URS SAFETY MANAGEMENT STANDARD

Respiratory Protection

1. Applicability

This standard applies to URS Corporation and its subsidiary companies that may require the use of respiratory protection, including Immediately Dangerous to Life and Health (IDLH) and emergency conditions. This program also addresses the voluntary use of respirators.

2. Purpose and Scope

The purpose of this standard is to protect those employees performing operations for which exposures cannot be controlled by use of conventional engineering or administrative controls, and prior to establishing a negative air exposure assessment, and to require that respiratory protective equipment is selected, used, maintained, and stored in accordance with acceptable practices. This procedure establishes the minimum standard for respirator training, selection, and use during the performance of all work requiring such protection.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Before assigning hazardous jobs to employees, determine if respirators are required.

1. Assign a project-specific Respiratory Protection Program administrator. This position shall be manned by a competent industrial hygienist or other technically qualified person who knowledgeable of the requirements of the URS and project-specific programs, have appropriate training in the principles and application of respiratory protection, and have the authority to conduct program evaluations.

2. If the potential for respiratory hazards exists for any portion of a job, complete Attachment 042-1 NA – Identifying When A Respirator Is Needed.

3. Contact a local Health, Safety, and Environment (HSE) Manager, Regional or Strategic Business Unit (RBU/SBU) HSE Manager, or URS Certified Industrial Hygienist (CIH) for assistance, as needed, if any of the questions in Attachment 042-1 are checked "yes."

4. Follow instructions in Attachment 042-2 NA – Voluntary Use or Respirators – for employees who wish to wear respirators on a voluntary basis when not required to by URS or a regulatory agency.

5. Follow all the requirements of this standard for employees who wish to voluntarily use tight-fitting (e.g., air purifying) respirators.

6. Required respirators will be paid for by URS and will be provided without cost to the employee.

7. Control worker's exposure to air contaminants, where practicable, by engineering or administrative controls, or by substitution of process materials with less-toxic substances. Use respirators only when engineering or administrative controls are not feasible or completely effective.

B. Select the proper respirator for the job.

1. Contact the appropriate HSE Manager or CIH for assistance in respirator selection for those jobs identified in Attachment 042-1 NA.

2. Contact the appropriate HSE Manager for follow up if there are any problems implementing the recommendations made.

C. Require employees who will use respirators to be medically qualified by a project medical consultant (PMC) before fit-testing and assigning them a respirator. The PMC should preferably be an occupational physician; however, the Occupational Safety and Health Administration (OSHA) allows any physician or licensed health care professional (PLHCP) to conduct evaluations of respiratory protection medical forms. The PMC, where required, will determine the physiological and psychological status that is relevant to wearing different types of respirators. The PMC will review all questionnaires and test results and verify in writing that workers are physically and psychologically able to perform work while using respiratory protective devices. These determinations will be made using guidelines established by the PMC.

1. For program details, refer to SMS 024 – Medical Screening and Surveillance.

2. Require that employees have a current and accurate Medical Surveillance form (Attachment 024-2).

3. Obtain a copy of the employee's Health Status Medical Report from the Office Health and Safety Representative. The consulting occupational

physician of the medical service provider following each work-related examination issues the Health Status Medical Report. Employees cannot be assigned respirators unless they are medically cleared for respirator use.

D. Require respirator users to receive appropriate training.

1. All respirator users must be trained:

   a. Before they are assigned a respirator.

   b. Annually thereafter.

   c. Whenever a new hazard or job is introduced.

   d. Whenever employees fail to demonstrate proper use or knowledge.

2. Document training in accordance with the requirements of SMS 055 – Training.

3. Training must address, at a minimum, the following:

   a. Why the respirator is necessary, and what conditions can make the respirator ineffective.

   b. What the limitations and capabilities of the respirators are.

   c. How to inspect, put on and remove, and check the seals of the respirator.

   d. What the respirator maintenance and storage procedures are.

   e. How to recognize medical signs and symptoms that may limit or prevent effective use of the respirator.

   f. The engineering and administrative controls being used and the need for respirators.

   g. The hazards and consequences of improper respirator use.

   h. How to recognize and handle emergency situations.

E. Require respirator users to be fit tested.

1. Any employee who has been assigned a reusable respirator must be fit tested on an annual basis (no more than 1 year may elapse between fit tests), or when the employee is assigned a respirator of a different make, type, or size from that previously tested.

2. Qualitative or quantitative fit testing can be performed by contract or in-house personnel.

3. Obtain a signed, written copy of the fit-test results. The fit-test results should include:

    a. Employee's name and employee identification number.

    b. Respirator brand, model, and size fitted for.

    c. Date fit tested.

    d. Method of fit testing used.

    e. Name and signature of fit tester.

    f. Manufacturer and serial number of fit-testing apparatus (if used).

    A fit test results form is available as Attachment 042-3 NA.

F. The project-specific Respiratory Protection Program administrator will issue respirators to persons who must wear respirators for protection against harmful atmospheres should be given adequate training to ensure that the correct respirator is issued for each application. This training should include, but not necessarily be limited to, the following:

1. Establishment of a working knowledge of the specific types of respirators to be issued, their limitations, and the importance of issuing only the respirators for which each user is specifically approved.

2. Familiarization with the respirator maintenance and repair program in order to be able to identify any respirator that is improperly cleaned or needs repair.

3. Familiarization with the procedures for respirator issue. Only persons trained to ensure that proper respirators are issued will be permitted to issue respirators to persons needing them.

G. Where required by Section 2.C of SMS 043 – Personal Monitoring, conduct initial exposure assessments for contaminants of concern. Record collected air-monitoring data. Respiratory protection must be worn until such

assessments have been conducted, and it is determined that respiratory protection is not warranted.

H. Provide qualified employees with respirator(s) and adequate amounts of parts and cartridges.

1. Assign employees whose duties require respirators their own respirator for which they have been fit tested.

2. Provide special eyeglass inserts designed for the respirator if an employee must wear eyeglasses with a full-facepiece respirator. Contact lenses may be worn when wearing a full-facepiece respirator.

3. Respirators and cartridges must be approved by the National Institute for Occupational Safety and Health (NIOSH). Military-issue respirators are approved under Military Standard AR 11-34.

I. Require respirators to be used properly.

1. Prohibit facial hair where the respirator-sealing surface meets the wearer's face.

2. Require employees to perform a positive and negative fit check every time the respirator is put on.

3. Employees will leave the area where respirators are being used:

   a. Before removing the facepiece for any reason.

   b. To correct any respirator malfunction.

   c. To change the respirator and/or respirator cartridges.

   d. The employee becomes ill (dizziness, nausea, etc.).

   e. If any of the following is detected:

      1. Vapor or gas breakthrough

      2. Leakage around the facepiece

      3. Increased breathing resistance.

4. Use cartridges with End-of-Service-Life indicators, or determine the respirator cartridge change-out schedule. See Supplemental Information A for guidance.

J. Require respirators to be cleaned and stored properly.

1. Clean and disinfect respirators after each use.

2. Store respirators in a plastic bag or case and in a clean location.

3. Inspect respirators before use and after each cleaning.

K. Address issues associated with special-use respirators (self-contained breathing apparatus; air-supply respirators; emergency escape respirators).

1. Self-Contained Breathing Apparatus

   Inspect self-contained breathing apparatus monthly and after each use in accordance with manufacturer's instructions.

2. Air-Supplied Respirators

   a. Air used for atmosphere-supplying respirators must meet or exceed the requirements for Type 1 – Grade D breathing air. Never use oxygen.

      1. A certificate of analysis must accompany bottled air.

      2. Compressors used to supply breathing air must:

         i. Prevent entry of contaminated air into the air supply.

         ii. Minimize moisture content.

         iii. Have suitable in-line sorbent beds and filter to provide appropriate air quality.

         iv. Have a high–carbon-monoxide alarm that sounds at 10 part per million (ppm).

   b. Couplings on air-hose lines must be incompatible with other gas system.

3. Emergency Escape Respirators

   a. Emergency escape respirators intended to be used only for emergency exit. This may include situations where IDLH atmospheres and oxygen-deficient conditions exist. These respirators may be used as stand-alone protection or in conjunction with air-supplied respirators.

L. Require follow-up training and medical surveillance to be provided as directed.

1. Provide follow-up physical examinations as directed by the SMS 024-3 NA – Medical Screening and Surveillance Exam Protocol table.

2. Provide follow-up physicals as directed by the Occupational Health Manager.

3. Provide annual refresher training.

4. Provide annual fit testing.

5. Conduct regular evaluations to determine the effectiveness of the program's implementation. This should include interviews with employees regarding such topics as respirator selection, fit, and maintenance.

M. Where required, implement procedures for dealing with entry into areas with IDLH conditions.

1. Ensure at least one employee or attendant is located outside the area with the IDLH atmosphere. This person must be equipped with:

   a. Pressure demand or other positive pressure self-contained breathing apparatus (SCBA), or a pressure demand or other positive pressure supplied-air respirator with auxiliary SCBA; and either

   b. Appropriate retrieval equipment to removing the employee within the IDLH atmosphere, or

   c. Equivalent means of rescue.

2. Maintain communication between the employee(s) in the area with the IDLH environment and the employee(s) or attendant(s) outside the area. Communication may include visual, voice, or signal lines.

3. In an emergency situation, the manager overseeing operations must be notified before employee(s) outside the area with the IDLH atmosphere enter the space.

5. Documentation Summary

All Respiratory Protection Program documentation must be protected by the Privacy Act of 1974 (PL-93-579), and confidential medical information not required by OSHA may be protected under the Health Insurance Portability Accountability Act of 2003 (HIPAA).

The following information will be maintained in the office/project file by the Project Manager:

1. Identifying When A Respirator Is Needed – Attachment 042-1 NA.
2. Voluntary Use of Respirators – Attachment 042-2 NA.
3. Fit Test Record – Attachment 042-3 NA.
4. Employee Health Status Medical Report, including clearance for respirator use.
5. Employee Respirator Training Records.

6. Resources

A. U.S. OSHA Standard - Respiratory Protection – 29 Code of Federal Regulations (CFR) 1910.134

B. U.S OSHA Technical Links – Respiratory Protection

C. ANSI Z88.6-2006 – Respirator Use – Physical Qualifications for Personnel

D. AIHA, The Occupational Environment – Its Evaluation and Control

E. NIOSH Respirator Decision Logic

F. NIOSH Guide to Industrial Respiratory Protection

G. SMS 024 – Medical Screening and Surveillance Program

H. SMS 055 – Health and Safety Training

I. Attachment 042-1 NA – Identifying When a Respirator is Needed

J. Attachment 042-2 NA – Voluntary Use of Respirators

K. Attachment 042-3 NA – Fit Test Record

L. Attachment 042-4 NA – Respirator Standard Operating Procedure

7. Supplemental Information

A. Respirator Cartridge Change Schedule

B. Hazard Analysis for Respirator Use

C. Fit Testing Guidance

D. Respirator Selection Guidance

E. Inspection, Cleaning, and Storage Guidance

A cartridge change schedule must be developed for cartridges or canisters used with air purifying respirators that do not have an End of Service Life Indicator (ESLI). The purpose of this is to prevent contaminants from breaking through the respirator's sorbent cartridge(s), and thereby over-exposing employees. NIOSH has approved ESLIs for only four cartridges or canisters (mercury vapor, carbon monoxide, ethylene oxide, and hydrogen sulfide). Historically we have relied on the warning properties (odor, irritation) of a contaminant to dictate cartridge change. OSHA no longer allows this as the sole basis for changing respirator cartridges. In developing a change schedule the following factors should be considered:

- Contaminants
- Concentration
- Frequency of use (continuously or intermittently throughout the shift)
- Temperature and humidity
- Work rate
- The presence of potentially interfering chemicals.

The worst-case conditions should be assumed to avoid early breakthrough. This must be documented in the project health and safety plan or, in the cases of office or labs, in the site specific Respiratory Protection Program.

Sources of Help

OSHA provides assistance in developing respirator cartridge change schedules on its website at http://www.osha.gov/SLTC/etools/respiratory/change_schedule.html.

Most cartridge manufacturers maintain on-line interactive cartridge service life programs that can be used to evaluate the service life against many contaminants. Typically, these do not evaluate the service life against mixtures (multiple contaminants).

Because of the complexity in evaluating mixtures, OSHA offers the following guidance:

- When the individual compounds in the mixture have similar breakthrough times (i.e., within one order of magnitude), service life of the cartridge should be established assuming the mixture stream behaves as a pure system of the most rapidly migrating component with the shortest breakthrough time (i.e., sum up the concentration of the components).
- Where the individual compounds in the mixture vary by 2 odors of magnitude or greater, the service life may be based on the contaminant with the shortest breakthrough time.

Rule of Thumb *("The Occupational Environment" - Its Evaluation and Control)*

- If the chemical's boiling point is >70 °C and the concentration is less than 200 ppm, you can expect a service life of 8 hours at a normal work rate.
- Service life is inversely proportional to work rate.
- Reducing concentration by a factor of 10 will increase service life by a factor of 5.
- Humidity above 85% will reduce service life by 50%.

OSHA Interpretation

The OSHA inspection procedures for the respiratory protection standard specifies that where contaminant migration is possible, respirator cartridges/canisters should be changed after each work shift where exposure occurs unless there is objective data to the contrary (description studies) showing the performance in the conditions and schedule of use/non-use found in the workplace.

A. A hazard analysis of the workplace must be performed before selecting respirators. The analysis must consider inhalation hazards under routine and foreseeable emergency conditions. Other factors to consider when choosing respirators include skin and eye exposure, the effects of heat or cold, use of protective clothing, employee conditioning, and workload.

B. Respiratory hazards that must be identified include:

1. Oxygen Deficiency
2. Air Contaminants
3. Particulates
4. Toxic Gases

C. Evaluating Exposures

There are several options on how to evaluate exposures:

1. One option is to rely on personal monitoring data of employees. Representative exposure data provided by industry or laboratory studies is acceptable as long as it applies to similar tasks and conditions at the worksite.
2. The professional judgment provided by the Business, RBU, SBU, Office, or Project HSE Manager and/or as recommended by a qualified industrial hygienist or safety professional may be employed for the task.
3. If the exposure cannot be identified or estimated, then the atmosphere is considered immediately dangerous to life or health (IDLH). Atmospheres with levels of oxygen below 19.5% are also defined as IDLH.
4. Trained and qualified technical personnel shall perform assessment of the degree of respiratory hazard through sampling and testing of the work environment. Problems requiring special respiratory protection should be discussed with the Business or Regional HSE Manager or qualified industrial hygienist.
5. The Project HSE Manager shall establish procedures to control respiratory hazards through engineering or administrative controls, product/material substitution, respiratory protective devices, or a combination of these methods.
6. He/she shall also perform annual evaluations of the effectiveness of the project's respiratory protection program. These evaluations shall be documented.
7. The Project HSE Manager shall select and provide adequate respiratory protective devices for use on the project. This selection shall be based upon the specific type of air contaminant(s), the concentration of the contaminants(s) or oxygen deficiency in the work environment.
8. Establish a change schedule for air-purifying respirators based upon objective information or data that will ensure that cartridges are changed before the end of their useful life. OSHA has mandated that reliance on warning properties is no longer valid

A. A quantitative fit-test provides the most accurate information; qualitative fit testing depends on the respirator wearer's sense of smell and taste (subjective response). OSHA's standard requires fit-testing for any face mask (full or half) designed to have a tight seal along the face, whether it is used in a positive or negative pressure mode, and whether it is disposable or not. If the required fit factor is greater than 100, then a quantitative fit-test must be performed.

B. Each person will have a qualitative or quantitative fit test when first required to wear a respirator, every 12 months when respirators will be worn thereafter, or as hazards or respiratory needs change.

C. Each person will have a qualitative or quantitative fit test for each specific make(s) and model(s) of respirator(s) for which the worker may wear.

D. Under no circumstances shall a worker be allowed to use any respirator if the results of the qualitative fit test indicate that the worker is unable to obtain a satisfactory seal.

E. The eight exercises required by OSHA under the respiratory protection standard, 29 CFR 1910.134, Appendix A, are as follows (note that these are not required controlled negative pressure (CNP) quantitative fit testing):

   1. normal breathing
   2. deep breathing
   3. head side to side
   4. head up and down
   5. talking out loud
   6. grimacing (quantitative only)
   7. bending
   8. normal breathing

F. Qualitative and quantitative fit testing must be performed in negative pressure mode for all tight fitting respirators, whether the respirator is positive or negative pressure demand.

G. Qualitative and quantitative fit testing must be conducted according to one of the protocols found in 29 CFR 1910.134, Appendix A.

H. Employees using respirators when not required under the standard (i.e., dust masks or comfort masks for nuisance type dust without a specified exposure level) must be aware of the potential hazards of using a respirator. See Attachment 042-2 of this standard or Appendix D of 29 CRF 1910.134 for information program requirement.

A. Physical characteristics, functional capabilities, and performance limitations of various types of respirators shall be considered in the selection process.

B. Specifics regarding hazard classification, descriptions of respirator types and modes of operation, and the capabilities and limitations of respirators are listed in ANSIZ88.2-1992.

C. To select the correct respirator, the hazards must first be identified in the workplace and then follow these steps:

1. Determine if the environment is IDLH.
    a. All oxygen deficient atmospheres shall be considered IDLH.
    b. If the employee exposure cannot be reasonably estimated, the atmosphere must be considered IDLH.
2. Identify the contaminant(s) present in the atmosphere and answer the following questions:
    a. What is the concentration?
    b. Are they gaseous or particulate?
    c. Are the contaminants IDLH?
3. After completing the above steps select the appropriate respirator for the particular hazard(s).
    a. IDLH – Provide a full facepiece NIOSH certified pressure demand SCBA with a minimum service life of 30 minutes or a full facepiece pressure demand airline respirator with an auxiliary self-contained air supply.
    b. Non-IDLH – A respirator must be provided that is appropriate for the contaminant(s) identified.
4. For protection against gases and vapors, <u>either</u> an atmosphere-supplying respirator or an air-purifying respirator equipped with a NIOSH certified end-of-service-life indicator (ESLI) for the contaminant must be used. In lieu of an ESLI, a change schedule for cartridges based on objective information or data may be used to ensure cartridges are changed before the end of their service life occurs (see Supplemental Information A). In most cases, respirator cartridge manufacturers provide a product specific on-line or CD-ROM based “Service Life Calculator” that allows determination of useful service life of a cartridge based on expected concentration and environmental and work conditions. If neither an ESLI or change schedule is available, a supplied air respirator must be used.
5. For protection against particulates, an atmosphere-supplying respirator or an air-purifying respirator equipped with a NIOSH-certified high-efficiency particulate air (HEPA) filter under 30 CFR 11 or an air-purifying respirator equipped with a NIOSH certified filter for particulates under 42 CFR 84 must be used.

6. There are three classes of filters under NIOSH (N, R, and P series) with three levels of filter efficiency in each class – 95%, 99%, and 99.97% (classified as 100). All filters can be used regardless of aerosol size. The new filters are classified as follows:
    a. N – For solid particulates and non-oil aerosols that do not degrade filter performance.
    b. R – For solid particulates and degrading oil-based aerosols. R filters have “use limitations.”
    c. P – For solid particulates and degrading oil-based aerosols. P filters generally have no “use limitations” other than those normally associated with particulate filters. The P100 filter is the replacement for the HEPA filter.

E. Particulate filters are tested with 200 mg of loading but in many cases, these filters may exceed this capacity. Filtration efficiency may actually increase as the filter cake develops on the filter. Increased resistance to breathing or obvious taste or odor in the respirator would be cause to examine, re-evaluate and replace the filter cartridge

A. Inspection

Routinely used air-purifying and airline respirators should be checked as follows before and after each use:

1. Examine the facepiece for:
    a. Excessive dirt.
    b. Cracks, tears, holes or physical distortions of shape from improper storage.
    c. Inflexibility of rubber facepiece (stretch and knead to restore flexibility).
    d. Cracked or badly scratched lenses in full facepieces.
    e. Incorrectly mounted full facepiece lenses, or broken or missing mounting clips.
    f. Cracked or broken air-purifying element holder(s), badly worn threads or missing gasket(s) if required.
2. Examine the head straps or head harness for:
    a. Breaks.
    b. Loss of elasticity.
    c. Broken or malfunctioning buckles and attachments.
    d. Excessively worn serrations on head harness, which might permit slippage (full facepieces only).
3. Examine the exhalation valve for the following after removing its cover:
    a. Foreign material, such as detergent residue, dust particles or human hair under the valve seat.
    b. Cracks, tears or distortion in the valve material.
    c. Improper insertion of the valve body in the facepieces.
    d. Cracks, breaks or chips in the valve body, particularly in the sealing surface.
    e. Missing or defective valve cover.
    f. Improper installation of the valve in the valve body.
4. Examine the air-purifying element for:
    a. Incorrect cartridge, canister, or filter for the hazard.
    b. Incorrect installation, loose connections, missing or worn gasket or cross threading in the holder.
    c. Expired shelf-life date on the cartridge or canister.
    d. Cracks or dents in the outside case of the filter, cartridge or canister, indicated by the absence of sealing material, tape, foil, etc., over the inlet.
5. If the device has a corrugated breathing tube, examine it for:

a. Broken or missing and connectors.

b. Missing or loose hose clamps.

c. Deterioration, determined by stretching the tube and looking for cracks.

6. Examine the harness of a front-or back-mounted gas mask for:

   a. Damage or wear to the canister holder, which may prevent its being held in place.

   b. Broken harness straps for fastening.

B. Self Contained Breathing Apparatus (SCBA)

Follow manufacturer specifications for storage, maintenance and cleaning of SCBA systems.

C. Manual Cleaning

A generalized cleaning procedure is typically found in the manufacturer's manual. Read the respirator manual and follow the manufacturer's recommendations.

1. Remove canisters, filters, valves, straps and speaking diaphragms from the facepiece.
2. Wash facepiece and accessories in warm soapy water or a commercially available cleaner, following the manufacturer's instructions. Gently scrub the respirator.
3. Rinse parts thoroughly in clean water.
4. Air dry in a clean place or wipe dry with a lint less cloth.

D. Machine Cleaning

Machines may be used to expedite the cleaning, sanitizing, rinsing, and drying of large numbers of respirators. Read the machine-cleaning manual and follow manufacturer's recommendations.

1. Extreme care must be taken to ensure against excessive tumbling and agitation, or exposure to temperatures above those recommended by the manufacturer (normally 120°F maximum), as these conditions are likely to result in damage to the respirators.
2. Ultrasonic cleaners, clothes-washing machines, dishwashers, and clothes dryers have been specially adapted and successfully used for cleaning and drying respirators.

E. Disinfection

1. Disinfection is required when more than one person uses the respirator. Recommended NIOSH disinfection procedures include immersion of the respirator body for two minutes in a 50 ppm chlorine solution (about 2 ml bleach to 1 liter of water). Rinse thoroughly in clean water and dry.

   a. Immersion times have to be limited to minimize damage to respirators. The solutions can age rubber and rust metal parts. Caution must be

taken to thoroughly rinse the respirator after cleaning and disinfection to prevent dermatitis.

b. An alternate method is to purchase a commercially prepared solution for disinfection/decontamination and follow the directions recommended by the manufacturer.

2. Each person wearing a respirator shall examine the respirator before use in accordance with the training and instruction provided during fit testing.
3. After cleaning and sanitizing, each respirator shall be examined to determine if it is in proper working condition, if it needs replacement of parts or repairs, or if it should be discarded. Respirator inspection shall include, when applicable, a check for tightness of connections; for the condition of the respiratory inlet covering, head harness, valves, connecting tubes, harness assemblies, filters, cartridges, canisters, end-of-service life indicator, and shelf life date(s), and for the proper function of regulators, alarms, and other warning systems.
4. Each rubber or other elastomeric part shall be inspected for pliability and signs of deterioration. Each air and oxygen cylinder shall be inspected to ensure that it is fully charged according to the manufacturer's instructions.

F. Repair

Only persons trained in proper respirator assembly and correction of possible respirator malfunctions and defects shall do replacement of parts or repairs. Replacement parts shall be only those designed for the specific respirator being repaired. Reducing or admission valves, regulators, and alarms shall be returned to the manufacturer for repair or adjustment. The valve, regulator, or alarm manufacturer must approve instrumentation for valve, regulator, and alarm adjustments and tests.

G. Storage

Respirators shall be stored in a convenient, clean and sanitary location. The purpose of good respirator storage is to ensure that the respirators will function properly when used. Respirators shall be stored in a manner that will protect them against dust, sunlight, heat, extreme cold, excessive moisture, or damaging chemicals. Respirators shall be stored to prevent distortion of rubber or other elastomeric parts. This can be done by storing the respirators in hermetically sealed plastic bags, or plastic bags capable of being sealed. Emergency and rescue use respirators that are placed in work areas shall be quickly accessible at all times, and the storage cabinet or container in which they are stored shall be clearly marked.

URS	Health, Safety and Environment **IDENTIFYING WHEN A RESPIRATOR IS NEEDED**	Attachment 042-1 NA Issue Date: July 2000 Revision 6: March 2012

Site Location: _____ Date: _____

Name of Person Performing Evaluation: _____

Project: _____

Answer the questions below for the jobs you are to perform on site. If a 'Yes' response is checked, consult with an HSE Manager or a URS Certified Industrial Hygienist (CIH) to determine if a respirator is truly needed for the job; and if so, the type of respirator needed.

It is important to be aware of the respiratory protection requirements for any chemicals you are exposed to; these can be found on the Material Safety Data Sheets or chemical labels.

