

# Republic of the Philippines DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS CENTRAL OFFICE

Manila

11 8 JAN 2018

DEPARTMENT ORDER	)
<sub>No.</sub> 13	)
Series of 2018	.18

SUBJECT: Guidelines for the Preparation of Cost Estimates for Traffic Management and Safety & Health Requirements for the Construction and Maintenance of Roads, Bridges and Safety & Health

**Requirements for School Buildings** 

In order to ensure proper implementation of road works safety & traffic management and construction safety & health program during the construction and maintenance of all roads, bridges and school building projects under the DPWH infrastructure program, all Implementing Offices of this Department are hereby directed to adopt the subject Guidelines (Annex "A") which prescribes the minimum requirement of the said items in the preparation of Program of Works (POW), Approved Budget for the Contract (ABC) and Detailed Unit Price Analysis (DUPA).

The cost estimates for these items shall include supply of materials, installation and maintenance considered for the entire duration of the project on a lump sum basis as specified in the guideline to be supported with detailed breakdown of requirements and cost computations in the DUPA. The project's safety & health and traffic management requirements shall be considered under Item B.7 – Occupational Safety and Health Program, Item B.8 – Traffic Management, Item 605 – Road Signs and other applicable items as prescribed in the revised standardized pay items of works per latest approved department issuances. Further, a complete quantity and description of traffic management and construction safety and health requirements shall be indicated in the Annex supplied for the particular pay item in the bill of quantities of the Bid Documents. This shall be provided to all interested bidders to ensure proper compliance of requirements and monitoring during project implementation.

The derivation of quantities and cost estimates for the aforementioned items shall be based on the approved Traffic Management Plan (TMP), Construction Safety and Health Program (CSHP) and other identified safety requirements of the project. Such cost shall not exceed the allowable percentage per project category as shown in Table No. 5 to Table No. 8 of the said Guideline (Annex "A").

In case of a cost percentage higher than 10% of what is prescribed to address the actual requirements, the head of the implementing office shall seek review of the TMP and CSHP from the Bureau of Quality and Safety (BQS) and corresponding review of cost from the Bureau of Construction (BOC).

This Order supplements the existing DPWH Road Works Safety Manual, Series of 2004; D.O. No. 56, Series of 2005 – Guidelines for the Implementation of DOLE D.O. No. 13, Series of 1998 on Occupational Safety and Health in the Construction Industry; D.O. No. 36, Series of 2007 – Provision and Installation of Road Safety Devices along Critical Sections of all DPWH Preventive Maintenance/ Asphalt Overlay and Reblocking Projects; and D.O. No. 103, Series of 2016 – Guidelines in the Preparation of Provision and Maintenance of Traffic Control as Pay Item in the Approved Budget for the Contract (ABC) on Infrastructure Projects.

This Order shall take effect immediately.

**MARK A. VILLAR** 

Secretary

6.1.3 ECG/AMD/WRO

Department of Public Works and Highways Office of the Secretary



Guidelines for the Preparation of Cost Estimates for Traffic Management and Safety & Health Requirements for the Construction and Maintenance of Roads, Bridges and Safety & Health Requirements for School Buildings **FOREWORD** 

The Department of Public Works and Highways (DPWH) being the primary engineering and

construction arm of the government recognizes its responsibility to enforce compliance to the

Occupational Safety and Health Standards established by the Department of Labor and

Employment (DOLE). In its effort to impose the required construction safety practices,

challenges in the compliance with the standards, however, have been encountered.

Relentless in its pursuit of providing a safer work environment, this Guidelines for the

Preparation of Cost Estimates for Traffic Management and Safety & Health

Requirements for the Construction and Maintenance of Roads, Bridges and Safety

& Health Requirements for School Buildings was prepared with the intent of improving

the implementing offices' means of preparing cost estimate/budget on safety requirements

particularly for road, bridge, and school building projects. It targets to serve as a preparatory

work in imposing the presentation and quantification of detailed safety requirements in the

preparation of the Program of Works (POW) and Approved Budget for the Contract (ABC) and

further, in the Bid Documents for contractors to be informed of the detailed requirements to

be provided on site.

It is hoped that adherence to this guideline shall further promote compliance of DPWH projects

on the aforesaid Safety and Health Standards through ensuring the provision of right cost of

construction safety requirements.

MARK A. VILLAR

Secretary

Department of Public Works and Highways Office of the Secretary

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## Introduction

When it comes to maintenance and construction works, safety must be of utmost priority. In the process of delivering civil works to address the needs of the Filipino people specifically in providing quality and safe infrastructure, safety during maintenance and construction works must be at the top of the minds of the implementing agencies and contractors to protect the workers as well as the people residing nearby and traveling public who use the adjacent/detour lanes. Preventive methods by risk mitigation and reduction of construction hazards through implementation of standard safety practices, complete and consistent use of personal protective equipment, adequate temporary road works traffic control (directional, regulatory, and warning signs, barriers, traffic cones, and other road safety devices), are the best solutions to minimize, if not eliminate, the occurrence of road crashes and untoward incidents.

In the Philippines, the Department of Labor and Employment (DOLE) leads the formulation, implementation and compliance monitoring of the Occupational Safety and Health Standards (OSHS)—the governing standards in the country's construction industry in terms of occupational safety and health. Correspondingly, the Department of Public Works and Highways (DPWH), as the primary engineering and construction arm of the government, has been seeking to continually reinforce the implementation of such standards by issuing guidelines and procedures through Department issuances and manuals.

Challenges in the compliance with the standards, however, have been encountered. The Department's engineers have encountered difficulty in imposing to the contractors the site safety requirements that are not presented in detail in the Contract or in the Program of Works. The major contributing factor is the lack of understanding of engineers and the contractors particularly on the standards related to the implementation of road works safety, traffic management and construction safety and health.

Thus, this cost estimation guideline entitled Guidelines for the Preparation of Cost Estimates for Traffic Management and Safety & Health Requirements for the Construction and Maintenance of Roads, Bridges and Safety & Health Requirements for School Buildings is hereby presented to introduce improvement in the Department's pursuit of further enhancing and sustaining the compliance to such safety standards particularly in the methods of deriving the cost and budget for construction safety requirements.

## **About this Guideline**

Guidelines for the Preparation of Cost Estimates for Traffic Management and Safety & Health Requirements for the Construction and Maintenance of Roads, Bridges and Safety & Health Requirements for School Buildings

This guideline basically presents methods on how to prepare detailed cost estimate for road works safety, traffic management, and general construction safety and health requirements to be reflected in the Detailed Unit Price Analysis (DUPA) and Program of Works (POW) required for every project particularly for roads, bridges, and buildings.

Relevant guidelines and manuals adopted and referred herein are the DPWH Road Works Safety Manual, 2004, DOLE D.O. 13, Series of 1998, and D.O. 56, Series of 2005. As an improvement to the DPWH Road Works Safety Manual, 2004, this guideline introduced minimum safety requirements on construction safety for bridge, drainage with deep excavations and building. Illustration of construction sequences particularly for road works were also included. The necessary traffic management schemes as part of a traffic management plan and corresponding Detailed Unit Price Analysis (DUPA) for traffic management and construction safety & health requirements are presented in this guideline for the purpose of illustrating the steps for cost computation thus, the implementing offices should verify the prevailing costs in their area in the preparation of POW and DUPA.

Every project is unique so, road works safety & traffic management and construction safety & health requirements vary depending on the actual site condition, programmed items of work and other foreseen necessities. Hence, contents herein would only serve as a guide as to what are advisable and minimum requirements. Modifications may be made if deemed necessary.

#### General Objective

In a more holistic perspective, this guideline aims to impart on the Department's effort of improving the proper implementation of construction safety and health program on all projects handled by DPWH. This cost estimation guideline intends to improve the implementing offices' means of preparing cost estimate/budget on safety requirements particularly for road, bridge, and building projects. It targets to serve as a preparatory work in imposing the presentation and quantification of detailed safety requirements in the preparation of the Program of Work (POW) and Approved Budget for the Contract (ABC) and further, in the Bid Documents for contractors to be informed on the detailed requirements to be provided on site. Moreover, this guideline aims to establish a baseline cost of safety requirements (in percentage) relative to a project's cost of civil works.

#### Specific Objectives

- To present the construction safety requirements and its application on road, bridge, and building projects commonly implemented by DPWH.
- To illustrate the quantification of requirements and the corresponding preparation of cost through Detailed Unit Price Analysis (DUPA).
- To present a matrix of the project's cost of safety requirements versus the cost of civil works.

## Part - A

#### General

#### A – 1

#### **Acronyms and Definition of Terms**

#### **ACRONYM**

#### **ABC**

Approved Budget for the Contract

#### **CSHP**

Construction Safety and Health Program

#### DO

Department Order

#### **DOLE**

Department of Labor and Employment

#### **DUPA**

**Detailed Unit Price Analysis** 

#### **POW**

Program of Work

#### **PPE**

Personal Protective Equipment

#### **OSHS**

Occupational Safety and Health Standards

#### **DEFINITION OF TERMS**

#### Dimension (D)

The dimension 'D' relates to distances for signage locations and taper lengths for different vehicle approach speeds. It is expressed in meters equal to the approach speed of traffic in kilometers per hour. For example, if the approach speed of traffic is 60 kph then the dimension D is 60 meters.

#### **High Speed Road**

Road sections with traffic approach speed between 60 kph and 80 kph

#### **High Volume Road**

Road sections accommodating 1,500 or more vehicles per day

#### **Long Term Works**

Works taking longer than a day and need to be provided with signage overnight and are commonly applicable for road and bridge works implemented by contract.

#### Low Speed Road

Road sections with traffic approach speed of less than 60 kph

#### Low Volume Road

Road sections accommodating less than 1,500 vehicles per day

#### **Road Works Traffic Control**

Activity which involves directing vehicular and pedestrian traffic around a construction zone or other road disruption through the provision of directional, regulatory, and warning signs, barriers, traffic cones, traffic controllers, and other devices to regulate, warn, or guide road users in order to attain safe and efficient movement of vehicles, pedestrians, bicyclists, workers, and the general public.

#### **Short Term Works**

Works to be completed within a day and need not be provided with signage overnight. This is usually applicable for road and bridge routine maintenance works usually performed by administration.

#### **Temporary Signage**

Construction safety signage installed for purposes of warning, informing and controlling the workers and the public on an on-going construction operation.

#### **Traffic Management**

The application of specific traffic control practices over a length of road or over an area, to achieve specified objectives like reduction of traffic congestion or regulation of traffic flow, which may be set by a governing agency (DPWH) responsible on arterial roads or the Local Government Unit (LGU) responsible on provincial and local roads.

#### **Traffic Management Plan**

A site-specific plan showing the proposed worksite layout with detailed description and location of signs, traffic control devices, and equipment at different stages of construction. It also describes the details on how work personnel, the public, and those who will be impacted by the work can be safely and efficiently guided through a roadwork site so that the road network is kept at a satisfactory level of performance.

#### Very High Speed Road

Road sections with traffic approach speed greater than 80 kph

#### A – 2 Procedural Guidelines – D.O No. 13, Series of 1998

## Guidelines Governing Occupational Safety & Health in the Construction Industry

#### A – 2.1 Personal Protective Equipment (PPE)

For General Construction Work, basic PPE for all construction workers are the following;

- a. Safety Helmet / Hard hat
- b. Safety Gloves
- c. Safety Shoes

Specialty PPE as listed below shall be provided to workers in addition to or lieu of the corresponding basic PPE as the work or activity requires.

Table 1 - Required Specialty Personal Protective Equipment as per DOLE D.O. 13, Series of 1998

	Construction Work/ Activity	S	pecialized PPE	Remarks	
1.	Work near unprotected areas such as but not limited to the following a. Working scaffolds b. Working on roofs	1.	Safety Belt	Where there is a possibility of fall that will normally cause disabling injury	
	Work involving pouring of concrete such as but not limited to the following a. Laying concrete slab b. Pouring of concrete for beams and/or columns	1.	Safety chemical resistant boots	If worker's feet may have contact with fresh concrete	
		2.	Chemical resistant gloves	If worker's hands may have contact with fresh concrete	
3.	Work involving laying of asphalt	1.	Heat resistant gloves	If worker needs to work on or near hot	
		2.	Heat resistant safety footwear	asphalt	
4.	Working with derricks and cranes	1.	Color-coded vest with reflectorized markings	Proper visibility and identification of critical persons such as operators, riggers, signal men	
		2.	Heavy leather gloves	For riggers	
		3.	High visibility gloves	For signal men	
5.	Working with earth moving equipment	1.	Heavy duty safety footwear	Safety shoes for relatively dry or sheltered work	
				Water and mud resistant boots for wet outdoor works	
		2.	Ear muff or ear plugs	When working near or on noisy equipment	
		3.	High visibility gloves	For spotters	
		4.	High visibility vest	For all workers within immediate vicinity equipment	

	Construction Work/ Activity	S	pecialized PPE	Remarks
6.	Manual excavation or digging	1.	Padded Vest	When work may involve being hit by falling materials
7.	Work on top of or near bodies of water	1.	Life vest	When there is danger
		2.	Safety belt	of fall into deep water
8.	Work where hot cutting and welding of metals are involved	1.	Heat resistant light filtering face shield	For welders and gas cutters
		2.	Heat resistant and heat insulating gloves	
		3.	Metal fume filtering respirators	
		4.	Heat resistant protective clothing	
		5.	Light filtering and heat resistant face goggles	For gas cutting in lieu of face shield
9.	When working with live electricity above 50 volts AC or DC	1.	Electrically insulated gloves	Electrical resistance must be suitable for
		2.	Electrically insulated safety shoes	the maximum electrical voltage of energized parts that may be handled by worker
10.	Work involving exposure to or handling of hot materials or work near open flame	1.	Heat resistant and heat insulating gloves	For handling of hot substances and materials
		2.	Heat insulating protective clothing	For working in hot working environment
		3.	Heat resistant face shield	For working near open flame
11.	Work involving handling of noisy and/or vibrating power tools/ equipment	1.	Vibration insulating gloves	Recommended total cumulative actual usage of tool shall be a maximum of 2 hours per day (for 8-hour work, duty cycle should be 1:4)
		2.	Ear protection	When power tool generates noise of more than 85 dB
12.	Work involving exposure to harmful dust	1.	Dust filtering respirators	If dust concentration is above recommended Threshold Limit Value (TLV) for the contaminant

	Construction Work/ Activity	S	pecialized PPE	Remarks
13.	Work that may involve shortage of oxygen	1.	Self-contained or supplied air respirator	Work in confined spaces or work involving depletion of oxygen supply
14.	Working with organic solvent or toxic and/or corrosive chemicals	2.	Chemical resistant gloves Chemical filtering respirator	If work involves handling of chemicals  If chemical emits vapors above recommended TLV for the contaminant chemical/s
		3.	Chemical resistant face shield	If work may involve chemical splashes to the face
		4.	Chemical goggles	If chemical vapors may irritate eyes
		5.	Chemical resistant protective clothing	If work will involve chemical splashes to the body of worker
15.	Working with atmospheres containing contaminants above recommended threshold limit values for airborne contaminants	1.	Appropriate contaminant filtering respirator	For atmospheres containing not more than ten times the recommended TLV
		2.	Contaminant protection for eyes	If contaminant may irritate eyes
		3.	Self-contained or supplied air respirator	For environment containing more than ten times the recommended TLV
		4.	Chemical suits	If contaminant may enter through skin
16.	Working under high pressure			
17.	Working near vehicular traffic	1.	PPEs with Reflectorized or luminous markings for high visibility	
		2.	Heavy duty safety shoes	
18.	Work which involves working underwater	1.	Self-contained or supplied air underwater breathing apparatus	
		2.	Thermal insulating wet suit and accessories	If work involves long exposure to cold water
19.	Working at night under low lighting conditions	1.	High visibility vest	

#### A - 2.2 Safety and Health Personnel

Based on Section 1033, Rule 1030 and Section 8 of DOLE D.O 13, Series of 1998 of the Occupational Safety and Health Standards (OSHS as Amended 1989), the following number of safety personnel and emergency occupational health personnel and facilities are required depending on the number of workers.

Table 2 - Considerations in the employment of safety man and emergency health personnel

Number of Workers	Number of Safety Man		
Hazardous Workplace			
200 and below	One (1) part-time safety man		
Over 200 to 1000	One (1) full-time safety man		
For every 1000 workers	One (1) full-time safety man		
Non-h	nazardous Workplace		
Less than 1000	One (1) part-time safety man		
For every 1000	One (1) full-time safety man		
Number of Workers	Number of Emergency Health Personnel		
Less than 50	One (1) full time certified first-aider		
Over 50 to 200	One (1) full-time registered nurse		
Over 200 to 300	One (1) full-time registered nurse		
	One (1) part-time physician		
	One (1) part-time dentist		
	And an emergency clinic		
Over 300	One (1) full-time registered nurse		
	One (1) full-time physician		
	One (1) full-time dentist		
	And an infirmary or emergency hospital with		
	one (1) bed capacity		

A part time safety man shall be allotted at least four (4) hours per week to perform the duties as safety man. With regard to the provision of emergency hospital, Section 1963.03 of OSHS states that an employer may not establish an emergency hospital or dental clinic in his workplace as required if a hospital or dental clinic which is located not more than 5 kilometers away from the workplace or which can be reached in 25 minutes of travel is situated and the employer has facilities readily available for transporting workers to the hospital or clinic in case of emergency.

## A – 2.3 Signage and Barricades as Prescribed in the Procedural Guidelines of DOLE D.O 13, Series of 1998

Construction Safety Signage shall be provided as a precaution and to advise the workers and the general public of the hazards existing in the worksite.

#### 2.3.1 Signage Procedures

As per DOLE's requirement, the signage shall be;

- a. Posted in prominent positions and at strategic locations
- b. As far as practicable, be in the language understandable to most of the workers employed in the site.
- c. For non-raised floor areas, the attached yellow CAUTION sign shall be used when using yellow CAUTION TAPE.
- d. For non-raised floor areas, the attached red DANGER sign shall be used when using the red DANGER TAPE.
- e. Placed in designated areas at 1.20 meter from the ground level, if there is no other more practicable height.

- f. Regularly inspected and maintained in good condition to achieve its purpose. Signage that are damaged; illegible or that no longer apply as to purpose, site or language, shall be removed or replaced by the safety officer when needed.
- g. Removed after the hazard is completely eliminated. If upon work completion that hazard is still present, the signage shall remain in place.
- h. Designed and constructed following the Overall Dimensions of Safety Signs Formula as required by the OSHS.
- Specific with the type of hazard and should indicate the name of the contaminant/ substance involved (for chemical hazards), and the type of PPE or respiratory equipment to be worn.

#### 2.3.2 Posting of Signage

Posting of signage shall include, but not limited to the following places:

- a. Areas where there are risks of falling objects.
- b. Areas where there are risks of falling, slipping, tripping among workers and the public
- c. Prior to entry in project sites, locations and its perimeter.
- d. Where there is mandatory requirement on the usage of PPEs.
- e. Areas where explosives and flammable substances are used or stored
- f. Approaches to working areas where danger from toxic or irritant airborne contaminants/ substances may exist.
- g. All places where contact with or proximity to electrical facility/ equipment can cause danger.
- h. All places where workers may come in contact with dangerous moving parts of machinery or equipment
- i. Locations of fire alarms and fire-fighting equipment
- j. Locations for instructions on the proper usage of specific construction equipment, tools.

#### 2.3.3 Barricading Procedures

In barricading, the following shall apply:

- a. The contractor shall provide all necessary barricades, safety tapes, safety cones or safety lines as required in isolating or protecting an unsafe work area from other workers, pedestrians or vehicular traffic.
- b. Barricades shall completely enclose the hazardous area and effectively limit unintentional or casual entry.
- c. Barricades shall be 0.90-meter vertical height from the ground, when no other more practical height specification is available.
- d. Barricades shall be maintained in good condition to achieve its purpose
- e. Barricades that are damaged; faded or that no longer apply as to purpose, site or meaning, shall be removed or shall be replaced by the safety officer.

- Barricade tape shall not be used on the floor as this presents a slipping hazard of its own.
- g. In addition to using the proper warning tape, the contractor shall use the appropriate safety signage when barricading an area.
- h. All barricades shall be removed after hazard is completely eliminated.
- i. Upon work completion, if the hazard is still present, the barricade shall remain in place.

#### 2.3.4 Installation of barricades

Installation of barricades shall include, but not limited to the following worksite conditions:

- a. Hazardous areas
- b. Trip hazard
- c. Robotic movement
- d. Energized electrical works
- e. Overhead suspended load test
- f. Critical high pressure test
- g. Chemical introduction
- h. Fall exposure
- i. Emergency Response Zone
- j. Unsafe condition zone
- k. Danger zone
- Confined and enclosed space

#### $\Delta = 3$

#### Reference Laws, Policies, Manuals, and Guidelines

In the preparation of this guideline, the following are the basis and references which the user may need for more detailed information:

- a. Handbook on Philippine Government Procurement (R.A. 9184)
- b. DOLE D.O. 13, Series of 1998

The Guidelines Governing Occupational Safety and Health in the Construction Industry

c. D.O. 135, Series of 2015

Strict Compliance to the Road Works Safety & Traffic Management and Construction Safety and Health Requirements during Construction and Maintenance of Roads and Bridges

d. Department Circular No. 29, Series of 2015

DOLE and DPWH Joint Memorandum Agreement on the Approval of CSHP of Government Infrastructure Projects

e. D.O. 197, Series of 2016

Revised Guidelines in the Preparation of Approved Budget for the Contract (ABC)

f. D.O. 129, Series of 2014

Guidelines in the Implementation of Memorandum Dated July 17, 2014 of the Secretary of DOLE on the Procedure in the Evaluation of Construction Safety and Health Program (CSHP) of Contractors Engaged by DPWH Pursuant to DPWH D.O. No. 56, Series of 2005

g. D.O. 54, Series of 2012

Guidelines on Reblocking of Portland Cement Concrete Pavement

h. D.O. 44, Series of 2012

Standardization of Construction Duration of DPWH Projects

i. D.O. 41, Series of 2012

Adoption of the Revised Manual on DPWH Highway Safety Design Standards May 2012 Edition

j. D.O. 13, Series of 2008

Guidelines in the Procurement and Installation of Road Safety Devices and Facilities

k. D.O. 56, Series of 2005

Guidelines in the Implementation of DOLE D.O. No. 13, Series of 1998 on Occupational Safety and Health in the Construction Industry

I. Department Circular No.09, Series of 2004

Road Safety Manuals and Handbooks

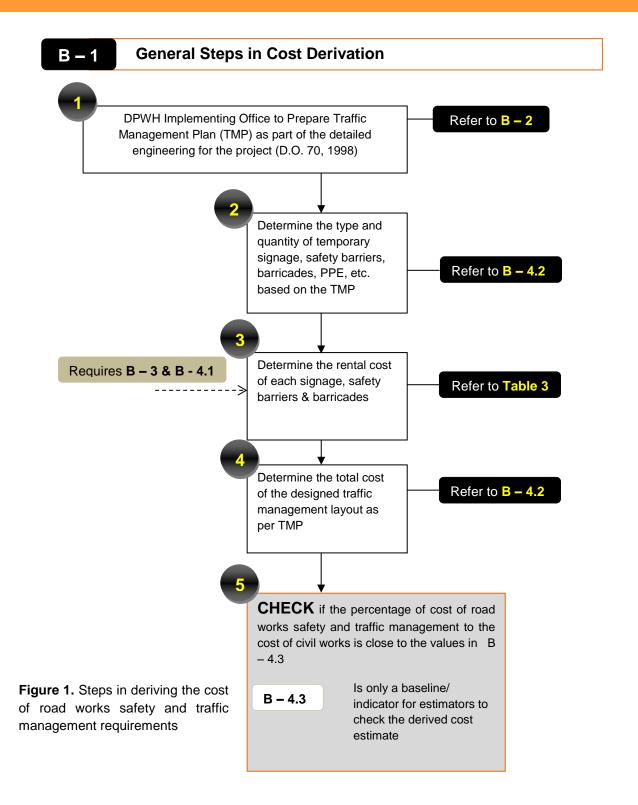
m. Department Order No. 70, Series of 1998

Traffic Alleviation for Major DPWH Projects along Heavily Thoroughfares in Metro Manila

- n. DPWH Road Works Safety Manual, 2004
- DPWH Highway Safety Design Standards Part 2: Road Signs and Pavement Markings Manual
- p. DPWH Construction Materials Price Data and Labor Rates

## Part - B

### Cost of Road Works Safety & Traffic Management



#### **3 – 2** Traffic Management Layouts

The **DPWH Road Works Safety Manual, 2004** includes discussion on the principles of worksite traffic management. For purposes of providing easy reference in this cost estimation guideline, presented herein are the worksite layout of signage and devices adopted from the DPWH Road Works Safety Manual (2004). However, a number of cases were observed in actual project implementation which also needs to be addressed thus, additional cases are introduced and some modifications are made on the layouts presented on the aforementioned manual.

The Traffic Management Layouts as presented in this guideline are still categorized into the following:

- a. Short Term Works
- b. Long Term Works
- c. Detours and Side Tracks
- d. Intersection Works
- e. Pavement Marking Works

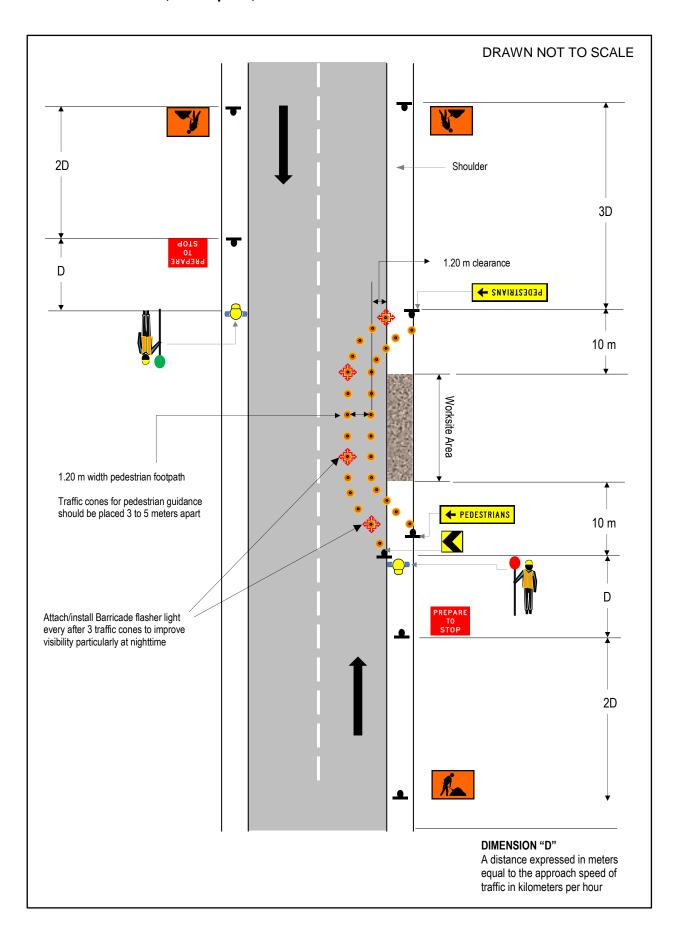
Through the illustrative traffic management layouts, the user of this guideline will be able to determine the basic requirements for the on-site implementation of road works safety and traffic management. Knowing such does not guarantee the sufficiency of knowledge in the proper practice of road works safety thus, a Traffic Management Plan (TMP) should be prepared by designated personnel in the office trained or have undergone seminar on the field of road works safety and traffic management. The traffic management layouts that would form part of the TMP to be prepared by the implementing office is not necessarily similar as presented in this guideline. Adjustments should be made to provide the necessary traffic control devices to be installed on site for a specific project. The need for a traffic controller is also illustrated on the different layouts and the requirement of providing a traffic controller for 24 hours on-site would depend on the actual operation and condition of the project. If closing a certain lane of the road hinders the continuous flow of a two-way traffic, then a traffic controller should be provided for the period that it is needed.

For purposes of illustrating the steps in deriving the cost, layouts in this guideline are utilized as basis in determining the quantities of signage and traffic devices.

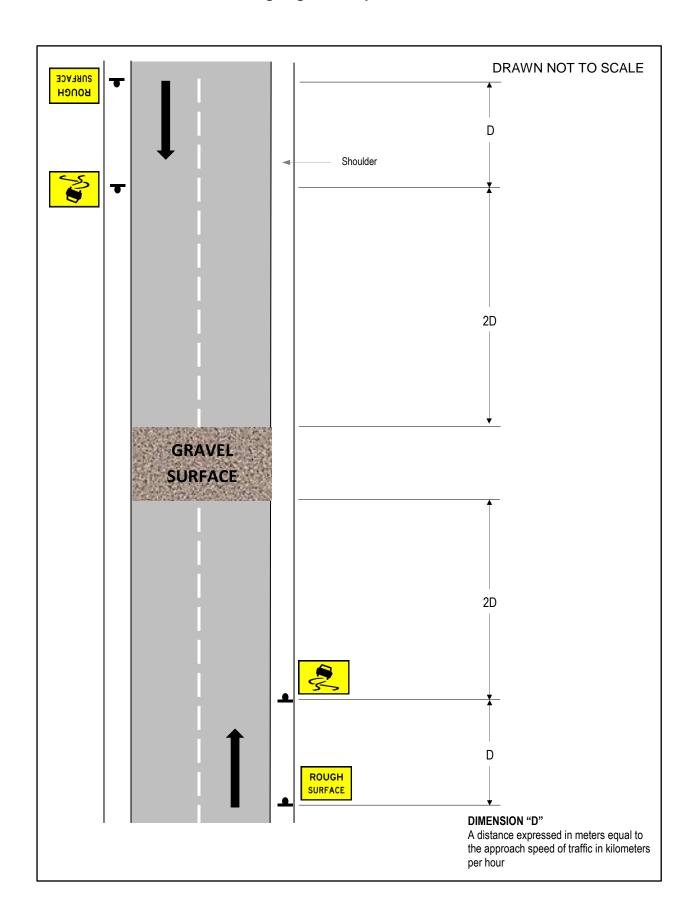
## **SHORT TERM WORKS**

(TRAFFIC MANAGEMENT LAYOUTS)

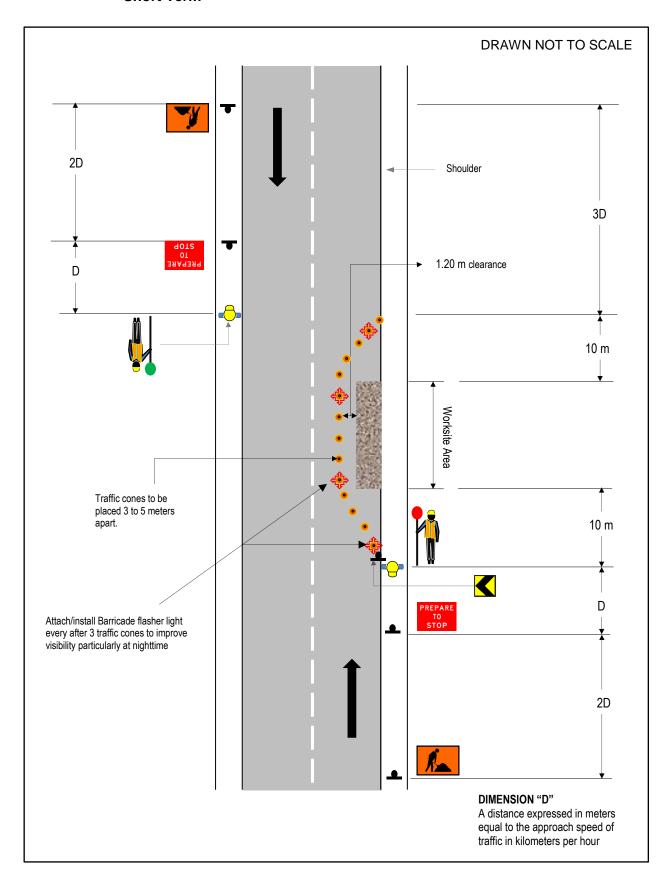
LAYOUT 1 – Part Lane Closure due to Works on Sidewalk – 2 Lane 2 Way Road, Low Speed, Short Term



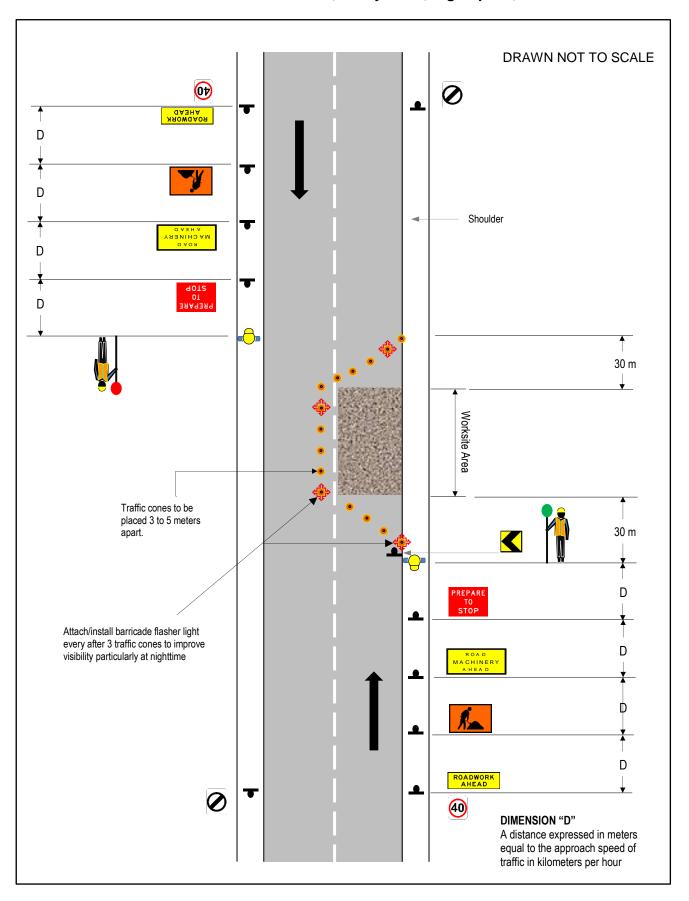
LAYOUT 2 – Road Condition Signing – Low Speed, Short Term



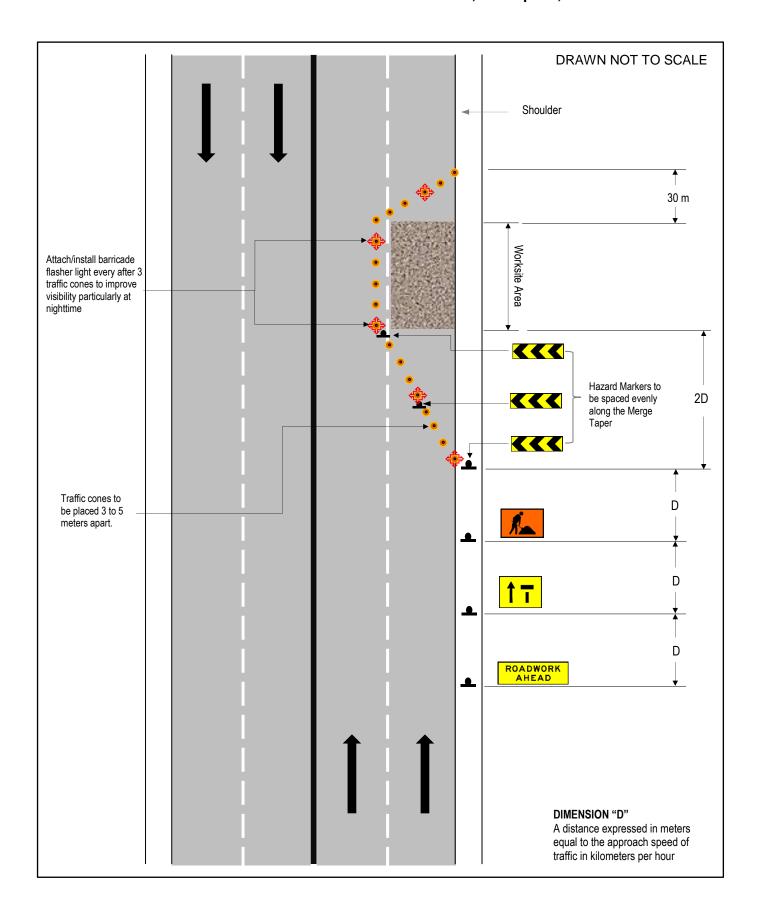
LAYOUT 3 – Part Lane Closure – 2 Lane, 2 Way Road, Low Speed, Low Volume, Short Term



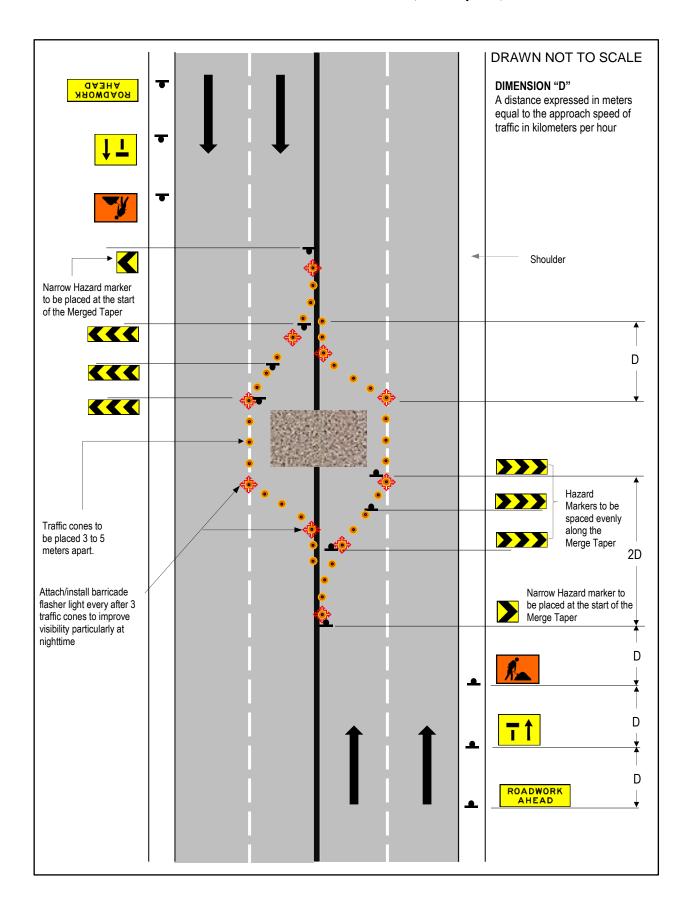
LAYOUT 4 - Part Lane Closure - 2 Lane, 2 Way Road, High Speed, Short Term



LAYOUT 5 - Closure of Outer Lane - Multilane Road, Low Speed, Short Term



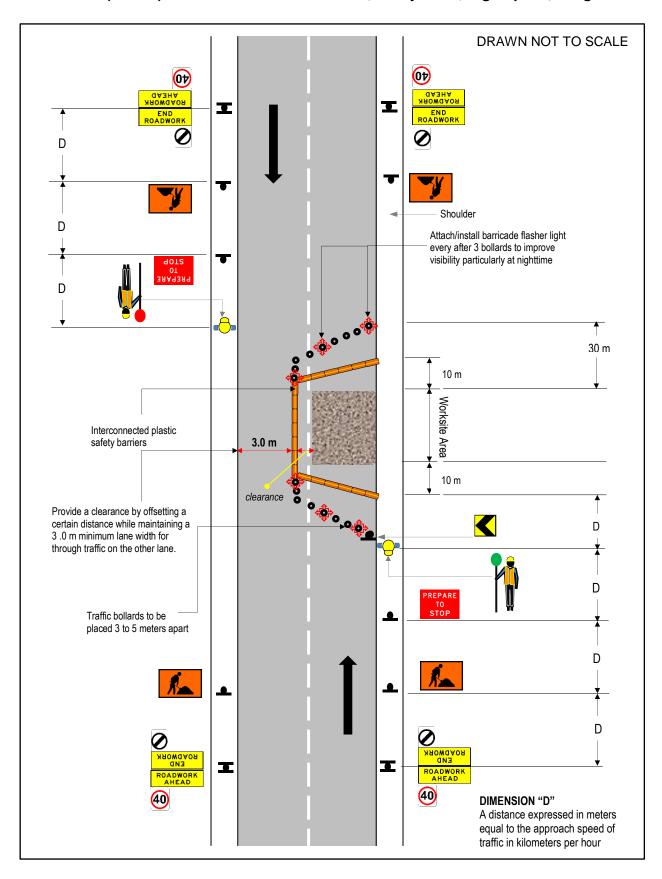
LAYOUT 6 - Closure of Center Lane - Multilane Road, Low Speed, Short Term



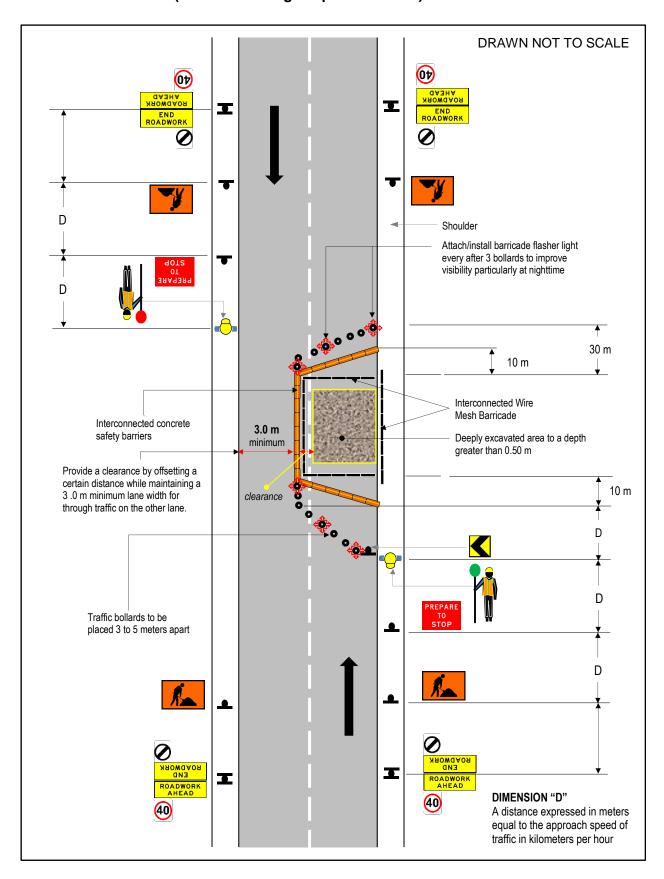
## **LONG TERM WORKS**

(TRAFFIC MANAGEMENT LAYOUTS)

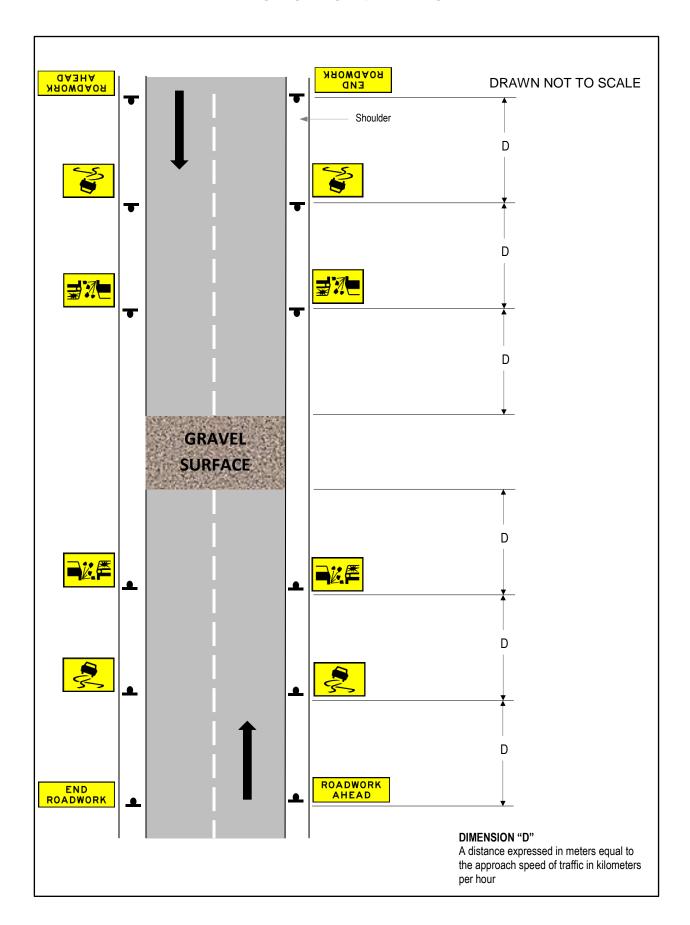
#### LAYOUT 7 (Case 1) - Part Lane Closure - 2 Lane, 2 Way Road, High Speed, Long Term



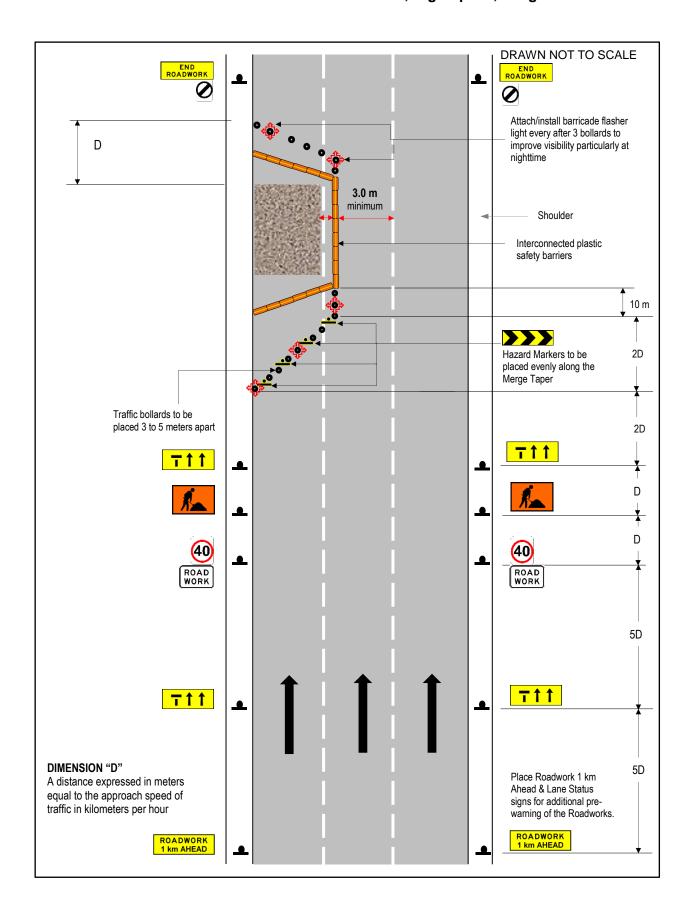
LAYOUT 7 (Case 2) – Part Lane Closure – 2 Lane, 2 Way Road, High Speed, Long Term (Works involving deep excavations)



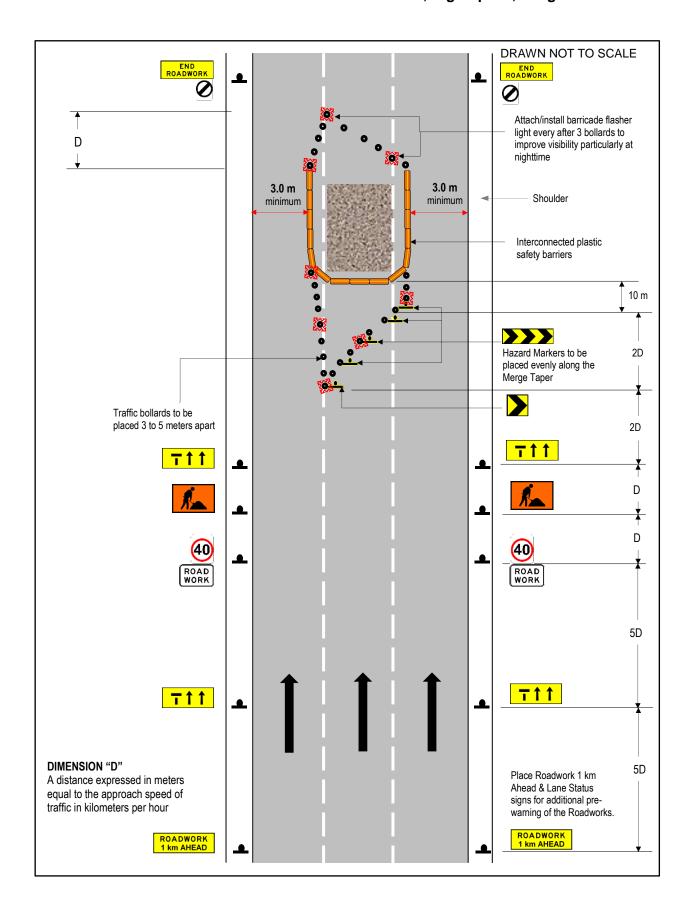
LAYOUT 8 - Road Condition Signing - High Speed, Long Term



LAYOUT 9 - Closure of Inner Lane - Multilane Road, High Speed, Long Term



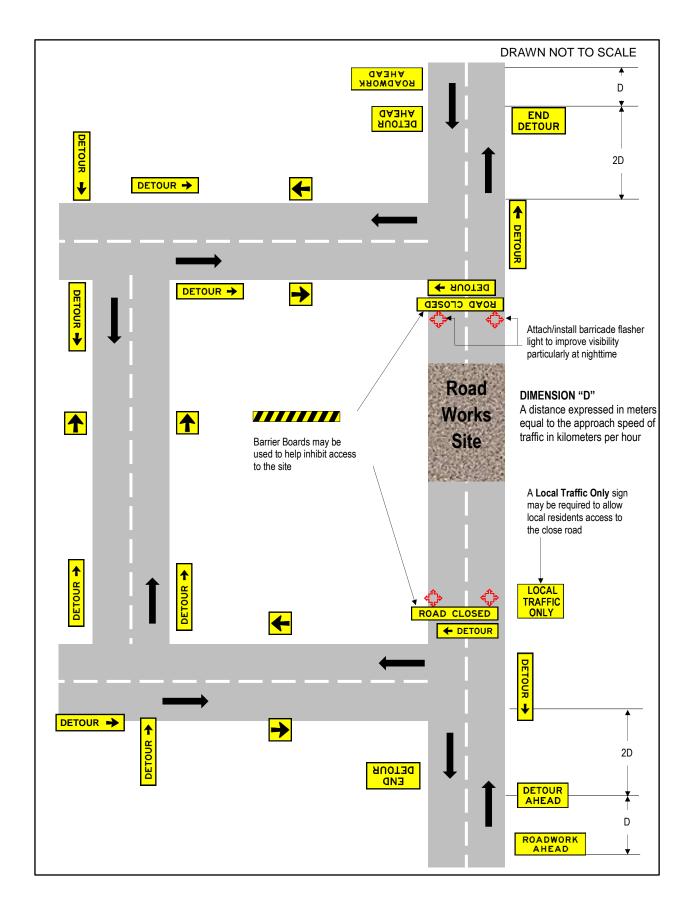
LAYOUT 10 - Closure of Center Lane - Multilane Road, High Speed, Long Term



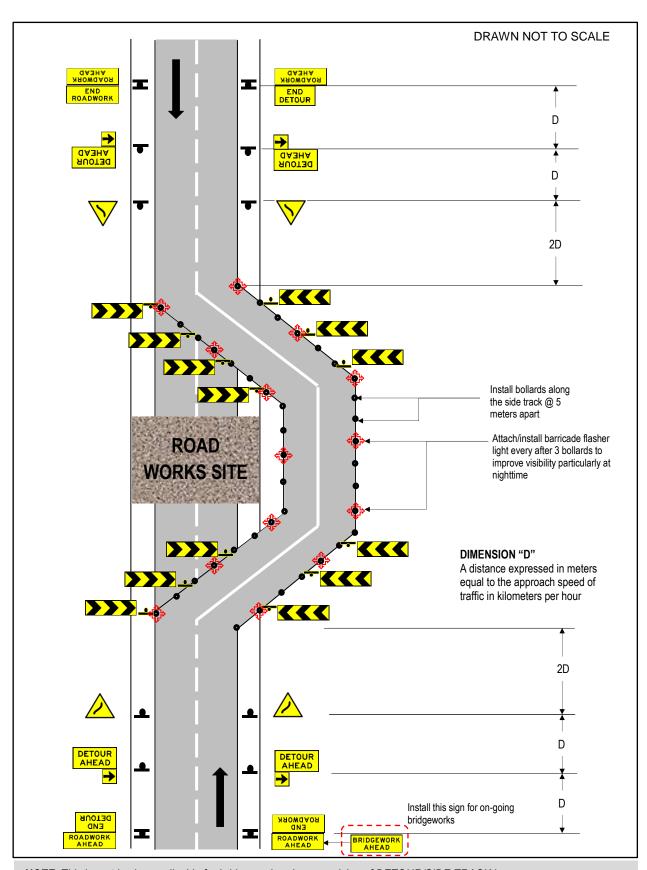
# DETOURS AND SIDE TRACKS

(TRAFFIC MANAGEMENT LAYOUTS)

LAYOUT 11 – Detour via the Existing Road Network – Low or High Speed, Short or Long Term

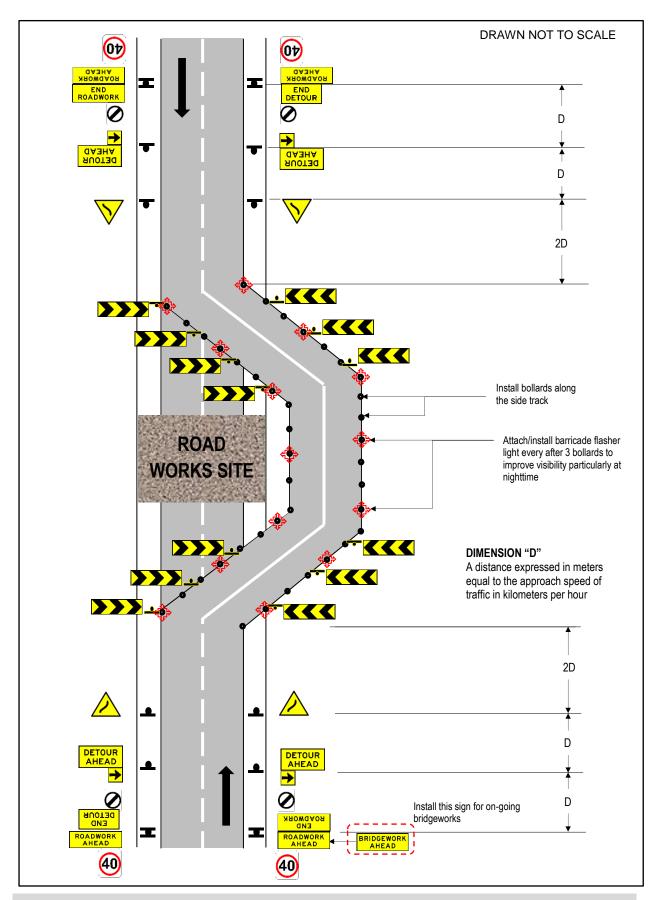


LAYOUT 12 - Detour via Side Track - Low Speed, Long Term



NOTE: This layout is also applicable for bridge works where provision of DETOUR/SIDE TRACK is necessary.

LAYOUT 13 - Detour via Side Track - High Speed, Long Term

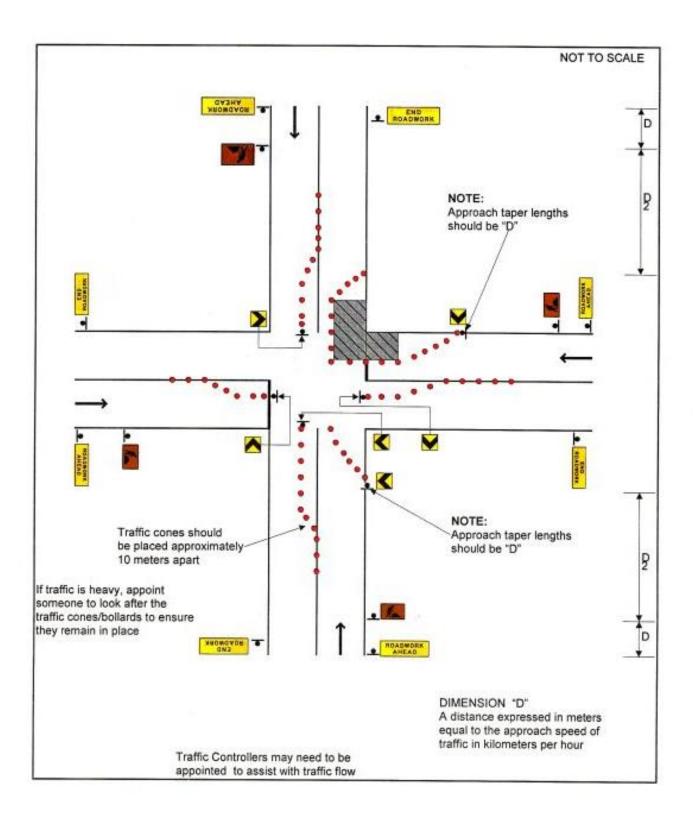


NOTE: This layout is also applicable for bridge works where provision of DETOUR/SIDE TRACK is necessary.

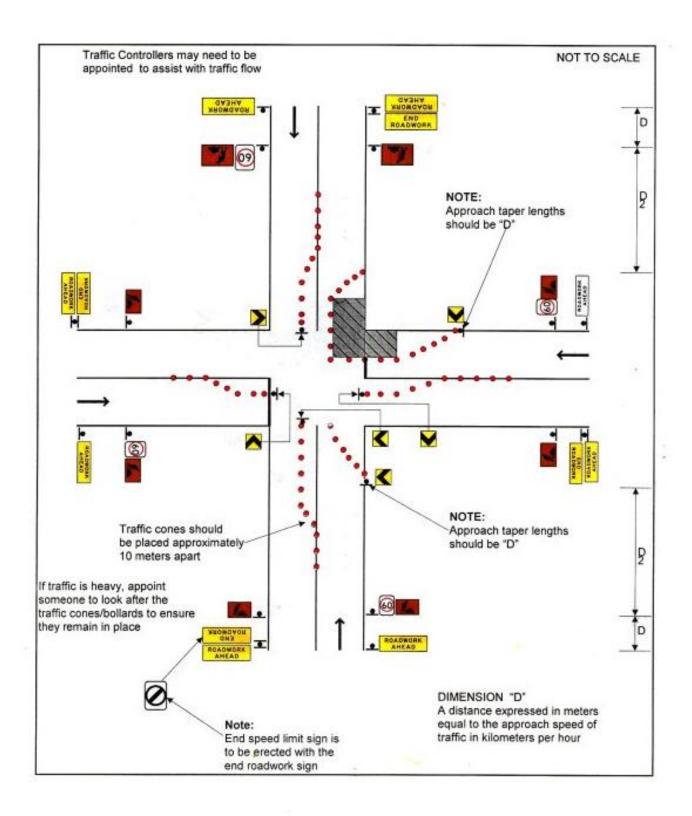
# **INTERSECTION WORKS**

(TRAFFIC MANAGEMENT LAYOUTS)

LAYOUT 14 - Works at an Intersection - Low Speed, Short or Long Term



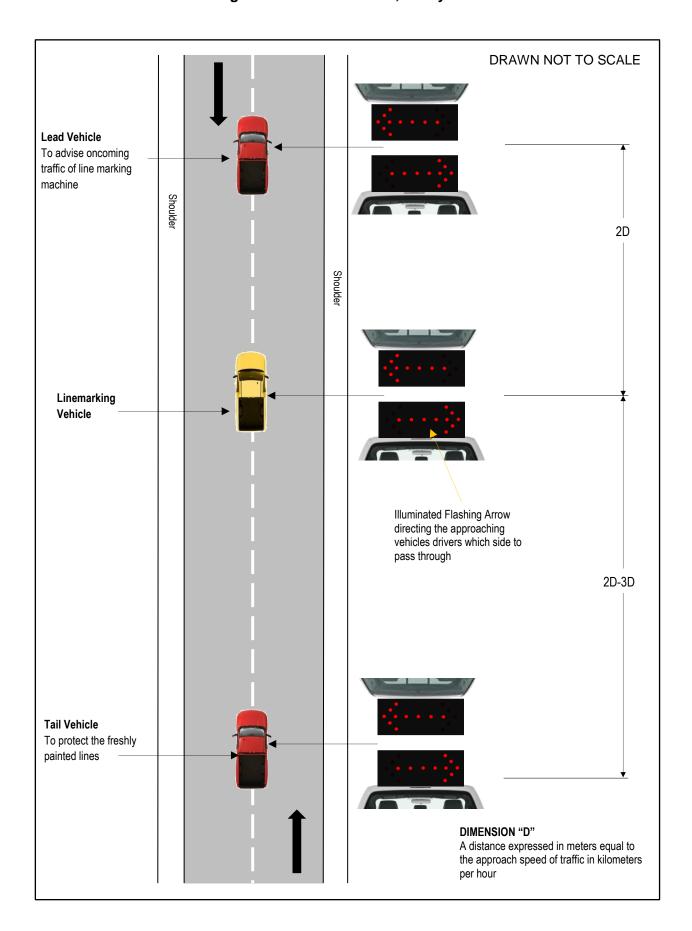
LAYOUT 15 - Works at an Intersection - High Speed, Short or Long Term



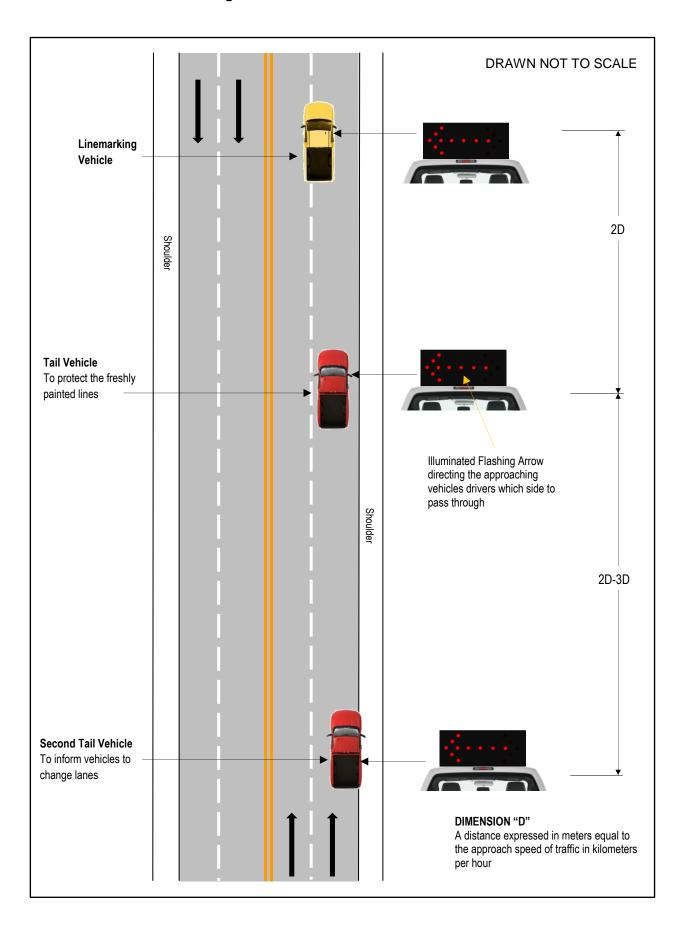
# PAVEMENT MARKING WORKS

(TRAFFIC MANAGEMENT LAYOUTS)

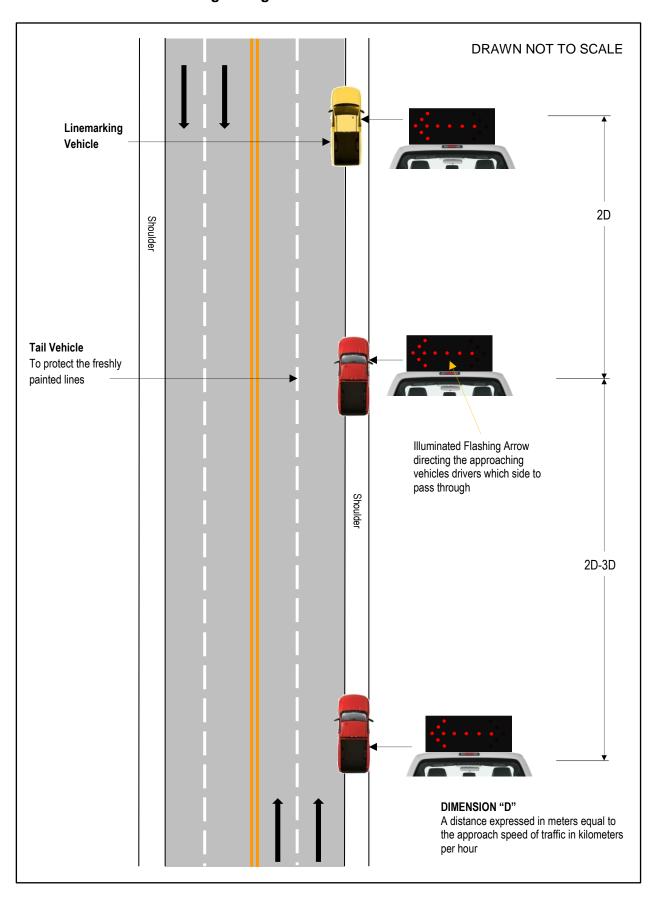
LAYOUT 16 - Lane Marking of Centerline - 2 Lane, 2 Way Road



**LAYOUT 17 – Lane Marking of Centerline – Multilane Road** 



**LAYOUT 18 – Lane Marking of Edgeline** 



Details on the color, standard sizes of signage, text layout and the requirement for luminosity/visibility of the signage, specification for other traffic control devices and relative standards are specified in the DPWH Road Works Safety Manual (2004). However, not all specifications of materials are stated in the said manual particularly the frame/support to be used for the temporary signage.

Based on DPWH Highway Safety Design Standards Part 2: Road Signs and Pavement Markings Manual, signs that are intended to convey message during dark periods need to be reflectorized or illuminated for greater visibility of colors and shapes. Reflectorization is achieved by the use of retro-reflective materials on legends, letter, borders and background of the sign. This requirement for reflectorization using a retro-reflective material is most advised for regular road signs as it would be for long term use and be fixed on our national highways. Similarly, for temporary road signs used in road works, standard specifications as advised shall be adopted. For the frames to hold the sign panels, design is as presented below.

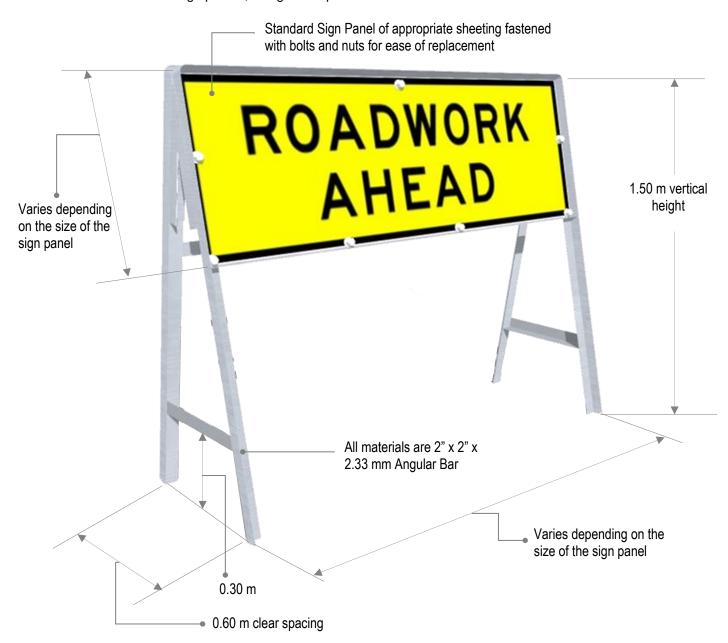


Figure 2. Details of the two-sided sign frame

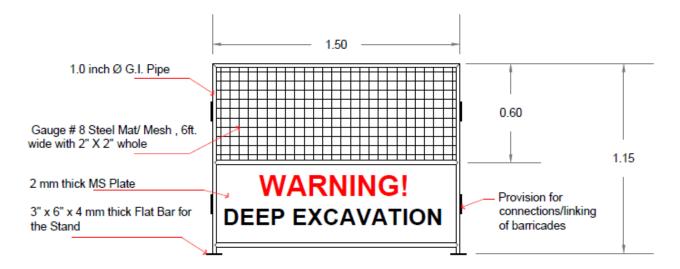
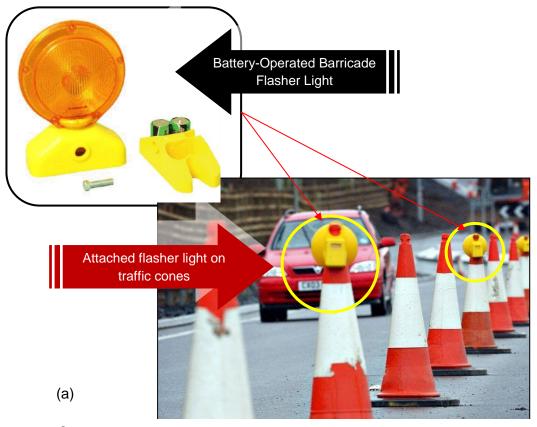


Figure 3. Details of construction mesh fence/barricade

To further improve the visibility of onsite set-up road works traffic management signage and devices particularly during nighttime, LED flasher light or appropriate available retro-reflective material is suggested to be attached or separately mounted on the installed temporary bollards, traffic cones, safety barrier and mesh fence/barricade along the confined area (work zone).



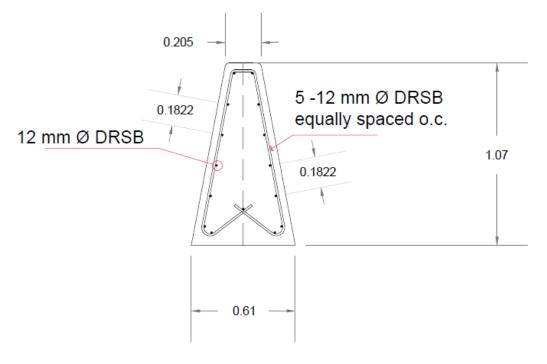
Source.

Retrieved from <a href="http://www.coventrytelegraph.net/news/coventry-news/12-weeks-new-roadworks-a45-8489038">http://www.coventrytelegraph.net/news/coventry-news/12-weeks-new-roadworks-a45-8489038</a>

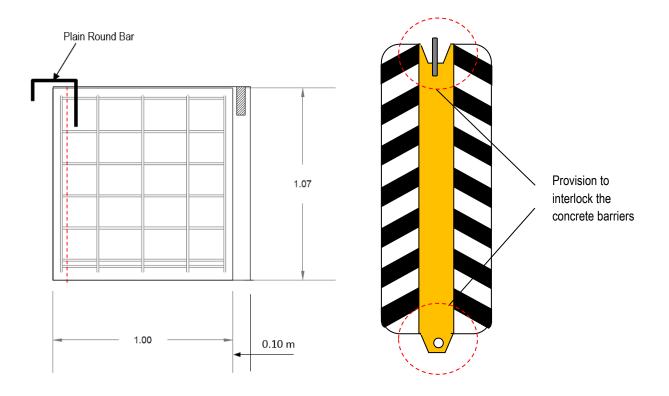




Figure 4. Installing or attaching of barricade flasher light on traffic devices (a) on traffic cones, (b) on temporary signage, (c) on barriers or fence



# **SECTION DETAILS**



# **SIDE VIEW**

Figure 5. Details of Concrete Barrier

# B-4

# **Cost Component**

The cost for construction safety and health must be taken into consideration in the preparation of Program of Work (POW) for every project. **Section 8.1 of the Procedural Guidelines of DOLE D.O. 13, Series of 1998**- The Guidelines Governing Occupational Safety and Health in the Construction Industry states that the total cost of implementing a Construction Safety and Health Program shall be mandatory and shall be made an integral part of the project's construction cost as a separate pay item, duly quantified and reflected in the Project's Construction Contract Documents.

