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## **Environmental Management System (EMS)**

### **Owner**

**Medical University of South Carolina (MUSC)**

### **Project**

**College of Pharmacy Renovation**

**Green Globes Target: 2**

### **Submitted by:**

**The Whiting-Turner Contracting Company**

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## Section 1

### Environmental Policy (<https://www.whiting-turner.com/practices/sustainability/>)

Whiting-Turner champions green not because it is fashionable, but because maintaining the well-being of our environment for future generations is simply the right thing to do—and it makes good business sense for us and our clients. As one of the largest builders of sustainable buildings in the nation, and a perennial Engineering News-Record (ENR) Top 20 Green Contractor, we are serious about our responsibility to preserve Earth’s limited resources and maintain our status as a good resident of the environment. We are continually reviewing our own internal processes and policies to make sure we are being good stewards. This includes evaluating jobsite practices and trailers, and looking at our corporate practices and spaces to make sure we are reducing our impact on the environment and giving our own employees the best possible environment to work and thrive in.

We have a responsibility to promote the health of people and ecosystems, as well as the form and function of cities, communities and lifecycle operations of our planet. Achieving a building that serves as a benchmark for energy efficiency and environmental responsibility is truly a team effort.

For the MUSC College of Pharmacy renovation, this policy will be realized through the implementation of the following Environmental Action Plan. This plan identifies the potential environmental impacts associated with the COP/IIR construction, the goals and requirements associated with the construction and its Green Globes certification, and the procedures to verify that these goals are achieved as well as documented throughout the project.

## Section 2

### Regulatory Compliance

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All sitework, earthwork and site disturbance activities will be undertaken in compliance with the requirements of the stormwater / land disturbance permit and approved plans issued by South Carolina Department of Health and Environmental Control (SCDHEC) – Bureau of Water (BOW) and the MS4 (City of Charleston). Before any work takes place onsite, a meeting and walkthrough will be held with these authorities and the engineer of record to display compliance with these plans. SWPPP is detailed further later in the plan.

Selective demolition activities will be required for this project, and before any work commences the proper permits for demolition will be obtained by the subcontractors performing the work. Whiting-Turner will review these permits and display the permits at the project site. Plans and documentation of disposal of demolished materials to approved locations will be provided by each company performing demolition. The Waste Management plan further details this documentation.

## Section 3

# Environmental Risk Assessment

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This section is intended to outline the expected Environmental Risks associated with the construction of the MUSC College of Pharmacy project. Note that these items are separate from the risks outlined in the Indoor Air Quality Plan, as these mainly pertain to exterior activities.

### 1. Dust

- a. Activities producing dust
  - i. Concrete cutting
  - ii. Earthwork/utility work
  - iii. Foundations
  - iv. Concrete/masonry work
- b. Probability – High
- c. Severity of Impact – Medium

### 2. Erosion/Water Pollution

- a. Activities with a potential to cause erosion
  - i. Excavation/grading
  - ii. Deep foundations
  - iii. Utilities
  - iv. Pumping/dewatering
- b. Probability – Medium
- c. Severity of Impact – High

### 3. Noise

- a. Activities with a potential to generate noise
  - i. Equipment noise – earthwork, utilities, foundations, structure
  - ii. Repetitive noise and vibration – deep foundations
  - iii. Sawcutting/chipping
  - iv. General construction activities
- b. Probability – High
- c. Severity of Impact – Medium

### 4. Air Pollution

- a. Activities with a potential for Air Pollution
  - i. Equipment exhaust
  - ii. Odor-producing activities
- b. Probability – High
- c. Severity of Impact – Low/Medium (See “Clean Diesel Plan”)

## 5. Hazardous Waste / Spills

- a. Activities with a potential for Hazardous Waste
  - i. Equipment fuel spills
  - ii. Hydraulic hoses
  - iii. Chemical spills
- b. Probability – Low
- c. Severity of Impact – Medium

## Section 3

# Environmental Risk Management Strategies

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As with all construction projects, elimination of the risk is the best solution but this may not always be possible. Whenever a risk cannot be avoided, it will be reduced by minimizing the area, duration and severity of the activity creating the risk. When the scope of work requires that a risk must be undertaken, such as earthmoving creating runoff or dust, procedures will be put in place to monitor and control the risk.