Material Used or Process to be Performed			Notes
Abrasive Blasting			
• Abrasive blasting (with any type of grit or material) will be performed	☐ **Yes**	☐ **No**	_____
• Employee will fill abrasive blasting pots or perform clean-up activities	☐ **Yes**	☐ **No**	_____
• Employee will be in a contained area where abrasive blasting is taking place	☐ **Yes**	☐ **No**	_____
Acids			
• Liquid or powder acids will be used in a situation where acid vapors, mists, or dust may be breathed	☐ **Yes**	☐ **No**	_____
Adhesives			
• Aerosols-propelled adhesives are to be used in areas where there is insufficient or no local exhaust ventilation	☐ **Yes**	☐ **No**	_____
• Two-part adhesives (mix part one with two, let set, then use) are to be used in areas where there is limited ventilation	☐ **Yes**	☐ **No**	_____
Alkalis/Bases/Caustics			
• Powdered alkalis will be used in a situation where an airborne dust may be breathed	☐ **Yes**	☐ **No**	_____
Asbestos Abatement			
• Asbestos will be removed, repaired, or sampled	☐ **Yes**	☐ **No**	_____
• Employees will be inspecting or overseeing areas where asbestos will be removed or disturbed	☐ **Yes**	☐ **No**	_____
Cleaning Compounds			
• Degreasers or carbon removers will be used in areas where local exhaust ventilation is not provided	☐ **Yes**	☐ **No**	_____
• Aerosol-propelled cleaning compounds will be used in areas where there is no local exhaust ventilation	☐ **Yes**	☐ **No**	_____
• Entry into a vault, tank, silo, sewer, or other confined space that has been used for chemical storage, recently painted, or where inert gases may have been used without ventilation	☐ **Yes**	☐ **No**	_____
• Degreasers or carbon removers will be used in voids, tanks, or other confined spaces	☐ **Yes**	☐ **No**	_____
Corrosion-Preventive Compounds			
• Corrosion-prevention compounds, including chemical conversion compounds and corrosion inhibitors, will be used in areas where there is no local exhaust ventilation	☐ **Yes**	☐ **No**	_____
Detergents/Soaps			
• Ammonia-based detergents will be used in large quantities (more than 5 gallons) in areas where local exhaust ventilation cannot be provided	☐ **Yes**	☐ **No**	_____

Material Used or Process to be Performed			Notes
• Large quantities (5- or 55-gallon containers) of high pH powder detergent/soap will be used in a situation where dust may be breathed	☐ Yes	☐ No	_____
Fuels (including regular or unleaded gasoline, kerosene, diesel fuel, JP-5)			
• Employees will be inside unventilated fuel cells or other confined spaces containing fuels	☐ Yes	☐ No	_____
Grinding, Cutting, Sanding			
• Cutting, grinding, or sanding surfaces that have coatings containing beryllium, cadmium, chromium, lead, or zinc	☐ Yes	☐ No	_____
• Cutting, grinding, or sanding surfaces that are concrete or glass without use of ventilation or water	☐ Yes	☐ No	_____
Hazardous Waste Sites			
• Employees will be performing tasks on a hazardous waste site that requires the use of respirator (as indicated in the site health and safety plan)	☐ Yes	☐ No	_____
• Employees will be performing site assessments on potential hazardous waste sites	☐ Yes	☐ No	_____
Hydraulic Fluids (including petroleum-based fluids, synthetic fire-resistant fluids, and water-based fire-resistant fluids)			
• Hydraulic fluids and the vapors generated will not be exhausted using local exhaust ventilation	☐ Yes	☐ No	_____
• Synthetic fire-resistant fluids or water-based fire-resistant fluids will be used in an area where the air is contaminated with visible mist or spray from hydraulic fluids	☐ Yes	☐ No	_____
Inspection Penetrants (including Flouro-finder, water-indicating pastes, and penetrant removers)			
• An aerosol-propelled inspection penetrant will be used in an area where local exhaust ventilation cannot be provided, or in a situation where the solvent vapors can be breathed	☐ Yes	☐ No	_____
Lead Abatement Activities			
• Lead-containing materials will be disturbed, removed, or sampled	☐ Yes	☐ No	_____
• Employees will be inspecting or overseeing areas where lead will be removed or disturbed	☐ Yes	☐ No	_____
Lubricants/Oils			
• Aerosol lubricants or oils will be sprayed with no immediate exhaust ventilation	☐ Yes	☐ No	_____
Oxidizers (materials that give off oxygen, including chlorine laundry bleach, calcium hypochlorite, calcium oxide, oxygen candles, lithium hydroxide, hydrogen peroxide, and sodium dichromate)			
• Oxidizers containing organic chlorine will be used in a situation where the dusts or vapors may be breathed	☐ Yes	☐ No	_____
• Powdered oxidizers will be used in a situation where airborne dust may be breathed	☐ Yes	☐ No	_____
Paint Materials (including paints, primers, thinners, enamels, lacquers, strippers, coatings, and varnishes)			
• Paint materials will be spray-applied in areas where there is no local exhaust ventilation	☐ Yes	☐ No	_____
• Two-part (mix part a with part b, let set, then apply) polyurethane or epoxy polyamide paints will be brush- or spray-applied	☐ Yes	☐ No	_____
• Paints containing beryllium, cadmium, chromium, lead, or zinc (refer to the MSDS)	☐ Yes	☐ No	_____

Material Used or Process to be Performed			Notes
• Paint materials will be applied in confined spaces	☐ Yes	☐ No	_____
Solvents (including hydrocarbon solvents such as acetone, methyl ethyl ketone, toluene, xylene, and alcohols, as well as mixed solutions like antifreeze, heat-transfer fluid, turpentine, pipe-dope, and naphtha thinner)			
• Local exhaust ventilation will not be provided and work will involve breathing solvent vapors	☐ Yes	☐ No	_____
• Solvents will be used within confined spaces	☐ Yes	☐ No	_____
• Solvents will be applied using aerosols	☐ Yes	☐ No	_____
Thermal Insulation (including asbestos and non-asbestos materials like pipe lagging, fiberglass insulation, boiler insulation, packing materials, and floor or ceiling tiles)			
• Insulation will be disturbed, removed, or sampled	☐ Yes	☐ No	_____
Water-Treatment Chemicals (includes corrosive chemicals such as tri-sodium phosphate, hardness buffer, titrating solution, morpholine, caustic soda, citric acid, and nitric acid, as well as toxic chemicals such as mercuric nitrate, hydrazine, EDTA, and sodium nitrate)			
• Morpholine, EDTA, or harness buffer/titrating solution is to be used in poorly ventilated spaces	☐ Yes	☐ No	_____
• Powdered water-treatment chemicals will be used in a situation where chemical dusts may be breathed	☐ Yes	☐ No	_____
Welding/Brazing/Cutting			
• Welding will be performed in confined spaces	☐ Yes	☐ No	_____
• Welding galvanized metal or stainless steel	☐ Yes	☐ No	_____
• Brazing with cadmium or lead	☐ Yes	☐ No	_____
• Torch-cutting on coated/painted materials	☐ Yes	☐ No	_____
For Any of the Above-Listed Activities			
• An employee will be in the immediate area – within 10 feet of the job or operation; or	☐ Yes	☐ No	_____
• Employee will be inside confined space where activities are taking place; or	☐ Yes	☐ No	_____
• Employee will be inside a “controlled area” such as found in asbestos abatement, lead abatement, radiation control area, or a hazardous waste site	☐ Yes	☐ No	_____
Other			
• A chemical process procedure (e.g., hydrogen sulfide in refineries, ammonia as a refrigerant, chlorine in water disinfection, inert gas systems) required the use of a respirator or emergency escape respirator	☐ Yes	☐ No	_____
• Mine operations require issuance of an emergency escape respirator	☐ Yes	☐ No	_____
• Emergency response plan requires issuance of respirators to first responders	☐ Yes	☐ No	_____
• Radiological controls require use of a respirator	☐ Yes	☐ No	_____
• Laboratory Chemical Hygiene plan requires issuance of respirators	☐ Yes	☐ No	_____
• Exposure to airborne mold	☐ Yes	☐ No	_____

Instructions: Have the employee that is opting to use a respirator for non-overexposure conditions read this page, and then sign on the bottom of the page. Maintain a copy in the employee's training file.

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for employees. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the employee.

Sometimes employees may wear respirators to avoid exposures to hazards, even if the amount of the hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your own voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not pose a hazard.

1. Read and follow all instructions provided by the manufacture on use, maintenance, cleaning, and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH (the National Institute for Occupational Safety and Health) certifies respirators in the U.S. A label or statement of certification should appear on the respirator or respirator packaging; it will tell you what the respirator is designed for and how it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants against which your respirator is not designed to protect. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, fumes, smoke, or very small solid particles.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.
5. If you have any health conditions (asthma; high blood pressure; emphysema; heart disease) that could be aggravated by using a respirator, you should check with your doctor before using one.

I have read and understand this information: Date: _____

_____

Employee's Name (Please Print):

_____

Employee's Signature:

URS	Health, Safety and Environment **FIT TEST RECORD**	Attachment 042-3 NA Issue Date: July 2000 Revision 6: March 2012

Employee Name _____ Employee Number _____

Office/Project _____ Last Medical Exam _____

Fit Test Date _____ Corrective Lenses Needed Yes ☐ No ☐

Medically qualified to wear respirator? Yes ☐ No ☐

Briefed on fundamental principles of respiratory protection, use, selection, inspection, cleaning, maintenance, and storage of equipment? Yes ☐ No ☐

Test agent recognition: Yes ☐ No ☐ N/A ☐

	RESPIRATOR 1	RESPIRATOR 2	RESPIRATOR 3
Equipment Type	_____	_____	_____
Manufacturer's Name	_____	_____	_____
Model	_____	_____	_____
Size	_____	_____	_____
Facepiece Composition (Rubber/Silicone)	_____	_____	_____

TEST PERFORMED	RESPIRATOR 1	RESPIRATOR 2	RESPIRATOR 3
Negative Pressure Test:	Pass ☐ Fail ☐	Pass ☐ Fail ☐	Pass ☐ Fail ☐
Positive Pressure Test:	Pass ☐ Fail ☐	Pass ☐ Fail ☐	Pass ☐ Fail ☐
Isoamyl Acetate Test:	Pass ☐ Fail ☐	Pass ☐ Fail ☐	Pass ☐ Fail ☐
Irritant Smoke Test:	Pass ☐ Fail ☐	Pass ☐ Fail ☐	Pass ☐ Fail ☐
Bitrex:	Pass ☐ Fail ☐	Pass ☐ Fail ☐	Pass ☐ Fail ☐
Saccharin:	Pass ☐ Fail ☐	Pass ☐ Fail ☐	Pass ☐ Fail ☐
Generated Aerosol Quantitative Fit:	P ☐ F ☐ Fit Factor _____	P ☐ F ☐ Fit Factor _____	P ☐ F ☐ Fit Factor _____
Ambient Aerosol Quantitative Fit:	P ☐ F ☐ Fit Factor _____	P ☐ F ☐ Fit Factor _____	P ☐ F ☐ Fit Factor _____
Controlled Negative Pressure Quantitative Fit:	P ☐ F ☐ Fit Factor _____	P ☐ F ☐ Fit Factor _____	P ☐ F ☐ Fit Factor _____

_____ _____ _____

Examiner's Name (Please Print) **Examiner's Signature** **Date**

_____ _____

Employee's Signature **Date**

Job Task Reviewed: _____

Date Reviewed: _____

Task Review by: _____

ADMINISTRATIVE PROCEDURES

1. All respirator users must be medically qualified to use respirators.
2. Respirator users must be trained annually in respirator use, and must be fit-tested annually.
3. The respirator will be used only by the person to whom it was issued.
4. Persons using glasses who are required to use a full-face respirator may use contact lenses or eyeglass inserts designed for the respirator.

GUIDANCE FOR SELECTION OF RESPIRATOR AND CARTRIDGES/FILTERS

1. Respirators are currently being issued and used for the following job activities:

   _____

   _____

2. The respirator will be equipped with the following cartridges/filters:

   _____

3. Filters are to be changed when the breathing resistance increases.

4. Cartridges are to be changed _____ (frequency), or when the contaminant you are protecting yourself from can be smelled or tasted.

FIT TESTING & FIT CHECKING

1. Fit testing is required annually. To arrange for fit testing, call your local, project, or regional safety representative or qualified industrial hygienist.
2. Respirator users will “fit check” the respirator every time the respirator is put on:
   - **Negative Check** – Cover filters/cartridges with palms of hands and breathe in: leakage should not be detected around the face seal of the respirator. Do not use if leakage is detected.
   - **Positive Check** – Cover the exhalation valve cover with palm of hand and blow out slightly: leakage should not be detected around the respirator seal.
   - **For Air Supply Respirators** – Kink or close off air supply hose and breathe in: leakage should not be detected around the face seal of the respirator.

CLEANING AND MAINTENANCE OF RESPIRATOR

1. Clean and disinfect respirator after every use.
2. Inspect respirator at the end of work every day in use to ensure parts are not missing. Replace missing parts from stock supply.
3. Store clean respirator in labeled plastic bag out of direct sunlight.
4. Do not alter respirator in any way.

URS SAFETY MANAGEMENT STANDARD

Personal Monitoring (Industrial Hygiene)

1. Applicability

This standard applies to the operations of URS Corporation and its subsidiary companies where employees may be exposed to airborne concentrations of hazardous air contaminants potentially exceeding permissible limits. Note that this standard does not cover monitoring for asbestos operations (SMS 008 – Asbestos Operations), hexavalent chromium (SMS 083 – Chromium (VI) Inhalation Exposure Protections), confined spaces (SMS 010 – Confined Space), heat stress (SMS 018 – Heat Stress), or noise (SMS 026 – Noise and Hearing Conservation).

2. Purpose and Scope

The purpose of this standard is to assist and provide guidance to URS personnel who need to conduct personal industrial hygiene monitoring. Monitoring will be conducted to evaluate the exposures of URS employees to concentrations of toxic particulates, fibers, gases, vapors, mists, radionuclides, pathogens, hazardous biological agents, or to oxygen-deficient atmospheres.

Personal monitoring must be conducted under the following conditions:

A. Where directed by a facility or site-specific health and safety plan.

B. Where employees are exposed to known or suspected human carcinogens (e.g., beryllium, vinyl chloride, etc.).

C. Where regulations require "initial exposure assessments” (e.g., lead, asbestos, methylene chloride, hexavalent chromium). The only exception to conducting an "initial exposure assessment" where there is a regulatory requirement to do so is when similar exposure assessments have been conducted under similar site conditions within 1 year prior to the start of work on the current project or site.

D. When directed by a client or required by contract.

E. At the direction of a Safety Manager in response to employee concerns or incidents involving chemical exposure.

F. Co-sampling during regulatory inspections.

G. Routine monitoring in compliance with regulatory requirements.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Procedures for Personal Industrial Hygiene Monitoring

1. Calibrate sampling equipment in accordance with the manufacturer's recommendations and the approved sampling methodology.

2. Collect samples using the most current applicable methodologies established by either the National Institute for Occupational Safety and Health (NIOSH) *Manual of Analytical Methods*, U.S. Department of Labor – Occupational Safety and Health Administration (OSHA) *Sampling and Analytical Methods*, or applicable guidelines for the host country.

3. Select an analytical laboratory accredited by the American Industrial Hygiene Association (AIHA), or equivalent host country certification, licensing, or accreditation, to analyze the personal air samples.

   Note: There are several programs under which a laboratory may receive AIHA accreditation. The laboratory must be currently accredited for the specific program, scope category, and field of testing for the analysis that will be performed, not merely hold AIHA accreditation.

4. Require the selected laboratory to use the applicable analytical methodologies and document quality control procedures.

5. Ensure equipment is maintained, serviced, and calibrated in accordance with manufacturer's recommendations.

6. Document personal monitoring activities using the appropriate URS Industrial Hygiene Monitoring Form; require that all laboratory chain-of-custody forms be properly completed; and ensure samples are sealed and secured according to Quality Assurance procedures.

7. Ensure workers are being protected (e.g., engineering controls, respiratory protection, PPE) during the monitoring phase. Determine whether medical surveillance is required.

B. Evaluation of Personal Monitoring Results

1. Where feasible, require that a URS Certified Industrial Hygienist (CIH) approved by a Safety Manager evaluate the analytical results.

2. Obtain a written evaluation report from the Safety manager. If exposures exceed the Action Level and/or Permissible Exposure Limit for the air contaminant(s) of concern, a verbal report is to be made to the senior facility, project, or site manager immediately, and the evaluation report will include required corrective actions.

3. Complete evaluation reports within 5 working days of the receipt of the analytical results.

C. Procedures for Direct-Read Air Monitoring

1. Direct-read air monitoring instruments are used primarily as screening tools to provide real-time evaluations of hazardous airborne contaminants at a project site.

2. Select an appropriate air monitor for the air contaminant to be measured.

3. Calibrate monitor in accordance with manufacturer's recommendations. Dates of full instrument calibration will be recorded on the direct-read instrument and on any associated calibration data sheets. If full instrument calibrations are not performed daily, then bump tests (exposure to a known concentration of contaminant) will be performed to verify calibration and ensure alarms are working appropriately.

4. Conduct air monitoring using techniques identified by the instrument manufacturer.

5. Ensure equipment is maintained, serviced, and calibrated in accordance with manufacturer's recommendations.

6. Document personal monitoring activities using the appropriate URS Industrial Hygiene Monitoring Form.

7. Ensure workers are being protected (e.g., engineering controls, respiratory protection, PPE) during the monitoring phase. Determine whether medical surveillance is required.

8. Where required by client request or by unique or high hazard areas, individual portable direct-read monitors shall be used.

D. Evaluation of Personal Monitoring Results

1. Compare measured results with project-specific Action Levels and/or published Permissible Exposure Limits. If exposures exceed the Action Level and/or Permissible Exposure Limit for the air contaminant(s) of concern, take corrective actions as identified in the site-specific health and safety plan. Where questions exist about the results, contact a CIH approved by a Safety Manager to evaluate the analytical results.

E. Communication of Sample Results and Evaluation

1. Provide copies of the evaluation report to the employee(s) monitored and to employees working in the area for which the exposures could be representative, within 5 days of receipt of lab results.

2. Provide a copy of the evaluation report and monitoring data to the manager directing activities of the facility or site for filing purposes.

3. Personal identifiers (e.g., name, address, employee number) or information which could reasonably be used to identify specific employees (e.g., exact age, height, weight, race, sex, date of initial employment, job title), must be removed from analysis reports before access to the exposure data is provided.

F. Corrective Actions

Implement required corrective actions immediately. If workers are being exposed above the PEL, respiratory protection should be worn in accordance with SMS 042 – Respiratory Protection. Engineering controls should be used to reduce exposures to the extent possible

G. Exposure Records

1. Exposure records include workplace monitoring, biological monitoring, material safety data sheets and chemical inventories. Sampling results, the collection methodology (sampling plan), a

description of the analytical and mathematical methods used, and a summary of other background data relevant to interpretation of the results obtained, must retained for at least thirty (30) years.

5. Documentation Summary

The following documents will be maintained in the project profile:

A. Calibration data.

B. Completed IH Monitoring Form(s).

C. Evaluation Report with sample results (provide copy to affected employee as well).

D. Relevant prior initial exposure assessments.

6. Resources

A. OSHA Sampling and Analytical Methods

B. OSHA Chemical Sampling Information

C. American Industrial Hygiene Association – The Occupational Environment: Its Evaluation and Control

D. American Conference of Governmental Industrial Hygienists – Air Sampling Instruments for Evaluation of Atmospheric Contaminants

E. NIOSH Manual of Analytical Methods

F. SMS 008 – Asbestos Operations

G. SMS 010 – Confined Space

H. SMS 018 – Heat Stress

I. SMS 026 – Noise and Hearing Conservation

J. SMS 042 – Respiratory Protection

K. SMS 050 – Toxic and Hazardous Substances

L. Attachment 043-1 AMER – General Industrial Hygiene Survey Form

M. Attachment 043-2 AMER – Industrial Hygiene Sample Field Sheet

N. Attachment 043-3 AMER – Total Dust Industrial Hygiene Sample Field Sheet

O. Attachment 043-4 AMER – Respirable Dust Industrial Hygiene Sample Summary

P. Attachment 043-5 AMER – Detector Tube Industrial Hygiene Sample Summary

Q. Attachment 043-6 AMER – Gas/Vapor/Fume/Mist Industrial Hygiene Sample Summary

R. Attachment 043-7 AMER – Combustible Gas Monitor Industrial Hygiene Sample Summary

S. Attachment 043-8 AMER – PID/FID Monitoring Report

7. Supplemental Information

A. Industrial Hygiene and Medical Surveillance Evaluation Form

URS	Safety Management Standard GENERAL INDUSTRIAL HYGIENE SURVEY FORM	Attachment 043-1 AMER Issue Date: June 1999 Revision 5: January 2011

Location: _____ **Prepared By:** _____ **Date Prepared:** _____ **Page** _____ **of** _____

Job Description	No. of Hours Per Day Worked On This Job	Dust, Fume, or Mists	Control Methods	Gases	Vapors	Other	Control Methods	Noise	Control Methods	Radiation, UV Vibration, IR, etc.	Control Methods	Comments

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URS	Safety Management Standard **INDUSTRIAL HYGIENE SAMPLE FIELD SHEET**	Attachment 043-2 AMER Issue Date: June 1999 Revision 5: January 2011

Sample ID Date: _____

Material of Interest (MOI) in Dust: _____

Site: _____ Sample I.D. No. _____

Person Sampled or Area: _____ Employee No. _____

Job/Area: _____

Sample Type

Personal: ☐ Area: ☐ Resp. Dust: ☐ Total Dust: ☐ Other: _____

Pump Type:	_____	Pump No	_____	Time On:	_____	Time Off:	_____
Total Time (min):	_____	Cassette No:	_____	Initial Flow:	_____	Final Flow:	_____
Average Flow:	_____	Volume:	_____	Calibrator Model:	_____	Calibrator Serial No:	_____

Workplace Conditions

Operations: Normal ☐ Abnormal ☐ Explain _____

Respirator Use: Type _____ % of Time Worn _____

Ventilation: Type _____

Normal ☐ Abnormal ☐ Explain _____

Weather Conditions

Approximate Temperature: _____ °**F** _____ °**C**

Sky:	Precipitation	☐	Cloudy	☐	Partly Cloudy	☐	Clear	☐
Wind:	Calm	☐	Light	☐	Medium	☐	High	☐

Work Description/Comments: Scheduled Hours per Shift: _____

_____

_____

_____

Sampled By: _____

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URS	Safety Management Standard **TOTAL DUST INDUSTRIAL HYGIENE SAMPLE SUMMARY**	Attachment 043-3 AMER Issue Date: June 1999 Revision 5: January 2011

MATERIAL OF INTEREST (MOI) IN DUST: _____ **Page** _____ **of** _____

IDENTIFICATION **SAMPLE TYPE** **Exposure Limit: OSHA PEL: DUST** _____ **mg/m^3 MOI** _____

Prepared By: _____ **Personal:** _____ **ACGIH TLV: DUST** _____ **mg/m^3 MOI** _____

Date Prepared: _____ **Area:** _____ **Location:** _____ **Scheduled Hours Per Shift:** _____

Date	Name or Area	Job Class	Resp Type	Pump Type	Time		Sam Time (min)	Flow	Vol	Filter Wt.		MOI %	Concentration		Shift TWA		% PEL or % TLV	
Sample No.	Employee No.	Equipment	% Use	ID No.	On	Off		(lpm)	(m^3)	Dust mg	MOI mg		Dust mg/m^3	MOI mg/m^3	Dust mg/m^3	MOI mg/m^3	Dust mg/m^3	MOI mg/m^3

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URS	Safety Management Standard **RESPIRABLE DUST INDUSTRIAL HYGIENE SAMPLE SUMMARY**	Attachment 043-4 AMER Issue Date: June 1999 Revision 5: January 2011

MATERIAL OF INTEREST (MOI) IN DUST: _____ **Page** _____ **of** _____

IDENTIFICATION **SAMPLE TYPE** **Exposure Limit: OSHA PEL: DUST** _____ **mg/m^3 MOI** _____

Prepared By: _____ **Personal:** _____ **ACGIH TLV: DUST** _____ **mg/m^3 MOI** _____

Date Prepared: _____ **Area:** _____ **Location:** _____ **Scheduled Hours Per Shift:** _____

Date	Name or Area	Job Class	Resp Type	Pump Type	Time		Sam Time (min)	Flow	Vol	Filter Wt.		MOI %	Concentration		Shift TWA		% PEL or % TLV	
Sample No.	Employee No.	Equipment	% Use	ID No.	On	Off		(lpm)	(m^3)	Dust mg	MOI mg		Dust mg/m^3	MOI mg/m^3	Dust mg/m^3	MOI mg/m^3	Dust mg/m^3	MOI mg/m^3

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URS	Safety Management Standard **DETECTOR TUBE INDUSTRIAL HYGIENE SAMPLE SUMMARY**	Attachment 043-5 AMER Issue Date: June 1999 Revision 5: January 2011

GAS/VAPOR: _____ **Page** _____ **of** _____

IDENTIFICATION

Prepared By: _____ **Date:** _____

DETECTOR TUBE

Brand: _____ **Type:** _____

Batch No.: _____ **Exp. Date:** _____

Pump Type: _____ **Serial No.:** _____

EXPOSURE LIMIT

Basis: ACGIH TLV _____ **OSHA PEL** _____

Location: _____

Scheduled Hours Per Shift: _____

SAMPLE TYPE

Area _____

Personal _____

Survey _____

Sequential _____

Leak Test **Yes** ☐ **No** ☐

Time	Name or Area	Job Class	Resp Type	Sampling Conditions			Pump Strokes	Air Concentration			Comments
Sample No.	Employee No.	Location	% Use	Temperature	R.H.	Atm. Pres.		Tube ( )	Corrected ( )	%PEL or %TLV	

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URS	Safety Management Standard **GAS / VAPOR / FUME / MIST** **INDUSTRIAL HYGIENE SAMPLE SUMMARY**	Attachment 043-6 AMER Issue Date: June 1999 Revision 5: January 2011

SAMPLE DEVICE **Page _____ of _____**

Brand: _____ **Type:** _____ **Batch No.:** _____ **Exp. Date:** _____

IDENTIFICATION **SAMPLE TYPE**

Prepared By: _____ **Personal:** _____ **Location:** _____

Date Prepared: _____ **Area:** _____ **Scheduled Hours Per Shift:** _____

Date	Name or Area	Job Class	Resp Type	Pump Type	Time		Sample Time (min)	Flow (lpm)	Vol (m^3)	Lab Results	Air Concentration	Shift TWA	Exposure Limit PEL/TLV	%PEL or %TLV	MOI
Sample No.	Employee No.	Location	% Use	ID No.	On	Off									

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COMBUSTIBLE GAS MONITOR
INDUSTRIAL HYGIENE SAMPLE SUMMARY

PERMISSIBLE EXPOSURE LIMITS

Carbon Monoxide (CO)

Shift TWA: _____

Ceiling: _____

STEL: _____

Hydrogen Sulfide (H_2S)

Shift TWA: _____

Ceiling: _____

STEL: _____

Basis:

ACGIH ☐ **OSHA** ☐ **ACGIH** ☐ **OSHA** ☐

WORKPLACE CONDITIONS

Page _____ **of** _____

Site: _____

Operations: **Normal** ☐ **Not Normal** ☐ **Explain** _____

Ventilation Type: _____

Normal ☐ **Not Normal** ☐ **Explain** _____

Instrument Type: _____ **Serial No.:** _____

Date	Location	Resp Type	Weather	Carbon Monoxide			Oxygen %	Hydrogen Sulfide			LEL %	Time (Hr)	Comments
Sampled By	Conditions	% Use		Real Time	Shift TWA %TLV/%PEL	STEL %TLV/%PEL		Real Time	Shift TWA %TLV/%PEL	STEL %TLV/%PEL			

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URS	Safety Management Standard **PID / FID MONITORING REPORT**	Attachment 043-8 AMER Issue Date: June 1999 Revision 5: January 2011

Location: _____ **Page** _____ **of** _____

Prepared By: _____ **Calibration:** _____

Model: _____ **Span Gas:** _____ **Lamp Voltage:** _____

Serial No.: _____ **Zero Gas:** _____

Date	Location and Conditions	Event No.	Sample Time hour: min	Min (ppm)	AVG (ppm)	Max (ppm)	Alarm		Comments
							Level (ppm)	Status	

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URS	Safety Management Standard **INDUSTRIAL HYGIENE and MEDICAL SURVEILLANCE EVALUATION FORM**	SMS 043 AMER Supplemental Information A Issue Date: January 2013

Location Information (Complete separate form with all information for each location)

Project/Site Name: **U.S. Site Code:** _____ **Date:** ____/____/____

Site Address: _____ **Additional Information:**

City: _____ **State** _____ **Zip** _____

Site Manager: **Site Safety Representative:**

Evaluation Questions: Selecting "Needs Further Evaluation" means that additional assistance is requested/needed beyond site resources.		Yes	No	Needs Further Evaluation	Comments:
The following questions assess employee health and medical surveillance factors (in accordance with Company and Regulatory Requirements). Please answer thoroughly and accurately. All URS worksites are subject to local regulations, URS Safety Management Standards (SMS) and any additional customer/client standards.					
Respiratory Protection					
1	Review SMS 042 and complete Attachment 042-1 and attach to this evaluation.	☐	SMS Attachment 042-1 Completed and Attached		
2	Do you have any dust masks, half- or full face respirators, SCBA, or supplied air respirators?	☐	☐	☐	
3	Does <u>any</u> employee wear dust masks or respirators on a voluntary basis or perform <u>any</u> work that requires them to wear dust masks or respirators?	☐	☐	☐	
4	Are employees who wear dust masks or respirators medically cleared for respirator use?	☐	☐	☐	
5	Person responsible for and location of medical clearance records:				
6	Are employees who wear dust masks or respirators properly fit tested? Fit tests include qualitative or quantitative fit testing conducted in accordance with specified protocols.	☐	☐	☐	
7	Person responsible for and location of fit-test records:				
General Respiratory Hazards (or General Work Processes Potentially Creating Respiratory Hazards)					
8	Does any employee conduct work activities that require hand sanding, powered (air or electric) sanding or grinding, expendable abrasives, using a media blast cabinet or booth, or similar?	☐	☐	☐	
9	Does any employee perform welding activities, such as, MIG or TIG, electric arc welding, acetylene torch, plasma arc, or cleanup of areas where these activities are performed?	☐	☐	☐	
10	Does any employee perform parts cleaning, chemical surface cleaning, or chemical stripping?	☐	☐	☐	
11	Does any employee perform or work near touch-up painting, spray painting (in or out of a paint booth), use paint thinner, ketones, toluene, or any other solvents?	☐	☐	☐	
12	Does any employee perform or work near plating or electroplating operations that use any form of cyanide solution?	☐	☐	☐	
Specific Respiratory Hazards					
13	**Cadmium** – is not addressed in a specific SMS. Please review site-specific MSDSs or site knowledge prior to completing this section	☐	MSDSs and Site Knowledge Reviewed (e.g., site history, environmental data)		
14	Does any employee perform work activities involving cadmium containing -metals or paints that generates dust, fumes or other fine particles? Any work activities involving demolition or salvaging structures, or waste management including recycling?	☐	☐	☐	

