Riverside Research Activities
Risk Management and Safety Program

Safety and Structural Systems Division

February 01, 2007
Introduction

The Texas Transportation Institute (TTI) is committed to providing a safe and healthful work environment for its employees and visitors. All activities and work involve some level of risk to people and property. Many activities involve low level risks of a type and magnitude routinely encountered and accepted as requiring no special measures for mitigation. Other activities may involve increased levels of risks and require additional, appropriate measures be taken to mitigate such risks.

The success of any risk management program is dependent upon each affected person understanding, accepting and adhering to the policies and practices of this program as well as other agency policies and programs.

Purpose

The purpose of this program is to enhance awareness of risk levels in the work environment and limit exposure of personnel and property to the lowest, practical level of risk through philosophy of risk management, training of personnel, engineering controls, establishment of policies and procedures.

Nature of Work and Related Potential Risk

Work performed within the Safety and Structural Systems Division includes outdoor construction, welding shop fabrication, automotive mechanical, carpentry shop, electronics, structural load testing, full-scale vehicle crash testing, demolition of structures and many related kinds of work. Other services performed include photography and videography of such work activities.

The nature of work described above involves increased levels of risk that require additional, appropriate measures be taken to mitigate potential injury to personnel or damage to property.

- Manual construction work, without power tools and machines, involves some risk of potential injury such as slipping and falling, dropping items on personnel or one’s own feet, smashing or pinching fingers, and cuts and abrasions from sharp objects.

- Working with machines involves a greater level of risk as machinery is heavy, may be mobile and can lift or move heavier loads. Operators of machinery must be trained in appropriate and safe operating procedures for that equipment.

Heavy Equipment
Heavy equipment operators and personnel working near heavy equipment are subject to increased levels of risk. Appropriate measures shall be taken to guard against and mitigate the potential of those risks.

- All heavy equipment shall be maintained in good working condition with all safety switches, safety locks and other safety features in proper working order.

- Each piece of heavy equipment shall be used only for its intended purpose and shall not be overloaded.

- All equipment shall be operated at safe speeds and in safe manners at all times.

- Only qualified persons shall operate heavy equipment. A person may be qualified to operate a piece of heavy equipment through formal training or through extensive experience with approval of their supervisor.

- Personnel should not operate equipment that they are not qualified to operate. It is their responsibility to ensure their supervisor is aware of their need for training.

**Hazardous Materials**

TTI adheres to hazardous materials procedures established by the TAMU Environmental Health and Safety Department (EHSD). TTI provides an annual chemical inventory to TAMU for their inclusion, as appropriate, in the TAMU Tier II report to the TAMU System.

All hazardous materials must be handled, used, stored and disposed of in the appropriate, required manner. They must remain in their original container with all labels affixed.

Material Safety Data Sheets (MSDS) are maintained in binders located near the exterior, west side door of Building 7090 (large hangar).

Appropriate storage cabinets are located in Building 7090. Hazardous materials commonly used by division personnel include, but are not limited to, paint, gasoline, batteries, oils, greases, transmission fluid and solvents.

Disposal of hazardous materials is coordinated through TAMU EHSD.

If personnel cannot locate a MSDS or notice any potential problems with any hazardous materials or the storage of such material, they shall contact the division safety coordinator immediately.

**Personal Protective Equipment (PPE)**

Exposure to risks can be reduced through the use of appropriate personal protective equipment (PPE).
Each employee is required to follow safe practices to avoid injury to themselves as well as coworkers or authorized visitors. The following sections define PPE requirements for the majority of the shop and test track tasks.

All required PPE, except steel toe safety footwear (see section below), and any additional PPE deemed necessary by an employee may be obtained from the appropriate division administrative personnel.

A supply of appropriate PPE is available for authorized visitors in each area.

All personnel working in or visiting an area which requires PPE shall wear or use the required items while in that area.