The road works safety wherein provision of traffic devices and signage are necessary to protect the workers and the road users from the probable harm of the on-going construction is considered in this guideline as covered by the abovementioned governing guidelines of DOLE. Hence, quantification and costing of those requirements are necessary.

Moreover, the DPWH D.O. 22, series of 2015 as superseded by D.O. 197, Series of 2016 presents that the cost of Construction Safety and Health is not embedded/incorporated in each civil work items thus, considered as a separate pay item under non-civil works but not subject to OCM mark-up. D.O. 05, Series of 2017 also specify Item B.7 – Occupational Safety and Health Program and B.8 Traffic Management as pay items under Part B – Other General Requirements.

#### B - 4.1 Considerations in the Preparation of DUPA

To illustrate the basic cost estimation process in this guideline, prepared herein is the Detailed Unit Price Analysis (DUPA) based on plans, specifications, and requirements presented in Section B - 2 to B - 3. The DUPA as presented in this guideline serve only as a reference for the implementing offices in deriving costs for the road works safety & traffic management and construction safety & health. Should there be an increase/decrease in cost, the Implementing Offices in its derivation of cost shall correspondingly make the necessary adjustments. Cost of Personal Protective Equipment (PPE) (e.g. safety shoes and gloves) will be based on the actual specific requirements and as prescribed in Table 1. It must be noted however, that the quantities of signs and traffic control devices in the DUPA presented in this guideline are not fixed as quantification should be based on the prepared worksite traffic management plan applicable for the specific project.

Table 3 tabulates the estimated unit cost for each road work signage and is utilized in the preparation of DUPA for each traffic management layout. With regard to costing, payment for the signage is in a daily rental basis which means that it will not be turned over to the implementing office after the completion of the project. The implementing office will only pay the contractor for providing the safety requirements within the period that the devices and signs are used in the project.

In the determination of the daily rental cost of the devices and signage, the following lifespan of materials are considered:

Road works standard retroreflective signs – 3 years
 Plastic Safety Barriers – 2 years
 Traffic Cones – 2 years
 Temporary Bollards – 2 years
 Construction Safety Fence/Barricade – 2 years
 Concrete Safety Barriers – 5 years

For estimation and illustration purposes, sample DUPA of each traffic management layout presented herein are referred from the DPWH Construction Materials Price Data (CMPD 2015, NCR), DOLE Standard Labor Rates, D.O. 22, Series of 2015. The Implementing Offices shall adjust accordingly upon issuance of reference, guidelines and related policies that may supersede the stated references in this guideline.

Table 3 – List of road works temporary signage and the estimated daily rental cost

OAD AND DDIDGE	MODIC CITE TEMPODADY	.	SIC	SNAGE DESCRIPTION			MA	ATERIAL REQUIR	REMENTS AND COST			Daily Rental Rate
	WORK SITE TEMPORARY GNAGE	Sign No.	Size (mm) (Width X Height)	Letters/Symbols	Background	Sign Panel	Frame		Consumables (5% of Frame)	Labor (15% of Frame & Consumables)	Total	(considering 3 yea lifespan)
						[A]	Angle Bar	Cost [B]	[C]	[D]	[E] = [A] +[B] +[C] + [D]	[F] = [E]/(365*3)
ADVANCE	WARNING SIGNS											
ROADWORK AHEAD	ROADWORK AHEAD (T1-1, T1-31)	T1-1	1800 x 600	Line 1- Black 200 DM Line 2- Black 160 DM	Yellow Reflectorized	₱7,733.00	3 pcs - 6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱11,991.80	10.95
BRIDGEWORK AHEAD	BRIDGEWORK AHEAD (T1-2)	T1-2	1800 x 600	Line 1- Black 200 DM Line 2- Black 160 DM	Yellow Reflectorized	₱7,733.00	3 pcs - 6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱11,991.80	10.95
ROAD MACHINERY AHEAD	ROAD MACHINERY AHEAD (T1-3)	T1-3	1200 x 600	Line 1- Black 100 EM Line 2- Black 120 DM Line 3- Black 100 EM	Yellow Reflectorized	₱5,612.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱7,165.04	6.54
GRADER AHEAD	GRADER AHEAD (T1-4)	T1-4	900 × 600	Black 140 DN	Yellow Reflectorized	₱4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	5.64
	WORKMEN AHEAD (Symbolic) (T1-5)	T1-5	900 x 600	Black	Red / Orange -Fluorescent for day use (Short Term) -Reflectorized for night use (Long Term)	₱4,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	5.64
ROADWORK NEXT 2km	ROADWORK NEXT km (T1-24)	T1-24	1800 x 600	Line 1- Black 200 DM Line 2- Black 160 DM	Yellow Reflectorized	₱7,733.00	3 pcs - 6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱11,991.80	10.95
ROADWORK ON SIDE ROAD	ROADWORK ON SIDE ROAD (T1-25)	T1-25	1800 x 600	Line 1- Black 160 EN Line 2- Black 160 DN	Yellow Reflectorized	₱7,733.00	3 pcs - 6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱11,991.80	10.95
NEXT 2 km	NEXT 2 km (T1-28)	T1-28	600 × 600	Line 1- Black 150 DM Line 2- Black 150 DN & 100 LC	Yellow Reflectorized	₱3,470.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,309.20	5.76
END ROADWORK	END ROADWORK (T2-16, T2-17)	T2-16	1800 x 600	Line 1- Black 200 DM Line 2- Black 160 DM	Yellow Reflectorized	₱7,733.00	3 pcs-6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱11,991.80	10.95
REGULA	ATORY SIGNS									I		
PREPARE TO STOP	PREPARE TO STOP (T1-18)	T1-18	900 x 600	Line 1- White 120 DM Line 2- White 120 DM Line 3- White 120 EM Reflectorized	Red Reflectorized	₱4,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	5.64
60	SPEED RESTRICTION (R4-1)	R4-1	600 x 800 (size B)	Black 240 DN  Circle – 600 dia. Red	White Reflectorized	₱3,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱5,175.04	4.73
ROAD	ROAD WORK (R4-3)	R4-3	600 x 400 (size B)	Line 1- Black 100 EM Line 2- Black 100 EM	Reflectorized  White Reflectorized	₱2,685.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱4,238.04	3.87
END 60	END SPEED RESTRICTION (R4-12, R4-2)	R4-12	600 x 1000 (size B)	Line 1 - Black 160 EM Line 2 - Black 240 DN	White Reflectorized  Red circle -	₱4,528.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,081.04	5.55

Note: Refer to B-4.1 for the guidelines in determining the cost of material requirements.

	WORK SITE TEMPORARY		SIC	GNAGE DESCRIPTION			M	ATERIAL REQUIR	REMENTS AND COST			Daily Rental Rate
	SIGNAGE	Sign No.	Size (mm) (Width X Height)	Letters/Symbols	Background	Sign Panel	Frame		Consumables (5% of Frame)	Labor (15% of Frame & Consumables)	Total	(considering 3 years lifespan)
						[A]	Angle Bar	Cost [B]	[C]	[D]	[E] = [A] +[B] +[C] + [D]	[F] = [E]/(365*3)
	END SPEED RESTRICTION (R4-12, R4-2) De-restriction	R4-2	600 x 800 (size B)	Symbol – 600 dia.	White Reflectorized	₱3,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱5,175.04	4.73
				Black								
DET	OUR SIGNS											
DETOUR AHEAD	DETOUR AHEAD (T1-6)	T1-6	1200 x 600	Line 1- Black 160 EN Line 2- Black 160 EN	Yellow Reflectorized	₱5,612.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱7,165.04	6.54
	DETOUR (Left or Right)											4.80
DETOUR →  DETOUR	(T5-1)	T5-1	1200 X 300	Black 120 EN	Yellow Reflectorized	₱3,698.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱5,251.04	
	DETOUR MARKER									<del> </del>		3.26
<b>←</b>	(T5-6)	T5-6A	450 X 450	Black 300 High	Yellow Reflectorized	₱2,012.00	2 pcs- 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱3,565.04	
LOCAL	LOCAL TRAFFIC ONLY			Line 1- Black 100 EN								5.64
TRAFFIC ONLY	(G9-40-2)	G9-40-2	900 x 600	Line 2- Black 100 EN Line 3- Black 100 EN	Yellow Reflectorized	₱4,622.00	2 pcs- 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
END DETOUR	END DETOUR (T2-23)	T2-23	1200 x 600	Line 1- Black 160 DM Line 2- Black 160 DM	Yellow Reflectorized	₱5,612.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱7,165.04	6.54
SIGNS FOR ROAD	CONDITIONS & HAZARDS						1					
	WET TAR											5.64
WET TAR	(T3-1)	T3-1	900 x 600 Type B-2	Line 1- Black 160 FM Line 2- Black 160 FM	Yellow Reflectorized	<b>₽</b> 4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
4	SLIPPERY											5.64
3	(T3-3)	T3-3	900 x 600 Type B-2	Symbol - Black	Yellow Reflectorized	<b>₽</b> 4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
SOFT	SOFT EDGES											5.64
EDGES	(T3-6)	T3-6	900 x 600 Type B-2	Line 1- Black 160 DN Line 2- Black 160 DN	Yellow Reflectorized	<b>₽</b> 4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
ROUGH	ROUGH SURFACE											5.64
SURFACE	(T3-7)	T3-7	900 x 600	Line 1 - Black 120 EN Line 2 - Black 120 DN	Yellow Reflectorized	₱4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
			Type B-2									
	LOOSE STONES (T3-9)	T3-9	900 x 600	Symbol - Black	Yellow Reflectorized	<b>₽</b> 4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	5.64
			Type B-2									5.04
GRAVEL ROAD	GRAVEL ROAD (T3-13)	T3-13	900 x 600	Line 1 - Black 140 DN Line 2 - Black 140 DN	Yellow Reflectorized	₱4,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	5.64
	LOOSE SURFACE		Type B-2									5.64
L00SE SURFACE	(T3-14)	T3-14	900 x 600 Type B-2	Line 1 - Black 140 DM Line 2 - Black 140 CM	i tellow Kellectolized	₱4,622.00	2 pcs-6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
NO LINES	NO LINES DO NOT OVERTAKE		Type D-2	Line 1 - Black 140 EM								10.87
DO NOT OVERTAKE	UNLESS SAFE (T3-12)	T3-12	1500 x 900	Line 2 - Black 140 EM Line 3 - Black 140 EM	Yellow Reflectorized	₱9,575.00	3 pcs-6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱11,904.56	
UNLESS SAFE			Type B-1	Line 4 - Black 120 DM								

	WARK AITE ETITAL : -:		SIC	NAGE DESCRIPTION			M	ATERIAL REQUIR	REMENTS AND COST			Ballia Barris Control
	WORK SITE TEMPORARY GNAGE	Sign No.	Size (mm) (Width X Height)	Letters/Symbols	Background	Sign Panel	Frame		Consumables (5% of Frame)	Labor (15% of Frame & Consumables)	Total	Daily Rental Rat (considering 3 yea lifespan)
						[A]	Angle Bar	Cost [B]	[C]	[D]	[E] = [A] +[B] +[C] + [D]	[F] = [E]/(365*3
	TRAFFIC HAZARD AHEAD									<del> </del>		8.86
TRAFFIC	(T1-10)											
HAZARD				Line 1 - Black 160 DM	4							
		T1-10	1200 x 900	Line 2 - Black 160 DM	Yellow Reflectorized	₱8,150.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱9,703.04	
AHEAD				Line 2 - Black 160 DM	4							
<u></u> -			Type A-2			-						
	TRUCKS ENTERING											5.64
	(T2-25)	T2-25	900 x 600	Symbol	Yellow Reflectorized	₱4,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
-0-0-			Type B-2	Black		. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, , , , , , , , , , , , , , , , , , , ,	,			,	
			Туре Б-2		1							
SIGNS FOR LAN	E & ROAD CLOSURES											
	ROAD CLOSED											5.55
ROAD CLOSED	(T2-4)	T2-4	1800 X 300	Black 140 EN	Yellow Reflectorized	₱3,745.00	3 pcs - 6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱6,074.56	
		-	Type C-1			-		·			·	
	LANE STATUS		Туре С-1									8.86
•	(T2-6-1 and T2-6-2)					-						0.00
	(											
		T2-6-1	1200 x 900	Black 600 High	Yellow Reflectorized	₱8,150.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱9,703.04	
			Type A-2			-						
	LANE STATUS		Type A-2									12.95
	(T2-6-1 and T2-6-2)					1						
TIT		T2-6-2	1800 x 900	Black 600 High	Yellow Reflectorized	₱11,850.00	3 pcs - 6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱14,179.56	
		1202	1000 x 500	Black 600 riigii	Tollow Prollogion250	111,030.00	o pos om Economini	1 1,020.24	1 00.40	1 000.00	1 14,170.00	
			Type A-1			-						
CIONO FOR PE	DESTRUM CONTROL		Турстт								1	
SIGNS FOR PEI	DESTRIAN CONTROL											
PEDESTRIANS	PEDESTRIANS WATCH YOUR STEP			Line 1 - Black 100 CN		-						5.64
WATCH YOUR	(T8-1)	T8-1	900 x 600	Line 2 - Black 100 CN	Yellow Reflectorized	₱4,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
STEP			Type B-2	Line 3 - Black 100 CN		-						
	PEDESTRIANS		71 -								1	4.80
← PEDESTRIANS	(T8-2 L or R)	T8-2				1						
		L or R	1200 X 300	Black 100 CM	Yellow Reflectorized	₱3,698.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱5,251.04	
PEDESTRIANS →			Type C-2	Arrow 140		-						
	USE OTHER FOOTPATH		1 ype 0-2		+					+	1	5.64
USE OTHER	(T8-3)	T0 0	000 000	Line 1- Black 100 DN	V II D (I + : 1		0 150500	<del>-</del>	<del>-</del>	<del>2</del> 000 57	B0 475 04	0.0 .
FOOTPATH		T8-3	900 x 600	Line 2- Black 100 DN	Yellow Reflectorized	₱4,622.00	2 pcs - 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,175.04	
1001171111			Type B-2									
<b>TEMPORARY</b>	HAZARD MARKERS											
	TEMPORARY HAZARD MARKER			Chevrons								5.76
	(T5-5)	TE E	600 2 600	Black 194 wide at 45°	Vollow Boffs stories -	B2 470 00	2 non 6m   50,50,2	<b>₽</b> 1 200 10	BC 4 2 4	₱202 E7	<b>₽</b> ¢ 200 20	
		T5-5	600 x 600		Yellow Reflectorized	₱3,470.00	2 pcs- 6m L50x50x3mm	₱1,286.16	₱64.31	₱202.57	₱6,309.20	
			Type B-3									
	TEMPORARY HAZARD MARKER			Chevrons		-						8.01
	(T5-4)	T5-4	1500 x 450	Black 177 wide at 45°	Yellow Reflectorized	₱6,440.00	3 pcs-6m L50x50x3mm	₱1,929.24	₱96.46	₱303.86	₱8,769.56	
		L	Type B-1		1	4						

NOTE: Costs as presented herein are intended only to illustrate the derivation of cost. Should there be an increase/decrease in cost of materials, necessary adjustments shall be made accordingly.

# Detailed Unit Price Analysis (DUPA) per Traffic Management Layout

B - 4.2

(Layout 1- Part Lane Closure due to Works on Sidewalk - 2 Lane, 2 Way Road, Low Speed, Short Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
,		J. 11 1		J 1011E	
	Prepare to Stop	each	2.00	5.64	11.28
	Workmen Ahead (T1-5)	each	3.00	5.64	16.92
	Temporary Hazard marker (Chevron, T5-5)	each	1.00	5.76	5.76
	Pedestrians (T8-2 L or R)	each	2.00	4.80	9.59
	( = = = : : )				
*	Traffic Cones (@ 3 meters apart)	each	24.00	1.85	44.38
	= Unit Price of a Traffic Cone/ Lifespan (2	2 years)			
	, ,				
	Safety Vest	each	2.00	2.22	4.44
	Safety Helmet	each	2.00	0.25	0.49
	Safety Shoes	each	2.00	2.77	5.55
*	Quantity is based on the assumed 9 -meter le	ength (2 blocks) of ro	ad work zone		
	If the length is increased/decreased, correspond	onding adjustment			
	of quantities shall be made.				
Note:	: For estimation purposes, approach speed (e	equal to "D" in meters)	is 40 kph.		
_	SUB - TOTAL (A)	OUANT.	-1		98.42
В.	LABOR COST	QUANT No. of Personnel	Total Hours	Unit Rate	Total Cost
		No. or reisonner	Total Hours	Nate	COSL
	Unskilled Workers	2.00	2.00	70.74	282.96
	Traffic Controller (Flagman)	2.00	8.00	70.74	1,131.84
	Trailic Controller (Flagman)	2.00	8.00	70.74	1,131.04
	SUB - TOTAL (B)				1,414.80
C.	EQUIPMENT COST	QUANT	TTY	Hourly	Total
				-	_
		No. of Equipt.	Total Hours	Rate	Cost
		No. of Equipt.	Total Hours	Rate	Cost
		No. of Equipt.	Total Hours	Rate	Cost
	Stake Truck (5 T)	No. of Equipt.	Total Hours 2.00	712.00	Cost 1,424.00
	Stake Truck (5 T) Barricade Flasher Light				
	, ,	1.00	2.00	712.00	1,424.00
	Barricade Flasher Light	1.00	2.00	712.00	1,424.00
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	1.00 6.00 1 day is equ	2.00 8.00 \$ ivalent to 8 hrs	712.00	1,424.00
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	1.00 6.00 1 day is equi	2.00 8.00 ivalent to 8 hrs	712.00 0.65	1,424.00 31.27
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	1.00 6.00 1 day is equi	2.00 8.00 ivalent to 8 hrs	712.00 0.65	1,424.00 31.27
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	1.00 6.00 1 day is equi Sample Con ₱ 938.05 (cos	2.00 8.00 \$ ivalent to 8 hrs	712.00 0.65	1,424.00 31.27
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	1.00 6.00 1 day is equi Sample Con ₱ 938.05 (cos (30 day)	2.00 8.00 tivalent to 8 hrs nputation: t of 1 flasher lights x 6) X 8 hours	712.00 0.65	1,424.00 31.27
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	1.00 6.00  1 day is equi  Sample Con  1 938.05 (cos (30 day)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65	1,424.00 31.27
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)	1.00 6.00  1 day is equi  Sample Con  1 938.05 (cos (30 day)	2.00 8.00 tivalent to 8 hrs nputation: t of 1 flasher lights x 6) X 8 hours	712.00 0.65	1,424.00 31.27 I/ hour e daily rental rate
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	1.00 6.00  1 day is equi  Sample Con  1 938.05 (cos (30 day)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65	1,424.00 31.27 I/ hour e daily rental rate 1,455.27
D.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	1.00 6.00  1 day is equi  Sample Con  1 938.05 (cos (30 day)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)	1.00 6.00  1 day is equi  Sample Con  1 938.05 (cos (30 day)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65	1,424.00 31.27 I/ hour e daily rental rate 1,455.27
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST	1.00 6.00 1 day is equi Sample Con ₱ 938.05 (cos (30 day): Multiplying 0 of ₱5.21. So	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%)	1.00 6.00 1 day is equi Sample Con ₱938.05 (cos (30 days Multiplying 0 of ₱5.21. So	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65 $(t) = \text{P } 0.65 \text{ rental}$ st equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65 (t) = P 0.65 rental st equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65 $(t) = \text{P } 0.65 \text{ rental}$ st equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49 2,968.49
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65 (t) = P 0.65 rental st equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  65 by 8 hrs is jus, 5.21 X 6 units =	712.00 0.65 0.65 rental at equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49 2,968.49
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%  TOTAL INDIRECT COST	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00  ivalent to 8 hrs  nputation:  t of 1 flasher lights X 6) X 8 hours  6.65 by 8 hrs is just	712.00 0.65 0.65 rental at equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49 2,968.49
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%  TOTAL INDIRECT COST  Mark-up percentage varies depending on	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00 tivalent to 8 hrs  nputation: t of 1 flasher lights X 6) X 8 hours  65 by 8 hrs is jus, 5.21 X 6 units =	712.00 0.65 0.65 rental at equivalent to the 31.27.	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49 2,968.49
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12%  TOTAL INDIRECT COST  Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	1.00 6.00  1 day is equi  Sample Con  ₱ 938.05 (cos (30 days)  Multiplying 0 of ₱5.21. So  of D) or's Profit (8% of D)	2.00 8.00 tivalent to 8 hrs  nputation: t of 1 flasher lights X 6) X 8 hours  65 by 8 hrs is jus, 5.21 X 6 units =	712.00 0.65  .tt) = P 0.65 rental at equivalent to the 31.27.  237.48 384.72	1,424.00 31.27 I/ hour e daily rental rate 1,455.27 2,968.49 2,968.49 2,968.49 622.19

(Layout 2 - Road Condition Signing - Low Speed, Short Term)

ITEMS NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COS	T
	Rough Surface (T3-7)	each	2.00	5.64		11.28
	Slippery (T3-3)	each	2.00	5.64	•	11.28
No	te: For estimation purposes, approach speed (	l equal to "D" in meters)	is 40 knh			
740	to. For estimation purposes, approach speed (	quario D in motors)	13 40 KpH.			
	SUB - TOTAL (A)					22.56
B.	LABOR COST	QUANT		Unit	Total	
_		No. of Personnel	Total Hours	Rate	Cost	
L	SUB - TOTAL (B)	T				-
C.	EQUIPMENT COST	QUANT		Hourly	Total	
		No. of Equipt.	Total Hours	Rate	Cost	
	SUB - TOTAL (C)					-
D.	TOTAL DIRECT COST (A + B + C)					22.56
E.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)					
	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST	(of D)				22.56
E.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99)			1.80		22.56
E.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99 2. Contractor	or's Profit (8% of D)		1.80 2.92		22.56
E. F.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99 2. Contract 3. VAT 12%	or's Profit (8% of D)		1.80 2.92		22.56 22.56
E. F.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99 2. Contractor	or's Profit (8% of D)				22.56
E. F.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contract 3. VAT 12% ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on	or's Profit (8% of D)	TOTAL COST (	2.92	•	22.56 22.56
E. F.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contract 3. VAT 12%  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	or's Profit (8% of D)		2.92 D + F))		22.56 22.56 4.73 27.29
E. F.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contract 3. VAT 12% ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on	or's Profit (8% of D)		2.92		22.56 22.56 4.73

(Layout 3 - Part Lane Closure - 2 Lane 2 Way Road, Low Speed, Low Volume, Short Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
- ',	INVITERIALE I GGGI/GIAIT		<u> </u>	OILLI IOVIE	101712 0001
	Prepare to Stop	each	2.00	5.64	11.28
	Workmen Ahead (T1-5)	each	2.00	5.64	11.28
	Temporary Hazard Marker (Chevron, T5-5)	each	1.00	5.76	5.76
*	Traffic Cones (@ 5 meters apart)	each	16.00	1.85	29.59
	, , ,				
	Safety Vest	each	2.00	2.22	4.44
	Safety Helmet	each	2.00	0.25	0.49
	Safety Shoes	each	2.00	2.77	5.55
*	Quantity is based on the assumed 50-meter I	longth roadwork zono			
	If the length is increased/decreased, correspond	-			
	of quantities shall be made.	maing adjustinent			
	or quartition drian bo made.				
Note	e: For estimation purposes, approach speed (e	equal to "D" in meters) is	40 kph.		
_	SUB - TOTAL (A)	OUANIT	TV	1114	68.39
В.	LABOR COST	QUANTI	,	Unit	Total Cost
		No. of Personnel	Total Hours	Rate	Cost
	Unskilled Workers	2.00	2.00	70.74	282.96
	Traffic Controller (Flagman)	2.00	8.00	70.74	1,131.84
	Traile Controller (Flaginari)	2.00	0.00	70.14	1,101.04
	SUB - TOTAL (B)				1,414.80
C.	EQUIPMENT COST	QUANTI		Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	0.1 7 1 (5.7)	4.00		740.00	4 404 00
	Stake Truck (5 T)	1.00	2.00	712.00	1,424.00
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	4.00	8.00	0.65	20.85
	w/ lifespan consideration of 6 months)				
_	SUB - TOTAL (C)				1,444.85
D.	TOTAL DIRECT COST (A + B + C)				2,928.04
E. F.	DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST				2,928.04
Γ.		( of D )			
	1. OCM (9%	or's Profit (8% of D)		234.24	
	3. VAT 12%			379.47	
**	TOTAL INDIRECT COST	,		070.47	613.72
	TO THE MEMBER 1 GOOT				010.72
**	Mark-up percentage varies depending on		TOTAL COST (	D + F)	3,541.75
	the Total Direct Cost of the project. Applied			,	-,
	herein is based on D.O. 22, Series of 2015.		TOTAL R	ENTAL COST	3,541.75
_					

(Layout 4- Part Lane Closure - 2 Lane 2 Way Road, High Speed, Short Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A) MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
Speed Restriction (R4-1)	each	2.00	4.73	9.45
Roadwork Ahead (T1-1)	each	2.00	10.95	21.90
End Speed Restriction (R4-2)	each	2.00	4.73	9.45
Workmen Ahead (T1-5) Road Machinery (T1-3)	each each	2.00 2.00	5.64 6.54	11.28 13.09
Prepare to Stop (T1-3)	each	2.00	5.64	11.28
Temporary Hazard Marker (Chevron, T5-5)		1.00	5.76	5.76
* Traffic Cones (@ 5 meters apart)	each	23.00	1.85	42.53
maile cones (@ o meters apart)	Caon	20.00	1.00	42.00
Safety Vest	each	2.00	2.22	4.44
Safety Helmet	each	2.00	0.25	0.49
Safety Shoes	each	2.00	2.77	5.55
* Quantity is based on the assumed 50-meter	-			
If the length is increased/decreased, corresp	onding adjustment			
of quantities shall be made.				
Note: For estimation purposes, approach speed (	equal to "D" in meters) i	is 40 kph. I		
SUB - TOTAL (A)				135.23
B. LABOR COST	QUANT	ITY	Unit	Total
	No. of Personnel	Total Hours	Rate	Cost
Traffic Controller (Flagman)	2.00	8.00	70.74	1,131.84
Unskilled Worker	2.00	2.00	70.74	282.96
SUB - TOTAL (B)				1,414.80
C. EQUIPMENT COST	QUANT	ITY	Hourly	Total
G	No. of Equipt.	Total Hours	Rate	Cost
Stake Truck (5 T)	1.00	2.00	712.00	1,424.00
Barricade Flasher Light	6.00	8.00	0.65	31.27
(3 Volts, Battery Operated, Amber Color,				
w/ lifespan consideration of 6 months)				
SUB - TOTAL (C)	1			1,455.27
D. TOTAL DIRECT COST (A + B + C)				3,005.30
E. DIRECT UNIT COST (D/Quantity)				3,005.30
F. ADD: INDIRECT COST				
1. OCM (9°	% of D )			
2. Contract	or's Profit (8% of D)		240.42	
3. VAT 12%	6		389.49	
** TOTAL INDIRECT COST				629.91
** Moule up novoomtog		TOTAL 000T /	D . F)	0.005.04
** Mark-up percentage varies depending on the Total Direct Cost of the project. Applied		TOTAL COST (	D + F)	3,635.21
herein is based on D.O. 22, Series of 2015.		TOTAL D	ENTAL COST	3,635.21
2.0.000		IOIALK	LIVIAL COST	3,033.21

(Layout 5 - Closure of Outer Lane - Multilane Road, Low Speed, Short Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork Ahead (T1-1)	each	1.00	10.95	10.95
	Workmen Ahead (T1-5)	each	1.00	5.64	5.64
	Lane Status (T2-6-1)	each	1.00	8.86	8.86
	Temporary Hazard Marker (Chevron, T5-4)	each	3.00	8.01	24.03
*	* Traffic Cones (@ 5 meters apart)	each	33.00	1.85	61.03
	(G T				
*	Quantity is based on the assumed 50-meter If the length is increased/decreased, corresponding quantities shall be made.				
Note	e: For estimation purposes, approach speed (e	egual to "D" in meters) i	s 40 kph.		
74010	on odimation purposed, approach opeca (c	rquario D immotoro, r	o ro npm		
	SUB - TOTAL (A)				110.51
B.	LABOR COST	QUANT		Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	Unskilled Worker	2.00	2.00	70.74	282.96
	SUB - TOTAL (B)				282.96
C.	EQUIPMENT COST	QUANT	ITY	Hourly	Total
ļ .	24011 III.2111 0001	No. of Equipt.	Total Hours	Rate	Cost
	Stake Truck (5 T)	1.00	2.00	712.00	1.424.00
	Barricade Flasher Light	8.00	8.00	0.65	41.69
	(3 Volts, Battery Operated, Amber Color,	0.00	0.00	0.00	11.00
	w/ lifespan consideration of 6 months)				
	SUB - TOTAL (C)				1,465.69
D.	TOTAL DIRECT COST (A + B + C)				1,859.16
_					1.050.40
E. F.	DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST				1,859.16
	ADD: INDIRECT COST	6 of D )			1,859.16
	ADD: INDIRECT COST  1. OCM (9%	•		148 73	1,859.16
	ADD: INDIRECT COST  1. OCM (9% 2. Contracto	or's Profit (8% of D)		148.73 240.95	1,859.16
F.	ADD: INDIRECT COST  1. OCM (9%	or's Profit (8% of D)		148.73 240.95	389.68
F. **	ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12% * TOTAL INDIRECT COST  * Mark-up percentage varies depending on	or's Profit (8% of D)	TOTAL COST (	240.95	
F. **	ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12% TOTAL INDIRECT COST	or's Profit (8% of D)	·	240.95	389.68

(Layout 6 - Closure of Center Lane - Multilane Road, Low Speed, Short Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

(A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork Ahead (T1-1)	each	2.00	10.95	21.90
	Workmen Ahead (T1-5)	each	2.00	5.64	11.28
	Lane Status (T2-6-1)	each	2.00	8.86	17.72
	Temporary Hazard Marker (Chevron, T5-5)	each	2.00	5.76	11.52
	Temporary Hazard Marker (Chevron, T5-4)	each	6.00	8.01	48.05
*	Traffic Cones (@ 5 meters apart)	each	70.00	1.85	129.45
	, , ,				
*	Quantity is based on the assumed 50-meter in	-			
	If the length is increased/decreased, corresponding of quantities shall be made.	onding adjustment			
Note	e: For estimation purposes, approach speed (e	equal to "D" in meters)	is 40 kph.		
	SUB - TOTAL (A)				239.93
B.	LABOR COST	QUANT	TTY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	Unskilled Worker	2.00	2.00	70.74	282.96
	SUB - TOTAL (B)				282.96
C.	EQUIPMENT COST	0114117	TTV/	Hourly	Total
ļ -		QUANI	IIY		
	Egon MENT 6661	QUANT No. of Equipt.			
	Equi MEN 3001	No. of Equipt.	Total Hours	Rate	Cost
	EQUI IIIEN GOOT				
					Cost
	Stake Truck (5 T)	No. of Equipt.	Total Hours 2.00	712.00	<b>Cost</b> 1,424.00
	Stake Truck (5 T) Barricade Flasher Light	No. of Equipt.	Total Hours	Rate	Cost
	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	No. of Equipt.	Total Hours 2.00	712.00	<b>Cost</b> 1,424.00
	Stake Truck (5 T) Barricade Flasher Light	No. of Equipt.	Total Hours 2.00	712.00	<b>Cost</b> 1,424.00
	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)	No. of Equipt.	Total Hours 2.00	712.00	Cost 1,424.00 93.80
D.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 2.00	712.00	<b>Cost</b> 1,424.00
D. E.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours 2.00	712.00	1,424.00 93.80 1,517.80 2,040.70
	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 2.00	712.00	1,424.00 93.80
E.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)	No. of Equipt.  1.00 18.00	Total Hours 2.00	712.00	1,424.00 93.80 1,517.80 2,040.70
E.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99)	No. of Equipt.  1.00 18.00	Total Hours 2.00	712.00	1,424.00 93.80 1,517.80 2,040.70
E.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99)	No. of Equipt.  1.00 18.00  6 of D ) or's Profit (8% of D)	Total Hours 2.00	712.00 0.65	1,424.00 93.80 1,517.80 2,040.70
E. F.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor	No. of Equipt.  1.00 18.00  6 of D ) or's Profit (8% of D)	Total Hours 2.00	712.00 0.65	1,424.00 93.80 1,517.80 2,040.70
E. F.	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	No. of Equipt.  1.00 18.00  6 of D ) or's Profit (8% of D)	Total Hours 2.00	712.00 0.65	1,424.00 93.80 1,517.80 2,040.70 2,040.70
E. F. **	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	No. of Equipt.  1.00 18.00  6 of D ) or's Profit (8% of D)	Total Hours 2.00	712.00 0.65	1,424.00 93.80 1,517.80 2,040.70 2,040.70
E. F. **	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  1.00 18.00  6 of D ) or's Profit (8% of D)	2.00 8.00	712.00 0.65	1,424.00 93.80 1,517.80 2,040.70 2,040.70
E. F. **	Stake Truck (5 T) Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  1.00 18.00  6 of D ) or's Profit (8% of D)	2.00 8.00	712.00 0.65	1,424.00 93.80 1,517.80 2,040.70 2,040.70

(Layout 7 (Case 1) - Part Lane Closure - 2 Lane, 2 Way Road, High Speed, Long Term)

UNIT

QUANTITY UNIT RATE

**TOTAL COST** 

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A) MATERIALS : COST/UNIT

	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNITRATE	TOTAL COST
	Speed Restriction (R4-1)	each	4.00	4.73	18.90
	Roadwork Ahead (T1-1)	each	4.00	10.95	43.81
	End Roadwork (T2-16)	each	4.00	10.95	43.81
	End Speed Restriction (R4-2)	each	4.00	4.73	18.90
	. , ,				
	Workmen Ahead (T1-5)	each	4.00	5.64	22.56
	Prepare to Stop (T1-18)	each	2.00	5.64	11.28
	Temporary Hazard Marker (Chevron, T5-5)	each	1.00	5.76	5.76
*	Temporary Bollards (@ 5 meters apart)	each	16.00	1.64	26.30
*	Plastic Safety Barriers	each	160.00	2.74	438.36
	•				
	Safety Vest	each	2.00	2.22	4.44
	Hard Hat	each	2.00	0.25	0.49
	Safety Shoes	each	2.00	2.77	5.55
	Salety Shoes	Cacii	2.00	2.11	0.00
*	Quantity is based on the assumed 100-meter	longth roodwork zon			
	If the length is increased/decreased, correspond	_			
	-	l			
	of quantities shall be made.				
Note	e: For estimation purposes, approach speed (e	equal to "D" in meters,	is 40 kph.		
	CUD TOTAL (A)				C40.4C
В.	SUB - TOTAL (A)  LABOR COST	QUANT	TTV	Unit	640.16 Total
Ь.	LABOR COST	No. of Personnel	Total Hours	Rate	Cost
	T ( O : 11 ( C )				
	Traffic Controller (Flagman)	6.00	8.00	70.74	3,395.52
	Consideration: With flagmen provided for 24				
	hours under 3 shifts. Necessary adjustment				
	nours under 5 stills. Necessary adjustillerit				
	shall be made accordingly depending on				
	shall be made accordingly depending on				
	shall be made accordingly depending on the need of the project and schedule of work)				3,395,52
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)	QUANT	TITY	Hourly	3,395.52 Total
C.	shall be made accordingly depending on the need of the project and schedule of work)	QUANT		Hourly Rate	Total
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)	QUANT No. of Equipt.	TTY Total Hours	Hourly Rate	
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST			-	Total
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio	No. of Equipt.	Total Hours	Rate	Total Cost
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light	No. of Equipt.	Total Hours	Rate	Total Cost
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
C.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13
	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13
D.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13 192.80 4,228.48
D. E.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13
D.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13 192.80 4,228.48
D. E.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)	No. of Equipt.  2.00 29.00	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13 192.80 4,228.48
D. E.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9%)	No. of Equipt.  2.00 29.00	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 151.13 192.80 4,228.48
D. E.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9%)	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost 41.67 151.13 192.80 4,228.48
D. E. F.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor)	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost 41.67 151.13 192.80 4,228.48
D. E. F.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost  41.67 151.13  192.80 4,228.48 4,228.48
D. E. F.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65 338.28 548.01	Total Cost  41.67 151.13  192.80 4,228.48 4,228.48
D. E. F.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractors 3. VAT 12%  TOTAL INDIRECT COST	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	8.00 8.00	2.60 0.65 338.28 548.01	Total Cost  41.67 151.13  192.80 4,228.48 4,228.48 4,228.48
D. E. F.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contracted 3. VAT 12%  TOTAL INDIRECT COST  Mark-up percentage varies depending on	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	8.00 8.00	2.60 0.65 338.28 548.01	Total Cost  41.67 151.13  192.80 4,228.48 4,228.48 4,228.48
D. E. F.	shall be made accordingly depending on the need of the project and schedule of work)  SUB - TOTAL (B)  EQUIPMENT COST  Two-way Radio (w/ lifespan consideration of 2 years)  Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST  Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	No. of Equipt.  2.00 29.00  of D)  or's Profit (8% of D)	8.00 8.00	2.60 0.65 338.28 548.01	Total Cost  41.67 151.13  192.80 4,228.48 4,228.48 4,228.48  886.29 5,114.76

(Layout 7 (Case 2) - Part Lane Closure - 2 Lane, 2 Way Road, Low Speed, Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day
QUANTITY : 1.00

A) MATERIALS : COST/UNIT

A) MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
<u>'</u>	-		4.73	18.90
Speed Restriction (R4-1)	each	4.00 4.00	-	
Roadwork Ahead (T1-1)	each		10.95	43.81
End Roadwork (T2-16)	each	4.00	10.95	43.81
End Speed Restriction (R4-2)	each	4.00	4.73	18.90
Workmen Ahead (T1-5)	each	4.00	5.64	22.56
Prepare to Stop (T1-18)	each	2.00	5.64	11.28
Temporary Hazard Marker (Chevron, T5-5		1.00	5.76	5.76
* Concrete Safety Barriers	each	47.00	2.50	117.46
* Construction Safety Fence	each	48.00	3.94	189.26
* Temporary Bollards (@ 5 meters apart)	each	16.00	1.64	26.30
Safety Vest	man-day	2.00	2.22	4.44
Hard Hat	man-day	2.00	0.25	0.49
Safety Shoes	man-day	2.00	2.77	5.55
* Overtity is because on the accumed 27 mate	. la nath raa duwrt = ana			
* Quantity is based on the assumed 27-meter	•			
If the length is increased/decreased, corresp	oonaing aajustment			
of quantities shall be made.	/	[- 40 look		
Note: For estimation purposes, approach speed (	(equal to "D" in meters) i	is 40 Kpn.		508.53
B. LABOR COST	QUANT	ITY	Unit	Total
	No. of Personnel	Total Hours	Rate	Cost
Traffic Controller (Flagman)	6.00	8.00	70.74	3,395.52
Consideration: With flagmen provided for 24	1			-,
hours under 3 shifts. Necessary adjustment				
shall be made accordingly depending on				
1				
the need of the project and schedule of				
the need of the project and schedule of work)				
I				3,395.52
work)	QUANT		Hourly	Total
work) SUB - TOTAL (B)	QUANT No. of Equipt.	ITY Total Hours	Hourly Rate	
work) SUB - TOTAL (B) C. EQUIPMENT COST	No. of Equipt.	Total Hours	Rate	Total Cost
work) SUB - TOTAL (B) C. EQUIPMENT COST  Two-way Radio	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
work) SUB - TOTAL (B) C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light	No. of Equipt.	Total Hours	Rate	Total Cost
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
work) SUB - TOTAL (B) C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67
work) SUB - TOTAL (B) C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 57.33
work) SUB - TOTAL (B) C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 57.33
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost  41.67 57.33  98.99 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST	No. of Equipt.  2.00 11.00	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 57.33 98.99 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9)	No. of Equipt.  2.00 11.00	Total Hours 8.00	<b>Rate</b> 2.60	Total Cost 41.67 57.33 98.99 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9 2. Contract	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost 41.67 57.33 98.99 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost  41.67 57.33  98.99 4,003.04 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9 2. Contract 3. VAT 126	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost 41.67 57.33 98.99 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9 2. Contract 3. VAT 126	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	8.00 8.00	2.60 0.65 320.24 518.79	Total Cost  41.67 57.33  98.99 4,003.04 4,003.04
work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9 2. Contract 3. VAT 126	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	Total Hours 8.00	2.60 0.65 320.24 518.79	Total Cost  41.67 57.33  98.99 4,003.04 4,003.04
Work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9 2. Contrac 3. VAT 124  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	Total Hours  8.00 8.00  TOTAL COST (	2.60 0.65 320.24 518.79	Total Cost  41.67 57.33  98.99 4,003.04 4,003.04 839.04
Work)  SUB - TOTAL (B)  C. EQUIPMENT COST  Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C) E. DIRECT UNIT COST (D/Quantity) F. ADD: INDIRECT COST  1. OCM (9 2. Contrac 3. VAT 124  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	No. of Equipt.  2.00 11.00  % of D ) tor's Profit (8% of D)	Total Hours  8.00 8.00  TOTAL COST (	2.60 0.65 320.24 518.79	Total Cost  41.67 57.33  98.99 4,003.04 4,003.04  839.04

(Layout 8 - Road Condition Signing, High Speed, Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork Ahead (T1-1)	each	4.00	10.95	43.81
	Slippery (T3-3)	each	4.00	5.64	22.56
	Loose Stones (T3-9)	each	4.00	5.64	22.56
	SUB - TOTAL (A)				88.92
B.	LABOR COST	QUANT	ITY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	SUB - TOTAL (B)				_
C.	EQUIPMENT COST	QUANT	ITY	Hourly	- Total
•		No. of Equipt.	Total Hours	Rate	Cost
<u></u>	SUB - TOTAL (C)				<u> </u>
D.	TOTAL DIRECT COST (A + B + C)				88.92
E. F.	DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST				88.92
Γ.	1. OCM (9%	( of D )			
		or's Profit (8% of D)		7.11	
	3. VAT 12%			11.52	
**	* TOTAL INDIRECT COST	•		11.02	18.64
					10.01
**	* Mark-up percentage varies depending on		TOTAL COST (	D + F)	107.56
	the Total Direct Cost of the project. Applied		,	•	
	herein is based on D.O. 22, Series of 2015.		TOTAL R	ENTAL COST	107.56

(Layout 9 - Closure of Inner Lane - Multilane Road, High Speed, Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A) MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST	
Roadwork 1 km Ahead (T1-1)	each	2.00	10.95	21.90	
Lane Status (T2-6-2)	each	4.00	12.95	51.80	
Road Work (R4-3)	each	2.00	3.87	7.74	
Speed Restriction (R4-1)	each	2.00	4.73	9.45	
Workmen Ahead (T1-5) Temporary Hazard Marker (Chevron, T5-4)	each	2.00 4.00	5.64	11.28	
End Speed Restriction (R4-2)	each each	2.00	8.01 4.73	32.03 9.45	
End Roadwork (T2-16)	each	2.00	10.95	21.90	
* Plastic Safety Barriers	each	124.00	0.68	84.93	
* Temporary Bollards (@ 5 meters apart)	each	27.00	1.64	44.38	
* Quantity is based on the assumed 100-meter	r langth readwork zon				
If the length is increased/decreased, correspond	•	e 			
of quantities shall be made.	onding adjustinent				
Note: For estimation purposes, approach speed (equal to "D" in meters) is 40 kph.					
SUB - TOTAL (A)				294.88	
B. LABOR COST	QUANT	TTY	Unit	Total	
	No. of Personnel	Total Hours	Rate	Cost	
SUB - TOTAL (B)	1			-	
C. EQUIPMENT COST	QUANT	QUANTITY Hourly		Total	
	No. of Equipt.	Total Hours	Rate	Cost	
Barricade Flasher Light	32.00	8.00	0.65	166.76	
(3 Volts, Battery Operated, Amber Color,					
w/ lifespan consideration of 6 months)					
SUB - TOTAL (C)	1			166.76	
D. TOTAL DIRECT COST (A + B + C)				461.64	
E. DIRECT UNIT COST (D/Quantity)				461.64	
F. ADD: INDIRECT COST					
1. OCM (9%	% of D )				
2. Contracto	or's Profit (8% of D)		36.93		
3. VAT 12%	, D		59.83		
** TOTAL INDIRECT COST				96.76	
** Mark-up percentage varies depending on		TOTAL COST (	D + F)	558.40	
the Total Direct Cost of the project. Applied		101AL 0001 (	5 . 1 )	550.40	
herein is based on D.O. 22, Series of 2015.		TOTAL R	ENTAL COST	558.40	

(Layout 10 - Closure of Center Lane - Multilane Road, High Speed, Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork 1 km Ahead (T1-1)	each	2.00	10.95	21.90
	Lane Status (T2-6-2)	each	4.00	12.95	51.80
	Road Work (R4-3)	each	2.00	3.87	7.74
	Speed Restriction (R4-1)	each	2.00	4.73	9.45
	Workmen Ahead (T1-5)	each	2.00	5.64	11.28
	Temporary Hazard Marker (Chevron, T5-4)	each	6.00	8.01	48.05
	Temporary Hazard Marker (Chevron, T5-5)	each	1.00	5.76	5.76
	End Speed Restriction (R4-2)	each	2.00	4.73	9.45
	End Roadwork (T2-16)	each	2.00	10.95	21.90
4	Plastic Safety Barriers	each	210.00	2.74	575.34
	Temporary Bollards (@ 5 meters apart)	each	55.00	1.64	90.41
*	Quantity is based on the assumed 100-meter i	  ength_roadwork			
	If the programmed length is increased/decreased	-			
	corresponding adjustment of quantities shall b	·			
	corresponding adjustment of quantities shall b	e made.			
Note	e: For estimation purposes, approach speed (ed	rual to "D" in metere) is	10 kph		
IVOL	e. For estimation purposes, approach speed (ed	juanto D in ineters) is	40 Kpn.		
	SUB - TOTAL (A)				853.09
В.	LABOR COST	QUANT	ITY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	SUB - TOTAL (B)			I.	-
C.	EQUIPMENT COST	QUANT	ITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	Barricade Flasher Light	64.00	8.00	0.65	333.53
	(3 Volts, Battery Operated, Amber Color,				
	w/ lifespan consideration of 6 months)				
	SUB - TOTAL (C)	l			333.53
D.	TOTAL DIRECT COST (A + B + C)				1,186.62
E.	DIRECT UNIT COST (D/Quantity)				1,186.62
F.	ADD: INDIRECT COST				1,100.02
	1. OCM (9%	of D.)			
	•	's Profit (8% of D)		94.93	
	3. VAT 12%	5 FIUII (0% UID)			
**				153.79	040.70
~	* TOTAL INDIRECT COST				248.72
	· Made on a superior day of the superior day o		TOTAL 000T /		4 405 04
4.4				( ) <b>+ ⊢</b> )	1,435.34
**	Mark-up percentage varies depending on the		TOTAL COST (	D 1 1 )	,
**	Total Direct Cost of the project. Applied		`	•	,
**			`	ENTAL COST	1,435.34
**	Total Direct Cost of the project. Applied		`	•	•

(Layout 11 -Detour via the Existing Road Network - Low or High Speed, Short or Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork Ahead (T1-1)	each	2.00	10.95	21.90
	Detour Ahead (T5-1)	each	4.00	6.54	26.17
	Detour (Left or Right) (T5-1)	each	12.00	4.80	57.55
	Detour Marker (T5-6)	each	6.00	3.26	19.53
	Local Traffic Only (G9-40-2)	each	1.00	5.64	5.64
	Road Closed (T2-4) End Detour (T2-23)	each each	2.00 2.00	5.55 6.54	11.10 13.09
	Liid Delodi (12-23)	Gacii	2.00	0.54	13.09
	SUB - TOTAL (A)				154.98
	(1)				
B.	LABOR COST	QUAN	TITY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	SUB - TOTAL (B)				-
	(2)				
C.	EQUIPMENT COST	QUANTITY		Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	Barricade Flasher Light	4.00	8.00	0.65	20.85
	(3 Volts, Battery Operated, Amber Color,				
	w/ lifespan consideration of 6 months)				
	SUB - TOTAL (C)				20.85
D.	TOTAL DIRECT COST (A + B + C)				175.82
E.	DIRECT UNIT COST (D/Quantity)				175.82
F.	ADD: INDIRECT COST				
	1. OCM (9%				
		or's Profit (8% of D)		14.07	
	3. VAT 12%	)		22.79	
*	* TOTAL INDIRECT COST				36.85
	* Mark un parantaga varias danandina an		TOTAL COST (	D . E)	040.00
	* Mark-up percentage varies depending on the Total Direct Cost of the project. Applied		TOTAL COST (	D + F)	212.68
	herein is based on D.O. 22, Series of 2015.		TOTAL D	ENTAL COST	212.68
			IOIALK	LIVIAL COST	212.00

(Layout 12 -Detour via A Side Track - Low Speed, Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork Ahead (T1-1)	each	4.00	10.95	43.81
	End Roadwork (T2-16)	each	2.00	10.95	21.90
	Detour Ahead (T5-1)	each	4.00	6.54	26.17
	Detour Marker (T5-6)	each	4.00	3.26	13.02
	End Detour (T2-23)	each	2.00	6.54	13.09
	Temporary Hazard Marker (Chevron, T5-4)	each	13.00	8.01	104.11
*	Temporary Bollards	each	60.00	1.64	98.63
	Quantity is variable depending on the roadwo	-			
	If the programmed length is increased/decrea				
	corresponding adjustment of quantities shall	be made. I			
	SUB - TOTAL (A)				320.74
B.	LABOR COST	QUANT	ITY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	OUD TOTAL (D)				
	SUB - TOTAL (B)				
C.		OUANT	IT\/	11	- -
1	EQUIPMENT COST	QUANT		Hourly	Total
		QUANT No. of Equipt.	Total Hours	Hourly Rate	Total Cost
	EQUIPMENT COST	No. of Equipt.	Total Hours	Rate	Cost
	EQUIPMENT COST  Barricade Flasher Light			_	
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	No. of Equipt.	Total Hours	Rate	Cost
	EQUIPMENT COST  Barricade Flasher Light	No. of Equipt.	Total Hours	Rate	Cost
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	No. of Equipt.	Total Hours	Rate	Cost
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months) SUB - TOTAL (C)	No. of Equipt.	Total Hours	Rate	<b>Cost</b> 104.23
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)	No. of Equipt.	Total Hours	Rate	Cost 104.23 104.23
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours	Rate	Cost 104.23 104.23 424.96
E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)	No. of Equipt. 20.00	Total Hours	Rate	Cost 104.23 104.23 424.96
E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%)	No. of Equipt. 20.00	Total Hours	Rate	Cost 104.23 104.23 424.96
E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%)	No. of Equipt.  20.00  of D) or's Profit (8% of D)	Total Hours	0.65	Cost 104.23 104.23 424.96
E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor	No. of Equipt.  20.00  of D) or's Profit (8% of D)	Total Hours	0.65 0.65	Cost 104.23 104.23 424.96
E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  20.00  of D) or's Profit (8% of D)	8.00	0.65 34.00 55.08	Cost  104.23  104.23  424.96 424.96
E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  20.00  of D) or's Profit (8% of D)	Total Hours	0.65 34.00 55.08	Cost  104.23  104.23  424.96 424.96
E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST  Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	No. of Equipt.  20.00  of D) or's Profit (8% of D)	8.00 TOTAL COST (	34.00 55.08	104.23 104.23 424.96 424.96 89.07
E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  20.00  of D) or's Profit (8% of D)	8.00 TOTAL COST (	0.65 34.00 55.08	Cost  104.23  104.23  424.96 424.96

(Layout 13 - Detour via A Side Track - High Speed, Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Speed Restriction (R4-1)	each	4.00	4.73	18.90
	Roadwork Ahead (T1-1)	each	4.00	10.95	43.81
	End Roadwork (T2-16)	each	2.00	10.95	21.90
	Detour Ahead (T5-1)	each	4.00	6.54	26.17
	End Detour (T2-23)	each	2.00	6.54	13.09
	Temporary Hazard Marker (Chevron, T5-4)	each	13.00	8.01	104.11
	End Speed Restriction (R4-2)	each	4.00	4.73	18.90
*	Temporary Bollards	each	60.00	1.64	98.63
	Tomporary Bonardo	Guon	00.00	1.01	00.00
*	Quantity is variable depending on the roadwo	ı ork lenath			
	If the programmed length is increased/decrea	-			
	corresponding adjustment of quantities shall				
	and the state of t				
		ı			
	SUB - TOTAL (A)				345.52
B.	LABOR COST	QUANT	ITY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
1					
	SUB - TOTAL (B)				-
C.	SUB - TOTAL (B) EQUIPMENT COST	QUANT		Hourly	- Total
C.		QUANT No. of Equipt.	ITY Total Hours	Hourly Rate	- Total Cost
C.	EQUIPMENT COST	No. of Equipt.	Total Hours	Rate	Cost
C.	EQUIPMENT COST  Barricade Flasher Light				
C.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color,	No. of Equipt.	Total Hours	Rate	Cost
C.	EQUIPMENT COST  Barricade Flasher Light	No. of Equipt.	Total Hours	Rate	Cost
C.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)	No. of Equipt.	Total Hours	Rate	<b>Cost</b> 104.23
	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)	No. of Equipt.	Total Hours	Rate	Cost 104.23 104.23
D.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours	Rate	Cost 104.23 104.23 449.75
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)	No. of Equipt.	Total Hours	Rate	Cost 104.23 104.23
D.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST	<b>No. of Equipt.</b> 20.00	Total Hours	Rate	Cost 104.23 104.23 449.75
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99)	No. of Equipt. 20.00 6 of D )	Total Hours	0.65	Cost 104.23 104.23 449.75
D. E.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	Total Hours	0.65 0.65	104.23 104.23 449.75
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (99) 2. Contractor 3. VAT 12%	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	Total Hours	0.65	Cost 104.23 104.23 449.75 449.75
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	Total Hours	0.65 0.65	104.23 104.23 449.75
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (99 2. Contractor 3. VAT 12%	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	8.00	0.65 0.65	Cost 104.23 104.23 449.75 449.75
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (99 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	Total Hours	0.65 0.65	Cost 104.23 104.23 449.75 449.75
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (99 2. Contracted 3. VAT 12% TOTAL INDIRECT COST  Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	Total Hours  8.00  TOTAL COST (	0.65 - 35.98 58.29 D+F)	Cost  104.23  104.23  449.75  449.75  449.75  544.02
D. E. F.	Barricade Flasher Light (3 Volts, Battery Operated, Amber Color, w/ lifespan consideration of 6 months)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (99 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  20.00  6 of D ) or's Profit (8% of D)	Total Hours  8.00  TOTAL COST (	0.65 0.65	Cost  104.23  104.23  449.75  449.75

(Layout 14 - Works at an Intersection - Low Speed, Short or Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Roadwork Ahead (T1-1)	each	4.00	10.95	43.81
	End Roadwork (T2-16)	each	4.00	10.95	43.81
	Workmen Ahead (T1-5)	each	4.00	5.64	22.56
	Temporary Hazard Marker (Chevron, T5-5)	each	6.00	5.76	34.57
*	Traffic Cones	each	80.00	1.85	147.95
*	Quantity is based on the assumed 50-meter i	l length roadwork			
	If the programmed length is increased/decrea	-			
	corresponding adjustment of quantities shall				
	3, , ,				
		,			
_	SUB - TOTAL (A)		,		292.68
B.	LABOR COST	QUANT	,	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	SUB - TOTAL (B)	1			-
C.	EQUIPMENT COST	QUANT		Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				292.68
E.	DIRECT UNIT COST (D/Quantity)				292.68
F.	ADD: INDIRECT COST				
1	1. OCM (9%	,		26.34	
1		or's Profit (8% of D)		23.41	
1	3. VAT 12%	ò		41.09	
**	TOTAL INDIRECT COST				90.85
	Mode up paramtaga verile e de estadio		TOTAL 2007	D . E\	202 =2
**	Mark-up percentage varies depending on		TOTAL COST (	D + F)	383.53
1	the Total Direct Cost of the project. Applied herein is based on D.O. 22, Series of 2015.		TOTAL	ENTAL COST	202 52
1	norom is bused on b.o. 22, delies of 2010.		IOIAL R	ENTAL COST	383.53
<u> — </u>					

(Layout 15 - Works at an Intersection - High Speed, Short or Long Term)

ITEM NO/DESCRIPTION : B.8 - Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : day QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Speed Restriction (R4-1)	each	4.00	4.73	18.90
	Roadwork Ahead (T1-1)	each	8.00	10.95	87.61
	End Roadwork (T2-16)	each	4.00	10.95	43.81
	Workmen Ahead (T1-5)	each	8.00	5.64	45.11
	Temporary Hazard Marker (Chevron, T5-5)	each	6.00	5.76	34.57
	End Speed Restriction (R4-2)	each	4.00	4.73	18.90
*	Traffic Cones	each	80.00	1.85	147.95
		]			
*	Quantity is based on the assumed 50-meter I	-			
	If the programmed length is increased/decrea				
	corresponding adjustment of quantities shall	pe made. I			
		I			
	SUB - TOTAL (A)				396.86
В.	LABOR COST	QUANT	ITY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
C.	SUB - TOTAL (B) EQUIPMENT COST	QUANT	ITV	Harmler	- Total
C.	EQUIPMENT COST		Total Hours	Hourly	Cost
-		No. of Equipt.	Total nours	Rate	Cost
	SUB - TOTAL (C)	ı	1		-
D.					396.86
	TOTAL DIRECT COST (A + B + C)				
E.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)				396.86
	,				396.86
E.	DIRECT UNIT COST (D/Quantity)	<b>6</b> of D )		_	396.86
E.	DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%	6 of D) or's Profit (8% of D)		- 31.75	396.86
E.	DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%	or's Profit (8% of D)		- 31.75 51.43	396.86
E. F.	DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contractor	or's Profit (8% of D)			396.86 83.18
E. F.	DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12%	or's Profit (8% of D)			
E. F.	DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12%  TOTAL INDIRECT COST  Mark-up percentage varies depending on	or's Profit (8% of D)	TOTAL COST (	51.43	
E. F.	DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12%  TOTAL INDIRECT COST  Mark-up percentage varies depending on the Total Direct Cost of the project. Applied	or's Profit (8% of D)	·	51.43 D+F)	83.18 480.04
E. F.	DIRECT UNIT COST (D/Quantity)  ADD: INDIRECT COST  1. OCM (9% 2. Contracto 3. VAT 12%  TOTAL INDIRECT COST  Mark-up percentage varies depending on	or's Profit (8% of D)	·	51.43	83.18

(Layout 16 - Lane Marking of Centerline - 2 Lane, 2 Way Road)

ITEM NO/DESCRIPTION : Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : sq.m OUTPUT PER HOUR : 25

QUANTITY : 22.50 sq.m. (for 300 meter set-up)

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
<u> </u>	CUR TOTAL (A)				
В.	SUB - TOTAL (A)  LABOR COST	QUANTI <sup>*</sup>	ГҮ	Unit	- Total
		No. of Personnel	Total Hours	Rate	Cost
C.	SUB - TOTAL (B) EQUIPMENT COST	QUANTI	TY Hourly		- Total
<u> </u>	Egon MERT 6001	No. of Equipt.	Total Hours	Rate	Cost
	Illuminated Flashing Arrow Boards (Battery or Genset Operated)	6.00	0.900		-
	(23) or consor operatory				
	SUB - TOTAL (C)				-
D. E.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)				-
F.	ADD: INDIRECT COST				
	1. OCM (9%			-	
	2. Contracto 3. VAT 12%	or's Profit (8% of D)		-	
**	TOTAL INDIRECT COST		;		-
**	Mark-up percentage varies depending on		TOTAL COST (	D + E)	
	the Total Direct Cost of the project. Applied		IOTAL COST (	υ + Γ <i>)</i>	-
	herein is based on D.O. 22, Series of 2015.		TOTAL RENTA	L COST	-
					-

(Layout 17- Lane Marking of Centerline - Multilane Road)

ITEM NO/DESCRIPTION : Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : sq.m OUTPUT PER HOUR : 25

QUANTITY : 22.50 sq.m. (for 300 meter set-up)

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	SUB - TOTAL (A)	F-1-1 D1-1 O1 -11		<b>D</b>	-
В.	LABOR COST	Total Rental Cost of I QUANTI		Unit	- Total
Ь.	LABOR COST	No. of Personnel	Total Hours	Rate	Cost
		1101 011 0100111101	Total Hours	rato	000.
	OUD TOTAL (D)				
C.	SUB - TOTAL (B) EQUIPMENT COST	QUANTI	TV	Hourly	- Total
0.	EQUI MENT COOT	No. of Equipt.	Total Hours	Rate	Cost
	Illuminated Flashing Arrow Boards	3.00	0.90		
	(Battery or Genset Operated)				
_	SUB - TOTAL (C)				-
D. E.	TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)				-
E. F.	ADD: INDIRECT COST				-
١.	1. OCM (9%	of D )		_	
		or's Profit (8% of D)		_	
	3. VAT 12%			-	
**	TOTAL INDIRECT COST		•		-
**	Mark-up percentage varies depending on		TOTAL COST (	D + F)	-
	the Total Direct Cost of the project. Applied herein is based on D.O. 22, Series of 2015.		TOTAL DEL :		
	nereni is based on D.O. 22, Selles of 2015.		TOTAL RENTA	L COST	-

(Layout 18 - Lane Marking of Edgeline)

ITEM NO/DESCRIPTION : Road Works Safety and Traffic Management

UNIT OF MEASUREMENT : sq.m OUTPUT PER HOUR : 25

QUANTITY: 30.00 sq.m. (for 300 meter set-up)

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	SUB - TOTAL (A)				-
B.	LABOR COST	QUANT	TTY	Unit	Total
		No. of Personnel	Total Hours	Rate	Cost
	SUB - TOTAL (B)				-
C.	EQUIPMENT COST	QUANT			Total
		No. of Equipt.	Total Hours	Rate	Cost
	Illuminated Flacking Amous Boards	3.00	1.20		
	Illuminated Flashing Arrow Boards (Battery or Genset Operated)	3.00	1.20		
	(Battery of Contool Operation)				
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				-
E. F.	DIRECT UNIT COST (D/Quantity)				-
۲.	ADD: INDIRECT COST  1. OCM (99)	( of D )		_	
		or's Profit (8% of D)		-	
	3. VAT 12%			-	
	TOTAL INDIRECT COST				-
١			<b>TOTAL</b> 555=		
**	Mark-up percentage varies depending on the Total Direct Cost of the project. Applied		TOTAL COST (	D + F)	-
	herein is based on D.O. 22, Series of 2015.		TOTAL RENTA	LCOST	_
	,		IOINE NEMIA	_ 555.	_

# Relative Percentage of Cost for Road Works Safety and Traffic Management to the Cost of Civil Works

B - 4.3

 Table 4. RELATIVE COST OF ROADWORKS SAFETY & TRAFFIC MANAGEMENT TO THE COST OF CIVIL WORKS

 Note: Project Cost/ Reference Amount and duration reflected herein is based on D.O. 44 Series of 2012

d to co						
רפוולווו	1.00 km.	0.46 km.	1.86 km.	4.65 km.	9.30 km.	13.95 km.
Reference Amount / Cost of Civil Works	10,753,876.80	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)	25.00	26	102	254	202	092
Applicable Traffic Management Layout	Layout No. 7	Layout No. 7	Layout No. 7	Layout No. 7	Layout No. 7	Layout No. 7
Number of Set-up	2	-	2	2	2	
Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
Total Estimated Cost of Road Works						
Safety & Traffic Management	562,623.30	132,983.69	1,043,410.48	2,598,296.68	5,186,363.85	7,774,431.01
Relative Weight (%)	5.23	2.66	5.22	5.20	5.19	5.18
Say	5.25	2.70	5.25	5.20		5.20
					Maximum =	5.25
2 Paved (Asphalt) to Paved (Concrete)						
lenath	1.00 km	0.41 km	1.63 km	4 09 km	8 17 km	12.26 km
Reference Amount / Cost of Civil Works	12.234.914.12	5.000.000.00	20.000.000.00	50.000.000.00	100.000.000.00	150.000.000.00
Duration (C.D.)	52.00	21	85	213		638
Applicable Traffic Management Layout	Layont 7	Layout 7	Layout 7	Layout 7	Layout 7	Layout 7
Number of Set-up	2		2	2	2	
Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
Total Estimated Cost of Road Works						
Safety & Traffic Management	531,934.75	107,409.90	869,508.73	2,178,886.59	4,327,084.63	6,526,430.24
Relative Weight (%)	4.35	2.15	4.35	4.36	4.33	4.35
Say	4.35	2.15	4.35	4.40	4.35	4.40
					Maximum =	4.40
3 Paved (Asphalt) to Paved (Asphalt)	Pavement Width = $6.70  \text{m}$	70 m	Shoulder Width = $2.00  m$	0 m	Pavement Thickness = 100 mm	: = 100 mm
Length	1.00 km.	0.35 km.	1.40 km.	3.51 km.	7.01 km.	10.52 km.
Reference Amount / Cost of Civil Works	14,259,959.77	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)	40.00	14	99	140	281	421
Applicable Traffic Management Layout	Layont 7	Layout 7	Layout 7	Layout 7	Layout 7	Layout 7
Number of Set-up	2	1	2	2	2	
Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
Total Estimated Cost of Road Works	409 180 58	71 606 60	572 852 81	1 432 132 03	2 874 403 57	4 306 625 60
Relative Weight (%)	287	1 43	2.86	2.86	2,52,4,453.97	7.87
		2 4	8000	50.0		2.2
Say	2.30	L.40	2.30	7.30	7.30	2.30

A ROADS						
4 Gravel to Asphalt	Pavement Width = $6.7$	6.70 m	Shoulder Width = 2.00 m	0 m	Pavement Thickness = 100 mm	s = 100 mm
Length	1.00 km.	0.32 km.	1.26 km.	3.16 km.	6.32 km.	9.49 km.
Reference Amount / Cost of Civil Works	15,811,255.67	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)	31.00	10	40	66	197	295
Applicable Traffic Management Layout	Layont 7	Layout 7	Layout 7	Layout 7	Layont 7	Layout 7
Number of Set-up	2	1	2	2	2	2
Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
Total Estimated Cost of Road Works						
Safety & Traffic Management	317,114.95	51,147.57	409,180.58	1,012,721.93	2,015,214.35	3,017,706.77
Relative Weight (%)	2.01	1.02	2.05	2.03	2.02	2.01
Say	2.05	1.05	2.05	2.05	2.05	2.05
					Maximum =	2.05
5 Gravel to Concrete						
C+2000	2,00 t	m/ 07 0	4 60 100	m/1 00 N	20 0 m	40.60 1.50
Lengui		0.42 NIII.	I.OO MIII.	4.ZU NIII.	0.40 NIII.	12.00 MIII.
Reference Amount / Cost of Civil Works	11,901,170.48	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)	39.00	17	92	162	324	486
Applicable Traffic Management Layout	Layont 7	Layont 7	Layont 7	Layout 7	Layout 7	Layout 7
Number of Set-up	2	1	2	2	2	2
Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
Total Estimated Cost of Road Works						
Safety & Traffic Management	398,951.07	86,950.87	664,918.44	1,657,181.35	3,314,362.69	4,971,544.04
Relative Weight (%)	3.35	1.74	3.32	3.31	3.31	3.31
Say	3.40	1.75	3.35	3.35	3.35	3.35
					Maximum =	3.40
6 Asphalt Overlay	Pavement Width = 6.70 m	70 m	Shoulder Width = 2.00 m	0 m	Pavement Thickness = 50 mm	s = 50 mm
Length	1.00 km.	0.72 km.	2.89 km.	7.23 km.	14.46 km.	21.69 km.
Reference Amount / Cost of Civil Works	6,915,785.73	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)	14.00	11	41	102	203	304
Applicable Traffic Management Layout	Layont 7	Layout 7	Layout 7	Layout 7	Layont 7	Layout 7
Number of Set-up	~	_	_	_	_	_
Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
Total Estimated Cost of Road Works						
Safety & Traffic Management	71,606.60	56,262.33	209,705.05	521,705.24	1,038,295.72	1,554,886.20
Relative Weight (%)	1.04	1.13	1.05	1.04	1.04	1.04
Say	1.05	1.15	1.05	1.10	1.05	1.05
					Maximum =	1.15

