

# Punjab State Road Sector Project

PWD B&R Branch, Govt. of Punjab

## Punjab Roads & Bridges Development Board

### Training programme on Environmental Management

#### Module for Training during Construction



11<sup>th</sup> July 2008



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# Presentation Structure

## Module 1

- **Environmental Aspects in PSRSP**
- **Environmental Management Plan**
- **Environmental Friendly Construction Methodology**
- **Workers Safety during Construction**

## Module 2

- **Reporting and Monitoring System**

# MODULE - 1

# Environmental Aspects

- / Objectives of environmental study
- / Study aspects
- / Environmental impacts

# Objectives of Environmental Study

- To ensure that the project is environmentally and socially sound and sustainable
- To minimize the adverse impacts
- To maximize the positive impacts
- To inform stakeholders and involve them in developing alternative options and mitigation plans to minimize the risks.

# Aspects Covered

- Geology
- Soil
- Climate
- Hydrology
- Water quality
- Flora and fauna
- Air quality
- Noise
- Land use
- Cultural properties
- Social aspects

# Study Aspects

- / Base line status
- / Public participation
- / Impact assessment
- / Identification of issues, problems and mitigation measures
- / Preparation of EMP
- / Preparation of resettlement action plan
- / Environmental enhancements

# Environmental Impacts in LM

## / Negative Impacts

Hand Pumps/Tube wells Relocation (no)	90
Pond Area (sq.m)	2190
Relocation of Religious properties	2
Transfer of Agricultural land (ha.)	25.5
Borrow Earth (Cum)	630,000
Quarry Material (Cum)	621,000
Water (cu.m)	123,120
Nos of trees to be felled	9,365

## / Positive Impacts

<b>Enhancement sites</b>	
Cultural/Religious Properties	3
Surface water body	7
Educational Institute	2
Safe Access to educational	17
Enhancement of Bus bays	18
Rotary Junctions	4
Tree Saving (Nos.)	4,825
Vegetative Screen Barrier	4
Major Junction improvement	1
Street lighting locations	12
Signage boards (nos.)	229



# Environmental Management Plan

- / Why EMP implementation
- / Soil
- / Water
- / Air
- / Noise
- / Other aspects and environmental enhancement

# Environmental Management Plan (EMP)

- / EMP consists of set of mitigation, monitoring and institutional measures to be taken during pre-construction, construction and operation stages to **reduce adverse environmental impacts**
- / Components of EMP
  - Mitigation of potentially adverse impacts;
  - Environment Enhancement Measures
  - Monitoring during project implementation and operations;
  - Institutional Capacity Building and Training;
  - Implementation Schedule
  - Environmental Budget

# Why EMP Implementation?

## / Construction Stage

- ❑ Prevent and reduce the negative environmental impacts by economically feasible mitigation measures

BECAUSE

EMP has been included as part of contract documents.

## / Reference

- ❑ **Annexure A1**: Major labour laws applicable to civil works
- ❑ **Annexure A2**: Safety and welfare provisions
- ❑ **Part C**: Environmental Management Plan

# EMP – Soil Resources

- / Restoration of striped **top soil** - MoRTH: 301.3.2
- / **Multiple handling of top soil** to be kept minimum – MoRTH: 305.3.3
- / **Borrowing** within the RoW prohibited - MoRTH 305.2.2.2
- / Management of **borrow pits** in accordance with EMP guidelines
- / **Slope** of pit not steeper than 1 vertical to 2 horizontal, from the edge - MoRTH: 305.2.2.2 and 306
- / Vehicle and equipment **refueling** to be carried out without contamination of ground - MoRTH 306.3

# EMP – Water Resources

- / Filling of water bodies to be compensated
- / **Replacement** to be ready prior to demolition of existing sources - MoRTH 301.5
- / **Discharge standards** promulgated under the Environmental Protection Act, 1986 to be strictly followed
- / Contractor shall take all measures necessary to prevent **siltation** – MoRTH: 111.4 and 306
- / All necessary measures to be taken to prevent alteration of **natural drainage** course - MoRTH: 306
- / All measures to be taken to prevent **contamination of water bodies** from fuel and lubricants – MoRTH: 111.4

# EMP – Air

- / All vehicles delivering materials to the site to be covered to **avoid spillage** – MoRTH: 111.9
- / **Waste disposal** and **sewage** system for labour camp to be properly designed, built and operated – MoRTH: 114.1
- / **Emission** from construction vehicles and machinery shall strictly adhere to standards specified by the MoEF/CPCB/PPCB
- / **Hot mix plants** shall be at least **500m** from the nearest settlement - MoRTH 111.5
- / No new plant will be set-up in notified or restricted forest

# EMP – Air

- / Hot mix plants to comply with all **relevant pollution norms** - MoRTH 111.5
- / The Contractor will submit **PUC certificates** for all vehicles – C 4.2.2
- / All **crushers** shall confirm to Environmental Protection Act, 1986
- / Crushers already licensed by the PPCB shall be used – C 4.2.1
- / **SPM** at a distance of 40m not to exceed 500 microgm/cum – C 4.2.1

# EMP – Noise

- / Plants and construction equipment shall strictly confirm to the **GoI noise standards** – MoRTH: 111.1
- / Restricted construction activities around sensitive land uses and silence zones – C 4.3.1
- / Proper and regular **maintenance of vehicle** and equipments to reduce the noise level
- / Within 150 m of the nearest habitation, **noisy construction** work will be **stopped** during the night time between 10.00 PM and 6.00 AM – C 4.3.1

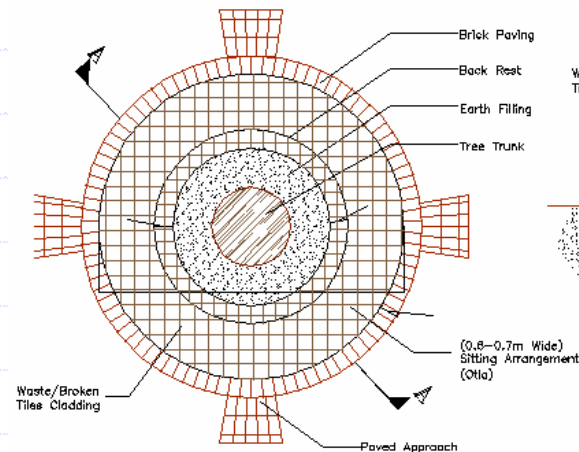
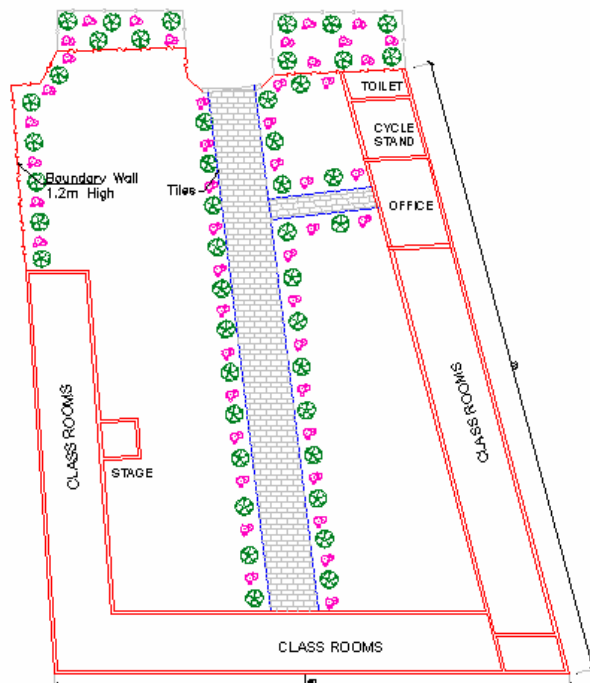


# EMP – Other Aspects

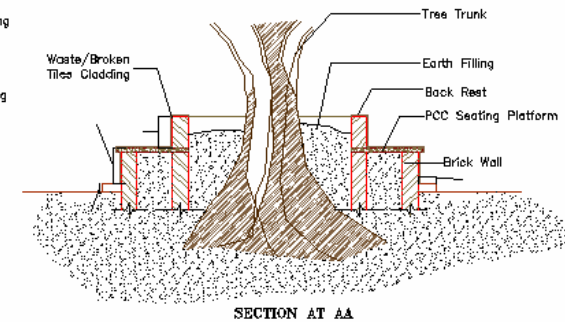
- / Loss and damage of **vegetation**
- / Loss, damage or disruption to **fauna**
- / **Traffic control** and safety
- / **Worker's risk** from operation
- / **Labour camp** management
- / Worker's health risks including **hygiene**, first-aid, potable water
- / Environmental **enhancement**