- The person in charge of each area shall ensure that the specific safety equipment needed on the particular job is available and used by all affected personnel and authorized visitors.

- PPE items shall be maintained in clean and serviceable condition. Any unserviceable item shall be replaced as soon as possible.

- Employees shall inspect each piece of PPE for safety, cleanliness and acceptable fit. If an item is not usable or does not appropriately fit, they shall contact the area supervisor for replacement of the item.

**Eye Protection**

- Safety glasses with eye shields are for general purpose eye protection and shall be used in operations with increased risk of generating flying particles, including but not limited to, chipping, sawing, grinding, wire brushing, hammering and most power tool operation.

- Protective Eyewear shall be used when working underneath vehicles, on a lift or on the floor.

- Employees requiring prescription glasses shall wear goggles or face shields for equivalent protection.

- Appropriate welders’ helmet/goggles shall be worn when welding or cutting with electric or gas equipment or when in proximity of those operations.
Ear Protection

- Ear protection, full coverage ear muffs or foam ear plugs as appropriate, shall be worn whenever the sound level of an operation exceeds the acceptable levels prior to those with the potential of causing hearing damage. For example: power saws, air nail guns, hammering on metal or in confined spaces or visiting an area where these activities are being performed.

- Ear protection shall be worn when operating other power tools and air equipment.

Dust Masks and Respirators

- A dust mask should be used for nuisance level dusts and mists that come from grinding sweeping or other similar activities. A dust mask shall not be used when painting.

- A cartridge type respirator shall be used for any spray painting except for minor jobs such as when using spray cans. All painting shall be conducted in a well ventilated area.

Hard Hats

- Approved hard hats shall be worn by employees while working on roadway right of way.

- Hard hats shall be worn in work sites where there is a danger of head injury from impact or falling and/or flying objects.

- Hard hats shall be worn when working under vehicles (on lifts) or around/under structures that pose potential risk of injury to the head.

- Employees shall inspect their hard hat prior to wearing to ensure safety, no visible cracks or damage or dry rot of materials.

Gloves

- Leather gloves shall be worn when handling heavy, abrasive or sharp-edged objects.

- Welders gloves shall be worn when arc welding, gas welding or cutting.

- Cotton or leather gloves should be worn for light duty material handling.
Safety Footwear – Steel Toe Shoes and Boots

TTI will reimburse authorized employees for their purchase of steel toe safety footwear. Authorization, minimum safety standard requirements and reimbursement procedures, including current amount of reimbursement, are available on the TTINet (intranet).

- Safety footwear shall be worn by any employee while working on roadway right of way.
- Safety footwear shall be worn by employees engaged in material handling work.
- Safety footwear should be worn when involved in any activity that increases the likelihood of injury to the toe area.

Safety Vests

- Approved safety vests shall be worn by personnel while working on roadway right of way.
- Approved safety vests shall be worn by personnel while performing duties of traffic control during crash tests or other test track activities where high visibility is needed.
Vehicle Crash Test Procedures

The safety procedures to be used for all vehicle tests, based on over 35 years of extensive research and experience, include, but are not limited to:

- Each vehicle test location, date and time shall be submitted to the TAMU Office of Facilities Coordination to be published on the Riverside Users web site.

- A "test conductor" is present for each test. That person is responsible for directing the test personnel, deciding when to perform the test, addressing any related risk or safety issues and stopping the test should potential problems arise. They are also responsible for checking the Riverside Users web site to confirm no other events are scheduled for that area and time.

- The test conductor and/or the division safety coordinator will provide a safety briefing prior to each test to ensure all affected personnel understand procedures and measures necessary for that test. They shall also provide a safety briefing to authorized visitors to ensure their understanding of procedures and mitigate risk.

- An “authorized visitors” area shall be established for each test. For safety purposes, it is protected by concrete barricades, is perpendicular to the path of the test vehicle, upstream of the impact site by a minimum of at least 200 feet. Use of larger test vehicles and/or higher speeds will require that distance to be proportionately increased.

