SECTION 2
GUIDE FOR PREPARATION OF AN ACTIVITY HAZARD ANALYSIS (AHA)

1. Purpose. Provides guidance in preparing an Activity Hazard Analysis in accordance with EM 385-1-1.

2. Applicability. This applies to all ~~TAC~~ PenRen contract operations.

3. References.

a. AR 385 series.

b. ER 385 series.

c. EM 385-1-1.

4. Policy. An Activity Hazard Analysis for each major phase of work is required by EM 385-1-1 (Safety and Health Requirements Manual). This analysis, utilized correctly, will have favorable affects on your safety record. This section provides guidance for preparing an Activity Hazard Analysis through a step-by-step procedure giving an example, explanations, and definitions. By showing this procedure, we hope to increase your understanding of how and why the analysis is used.

5. Overview.

a. An Activity Hazard Analysis is a procedure used to review job methods and identify hazards specific to a project and it's environment. These hazards may have been overlooked from the start or they may have developed after production work has started. Once the hazards are known, the best solution or control can then be developed.

b. The person best suited to develop the analysis is the foreman or line supervisor. The reasons being that the foreman has more than likely put in 5-10 years of doing the work that he is now supervising. He has made the mistakes, seen the hazards, and probably has the best suggestions on how to make the job safer. In addition, he is best qualified to break the job down into successive steps. The Safety Officer would be available to provide any necessary assistance and guidance in the analysis preparation.

c. Once the analysis' rough draft is completed, we suggest that it be reviewed by the contractor's safety officer, who would review the analysis on a technical level, check to see that no hazards were overlooked, and examine the control measures to see that the most effective measures were being used.

6. Procedures.

a. Step 1 - Identify all the activities to complete a project that needs to be analyzed.

(1) An activity is a sequence of separate steps that together accomplish a work goal. Some activities can be too broadly defined in general terms of what is accomplished. Making paper, building a new dorm, mining ore, are examples. Such broadly defined activities are not suitable for an activity hazard analysis. Similarly, an activity can be too narrowly defined in terms of a single action. Pulling a switch, tightening a screw, pushing a button are examples. Such narrowly defined activities are also not suitable for an AHA.

(2) Activities suitable for a hazard analysis are those assigned generally to a line supervisor and related to a particular phase of work. Erecting block walls, steel erection, installation of utilities, and painting are good subjects for an activity hazard analysis.

(3) Once an activity has been defined, we recommend completing the analysis using the format shown in the back of this Section. Note that the activity chosen for the example is interior demolition of a US Army Reserve Center.

b. Step 2 - Break Each Activity Down Into It's Successive Steps

(1) Now the activity is broken down into its principal steps of accomplishment. Usually you, the line supervisor or foreman, will rely on past experience with the type of work being analyzed. You know your work goal (end point), the beginning point, and what you have to do to accomplish the work goal (steps). You should be able to visualize a logical procession step by step.

(2) Record the steps in their natural order of occurance. Describe what is done, but not the details of how it is done. Usually three or four words are sufficient. Number the steps consecutively.

(3) In the example, our progression of principal steps include the following: remove furniture from office; remove plumbing, electrical and HVAC duct work from partitions; demolish interior; and clean up. This shows a logical progression from point A (an old deteriorated interior) to point B (the state of final preparation for the next activity - Creating A New Interior).

c. Step 3 - Identify Hazards and Potential Accidents

(1) Once the principal steps have been identified and logged on the form, identify the potential hazards encountered in each of the principal steps listed. Once again past experience will be relied upon heavily. Also, talking with workers about past accidents or near misses will be of help to you. Checking with first aid logs or accident investigations will also help. At this point, evaluate hazards presented by other activities working adjacent to the activity being analyzed.

(2) The following is a list of questions that will also help you identify most of the hazards:

(a) Is there danger of striking against, being struck by or otherwise making injurious contact with the object?

(b) Can the employee be caught on, in, or between the object?

(c) Can the employee slip or trip? Can the employee fall on the same level or to another level?

(d) Can the employee strain themselves by pushing, pulling or lifting?