Resployeding, 50% of existing PCCP         1,100 km.         0,544 km.         1,177 km.         5,42 km.         1,005 km.         1,000 km.         1,147 km.         1,147 km.         1,414 km.         1							
9,218,747.25 5,000,000.00 20,000,000 50,000,000 100,000,000,000 150,000,000 150,000,000,000 150,00	Length	1.00 km.	0.54 km.	2.17 km.	5.42 km.	10.85 km.	16.27 km.
26.00         14         56         139         277         Layout 7         Layout 8	Reference Amount / Cost of Civil Works	9,218,747.25	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Layout 7	Duration (C.D.)	26.00	14	26	139	277	415
132,983.69 71,606.60 286,426.41 710,951.26 1,416,787.76 2,122,62 1,446,787.76 1,445	Applicable Traffic Management Layout	Layout 7	Layout 7	Layout 7	Layout 7	Layout 7	Layout 7
132,983.69	Number of Set-up	1	1	1	1	1	1
132,983.69 71,606.60 286,426.41 710,951.26 1,416,787.76 2,122,62 1,445 1	Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
132,983.66	Total Estimated Cost of Road Works						
1.44   1.45	Safety & Traffic Management	132,983.69	71,606.60	286,426.41	710,951.26	1,416,787.76	2,122,624.26
1.45	Relative Weight (%)	1.44	1.43	1.43	1.42	1.42	1.42
1,375,139,57   5,000,000.00   20,000,000.00   50,000,000.00   150,000,00	Say	1.45	1.45	1.45	1.45	1.45	1.45
1.00 km. 0.44 km. 1.76 km. 4.40 km. 8.79 km. 13.15 11.375,139.57 5,000,000.00 20,000,000.00 50,000,000.00 100,000,000.00 150,000,000.00 16 64 64.00 km. 169 169 179 179 189 171.00 km. 2.17 km. 8.70 km. 21.77 km. 8.70 km. 21.77 km. 8.70 km. 21.77 km. 8.70 km. 10.00 22 87,344 8 10.00 50,000,000.00 100,000,000.00 100,000,000.00 150,000,000.00 100,000,000.00 150,000,000.00 100,000,000.00 150,000,000.00 150,000,000.00 100,000,000.00 150,000,00					N		1.45
1.00 km,   1.00 km,   1.375, 139, 57   1.00 km,   1.00 km	8 Concrete Reblocking, 50% of existing PC	-C					
1,00 km,   1,00 km,   1,76 km,   4,40 km,   8,79 km,   1,315,     1,315,139,57   5,000,000,00   50,000,000,00   100,000,000,00     1,315,139,57   5,000,000,00   20,000,000,00   50,000,000,00   150,000,000,00     1,22   1,476   5,114,76   7,104		•	•				
1,	Length	1.00 km.	0.44 km.	1.76 km.	4.40 km.	8.79 km.	13.19 km.
36.00   36.00   16   64   159   317   Layout 7   Layout 8   S,114.76   S,11	Reference Amount / Cost of Civil Works	11,375,139.57	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Figure   Cost of Road Works	Duration (C.D.)	36.00	16	64	159	317	475
Lup         Lup         1 <td>Applicable Traffic Management Layout</td> <td>Layout 7</td> <td>Layout 7</td> <td>Layout 7</td> <td>Layout 7</td> <td>Layout 7</td> <td>Layout 7</td>	Applicable Traffic Management Layout	Layout 7	Layout 7	Layout 7	Layout 7	Layout 7	Layout 7
Set-up per Day   5,114.76   1,65   1	Number of Set-up	1		1	1		1
ad Cost of Road Works  Layout 8  Lay	Rental Cost per Set-up per Day	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76	5,114.76
ic Management 184,131.26 81,836,12 327,344.46 813,246,40 1,621,378.05 2,429,500  ht (%)  Say  1.62  1.64  1.64  1.64  1.64  1.64  1.64  1.64  1.64  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.65  1.70 km  2.17 km  2.18 km  6.52  1.00 km  2.300,000,00  2.0,000,000,00  2.0,000,000,00  2.0,000,000,00  2.0,000,000,00  2.18 km  6.52  1.00 km  2.300,000,000  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,00  2.300,000,000  2.300,0	Total Estimated Cost of Road Works						
nt (%)         1.62         1.64         1.64         1.63         1.62         1.62         1.62         1.62         1.62         1.62         1.62         1.62         1.62         1.62         1.62         1.70         1.70         1.70         Maximum =         Maximum =         Maximum =         Maximum =         1.70 <th< td=""><td>Safety &amp; Traffic Management</td><td>184,131.26</td><td>81,836.12</td><td>327,344.46</td><td>813,246.40</td><td>1,621,378.05</td><td>2,429,509.69</td></th<>	Safety & Traffic Management	184,131.26	81,836.12	327,344.46	813,246.40	1,621,378.05	2,429,509.69
Maximum =   Maxi	Relative Weight (%)	1.62	1.64	1.64	1.63	1.62	1.62
Maximum =   Maxi	Say	1.65	1.65	1.65	1.65	1.70	1.70
Count / Cost of Civil Works         1.00 km.         2.17 km.         8.70 km.         21.74 km.         43.48 km.         65.22           Count / Cost of Civil Works         2,300,050.60         5,000,000.00         20,000,000.00         50,000,000.00         150,000,000           1.)         10.00         22,300,050.60         20,000,000.00         50,000,000.00         150,000,000           1.)         10.00         22         87         2.18         Layout 8         Layout 8 <t< td=""><td></td><td></td><td></td><td></td><td>N</td><td></td><td>1.70</td></t<>					N		1.70
Cost of Civil Works         1.00 km.         2.17 km.         8.70 km.         21.74 km.         43.48 km.         65.22           Cost of Civil Works         2,300,050.60         5,000,000.00         20,000,000.00         50,000,000.00         100,000,000.00         150,000,000.00           anagement Layout         Layout 8         La	9 Re-Gravelling						
Cost of Civil Works         2,300,050.60         5,000,000.00         20,000,000.00         50,000,000.00         150,000,000.00         150,000,000.00           anagement Layout         Layout 8         Layou	Length	1.00 km.	2.17 km.	8.70 km.	21.74 km.	43.48 km.	65.22 km.
anagement Layout B         Layout B <td>Reference Amount / Cost of Civil Works</td> <td>2,300,050.60</td> <td>5,000,000.00</td> <td>20,000,000.00</td> <td>50,000,000.00</td> <td>100,000,000.00</td> <td>150,000,000.00</td>	Reference Amount / Cost of Civil Works	2,300,050.60	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
anagement Layout 8         Layout 8 <td>Duration (C.D.)</td> <td>10.00</td> <td>22</td> <td>87</td> <td>218</td> <td>435</td> <td>653</td>	Duration (C.D.)	10.00	22	87	218	435	653
-up per Day         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.53         10	Applicable Traffic Management Layout	Layout 8	Layout 8	Layout 8	Layout 8	Layout 8	Layout 8
-up per Day         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.56         107.53         10	Number of Set-up	_	_	_	_	_	1
st of Road Works         1,075.58         2,366.27         9,357.52         23,447.59         46,787.62         70,23           Ragement         0.05         0.05         0.05         0.05         0.05         0.05         0.05	Rental Cost per Set-up per Day	107.56	107.56	107.56	107.56	107.56	107.56
lagement     1,075.58     2,366.27     9,357.52     23,447.59     46,787.62     70,23       0.05     0.05     0.05     0.05     0.05     0.05     0.05	Total Estimated Cost of Road Works	1					
Say         0.05         0.05         0.05         0.05         0.05	Safety & Traffic Management	1,075.58	2,366.27	9,357.52	23,447.59	46,787.62	70,235.20
0.05 0.05 0.05 0.05 0.05 0.05		0.05	0.05	0.02	0.05	0.05	0.05
	Say	0.02	0.05	0.02	0.02	0.02	0.05

Length Reference Amount / Cost of Civil Works Duration (C.D.)						
Reference Amount / Cost of Civil Works Duration (C.D.)	1.00 km.	0.78 km.	3.13 km.	7.84 km.	15.67 km.	23.51 km.
Duration (C.D.)	6,380,050.21	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
()	28.00	22	87	216		647
Applicable Traffic Management Lavout	Layout 7 w/o Traffic	Layout 7 w/o Traffic	Layout 7 w/o Traffic	Layout 7 w/o Traffic	Layout 7 w/o Traffic	Layout 7 w/o Traffic
Number of Set-up	2	2	2			
Rental Cost per Set-up per Day	994.85	994.85	994.85	994.86	994.86	994.8
Total Estimated Cost of Road Works Safety & Traffic Management	55,711.85	43,773.60	173,104.67	429,777.12	859,554.23	1,287,341.64
Relative Weight (%)	0.87	0.88	0.87	0.86	0.86	98.0
Say	06:0	06:0	06.0	0.90	06:0	0:90
B. BRIDGE (Based on Typical Standard Design)	sign)		ı	ı	Maximum =	06:0
Hono		15 l.m. @ 1 Span of 15 l.m.	63 l.m. @ 3 Spans of 21 l.m.	168 l.m. @ 7 Spans of 24 l.m.	312 l.m. @ 13 Spans of 24 l.m.	456 l.m. @ 19 Spans of 24 l.m.
Reference Amount / Cost of Civil Works		5 000 000 000	20 000 000 00	50 000 000 00	100 000 000 00	150 000 000 00
Duration (C.D.)		125				
Applicable Traffic Management Layout		Layout 13	Layon	Layon	Layor	Layon
Number of Set-up		7				
Rental Cost per Set-up per Day		544.02	631.83	808.53	1,032.47	1,257.25
Total Estimated Cost of Road Works Safety & Traffic Management		68.002.01	126.365.54	270.857.03	526.561.56	861.214.35
Relative Weight (%)		1.36	0.63	0.54	0.53	0.57
Say		1.40	0.70	09:0	0.60	0.60
2 PSCG on R.C. Pile Foundation						
		15 l.m.			240 l.m.	360 l.m.
Length		@ 1 Span of 15 l.m.	@ 2 Spans of 24 I.m.	@ 5 Spans of 24 l.m.	@ 10 Spans of 24 l.m.	@ 15 Spans of 24 l.m.
Reference Amount / Cost of Civil Works		5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)		140	180	225	295	375
Applicable Traffic Management Layout		Layout 13	Layout 13	Layout 13	Layout 13	Layout 13
Number of Set-up		1	1	700.00	1	, ,
Total Estimated Cost of Road Works		20.445.02	002.04	1 23.20	923.43	0,110.13
Safety & Traffic Management		76,162.25	108,512.03	164,084.03	272,411.68	419,307.07
Relative Weight (%)		1.52	0.54	0.33	0.27	0.28
Say		1.60	09:0	0.40	0:30	0:30

3 KCDG on Bored Pile Foundation					
490000	15 l.m. @ 1 Span of 15 l.m.	72 l.m. @ 3 Spans of 24 l.m.	168 l.m. @ 7 Spans of 24 l.m.	312 l.m. @ 13 Spans of 24 l.m.	456 l.m. @ 19 Spans of 24 l.m.
Reference Amount / Cost of Civil Works	00 000 000 \$	00 000 000 0	00 000 000 05	100 000 000 00	-
Duration (C.D.)	105				
Applicable Traffic Management Layout	Layout 13	Layon	Layon	Layor	Layon
Number of Set-up					
Rental Cost per Set-up per Day	544.02	638.84	796.16	1,016.29	1,237.53
Total Estimated Cost of Road Works					
Safety & Traffic Management	57,121.69	124,573.23	254,769.70	538,632.63	909,584.94
Relative Weight (%)	1.14	0.62	0.51	0.54	0.61
Ass	1.25	0.75	0.75	0.75	0.75
4 Poce on Bored Pile Foundation					
	•				-
	15 l.m.	48 l.m.	120 l.m.	240 l.m.	
Length	@ 1 Span of 15 l.m.	@ 2 Spans of 24 I.m.	@ 5 Spans of 24 I.m.	@ 10 Spans of 24 l.m.	@ 15 Spans of 24 l.m.
Reference Amount / Cost of Civil Works	5,000,000.00	20,000,000.00	50,000,000.00	100,000,000.00	150,000,000.00
Duration (C.D.)	105	145	210	305	405
Applicable Traffic Management Layout	Layout 13	Layout 13	Layout 13	Layout 13	Layout 13
Number of Set-up		1			
Rental Cost per Set-up per Day	544.02	5969:63	722.78	914.38	1,107.10
Total Estimated Cost of Road Works					
Safety & Traffic Management	57,121.69	86,946.02	151,783.58	278,885.72	448,375.38
Relative Weight (%)	1.14	0.43	0.30	0.28	0.30
Say	1.25	09:0	09:0	09:0	0.50

Table 5. Relative weight of the cost of road works safety and traffic management to the civil works

	Pro	Project Category / Level of Improvement	Percentage of Cost for Road Works Safety & Traffic Management Relative to the Cost of Civil Works
AR	A Roads		
	1	Paved (Concrete) To Paved (Concrete)	5.25
	2	Paved (Asphalt) To Paved (Concrete)	4.40
	3	Paved (Asphalt) To Paved (Asphalt)	2.90
	4	Gravel To Asphalt	2.05
	2	Gravel To Concrete	3.40
	9	Asphalt Overlay	1.15
	2	Concrete Reblocking, 30% of existing PCCP	1.45
	8	Concrete Reblocking, 50% of existing PCCP	1.70
	6	Re-Gravelling	0.05
	10	Widening Paved	0:00
<b>B</b> . B	B. Bridges		
	1	RCDG on RC. Pile Foundation	1.40
	2	PSCG on RC. Pile Foundation	1.60
	3	RCDG on Bored Pile Foundation	1.25
	4	PSCG on Bored Pile Foundation	1.25

Derived percentage of cost of road works safety & traffic management requirements (as per TMP) relative to civil works is advisably lower than the values above or within +10%. Note:

# Sample Computation and Illustrations

B - 4.4

### **SAMPLE ILLUSTRATION NO. 1**

Road Reconstruction 1 Km length road, two lanes

### Site Condition:

A proposed 1 kilometer continuous road reconstruction work has the following road construction and traffic conditions to be considered:

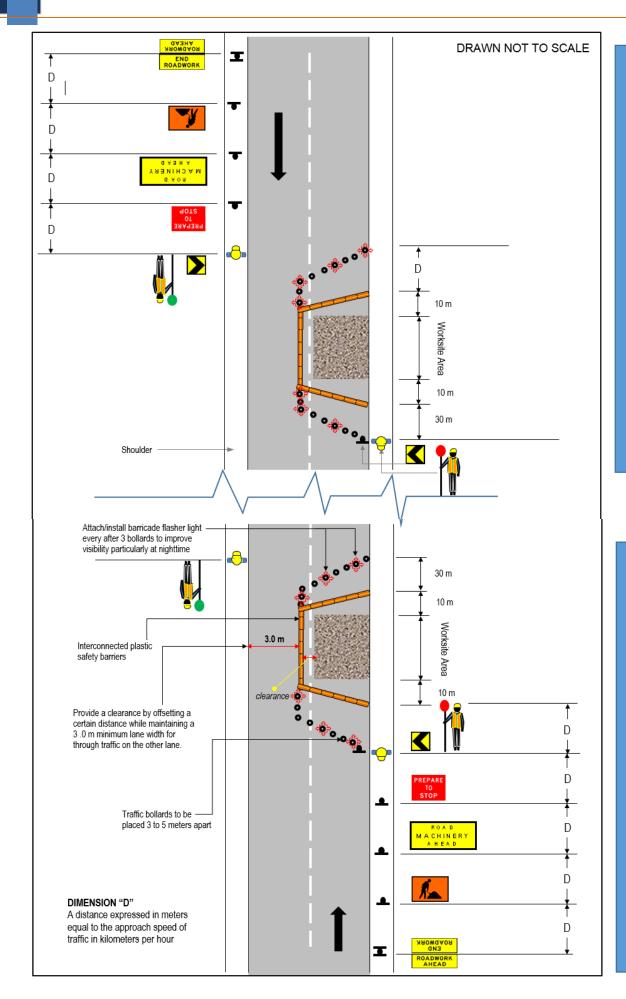
Road Location	Rural Area
Direction of traffic	Two way traffic
Number of Lanes	Two Lanes
Maximum Speed of Vehicles	40 kph (Low Speed)
Designed strength of concrete for the PCCP	3-day concrete (3 days curing period)

### Proposed Traffic Management Layout

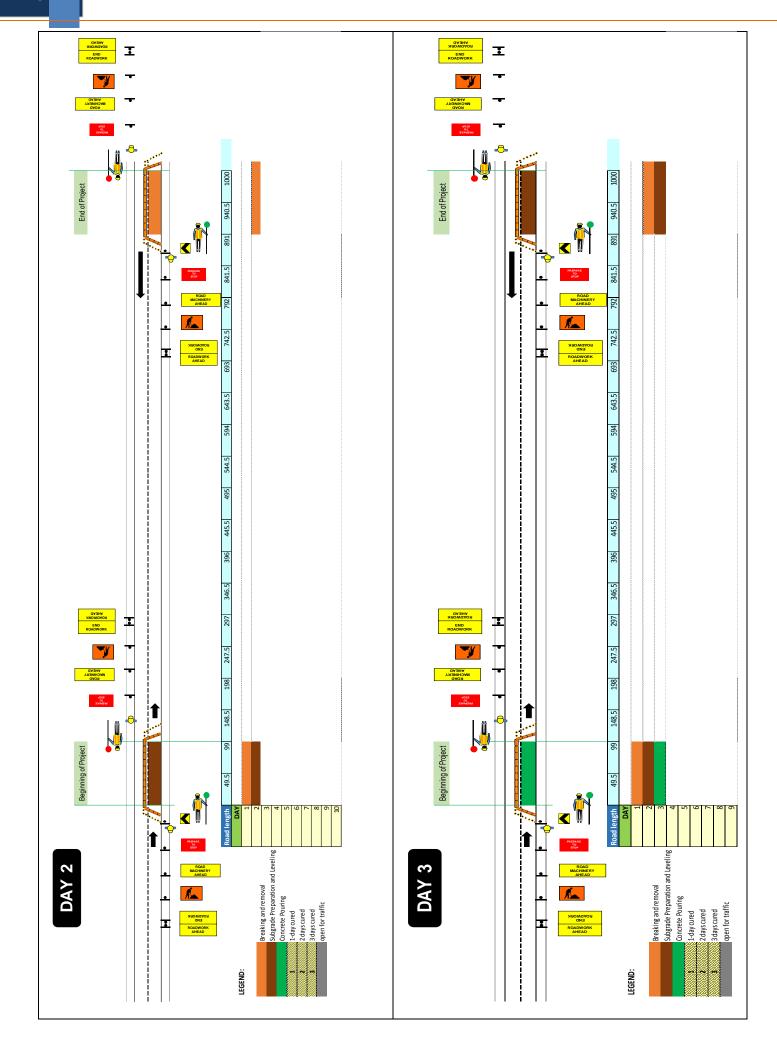
In this condition, each series of roadwork set-up or layout is planned to be 100 meter in length. To facilitate the completion of work, 2 set-ups are proposed to be undertaken performing parallel works. Qualifying this as a long term work, Layout 7 (Case 1) – Part Lane Closure can be considered as the applicable traffic management layout but with some modifications to suit actual project condition and requirements.

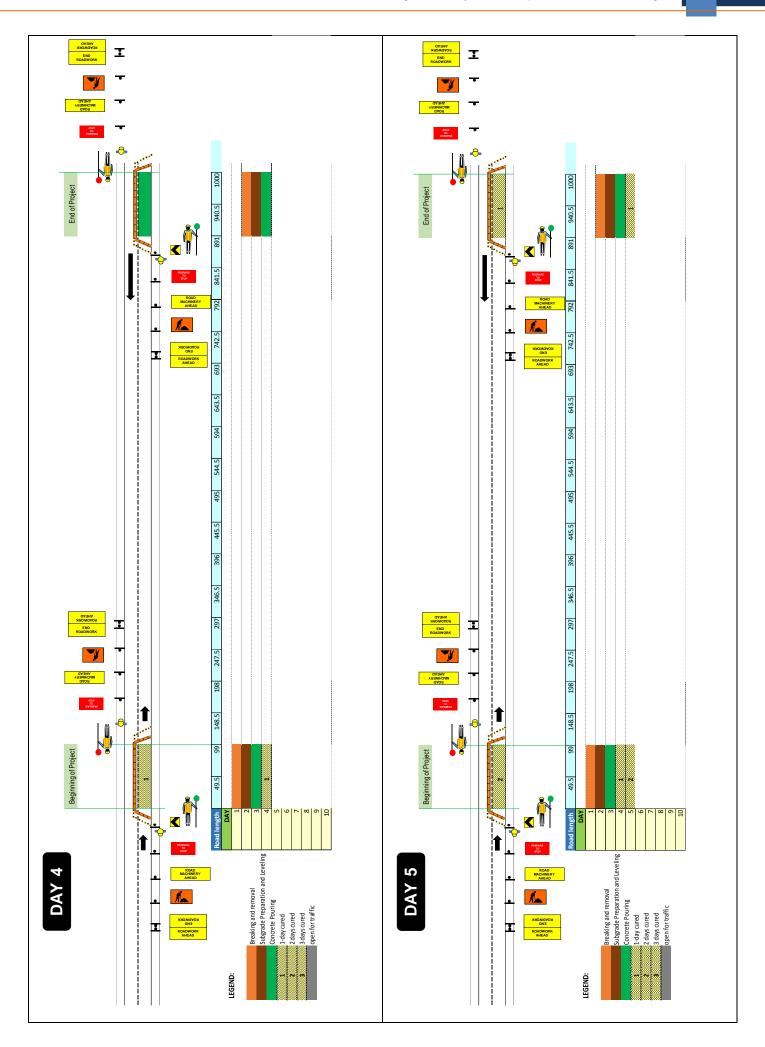
Illustrated below is the proposed traffic management scheme with two set-ups operating on opposite ends of the stretch of the road to be reconstructed. The two groups will be moving forward to meet at the center until the works in one lane are completed. Considering the distance between the two on-going operations, the traffic controllers shall be provided with hand held two-way radio for communication and coordination. As the groups meet towards the center, the number of traffic controllers may be reduced and a longer stretch of the road/area will be closed as work zone.

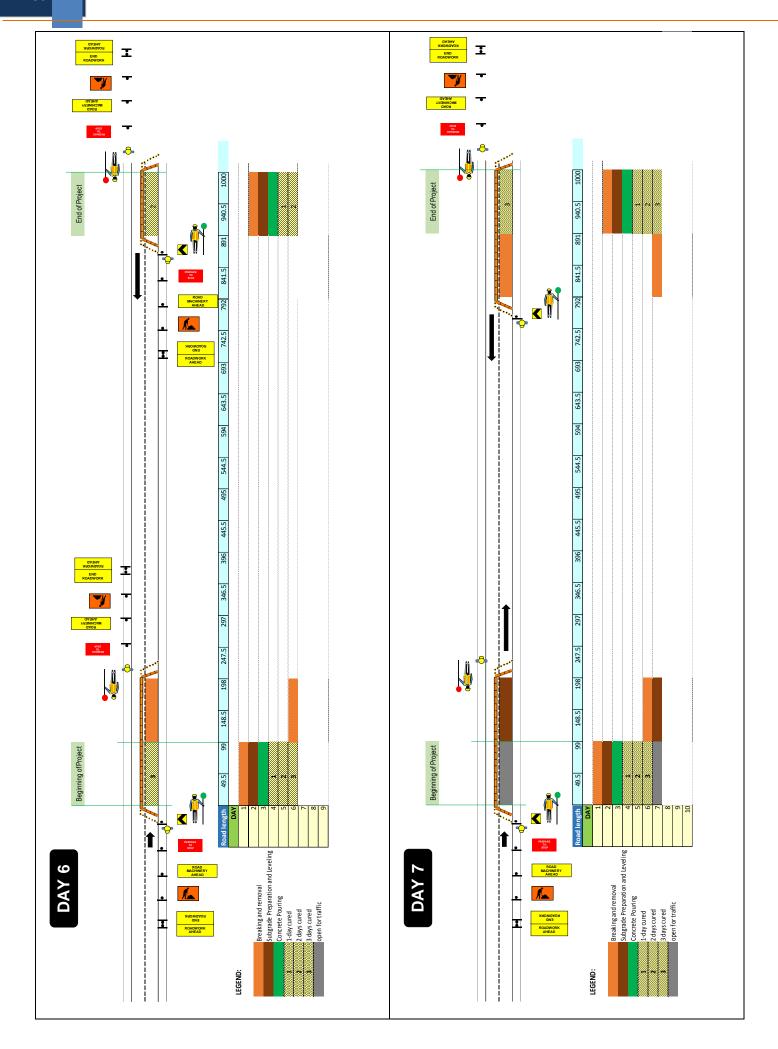
The corresponding DUPA reflecting the estimated cost for road works safety and traffic management based on the aforementioned proposed traffic management scheme is also presented.

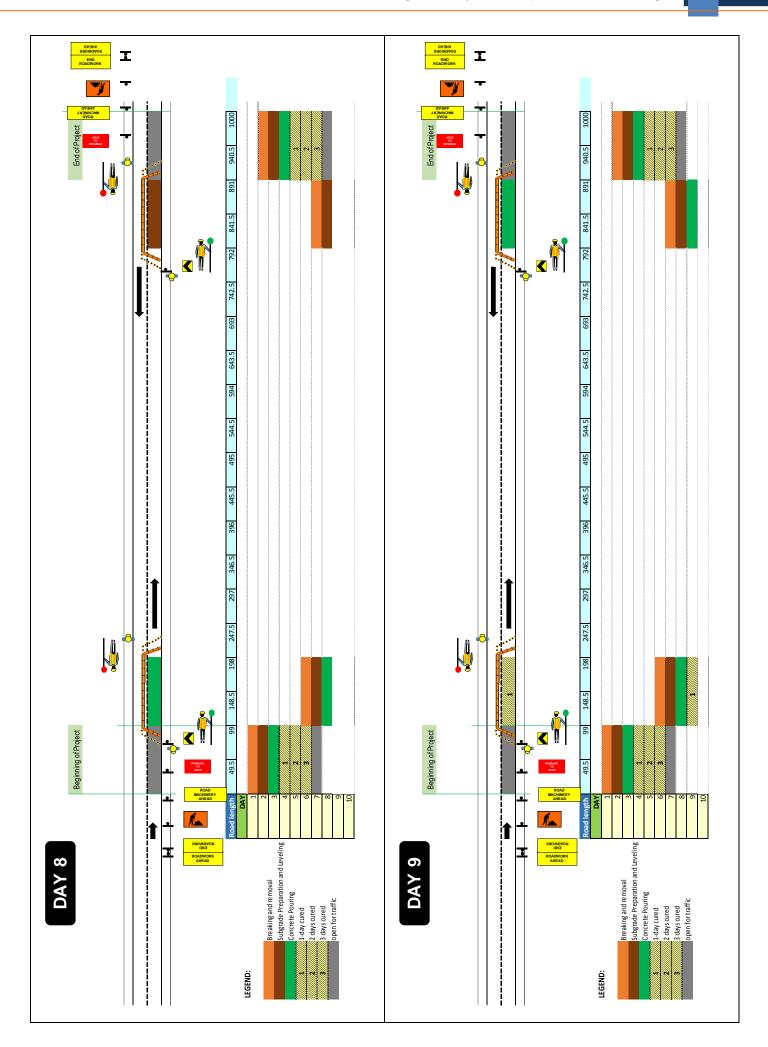


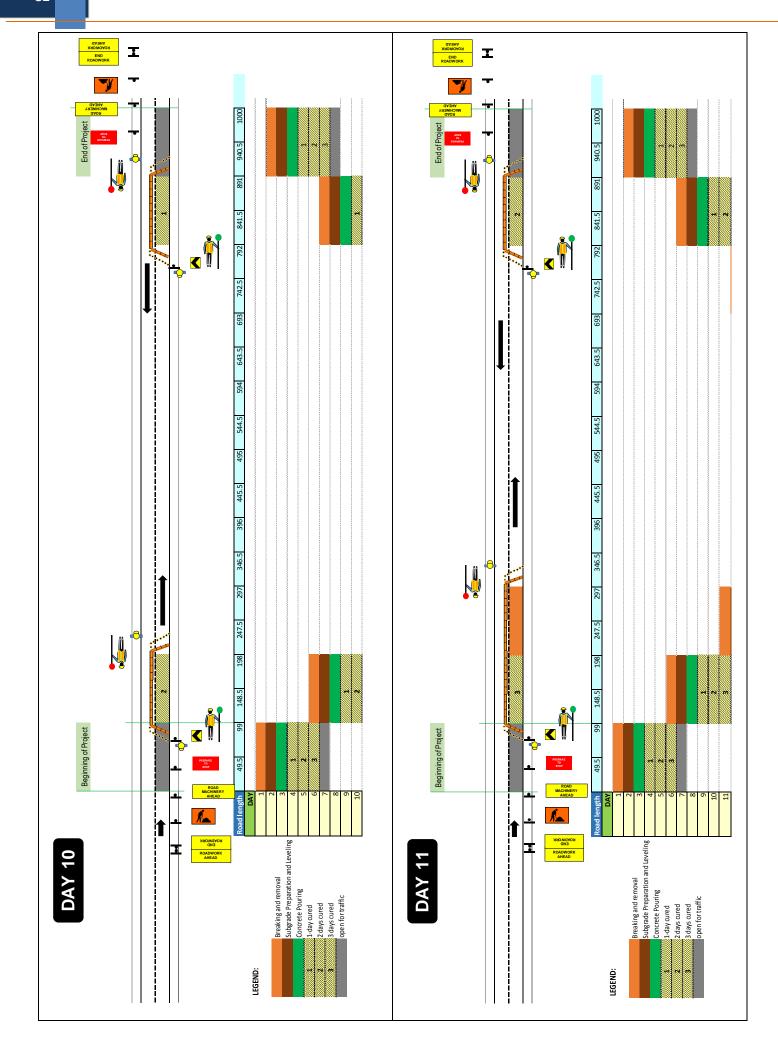
## 1000 940.5 PROPOSED TRAFFIC MANAGEMENT SCHEME 891 841.5 792 742.5 693 643.5 594 544.5 Subgrade Preparation and Leveling 8.375 1.12 0.067 495 Time (hr) **Breaking and removal** 445.5 Concrete Pouring open for traffic 40 m<sup>2</sup> 300 m<sup>2</sup> 50 m³ 50 m³ 70 m² 2 days cured 3 days cured 1-day cured For a 100-meter length, single lane road work zone, 230 mm thk. 396 346.5 Removal of Structure (PCCP, t=230 mm) Levelling Course (Subbase Course) Aggregate Base Course (Shoulder) 297 Subgrade Preparation 247.5 PCCP (230 mm thk.) 198 Output per hour: 148.5 102 (2) 105 200 (1) 201 311 99 Beginning of Project 49.5 Road length DAY :

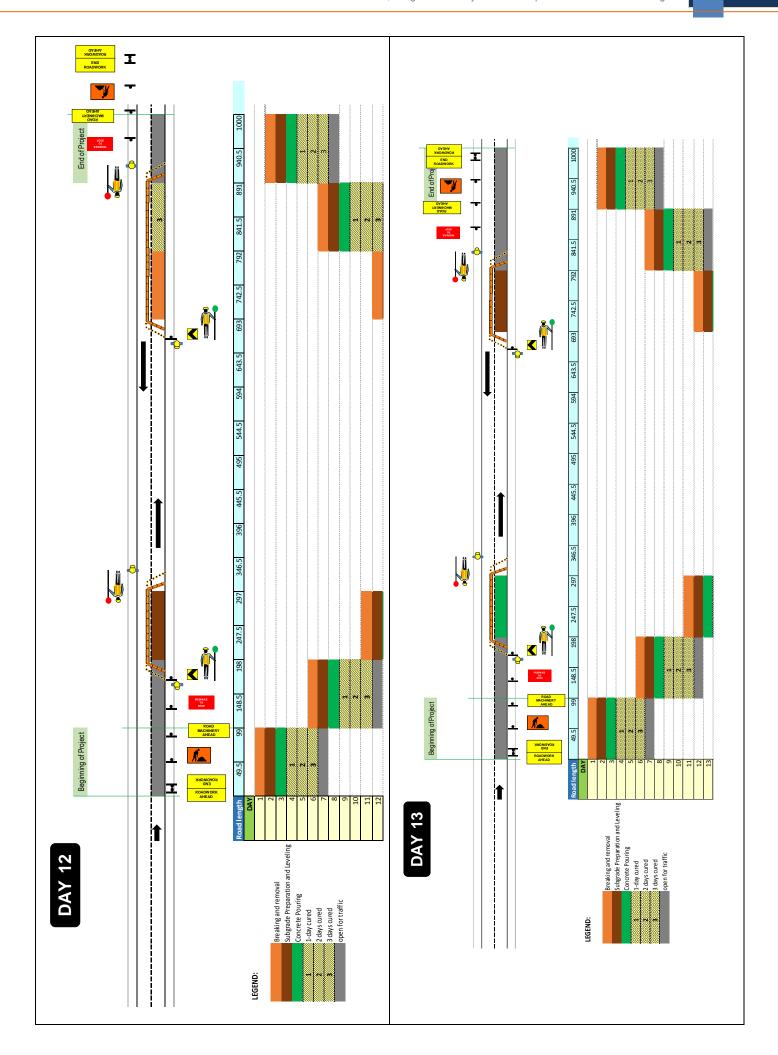


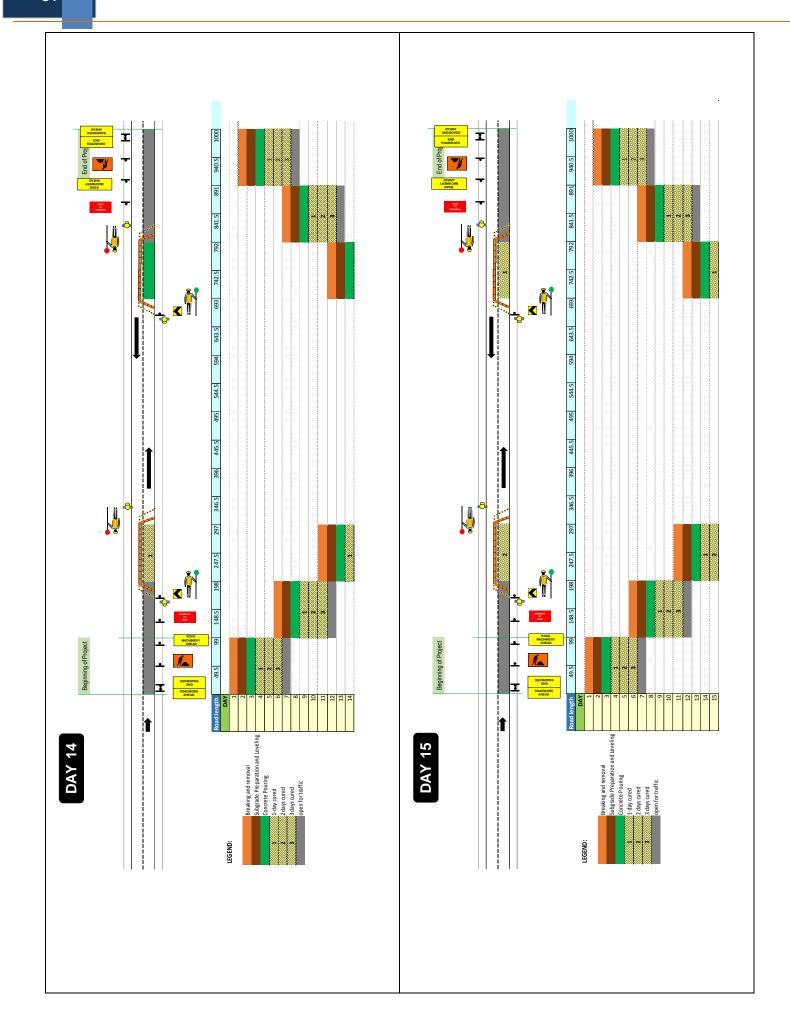


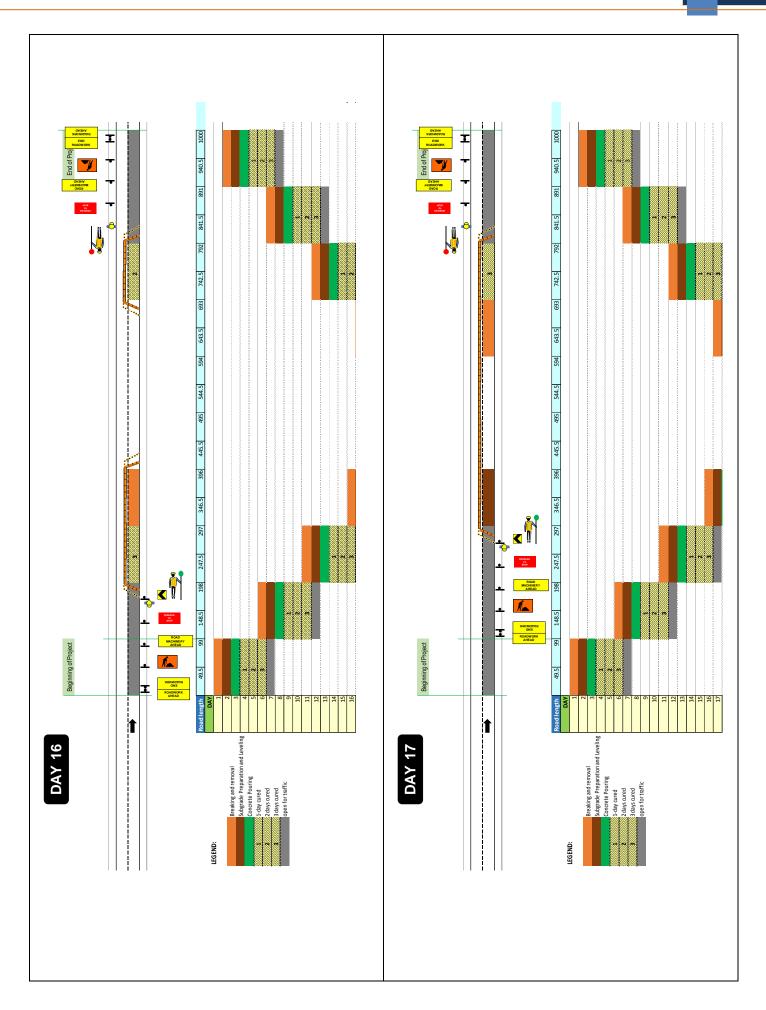


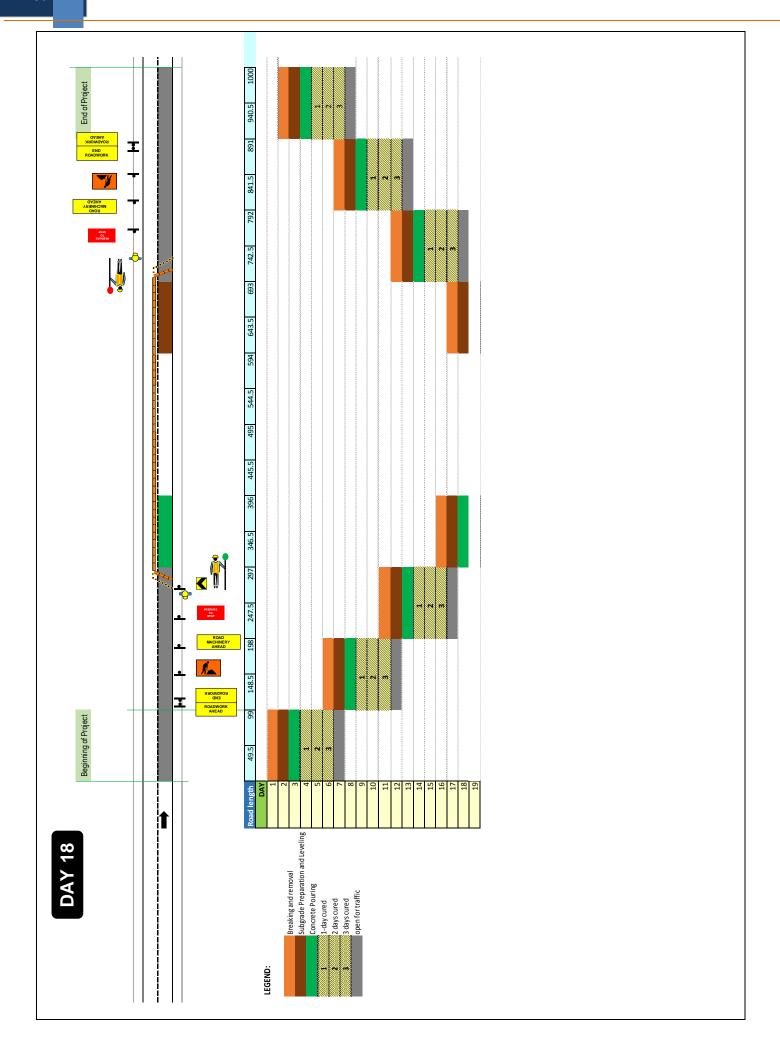


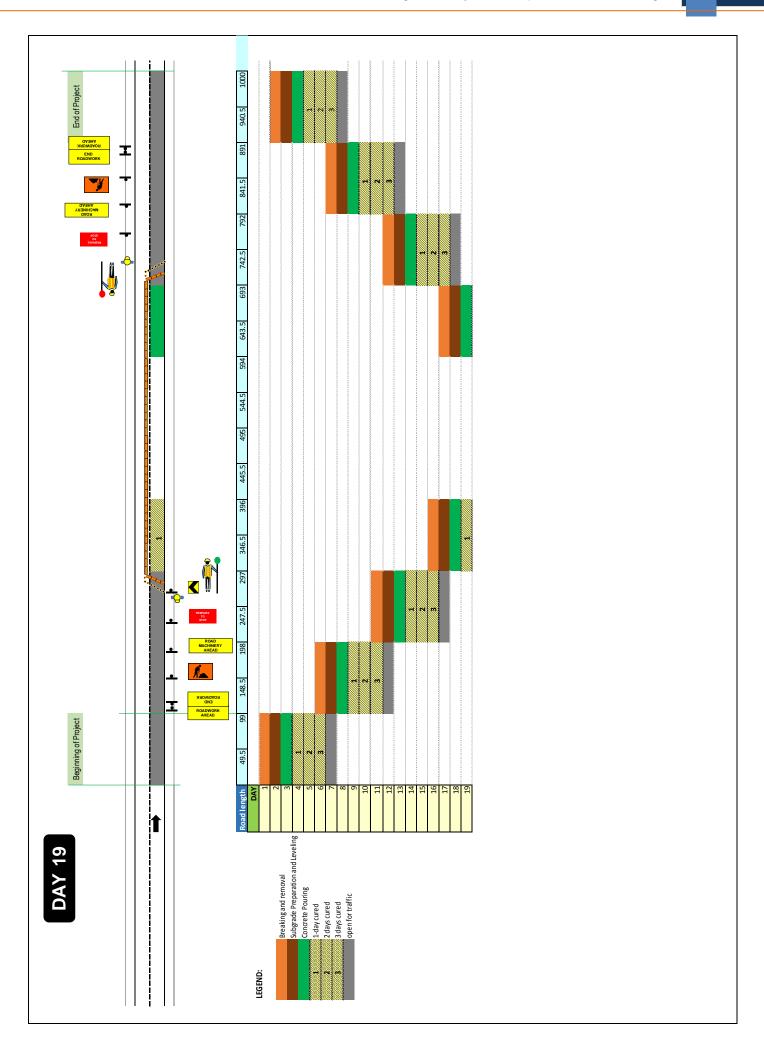


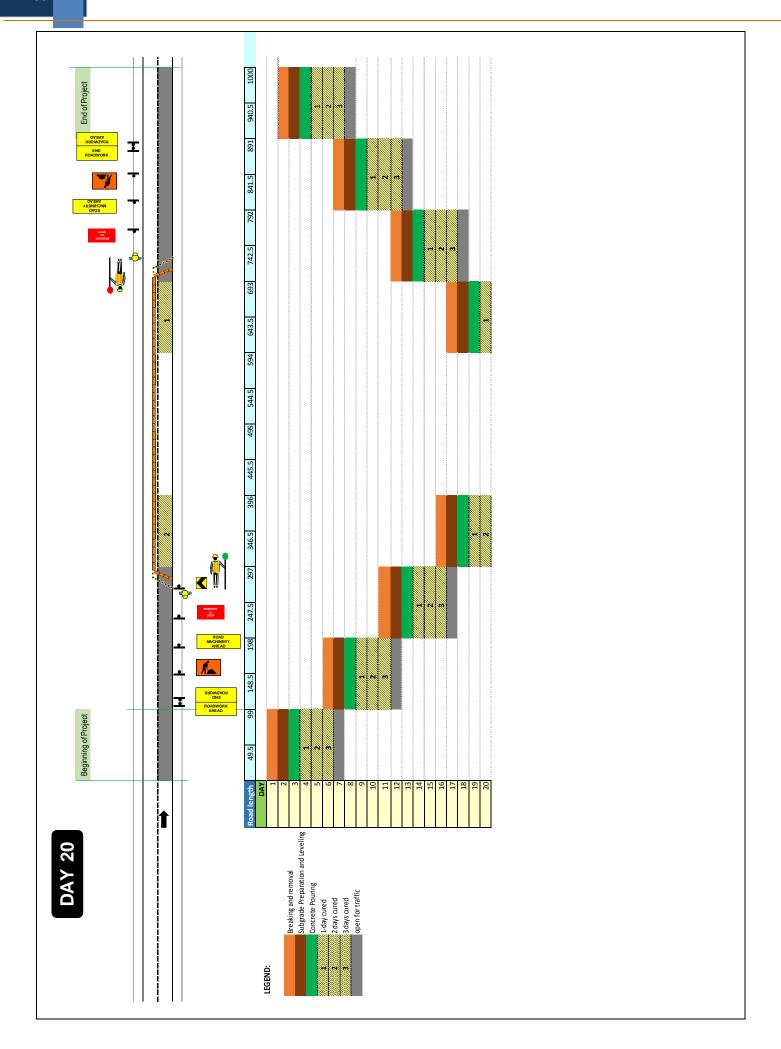


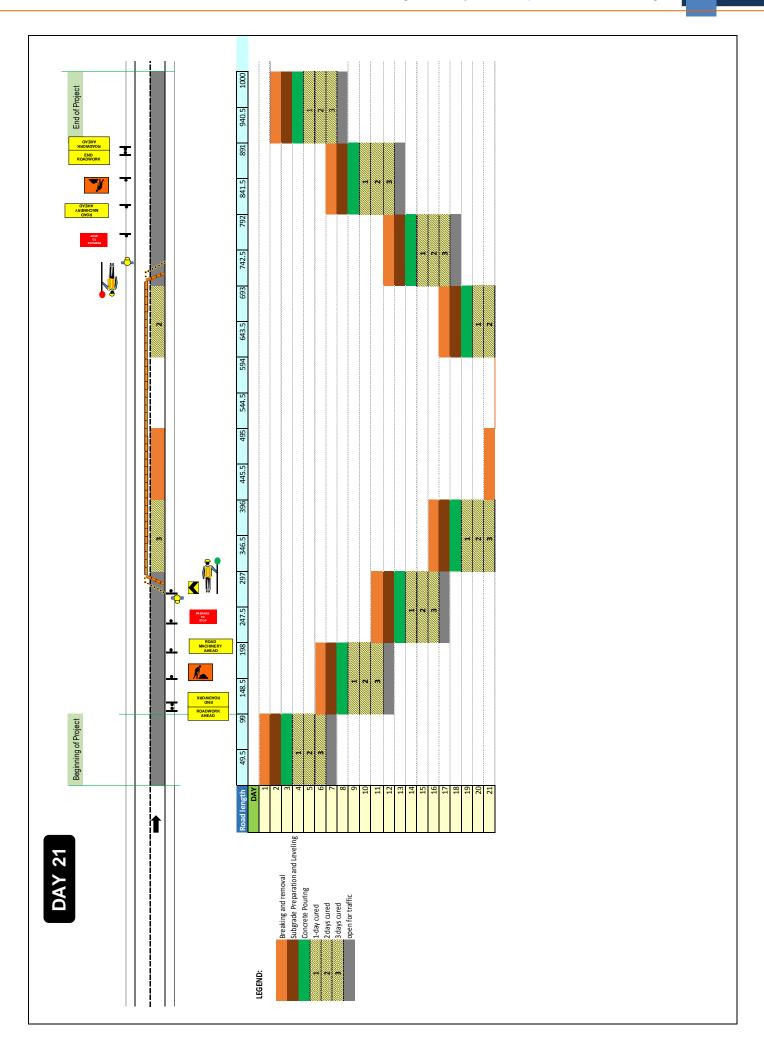


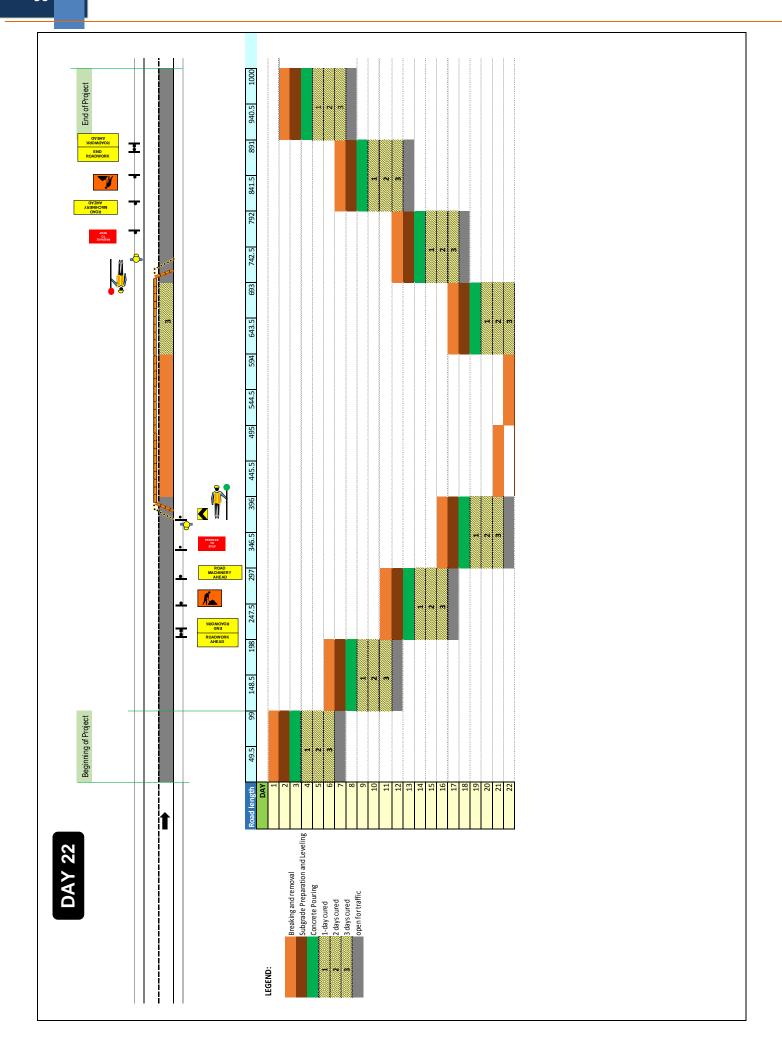


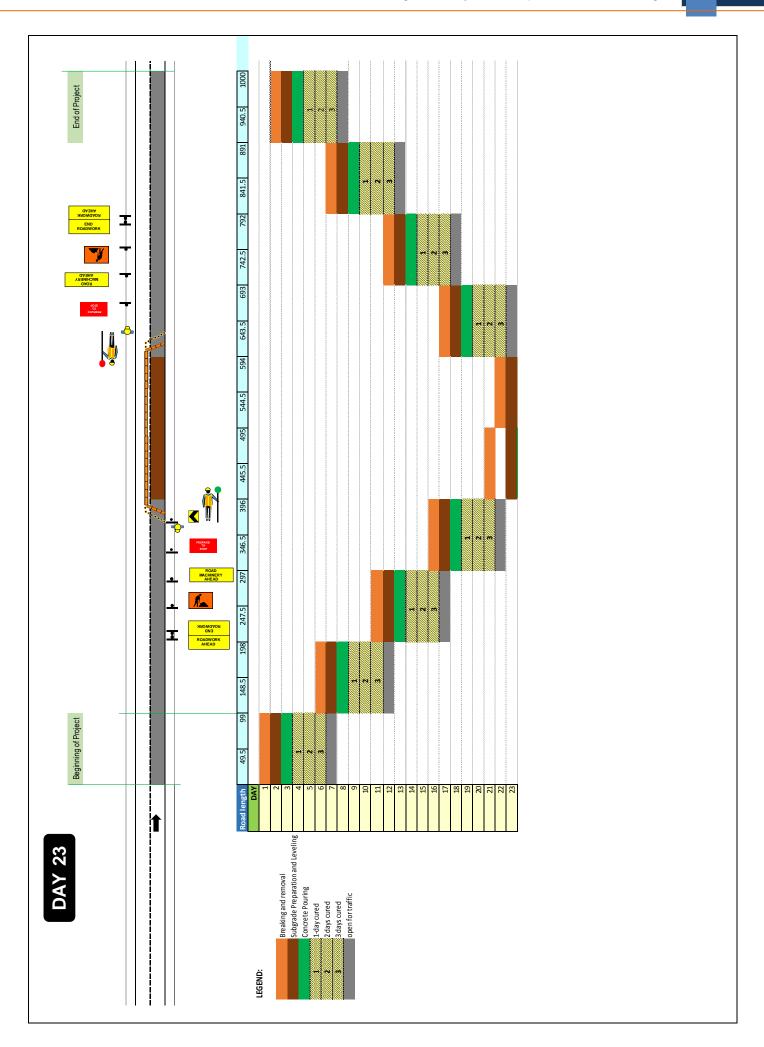


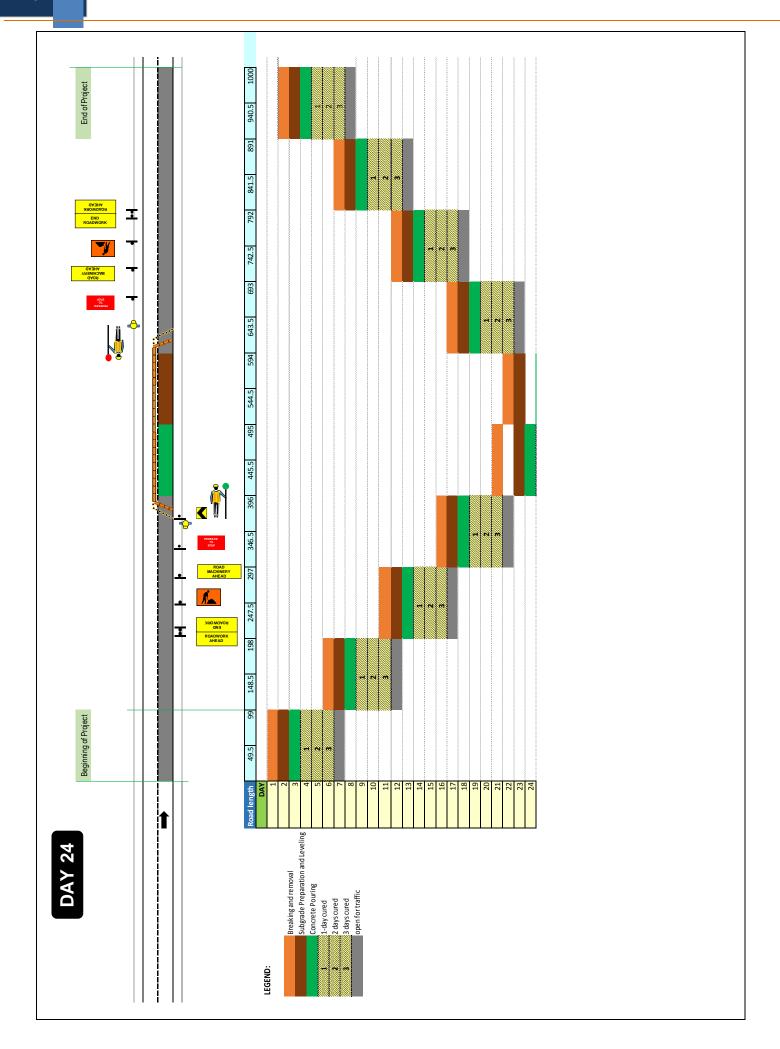


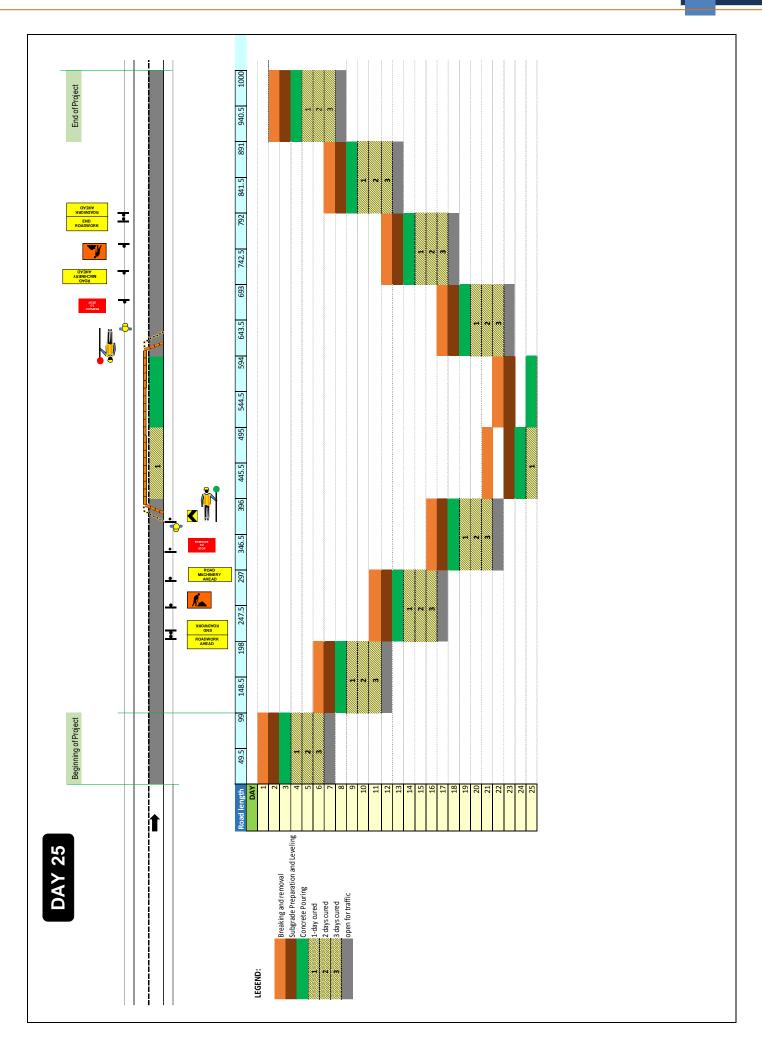


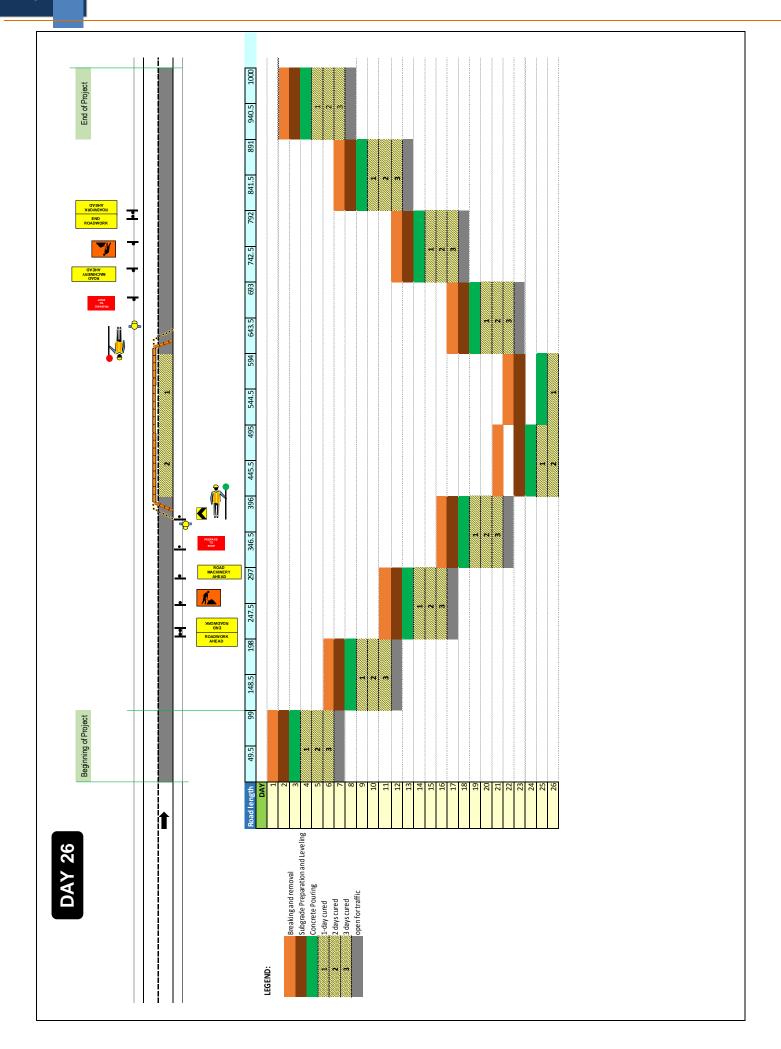


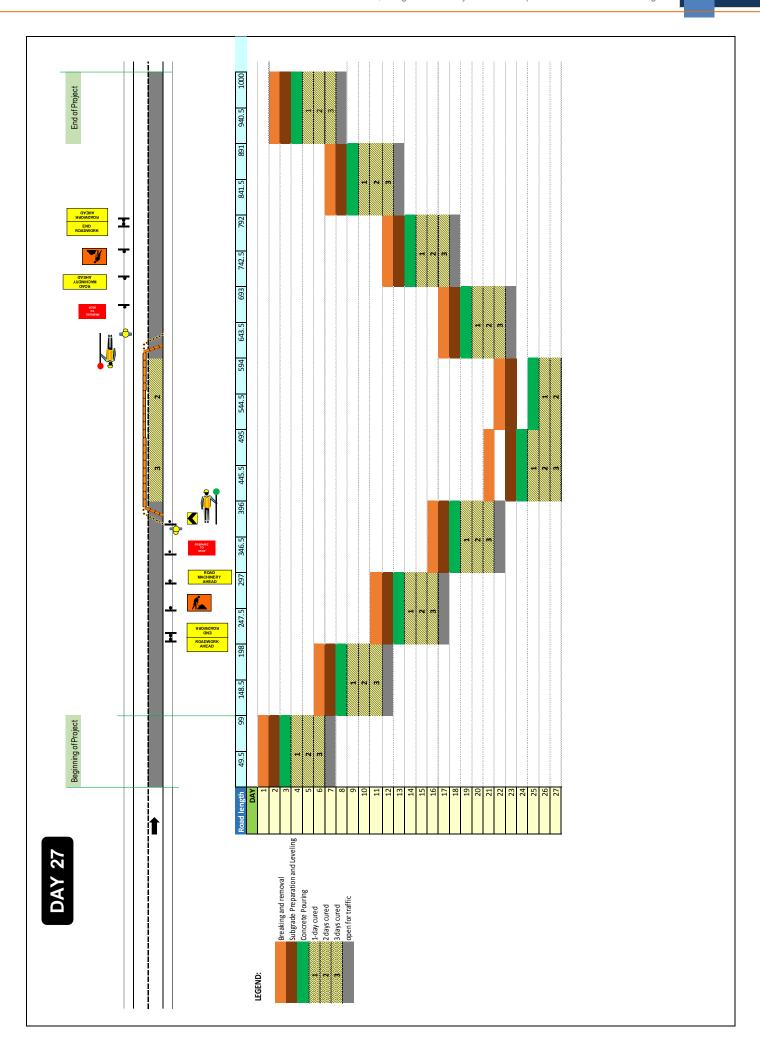


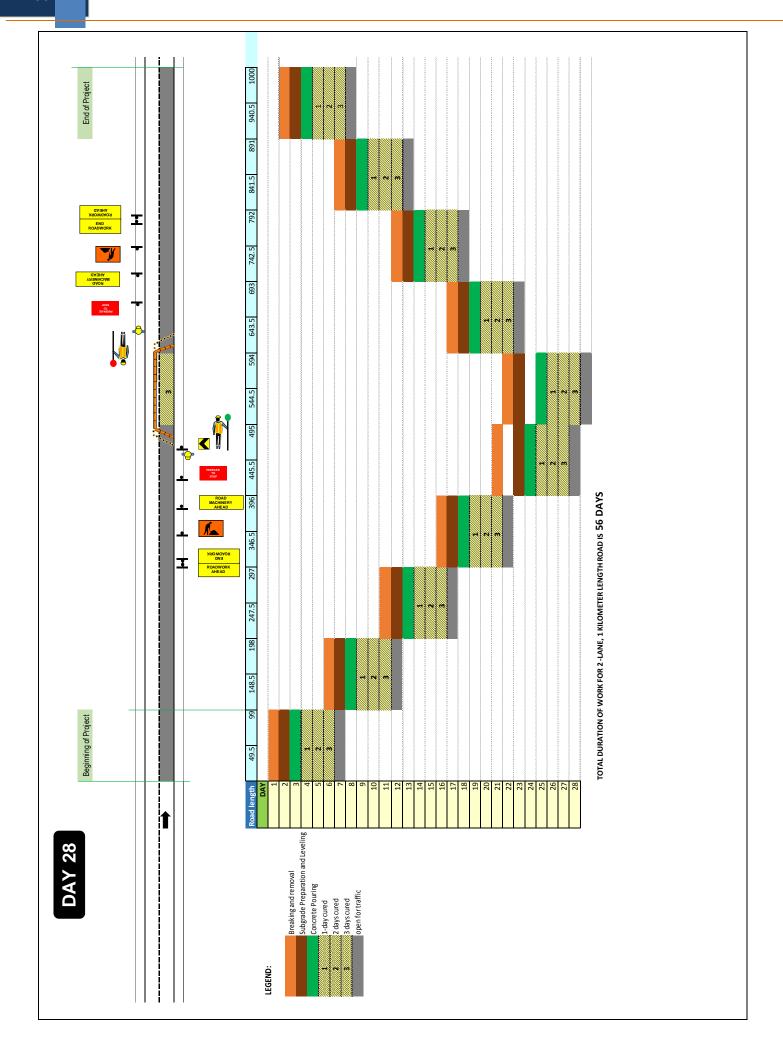










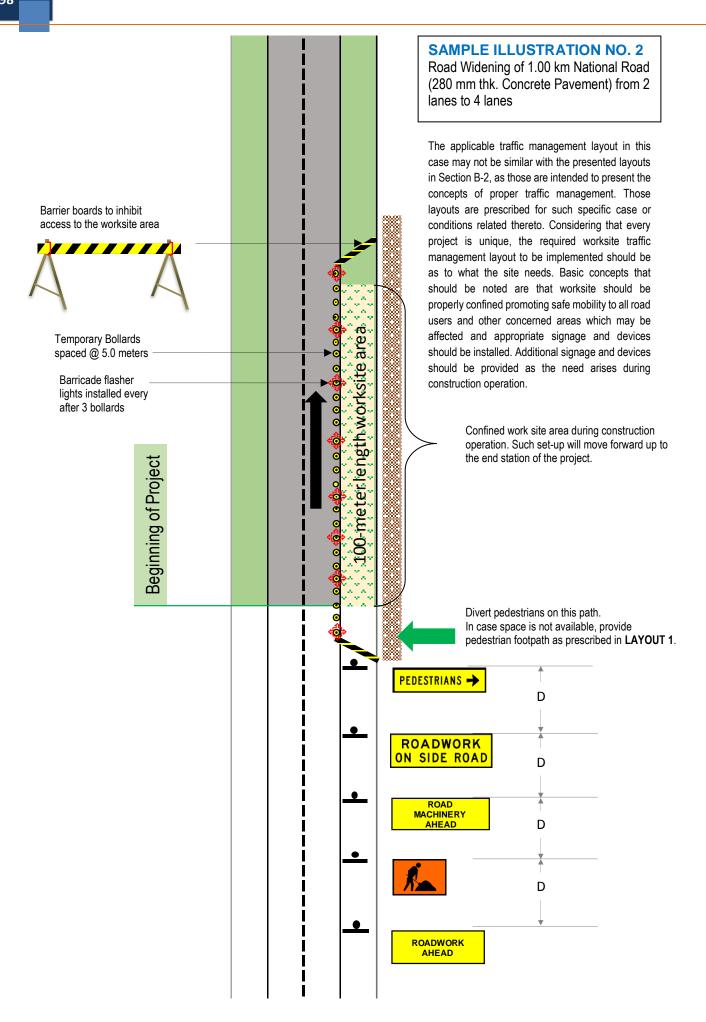


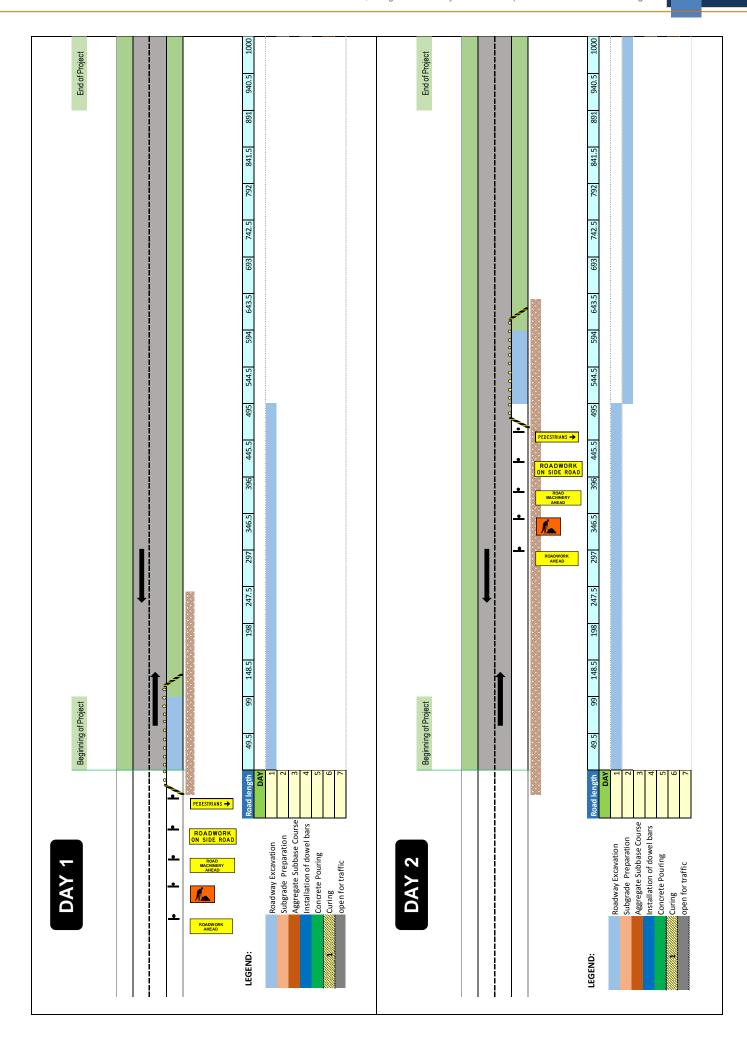
# **DETAILED UNIT PRICE ANALYSIS**

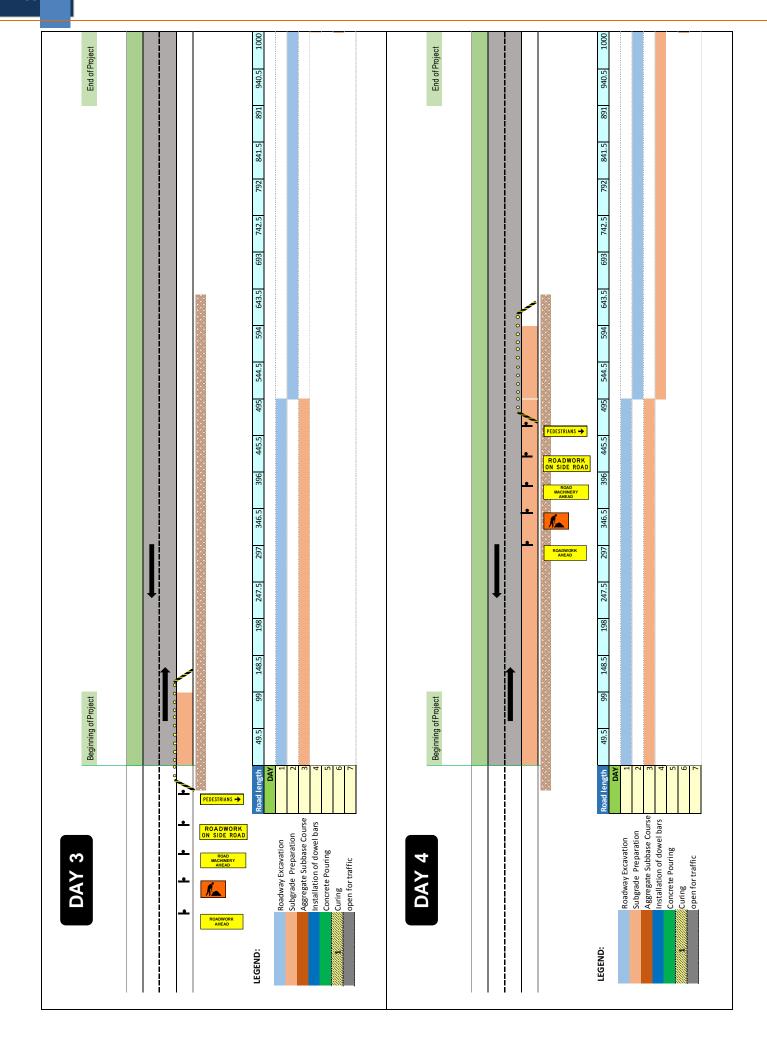
**B.8 Roadworks Safety & Traffic Management** ITEM NO/DESCRIPTION