# Environmental Enhancement

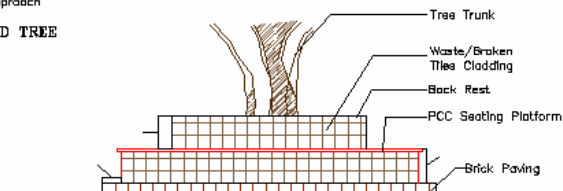
- Site specific mitigation and improvement
- Technical drawings and specifications have been prepared



PLAN SHOWING THE TYPICAL SEATING AROUND TREE



SECTION AT AA



# Environmental Enhancement

- / Enhancement of community ponds, bus shelters and roadside amenities
- / Enhancement of cultural properties, sitting arrangements
- / Enhancement of major intersections
- / Provision of underpass
- / Provision of noise barrier
- / Improvement of aesthetic quality through plantation
- / Provision of street light/ illumination

# Environmental Enhancement: LM

- / Enhancement of mosque at km 16.95
- / Enhancement of temple at km 54.7
- / Enhancement of school at km 21.27/ 67.1
- / Enhancement of gurdwara at km 27/ 47.3
- / Enhancement of bus bays
- / Enhancement of sitting benches
- / Enhancement of village gates
- / Enhancement of drinking water sources
- / Enhancement of boundary wall
- / Enhancement of waste water ponds
- / Enhancement of rotary junction
- / Traffic calming measures

# Major Issues in LM

- / Total cutting of 9,365 nos. of trees and afforestation
- / Inadequate drainage
- / Higher noise level with the permissible limit
- / Road safety
- / Loss of hand pumps
- / Top soil management in bypass
- / Debris disposal site

# Environmental Friendly Construction Methodology

- / Retaining structures
- / Top soil preservation
- / Dust suppression
- / Borrow area management
- / Safety

# Environmental Friendly Construction Methodology

- / Environmental friendly construction methodology should follow the process laid down in EMP
- / This follows safeguard measures and good practices in other similar projects
- / As most activities are inter related a sequential order should be followed during construction

# Environmental Friendly Construction Methodology

## Protection of Environment

- / Existing water courses and drains will be kept safe and free from any contamination
- / equipment in good condition to minimize dust, gaseous or other air-borne emissions
- / The contractor will take necessary measures to maintain all plant and equipment in good condition
- / Regular water spraying on haulage roads during transportation of construction material
- / Provisions should be made for noise absorbing pads at foundations of vibrating equipments to reduce noise emissions



# Environmental Friendly Construction Methodology

## Protection of Environment

- / Minimum disturbance to natural drainage pattern
- / Use of silt fencing
- / Cement and coal ash should be stacked together, fenced by bricks or earth wall, and kept away from water, to prevent leachate formation and contamination of surface and ground water
- / Dumping of construction material should be from an optimum height

# Environmental Friendly Construction Methodology

## Pollution

- / Bituminous hot-mix plants and concrete batching plants shall be located sufficiently away from habitation
- / All possible ways to reduce pollution
- / Slope of the embankments leading to water bodies should be modified and rechannelised to prevent entry of contaminants into the water body
- / Over Burden (OB) waste dumps shall be sprayed with water, as they are the major source of air borne particulate matter

# Environmental Friendly Construction Methodology

## Traffic and Safety

- / Least interference to the flow of traffic with the satisfactory execution
- / One-way traffic operation shall be established whenever the traffic is to be passed over part of the carriageway inadequate for two-lane traffic
- / Detail traffic management plan
- / Where the execution of the works requires single-lane operation on public road, the Contractor shall provide and maintain all necessary barriers, warning signs and traffic control signals to the approval of the Engineer

# Environmental Friendly Construction Methodology

## Health and Safety

- / The contractor shall keep complete and accurate records of the employment of labour at the site
- / The contractor and his sub-contractors shall abide at all times by all existing labour enactments and rules
- / All workmen at site shall be provided with safety helmets and yellow/ orange jackets. Workmen required on site during night hours shall be provided with fluorescent yellow jackets with reflective lopes.
- / Workers employed on mixing asphaltic materials, cement, lime mortars, concrete etc. shall be provided with protective footwear, protective goggles.

# Environmental Friendly Construction Methodology

## First Aid

- / The provision and maintenance of suitably equipped and staffed first aid stations throughout the extent of the works
- / indoor health unit having one bed facility every 250 workers needs to be provided
- / Adequate transport facilities for moving the injured persons to the nearest hospital must also be provided in ready to move condition.
- / The first-aid units apart from an adequate supply of sterilized dressing material should contain other necessary appliances as per the factory rules

# Retaining Structures



- Gabion structures used for construction of retaining structures



- / Reinforced soil slope system used for new construction or failed slopes

# Top Soil Preservation

- / Preservation of top soil in stockpiles of height not more than 2m



- Laying of top soil in newly formed road slopes

# Top Soil Management



◇ Relaying of top soil



◇ Top soil management



# Dust Suppression



- Watering in construction camp site for dust suppression

/ Watering of main road



# Borrow Area Redevelopment



◇ Before excavation



□ During excavation



/ After redevelopment

# Training and Orientation



□ Training to workers

/ Safety training to construction workers



# Environmental Enhancement



□ Temple before relocation



/ Completed temple after relocation

# Safety



- ◇ Safety measures for heavy equipments during transportation

# Site Photographs of Package UG - 2

Contd...



# Site Photographs of Package UG - 2



# Site Photographs of Package UG - 2





## Site Photographs of Package UG - 2



## Site Photographs of Package UG - 2



# Workers Safety During Construction

- / Safety during construction
- / General safety practices

# Safety During Construction



# Safety During Construction

## House Keeping Practices

- / Maintain washrooms and canteens clean
- / Keep all walkways clear and unobstructed at all times
- / Ensure that spillages of oil and greasy
- / Stack raw materials and finished products clear of walkways or inside roads
- / Do not leave tools on the floor or in any location where they can be easily dislodged
- / Keep windows and light fitting clean
- / Maintain the workplace floors dry and in a non-slippery condition

# Safety During Construction

## Layout in the construction plant

- / Arrange border to perimeter fencing
- / Ensure good visibility and safe access at site entrances
- / Provide adequate warning signs at the entrance and exit where necessary
- / Provide adequate space/area for loading and unloading, storage of materials, plant and machinery
- / Display emergency procedure and statutory notices at conspicuous location
- / Consider welfare facilities required

# Safety During Construction

## Noise Hazards and its Control

- / Use sound level meters to measure. If the sound level exceeds 85 dB(A), then preventive measures should be taken
- / Make personnel aware of noisy areas by using suitable warning signs and insisting that ear protectors should necessarily be worn.
- / Reduce noise at source by improved maintenance, replacing noisy machines, screening with noise absorbing material, making changes to the process/equipment, controlling machine speeds, ensuring that two noise-generating machines are not running at the same time, using cutting oils and hydraulic breakers.