Evaluation Questions: Selecting "Needs Further Evaluation" means that additional assistance is requested/needed beyond site resources.	Yes	No	Needs Further Evaluation	Comments:
15 **Chromium** – is addressed in SMS 083. Please review the SMS prior to completing this section.	☐	SMS 083 Reviewed		
16 Does any employee perform work activities involving chromium VI (hexavalent chromium) containing -metals or paints that generates dust, other fine particles, or mists?	☐	☐	☐	
17 **Asbestos** is addressed in SMS 008. Please review the SMS prior to completing this section.	☐	SMS 008 Reviewed		
18 Are there any asbestos-containing materials (ACM) or presumed asbestos-containing materials (PACM) at your site?	☐	☐	☐	
19 Do any employees perform intrusive work with asbestos (i.e., sampling, demolition, etc.)?	☐	☐	☐	
20 If ACM or PACM has been identified at the site, is there a designated competent person?	☐	☐	☐	
21 Asbestos Competent Person contact information:				
22 **Lead -** is addressed in SMS 022. Please review the SMS prior to completing this section.	☐	SMS 022 Reviewed		
23 Do any employees perform scraping, sanding, painting, application, power tool cleaning, lead burning, riveting, or working with collection systems that involve lead containing materials?	☐	☐	☐	
24 **Silica** - is addressed in SMS 006. Please review the SMS prior to completing this section.	☐	SMS 006 Reviewed		
25 Does any employee perform work on silica-containing materials that generates dust or other fine particles?	☐	☐	☐	
26 **Other Specific Substances** - are addressed in SMS 002, SMS 009 and SMS 015. Please review the SMSs prior to completing this section.	☐	SMS 002, SMS 009, and SMS 015 Reviewed		
27 Mark all of the following products/chemicals that any employees work with or are exposed to: ☐ Acrylonitrile ☐ 1,2-Dibromo-3-chloropropane ☐ Arsenic ☐ Ethylene Oxide ☐ Benzene ☐ Formaldehyde ☐ Butadiene ☐ Methylenedianiline ☐ Methylene Chloride ☐ Suspected Carcinogens ☐ Vinyl Chloride ☐ Coke Oven Emissions ☐ Cotton Dust ☐ Pesticides/Fungicides/ Herbicides	☐	☐	☐	
Non-Ionizing and Ionizing Radiation				
Non-Ionizing Radiation - is not addressed in a specific SMS.				
28 Do any employees work with lasers?	☐	☐	☐	
29 Do any employees work with radiofrequency sealers?	☐	☐	☐	
30 Do any employees work with or near any other devices that actively emit radiofrequency radiation, (e.g., radar systems, high energy microwave systems, etc.)?	☐	☐	☐	
31 **Ionizing Radiation** - is addressed in SMS 052 and SMS 044. Please review the SMS prior to completing this section.	☐	SMS 052 and SMS 044 Reviewed		
32 Are employees exposed to ionizing radiation from sources other than a sealed source (e.g., uranium mill tailings)? If yes, are any of the employees on the site classified as a radiation worker?	☐	☐	☐	If yes, identify Radiation Safety Officer (RSO).
33 Do we possess, control, or use any ionizing radiation sources or devices that generate radiation (e.g., XRF) and/or do we have any employees who transport gauges or sources in vehicles or ship them via air/common carrier?	☐	☐	☐	If yes, identify Radiation Safety Officer (RSO).

Evaluation Questions: Selecting "Needs Further Evaluation" means that additional assistance is requested/needed beyond site resources.	**Yes**	**No**	**Needs Further Evaluation**	**Comments:**
Biohazards				
34 **Bloodborne Pathogens/Biohazards** - are addressed in SMS 051 and SMS 047. Please review the SMS prior to completing this section.	☐ SMS 051 and SMS 047 Reviewed			
35 Are any employees required to work with or be potentially exposed to bloodborne pathogens or biohazards (e.g., pathogenic organisms) as part of their job?	☐	☐	☐	
Other Potential Exposure Hazards				
36 Are there any other hazardous substances, chemicals, or other sources present in the workplace that could create employee exposure at unsafe levels that were not listed above?	☐	☐	☐	
Air Monitoring				
37 Has air monitoring for any potential hazardous substances been done within the last 3 years?	☐	☐	☐	
38 If "Yes" to Question 37, were any substances found above established action or exposure limits?	☐	☐	☐	
39 Person responsible for and location of air monitoring records:				
Waste Operations & Remediation				
40 **Hazardous Waste Operations –** SMS 017. Please review the SMS prior to completing this section.	☐ SMS 017 Reviewed			
41 Do any employees perform remediation construction activities, field construction sampling, or supervise activities at hazardous waste remediation sites or hazardous waste treatment, storage, or disposal (TSD) facilities in which the employee could be exposed to hazardous substances above permissible exposure levels (e.g., work in exclusion zones)?	☐	☐	☐	
42 If Yes, how many days per year?	☐ 1-29 Days/year ☐ 30+ Days/year			
Field & Laboratory				
43 Do any employees work in a chemistry laboratory 30 or more days/year?	☐	☐	☐	
44 Do any employees work on a pilot plant project 30 or more days/year?	☐	☐	☐	
45 Do any employees conduct bench scale chemical operations 30 or more days/year?	☐	☐	☐	
Hearing/Noise				
46 **Hearing/Noise –** is addressed in SMS 026. Please review the SMS prior to completing this section.	☐ SMS 026 Reviewed			
47 Are <u>any</u> employees at any time working around operating machinery or other noisy conditions (loud enough to affect normal conversation)?	☐	☐	☐	
48 Is there any intermittent/occasional high noise levels at your work site (as loud as or louder than a chain saw)?	☐	☐	☐	
49 Has noise level monitoring or noise dosimetry been performed within the last 3 years?	☐	☐	☐	
50 Is any hearing protection provided or worn at your work site (ear plugs and/or ear muffs)?	☐	☐	☐	
51 Do noise levels equal or exceed an 8-hour time-weighted average of 85 decibels for any employees or subcontractors?	☐	☐	☐	

Evaluation Questions: Selecting "Needs Further Evaluation" means that additional assistance is requested/needed beyond site resources.	Yes	No	Needs Further Evaluation	Comments:
52 Person responsible for and location of noise level monitoring or dosimetry records:				
53 If "Yes" to Question 50, Is annual training provided to every affected employee? (Training should include the effects of noise, purpose of hearing protectors, selection, fitting, care and use of hearing protectors, and include demonstration of proper use of hearing protection if used)	☐	☐	☐	
54 If "Yes" to Question 50, are annual hearing tests performed on any of the employees at your work site related to noise exposure?	☐	☐	☐	
55 Person responsible for and location of hearing test (audiometry) records :				
Employment Physicals				
56 **DOT Physicals** - are addressed in SMS 024. Please review the SMS before completing this section.	☐	SMS 024 Reviewed		
57 Do any employees drive a truck with a gross vehicle weight rating of 10,000 pound or more?	☐	☐	☐	
58 Are any employees contractually required to have a DOT exam?	☐	☐	☐	
59 **Specific Chemical Hazards** – Will employees be exposures to specific chemical hazards (e.g., lead, asbestos, benzene) that will be required as part of an employment physical?	☐	☐	☐	
60 **Flight Physical -** Are any employees required to obtain a FAA flight physical?	☐	☐	☐	
International Work				
61 Are any employees required to work outside the United States for more than 30 days/yr.?	☐	☐	☐	
Diving Operations				
62 **Diving –** is addressed in SMS 085. Please review the SMS prior to completing this section.	☐	SMS 085 Reviewed		
63 Are any employees performing diving operations?	☐	☐	☐	

Anticipated Changes or Future Risks:	Yes	No	Needs Further Evaluation	Comments:
Do you anticipate any changes in work activities or conditions within the next 12 months that could affect the above answers of this questionnaire?	☐	☐	☐	
Description:				

Additional Information & Comments:

Information & Comments:

Action Items:

Interim/Immediate Actions:

1.
2.
3.
4.

Long Term Actions:

1.
2.
3.
4.

Completed By:

Name	Signature	Date
_____	_____	_____

Comments:

URS SAFETY MANAGEMENT STANDARD

Radiation Safety for Portable Gauges

1. Applicability

This standard applies to URS Corporation, and its subsidiary companies, where storage, maintenance, and use of portable gauges (e.g., nuclear-density gauges) containing sealed radioactive source material are conducted, except where such storage, maintenance, and use are conducted as part of Department of Energy (DOE) and Department of Defense (DOD) activities.

Further information on employee protection from ionizing radiation, including the "Declaration of Pregnancy" process, can be found in SMS 052 – Radiation Protection Program.

2. Purpose and Scope

The purpose of this standard is to protect URS personnel and members of the public from exposure to radioactive sealed source materials contained in portable gauges, and to control the use of such material in accordance with the requirements of licensing agencies such as the U.S. Nuclear Regulatory Commission (NRC) or States under an agreement with the NRC ("Agreement States").

This standard applies to any location that uses or stores portable gauges containing radioactive material, except those associated with DOE and DOD activities.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Appoint a Radiation Safety Officer (RSO). A location cannot store or use portable gauges containing radioactive sources without a Radioactive Materials License and the oversight of a RSO.

1. The RSO must complete radiation safety training as required by the gauge manufacturer and the agency regulating the use of radioactive material (Agency). This training can be obtained from the manufacturer or an appropriate third party.

2. An employee cannot commence RSO duties until this training is completed.

3. The RSO must develop, implement, and maintain the Radiation Safety Program in accordance with the requirements of the gauge manufacturer and/or the Agency. Supplemental Information A provides a Portable Gauge Radiation Safety Program Template.

4. The RSO must apply for and maintain a license from the Agency that covers all radioactive sources in all gauges that are or will be owned, rented, or leased by the location.

B. Dosimetry

1. Implement a radiation dosimetry program for all gauge operators in accordance with Agency requirements.

2. Provide dosimetry results to the Occupational Health Manager within 30 days of analysis for inclusion in employee medical records. Inform all operators of their exposures in writing.

3. Investigate the circumstances if any personal dosimeter analysis results exceed 0.125 rem for any quarter. Provide a written report to the respective safety manager.

C. Leak Tests

1. Perform leak tests either semi-annually or annually, depending on license and gauge manufacturer's requirements.

2. Refer to the gauge manufacturer’s instruction for leak test procedures.

3. Report all leak-test results indicating more that 0.005 microcuries of removable contamination. This report must be made to the Agency within 5 days of the test.

4. Retain leak-test results in the facility or site safety files.

D. Gauge Operators

1. Complete an operator's radiation safety training program, from either the gauge manufacturer or an appropriate third party, prior to transporting or using any gauge.

2. Operators who transport gauges in their vehicles or ship them via air/common carrier must complete Department of Transportation/International Air Transport Association (DOT/IATA) training every 3 years.

3. Do not allow use, transport, or shipping of gauges by employees who have not completed this training.

4. Immediately report any problems associated with gauges to the RSO. Such problems may include equipment malfunction, damage, theft, or other loss.

5. Notify the RSO prior to removing the gauge from its permanent storage place and complete Attachment 044-3 AMER – Utilization Log.

E. Transportation, Storage, and Security

1. Store and transport all gauges in strict adherence with the requirements of the location's Radiation Safety Program.

2. Conduct a quarterly inventory (Attachment 044-4 AMER) for all gauges.

3. Secure gauges with two independent physical controls whenever they are not in use (i.e., whenever the gauges are transported or in storage).

4. Address the following storage issues in the location's program:

   a. Device security

   b. Storage location and placarding (if required)

   c. Fire department notification

5. Address all relevant gauge transportation issues in the location's program. Such issues may include:

   a. Shipping papers

   b. Interstate transportation

   c. Proper shipping containers and labeling

   d. Device security

   e. DOT/IATA Training

   f. Emergency Response Information.

F. Agreement States

Many states have agreements with the NRC to regulate source materials. Refer to Supplemental Information A – Map of Nuclear Regulatory Commission Offices.

G. Audits

The RSO must audit their area of responsibility at least semi-annually using Attachment 044-1 AMER– Portable Gauge Audit Checklist.

5. Documentation Summary

A. Facility or Site Safety Files

Maintain all documents related to the project Radiation Safety Program. Such documents include, but are not limited to:

1. Written program.
2. License/Registration (where required).
3. Operator training documents.
4. Statement of Operator Authorization (listing of authorized Operators). See Attachment 044-2 AMER.
5. Leak test results.
6. Dosimetry results and results of any dosimetry investigations.
7. Semi-annual audits by RSO and records of any external agency audits.
8. Quarterly Inventory – See Attachment 044-4 AMER.
9. Utilization Logs – See Attachment 044-3 AMER.
10. Packaging (case) testing results.
11. Location-specific Radiation Safety Program.

B. Maintain a separate file for each gauge, to include:

1. Current and past leak test certificates.

2. Original gauge source certificates and Certificates of Competent Authority.

C. Field Records

Maintain the following with each gauge at all times:

1. A copy of the radioactive material license.
2. Statement of Operator Authorization.

6. Resources

A. Troxler Nuclear Gauges

B. NRC Guidance: Portable Gauge Licenses

C. SMS 052 – Radiation Protection Program

D. Attachment 044-1 AMER – Portable Gauge Audit Checklist

E. Attachment 044-2 AMER – List of Employees Authorized to Operate Portable Gauges

F. Attachment 044-3 AMER – Portable Gauge Utilization Log

G. Attachment 044-4 AMER – Portable Gauge Quarterly Inventory Form

7. Supplemental Information

A. Map of Nuclear Regulatory Commission Offices

B. Portable Gauge Radiation Safety Program Template

URS SAFETY MANAGEMENT STANDARD

Subcontractor Safety Management

1. Applicability

This standard is applicable to subcontractors retained by the Infrastructure & Environment and Federal Services divisions of URS Corporation and its subsidiary companies that perform:

- Intrinsically higher-risk construction-related activities (e.g., drilling, excavation, surveying, demolition, electrical contracting, steel erection etc.).
- Significant building or infrastructure alteration, demolition, and/or repair activities using their own workforce or equipment.
- Activities on hazardous waste sites.
- Activities in government services operations (e.g., aviation repair, vehicle repair, warehousing, facility operations, and maintenance) where the annual cost of the subcontract exceeds $1,000,000.
- An activity where URS does not supervise the day-to-day activities and work efforts of subcontractor workers.
- Activities related to railways and highway agencies (e.g., design, surveys).
- Activities that may have significant safety and/or environmental impact.
- Activities for clients who require formal approval of subcontractors.

This procedure is applicable to the operations of subcontractors and sub-subcontractors of any tier.

This procedure does not apply to third-party contractor operations where there is no subcontract relationship between the contractor and URS. Safety issues regarding third-party contractor operations are governed by project-specific contracts, and are not covered by this standard.

2. Purpose and Scope

This procedure provides requirements on the pre-evaluation of subcontractor safety and environmental programs; contractual risk management; subcontractor safety performance on the job site; and the responsibilities of the Project Manager with respect to subcontractor jobsite performance.

Each URS subcontractor must be evaluated at least annually using Attachment 046-1 AMER, “Subcontractor Safety Evaluation Form,” or equivalent client or

URS International Operations form, in order to perform work on any new URS projects.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Subcontractors must be competent and capable to perform their activities in a safe and environmentally sound manner.

B. Pre-qualification of Subcontractor – The Project Manager will complete the following procedures for all subcontractors retained on projects covered by this standard (the PM should also require subcontractors to follow these procedures with respect to pre-qualification of sub-subcontractors of any tier):

1. Request all subcontractor candidates to complete the attached Subcontractor Safety Evaluation Form (Attachment 046-1 AMER).

2. Conduct an assessment of each subcontractor's qualifications with respect to the subcontractor evaluation criteria contained in Attachment 046-2 AMER.

3. If the subcontractor does not meet the criteria established in Attachment 046-2 AMER, and URS must retain the contractor, the Subcontractor Variance Form (Attachment 046-3 AMER) must be completed and approved by a Regional, or Strategic Business Unit (SBU) Safety Manager.

4. Verify that subcontractors meet the insurance requirements as stated in URS' agreement with the subcontractor, or as approved by URS Legal Counsel or Contracting Manager/Officer.

5. If the subcontractor has been successfully evaluated within the last 12 months, that evaluation may be substituted.

6. For long-term operations, update this evaluation within 12 months of the previous evaluation.

C. Contractual and Risk Management Requirements of Subcontractors

1. Ensure that the subcontractor is contractually bound to comply with applicable client and URS Safety Program requirements.

2. Ensure that subcontractor is contractually bound to develop additional safety procedures for work that is exclusive to their activities on the site, and for which they may have superior knowledge.

3. Assess compliance of subcontractor's insurance with the URS subcontract requirements (including, but not limited to, necessary types and amounts of coverage, URS Corporation additional insured endorsement, etc.).

4. Ensure that URS has the right in its subcontract, without liability to URS, to stop the subcontractor's work in the event of any violations of the applicable safety requirements.

5. Project Managers shall require subcontractors to follow pre-qualification procedures for lower-tied subcontractors.

C. Subcontractor Safety Representative

1. Require each subcontractor to appoint a Subcontractor Safety Representative (SSR) who:

   a. Is knowledgeable of the subcontractor's activities.

   b. Understands the safety requirements of the subcontractor's activities.

   c. Has the ability to recognize and the authority to correct safety deficiencies and execute a stop work order should an imminent danger arise.

   d. Has the responsibility for the administration of the subcontractor Health and Safety Program.

   e. Will serve as the direct contact with URS Corporation regarding resolution of health and safety issues.

D. Communication

1. Provide the SSR with information regarding site safety program including but not limited to:

   a. Client Requirements

   b. URS Safety Program

   c. Site Hazard Communication Program

d. Site Emergency Action Plan

e. Any additional safety information from other contractors or subcontractors working on the site.

2. Provide the SSR with the name of the URS project or site contact and alternate for addressing site health and safety issues.

3. Require the participation of subcontractors in all site safety briefings.

4. Require subcontractor compliance with all safety directives and/or stop work orders issued by the URS site representatives.

5. Require the subcontractor to notify the URS project or site manager when they will utilize short service employees (SSE) (i.e., employees with less than six months of experience) to perform on-site activities. The URS project or site manager must approve the use of any SSE by the subcontractor prior to mobilization. Site management will interact with the short service employee to verify their level of competency and manage the SSE in accordance with SMS 078 – Short Service Employees.

6. Prior to the start of work, roles, responsibilities, communication chain-of-command, and emergency preparedness procedures will be established.

E. Subcontractor Performance

1. To the extent reasonable in light of URS' scope of work under the client contract, visit the site and periodically observe subcontractor's operations (i.e., conduct spot checks) to assess whether subcontractor appears to be conducting their operations in accordance with applicable safety requirements. Periodically review any required subcontractor health and safety written documentation for compliance with applicable requirements.

2. In the event that unsafe acts or unsafe conditions are observed, immediately stop work, and bring them to the attention of the SSR for resolution.

3. Investigate all incidents related to subcontractor operations to identify causes and effect corrective actions.

4. In the event of serious and/or continuing subcontractor breaches of applicable requirements, contact legal counsel to assess whether formal contractual action is appropriate under the subcontract.

5. Once a job is completed, a subcontractor's performance should be reviewed and feedback provided to subcontractor management.

F. Subcontractor Database (Infrastructure & Environment only)

1. A database is available to store Attachment 046-1 AMER completed by subcontractors. The database can be accessed at:

   http://thesourse.urscorp.com/TheSoURSe/Corporate/HSE/SubcontractorSafetyPreQualification.NSF

2. A Regional Safety Manager or designee can upload completed Attachment 046-1 AMER. Contact your Office Safety Representative or Regional Safety Manager for information on how to access the database.

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Subcontractor Safety Evaluation Form (Attachment 046-1 AMER)

B. Applicable and current Insurance Certificates

C. Names and telephone numbers of SSR for each subcontractor

D. Verification of safety documents transmitted to subcontractors and received from subcontractors

E. Identified safety deficiencies as applicable for subcontractors and verification of correction of conditions

F. All other safety related documentation between URS and subcontractor such as training certifications, etc.

G. Subcontractor safety plan, incident reports, and resolution reports.

6. Resources

A. Attachment 046-1 AMER – Subcontractor Safety Evaluation Form

B. Attachment 046-2 AMER – Subcontractor Evaluation Criteria

C. Attachment 046-3 AMER – Subcontractor Variance Form

It is the policy of URS to provide a safe and healthful environment for all of its employees through the prevention of incidents. As such, URS considers safety as paramount and requests the following information of our subcontractors.

Company Name: _____ Date: _____

Address: _____ Contact Name: _____

_____ Title: _____

City: _____ Telephone: _____

State/Province: _____ Fax: _____

Zip/Postal Code: _____ Email: _____

Type of services performed: _____

Has your company previously performed work as a subcontractor to URS? ☐ Yes ☐ No

If "Yes" explain the nature of the work, project location, and project date, and URS Project Manager and telephone number.

_____

_____

_____

_____

_____

How many years has your organization been in business under your firm's name? _____

If applicable, what was your organization's previous name(s)? _____

Does your company have the appropriate licenses, registrations and insurance? ☐ Yes ☐ No

1. WORKERS' COMPENSATION EXPERIENCE INFORMATION

(United States Only)

Insurance Carrier(s): _____

Contact for Insurance Information: _____

Title: _____ Telephone: _____ Fax: _____

A. For U.S. operations - List your firm's Interstate Workers' Compensation Experience Modification Rate (EMR) for the three most recent years: (Information is available from your workers' compensation insurance carrier.)

   For international operations - List the applicable performance rating (e.g., NEER Performance Index in Canada) for your company.

Year	EMR Interstate (or international equivalent)
_____	_____
_____	_____
_____	_____

B. We require verification of your EMR (or international equivalent). Please attach the endorsement page from your policy listing your rating, or have your insurance carrier or broker provide this information on their letterhead.

C. If your rating exceeds 1.0 for any one or more years above, please explain why:

Comments: _____

_____

_____

_____

2. SAFETY PERFORMANCE DATA

A. Please consolidate your firm's injury and illness data for the last 3 years and complete the table below. The information provided must be for your company as a whole, not an individual office location. See page 8 for definitions of terms used below. **For U.S. operations, provide copies of your OSHA 300 and 300A logs for the last 3 years.**

	YEAR	YEAR	YEAR
1. Average Number of Employees			
2. Hours Worked			
3. Fatalities[1]			
4. Permanent Total Disabilities (PTD)			
5. Lost Workday Cases (LWC)			
6. Lost Time Injuries (LTI) [Rows 3+4+5]			
7. Lost Time Injury Rate (LTIR)			
8. Lost Work Days			
9. Lost Work Day Severity Rate			
10. Restricted Workday Cases (RWC)			
11. Medical Treatment Cases (MTC)			
12. Total Recordable Cases (TRC) [Rows 6+10+11]			
13. Total Recordable Incident Rate (TRIR)			
14. Environmental Occurrences			

[1] For each fatality, please attach a description of the accident, including cause, lessons learned, actions taken resulting from that fatality, and actions taken to prevent future fatalities.

B. Has your company been issued any health and safety related citations/orders from any federal, state, province, or local regulatory agency during the past 3 years? ☐ Yes ☐ No

If "Yes", please explain the nature of the citation/order, classification, and final fine (if applicable) in an attachment to your evaluation form submittal.

3. RISK MANAGEMENT / INSURANCE DATA

A. Are you able to provide URS with insurance certificates naming URS, and if requested, URS' client as an additional insured? ☐ Yes ☐ No

B. Please provide proof of current Workers' Compensation and Employer's Liability Insurance coverage or proof of exemption. (For U.S. operations, *attach certificate naming URS as Additional Insured*).

4. HEALTH AND SAFETY PROGRAM

A. Does your company operate a health and safety management system that is third-party registered and compiles with OHSAS 18001? ☐ Yes ☐ No

B. Does your company maintain a written Safety program? ☐ Yes ☐ No

If "Yes," please include a copy of the Table of Contents.

C. Is your company capable of preparing safety procedures specific to the work proposed for this project? ☐ Yes ☐ No

D. Does your firm have a safety officer? ☐ Yes ☐ No

If "Yes," please provide name and telephone number.

Name: _____ Telephone: _____

E. Do you hold jobsite safety meetings? ☐ Yes ☐ No

How Often?

Daily ☐ Weekly ☐ Bi-Weekly ☐ Monthly ☐ Less Often, As needed ☐

Are the safety meetings documented? ☐ Yes ☐ No

F. Does your firm have the following policies/procedures? *If "Yes," please provide copies of the policies/procedures.*

1. Stop Work? ☐ Yes ☐ No
2. Short Service Employee? ☐ Yes ☐ No
3. Fitness for Duty? ☐ Yes ☐ No

G. Is a program in place for the reporting and correction of workplace hazards? ☐ Yes ☐ No

H. Are workers encouraged to intervene when unsafe conditions are observed? ☐ Yes ☐ No

I. Have the safety hazards associated with your job activities been identified? ☐ Yes ☐ No

Has a risk assessment been performed on these hazards? ☐ Yes ☐ No

J. Does your company use subcontractors? ☐ Yes ☐ No

If "Yes", please provide details of how you select and manage subcontractors.

5. ACCIDENT/INCIDENT REPORTING, INVESTIGATION, AND INJURY MANAGEMENT

A. Does your company have a process in place for immediate reporting, investigation, and follow-up of incidents, near-misses and occupational injuries? ☐ Yes ☐ No

If "Yes," who receives copies of the report? (Job Title) _____

(Job Title) _____

(Job Title) _____

B. Who is responsible for investigation and completion of your incident report forms? (Job Title) _____

Please provide your company's incident reporting procedures.

Please provide a copy of an investigation report conducted within the last year.

C. Does your company have an injury management procedure? ☐ Yes ☐ No
If "Yes," provide a copy of the injury management procedure.

D. Does your injury management procedure include the use of occupational clinics (for non-critical injuries) as a preferred method of medical care? ☐ Yes ☐ No

E. Does your company have a nurse or doctor on staff? ☐ Yes ☐ No

F. Does your company use a third party to provide medical advice to injured employees? ☐ Yes ☐ No

If "Yes," which third-party company is used? _____

6. SAFETY TRAINING

A. Do you have or provide company paid safety training to your employees? ☐ Yes ☐ No

B. Does your company have a formal safety orientation program for new employees? *If "Yes," submit an outline for evaluation.* ☐ Yes ☐ No

If "Yes", are records kept? ☐ Yes ☐ No

If "Yes," who conducts the orientation? (Job Title) _____

If "No," how are new employees informed of safety policies, procedures and expectations?

