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No. NBCC/AGM/Roorkee/IIT/Ph-II/2016/27

Dated: 13.01.2016

**The Institute Engineer**  
Indian Institute of Technology  
IIT Campus,  
Roorkee- 247667

**Sub: Construction of Student Activity Centre, Boys Hostel, Transit  
Accommodation and Lecture Hall Complex-II at IIT Roorkee – Measures to  
be taken up at construction stage to safeguard environmental issues.**

Dear Sir,

This has reference to your letter no. E&W/IE/New Buildings/389 Dated 04.01.2016 and email dated 12.01.2016 at 07:44 PM.

At the outset, It is to highlight that NBCC has taken into consideration & directed the contractor to adopt various measures for the protection of environment, health & safety of workers.

Following measures have been adopted at construction sites.

**1. Protection of Environment**

- Tippers carrying earth are covered with Plastic sheets prior leaving the excavation sites to prevent dust dispersion.
- Construction sites are being watered to minimize dust generation. Water is being sprinkled all around the dumping yard not allowing dust to blow.
- Cement debagging process is undertaken in sheltered areas.
- Enclosures have been provided around the main dust generating activities (grout mixing).
- Dumping yard has been encompassed with green cloth to arrest spread of dust particles.
- Barricading with GI sheets has been erected around the area under excavation.
- Wheel washing facility is under process to prevent soiling of bitumen road.

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- h. Sweepers in dress have been engaged to collect the spilled material near road bumps.
- i. Dusty roads are being sprayed with water.
- j. Plants & equipments are well maintained not to allow any black smoke.
- k. Speed control measures of trucks are also being applied.
- l. Hoardings & caution tapes have been provided along boundaries.

**2. Noise Control**

- a. Silenced equipments are being utilized.
- b. Air compressors & Generators operate with doors closed.
- c. Idle plant/Equipment are turned off or throttled down.
- d. Air compressors & Hand held breakers have valid noise emission levels.
- e. Noise mitigation measures are adopted.

**3. Protection of health & Safety measures**

- a. At work place first aid facilities have been provided & maintained.
- b. A person trained in first aid treatment has been employed.
- c. Drinking water facilities have been provided to the laborers.
- d. Adequate & suitable facilities of washing have been provided & maintained for the use of labour employed.
- e. Latrines & Urinals have been provided separately for male & female workers.
- f. Contractor has been directed to effect proper disposal of night soil & other conservancy works in respect of the Contractor's workmen or employees on the site.
- g. A every work place, at which 20 or more women workers are ordinarily employed, there shall be provided two rooms of reasonable dimensions for the use of their children under the age of six years.
- h. No electric cable or apparatus which is likely to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.
- i. All practical steps shall be taken to prevent danger to persons employed from risk or fire or explosion or flooding. No floor, roof or other part of the building shall be overloaded with debris or materials as to render it unsafe.

- j. Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.
- k. Those engaged in white washing and mixing or stacking of cement bags or any materials which are injurious to the eye shall be provided with protective goggles.
- l. Those engaged in welding works shall be provided with welders protective eye shields.

**The labour safety provisions & provisions for the protection of health have been elaborated in General Conditions of Contract Section – 4 issued to the contractor which will also form a part of the agreement.**

#### **4. Spill Control Plan**

Spill prevention and control plans are under preparation, clearly to stop the source of the spill, to contain the spill, to dispose the contaminated material and hazardous wastes, and stating designation of personnel trained to prevent and control spills. Hazardous wastes include pesticides, paints, cleaners, and petroleum products. It is also recommended to demarcate areas on the site plan to which the site activities would be limited during construction by the contractor. The demarcated area should be separated from the rest of the site through a physical barrier. Recommendations to handle hazardous waste on site are as follows:

##### **a. Handling and Disposal of hazardous materials at Construction Site**

Precautionary steps for handling and disposal of hazardous materials are necessary for the following reasons

- i. Protection for the construction workers
- ii. Protection for other materials, products, equipments etc. on site
- iii. Water, Air and Soil Contamination

##### **b. General instructions for handling & disposal of hazardous waste**

- i. Labeling all Hazardous products and waste as 'Hazardous materials' in local and other preferred languages should be incorporated as a general practice.
- ii. Locations should be identified on the construction site to store the used/scrap wastes and the items should be segregated and stored in the bins accordingly.