**USE BARRICADES  
TO PROTECT PUBLIC AREAS**



**CARELESSNESS MAY CAUSE YOU  
A PAINFUL TRIP TO THE HOSPITAL**



# Safety During Construction

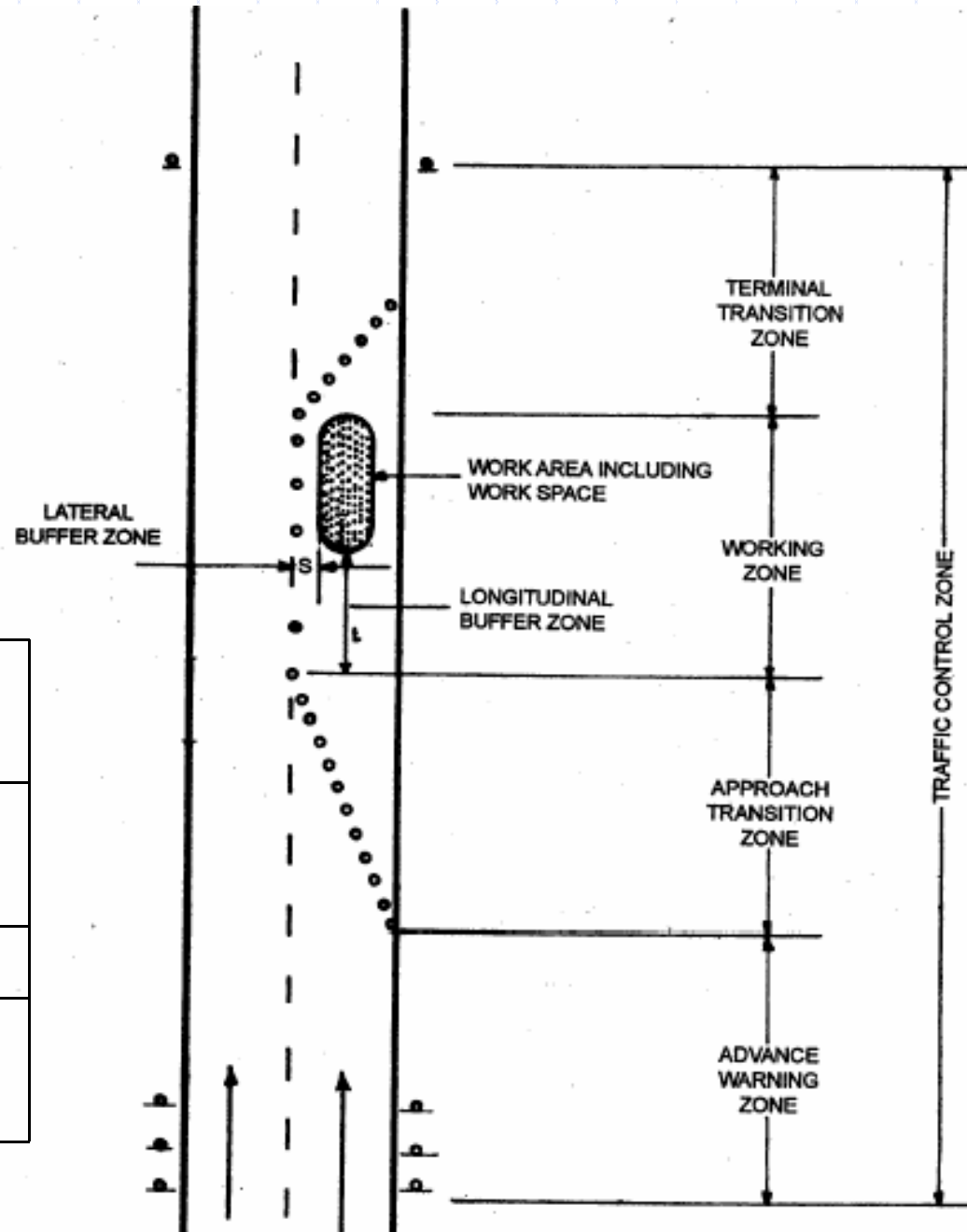
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## Road Works

- / The use of signage is most important to caution the road users of possible unsafe conditions due to the road works.
- / Use the appropriate signage devices as required by the site conditions/situation. The devices include regulatory signs, delineators, barricades, cones, pavement markings, lanterns and traffic control lights.
- / In using signs, make sure that they are (i) simple, easy-to-understand and convey only one message, (ii) luminescent and with reflective properties, and )iii) broad, prominent and of appropriate size.
- / In using barricades, make sure that you keep traffic away from work areas and you guide the drivers to keep along a safe, alternative path

## Construction Zones

Advance working zone	300 m
Approved transition zone	100 m
Working zone	500 m
Terminal transition zone	100 m



# Traffic Safety

## Clause 112.4

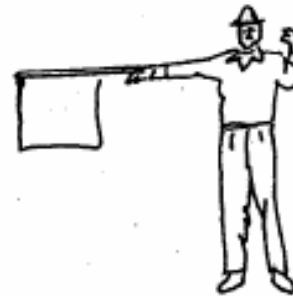
- / Traffic signals or flagmen to be deployed where only one way traffic is possible

## Sub Clause 112.6

- / Construction, maintenance and dismantling to be incidental to works

Contd...

FLAG



TO STOP TRAFFIC



TRAFFIC PROCEED



TO ALERT AND SLOW TRAFFIC

PADDLE



Module 1



Stop Sign



Give Way Sign



No Entry



Compulsory Keep Left



Compulsory Turn Left



Compulsory Turn Right



Compulsory Ahead Only



One Way Sign

Straight Prohibited or No Entry



Compulsory Ahead or Turn Right



Compulsory Ahead or Turn Left



Priority to Vehicles in Other Direction



Priority to Vehicles in this Direction



Vehicles Prohibited in Both Directions



Left Turn Prohibited



Right Turn Prohibited



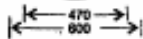
'U' Turn Prohibited



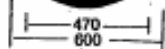
Load Limit



Axle Load Limit



Overtaking Prohibited



No Parking



No Stopping or No Standing



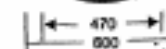
Height Limit



Length Limit

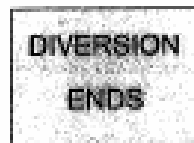
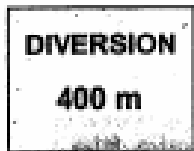


Restriction Ends



Speed Limit

Module I



Two Way Traffic Ahead



Men at Work



Narrow Road Ahead



Left Lane Diverted



Right Lane Diverted



Lane Closed (Two Lane Road)



Lane Closed (Three Lane Road)



Lane Closed (Four Lane Road)