_____

_____

_____

C. Do you have additional safety training for newly hired or promoted foremen/superintendents? ☐ Yes ☐ No

Topics Covered:

_____

_____

_____

D. Do you maintain a record of all employees' training? ☐ Yes ☐ No

E. Are your employees enrolled in a Defensive Driving Training Program? ☐ Yes ☐ No

If "Yes," describe the training, including the training provider, who receives the training, and course length.

_____

_____

_____

Please provide a copy of training records from a recent safety training course.

7. MEDICAL / DRUG TESTING

A. Does your company have a Drug/Alcohol policy or program? ☐ Yes ☐ No

If "Yes," does your drug and alcohol program include the following:

Pre-employment testing ☐ Yes ☐ No

Testing for Cause ☐ Yes ☐ No

Post-accident testing ☐ Yes ☐ No

Random testing ☐ Yes ☐ No

B. Does your company have an ongoing medical surveillance program as required by applicable governmental regulations? ☐ Yes ☐ No

Do you conduct medical examinations for:

Pre-employment ☐ Yes ☐ No

Pre-placement Job Capability ☐ Yes ☐ No

Hearing Function (Audiograms) ☐ Yes ☐ No

Pulmonary ☐ Yes ☐ No

Respiratory ☐ Yes ☐ No

8. COMPLIANCE ASSURANCE

A. Does your company conduct safety system audits and/or inspections? ☐ Yes ☐ No

1. How often? _____
2. Who conducts the audits/inspections? (Job Title) _____
3. Who receives the reports? (Job Title) _____
4. Are audits/inspections documented? *If "Yes," provide an example.* ☐ Yes ☐ No

9. ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY

A. Has your company been issued any environmental related citations/orders from any federal/state/province, or local regulatory agency during the past 3 years? ☐ Yes ☐ No

If "Yes", please explain the nature of the citation/order, classification, and final fine (if applicable) in an attachment to your evaluation form submittal.

B. Does your company have an Environmental Management and/or Sustainability Policy Statement (can be incorporated into an HSE policy statement)? ☐ Yes ☐ No

C. Does your company have any of the following:

i. Process to assess environmental compliance requirements? ☐ Yes ☐ No

ii. Process to identify environmental impacts? ☐ Yes ☐ No

iii. Waste Management Program (including recycling)? ☐ Yes ☐ No

iv. Procurement policies requiring purchase of recycled materials? ☐ Yes ☐ No

v. Energy use tracking and management policies? ☐ Yes ☐ No

vi. Green House Gas emissions reduction program? ☐ Yes ☐ No

vii. Tracking of "Carbon Footprint"? ☐ Yes ☐ No

viii. Environmental Certifications (e.g., ISO)? ☐ Yes ☐ No

ix. Water Management/Conservation? ☐ Yes ☐ No

x. Environmental Performance Metrics? ☐ Yes ☐ No

Comment on any other areas of your company's programs and policies that you think will be appropriate in our evaluation.

_____

_____

_____

_____

VERIFICATION OF DATA

Please have an officer of the company sign below certifying that the information provided in this document is current and correct. Misrepresentation of data requested is grounds for immediate termination of contracts and disqualification from future consideration.

Name _____ Title _____

Signature _____ Date _____

REQUIRED INFORMATION SUBMITTAL

Please provide copies of the following documents with the completed evaluation form. **If the following information is not included, provide a written reason for the failure to do so.**

- ☐ EMR documentation, or international equivalent, from your insurance carrier
- ☐ U.S. Only - OSHA 300 and 300A Logs (Past 3 Years) – *Employee names must be removed.*
- ☐ Description for any fatalities (if applicable)
- ☐ Insurance Certificate(s) – *Naming URS as Additional Insured*
- ☐ Explanation of any health and safety related order/citation (if applicable)
- ☐ Safety Program (Table of Contents)
- ☐ Stop Work, Short Service Employee, Fitness for Duty Policies/Procedures
- ☐ Accident/Incident Reporting Procedure
- ☐ Example of an Investigation Report conducted within the past year, if applicable
- ☐ Injury Management Procedure
- ☐ Safety Orientation for New Hires (Outline)
- ☐ Example of Safety Training Records
- ☐ Example of Job Site Safety Inspection conducted within the past year
- ☐ Explanation of any environmental related order/citations (if applicable)

Definitions for Question 2.A.

Hours Worked - The total number of hours of employment including paid overtime and training but excluding leave, sickness and unpaid overtime hours. Hours worked should be calculated separately for company and contractor personnel.

Fatality - A death resulting from a work related injury or occupational illness, regardless of the time intervening between the incident causing the injury or exposure causing illness and the death.

Permanent Total Disability (PTD) - Any work related injury that permanently incapacitates an employee and results in termination of employment.

Lost Workday Cases (LWC) - Any work related injury/illness that renders the injured person temporarily unable to perform their normal work or restricted work on any day after the day on which the injury occurred. Any day includes rest day, scheduled holiday, public holiday or subsequent day after ceasing employment. Note for U.S. Based Companies: This definition is different from the OSHA definition, which considers restricted work as a lost workday case.

Lost Time Injuries (LTI) - The sum of injuries/illnesses resulting in fatalities, permanent total disabilities and lost workday cases, but excluding restricted work cases and medical treatment cases.

Lost Time Injury Rate (LTIR) - The number of lost time injuries/illnesses per 200,000 exposure hours.

$$\frac{\text{Number of Lost Time Injuries X 200,000 hours}}{\text{Hours Worked}}$$

Lost Work Days (LWD) – The number of days away from work experienced by all employees during the year.

Severity Rate -

$$\frac{\text{Total number of lost work days X 200,000 hours}}{\text{Hours Worked}}$$

Restricted Workday Cases (RWC) - Any work related injury/illness, which renders the injured person temporarily unable to perform all, but still some, of their normal work on any day after the day on which the injury occurred.

Medical Treatment Cases (MTC) - Any work related injury/illness that involves neither lost workdays or restricted workdays, but which requires treatment by a physician or other medical specialist. Medical treatment does not include first aid.

Total Recordable Cases (TRC) - The sum of injuries/illness resulting in fatalities, permanent total disabilities, lost workday cases, restricted workday cases and medical treatment cases.

Total Recordable Incident Rate (TRIR) - The number of total recordable cases (see definitions above) per 200,000 exposure hours. This rate is determined by the following formula:

$$\frac{\text{Number of Total Recordable Cases X 200,000 hours}}{\text{Hours Worked}}$$

Environmental Occurrence – Any environmental occurrence required to be reported to a statutory body.

THIS PAGE IS TO BE COMPLETED BY URS CORPORATION.

Subcontractor Name: _____

Project or Site Manager Evaluation:

Pass ☐ Subcontractor meets the criteria established in Attachment 046-2 AMER, and no further action is required.

Fail ☐ Subcontractor does not meet the criteria established in Attachment 046-2 AMER. If a unique business need exists, then a subcontractor variance must be initiated using Attachment 046-3 AMER. The variance must be submitted to a Regional or Strategic Business Unit Safety Manager for evaluation.

Project or Site Manager Name: _____

Signature: _____

Date: _____

Prior to engaging a subcontractor on a project, Project Managers are required to ensure that the contractor has an effective safety program, is capable of conducting its operations in a safe manner, and has appropriate insurance coverage. The following criteria shall be followed in determining whether the subcontractor may be used on a URS project.

Note: Some questions/answers (Sections 4 through 9) from Attachment 046-1 AMER are not discussed in the evaluation criteria below. These questions are asked and the answers are intended to help the Project Manager understand the culture and/or priorities of the subcontractor.

GENERAL INFORMATION

If subcontractor has performed work for URS previously, check safety performance history with previous URS Corporation Project Manager.

The numbers in the sections below directly correspond to the questions in Attachment 046-1 AMER.

WORKERS' COMPENSATON EXPERIENCE INFORMATION

1.A. For any EMR, or international equivalent, listed as greater than 1.0, the contractor has failed the sub-evaluation. Further consideration may not occur without referral to a URS Regional, or Strategic Business Unit (SBU) Safety Manager in your Region for further assessment.

If all EMRs listed are 1.0 or below, continue with the evaluation.

SAFETY PERFORMANCE

2. If the contractor has had a fatality (line 3), further consideration may not occur without referral to a URS Regional or SBU Safety Manager in your Region.

For any Total Recordable Incident Rate (line 13 in table) listed as greater than 4.0, the subcontractor has failed the evaluation. Further considerations may not occur without referral to a URS Regional or SBU Safety Manager in your Region for further assessment.

If the Total Recordable Incident Rates are at or below 4.0, continue with the assessment.

2.B. In the U.S., determine the subcontractor's citation history at http://osha.gov/pls/imis/establishment.html. Query Case Status Open and Closed. Compare the published data to the subcontractor questionnaire. The subcontractor must explain any discrepancies.

Look for willful, serious, and repeat violations. If they suggest a problem, request information and refer to a URS Regional or SBU Safety Manager in your Region for further assessment.

RISK MANAGEMENT/INSURANCE DATA

3.A. The ability to provide Insurance Certificates naming URS Corporation as an additional insured is required. Refer any questions to the URS Legal Department.

3.B Proof of Workers' Compensation Insurance (or proof of exemption) is required. Refer any questions to the URS Legal Department.

SAFETY PROGRAM

For Sections 4 through 8, if a subcontractor answers 'No' to any of the questions, the Project Manager needs to consider the type of work the subcontractor will be performing (e.g., HAZWOPER work requires medical surveillance exams) to determine if the answer is acceptable.

4.B A "No" answer should be referred to a URS Regional or SBU Safety Manager in your Region for further assessment. For small subcontractors, a 'No' answer may be acceptable with good incident and insurance rate statistics. Generally, some minimal program is expected depending on the breadth and complexity of the work. Contact a URS Regional or SBU Safety Manager in your Region for further assessment if you have any questions or doubts.

4.C. It is expected that a subcontractor being hired to perform services on the project site should be the best prepared to address safety issues for their operations, especially when specialty work is being conducted, or for work in which the subcontractor possesses superior knowledge of their operations.

A "No" answer should be referred to a URS Regional or SBU Safety Manager in your Region for further assessment.

Exception:

If the subcontractor does not meet the other requirements outlined above, the decision will be that the subcontractor will not be used. However, if a unique business need exists (e.g., subcontractor is a specialty subcontractor), the Project Manager should initiate a Subcontractor Variance (Attachment 046-3 AMER). The Subcontractor Variance must be approved by a Regional or SBU Safety Manager.

Subcontractor Name: _____

Project or Site Location: _____

Description of Work to be Performed:

_____

_____

_____

_____

_____

Explain any of the following conditions that apply to the subcontractor:

- EMR greater than 1.0
- TRIR greater than 4.0
- Fatalities within the past 3 years
- Willful, serious, or repeat citations

_____

_____

_____

_____

_____

_____

_____

_____

Why should we use this subcontractor?

Have other similar subcontractors been evaluated? If so, please explain.

Mitigations by URS to manage the risks.

Review:

	Project or Site Manager Requesting Variance	**Safety Manager Approval**
Name:	_____	_____
Date:	_____	_____
Signature:	_____	_____

URS SAFETY MANAGEMENT STANDARD

Biological Hazards

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where job activities are performed primarily in outdoor environments.

2. Purpose and Scope

The purpose of this standard is to provide information that will help eliminate or reduce illnesses and injuries transmitted by plants, insects, animals, and pathogenic agents. Although there are many animals and insects that are potentially harmful to humans (e.g., bees, spiders, bears, and rodents), this standard focuses on six common biological hazards: ticks, poison plants, mosquitoes, snakes, Valley Fever, and water-borne pathogenic agents. Refer to SMS 051 – Bloodborne Pathogens for additional information.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Ticks

1. Precautionary Measures

a. Background information: Ticks do not jump, crawl, or fall onto a person. They are picked up when clothing or hair brushes a leaf or other object the tick is on. Ticks are generally found within 3 feet of the ground. Once picked up, they will crawl until they find a likely site to feed. Often they will find a spot at the back of the knee, near the hairline, behind the ears, or at pressure points where clothing presses against the skin (underwear elastic, belts, neckline). The best way to prevent tick-borne diseases is not to be bitten by a tick. Ticks can carry a number of diseases, including the following:

i. *Lyme Disease* is an infection caused by the corkscrew-shaped bacteria *Borrelia burgdorferi* that is transmitted by the bite of deer tick (ixodes) and western black-legged ticks. The disease occurs in the forested areas of North America, Europe, and Asia. Symptoms that occur within 3 to 30 days following a tick bite include: a spreading ‘bulls-eye” rash, fever, fatigue, headache, and joint and muscle aches. Prompt treatment with antibiotics is essential in order to prevent more serious complications that may occur if left untreated.

ii. *Rocky Mountain Spotted Fever* is an infection caused by the bacteria *Rickettsia rickettsii*. The disease occurs in North, Central, and South America. Other Rickettsia organisms cause disease worldwide (Mediterranean, Japan, Africa, North Asia). Symptoms which occur 2-6 days following a tick bite include: fever, nausea, vomiting, diarrhea, rash, muscle and joint pain. The disease is treated with antibiotics.

iii. *Babesiosis* is caused by hemoprotozoan parasites of the genus *Babesia*. It is transmitted by the ixodid tick. The geographic distribution is worldwide. Symptoms include fever, chills, fatigue, muscle aches, and an enlarged spleen and liver. The disease is treated with anti-protozoan drugs.

iv. *Ehrlichiosis* is caused by several bacteria of the genus *Ehrlichiae*. The geographic distribution is global, primarily in temperate regions. Symptoms which occur 5-10 days following a tick bite include fever, headache, fatigue, muscle aches, nausea, vomiting, diarrhea, confusion, and occasionally a rash. The disease is treated with antibiotics.

b. Avoidance of tick habitats

Whenever possible, persons should avoid entering areas that are likely to be infested with ticks, particularly in spring and summer when nymphal ticks feed. Ticks favor a moist, shaded environment, especially which provided by leaf litter and low-lying vegetation in wooded, brushy, or overgrown grassy habitat. Both deer and rodent hosts must be abundant to maintain the life cycle of the tick.

c. Personal Protective Equipment

i. Wear light colored clothing or white Tyvek® to allow you to see ticks that are crawling on your clothing.

ii. Tuck your pant legs into your socks or boots, wear high rubber boots, or use tape to close the opening where they meet so that ticks cannot crawl up the inside of your pant legs.

iii. Wear a hat, and tie back long hair.

iv. Apply repellents to discourage tick attachment. Repellents containing permethrin can be sprayed on boots and clothing, and will last for several days. Repellents containing DEET (n,n-diethyl-m-toluamide) can be applied to the skin, but will last only a few

hours before reapplication is necessary. Apply according to Environmental Protection Agency guidelines to reduce the possibility of toxicity.

d. Tick Check

i. Change clothes when you return from an area where ticks may be located.

ii. Shower to wash off any loose ticks.

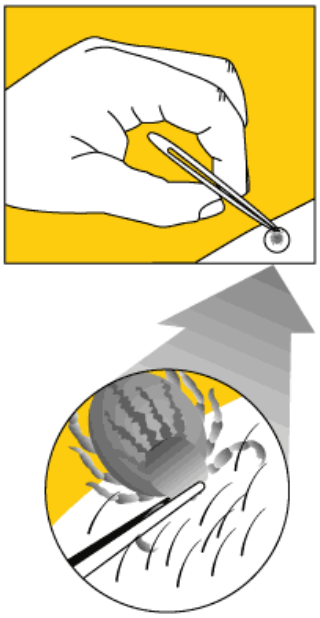
iii. Check your entire body for ticks. Use a hand held or full-length mirror to view all parts of your body.

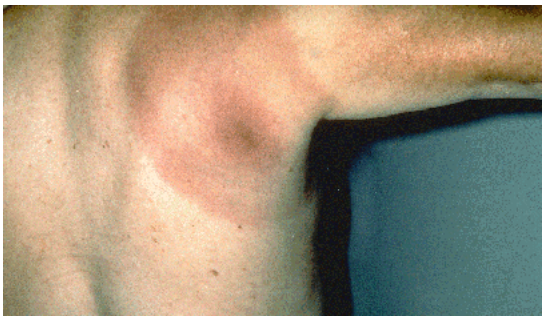
iv. Place clothing worn in tick infested areas into the dryer for at least 30 minutes in order to kill any ticks.

2. Tick Removal

Because it takes several hours of attachment before microorganisms are transmitted from the tick to the host, prompt removal of attached or crawling ticks is an important method of preventing disease. Remember, folklore remedies of tick removal to do not work! Methods such as the use of petroleum jelly or hot matches may actually make matters worse by irritating the tick and stimulating it to release additional saliva or regurgitate gut contents, increasing the chances of transmitting disease.

The best method to remove an attached tick is with a set of fine tipped tweezers.





a. Use fine-tipped tweezers. When possible, avoid removing ticks with bare hands.

b. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with the tweezers.

c. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva and gut contents) may contain infectious organisms.

d. After removing the tick, thoroughly wash your hands with soap and water. Apply an antiseptic to the bite site. If the mouthparts cannot be removed, clean the wound, apply an antibiotic ointment. Keep the wound covered and dry to prevent the risk of infection.

e. Disinfect the tweezers.

f. Save the tick for identification in case you become ill. This may help the doctor make an accurate diagnosis. Place the tick in a vial or plastic zip lock bag and put it in the freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag.

3. Reporting and Medical Follow-Up

Tick bites must be reported and managed in accordance with SMS 049 – Incident Reporting, Notifications & Investigation and SMS 065 – Injury and

Claims Management. In most circumstances, medical treatment of persons who only have a tick bite is not recommended. However, individuals who are bitten by a tick should seek medical attention if any signs and symptoms of tick-borne disease develop over the weeks following the tick bite.

B. Poisonous Plants

1. Background Information

Poison ivy and poison oak plants are the most common cause of allergic contact dermatitis in North America. These poisonous plants can be a hazard for many various outdoor activities at work, home, and play. Skin contact with the oleoresins (urushiol) from these plants can cause an itchy, red, oozing, blistered rash in sensitive individuals. Oil content in the plants is highest in the spring and summer; however, the plants are even hazardous in the winter when they have dropped their leaves. There are three types of exposure:

a. Direct contact: An initial skin exposure is necessary to “sensitize” the individual. Subsequent contact in a sensitized person will result in a rash appearing within 4 to 48 hours. Approximately 50 to 70 percent of the population is sensitized. Poison plant dermatitis is usually characterized by areas of linear or streaked patches where branches of the plant brushed the skin.

b. Indirect contact: Skin exposure can happen indirectly. Clothing, shoes, tools, personal protective equipment, and other items can be contaminated with the oils and maintain potency for months.

c. Airborne smoke contact: Never burn poison plants. Droplets of oil can be carried by smoke and enter the respiratory system, causing a severe internal outbreak.

Poison plant rash is not contagious. Skin contact with blister fluid from an affected individual will not cause dermatitis in another sensitized person. Scratching the rash can only spread it to other parts of your body if the oil is still on your skin. After the oil has been washed off or absorbed by the skin, scratching will not spread the rash.

The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each and are green in the summer and red in the fall. Both plants also have greenish-white flowers and berries that grow in clusters. All parts of these plants are toxic.

Poison Ivy grows as a small plant, vine, and as a shrub. Leaves always consist of three glossy leaflets.

Poison Oak grows as a shrub or vine. It has three leaflets that resemble oak leaves.

Poison Sumac grows as a woody shrub or small tree from 5 to 25 feet tall. It has 7 to 13 leaves that grow opposite each other with a leaflet at the tip. Poison sumac grows in wet soils, typically in swamps and bogs.

Poison Sumac

2. Precautionary Measures

   a. The best approach is to learn to identify the plants and avoid them.

   b. Wear long pants and long sleeves, boots, and gloves.

   c. Barrier skin creams may offer some protection if applied before contact.

d. Avoid indirect contact with tools, clothing, or other objects that have come into contact with a crushed or broken plant. Don't forget to wash contaminated clothing and clean up contaminated equipment.

e. If you can wash exposed skin areas within 3 to 5 minutes with cold running water, you may keep the urushiol from penetrating your skin. Proper washing may not be practical in remote areas, but a small wash-up kit with pre-packaged alcohol-based cleansing tissues can be effective.

3. Reporting and Medical Follow-Up

Exposure to poisonous plants must be reported and managed in accordance with SMS 049 – Incident Reporting, Notifications & Investigation and SMS 065 – Injury and Claims Management.

Home treatment: Calamine lotion and an oatmeal (1 cup to a tub full of water) bath can help relieve itching. To prevent secondary skin infection, scratching is not helpful, and the finger nails should be cut to avoid damage to the skin. Over-the-counter hydrocortisone cream can decrease inflammation and itching; however, read the label and use according to directions.

When to see the doctor: Severe cases may require further treatment. A physician should be seen if the rash appears infected, is on the face or other sensitive body areas, or is too extensive to be easily treated at home.

C. Mosquito-Borne Diseases

1. Background Information

a. Arboviral encephalitis is a viral illness causing inflammation of the brain, and is transmitted to humans by the bite of infected mosquitoes. Globally, there are several strains, including: Eastern equine, Japanese, La Crosse, St. Louis, West Nile, and Western equine encephalitis. Some of the strains have a vaccine. Symptoms of infection are nonspecific and flu-like: fever, headache, and tiredness. Fortunately, only a small proportion of infected people progress to encephalitis. Treatment is supportive, antibiotics are not effective.

b. Malaria is a serious but preventable disease spread by the bite of an infected anopheline mosquito. It is caused by four species of the parasite *Plasmodium (P. falciparum, P. vivax, P. ovale, and P malariae)*. Malaria-risk areas include primarily tropical areas of Central

and South America, Africa, India, Southeast Asia, and the Middle East. Symptoms of malaria, which occur 8 days to 1 year after infection, include fever, shaking, chills, headache, muscle ache, tiredness, jaundice, nausea, vomiting, and diarrhea. Malaria can be cured with prescription drugs and may be prevented by prophylactic drugs when used correctly.

c. Dengue Fever is a potentially life-threatening viral illness transmitted by the bite of the Aedes mosquito, found primarily in urban areas. The disease is found in most of tropical Asia, the Pacific Islands, Central and South America, and Africa. There are four dengue virus serotypes. Symptoms include sudden onset, high fever, severe headache, joint and muscle pain, rash, nausea, and vomiting. There is no specific treatment and no vaccine.

d. Yellow Fever is a viral disease transmitted between humans by mosquitoes. It occurs only in certain areas of Africa and South America. There is a vaccine that confers immunity lasting 10 years or more. Symptoms begin 3 to 6 days after the mosquito bite, and include fever, nausea, vomiting, headache, slow pulse, muscle aches, and restlessness. Treatment is symptomatic.

e. West Nile virus is a viral disease transmitted by mosquitoes. It occurs in North America, Europe, Africa, west and central Asia, and the Middle East. There is no vaccine for West Nile virus. Symptoms include nausea, vomiting, diarrhea, muscle aches, headache, rash, sore throat, and swollen lymph glands. Symptoms may last 3-6 days or up to a month.

2. Precautionary Measures

a. Insect Repellent: Use insect repellants that contain DEET. The effect should last about 4 hours. Always use according to label directions. Use only when outdoors and wash skin after coming indoors. Do not breathe in, swallow, or get into the eyes. Do not put on wounds or broken skin.

b. Protective Clothing: Wear long-sleeved shirts and long pants, especially from dusk to dawn. Avoid going outdoors during these hours.

c. Mosquito netting: Travelers who will not be staying in well-screened or air conditioned rooms should use a pyrethroid-containing flying insect spray in living and sleeping areas during evening and nighttime hours.

Sleep under mosquito netting (bed nets) that has been sprayed with permethrin.

d. Malaria prophylaxis medications may be prescribed; however, they do not provide complete protection. The type of medication given depends on the area of travel.

D. Biting and Stinging Insects

1. Background Information

Biting and stinging insects include bees, wasps, hornets, chiggers and fire ants. The biting and stinging insects are most abundant in warmer months. Bees, wasps and hornet nests and hives may be found in trees, under roof eaves, in the ground or within equipment. Fire ants are found in mounds on the ground. Health effects of biting and stinging insects range from mild discomfort or pain to a lethal reaction for those workers that are allergic to the insect's venom. Anaphylactic shock is the body's severe allergic reaction to a bite or sting and requires immediate emergency care.

2. Precautionary Measures

Employees should take the following steps to prevent insect bites/stings:

a. Wear light-colored, smooth-finished clothing.

b. Avoid perfumed soaps, shampoos, and deodorants. Don't wear cologne or perfume and avoid bananas and banana-scented toiletries.

c. Wear clean clothing and bathe daily.

d. Wear clothing to cover as much of the body as possible.

e. Avoid flowering plants when possible.

f. Keep work areas clean. Social wasps thrive in places where humans discard food.

g. Remain calm and still if a single stinging insect is flying around.

h. If you are attacked by several stinging insects at once, run to get away from them.

i. If a bee comes inside your vehicle, stop the car slowly, and open all the windows.

j. Do not disturb nests, hives or mounds.

k. Employees with a history of severe allergic reactions to insect bites or stings should consider carrying an epinephrine auto injector (EpiPen).

3. Reporting and Medical Follow-up

Bites and stings must be reported and managed in accordance with SMS 049 – Incident Reporting, Notifications & Investigation and SMS 065 – Injury and Claims Management. In most circumstances, medical treatment of persons who only have a bite/sting is not recommended. However, individuals who are allergic to the insect's venom should seek medical attention.

First aid of a bite/sting should include:

a. Having someone stay with the employee to be sure that they do not have an allergic reaction,

b. Wash the site with soap and water,

c. Remove the stinger using gauze wiped over the area or by scraping a fingernail over the area (never squeeze the stinger or use tweezers),

d. Apply ice to reduce the swelling,

e. Keep the bite/sting area covered and dry,

f. Do not scratch the bite/sting as this may increase swelling, itching and risk of infection.

g. Antihistamines may help. Follow the directions on the packaging.

E. Poisonous Snakes

1. Background Information

No single characteristic distinguishes a poisonous snake from a harmless one except the presence of poison fangs and glands. Only in dead specimens can you determine the presence of these fangs and glands without danger. Most poisonous snakes have both neurotoxic and hemotoxic venom; however, one type is dominant and the other is weak.

a. Hemotoxic venom. The folded-fang snakes (fangs can raise to an erect position) have venoms that affect the circulatory system, destroying blood cells, damaging skin tissues, and causing internal hemorrhaging.

b. Neurotoxic venom. The fixed-fang snakes (permanently erect fangs) have venoms that affect the nervous system, making the victim unable to breathe.

c. Poisonous snakes in the Americas: copperhead, coral snake, cottonmouth, and rattlesnake.

2. Precautionary Measures

Bites occur when you don't hear or see the snake, when you step on them, or when you walk too close to them. Follow these simple rules to reduce the chance of accidental snakebite:

l. Don't put your hands into dark places, such as rock crevices, heavy brush, or hollow logs, without first investigating.

m. Don't step over a fallen tree. Step on the log and look to see if there is a snake resting on the other side.

n. Don't walk through heavy brush or tall grass without looking down. Look where you are walking.

o. Do not pick up any live snake. If you encounter a snake, walk around the snake, giving it plenty of room. A snake can strike half its length.

p. Don't pick up freshly killed snakes without first severing the head. The nervous system may still be active and a dead snake can deliver a bite.

3. Reporting and Medical Follow-Up

Snake bites must be reported and managed in accordance with SMS 049 – Incident Reporting, Notifications & Investigation and SMS 065 – Injury and Claims Management.

If you are bitten by a snake, the primary goal is to get to a hospital as soon as possible to receive professional medical evaluation, and possible treatment with anti-venom if warranted. Initial first aid should include: Washing the bite with soap and water; immobilizing the bitten area and keeping it lower than the heart. Try to remain calm. If you are unable to reach a hospital within 30 minutes, a bandage, wrapped 2 to 4 inches above the bite, may help slow the venom. The bandage should not cut off blood flow from a vein or artery; make sure the bandage is loose enough that a finger can slip under it.