(e) Is there a possibility of electrical, health, or fire hazards associated with that principal step?

(3) It is estimated that with these questions you should be able to identify 90% of the potential hazards. What about the other 10%? The other 10% is what makes the activity hazard analysis so unique. This is why the so called "generic analysis" is so incomplete. Factors which are unique to an activity (elevation, terrain, weather, etc.) may add to or change the potential hazards. All this must be taken into consideration when doing the analysis.

(4) In the example, we have listed most of the hazards associated with the principal steps. These are very general due to the lack of specific project information. The purpose of this is to keep the analysis simple and easy to follow. Had a foreman or line supervisor prepared the analysis in accordance with all the specific information available, it would be more complete and extensive, also considering other operations being done in the same area.

d. Step 4 - Develop a Control for Each Hazard Identified.

(1) This is where you come up with the methods of controlling the hazards identified in Step 3 of this procedure. There may be several solutions to controlling the hazard; we want the best solution (that which is most beneficial). Ask yourself "What are the benefits to this solution?" Sometimes the solution will solve that particular problem but create a new hazard for that step or another step. Once again it is useful to ask workers for suggestions.

(2) The following are suggestions to help you come up with ideas for the best solution to your particular hazard:

(a) Change or modify the physical conditions that create the hazard. "What change in physical condition will eliminate the hazard or prevent the accident?" A good example of this would be changing the surface in a work area to a non-slip type surface. Supplying ear muffs to a worker who must travel through an area in which noise levels exceed the standard would be another.

(b) Change the work procedures. "What should the employee do or not do to eliminate the hazard or prevent this potential accident?" For example, "Is there another way for the employee to reach the work station other than going through the noisy area?" If there is, will it be more or less hazardous for the employee? You should consider work saving tools or equipment. For example, say an employee must lift and carry a heavy object to a workbench. All you need do is supply the worker with a workbench that has casters. Also, if two workers were to lift the object you would reduce the risk of back injury.

(c) Reduce the frequency that a task must be performed. Every task has some potential for an accident to occur. Therefore when you increase the times that the task is performed you increase the probability of an accident occurring.

(d) Training. If none of the previous suggestions are applicable, then the answer may be training the employees to do a task safely. Quite often we hear of accidents caused by lack of knowledge of proper safe procedures. This could mean simple instructions from a foreman or line supervisor, or could involve specialized training from an outside source. The latter is recommended for irregular work which may be unique.

(3) We have found that special attention should be given to newer employees (0 to 1 ½ years). These employees have proven to be among the most likely to have an accident because of their lack of experience. This is why it is good practice for employers to give new employees good initial safety training in their orientation.

(4) Once you have decided on a control for the hazard you must put it into a positive statement; i.e. Dust respirators will be supplied to the workmen. Electricity will be locked out by a mechanical device. In other words you will be committing yourself to perform the action you chose to control the hazard.

(5) If you now turn to the example, you will find a copy of our completed analysis. As an exercise, go back through Step 1 through Step 4. See if you can come up with anything that we left out.

7. Update as Needed. It should be noted that the completed analysis is not set in stone. We all know that field changes take place every day. With these changes a new hazard may arise. Also, a delay in a different activity could effect you working next to that operation. This could add numerous hazards to your job. For an Activity Hazard Analysis to be most effective it must be updated as the activity progresses and used as a training tool with all affected employees at weekly tool box meetings.

8. Benefits.

a. A complete activity hazard analysis will reap many rewards. How much does your organization spend for worker's compensation insurance premiums? What you pay in premiums largely depends on your past accident history. If you can reduce your number of accidents using the activity hazard analysis process, then you can expect to see a reduction in your worker's compensation premiums. With lower premiums follows a lower quotation or bid. This means that your organization could be more competitive for various jobs.

b. Accidents cost money. For every accident there are obvious costs (doctor, hospitals, etc.) as well as hidden costs (training a new employee, drop in morale, wages lost in reacting to the accident, project down time, etc.). By reducing the accidents you can save money, thereby increasing your profit margins on each job.

c. Safety training benefits your organization. Establishing safety contacts between line supervisor and worker (one on one) promotes good safety awareness and increases morale. This is very important for new employees.

d. Training on the proper methods of performing certain tasks will in most cases increase productivity. An increase in productivity always turns into an increase in profits.