Median Closed



Diversion to Other Carriageway



Traffic Signal Ahead



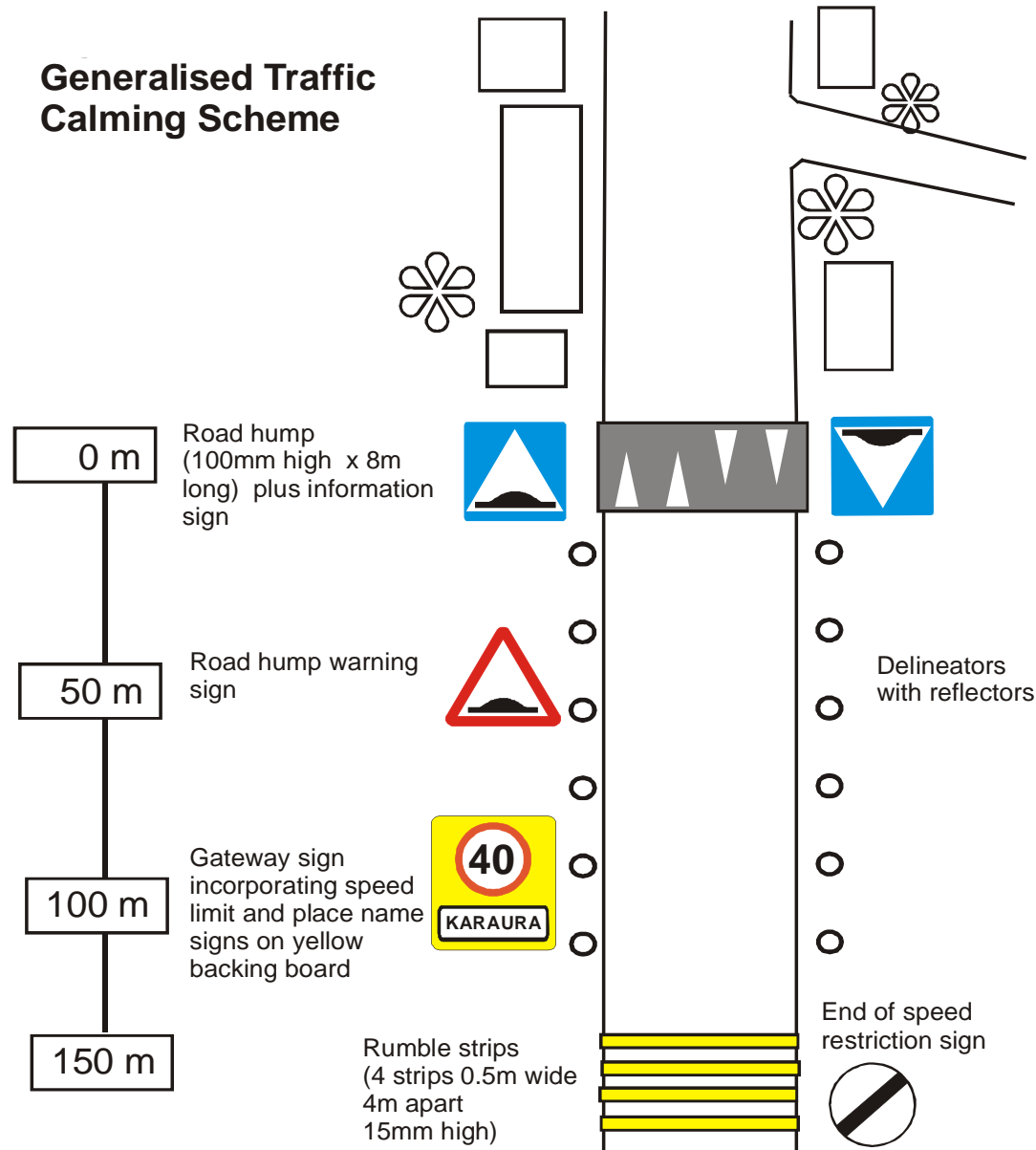
Two Way Traffic



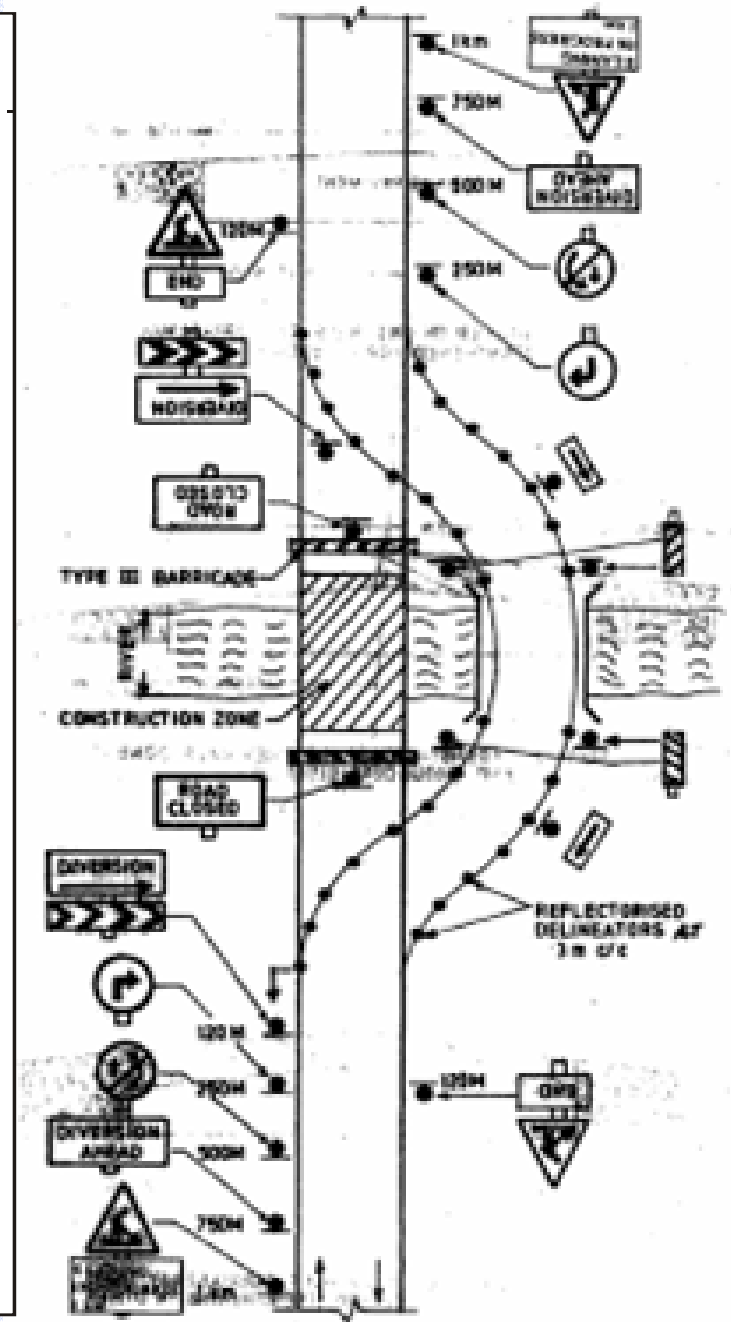
Un Even Road

# Module I

## Generalised Traffic Calming Scheme



Not to scale



# Safety During Construction

## Electrical Hazards

- / Treat all wires as live wires
- / Never touch dangling wires, but report them to your manager
- / Unless you are a qualified electrician, do not attempt electrical repairs
- / Never use electrical equipment if your hands are wet or you are standing in water
- / If electrical equipment is sparking or smoking, turn the power off and report the condition to your supervisor
- / Never use electrical wires that have physical damage
- / Never allow equipment or traffic to run over electrical wires.

# Safety During Construction

## Storage of Gas/ LPG

- / Store filled gas/LPG cylinder in the open area, i.e. outside of the building
- / Transport, store, use and secure cylinders in upright position
- / Ensure proper ventilation at the ground level in locations where gas/LPG is in use
- / Avoid physical damage to the cylinders
- / Never weld or cut on or near the cylinders
- / Store empty cylinders secured and upright
- / Make sure that the cylinder is closed immediately after use
- / Investigate immediately if there is the smell of LPG or gas
- / Make sure that there is no other unrelated fire in the vicinity of the cylinder



# Safety During Construction

## Operation of trucks and dumpers

- / Ensure that only trained, authorized and licensed drivers operate the vehicles
- / Enlist the help of another worker before reversing the vehicle
- / Switch-off the engine of an unattended vehicle
- / Lower the tipping bodies when the machine is unattended, but if it is necessary to leave them in the raised position they should be blocked to prevent their fall.
- / Wear safety boots or shoes to avoid injuries during loading and unloading.
- / Carryout periodic servicing to the manufacturer's requirements. All records of maintenance and repairs should be in writing or kept on site.

# Safety During Construction

## Gas Welding

- / Use personal protective equipment during welding
- / Screen of the work area with sturdy opaque or translucent materials because glare can cause eye injury.
- / Do not use gas cylinders for supporting work or as rollers
- / Do not use oil grease on oxygen cylinder fittings
- / Do not use cylinders with damaged valves.
- / Do not use too much force if valves are stuck.
- / Replace valve caps after use
- / Treat all gas cylinders as "full" unless you are sure otherwise.
- / Never attempt to transfer acetylene from one cylinder to another or attempt to refill an acetylene cylinder.
- / Place portable fire extinguishers near the welding area

# Safety During Construction

## Manual Handling and Lifting

- / Use mechanical equipment in place of manual handling as far as possible.
- / Assess the manpower required to handle or lift the load safely and arrange the manpower accordingly.
- / In handling hazardous materials, the workers shall be informed of the hazards and safety precautions.
- / All relevant persons shall be trained in the proper methods of lifting and carrying.
- / Where team work is required, select the persons whose ages and physical builds are compatible for teaming up. Coordinate the actions of the team members by giving necessary instructions.

# Safety During Construction

## Handling Chemicals and Hazardous substance

- / Always substitute hazardous chemicals with harmless or less hazardous ones wherever possible
- / Enclose the process using chemicals or provide other engineering controls such as local exhaust ventilation, a fume cupboard or a safety cabinet
- / Exercise great care in the storage and use of chemicals because they may be explosive, poisonous, corrosive or combustible.
- / Separate different chemicals physically
- / Consider unknown substances and liquids as dangerous until proven otherwise
- / All containers should be clearly labeled to indicate contents. Never use a wrongly labeled container for chemicals
- / No smoking within the construction camp site premises



**OBSERVE ALL SIGNS**



**USE SAFE ACCESSWAYS**

# Safety During Construction

## First AID

- / Provide first aid boxes at every site
- / Ensure that training on the use of the first aid box is provided to a handful of staff working in the site.
- / Display the list of persons who are trained on providing first aid.
- / Ensure that every first aid box is marked plainly "First Aid" in English and local language.
- / The responsible person or first aider should replenish the contents of the first aid box as necessary.