Research has shown the following to be potentially harmful: DO NOT apply ice, use a tourniquet, or make incisions into the wound.

E. Valley Fever

1. Background Information

Valley Fever is an illness that results from exposure to a fungal spore (*Coccidioides immitis*). It is endemic to the San Joaquin Valley in California, as well as areas of the Southwestern U.S., Mexico, and Central and South America, although it has been found in many other areas. It is particularly associated with arid soils that are not cultivated. Exposure is generally by inhalation of spores, though it may also enter through broken skin. Approximately 2 weeks after inhalation exposure, severe weakness and flu-like symptoms develop; severe pneumonia may occur. It may also affect the brain, bones, and joints causing disability, spinal meningitis, or death. Dermal forms of the infection can form disfiguring fungal lesions.

2. Precautionary Measures

Because it is associated with arid soils, personnel should avoid locations and activities that create dust. Persons at risk of exposure include geologists, surveyors, excavators, archaeologists, etc. Dust suppression methods should be employed and the use of particulate respirators should be considered for areas known to harbor the fungus. At one phase of the fungus' life cycle, cottony, spider-web–like growths may be seen on the soil surface. If observed, these growths must not be disturbed, and work should be relocated if possible.

3. Reporting and Medical Follow-up

Exposure to fungal spores must be reported and managed in accordance with SMS 049 – Incident Reporting, Notifications & Investigation and SMS 065 – Injury and Claims Management.

Approximately 60 percent of exposed persons will not have symptoms. Persons that have been in areas associated with Valley Fever should be alert to the development of flu-like symptoms, fatigue, or skin rashes 2 to 4 weeks later. Valley Fever can be treated with anti-fungal medication. Early treatment is critical, as disseminated forms of the disease can result in chronic disease or death.

F. Pathogenic organisms

1. Background Information

Employees who perform certain activities, such as disaster response, may be in areas where water-borne pathogens may be present. A partial list of agents includes: E. coli, Hepatitis A, typhoid, and cholera. Chemical hazards and molds and fungus may also be present. Refer to SMS 051– Bloodborne Pathogens for additional information.

2. Precautionary Measures

   All work must be performed within the scope of either a Health and Safety Plan or Safe Work Plan that identifies the task hazards, and specifies appropriate controls. A medical exam and/or inoculations may be required. See SMS 024 – Medical Screening and Surveillance, or contact the Occupational Health Manager for assistance.

   Where contact with water or wet materials may occur, personnel must use protection such as impervious coveralls, boots/waders, face shields, etc, as specified in the project Health and Safety Plan or Safe Work Plan. Personnel must protect any areas of broken skin, eyes, nose, and mouth from contact with potentially infectious materials, and practice good personal hygiene before eating, drinking, etc.

3. Reporting and Medical Follow-up

   Exposure to pathogenic organisms must be reported and managed in accordance with SMS 049 – Incident Reporting, Notifications & Investigation and SMS 065 – Injury and Claims Management.

   Medical evaluation and/or an inoculation schedule may be required prior to beginning work. Because early evaluation and treatment is more successful, personnel should be alert to signs and symptoms of possible pathogenic organisms and seek prompt medical evaluation if illness develops or is suspected.

G. Natural disaster relief efforts

1. Natural disaster relief efforts present a variety of hazards, including biological hazards. Biological hazards potentially encountered during relief efforts include mold, sewage-contaminated water, various building materials that may puncture the skin and create various types of infections, and displaced animals and insects. Before work begins, each disaster relief site should be evaluated for the various types of biological hazards that may be encountered. Control measured must be developed to address the biological hazards.

5. Documentation Summary

Complete and distribute a URS Incident Report Form (SMS 049) for all work-related biological exposure incidents.

6. Resources

A. Centers for Disease Control http://www.cdc.gov

B. U.S. Food and Drug Administration - Treating and Preventing Venomous Snake Bites
http://www.fda.gov/fdac/features/995_snakes.html

D. ENature – Identify plant and animals hazards in a specific area.
http://enature.com/zipguides/index.asp?choice=poisonous

E. SMS 051 – Bloodborne Pathogens

F. SMS 024 – Medical Screening and Surveillance

G. SMS 049 – Incident Reporting, Notifications & Investigation

H. SMS 065 – Injury and Claims Management

I. ORC Pandemic Planning Guide

URS SAFETY MANAGEMENT STANDARD

Hazardous Materials/Dangerous Goods Shipping

1. Applicability

This standard applies to URS Corporation (URS) and its subsidiary companies that ship hazardous materials (hazmat).

U.S. Department of Transportation (DOT) regulations for hazardous materials shipping (by air, ground, or water) and the International Air Transportation Association (IATA) regulations for dangerous goods shipping (by air) prohibit the shipment of certain materials unless they are packaged, marked, labeled, and accompanied with shipping documentation in a specified manner. Failure to adhere to these shipping requirements may result in fines to the company and disciplinary action to the employee(s) involved in the shipment.

Examples of Hazardous Materials/Dangerous Goods regulated by the DOT and IATA that may be encountered or used during URS projects may include, but are not limited to, certain field environmental samples, compressed gases (fire extinguishers, calibration gases, compressed air, and welding and cutting gases), ionizing radiation sources used to calibrate detection equipment or analytical equipment, nuclear-density meters, laboratory reagents, hazardous wastes, materials used for bench-scale and pilot plant operations, oils, greases, lubricating fluids, cleaning solvents, degreasing solvents, paints, spray paints, paint removers and/or strippers, diesel fuel, gasoline, pesticides, inks, glues, and other adhesives, battery fluids, ammonia cleaning solutions and peroxide solutions. When possible, only use ground carriers for transportation of hazardous materials.

The air shipment of environmental samples represents a significant percentage of hazardous materials/dangerous goods shipped by URS. Although most environmental samples (both water and soil) do not meet the definition of hazardous, extreme care must be taken to properly classify materials.

2. Purpose and Scope

The purposed of this standard is to prevent shipping-related incidents and violations, and prevent injuries to employees and members of the public.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

Project Managers' responsibilities include the following related to hazardous materials shipping:

A. Ensure that every employee and driver involved with shipping a hazardous material in commerce is trained and certified, and records are maintained in accordance with 49 Code of Federal Regulations (CFR) 172.704.

B. Ensure every driver of a truck that has a gross vehicle weight rating exceeding 26,000 pounds (11.8 kg), or as mandated by state, or hauling a placardable quantity of hazmat has a commercial driver's license (CDL) with proper endorsements (e.g., hazmat, tank, etc.) in accordance with 49 CFR 383.91 and 383.93, and has current DOT hazmat training in all required areas, in accordance with 49 CFR 172.704 and 177.816.

C. Ensure every truck hauling hazmat in regulated quantities carries a current DOT Hazardous Materials Certificate of Registration; and if required, a Federal Motor Carrier Safety Administration (FMCSA) Hazardous Materials Safety Permit and any other state-mandated registration.

D. Verify that insurance coverage includes transportation of hazardous materials over commercial roads (49 CFR 387.9).

E. Ensure every truck hauling hazmat has the proper documentation, including shipping paper, emergency response information, 24-hour emergency response telephone number, and the DOT Hazardous Materials Registration (if required). In addition, when using a third-party emergency response provided such as CHEMTREC, a Customer Contract Number (CCN#) must appear on the shipping paper.

F. If using CHEMTREC as the 24-hour emergency number, ensure that current Safety Data Sheets (SDSs) for each transported hazmat are submitted to CHEMTREC before transport.

G. Ensure all hazmat incidents are properly reported to the project safety supervisor, in accordance with URS reporting procedures.

H. Report hazardous material spills within 24 hours, including material spilled and estimated quantity.

4. Requirements

In order to minimize the potential for an improper shipment, Project Managers and Site Managers are required to ensure that an individual trained according to DOT Regulations in 49 CFR 172 Subpart H and, if applicable, IATA Dangerous Goods Regulations Subsection 1.5 is responsible for the correct classification, packaging, marking, labeling, and completion of shipping papers for any hazardous materials being shipped offsite. No hazmat shipments shall leave the site without prior inspection. The assigned person must have current DOT

hazmat certification and, if applicable, IATA certification. DOT requires recurrent training every 3 years, and IATA requires recurrent training every 2 years.

A. Staffing

1. Each project or site must ensure that DOT hazmat-trained individuals are involved in the process of preparing hazardous materials for shipment.

2. Each location where hazardous material shipping occurs or where hazardous material employees are assigned must identify a local or regional shipping specialist.

3. The assigned shipping specialist must have current certification of DOT hazmat, and if applicable, IATA training.

B. Hazmat Hotline

URS maintains a **shipping Hazmat Hotline** for hazardous materials/dangerous goods to provide answers to specific shipping questions.

1. **800-381-0664** in Canada and U.S.

2. **919-461-1227** for other countries

3. **Email: HazmatHotline@urs.com**

C. Shipper Training

All employees involved in the transportation of hazmat in commerce must be formally trained and certified in accordance with 49 CFR 172.704. Training must include the following components: general awareness, function-specific, safety, hazmat security, security plan (if applicable), and if applicable, driver training.

1. Training Requirements. Require employees who package, prepare paperwork, load and/or unload, and transport hazardous materials be trained to the appropriate level of activity:

   a. Training is required prior to performing hazardous material shipping activities.

   b. Training is required when regulatory changes impact current procedures, and every 2 years (IATA) or 3 years (DOT).

c. Regional or local hazmat shipping specialists must complete a 2-day hazardous material/dangerous goods shipping course conducted by URS, or complete an outside equivalent course.

d. Drivers may be exempt from function-specific training if the DOT's Materials of Trade (MOT) exception applies to the shipment (see Section 4.K.6 and SMS 048 NA, Supplemental Information A).

e. Certain shipments of hazmat must have a Hazardous Materials Security Plan (see Section 4.I for more information).

2. Training Records. Employers are required to maintain training records for all hazmat employees during employment, and for 90 days after, including:

a. Hazmat employee's name;

b. Completion date of most recent training;

c. Training materials (copy, description, or location);

d. Name and address of hazmat trainer; and

e. Certification that the hazmat employee has been trained and tested.

D. Hazmat Driver Training

1. In addition to the training required by 49 CFR 172.704 (above), hazmat drivers must also be trained in the requirements of 49 CFR 177.816, or have a CDL with a hazmat endorsement.

2. CDL requirements are located in 49 CFR 383.

E. Hazmat Registration

1. Shippers or carriers who offer any of the following in commerce must have a hazmat registration in accordance with 49 CFR 107.601-620:

a. Any highway route–controlled quantity of a Class 7 (radioactive) material;

b. More than 55 pounds (25 kilograms) of a Division 1.1, 1.2, or 1.3 (explosive) material in a motor vehicle, rail car, or freight container;

c. More than 1 liter (1.08 quarts) per package of a material extremely toxic by inhalation (i.e., “material poisonous by inhalation,” as defined in 49 CFR 171.8, that meets the criteria for “hazard zone A,” as specified in 49 CFR 173.116(a) or 173.133(a));

d. A hazardous material in a bulk packaging having a capacity of 3,500 gallons for liquids or gases, or more than 468 cubic feet of solids;

e. A shipment in other than bulk packaging of 5,000 pounds gross weight or more of one class of hazardous material for which the transport vehicle requires placarding for which placarding of a vehicle, rail car, or freight container is required for that class; and

f. Except for certain farm-related activities, any quantity of materials requiring placarding.

   In general, this includes Company fuel and lube trucks that travel on public roads.

2. The vehicle must keep a copy of the current Certificate of Registration in each truck used to transport hazmat.

3. In addition, a copy of the registration statement filed with the DOT and the Certificate of Registration must be maintained at the principal place of business for a period of 3 years.

4. This registration must be renewed each year.

F. FMCSA Hazardous Materials Safety Permits

1. Since January 2005, certain highway carriers of hazmat must obtain a hazmat safety permit from the FMCSA as required under 49 CFR 385.403, 390.3, and 390.19. In general, a safety permit is required if a motor carrier transports any of the following:

   a. A highway route–controlled quantity of a Class 7 (radioactive) material;

b. More than 55 pounds (25 kilograms) of a Division 1.1, 1.2, or 1.3 (explosive) material or an amount of a Division 1.5 (explosive) material requiring placarding;

c. More than 1.08 quarts (one liter) per package of a “material poisonous by inhalation,” that meets the criteria for “Hazard Zone A.”

d. A “material poisonous by inhalation” that meets the criteria for “Hazard Zone B ” in a bulk packaging (capacity greater than 119 gallons [450 liters]);

e. A “material poisonous by inhalation” in a ”bulk packaging,” both defined in 49 CFR 171.8, that meets the criteria for “Hazard Zone C or “Hazard Zone D” in a packaging having a capacity equal to or greater than 3,500 gallons (13,248 liters); or

f. A shipment of compressed or refrigerated liquefied methane or liquefied natural gas, or other liquefied gas with a methane content of at least 85 percent, in a bulk packaging having a capacity equal to or greater than 3,500 gallons (13,248 liters).

G. Shipping Papers

1. With few exemptions, anyone who offers a hazmat for transportation must complete shipping papers that must be carried in the vehicle, within the driver’s immediate reach when restrained by a seat belt, and visible to a person entering the vehicle, or in a holder mounted on the inside of the driver’s door (49 CFR 172, Subpart C; and 49 CFR 177.817).

2. Shippers must retain copies of shipping papers for at least 2 years after the transporter accepts the material (49 CFR 172.201).

3. A motor carrier using a shipping paper without change for multiple shipments of one or more hazardous materials having the same shipping name and identification number may retain a single copy of the shipping paper, instead of a copy for each shipment made, if the carrier also retains a record of each shipment made, to include shipping name, identification number, quantity transported, and date of shipment.

4. Shippers and transporters of hazardous waste (as defined in 40 CFR 261) must retain copies of hazardous waste manifests for at least 3 years after the initial carrier accepted the material.

5. Upon request, hazmat shipping papers and hazardous waste manifests must be made available to federal, state, and local inspectors.

H. Emergency Response Information

1. DOT requires anyone who offers, transports, or handles hazmat to have emergency response information immediately available. (49 CFR 172.600). Safety Data Sheets (SDSs) and DOT's Emergency Response Guidebook are common reference sources for emergency response information.

2. In addition, persons who offer hazmat for transportation must provide a 24-hour emergency response telephone number that must be monitored by a knowledgeable person at all times while the material is in transit.

3. URS maintains an account with CHEMTREC for this service. Before using this service, URS must submit an SDS or Waste Safety Data Sheet to them. Contact the Hazmat Hotline (see Section 4.B) for more information.

I. Hazardous Material Transportation Security Plan

1. URS sites that transport or offer the following types or quantities of materials for transportation must have a Hazardous Material Transportation Security Plan on site and must ensure that all hazmat employees are trained in the plan, as required by 49 CFR 172.800.

   a. Any quantity of a Division 1.1, 1.2, or 1.3 material;

   b. A quantity of a Division 1.4, 1.5, or 1.6 material requiring placarding in accordance with subpart F;

   c. A large bulk quantity of Division 2.1 material;

   d. A large bulk quantity of Division 2.2 material with a subsidiary hazard of 5.1;

   e. Any quantity of a material poisonous by inhalation, as defined in 49 CFR 171.8;

   f. A large bulk quantity of a Class 3 material meeting the criteria for Packing Group I or II;

g. A quantity of desensitized explosives meeting the definition of Division 4.1 or Class 3 material requiring placarding in accordance with subpart F;

h. A large bulk quantity of a Division 4.2 material meeting the criteria for Packing Group I or II;

i. A quantity of a Division 4.3 material requiring placarding in accordance with subpart F;

j. A large bulk quantity of a Division 5.1 material in Packing Groups I and II; perchlorates; or ammonium nitrate, ammonium nitrate fertilizers, or ammonium nitrate emulsions, suspensions, or gels;

k. Any quantity of organic peroxide, Type B, liquid or solid, temperature controlled;

l. A large bulk quantity of Division 6.1 material (for a material poisonous by inhalation see paragraph (e) above);

m. A select agent or toxin regulated by the Centers for Disease Control and Prevention under 42 CFR 73 or the United States Department of Agriculture under 9 CFR 121;

n. A quantity of uranium hexafluoride requiring placarding under 49 CFR 172.505(b);

o. International Atomic Energy Agency (IAEA) Code of Conduct Category 1 and 2 materials including Highway Route Controlled quantities as defined in 49 CFR 173.403 or known radionuclides in forms listed as RAM-QC by the Nuclear Regulatory Commission;

p. A large bulk quantity of Class 8 material meeting the criteria for Packing Group I.

2. If a project or office determines that a hazmat security plan is required, contact the URS Hazmat Hotline.
3. A Hazmat Security Specialist will be assigned at each site required to have a hazmat security plan.
4. All Hazmat Security Plans will be reviewed annually and updated if required.

J. Hazardous Incident Report

1. A person in possession of a hazmat at the time of a reportable incident as outlines in 49 CFR 171.15 must immediately report the incident to the National Response Center. In addition, these incidents require filing a detailed written incident report within 30 days of the incident (see 49 CFR 171.16).

2. Incidents that do not trigger the immediate reporting as outlined in 49 CFR 171.15, but which meet any of the other incident criteria in 49 CFR 171.16 still warrant a detailed written report under 171.16 within 30 days of the incident.

3. All hazmat incidents must be reported in accordance with SMS 049 – Injury/Illness/Incident Reporting & Notifications.

K. General Procedures

1. Select the best way to ship the hazardous material based on the quantity, hazard(s), and mode of transportation (e.g., air, land, water).

2. Ensure shipping containers are designed, constructed, filled, closed, secured and maintained so that, under normal conditions of handling and transport, there will be no accidental release of hazardous materials which could endanger public safety.

3. Ensure that a copy of the closure instructions provided by the package manufacturer is available for each UN specification shipping container type that is used at the facility.

4. Package, mark, label, and placard according to applicable regulations.

5. Complete the shipping documentation according to applicable regulations, which may include bill of lading, shipper's declaration, hazardous waste manifest, or other, as applicable.

6. Follow hazard communication requirements:

   a. Send a copy of the appropriate Emergency Response Guidebook page or MSDS with each shipment.

b. Include the 24-hour emergency response phone number (CHEMTREC 800-262-8200 domestic; 1-703-741-5500 international) on the shipping paperwork.

i. Any shipment of a hazardous material or hazardous waste requires that CHEMTREC be notified in advance of the shipment. CHEMTREC requires that either an SDS or Hazard Profile of the hazardous material being offered for shipment be provided to CHEMTREC. URS maintains a current contract with CHEMTREC to provide this required service and the right to use the CHEMTREC emergency phone number on shipping papers when notification of the shipment has been made. Contact the Hazmat Hotline (see Section 4.B) before contacting CHEMTREC.

7. URS also maintains current Hazardous Materials Certificate of Registrations with the U.S. Department of Transportation. Contact the Hazmat Hotline for more information.

8. DOT regulations include a "Materials of Trade" or "MOTs" exception. MOTs are hazmat, other than hazardous waste, that are carried on a motor vehicle:

- to protect the health and safety of the motor vehicle operator or passengers, such as insect repellant or a fire extinguisher;
- to support the operation or maintenance of a motor vehicle (including its auxiliary equipment), such as a spare battery or gasoline; or
- to directly support a principal business of a private motor carrier (including vehicles operated by a rail carrier) that is other than transportation by motor vehicle – for example, landscaping, pest control, painting, plumbing, or welding services.

URS operations may qualify under this exception. Refer to the exception requirements under 49 CFR 173.6. A hazmat-trained employee should make the determination as to whether this exception will apply to the shipment.

L. Special Requirements

1. Do not offer packages for shipment without knowing the contents and classifying the packages in accordance with the DOT, and, if applicable, IATA regulations. Do not ship potentially hazardous

materials using an unknown carrier or broker. A Hazardous Material Transportation Security Plan may be required for shipment of certain hazardous materials, and employee training is required to protect shipments of hazardous materials from theft and acts of terrorism.

2. Contact the applicable shipping company, shipping specialist, or the Hazmat Hotline if you are unsure or suspect there may be additional special requirements on a shipment.

3. Some transporters have more stringent requirements than DOT or IATA. For example, the United Parcel Service (UPS) publishes its own Guide for Shipping Ground and Air Hazardous Materials. URS shipping training and this program may not meet these additional requirements.

4. Some countries have more stringent requirements than DOT or IATA. Refer to the international hotline for assistance.

5. For international shipments, an expediter may be required to ensure needed materials are not held in customs. It may be advisable to purchase hazardous materials in the destination country.

6. The air shipment of environmental media samples represents a large percentage of potential hazardous materials/dangerous goods shipped by URS. Most environmental media samples (water and soil) typically do not meet the definition of a dangerous good (hazardous material) unless preservatives are added to make the sample a corrosive material. DOT exemptions may apply to allow air shipment as long as the samples are properly packaged and the package is properly marked; however, extreme care must be taken to properly classify, package, and mark the environmental samples to ensure compliance with the regulations.

7. Because more stringent requirements apply to air shipments, ground shipment (e.g., including use of a lab courier service) should be considered first for hazardous materials shipping.

8. Hazardous materials shipments must be loaded and secured in an appropriate shipping container (see 4.K.2 for additional information). The shipping container must also be loaded and secured on the means of transportation used for shipping in such a way as to prevent, under normal means of transport, damage to the

shipping container or to the means of transportation that could lead to an accidental release of the hazardous materials.

9. Where an accidental release of hazardous materials from its packaging/containment in excess of a prescribed quantity or concentration occurs or is imminent, any person who at the time has the charge, management or control of the means of containment shall report the occurrence or imminence of the release to the project safety supervisor. Every person required to make a report shall, as soon as possible in the circumstances, take all safe and reasonable emergency measures to reduce or eliminate any danger to public safety that results or may reasonably be expected to result from the release using the Safety Data Sheets (SDSs), DOT's Emergency Response Guidebook, or other resources as appropriate.

5. Documentation

The following documentation will be maintained in the project files:

A. Training Records

1. Employers are required to maintain training records for all hazmat employees during employment and for 90 days after, including hazmat employee's name; completion date of most recent training; training materials (copy, description, or location); name and address of hazmat trainer; and certification that the hazmat employee has been trained and tested. Ensure training records include:

   a. Hazmat employee's name;

   b. Completion date of most recent training;

   c. Training materials (copy, description, or location);

   d. Name and address of hazmat trainer; and

   e. Certification that the hazmat employee has been trained.

B. Shipping Documentation Records

1. Shippers must retain copies of shipping papers for at least 2 years after the transporter accepts the material. Shippers and transporters of hazardous waste must retain copies of hazardous

waste manifests for at least 3 years after the initial carrier accepted the material.

2. For each shipment:

   a. Copy of shipper's declaration for dangerous goods;

   b. Copy of applicable ERG or ~~M~~SDS accompanying shipment;

   c. Copy of information (MSDS or Hazard Profile) provided to CHEMTREC; and

   d. Supporting documentation related to the classification of the material.

C. Hazardous Materials Transportation Security Plan, if required and applicable to site or facility operations.

D. Hazardous Incident Report(s), if reportable incident(s) has occurred.

6. Resources

A. 49 Code of Federal Regulations, Parts 171-180, Subchapter C – Hazardous Materials Regulations

B. International Air Transport Association Dangerous Goods Regulations (DGR), updated and issued annually

C. International Maritime Dangerous Goods Code. International Maritime Organization, Amendment 29-98

D. DOT Office of Hazardous Materials Safety

E. URS Hazardous Materials Hotline: **800-381-0664**

F. SMS 049 – Injury/Illness/Incident Reporting & Notifications

7. Supplemental Information

A. Materials of Trade Summary

The Department of Transportation (DOT) "Materials of Trade" or "MOTs" exception applies to hazardous materials, other than hazardous waste, that are carried on a motor vehicle for one of the following purposes:

- to protect the health and safety of the motor vehicle operator or passengers, such as insect repellant or a fire extinguisher;
- to support the operation or maintenance of a motor vehicle (including its auxiliary equipment), such as a spare battery or gasoline; or
- to directly support a principal business of a private motor carrier (including vehicles operated by a rail carrier) that is other than transportation by motor vehicle – for example, landscaping, pest control, painting, plumbing, or welding services.

Some URS activities (e.g., environmental sampling and other field services), may be able to use this exception. The exception is found in the Code of Federal Regulations at 49 CFR 173.6. A hazmat-trained employee should make the determination as to whether this exception will apply to the shipment.

The MOTs exception allows URS Corporation employees to transport certain amounts of chemicals aboard their vehicles without preparing shipping papers, emergency response information, placarding, or formal training.

MOTs must be packaged in the manufacturer's original packaging, or a packaging of equal or greater strength or integrity. Gases must be in DOT specification cylinders. If the inner container (such as the bottle) is secured against movement inside the vehicle (if it is kept in a cabinet or tool box), then no outer packaging (such as a cardboard box) is required. The MOT must be marked with a common name or the technical name.

No hazardous material training is required, except that the driver must have general knowledge of the MOT regulations, quantity limitations, packaging requirements, and marking and labeling requirements. The driver is not allowed to exceed total aggregate weight of 440 pounds of MOTs aboard the vehicle.

The hazardous material classes and quantities of hazmat items typically transported by URS field can be transported as MOTs:

- The inner container of a Packing Group II and III material in Class 3, 8, 9, Division 4.1, 5.1, 5.2, 6.1, or ORM-D cannot exceed 66 pounds or 8 gallons each.
- A Division 2.1 or 2.2 cylinder cannot exceed 220 pounds.
- The inner container of a Packing Group II or II material in Division 4.3 cannot exceed 1 ounce.

PURPOSE & APPLICABILITY:

URS Corporation (URS) must maintain a Hazardous Material (HAZMAT) Transportation Security Plan **as required under 49 CFR 172.800**. URS has the potential to ship a quantity of hazardous material that requires placarding under 49 CFR Subpart F [49 CFR 172.800(b)(7)]. Therefore, URS must develop a HAZMAT Security Plan that addresses security concerns for those specific shipments and for the HAZMAT employees who prepare the shipments.

OWNERSHIP AND APPROVAL:

A HAZMAT Security Specialist will be designated at each URS facility with the potential to be subject to Security Plan requirements. The site HAZMAT Security Specialist will be responsible for developing, maintaining, reviewing, and updating a security plan specific to their site operations. All revisions must be approved by the document owner or designee prior to inclusion.

TRAINING:

- URS HAZMAT employees affected by the Security Plan will be trained to the requirements of this Plan.
- The scope of the HAZMAT Security Plan is “limited to applicants for HAZMAT employee positions that involve access to or handling of the hazardous materials covered by the security plan.” Only those employees who work directly with placardable quantities of hazardous materials will require training under this plan.
- HAZMAT Security Training is required every 3 years. If no changes are made to the plan, this 3-year cycle is sufficient. If changes are made to the plan, employees must be trained to understand the changes at the time they go into effect.
- All new HAZMAT employees must receive General Awareness HAZMAT Security Training within 90 days of hire. Existing HAZMAT employees must receive General Awareness HAZMAT Security Training with their next scheduled recurrent HAZMAT shipping training.

PLAN ORIGIN / REVIEW:

Each URS site-specific Security Plan will be reviewed and updated, as required, based on the individual site’s shipping activities for placardable quantities of HAZMAT. In certain instances, URS HAZMAT activities may be operating under existing security plans issued by other Federal agencies (such as U.S. Customs); or URS HAZMAT activities may be conducted onsite at another company, coming under the auspices of that company’s Security Plan. As allowed by 49 CFR 172.804, so long as the Security Plan issued by the other agency or company contains all of the elements required under 49 CFR 172.802, that plan may serve as the URS site-specific Security Plan.

RISK ASSESSMENT:

Hazard Analysis

Potential URS activities that may be ship placardable quantities of HAZMAT are:

1. Environmental sampling support chemicals (cylinders, solvents, etc.)
2. Laboratory hazardous waste (primarily Class 3 and Class 8)
3. Because URS provides environmental management services to clients, certain URS employees may function in the role of HAZMAT employee to another company and, for that reason, would be required to be trained to that company's HAZMAT Security Plan.
4. Federal Services business --Coordinate Transport of Confiscated Customs items. Types of HAZMAT items vary and may include explosives [grenades, small arm propellant powders, cigarette lighters, refrigerant gases (R-22)].