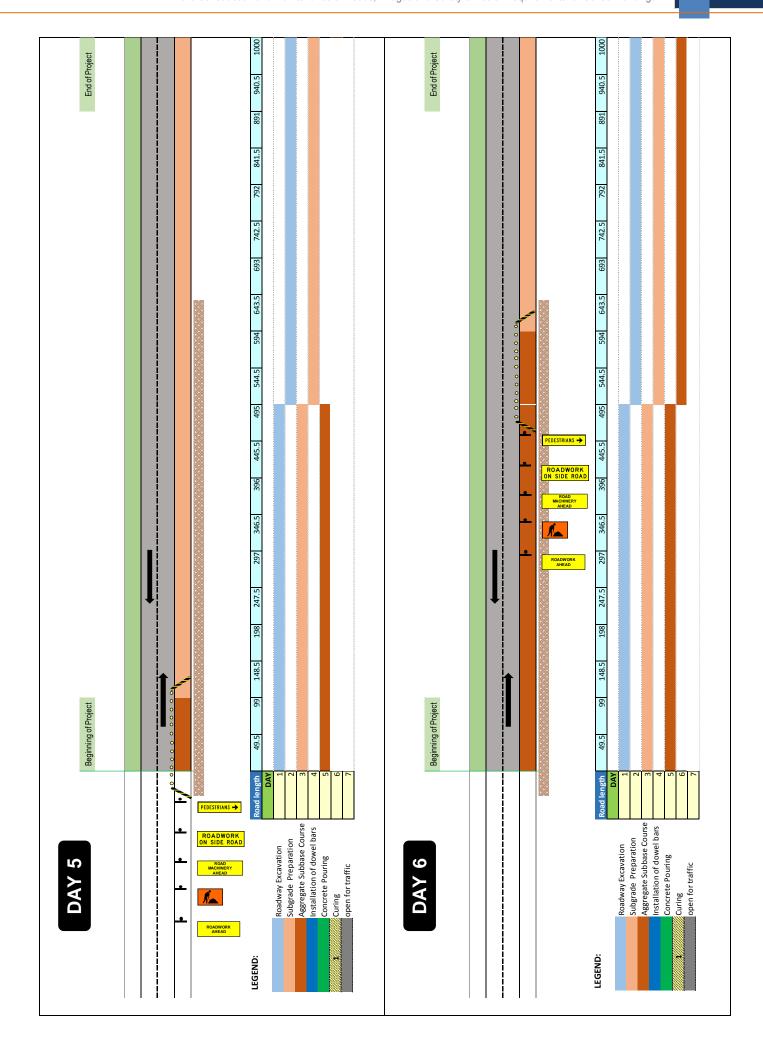
lot UNIT OF MEASUREMENT

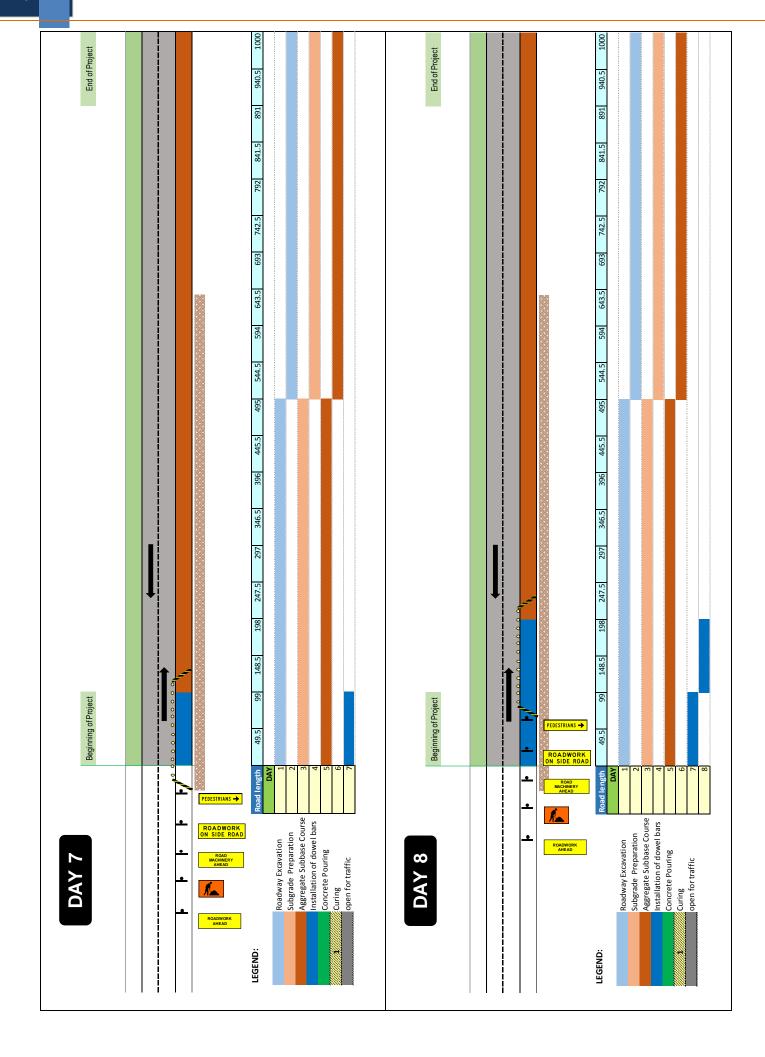
QU/	ANTITY · 1 lot (for 56				
A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
^)		l I		4.73	
	Speed Restriction (R4-1) Roadwork Ahead (T1-1)	each-day	4.00 4.00	10.95	18.90 43.81
	End Roadwork (T2-16)	each-day			
	,	each-day	4.00 4.00	10.95 4.73	43.81 18.90
	End Speed Restriction (R4-2)	each-day	4.00	5.64	22.56
	Workmen Ahead (T1-5)	each-day			
	Prepare to Stop (T1-18)	each-day	2.00	5.64	11.28
	Temporary Hazard Marker (Chevron, T5-5)	each-day	1.00	5.76	5.76
	Road Machinery (T1-3)	each-day	2.00	6.54	13.09
	* Temporary Bollards (@ 5 meters apart)	each-day	32.00	1.64	52.60
,	Plastic Safety Barriers	each-day	320.00	2.74	876.71
	Safety Vest	man-day	2.00	1.11	2.22
	Hard Hat	man-day	2.00	0.27	0.55
	Safety Shoes	man-day	2.00	3.29	6.58
Not	e: For estimation purposes, approach speed (e	agual to "D" in matery	io 40 kah		
7000		equal to D in meters)	15 40 KpH.		
<u>_</u>	SUB - TOTAL (A)				1,116.76
B.	LABOR COST	QUANT		Unit	Total
<u></u>	Traffic Controller	No. of Personnel	Total Hours 8.00	70.74	<b>Cost</b> 2,263.68
	SUB - TOTAL (B)				2,263.68
C.	SUB - TOTAL (B) EQUIPMENT COST	QUANT	TITY	Hourly	2,263.68 Total
C.		QUANT No. of Equipt.	TITY Total Hours	Hourly Rate	'
C.				-	Total
C.				-	Total
C.	EQUIPMENT COST	No. of Equipt.	Total Hours	Rate	Total Cost
<b>C</b> .	EQUIPMENT COST  Two-way Radio	No. of Equipt.	Total Hours 8.00	2.60	Total Cost 83.34
С.	Two-way Radio Barricade Flasher Light	No. of Equipt.	Total Hours 8.00	2.60	Total Cost 83.34
	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)	No. of Equipt.	Total Hours 8.00	2.60	Total Cost 83.34 257.96
D.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C)	No. of Equipt.	Total Hours 8.00	2.60	Total Cost 83.34 257.96 341.30 3,721.75
	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity)	No. of Equipt.	Total Hours 8.00	2.60	Total Cost 83.34 257.96
D. E.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST	No. of Equipt. 4.00 33.00	Total Hours 8.00	2.60	Total Cost 83.34 257.96 341.30 3,721.75
D. E.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%)	No. of Equipt.  4.00 33.00	Total Hours 8.00	2.60 0.65	Total Cost 83.34 257.96 341.30 3,721.75
D. E.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor	No. of Equipt.  4.00 33.00  6 of D )  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost 83.34 257.96 341.30 3,721.75
D. E. F.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9%)	No. of Equipt.  4.00 33.00  6 of D )  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost 83.34 257.96 341.30 3,721.75
D. E. F.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12%	No. of Equipt.  4.00 33.00  6 of D )  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65	Total Cost  83.34 257.96  341.30 3,721.75 66.46
D. E. F.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  4.00 33.00  6 of D )  or's Profit (8% of D)	Total Hours 8.00	2.60 0.65 297.74 482.34	Total Cost  83.34 257.96  341.30 3,721.75 66.46
D. E. F.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  4.00 33.00  6 of D ) or's Profit (8% of D)	8.00 12.00	2.60 0.65 297.74 482.34	Total Cost  83.34 257.96  341.30 3,721.75 66.46  780.08
D. E. F.	Two-way Radio Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  TOTAL DIRECT COST (A + B + C) DIRECT UNIT COST (D/Quantity) ADD: INDIRECT COST  1. OCM (9% 2. Contractor 3. VAT 12% TOTAL INDIRECT COST	No. of Equipt.  4.00 33.00  6 of D ) or's Profit (8% of D)	8.00 12.00	2.60 0.65 297.74 482.34 D+F)	Total Cost  83.34 257.96  341.30 3,721.75 66.46

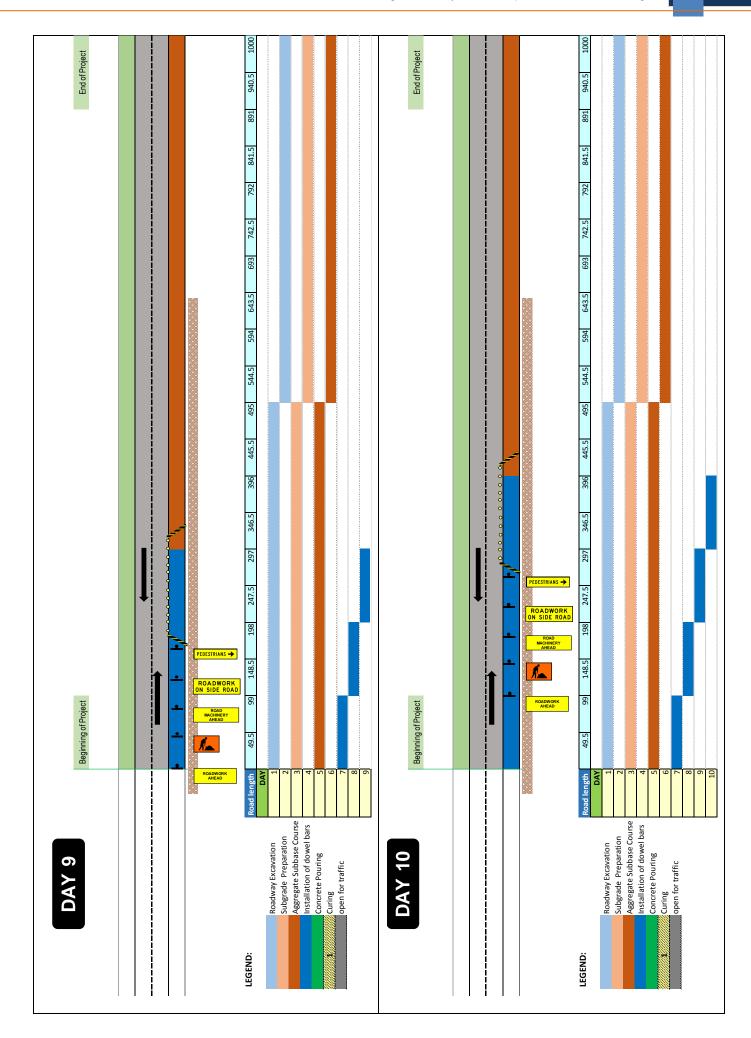


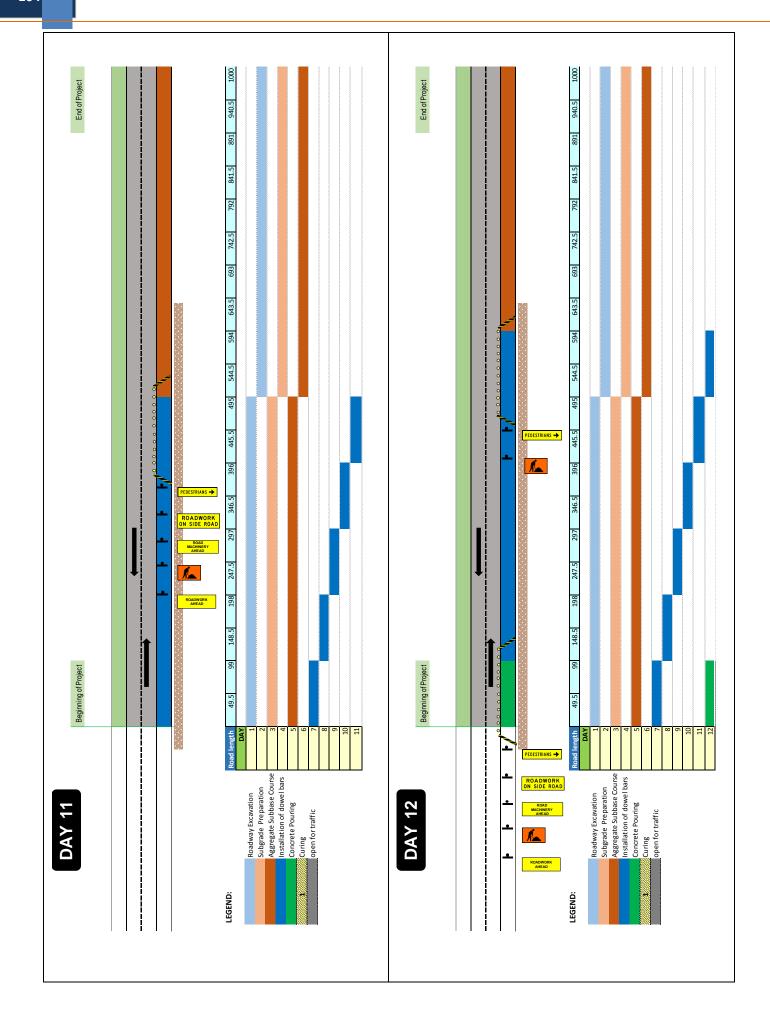


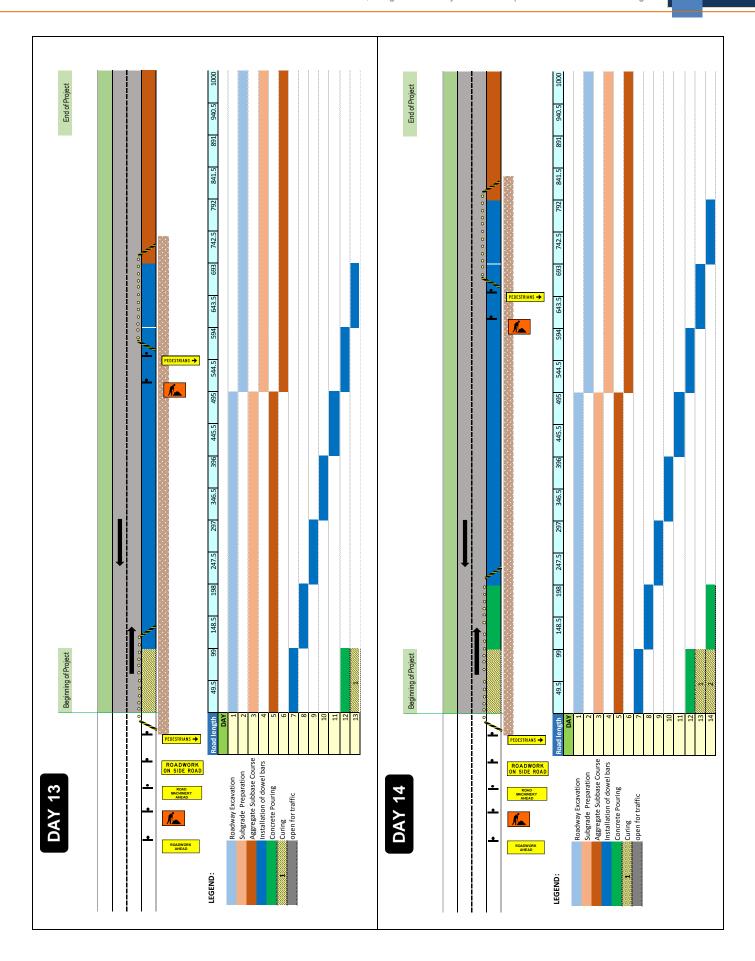


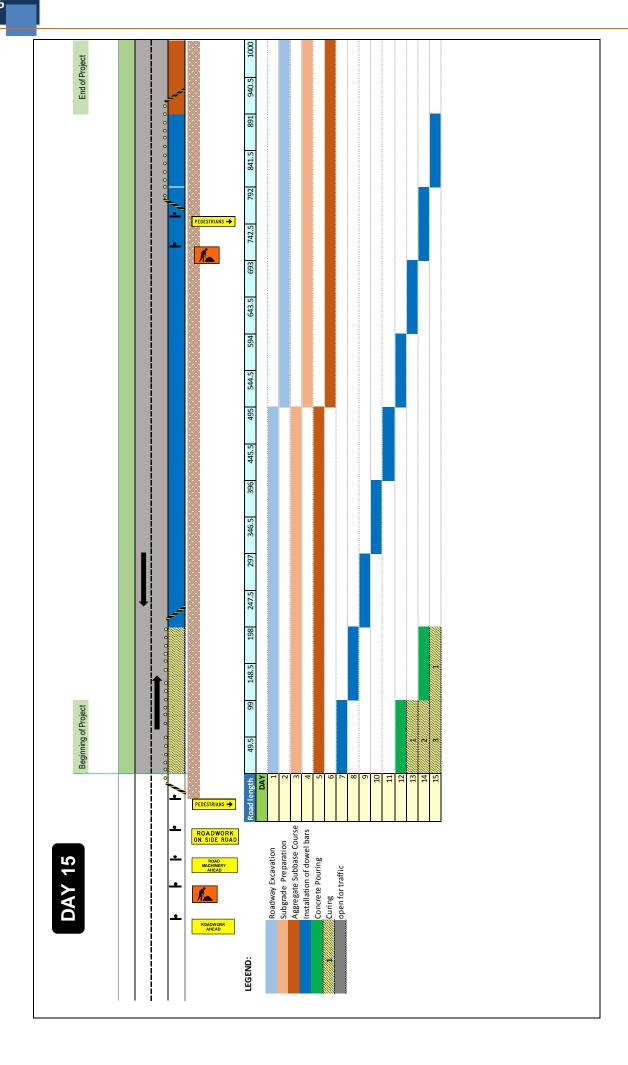


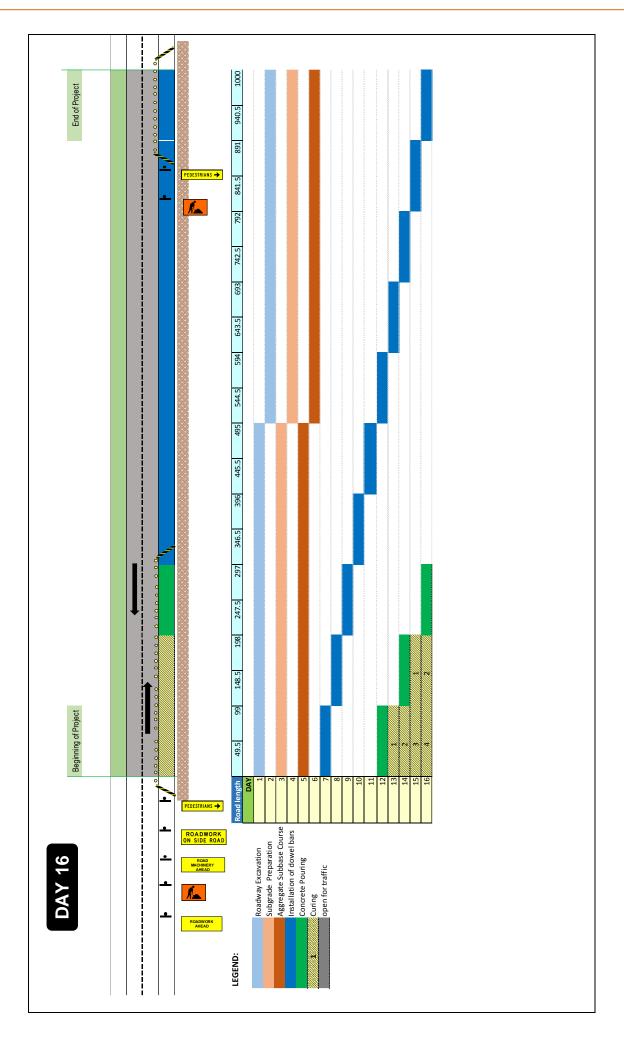


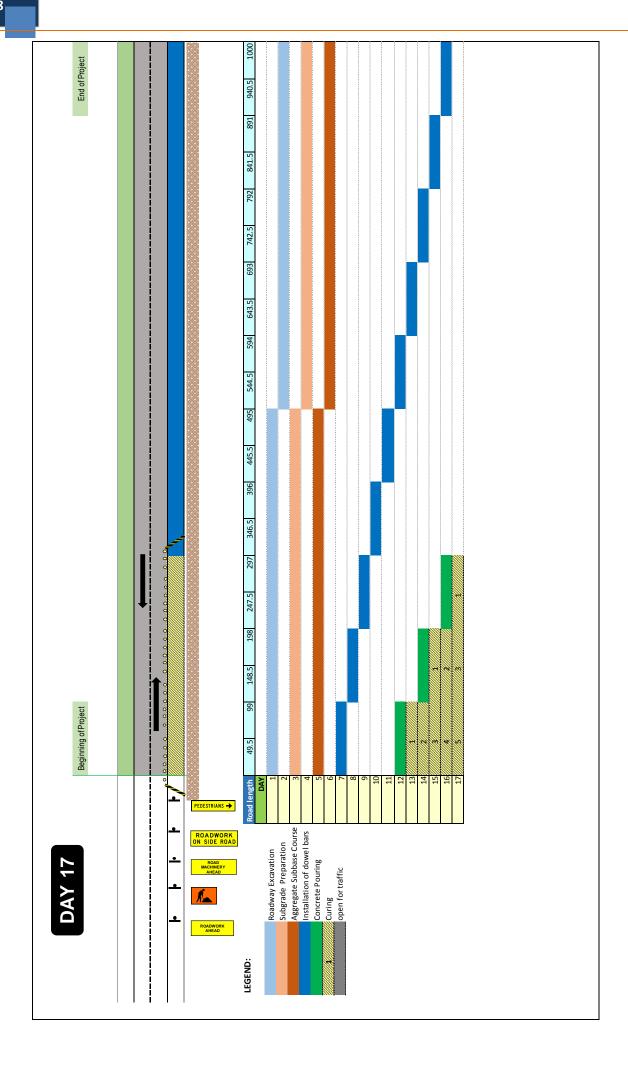


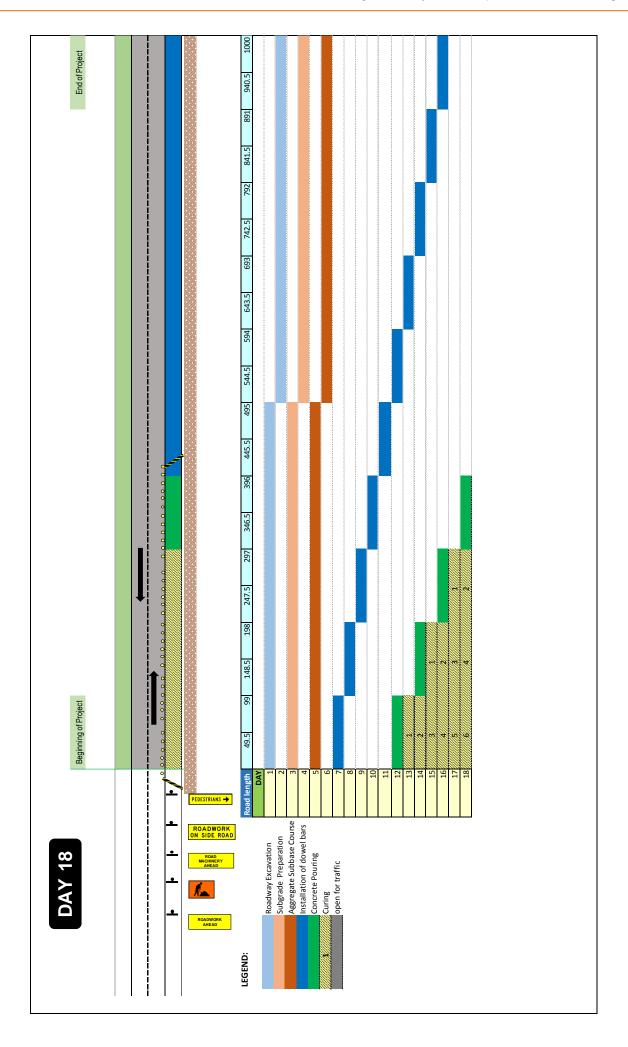


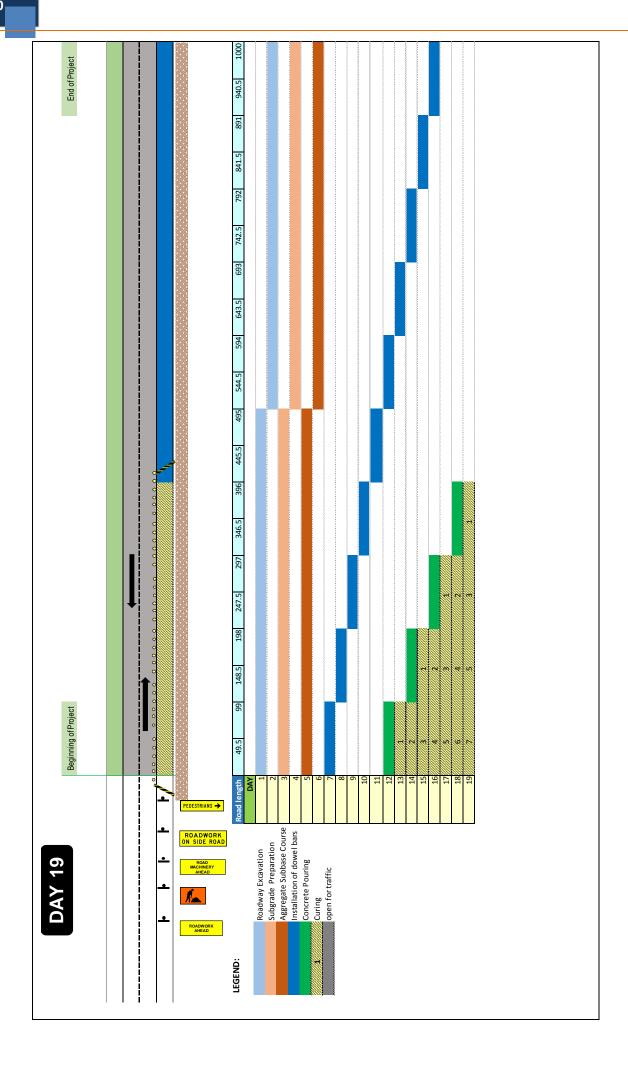


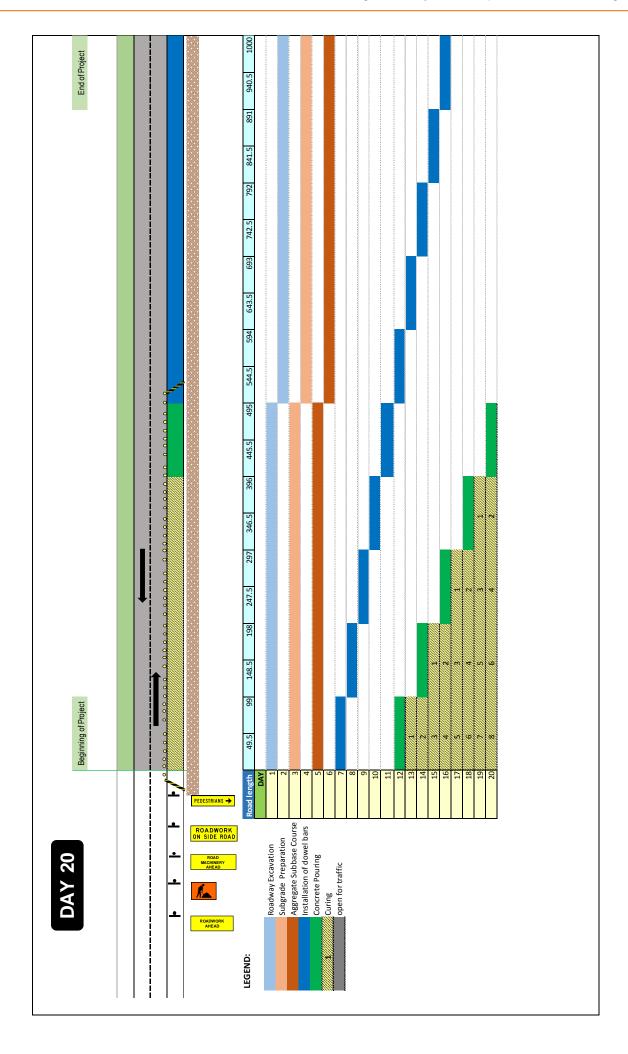


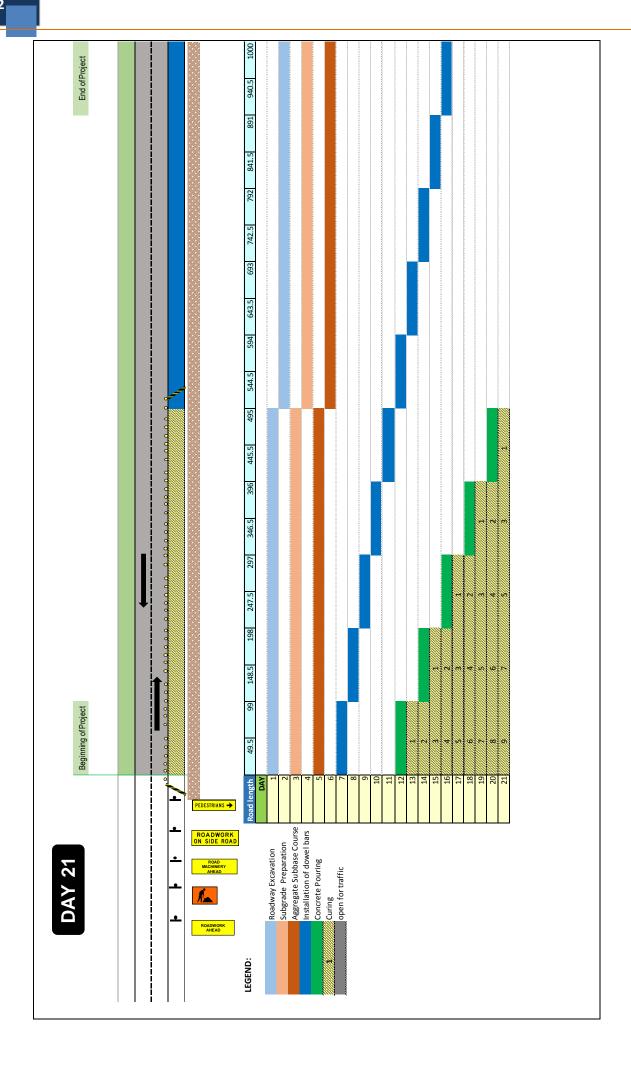


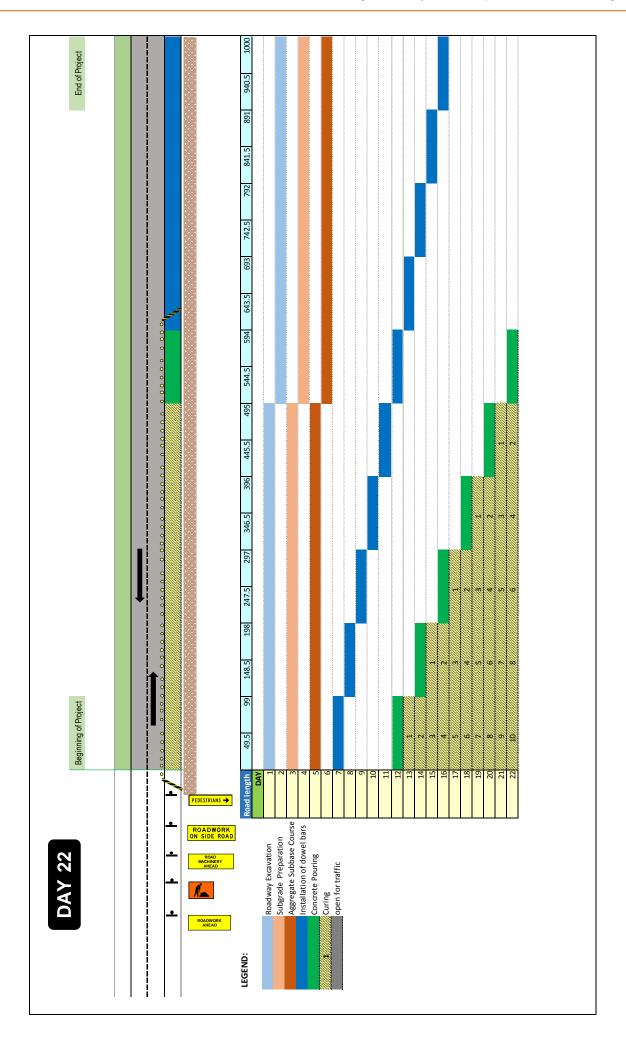


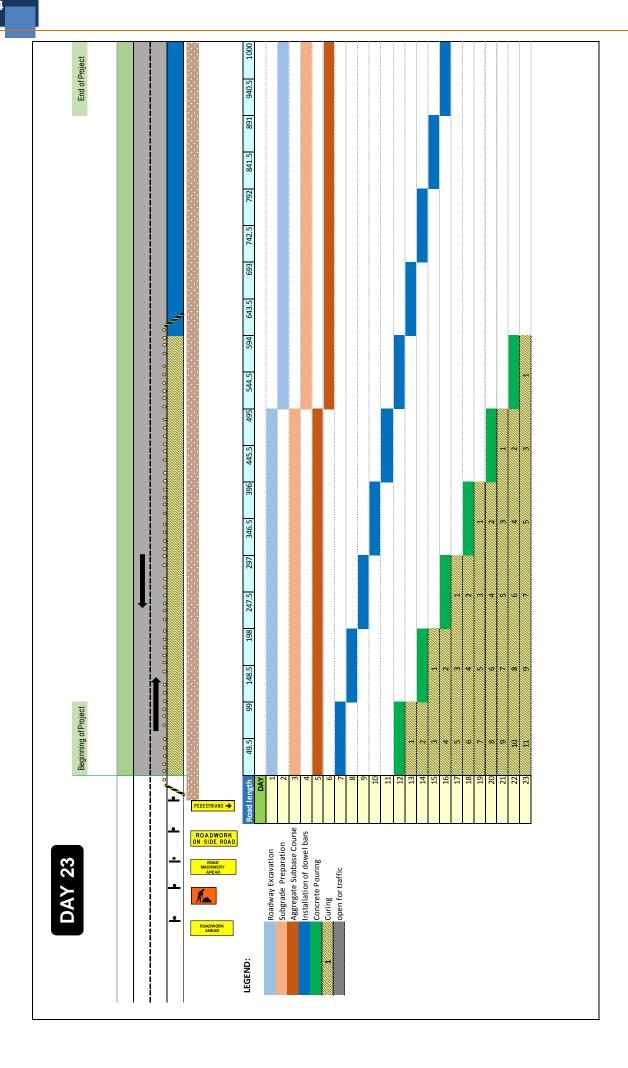


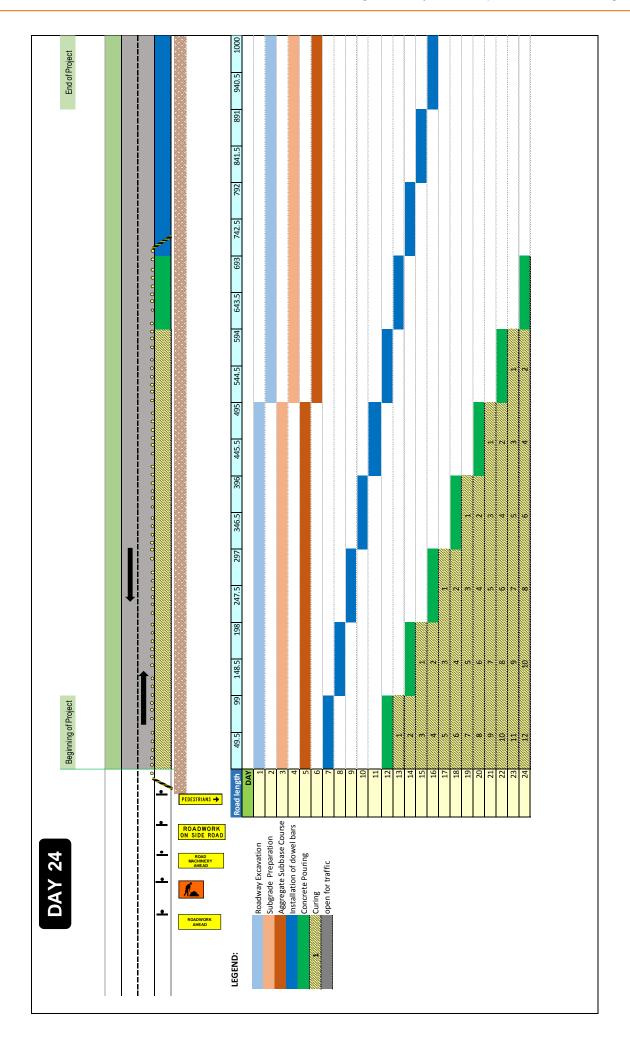


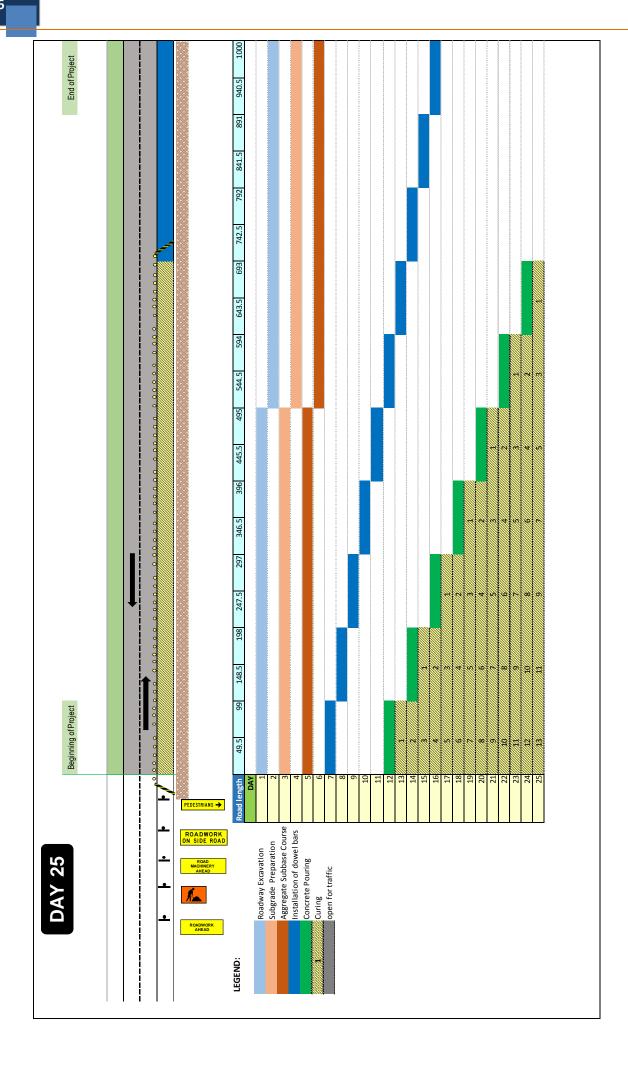


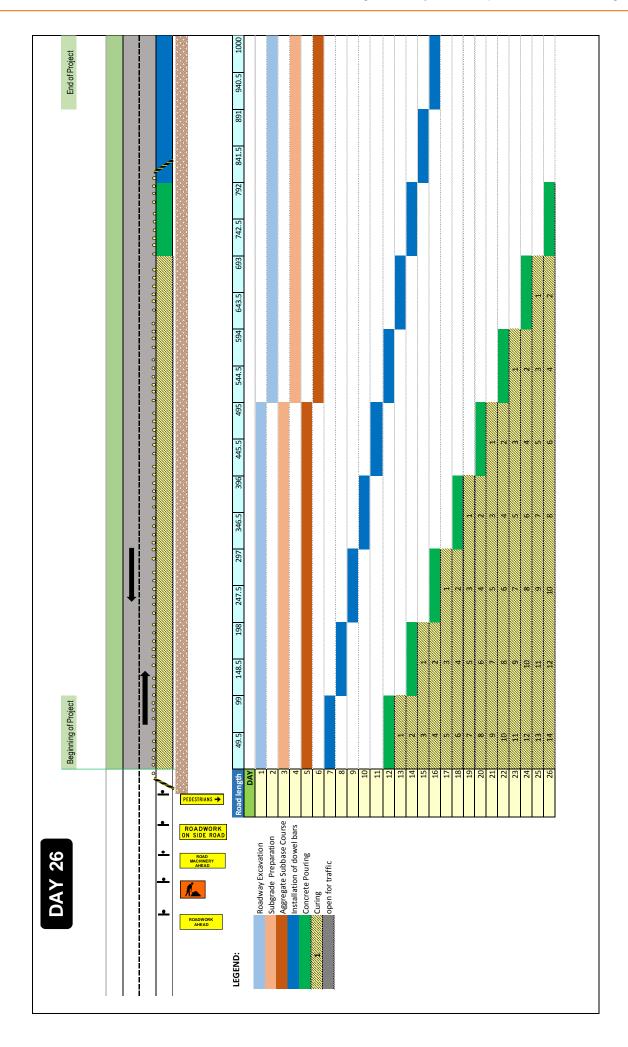


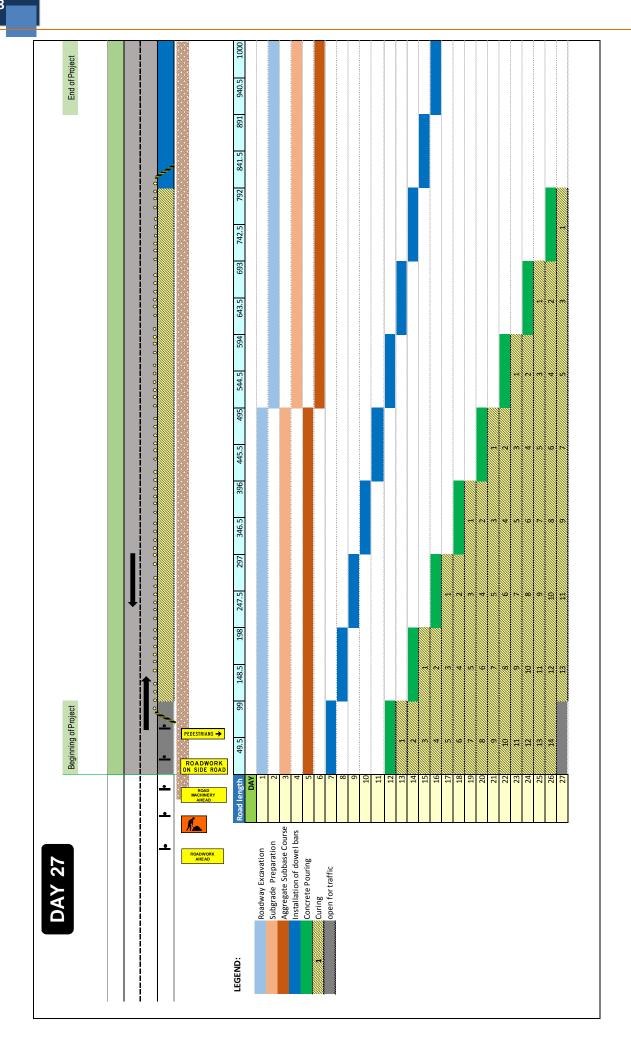


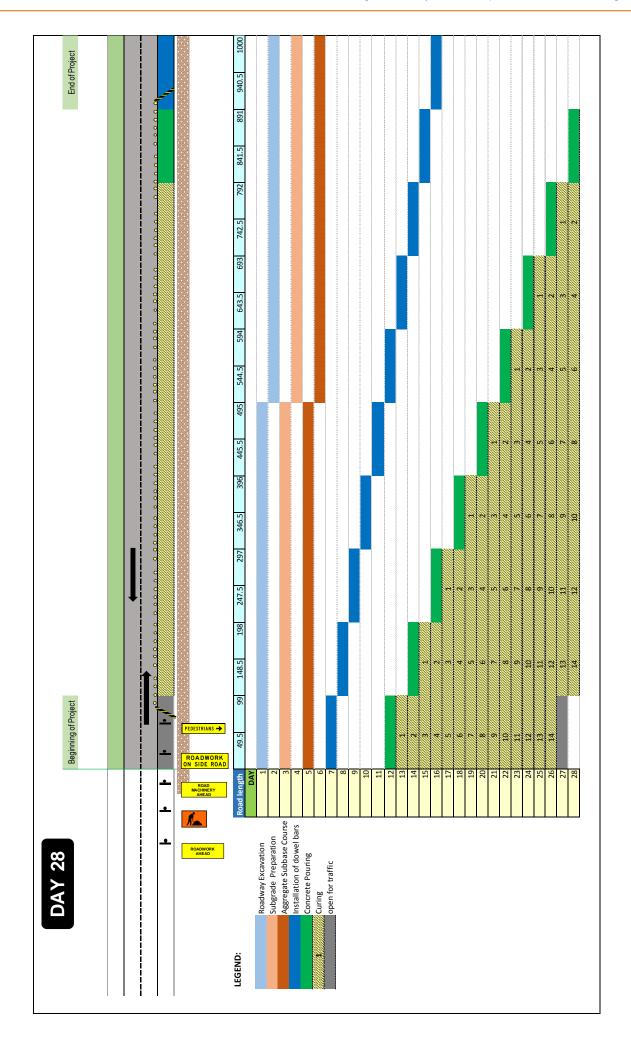


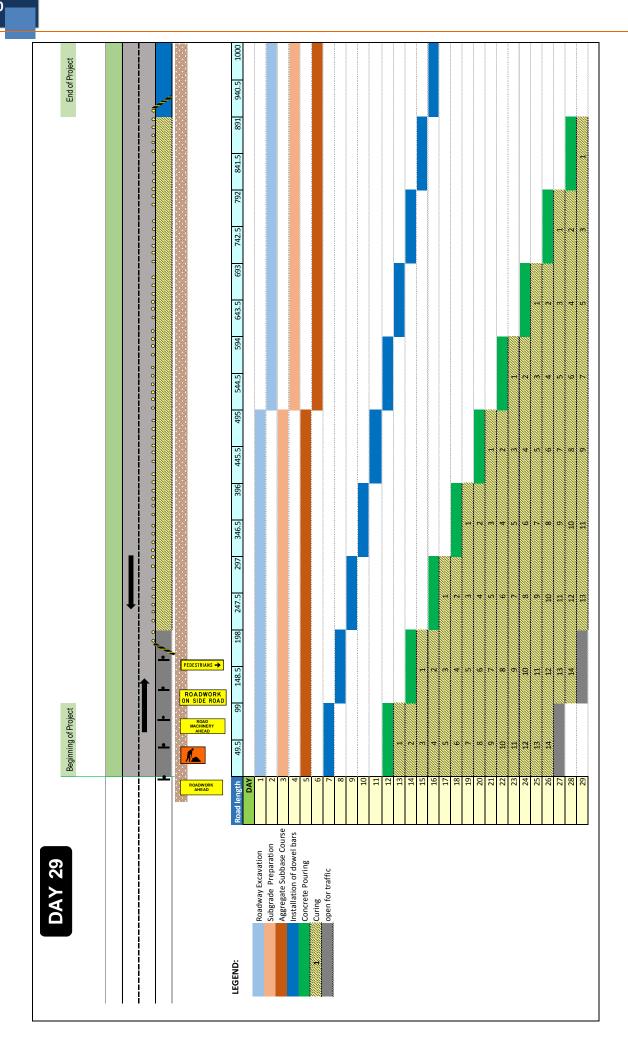


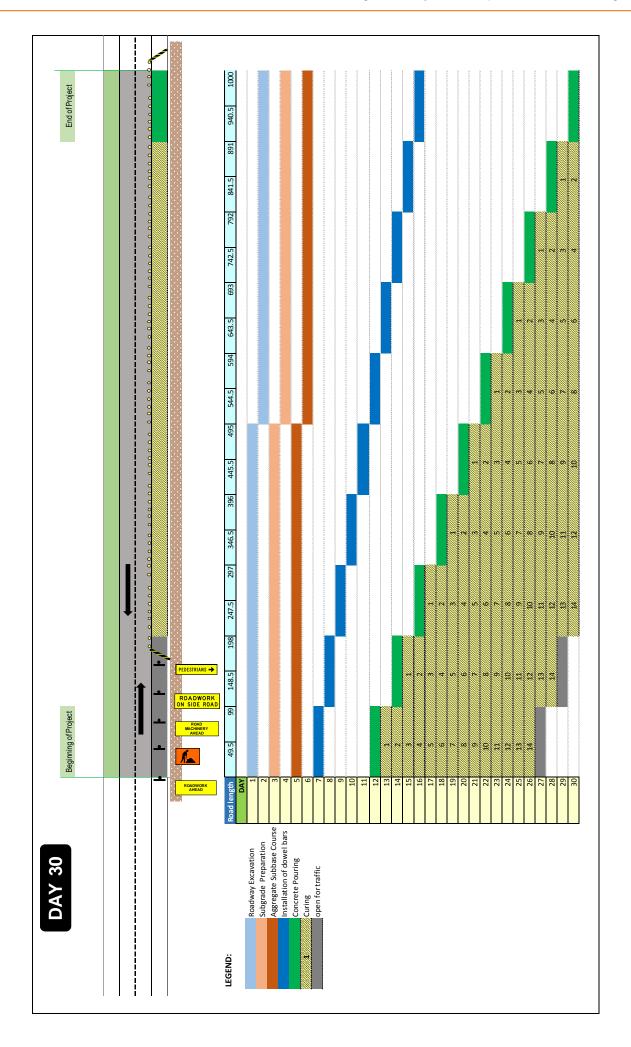


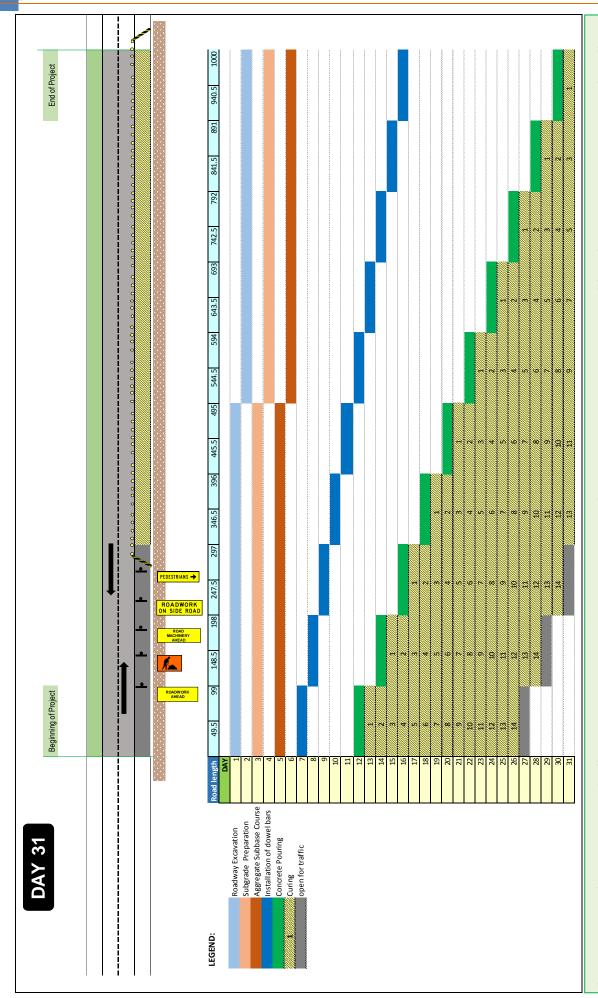












traffic and other factors to allow safe mobility of workers, equipment, pedestrians, and other road users during construction operation to install the appropriate signage, barriers, and During actual construction, necessary adjustments may be made in the illustration as presented herein. Considerations should be given in the available space, existing structures, Same sequence of work and set-up of traffic management layout applies to the other lane of the road until the newly constructed PCCP is fully cured and may be opened for traffic. the necessary traffic devices.

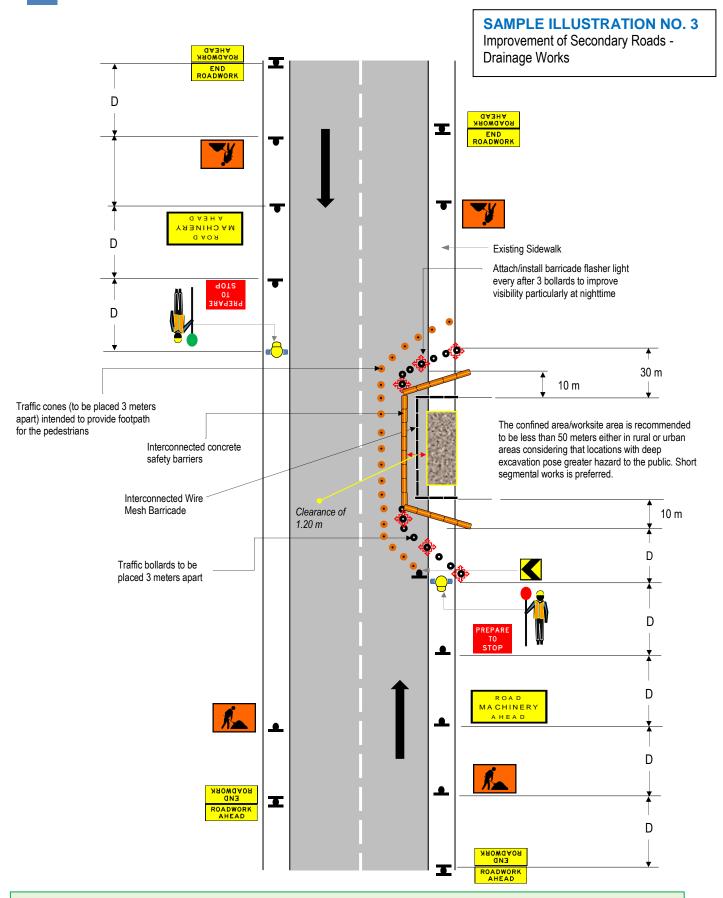
Road Widening of 1.00 km National Road (280 mm thk Concrete Pavement) from 2 lanes to 4 lanes (Low Speed)

ITEM NO/DESCRIPTION B.8 Roadworks Safety & Traffic Management

UNIT OF MEASUREMENT : 10

QUANTITY : 1 lot (for 87 C.D total duration for the completion of work on two lanes excluding mob./demob)

Roadwork Ahead (T1-1)	A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
Workmen Ahead (T1-5)						
Road Machinery (T1-3)		Roadwork Ahead (T1-1)	each-day	1.00	10.95	10.95
Road Machinery (T1-3)		Workmen Ahead (T1-5)	each-day	1.00	5.64	5.64
Readwork on Side Road (T1-25)   each-day   1.00   10.95   10.95   each-day   1.00   4.80   4.80   each-day   50.00   each-day   50.00   each-day   1.00   4.80   each-day   1.00   each-day   1.00   4.80   each-day   6.00   each-day   1.00   each-day   1.00   4.80   each-day   1.00   1.095   10.95   each-day   1.00   each-day   1.00   1.095   1.00   1.000			each-day	1.00	6.54	6.54
Pedestrians (T8-2)		• • •	•			
SUB - TOTAL (A)   SUB - TOTAL (B)   SUB - TOTAL (B)   SUB - TOTAL (B)   C. EQUIPMENT COST   QUANTITY   No. of Personnel   Total Hours   Total Cost			•			
SUB - TOTAL (A)   QUANTITY   Unit   Total		, ,	•			1.00
SUB - TOTAL (A)   121.07		remporary Bollards (@ 5 meters apart)	Cacii day	30.00		82 10
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost			I 2) set-ups of 100 me 	ter)	1.04	02.10
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost						
SUB - TOTAL (B)   C.   EQUIPMENT COST   QUANTITY   Hourly   Total   Cost		CUD TOTAL (A)				404.07
No. of Personnel   Total Hours   Rate   Cost	B		OLIANI	TITV	l lmi4	
SUB - TOTAL (B)   C. EQUIPMENT COST   QUANTITY   Hourly   No. of Equipt.   Total Hours   Rate   Cost	В.	LABOR COST			1	
C. EQUIPMENT COST         QUANTITY         Hourly Rate         Total Cost           Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)         16.00         12.00         0.65         125.07           SUB - TOTAL (C)         125.07           D. TOTAL DIRECT COST (A + B + C)         246.15           E. DIRECT UNIT COST (D/Quantity)         246.15           F. ADD: INDIRECT COST         1. OCM (9% of D)         19.69           3. VAT 12%         31.90           ** TOTAL INDIRECT COST         51.59           ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O.         TOTAL COST (D + F)         297.73           ** Alark-up Direct Cost of the project per D.O.         22, Series 2015         TOTAL RENTAL UNIT COST (PER DAY)         297.73	-		No. of Personner	Total Hours	Rate	COSt
C. EQUIPMENT COST         QUANTITY         Hourly Rate         Total Cost           Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)         16.00         12.00         0.65         125.07           SUB - TOTAL (C)         125.07           D. TOTAL DIRECT COST (A + B + C)         246.15           E. DIRECT UNIT COST (D/Quantity)         246.15           F. ADD: INDIRECT COST         1. OCM (9% of D)         19.69           3. VAT 12%         31.90           ** TOTAL INDIRECT COST         51.59           ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O.         TOTAL COST (D + F)         297.73           ** Alark-up Direct Cost of the project per D.O.         22, Series 2015         TOTAL RENTAL UNIT COST (PER DAY)         297.73						
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No. of Equipt.   Total Hours   Rate   Cost			OLIANI	TITY	Hannin	- Tatal
Barricade Flasher Light (3 Volts, Battery Operated, Amber Color)   16.00   12.00   0.65   125.07	C.	EQUIPMENT COST			1 - 1	
(3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C)  E. DIRECT UNIT COST (D/Quantity)  F. ADD: INDIRECT COST  1. OCM (9% of D) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  TOTAL RENTAL UNIT COST (PER DAY)  297.73			No. of Equipt.	Total Hours	Rate	Cost
(3 Volts, Battery Operated, Amber Color)  SUB - TOTAL (C)  D. TOTAL DIRECT COST (A + B + C)  E. DIRECT UNIT COST (D/Quantity)  F. ADD: INDIRECT COST  1. OCM (9% of D) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  TOTAL RENTAL UNIT COST (PER DAY)  297.73						
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SUB - TOTAL (C)   125.07     D. TOTAL DIRECT COST (A + B + C)   246.15     E. DIRECT UNIT COST (D/Quantity)     F. ADD: INDIRECT COST   1. OCM (9% of D)   2. Contractor's Profit (8% of D)   3. VAT 12%   31.90     *** TOTAL INDIRECT COST   51.59     *** Mark-up percentage varies depending on the total Direct Cost of the project per D.O.   22, Series 2015   TOTAL RENTAL UNIT COST (PER DAY)   297.73     *** TOTAL RENTAL UNIT COST (PER DAY)   297.73     *** TOTAL RENTAL UNIT COST (PER DAY)   297.73   297.73     *** TOTAL RENTAL UNIT COST (PER DAY)   297.73   297.73     *** TOTAL RENTAL UNIT COST (PER DAY)   297.73   29		Barricade Flasher Light	16.00	12.00	0.65	125.07
D. TOTAL DIRECT COST (A + B + C)  E. DIRECT UNIT COST (D/Quantity)  F. ADD: INDIRECT COST   1. OCM (9% of D) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST   ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  246.15  246.15  246.15   19.69 31.90  ** TOTAL COST (D + F) 297.73		(3 Volts, Battery Operated, Amber Color)				
D. TOTAL DIRECT COST (A + B + C)  E. DIRECT UNIT COST (D/Quantity)  F. ADD: INDIRECT COST   1. OCM (9% of D) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST   ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  246.15  246.15  246.15   19.69 31.90  ** TOTAL COST (D + F) 297.73						
D. TOTAL DIRECT COST (A + B + C)  E. DIRECT UNIT COST (D/Quantity)  F. ADD: INDIRECT COST   1. OCM (9% of D) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST   ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  246.15  246.15  246.15   19.69 31.90  ** TOTAL COST (D + F) 297.73						
E. DIRECT UNIT COST (D/Quantity)  F. ADD: INDIRECT COST  1. OCM (9% of D ) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  TOTAL RENTAL UNIT COST (PER DAY)  297.73						
F. ADD: INDIRECT COST  1. OCM (9% of D ) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  TOTAL RENTAL UNIT COST (PER DAY)  297.73		•				246.15
1. OCM (9% of D ) 2. Contractor's Profit (8% of D) 3. VAT 12%  ** TOTAL INDIRECT COST   ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  19.69 31.90  ** TOTAL COST (D + F) 297.73  ** TOTAL COST (D + F) 297.73	E.	DIRECT UNIT COST (D/Quantity)				
2. Contractor's Profit (8% of D) 19.69 3. VAT 12% 31.90  ** TOTAL INDIRECT COST 51.59  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73	F.	ADD: INDIRECT COST				
2. Contractor's Profit (8% of D) 19.69 3. VAT 12% 31.90  ** TOTAL INDIRECT COST 51.59  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73		1. OCM (9%	6 of D )			
3. VAT 12% 31.90  ** TOTAL INDIRECT COST 51.59  ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73					19.69	
** TOTAL INDIRECT COST   ** Mark-up percentage varies depending on the total Direct Cost of the project per D.O. 22, Series 2015  TOTAL RENTAL UNIT COST (PER DAY)  51.59  TOTAL RENTAL UNIT COST (D + F) 297.73						
** Mark-up percentage varies depending on total COST (D + F) 297.73 the total Direct Cost of the project per D.O. 22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73	**					51.59
the total Direct Cost of the project per D.O. 22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73						300
the total Direct Cost of the project per D.O. 22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73	**	* Mark-up percentage varies depending on		TOTAL COST	D + F)	297 73
22, Series 2015 TOTAL RENTAL UNIT COST (PER DAY) 297.73				.5 // ( 0001 (	- 11)	231.13
2011.0			TOTAL	RENITAL LINIT O	OST (DED DAV)	207 72
rotal cost for the whole qualitors of the project = 25,902.35		22, 333 2010			, ,	
	Щ		וטומו נטטו וטו ווו	e willie uuiallon	or the project =	20,902.30



Same set-up of traffic management layout applies as the work progresses up to the other side of the road until the newly constructed structure may be opened for traffic.

During actual construction, necessary adjustments may be made in the illustration as presented herein. Considerations should be given in the available space, existing structures, traffic and other factors to allow safe mobility of workers, equipment, pedestrians, and other road users during construction operation to provide the appropriate signage, barriers, and the necessary traffic devices.

## Part - C

### Cost of Construction Safety and Health Requirements

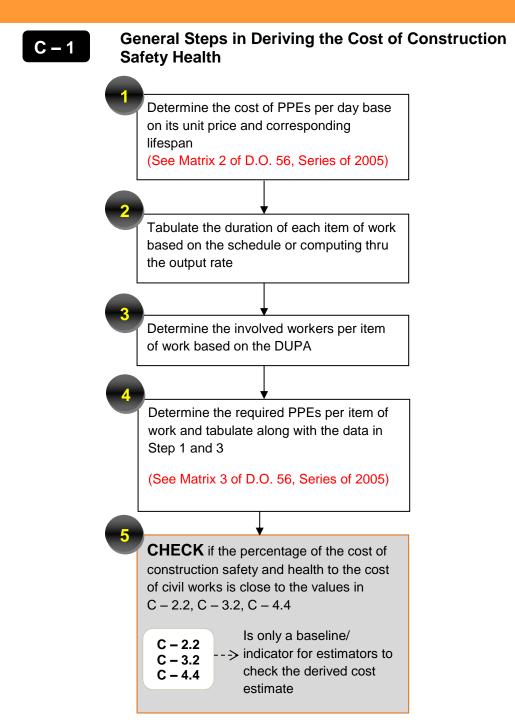


Figure 6. Steps in deriving the cost of Construction Safety and Health



#### **Cost of Construction Safety and Health for Roads**

#### C - 2.1 Checklist of Personal Protective Equipment per Type of Road Project

(Note: Checklist of PPEs as reflected herein are the minimum requirements only. Should the Implementing Offices identify the need for inclusion of specialized PPEs, necessary adjustment shall be made accordingly.)