**GLOVES, SAFETY FOOTWEAR,  
SAFETY HELMETS, SAFETY BELTS,  
PROTECTIVE EYEWEAR ARE  
FOR YOUR PROTECTION. USE THEM**

# Safety During Construction

## Personal Protective Equipments

- / Consider the provision of personal protective equipment only after all measures for removing or controlling safety hazards have been provided reasonably impractical.
- / Ensure that sufficient personal protective equipment are provided and that they are readily available for every person who may need to use them.
- / The management should ensure that all persons make full and proper use of the personal protective equipment provided.
- / Provide instruction and training in the proper use and care of any specific protective equipment where necessary
- / Do not willfully misuse, interfere with or ill-treat any protective clothing and equipment provided.



# Safety During Construction

## Eye Protection

- / Issue eye protection equipment where there is a foreseeable risk of eye injury
- / Ensure an adequate supply of goggles/shields is available.
- / Keep the goggles clean and make sure they are good fit.
- / Do not watch welding operations unless your eyes are protected from the damaging effect of flash.

# Safety During Construction

## Head Protection

- / No person shall enter a construction site unless he is wearing a suitable safety helmet
- / Wear a safety helmet:
  - / When there is the risk of being hit by falling objects
  - / While on or near a construction site
  - / During adverse weather conditions
  - / When in any area designated as a "hard hat" area.
- / Provide identification labels to all helmets in some way to prevent random exchange among wearers, with one helmet exclusive to each person.
- / Destroy, remove and replace all worn, defective or damaged helmets.

# Safety During Construction

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## Safety Footwear

- / Wear suitable footwear for work
- / Use safety footwear on site or in other dangerous areas
- / Wear suitable safety shoes or ankle boots when working anywhere where there is high risk of foot injuries from slippery or uneven ground, sharp objects, falling objects, etc.
- / All safety footwear, including safety shoes, ankle boots and rubber boots, should be fitted with steel toecaps.
- / Avoid wearing flip flops, high heeled shoes, slippers, light sport shoes in situations where there is a risk of foot injury.
- / Keep shoe lace knots tight.

# Safety During Construction

## Hearing Protection

- / Provide ear plugs or ear muffs as required.
- / Provide disposable ear plugs for infrequent visitors and ensure that they are never re-used.
- / Provide re-usable ear plugs for those who need to work continuously for a long period in a high noise area.
- / Use ear muffs with replaceable ear cushions because they deteriorate with age or may be damaged in use.
- / Avoid wearing spectacles with ear muffs.
- / Use soap and water or the recommended solvent for cleaning ear muffs.
- / Provide ear muffs for those who may need to get in and out of a high noise area frequently.

# Safety During Construction

## Respiratory Protective Equipment

- / Wear suitable respirable for protection when there is a potential for small particles entering the lungs, e.g. emptying of cement bags.
- / Ensure that the exhalators can provide adequate protection.
- / Provide training to all persons using the respirators for their correct fitting, use, limitations and symptoms of exposure.
- / Clean and inspect all respirators before and after use.
- / Store respirators properly when not in use.

# Safety During Construction

## Fire Prevention

- / Store flammable material in proper areas having adequate fire protection systems.
- / Display sufficient warning signs.
- / Train selected personnel to use these fire extinguishers
- / Inspect fire extinguishers regularly and replace as necessary
- / Fire escape route should be kept clear at all times and clearly indicated.
- / Know the escape route and assembly point.
- / Display escape route maps prominently on each floor
- / Carryout fire drill regularly. Designate fire officers
- / Install fire alarm wherever required and test regularly.

# Good safety Practices

- ◆ Train, communicate and motivate to all staffs
- ◆ Inspect work area daily
- ◆ Be an observer - stay alert
- ◆ Use your best safety devices
- ◆ Availability of safety equipments at all work places
- ◆ Report injuries/incidents/illnesses to the safety officer
- ◆ Report safety issues to the safety officer/ team leader
- ◆ Follow through in your duties

# Way Forward

## For effective implementation of EMP

- / Coordination between CSC and contractor
- / Support from other/ engineering department
- / Regular monitoring by the Client
- / Discussion of environmental aspects in monthly meeting
- / Actual implementation by the contractor
- / Proper documentation of all aspects
- / Addressing all unconformities
- / Continual improvement where ever feasible



# MODULE - 2

# Monitoring & Reporting System

# Suggestive Reporting Methodology

- / Review activities on site against environmental work methodology
- / Record all issues of non compliance
- / Review all non compliance listed in previous environmental inspection report
- / Assess the suitability of the remedial measures suggested
- / Organize close meeting with contractors representative
- / Detail site inspection report/ formats will be completed within 3 working days
- / Document all issues/ problems with photographs

# Applicability of Reporting Formats

<b>Clearances/ Formats</b>	<b>LM</b>	<b>Status</b>	<b>Remarks</b>
Clearances (CFE and CFO)	Y	Obtained	One time
Tree cutting/ forest clearance	Y	Obtained	One time
Setting of construction camps	Y	Obtained	One time
Hot mix plan/ BMP	Y	Established	One time/ Monthly
Enhancement measures	Y	In Progress	One time
Earthwork	Y	In Progress	Monthly
Disposal sites/ Land fill sites	Y	In Progress	Monthly/ One time
Identification of source of water for construction	Y	Completed	One time
Borrow area	Y	In Progress	Monthly
Quarry area	-	Not Applicable	
Road safety	Y	In Progress	Monthly
Machinery operations	Y	In Progress	Monthly
Pollution monitoring	Y	In Progress	Quarterly
Redevelopment of borrow areas	Y	In Progress	One time

# Roles & Responsibility

# Contractual Obligations

Quality assurance plan	Protection of environment
Traffic management plan	Engagement of staff & labour
Traffic safety and control	Health & safety
Maintenance and diversion of traffic	Prohibition of child labour
Borrow area	Major labour laws
Access to safe movement	Safety and welfare provision
	Access route
	Safety procedure

# Responsibility

Contd...

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
P.1	Land Acquisition	PRBDB, Revenue Dept, Collaborating Agencies	PRBDB
P.2	Clearance of Encroachment/ squatters (change in land use)	PRBDB and Revenue Authority	PRBDB
P.3	Tree Cutting	Contractor/ Agency engaged by PRBDB	CSC and/ PRBDB
P.4	Preservation of Trees	PRBDB, Forest Department, Contractor	CSC and PRBDB
P.5	Relocation of Community Utilities and Common Property Resources	PRBDB other Agencies and / Contractor	PRBDB
P.6	Relocation of affected Cultural and Religious Properties	PRBDB, Contractor	CSC/PRBDB
P.7	Orientation of Implementing Agency and Contractors	Contractor, CSC and PRBDB	PRBDB
P.8.1	Joint Field Verification	Contractor/ Environmental Specialist of CSC	PRBDB
P.8.2	Assessment of Impacts due to Changes/Revisions/Additions in the Project Work	Contractor/ Environmental Specialist of CSC	PRBDB

**Module II**

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
P.8.3	Crushers, hot-mix plants and Batching Plants Location	Contractor/ Environmental Specialist of CSC	PRBDB
P.8.4	Other Construction Vehicles, Equipment and Machinery	Contractor/ Environmental Specialist of SC	PRBDB
P.9.1	Borrow Areas	Contractor/ Environmental Specialist of CSC	PRBDB
P.9.2	Quarry	Contractor	Environmental Specialist of CSC and PRBDB
P.9.3	Arrangement for Construction Water	Contractor	Environmental Specialist of CSC and PRBDB
P.10	Sand	All riverbeds recommended for sand extraction for the project.	
P.11	Labour Requirements	Contractor	Environmental Specialist of CSC and PRBDB
P.12	Construction – Selection, Design and Lay-out	Contractor	Environmental Specialist of CSC and PRBDB
P.13	Arrangements for Requirement	Contractor	Environmental Specialist of CSC and PRBDB
P.14	Implementation information workshop	Contractor	EO, PRBDB