Hazard Classes/Divisions of HAZMAT offered for shipment in placardable quantities include:

1. Class 1 [Division 1.2, 1.4 (confiscated Customs explosives)]
2. Division 2.2 (refrigerant gases; calibration gases with low parts per million (ppm) levels of constituents used for air pollution environmental analysis)
3. Division 2.1 (cigarette lighters; calibration gases containing higher levels of flammable constituents used for air pollution environmental analysis)
4. Class 3 (solvents)
5. Division 6.1 (PGII or PGIII)

Of the hazardous materials listed above, the materials of greatest concern from a security risk as potential weapons or targets of opportunity for terrorist activities would be **Division 1.4, Division 2.1, and Class 3.**

Cylinders containing non-toxic, nonflammable calibration gases (Division 2.2) are not viewed as a major concern for terrorist activities.

Even though certain types of HAZMAT offered by URS pose greater threat than others, all requirements set out in this plan apply to all placardable quantities of HAZMATs offered for transport.

Facility Security Analysis

- Identify potential threat to facility: It is unlikely that terrorists/criminals will look to URS facilities for obtaining hazardous materials for their activities.
- Containment failure/burst drum: HAZMAT in drums is likely to be hazardous waste. Spill procedures in place to minimize spills as required by hazardous waste regulations.

Consequence / Worst-case Scenario Analysis - Factors to consider:

Physical Factors

- **HAZMAT container size:** Largest containers are 55-gallon drums of waste materials. However, most URS chemicals used in support of environmental sampling operations are small inner container sizes (many qualify for limited quantity exception) in combination packages, which pose extremely minimal HAZMAT risk.
- **HAZMAT storage location within facility:** HAZMAT is stored in locked rooms, with limited access to designated HAZMAT employees.
- **External access:** In many instances, the URS premises are located in an office park setting that is patrolled by security guards, providing restricted access by unauthorized persons. In certain instances, HAZMAT is stored outside of the building in a fenced, locked area with security lights (typically cylinders). HAZMAT is also stored inside locked laboratories and waste accumulation areas. Intruders would have to penetrate building HAZMAT storage rooms to reach HAZMAT.

Worst-case Scenario #1: Access by undesirable personnel to drums of flammable liquid waste in waste storage area. To prevent:

- Store flammable liquid drums in OSHA-compliant fire proof room with grounding.
- Allow limited employee access to fire proof room (which is isolated from other areas of facility).
- As always, follow local fire department requirements for flammable liquid storage.

Worst-case Scenario #2: Theft of drums/counter action

- Maintain comprehensive HAZMAT inventory; instruct employees to report gaps in inventory to their supervisor
- Store drums in limited access area.
- Remove HAZMAT from limited access storage area only when packaging/preparing for shipment.
- Ensure HAZMAT employee oversees transporter loading activities.
- Use reputable transporters; verify identification of drivers; confirm employment with scheduled transporter.

PERSONNEL SECURITY:

Verify information provided by job applicants for HAZMAT employee job functions.

URS hiring practices are outlined in a procedure maintained by URS Human Resources Department. Such hiring practices address measures to confirm information provided by job applicants hired for positions that involve access to and handling of the hazardous materials covered by the security plan. As set out in URS Corporation Policies and Procedures Manual, Section 3 Human Resources, 030.020 Recruiting and Hiring, URS Corporation conducts a background check using an outside company on all potential new HAZMAT employees. In these hiring practices, URS uses a third party to verify information related to:

- an applicant's recent employment history
- educational credentials
- criminal background (felony convictions)
- pre-employment drug screening
- references
- citizenship status

URS obtains, reviews, and approves the HAZMAT Security Plan for any company providing URS with contracted employees for HAZMAT functions

Clients where URS provides HAZMAT staff may require an additional background check.

Train employees to question suspicious behavior, including unknown individuals at the facility. If an individual is seen without identification or escort, take them to the facility reception area.

Report all suspicious persons/behavior to URS supervisor or security.

UNAUTHORIZED ACCESS:

Prevent unauthorized personnel from access to hazardous materials, facility property, and equipment.

Many URS operations provide environmental management services onsite at client locations (including military bases and manufacturing facilities). In these cases, access issues must be addressed in the client's HAZMAT Security Plan. Certain URS offices and locations store HAZMAT prior to shipment in fenced areas with locks and security lighting. Other URS locations with laboratories store waste prior to disposal in outside locked, fenced areas. In certain locations, a security guard drives around office park areas after hours and questions suspicious activity.

Hazardous material preparation areas (loading docks) and hazardous waste storage areas accessible only to authorized personnel and remain locked.

Hazardous material storage rooms are available only to authorized personnel with restricted entry (institute a sign-in/sign out procedure or key card entry to track access to those areas).

Maintain the integrity of perimeter fencing and ensure that it meets the security needs of the facility.

Ensure facility yards and parking areas have adequate security lighting.

Ensure all access points (doors and windows) are locked and secured from the outside when not in use.

EN ROUTE SECURITY:

Assess security risks of shipments of hazardous materials covered by the security plan en route from origin to destination, including shipments stored incidental to movement. Shipper has best access to information relative to the hazardous properties of the commodity. Shipper controls include:

- Carrier selection and order entry
- Loading
- Time and Method of Dispatch
- Destination

Carrier responsible for transportation/movement. Carrier controls include:

- Driving time
- Route deviations
- Rest Stop Selection

At a minimum, URS shall:

- Use reputable transporters such as Fed-ex Ground, Fed-ex Air.
- If hiring CDL drivers to transport placardable quantities of HAZMAT (for environmental sampling activities), conduct a driver background check and verify the presence of a HAZMAT Security Plan for the company of these hired drivers.
- Be assured that the Carrier transporting URS material has a HAMZAT Security Plan in place that adequately addresses the assessed security risks of the material to be transported, including risks related to storage of the material during transportation.
- Be assured that the Carrier has a Centralized Communication System in place and Shipper Alerts in the event of incidents during transportation (including theft, non-receipt of material, accident, etc.).
- Conduct periodic compliance review of Carriers to ensure compliance with

HAZMAT Security requirements. If HAZMAT stored during transportation, verify security of storage location.

- Verify Driver Identification at pickup: Require all drivers to present a valid driver's license with HM endorsement, if required, when picking up HAZMAT for transport. Require all drivers to provide proof of employment with selected, pre-qualified Carrier. Require driver to sign HAZMAT Bill of Lading if placards offered.

URS employee responsible for selecting carriers and establishing routes to select carefully all transportation routes, taking into account quantity and nature of the HAZMAT, safe areas, duration of the journey.

Federal Services Customs Confiscation Group follows the "Standards for Cargo Security" based on United States Treasury Decision 72-56 and Customs regulations in 19 CFR. These security standards consist of two elements:

1. Physical Security Standards (which address buildings; fencing; gates; gate houses; parking; lighting; locks, locking devices, and key control; high-risk cargo).
2. Procedural Security Standards (which address personnel screening; security personnel; communications; identification system; independent contractors; cargo quantity control; delivery procedures; containerized shipments; security education).

The three areas required to be addressed by DOT (Personnel Security, Unauthorized Access, En route security) are addressed thoroughly in the requirements of these standards. These standards will suffice as a DOT Security Plan for the Federal Services Customs Confiscation Group and the Security Education required by these standards will suffice for required DOT HAZMAT Security Plan training.

URS SAFETY MANAGEMENT STANDARD

Incident Reporting, Notifications, and Investigation

1. Applicability

This standard applies to the operations of URS Corporation (URS) and its subsidiary companies.

2. Purpose and Scope

The purpose of this standard is to provide guidance for the timely reporting of work-related injuries, illness, and incidents. This procedure also defines incident notification and investigation procedures. For incidents involving motor vehicles, the reporting and notification requirements of SMS 057 – Vehicle Safety Program, will also apply.

Substance abuse testing may be required after an incident occurs. Consult the division-specific substance abuse testing requirements; and if applicable, client/project contract documentation.

Refer to Supplemental Information A – Definitions, in this standard for clarification on the meaning of terminology.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Reporting: All employees must immediately notify their appropriate level of management (line, project, and/or office) of a reportable incident. A reportable incident includes the following:

1. An injury or illness to any URS employee or subcontractor, even if the injury does not require medical attention.
2. An injury to a member of the public, or clients, occurring on a URS-controlled work site.
3. Work-related illness resulting from suspected chemical or biological exposure.
4. Re-occurring conditions such as back pain or cumulative trauma disorders (e.g., carpal tunnel syndrome).
5. Fire or explosion.

6. Natural or man-made disasters which result in property damage or injury.

7. Any vehicle incident occurring on site, while traveling to or from client locations, or with any company-owned, rented, or leased vehicle (including personal vehicles used for company business). If the vehicle incident involves injury, complete both the Incident Report Form (Attachment 049-1 AMER) and Auto Claim Report (Attachment 057-1 AMER). If the vehicle incident does not involve injuries, complete Attachment 057-1 AMER.

8. Property damage resulting from any URS or subcontractor activity.

9. Unexpected release or imminent release of a hazardous material including spills during transport on public highways. Hazardous material releases require notification to Division Legal (or Insured Litigation) within 24 hours including identification of chemical(s) released and estimated quantity and the URS HAZMAT Hotline – **800-384-0664** for hazardous chemical spills during transportation. Refer to SMS 048 AMER for additional information.

10. Unexpected chemical exposures to workers or the public. (This may require notification to the Environmental Protection Agency or Local/State Emergency Response Authorities according to site/project Emergency Preparedness Plan.)

11. A safety-related complaint from the public regarding URS activities.

12. Incidents that could result in adverse public media interest concerning URS or a URS project.

13. Any incident that could or does result in an actual investigation by state, federal, provincial, or local regulatory or law enforcement agencies.

14. Any other significant occurrence that could impact safety, including a near-miss.

Note: A near-miss is defined as an incident having the potential to cause injury or property damage as listed above, but did not. An example of a near-miss includes: a worker steps off a ledge, falls 3 feet (1 meter) to the floor, and is uninjured.

B. Actions: Take the actions listed below following a reportable incident:

1. Employees:

   a. If necessary, suspend operations and secure and/or evacuate the area according to your site Emergency Preparedness Plan.

   b. Immediately notify your supervisor and/or project manager. If the site has a Safety Committee or Floor Warden team, also notify a member of this team and follow instructions accordingly. Many members of Safety Committees and Floor Warden team are trained in First Aid/CPR as well as site and project emergency preparedness procedures.

   c. Contact appropriate emergency services according to your site Emergency Preparedness Plan and obtain medical attention as required, or as directed by your supervisor. For additional information, refer to SMS 065 – Injury and Claims Management.

   d. For a near miss occurring in Energy & Construction or Federal Services, contact the Safety Manager who will enter the information into G-SMART. For a near miss occurring in Infrastructure & Environment, employees shall enter near miss information into the Near Miss/Observation database.

   e. Do not discuss the incident with members of the news media or legal representatives (except URS legal counsel or your personal legal advisor) unless directed to do so by URS management.

   f. Do not make statements pertaining to guilt, fault, or liability.

   g. Complete and sign a Statement Form (included in Attachment 049-1).

2. Line/Project Management Responsibilities

   a. If an incident occurs on a client-controlled site, Project Management will ensure that appropriate client notifications are made within the required time frames. These notification requirements will be documented in project-specific planning documents (e.g., IMT, Emergency Preparedness Plan).

b. Review circumstances (i.e., who, what, when, where, and how) of the incident within 7 working days with applicable employee(s) to determine apparent causes, and to develop recommended corrective actions.

c. Discuss the circumstances surrounding the incident, and corrective actions taken, with department or project staff. In some cases, Legal may direct that discussions and communications be limited by Attorney-Client protection.

3. Local Office or Project Safety Representative

a. Record information pertaining to the incident (e.g., time, date, location, name and company of person(s) involved, witnesses, description of event, and actions taken.

Energy & Construction and Federal Services must enter the incident information into G-SMART within 24 hours of the incident. Infrastructure & Environment employees must submit Attachment 049-1 AMER to incidentreport@urs.com within 24 hours of the incident.

Information from the Incident Report Form may be used by our workers' compensation third-party administrator to prepare a First Report of Injury (FROI) to meet regulatory requirements. Financial penalties might be assessed by state or federal agencies for delayed reports. Refer to SMS 065 – Injury and Claims Management, for additional information.

b. Drug and alcohol testing shall be performed in accordance with the division drug and alcohol (substance abuse) testing program.

c. Assist with incident evaluation and investigation as directed by management. Investigations shall be completed within 7 working days of an incident.

d. With management, identify cause(s) of the incident and identify corrective actions needed to avoid recurrence.

e. Review injury/incident report or the near-miss report for completeness and accuracy. Ensure the reports are distributed properly.

f. Ensure that the injured employee is properly counseled/advised as directed by SMS 065 – Injury and Claims Management. In cases of fatalities and large scale natural or man-made disasters, professional counselors from the URS Employee Assistance Program (EAP) will be utilized as directed by the site Human Resources department.

g. Implement corrective actions as directed by management.

4. Occupational Health Manager (OHM) / Claims Manager

   a. Manage work-related injuries and illness with the workers' compensation third-party administrator/carrier.

   b. Ensure that the employee's injury is managed in accordance with SMS 065 – Injury and Claims Management. Provide guidance for the affected office, project, and/or safety representative.

5. Safety Management

   a. The OHM (Infrastructure & Environment and Federal Services) or Operating Group Safety Director (Energy & Construction), with input from the appropriate Safety Manager, will review all reported incidents to determine U.S. Occupational Safety and Health Administration (OSHA)/Mine Safety and Health Administration (MSHA) reporting and recording requirements. For a determination of recordability for cases in which the recordable classification is unclear, the Vice President of Safety will make the final determination. All decisions will be based strictly on current OSHA/MSHA recordkeeping regulations.

   b. Where an incident has resulted in an injury or illness, and that injury or illness is determined to be recordable in accordance with OSHA/MSHA recordkeeping requirements, the OHM (Infrastructure & Environment and Federal Services) or site/project Safety Manager (Energy & Construction) shall enter pertinent information related to the case into URS' recordkeeping documents/databases no later than 7 working days after receiving information that the event occurred.

c. Each January, the OHM (Infrastructure & Environment and Federal Services) or site/project Safety Manager (Energy & Construction) will prepare and distribute the appropriate government injury/illness. These reports will summarize all required government information for incidents that occurred at the job site, plant, or project office during the preceding calendar year.

   For Energy & Construction, reports, where required by regulation, will be signed by an officer of the company or the highest ranking company official at a site or project (usually the office or project manager). For Federal Services & Infrastructure & Environment, reports will be signed by an officer of the company.

6. Fatalities and Serious Incidents

   a. Immediately notify URS management by telephone (or other direct means) in the order listed below for incidents involving a URS employee or subcontractor: death, inpatient hospitalization, amputation of a leg, arm, hand, or foot, (not a finger or toe), burns to a major portion of the body, loss of sight in an eye, or equipment damage valued at more than $100,000 (USD). (Refer to the Division or Operating Group reporting procedures for required contacts and notification times.)

      i. Appropriate senior leadership for the affected program.

      ii. Division Vice President of Safety.

      iii. Notifications in accordance with the applicable Crisis Management Plan or IMT /Emergency Preparedness Plan.

   b. The Vice President of Safety will notify the URS Management Committee and the Vice Presidents of Safety for the other URS divisions.

   c. The designated Safety Manager for the Division, Operating Group or site/project (or designee) will notify federal and state authorities as appropriate within the required timeframe (usually 8 hours).

   d. In the event of a fatality, URS may provide compassion payments to the family. The compassion payments have no

bearing on insurance coverage. The payments will help cover items such as travel, lodging, and meals for the family. The amount and method of payment(s) shall be approved by Operations Management or Vice President of Human Resources.

e. The Vice President of Safety in the Division in which the serious incident occurred will direct the investigation. Subject matter experts from other URS divisions may be asked to assist in the investigation.

f. Prepare documentation related to the incident at the direction of URS Legal Counsel. Documentation must contain “Privileged and Confidential” and “This document was prepared at the direction of counsel for use in anticipated litigation.”

g. Route copies of incident reports, medical reports, certificate of death, and other correspondences to the Vice President of Safety (or designee) and URS Legal to maintain privilege.

C. Incident Investigation

1. Perform root cause investigations on the following types of incidents:

   a. A recordable injury or illness of a URS or subcontractor employee.

   b. A vehicle incident involving a URS employee (while working) where either the employee or a member of the public is hospitalized.

   c. Incidents that result in significant adverse public media interest in URS or a URS project.

   d. Any near miss or incident occurring on projects undertaken for specific clients, where URS has contractually agreed to participate in safety systems that dictate that all near misses and incidents undergo a root-cause analysis.

   e. Damage to Company- or Government-owned equipment that exceeds $25,000, unless otherwise required by a client.

   f. A release to the environment of a substance in excess of a mandated reportable quantity, and requiring the response of external response organizations.

g. Any near miss that a Safety Manager determines—if taken to its logical conclusion—would have resulted in a fatality, multi-day lost-workday case, and/or inpatient hospitalization.

h. Any incident that the Vice President of Safety or Safety Director deems appropriate for an investigation.

2. Actions: The following actions will be taken to investigate an incident:

   a. The Project or Office Manager or Supervisor will notify the responsible Safety Manager that a recordable incident has occurred.

   b. The investigation may require that an investigation team be assembled. The team will be selected by the responsible Safety Manager, in collaboration with URS line managers.

   c. The responsible Safety Manager may include other appropriate members of management in an investigation team, and may solicit input from URS Legal regarding the investigation. The person leading the investigation will be trained in investigation techniques and root-cause analysis.

   d. If deemed appropriate by the Vice President of Safety, the responsible Safety Manager will complete the investigation under the direction of URS Legal Counsel and the Vice President of Safety (or designee).

   e. Following an incident, immediately determine the sources of evidence. Evidence may include a listing of people, equipment, and materials involved; a recording of environmental factors such as weather, illumination, temperature, noise, ventilation; and physical factors such as fatigue and medical conditions.

   f. The investigation process will include interviews with those involved or those directly witnessing the event.

   g. The investigation team lead should ensure that investigation tools are available (e.g., cameras, protective equipment, tape measures, marking devices, etc.).

   h. Store evidence (e.g., witness statements, photographs, documentation, etc.) that is collected during the investigation in a secured and locked location.

   i. If photos are taken, a photo log should be created as the photos are taken during the investigation. The Photo

Evidence Sheet (Attachment 049-2 AMER) may be used to document photo details (e.g., date, time, direction).

j. The Visitors Log (Attachment 049-3 AMER) may be used to document visitors present during the investigation.

k. Prepare an Incident Investigation Summary (Attachment 049-4 AMER) for any investigation within 7 working days of the incident. For Energy & Construction and Federal Services, the Incident Investigation Summary should be uploaded into G-SMART. For Infrastructure & Environment, the information should be submitted to incidentreport@urs.com.

l. Investigation reports will identify the critical factors involved in the incident. Develop direct and contributing causes to identify the root cause(s) of an incident. Investigators will evaluate causes associated with human activities, physical causes, and systems causes. The report will identify corrective actions, and assign a responsible party and due dates.

m. Incident Investigation Report Template (Attachment 049-5 AMER) may be used as a template to prepare a detailed incident investigation report.

n. The responsible Safety Manager (or designee) should complete a Lessons Learned (Attachment 049-6 AMER) within 7 working days of the incident. This Lessons Learned shall be forwarded to the Group Safety Director or Vice President of Safety and after review and approval be distributed to operations. This will then be used for communication to URS staff in order to facilitate the communication of lessons learned. The Lessons Learned will contain only basic facts; will be without reference to a site, location, or employee; and will be developed solely for the purpose of conveying lessons learned to prevent a similar incident, illness, or injury. Lessons Learned information should be posted on the Sourse for other employees to access.

3. Release of the investigation report outside of URS may only be authorized by the Division Vice President of Safety (or designee).

4. Following the completion of the incident investigation and development of corrective actions, it is critical that the requirements

for preventing a recurrence of the event be implemented prior to re-starting the activity.

5. Documentation Summary

File incident information and associated incident investigation documentation in the appropriate safety files (e.g., GSMART).

6. Resources

A. Occupational Health Managers (OHMs)/Claims Managers

Infrastructure & Environment	Federal Services	Energy & Construction
Occupational Health Manager	Occupational Health Nurse Workers' Compensation Manager	Claims Manager
Jeanette Schrimsher, RN COHN-S (866) 326-7321 (Toll Free-U.S.) jeanette.schrimsher@urs.com	**BJ Heinrich, RN, COHN-S/CM, STS** (877) 878-9525 (Toll Free) bj.heinrich@urs.com	**Terry Sower, CPCU, AIC, CWCP** (208) 386-6038 (Office) terry.sower@urs.com

B. Why Tree – RCA Training Materials

C. SMS 048 – Hazardous Materials/Dangerous Goods Shipping

D. SMS 057 – Vehicle Safety Program

E. SMS 065 – Injury and Claims Management

F. Attachment 049-1 AMER – Incident Report Form

G. Attachment 049-2 AMER – Photo Evidence Sheet

H. Attachment 049-3 AMER – Visitor Log

I. Attachment 049-4 AMER – Incident Investigation Summary

J. Attachment 049-5 AMER – Incident Investigation Report Template

K. Attachment 049-6 AMER – Lessons Learned Template

L. Supplemental Information A – Definitions

URS	Safety Management Standard **INCIDENT REPORT FORM**	Attachment 049-1 AMER Issue Date: May 2001 Revision 12: April 2013

GENERAL DETAILS

Project Name (If applicable):

Client (If applicable):

Incident Occurred While On: ☐ URS Premises ☐ Client Site ☐ Travel ☐ Other:

Address:

Event Type: ☐ Injury/Illness ☐ Fire ☐ Property Damage ☐ Spill/Release

Injury Type: ☐ Injury ☐ Illness ☐ First Aid ☐ Information Only (no treatment)

Office Employee Assigned To:

Date of Incident: Time of Incident:

Date Reported to Supervisor: Time Reported to Supervisor:

Specific On-Site Location of Incident (e.g., loading dock):

Brief Description of Incident **(what happened, severity of injury, and status of injured people including levels of medical treatment, work status)**:

Employee Description of Incident – Has the Employee completed Statement Form (page 2)?

☐ Yes ☐ No, state reason:

What was the employee doing just before the incident occurred? (Name tools, equipment, material and what the employee was doing with them):

How did the incident occur? (What and how details, name object(s), substance(s) involved):

What object(s) or substance(s) directly harmed the employee?

What was the injury or illness (Provide a brief description of the body part/nature of injury):

EMPLOYEE DETAILS

Employee Name: Employee ID/Number:

☐URS ☐ Contractor

Employee Phone #: Time Employee Started Work:

Supervisor Managing Work (PM if applicable): Supervisor Phone #:

Days Worked Weekly: ☐ Mon - Fri ☐ Other Than Mon - Fri Describe if Other: _____

STATEMENT FORM

Name of Injured Employee:		Name of Individual Providing Statement:	

This is a statement from: ☐ Injured Employee ☐ Supervisor ☐ Witness

Describe the incident in as much detail as possible (attach additional pages if needed).

Signature of Individual Providing Statement:			
Date:		Contact Phone Number:	

INCIDENT REPORT FORM

ACCIDENT TYPE	PRIMARY BODY PART		NATURE OF INJURY	
☐ Body reaction / systemic	☐ Abdomen	☐ Hip	☐ Amputation	☐ Frost bite
☐ Caught in, under, or between	☐ Ankle	☐ Knee	☐ Asphyxia	☐ Ganglion cyst
☐ Contact with (e.g., biological)	☐ Back, lower / upper	☐ Lip	☐ Blister	☐ Heat exhaustion /stroke
☐ Contact with chemicals	☐ Buttocks	☐ Lower leg	☐ Burn, chemical	☐ Hernia
☐ Contact with electrical	☐ Chest	☐ Mouth/teeth	☐ Burn, electrical	☐ Infection
☐ Contact with temperature extremes	☐ Chin	☐ Neck	☐ Burn, fire / thermal	☐ Inflammation
☐ Fall from elevation	☐ Circulatory system	☐ Nervous system	☐ Carpal tunnel syndrome	☐ Injection
☐ Fall on same level	☐ Digestive system	☐ Nose	☐ Conjunctivitis	☐ Pneumoconiosis
☐ Foreign body in eye	☐ Ear(s)	☐ Respiratory system	☐ Contusion / bruise	☐ Poisoning
☐ Inhalation	☐ Elbow	☐ Ribcage	☐ Cut / laceration	☐ Puncture
☐ Lifting, pushing, pulling	☐ Eye(s)	☐ Shoulder	☐ Dermatitis, allergic	☐ Repetitive stress
☐ Mobile equipment / component failure	☐ Face	☐ Spine	☐ Dermatitis, direct	☐ Respiratory
☐ Mobile equipment incident	☐ Finger/thumb	☐ Testicles	☐ Dislocation	☐ Splinter
☐ Motor vehicle incident	☐ Foot	☐ Toe	☐ Foreign body	☐ Sprain
☐ Overexertion	☐ Forearm	☐ Upper arm	☐ Fracture	☐ Strain
☐ Repetitive motion, cumulative trauma	☐ Hand	☐ Upper leg		
☐ Rubbed or abraded	☐ Head	☐ Wrist		
☐ Slip or overexertion resulting in strain, hernia, etc.	**PRIMARY BODY PART SIDE**			
☐ Struck against	☐ Left ☐ Right ☐ Both			
☐ Struck by				
☐ Surface contracted with irritating substances				

MEDICAL TREATMENT

What level of medical treatment was received? ☐ First Aid ☐ Clinic/Physician ☐ Emergency Room ☐ Refused/None

Was injured hospitalized overnight as an inpatient? ☐ Yes ☐ No

Was treatment provided on site? ☐ Yes ☐ No

Describe:

Hospital/Occupational Clinic Name: Physician Name:

CONTRIBUTING CAUSES

Contributing Causes:

ROOT CAUSE DETERMINATION

Root Cause(s):

CORRECTIVE ACTIONS

List methods of preventing/avoiding this type of incident in the future. There must be one or more corrective actions for each root cause.

Corrective Action	Responsible Party	Due Date

DISTRIBUTION

Energy & Construction
Incident data must be entered into G-SMART and a copy of the report sent to the respective Operating Group (OG) Safety Director per OG procedures.

Federal Services
Incident data must be entered into G-SMART within 24 hours of the incident.

Infrastructure & Environment
E-mail incident report to incidentreport@urs.com or fax to 512.419.6413.

Incident/Facility: _____

Instructions:

Pertinent information such as photo number, time and date photos were taken, direction camera was pointing (e.g., north, south, east, or west), and relationship to the incident must be recorded below each photo.

Date of Incident: _____

Photos Taken By: _____
(Last) (First) (M.I.)

Job Title: _____

Evidence Sheet Prepared By: _____
(Last) (First) (M.I.)

Job Title: _____

Investigation Name: _____

Attach Photo Here

Attach Photo Here

Print Number: _____

Time/Date Taken: _____

Direction: _____

Notes:

Print Number: _____

Time/Date Taken: _____

Direction: _____

Notes:

This document is uncontrolled when printed, saved or copied.
Please refer to the URS Safety website on the Sourse for the latest version.

Incident/Facility: _____

Instructions:

It is important to note the name and purpose of each visitor during the incident investigation. Items such as persons interviewed, evidence taken, meetings, and request for information should be noted on this form. Duplicate this form if additional sheets are needed.