The first step in the management of the environmental risks listed above is this plan. Issuing this plan to all prospective subcontractors as part of the bid documents ensures that these requirements are understood and incorporated into each bid package by the companies performing the work.

The next step is to review submittals for compliance with the plan, and then review the plan and the submitted procedures at the preconstruction meeting before each trade starts work. This ensures that the plan is understood and followed at the company level, but the best place to ensure the understanding of the individual workforce members is at the initial site orientation. This is the point where Whiting-Turner can make the most of a one on one audience with the tradespeople performing the work, to confirm their commitment to the project goals and requirements. This is also the place where any deficiencies in training or education can be identified and corrected before they impact the project.

Weekly all hands safety meetings are a great place for follow up instructions as the entire workforce is on hand to hear. A rotating environmental management topic will be covered by Whiting-Turner at this meeting, relating to the project activities happening at the time.

### 1. Dust

The production of airborne dust is most likely during site clearing, earthwork and concrete demolition activities. Mitigation of dust is first provided via avoidance of dust producing activities where possible, such as through wet concrete cutting and prompt removal of wet slurry. Airborne dust is reduced by not allowing stockpiling of soils onsite, and by compacting or stoning uncovered soil to slow or prevent dry out. Control is used as a last resort, and includes protection of nearby air intakes with filter media. Preliminary investigations of the MUSC College of Pharmacy site have not identified any nearby air intakes that might require filter media, but this will be reviewed again with MUSC before construction starts. Active watering of the project site to prevent airborne dust is the other control that will be utilized whenever conditions require this. Whiting-Turner will be responsible for verifying that subcontractors are adhering to the dust avoidance and reduction policies and will document these procedures with quality control reports and photographs. Daily and weekly site appearance checklists will also be enforced so that any dust producing conditions are identified and mitigated promptly.

## **2. Erosion/Water Pollution**

General erosion control practices will include proper grading of site during construction to minimize runoff, especially where water could leave the project site and enter public storm systems. This will be planned and reviewed with all subcontractors performing earthwork before construction begins, and Whiting-Turner will document that grading is being performed to these plans. Excavation permits will ensure that no earth moving is performed without Whiting-Turner's consent and approval. Management of vehicles will be enforced by Whiting-Turner to ensure that all vehicles leaving the jobsite have been washed of loose material that could be tracked onto walkways or roadways. This topic will be covered with all workforce employees as part of initial jobsite training, and particularly those who act as spotters for vehicles. Site entrances will be inspected several times per day by Whiting-Turner to verify that vehicles are being washed. Parking onsite will not be allowed, to reduce the number of vehicles entering and leaving the site.

Contract Documents include detailed SWPPP documentation, which will be supplemented with the earthwork subcontractors' Comprehensive SWPP Plan. This plan will be reviewed and approved by permitting authorities as well as engineer of record, and Whiting-Turner will review the implementation of the plan. This plan will include frequency of inspections and periodic maintenance, along with reporting procedures to verify that maintenance and inspections are taking place. Inspections and reporting will also occur after any significant weather event, and after any changes are made to the erosion control system.

Tree protection is detailed on the contract documents and will be installed before initial construction starts, and inspected as part of the SWPPP initial inspection. This protection will be inspected by Whiting-Turner and the installing subcontractor weekly and maintained as needed to provide the original level of tree and root protection.

## **3. Noise**

Construction activities during the College of Pharmacy project will produce noise, particularly during the deep foundations and steel erection. We have discussed the noise and vibration aspects of the project with MUSC, so that they can plan their more sensitive activities around times of less noise impact. There are also noise ordinances in place for the City of Charleston that limit the time when work can take place, which reduces the impact to the surrounding businesses and residences. Site fencing with screen and temporary partitions will be provided to further separate the construction area from nearby places of work and public spaces.