**Module II**

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
C.1.1	Clearing and Grubbing	Contractor	Environmental Specialist of CSC, PRBDB
C.1.2	Disposal of Debris from dismantling structures and road surface	Contractor	Environmental Specialist and Resident Engineer of CSC, EO, PRBDB
C.1.3	Other Construction Wastes Disposal	Contractor	Environmental Specialist of CSC, PRBDB
C.1.4	Stripping, stocking and preservation of top soil	Contractor	Environmental Specialist of CSC, PRBDB
C.1.5	Accessibility	Contractor	Environmental Specialist of CSC, PRBDB
C.1.6	Planning for Traffic Diversions and Detours	Contractor	Environmental Specialist and Resident Engineer of CSC,EO, PRBDB
C.2.1	Earth from Borrow Areas for Construction	Contractor	Environmental Specialist of CSC, PRBDB
C.2.2	Quarry Operations	Contractor	Environmental Specialist of CSC, PRBDB
C.2.3	Transporting Construction Materials and Management	Contractor	Environmental Specialist of CSC, PRBDB

**Module II**

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
C.3.1	Disruption to Other Users of Water	Contractor	Environmental Specialist of CSC, PRBDB
C.3.2	Drainage	Contractor	Environmental Specialist of CSC, PRBDB
C.3.3	Siltation of Water Bodies and Degradation of Water Quality	Contractor	Environmental Specialist of CSC, PRBDB
C.3.4	Slope Protection and Control of Soil Erosion	Contractor	Environmental Specialist of CSC, PRBDB
C.4.1 .1	Water Pollution from Construction Wastes	Contractor	Environmental Specialist of CSC, PRBDB
C.4.1 .2	Water Pollution from Fuel and Lubricants	Contractor	Environmental Specialist of CSC, PRBDB
C.4.2 .1	Dust Pollution	Contractor	Environmental Specialist of CSC, EO, PRBDB through the Engineer
C.4.2 .2	Emission from Construction Vehicles, Equipment and Machineries	Contractor	Environmental Specialist of CSC, PRBDB
C.4.3 .1	Noise Pollution: Noise from Vehicles, Plants and Equipments	Contractor	Environmental Specialist of CSC, EO, PRBDB

**Module II**

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
C.5.1	Personal Safety Measures for Labour	Contractor	Environmental Specialist of CSC, PRBDB
C.5.2	Traffic and Safety	Contractor	Environmental Specialist of CSC, PRBDB
C.5.4	Risk from Electrical Equipment(s)	Contractor	Environmental Specialist of CSC, PRBDB
C.5.5	Risk Force Measure	Contractor	Environmental Specialist of CSC, PRBDB
C.5.6	First Aid	Contractor	Environmental Specialist of CSC, PRBDB
C.5.7	Informatory Signs and Hoardings	Contractor	Environmental Specialist of CSC, PRBDB
C.6.1	Road side Plantation Strategy	Contractor	Environmental Specialist of CSC, PRBDB
C.6.2	Flora and Chance found Fauna	Contractor	Environmental Specialist of CSC, PRBDB
C.6.3	Chance Found Archaeological Property	Contractor	Environmental Specialist of CSC, PRBDB

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
C.7.1	Accommodation	Contractor	Environmental Specialist of CSC, PRBDB
C.7.2	Potable Water	Contractor	Environmental Specialist of CSC, PRBDB
C.7.3	Sanitation and Sewage System	Contractor	Environmental Specialist of CSC, PRBDB
C.7.4	Waste Disposal		
C.8.1	Environmental Conditions	Contractor	Environmental Specialist of CSC and PRBDB, NHAI
C.8.2	Continuous Community Participation	Environmental Specialist of CSC	Environmental Specialist of CSC and PRBDB, NHAI
C.8.3	Clean-up Operations, Restoration and Rehabilitation	Contractor	Environmental Specialist of CSC, PRBDB
C.9.1	Tree	State Forest Department	PRBDB

## Module II

Sl. No.	Environmental Issue	Responsibility	
		Planning and Execution	Supervision/ Monitoring
O.1	Monitoring Operation Performance	PRBDB/PWD	PRBDB/PWD
O.2	Maintenance of Drainage	PRBDB/PWD	PRBDB/PWD
O.3	Pollution Monitoring	Pollution Monitoring Agency	PRBDB/PWD
O.4.	Soil Erosion and Monitoring of Borrow Areas	PRBDB/PWD	PRBDB/PWD
O.5	Changes in Land Use Pattern	PRBDB/PWD, Revenue Department and Local Civic Bodies	PRBDB/PWD PRBDB/PWD
O.6	Removal of Dead Animals	Local Authorities	PRBDB/ PWD
O.7	Public awareness on Noise levels and Health Affects	PRBDB	PRBDB

# Details of Earthwork

	Name of Village	Chainage (km)	Side (LHS / RHS)	Haul road length (m)
I				
II				

(SHOW ON A SKETCH PLAN CLEARLY INDICATING DISTANCE AND APPROACH ROADS)

## 2. DETAILS OF BORROW AREAS

2.1	Capacity of the Borrow Area	
2.2	Percentage of the capacity exhausted	
2.3	Total quantity of the Earth Excavated (in cum)	
2.4	Quantity of Top Soil removed from the Borrow Areas	
2.5	Location of Top Soil stored removed	
2.6	Quantity of Top Soil stored at the beginning of the month	
2.7	Quantity of Top Soil utilized at the end of the month	
2.8	Location (s) where Top Soil has been utilized (Specify on a location plan)	
2.9	Quantity of earthwork excavation from existing road	
2.10	Total quantity of earthwork reused in cum. (5%)	
2.11	Location disposal (if other than sites) (Specify clearly on a location plan)	
2.12	Quantity of earthwork re-used in fill operation	
2.13	Location of borrow areas in disuse / exhausted	
2.14	Outline a rehabilitation plan for each of the exhausted borrow areas with special reference to Erosion Protection Measures. Also, submit at separate detailed rehabilitation plan for exhausted borrow areas for approval supported adequately with layouts, plans and drawings.	

# Details of Hot Mix Plant

## 1. ENVIRONMENT FEATURES OF THE SURROUNDING AREA

1.1	Name and location of Hot Mix Plant (w.r.t. PWD km ch.)	
1.2	Wind direction	
1.3	Name (s), distance population and type of settlements in a 1.5 km radius of site.	

## 2. DRAW SKETCH PLAN OF HMP CLEARLY INDICATING DISTANCE AND APPROACH ROADS.

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## 3. DETAILS OF HMP AND MITIGATION MEASURES TAKEN

3.1	Installed Capacity	
3.2	Average Utilization	
3.3	Make	
3.4	Model	
3.5	Last Serviced	

## 4. EXPLAIN AIR POLLUTION CONTROL MEASURES TAKEN AT THE HMP SITE

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## 5. EXPLAIN NOISE POLLUTION CONTROL MEASURES TAKEN AT THE HMP SITE

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# Details of Machinery in Operation

## 1. Environment Features of the surrounding area

1.1	Total machinery in operation (Nos.)		
1.2	Number of pavers		
1.3	Number of rollers		
1.4	Number of excavators		
1.5	Number of graders	Nos.	
1.6	Number of dumpers	Nos.	
1.7	No. of workshops with repairs facility (furnish location and type of facility provided)	Workshop on Location	Facility Provided
1.8	Number of vehicles in repair at each location		
1.9	Number of oil interceptor provided in each repair / fuelling site		
1.10	Total quantity of oil and wastes recovered in each interceptor during last month.	Oil waste	Liters, Kg.
1.11	Details of waste disposal. (Whether Sold/ Disposed)		