Name (Last, First, M.I.)	Affiliation	Date of Visit	Time of Arrival	Time of Departure	Notes

URS	Safety Management Standard **INCIDENT INVESTIGATION SUMMARY**	Attachment 049-4 AMER Issue Date: May 2001 Revision 12: April 2013

Event:	**Date of Incident:**
Work Location:	**Date of Review:**
Summary Prepared By:	
Summary of Incident:	
Root Cause(s):	

Contributing Factors	
Physical	
Systems	
Human or Behavioral	

Recommendations:

Corrective Actions

List methods of preventing/avoiding this type of incident in the future. There must be one or more corrective actions for each root cause.

Corrective Action	Responsible Party	Due Date

Investigation Title

Incident Location

Date Prepared

Investigation Participants:

{Name, Title}

{Name, Title}

{Name, Title}

{Name, Title}

Report Prepared by:

Name	Signature	Date

This report is for internal use only.

Company Proprietary

TABLE OF CONTENTS

Page

1.0 EXECUTIVE SUMMARY ..... #

2.0 DESCRIPTION OF EVENT ..... #

3.0 IMMEDIATE ACTIONS TAKEN ..... #

4.0 CONTRIBUTING CAUSES ..... #

5.0 ROOT CAUSES ..... #

6.0 RECOMMENDED CORRECTIVE ACTIONS ..... #

7.0 ATTACHMENTS ..... #

Company Proprietary

1.0 Executive Summary

Describe in two or three paragraphs what happened, root causes, and corrective actions.

2.0 Description of Event

Describe in detail what happened, sequence of events, and the extent of injuries or damage. Describe the findings related to Physical, System and Human/Behavior causes. Note times of events, the names of personnel involved, injured or as witnesses.

Reference picture(s) as (see **Figure 1**)

{Insert Image Here}

***Figure 1**, Brief Description*

3.0 Immediate Actions Taken

Describe the events immediately following the incident. Note responder first aid actions, emergency transport, hospital information, and resolution.

4.0 Contributing Causes

Describe completely each Physical, System and Human/Behavior cause.

5.0 Root Causes

Describe completely the root cause(s).

Company Proprietary

6.0 Recommended Corrective Actions

Describe the corrective action, responsible party and due date for completion. Use the following format.

CORRECTIVE ACTIONS		
Corrective Action	**Responsible Party**	**Due Date**

7.0 Attachments

Witness statements, figures, documents, pictures, etc.

Company Proprietary

Safety
Lessons Learned

Attachment 049-6 AMER
Issue Date: May 2001
Revision 12: April 2013

Title of Lesson Learned – Tahoma 20pt

Incident Summary

The Lessons Learned shall contain only basic facts; will be without reference to a site, location, or employee; and will be developed solely for the purpose of conveying lessons learned to prevent a similar incident, illness, or injury.

Use this column to describe the incident. Include photos within the column.

Heading text is Arial 12pt, bold, 3 pt after. Column text is Arial 10pt, paragraph 0pt before, 3pt after, line spacing 1.0, justified. Cell has default 0.19cm margins left and right. There is a central column to provide a gap between the left hand summary text and the right hand findings text.

You can fill this column with as much text as you wish, but the whole page, including the date at right below must still fit on one page.

The page is now laid out as a table, not as columns so the text in this column will now not flow into the adjacent column.

Insert photo if room is available. Do not include pictures that could identify the employee(s) involved.

Attempt to limit the document to one page when possible.

What Went Wrong?

- Use this section of this column to describe what went wrong.
- Text is Arial 10pt, paragraph 0pt before, 3pt after, line spacing 1.0, justified. Cell has default 0.19cm margins left and right.
- Keep the bulleting.

What Went Right?

- Use this section of this column to describe what went right.
- Text is Arial 10pt, paragraph 0pt before, 3pt after, line spacing 1.0, justified.
- Keep the bulleting.

Lessons Learned

- Use this section of this column to describe lessons learned.
- Text is Arial 10pt, paragraph 0pt before, 3pt after, line spacing 1.0, justified.
- Keep the bulleting.

If the text does not fill the column, you should insert additional line spaces before What Went Right and before Lessons Learned.

Do not allow the text to overwrite the date.

Insert Month Year

Contributing Cause: A cause that contributed to an occurrence but, by itself, would not have caused the occurrence.

Days-Away Case (DAC): Injuries that result in time lost from the job in excess of the day of the injury.

Fatality: Injuries or illnesses that result in death.

First Aid: Cases that require minor treatment administered on the job site. First Aid cases include treatments and subsequent observation of minor scratches, cuts, burns, splinters, and so forth, which do not ordinarily require medical care even though a physician, or registered professional personnel, may provide the care. Repeated use of non-prescription medication at non-prescription dosage, other than antiseptic, is a first aid case.

Incident Rate: The injury frequency expressed in terms of the number of incidence per 100 employees worked in a given year (200,000 hours). The incident rate is calculated for lost time, medical, total Occupational Safety and Health Administration (OSHA) recordable injuries, and total lost workdays.

Medical Injury: Injuries, which require treatment beyond first aid and are not, lost time or restricted duty injuries. Medical injuries include (but are not limited to) stitches, fractures, loss of consciousness, surgery, prescription medicines, etc. Medical injures are OSHA recordable.

Mine Accident, Injury and Illness Reporting: Reporting for projects covered by MSHA and 30 CFR shall follow reporting procedures specified in 30 CFR 50.20 using Form 7000-1. This form has four sections and definitions for data required are included in Part 50 of the regulation.

OSHA Recordable: Those injuries and illnesses that are required to be recorded on the OSHA 300 Log. These injuries include lost time injuries, restricted duty injuries, medical injuries, and all occupational illnesses as defined by 29 CFR 1904 Subpart C and entered on the OSHA 300 Log plus all work related non-first aid occupational illnesses or work related illnesses as listed in 29 CFR 1904, Appendix B regardless of treatment.

Recordable Injury/Illness: Those injury or illnesses that are work-related and results in one or more of the following:

1. Death.
2. Days away from work.
3. Restricted work or transfer to another job.

4. Medical treatment beyond first aid.
5. Loss of consciousness.
6. A significant injury or illness diagnosed by a physician or other licensed health care professional.

Restricted Work Injury: Injuries that result in the individual being assigned to transitional duty and/or temporary job assignment.

Root Cause: The cause that, if corrected, would prevent recurrence of this and similar occurrences. The root cause does not apply to this occurrence only, but has generic implications to a broad group of possible occurrences, and it is the most fundamental aspect of the cause that can logically be identified and corrected.

Critical Injury (Canada):

Per the Ontario Occupational Health and Safety Act, R.R.O. 1990, Regulation 834, a Critical Injury is defined as an injury of a serious nature that:

a. Places life in jeopardy;
b. Produces unconsciousness;
c. Results in substantial loss of blood;
d. Involves the fracture of a leg or arm but not a finger or toe;
e. Involves the amputation of a leg, arm, hand or foot, but not a finger or toe;
f. Consists of burns to a major portion of the body; or
g. Causes the loss of sight in an eye.

Per the British Columbia Workers Compensation Act, RSBC 1996, Chapter 492, a Critical Injury is defined as injury of a serious nature that includes the following:

a. Any incident that kills, causes risk of death, or seriously injures a worker;
b. Any blasting accident that results in injury, or unusual event involving explosives;
c. A diving incident that causes death, injury, or decompression sickness requiring treatment;
d. A major leak or release of a dangerous substance;
e. A major structural failure or collapse of a structure, equipment, construction support system or excavation; and any serious mishap.

URS SAFETY MANAGEMENT STANDARD

Toxic and Hazardous Substances

1. Applicability

This standard applies to the operations of URS Corporation and its subsidiary companies where employees may be exposed to concentrations of specific chemical hazards potentially exceeding permissible exposure limits.

2. Purpose and Scope

The purpose of this standard is to provide guidance in controlling potential employee exposures to toxic and hazardous substances specifically regulated by the U.S. Occupational Safety and Health Administration (OSHA). These substances include the following:

Acrylonitrile	**13 Carcinogens:**
Asbestos	4-Nitrobiphenyl
Benzene	alpha-Napthylamine
Cadmium	Methyl chloromethyl ether
Chromium (VI)	3,3'-Dichlorobenzidine
Coke Oven Emissions	bis-Chloromethyl ether
Cotton Dust	beta-Napthylamine
Ethylene Oxide	Benzidine
Formaldehyde	4-Aminodiphenyl
Hydrogen Sulfide	Ethyleneimine
Inorganic Arsenic	beta-Propiolactone
Lead	2-Acetylaminofluorene
Methylene Chloride	4-Dimethylaminoazobenzene
Methylenedianiline	N-Nitrosodimethylamine
Vinyl Chloride	
1,2-dibromo-3-chloropropane	
1,3-Butadiene	

Note: Hexavalent Chromium is covered in SMS 083.
Lead in construction activities is covered in SMS 022.
Bloodborne pathogens is covered in SMS 051.
Ionizing radiation is covered in SMS 052.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Identification of Hazardous Substances

1. Determine whether there is potential for exposure to any of the hazardous substances (identified in Section 2 of this SMS) in the work area prior to performing any work that may involve handling of one or more of the chemicals, or may result in exposure through production, research, or process activities or through activities such as drilling, excavation, demolition, alteration, salvage, repair, restoration, welding, brazing, grinding, or other surface-disturbing activities.

2. Determination may include the evaluation of material safety data sheets (MSDSs) where any hazardous substance(s) are part of a mixture.

B. Determine the Potential for Employee Exposure to the Hazardous Substance

1. If any of the substances are identified, conduct an exposure assessment based on the type of work to be performed to determine whether employees have the potential to be exposed above any action level identified in the substance-specific regulations. This assessment must be reviewed and approved by a Certified Industrial Hygienist (CIH) approved by a Safety Manager.

2. Include the results of the initial exposure assessment in the facility or site health and safety plan and/or facility or site health and safety file.

C. Controlling Potential Employee Exposures

1. Where the initial exposure assessment identifies the potential for employee exposures above an established action level or permissible exposure limit, develop a facility or site-specific program to address all required regulatory concerns for that substance(s). Completed programs and/or guidance documents are to be included in the facility or site-specific health and safety plans.

2. Toxic and Hazardous Substance Checklist – Attachment 050-1 AMER provides a general checklist to be used in conjunction with the substance-specific standard and to ensure that the program covers all required areas of concern.

D. Compliance Programs

When compliance programs are required by a specific standard, the following outline will be used unless otherwise directed by the standard:

1. Description of work activities that expose personnel.
2. Engineering controls and personal protective equipment to be used and procedures to be followed during exposure activities.
3. Employee job responsibility and crew size during exposure activities.
4. Work practice program (e.g., protective work clothing and equipment, housekeeping, change areas, hygiene practices).
5. Maintenance and decontamination practices to be followed for servicing and cleaning equipment and disposing of waste.
6. Specific instructions on how to set up engineering controls (e.g., ventilation, containment).
7. Procedures to be followed in regulated areas where the chemical hazards are present (e.g., restricted access, signage and instruction, contamination control, emergency procedures).
8. Exposure monitoring data from the initial assessment.
9. Exposure monitoring data from ongoing monitoring as required by the specific standard.
10. Medical surveillance program requirements. Refer to SMS 024 – Medical Screening and Surveillance for additional information.
11. A detailed work schedule for implementation.
12. Recordkeeping requirements.

13. A description of arrangements made among contractors on multicontractor sites with respect to informing affected employees of potential exposure.

14. Name of competent person who will be responsible for performing regular inspections of the job site, materials, and equipment during the job.

A Safety Manager must approve all compliance programs.

E. Training Requirements

1. All employees with potential exposure to the substances covered by this SMS must receive appropriate training prior to performing activities that could result in exposure. This training must be performed initially, upon any substantial changes to the operation covered, and annually. In general, the training should cover the following topics unless otherwise indicated by the specific standard:

   a. Basic Employee Training

      - Regulated areas: authorizations, entrance restrictions.
      - Signs and warnings.
      - Container contents identification.
      - Nature of the specific hazards, including local and systemic toxicity.
      - Specific nature of the operations that could result in exposure.
      - Medical surveillance program and, as appropriate, methods for self-examination.
      - Personal protective equipment and procedures.
      - Engineering controls.
      - Hygiene practices and procedures.
      - Decontamination practices.
      - Respiratory protection requirements and program, if applicable.
      - Emergency practices and procedures.

- Employee's specific role in emergency procedures.
- Recognition and evaluation of potential hazardous situations.
- Employee's specific duties and responsibilities.
- Employee's rights to access records.
- First aid procedures and practices.

b. Supervisor Training (in addition to basic employee training)

- Operations reports required.
- Incident reports required.
- Medical surveillance program.
- Medical examinations.
- Recordkeeping.
- Training program and outline.

2. All training performed as part of this SMS will be documented and tracked in accordance with SMS 055 – Safety Training.

3. These training records will be maintained for a minimum of 5 years.

4. Staff potentially exposed to lead at or above 30 ug/m^3 time-weighted average (TWA) for more than one year will attend refresher training each year this potential exposure exists. After a lapse of more than one year, staff will be retrained prior to working on sites with the potential to exceed 30 ug/m^3 TWA.

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Hazardous substance list.

B. Approved exposure assessment(s).

C. Completed Toxic and Hazardous Substance Checklist – Attachment 050-1 AMER, along with any required guidelines and/or programs.

D. Approved Compliance Program.

E. Training Records.

6. Resources

A. 13 Carcinogens – 29 Code of Federal Regulations (CFR) 1910.1003 and 29 CFR 1926.1004-1016

B. Acrylonitrile – 29 CFR 1910.1045 and 29 CFR 1926.1145

C. Asbestos – 29 CFR 1910.1001 and 29 CFR 1926.1101

D. Benzene – 29 CFR 1910.1028 and 29 CFR 1926.1128

E. Cadmium – 29 CFR 1910.1027 and 29 CFR 1926.1127

F. Chromium (VI) – 29 CFR 1910.1026 and 29 CFR 1926.1126

G. Coke Oven Emissions – 29 CFR 1910.1029

H. Cotton Dust – 29 CFR 1910.1043

I. Ethylene Oxide – 29 CFR 1910.1047 and 29 CFR 1926.1147

J. Formaldehyde – 29 CFR 1910.1048 and 29 CFR 1926.1148

K. Hydrogen Sulfide – Sampling and Analytical Methods

L. Inorganic Arsenic – 29 CFR 1910.1018 and 29 CFR 1926.1118

M. Lead – 29 CFR 1910.1025 and 29 CFR 1926.62

N. Methylene Chloride – 29 CFR 1910.1052 and 29 CFR 1926.1152

O. Methylenedianiline – 29 CFR 1910.1050

P. Vinyl Chloride – 29 CFR 1910.1017 and 29 CFR 1926.1117

Q. 1,2-dibromo-3-chloropropane – 29 CFR 1910.1044 and 29 CFR 1926.1144

R. 1,3-Butadiene – 29 CFR 1910.1051

S. SMS 008 – Asbestos Operations

T. SMS 022 – Lead in Construction

U. SMS 024 – Medical Screening and Surveillance

V. SMS 043 – Personal Monitoring (Industrial Hygiene)

W. SMS 055 – Safety Training

X. SMS 083 – Chromium (VI) Inhalation Exposure Protection

Y. Attachment 050-1 AMER – Toxic and Hazardous Substance Checklist

7. Supplemental Information

A. Benzene Handling Policy and Procedure

B. Hydrogen Sulfide Gas

URS	Safety Management Standard **TOXIC AND HAZARDOUS SUBSTANCE CHECKLIST**	Attachment 050-1 AMER Issue Date: November 2000 Revision 5: March 2013

1.	Have hazardous substances present in the workplace been identified?	☐ Yes	☐ No	☐ NA
2.	Is there a potential for employee exposure above an established action level?	☐ Yes	☐ No	☐ NA
3.	List hazardous substances identified: _____ _____ _____ _____			
4.	If the response to Question 2 is "Yes," have you completed a program or developed guidelines to address the following compliance concerns, where applicable, for each identified hazardous substance?			
	• Permissible Exposure Limits	☐ Yes	☐ No	☐ NA
	• Exposure Monitoring	☐ Yes	☐ No	☐ NA
	• Regulated Areas/Signs	☐ Yes	☐ No	☐ NA
	• Compliance Program	☐ Yes	☐ No	☐ NA
	• Respiratory Protection	☐ Yes	☐ No	☐ NA
	• Protective Clothing	☐ Yes	☐ No	☐ NA
	• Hygiene	☐ Yes	☐ No	☐ NA
	• Hazard Communication	☐ Yes	☐ No	☐ NA
	• Training Program	☐ Yes	☐ No	☐ NA
	• Housekeeping	☐ Yes	☐ No	☐ NA
	• Medical Surveillance	☐ Yes	☐ No	☐ NA
	• Medical Removal	☐ Yes	☐ No	☐ NA
	• Recordkeeping	☐ Yes	☐ No	☐ NA
	• Reporting	☐ Yes	☐ No	☐ NA
	• Standard Operating Procedures	☐ Yes	☐ No	☐ NA
	• Contamination/Waste disposal	☐ Yes	☐ No	☐ NA
	• Emergency Response	☐ Yes	☐ No	☐ NA
	• Engineering Controls	☐ Yes	☐ No	☐ NA

Attach all program and/or guidance material for items checked "Yes" to this checklist (or indicate where the information can be found in the facility or site health and safety plan).

Prepared by: _____ Date: _____

Reviewed by: _____ Date: _____

Approved by: _____ Date: _____

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APPLICABILITY

This is a policy and procedure document for Benzene Handling and Exposure monitoring. This procedure applies to the US-based operations of URS Corporation and its subsidiary companies where Benzene, CAS 71-43-2, is known to be present in the work environment, unless exempted in whole or in part by the scope of 29 CFR 1910.1028, or previously implemented portions of these standards. It can serve as a supplement to a URS-written Health and Safety Plan (HSP) or Safe Work Plan, but should not be considered a substitute for either of those documents.

PURPOSE AND SCOPE

This policy and procedure document provides guidance in controlling potential employee exposure to Benzene as regulated by OSHA standard 29 CFR 1910.1028.

IMPLEMENTATION

Implementation of this standard is the responsibility of the manager directing activities of the facility or site.

PERMISSIBLE EXPOSURE LIMITS AND ACTION LEVEL

The Permissible Exposure Limits are 1 ppm (part per million) calculated as an 8-hour time-weighted average (TWA), and the Short-Term Exposure Limit (STEL) is 5 ppm as averaged over any 15 minute period. The action level, defined as an airborne concentration of Benzene calculated as an 8-hour time-weighted average, is 0.5 ppm. Benzene has a “skin” designation in California. The Action Level is below the typical PID monitoring equipment sensitivity.

REGULATED AREA

The regulated area is defined as any area where airborne concentrations of Benzene exceed or can reasonably be expected to exceed the permissible exposure limits, either the 8-hour time-weighted average exposure of 1 ppm or the short-term exposure limit of 5 ppm for 15 minutes. Access to regulated areas shall be limited to authorized persons.

EXPOSURE MONITORING

Determinations of employee exposure to Benzene shall be made from representative breathing zone air samples. Representative 8-hour TWA employee exposures shall be determined on the basis of one full shift exposure sample in the work area.

Determinations of STEL compliance shall be made from 15-minute employee breathing zone samples. These samples shall be taken at work areas where it is reasonable to expect higher Benzene concentrations, such as:

- Where tanks are opened, filled unloaded or gauged;
- Where containers or process equipment are opened, and
- Where Benzene is used for cleaning or as a solvent in an uncontrolled environment.

The remaining elements of monitoring, such as minimum time frames for initial and periodic monitoring and employee notification shall be at least as stringent as OSHA 29 CFR 1910.1028(e)(2) through (e)(7).

Air monitoring options include:

- Benzene-specific instruments such as the UltraRae Benzene PGM-7200 or Draeger CMS;
- Detector tubes (i.e., Draeger); and
- Sample media for subsequent laboratory analysis.

BENZENE HANDLING AND INFORMATION

Physical and Chemical Characteristics: Benzene is a clear, colorless liquid with a distinctive sweet aromatic odor. Its boiling point is 176 degrees F and its flash point is 12 degrees F. The flammable limits in air are 1.3% - 7.5%. Benzene is a flammable liquid. Its vapors can form explosive mixtures. All ignition sources must be controlled when Benzene is used, handled, or stored. Where liquid or vapor may be released, such areas shall be considered as hazardous locations. Benzene vapors are heavier than air; thus the vapors may travel along the ground and be ignited by open flames or sparks at locations remote from the site at which Benzene is handled. Benzene is typically found combined with other petroleum hydrocarbons, i.e., gasoline or other fuel fractions.

Synonyms: Benzol, benzole, coal naphtha, cyclohexatriene, phene, phenyl hydride, pyrobenzol. (Benzin, petroleum benzin and Benzine do not contain Benzene).

Work Practices: Proper handling of Benzene - containing materials (those materials containing 0.1 percent or more of benzene) can greatly reduce exposure, the need for regulated areas, and the use of protective equipment. The following good work practices must be followed:

- When draining equipment containing Benzene materials, draining must be performed in a closed system;
- Equipment containing Benzene materials must be cleaned by appropriate method prior to opening; and
- Use Benzene-free purchased products when possible. Types of products, which may contain Benzene, include paints, thinners, degreasers, cleaners, etc. Under no circumstances are aerosol products containing Benzene allowed to be used. Consult the Materials Safety Data Sheet (MSDS) to determine if the product is Benzene-free.

SYMPTOMS OF EXPOSURE

Benzene can affect your health if you inhale it, or if it comes in contact with your skin or eyes. Benzene is also harmful if you happen to swallow it. It has poor warning properties since the mean odor threshold is reported as 34 ppm.

Effects of Overexposure

1. Short-term (acute) overexposure: If you are overexposed to high concentrations of Benzene, well above the levels where its odor is first recognizable, you may feel breathless, irritable, euphoric, or giddy; you may experience irritation in eyes, nose, and respiratory tract. Locally, irritation and reddening of the skin may occur and in severe cases the skin may blister. You may develop a headache, feel dizzy, nauseated, or intoxicated. Severe exposures may lead to convulsions and loss of consciousness / coma.

2. Long-term (chronic) exposure: Repeated or prolonged exposure to Benzene, even at relatively low concentrations, may result in various blood disorders, ranging from a plastic anemia to leukemia, an irreversible, often fatal disease. Many blood disorders associated with Benzene exposure may occur without overt symptoms.
3. Target organs / areas of the body:
   - Blood forming systems / bone marrow;
   - Central Nervous System; and
   - Eyes, skin, respiratory system.

SIGNAGE

The following sign shall be posted at entrances to any Benzene regulated area:

DANGER
BENZENE
CANCER HAZARD
FLAMMABLE – NO SMOKING
AUTHORIZED PERSONNEL ONLY
RESPIRATOR REQUIRED

Containers of Benzene in the workplace shall bear the following forms of warning:

DANGER
CONTAINS BENZENE
CANCER HAZARD
MEDICAL SURVEILLANCE

Medical surveillance shall be made available for any employee who is or may be exposed to Benzene at or above the action level for 30 or more days per year. Medical surveillance shall also be made available for employees that are or may be exposed to Benzene at or above the PELs for 10 or more days per year, or for any employee exposed to Benzene in an emergency situation. All medical examinations and procedures shall be performed by or under the supervision of a licensed physician. An accredited laboratory shall conduct all laboratory tests. All medical examinations and procedures will be provided by URS to its employees without cost, and at a reasonable time and place.

Additional elements of medical monitoring, such as examinations, referrals, and physician's opinions shall be at least as stringent as OSHA 29 CFR 1910.1028(i)(2) through (i)(7).

Medical Removal Plan: When a physician makes a referral to a hematologist/internist, the URS employee will be removed from areas where exposures may exceed the Action level until such time as the physician makes a medical determination. Additional elements of the medical removal plan, such as follow-up examinations and medical removal protection benefits shall be at least as stringent as OSHA 29 CFR 1910.1028(i)(8) through (i)(9).

WRITTEN COMPLIANCE PLAN

Engineering controls and work practices shall be instituted whenever feasible, to reduce and maintain employee exposures to Benzene at or below the PEL, except to the extent that URS can establish that the controls are not feasible per OSHA 29 CFR 1910.1028(f)(1)(iii) or (g)(1).

When any exposures are over the PELs, URS shall develop a written compliance program to reduce employee exposure to or below the PELs primarily by means of engineering and work practice controls. The compliance program will be at least as stringent as OSHA 29 CFR 1910.1028(f). This compliance program will be included as part of the project and site-specific HSP or Safe Work Plan.

The plan shall be reviewed and revised as appropriate based on the most recent exposure monitoring data.

PERSONAL PROTECTIVE EQUIPMENT / RESPIRATORY PROTECTION

Personal Protective Equipment (PPE): PPE shall be worn where appropriate to prevent eye contact and limit dermal exposure to liquid Benzene. Eye and face protection shall meet the requirements of OSHA 29 CFR 1910.133. Appropriate protective equipment shall include such items as boots, gloves, sleeve, aprons, etc. Splash-proof safety goggles shall be provided if it is possible that Benzene liquid could get into the eyes. Details shall be provided in the written project and site-specific HSP or Safe Work Plan.

Respiratory Protection: Respirators are required for those operations in which engineering controls or work practice controls are not feasible to reduce exposure at or below the PELs (8-hour TWA of 1 ppm or STEL of 5 ppm for any 15-minute period). However, where it can be documented that Benzene is used or present in the workplace less than 30 days a year, respirators may be used in lieu of engineering controls or work practice controls. If respirators are worn, they must have certification by the National Institute for Occupational Safety and Health (NIOSH), and respirator cartridge or canisters must be replaced before the end of their service life, or the end of the shift, whichever occurs first. All employees wearing a respirator must be a part of the medical surveillance program. Additionally, they must have undergone respirator protection program training and a respirator fit test prior to work assignment.

HAZARD COMMUNICATION

URS will provide access to its employees, of any Material Safety Data Sheet (MSDS) that addresses the Benzene content in the workplace, complying with OSHA 29 CFR 1910.1200(g)(8).

Employees who work with Benzene shall be Hazard Communication trained, in accordance with OSHA 29 CFR 1910.1200(h)(1). Additionally, they shall be informed of any areas in their workplace where Benzene is present, and the location and availability of a written Hazard Communication program. In California, employees will also be informed of the provisions of Proposition 65.

TRAINING

Information and training shall be provided to employees at the time of initial assignment to a work area where Benzene is present. For those employees who work in areas known or

expected to be above the Benzene Action level, information and training shall be provided upon their initial assignment in the work area, and annually thereafter.

Additionally, URS shall provide to its employees an explanation of the contents of the Benzene Occupational Safety and Health Standard – OSHA 29 CFR 1910.1028, including Appendices A and B, and shall inform its employees of:

- Where the standard is available;
- A description of URS' medical surveillance program; and
- An explanation of the information contained in Appendix C of the standard.

RECORDKEEPING

URS will establish and maintain records regarding employee exposure, monitoring and sampling, exposure levels, and respiratory devices to be worn. URS will retain these records for at least 30 years, in accordance with OSHA 29 CFR 1910.1028(k) and OSHA 29 CFR 1910.1020.

PROJECT AND SITE-SPECIFIC BENZENE HANDLING INFORMATION

The following topics related to Benzene handling should be considered project and site-specific, and will depend on the details of the project involved. A HSP or Safe Work Plan shall be written for any project / work assignment involving Benzene and should address the following additional topics:

- Housekeeping and Hygiene;
- Emergency Response; and
- Benzene Contamination / Waste Disposal / Spill Reporting.

APPLICABILITY

This procedure applies to operations of URS Corporation and its subsidiary companies where hydrogen sulfide gas, CAS 7783-06-4, is known to be present in the work environment. It can serve as a supplement to a URS-written Health and Safety Plan (HSP) or Safe Work Plan, but should not be considered a substitute for either of those documents.

PURPOSE AND SCOPE

This document provides guidance in controlling potential employee exposure to hydrogen sulfide.