ACCIDENT PREVENTION PROGRAM
HAZARD ANALYSIS

1. Contract No.DACA17-96-C-0123	2. Project Interior Demo Army Reserve Center	3. Facility Carter Barracks
4. Date 7/25/96	5. Major Activity	6. Estimated Start Date 17 Oct 96
7. PRINCIPAL STEPS	8. POTENTIAL HAZARDS	9. RECOMMENDED CONTROLS
1, Remove furniture from work area.	Back Strain	Sufficient number of personnel will be provided. Dollies and appropriate furniture lifting equipment will be provided to assist. Employees will be trained to lift with the legs and not the back.
	Feet Injuries	Personnel will be provided and required to use appropriate personal protective equipment (i.e. shoes, gloves, hard hat, etc.)
2. Disconnect plumbing, electrical, and HVAC duct work from interior.	Electricution or shock from wires	Lock Out/Tag Out procedures willbe strictly enforced per separate analysis. Coordination with all local utilities for disconnect. Only certified experienced electricians will be used.
10. EQUIPMENT TO BE USED	11. INSPECTION REQUIREMENTS	12. TRAINING REQUIREMENTS
trucks forklifts dollies ladders various hand tools (powered/non-powered) scaffolding welding/cutting fans dust masks/respiratory protection PPE (personal protective equipment)	Initial checklist inspections daily or prior to use for the day Lock Out/tag out and grounding (GFCI)	Only qualified trained personel will be used for each specialized job (i.e. electricians, truck operators, fork lift operator, plumbing, HVAC, etc.) Initial indoctrination with continuous training will be provided using this hazard analysis prior to each phase of operation.. Special Asbestoes certified personnel with required refresher training - as appropriate
13. Contractor (Signature & Date)		
14. Report discussed with contractor/superintendant on _____ _____ Area/Resident Engineer (Signature)		15. Contracting Officer (Signature & Date) or Contracting Officer Representative

ACCIDENT PREVENTION PROGRAM
HAZARD ANALYSIS

1. Contract No. DACA17-96-C-0123	2. Project Interior Demo Army Reserve Center	3. Facility Carter Barracks
4. Date 7/25/96	5. Location Your City, State	6. Estimated Start Date 17 Oct 96
7. PRINCIPAL STEPS	8. POTENTIAL HAZARDS	9. RECOMMENDED CONTROLS
2. Disconnect Plumbing, etc, continured....	Workmen or tools falling from elevated work areas	Appropriate ladders for the job will be used extending 3 feet above the surface and secured. No one will travel up or down a ladder carrying tools or equipment in their hands. Scaffolding will be constructed properly, inspected regularly and in accordance with EM 385-1-1, separate analysis on scaffolding. Tools will not be laying loose on the scaffold and appropriate toeboards and netting will be used to prevent anything being kicked over the side. Appropriate fall protection will be used by all affected employees.
	Asbestos from hot water pipe insulation	Separate analysis on Asbestos removal
	Trips/falls	Housekeeping will be maintained at all times. Appropriate foot protection will be worn at all times.
10. EQUIPMENT TO BE USED	11. INSPECTION REQUIREMENTS	12. TRAINING REQUIREMENTS

13. Contractor (Signature & Date)

14. Report discussed with contractor/superintendant on _____

_____
Area/Resident Engineer (Signature)

15. Contracting Officer (Signature & Date)
or
Contracting Officer Representative

ACCIDENT PREVENTION PROGRAM
HAZARD ANALYSIS

1. Contract No.	2. Project	3. Facility
4. Date	5. Location	6. Estimated Start Date
7. PRINCIPAL STEPS	8. POTENTIAL HAZARDS	9. RECOMMENDED CONTROLS
10. EQUIPMENT TO BE USED	11. INSPECTION REQUIREMENTS	12. TRAINING REQUIREMENTS
13. Contractor (Signature & Date)		
14. Report discussed with contractor/superintendant on _____ _____ Area/Resident Engineer (Signature)		15. Contracting Officer (Signature & Date) or Contracting Officer Representative