1. Paved (Concrete) to Paved (Concrete), Assume 1Km. Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
101(2)	Foreman	4	4	✓	<b>4</b>	4						
Removal of Structure (PCCP,	Skilled Laborer											
t=0.23m.)	Unskilled Laborer	4	4	✓	<b>4</b>	4						
105	Foreman	✓	<b>√</b>	✓	<b>4</b>	✓						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	4	4	✓	<b>✓</b>	4						
200(1)	Foreman	4	4	✓	<b>4</b>							
Levelling Course (Subbase Course)	Skilled Laborer											
	Unskilled Laborer	4	4	✓	<b>4</b>	4						
201	Foreman	4	4	✓	<b>4</b>							
Aggregate Base Course (Shoulder)	Skilled Laborer											
	Unskilled Laborer	4	4	✓	<b>4</b>							
311	Foreman	4		<b>4</b>	<b>✓</b>	4					<b>✓</b>	
CP (0.23m. Thk)	Skilled Laborer	✓		<b>✓</b>	<b>✓</b>	✓					<b>✓</b>	
	Unskilled Laborer	✓		✓	<b>4</b>	✓					<b>✓</b>	

2. Paved (Asphalt) to Paved (Concrete), Assume 1Km. Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
101(1)	Foreman	4	4	4	<b>✓</b>	4						
Removal of Structure (Asphalt	Skilled Laborer											
Pavement)	Unskilled Laborer	4	4	4	<b>~</b>	4						
105	Foreman	4	4	4	4	4						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	4	4	4	<b>4</b>	4						
200(1)	Foreman	4	4	4	4	4						
Levelling Course (Subbase	Skilled Laborer											
Course)	Unskilled Laborer	4	4	4	<b>✓</b>	4						
201	Foreman	4	4	4	<b>~</b>	4						
Aggregate Base Course	Skilled Laborer											
(Shoulder)	Unskilled Laborer	4	4	4	<b>~</b>	4						
311	Foreman	4		4	<b>~</b>	4					4	
202 (2.22 - 71.1)	Skilled Laborer	4		4	4	4					4	
	Unskilled Laborer	4		4	<b>4</b>	4					4	

3. Paved (Asphalt) to Paved (Asphalt), Assume 1Km. Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
101(1)	Foreman	4	<b>*</b>	<b>~</b>	<b>~</b>	4						
Removal of Structure (Asphalt	Skilled Laborer											
Pavement)	Unskilled Laborer	<b>&gt;</b>	<b>*</b>	<b>~</b>	<b>→</b>	>						
105	Foreman	<b>&gt;</b>	4	4	<b>4</b>	>						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	>	<b>&gt;</b>	4	<b>*</b>	>						
200(1)	Foreman	>	<b>&gt;</b>	4	<b>→</b>	>						
Levelling Course (Subbase	Skilled Laborer											
Course)	Unskilled Laborer	>	<b>&gt;</b>	4	<b>*</b>	>						
201	Foreman	>	<b>&gt;</b>	4	<b>*</b>	>						
(Chauldan)	Skilled Laborer											
	Unskilled Laborer	>	4	4	✓	>						
301	Foreman	4		4		4					4	
Bituminous Prime Coat (RC Cut-	Skilled Laborer											
Back Asphalt)	Unskilled Laborer	>		4		>					4	
302	Foreman	>		4		>					4	
Bituminous Tack Coat	Skilled Laborer											
(Emulsified Asphalt)	Unskilled Laborer	>		4		>					<b>&gt;</b>	
310(1)	Foreman	>	4	4	<b>4</b>	>						
Bituminous Concrete Surface	Skilled Laborer	>	4	4	✓	>						
Course, Hot Laid (Wearing)	Unskilled Laborer	>	4	4	<b>*</b>	>						
310(2)	Foreman	>	4	4	<b>*</b>	>						
Bituminous Concrete Surface	Skilled Laborer	4	4	4	4	4						
	Unskilled Laborer	~	<b>~</b>	~	<b>&amp;</b>	<b>~</b>						

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
105	Foreman	<b>4</b>	<b>4</b>	4	<b>4</b>	<b>✓</b>						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	✓	✓	<b>4</b>	<b>✓</b>						
200	Foreman	<b>✓</b>	✓	✓	<b>4</b>	<b>✓</b>						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	<b>~</b>	<b>✓</b>	✓	<b>4</b>	<b>4</b>						
201	Foreman	<b>✓</b>	✓	<b>✓</b>	<b>4</b>	<b>~</b>						
Aggregate Base Course	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	✓	✓	<b>4</b>	<b>✓</b>						
301	Foreman	<b>✓</b>		✓							<b>✓</b>	
Bituminous Prime Coat (RC Cut-	Skilled Laborer											
Back Asphalt)	Unskilled Laborer	<b>✓</b>		✓							✓	
302	Foreman	<b>✓</b>		<b>✓</b>							<b>✓</b>	
Bituminous Tack Coat (Emulsified	Skilled Laborer											
Asphalt)	Unskilled Laborer	<b>✓</b>		<b>✓</b>							<b>✓</b>	
310(1)	Foreman	<b>✓</b>	✓	✓	<b>4</b>	<b>✓</b>						
Bituminous Concrete Surface	Skilled Laborer	<b>✓</b>	✓	✓	<b>4</b>	<b>✓</b>						
Course, Hot Laid (Wearing)	Unskilled Laborer	<b>~</b>	<b>~</b>	✓	<b>4</b>	<b>~</b>						
310(2)	Foreman	<b>~</b>	<b>~</b>	✓	<b>4</b>	<b>✓</b>						
Bituminous Concrete Surface	Skilled Laborer	<b>~</b>	<b>~</b>	✓	<b>4</b>	<b>✓</b>						
Course Hot Laid (Binder)	Unskilled Laborer	<b>✓</b>	4	<b>✓</b>	4	<b>✓</b>						

5. Gravel to Concrete	e, Assume 1Kn	n. Length										
ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
105	Foreman	✓	<b>✓</b>	✓	<b>✓</b>	<b>4</b>						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	✓	<b>4</b>	✓						
200	Foreman	<b>✓</b>	4	✓	<b>4</b>	✓						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	✓	<b>4</b>	✓						
201	Foreman	<b>✓</b>	4	✓	<b>4</b>	✓						
Aggregate Base Course (Shoulder)	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	<b>✓</b>	✓	<b>~</b>	✓						
311	Foreman	<b>✓</b>		✓							<b>✓</b>	
PCCP (0.23m. Thk)	Skilled Laborer	<b>✓</b>		✓							<b>~</b>	
	Unskilled Laborer	✓		✓							✓	

6. Asphalt Overlay, A	5. Asphalt Overlay, Assume 1Km. Length														
ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES			
SPL	Foreman	✓	<b>✓</b>	✓	4	✓									
Surface Project (Sealing /Patching)	Skilled Laborer														
	Unskilled Laborer	4	4	4	<b>~</b>	✓									
302	Foreman	4		4	<b>~</b>	✓					<b>✓</b>				
	Skilled Laborer														
Asphalt)	Unskilled Laborer	4		4	<b>~</b>	✓					<b>✓</b>				
310(1)	Foreman	4	4	4	<b>~</b>	✓									
Bituminous Concrete Surface Ski	Skilled Laborer	4	4	4	<b>4</b>	<b>✓</b>									
	Unskilled Laborer	<b>4</b>	4	4	<b>&gt;</b>	<b>4</b>									

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
101(1)	Foreman	✓	<b>✓</b>	✓	<b>4</b>	✓						
Removal of Deteriorated Subbase	Skilled Laborer											
	Unskilled Laborer	✓	<b>✓</b>	✓	<b>4</b>	✓						
101(2)	Foreman	4	<b>4</b>	✓	4	4						
Removal of Structure (PCCP,	Skilled Laborer											
t=0.23m.)	Unskilled Laborer	4	<b>4</b>	✓	4	4						
200	Foreman	4	<b>4</b>	✓	4	4						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	✓	4	✓	<b>4</b>	4						
302	Foreman	4		4	4	4					<b>√</b>	
Bituminous Tack Coat (Emulsified	Skilled Laborer				•							
Asphalt)	Unskilled Laborer	4		✓	4	<b>4</b>					<b>✓</b>	
310	Foreman	✓	4	✓	✓	4						
Bituminous Concrete Surface	Skilled Laborer	4	1	4	4	4						
Course, Hot Laid	Unskilled Laborer	4	1	4	4	4						
311	Foreman	1	•	4	1	1					<b>√</b>	
	Skilled Laborer	4		4	<b>4</b>	4					4	
	Unskilled Laborer	4		<b>4</b>	4	4					<b>4</b>	

8. Concrete Reblock	ing (50% of Exi	sting PCCI	P), Assun	ne 1Km. Le	ength							
ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
101(1)	Foreman	<b>✓</b>	<b>4</b>	✓	<b>✓</b>	4						
Removal of Deteriorated Subbase	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	4	<b>~</b>	✓						
101(2)	Foreman	<b>✓</b>	<b>4</b>	✓	<b>✓</b>	4						
Removal of Structure (PCCP,	Skilled Laborer											
t=0.23m.)	Unskilled Laborer	<b>✓</b>	4	4	<b>~</b>	✓						
200	Foreman	<b>✓</b>	<b>4</b>	✓	<b>~</b>	<b>~</b>						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	✓	<b>4</b>	✓						
302	Foreman	<b>✓</b>		✓	<b>~</b>	<b>~</b>					<b>✓</b>	
Bituminous Tack Coat (Emulsified	Skilled Laborer											
Asphalt)	Unskilled Laborer	✓		✓	<b>&gt;</b>	<b>4</b>					<b>~</b>	
310	Foreman	<b>✓</b>	<b>✓</b>	✓	<b>~</b>	✓						
Bituminous Concrete Surface	Skilled Laborer	<b>✓</b>	4	✓	<b>4</b>	✓						
Course, Hot Laid	Unskilled Laborer	✓	<b>✓</b>	✓	<b>&gt;</b>	<b>4</b>						
311	Foreman	<b>✓</b>		✓	<b>~</b>	<b>~</b>					<b>✓</b>	
PCCP (0.23m. Thk)	Skilled Laborer	<b>4</b>		✓	<b>&gt;</b>	4					4	
	Unskilled Laborer	✓		✓	<b>\</b>	4					<b>~</b>	

9. Re-Gravelling, Assume 1Km. Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
105	Foreman	<b>✓</b>	4	<b>✓</b>	<b>4</b>	✓						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	<b>~</b>	<b>✓</b>	✓	<b>&gt;</b>	<b>4</b>						
200	Foreman	<b>✓</b>	<b>~</b>	✓	>	<b>4</b>						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	<	<b>~</b>	<b>√</b>						

10. New Road Opening, Concrete, Assume Embankment H=1.00m., Assume 1Km. Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAVETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
100	Foreman	<b>4</b>	<b>4</b>	✓	<b>~</b>	<b>✓</b>						
Clearing and Grubbing	Skilled Laborer											
	Unskilled Laborer	4	<b>✓</b>	✓	>	✓						
104	Foreman	✓	<b>✓</b>	<b>✓</b>	<b>~</b>	✓						
Embankment	Skilled Laborer											
	Unskilled Laborer	✓	<b>~</b>	<b>✓</b>	<b>4</b>	✓						
105	Foreman	✓	<b>✓</b>	4	<b>~</b>	✓						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	✓	<b>✓</b>	<b>✓</b>	<b>4</b>	✓						
00	Foreman	4	<b>~</b>	✓	<b>~</b>	<b>✓</b>						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	4	<b>~</b>	✓	<b>~</b>	<b>✓</b>						
311	Foreman	✓		<b>✓</b>	<b>4</b>	✓					<b>4</b>	
PCCP (0.23m. Thk)	Skilled Laborer	4		<b>✓</b>	<b>4</b>	<b>✓</b>					<b>✓</b>	
	Unskilled Laborer	✓		✓	4	✓					<b>✓</b>	
103(3)	Foreman					✓						
Foundation Fill	Skilled Laborer											
	Unskilled Laborer	✓	<b>~</b>	<b>✓</b>	<b>4</b>	✓						
500	Foreman	4	<b>✓</b>	4	<b>~</b>	✓						
nforced Concrete Pipe Culvert	Skilled Laborer	4		4	7	4					<b>~</b>	
(910mm dia.)	Unskilled Laborer	4		4	4	✓					✓	

11. New Road Opening, Concrete, Assume Road Cut H=1.00m., Assume 1Km, Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
100	Foreman	<b>✓</b>	<b>~</b>	✓	<b>&gt;</b>	<b>✓</b>						
Clearing and Grubbing	Skilled Laborer											
	Unskilled Laborer	✓	4	✓	<b>4</b>	✓						
102	Foreman	<b>✓</b>	4	✓	<b>4</b>	<b>✓</b>						
Roadway Excavation	Skilled Laborer											
	Unskilled Laborer	4	<b>~</b>	4	4	4						
105	Foreman	4	<b>✓</b>	4	<b>4</b>	4						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	✓	<b>✓</b>	4	<b>4</b>	✓						
00	Foreman	4	<b>~</b>	4	4	4						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	✓	<b>✓</b>	4	<b>4</b>	✓						
311	Foreman	✓		4	<b>4</b>	✓					4	
PCCP (0.23m. Thk)	Skilled Laborer	<b>✓</b>		✓	<b>4</b>	<b>✓</b>					<b>√</b>	
	Unskilled Laborer	✓		✓	<b>4</b>	✓					<b>✓</b>	
103(3)	Foreman		<b>✓</b>			4						
Foundation Fill	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	✓	<b>4</b>	<b>✓</b>						
500	Foreman	<b>4</b>	<b>~</b>	✓	<b>4</b>	<b>4</b>						
Reinforced Concrete Pipe Culvert	Skilled Laborer	<b>4</b>		✓	<b>4</b>	<b>4</b>					<b>4</b>	
(910mm dia.)	Unskilled Laborer	4		4	<b>~</b>	4					4	

12. Widening Paved, PCCP, Assume 1Km. Length

ITEM NO./ DESCRIPTION	WORKERS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
100	Foreman	<b>~</b>	4	✓	<b>4</b>	<b>✓</b>						
Clearing and Grubbing	Skilled Laborer											
	Unskilled Laborer	✓	4	✓	<b>4</b>	✓						
102	Foreman	✓	4	✓	<b>4</b>	✓						
Roadway Excavation	Skilled Laborer											
	Unskilled Laborer	✓	4	✓	<b>4</b>	✓						
105	Foreman	✓	4	✓	<b>4</b>	✓						
Sub-Grade Preparation	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	✓	<b>4</b>	<b>✓</b>						
200	Foreman	✓	4	✓	<b>4</b>	✓						
Aggregate Subbase Course	Skilled Laborer											
	Unskilled Laborer	<b>✓</b>	4	✓	<b>4</b>	<b>✓</b>						
311	Foreman	✓		✓	<b>4</b>	✓					<b>✓</b>	
PCCP (0.23m. Thk)	Skilled Laborer	<b>4</b>		<b>✓</b>	<b>4</b>	<b>4</b>					<b>~</b>	
	Unskilled Laborer	✓		<b>✓</b>	4	✓					✓	

# Cost Computation (Roads)

C – 2.2

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD -1)

າ 54.50 C.D. Duration
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																				3,459.15	2,000.00	15,260.00	20,719.15		1,657.53	2,685.20	25,061.88
EYE GOGGLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		09	169.05	•								
RUBBER BOOTS	0	0	0	0	0	0	0	0	0	0	0	0	11.96	47.84	143.52	203	365	206.00	1.39	281.86							
LANYARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		730	1,083.30									
BODY HARNESS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	•	730	1,263.85	•								
EAR MUFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	730	602.60									
DUST/GAS MASK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	•	1	63.25	•								
RAIN COATS	6.282	0	12.564	1.338	0	2.676	0.504	0	1.008	0.3	0	9.0	3.588	14.352	43.056	98	730	245.00	0.34	28.95							
WORKING	20.94	0	41.88	4.46	0	8.92	1.68	0	3.36	1	0	2	11.96	47.84	143.52	288	3	23.00	79'2	2,204.63	ak)						
SAFETY VEST	20.94	0	41.88	4.46	0	8.92	1.68	0	3.36	1	0	2	11.96	47.84	143.52	288	180	400.00	2.22	639.02	hours per wee						
SAFETY	20.94	0	41.88	4.46	0	8.92	1.68	0	3.36	1	0	2	0	0	0	84	365	1,012.00	2.77	233.56	nsider atleast 4						
SAFETY HELMET	20.94	0	41.88	4.46	0	8.92	1.68	0	3.36	1	0	2	11.96	47.84	143.52	288	730	180.55	0.25	71.12	. 56, S2005, co						
MAN-DAYS	20.94	0	41.88	4.46	0	8.92	1.68	0	3.36	1	0	2	11.96	47.84	143.52	287.56					TH (AS PER D.C	D.O. 56, S2005)					
DAYS	20.94	0.00	20.94	4.46	0.00	4.46	1.68	0.00	1.68	1.00	0.00	1.00	11.96	11.96	11.96						.000.000/MON	TH (AS PER D					
NO. OF PERSONNEL	1	0	2	1	0	2	1	0	2	1	0	2	1	4	12	29				lays))	TTIME) @ P15	8,400.00/MON					
WORKERS	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	A. TOTAL, PERSONNEL/MAN-DAYS	B. SERVICE LIFE, DAYS	C. PURCHASE COST, PPh	D. UNIT COST/MAN-DAY (C÷B)	E. DIRECT COST FOR PPE's (D x A (Man-days))	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, S2005, consider atleast 4 hours per week	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER	H. TOTAL DIRECT COST (E + F + G)	I. OCM (9% of E)	J. PROFIT (8% of E)	K. VAT (12% of E + H + I)	L. TOTAL COST (E + H + I + J)
OUTPUT PER HOUR		40			300			20			20			20													
QUANTITY		6,700.00			10,700.00			670.00			400.00			6,700.00													
ITEM NO./ DESCRIPTION	101(2)	Removal of Structure (PCCP,	t=0.23m.)	105	Sub-Grade Preparation		200(1)	Levelling Course (Subbase Course)		201	Aggregate Base Course (Shoulder)		311	PCCP (0.23m. Thk)													

Note: Assumed Rain Coats usage, 30% of man-days

Paved (Concrete) to Paved (Concrete), 1 km length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A.	MATERIAL C. COCT/INIT	LINUT	OLIANITITY	LINUT DATE	TOTAL COOT
A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Safety Helmet	man-day	288	0.25	71.12
	Safety Shoes	man-day	84	2.77	233.56
	Safety Vest	man-day	288	2.22	639.02
	Working Gloves	man-day	288	7.67	2,204.63
	Rubber Boots	man-day	203	1.39	281.86
Opti	onal (if necessary)				
	Rain Coats (30% of the Duration)	man-day	86	0.34	28.95
	CUD TOTAL (A)				2 450 45
В.	SUB - TOTAL (A)  LABOR COST	QUAN	ITITV	Unit	3,459.15 Total
Б.	LABOR COST	No. of	Total Man-	Offic	iotai
		Personnel	days	Rate	Cost
-		1 CI SOIIIICI	uays	Nate	COSt
	Safety Practitioner/ Officer (Part Time)	1.00	4.00	500.00	2,000.00
	Health Personnel (Full Time)	1.00	54.50	280.00	15,260.00
	rieaiti reisorilei (i dii fille)	1.00	34.30	200.00	13,200.00
	SUB - TOTAL (B)				17,260.00
C.	EQUIPMENT COST	QUAN	ITITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				20,719.15
E.	DIRECT UNIT COST (D/Quantity)				20,719.15
F.	ADD: INDIRECT COST				,
	1. OCM ( 9	9% of D )		_	
		tor's Profit (8% of	D)	1,657.53	
	3. VAT 129	,	,	2,685.20	
	TOTAL INDIRECT COST	· <del>-</del>	•	_,000.20	4,342.73
					.,0 .2 0
			TOTAL COST (E	) + F)	25,061.88
			- · · · = · · (=	,	_==,===00

Note: Costs as presented herein are intended only to illustrate the derivation of cost. Should there be an increase/decrease in the cost of materials, labor, equipment and on the allowable percentage of mark-up, necessary adjustments shall be made in accordance with the latest approved department issuances.

II EIN NO., DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY HELMET	SAFETY	SAFETY VEST	WORKING	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES	
			Foreman	1	13.96	13.96	13.96	13.96	13.96	13.96	4.188	0	0	0	0	0	0	
Removal of Structure (Asphalt	6,700.00	09	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Pavement)			Unskilled Laborer	2	13.96	27.92	27.92	27.92	27.92	27.92	8.376	0	0	0	0	0	0	
			Foreman	1	4.46	4.46	4.46	4.46	4.46	4.46	1.338	0	0	0	0	0	0	
Sub-Grade Preparation	10,700.00	300	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	4.46	8.92	8.92	8.92	8.92	8.92	2.676	0	0	0	0	0	0	
			Foreman	1	4.85	4.85	4.85	4.85	4.85	4.85	1.455	0	0	0	0	0	0	
Levelling Course (Subbase	1,938.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	4.85	9.7	9.7	2.6	9.7	9.7	2.91	0	0	0	0	0	0	
			Foreman	1	2.30	2.3	2.3	2.3	2.3	2.3	69.0	0	0	0	0	0	0	
Aggregate Base Course	920.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
(Shoulder)			Unskilled Laborer	2	2.30	4.6	4.6	4.6	4.6	4.6	1.38	0	0	0	0	0	0	
			Foreman	1	11.96	11.96	11.96	0	11.96	11.96	3.588	0	0	0	0	11.96	0	
PCCP (0.23m. Thk)	6,700.00	02	Skilled Laborer	4	11.96	47.84	47.84	0	47.84	47.84	14.352	0	0	0	0	47.84	0	
			Unskilled Laborer	12	11.96	143.52	143.52	0	143.52	143.52	43.056	0	0	0	0	143.52	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	59		280.03	280	11	280	280	84					203		
			B. SERVICE LIFE, DAYS				730	392	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
			D. UNIT COST/MAN-DAY (C ÷ B)				0.25	2.77	2.22	7.67	0.34					1.39	•	
			E. DIRECT COST FOR PPE's (D x A (Man-days))	an-days))			69.26	212.69	622.29	2,146.90	28.19					281.86		3,361.19
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, S2005, consider atleast 4 hours per week	PART TIME) @ F	15,000.00/M	ONTH (AS PER	D.O. 56, S200	5, consider at	east 4 hours pe	r week)								2,000.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O. 56, S2005)	@ P8,400.00/N	10NTH (AS PE	R D.O. 56, S20	02)											14,560.00
			H. TOTAL DIRECT COST (E + F + G)															19,921.19
			I. OCM (9% of E)															
			J. PROFIT (8% of E)															1,593.70
			K. VAT (12% of E + H + I)															2,581.79
			11 - 11 - 11 - 17 - 10 - 14 - 10 - 1															

Paved (Asphalt) to Paved (Concrete), Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	MATERIALO . COST/UNIT	O I VI I	QUANTITI	JIIII NATE	101AL 0031
	Sofoty Holmot	man day	280	0.25	69.26
	Safety Helmet Safety Shoes	man-day	280 77	0.25 2.77	212.69
	Safety Vest	man-day man-day	280	2.77	622.29
	Working Gloves	man-day	280	7.67	2,146.90
	Rubber Boots	man-day	203	1.39	281.86
	Nubbel Boots	man-uay	203	1.39	201.00
Ont	ional (if necessary)				
Opt	Rain Coats (30% of the Duration)	man-day	84	0.34	28.19
	Nam Coats (50% of the Baration)	man day	04	0.54	20.13
	SUB - TOTAL (A)				3,361.19
B.	LABOR COST	QUAN	TITY	Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	4.00	500.00	2,000.00
	Health Personnel (Full Time)	1.00	52.00	280.00	14,560.00
_	SUB - TOTAL (B)				16,560.00
C.	EQUIPMENT COST	QUAN		Hourly	Total
-		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)			-	-
D.	TOTAL DIRECT COST (A + B + C)				19,921.19
E.	DIRECT UNIT COST (D/Quantity)				19,921.19
F.	ADD: INDIRECT COST				,
	1. OCM ( 9	9% of D )		-	
		tor's Profit (8% of	D)	1,593.70	
	3. VAT 12	*	•	2,581.79	
	TOTAL INDIRECT COST		•	· -	4,175.48
					,
			TOTAL COST (E	) + F)	24,096.67

Note: Costs as presented herein are intended only to illustrate the derivation of cost. Should there be an increase/decrease in the cost of materials, labor, equipment and on the allowable percentage of mark-up, necessary adjustments shall be made in accordance with the latest approved department issuances.

)			/o															
ITEM NO./ DESCRIPTION	QUANTITY	QUANTITY OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING F	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES	
101(1)			Foreman	1	13.96	13.96	13.96	13.96	13.96	13.96	4.188	0	0	0	0	0	0	
Removal of Structure (Asphalt	6,700.00	09	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Pavement)			Unskilled Laborer	2	13.96	27.92	27.92	27.92	27.92	27.92	8.376	0	0	0	0	0	0	
105			Foreman	1	4.46	4.46	4.46	4.46	4.46	4.46	1.338	0	0	0	0	0	0	
Sub-Grade Preparation	10,700.00	300	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	4.46	8.92	8.92	8.92	8.92	8.92	2.676	0	0	0	0	0	0	
200(1)			Foreman	1	1.68	1.68	1.68	1.68	1.68	1.68	0.504	0	0	0	0	0	0	
Levelling Course (Subbase	670.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Course)			Unskilled Laborer	2	1.68	3.36	3.36	3.36	3.36	3.36	1.008	0	0	0	0	0	0	
201			Foreman	1	1.00	1	1	1	1	1	0.3	0	0	0	0	0	0	
Aggregate Base Course	400.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
(Shoulder)			Unskilled Laborer	2	1.00	2	2	2	2	2	9.0	0	0	0	0	0	0	
301			Foreman	1	5.58	5.58	5.58	0	5.58	5.58	1.674	0	0	0	0	5.58	0	
Bituminous Prime Coat (RC Cut-	13.40	0.3	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Back Asphalt)			Unskilled Laborer	3	5.58	16.74	16.74	0	16.74	16.74	5.022	0	0	0	0	16.74	0	
302			Foreman	1	1.95	1.95	1.95	0	1.95	1.95	0.585	0	0	0	0	1.95	0	
Bituminous Tack Coat	4.69	0.3	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
(Emulsified Asphalt)			Unskilled Laborer	3	1.95	5.85	5.85	0	5.85	5.85	1.755	0	0	0	0	5.85	0	
310(1)			Foreman	1	4.89	4.89	4.89	4.89	4.89	4.89	1.467	0	0	0	0	0	0	
Bituminous Concrete Surface	6,700.00	171.3	Skilled Laborer	4	4.89	19.56	19.56	19.56	19.56	19.56	5.868	0	0	0	0	0	0	
Course, Hot Laid (Wearing)			Unskilled Laborer	8	4.89	39.12	39.12	39.12	39.12	39.12	11.736	0	0	0	0	0	0	
310(2)			Foreman	1	4.89	4.89	4.89	4.89	4.89	4.89	1.467	0	0	0	0	0	0	
Bituminous Concrete Surface	6,700.00	171.3	Skilled Laborer	4	4.89	19.56	19.56	19.56	19.56	19.56	5.868	0	0	0	0	0	0	
Course, Hot Laid (Binder)			Unskilled Laborer	8	4.89	39.12	39.12	39.12	39.12	39.12	11.736	0	0	0	0	0	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	46		220.56	221	190	221	221	99					30		
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	506.00	169.05	
			D. UNIT COST/MAN-DAY (C ÷ B)				0.25	2.77	2.22	79.7	0.34	-				1.39	-	
			E. DIRECT COST FOR PPE's (D x A (Man-days))	n-days))			54.55	528.01	490.13	1,690.96	22.21					41.76	-	2,827.62
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, S2005, consider atleast 4 hours per week	ART TIME) @ F	15,000.00/1	MONTH (AS PE	R D.O. 56, S20	105, consider a	tleast 4 hours p	er week )								1,500.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O. 56, S2005)	@ P8,400.00/N	ONTH (AS	PER D.O. 56, S2	(500											11,200.00
			H. TOTAL DIRECT COST (E + F + G)															15,527.62
			I. OCM (9% of E)															
			J. PROFП (8% of E)															1,242.21
			K. VAT (12% of E + H + I)							1								2,012.38
			L. TOTAL COST (E + H + I + J)								1						$\dashv$	18,782.21

3. Paved (Asphalt) to Paved (Asphalt), Assume 1Km. Length, with 40 C.D. Duration

Paved (Asphalt) to Paved (Asphalt), Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	MATERIALO . COST/UNIT	OINI	WOANIIII	JHITRATE	TOTAL COST
	Safety Helmet	man-day	221	0.25	54.55
	Safety Shoes	man-day	190	2.77	528.01
	Safety Vest	man-day	221	2.77	490.13
	Working Gloves	man-day	221	7.67	1,690.96
	Rubber Boots	man-day	30	1.39	41.76
	Number Books	man-day	30	1.59	41.70
Ont	ional (if necessary)				
Op.	Rain Coats (30% of the Duration)	man-day	66	0.34	22.21
	riam coate (co/o or the Daramen)			0.0 .	
	SUB - TOTAL (A)				2,827.62
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	3.00	500.00	1,500.00
	Health Personnel (Full Time)	1.00	40.00	280.00	11,200.00
	SUB - TOTAL (B)				12,700.00
C.	EQUIPMENT COST	QUAN	TITV	Hourly	Total
О.	EQUI MENT COST	No. of Equipt.	Total Hours	Rate	Cost
		No. or Equipt.	Total Hours	Nate	0031
	_	_	_	_	_
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				15,527.62
E.	DIRECT UNIT COST (D/Quantity)				15,527.62
F.	ADD: INDIRECT COST				
	1. OCM ( 9			-	
	2. Contract	tor's Profit (8% of	D)	1,242.21	
	3. VAT 129	%		2,012.38	
	TOTAL INDIRECT COST				3,254.59
				,	
			TOTAL COST (E	) + F)	18,782.21

Note: Costs as presented herein are intended only to illustrate the derivation of cost. Should there be an increase/decrease in the cost of materials, labor, equipment and on the allowable percentage of mark-up, necessary adjustments shall be made in accordance with the latest approved department issuances.

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 4)

4. Gravel to Asphalt, Assume 1Km. Length, with 31 C.D. Duration

					l						-				I			
ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	W ORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY	SAFETY	SAFETY VEST	WORKING	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY	LANYARD	RUBBER	EYE GOGGLES	
105			Foreman	1	4.46	4.46	4.46	4.46	4.46	4.46	1.338	0	0	0	0	0	0	
Sub-Grade Preparation	10,700.00	300	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
		1	Unskille d Laborer	2	4.46	8.92	8.92	8.92	8.92	8.92	2.676	0	0	0	0	0	0	
200			Foreman	1	3.16	3.16	3.16	3.16	3.16	3.16	0.948	0	0	0	0	0	0	
Aggregate Subbase Course	1,264.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	3.16	6.32	6.32	6.32	6.32	6.32	1.896	0	0	0	0	0	0	
201			Foreman	1	4.85	4.85	4.85	4.85	4.85	4.85	1.455	0	0	0	0	0	0	
Aggregate Base Course	1,938.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	4.85	9.7	9.7	9.7	9.7	9.7	2.91	0	0	0	0	0	0	
301		_	Foreman	1	5.58	5.58	5.58	0	5.58	0	0	0	0	0	0	5.58	0	
Bituminous Prime Coat (RC Cut-	13.40	0.3	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Back Asphalt)			Unskilled Laborer	3	5.58	16.74	16.74	0	16.74	0	0	0	0	0	0	16.74	0	
302			Foreman	1	1.95	1.95	1.95	0	1.95	0	0	0	0	0	0	1.95	0	
Bituminous Tack Coat (Emulsified	4.69	0.3	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
Asphalt)		_	Unskilled Laborer	3	1.95	5.85	5.85	0	5.85	0	0	0	0	0	0	5.85	0	
310(1)		_	Foreman	1	4.89	4.89	4.89	4.89	4.89	4.89	1.467	0	0	0	0	0	0	
Bituminous Concrete Surface	6,700.00	171.3	Skilled Laborer	4	4.89	19.56	19.56	19.56	19.56	19.56	5.868	0	0	0	0	0	0	
Course, Hot Laid (Wearing)			Unskilled Laborer	8	4.89	39.12	39.12	39.12	39.12	39.12	11.736	0	0	0	0	0	0	
310(2)			Foreman	1	4.89	4.89	4.89	4.89	4.89	4.89	1.467	0	0	0	0	0	0	
Bituminous Concrete Surface	6,700.00	171.3	Skilled Laborer	4	4.89	19.56	19.56	19.56	19.56	19.56	5.868	0	0	0	0	0	0	
Course, Hot Laid (Binder)			Unskilled Laborer	8	4.89	39.12	39.12	39.12	39.12	39.12	11.736	0	0	0	0	0	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	43		194.67	195	165	195	165	49					30		
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
		_	D. UNIT COST/MAN-DAY (C÷B)				0.25	2.77	2.22	7.67	0.34					1.39		
			E. DIRECT COST FOR PPE's (D x A (Man-days))	ys))			48.15	456.23	432.60	1,261.55	16.57			-		41.76	-	2, 256.85
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH	TIME) @ P15,00	0.00/MON		(AS PER D.O. 56, S2005, consider atleast 4 hours per week	ider atleast 4 h	ours per week	(								1,500.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O.	400.00/MONTH	(AS PER D.	J. 56, S2005)												8,680.00
			H. TOTAL DIRECT COST (E + F + G)															12,436.85
			I. OCM (9% of E)															•
			J. PROFIT (8% of E)															994.95
			K. VAT (12% of E + H + I)															1,611.82
			L. TOTAL COST (E + H + I + J)								_				_		_	15,043.62

Note: Assumed Rain Coats usage, 30% of man-days

Gravel to Asphalt, Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	112.11.21.12.1.1.1.1.1.1.1.1.1.1.1.1.1.	O.U.I	ζο, αττιτι	011111111111111111111111111111111111111	101712 0001
	Safety Helmet	man-day	195	0.25	48.15
	Safety Shoes	man-day	165	2.77	456.23
	Safety Vest	man-day	195	2.22	432.60
	Working Gloves	man-day	165	7.67	1,261.55
	Rubber Boots	man-day	30	1.39	41.76
Opti	onal (if necessary)				
'	Rain Coats (30% of the Duration)	man-day	49	0.34	16.57
	,	·			
	SUB - TOTAL (A)				2,256.85
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	3.00	500.00	1,500.00
	Health Personnel (Full Time)	1.00	31.00	280.00	8,680.00
	SUB - TOTAL (B)				10,180.00
C.	EQUIPMENT COST	QUAN	TITY	Hourly	Total
.		No. of Equipt.	Total Hours	Rate	Cost
		nor or Equipm	101011100110	11010	000.
	-	-	_	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				12,436.85
E.	DIRECT UNIT COST (D/Quantity)				12,436.85
F.	ADD: INDIRECT COST				
	1. OCM ( 9			-	
	2. Contrac	tor's Profit (8% of	D)	994.95	
	3. VAT 129	%		1,611.82	
	TOTAL INDIRECT COST				2,606.76
			TOTAL COST (E	) + F)	15,043.62

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 5)

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																	1,279.24	1,500.00	10,780.00	13,559.24		1,084.74	1,757.28	16,401.26
EYE GOGGLES	0	0	0	0	0	0	0	0	0	0	0	0		09	169.05		-							
RUBBER BOOTS	0	0	0	0	0	0	0	0	0	11.96	47.84	143.52	203	365	206.00	1.39	281.86							
LANYARD	0	0	0	0	0	0	0	0	0	0	0	0	-	082	1,083.30	•								
BODY HARNESS	0	0	0	0	0	0	0	0	0	0	0	0	•	730	1,263.85		•							
EAR MUFF	0	0	0	0	0	0	0	0	0	0	0	0		730	602.60		-							
DUST/GAS MASK	0	0	0	0	0	0	0	0	0	0	0	0		1	63.25		-							
RAIN COATS	1.338	0	2.676	2.154	0	4.308	0.315	0	0.63	0	0	0	11	730	245.00	0.34	3.83							
WORKING	4.46	0	8.92	7.18	0	14.36	1.05	0	2.1	0	0	0	38	3	23.00	79.7	291.87	(1)						
SAFETY VEST	4.46	0	8.92	7.18	0	14.36	1.05	0	2.1	11.96	47.84	143.52	241	180	400.00	2.22	536.42	1 (AS PER D.O. 56, S2005, consider atleast 4 hours per week						
SAFETY	4.46	0	8.92	7.18	0	14.36	1.05	0	2.1	0	0	0	38	365	1,012.00	2.77	105.55	sider atleast 4						i
SAFETY HELMET	4.46	0	8.92	7.18	0	14.36	1.05	0	2.1	11.96	47.84	143.52	241	730	180.55	0.25	59.70	56, S2005, con:						
MAN-DAYS	4.46	0	8.92	7.18	0	14.36	1.05	0	2.1	11.96	47.84	143.52	241					H (AS PER D.O.	J. 56, S2005)					i
DAYS	4.46	0.00	4.46	7.18	0.00	7.18	1.05	0.00	1.05	11.96	11.96	11.96						00.00/MONT	H (AS PER D.0					
NO. OF PERSON NEL	1	0	2	1	0	2	1	0	2	1	4	12	26				ıys))	TIME) @ P15,0	,400.00/MONT					
WORKERS	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	A. TOTAL, PERSONNEL/MAN-DAYS	B. SERVICE LIFE, DAYS	C. PURCHASE COST, PPh	D. UNIT COST/MAN-DAY (C ÷ B)	E. DIRECT COST FOR PPE's (D x A (Man-days))	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O	H. TOTAL DIRECT COST (E+F+G)	I. OCM (9% of E)	J. PROFIT (8% of E)	K. VAT (12% of E + H + I)	L. TOTAL COST (E + H + I + J)
OUTPUT PER HOUR	4	300		4	S0 S	ר	Н	S0 S		4	70 s	ר	4	8	J	נ	E	4	פ	4	_	T.	¥	1
QUANTITY		10,700.00			2,872.00			420.00			6,700.00													
ITEM NO./ DESCRIPTION	105	Sub-Grade Preparation		200	Aggregate Subbase Course		201	Aggregate Bas e Course (Shoulder)		311	PCCP (0.23m. Thk)													

Note: Assumed Rain Coats usage, 30% of man-days

Gravel to Concrete, Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
,					
	Safety Helmet	man-day	241	0.25	59.70
	Safety Shoes	man-day	38	2.77	105.55
	Safety Vest	man-day	241	2.22	536.42
	Working Gloves	man-day	38	7.67	291.87
	Rubber Boots	man-day	203	1.39	281.86
Opti	onal (if necessary)				
	Rain Coats (30% of the Duration)	man-day	11	0.34	3.83
	,	•			
	SUB - TOTAL (A)				1,279.24
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	3.00	500.00	1,500.00
	Health Personnel (Full Time)	1.00	38.50	280.00	10,780.00
	0112 - 70741 (2)				40.000.00
_	SUB - TOTAL (B)	01141	ITIT\/		12,280.00
C.	EQUIPMENT COST	QUAN	Total Hours	Hourly	Total
-		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)				_
D.	TOTAL DIRECT COST (A + B + C)				13,559.24
E.	DIRECT UNIT COST (D/Quantity)				13,559.24
F.	ADD: INDIRECT COST				10,000.24
l	1. OCM ( 9	9% of D )		_	
		tor's Profit (8% of	D)	1,084.74	
	3. VAT 129	•	٥,	1,757.28	
	TOTAL INDIRECT COST	· <del>-</del>		.,. 07.20	2,842.02
					2,0 .2.02
			TOTAL COST (E	) + F)	16,401.26
				· · /	. 5, 101.20
$\vdash$					

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 6)

uration
9
14 C
with
Length,
1Km.
Assume
Overlay,
. Asphalt
ø

														994.17	500.00	3,920.00	5,414.17	•	433.13	701.68	6,548.98
EYE GOGGLES	0	0	0	0	0	0	0	0	0		09	169.05	-								
RUBBER BOOTS	0	0	0	1.95	0	5.85	0	0	0	8	365	206.00	1.39	10.81							
LANYARD	0	0	0	0	0	0	0	0	0		730	1,083.30	-								
BODY HARNESS	0	0	0	0	0	0	0	0	0	-	730	1,263.85	-	-							
EAR MUFF	0	0	0	0	0	0	0	0	0		730	602.60	-								
DUST/GAS MASK	0	0	0	0	0	0	0	0	0	-	1	63.25	-	-							
RAIN COATS	0.252	0	1.512	0.585	0	1.755	1.467	5.868	11.736	23	730	245.00	0.34	7.78							
WORKING GLOVES	0.84	0	5.04	1.95	0	5.85	4.89	19.56	39.12	11	3	23.00	19.7	592.25	ik)						
SAFETY VEST	0.84	0	5.04	1.95	0	5.85	4.89	19.56	39.12	11	180	400.00	2.22	171.67	AS PER D.O. 56, S2005, consider atleast 4 hours per week						
SAFETY SHOES	0.84	0	5.04	0	0	0	4.89	19.56	39.12	69	365	1,012.00	2.77	192.56	nsider atle ast						
SAFETY HELMET	0.84	0	5.04	1.95	0	5.85	4.89	19.56	39.12	11	730	180.55	0.25	19.11	J. 56, S2005, co						
MAN-DAYS	0.84	0	5.04	1.95	0	5.85	4.89	19.56	39.12	11						0.0. 56, \$2005)					
DAYS	0.84	0.00	0.84	1.95	0.00	1.95	4.89	4.89	4.89						15,000.00/MOI	NTH (AS PER I					
NO. OF PERSONNEL	1	0	9	1	0	3	1	4	80	24				-days))	ART TIME) @ P:	P8,400.00/MC					
WORKERS	Fore man	Skille d Laborer	Unskilled Labore r	Foreman	Skille d Laborer	Unskilled Labore r	Fore man	Skille d Laborer	Unskilled Labore r	A. TOTAL, PERSONNEL/MAN-DAYS	B. SERVICE LIFE, DAYS	C. PURCHASE COST, PPh	D. UNIT COST/MAN-DAY (C ÷ B)	E. DIRECT COST FOR PPE's (D x A (Man-days))	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O.	H. TOTAL DIRECT COST (E + F + G)	I. OCM (9% of E)	J. PROFIT (8% of E)	K. VAT (12% of E + H + I)	L. TOTAL COST (E + H + I + J)
OUTPUT PER HOUR		1000			0.3			171.3					. 1			. 1					
QUANTITY		6,700.00			4.69			6,700.00													
ITEM NO./ DESCRIPTION	SPL	Surface Project (Sealing /Patching)		302	Bituminous Tack Coat (Emulsified	Asphalt)	310(1)	Bituminous Concrete Surface	Course, Hot Laid												

Note: Assumed Rain Coats usage, 30% of man-days

Asphalt Overlay, Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
~)	MATERIALS: SOST/SHIT	Oitii	QOANTITI	OHITIKATE	TOTAL GOOT
	Safety Helmet	man-day	77	0.25	19.11
	Safety Shoes	man-day	69	2.77	192.56
	Safety Vest	man-day	77	2.77	171.67
	Working Gloves	man-day	77 77	2.22 7.67	592.25
	Rubber Boots			_	
	Rubber Boots	man-day	8	1.39	10.81
Onti	and (if necessary)				
Ори	onal (if necessary) Rain Coats (30% of the Duration)	man day	23	0.24	7.78
	Rain Coals (30% of the Duration)	man-day	23	0.34	1.10
	SUB - TOTAL (A)				994.17
В.	LABOR COST	QUAN	TITY	Unit	Total
٥.	LABOR GOOT	No. of	Total Man-	Onic	Total
		Personnel	days	Rate	Cost
			, -	rtato	0001
	Safety Practitioner/ Officer (Part Time)	1.00	1.00	500.00	500.00
	Health Personnel (Full Time)	1.00	14.00	280.00	3,920.00
	ricalari crecimici (i ali rimo)	1.00	11.00	200.00	0,020.00
	SUB - TOTAL (B)				4,420.00
C.	EQUIPMENT COST	QUAN	TITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
		• •			
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				5,414.17
E.	DIRECT UNIT COST (D/Quantity)				5,414.17
F.	ADD: INDIRECT COST				•
	1. OCM ( 9	9% of D )		-	
		tor's Profit (8% of	D)	433.13	
	3. VAT 129	•	,	701.68	
	TOTAL INDIRECT COST				1,134.81
					, - 2.
			TOTAL COST (E	) + F)	6,548.98
				,	,

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 7)

7. Concrete Reblocking (30% of Existing PCCP), Assume 1Km. Length, with 25.5 C.D. Duration

5/10         5/10         6/10 <th< th=""><th>  1.00  </th><th>QUANTITY OUTPUT PER HOUR</th><th>JTPUT PER HOUR</th><th></th><th>WORKERS</th><th>NO. OF PERSONNEL</th><th></th><th>MAN-DAYS</th><th>SAFETY HELMET</th><th>SAFETY SHOES</th><th>SAFETY VEST</th><th>WORKING</th><th>RAIN COATS</th><th>DUST/GAS MASK</th><th>EAR MUFF</th><th>BODY</th><th>LANYARD</th><th>RUBBER</th><th>EYE GOGGLES</th><th></th></th<>	1.00   1.00	QUANTITY OUTPUT PER HOUR	JTPUT PER HOUR		WORKERS	NO. OF PERSONNEL		MAN-DAYS	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY	LANYARD	RUBBER	EYE GOGGLES	
5/02         5/02         5/02         15/06         0	502         502         502         502         1506         0 <t< td=""><td>402 00 20 chilad Laborar 0</td><td>Foreman</td><td></td><td>11 0</td><td>- 1</td><td>2.51</td><td>2.51</td><td>2.51</td><td>2.51</td><td>2.51</td><td>2.51</td><td>0.753</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0 0</td><td></td></t<>	402 00 20 chilad Laborar 0	Foreman		11 0	- 1	2.51	2.51	2.51	2.51	2.51	2.51	0.753	0	0	0	0	0	0 0	
1047 1047 1047 1047 1047 1047 3141 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1047 1047 1047 1047 1047 1047 3141 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Unskilled Laborer 2	Unskilled Laborer 2	er 2		2.51	t	5.02	5.02	5.02	5.02	5.02	1.506	0	0	0	0	0	0	
0         0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Foreman 1 10.47	1	1	1 10.47	10.47		10.47	10.47	10.47	10.47	10.47	3.141	0	0	0	0	0	0	
1.68   1	1.68   1	2,010.00 24 Skilled Laborer 0 0.00	Skilled Laborer 0	0		0.00		0	0	0	0	0	0	0	0	0	0	0	0	
1.68	1.68	Unskilled Laborer 2 10.47	. 2	. 2	2 10.47	10.47		20.94	20.94	20.94	20.94	20.94	6.282	0	0	0	0	0	0	
0         0	0         0	Foreman 1 1.68	1	1	1 1.68	1.68		1.68	1.68	1.68	1.68	1.68	0.504	0	0	0	0	0	0	
336         336         336         336         1008         0 <t< td=""><td>  3.36   3.36   3.36   3.36   3.36   3.36   1.008   0.0   0.0   0.0   0.0   0.0     1.95   1.95   0.0   1.95   1.95   0.585   0.0   0.0   0.0   0.0   0.0   0.0     2.80   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     2.80   0.28   0.38   0.38   0.38   0.489</td><td>402.00 30 Skilled Laborer 0 0.00</td><td>Skilled Laborer 0</td><td>0</td><td></td><td>0.00</td><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></t<>	3.36   3.36   3.36   3.36   3.36   3.36   1.008   0.0   0.0   0.0   0.0   0.0     1.95   1.95   0.0   1.95   1.95   0.585   0.0   0.0   0.0   0.0   0.0   0.0     2.80   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0     2.80   0.28   0.38   0.38   0.38   0.489	402.00 30 Skilled Laborer 0 0.00	Skilled Laborer 0	0		0.00		0	0	0	0	0	0	0	0	0	0	0	0	
1.95	1.95   1.95   0   1.95   1.95   1.95   1.95   0.0   0   0   0   0   0   0   0   0	Unskilled Laborer 2 1.68	. 2	. 2	2 1.68	1.68		3.36	3.36	3.36	3.36	3.36	1.008	0	0	0	0	0	0	
1.0   0   0   0   0   0   0   0   0   0	0         0	Foreman 1 1.95	1	1	1 1.95	1.95		1.95	1.95	0	1.95	1.95	0.585	0	0	0	0	1.95	0	
8.85         6.86         6.88         1.75         0         0         0         6.88         0         8.89         6.89         4.89         6.89         0.0         0 <th< td=""><td>8.85         6.86         0         6.85         0</td><td>4.69 0.3 Skilled Laborer 0 0.00</td><td>Skilled Laborer 0</td><td>0</td><td></td><td>0.00</td><td></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></th<>	8.85         6.86         0         6.85         0	4.69 0.3 Skilled Laborer 0 0.00	Skilled Laborer 0	0		0.00		0	0	0	0	0	0	0	0	0	0	0	0	
1956   489   489   489   489   489   489   1467   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4.89   4.89   4.89   4.89   4.89   4.89   4.89   4.89   1.467   0.0   0.0   0.0   0.0   0.0     19.56   19.56   19.56   19.56   19.56   19.56   2.688   0.0   0.0   0.0   0.0   0.0     3.59   3.59   3.59   3.59   10.77   0.0   0.0   0.0   0.0   3.59   0.0     4.30   4.30   0.0   4.30   4.30   4.30   4.30   0.0   0.0   0.0   0.0   0.0     4.30   4.30   0.0   4.30   4.30   4.30   4.30   0.0   0.0   0.0   0.0   4.30   0.0     4.30   4.30   4.30   4.30   4.30   4.30   4.30   0.0   0.0   0.0   0.0   4.30   0.0     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30     4.30   4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30     4.30   4.30   4.30     4.30   4.30   4.30     4.30   4.30     4.30   4.30     4.30   4.30     4.30   4.30     4.30   4.30	Unskilled Laborer 3 1.95	. 3	. 3	3 1.95	1.95		5.85	5.85	0	5.85	5.85	1.755	0	0	0	0	5.85	0	
39.12         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.56         19.59         0<	13.56         19.56 <th< td=""><td>Foreman 1 4.89</td><td>1</td><td>1</td><td>1 4.89</td><td>4.89</td><td></td><td>4.89</td><td>4.89</td><td>4.89</td><td>4.89</td><td>4.89</td><td>1.467</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td></td></th<>	Foreman 1 4.89	1	1	1 4.89	4.89		4.89	4.89	4.89	4.89	4.89	1.467	0	0	0	0	0	0	
3.3.12 39.12 39.12 39.12 1.1736 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.5.1	6,700.00 171.3 Skilled Laborer 4 4.89	Skilled Laborer 4	4		4.89		19.56	19.56	19.56	19.56	19.56	5.868	0	0	0	0	0	0	
3.59         0.0         3.59         0.0         0.0         0.0         0.0         3.59         0.0         0.0         0.0         0.0         3.59         0.0         0.0         0.0         0.0         14.36         0.0         0.0         0.0         14.36         0.0         0.0         0.0         0.0         14.36         0.0         0.0         0.0         14.36         0.0	3.59         0         3.59         0         0         0         0         0         3.59         0         0         4.36         0         0         0         0         3.59         0	Unskilled Laborer 8 4.89	8	8		4.89		39.12	39.12	39.12	39.12	39.12	11.736	0	0	0	0	0	0	
1436         0         14.36         0         0         0         0         14.36         0         14.36         0         14.36         0         14.36         0         0         0         0         14.36         0         0         0         0         14.36         0         0         0         0         14.36         0	1436         0         1436         0         0         0         0         0         1436         0         1436         0         1436         0         0         0         0         1436         0	Foreman 1 3.59	1	1	1 3.59	3.59		3.59	3.59	0	3.59	3.59	1.077	0	0	0	0	3.59	0	
176   176   178   1.08   1.15924   1.15924   0 0 0 0 0 0 43.08   0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	43.08         0         43.08         0         0         0         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         43.08         0         0         0         0         0         43.08         0	2,010.00 70 Skilled Laborer 4 3.59	Skilled Laborer 4	4		3.59		14.36	14.36	0	14.36	14.36	4.308	0	0	0	0	14.36	0	
176         176         176         176         176         53         -         -         -         69         -         69         -           180         136         126         176         176         -         -         -         69         -         -         -         -         -         69         - </td <td>176         176         176         176         176         176         176         178         53         .         .         .         69         .</td> <td>Unskilled Laborer 12 3.59</td> <td>12</td> <td>12</td> <td></td> <td>3.59</td> <td></td> <td>43.08</td> <td>43.08</td> <td>0</td> <td>43.08</td> <td>43.08</td> <td>12.924</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>43.08</td> <td>0</td> <td></td>	176         176         176         176         176         176         176         178         53         .         .         .         69         .	Unskilled Laborer 12 3.59	12	12		3.59		43.08	43.08	0	43.08	43.08	12.924	0	0	0	0	43.08	0	
130   130	180 Secondary   180 Secondar	A. TOTAL, PERSONNEL/MAN-DAYS 43			43			176	176	108	176	176	23	-	-	-		69		
180.55   1,012.00   400.00   23.00   245.00   63.25   602.60   1,633.85   1,083.30   506.00   169.05     0.25   2.77   2.22   7.67   0.34                     4.3 6.2   2.86.14   2.86.14   1,322.25   1,776	180.55   1,012.00   400.00   23.00   245.00   63.25   602.60   1,083.90   506.00   169.05   169.05   1,083.90   1,083.9	B. SERVICE LIFE, DAYS	B. SERVICE LIFE, DAYS	B. SERVICE LIFE, DAYS					730	365	180	3	730	1	730	730	730	365	09	
0.25   2.77   2.22   7.67   0.34	0.25   2.77   2.22   7.67   0.34	C. PURCHASE COST, PPh	C. PURCHASE COST, PPh	C. PURCHASE COST, PPh					180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	506.00	169.05	
43.62   298.19   391.96   1,352.25   17.76	43.62   298.19   391.96   1,352.25   17.76	D. UNIT COST/MAN-DAY (C÷B)	D. UNIT COST/MAN-DAY (C÷B)	D. UNIT COST/MAN-DAY (C ÷ B)					0.25	2.77	2.22	7.67	0.34	-	-		-	1.39	-	
(AS PER D. O. 56, \$2005, consider at least 4 hours per week)     1       56, \$2005)     56, \$2005	(AS PER D. O. 56, S2005, consider atleast 4 hours per week)     4       56, 52005)     56, 52005       56, 52005)     7       7     7       8     9       9     9       10     10       11     11       12     12       13     14       14     14       15     14       16     17       17     18       18     10       18     11       19     11       10     11       11     12       12     12       12     12       13     12       14     12       15     12       16     12       17     12       18     12       18     12       18     12       18     12       18     12       18     12       18     12       18     12       18     13       18     14       18     14       18     14       18     14       18     14       18     14       18     14 <td>E. DIRECT COST FOR PPE's (D x A (Man-days))</td> <td>E. DIRECT COST FOR PPE's (D x A (Man-days))</td> <td>E. DIRECT COST FOR PPE's (D x A (Man-days))</td> <td>days))</td> <td></td> <td></td> <td></td> <td>43.62</td> <td>298.19</td> <td>391.96</td> <td>1,352.25</td> <td>17.76</td> <td></td> <td></td> <td></td> <td></td> <td>95.42</td> <td></td> <td>2,199.20</td>	E. DIRECT COST FOR PPE's (D x A (Man-days))	E. DIRECT COST FOR PPE's (D x A (Man-days))	E. DIRECT COST FOR PPE's (D x A (Man-days))	days))				43.62	298.19	391.96	1,352.25	17.76					95.42		2,199.20
56, 52005)	56, 22005)     7       7     10       8     10       9     10       10     10       10     10       10     10       10     10       10     10       10     10       10     10       11     10       12     10       13     10       14     10       15     10       16     10       17     10       18 </td <td>F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH</td> <td>F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MO</td> <td>F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MO</td> <td>RT TIME) @ P15,000.00/MO</td> <td>000.00/MO</td> <td>Ę</td> <td>(AS PER D.O. 5</td> <td>6, S2005, consi</td> <td>der atleast 4 h</td> <td>ours per week</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1,000.00</td>	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MO	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MO	RT TIME) @ P15,000.00/MO	000.00/MO	Ę	(AS PER D.O. 5	6, S2005, consi	der atleast 4 h	ours per week									1,000.00
10,239.20	10.339.20       7       8       1,339.96	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O.	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER I	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER I	P8,400.00/MONTH (AS PER I	TH (AS PER I	0.0	56, \$2005)												7,140.00
		H. TOTAL DIRECT COST (E + F + G)	H. TOTAL DIRECT COST (E+F+G)	H. TOTAL DIRECT COST (E +F + G)																10,339.20
827.14	827.14	I. OCM (9% of E)	I. OCM (9% of E)	1. OCM (9% of E)																
	1,339.96	J. PROFIT (8% of E)	J. PROFIT (8% of E)	J. PROFIT (8% of E)																827.14

Note: Assumed Rain Coats usage, 30% of man-days

Concrete Reblocking (30% of Existing PCCP), Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Safety Helmet	man-day	176	0.25	43.62
	Safety Shoes	man-day	108	2.77	298.19
	Safety Vest	man-day	176	2.22	391.96
	Working Gloves	man-day	176	7.67	1,352.25
	Rubber Boots	man-day	69	1.39	95.42
Opti	onal (if necessary)				
	Rain Coats (30% of the Duration)	man-day	53	0.34	17.76
-	CLIP TOTAL (A)				2 400 20
В.	SUB - TOTAL (A)  LABOR COST	QUAN	ITITY	Unit	2,199.20 Total
٥.	LABOR COST	No. of	Total Man-	Oille	lotai
		Personnel	days	Rate	Cost
			, -	rtuto	0001
	Safety Practitioner/ Officer (Part Time)	1.00	2.00	500.00	1,000.00
	Health Personnel (Full Time)	1.00	25.50	280.00	7,140.00
	,				•
	SUB - TOTAL (B)				8,140.00
C.	EQUIPMENT COST	QUAN		Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
-	SUB - TOTAL (C)				_
D.	TOTAL DIRECT COST (A + B + C)				10,339.20
E.	DIRECT UNIT COST (D/Quantity)				10,339.20
F.	ADD: INDIRECT COST				10,000.20
ļ	1. OCM ( 9	9% of D )		_	
		tor's Profit (8% of	D)	827.14	
	3. VAT 129	,	_,	1,339.96	
	TOTAL INDIRECT COST			,	2,167.10
					,
			TOTAL COST (E	) + F)	12,506.29

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 8)

8. Concrete Reblocking (50% of Existing PCCP), Assume 1Km. Length, with 36 C.D Duration

																							2,987.19	1,500.00	10,080.00	14,567.19		1,165.38	1,887.91	17,620.47
EYE GOGGLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		09	169.05		-							
RUBBER BOOTS	0	0	0	0	0	0	0	0	0	1.95	0	5.85	0	0	0	5.98	23.92	71.76	109	365	206.00	1.39	151.74							
LANYARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		730	1,083.30									
BODY HARNESS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		022	1,263.85									
EAR MUFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		730	602.60									
DUST/GAS MASK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	1	63.25									
RAIN COATS	0.753	0	1.506	5.235	0	10.47	0.837	0	1.674	0.585	0	1.755	1.467	5.868	11.736	1.794	7.176	21.528	72	730	245.00	0.34	24.29							
WORKING GLOVES	2.51	0	5.02	17.45	0	34.9	2.79	0	5.58	1.95	0	5.85	4.89	19.56	39.12	5.98	23.92	71.76	241	3	23.00	79.7	1,849.81							
SAFETY VEST	2.51	0	5.02	17.45	0	34.9	2.79	0	5.58	1.95	0	5.85	4.89	19.56	39.12	5.98	23.92	71.76	241	180	400.00	2.22	536.18	er week)						
SAFETY SA SHOES	2.51	0	5.02	17.45	0	34.9	2.79	0	5.58	0	0	0	4.89	19.56	39.12	0	0	0	132	365	1,012.00	2.77	365.48	east 4 hours p					ì	
SAFETY 9	2.51	0	5.02	17.45	0	34.9	2.79	0	5.58	1.95	0	5.85	4.89	19.56	39.12	5.98	23.92	71.76	241	730	180.55	0.25	29.68	5, consider at					ì	
			٥.				6			:		:												3 D.O. 56, S200	02)					
MAN-DAYS	2.51	0	5.02	17.45	0	34.9	2.79	0	5.58	1.95	0	5.85	4.89	19.56	39.12	5.98	23.92	71.76	241					ONTH (AS PER	R D.O. 56, S2005)				İ	
DAYS	2.51	0.00	2.51	17.45	0.00	17.45	2.79	0.00	2.79	1.95	0.00	1.95	4.89	4.89	4.89	5.98	5.98	5.98						15,000.00/M	ONTH (AS PE					
NO. OF PERSONNEL	1	0	2	1	0	2	1	0	2	1	0	3	1	4	∞	1	4	12	43				-days))	ART TIME) @ F	P8,400.00/M				İ	
WORKERS	Foreman	Skille d Laborer	Unskilled Labore r	Foreman	Skille d Laborer	Unskilled Labore r	Foreman	Skille d Laborer	Unskilled Labore r	Foreman	Skille d Laborer	Unskilled Labore r	Foreman	Skille d Laborer	Unskilled Labore r	Foreman	Skille d Laborer	Unskilled Labore r	A. TOTAL, PERSONNEL/MAN-DAYS	B. SERVICE LIFE, DAYS	C. PURCHASE COST, PPh	D. UNIT COST/MAN-DAY (C ÷ B)	E. DIRECT COST FOR PPE's (D x A (Man-days))	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, 52005, consider atleast 4 hours per week )	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O	H. TOTAL DIRECT COST (E + F + G)	I. OCM (9% of E)	J. PROFIT (8% of E)	K. VAT (12% of E + H + I)	L. TOTAL COST (E + H + I + J)
OUTPUT PER HOUR		20			24			30			0.3			171.3			0/													
QUANTITY		402.00			3,350.00			670.00			4.69			6,700.00			3,350.00													
ITEM NO./ DESCRIPTION	101(1)	Removal of Deteriorated Subbase		101(2)	Removal of Structure (PCCP,	t=0.23m.)	200	Aggregate Subbase Course		302	Bituminous Tack Coat (Emulsified	As phalt)	310	Bituminous Concrete Surface	Course, Hot Laid	311	PCCP (0.23m. Thk)													

Note: Assumed Rain Coats usage, 30% of man-days

Concrete Reblocking (50% of Existing PCCP), Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
7.9		0.1	Q0/211111	011111111111111111111111111111111111111	101712 0001
	Safety Helmet	man-day	241	0.25	59.68
	Safety Shoes	man-day	132	2.77	365.48
	Safety Vest	man-day	241	2.22	536.18
	Working Gloves	man-day	241	7.67	1,849.81
	Rubber Boots	man-day	109	1.39	151.74
	Tabbot Booto	man day	.00	1.00	1011
Opti	onal (if necessary)				
- 1	Rain Coats (30% of the Duration)	man-day	72	0.34	24.29
	,	,			
	SUB - TOTAL (A)				2,987.19
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Cofet: Drestitioner/Officer (Dort Time)	1.00	2.00	F00 00	4 500 00
	Safety Practitioner/ Officer (Part Time)	1.00	3.00	500.00	1,500.00
	Health Personnel (Full Time)	1.00	36.00	280.00	10,080.00
	SUB - TOTAL (B)				11,580.00
C.	EQUIPMENT COST	QUAN	TITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				14,567.19
E.	DIRECT UNIT COST (D/Quantity)				14,567.19
F.	ADD: INDIRECT COST				
	1. OCM ( 9		_,	-	
		tor's Profit (8% of	D)	1,165.38	
	3. VAT 129	<b>%</b>		1,887.91	0.050.00
	TOTAL INDIRECT COST				3,053.28
			TOTAL COST (E	) + E) .	17,620.47
			IOTAL COST (L	) + r)	17,020.47
1					

. Re-Gravelling, Assu	ıme 1Km	1. Length,	DETAI 9. Re-Gravelling, Assume 1Km. Length, with 10 C.D. Duration	ILED CALC	CULATIO	DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 9)	ST OF CO	NSTRUCTI	ION SAFE	IY AND H	ЕАLТН ( R	( 6 - QVC						
ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY HELMET	SAFETY	SAFETY VEST	WORKING	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES	
105			Foreman	1	4.46	4.46	4.46	4.46	4.46	4.46	1.338	0	0	0	0	0	0	
Sub-Grade Preparation	10,700.00	300	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
		_	Unskilled Laborer	2	4.46	8.92	8.92	8.92	8.92	8.92	2.676	0	0	0	0	0	0	
200			Foreman	1	5.35	5.35	5.35	5.35	5.35	5.35	1.605	0	0	0	0	0	0	
Aggregate Subbase Course	2,140.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskille d Laborer	2	5.35	10.7	10.7	10.7	10.7	10.7	3.21	0	0	0	0	0	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	9		29	29	29	29	29	6			٠				
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
			D. UNIT COST/MAN-DAY (C ÷ B)				0.25	2.77	2.22	7.67	0.34	-	-	-		-	-	
			E. DIRECT COST FOR PPE's (D x A (Man-days))	-days))			7.28	81.60	65.40	225.63	2.96						-	382.87
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, S2005, consider atle ast 4 hours per week )	.RT TIME) @ P1	5,000.00/M	ONTH (AS PER D	.O. 56, S2005, c	onsider atle ast	4 hours per we	ek)								500.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O. 56, S2005)	P8,400.00/MO	NTH (AS PEF	3 D.O. 56, S2005												2,800.00
			H. TOTAL DIRECT COST (E + F + G)															3,682.87
			I. OCM (9% of E)															
			J. PROFIT (8% of E)															294.63
			K. VAT (12% of E + H + I)															477.30
,			L. TOTAL COST (E + H + I + J)															4,454.80
			L. IOIAL COSI (E+H+I+J)															

Note: Assumed Rain Coats usage, 30% of man-days

Re-Gravelling, Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
~)	MATERIALS: SOST/SHIT	OIIII	QOANTITI	ONII IVAIL	TOTAL GOOT
	Safety Helmet	man-day	29	0.25	7.28
	Safety Shoes	man-day	29	2.77	81.60
	Safety Vest	man-day	29	2.22	65.40
	Working Gloves	man-day	29	7.67	225.63
	Rubber Boots	man-day	-	1.39	-
	Nasser Beete	man day		1.00	
Opti	onal (if necessary)				
'	Rain Coats (30% of the Duration)	man-day	9	0.34	2.96
	,	Í			
	SUB - TOTAL (A)				382.87
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	1.00	500.00	500.00
	Health Personnel (Full Time)	1.00	10.00	280.00	2,800.00
	SUB - TOTAL (B)				3,300.00
C.	EQUIPMENT COST	QUAN	ITITY	Hourly	Total
.		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				3,682.87
E.	DIRECT UNIT COST (D/Quantity)				3,682.87
F.	ADD: INDIRECT COST				
	1. OCM ( 9			-	
		tor's Profit (8% of	D)	294.63	
	3. VAT 129	%		477.30	
	TOTAL INDIRECT COST				771.93
			TOTAL 0007 (5		4 454 60
			TOTAL COST (E	) + F)	4,454.80

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 10) 10. New Road Opening, Concrete, Assume Embankment H=1.00m., Assume 1Km. Length, with 83 C.D Duration

																										4,853.93	3,000.00	23,324.00	31,177.93		2,494.23	4,040.66	37.712.83
EYE GOGGLES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		09	169.05									
RUBBER	0	0	0	0	0	0	0	0	0	0	0	0	11.96	47.84	143.52	0	0	0	0	8	16	722	365	506.00	1.39	315.13							
LANYARD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		730	1,083.30		•							
BODY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		730	1,263.85									
EAR MUFF	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		730	602.60		•							
DUST/GAS MASK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1	63.25		-							
RAIN COATS	1.314	0	2.628	10.287	0	20.574	2.001	0	4.002	2.574	0	5.148	3.588	14.352	43.056	0.255	0	1.02	1.2	2.4	4.8	119	730	245.00	0.34	40.01							_
WORKING	4.38	0	8.76	34.29	0	68.58	6.67	0	13.34	8.58	0	17.16	11.96	47.84	143.52	0.85	0	3.4	4	8	16	397	3	23.00	79.7	3,046.20							
SAFETY VEST	4.38	0	8.76	34.29	0	68.58	6.67	0	13.34	8.58	0	17.16	11.96	47.84	143.52	0.85	0	3.4	4	8	16	397	180	400.00	2.22	882.96	ours per week)						
SAFETY	4.38	0	8.76	34.29	0	68.58	6.67	0	13.34	8.58	0	17.16	0	0	0	0.85	0	3.4	4	0	0	170	365	1,012.00	2.77	471.37	(AS PER D.O. 56, S2005, consider atleast 4 hours per week						
SAFETY	4.38	0	8.76	34.29	0	68.58	6.67	0	13.34	8.58	0	17.16	11.96	47.84	143.52	0.85	0	3.4	4	8	16	397	730	180.55	0.25	98.27	6, S2005, consi						
MAN-DAYS	4.38	0	8.76	34.29	0	68.58	6.67	0	13.34	8.58	0	17.16	11.96	47.84	143.52	0.85	0	3.4	4	8	16	397						. 56, S2005)					
DAYS	4.38	0.00	4.38	34.29	00:00	34.29	6.67	0.00	6.67	8.58	0.00	8.58	11.96	11.96	11.96	0.85	0.00	0.85	4.00	4.00	4.00						000.00/MONTH	TH (AS PER D.O					
NO. OF PERSONNEL	1	0	2	1	0	2	1	0	2	1	0	2	1	4	12	1	0	4	1	2	4	41				lays))	T TIME) @ P15,	8,400.00/MON					
WORKERS	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	Foreman	Skilled Laborer	Unskilled Laborer	A. TOTAL, PERSONNEL/MAN-DAYS	B. SERVICE LIFE, DAYS	C. PURCHASE COST, PPh	D. UNIT COST/MAN-DAY (C ÷ B)	E. DIRECT COST FOR PPE's (D x A (Man-days))	F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH	G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O.	H. TOTAL DIRECT COST (E + F + G)	I. OCM (9% of E)	J. PROFIT (8% of E)	K. VAT (12% of E + H + I)	L. TOTAL COST (E + H + I + J)
OUTPUT PER		200			20			300			20			70			1.25			1.75													
QUANTITY		17,500.00			13,715.00			16,000.00			3,430.00			6,700.00			8.46			26.00													L
ITEM NO./ DESCRIPTION	100	Clearing and Grubbing		104	Embankment		105	Sub-Grade Preparation		200	Aggregate Subbase Course		311	PCCP (0.23m. Thk)		103(3)	Foundation Fill		200	Reinforced Concrete Pipe Culvert	(910mm dia.)												