# Checklist for Borrow Area Operation

Sl. No.	Issue	Unit	Remarks
1	Whether the identified borrow area is enlisted in the DPR	Yes/No	
2	Whether formal agreement between Contractor and landowner has taken place.	Yes/No	
3	Whether suitable material available from the borrow area	Yes/No	
4	Whether sufficient quantity of earth is available	Yes/No	
5	Whether loss to the existing vegetation will be minimum	Yes/No	
6	Whether borrow area operation not going create nuisance to the nearby settlements	Yes/No	
7	Whether borrow area is located faraway from the existing roads	Yes/No	
8	Whether P3 Format of EMP: Establishment of borrow areas has been filled up and submitted to the Engineer	Yes/No	
9	Whether photographic evidences of the stages of borrow area operation is maintained	Yes/No	
10	<b>Whether the borrow area has been approved by the environmental specialist of the Engineer</b>	Yes/No	
11	Whether top soil preservation is carried out by stripping off 15 cm of topsoil and stored in stockpiles not exceeding height of 2m and side slopes not steeper than 1:2	Yes/No	
12	<b>Whether redevelopment plan of borrow area has been approved by the Engineer</b>	Yes/No	
<b>Special measures to be adopted if:</b>			
13	Borrow area is located in non-agricultural land : <ul style="list-style-type: none"> <li>○ Borrowing of earth is carried out to a depth of 1.5m from the existing ground level</li> <li>○ Borrowing of earth is not carried out continuously through out the stretch</li> <li>○ Ridges of not less than 8m width will be left at intervals not exceeding 300m</li> <li>○ Small drains will be cut through the ridges to facilitate drainage, if necessary</li> <li>○ The slope of the edges will be maintained not steeper than 1:4(Vertical:Horizontal)</li> </ul>		
14	Borrow area is located in agricultural land : <ul style="list-style-type: none"> <li>○ Borrowing of earth is carried out to a depth of 30cm after stripping 15 cm of topsoil</li> </ul>		
15	Borrow area is located in Elevated land : <ul style="list-style-type: none"> <li>○ On request of the land owner, borrowing shall be carried out to a depth of not more than 1.5m or up to the level of surrounding fields.</li> </ul>		
16	Borrow area is located along the River : <ul style="list-style-type: none"> <li>○ Borrow area should be located at least 15m away from the toe of the river bank or high flood level, whichever is maximum.</li> </ul>		
17	Borrow area is located nearby settlements : <ul style="list-style-type: none"> <li>○ Borrow area should be located at least 0.75Km. from the village or settlement. If unavoidable, the pit will not be dug for more than 30cm and drains will be cut to facilitate drainage.</li> <li>○ Borrow areas will be redeveloped immediately after borrowing is completed. If spoils are dumped, will be covered with a layer of stockpiled topsoil.</li> </ul>		
18	Borrow area is located along the road : <ul style="list-style-type: none"> <li>○ Borrow pits along the road should be discouraged</li> <li>○ If unavoidable, should not be dug continuously</li> <li>○ Ridges of not less than 8m width will be left at intervals not exceeding 300m</li> <li>○ Small drains will be cut through the ridges to facilitate drainage, if necessary</li> <li>○ No pit should be dug within the offset width from the toe of the embankment required as per the consideration of stability with a minimum width of 10m.</li> <li>○ Maximum depth of the pit to be operated should be less than 1.5m</li> </ul>		

# Checklist for Safety Management

Sl. No.	Issue	Unit	Compliance Status	Remarks
<b>Details of construction zone</b>				
1	Length of Construction Zone	Km.		
2	Distance Between two Construction zones(Present and Next)	Km.		
3	Length of transition SubZone (Should be minimum 50 meters for a speed of 50Km./Hr.)	M		
4	Length of work Subzone in Urban stretch(should be <2Km.)	Km.		
5	Distance between two work subZones	M		
6	Length of Work SubZone in Rural Stretch(5-10Km.)	Km.		
<b>Placement of Signages in Construction zones</b>				
7	Whether Traffic Control Plan was submitted to the Engineer two weeks prior to undertake the work and status of its approval as per Clause 112 of contract Document			
8	Sign saying 'Men At Work' 1 Km. ahead of Transition subzone provided	Yes/No		
9	Supplementary sign saying diversion 1Km. ahead provided	Yes/No		
10	Sign Saying 'Road Closed ahead' provided	Yes/No		
11	Detour sign Placed	Yes/No		
12	Sharp Deviation Sign Placed at the End of advance warning subzone	Yes/No		
<b>Signage in Transition Sub-Work Zone</b>				
13	Signage Saying 'Keep Left/Right' Provided	Yes/No		
14	Delineators placed along the length of the Transition subwork zone	Yes/No		
15	Hazard Marker placed where railing for CD structure on Diversion starts	Yes/No		
16	Barricade provided on either side of work sub zone	Yes/No		
17	Signage placed to indicate end of work zone 120m away from end of termination of SubZone	Yes/No		
<b>Road Delineators</b>				
18	Road Indicators Provided	Yes/No		
19	Hazard Markers provided	Yes/No		
20	Object Markers Provided	Yes/No		
<b>Environmental Measures</b>				
21	Whether area has been identified for top soil preservation	Yes/No		
22	Whether dust suppression measures available at workplace	Yes/No		
23	Whether stacking of top soil is in accordance with the EMP	Yes/No		
24	Whether all workmen are supplied with proper PPE and status of their usage	Yes/No		
25	Whether First aid Facility is available at work site	Yes/No		
26	Whether drinking water facility available at work site	Yes/No		
27	Whether Ambulance is readily accessible	Yes/No		
28	Whether Disposal sites have been identified and approved by the engineer for waste material to be dumped	Yes/No		



# Details of Land Fill Operations

## 1. Environment Features of the surrounding area

1.1	Location of each land fill site (Provide sketch Map below)	Name of Village	Chainage (km)	Side (LHS/RHS)	Haul road length (m)
	•I				
	II				
1.2	Capacity of each land fill site				
1.3	Safety measure taken at land fill site (s)				
1.					
2.					
3.					
4.					
5.					

# Accident Report

D01 ( )	Fall of person from a height	D11 ( )	Explosion
D02 ( )	Slip, trip or fall on same level	D12 ( )	Fire
D03 ( )	Struck against fixed objects	D13 ( )	Contact with hot or corrosive substances
D04 ( )	Struck by flying or falling objects	D14 ( )	Contact with poisonous gas or toxic substances
D05 ( )	Struck by moving objects	D15 ( )	Contact with electric current
D06 ( )	Struck / caught by cable	D16 ( )	Hand tool accident
D07 ( )	Stepping on nail etc.	D17 ( )	Vehicle / Mobile plant accident
D08 ( )	Handling without machinery	D18 ( )	Machinery operation accident
D09 ( )	Crushing / burying	D19 ( )	Other (please specify)
D10 ( )	Drowning or asphyxiation		

## Agent Involved in Accident

E01 ( )	Machinery	E11 ( )	Excavation / underground working
E02 ( )	Portable power appliance	E12 ( )	Floor, ground, stairs or any working, surface
E03 ( )	Vehicle or associated equipment / machinery	E13 ( )	Ladder
E04 ( )	Material being handled, used or stored	E14 ( )	Scaffolding/gondola
E05 ( )	Gas, vapour, dust, fume or oxygen	E15 ( )	Construction formwork, shuttering and falsework
E06 ( )	Hand tools	E16 ( )	Electricity supply cable, wiring switchboard and associated equipment
E07 ( )	Floor edge	E17 ( )	Nail, splinter or chipping
E08 ( )	Floor opening	E18 ( )	Other (Please specify)
E09 ( )	Left shaft	E19 ( )	
E10 ( )	Stair edge		

# Pollution Monitoring

Sl. No.	Chainage (km)	Details of locations	Duration of monitoring	Instruments used	Completion	Standards	Results	Reasons for exceeding standards	Mitigation Measures suggested	Type of area (Residential / Industrial / Commercial)	Remarks
<b>1. Air Monitoring</b>											
						SPM RSPM HC SOx NOx	SPM RSPM HC SOx NOx				
<b>2. Water Monitoring</b>											
						pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease	pH TSS TDS Turbidity Hardness Coliform BOD COD Oil & Grease				
<b>3. Soil Monitoring</b>											
						pH Organic Matter Alkalinity Conductivity Water holding capacity Pb	pH Organic Matter Alkalinity Conductivity Water holding capacity Pb				
<b>4. Noise Monitoring</b>											
						L day equivalent L night equivalent L equivalent	L day equivalent L night equivalent L equivalent				