The waste should be then handed over to the authorized agencies for safe disposal.

**c. In addition to the hazardous materials, following items used for application of hazardous chemicals should also be properly disposed**

- i. Cotton Hosiery gloves/ Criss cross gloves
- ii. Arm Guards
- iii. Corrugated /Thermocol Scrap
- iv. Plastic and glassware

**d. Following is a list of most commonly found toxicants, contaminants on a building construction site and certain guidelines for their handling and disposal. Asbestos products – insulation, tiles etc**

- i. To effectively handle asbestos products several elements need to be considered. Site Engineers and building owners must:
- ii. Keep an up-to-date inventory of all asbestos-containing materials on the site/building
- iii. Ensure that all asbestos-containing materials are clearly identified.
- iv. Conduct a risk assessment of the potential for exposure to any of the asbestos-containing materials.
- v. Develop safe work procedures, including the correct use of personal protective equipment, for workers who may work near asbestos-containing materials
- vi. Instruct all workers who could be exposed in all aspects of the asbestos handling precautions.
- vii. Prepare written work procedures specific to each job site and make them available to all workers required to follow the procedures.
- viii. Ensure that work is carried out under the supervision of experienced and qualified supervisors along with the uses of appropriate safety equipments.
- ix. Handling and disposal of the asbestos products should be as per instructions and procedures marked in the manufacturer's manual.
- x. Any asbestos containing building component should be clearly identified and information should be given to the building residents/manager.

- xi. All asbestos products for disposal should be kept in a separate marked covered bin and given to authorized agency for disposal.

**e. Formwork oil Prevention of oil spillage at the time of oiling of machinery or metal works on construction site.**

- i. All vessels used for oil collection/ storage should be appropriately secured to avoid spillage.
- ii. Vessels should be kept under the equipments for collection of leaked oil during maintenance of equipments or during time of greasing of metal works during construction.
- iii. Any spilled oil is to be covered with sand immediately.
- iv. In case of fire/spillage the Fire & safety department should be informed.
- v. In case of heavy leakage of oil the Security department should be notified.
- vi. It is the primary responsibility of the site engineer to ensure that these procedures are adhered to. Mop cloths or other materials used for cleaning up or wiping during oil and diesel works should be disposed off.

**f. Tar and Tar products (bitumen, felt, water proofing compounds etc)**

- i. Wear personal protective equipment & clothes (hardhat, gloves, goggles, earmuffs, etc.), as appropriate.
- ii. Avoid any kind of contacts with the materials.
- iii. Wear respiratory protection and gloves while working.
- iv. Wear the chemical goggles when using, applying or handling chemical liquids or powders from containers labeled "Caustic" or "Corrosive."
- v. When handling hot tar, wear clothing made of cotton or non-synthetic fibers. Wear long sleeve shirts, long pants and gloves.
- vi. Do not smoke or eat while performing tar work.
- vii. Prevent spillage on the ground and other surfaces.
- viii. Disposal - All tar and tar products for disposal should be kept in a separate marked covered bin and give to authorized agency for disposal.

**g. Chemical admixtures, sealants, adhesives solvents, paints, pigments, dyes and primers etc.**

- i. Wear safety shoes with non-skid soles.

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- ii. Wear long-sleeve shirts and protect hands with protective gloves and appropriate eye protection.
- iii. Every worker should use respiratory protective equipment during working with chemical admixture products, sealants, adhesives, solvents etc.
- iv. Avoid any kind of skin contact with the chemicals used.
- v. Wash well with soap and warm water or use special cleansers, especially after direct contact with chemicals, and before drinking and eating.
- vi. Do not inhale or smell the chemicals when the cans are opened.
- vii. Disposal of containers of chemical products, materials applied with chemical products etc should be done by segregating and collecting these separately as hazardous waste. These should then be given to an authorized agency for disposal.
- viii. These materials should never be burnt.

**h. Product packaging (cement bags, cartons, containers, plastic covers etc.)**

- i. Collect all products packaging material at a designated area.
- ii. Reuse & recycle to the extent possible the product packaging material.
- iii. Handover the packaging material to proper recycling agents or Municipal authority for recycling or proper disposal.

Photos in support of following the prevention measures for the ongoing works at present are attached herewith for your kind perusal.

Yours Faithfully



12-1-2016

(Yogesh Kumar)

AGM (Engg.), Roorkee