Note: Assumed Rain Coats usage, 30% of man-days

New Road Opening, Concrete, Assume Embankment H=1.00m., Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Safety Helmet	man-day	397	0.25	98.27
	Safety Shoes	man-day	170	2.77	471.37
	Safety Vest	man-day	397	2.22	882.96
	Working Gloves	man-day	397	7.67	3,046.20
	Rubber Boots	man-day	227	1.39	315.13
L .					
Opt	onal (if necessary)		440	0.04	40.04
	Rain Coats (30% of the Duration)	man-day	119	0.34	40.01
	SUB - TOTAL (A)				4,853.93
В.	LABOR COST	QUAN	ITITY	Unit	4,855.95
-	ERBOR GOOT	No. of	Total Man-	Onic	lotai
		Personnel	days	Rate	Cost
			•		
	Safety Practitioner/ Officer (Part Time)	1.00	6.00	500.00	3,000.00
	Health Personnel (Full Time)	1.00	83.30	280.00	23,324.00
	,				•
	SUB - TOTAL (B)				26,324.00
C.	EQUIPMENT COST	QUAN		Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	OUD TOTAL (O)				
_	SUB - TOTAL (C)				24 477 00
D.	TOTAL DIRECT COST (A + B + C)				31,177.93
E. F.	DIRECT UNIT COST (D/Quantity)				31,177.93
۲.	ADD: INDIRECT COST	00/ -f D )			
	1. OCM (	9%	D)	- 2,494.23	
	2. Contrac 3. VAT 12	,	D)	2,494.23 4,040.66	
	TOTAL INDIRECT COST	70		4,040.00	6 524 90
	TOTAL INDIRECT COST				6,534.89
			TOTAL COST (E	) + F)	37,712.83
			101AL 0001 (L	,	01,112.00
<b>—</b>					

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 11)

11. New Road Opening, Concrete, Assume Road Cut H=1.00m., Assume 1Km. Length, with 80 C.D. Duration

					1													
ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY	SAFETY	SAFETY VEST	WORKING	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES	
100			Foreman	1	4.38	4.38	4.38	4.38	4.38	4.38	1.314	0	0	0	0	0	0	
Clearing and Grubbing	17,500.00	200	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	4.38	8.76	8.76	8.76	8.76	8.76	2.628	0	0	0	0	0	0	
102			Foreman	1	30.91	30.91	30.91	30.91	30.91	30.91	9.273	0	0	0	0	0	0	
Roadway Excavation	14,834.70	09	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	30.91	61.82	61.82	61.82	61.82	61.82	18.546	0	0	0	0	0	0	
105			Foreman	1	5.18	5.18	5.18	5.18	5.18	5.18	1.554	0	0	0	0	0	0	
Sub-Grade Preparation	12,420.00	300	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	5.18	10.36	10.36	10.36	10.36	10.36	3.108	0	0	0	0	0	0	
200			Foreman	1	8.58	8.58	8.58	8.58	8.58	8.58	2.574	0	0	0	0	0	0	
Aggregate Subbase Course	3,430.00	20	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	8.58	17.16	17.16	17.16	17.16	17.16	5.148	0	0	0	0	0	0	
311			Foreman	1	11.96	11.96	11.96	0	11.96	11.96	3.588	0	0	0	0	11.96	0	
PCCP (0.23m. Thk)	6,700.00	70	Skilled Laborer	4	11.96	47.84	47.84	0	47.84	47.84	14.352	0	0	0	0	47.84	0	
			Unskilled Laborer	12	11.96	143.52	143.52	0	143.52	143.52	43.056	0	0	0	0	143.52	0	
103(3)			Foreman	1	0.85	0.85	0.85	0.85	0.85	0.85	0.255	0	0	0	0	0	0	
Foundation Fill	8.46	1.25	Skilled Laborer	0	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	4	0.85	3.4	3.4	3.4	3.4	3.4	1.02	0	0	0	0	0	0	
200			Foreman	1	4.00	4	4	4	4	4	1.2	0	0	0	0	0	0	
Reinforced Concrete Pipe Culvert	26.00	1.75	Skilled Laborer	2	4.00	8	8	0	8	8	2.4	0	0	0	0	8	0	
(910mm dia.)			Unskilled Laborer	4	4.00	16	16	0	16	16	4.8	0	0	0	0	16	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	41		383	383	155	383	383	115	-				227		
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
			D. UNIT COST/MAN-DAY (C÷B)				0.25	2.77	2.22	7.67	0.34	-				1.39	-	
			E. DIRECT COST FOR PPE's (D x A (Man-days))	ays))			94.66	430.86	850.49	2,934.19	38.53					315.13		4,663.86
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH	ГТІМЕ) @ P15,(	00.00/MON		(AS PER D.O. 56, S2005, consider atleast 4 hours per week	sider atleast 4	hours per wee	k)								3,000.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O.	8,400.00/MON	H (AS PER D	.0. 56, \$2005)												22,400.00
			H. TOTAL DIRECT COST (E + F + G)															30,063.86
			I. OCM (9% of E)															
			J. PROFIT (8% of E)															2,405.11
			K. VAT (12% of E + H + I)															3,896.28
			L. TOTAL COST (E + H + I + J)															36,365.25

Note: Assumed Rain Coats usage, 30% of man-days

New Road Opening, Concrete, Assume Road Cut H=1.00m., Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

•	MATERIAL C. COCT/LINET	LINUT	OLIANITITY	LINUT DATE	TOTAL COST
A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	0.7.1.11.1	1.	000	0.05	04.00
	Safety Helmet	man-day	383	0.25	94.66
	Safety Shoes	man-day	155	2.77	430.86
	Safety Vest Working Gloves	man-day	383	2.22 7.67	850.49
	Rubber Boots	man-day man-day	383 227	1.39	2,934.19 315.13
	Rubbei Boots	man-day	221	1.39	315.13
Onti	onal (if necessary)				
Opt	Rain Coats (30% of the Duration)	man-day	115	0.34	38.53
	Tam Coale (60% of the Daratory)	man day		0.01	00.00
	SUB - TOTAL (A)				4,663.86
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	6.00	500.00	3,000.00
	Health Personnel (Full Time)	1.00	80.00	280.00	22,400.00
	SUB - TOTAL (B)				25,400.00
C.	EQUIPMENT COST	QUAN	ITITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
		1.1			
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				30,063.86
E.	DIRECT UNIT COST (D/Quantity)				30,063.86
F.	ADD: INDIRECT COST				
	1. OCM ( 9			-	
		tor's Profit (8% of	D)	2,405.11	
	3. VAT 129	%		3,896.28	
	TOTAL INDIRECT COST				6,301.39
			TOTAL COCT /5	· ·	00 005 05
			TOTAL COST (E	J + F)	36,365.25

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (ROAD - 12)

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BOOTS EYE GOGGLES	0 0	0 0	0 0											4			121	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1.14 28.56 88.68 85.68	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 .56 0 28.56 0 85.68 0 0 365 60 169.05 133 - 1	0 28.56 0 28.56 0 85.68 0 28.56 0 85.60 169.05 139 - 1.18.27 - 1.20 0	0 28.56 0 85.68 0 85.68 0 85.68 0 85.68 0 85.68 0 85.68 0 85.68 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 28.56 0 0 85.68 0 0 85.68 0 0 85.68 0 0 121 0 180.05 1.39 - 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 28.56 0 0 85.68 0 0 85.68 0 121 - 1 365 60 506.00 169.05 1.39 - 1	0 0 0 0 14 0 0 28.56 0 0 85.68 0 0 85.68 0 0 1.21 - 169.05 1.39 - 1
HARNESS LANYARD BO	0 0	0 0	0 0	0 0	0 0		<b>-</b>	0	0 0 0	0 0 0	0 0 0 0				00000000000			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
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KAIN COATS	0.3	0	9.0	4.611	0	9.222		0.501	0.501	0.501	0 0.501 1.002 0.6	0.501 0 1.002 0.6	0.501 1.002 0.6 0.6	0.501 0 0.1.002 0.6 0 0 1.2 2.142	0.501 0 1.002 0.6 0 0 1.2 2.142 8.568	0.501 0 0 0.6 0.6 0 1.1.2 2.142 8.568 25.704		0.501 0 0.6 0.6 0.6 2.12 2.142 8.568 8.568 7	0.501 1.002 0.6 0.6 0 1.2 2.142 8.568 8.568 25.704 7	0. 0. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	0 0 0.0.0 1.000 0.0.6 0.0.0 0.0.6 0.0.0 0.0.6 0.0.0 0.0.6 0.0.0 0.0.6 0.0.6 0.0.6 0.0.6 0.0.0 0.	0 0 0 0.00 0.00 0.00 0.00 0.00 0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
GLOVES	1	0	2	15.37	0	30.74		1.67	1.67	1.67	1.67 0 3.34 2	1.67 0 0 3.34 2 0	1.67 0 0 3.34 2 2 0 0	1.67 0 0 3.34 2 0 0 4 7.14	1.67 0 3.34 2 2 0 0 4 7.14 7.14	1.67 0 3.34 2 0 0 4 4 7.14 2.8.56 85.68		1.67 0 0 2 2 0 0 4 4 7.14 7.14 85.68	1.67 0 0 2 2 2 0 0 0 7.14 7.14 28.568 85.68	1.67 0 0 2 2 2 0 0 4 4 7.14 7.14 28.56 85.68 85.68	1.67 0 0 2 2 0 0 4 4 7.14 28.568 85.68 85.68	1.67 0 0 0 0 0 4 4 7.14 7.14 85.68 85.68	1.67 0 0 0 0 0 0 0 0 7.14 4 4 7.14	1.67 0 0 0 0 0 0 0 0 2 2 28.56 88.56 85.68	1.67 0 0 0 0 0 0 0 0 0 0 2 2 2.8.56 85.68 85.68 1,390	1.67 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2	1.67 0 0 2 2 2 2 2 2 2 3.34 4 4 4 4 4 4 4 4 4 4 4 7.14 28.56 88.56 88.56 1.39 1.30 1.3
SAFETY VEST	1	0	2	15.37	0	30.74		1.67	1.67	1.67	1.67 0 3.34 2	1.67 0 0 3.34 2 0	1.67 0 0 3.34 2 2 0 0	1.67 0 0 3.34 2 2 0 0 4 4 7.14	1.67 0 0 3.34 2 2 0 0 0 4 7.14 7.14	1.67 0 0 3.34 2 2 0 0 4 7.14 7.14 85.68	1.67 0 0 3.34 2 0 4 4 7.14 2.85 85.68 60 182	1.67 0 0 3.34 2 2 0 0 0 4 4 7.14 7.14 85.68	1.67 0 0 2 2 2 0 0 0 0 7.14 7.14 85.68	1.67 0 0 0 2 2 2 2 2 2 4 4 4 7.14 7.14 85.68	1.67 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3. 3. 7. 7. 7. 7. 7. 7. 8.8 8.5 8.8 8.5 8.5 8.5 8.5 8.5 8.5 8.	1.67 0 0 3.34 2 2 2 2 4 4 7.14 2.8.56 8.56 8.56 8.60 0 182 0 400.00 0 0 400.00 0 0 7 7 2.22 0 400.00 0 0 7 7 2.22 0 7 2.22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.67 0 0 3.34 2 2 2 0 0 0 0 0 85.68 81.68 0 81.68 180 0 0 400.00 0 7 7 2.22 99 403.33	1.67 0 0 3.34 2 2 2 0 0 0 0 85.68 00 400.00 00 400.00 00 7 2.22 99 403.33 east 4 hours perv	1.67 0 0 3.34 2 2 2 0 0 0 0 0 85.68 180 0 400.00 0 77 2.222 99 403.33	1.67  0  0  1.34  2.34  2.2  7.14  7
SHOES	1	0	2	15.37	0	30.74		1.67	1.67	1.67	1.67 0 3.34 2	1.67 0 3.34 2 2 0	1.67 0 0 3.34 2 2 0 0	1.67 0 0 3.34 2 2 0 0 4	1.67 0 0 3.34 2 2 0 0 0 0 0	1.67 0 3.34 2 2 0 0 0 0 0 0		1.67 0 0 2 2 0 0 0 0 0 0 0	1,017	1.67 0 0 2 2 2 0 0 0 0 0 0 0 0 0 1 1,012 3,344 1,012 3,344 1,012 3,344 1,012 1	1.67 0 0 2 2 2 0 0 0 0 0 0 0 0 0 1,012 3.34	1.67 0 0 3.34 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.67 0 3.34 2 0 0 0 0 0 0 0 0 0 0 0 0 0	1.67  0  3.34  2  0  0  0  0  0  0  0  0  0  0  0  0	1.67  0  3.34  2  0  0  0  0  0  0  0  0  0  0  0  0	1.67  0  3.34  2  0  0  0  0  0  0  0  0  0  0  0  0	1.67  0  3.34  2  0  0  0  0  0  0  0  0  0  0  0  0
HELMET	1	0	2	15.37	0	30.74		1.67	1.67	1.67	1.67 0 3.34 2	1.67 0 0 3.34 2 0	1.67 0 0 3.34 2 2 0 0 4	1.67 0 0 3.34 2 2 0 0 4 7.14	1.67 0 0 3.34 2 2 0 0 0 7.14 7.14	1.67 0 0 3.34 2 0 0 0 4 4 7.14 7.14 85.68	1.67 0 0 3.34 2 2 2 0 0 0 0 7.14 7.14 7.14 85.68	1.67 0 0 0 2 2 0 0 0 4 7.14 7.14 7.14 85.68 85.68	1.67 0 3.34 2 2 0 0 0 7.14 7.14 2.8.56 8.8.56 8.8.68 8.8.68 7.80 1.80 7.80	1.67 0 0 3.34 2 2 0 0 0 0 0 0 85.68 85.68 180.55 180.55	1.67 0 0 3.34 2 2 2 0 0 0 1 7.14 7.14 7.14 7.14 7.18 180.55 180.55 180.55 0.25	167 0 0 3.34 2 2 0 0 0 7.14 7.14 7.14 7.14 7.14 7.14 7.14 7.14 1.18	167  0  0  2  2  2  7  144  180.5, 52000	167 0 0 0 2 2 2 2 2 2 3.34 4 4 7.14 7.14 28.56 88.56 88.56 89.56 0.02 180.56 80.50 0.02 0.02 0.02 0.02 0.02 0.02 0.02	167 0 0 2 2 2 4 4 7.14 2.8.56 85.68 85.68 87.08 180.5.	167 0 0 3.34 2 2 2 2 7.14 7.14 7.14 186.56 85.68 85.68 186.50 0.22 0.22 0.22 0.23 0.23 0.23	167 0 0 3.34 2 2 2 2 1.14 2.8.56 85.68 85.68 180.5.6 180.56 180.56 180.50 180.
MAN-DATS	1	0	2	15.37	0	30.74	,	T.6/	7	i e	3 1	1 6	-	3 17	33 7.	3. 1. 1. 2.885	33 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	3.3.3.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	288	1,1	2 2 8 8 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8						
NEL	1.00	00:00	1.00	15.37	0.00	15.37	1.67	1	0.00	0.00	0.00 1.67 2.00	1.67	0.00 2.00 0.00 2.00 2.00	0.00 1.67 2.00 0.00 2.00 2.00 7.14	0.00 2.00 0.00 2.00 2.00 7.14 7.14	0.00 1.67 2.00 0.00 2.00 2.00 7.14 7.14	0.00 1.67 2.00 0.00 2.00 7.14 7.14 7.14	0.00 1.67 2.00 0.00 2.00 2.00 7.14 7.14 7.14	000 1.67 2.00 0.00 2.00 2.00 7.14 7.14 7.14 7.14	0.00 1.67 2.00 0.00 2.00 2.00 7.14 7.14 7.14 7.14	000 1.67 2.00 000 2.00 2.00 2.00 7.14 7.14	000 1.67 2.00 0.00 0.00 7.14 7.14 7.14 7.14 7.14	000 1.67 2.00 0.00 0.00 7.14 7.14 7.14 7.14 7.14 7.14 7.14 (P. 15,000,000/	000 1.67 2.00 0.00 0.00 7.14 7.14 7.14 7.14 7.14 7.14 7.14 7.14	0.00 1.67 2.00 0.00 2.00 2.00 2.00 7.14 7.14 7.14 7.14 7.14 7.14 7.14	@ P15,000.00/	0.00 1.67 2.00 0.00 0.00 2.00 7.14 7.14 7.14 7.14 7.14 7.14 7.14 8.015,000,000
PERSONNEL	1	0	2	1	0	2	1		0	0 2	0 2 1	0 7 7 0	0 2 1 1 0 2	0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 0 0 7 1 1 4 4 4 4	0 2 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 2 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 2 2 2 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4	0 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 2 2 2 2 2 4 4 4 4 4 4 2 2 5 2 5 2 5 9 2 5 9	0 2 2 2 2 1 1 1 2 2 2 2 2 2 2 2 2 2 2 2	0 2 2 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2	2 2 1 2 2 2 2 2 3 2 3 2 3 2 3 3 3 3 3 3	0 2 2 1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 2 2 1 1 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2	0 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 2 2 1 1 1 1 1 1 2 2 2 2 2 2 2 2 2 2 2
	Fore man	Skilled Laborer	Unskilled Laborer	Fore man	Skilled Laborer	Unskilled Laborer	Foreman	Lorentain	Skilled Laborer	Skilled Laborer Unskilled Laborer	Skilled Laborer Unskilled Laborer Foreman	Skilled Laborer Unskilled Laborer Foreman Skilled Laborer	Skilled Laborer Unskilled Laborer Foreman Skilled Laborer Onskilled Laborer	Skilled Laborer Unskilled Laborer Foreman Skilled Laborer Junskilled Laborer Foreman Foreman	Skilled Laborer Unskilled Laborer Foreman Skilled Laborer Inskilled Laborer Foreman Skilled Laborer Foreman	Skilled laborer Unskilled laborer Foreman Skilled laborer Foreman Unskilled laborer Skilled laborer Skilled laborer Skilled laborer Oskilled laborer	Stilled Laborer Unskilled Laborer Foreman Skilled Laborer Inskilled Laborer Foreman Skilled Laborer Nunskilled Laborer ATOTAL, PERSONNEL/MAN-DAYS	Skilled Laborer Unskilled Laborer Foreman Skilled Laborer Foreman Skilled Laborer Unskilled Laborer Unskilled Laborer A. TOTAL, PERSONNEL/MAN-DAYS B. SERVICE LIFE, DAYS	Skilled Laborer Unskilled Laborer Foreman Skilled Laborer Foreman Skilled Laborer Foreman A TOTA, PERSONNEL/MAN-DAYS B. SERNICE LIFE, DAYS C. PURCHASE COST, PPh	Skilled Laborer Inskilled Laborer Foreman Skilled Laborer Corman Skilled Laborer Foreman Onskilled Laborer A. TOTAL, PRESONNEL/MAN-DAYS B. SERVICE LIFE, DAYS C. PURCHASE COST, PPH D. UNIT COST/MAN-DAYS (C+B)	Skilled Laborer  Foreman Skilled Laborer  Foreman Skilled Laborer  Foreman Skilled Laborer  Foreman Skilled Laborer  Foreman Skilled Laborer  Foreman Skilled Laborer  Corran, Personnet/Man-Days  B. SERVICE Life Days  C. PURCHASE COST, PPh  D. UNIT COST/Man-Days)  E. DIRECT COST FOR PPE's [D x 4 (Man-days)]	Skilled Laborer	Skilled Laborer	Skilled Laborer Unskilled Laborer Fore man Skilled Laborer Fore man Skilled Laborer Unskilled Laborer Unskilled Laborer Unskilled Laborer A. TOTAL, PERSONNEL/MAN-DAYS B. SERVICE LIFE, DAYS C. PURCHASE COST, PPH B. SERVICE LIFE, DAYS C. PURCHASE COST POR PEES (D x 4 (F. E. SAETY OFFICER/PRACTITIONER G. HEALTH PERSONNEL (FULL TIME H. TOTAL DIRECT COST (E+F+G)	Skilled Laborer  Foreman Skilled Laborer Foreman Skilled Laborer Inskilled Laborer Foreman Skilled Laborer Foreman Skilled Laborer Foreman Skilled Laborer Foreman Skilled Laborer Foreman Unskilled Laborer  A. TOTAL, PRESONNEL/MAN-DAYS B. SERVICE LIFE, DAYS C. PURCHASE COST, PPh D. UNIT COST/MAN-DAY (C+B) E. DIRECT COST FOR PPE'S (D x 4 (n E. SAETY OFFICER/PRACTITIONER G. HALTH PRESONNE (FULL TIME H. TOTALLTHM H. TOTALLTHM H. TOTALLTHM IN COCM (9% of E)	Skilled Laborer  Foreman  Skilled Laborer  Inskilled Laborer  Skilled Laborer  Skilled Laborer  Foreman  Skilled Laborer  Lonskilled Laborer  A. TOTAL, PERSONNEL/MAN-DAYS  B. SERVICE LEF, DAYS  C. PUNTCOST/MAN-DAYS  C. PUNTCOST/MAN-DAYS  E. DIRECT COST PPh  D. UNITCOST/MAN-DAYS  E. DIRECT COST FOR PPE'S; (D'X A (I)  E. SAFETY OFFICER/PRACTITIONER  G. HEALTH PERSONNEL (FULL TIME  H. TOTAL DIRECT  1. OCKN 19% of E)  1. OCKN 19% of E)  1. OCKN 19% of E)	Skilled laborer Inskilled laborer Foreman Skilled laborer Inskilled laborer Skilled laborer Skilled laborer Skilled laborer Inskilled laborer Onskilled laborer Inskilled laborer Onskilled laborer Inskilled laborer Onskilled laborer  A. TOTAL, PERSONNEL/MAN-DAY'S E. DIRCHASE COST, PPh D. UNIT COST/MAN-DAY (C+B) E. DIRECT COST FOR PPE S (D x 4 (f) F. SAFET OFFICER/PRACTTRONER G. HEALTH PERSONNEL (FULL TIME H. TOTAL DIRECT COST (E+F+G) I. OCM (9% of E) I. OCM (9% of E) I. PROPIT (8% of E) K. VAT (12% of E + H+1)
	4	S 005	ר	4	20	ר	4	300								,,==,=,=											
		4,000.00			2,459.60			4,000.00	-			800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	800.00	4,000.00	800.00	800.00	800.00	800.00	4,000.00
	100	Clearing and Grubbing		102	Roadway Excavation		105	and the second of the Co. A O	Sub-ora de Preparation	Sub-Grade Preparauon	Sub-ura de Preparation 200	Sub-ura de Preparation 200 Aggrega te Subba se Course	Sub-Sira de Prepa I auon 200 Aggrega te Subba se Cour se	Sub-strate Preparation 200 Aggregate Subbase Course 311	Sub-sia de Yrepa fauon  200  Aggrega te Subbase Course  311  P CCP (0.23m. Thk)	Sub-Grade Prepal autoni 200 Aggrega te Subba se Course 311 PCCP (0.23m. Thk)	Sub-state Preparation  200 Aggregate Subbase Course  311 PCCP (0.23m. Thk)	Sub-Grade Preparation  200 Aggrega te Subbase Course  311 PCCP (0.23m. Thk)	Sub-Grade Preparation  200 Aggregate Subbase Course  311 PCCP (0.2.3m, Thk)	Sub-state Frepal auton 200 Aggrega te Subbase Course 311 PCCP (0.23m, Thk)	Sub-state Preparation  200  Aggregate Subbase Course  311  PCCP (0.23m, Thk)	Sub-Grade Preparation  200  Aggregate Subbase Course  311  PCCP (0.23m, Thk)	Sub-Grade Preparation 200 Aggrega te Subbase Course 311 PCCP (0.23m. Thk)	Sub-urage Freparauon 200 Aggrega te Subbase Course 311 PCCP (0.23m, Thk)	Sub-Grade Preparation  200 Aggregate Subbase Course  311 PCCP (0.2.3m, Thk)	200 Aggrega te Subbase Course 711 PCCP (0.2.3m, Thk)	Sub-Grade Preparations 200 Aggregate Subbase Course 311 PCCP (0.23m, Thk)

Note: Assumed Rain Coats usage, 30% of man-days

Widening Paved, PCCP, Assume 1Km. Length

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
7.9	112.11.21.12.1.1.1.1.1.1.1.1.1.1.1.1.1.	O.U.I	ζο, αττιτι	011111111111111111111111111111111111111	101712 0001
	Safety Helmet	man-day	182	0.25	44.89
	Safety Shoes	man-day	60	2.77	166.69
	Safety Vest	man-day	182	2.22	403.33
	Working Gloves	man-day	182	7.67	1,391.50
	Rubber Boots	man-day	121	1.39	168.27
Opti	onal (if necessary)				
l '	Rain Coats (30% of the Duration)	man-day	54	0.34	18.27
	,	,			
	SUB - TOTAL (A)				2,192.96
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	2.00	500.00	1,000.00
	Health Personnel (Full Time)	1.00	27.50	280.00	7,700.00
	SUB TOTAL (B)				9 700 00
C.	SUB - TOTAL (B) EQUIPMENT COST	QUAN	ITITV	Hourly	8,700.00 Total
G.	EQUIFMENT COST	No. of Equipt.	Total Hours	Rate	Cost
		No. or Equipt.	Total Hours	Nate	Cost
	_	_	_	_	_
	-	-	-	-	-
	SUB - TOTAL (C)				_
D.	TOTAL DIRECT COST (A + B + C)				10,892.96
E.	DIRECT UNIT COST (D/Quantity)				10,892.96
F.	ADD: INDIRECT COST				. 0,002.00
	1. OCM ( 9	9% of D )		_	
		tor's Profit (8% of	D)	871.44	
	3. VAT 129		,	1,411.73	
	TOTAL INDIRECT COST		•	,	2,283.16
					,
			TOTAL COST (E	) + F)	13,176.12
			`	•	

# **C** – 3

# Cost of Construction Safety and Health for Bridge

# C – 3.1 Checklist of Personal Protective Equipment per Type of Bridge Project

(Note: Checklist of PPEs as reflected herein are the minimum requirements only. Should the Implementing Offices identify the need for inclusion of specialized PPEs, necessary adjustment shall be made accordingly.)

ITEM NO./ DESCRIPTION	WORKERS	NO. OF	SAFETY	SAFETY	SAFETY	WORKING	RAIN COATS	DUST/GAS	EAR MUFF	BODY	LANYARD	RUBBER	EYE
TENTION DESCRIPTION	WORKERS	PERSONNEL	HELMET	SHOES	VEST	GLOVES	ITAIN COATS	MASK	LAK MOT	HARNESS	LANTAND	BOOTS	GOGGLES
SUBSTRUCTURE													
	Foreman	1	4	4	4	4	✓						
Construction of Embankment	Skilled Laborer	0											
& Detour Road	Unskilled Laborer	2	4	4	4	4	4						
	Foreman	1	4	4	4	4	4						
Structure Excavation (AOWL)	Skilled Laborer	0											
	Unskilled Laborer	3	<b>*</b>	4	4	4	4						
	Foreman	1	4	4	4	4	<b>*</b>						
RC Piles, Furnished and	Skilled Laborer	9	4	4	4	4	4						
Driven, 0.45x0.45 m.	Unskilled Laborer	13	<b>*</b>	4	4	4	<b>*</b>						
	Foreman	1	4	4	4	4	*						
RC Test Piles, Furnished and	Skilled Laborer	5	4	4	4	4	*						
Driven, 0.45x0.45 m.	Unskilled Laborer	5	4	4	4	4	<b>~</b>						
	Foreman	1	4	4	4	4	*						
Reinforcing Steel Bars, Gr.40	Skilled Laborer	2	4	4	4	4	4						
(Substructure)	Unskilled Laborer	8	4	4	4	4	4						
	Foreman	1	4		4	4	4					4	
Concrete Class "A"	Skilled Laborer	8	4		4	4	4					4	
	Unskilled Laborer	16	4		4	4	4					4	
SUPERSTRUCTURE													
	Foreman	1	4	4	4	4	4						
Shoring/Falsework to	Skilled Laborer	8	4	4	4	4	4			4	4		
Superstructure	Unskilled Laborer	16	4	4	4	4	4			4	4		
	Foreman	1	4	4	4	4	4						
Concrete Railing Type "B"	Skilled Laborer	2	4	4	4	4	4						
	Unskilled Laborer	4	<b>V</b>	<b>V</b>	4	✓	<b>~</b>						
	Foreman	1	4	4	4	4	4						
Structural Steel (Expansion	Skilled Laborer	1	<b>V</b>	<b>V</b>	<b>V</b>	4	•						
Dam)	Unskilled Laborer	2	<b>V</b>	<b>V</b>	<b>V</b>	<b>9</b>	<b>y</b>						
	Foreman	1	<b>V</b>	<b>V</b>	<b>V</b>	<b>V</b>	9						
Reinforcing Steel Bars, Gr.40	Skilled Laborer	2	4	4	4	4	4						
(Superstructure)	Unskilled Laborer	8	<b>V</b>	<b>V</b>	<b>√</b>	<b>V</b>	9						
	Foreman	1	<b>V</b>		4	4	4					✓	
Concrete Class "A"	Skilled Laborer	8	<b>V</b>		<b>√</b>	<b>V</b>	9					<b>V</b>	
	Unskilled Laborer	16	2		4	2	2		İ			J	

ITEM NO./ DESCRIPTION	WORKERS	NO. OF PERSONNEL	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
SUBSTRUCTURE													
	Foreman	1	4	4	✓	✓	<b>4</b>						
Construction of Embankment &	Skilled Laborer	0		_	_	Ť							
Detour Road	Unskilled Laborer	2	4	4	✓	<b>√</b>	<b>4</b>						
	Foreman	1	<u> </u>	4	<b>V</b>	<b>y</b>	<b>y</b>						
Structure Excavation (AOWL)	Skilled Laborer	0			_		_						
,	Unskilled Laborer	3	<b>4</b>	<b>√</b>	4	<b>4</b>	<b>4</b>						
	Foreman	1	<del>-</del>	7	4	<b>y</b>	~						
RC Piles, Furnished and Driven,	Skilled Laborer	9	<u> </u>	<b>y</b>	4	<b>y</b>	~				1		
0.45x0.45 m.							_						
	Unskilled Laborer	13	<u> </u>	4	4	4	4						
PC Tost Dilas Euroiched and	Foreman	1	4	4	4	4	4						
RC Test Piles, Furnished and Driven, 0.45x0.45 m.	Skilled Laborer	5	✓	4	4	4	<b>~</b>						
5111011, 01 15/01 15 1111	Unskilled Laborer	5	✓	4	4	4	4						
- 1 6 1 2 2 2 2	Foreman	1	✓	4	4	4	•						
Reinforcing Steel Bars, Gr.40 (Substructure)	Skilled Laborer	2	4	4	✓	✓	4						
(Substructure)	Unskilled Laborer	8	4	4	4	4	4						
	Foreman	1	✓		4	4	4					4	
Concrete Class "A"	Skilled Laborer	8	4		4	4	<b>&gt;</b>					4	
	Unskilled Laborer	16	4		4	4	4					4	
SUPERSTRUCTURE													
	Foreman	1	4	4	4	✓	4						
Concrete Railing Type "B"	Skilled Laborer	2	4	4	4	4	>			4	4		
	Unskilled Laborer	4	4	4	4	4	>			4	4		
	Foreman	1	4	4	4	4	~						
Structural Steel (Expansion	Skilled Laborer	1	4	4	4	4	4						
Dam)	Unskilled Laborer	2	4	4	4	✓	<b>~</b>						
	Foreman	1	4	4	4	4	4						
Reinforcing Steel Bars, Gr.40	Skilled Laborer	2	4	4	4	<b>4</b>	4						
(Superstructure)	Unskilled Laborer	8	J	9	4	4	9						
	Foreman	1	4	*	4	<b>V</b>	<b>V</b>					✓	
Concrete Class "A"	Skilled Laborer	8	<u> </u>		<b>V</b>	<b>V</b>	~					<b>V</b>	
	Unskilled Laborer	16	<b>y</b>		<b>V</b>	<b>V</b>	<b>y</b>	1				<b>y</b>	
	Foreman	1	<u> </u>	4	4	<b>y</b>	4						
Elastomeric Bearing Pad	Skilled Laborer	0		_	_	_	_						
	Unskilled Laborer	1	<b>√</b>	<b>J</b>	<b>4</b>	9	9				<u> </u>		<del>                                     </del>
			<u> </u>	-	7	<b>y</b>	~	<del> </del>	<del> </del>			<b>y</b>	<del>                                     </del>
Prestressed Concrete Girder,	Foreman	1	<del>-</del>	1	<b>y</b>	<b>y</b>	*	<del> </del>	<del> </del>			<b>y</b>	<del>                                     </del>
L=15.00 m	Skilled Laborer	8	<u> </u>		9	<b>y</b>	<b>y</b>		-	-	<b> </b>	<b>y</b>	<del></del>

ITEM NO./ DESCRIPTION	WORKERS	NO. OF PERSONNEL	SAFETY HELMET	SAFETY SHOES	SAFETY VEST	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE GOGGLES
SUBSTRUCTURE													
	Foreman	1	4	<b>9</b>	4	4	<b>→</b>						
Construction of Embankment &	Skilled Laborer	0	*	·		·	·						
Detour Road	Unskilled Laborer	2	4	<b>4</b>	✓	✓	<b>V</b>						
	Foreman	1	<b>V</b>	<b>V</b>	4	V	<b>V</b>						
Structure Excavation (AOWL)	Skilled Laborer	0	*			·	·						
	Unskilled Laborer	3	✓	✓	4	4	✓						
	Foreman	1	4	<b>J</b>	4	V	<b>V</b>						
Bored Piles, D=0.80m @	Skilled Laborer	14	4	<b>J</b>	4	V	<b>V</b>						
Abutment	Unskilled Laborer	23	4	<b>J</b>	4	4	<b>V</b>						
	Foreman	1	4	•	4	V	4						
Steel Casing @ Abutments,	Skilled Laborer	4	4	•	4	4	4						
D=0.80m	Unskilled Laborer	6	4	•	4	V	<b>V</b>						
	Foreman	1	4	•	4	4	<b>V</b>						
Reinforcing Steel Bars, Gr.40	Skilled Laborer	2	<b>V</b>	<b>y</b>	<b>V</b>	√.	<b>y</b>						
(Substructure)	Unskilled Laborer	8	<b>V</b>	<b>V</b>	4	V	<b>V</b>						
	Foreman	1	<b>V</b>	*	<b>V</b>	J	<b>y</b>					<b>√</b>	
Concrete Class "A"	Skilled Laborer	8	<b>V</b>		4	V	<b>V</b>					<b>V</b>	
	Unskilled Laborer	16	4		4	4	<b>V</b>					<b>V</b>	
	Foreman	1	4	<b>4</b>	4	4	<b>V</b>					•	
Pile Integrity Testing (P.I.T)	Skilled Laborer	2	4	4	4	4	<b>V</b>						
	Unskilled Laborer	2	<b>V</b>	<b>V</b>	4	V	<b>V</b>						
	Foreman	1	Ý	J	V	9	<b>V</b>						
High Strain Dynamic (PDA)	Skilled Laborer	2	<b>V</b>	<b>J</b>	4	V	<b>V</b>						
	Unskilled Laborer	4	- V	<i>y</i>	4	<b>V</b>	<b>y</b>						
SUPERSTRUCTURE	Oliskilled Edborer	·		_	_		·						
	Foreman	1	4	4	✓	✓	✓						
Shoring/Falsework to	Skilled Laborer	8	- <del>-</del>	<b>y</b>	<b>V</b>	<i>y</i>	<b>y</b>			✓	<b>√</b>		
Superstructure	Unskilled Laborer	16	<b>V</b>	4	<b>V</b>	4	<b>V</b>			4	4		
	Foreman	1	· ·	<i>y</i>	4	<b>V</b>	<b>V</b>			•	•		
Concrete Railing Type "B"	Skilled Laborer	2	<u> </u>	<b>y</b>	4	4	<b>y</b>						
• ,,	Unskilled Laborer	4	<u>,</u>	<b>y</b>	4	4	<b>y</b>						
	Foreman	1	<u> </u>	<b>y</b>	<b>→</b>	4	<b>y</b>						
Structural Steel (Expansion	Skilled Laborer	1	-	<i>3</i>	9	<i>y</i>	9						
Dam)	Unskilled Laborer	2	<u> </u>	<b>y</b>	4	4	<b>&gt;</b>						
	Foreman	1	<u> </u>	<b>y</b>	4	4	<b>y</b>						
Reinforcing Steel Bars, Gr.40	Skilled Laborer	2	<u> </u>	<b>y</b>	4	4	<b>y</b>						
(Superstructure)	Unskilled Laborer	8	<u> </u>	<b>y</b>	4	4	<b>y</b>						
	Foreman	1	4	_	<b>V</b>	<b>y</b>	<b>y</b>					<b>√</b>	
Concrete Class "A"	Skilled Laborer	8	<u> </u>		4	4	<b>y</b>					<b>y</b>	
	Unskilled Laborer	16	-		2	4	<b>y</b>		<del>                                     </del>			3	<del>                                     </del>

ITEM NO./ DESCRIPTION	WORKERS	NO. OF	SAFETY	SAFETY	SAFETY	WORKING	RAIN COATS	DUST/GAS	EAR MUFF	BODY	LANYARD	RUBBER	EYE
SUBSTRUCTURE		PERSONNEL	HELMET	SHOES	VEST	GLOVES		MASK		HARNESS		BOOTS	GOGGLES
SUBSTRUCTURE	Faraman	1	4	<b>√</b>	<b>9</b>	✓	<b>✓</b>						
Construction of Embankment &	Foreman Skilled Laborer	0		*	~	₩	~						<del>                                     </del>
Detour Road			•	<b>4</b>	4	<b>√</b>	<b>√</b>						<del>                                     </del>
	Unskilled Laborer	2	7	7	7	~	<b>y</b>				1		
Structure Excavation (AOWL)	Foreman	1		*	~	*	~						<del>                                     </del>
Structure Excuration (NOTE)	Skilled Laborer	0	<b>√</b>	<b>✓</b>	4	✓	<b>✓</b>				1		
	Unskilled Laborer	3											<del>                                     </del>
Bored Piles, D=0.80m @	Foreman	1	<u> </u>	<b>4</b>	4	4	4						<del>                                     </del>
Abutment	Skilled Laborer	14	7	4	4		<b>4</b>						<del>                                     </del>
	Unskilled Laborer	23	· ·			4							<del>                                     </del>
Steel Casing @ Abutments,	Foreman	1	<b>-</b> ✓	4	4	- ✓	<b>√</b>						<del>                                     </del>
D=0.80m	Skilled Laborer	4	4	4	4	4	7						<del>                                     </del>
	Unskilled Laborer	6	<del></del>	4	4	4	-						<del>                                     </del>
Reinforcing Steel Bars, Gr.40	Foreman	1			4	- ✓	✓						<del> </del>
(Substructure)	Skilled Laborer	2	4	4	4	4	✓						<del>                                     </del>
(	Unskilled Laborer	8	4	4	4	4	4						<del>                                     </del>
Concrete Class "A"	Foreman	1	<u> </u>		4	4	✓					4	<u> </u>
Concrete class A	Skilled Laborer	8	<u> </u>		4	4	✓					4	<u> </u>
	Unskilled Laborer	16	4		4	4	✓					4	<u> </u>
Dila lata arita Tantina (D I T)	Foreman	1	4	4	4	4	✓						<u> </u>
Pile Integrity Testing (P.I.T)	Skilled Laborer	2	<u> </u>	4	✓	4	✓						<b></b>
	Unskilled Laborer	2	<u> </u>	4	✓	4	✓						<b></b>
	Foreman	1	<u> </u>	4	4	4	✓						<b></b>
High Strain Dynamic (PDA)	Skilled Laborer	2	4	4	✓.		<						<u> </u>
	Unskilled Laborer	4	4	4	4	4	✓						<u> </u>
SUPERSTRUCTURE													
	Foreman	1	4	4	4	4	4						ļ
Concrete Railing Type "B"	Skilled Laborer	2	4	4	4	4	✓			4	4		<u> </u>
	Unskilled Laborer	4	4	4	4	4	✓			4	4		<u> </u>
	Foreman	1	4	4	✓	4	4						
Structural Steel (Expansion	Skilled Laborer	1	4	4	✓	4	4						
Dam)	Unskilled Laborer	2	4	4	✓	4	4						
	Foreman	1	4	✓	✓	4	✓						
Reinforcing Steel Bars, Gr.40	Skilled Laborer	2	4	4	4	4	4						
(Superstructure)	Unskilled Laborer	8	4	4	4	4	4						
	Foreman	1	4			4	<b>4</b>					4	
Concrete Class "A"	Skilled Laborer	8	4		4	4	4					4	
	Unskilled Laborer	16	4		4	4	4					4	
	Foreman	1	4	4	4	<b>*</b>	<b>→</b>						
Elastomeric Bearing Pad	Skilled Laborer	0											
	Unskilled Laborer	1	4	4	4	4	4						
	Foreman	1	4		4	4	4					4	
Prestressed Concrete Girder,	Skilled Laborer	8	<b>V</b>		4	V	4					V	
L=15.00 m	Unskilled Laborer	8	<i>y</i>		<b>J</b>	<b>4</b>	<b>J</b>					4	i e

# Cost Computation (Bridge)

C - 3.2

# DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (BRIDGE -1)

1. RCDG ON RC PILE FOUNDATION, L = 15.00 l.m., with 125 C.D. Duration

T. NCDO ON NC I IEE		,	- (		j	ŀ		ŀ	ŀ	ŀ	ŀ							
ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY HELMET	SAFETY	SAFETY V	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER	EYE GOGGLES	
SUBSTRUCTURE																		
			Foreman	1	2.00	2	2	2	2	2	9.0	0	0	0	0	0	0	
Construction of Embankment &	1.00	0.875	Skilled Laborer	0	2.00	0	0	0	0	0	0	0	0	0	0	0	0	
Detour Road			Unskilled Laborer	2	2.00	4	4	4	4	4	1.2	0	0	0	0	0	0	
			Foreman	1	0.23	0.23	0.23	0.23	0.23	0.23	690.0	0	0	0	0	0	0	
Structure Excavation (AOWL)	36.00	20	Skilled Laborer	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	3	0.23	69:0	0.69	0.69	0.69	0.69	0.207	0	0	0	0	0	0	
			Foreman	1	13.99	13.99	13.99	13.99	13.99	13.99	4.197	0	0	0	0	0	0	
RC Piles, Furnished and Driven,	200.00	7 & 2.4	Skilled Laborer	6	13.99	125.91	125.91	125.91	125.91	125.91	37.773	0	0	0	0	0	0	
0.45×0.45 m.			Unskilled Laborer	13	13.99	181.87	181.87	181.87	181.87	181.87	54.561	0	0	0	0	0	0	
			Foreman	1	3.78	3.78	3.78	3.78	3.78	3.78	1.134	0	0	0	0	0	0	
RC Test Piles, Furnished and	54.00	7 & 2.4	Skilled Laborer	2	3.78	18.9	18.9	18.9	18.9	18.9	2.67	0	0	0	0	0	0	
Driven, 0.45x0.45 m.			linskilled lahorer	۰ ۱	3.78	18.9	18.9	18.9	18.9	189	5.67	0	0		0	0	0 0	
			Foreman		4 42	4 42	4 42	4 42	4 42	4 42	1 326		0				, c	
Reinforcing Steel Bars, Gr.40	6.358.00	180	Chillod Laborer	,	4.42	0 0	78.8	78.8	78.8	2 8 8	2,652	0 0	0	0 0			0 0	
(Substructure)			United Laborel	7 0	4.42	0.04	20.04	20.04	20.30	35.36	10.500	0 0	0	0 0	0 0	0 0	0 0	
			Unskilled Laborer	×	4.47	35.30	35.30	35.30	35.30	35.35	10.608	o	0	0	0	0	0	
			Foreman	1	10.19	10.19	10.19		10.19	10.19	3.057	0	0	0	0	10.19	0	
Concrete Class "A"	42.90	0.526	Skilled Laborer	8	10.19	81.52	81.52		81.52	81.52	24.456	0	0	0	0	81.52	0	
			Unskilled Laborer	16	10.19	163.04	163.04		163.04	163.04	48.912	0	0	0	0	163.04	0	
SUPERSTRUCTURE																		
			Foreman	1	5.00	5	5	5	5	5	1.5	0	0	0	0	0	0	
Shoring/Falsework to	15.00	0.375	Skilled Laborer	8	5.00	40	40	40	40	40	12	0	0	40	40	0	0	
Superstructure			Unskilled Laborer	16	5.00	80	80	80	80	80	24	0	0	80	80	0	0	
			Foreman	1	6.00	9	9	9	9	9	1.8	0	0	0	0	0	0	
Concrete Railing Type "B"	30.00	0.625	Skilled Laborer	2	00.9	12	12	12	12	12	3.6	0	0	0	0	0	0	
			Unskilled Laborer	4	00.9	24	24	24	24	24	7.2	0	0	0	0	0	0	
			Foreman	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Structural Steel (Expansion	756.00	200	Skilled Laborer	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Dam)			Unskilled Laborer	2	0.19	0.38	0.38	0.38	0.38	0.38	0.114	0	0	0	0	0	0	
			Foreman	1	8.29	8.29	8.29	8.29	8.29	8.29	2.487	0	0	0	0	0	0	
Reinforcing Steel Bars, Gr.40	11,936.00	180	Skilled Laborer	2	8.29	16.58	16.58	16.58	16.58	16.58	4.974	0	0	0	0	0	0	
(Superstructure)			Unskilled Laborer	8	8.29	66.32	66.32	66.32	66.32	66.32	19.896	0	0	0	0	0	0	
			Foreman	1	15.07	15.07	15.07		15.07	15.07	4.521	0	0	0	0	15.07	0	
Concrete Class "A"	57.40	0.476	Skilled Laborer	8	15.07	120.56	120.56		120.56	120.56	36.168	0	0	0	0	120.56	0	
			Unskilled Laborer	16	15.07	241.12	241.12		241.12	241.12	72.336	0	0	0	0	241.12	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	149		1309	1,309	829	1,309	1,309	393			120	120	632		
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	506.00	169.05	
			D. UNIT COST/MAN-DAY (C ÷ B)				0.25	2.77	2.22	7.67	0.34			1.73	1.48	1.39		
			E. DIRECT COST FOR PPE's (D x A (Man-davs))				323.84	1.879.38	2,909.64	10.038.27	131.83			207.76	178.08	875.45	,	16.544.25
			1	O G BE OO OO HINOWING OO BE	MTH (AC DED	2000	. and a solution of	A decrease and a decr	1 400	-								00 00 1
				MACATH (AS BE	NATION (AS PEN DA	30, 320U3,	consider attea	st 4 nours bei	veek)									4,300.00
			H TOTAL DIBECT COST (F + E + C)	MON II (AS PE	,	(50)												55,000.00
			1. IOIAL DIRECT COST (E + F + G)								Ì							36,044.23
			I. OCINI (3% of E)															4 483 54
			K. VAT (12% of E + H + I)															7.263.33
			L. TOTAL COST (E + H + I + I)															67.791.12

Note: Assumed Rain Coats usage, 30% of man-days

RCDG ON RC PILE FOUNDATION, L = 15.00 l.m.

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
- 1		<u> </u>	407411111	<u> </u>	101112 0001
	Safety Helmet	man-day	1,309	0.25	323.84
	Safety Shoes	man-day	678	2.77	1,879.38
	Safety Vest	man-day	1,309	2.22	2,909.64
	Working Gloves	man-day	1,309	7.67	10,038.27
	Rubber Boots	man-day	632	1.39	875.45
	Body Harness	man-day	120	1.73	207.76
	Lanyard	man-day	120	1.48	178.08
	Lariyard	man-uay	120	1.40	170.00
Ont	ional (if necessary)				
Орі	Rain Coats (30% of the Duration)	man-day	393	0.34	131.83
	Raili Coats (30% of the Duration)	man-uay	393	0.34	131.03
-	SUB - TOTAL (A)				16,544.25
В.	LABOR COST	QUAN	TITY	Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
			,	11000	
	Safety Practitioner/ Officer (Part Time)	1.00	9.00	500.00	4,500.00
	Health Personnel (Full Time)	1.00	125.00	280.00	35,000.00
	ricalti i cisorinci (i dii fiine)	1.00	125.00	200.00	33,000.00
	SUB - TOTAL (B)				39,500.00
C.	EQUIPMENT COST	QUAN	TITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	_	_	_	_	_
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				56,044.25
E.	DIRECT UNIT COST (D/Quantity)				56,044.25
F.	ADD: INDIRECT COST				23,2320
1	1. OCM ( 9	9% of D )		-	
1		tor's Profit (8% of	D)	4,483.54	
	3. VAT 12°	•	,	7,263.33	
1	TOTAL INDIRECT COST			. ,200.00	11,746.87
	101712 1110111201 0001				11,140.01
			TOTAL COST (E	) + F)	67,791.12
				,	0.,.012
_					

DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (BRIDGE -2)

2. PSCG ON RC PILE FOUNDATION, L = 15.00 l.m., with 140 C.D. Duration

ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY HELMET	SAFETY	SAFETY	WORKING	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER BOOTS	EYE	
SUBSTRUCTURE																		
			Foreman	1	2.00	2.00	2.00	2.00	2.00	2.00	09:0	0	0	0	0	0	0	
Construction of Embankment &	1.00	0.875	Skilled Laborer	0	2.00	0	0	0	00:00	0	0	0	0	0	0	0	0	
Decou noau			Unskilled Laborer	2	2.00	4.00	4.00	4.00	4.00	4.00	1.20	0	0	0	0	0	0	
	9		Foreman	1	0.23	0.23	0.23	0.23	0.23	0.23	690.0	0	0	0	0	0	0	
Structure excavation (AUVVL)	36.00	70	Skilled Laborer	0	0.23	0	0	0	0.00	0	0	0	0 0	0 (	0 (	0 (	0 (	
			Unskilled Laborer	τ,	0.23	0.69	0.69	0.69	0.69	0.69	4.107	0	0	0	0 0	0 0	0 0	
RC Piles Furnished and Driven	200 00	7 8. 2 4	Foreman	1 0	13.99	13.99	13.99	13.99	13.99	13.99	4.197	0	0	0 0	0 0	0	0	
0.45x0.45 m.	0000	2	Skilled Laborer	v ;	12.00	163.91	16.621	16.621	16.671	16.621	57.775	0	0	0		5 6	0	
			Foreman	1.3	3.78	3 78	3.78	3 78	3.78	3.78	1134	0	0 0	0 0	0 0	0 0	0 0	
RC Test Piles, Furnished and	54.00	7 & 2.4	Skilled Jaborer	4 1	3.78	189	18.9	189	18 90	9 8 1	567	0	0	0 0	0	0	0	
Driven, 0.45x0.45 m.			Unskilled Laborer	2	3.78	18.9	18.9	18.9	18.90	18.9	5.67	0	0	0	0	0	0	
			Foreman	1	5.74	5.74	5.74	5.74	5.74	5.74	1.722	0	0	0	0	0	0	
Reinforcing Steel Bars, Gr.40	8,272.00	180	Skilled Laborer	2	5.74	11.48	11.48	11.48	11.48	11.48	3.444	0	0	0	0	0	0	
(Substructure)			Unskilled Laborer	8	5.74	45.92	45.92	45.92	45.92	45.92	13.776	0	0	0	0	0	0	
			Foreman	1	10.81	10.81	10.81	10.81	00.0	10.81	3.243	0	0	0	0	10.81	0	
Concrete Class "A"	45.50	0.526	Skilled Laborer	8	10.81	86.48	86.48	86.48	00:0	86.48	25.944	0	0	0	0	86.48	0	
			Unskilled Laborer	16	10.81	172.96	172.96	172.96	0.00	172.96	51.888	0	0	0	0	172.96	0	
SUPERSTRUCTURE																		
			Foreman	1	6.00	9	9	9	00'9	9	1.8	0	0	0	0	0	0	
Concrete Railing Type "B"	30.00	0.625	Skilled Laborer	2	6.00	12	12	12	12.00	12	3.6	0	0	12	12	0	0	
			Unskilled Laborer	4	6.00	24	24	24	24.00	24	7.2	0	0	24	24	0	0	
			Foreman	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Structural Steel (Expansion	756.00	200	Skilled Laborer	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Dam)			Unskilled Laborer	2	0.19	0.38	0.38	0.38	0.38	0.38	0.114	0	0	0	0	0	0	
			Foreman	1	3.88	3.88	3.88	3.88	3.88	3.88	1.164	0	0	0	0	0	0	
Reinforcing Steel Bars, Gr.40	5,589.75	180	Skilled Laborer	2	3.88	7.76	7.76	7.76	7.76	7.76	2.328	0	0	0	0	0	0	
(Superstructure)			Unskilled Laborer	8	3.88	31.04	31.04	31.04	31.04	31.04	9.312	0	0	0	0	0	0	
			Foreman	1	8.78	8.78	8.78	8.78	0.00	8.78	2.634	0	0	0	0	8.78	0	
Concrete Class "A"	33.45	0.476	Skilled Laborer	8	8.78	70.24	70.24	70.24	0.00	70.24	21.072	0	0	0	0	70.24	0	
			Unskilled Laborer	16	8.78	140.48	140.48	140.48	0.00	140.48	42.144	0	0	0	0	140.48	0	
			Foreman	1	1.00	1	1	1	1.00	1	0.3	0	0	0	0	1	0	
Elastomeric Bearing Pad	8.00	П	Skilled Laborer	0	1.00	0	0	0	0.00	0	0	0	0	0	0	0	0	
			Unskilled Laborer	1	1.00	1	1	1	1.00	1	0.3	0	0	0	0	1	0	
			Foreman	1	2.00	2	2	2	0.00	2	9.0	0	0	0	0	2	0	
Prestressed Concrete Girder,	4.00	0.25	Skilled Laborer	8	2.00	16	16	16	0.00	16	4.8	0	0	0	0	16	0	
L=15.00 m			Unskilled Laborer	8	2.00	16	16	16	0.00	16	4.8	0	0	0	0	16	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	143		1045	1045	1045	521	1045	313	0	0	36	36	526	0	
			B. SERVICE LIFE, DAYS				730	180	365	3	730	1	730	730	730	365	99	
			C. PURCHASE COST, PPh				180.55	400.00	1,012.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
			D. UNIT COST/MAN-DAY (C ÷ B)				0.25	2.22	2.77	79.7	0.34			1.73	1.48	1.39		
			E. DIRECT COST FOR PPE's (D x A (Man-days))	n-days))			258.36	2,321.33	1,444.11	8,008.60	105.18		•	62.33	53.42	728.85		12,982.18
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, S2005, consider atleast 4 hours per week)	ART TIME) @ P	15,000.00/MG	NTH (AS PER D	.0. 56, S2005,	consider atle	east 4 hours p	er week )								5,000.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O. 56, S2005)	® P8,400.00/M	ONTH (AS PER	D.O. 56, S2005	13											39,200.00
			H. TOTAL DIRECT COST (E + F + G)															57.182.18
			I. OCM (9% of E)															
			J. PROFIT (8% of E)															4,574.57
			K. VAT (12% of E + H + I)															7,410.81
			L. TOTAL COST (E + H + I + J)												_			69,167.56

Note: Assumed Rain Coats usage, 30% of man-days

PSCG ON RC PILE FOUNDATION, L = 15.00 l.m.

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

Δ.	MATERIALS - COST/LINIT	LINUT	OLIANTITY	LINIT DATE	TOTAL COST
A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
			4.045	0.05	050.00
	Safety Helmet	man-day	1,045	0.25	258.36
	Safety Shoes	man-day	521	2.77	1,444.11
	Safety Vest	man-day	1,045	2.22	2,321.33
	Working Gloves	man-day	1,045	7.67	8,008.60
	Rubber Boots	man-day	526	1.39	728.85
	Body Harness	man-day	36	1.73	62.33
	Lanyard	man-day	36	1.48	53.42
Opti	ional (if necessary)			2.24	10-10
	Rain Coats (30% of the Duration)	man-day	313	0.34	105.18
	SUB - TOTAL (A)				12,982.18
В.	SUB - TOTAL (A)  LABOR COST	QUAN	ITITY	Unit	12,982.18 Total
٥.	EABOR GOOT	No. of	Total Man-	O	10
		Personnel	days	Rate	Cost
		. 0.00		Nato	
	Safety Practitioner/ Officer (Part Time)	1.00	10.00	500.00	5,000.00
	Health Personnel (Full Time)	1.00	140.00	280.00	39,200.00
	Health Fersonner (Fun Time)	1.00	140.00	200.00	38,200.00
	SUB - TOTAL (B)		<u> </u>		44,200.00
C.	EQUIPMENT COST	QUAN	ITITY	Hourly	Total
_		No. of Equipt.	Total Hours	Rate	Cost
	_	_ !	l <sub>-</sub>	_	_
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				57,182.18
E.	DIRECT UNIT COST (D/Quantity)				57,182.18
F.	ADD: INDIRECT COST				<del>-</del> -, -
	1. OCM ( 9	9% of D )		-	
		tor's Profit (8% of	D)	4,574.57	
	3. VAT 129		٥,	7,410.81	
	TOTAL INDIRECT COST	70	-	,,	11,985.38
	101/1E    12.1.1.2.1.				11,000.00
			TOTAL COST (D	) + F)	69,167.56
			10 11 12 222 . ,=	, , ,	00,.0

# DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (BRIDGE -3)

3. RCDG ON BORED PILE FOUNDATION, L = 15.00 l.m., with 105 C.D. Duration

ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY	SAFETY	SAFETY	WORKING R	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY	LANYARD	RUBBER BOOTS	EYE GOGGLES	
SUBSTRUCTURE									T									
			Foreman	1	2.00	2.00	2.00	2.00	2.00	2.00	09:0	0	0	0	0	0	0	
Construction of Embankment &	1.00	0.875	Skilled Laborer	0	2.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	2	2.00	4.00	4.00	4.00	4.00	4.00	1.20	0	0	0	0	0	0	
(1)410 (4) (1) (1) (1) (1) (1)	C	ć	Foreman	1	0.23	0.23	0.23	0.23	0.23	0.23	0.069	0 (	0	0	0	0	0	
Structure Extravation (AOVL)	30.00	70	Skilled Laborer	0 %	0.23	0 09 0	0 69 0	0 69 0	0 69	0 69	0 202	0 0	0 0	0 0	0 0	0 0	0 0	
			Foreman	1	11.47	11.47	11.47	11.47	11.47	11.47	3.441	0	0	0	0	0	0	
Bored Piles, D=0.80m @	100.00	1.09	Skilled Laborer	14	11.47	160.58	160.58	160.58	160.58	160.58	48.174	0	0	0	0	0	0	
Abutment			Unskilled Laborer	23	11.47	263.81	263.81	263.81	263.81	263.81	79.143	0	0	0	0	0	0	
			Foreman	1	1.50	1.5	1.5	1.5	1.5	1.5	0.45	0	0	0	0	0	0	
Steel Casing @ Abutments,	24.00	2	Skilled Laborer	4	1.50	9	9	9	9	9	1.8	0	0	0	0	0	0	
D=0.80m			Unskilled Laborer	9	1.50	6	6	6	6	6	2.7	0	0	0	0	0	0	
			Foreman	1	5.74	5.74	5.74	5.74	5.74	5.74	1.722	0	0	0	0	0	0	
Reinforcing Steel Bars, Gr.40	8,272.00	180	Skilled Laborer	2	5.74	11.48	11.48	11.48	11.48	11.48	3.444	0	0	0	0	0	0	
(Substructure)			Unskilled Laborer	∞	5.74	45.92	45.92	45.92	45.92	45.92	13.776	0	0	0	0	0	0	
			Foreman	1	10.81	10.81	10.81	0	10.81	10.81	3.243	0	0	0	0	10.81	0	
Concrete Class "A"	45.50	0.526	Skilled Laborer	8	10.81	86.48	86.48	0	86.48	86.48	25.944	0	0	0	0	86.48	0	
			Unskilled Laborer	16	10.81	172.96	172.96	0	172.96	172.96	51.888	0	0	0	0	172.96	0	
			Foreman	1	0.25	0.25	0.25	0.25	0.25	0.25	0.075	0	0	0	0	0	0	
Pile Integrity Testing (P.I.T)	2.00	1	Skilled Laborer	2	0.25	0.5	0.5	0.5	0.5	0.5	0.15	0	0	0	0	0	0	
			Unskilled Laborer	2	0.25	0.5	0.5	0.5	0.5	0.5	0.15	0	0	0	0	0	0	
			Foreman	1	4.00	4	4	4	4	4	1.2	0	0	0	0	0	0	
High Strain Dynamic (PDA)	1.00	0.03125	Skilled Laborer	2	4.00	8	8	8	8	8	2.4	0	0	0	0	0	0	
			Unskilled Laborer	4	4.00	16	16	16	16	16	4.8	0	0	0	0	0	0	
SUPERSTRUCTURE																		
			Foreman	1	2.00	2	2	2	2	2	1.5	0	0	0	0	0	0	
Shoring/Falsework to	15.00	0.375	Skilled Laborer	8	5.00	40	40	40	40	40	12	0	0	40	40	0	0	
Superstructure			Unskilled Laborer	16	2.00	80	80	80	80	80	24	0	0	80	80	0	0	
			Foreman	1	9.00	9	9	9	9	9	1.8	0	0	0	0	0	0	
Concrete Railing Type "B"	30.00	0.625	Skilled Laborer	2	6.00	12	12	12	12	12	3.6	0	0	0	0	0	0	
			Unskilled Laborer	4	9.00	24	24	24	24	24	7.2	0	0	0	0	0	0	
			Foreman	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Structural Steel (Expansion	756.00	200	Skilled Laborer	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Dam)			Unskilled Laborer	2	0.19	0.38	0.38	0.38	0.38	0.38	0.114	0	0	0	0	0	0	
			Foreman	1	8.29	8.29	8.29	8.29	8.29	8.29	2.487	0	0	0	0	0	0	
Reinforcing Steel Bars, Gr.40	11,936.00	180	Skilled Laborer	2	8.29	16.58	16.58	16.58	16.58	16.58	4.974	0	0	0	0	0	0	
(Suberstincture)			Unskilled Laborer	∞	8.29	66.32	66.32	66.32	66.32	66.32	19.896	0	0	0	0	0	0	
= 4 = -		į	Foreman	1	15.07	15.07	15.07		15.07	15.07	4.521	0	0	0	0	15.07	0	
COILCIETE CIASS A	07.40	0.470	Skilled Laborer	× !	15.07	120.56	120.56		120.56	120.56	36.168	0	0	0	0	120.56	0	
			Unskilled Laborer	16	15.07	241.12	241.12		241.12	241.12	72.336	0	0	0	0	241.12	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	176		1458	1,458	811	1,458	1,458	437		'	120	120	647		
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
			D. UNIT COST/MAN-DAY (C + B)				0.25	2.77	2.22	7.67	0.34	•	•	1.73	1.48	1.39	•	
			E. DIRECT COST FOR PPE's (D x A (Man-days))	ลn-days))			360.51	2,247.53	3,239.16	11,175.09	146.76	•	,	207.76	178.08	896.94	,	18,451.81
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MO	ART TIME) @	P15,000.00/N	IONTH (AS PER	INTH (AS PER D.O. 56, S2005, consider atleast 4 hours per week )	consider atle	ast 4 hours p	er week )								4,000.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PEF	@ P8,400.00/I	MONTH (AS P.	ER D.O. 56, S2005)	05)											29,400.00
			H. TOTAL DIRECT COST (E + F + G)															51,851.81
			I. OCM (9% of E)															- 0,00
			J. PROFIT (8% of E) K. VAT (12% of E + H + I)															6,719.99
			L. TOTAL COST (E + H + I + J)							İ				İ			l	62.719,95
			L. 10:00 (10:00)												-			Jan 24 1 1 20

Note: Assumed Rain Coats usage, 30% of man-days

RCDG ON BORED PILE FOUNDATION, L = 15.00 l.m.

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot
OUTPUT PER HOUR : n/a
QUANTITY : 1.00

<b>A</b> \	MATERIAL C. COOT/UNIT	LINUT	OLIANITITY	LINUT DATE	TOTAL COST
A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Safety Helmet	man-day	1,458	0.25	360.51
	Safety Shoes	man-day	811	2.77	2,247.53
	Safety Vest	man-day	1,458	2.22	3,239.16
	Working Gloves	man-day	1,458	7.67	11,175.09
	Rubber Boots	man-day	647	1.39	896.94
	Body Harness	man-day	120	1.73	207.76
	Lanyard	man-day	120	1.48	178.08
Opt	ional (if necessary)				
	Rain Coats (30% of the Duration)	man-day	437	0.34	146.76
	SUB - TOTAL (A)				18,451.81
B.	LABOR COST	QUAN		Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	8.00	500.00	4,000.00
	Health Personnel (Full Time)	1.00	105.00	280.00	29,400.00
	, ,				·
	SUB - TOTAL (B)				33,400.00
C.	EQUIPMENT COST	QUAN	TITY	Hourly	Total
		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				51,851.81
E.	DIRECT UNIT COST (D/Quantity)				51,851.81
F.	ADD: INDIRECT COST				,
	1. OCM ( 9	9% of D )		-	
		tor's Profit (8% of	D)	4,148.14	
	3. VAT 12°		,	6,719.99	
	TOTAL INDIRECT COST	· <del>-</del>		5,7 10.00	10,868.14
					. 5,000. 14
			TOTAL COST (E	) + F)	62,719.95
				,	02,710.00
$\vdash$					

# DETAILED CALCULATIONS ON COST OF CONSTRUCTION SAFETY AND HEALTH (BRIDGE - 4)

4. PSCG ON BORED PILE FOUNDATION, L = 15.00 l.m., with 105 C.D. Duration

4. PSCG ON BOKED	PILE FUU	INDALIO	4. POUG ON BOKED FILE FOUNDATION, L = 15.00 I.III., WILL 105 C.D. DUFALION	3 :5:			ŀ	l	ŀ	ŀ	ľ				Ĭ	ŀ	ŀ	
ITEM NO./ DESCRIPTION	QUANTITY	OUTPUT PER HOUR	WORKERS	NO. OF PERSONNEL	DAYS	MAN-DAYS	SAFETY	SAFETY	SAFETY 1	WORKING GLOVES	RAIN COATS	DUST/GAS MASK	EAR MUFF	BODY HARNESS	LANYARD	RUBBER	EYE GOGGLES	
SUBSTRUCTURE																		
O to constant of the constant of		0 0	Foreman	1	2.00	2.00	2.00	2.00	2.00	2.00	09:0	0	0	0	0	0	0	
Detour Road	7.00	0.0/2	Skilled Laborer Hoskilled Laborer	0 6	2.00	4 00	0 4 00	0 4 00	0 4 00	0 4 00	1 20	0 0	0 0	0 0	0 0	0 0	0 0	
			Foreman	1	0.23	0.23	0.23	0.23	0.23	0.23	690.0	0	0	0	0	0	0	
Structure Excavation (AOWL)	36.00	20	Skilled Laborer	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	ε .	0.23	69:0	69.0	69.0	69:0	69:0	0.207	0	0	0	0	0	0	
Bored Piles, D=0.80m @	100:00	1.09	Foreman	17	11.47	11.47	11.47	11.47	11.47	11.47	3.441	0	0	0	0	0	0	
Abutment			Unskilled Laborer	23	11.47	263.81	263.81	263.81	263.81	263.81	79.143	0	0	0	0	0	0	
			Foreman	1	1.50	1.5	1.5	1.5	1.5	1.5	0.45	0	0	0	0	0	0	
Steel Casing @ Abutments,	24.00	2	Skilled Laborer	4	1.50	9	9	9	9	9	1.8	0	0	0	0	0	0	
D=0.80m			Unskilled Laborer	9	1.50	6	6	6	6	6	2.7	0	0	0	0	0	0	
			Foreman	1	5.74	5.74	5.74	5.74	5.74	5.74	1.722	0	0	0	0	0	0	
Reinforcing Steel Bars, Gr.40	8,272.00	180	Skilled Laborer	2	5.74	11.48	11.48	11.48	11.48	11.48	3.444	0	0	0	0	0	0	
(Substructure)			Unskilled Laborer		5.74	45.92	45.92	45.92	45.92	45.92	13.776	0	0	0	0	0	0	
-			Foreman	1	10.81	10.81	10.81	0	10.81	10.81	3.243	0	0	0	0	10.81	0	
Concrete Class "A"	45.50	0.526	Skilled Laborer	∞ ;	10.81	86.48	86.48	0	86.48	86.48	25.944	0	0	0	0	86.48	0	
			Unskilled Laborer	dl 1	10.81	1/2.96	1/2.96	0 0	1/2.96	1/2.96	51.888	0	0	0 0	0 0	1/2.96	0 0	
Pile Integrity Testing (P.I.T)	2 00		Foreman	1 0	0.75	0.25	0.25	0.5	0.25	0.55	0.075	0	0 0	5 0	0 0	0	0 0	
0	i	1	Unskilled Laborer	2 2	0.25	0.5	0.5	0.5	0.5	0.5	0.15	0	0	0	0	0	0	
			Foreman	1	4.00	4	4	4	4	4	1.2	0	0	0	0	0	0	
High Strain Dyna mic (P DA)	1.00	0.03125	Skilled Laborer	2	4.00	8	8	8	8	8	2.4	0	0	0	0	0	0	
			Unskilled Laborer	4	4.00	16	16	16	16	16	4.8	0	0	0	0	0	0	
SUPERSTRUCTORE			Foreman	-	9	9	9	9	9	٠	18	O	o	c	c	c	c	
Concrete Railing Type "B"	30.00	0.625	Skilled Laborer	2 2	00'9	12	12	12	12	12	3,6	0	0	12	12	0	0	
:			Unskilled Laborer	4	6.00	24	24	24	24	24	7.2	0	0	24	24	0	0	
			Foreman	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Structural Steel (Expansion	756.00	200	Skilled Laborer	1	0.19	0.19	0.19	0.19	0.19	0.19	0.057	0	0	0	0	0	0	
Dam)			Unskilled Laborer	2	0.19	0.38	0.38	0.38	0.38	0.38	0.114	0	0	0	0	0	0	
	0	,	Foreman	1	3.88	3.88	3.88	3.88	3.88	3.88	1.164	0	0	0	0	0	0	
(Superstructure)	5,589.75	180	Skilled Laborer	2	3.88	7.76	7.76	7.76	7.76	7.76	2.328	0	0	0	0	0	0	
(20000000000000000000000000000000000000			Unskilled Laborer		3.88	31.04	31.04	31.04	31.04	31.04	9.312	0	0	0	0	0	0	
Concrete Class "A"	33.45	0.476	Foreman	. 0	8.78	8.78	8.78	0	8.78	8.78	2.634	0	0	0	0	8.78	0	
	7	2	Skilled Laborer	0 1	0.78	140.48	140.48	0 0	140.48	140.48	42 144	0 0	0 0	0 0	0 0	140.48	0 0	
			Foreman	1	1.00	1	1	1	1	1	0.3	0	0	0	0	0	0	
Elastomeric Bearing Pad	8.00	П	Skilled Laborer	0	1.00	0	0	0	0	0	0	0	0	0	0	0	0	
			Unskilled Laborer	1	1.00	1	1	1	1	1	0.3	0	0	0	0	0	0	
			Foreman	1	2.00	2	2	0	2	2	9:0	0	0	0	0	2	0	
Prestressed Concrete Girder,	4.00	0.25	Skilled Laborer	8	2.00	16	16	0	16	16	4.8	0	0	0	0	16	0	
L=15.00 m			Unskilled Laborer		2.00	16	16	0	16	16	4.8	0	0	0	0	16	0	
			A. TOTAL, PERSONNEL/MAN-DAYS	170		1163	1,163	639	1,163	1,163	349			36	36	524		
			B. SERVICE LIFE, DAYS				730	365	180	3	730	1	730	730	730	365	09	
			C. PURCHASE COST, PPh				180.55	1,012.00	400.00	23.00	245.00	63.25	602.60	1,263.85	1,083.30	206.00	169.05	
			D. UNIT COST/MAN-DAY (C + B)				0.25	2.77	27.7	7.67	0.34			1.73	1.48	1.39		
			E. DIRECT COST FOR PPE's (D x A (Man-days))	Vlan-days))			287.61	1,772.00	2,584.13	8,915.26	117.08			62.33	53.42	726.08		14,517.91
			F. SAFETY OFFICER/PRACTITIONER (PART TIME) @ P15,000.00/MONTH (AS PER D.O. 56, S2005, consider atleast 4 hours per week)	(PART TIME) @	P15,000.00/M	ONTH (AS PER	D.O. 56, S2005,	consider atlea	ast 4 hours per	week)								4,000.00
			G. HEALTH PERSONNEL (FULL TIME) @ P8,400.00/MONTH (AS PER D.O. 56, S2005)	) @ P8,400.00/F	MONTH (AS PE	R D.O. 56, 520	05)								İ			29,400.00
			H. TOTAL DIRECT COST (E + F + G)															47,917.91
			J. PROFIT (8% of E)												l			3,833.43
			K. VAT (12% of E + H + I)								П						T	6,210.16
			L. TOTAL COST (E + H + I + J)															57,961.50
NOTE:	As sumed Ra	in Coats usag	Note: Assumed Rain Coats usage 30% of man-days															

Note: Assumed Rain Coats usage, 30% of man-days

PSCG ON BORED PILE FOUNDATION, L = 15.00 l.m.