#### **4. Air Pollution**

A major potential for air pollution on construction sites is the use of motorized equipment. For the MUSC College of Pharmacy, the Clean Diesel Plan has been created to limit the emissions from onsite motorized equipment in four ways:

- Reduced Idling Policy
- Clean Fuel Use
- Engine upgrades that reduce emissions
- Engine Maintenance records

The Clean Diesel Plan details these items and the methods of enforcement.

As this project is located completely within the grounds of MUSC, a Tobacco free campus, there will be no tobacco use allowed on the project. This will be documented in the preconstruction meetings and site orientations, along with signage around the construction area. This removes a source of air pollution as well as an odor issue for pedestrians and MUSC employees and students.

#### **5. Hazardous Materials**

Subcontractors will be responsible for providing SDS' for any material that they bring onsite, so that proper disposal, cleanup and safety information is available in the event of a spill or incident. All subcontractors are required to understand the SDS and have all specific equipment or materials onsite along with properly trained personnel to manage incidents with their materials. Responses to incidents with any chemicals are to be detailed in each subcontractors' Site Specific Safety plan. For equipment on the jobsite, all subcontractors are required to provide their own daily checklist, to ensure that equipment showing signs of a potential maintenance issue can be taken out of service. Whiting-Turner treats any spills or other incidents with chemicals as a safety incident, including a standdown with the responsible subcontractor, verification of the proper cleanup and documentation of the disposal, and retraining if necessary. Tracking of the disposal of the hazardous material at an approved facility and documentation of this is provided to the owner. Before work recommences, any materials used to clean up the incident or spill must be replaced so that a spill kit is ready for another event. This kit is required to be part of the subcontractor's daily checklist for every piece of equipment.

## Section 5

### Roles, Responsibilities and Reporting Structure

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Whiting-Turner management personnel will be responsible for communicating the Environmental Management plan to prospective subcontractors during the bid period, and confirming their understanding of the plan along with the subcontractors' responsibilities. The Whiting-Turner managers will receive, review and submit the subcontractors' documentation, and ensure the correct documentation is collected and stored in one location. This includes documentation of filter changes, engine emissions controls and equipment maintenance, waste management tracking and SWPPP inspection reporting.

Whiting-Turner field personnel will assist the subcontractors in planning the work and ensure that the intent of the environmental management plan is met through the pre task planning. Field personnel will maintain signage and check documentation of equipment, along with performing site inspections for erosion control, dust mitigation and overall housekeeping. Whiting-Turner field personnel will walk SWPPP with subcontractor during inspections to verify that all required maintenance is being performed, as well as after weather events. Whiting-Turner will review SWPPP with owner's environmental manager along with overall environmental management of the project on a periodic basis and document the results of these reviews along with any changes. Incident Reports will generally start with Whiting-Turner field personnel, but all Whiting-Turner employees will have the ability and training to identify, correct and report deficiencies from the environmental management plan.

## Section 6

### Site and Work Instructions for Site Personnel

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These instructions will be relayed to the workforce during the site orientation as a list of best practices, based on this plan and the detailed work plans provided by each subcontractor. Whiting-Turner will draft these instructions to incorporate all of the detailed plans once they are received. Activity Hazard Analysis sheets filled out for each task by each subcontractor will include environmental precautions, particularly for work that involves motorized equipment, earth moving, pumping water, or the potential to create dust. Whiting-Turner field personnel will review these AHAs before work begins to ensure that all possible steps have been taken to avoid, reduce or control environmental impacts of the activity. Signage will be implemented as a continuous reminder of the Environmental Management Plan and the responsibilities of each person involved with the project.

## Section 7

### Environmental Inspection Checklists

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These include the inspection checklist for jobsite housekeeping, and SWPPP inspection checklist for erosion control. The jobsite housekeeping checklist includes site fencing, entrances, dust producing activities or conditions, and general erosion control checks. Whiting-Turner personnel will also perform spot checks to look for daily equipment inspections being filled out, excavation permits, and equipment maintenance logs.

## Section 8

### Records of Compliance

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Will be kept for every inspection performed by subcontractors, Whiting-Turner, design team, owner or regulatory agency. Corrective actions or changes to the Environmental Plan will be documented with these records. These inspections will all be documented along with photographs and compiled in a single location.