# Miscellaneous



## ਪੰਜਾਬ ਪ੍ਰਦੂਸ਼ਣ ਰੋਕਥਾਮ ਬੋਰਡ PUNJAB POLLUTION CONTROL BOARD

ਗੁਰੂ ਨਾਨਕ ਦੇਵ, 20-21, ਅਮਰ ਪਲਾਜ਼ਾ, ਪੀ.ਐਫ.ਲੀ.ਸੀ. ਕੰਪਲੈਕਸ, ਨੇਰ ਬਸ ਸਟੈਂਡ, ਲੁਧਿਆਣਾ  
Zonal Office, 20-21, Amar Plaza, P.F / LIC Complex, Near Bus Stand, Ludhiana

No. 1458

REGISTERED

Dated 27-3-2008

To

M/s Som Datt Builders Pvt. Ltd.,  
Paheer-Jhammat Road, Jhammat,  
Distt. Ludhiana

Name of the Director : Sh. Som Datt  
Scale of the Industry : Small  
NOC fee details : Rs. 5000/- vide R. No. 65/2433 dated 22/3/2007

**Subject:** "Consent to Establish (NOC)" from Pollution Angle under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act 1974 - M/s Som Datt Builders Pvt. Ltd., Paheer-Jhammat Road, Jhammat, Distt. Ludhiana

No. ZO/ LDH-II/2008/NOC/620

Dated 26/3/2008

The Punjab Pollution Control Board, has "No Objection" for setting up of the Hot Mix Plant and concrete mix plant at Paheer-Jhammat Road, Jhammat, Distt. Ludhiana for WMM @ 1200 MT/day, DBM @ 800 MT/day, Concrete @ 100 m<sup>3</sup>/day subject to the following conditions:-

1. The NOC is valid only for registration of application and issue of demand notice for electric connection by P.S.E.B./Water supply connection/loans etc. However, the industry shall obtain a clearance certificate from the Board to the effect that it has installed proper and adequate pollution control equipments for the purposes of release of electric connection by P.S.E.B. and drawing the last installment of loan from financial institutions.
2. The N.O.C. is valid for period of one year from the date of its issue or till the commissioning of the industry whichever is earlier.
3. The industry shall apply for consents of the Board as required under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of

- Pollution) Act, 1981 two months before the commissioning of the plant.
4. The industry shall provide adequate arrangements for fighting the accidental leakages/discharge of any air pollutant/gas/liquids from the vessels, mechanical equipments etc. which are likely to cause environmental pollution.
  5. The industry shall comply with any other conditions laid down or directions issued by the Board under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 and the Air (Prevention & Control of Pollution) Act, 1981 from time to time.
  6. Nothing in this N.O.C. shall be deemed to preclude the institution of any legal action nor relieve the applicant from any responsibilities or penalties to which the applicant is or may be subjected under the provisions of the Water/Air Acts respectively.
  7. The project has been approved by the Board from pollution angle and the industry shall obtain the approval of site from other concerned departments, if need be.
  8. The industry shall plant minimum of three suitable varieties of trees at the density of not less than 1000 trees per acre along the boundary of the industrial premises.
  9. The industry shall discharge all gases through a stack of minimum height as specified in the following standards laid down by the Board.



(A) Stack height for diesel generating sets:

Capacity of diesel Generating set	Height of the Stack	
0-50 KVA	Height of the building	+ 1.5 mt.
50-100 KVA	-do-	+ 2.0 mt.
100-150 KVA	-do-	+ 2.5 mt.
150-200 KVA	-do-	+ 3.0 mt.

For higher KVA rating stack height H (in meter) shall be worked out according to the formula:

$$H = h + 0.2 (KVA)^{0.5}$$

Where h = height of the building in meters where the generator set is installed.

10. The industry shall discharge all gases through a stack of minimum height as specified in the following standards laid down by the Board.

$$H = 14 Q_g^{0.3} \quad \text{or} \quad H = 74 (QP)^{0.24}$$

Where  $Q_g$  = Quantity of  $SO_2$  in kg/hr

$QP$  = Quantity of particulate matter in tonne/day

*Note* : Minimum Stack height in all cases shall be 2.0 mtr. or as calculated from relevant formula whichever is more.

- 11 The industry shall provide port-holes, platforms and/or other necessary facilities as may be required for collecting the samples of emissions from any chimney, flue or duct or any other outlets.

Specifications of the port-holes shall be as under:-

- i) The sampling ports shall be provided at atleast 8 times chimney diameter down stream and 2 times up stream from the flow disturbance, For a rectangular cross section the equivalent diameter ( $D_e$ ) shall be calculated from the following equation to determine upstream, downstream distance:-

$$D_e = \frac{2L.W}{L+W}$$

Where L=Length in mts, W=Width in mts.

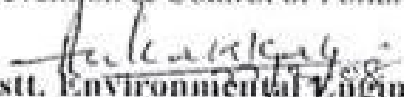
- ii) The sampling port shall be 7 to 10 cm in diameter.
- 12 The industry shall ensure that no air pollution problem or public nuisance is created in the area due to discharge of emissions from the industry.
- 13 The industry shall maintain the following record to the satisfaction of the Board :-
- a) Log books for running of air pollution control devices or pumps/motors used for running of the same.
- b) Register showing the results of various tests conducted by the industry for monitoring of stack emissions and ambient air.
- c) Register showing the stock of absorbents and other chemicals to be used for scrubbers.
- 14 The industry shall ensure that the emissions from the each stack shall conform to the emission standards of  $150 \text{ mg/Nm}^3$  or as laid down by the Board from time to time.
- 15 The industry shall not consume any fuel except furnace oil and diesel for burning purposes without the prior written permission of the Board.
- 16 The industry shall install air pollution control device/ recirculation system simultaneously alongwith the main project so as to contain the effluent / emissions within the permissible limits prescribed by the Board.
- 17 All amendments/revisions made by the Board in the effluent and/or emission/stack height standards shall be applicable to the industry from the date of such amendments/revisions.
- 18 The industry shall install separate energy meter for its effluent treatment plant / air pollution control device and maintain the record on daily basis regarding consumption of energy for



- the running and maintenance of effluent treatment plant/recirculation system.
- 19 The adequacy and efficacy of the effluent treatment plant and air pollution control devices will be the entire responsibility of the industry.
- 20 The pollution control devices shall be interlocked with the manufacturing process of the industry.
- 21 A suitable dust control system for the dryer and mixer to contain/ recycle permissible fines in the mix should be provided. It should be capable of preventing the exhaust of fine dust into atmosphere from both ends of the dryer drum by creating adequate negative pressure.
- 22 The plant should have centralized control panel/ cabine capable of pre-setting control /synchronizing all operation, starting from feeding of cold aggregates to the discharges of hot mix to ensure proper mixing. It should have adequate water scrubbing mechanism to completely remove / control the dust coming out of the drier with proper provisions of re-circulation system for the scrubber water.
- 23 Bitumen must be mixed with aggregate as soon as it is heated and dried and second time lifting of the dried aggregate for proper hatching should be avoided.
- 24 All roads / vehicular movement areas at site of hot mix plant should be pucca / stabilized with stone aggregates and regular sprinkling of water be ensured so that no dust is generated with vehicular movement.
- 25 Hot mix plant must have proper stack heights for the discharge of its scrubbed flue gases and bitumen heating system with proper platform and port holes as per the Punjab Pollution Control Board norms.
- 26 Fine dust arrested by water scrubber and collected in the re-circulation water tank should be collected and filled in a pit to be covered with fresh earth. This exercise should be repeated as and when dust is removed from re-circulation tank.
- 27 The Board reserves the right to revoke the NOC granted to the industry at any time in case the industry is found violating any of the conditions of NOC or any provision of Air (Prevention & Control of Pollution) Act,1981 & Water (Prevention & Control of Pollution) Act 1974 as amended time to time.

Undst. no .....

A copy of the above is forwarded to the Environmental Engineer, Pb. Pollution Control Board, Regional Office-II, Ludhiana for information & necessary action.

  
Asstt. Environmental Engineer  
For Senior Environmental Engineer  
Dated .....

  
Asstt. Environmental Engineer  
For Senior Environmental Engineer

Please Send Your Suggestions to

e-mail: *bceomindia@bceomindia.com*

*Contact No: +91 – 129 – 4050888*

*+91 – 129 – 4050892*

**THANK YOU**