ITEM NO/DESCRIPTION : B.7 - Construction Safety and Health

UNIT OF MEASUREMENT : lot OUTPUT PER HOUR : n/a QUANTITY : 1.00

A)	MATERIALS : COST/UNIT	UNIT	QUANTITY	UNIT RATE	TOTAL COST
	Safety Helmet	man-day	1,163	0.25	287.61
	Safety Shoes	man-day	639	2.77	1,772.00
	Safety Vest	man-day	1,163	2.22	2,584.13
	Working Gloves	man-day	1,163	7.67	8,915.26
	Rubber Boots	man-day	524	1.39	726.08
	Body Harness	man-day	36	1.73	62.33
	Lanyard	man-day	36	1.48	53.42
_					
Opt	ional (if necessary)				
	Rain Coats (30% of the Duration)	man-day	349	0.34	117.08
	SUB - TOTAL (A)				14,517.91
B.	LABOR COST	QUAN	TITY	Unit	Total
		No. of	Total Man-		
		Personnel	days	Rate	Cost
	Safety Practitioner/ Officer (Part Time)	1.00	8.00	500.00	4,000.00
	Health Personnel (Full Time)	1.00	105.00	280.00	29,400.00
_	SUB - TOTAL (B)	01141	TITY		33,400.00
C.	EQUIPMENT COST	QUAN	Total Hours	Hourly	Total Cost
-		No. of Equipt.	Total Hours	Rate	Cost
	-	-	-	-	-
	SUB - TOTAL (C)				-
D.	TOTAL DIRECT COST (A + B + C)				47,917.91
E.	DIRECT UNIT COST (D/Quantity)				47,917.91
F.	ADD: INDIRECT COST				
	1. OCM ( 9			-	
1	2. Contrac	tor's Profit (8% of	D)	3,833.43	
	3. VAT 129	%	_	6,210.16	
	TOTAL INDIRECT COST				10,043.59
1					
			TOTAL COST (E	) + F)	57,961.50

# Cost of Construction Safety & Health for Buildings

C-4

C - 4.1 Construction Safety Signage for Building Construction

Dimension (Width X Height ,feet)

Building Construction Safety Signage	ruction nage	Dimension (Width X Height ,feet)	Materials	Estimated Cost per Signage
Hard Hat Area	CAUTION HARD HAT AREA	3' x 2'		123.68
Danger Deep Excavation	DEEP EXCAVATION	3' x 2'		123.68
Beware Falling Debris	Beware Falling debris	3' x 2'	a.) Tarpaulin b.) 1/2 " Plywood (Back Frame) c.) Miscellaneous (Nails, Tie Wires as hangers, etc.)	123.68
Construction Entrance	CONSTRUCTION SITE ENTRANCE	3' x 2'		123.68
Construction Exit	CONSTRUCTION SITE	3' x 2'		123.68

Building Construction Safety Signage	ruction age	Dimension (Width X Height ,feet)	Materials	Estimated Cost per Signage
Safety Harness Required	A DANGER Safety harness required	3' x 2'		123.68
Welding /Hot Work Area	CAUTION HOT WORK AREA	3' x 2'		123.68
Authorized Personnel Only	CONSTRUCTION AREA AUTHORIZED PERSONNEL ONLY	3' x 2'	a.) Tarpaulin b.) 1/2 " Plywood (Back Frame) c.) Miscellaneous (Nails, Tie Wires	123.68
Fall Hazard	ADANGER  FALL HAZARD  DO NOT CROSS WITHOUT  FALL PROTECTION	2' X 3'	as hangers, etc.)	123.68
Temporary Materials Stacking Area	CAUTION TEMPORARY MATERIALS STACKING AREA	3 × 2		123.68

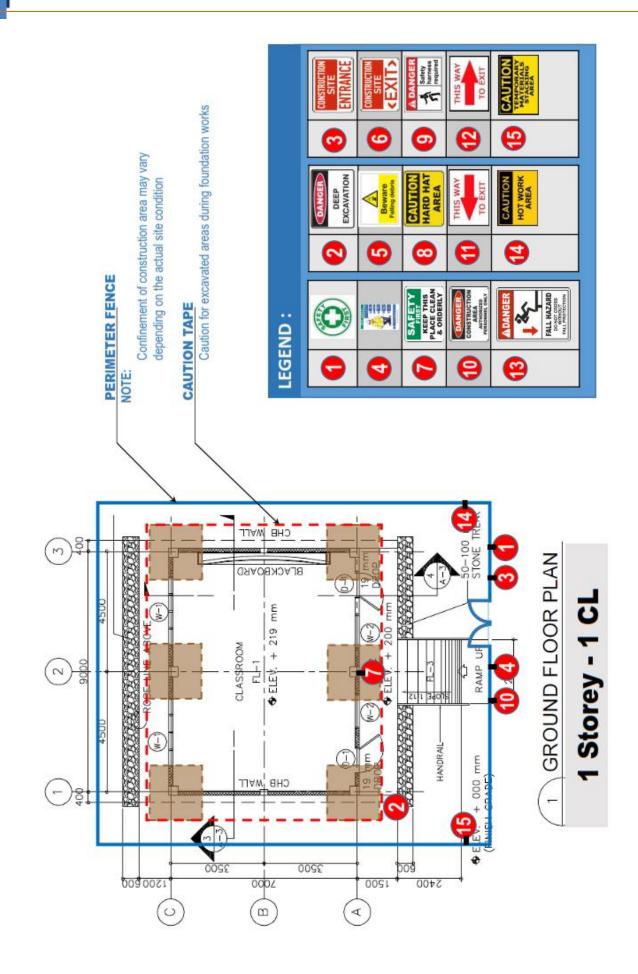
Building Construction Safety Signage	uction age	Dimension (Width X Height ,feet)	Materials	Estimated Cost per Signage
Exit (E-1)	THIS WAY TO EXIT	3'×2'	a.) Tarpaulin b.) 1/2 " Plywood (Back Frame)	123.68
Exit (E-2)	THIS WAY TO EXIT	3'×2'	c.) Miscellaneous (Nails, Tie Wires as hangers, etc.)	123.68

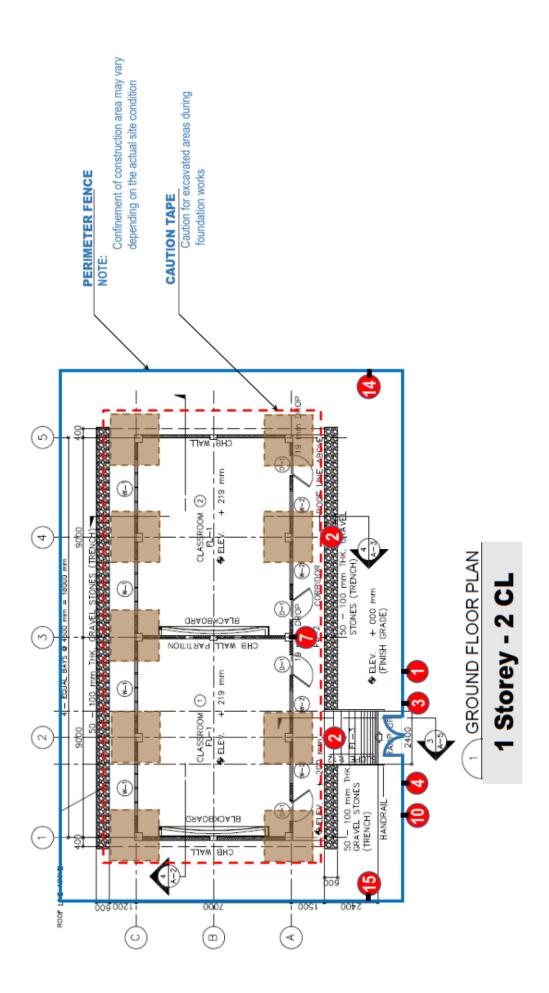
# Construction Safety Requirements for Standard School Buildings

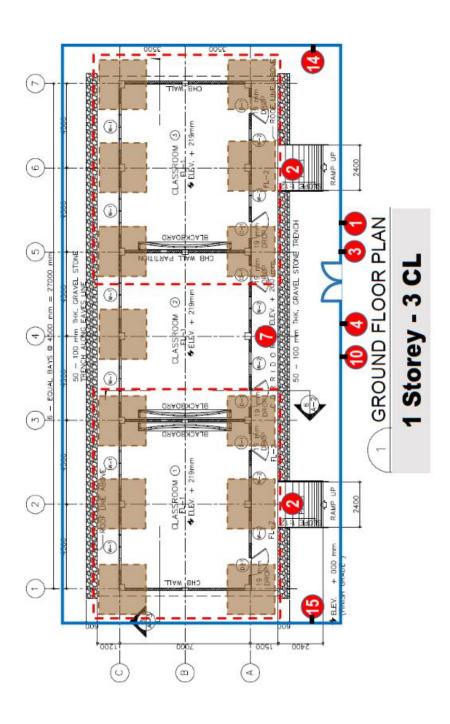
C - 4.2

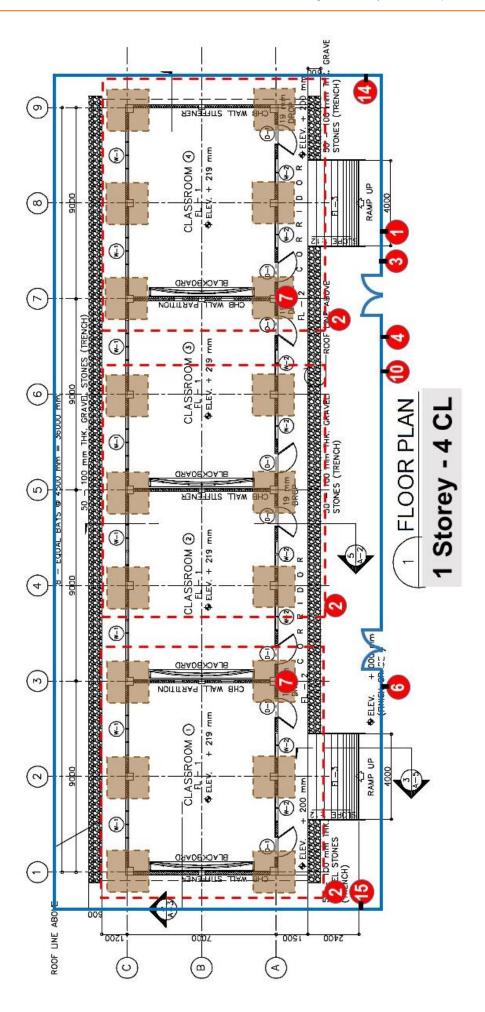
### 4.2.1 Signage and Barricades

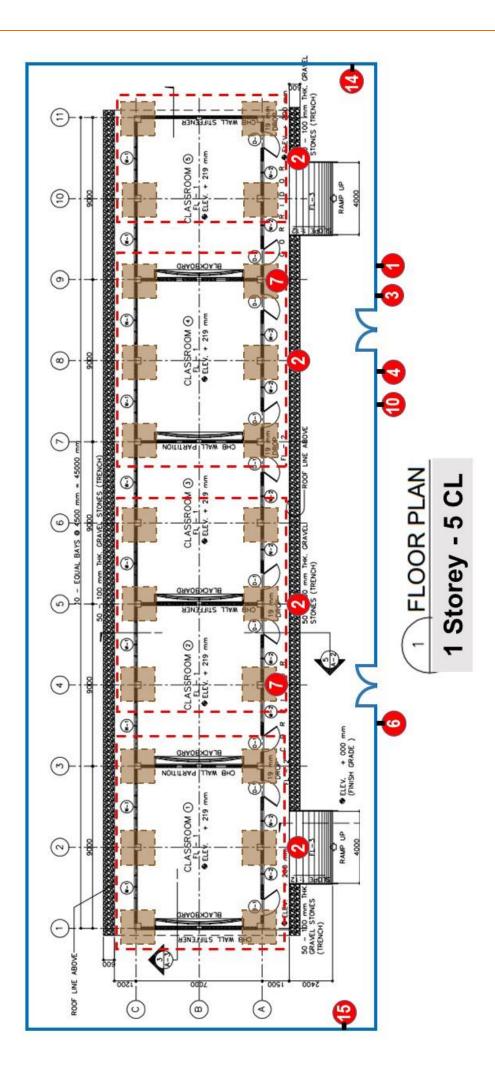
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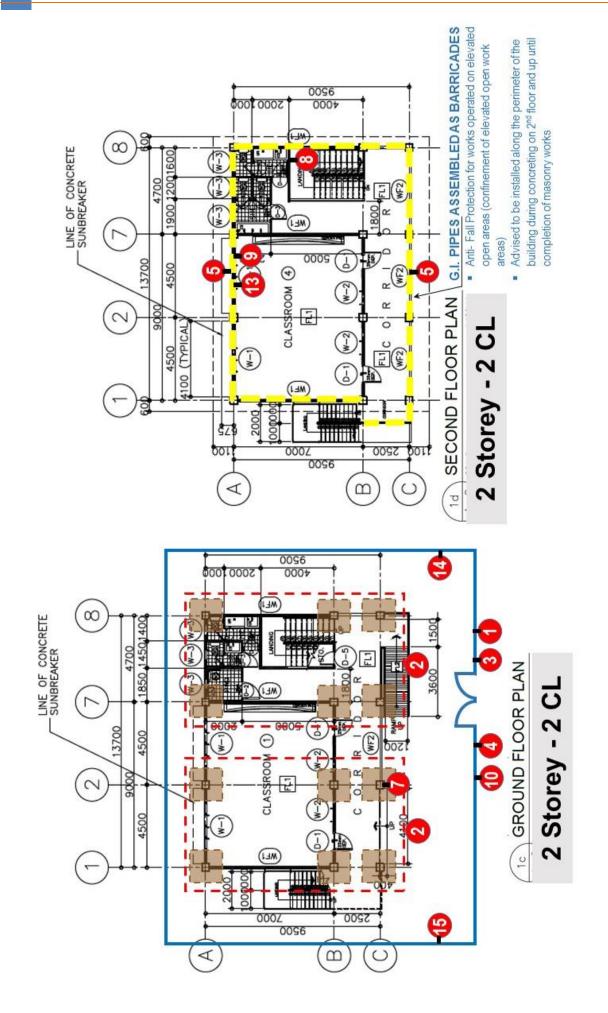




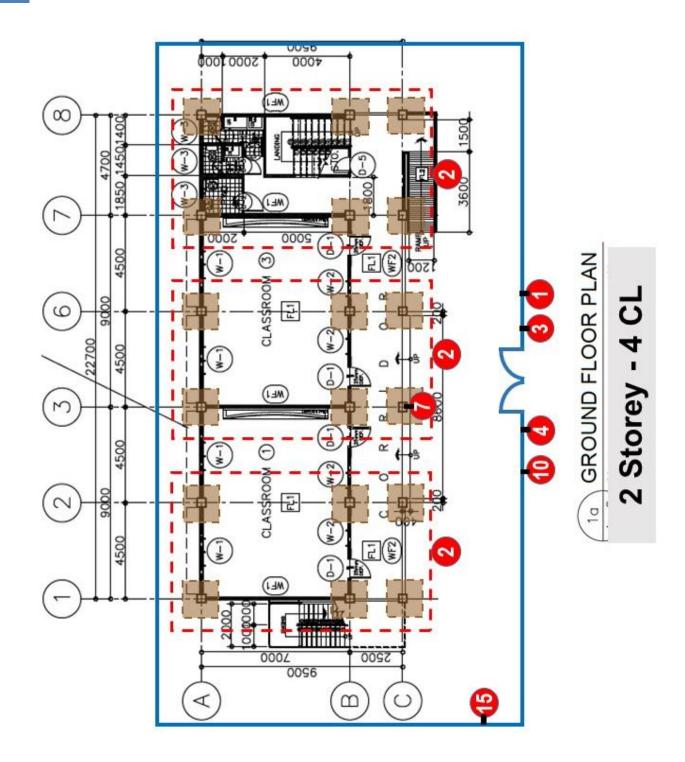


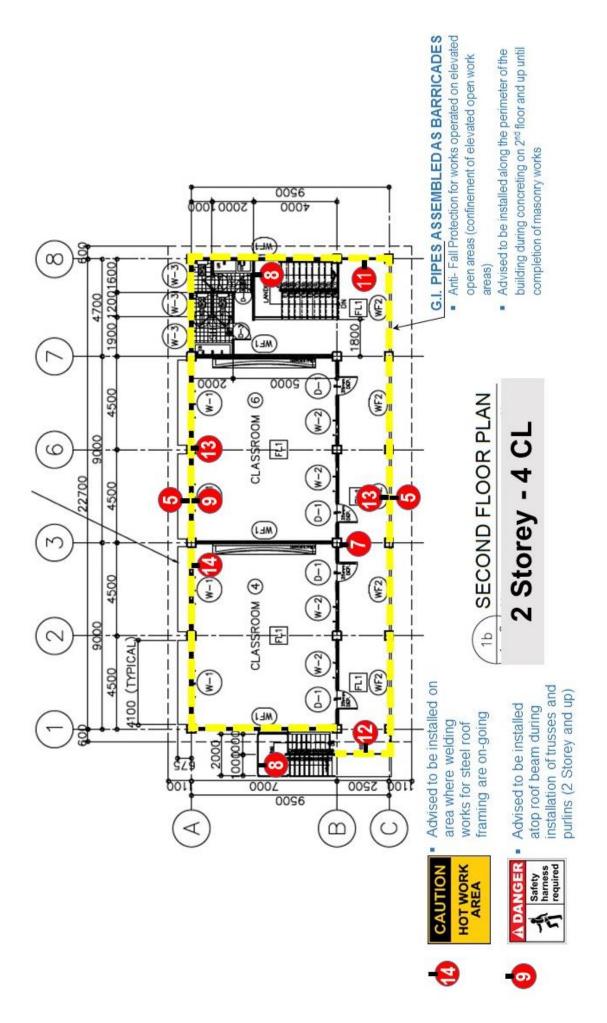




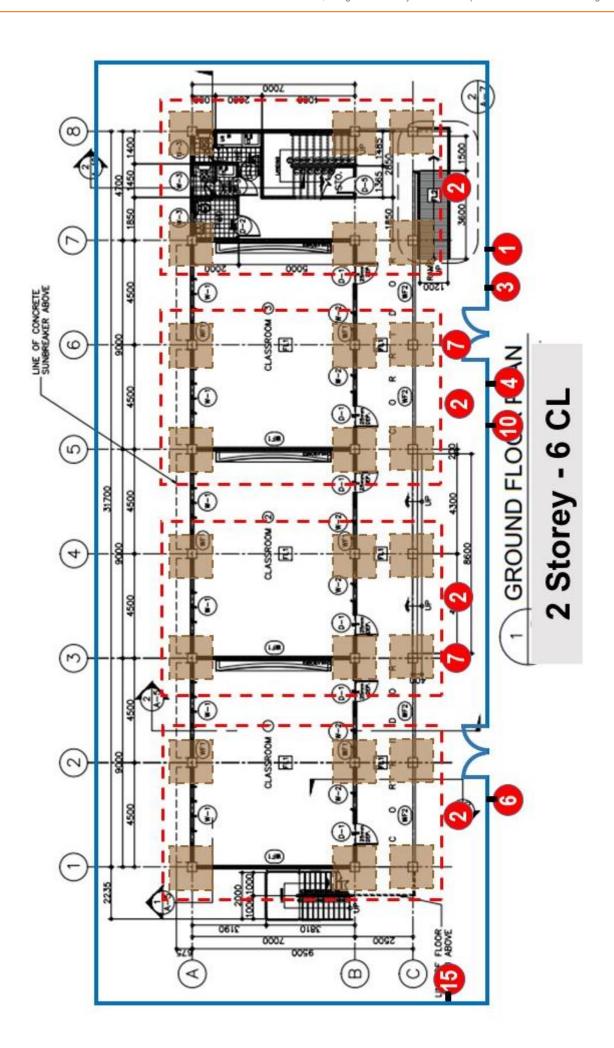


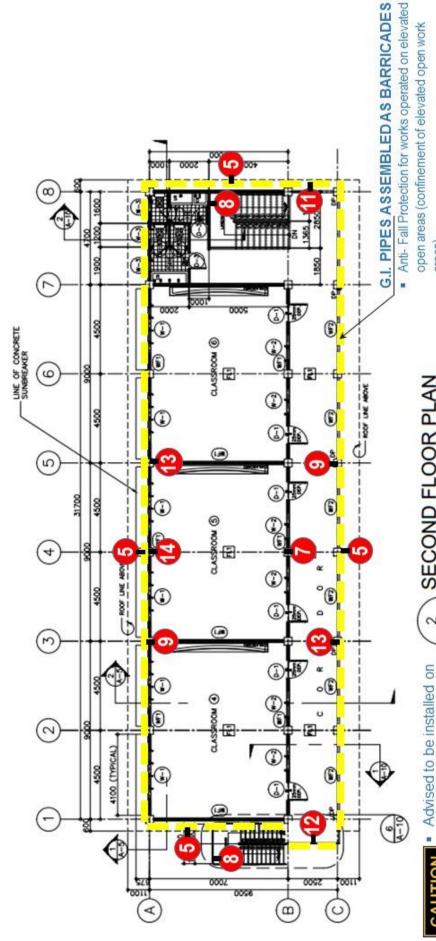
# 2 STOREY - 4 CLASSROOM





### 6 CLASSROOM 2 STOREY -





SECOND FLOOR PLAN 2 Storey - 6 CL 2

Advised to be installed along the perimeter of the building during concreting on 2nd floor and up until

areas)

completion of masonry works

Safety harness required

installation of trusses and purlins (2 Storey and up) Advised to be installed atop roof beam during

framing are on-going

area where welding

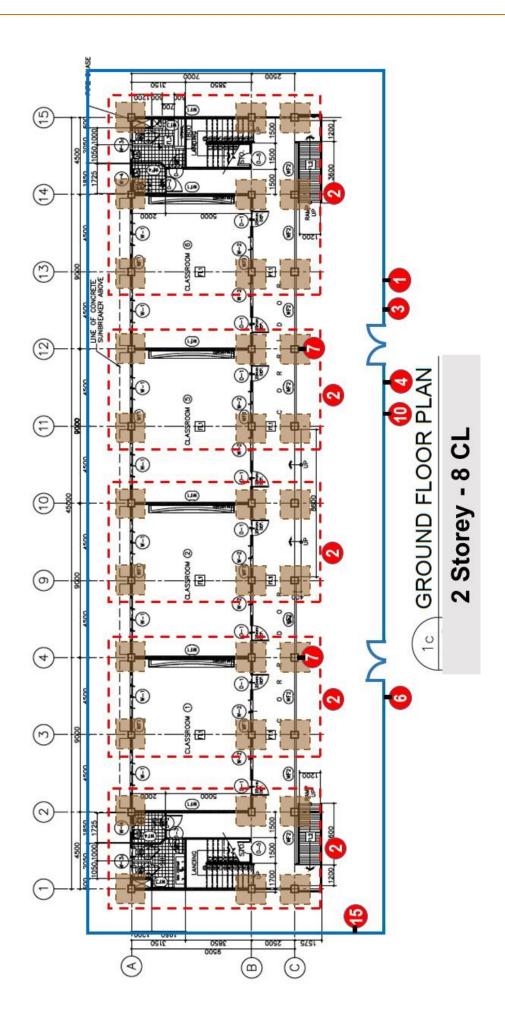
works for steel roof

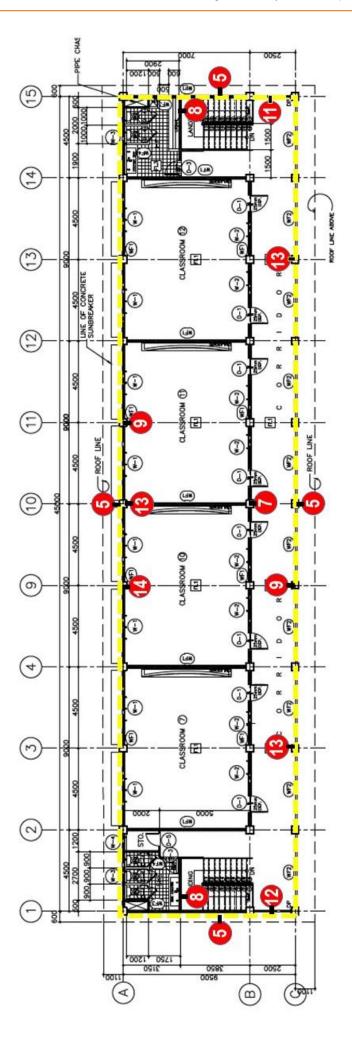
HOT WORK AREA





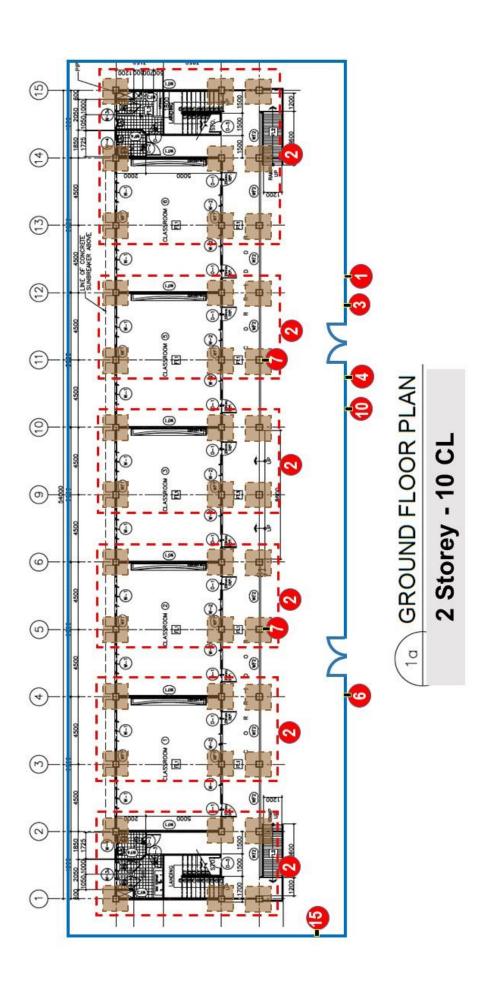
### 8 CLASSROOM 2 STOREY -

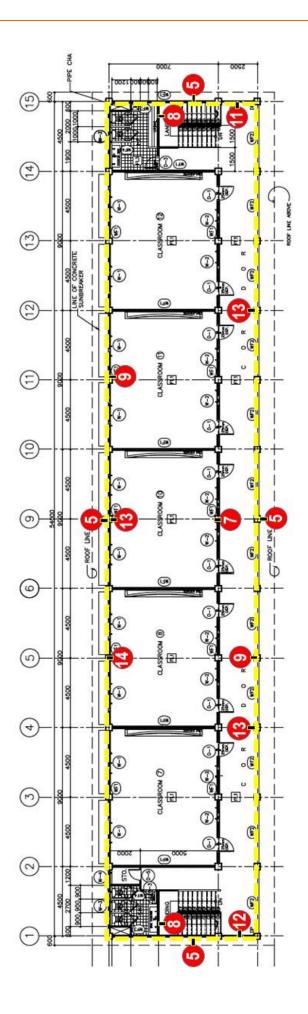




2 Storey - 8 CL

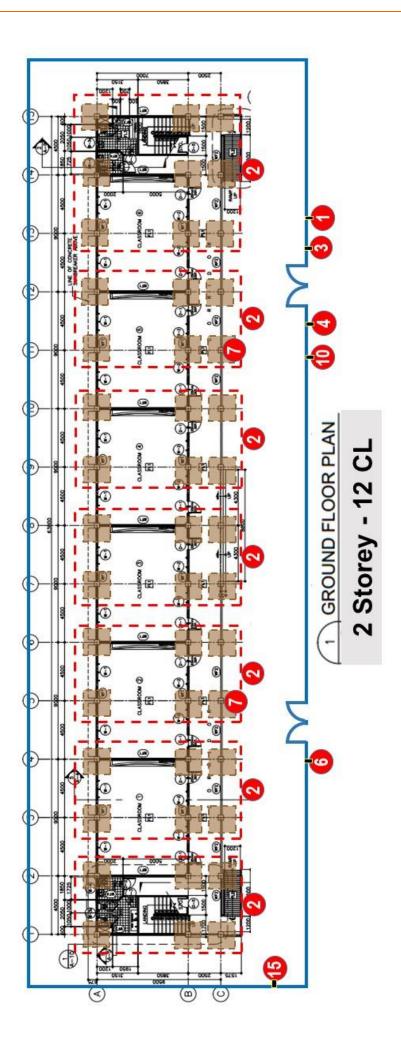
# 2 STOREY - 10 CLASSROOM

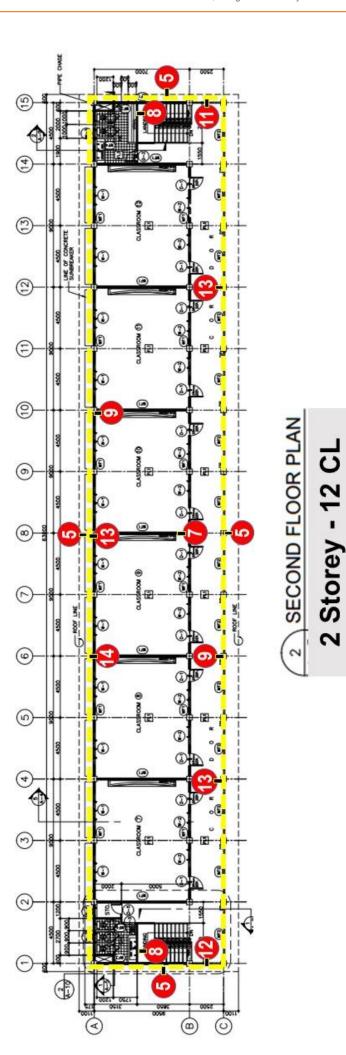




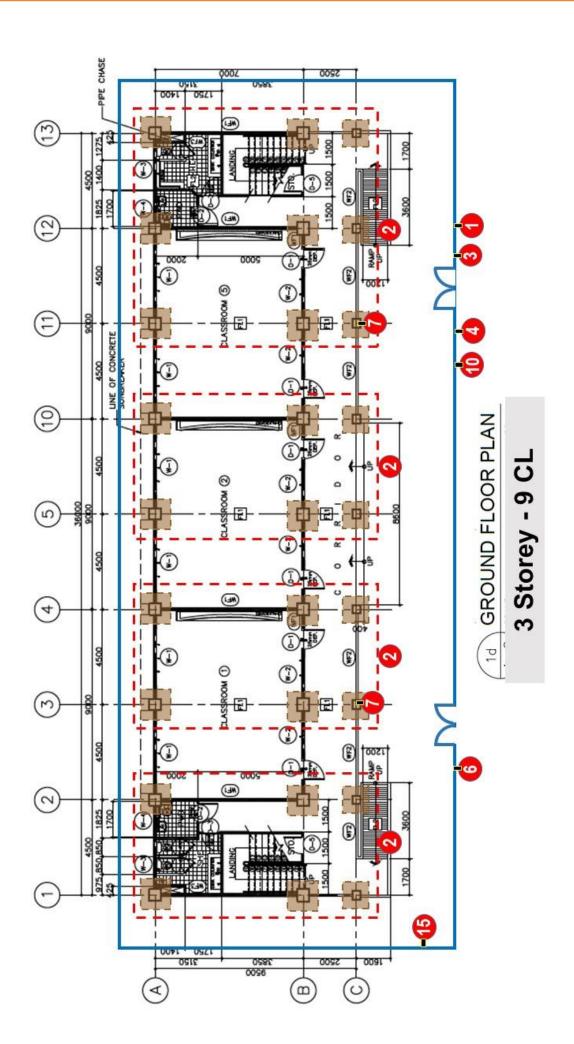
1b SECOND FLOOR PLAN
2 Storey - 10 CL

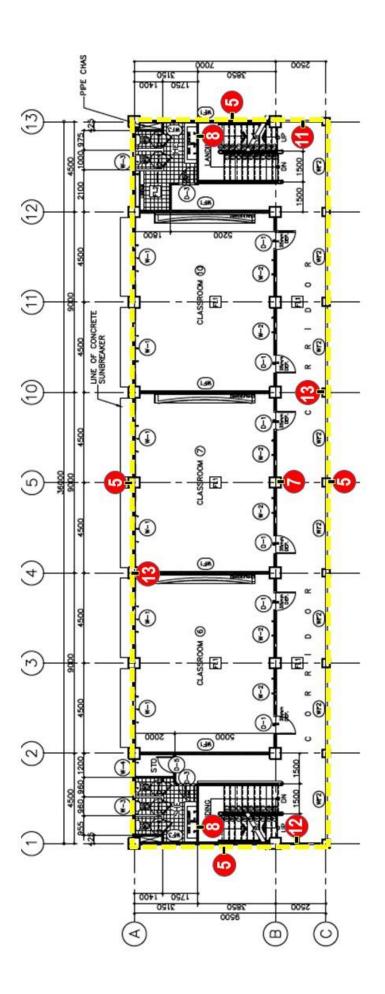
## 2 STOREY - 12 CLASSROOM



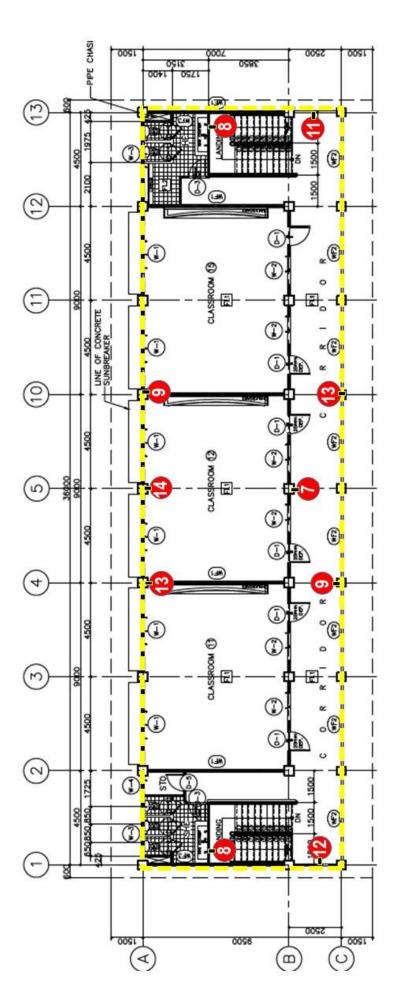


## 3 STOREY - 9 CLASSROOM



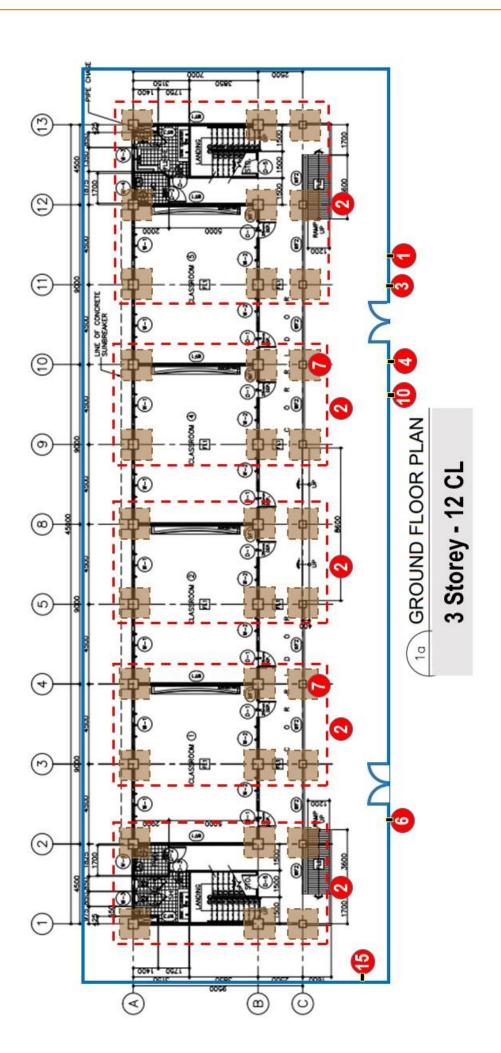


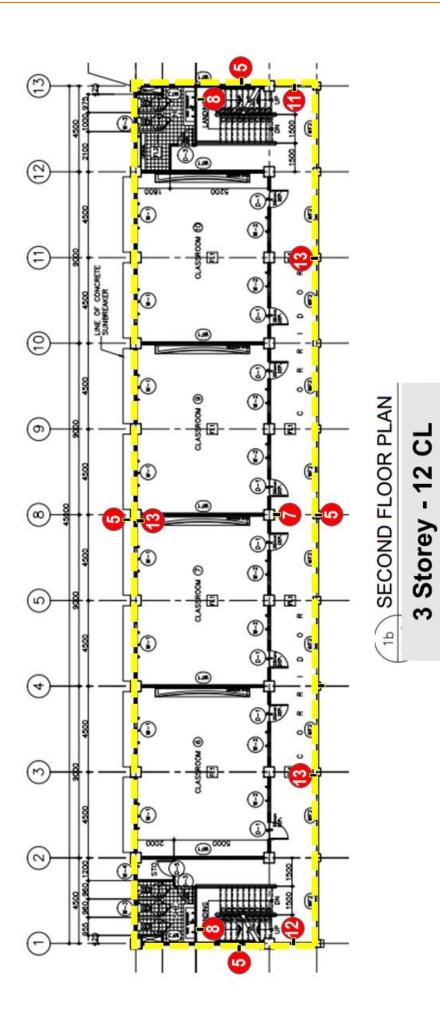
3 Storey - 9 CL

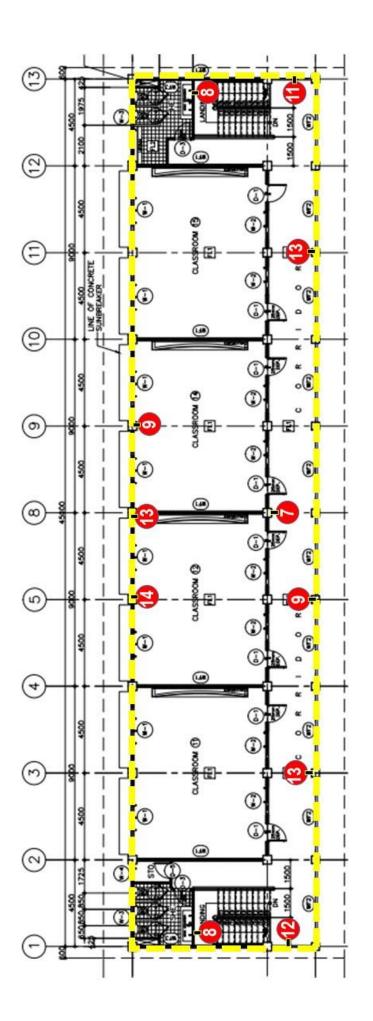




# 3 STOREY - 12 CLASSROOM

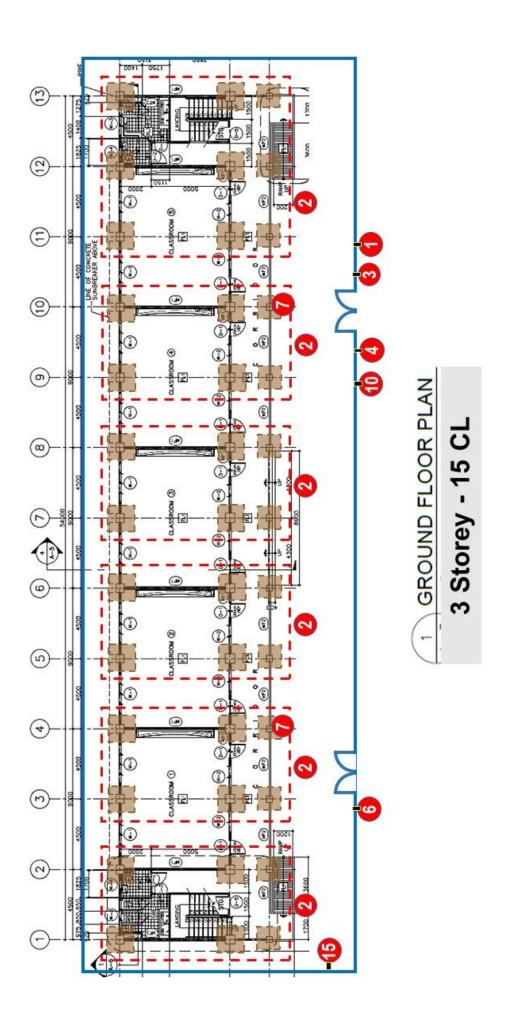


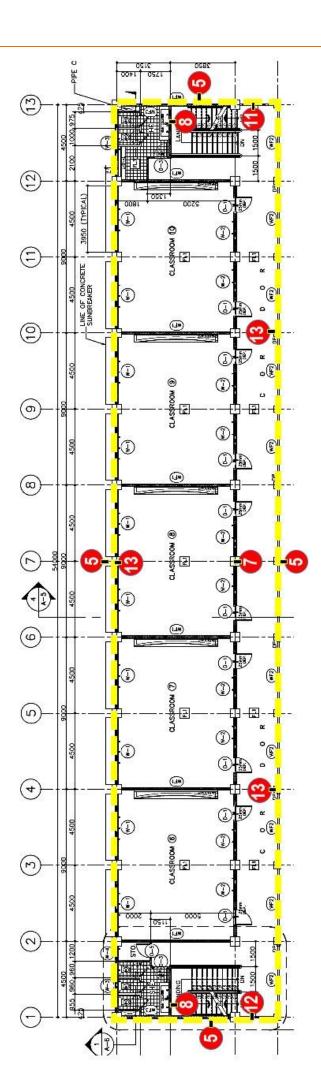




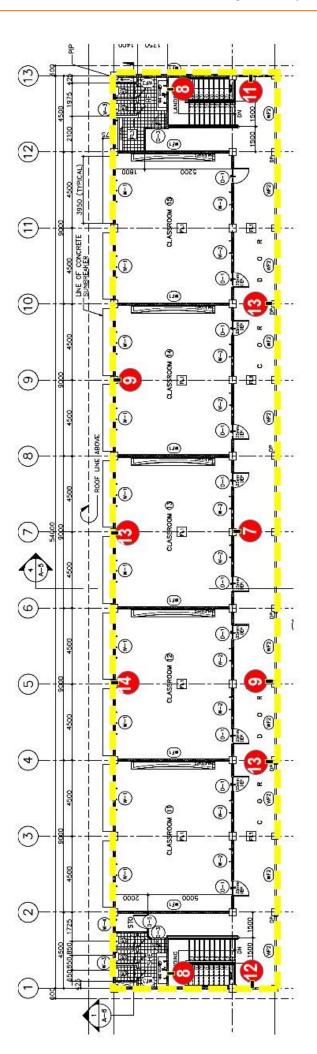
3 Storey - 12 CL

# 3 STOREY - 15 CLASSROOM



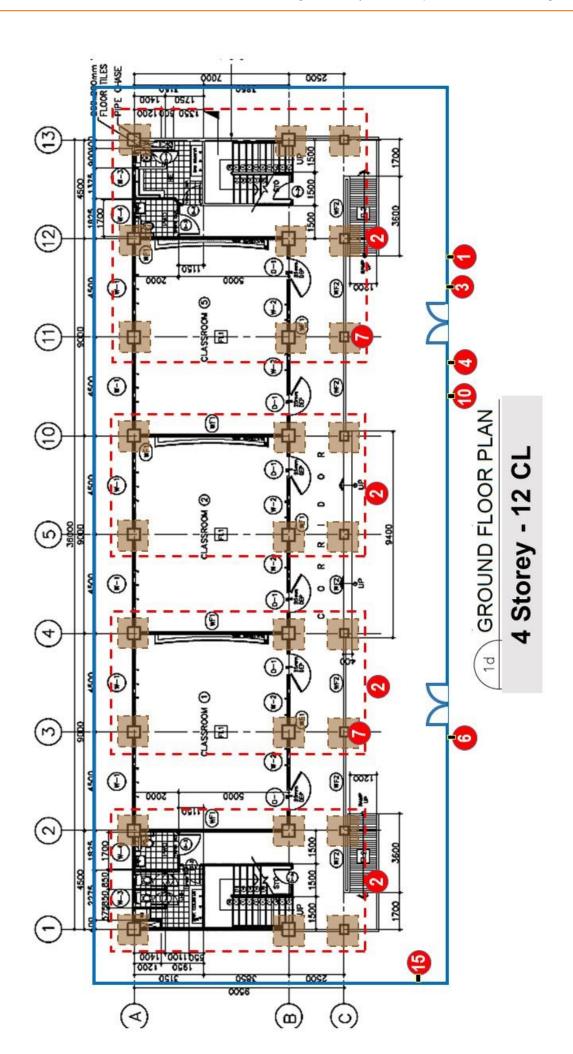


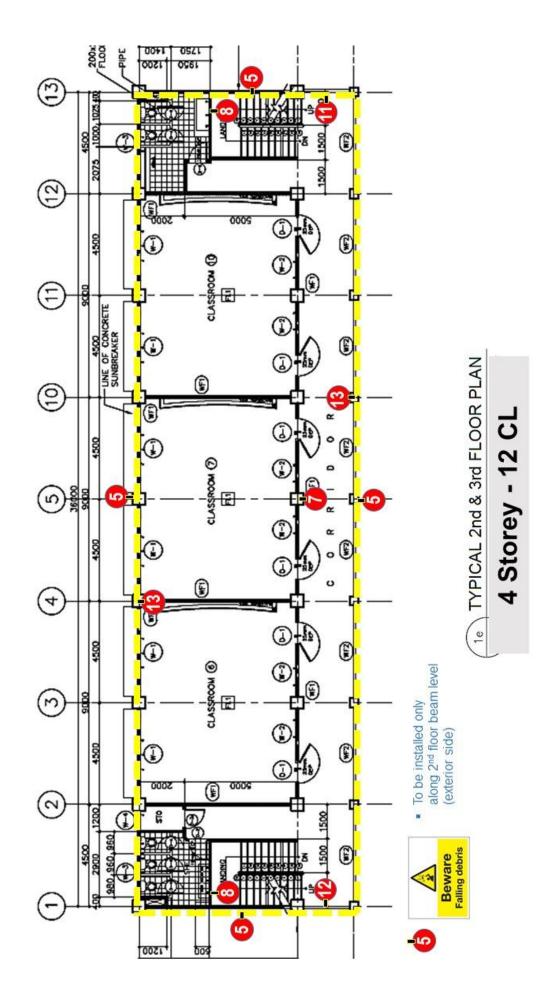
3 Storey - 15 CL

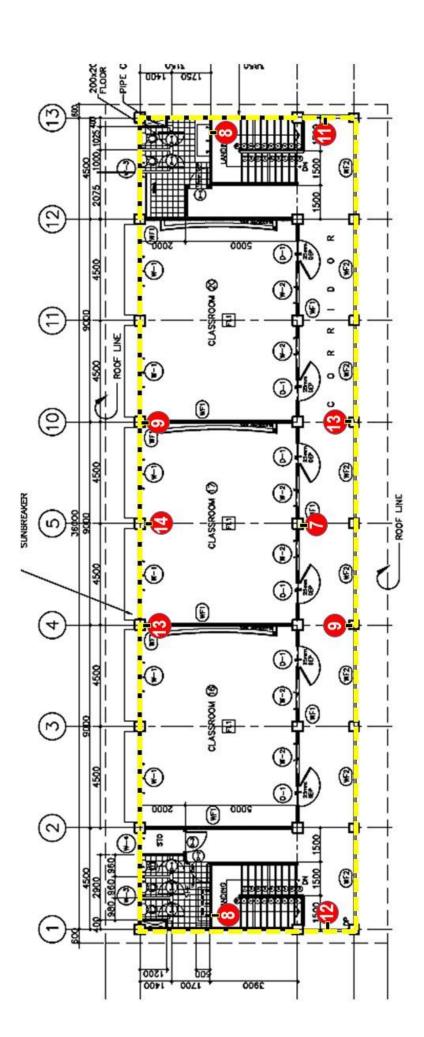




# 4 STOREY - 12 CLASSROOM

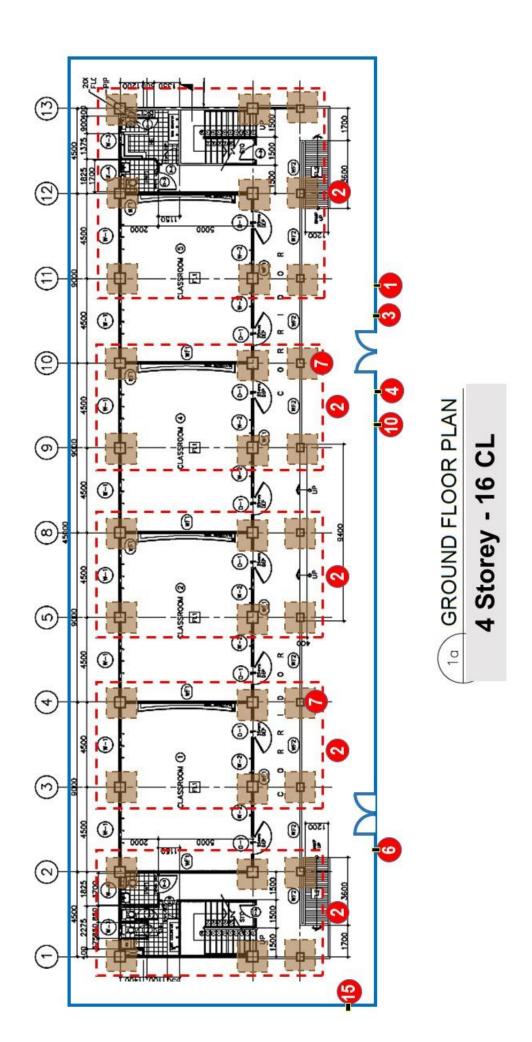


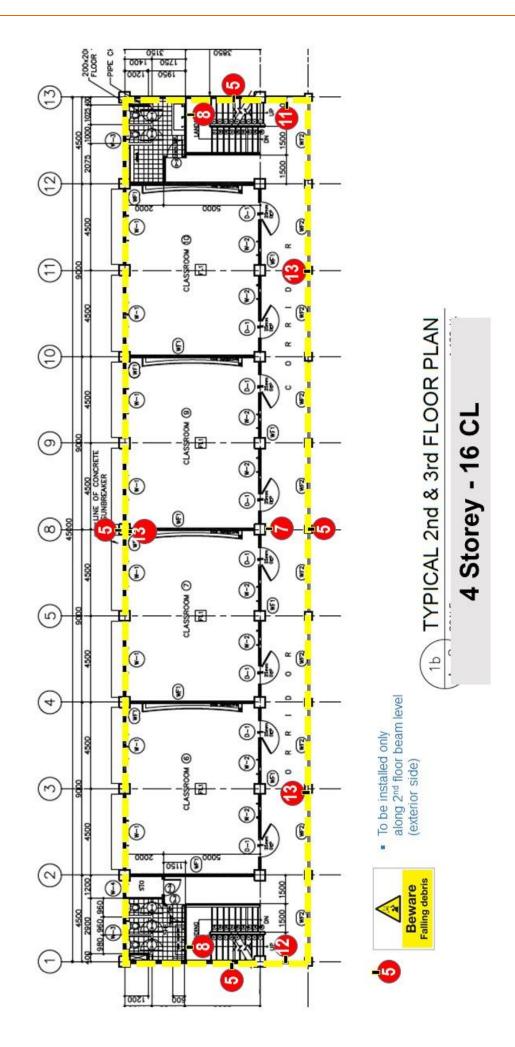


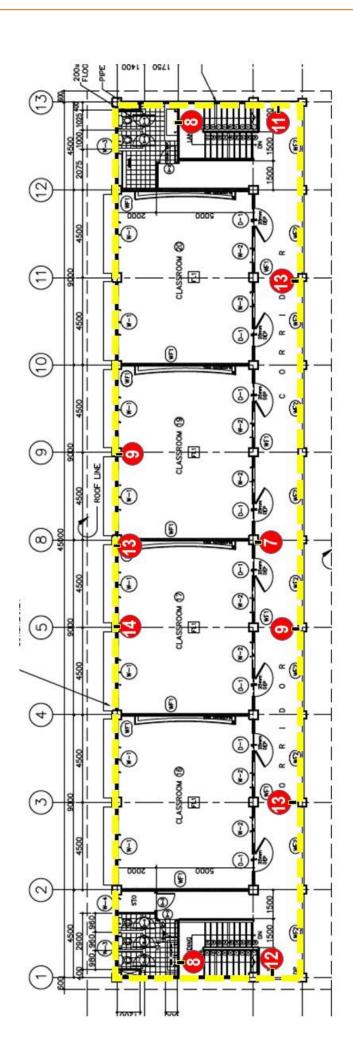


4 Storey - 12 CL

# 4 STOREY - 16 CLASSROOM

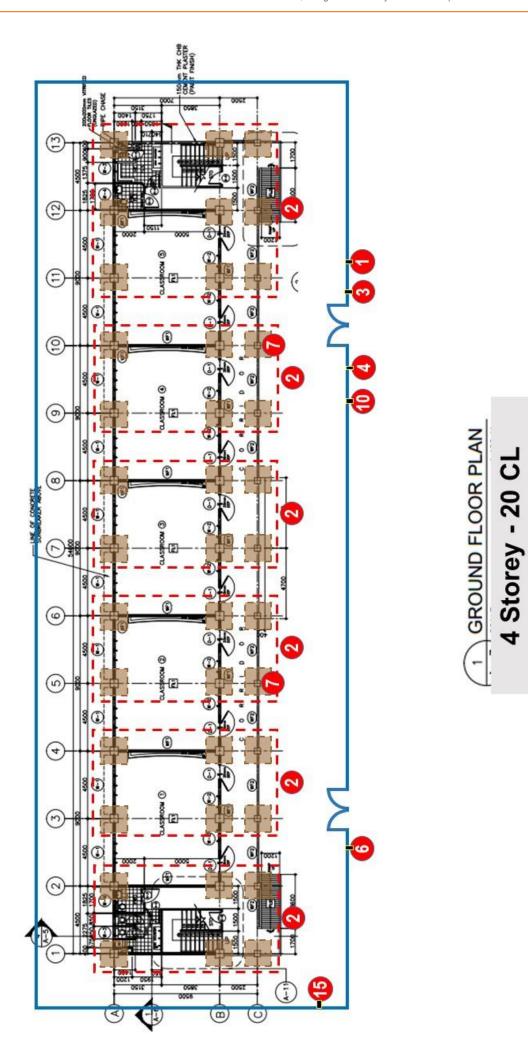


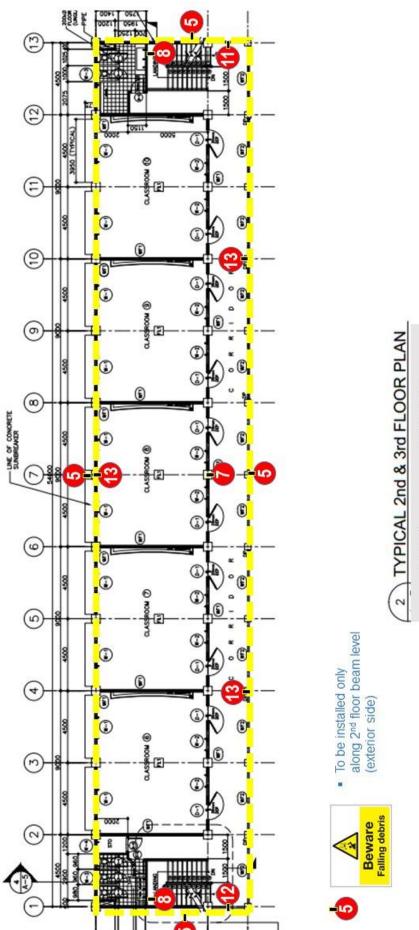




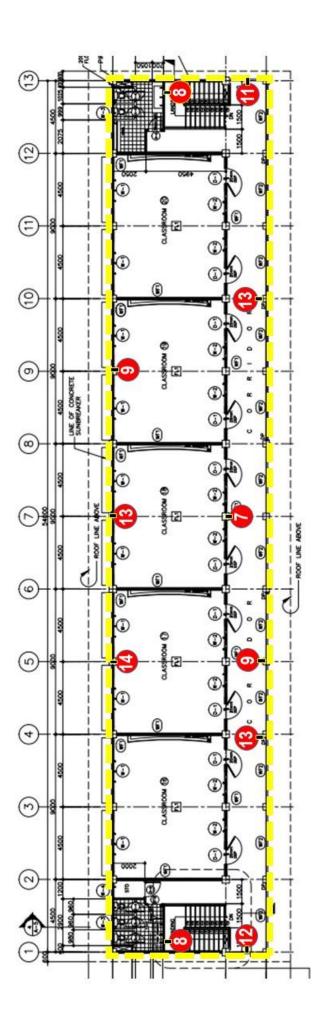
10 FOURTH FLOOR PLAN
4 Storey - 16 CL

# 4 STOREY - 20 CLASSROOM





4 Storey - 20 CL



4 Storey - 20 CL

## 4.2.2 Checklist of Personal Protective Equipment (PPE)

		MANPOWER	SAFFTY	SAFFTY	WORKING				FYF		RODY HARNESS	RIBBER
	SCOPE OF WORK	Designation	HELMET	SHOES	GLOVES	VEST	RAIN COATS	RAIN COATS DUST MASK	GOGGLES	EAR MOP		воотѕ
IV. Earthworks	ks											
Item 803	Excavation of Footing & Wall Footing	Foreman										
		Laborer	*		*	*	*					*
Item 804(a)	a) Backfilling of Excavated Materials	Foreman										
		Laborer	>		>	>	>					>
Item 804(b)	b) Gravel Bedding @ CF, WF, TG, SOF	Foreman										
		Laborer	<b>/</b>		*	*	<b>▶</b>					>
Item 804(c )	c) Embankment	Foreman										
		Laborer	1		*	1						>
V. Termite C	V. Termite Control Works											
Item 1000(a)	(a) Soil Poisoning	Foreman										
		Laborer	<b>/</b>		*	*		>				>
VI. Concrete Works	Works											
Foundation	Foundation to Ground Floor											
Item 404	Rebars works (Col. Ftg., FTB, Columns)	Foreman										
		Steelman	*	>	*	>	>					*
		Laborer	>	>	>	>	*					>
	Formworks and Scaffolding (FTB, Columns)	Foreman										
		Carpenter	*	>	*	>	>					>
		Laborer	*	>	*	>	>					>
Item 900	Concrete Works (Col. Ftg., FTB, Columns)	Foreman										
		Mason	*	>	>	>	>					>
		Laborer	>	>	>	>	>					>
Second Floor	loor											
Item 404	Rebars works (Beams, Slabs, Column)	Foreman										
		Steelman	>	>	>	>	>				>	
		Laborer	>	>	>	>	>					
	Formworks and Scaffolding	Foreman										
	(Beams, Slabs, Column)	Carpenter	>	>	>	>	>				>	
		Laborer	*	>	*	>	>					
Item 900	Concrete Works(Beams, Slabs, Column)	Foreman										
		Mason	>	>	>	>	>				>	
		Laborer	>	>	>	>	>					
Third Floor	or											
Item 404	Rebars works (Beams, Slabs, Column)	Foreman										
		Steelman	>	>	>	>	>				>	
		Laborer	>	>	>	>	>					
					1							

Item 900   Co	SCOPE OF WORK  Formworks and Scaffolding (Beams, Slabs, Column)  Concrete Works(Beams, Slabs, Column)  Rebars works (Beams, Slabs, Column)  Formworks and Scaffolding	Designation Foreman Carpenter Laborer Foreman	HELMET	SHOES	WORNING O. O. T.	VEST	RAIN COATS DUST MASK	704 HOLL	ב	EAR MOP	BODT HARNESS	RUBBER
Item 900   Co	Geams, Slabs, Column) Soncrete Works(Beams, Slabs, Column) Concrete Works (Beams, Slabs, Column) Commence and Scaffolding	Foreman Carpenter Laborer Foreman			GLOVES	2		DUSI MASh	GOGGLES	i	AND LANYARD	BOOTS
Item 900   Co     Item 404   Re     Item 404   Re     Item 404   Re     Item 404   Re     Item 404   Re     Item 900   Co     Item 900   Co     Item 900   Co     Item 900   Co     Item 506(1)A   Ma     Item 506(1)B   Ma	Seams, Slabs, Column) concrete Works(Beams, Slabs, Column) lebars works (Beams, Slabs, Column)	Carpenter Laborer Foreman										
Item 900   Co     Item 404   Re	Concrete Works(Beams, Slabs, Column)  Lebars works (Beams, Slabs, Column)  Comments and Scaffolding	Laborer Foreman	>	>	*	1	*				4	
Item 900   Co     Fourth Floor   Item 404   Re     Rem 900   Co     Item 900   Co     Item 900   Co     Item 900   Co     Item 900   Co     Item 900   Co     Item 900   Co     Item 506(1)A   Ma     Item 506(1)B   Ma	concrete Works(Beams, Slabs, Column)  (ebars works (Beams, Slabs, Column)	Foreman	>	>	*	1	*					
Fourth Floor   Item 404   Re   Foo   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 506(1)A   Ma   Item 506(1)B   Ma   Item 506(1)	lebars works (Beams, Slabs, Column)											
Fourth Floor   Item 404   Re   Foo   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 506(1)A   Ma   Item 506(1)B   Ma   Item 506(1)	ebars works (Beams, Slabs, Column)	Mason	>	>	>	1	*					
Fourth Floor   Item 404   Re   Fo   Fo   Fo   Fo   Fo   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 900   Co   Item 506(1)A   Ma   Item 506(1)B   Ma   Item 506	lebars works (Beams, Slabs, Column)	Laborer	>	>	*	*	*					
Item 404   Re   Fo   Fo	ebars works (Beams, Slabs, Column)											
Roof Beam   Fo	ormworks and Scaffolding	Foreman										
Roof Beam   Fo	ormworks and Scaffolding	Steelman	>	>	*	1	*				4	
Foor Beam   Foor Beam   Roof Beam   Rem 404   Rem 404   Rem 404   Rem 404   Rem 404   Rem 404   Rem 404   Rem 404   Rem 406   Rem 506(1)A   Malasonry Works   Rem 506(1)B   Malasonry Works	ormworks and Scaffolding	Laborer	>	>	*	*	*					
(Bx   Coof Beam   Red	CHINGING AND COMPANIES	Foreman										
Item 900   Co     Roof Beam   Item 404   Re     Item 404   Re     Item 900   Co     Item 900   Co     Item 506(1)A   Ma     Item 506(1)B   Ma	(Beams, Slabs, Column)	Carpenter	>	>	*	1	*				4	
Item 900   Co     Roof Beam   Re     Item 404   Re     Item 900   Co     Item 900   Co     Item 506(1)A   Ma     Item 506(1)B   Ma		Laborer	>	>	>	*	*					
Roof Beam   Item 404   Re   Item 404   Fo   Item 900   Co   Item 900   Co   Item 506(1)A   Ma   Item 506(1)B   Ma   Item 506	Concrete Works (Beams, Slabs, Column)	Foreman										
Roof Beam   Re		Mason	>	>	>	1	*					
Roof Beam   Item 404   Re		Laborer	>	>	>	1	*					
Item 900   Co	Rebar Works	Foreman										
Fo   Item 900   Co   Wasonry Works   Item 506(1)A   Ma   Item 506(1)B   Ma		Steelman	>	>	>	*	>				4	
Fo   Item 900   Co   Wasonry Works   Item 506(1)A   Ma   Item 506(1)B   Ma		Laborer	>	>	>	*	>					
Item 900   Co	Formworks and Scaffolding	Foreman										
Item 900 Co  VII. Masonry Works  Item 506(1)A Ma  Item 506(1)B Ma		Carpenter	>	>	>	1	>				1	
Item 900   Co		Laborer	>	>	>	*	>					
VII. Masonry Works Item 506(1)A Ma Item 506(1)B Ma	Concrete Works	Foreman										
VII. Masonry Works Item 506(1)A Ma Item 506(1)B Ma		Mason	>	>	>	1	>				1	
VII. Masonry Works Item 506(1)A Ma Item 506(1)B Ma		Laborer	>	>	>	1	>					
Item 506(1)A Ma Item 506(1)B Ma												
Item 506(1)B Ma	Masonry Units (150mm Wall)	Foreman										
Item 506(1)B Ma		Mason	>	>	>	*	>					
Item 506(1)B Ma		Laborer	>	>	>	>	>					
	Masonry Units (100mm Wall)	Foreman										
		Mason	>	>	>	>	*					
		Laborer	>	>	>	>	*					
VIII. Fabricated Materia	VIII. Fabricated Materials and Hardwares											
Item 1006(a) (0.	3.90 x 2.40m) Mahogany Panel Door on	Foreman										
203	50x150mm THK. Mahogany Jamb with Fixed	Carpenter	>	>	>	>						
9 <u>0</u>	lear Glass Transom (D-1)	Laborer	>	>	>	>						

	SCOPE OF WORK	MANPOWER	SAFETY	SAFETY	WORKING	VEST RA	RAIN COATS DUST MASK	UST MASK	EYE	EAR MOP	BODY HARNESS	RUBBER
-		Designation	UELMEI	SHOES	GLOVES				GOGGEES		AND LAND AND	2009
Item 1006(b)	Oct of Ford Form THY Medican, 19th with	Foreman										
	Maring Divisod Easing Inside and Ordinary	Carpenter	>	>	>	>						
	Outside with SS Kicking Plate (D-2)	Laborer	4	*	*	1						
Item 1006(c)	(0.80 x 2.10m) Hollow Core Flush Type Swing	Foreman										
	Marine Divisord Earing Inside and Ordinary	Carpenter	*	*	*	>						
	Outside (D-3)	Laborer	*	*	*	>						
Item 1006(d)	(0.60 x 1.20m) Swing door on 50x100mm	Foreman										
	Mahogany Door Jamb (D-4)	Carpenter	*	*	*	>						
		Laborer	1	*	1	>						
Item 1006 (f)	(0.80 x 2.10) Louver Door on 50x100 mm	Foreman										
	Mahogany Door Jamb (D-5)	Carpenter	1	*	1	>						
		Laborer	1	*	1	>						
Item 1010(a)	(2.50 x 1.50m) Jalousie Windows with Clear	Foreman										
	Glass Blades on Standard Jalouplus Casing and	Carpenter	4	1	*	1						
	Fixed Clear Glass Transom on 50x150mm Mahogany Jamb Complete with Hardware and											
	Accessories (W-1)	Laborer	>	>	>	>						
Item 1010(b)	(1.40 x 1.50m) Jalousie Windows with Clear	Foreman										
	Glass Blades on Standard Jalouplus Casing and	Carpenter	4	*	*	1						
	Fixed Clear Glass Transom on 50x150mm Jamb Complete with Hardware and Accessories (W-2)	Laborer	*	*	>	>						
Item 1010(c)	(1.90 x 0.635m) Jalousie Windows with Clear	Foreman										
	Glass Blades on Standard Jalouplus Casing on	Carpenter	1	1	*	>						
	50x150mm Mahogany Jamb Complete with Hardware and Accessories (W-3)	Laborer	>	>	>	>						
Item 1010(d)	(0.60 x 0.635m) Jalousie Windows with Clear	Foreman										
	Glass Blades on Standard Jalouplus Casing on	Carpenter	*	>	*	>						
	SUX15Umm Manogany Jamo Complete with Hardware and Accessories (W-4)	Laborer	>	>	>	>						
Item 1010(e)	Door Accessories (Locksets and Hinges)	Foreman										
		Carpenter										
		Laborer										
Item SPL-4	Blackboard	Foreman										
		Carpenter	*	>	>	>						
		Laborer	1	>	>	>						
Item SPL-6	Rail Guard	Foreman										
		Welder	>	>	>	>						
		Laborer	*	>	>	>						

	SCOPE OF WORK	MANPOWER Designation	SAFETY HELMET	SAFETY SHOES	WORKING GLOVES	VEST R/	AIN COATS [	RAIN COATS DUST MASK	EYE GOGGLES	EAR MOP	BODY HARNESS AND LANYARD	RUBBER BOOTS
IX. Finishing Works	rks											
Item 1021(c)	Plain Cement Finish with floor hardener non-skid	Foreman										
		Mason	4	*	*	>						
		Laborer	*	>	>	>						
Item 1021(c-2)	Non-skid Cement Floor Finish w/ 6mm groove lines Foreman	Foreman										
		Mason	1	*	*	>						
		Laborer	1	*	*	>						
Item 1027(a)	Plain Cement Plaster Finish	Foreman										
		Mason	4	*	*	>		1			*	
		Laborer	>	*	*	>		*				
Item 1018.2.1.	Item 1018.2.1.1 200x200mm Vitrified Glazed Tiles Wall Finish	Foreman										
		Mason	*	*	*	>						
		Laborer	4	*	*	>						
Item 1018.2.1.	Item 1018.2.1.2 200x200mm Vitrified Unglazed Tiles Floor Finish	Foreman										
		Mason	*	>	>	>						
		Laborer	1	*	*	>						
X. Carpentry Works	orks											
Item 1003	Carpentry for Ceiling with Insulation	Foreman										
		Carpenter	1	*	*	>						
		Laborer	1	*	*	>						
XI. Roof and Framing Works	ming Works											
Item 1013	Pre-Painted Metal Sheets (0.50 mm)	Foreman										
		Tinsmith	4	>	>	>					>	
		Laborer	*	>	>	>						
Item 403(a)	Steel Trusses and Lateral Struts	Foreman										
		Welder	*	*	>	>		*	>	>	>	
		Laborer	*	>	>	>						
Item 403(b)	Purlins and Channel Beam	Foreman										
		Welder	4	>	>	>		>	>	>	>	
		Laborer	*	>	>	>						
Item 403(b)	Purlins (Ceiling Support)	Foreman										
		Welder	*	>	>	>					>	
		Laborer	1	>	*	>						
Item 403(c)	Angular Base Plate	Foreman										
		Welder	1	*	*	>						
		Laborer	1	*	*	>						
Item 404	Sag Rod	Foreman										
		Welder	>	>	>	>					>	
		Laborer	*	>	>	>						

Presidential				MANPOWER	SAFETY	SAFETY	WORKING				EYE		BODY HARNESS	RUBBER
Professor   Prof			SCOPE OF WORK	Designation	HELMET	SHOES	GLOVES	VEST R.	AN COATS	DUST MASK	GOGGLES	EAR MOP	AND LANYARD	BOOTS
Wedger		Item 404	Cross Bracing	Foreman										
Laborer				Welder	*	>	>	>					>	
Foreign   Fore				Laborer	>	>	>	>						
Weder		SPL 905	Turn Buckle	Foreman										
Parinting   Foreman   Continuing   Foreman   Continuing   Foreman   Continuing   Foreman   Continuing   Parinter   Continuing   Parinter   Continuing   Continu				Welder	>	>	>	>					>	
Painter				Laborer	1	>	*	>						
Infinity Exercises	XII.	Painting Work	S)											
Painter		Item 1032 (a-1)	Masonry Painting	Foreman										
Laborer				Painter	1	1	4	>		*	1		*	
initing  Painter  Painter  Painter  Portamen  Doses and Fitting  Electrician  Coreman  Laborer  Labore				Laborer	1	*	4	>		*	1			
ng         Painter         4<		Item 1032 (a-2)	Wooden Painting	Foreman										
Laborer   Labo				Painter	1	>	*	>		*				
ng         Foreman         Coreman         Core         Coreman         Core         Core         Coreman         Coreman         Coreman         Coreman				Laborer	1	>	>	>		>				
Owes and Fitting         Fainter         4		Item 1032 (a-3)	Metal Painting	Foreman										
Overs and Fitting         Foreman <ul> <li>Foreman</li> <li>Electrician</li> <li>Coreman</li> <li>Laborer</li> <li>Coreman</li> <li>Laborer</li> <li>Coreman</li> <li>Laborer</li> <li>Coreman</li> <li>Co</li></ul>				Painter	*	1	1	*		*				
oxes and Fitting         Foreman </td <th></th> <td></td> <td></td> <td>Laborer</td> <td>1</td> <td>1</td> <td>4</td> <td>&gt;</td> <td></td> <td>*</td> <td></td> <td></td> <td></td> <td></td>				Laborer	1	1	4	>		*				
Oxes and Fitting         Foreman	X≡.	Electrical Wor	ıks											
Electrician         * <td< td=""><th></th><td>Item 1100</td><td>Conduits, Boxes and Fitting</td><td>Foreman</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>		Item 1100	Conduits, Boxes and Fitting	Foreman										
Mining Devices       Foreman       Foreman       Foreman         tures       Electrician       Foreman       Foreman         Laborer       Foreman       Foreman       Foreman         Jand Cabinets       Electrician       Foreman       Foreman         System       Foreman       Foreman       Foreman         Works       Foreman       Foreman       Foreman         Inaborer       Foreman       Foreman       Foreman         Plumber       Foreman       Foreman       Foreman         Plumber       Foreman       Foreman       Foreman				Electrician	*	>	1	*						
Miring Devices       Foreman       Feetrician       th></th> <td></td> <td></td> <td>Laborer</td> <td>*</td> <td>&gt;</td> <td>1</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				Laborer	*	>	1	*						
Electrician         4 <th< td=""><th></th><td>Item 1101</td><td>Wires and Wiring Devices</td><td>Foreman</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		Item 1101	Wires and Wiring Devices	Foreman										
Laborer         4 </td <th></th> <td></td> <td></td> <td>Electrician</td> <td>*</td> <td>1</td> <td>1</td> <td>*</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>				Electrician	*	1	1	*						
tures         Foreman         Feetrician				Laborer	*	>	*	>						
Electrician       4       4       4         Laborer       4       4       4         Laborer       4       4       4         Electrician       4       4       4         Laborer       4       4       4         Foreman       4       4       4         Morks       Electrician       4       4       4         Laborer       4       4       4       4         Inne Works       Foreman       4       4       4         Plumber       4       4       4       4         Plumber       4       4       4       4         Laborer       5       4       4       4		Item 1102(a)	Lighting Fixtures	Foreman										
Jand Cabinets       Foreman       Foreman       Fectrician       Fectrician       Foreman       Fo				Electrician	>	>	<	>						
d and Cabinets         Foreman         Feetrician         4				Laborer	>	1	~	*						
Electrician         4 <th< td=""><th></th><td>Item 1102(b)</td><td>Panel Board and Cabinets</td><td>Foreman</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		Item 1102(b)	Panel Board and Cabinets	Foreman										
System         Foreman         Foreman         Foreman           Works         Foreman         Foreman         Foreman           Works         Foreman         Foreman         Foreman           Ine Works         Foreman         Foreman         Foreman           Plumber         Foreman         Foreman         Foreman				Electrician	>	>	<	>						
System Foreman Foreman Electrician				Laborer	>	>	>	>						
Electrician       4       4       4         Laborer       4       4       4         Works       Foreman       7       4       4         Plumber       4       4       4       4         Ine Works       Foreman       9       4       4         Plumber       4       4       4       4         Laborer       4       4       4       4		Item 1102(c)	Fire Alarm System	Foreman										
Works Foreman Foreman Plumber Foreman Plumber Foreman Foreman Foreman Foreman Foreman Foreman Plumber Foreman Plumber Foreman Foreman Plumber Foreman				Electrician	>	>	*	>						
Works       Foreman       Foreman         Plumber       *       *         Laborer       *       *         Plumber       *       *         Laborer       *       *				Laborer	*	*	1	*						
Sewer Line Works         Foreman         Cold Waterline Works         Foreman         Cold Waterline Works         Foreman         Cold Waterline Works         Foreman	××.	Plumbing/ San	itary Works											
Plumber         *         *           Laborer         *         *           Cold Waterline Works         Foreman         *           Plumber         *         *           Laborer         *         *		Item 1001	Sewer Line Works	Foreman										
Cold Waterline Works         Foreman <t< td=""><th></th><td></td><td></td><td>Plumber</td><td>*</td><td>&gt;</td><td>1</td><td>*</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>				Plumber	*	>	1	*						
Cold Waterline Works Foreman Plumber     Plumber   Plumber				Laborer	*	>	1	*						
<b>&gt;</b> > > > > > > > > > > > > > > > > > >		Item 1002.3.2	Cold Waterline Works	Foreman										
<b>&gt;</b>				Plumber	>	>	>	>						
				Laborer	>	>	>	>						

	Nacw 10 14000	MANPOWER	SAFETY	SAFETY	WORKING	FOTA	NO TO THE TOTAL OF THE TOTAL	VIOLET MACK	EYE	040	BODY HARNESS RUBBER	RUBBER
	SCOPE OF WORK	Designation	HELMET	SHOES	GLOVES	VESI	RAIN COALS	DOSI MASK	GOGGLES	EAR MOR	AND LANYARD	воотѕ
Item 1002.2.8	Item 1002.2.8 Downspout/ Storm Drainage	Foreman										
		Plumber	1	>	1	>	>				*	
		Laborer	1	>	1	>	>					
Item 1002.2.5	Item 1002.2.5 Sanitary Fixtures	Foreman										
		Plumber	1	*	1	>						
		Laborer	1	*	1	>						
Item SPL-7	Septic Vault "Type E"	Foreman										
		Mason	1	*	1	>	>					
		Laborer	1	*	1	>	>					
Item SPL-8	Catch Basin	Foreman										
		Mason	1	*	1	>	>					
		Laborer	1	>	*	>	>					