SECTION 3

MAJOR CONSTRUCTION ACTIVITY AND HAZARD CHECK LIST

MAJOR ACTIVITY PHASE	HAZARDS AND CONTROLS
Excavation and Foundation	Equipment Operation: Prework Checks, Machinery Guards, Crane Load Tests, Back-up Alarms Traffic Controls: Haul Road Patterns, Signs and Signals, Flagmen and Signalmen. Dust Control Barricades Night Lighting Explosives (covered separately) Shoring and Sloping Protective Equipment: High Visibility Vests & Head Protection Pile Driving
Mass Concrete Placement	Hoisting Equipment: Prework Checks & Load Testing Electrical Hazards Scaffolding: Erection and Inspection, Handrails and Toeboards, Scaffold Machines, Suspended Scaffolds Access Facilities: Ramps and Runways, Stairways, Ladders & Manskips. Housekeeping Controls Safety Nets Protective Lighting Night Lighting Electrical Grounding Adequacy of Forms Vehicle Reverse Alarms Compressed Gas Cylinders: Storage and Use
Steel Erection	Hoisting Equipment: Prework Checks & Load Testing Access: Stairways, Ladders, & Manskips Scaffolding: Handrails, Toeboards, Scaffold Machines & Suspended Scaffolds Safety Nets Protective Equipment: Safety Belts & Lifelines

	Housekeeping Controls Welding: Cylinder Storage and Use, Flash Burn Hazards & Fire Protection
Building Construction	Housekeeping Controls: Fire Hazards & Stumbling Hazards Scaffolding: Handrails, Toeboards, Scaffold Machines, Suspended Scaffolds & Bracing and Stability Access Facilities: Stairways, Ladders, Workman Hoists, Floor, Roof, and Wall Openings, Multistory Perimeter Guarding Material Storage: Orderliness, Fire Hazard Control Hoisting Equipment: Prework Checks & Load Tests Electrical Exposures Hand and Power Tools Powder Actuated Tools Lighting: Work Areas Access Areas
Heating, Ventilation, and Air Conditioning	Housekeeping Controls Scaffolds: Handrails & Toeboards, Rolling Scaffolds, Bracing and Stability Access: Ladders, Stepladders Material Storage: Orderliness, Fire Hazard Control Protective Equipment Electrical Grounding
Electrical and Instrumentation Work	Clearance Procedures: Outages Coordination with others, Hot Line Work, Electrical Grounding & Protective Equipment
Use of Chemicals, Caustics, Toxic Materials, Radiation Exposures, & Welding	Determination of Hazard Protective Equipment: Masks, Respirators, Eye Protection, Protective Clothing, Dosimetry Fire and Explosion Hazard Control Storage of Materials Ventilation Radiation Exposures

Floating Plant Operation	Equipment Checks Machinery Guarding Protective Equipment: Work Vests, Ring Buoys, Life Saving Skiffs, Lighting & Lifesaving and Rescue Drills
Land Clearing	Equipment Operations: Prework Checks, Equipment Guards, Canopies, Winch Guards, Felling Controls, Decking Controls, Burning Controls & Power Tool Operations Protective Equipment: Head Protection, Leg and Knee Protection, Clearing Rule Handbook.
Demolition	Planning Order of Work, Housekeeping Controls, Shoring and Bracing, Protective Equipment, Materials Handling, & Material Removal
Paving	Traffic Controls: Signs, Signals, Flagmen, Haul Patterns, Equipment Checks, Vehicle Reverse Alarms & Protective Equipment
Explosives and Blasting	Transportation, Storage, Handling, Drilling, Loading, Warning Plan, Firing, Radio Frequency Hazards, Misfire Procedure, Static Electricity Control, Lightening Hazard Control, & Public Protection
Quarrying Cableway Operations Tunnelling	Where necessary the services of a staff Safety Engineer will be utilized to develop Hazard controls for these operations.