- Personnel at the test site will assist authorized visitors in the vicinity of the wire rope guide cable and ensure they are aware of the raised portion to avoid potential trip hazards.

- All personnel involved in a full-scale vehicle crash will have approved walkie-talkie radios for communication.

- Personnel remaining in the office, at the main contact number of 979-845-6375, will also have approved walkie-talkie radios for communication with the test site and will be available to contact and meet emergency responders if needed.

- During setup, all access points to the test area, including the entire length of the tow cable will be blocked with pipe or concrete barricades. However, if a section of the tow cable crosses a normal traffic route, it will be delineated with traffic safety cones and monitored by test personnel. Authorized test personnel will have an approved access point.

- Any open access points to the test area (for passage by authorized test personnel and equipment) will be guarded by personnel equipped with a site radio. Personnel stationed at access points must wear authorized safety vests for increased visibility.

- All personnel will watch for unauthorized vehicles and/or persons in the area, stop them and provide instructions.
Camera personnel down stream of the impact area and protected by several layers of concrete barrier, must be 300 feet or more from the impact point. The distance shall increase as related to increase of vehicle size and/or speed.

Once the overhead camera boom is raised, the area under the boom should be avoided by all test personnel and authorized visitors.

Each crash test vehicle will have a fail-safe, radio controlled brake system.

After the test, no one is permitted into the impact area until the test conductor has inspected all areas for any safety issues and provided approval for entry.

All affected personnel shall wear the appropriate personal protective equipment and observe safety procedures and common practices during preparation periods, vehicle tests and closure times.

Distances of personnel and visitor observation areas and camera and equipment stationing areas will be proportionately increased in relation to vehicle speed or size, as applicable.

**Additional Information**

Additional activities outside the usual scope of tests and related preparation or support work or that require use of areas outside the usual, daily testing areas shall be reported to the Riverside Coordinator for the TAMU Office of Facilities Coordination for inclusion in the Riverside User web site calendar.

Employees shall report all safety concerns or witness of default of safety procedures in others through the following chain of contact; their supervisors, program manager, division safety coordinator, division head or the TTI safety officer.

Employees, or an event witness, shall complete a “First Report of Injury or Illness” form (available on the TTINet) to report all work site injuries. Only facts, not opinions, should be stated on the form.

Additional workplace safety information may be obtained from the Texas Department of Transportation (TxDOT) “Handbook of Safe Practices” as related to TxDOT projects, the division safety coordinator and the TTI safety officer.

The agency safety officer can assist with arrangements for personnel safety training in various areas and assist with written safety protocols.

The agency safety officer is responsible for updating and maintaining this plan with commentary from the division safety coordinator and administration.
TAMU EHSD Review Approval (e-mail)

From: Crenshaw, Holly
Sent: Monday, November 27, 2006 2:31 PM
To: ‘White, Robert L’
Cc: Salsman, John M
Subject: RE: TTI Riverside Risk Plan

Thank you, Robert and John, for your review and supportive response. We greatly appreciate your help.

Holly

From: White, Robert L [mailto:rlwhite1@tamu.edu]
Sent: Monday, November 27, 2006 2:22 PM
To: Crenshaw, Holly
Cc: Salsman, John M
Subject: RE: TTI Riverside Risk Plan

Holly,
After reviewing your Risk Management and Safety Program we are confidence that your program meets all requirements that is needed for your operation. If at any time any changes or modifications are made to the program we would greatly appreciate you keeping us informed.

Thanks,
Robert

Plan History

November 18, 2006     Plan submitted to TAMU EHSD for review approval.

November 27, 2006     TAMU EHSD provided review approval via e-mail (included).

December 2006     Plan updated to include enhancements to internal processes and statements regarding scheduling through Riverside Users web site and Office of Facilities Coordination.

February 01, 2007     Final review completed by TTI and submitted to TAMU.