# Cost Computation (Buildings)

C - 4.3

## 4.3.1 Cost of Signage and Barricades

## **DETAILED UNIT PRICE ANALYSIS (DUPA)**

1 STOREY - 1 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

		T.,			
	Designation	No. of Person	No. of Days	Daily Rate	Amount
A.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	Cub. Tetalfee D				0.00
C.	Sub - Total for B Total (A + B)				0.00
D.	Output per Hour = 1 lot				0.00
	Direct Unit Cost (C ÷ D)				0.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
		Jiiii	Qualitity	Ollit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs (2' x 3') d. Caution Tape, 1000 ft	sets roll	6.00 0.50	123.68 800.00	742.10 400.00
	ia. Caulion rape , 1000 it	1011	0.50	000.00	400.00
	Sub - Total for F				1,919.34
G.	Direct Unit Cost (E + F)			·	1,919.34
	Overhead, Contingencies & Miscellaneous (C	DCM)		of G	
	Contractor's Profit (CP)			of G	<u> </u>
	Value Added Tax (VAT)		5%	of (G + H + I)	
K.	Total Unit Cost			(G + H + I + J)	

1 STOREY - 2 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
Α.	Labor		,	,	
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C. D.	Total (A + B)  Output per Hour = 1 lot				0.00
E.	Output per Hour = 1 lot  Direct Unit Cost (C ÷ D)				0.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs ( 2' x 3' )	sets	7.00	123.68	865.78
	d. Caution Tape , 1000 ft	roll	0.50	800.00	400.00
	Sub - Total for F				2,043.02
	Direct Unit Cost (E + F)				2,043.02
	Overhead, Contingencies & Miscellaneous (C	DCM)		of G	
	Contractor's Profit (CP)			of G	
	Value Added Tax (VAT) Total Unit Cost		5%	of (G + H + I) (G + H + I + J)	
n.	i otal Offit Cost			(0 +11+1)	

1 STOREY - 3 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Porcen	No. of Days	Doily Pote	Amount
	Designation	No. of Person	No. of Days	Daily Rate	Amount
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
		No or orms	No. or Days	Daily Nate	Amount
В.	Equipment				
1					
C.	Sub - Total for B				0.00
	Total (A + B)  Output per Hour = 1 lot				0.00
	Direct Unit Cost (C ÷ D)				0.00
_					
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
1	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
1	b. Safety First (4' x 4')	set	1.00	270.87	270.87
1	c. Warning Signs ( 2' x 3' )	sets	7.00	123.68	865.78
1	d. Caution Tape , 1000 ft	roll	0.50	800.00	400.00
1					
1					
1	Sub - Total for F				2,043.02
	Direct Unit Cost (E + F)				2,043.02
	Overhead, Contingencies & Miscellaneous (O	CM)		of G	
	Contractor's Profit (CP)			of G	
	Value Added Tax (VAT)		5%	of (G + H + I)	
K.	Total Unit Cost			(G + H + I + J)	

## **DETAILED UNIT PRICE ANALYSIS (DUPA)**1 STOREY - 4 CLASSROOM

Item No./Description Construction Safety and Health (Signage and Baricades)

Unit of Measurement lot 1.000 Output per hour

	Designation	No. of Person	No. of Days	Daily Rate	Amount
_	Labor			,	
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
				. ,	
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				0.00
D.	Output per Hour = 1 lot				0.00
<u>E.</u>	Direct Unit Cost (C ÷ D)				0.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs ( 2' x 3' )	sets	9.00	123.68	1,113.14
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	Sub - Total for F				2,690.38
6	Direct Unit Cost (E + F)	1		1	2,690.38
	Overhead, Contingencies & Miscellaneous (C	DCM)		of G	۷,000.00
	Contractor's Profit (CP)		8%	of G	
J.	Value Added Tax (VAT)		5%	of (G + H + I)	
	Total Unit Cost			(G + H + I + J)	

1 STOREY - 5 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

Item No./Description:ConstUnit of Measurement:lotOutput per hour:1.000

	Designation	No. of Person	No. of Days	Daily Rate	Amount
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				0.00
D.	Output per Hour = 1 lot				2.22
E.	Direct Unit Cost (C ÷ D)			1	0.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First Signage (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs (2' x 3')	sets	9.00	123.68	1,113.14
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	Sub - Total for F				2,690.38
G.	Direct Unit Cost (E + F)	1	<u>I</u>	1	2,690.38
	Overhead, Contingencies & Miscellaneous (	OCM)		of G	,
	Contractor's Profit (CP)	·		of G	
J.	Value Added Tax (VAT)			of (G + H + I)	
K.	Total Unit Cost			(G + H + I + J)	

2 STOREY - 2 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
^	Labor	1.0.0		July Maio	
٦.	Labor				
	· · ·				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	a. GI pipe barricades 4.5 m x 1.2 m	4	28.00	21.93	2,456.61
	b. GI pipe barricades 9.5 m x 1.2 m	2	28.00	49.59	2,776.93
_	Sub - Total for B				5,233.54
ဂ ဂ	Total (A + B)  Output per Hour = 1 lot				5,233.54
	Direct Unit Cost (C ÷ D)				5,233.54
-	Name and Specification	Unit	Quantity	Unit Cost	Amount
_		Jiik	Quantity	J.II. 5031	Amvant
۴.	Materials	6-1	1.00	500.07	500.07
	a. PPE Signage (4' x 8') b. Safety First (4' x 4' )	set set	1.00 1.00	506.37 270.87	506.37 270.87
	c. Warning Signs (2' x 3')	sets	11.00	123.68	1,360.51
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	0.50	3,500.00	1,750.00
	, <u></u>			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,. 2 3.00
	Sub - Total for F				4,687.75
_	Direct Unit Cost (E + F)	OCM)		of C	9,921.28
	Overhood Contingencies 9 Misseller //			of G	
Н.	Overhead, Contingencies & Miscellaneous (Contractor's Profit (CP)	ocivi)			
H. I.	Overhead, Contingencies & Miscellaneous (C Contractor's Profit (CP) Value Added Tax (VAT)	JCIVI)	8%	of G of (G + H + I)	

2 STOREY - 4 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
	Labor			July Hate	7
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
				<b>,</b>	
В.	Equipment a. GI pipe barricades 4.5 m x 1.2 m	8	30.00	21.93	5,264.16
	b. GI pipe barricades 4.5 m x 1.2 m	2	30.00	49.59	2,975.28
	b. Of pipe barriedees 5.5 III x 1.2 III	2	30.00	40.00	2,070.20
	Sub - Total for B	8,239.44			
C.	Total (A + B)	8,239.44			
D.	Output per Hour = 1 lot				0.000.44
E.	Direct Unit Cost (C ÷ D)				8,239.44
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs (2' x 3')	sets	17.00	123.68	2,102.60
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	1.00	3,500.00	3,500.00
	Sub - Total for F				7,179.84
G	Direct Unit Cost (E + F)			I	15,419.28
	Overhead, Contingencies & Miscellaneous (OC	CM)		of G	10,110.20
i.	Contractor's Profit (CP)	/	8%	of G	
	Value Added Tax (VAT)			of (G + H + I)	
	Total Unit Cost			(G + H + I + J)	
	1				

2 STOREY - 6 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
A.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	a. GI pipe barricades 4.5 m x 1.2 m	6	56.00	21.93	7,369.82
	b. GI pipe barricades 9.5 m x 1.2 m	2	56.00	49.59	5,553.86
İ					
	Sub - Total for B				12,923.68
C.	Total (A + B)				12,923.68
	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)				12,923.68
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				<u> </u>
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs ( 2' x 3')	sets	22.00	123.68	2,721.02
	d. Caution Tape, 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	1.00	3,500.00	3,500.00
	Sub Total for F				7 700 00
6	Sub - Total for F Direct Unit Cost (E + F)			1	7,798.26 20,721.94
	Overhead, Contingencies & Miscellaneous (	OCM)		of G	20,121.94
п. І.	Contractor's Profit (CP)	OCIVI)	Ω0/_	of G	
	Value Added Tax (VAT)			of (G + H + I)	
	Total Unit Cost		370	(G + H + I + J)	
		\= · · · · · · · · · · · · · · · · · · ·			

2 STOREY - 8 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	a. GI pipe barricades 4.5 m x 1.2 m	8	58.00	21.93	10,177.38
	b. GI pipe barricades 9.5 m x 1.2 m	2	58.00	49.59	5,752.21
	Sub - Total for B				15,929.58
C.	Total (A + B)	•		•	15,929.58
D.	Output per Hour = 1 lot				
Ε.	Direct Unit Cost (C ÷ D)				15,929.58
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4' )	set	1.00	270.87	270.87
	c. Warning Signs (2' x 3')	sets	23.00	123.68	2,844.70
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	1.50	3,500.00	5,250.00
	,				
	Sub - Total for F				9,671.94
	Direct Unit Cost (E + F)	l		1	25,601.52
G.					20,001.02
	Overhead, Contingencies & Miscellaneous (OCM)  Ontropole Profit (CR)				
Н.		(CON)	8%	of G	
H. I.	Contractor's Profit (CP)  Value Added Tax (VAT)	(COM)		of G of (G + H + I)	

2 STOREY - 10 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
Δ	Labor		-	-	
Λ.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
ь	Equipment			-	
Ь.	a. GI pipe barricades 4.5 m x 1.2 m	7	80.00	21.93	12,283.04
	b. GI pipe barricades 4.5 m x 1.2 m	2	80.00	49.59	7,934.08
	b. Of pipe barricades 5.5 m x 1.2 m	_	00.00	40.00	7,554.00
_	Sub - Total for B				20,217.12
C.	Total (A + B)				20,217.12
	Output per Hour = 1 lot  Direct Unit Cost (C ÷ D)				20,217.12
<u> </u>	Name and Specification	Unit	Quantity	Unit Cost	
	-	Offic	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs (2' x 3')	sets	23.00	123.68	2,844.70
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	1.50	3,500.00	5,250.00
	Sub Total for F				0.074.04
G	Sub - Total for F	<u> </u>		I	9,671.94
	Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (O	∩M)		of G	29,889.06
	Contractor's Profit (CP)	OIVI)	Ω0/.	of G	
	Value Added Tax (VAT)			of (G + H + I)	
	Total Unit Cost		370	(G + H + I + J)	
٠	rotal Offic Oost			(5 1 11 1 1 + 0)	

2 STOREY - 12 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

Sub - Total for A  Name and Capacity  ent be barricades 4.5 m x 1.2 m be barricades 9.5 m x 1.2 m	No. of Person  No of Units  8 2	No. of Days  No. of Days  80.00 80.00	Daily Rate  Daily Rate  21.93 49.59	0.00 Amount  14,037.76 7,934.08	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	Amount 14,037.76	
Name and Capacity ent be barricades 4.5 m x 1.2 m	8	80.00	21.93	14,037.76	
ent pe barricades 4.5 m x 1.2 m			21.93		
oe barricades 4.5 m x 1.2 m					
		33.33	10.00	1,001.00	
		i			
Out Tatalifan D				04 074 04	
Sub - Total for B				21,971.84	
Total (A + B)  per Hour = 1 lot				21,971.84	
Init Cost (C ÷ D)				21,971.84	
•	Unit	Quantity	Unit Cost	Amount	
	Oilit	Quantity	Olik Oost	Amount	
				506.37	
y First (4° X 4° )				270.87	
ing Signs ( 2 x 3 )				2,844.70 800.00	
y inet (1/8 x ∠./m x 90m)	roli	∠.00	3,500.00	7,000.00	
Sub - Total for F				11,421.94	
	<u> </u>			33,393.78	
Init Cost (F + F)	s (OCM)		of G	00,000.70	
Init Cost (E + F) ad. Contingencies & Miscellaneous					
ad, Contingencies & Miscellaneous					
ad, Contingencies & Miscellaneous tor's Profit (CP)		Value Added Tax (VAT)         5% of (G + H + I)           Total Unit Cost         (G + H + I + J)			
i	ad, Contingencies & Miscellaneous	Signage (4' x 8') set y First (4' x 4' ) set ing Signs ( 2' x 3' ) sets on Tape , 1000 ft roll y Net (1/8" x 2.7m x 90m) roll  Sub - Total for F Init Cost (E + F) ad, Contingencies & Miscellaneous (OCM) tor's Profit (CP)	Signage (4' x 8') Signage (4' x 8') Set Signage (4' x 8') Set Set Set Set Set Set Set Set Set Set	Signage (4' x 8') Signage (4' x 8') Set Signage (4' x 8') Set Set Signage (4' x 8') Set Set Set Set Set Set Set Set Set Set	

3 STOREY - 9 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount		
Δ	Labor			-			
Λ.	Labor						
	Sub - Total for A				0.00		
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount		
В.	Equipment						
	a. GI pipe barricades 4.5 m x 1.2 m	6	138.00	21.93	18,161.35		
	b. GI pipe barricades 9.5 m x 1.2 m	2	138.00	49.59	13,686.29		
					,		
	Cub. Total for D				24 047 04		
C.	Sub - Total for B				31,847.64		
	Total (A + B)				31,847.64		
	Output per Hour = 1 lot Direct Unit Cost (C ÷ D)	31,847.64					
<u> </u>	·						
	Name and Specification	Unit	Quantity	Unit Cost	Amount		
F.	Materials						
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37		
	b. Safety First (4' x 4' )	set	1.00	270.87	270.87		
	c. Warning Signs (2' x 3')	sets	29.00	123.68	3,586.79		
	d. Caution Tape, 1000 ft	roll	1.00	800.00	800.00		
	e. Safety Net (1/8" x 2.7m x 90m)	roll	2.00	3,500.00	7,000.00		
				3,000.00	.,553.60		
	Sub - Total for F				12,164.03		
G.	Direct Unit Cost (E + F)	1					
	Overhead, Contingencies & Miscellaneous	(OCM)		of G	44,011.67		
	Contractor's Profit (CP)	\/	8%	of G			
				of (G + H + I)			
			070	(G + H + I + J)			
	Value Added Tax (VAT) Total Unit Cost						

3 STOREY - 12 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

Sub - Total for A   0.00		Designation	No. of Person	No. of Days	Daily Rate	Amount
Sub - Total for A   No. of Units   No. of Days   Daily Rate   Amount			140. 01 1 013011	No. or Days	Daily Nate	Amount
Name and Capacity   No of Units   No. of Days   Daily Rate   Amount	Α.	Labor				
Name and Capacity   No of Units   No. of Days   Daily Rate   Amount						
Name and Capacity   No of Units   No. of Days   Daily Rate   Amount						
Name and Capacity   No of Units   No. of Days   Daily Rate   Amount						
Name and Capacity   No of Units   No. of Days   Daily Rate   Amount						
Name and Capacity   No of Units   No. of Days   Daily Rate   Amount						
B. Equipment a. GI pipe barricades 4.5 m x 1.2 m b. GI pipe barricades 9.5 m x 1.2 m c. Total for B D. Output per Hour = 1 lot E. Direct Unit Cost (C + D)  Name and Specification  F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') c. Warning Signs (2' x 3') c. Warning Signs (2'		Sub - Total for A				0.00
B. Equipment a. GI pipe barricades 4.5 m x 1.2 m b. GI pipe barricades 9.5 m x 1.2 m c. Total for B D. Output per Hour = 1 lot E. Direct Unit Cost (C + D)  Name and Specification  F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') c. Warning Signs (2' x 3') c. Warning Signs (2'		Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
a. GI pipe barricades 4.5 m x 1.2 m b. GI pipe barricades 9.5 m x 1.2 m 2 138.00 21.93 24,215.14 b. GI pipe barricades 9.5 m x 1.2 m 2 138.00 49.59 13,686.29   C. Total (A + B) 37,901.42 D. Output per Hour = 1 lot E. Direct Unit Cost (C + D) 37,901.42  Name and Specification Unit Quantity Unit Cost Amount  F. Materials a. PPE Signage (4' x 8') set 1.00 506.37 b. Safety First (4' x 4') set 1.00 270.87 c. Warning Signs (2' x 3') sets 31.00 123.68 d. Caution Tape , 1000 ft roll 1.00 800.00	_		110 01 011110	nor or Dayo	Daily Hate	7.11104111
Sub - Total for B   37,901.42	В.		Q	139.00	21.03	24 215 14
Sub - Total for B   37,901.42						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') set 1.00 270.87 c. Warning Signs (2' x 3') sets 31.00 123.68 3       3         b. Caution Tape , 1000 ft       roll 1.00 800.00		b. Of pipe barricades 9.5 fif x 1.2 fif		130.00	49.59	13,000.23
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') set 1.00 270.87 c. Warning Signs (2' x 3') sets 31.00 123.68 3       3         b. Caution Tape , 1000 ft       roll 1.00 800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') set 1.00 270.87 c. Warning Signs (2' x 3') sets 31.00 123.68 3       3         b. Caution Tape , 1000 ft       roll 1.00 800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') set 1.00 270.87 c. Warning Signs (2' x 3') sets 31.00 123.68 3       3         b. Caution Tape , 1000 ft       roll 1.00 800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials <ul> <li>a. PPE Signage (4' x 8')</li> <li>b. Safety First (4' x 4')</li> <li>c. Warning Signs (2' x 3')</li> <li>d. Caution Tape , 1000 ft</li> <li>roll</li> <li>1.00</li> <li>800.00</li> </ul>						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials <ul> <li>a. PPE Signage (4' x 8')</li> <li>b. Safety First (4' x 4')</li> <li>c. Warning Signs (2' x 3')</li> <li>d. Caution Tape , 1000 ft</li> <li>roll</li> <li>1.00</li> <li>800.00</li> </ul>						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials <ul> <li>a. PPE Signage (4' x 8')</li> <li>b. Safety First (4' x 4')</li> <li>c. Warning Signs (2' x 3')</li> <li>d. Caution Tape , 1000 ft</li> <li>roll</li> <li>1.00</li> <li>800.00</li> </ul>						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
C. Total (A + B)       37,901.42         D. Output per Hour = 1 lot       37,901.42         E. Direct Unit Cost (C ÷ D)       37,901.42         Name and Specification       Unit       Quantity       Unit Cost       Amount         F. Materials       a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00						
D. Output per Hour = 1 lot         1 lot           E. Direct Unit Cost (C ÷ D)         37,901.42           Name and Specification         Unit         Quantity         Unit Cost         Amount           F. Materials		Sub - Total for B				37,901.42
F.         Name and Specification         Unit         Quantity         Unit Cost         Amount           F.         Materials             a. PPE Signage (4' x 8')             b. Safety First (4' x 4')                   c. Warning Signs (2' x 3')                   d. Caution Tape , 1000 ft         set sets sets sets sets sets sets sets			37,901.42			
Name and Specification   Unit   Quantity   Unit Cost   Amount						
F. Materials a. PPE Signage (4' x 8') b. Safety First (4' x 4') c. Warning Signs (2' x 3') d. Caution Tape , 1000 ft  set 1.00 270.87 sets 31.00 123.68 3 d. Caution Tape , 1000 ft roll 1.00 800.00	Ε.	Direct Unit Cost (C ÷ D)	1			37,901.42
a. PPE Signage (4' x 8')       set       1.00       506.37         b. Safety First (4' x 4')       set       1.00       270.87         c. Warning Signs (2' x 3')       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00		Name and Specification	Unit	Quantity	Unit Cost	Amount
b. Safety First (4' x 4') set 1.00 270.87 c. Warning Signs (2' x 3') sets 31.00 123.68 d. Caution Tape , 1000 ft roll 1.00 800.00	F.	Materials				
c. Warning Signs ( 2' x 3' )       sets       31.00       123.68       3         d. Caution Tape , 1000 ft       roll       1.00       800.00			set			506.37
d. Caution Tape , 1000 ft roll 1.00 800.00			set			270.87
						3,834.16
e. Satety Net (1/8" x 2.7m x 90m)   roll   2.50   3,500.00   8						800.00
		e. Satety Net (1/8" x 2.7m x 90m)	roll	2.50	3,500.00	8,750.00
Sub - Total for F		Sub - Total for F				14,161.40
	G		_1	<u> </u>		52,062.82
H. Overhead, Contingencies & Miscellaneous (OCM)  of G			OCM)		of G	02,002.02
I. Contractor's Profit (CP)  8% of G			/	8%		
J. Value Added Tax (VAT) 5% of (G + H + I)						
K. Total Unit Cost (G + H + I + J)						

3 STOREY - 15 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
D	Equipment				
В.	a. GI pipe barricades 4.5 m x 1.2 m	7	258.00	21.93	39,612.80
	b. GI pipe barricades 9.5 m x 1.2 m	2	258.00	49.59	25,587.41
	b. Of pipe barriedees 5.5 m x 1.2 m		230.00	45.55	20,007.41
	Sub - Total for B				65,200.21
C.		65,200.21			
	Output per Hour = 1 lot				,
	Direct Unit Cost (C ÷ D)				65,200.21
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs ( 2' x 3' )	sets	31.00	123.68	3,834.16
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	3.00	3,500.00	10,500.00
	<u> </u>				
_	Sub - Total for F				15,911.40
	Direct Unit Cost (E + F)	OCM)		at C	81,111.61
	Overhead, Contingencies & Miscellaneous (Contractor's Profit (CP)	JCIVI)	00/	of G	
	Contractor's Profit (CP) Value Added Tax (VAT)			of G of (G + H + I)	
	Total Unit Cost		5%	(G + H + I + J)	
۲۱.	I otal offic oost			(5 : 11 + 1 + 3)	

4 STOREY - 12 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount		
Δ	Labor		-				
٦.	Labor						
	Sub - Total for A				0.00		
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount		
Ь	Equipment		-	-			
	a. GI pipe barricades 4.5 m x 1.2 m	6	220.00	21.93	28,952.88		
	b. GI pipe barricades 9.5 m x 1.2 m	2	220.00	49.59	21,818.72		
	b. Gr pipe barricades 9.5 m x 1.2 m	2	220.00	49.59	21,010.72		
	Sub - Total for B				50,771.60		
C.	Total (A + B)				50,771.60		
	Output per Hour = 1 lot				50 774 00		
<u>E.</u>	Direct Unit Cost (C ÷ D)				50,771.60		
	Name and Specification	Unit	Quantity	Unit Cost	Amount		
	Materials						
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37		
	b. Safety First (4' x 4')	set	1.00	270.87	270.87		
	c. Warning Signs ( 2' x 3' )	sets	36.00	123.68	4,452.57		
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00		
	e. Safety Net (1/8" x 2.7m x 90m)	roll	3.00	3,500.00	10,500.00		
					16,529.81		
	Sub - Lotal for F						
3.	Sub - Total for F  Direct Unit Cost (F + F)	L					
	Direct Unit Cost (E + F)	OCM)		of G	67,301.41		
н. [	Direct Unit Cost (E + F) Overhead, Contingencies & Miscellaneous (C	DCM)	X9X	of G	67,301.41		
H. I.	Direct Unit Cost (E + F)	DCM)		of G of G of (G + H + I)	67,301.41		

4 STOREY - 16 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
Α.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
В.	Equipment				
	a. GI pipe barricades 4.5 m x 1.2 m	8	226.00	21.93	39,656.67
	b. GI pipe barricades 9.5 m x 1.2 m	2	226.00	49.59	22,413.78
	Sub - Total for B				62,070.45
C.	Total (A + B)	62,070.45			
	Output per Hour = 1 lot				02,010110
Ε.	Direct Unit Cost (C ÷ D)	T	1		62,070.45
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. PPE Signage (4' x 8')	set	1.00	506.37	506.37
	b. Safety First (4' x 4')	set	1.00	270.87	270.87
	c. Warning Signs ( 2' x 3' ) d. Caution Tape , 1000 ft	sets roll	39.00 1.00	123.68 800.00	4,823.62 800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	4.00	3,500.00	14,000.00
		1011	7.00	3,300.00	14,000.00
_	Sub - Total for F				20,400.86
	Direct Unit Cost (E + F)	OCM)		of C	82,471.31
	Overhead, Contingencies & Miscellaneous (Contractor's Profit (CP)	JCIVI)	20/	of G of G	
	Value Added Tax (VAT)			of (G + H + I)	
J.					

4 STOREY - 20 CLASSROOM

Item No./Description : Construction Safety and Health (Signage and Baricades)

	Designation	No. of Person	No. of Days	Daily Rate	Amount
	Labor		•	,	
A.	Labor				
	Sub - Total for A				0.00
	Name and Capacity	No of Units	No. of Days	Daily Rate	Amount
D	Equipment			-	
Ь.	a. GI pipe barricades 4.5 m x 1.2 m	7	327.00	21.93	50,206.93
	b. GI pipe barricades 9.5 m x 1.2 m	2	327.00	49.59	32,430.55
	ar er pipe sameades etc mix name	_	027.00	.0.00	02, 100.00
	Cub Total for D				00 007 40
C.	Sub - Total for B Total (A + B)				82,637.48 82,637.48
D.	Output per Hour = 1 lot				02,037.40
	Direct Unit Cost (C ÷ D)				82,637.48
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F	Materials		•		
۲.	a. PPE Signage (4' x 8')	cot	1.00	506.37	506.37
	b. Safety First (4' x 4')	set set	1.00	270.87	270.87
	c. Warning Signs ( 2' x 3' )	sets	39.00	123.68	4,823.62
	d. Caution Tape , 1000 ft	roll	1.00	800.00	800.00
	e. Safety Net (1/8" x 2.7m x 90m)	roll	4.50	3,500.00	15,750.00
	o. Galoty Not (170 X Z./ III X John)	1011	7.00	5,500.00	10,700.00
	Sub - Total for F				22.450.00
G	Direct Unit Cost (E + F)	1			22,150.86 104,788.34
	Overhead, Contingencies & Miscellaneous	(OCM)		of G	104,700.34
	Contractor's Profit (CP)	(OOIVI)	80/	of G	
J.	Value Added Tax (VAT)			of (G + H + I)	
	Total Unit Cost		370	(G + H + I + J)	
11.	Trotal Offit Ooot			(5   11   1   5)	

# 4.3.2 Cost of PPEs and Safety Personnel

### **DETAILED UNIT PRICE ANALYSIS (DUPA)**

1 STOREY - 1 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.	Labor				
	Duration: 55 C.D. a. Safety Practitioner/ Officer (Part Time) b. Health Personnel (Full Time)	1	55 C.D.	280.00	15,400.00
	Sub - Total for A				15,400.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				15,400.00
D.	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)			1	15,400.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	472.00	0.25	118.00
	b. Safety Shoes	man-days	426.00	2.77	1,180.02
	c. Safety Gloves d. Vest	man-days man-days	472.00 472.00	7.67 2.22	3,620.24 1,047.84
	e. Rain Coats	man-days	114.00	0.34	38.76
	f. Dust Mask	man-days	116.00	15.00	1,740.00
	g. Eye Goggles	man-days	62.00	2.82	174.84
	h. Ear Muff	man-days	26.00	0.83	21.58
	i. Body Harness and Lanyard	man-days	40.00	3.21	128.40
	j. Rubber Boots	man-days	103.00	1.39	143.17
	Sub - Total for F				8.212.85
G.	Direct Unit Cost (E + F)		1	1	23,612.85
	Overhead, Contingencies & Miscellaneous (OCM)			of G	,
I.	Contractor's Profit (CP)			of G	1,889.03
	Value Added Tax (VAT)		5%	of (G + H + I)	1,275.09
K.	Total Unit Cost			(G + H + I + J)	26,776.97

# **DETAILED UNIT PRICE ANALYSIS (DUPA)** 1 STOREY - 2 CLASSROOM

Construction Safety and Health (PPE and Safety Personnel)

Item No./Description Unit of Measurement 1.000 Output per hour

	Designation	No. of Person	Man-days	Daily Rate	Amount
					7
Α.	Labor				
	Duration: 80 C.D.				
	a. Safety Practitioner/ Officer (Part Time)				
	b. Health Personnel (Full Time)	1	80 C.D.	280.00	22,400.00
	Sub - Total for A				22,400.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
ì					
ı					
	0.1. 7.16. 5				2.22
_	Sub - Total for B				0.00
C.	Total (A + B)				22,400.00
D.	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)	Т		т т	22,400.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
_					
F.	Materials				
	a. Safety Helmet	man-days	757.00	0.25	189.25
	b. Safety Shoes	man-days	678.00	2.77	1,878.06
	c. Safety Gloves	man-days	757.00	7.67	5,806.19
	d. Vest	man-days	757.00	2.22	1,680.54
	e. Rain Coats	man-days	189.00	0.34	64.26
	IC DO CAR I	man-days	162.00	15.00	2,430.00
	f. Dust Mask				
	g. Eye Goggles	man-days	102.00	2.82	287.64
				0.83	34.86
	g. Eye Goggles	man-days	102.00		
	g. Eye Goggles h. Ear Muff	man-days man-days	102.00 42.00	0.83	34.86
	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days	102.00 42.00 67.00	0.83 3.21	34.86 215.07
	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days	102.00 42.00 67.00	0.83 3.21	34.86 215.07
	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days	102.00 42.00 67.00	0.83 3.21	34.86 215.07
	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days	102.00 42.00 67.00	0.83 3.21	34.86 215.07 268.27
G.	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F	man-days man-days man-days	102.00 42.00 67.00	0.83 3.21	34.86 215.07 268.27
	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days man-days	102.00 42.00 67.00	0.83 3.21 1.39	34.86 215.07 268.27
Н.	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days	102.00 42.00 67.00 193.00	0.83 3.21 1.39	34.86 215.07 268.27 12,854.14 35,254.14
H. I.	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM) Contractor's Profit (CP)	man-days man-days man-days	102.00 42.00 67.00 193.00	0.83 3.21 1.39 of G of G	34.86 215.07 268.27 12,854.14 35,254.14 2,820.33
H. I. J.	g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days	102.00 42.00 67.00 193.00	0.83 3.21 1.39	34.86 215.07 268.27 12,854.14 35,254.14

1 STOREY - 3 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	Designation	No. of Person	Man-days	Daily Rate	Amount
		No. or reison	Wall-day's	Daily Nate	Amount
Α.	Labor				
	Duration: 90 C.D.				
	a. Safety Practitioner/ Officer (Part Time)				
	b. Health Personnel (Full Time)	1	90 C.D.	280.00	25,200.00
	an installar is seen that (i all initial)	•	00 0.2.	200.00	20,200.00
	Sub - Total for A				25,200.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				25,200.00
D.	Output per Hour = 1 lot				
Ε.	Direct Unit Cost (C ÷ D)		T		25,200.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	1045.00	0.25	261.25
	b. Safety Shoes	man-days	933.00	2.77	2,584.41
	c. Safety Gloves	man-days man-days	933.00 1045.00	2.77 7.67	2,584.41 8,015.15
	c. Safety Gloves d. Vest	man-days man-days man-days	933.00 1045.00 1045.00	2.77 7.67 2.22	2,584.41 8,015.15 2,319.90
	c. Safety Gloves d. Vest e. Rain Coats	man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00	2.77 7.67 2.22 0.34	2,584.41 8,015.15 2,319.90 82.62
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask	man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00	2.77 7.67 2.22 0.34 15.00	2,584.41 8,015.15 2,319.90 82.62 3,240.00
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles	man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00	2.77 7.67 2.22 0.34 15.00 2.82	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask	man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00	2.77 7.67 2.22 0.34 15.00 2.82	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74 347.50
<u>C</u>	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74 347.50
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00 250.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74 347.50
Н.	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00 250.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74 347.50 17,608.45
H. I.	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days man-days man-days man-days man-days man-days man-days	933.00 1045.00 1045.00 243.00 216.00 144.00 60.00 94.00 250.00	2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,584.41 8,015.15 2,319.90 82.62 3,240.00 406.08 49.80 301.74 347.50

1 STOREY - 4 CLASSROOM
Construction Safety and Health (PPE and Safety Personnel) Item No./Description

Unit of Measurement Output per hour 1.000

	Designation	No. of Person	Man-days	Daily Rate	Amount
		1101 011 010011	man dayo	Daily Hato	711104111
Α.	Labor				
	D 11				
	Duration: 100 C.D.				
	a. Safety Practitioner/ Officer (Part Time)				
	b. Health Personnel (Full Time)	1	100 C.D.	280.00	28,000.00
	Sub - Total for A				28,000.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				28,000.00
D.	Output per Hour = 1 lot				·
E.	Direct Unit Cost (C ÷ D)				28,000.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
_		- '			
F.	Materials				
	a. Safety Helmet	man-days	1312.00	0.25	328.00
	b. Safety Shoes	man-days	1163.00	2.77	3,221.51
	c. Safety Gloves	man-days	1312.00	7.67	10,063.04
	d. Vest	man-days	1312.00	2.22	2,912.64
	e. Rain Coats	man-days	306.00	0.34	104.04
	f. Dust Mask	man-days	254.00	15.00	3,810.00
	g. Eye Goggles	man-days	178.00	2.82	501.96
	h. Ear Muff	man-days	76.00	0.83	63.08
	i. Body Harness and Lanyard	man-days	120.00	3.21	385.20
	j. Rubber Boots	man-days	335.00	1.39	465.65
1					
1					
	Sub - Total for F				21,855.12
G.	Sub - Total for F Direct Unit Cost (E + F)				21,855.12 49,855.12
_				of G	
_	Direct Unit Cost (E + F) Overhead, Contingencies & Miscellaneous (OCM)		8%	of G of G	
H. I.	Direct Unit Cost (E + F) Overhead, Contingencies & Miscellaneous (OCM)			of G of (G + H + I)	49,855.12
H. I. J.	Direct Unit Cost (E + F) Overhead, Contingencies & Miscellaneous (OCM) Contractor's Profit (CP)			of G	49,855.12 3,988.41

1 STOREY - 5 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	<b>.</b>				
	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.	Labor				
	Duration . 445 C.D.				
	Duration: 115 C.D. a. Safety Practitioner/ Officer (Part Time)				
	b. Health Personnel (Full Time)	1	115 C.D.	280.00	32,200.00
	b. Health Fersonner (Full Time)	'	113 C.D.	200.00	32,200.00
	Sub - Total for A				32,200.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				32,200.00
D.	Output per Hour = 1 lot				,
E.	Direct Unit Cost (C ÷ D)				32,200.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	1557.00	0.25	389.25
	b. Safety Shoes	man-days	1384.00	2.77	3,833.68
	c. Safety Gloves	man-days	1557.00	7.67	11,942.19
	d. Vest	man-days	1557.00	2.22	3,456.54
	e. Rain Coats	man-days	360.00	0.34	122.40
	f. Dust Mask	man-days	302.00	15.00	4,530.00
	g. Eye Goggles	man-days	220.00	2.82	620.40 78.02
	h. Ear Muff i. Body Harness and Lanyard	man-days man-days	94.00 145.00	0.83 3.21	78.02 465.45
	j. Rubber Boots	man-days	458.00	1.39	636.62
	J. Rubber Boots	man-days	430.00	1.59	030.02
	Sub - Total for F				26,074.55
	Direct Unit Cost (E + F)				58,274.55
1	Overhead, Contingencies & Miscellaneous (OCM)			of G	
I.				of G	4,661.96
	Value Added Tax (VAT)		5%	of (G + H + I)	3,146.83
	Total Unit Cost			(G + H + I + J)	66,083.34

2 STOREY - 2 CLASSROOM
Construction Safety and Health (PPE and Safety Personnel) Item No./Description

Unit of Measurement lot 1.000 Output per hour

_	T				
	Designation	No. of Person	Man-days	Daily Rate	Amount
A.	Labor				
	L				
	Duration : 110 C.D. a. Safety Practitioner/ Officer (Part Time)				
	b. Health Personnel (Full Time)	1	110 C.D.	280.00	30,800.00
	b. Health ersonner (Full Time)	·	110 0.5.	200.00	30,000.00
	Sub - Total for A				30,800.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				30,800.00
D.	Output per Hour = 1 lot				00.000.00
E.	Direct Unit Cost (C ÷ D)				30,800.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
1	a. Safety Helmet	man-days	1629.00	0.25	407.25
	b. Safety Shoes	man-days	1576.00 1629.00	2.77	4,365.52
	c. Safety Gloves d. Vest	man-days man-days	1629.00	7.67 2.22	12,494.43 3,616.38
1	e. Rain Coats	man-days	661.00	0.34	224.74
1	f. Dust Mask	man-days	396.00	15.00	5,940.00
1	g. Eye Goggles	man-days	203.00	2.82	572.46
1	h. Ear Muff	man-days	35.00	0.83	29.05
1	i. Body Harness and Lanyard	man-days	368.00	3.21	1,181.28
	j. Rubber Boots	man-days	227.00	1.39	315.53
1					
1	Sub - Total for F				29,146.64
G.	Direct Unit Cost (E + F)		1	1	59,946.64
	Overhead, Contingencies & Miscellaneous (OCM)			of G	
	Contractor's Profit (CP)			of G	4,795.73
	1		==-/	. ( (0 . 11 . 1)	0.007.40
J.	Value Added Tax (VAT) Total Unit Cost		5%	of (G + H + I) (G + H + I + J)	3,237.12 67,979.49

# **DETAILED UNIT PRICE ANALYSIS (DUPA)** 2 STOREY - 4 CLASSROOM

Item No./Description Construction Safety and Health (PPE and Safety Personnel)

	Designation	No. of Person	Man-days	Daily Rate	Amount
	Labor		•	-	
Α.	Labor				
	Duration: 115 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	9.00	500.00	4,500.00
	b. Health Personnel (Full Time)	1	115 C.D.	280.00	32,200.00
	b. Health Fersonner (Full Time)	ı	115 C.D.	200.00	32,200.00
	Sub - Total for A				36,700.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				36,700.00
D.	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)		Т		36,700.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	2224.00	0.25	556.00
	b. Safety Shoes	man-days	2135.00	2.77	5,913.95
	c. Safety Gloves	man-days	2224.00	7.67	17,058.08
	d. Vest	man-days	2224.00	2.22	4,937.28
	e. Rain Coats	man-days	849.00	0.34	288.66
	f. Dust Mask	man-days	570.00	15.00	8,550.00
	g. Eye Goggles	man-days	299.00	2.82	843.18
	h. Ear Muff	man-days	59.00	0.83	48.97
	i. Body Harness and Lanyard	man-days	506.00	3.21	1,624.26
	j. Rubber Boots	man-days	317.00	1.39	440.63
	Sub - Total for F				40,261.01
	Direct Unit Cost (E + F)				76,961.01
	Overhead, Contingencies & Miscellaneous (OCM)			of G	
	Contractor's Profit (CP)		8%	of G	6,156.88
I.					
J.	Value Added Tax (VAT) Total Unit Cost		5%	of (G + H + I) (G + H + I + J)	4,155.89 87,273.79

2 STOREY - 6 CLASSROOM Construction Safety and Health (PPE and Safety Personnel) Item No./Description

Unit of Measurement lot 1.000 Output per hour

Designation	No. of Person	Man-days	Daily Rate	Amount
A. Labor				
Duration: 135 C.D.				
a. Safety Practitioner/ Officer (Part Time)	1	10.00	500.00	5,000.00
b. Health Personnel (Full Time)	1	135 C.D.	280.00	37,800.00
Sub - Total for A				42,800.00
Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B. Equipment				
Sub - Total for B				0.00
C. Total (A + B)				42,800.00
D. Output per Hour = 1 lot E. Direct Unit Cost (C ÷ D)				42,800.00
·				
Name and Specification	Unit	Quantity	Unit Cost	Amount
F. Materials				
a. Safety Helmet	man-days	2958.00	0.25	739.50
b. Safety Shoes	man-days	2826.00	2.77	7,828.02
c. Safety Gloves	man-days	2958.00	7.67	22,687.86
d. Vest	man-days	2958.00	2.22	6,566.76
e. Rain Coats	man-days	1,174.00	0.34	399.16
f. Dust Mask	man-days	745.00	15.00	11,175.00
g. Eye Goggles	man-days	394.00	2.82	1,111.08
h. Ear Muff	man-days	82.00	0.83	68.06
i. Body Harness and Lanyard	man-days	655.00	3.21	2,102.55
		492.00	1.39	683.88
j. Rubber Boots	man-days	492.00		
		492.00		
		492.00		
j. Rubber Boots		492.00		
j. Rubber Boots Sub - Total for F		492.00		53,361.87
j. Rubber Boots  Sub - Total for F  J. Direct Unit Cost (E + F)		492.00		53,361.87 96,161.87
j. Rubber Boots  Sub - Total for F  3. Direct Unit Cost (E + F)  H. Overhead, Contingencies & Miscellaneous (OCM)			of G	96,161.87
j. Rubber Boots  Sub - Total for F  3. Direct Unit Cost (E + F)  H. Overhead, Contingencies & Miscellaneous (OCM)  I. Contractor's Profit (CP)		8%	of G of G	96,161.87 7,692.95
j. Rubber Boots  Sub - Total for F  G. Direct Unit Cost (E + F)  H. Overhead, Contingencies & Miscellaneous (OCM)		8%	of G	96,161.87

# **DETAILED UNIT PRICE ANALYSIS (DUPA)** 2 STOREY - 8 CLASSROOM

Construction Safety and Health (PPE and Safety Personnel) Item No./Description

Unit of Measurement lot 1.000 Output per hour

	Designation	No. of Person	Man-days	Daily Rate	Amount
١.				Daily Hato	711104111
A.	Labor				
	Duration: 145 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	11.00	500.00	5,500.00
	b. Health Personnel (Full Time)	1	145 C.D.	280.00	40,600.00
	Si i i i i i i i i i i i i i i i i i i	•		200.00	.0,000.00
	0.1.7.16.4				40.400.00
	Sub - Total for A				46,100.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				46,100.00
D.	Output per Hour = 1 lot				40,100.00
	Direct Unit Cost (C ÷ D)				46,100.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	4041.00	0.25	1,010.25
	b. Safety Shoes	man-days	3842.00	2.77	10,642.34
	c. Safety Gloves	man-days	4041.00	7.67	30,994.47
	d. Vest	man-days	4041.00	2.22	8,971.02
	e. Rain Coats	man-days	1,558.00	0.34	529.72
	f. Dust Mask	man-days	1,061.00	15.00	15,915.00
	g. Eye Goggles	man-days	565.00	2.82	1,593.30
	h. Ear Muff	man-days	115.00	0.83	95.45
	i. Body Harness and Lanyard	man-days	836.00	3.21	2,683.56
	j. Rubber Boots	man-days	670.00	1.39	931.30
	Sub - Total for F				73,366.41
G.	Direct Unit Cost (E + F)			1	119,466.41
	Overhead, Contingencies & Miscellaneous (OCM)			of G	,
ιп.			00/	of G	0.557.21
	Contractor's Profit (CP)		8%	UI G	9,007.01
I.	Contractor's Profit (CP) Value Added Tax (VAT)			of (G + H + I)	9,557.31 6,451.19

2 STOREY - 10 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

6,500.00 47,600.00 54,100.00 Amount
47,600.00  54,100.00  Amount  0.00
47,600.00  54,100.00  Amount  0.00
47,600.00  54,100.00  Amount  0.00
54,100.00 Amount
Amount  0.00
Amount  0.00
0.00
E 4 400 00
54,100.00
54,100.00
Amount
1,183.25
12,459.46
36,302.11
10,507.26
622.88
18,420.00
1,861.20
114.54
3,171.48
1,102.27
85,744.45
139.844.45
139,844.45
139,844.45 11,187.56 7,551.60 158,583.61

2 STOREY - 12 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	I			<u> </u>	
	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.	Labor				
	Duration: 175 C.D.				
	Duration: 175 C.D. a. Safety Practitioner/ Officer (Part Time)	1	13.00	500.00	6,500.00
	b. Health Personnel (Full Time)	1	175 C.D.	280.00	49,000.00
	b. Health ersoniel (Full Time)	ı	175 C.D.	200.00	49,000.00
	Sub - Total for A				55,500.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
L	Sub - Total for B				0.00
C. D.	Total (A + B) Output per Hour = 1 lot				55,500.00
	Direct Unit Cost (C ÷ D)				55,500.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	5688.00	0.25	1,422.00
	b. Safety Shoes	man-days	5413.00	2.77	14,994.01
	c. Safety Gloves	man-days	5688.00	7.67	43,626.96
	d. Vest	man-days	5688.00	2.22	12,627.36
	e. Rain Coats f. Dust Mask	man-days	2,079.00	0.34	706.86
	g. Eye Goggles	man-days man-days	1,398.00 754.00	15.00 2.82	20,970.00 2,126.28
1	ig. Lyc Guggies	man-uays			-
		man-daye	160 00	ሀ ያረ ነ	1 2 7 211
	h. Ear Muff	man-days man-days	160.00 1 129 00	0.83 3.21	132.80 3 624 09
	h. Ear Muff i. Body Harness and Lanyard	man-days	1,129.00	3.21	3,624.09
	h. Ear Muff				
	h. Ear Muff i. Body Harness and Lanyard	man-days	1,129.00	3.21	3,624.09
	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days	1,129.00	3.21	3,624.09 1,270.46
G	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F	man-days	1,129.00	3.21	3,624.09 1,270.46 101,500.82
	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days	1,129.00	3.21 1.39	3,624.09 1,270.46
Н.	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days	1,129.00 914.00	3.21 1.39 of G	3,624.09 1,270.46 101,500.82
H. I.	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days	1,129.00 914.00	3.21 1.39	3,624.09 1,270.46 101,500.82

3 STOREY - 3 CLASSROOM
Construction Safety and Health (PPE and Safety Personnel) Item No./Description

1	Designation	No. of Person	Man-days	Daily Rate	Amount
	Labor				
Α.	Labor				
	Duration: 115 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	9.00	500.00	4,500.00
					·
	b. Health Personnel (Full Time)	1	115 C.D.	280.00	32,200.00
	Sub Total for A				26 700 00
	Sub - Total for A				36,700.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B.	Equipment				
l					
l					
	Sub - Total for B				0.00
C.	Total (A + B)				36,700.00
<b>L</b>					
D.	Output per Hour = 1 lot				
υ. Ε.					36,700.00
	Direct Unit Cost (C ÷ D)	Unit	Quantity	Unit Cost	
E.	Direct Unit Cost (C ÷ D)  Name and Specification	Unit	Quantity	Unit Cost	36,700.00 Amount
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials				Amount
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet	man-days	2433.00	0.25	Amount 608.25
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes	man-days man-days	2433.00 2374.00	0.25 2.77	Amount 608.25 6,575.98
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves	man-days man-days man-days	2433.00 2374.00 2433.00	0.25 2.77 7.67	Amount 608.25 6,575.98 18,661.11
E.	Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest	man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00	0.25 2.77 7.67 2.22	Amount  608.25 6,575.98 18,661.11 5,401.26
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats	man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00	0.25 2.77 7.67 2.22 0.34	608.25 6,575.98 18,661.11 5,401.26 402.22
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask	man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00	0.25 2.77 7.67 2.22 0.34 15.00	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles	man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31
E.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31
F.	Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31
F.	Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31 540.71
F. G.H.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00 389.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31 540.71
E. F. G.H. I.	Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM) Contractor's Profit (CP)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00 389.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31 540.71
F. G.H.I.	Direct Unit Cost (C ÷ D)  Name and Specification  Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	2433.00 2374.00 2433.00 2433.00 1,183.00 470.00 253.00 43.00 511.00 389.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	608.25 6,575.98 18,661.11 5,401.26 402.22 7,050.00 713.46 35.69 1,640.31 540.71 41,628.99

# **DETAILED UNIT PRICE ANALYSIS (DUPA)** 3 STOREY - 6 CLASSROOM

Construction Safety and Health (PPE and Safety Personnel) Item No./Description

Unit of Measurement : lot 1.000 Output per hour

	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.	Labor				
	Duration: 145 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	11.00	500.00	5,500.00
	b. Health Personnel (Full Time)	1	145 C.D.	280.00	40,600.00
	Sub - Total for A				46,100.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)			•	46,100.00
	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)				46,100.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	3387.00	0.25	846.75
	b. Safety Shoes	man-days	3306.00	2.77	9,157.62
	c. Safety Gloves	man-days	3387.00	7.67	25,978.29
	d. Vest e. Rain Coats	man-days	3387.00 1,669.00	2.22 0.34	7,519.14 567.46
	f. Dust Mask	man-days man-days	736.00	15.00	11,040.00
	g. Eye Goggles	man-days	374.00	2.82	1,054.68
	h. Ear Muff	man-days	62.00	0.83	51.46
	i. Body Harness and Lanyard	man-days	735.00	3.21	2,359.35
	j. Rubber Boots	man-days	576.00	1.39	800.64
		•			
<u>_</u>	Sub - Total for F				59,375.39
	Direct Unit Cost (E + F)			-1.0	105,475.39
	Overhead, Contingencies & Miscellaneous (OCM) Contractor's Profit (CP)		00/	of G of G	0 420 02
				of (G + H + I)	8,438.03 5,695.67
			370		
	Value Added Tax (VAT) Total Unit Cost		5%	(G + H + I + J)	5,695.67 119,609.09

3 STOREY - 9 CLASSROOM
Construction Safety and Health (PPE and Safety Personnel) Item No./Description

	Designation	No. of Person	Man-days	Daily Rate	Amount
A.	Labor				
	Duration: 175 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	13.00	500.00	6,500.00
	b. Health Personnel (Full Time)	1	175 C.D.	280.00	49,000.00
					•
	Out. Tatal for A				55 500 00
	Sub - Total for A	No of Heir	No of House	Harris Data	55,500.00
_	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				55,500.00
D.	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)				55,500.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	4,910.00	0.25	1,227.50
	b. Safety Shoes	man-days	4,782.00	2.77	13,246.14
	c. Safety Gloves	man-days	4,910.00	7.67	37,659.70
	d. Vest	man-days	4,910.00	2.22	10,900.20
	e. Rain Coats	man-days	2,493.00	0.34	847.62
	f. Dust Mask	man-days	1,032.00	15.00	15,480.00
	g. Eye Goggles	man-days	535.00	2.82	1,508.70
		•			
	h. Ear Muff	man-days man-days	103.00	0.83	85.49
		man-days	950.00	3.21	3,049.50
	i. Body Harness and Lanyard		07F 00	4 20	4 040 05
	j. Rubber Boots	man-days	875.00	1.39	1,216.25
			875.00	1.39	1,216.25
			875.00	1.39	1,216.25
	j. Rubber Boots		875.00	1.39	
G	j. Rubber Boots Sub - Total for F		875.00	1.39	85,221.10
	j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)		875.00		
Н.	j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)			of G	85,221.10 140,721.10
H. I.	j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)  Contractor's Profit (CP)		8%	of G of G	85,221.10 140,721.10 11,257.69
H. I. J.	j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)		8%	of G	85,221.10 140,721.10

3 STOREY - 12 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.	Labor				
	Duration: 185 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	14.00	500.00	7,000.00
	b. Health Personnel (Full Time)	1	185 C.D.	280.00	51,800.00
	Sub - Total for A				58,800.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
L	Sub - Total for B				0.00
C. D.	Total (A + B) Output per Hour = 1 lot				58,800.00
E.	Direct Unit Cost (C ÷ D)				58,800.00
F		l lmi4	O amtitu	Unit Coot	·
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	5,881.00	0.25	1,470.25
	b. Safety Shoes	man-days	5,728.00	2.77	15,866.56
	c. Safety Gloves d. Vest	man-days	5,881.00 5,881.00	7.67	45,107.27
	e. Rain Coats	man-days man-days	5,881.00 2,965.00	2.22 0.34	13,055.82 1,008.10
	f. Dust Mask	man-days	1,304.00	15.00	19,560.00
	g. Eye Goggles	man-days	654.00	2.82	1,844.28
	h. Ear Muff	man-days	120.00	0.83	99.60
	i. Body Harness and Lanyard	man-days	1,180.00	3.21	3,787.80
	j. Rubber Boots	man-days	1,041.00	1.39	1,446.99
F	Sub - Total for F				103,246.67
	Direct Unit Cost (E + F)			-10	162,046.67
	Overhead, Contingencies & Miscellaneous (OCM)			of G	10.060.70
	Contractor's Profit (CP) Value Added Tax (VAT)			of G of (G + H + I)	12,963.73 8,750.52
	Total Unit Cost		3%	(G + H + I + J)	183,760.92
LV.	i otal offit oost			(O T 11 T 1 T J)	103,700.32

3 STOREY - 15 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

Item No./Description:ConstrUnit of Measurement:lotOutput per hour:1.000

	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.	Labor				
	Duration: 200 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	15.00	500.00	7,500.00
	b. Health Personnel (Full Time)	1	200 C.D.	280.00	56,000.00
	Sub - Total for A				63,500.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
_	, ,			,	
B.	Equipment				
	0.1.7.17.5				
C.	Sub - Total for B Total (A + B)				0.00
D.	Output per Hour = 1 lot				63,500.00
E.	Direct Unit Cost (C ÷ D)				63,500.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
l_	-	Offic	Quantity	Onit Cost	Amount
F.	Materials				. =
	a. Safety Helmet	man-days	6885.00	0.25	1,721.25
	b. Safety Shoes	man-days	6701.00	2.77	18,561.77
	c. Safety Gloves d. Vest	man-days man-days	6885.00 6885.00	7.67 2.22	52,807.95 15,284.70
	e. Rain Coats	man-days man-days	3,484.00	0.34	15,284.70
	f. Dust Mask	man-days	1,571.00	15.00	23,565.00
	g. Eye Goggles	man-days	776.00	2.82	2,188.32
	h. Ear Muff	man-days	140.00	0.83	116.20
	i. Body Harness and Lanyard	man-days	1,416.00	3.21	4,545.36
	i. Rubber Boots	man-days	1,237.00	1.39	1,719.43
	[	<b>,</b> -	,		,
	Sub - Total for F				121,694.54
	Direct Unit Cost (E + F)				185,194.54
	Overhead, Contingencies & Miscellaneous (OCM)			of G	
	Contractor's Profit (CP)			of G	14,815.56
	Value Added Tax (VAT)		5%	of (G + H + I)	10,000.51
K.	Total Unit Cost			(G + H + I + J)	210,010.61

4 STOREY - 4 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	Designation	No. of Person	Man-days	Daily Rate	Amount
		No. of Ferson	Waii-day 5	Daily Nate	Amount
Α.	Labor				
	Duration: 145 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	11.00	500.00	5,500.00
	b. Health Personnel (Full Time)	1	145 C.D.	280.00	40,600.00
	b. Health reisonnei (ruii fiffie)	ı	143 C.D.	280.00	40,000.00
					40.400.00
	Sub - Total for A				46,100.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				46,100.00
D.	Output per Hour = 1 lot				
E.	Direct Unit Cost (C ÷ D)		T	T	46,100.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	2,977.00	0.25	744.25
	b. Safety Shoes	man-days	2,918.00	2.77	8,082.86
	c. Safety Gloves	man-days	2,977.00	7.67	22,833.59
	d. Vest	man-days	2,977.00	2.22	6,608.94
	e. Rain Coats	man-days	1,593.00	0.34	541.62
	f. Dust Mask	man-days	610.00	15.00	9,150.00
	g. Eye Goggles	man-days	311.00	2.82	877.02
	h. Ear Muff	man-days	41.00	0.83	34.03
	i. Body Harness and Lanyard	man-days	588.00	3.21	1,887.48
	j. Rubber Boots	man-days	503.00	1.39	699.17
	Cub. Tetal fair F				E4 4E0 00
	Sub - Total for F				51,458.96
	Direct Unit Cost (E + F)			at 0	97,558.96
	Overhead, Contingencies & Miscellaneous (OCM)		201	of G	7.004.70
	Contractor's Profit (CP)			of G	7,804.72
	Value Added Tax (VAT)		5%	of (G + H + I)	5,268.18
	Total Unit Cost			(G + H + I + J)	110,631.86

# **DETAILED UNIT PRICE ANALYSIS (DUPA)** 4 STOREY - 8 CLASSROOM

Construction Safety and Health (PPE and Safety Personnel) Item No./Description

Unit of Measurement 1.000 Output per hour

				T T	
	Designation	No. of Person	Man-days	Daily Rate	Amount
A.	Labor				
	Duration : 175 C.D.				
	Duration: 175 C.D. a. Safety Practitioner/ Officer (Part Time)	1	13.00	500.00	6,500.00
	b. Health Personnel (Full Time)	1	175 C.D.	280.00	49,000.00
	b. Health ersonner (Full Time)	ı	175 C.D.	200.00	49,000.00
-	Sub - Total for A				55,500.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				55,500.00
D.	Output per Hour = 1 lot				FF F00 00
<u> </u>	Direct Unit Cost (C ÷ D)				55,500.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials		4005.00		4 000 05
	a. Safety Helmet	man-days	4265.00	0.25	1,066.25
	b. Safety Shoes	man-days	4178.00 4265.00	2.77 7.67	11,573.06
	c. Safety Gloves d. Vest	man-days man-days	4265.00	2.22	32,712.55 9,468.30
	e. Rain Coats	man-days	2,288.00	0.34	777.92
	f. Dust Mask	man-days	969.00	15.00	14,535.00
	g. Eye Goggles	man-days	468.00	2.82	1,319.76
	h. Ear Muff	man-days	60.00	0.83	49.80
	i. Body Harness and Lanyard	man-days	901.00	3.21	2,892.21
	j. Rubber Boots	man-days	735.00	1.39	1,021.65
	Sub - Total for F				75,416.50
G	Direct Unit Cost (E + F)	<u> </u>	<u> </u>	<del>                                     </del>	130,916.50
	Overhead, Contingencies & Miscellaneous (OCM)			of G	100,010.00
	Contractor's Profit (CP)		8%	of G	10,473.32
J.	Value Added Tax (VAT)			of (G + H + I)	7,069.49
K.	Total Unit Cost			(G + H + I + J)	148,459.31

4 STOREY - 12 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

	Designation	No. of Person	Man-days	Daily Rate	Amount
	-		,	,	
Α.	Labor				
	Duration: 190 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	14.00	500.00	7,000.00
	b. Health Personnel (Full Time)	1	190 C.D.	280.00	53,200.00
	b. Health Fersonner (Full Time)	ı	190 C.D.	200.00	55,200.00
	Sub - Total for A				60,200.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				60,200.00
D.	Output per Hour = 1 lot				00,200.00
	Direct Unit Cost (C ÷ D)				60,200.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
_					
F.	Materials		0540.00	2.25	4 000 50
	a. Safety Helmet	man-days	6518.00	0.25	1,629.50
1	h Cofoty Chasa		6204.00	0.77	
	b. Safety Shoes	man-days	6384.00	2.77	17,683.68
	c. Safety Gloves	man-days man-days	6518.00	7.67	17,683.68 49,993.06
	c. Safety Gloves d. Vest	man-days man-days man-days	6518.00 6518.00	7.67 2.22	17,683.68 49,993.06 14,469.96
	c. Safety Gloves d. Vest e. Rain Coats	man-days man-days man-days man-days	6518.00 6518.00 3,409.00	7.67 2.22 0.34	17,683.68 49,993.06 14,469.96 1,159.06
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask	man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00	7.67 2.22 0.34 15.00	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles	man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00	7.67 2.22 0.34 15.00 2.82	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00	7.67 2.22 0.34 15.00 2.82 0.83	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00	7.67 2.22 0.34 15.00 2.82 0.83	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43 1,545.68
G	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43 1,545.68
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00 1,112.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43 1,545.68
Н.	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00 1,112.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43 1,545.68
	c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM) Contractor's Profit (CP)	man-days man-days man-days man-days man-days man-days man-days man-days	6518.00 6518.00 3,409.00 1,630.00 819.00 99.00 1,383.00 1,112.00	7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	17,683.68 49,993.06 14,469.96 1,159.06 24,450.00 2,309.58 82.17 4,439.43 1,545.68

# **DETAILED UNIT PRICE ANALYSIS (DUPA)** 4 STOREY - 16 CLASSROOM

Construction Safety and Health (PPE and Safety Personnel) Item No./Description

lot 1.000 Unit of Measurement Output per hour

	Designation	No. of Person	Man-days	Daily Rate	Amount
A.	Labor				
	Duration: 205 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	15.00	500.00	7,500.00
	b. Health Personnel (Full Time)	1	205 C.D.	280.00	57,400.00
					.,
	Sub - Total for A				64,900.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
B	Equipment			,	
٥.	Equipment				
	Sub - Total for B				0.00
C.	Total (A + B)				64,900.00
	Output per Hour = 1 lot				04,300.00
	Direct Unit Cost (C ÷ D)				64,900.00
	Name and Specification	Unit	Quantity	Unit Cost	Amount
F.	Materials				
	a. Safety Helmet	man-days	7828.00	0.25	1,957.00
	b. Safety Shoes	man-days	7663.00	2.77	21,226.51
	c. Safety Gloves	man-days	7828.00	7.67	60,040.76
	d. Vest e. Rain Coats	man-days man-days	7828.00	2.22 0.34	17,378.16 1,398.42
	f. Dust Mask	man-days	4,113.00 1,993.00	15.00	29,895.00
		-	976.00	2.82	2,752.32
1	la Eve Gogales	man-days			2,702.02
	g. Eye Goggles h. Ear Muff	man-days man-davs			97.94
	h. Ear Muff	man-days man-days man-days	118.00	0.83 3.21	97.94 5,482.68
		man-days		0.83	
	h. Ear Muff i. Body Harness and Lanyard	man-days man-days	118.00 1,708.00	0.83 3.21	5,482.68
	h. Ear Muff i. Body Harness and Lanyard	man-days man-days	118.00 1,708.00	0.83 3.21	5,482.68
	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days man-days	118.00 1,708.00	0.83 3.21	5,482.68 1,851.48
	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F	man-days man-days	118.00 1,708.00	0.83 3.21	5,482.68 1,851.48 142,080.27
G.	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days	118.00 1,708.00	0.83 3.21 1.39	5,482.68 1,851.48
G. H.	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days	118.00 1,708.00 1,332.00	0.83 3.21 1.39 of G	5,482.68 1,851.48 142,080.27 206,980.27
G. H. I.	h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days	118.00 1,708.00 1,332.00	0.83 3.21 1.39	5,482.68 1,851.48 142,080.27

4 STOREY - 20 CLASSROOM

Item No./Description : Construction Safety and Health (PPE and Safety Personnel)

l	Designation	No. of Person	Man-days	Daily Rate	Amount
Α.				-	
Α.	Labor				
	Duration: 220 C.D.				
	a. Safety Practitioner/ Officer (Part Time)	1	16.00	500.00	8,000.00
	b. Health Personnel (Full Time)	1	220 C.D.	280.00	61,600.00
	b. Health Groothiel (Fall Time)	'	220 0.5.	200.00	01,000.00
	Sub Total for A				60 600 00
	Sub - Total for A	<u> </u>			69,600.00
	Name and Capacity	No of Units	No. of Hours	Hourly Rate	Amount
В.	Equipment				
					0.00
_	Sub - Total for B				0.00
C.	Total (A + B)				69,600.00
D. E.	Output per Hour = 1 lot Direct Unit Cost (C ÷ D)				69,600.00
<u> </u>					,
			Quantity	Unit Cost	Amount
l	Name and Specification	Unit	Quantity		Amount
F.	Materials				
F.	Materials a. Safety Helmet	man-days	9147.00	0.25	2,286.75
F.	Materials a. Safety Helmet b. Safety Shoes	man-days man-days	9147.00 8951.00	0.25 2.77	2,286.75 24,794.27
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves	man-days man-days man-days	9147.00 8951.00 9147.00	0.25 2.77 7.67	2,286.75 24,794.27 70,157.49
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest	man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00	0.25 2.77 7.67 2.22	2,286.75 24,794.27 70,157.49 20,306.34
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats	man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00	0.25 2.77 7.67 2.22 0.34	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask	man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00	0.25 2.77 7.67 2.22 0.34 15.00	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles	man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff	man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard	man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41
F.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41 2,157.28
	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots	man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41 2,157.28
G.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00 1,552.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41 2,157.28
G.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00 1,552.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41 2,157.28
G. H. I.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM Contractor's Profit (CP)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00 1,552.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41 2,157.28 166,511.82 236,111.82
G. H. I. J.	Materials a. Safety Helmet b. Safety Shoes c. Safety Gloves d. Vest e. Rain Coats f. Dust Mask g. Eye Goggles h. Ear Muff i. Body Harness and Lanyard j. Rubber Boots  Sub - Total for F  Direct Unit Cost (E + F)  Overhead, Contingencies & Miscellaneous (OCM Contractor's Profit (CP)	man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days man-days	9147.00 8951.00 9147.00 9147.00 4,779.00 2,359.00 1,134.00 138.00 2,021.00 1,552.00	0.25 2.77 7.67 2.22 0.34 15.00 2.82 0.83 3.21 1.39	2,286.75 24,794.27 70,157.49 20,306.34 1,624.86 35,385.00 3,197.88 114.54 6,487.41 2,157.28

# Relative Cost of Construction Safety & Health to the Cost of Civil Works

C-5

Table 6. Relative percentage of cost of Construction Safety & Health (CSH) to the cost of civil works (Roads)

		Project Category / Level of Improvement	Percentage of Cost of Safety & Health to the Civil Works
Road	ds		
	1	Paved (Concrete) To Paved (Concrete)	0.30
	2	Paved (Asphalt) To Paved (Concrete)	0.20
	3	Paved (Asphalt) To Paved (Asphalt)	0.20
	4	Gravel To Asphalt	0.10
	5	Gravel To Concrete	0.20
	6	Asphalt Overlay	0.10
	7	Concrete Reblocking, 30% of existing PCCP	0.20
	8	Concrete Reblocking, 50% of existing PCCP	0.20
	9	Re-Gravelling	0.20
	10	New Road Opening, Concrete, Assume Embankment Height = 1.00m	0.20
	11	New Road Opening, Concrete , Assume Road Cut Height = 1.00m	0.30
	12	Widening Paved	0.30

Note: Derived percentage of cost of construction safety and health (as per project requirements) relative to civil works is advisably lower than the values above or within +10%.

Table 7. Relative percentage of cost of Construction Safety& Health (CSH) to the cost of civil works (Buildings)

				_	
TYPE OF SCHOOL BUILDING	DIRECT COST (Civil & MEPF Works)	SPL -1 - Personal Protective Equipment & Safety Personnel	SPL -2 - Signage & Barricades	Total Cost	Relative Percentage of Cost
ONE STOREY					
1-Classroom	750,336.17	23,612.85	1,919.34	25,532.19	3.40
2-Classroom	1,373,535.73	35,254.14	2,043.02	37,297.16	2.72
3-Classroom	1,997,229.48	42,808.45	2,043.02	44,851.47	2.25
4-Classroom	2,627,365.63	49,855.12	2,690.38	52,545.50	2.00
5-Classroom	3,203,236.16	58,274.55	2,690.38	60,964.93	1.90
TWO-STOREY					
2-Classroom	3,470,990.90	59,946.64	9,921.28	69,867.92	2.01
4-Classroom	5,024,465.55	76,961.01	15,419.28	92,380.29	1.84
6-Classroom	6,583,177.20	96,161.87	20,721.94	116,883.81	1.78
8-Classroom	9,196,213.52	119,466.41	25,601.52	145,067.93	1.58
10-Classroom	10,767,342.86	139,844.45	29,889.06	169,733.51	1.58
12-Classroom	12,350,759.24	157,000.82	33,393.78	190,394.60	1.54
THREE STOREY					
9-Classroom	12,348,200.63	140,721.10	44,011.67	184,732.77	1.50
12-Classroom	14,989,258.61	162,046.67	52,062.82	214,109.49	1.43
15-Classroom	17,587,460.90	185,194.54	81,111.61	266,306.15	1.51
FOUR-STOREY					
12-Classroom	16,206,764.28	177,962.12	67,301.41	245,263.53	1.51
16-Classroom		206,980.27	82,471.31	289,451.58	1.47
20-Classroom	22,971,845.00	236,111.82	104,788.34	340,900.16	1.48

Note: Derived percentage of cost of construction safety and health (as per project requirements) relative to civil works is advisably lower than the values above or within +10%.

Table 8. Relative Percentage of Cost of Construction Safety & Health (CSH) to the Cost of Civil Works (Bridge) Bridge (Based on Typical Standard Design) 1. 456 l.m. RCDG on R.C. Pile Foundation Lenath @ 1 Span of 15 l.m. @ 3 Spans of 21 l.m. @ 7 Spans of 24 l.m. @ 13 Spans of 24 l.m. @ 19 Spans of 24 l.m. Reference/Given amount (Based on D.O. 44: Calculation 5,000,000.00 20,000,000.00 50,000,000.00 100,000,000.00 150,000,000.00 Amount of Project Duration) Total estimated cost of Pay Item : Safety and Health 67,791.12 164,749.64 358,563.30 627,429.46 894,482.39 Say 628,000.00 895,000.00 Say 68,000.00 165,000.00 359,000.00 Relative Weight (%) 1.36% 0.83% 0.72% 0.63% 0.60% 1.35 0.85 0.75 0.65 0.60 Maximum = 1.35 2. 48 l.m. 120 l.m. 240 l.m. 360 l.m PSCG on R.C. Pile Foundation Lenath @ 10 Spans of 24 l.m. @ 1 Span of 15 l.m. @ 2 Spans of 24 l.m. @ 5 Spans of 24 l.m. @ 15 Spans of 24 l.m. Reference/Given amount (Based on D.O. 44: Calculation Amount 5000000 20000000 50000000 100000000 150000000 of Project Duration) 493,585.48 Total estimated cost of Pay Item: Safety and Health 69,167.56 113,958.62 201,854.33 346.298.56 Say 347,000.00 Say 70,000.00 114,000.00 202,000.00 494,000.00 Relative Weight (%) 1.40% 0.57% 0.40% 0.35% 0.33% 1.40 0.60 0.40 0.35 0.35 Say Maximum = 1.40 3. 15 l.m. 72 l.m. 168 l.m 312 l.m. 456 l.m RCDG on Bored Pile Foundation Length @ 3 Spans of 24 l.m. @ 13 Spans of 24 I.m. @ 19 Spans of 24 I.m. @ 1 Span of 15 l.m. @ 7 Spans of 24 l.m. Reference/Given amount (Based on D.O. 44: Calculation Amount 5000000 20000000 50000000 100000000 150000000 of Project Duration) 151,745.94 741,305.67 Total estimated cost of Pay Item : Safety and Health 62,719.95 295,303.50 519,149.10 Say 63,000.00 152,000.00 Say 296,000.00 520,000.00 742,000.00 Say Say Relative Weight (%) 0.59% 1.26% 0.76% 0.52% 0.49% 0.50 Say 1.25 0.75 0.60 0.55 Maximum = 1.25 4. 15 l.m. 48 l.m. 120 l.m. 240 l.m 360 l.m. **PSCG** on Bored Pile Foundation Length @ 5 Spans of 24 I.m. @ 10 Spans of 24 I.m. @ 15 Spans of 24 I.m. @ 1 Span of 15 l.m. @ 2 Spans of 24 l.m. Reference/Given amount (Based on D.O. 44: Calculation Amount 5000000 20000000 50000000 100000000 150000000 of Project Duration) 57.961.50 90 232 89 157.577.22 266.110.08 375,875.98 58,000.00 91,000.00 158,000.00 267,000.00 376,000.00 Say Say Relative Weight (%) 1.16% 0.46% 0.32% 0.27% 0.25% 1.15 0.45 0.35 0.30 0.25 Say Maximum = 1.15

Note: Derived percentage of cost of construction safety and health (as per project requirements) relative to civil works is advisably lower than the values above or within +10%.