IMPLEMENTATION

Implementation of this standard is the responsibility of the manager directing activities of the facility or site.

PERMISSIBLE EXPOSURE LIMITS AND ACTION LEVEL

The OSHA Construction Permissible Exposure Limit is 10 ppm (part per million) calculated as an 8-hour time-weighted average (TWA). The OSHA General Industry Permissible Exposure Limits are a ceiling concentration of 20 ppm (part per million) for a 10 minute exposure with a maximum peak of 50 ppm. The URS action level, defined as an airborne concentration of hydrogen sulfide is 10 ppm instantaneously. If the action level is exceeded, work will stop and personnel will assess the work area and implement engineering controls, administrative controls or don personal protective equipment.

EXPOSURE MONITORING

Personal and portable hydrogen sulfide monitor/alarm units are designed to provide workers with a measure of protection by warning of potentially hazardous levels of hydrogen sulfide within the immediate work area. These personal hydrogen sulfide monitor units should be set to alarm (both visible and audible) at 10 ppm to alert and warn personnel to evacuate the area or to use respiratory protection equipment (SCBA) if they are to remain in the area.

HYDROGEN SULFIDE HANDLING AND INFORMATION

Physical and Chemical Characteristics: Hydrogen sulfide is a colorless gas with a strong odor of rotten eggs. [**Note**: Sense of smell becomes rapidly fatigued & cannot be relied upon to warn of the continuous presence of hydrogen sulfide. Shipped as a liquefied compressed gas.]. Hydrogen sulfide is soluble in water. Its boiling point is -77 degrees F (-60 degrees C). The flammable limits in air are 4% - 44%. Hydrogen sulfide is a flammable gas. All ignition sources must be controlled when hydrogen sulfide is present. Hydrogen sulfide is heavier than air and may accumulate in low-lying areas.

Hydrogen sulfide often results from the bacterial breakdown of organic matter in the absence of oxygen, such as in swamps and sewers; this process is commonly known as anaerobic digestion.

Synonyms: Hydrosulfuric acid, Sewer gas, Sulfuretted hydrogen.

SYMPTOMS OF EXPOSURE

Hydrogen sulfide can affect your health if you inhale it, or if it comes in contact with your skin or eyes.

Effects of Overexposure

1. Short-term (acute) overexposure: If you are overexposed to high concentrations of hydrogen sulfide, you may experience irritation eyes, respiratory system; apnea, coma, convulsions; conjunctivitis, eye pain, lacrimation (discharge of tears), photophobia (abnormal visual intolerance to light), corneal vesiculation; dizziness, headache, lassitude (weakness, exhaustion), irritability, insomnia; and gastrointestinal disturbance.
2. Target organs / areas of the body:
    - Eyes, skin, respiratory system and central nervous system.

SIGNAGE

The following sign may be posted near area where hydrogen sulfide is present:

WARNING HAZARDOUS AREA
HYDROGEN SULFIDE
EXTREME HEALTH HAZARD
FATAL OR HARMFUL IF INHALED

WRITTEN COMPLIANCE PLAN

Engineering controls and work practices shall be instituted whenever feasible, to reduce and maintain employee exposures to hydrogen sulfide at or below the PEL.

URS shall develop a written compliance program to reduce employee exposure to or below the PELs primarily by means of engineering and work practice controls. The plan will identify locations where employees may be exposed to hydrogen sulfide while working on a project. In addition, the plan will include site-specific contingency/emergency plans. This compliance plan will be included as part of the project and site-specific Health and Safety Plan or Safe Work Plan. All employees must review the site specific Health and Safety Plan or Safe Work Plan.

PERSONAL PROTECTIVE EQUIPMENT / RESPIRATORY PROTECTION

Personal Protective Equipment (PPE): Personnel shall wear protective equipment to prevent eye contact. Selection of eye protection depends on the work operations conducted and other personal protective equipment worn. It may include safety glasses, chemical goggles, face shields, or a full-facepiece respirator (refer to respiratory selection below). Details shall be provided in the written project and site-specific HSP or Safe Work Plan.

Respiratory Protection: Respirators are required for those operations in which engineering controls or work practice controls are not feasible to reduce exposure at or below the action level. Employees may wear the following respirator protection:

- Full facepiece pressure-demand Self-Contained Breathing Apparatus (SCBA) with a service life of 30 minutes. Pressure demand respirators are positive pressure

atmosphere- supplying respirators that admit breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.

- Full facepiece pressure-demand Supplied Air Respirator (SAR) with auxiliary self-contained air supply.

- Respirators provided solely for escape shall be certified by NIOSH, or have equivalent approval, for escape from atmospheres containing hydrogen sulfide. Escape-only respirators have a single function: to allow a person working in a normally safe environment sufficient time to escape from suddenly occurring respiratory hazards. Selection of an escape-only respirator should include consideration of factors such as maximum expected concentration, escape time (i.e., exposure duration), breathing rate, respirator service life, and eye irritation. Supplied air escape-only respirators are recommended.

All employees wearing a respirator must be in a medical surveillance program. Additionally, they must have undergone respirator protection program training and a respirator fit test prior to work assignment.

TRAINING

Information and training shall be provided to employees at the time of initial assignment to a work area where hydrogen sulfide is present.

Employees who work in areas with the potential for exposure to hydrogen sulfide must be informed of the hazards of hydrogen sulfide exposure, symptoms of overexposure, use of respiratory protection equipment, and special precautions to minimize exposure, and shall be trained in the hazards associated with hydrogen sulfide and the use of personal protective equipment. Trained employees shall:

- Demonstrate knowledge of the hazards of hydrogen sulfide.
- Comply with the provisions of this and other applicable procedures.
- Properly use and maintain personal protective equipment.
- Demonstrate knowledge of site-specific operations/contingency plan procedures, if applicable.

RECORDKEEPING

URS will establish and maintain records regarding employee exposure, monitoring and sampling, exposure levels, and respiratory devices to be worn. URS will retain these records for at least 30 years, in accordance with OSHA 29 CFR 1910.1028(k) and OSHA 29 CFR 1910.1020.

URS SAFETY MANAGEMENT STANDARD

Office Ergonomics

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where job activities are performed at computer workstations.

2. Purpose and Scope

The primary goal of this standard is to eliminate or reduce work-related cumulative trauma disorders, or "CTDs" (also called musculo-skeletal disorders, repetitive strain injuries, repetitive motion injuries, and occupational overuse syndrome). Examples of CTDs are tendinitis, carpal tunnel syndrome, rotator cuff syndrome, epicondylitis, and De Quervain's disease.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Management Leadership

URS management supports this program by encouraging employees to report signs and symptoms of CTDs whenever they occur, and by authorizing the necessary resources to conduct training and ergonomic control measures at no cost to the employee.

B. Workstation Ergonomic Self-Assessment

URS employees should complete Attachment 054-1 NA – Workstation Ergonomic Self-Assessment, in the following circumstances:

- When a new employee is hired and assigned a permanent workstation, the employee should complete a Workstation Ergonomic Self-Assessment within 30 days of moving into the permanent workspace, or as soon as possible after the workspace is assigned.

- When an employee is moved to a new, permanent workspace, the employee should complete a Workstation Ergonomic Self-Assessment within 30 days of moving into the permanent workspace, or as soon as possible after the workspace is assigned.

The employee should provide the completed Workstation Ergonomic Self-Assessment to their supervisor to review and file. Supervisors may request assistance from a HSE representative to address concerns noted on the assessment form.

C. Reporting Problems

Early recognition and reporting of signs and symptoms of CTDs are essential in preventing the development of CTDs and may preclude impairment and/or disability. Employees should notify their supervisor and submit a completed Attachment 049-1 –Incident/Near Miss Report when experiencing the following warning signs: intermittent and migratory pain in the back, neck, or shoulder; fatigue or weakness in a limb; tingling or burning in fingers or thumb; numbness in an extremity; lack of muscular coordination; burning of eyes or difficulty focusing; or stiffness and cramping in the neck, upper back, shoulder, elbow, forearm, wrist, hand, thumb, or fingers.

D. Workstation Ergonomic Analysis

The HSE Manager will perform an ergonomic assessment (Attachment 054-2 NA) in the following circumstances:

- An employee reports signs and symptoms of a possible CTD or an employee's doctor requests an ergonomic evaluation for the employee (complete within 1 week of reporting, or as soon as possible).
- An employee requests an evaluation as a pro-active measure.
- As part of a general office audit when other employee's have reported CTDs, or as part of an office move.

E. Control Measures

Ergonomics includes a three-tier hierarchy of controls that can be used to help prevent and manage CTDs.

1. Engineering Controls are the preferred method to prevent and control CTDs. Engineering Controls include, but are not limited to, proper workstation layout, and selection and use of ergonomic equipment (see Supplemental Information Sheet A).
2. Administrative Controls are management-approved practices designed to reduce or prevent exposure to ergonomic risk factors, including job rotation, alternating tasks, and ergonomic training.

3. Work Practice Controls include employee's responsibilities to work safely at their workstation. Work Practice Controls may include taking mini-breaks, using proper work postures, and/or conducting stretching exercises (see Supplemental Information Sheet B).

F. Training

Ergonomic training is needed for employees assigned to jobs that require 4 or more hours per day of working at the keyboard. The training course content will include the following:

1. The signs, symptoms, and consequences of CTDs.
2. The importance of early reporting of CTD symptoms.
3. Site-specific and equipment-specific exposures associated with CTDs (i.e., word processing, data entry, 10-key calculators, and CAD designers).
4. Methods used to minimize CTDs.

G. Program Evaluation

1. A follow-up evaluation must be conducted within 30 days following a workstation analysis in order to ensure that control measures were effective in reducing or eliminating the ergonomic risk factors, and to assess if the implemented solutions reduced symptoms.
2. In addition, long-term indicators for the effectiveness of this ergonomic program will include annual review by the VP / Director Health, Safety, and Environment (HSE), and comparing the CTD incident rate and severity rate to previous years' rates.

5. Documentation Summary

The following documentation will be maintained in the office or project files:

A. Incident/Near Miss

B. Workstation Ergonomic Self-Assessment

C. Workstation Ergonomic Checklist

6. Resources

A. National Institute for Occupational Safety and Health (NIOSH) Elements of Ergonomics Programs

B. U.S. Department of Labor, OSHA Safety and Health Topics Ergonomics

C. California Title 8 General Industry Safety Orders Section 5110, Ergonomics

D. Canadian Centre for Occupational Health and Safety

E. SMS 049 – Injury / Illness / Incident Reporting and Notifications

F. Workstation Ergonomic Self-Assessment – Attachment 054-1 NA

G. Workstation Ergonomic Checklist – Attachment 054-2 NA

7.0 Supplemental Information

A. Ergonomic Posture

B. Stretching Exercises

Reduce glare on work surfaces by decreasing overhead lighting and using window shades effectively

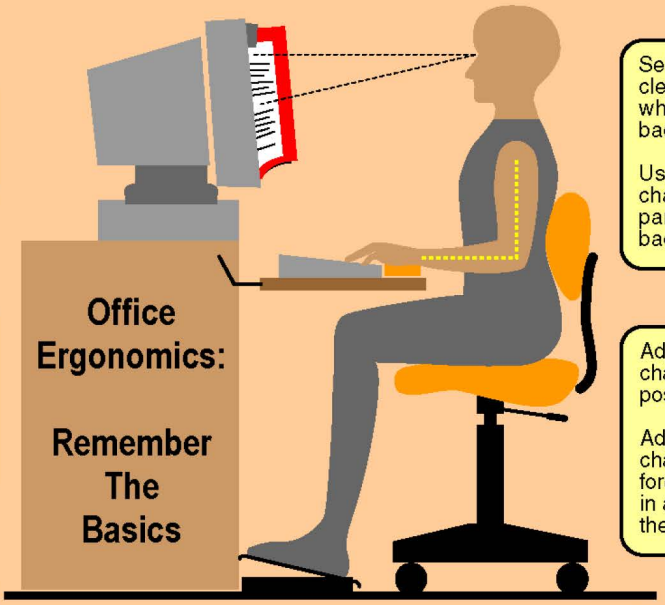
Add a task light to illuminate documents properly

Use a document holder to place source documents as close to the computer screen as possible and at the same height and distance and other input devices next to the keyboard

Sit with head and neck in upright position, even while on the telephone

Keep shoulders relaxed and elbows close to the body

Tilt or swivel the monitor screen to eliminate reflections on the screen or add an anti-glare filter



Select a chair that allows clearance behind knees when seated against the backrest

Use the backrest of the chair to provide full support particularly for the lower back

Place the monitor directly in front of you while at the keyboard

Position the top of monitor screen at or below eye level and about an arm's length away

Adjust the height of the chair to achieve a proper posture

Adjust the keyboard or chair height to keep forearms, wrists and hands in a straight line while using the keyboard

Maintain a proper posture having a 90 degree or greater angle at the hips and knees while the feet are supported by the floor or footrest

Allow ample clearance to move knees and legs under the keyboard support

Block noise with fabric partitions or use earplugs, music or a small fan to mask noise

Below are graphics of five stretching exercises to be performed to relieve tension from working at the computer. These exercises may be performed 2-3 times throughout the workday. Slowly perform neck and shoulder rolls 3-4 times in each direction. Gently hold each stretch while counting 5-15 seconds, repeat three times.

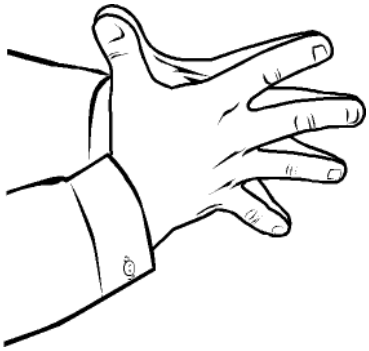
Neck roll

Shoulder roll

Upper body stretch

Wrist stretch

Finger stretch



URS	Health, Safety and Environment **WORKSTATION ERGONOMIC SELF-ASSESSMENT**	Attachment 054-1 NA Issue Date: November 2000 Revision 2: December 2009

Workstation User: _____ **Office:** _____

Location: _____ **Date:** _____

"No" responses indicate potential problem area: contact your HSE Manager for additional guidance.		
	CHAIR	
1.	Is your chair in good condition?	☐ Yes ☐ No
2.	Is your chair height adjustable?	☐ Yes ☐ No
3.	If your chair has wheels or casters, does it have five legs?	☐ Yes ☐ No
4.	Is the front of the seat pan 2 to 3 finger widths from the back of your knees?	☐ Yes ☐ No
5.	Is your back properly supported when properly seated?	☐ Yes ☐ No
6.	If your chair has arms, do they provide adequate support and are they adjustable?	☐ Yes ☐ No ☐ Not Applicable
7.	While you are seated, do your feet rest comfortably on the floor?	☐ Yes ☐ No
	COMPUTER EQUIPMENT	
8.	Is your monitor positioned directly in front of you? If you have two monitors, are they set side-by-side and close together, meeting at the center-front in front of you?	☐ Yes ☐ No
9.	Is the top 1/3 of your monitor approximately at or below eye-level?	☐ Yes ☐ No
10.	Does your keyboard height allow your forearms to be flat while keying?	☐ Yes ☐ No
11.	Is your keyboard directly in front of you?	☐ Yes ☐ No
12.	If you have a keyboard platform or keyboard tray, is it adjustable and wide enough for your keyboard and mouse?	☐ Yes ☐ No ☐ Not Applicable
13.	Is your mouse or trackball the right size and comfortable for use?	☐ Yes ☐ No
14.	If your wrists are not in a neutral (straight) position, are keyboard and mouse wrist pads used?	☐ Yes ☐ No
15.	Are your keyboard and mouse next to each other and on the same level?	☐ Yes ☐ No
	WORKSPACE	
16.	Are frequently used items and materials within arm's reach?	☐ Yes ☐ No
17.	Is the area under your desk free from knee or tripping hazards?	☐ Yes ☐ No
18.	Are work and writing surfaces free of sharp edges in contact with your forearms/wrists?	☐ Yes ☐ No
19.	Is overhead lighting sufficient?	☐ Yes ☐ No
20.	If used, is your document holder next to the monitor and on your dominant eye side?	☐ Yes ☐ No ☐ Not Applicable
21.	Is your phone located on your non-dominant side, and close to you?	☐ Yes ☐ No
	WORK PRACTICE	
22.	Can you rotate your tasks when necessary?	☐ Yes ☐ No
23.	Do you take breaks for your vision, and do you conduct eye exercises when necessary?	☐ Yes ☐ No
24.	Do you take breaks to stretch and reduce muscle fatigue when necessary?	☐ Yes ☐ No
	POSTURE	
25.	Are your feet flat on the floor when seated?	☐ Yes ☐ No
26.	Is your head looking straight-forward when working?	☐ Yes ☐ No
27.	Are your wrists in a neutral or straight position when keying and mousing?	☐ Yes ☐ No
28.	Are your shoulders comfortable when keying and mousing?	☐ Yes ☐ No
29.	Are your elbows at a 90- to100-degree angle when keying?	☐ Yes ☐ No

Actions Needed: _____

_____

URS	Health, Safety and Environment **WORKSTATION ERGONOMIC CHECKLIST**	Attachment 054-2 NA Issue Date: November 2000 Revision 2: December 2009

Workstation User: _____ **Location:** _____

Workstation Auditor: _____ **Date:** _____

"No" responses indicate potential problem areas that should receive further investigation.		
1.	Is the monitor directly in front of employee?	☐ Yes ☐ No
2.	Is the screen at a comfortable reading distance?	☐ Yes ☐ No
3.	When sitting tall and looking straight ahead, is the user looking near the top edge of the screen, or is the monitor height so that the neck does not need to bend forward or backwards?	☐ Yes ☐ No
4.	Is there a copyholder at the same height as the monitor?	☐ Yes ☐ No ☐ Not Applicable
5.	Is the lighting satisfactory, and without glare or reflection?	☐ Yes ☐ No
6.	If corrective lenses are used, are they the proper prescription?	☐ Yes ☐ No ☐ Not Applicable
7.	Is there a headset available for those employees requiring long telephone operations?	☐ Yes ☐ No ☐ Not Applicable
8.	Is the spine in its natural “S” shape position?	☐ Yes ☐ No
9.	Are the shoulders relaxed with the upper arm hanging straight down in a vertical position?	☐ Yes ☐ No
10.	Is the elbow at an approximate 90-degree angle, held close to the body?	☐ Yes ☐ No
11.	Are the forearms parallel with the floor?	☐ Yes ☐ No
12.	Are the wrists relaxed in a neutral straight position, without flexing up or down or in or out (with or without a wrist rest)?	☐ Yes ☐ No
13.	Is the keyboard kept flat, and at or just below elbow level?	☐ Yes ☐ No
14.	Is the mouse positioned close to the body, level with the keyboard, used with straight neutral wrists?	☐ Yes ☐ No
15.	Does the user strike the keyboard and click the mouse with a relaxed and light touch?	☐ Yes ☐ No
16.	If the wrists are not in a neutral (straight) position, are keyboard and mouse wrist pads used?	☐ Yes ☐ No
17.	Are often-used items within easy reach?	☐ Yes ☐ No
18.	Does the chair have sufficient lumbar support?	☐ Yes ☐ No
19.	Does the chair have an adjustable seat height?	☐ Yes ☐ No
20.	Does the chair have rolling casters?	☐ Yes ☐ No
21.	Are the thighs parallel to the floor?	☐ Yes ☐ No
22.	Is the angle between the thighs and trunk at 90 degrees or slightly greater?	☐ Yes ☐ No
23.	Is the angle at the knees about 90 degrees or slightly less?	☐ Yes ☐ No
24.	Are the feet flat on the floor or on a footrest?	☐ Yes ☐ No
25.	Is there adequate room for the legs? Is the desktop thin?	☐ Yes ☐ No
26.	Does the user take frequent small breaks and a lunch break?	☐ Yes ☐ No
27.	Does the user perform stretching exercises to relieve tension?	☐ Yes ☐ No
28.	If possible, does the user vary job tasks?	☐ Yes ☐ No

Actions Needed: _____

URS SAFETY MANAGEMENT STANDARD

Training

1. Applicability

This standard applies to the operations of URS Corporation and its subsidiary companies. These are the minimum safety-related training requirements and tracking procedures. Additional training requirements may exist in Safety Management Standards related to a specific task. Specific geographic entities, business units, and projects may have additional training requirements. Many government sites/projects will provide and track safety training through site contracted training providers.

2. Purpose and Scope

This standard was developed to assist employees and managers in the identification of training requirements and to define the URS procedures for tracking/documenting this training. It covers safety-related training only. The goals of this standard are to ensure regulatory compliance and to provide employees with the information/training they need to accomplish their work assignments safely; prevent injuries to themselves, coworkers, surrounding communities, and customers; and protect company and/or customer property and the environment.

3. Implementation

A. The assigned Site/Office Manager is responsible for ensuring compliance with this standard and any additional requirements necessary because of the physical location of the facility and/or the business units in operation at that facility.

B. The Program/Project Manager is responsible for ensuring project or program-related compliance (e.g., compliance of project/program staff members) with this standard and any additional training necessary because of specific project/program activities.

4. Requirements

A. Employee training requirements are dictated by the work each employee performs (or is expected to perform) and the geographic area(s) where the employee performs these activities. In most cases, there is a regulatory driver for specific training.

B. All new URS employees must be provided an orientation on the URS Safety Program. Details on orientation requirements are provided in SMS 025 – New Employee Orientation and SMS 078 – Short Service Employee.

C. Training Evaluation – Attachment 055-1 AMER is a list of the most common courses that may be required, the frequency, and expected participants. This table will be updated as regulatory and company requirements change. These requirements may be necessary due to the individual's project, site, or office activities, or the location of the facility. The responses to the evaluation dictate what training an individual needs in addition to the basic URS courses. Once these requirements have been identified, each employee is expected to complete the required training as soon as possible and to track his/her progress. Attachment 055-1 AMER contains four tables. Table 1 is applicable to all divisions of URS. Table 2-4 are division specific requirements. Table 1 and the applicable division-specific table should be used to evaluate an employee's training requirements.

D. Training requirements should be re-evaluated at least annually and more frequently if an employee's assigned duties change significantly.

E. To ensure consistency in content and duration and in meeting regulatory and company requirements, URS training materials should be used as the basis for training whenever they are available. Trainers may always elect to supplement the base training materials for these courses with specifics for the program, project, customer, office, or geographic unit.

F. For training requiring a certificate (regulatory or URS-driven), trainers must be Group, Business, Regional, or Strategic Business Unit (SBU) Safety Managers or approved by the Group, Business, Regional, or SBU Safety Manager. Trainers must have successfully completed a training course for the subjects which they are expected to teach or they shall have the academic/professional credentials and instruction experience necessary to demonstrate proper knowledge of the subject matter.

G. Training is offered in a variety of formats, including classroom instruction, computer based training (CBT), and on-the-job (OTJ) training. To ensure that training is consistent and that all requirements are being met, external courses (e.g., 40-Hour HAZWOPER), including classroom instruction and CBT, should be evaluated and approved by the Group, Business, Regional, or SBU Safety Manager and an employee's supervisor. Local safety staff will be able to assist in identifying qualified external vendors and courses as necessary.

H. URS staff is expected to be familiar with applicable training requirements. Staff members are expected to track their own progress toward meeting those requirements.

I. Certification maintenance point tracking is the responsibility of the employee holding the certification.

J. Supervisors and office/location managers are expected to be familiar with the training requirements of staff that report to them. Project Managers are expected to identify regulatory requirements for safety-related training as part of the project planning and staffing.

5. Documentation Summary

A. Those courses ~~so~~ denoted in Attachment 055-1 AMER or commonly required training will be tracked in a training database.

B. Classroom training must be documented using an attendance record and course agenda. Attachment 055-2 AMER - Attendance Record may be used to document attendance.

C. For training provided by customers/vendors, training documentation must be entered into a training database and documentation shall be maintained by the employee. Copies of certificates or other evidence of required project training may be included in project training files.

In some cases, objective evidence of comprehension is required (passing a test) and this information may be tracked in addition to the course information.

D. Group, Business, Regional and SBU Safety Managers will ensure that the course agenda meets regulatory/company requirements.

E. Original attendance sheets, agendas, course evaluations, completed tests, and copies of certificates will be maintained. These should be filed by course then by date for easy access/auditing.

F. Locations/projects/programs will maintain records on any project, program, or location- or site-specific training requirements such as fire extinguisher training, project health and safety plan training, and chemical hygiene program (laboratory safety) training.

G. For Infrastructure & Environment employees, for courses requiring certification, the Vice President of Safety (or designee) or customer/vendor will issue the certificates.

For Federal Services employees, a copy of the certificate is to be provided to the appropriate Human Resources Manager for inclusion into the personnel record (Human Resources Management System or HRMS).

6. Resources

A. SMS 025 – New Employee Orientation

B. SMS 078 – Short Service Employee

C. Attachment 055-1 AMER –Training Evaluation

D. Attachment 055-2 AMER – Attendance Record

7. Resources

A. Competent Persons in Construction

B. Competent Persons in General Industry

URS	Safety Management Standard **ATTENDANCE RECORD**	Attachment 055-2 AMER Issue Date: November 2000 Revision 11: March 2014

DATE: _____ **PAGE** _____ **OF** _____

LOCATION: _____

TYPE OF COURSE: _____

INSTRUCTOR SIGNATURE (required): _____

Name (print legibly)	Signature	Office Location	Employee Number

(Employee Number requested for training database use only, will be kept confidential.)

This document is uncontrolled when printed, saved or copied.
Please refer to the URS Safety website on the Sourse for the latest version.

This supplement defines and lists the areas within the OSHA Construction Standards where a competent person is required to be part of a particular project activity

A. Definition

A **competent person** is "one who is capable of identifying existing and predictable hazards in the surrounding or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them (Subpart C; 29 CFR 1926.32(f))."

B. Accident Prevention

"(Accident prevention) programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by **competent persons** designated by the employers (Subpart C: 29 CFR 1926.20(b)(2))."

C. Ionizing Radiation

"Any activity which involves the use of radioactive materials or X-rays, whether or not under license from the Nuclear Regulatory Commission, shall be performed by **competent persons** specially trained in the proper and safe operation of such equipment. In the case of materials used under Commission license, only persons actually licensed, or **competent persons** under direction and supervision of the licensee, shall perform such work (Subpart D; 29 CFR 1926.53(b))."

D. Respiratory Protection

"Administrative or engineering controls must first be implemented whenever feasible. When such controls are not feasible to achieve full compliance, protective equipment or other protective measures shall be used to keep the exposure of employees to air contaminants within the limits prescribed in this section. Any equipment and technical measures used for this purpose must first be approved for each particular use by a **competent** industrial hygienist or other technically qualified person (Subpart D; 29 CFR 1926.55(b))."

E. Lead

"The compliance program shall provide for frequent and regular inspections of job sites, materials, and equipment to be made by a **competent person** (Subpart D; 29 CFR 1926.62(e)(2)(iii))."

F. Hearing Protection

"Ear protective devices inserted in the ear shall be fitted or determined individually by **competent persons** (Subpart E; 29 CFR 1926.101(b))."

G. Material Handling

"Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a **competent person** designated by the employer (Subpart H; 29 CFR 1926.251(a)(6))."

H. Welding, Cutting, and Heating

"Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by a **competent person** to determine its flammability (Subpart J; 29 CFR 1926.354(a))."

I. Assured Equipment Grounding Conductor Program

"The employer shall designate one or more **competent persons** to implement the program (Subpart K; 29 CFR 1926.404(b)(1)(iii)(B))."

J. Scaffolding

1. "Before the scaffold is used, direct connections shall be evaluated by a **competent person** who shall confirm, based on the evaluation, that the supporting surfaces are capable of supporting the loads to be imposed. In addition, an engineer experienced in such scaffold design shall design masons' multi-point adjustable suspension scaffold connections (Subpart L; 29 CFR 1926.451(d)(3)(i))." Note that this passage applies to suspension scaffolds only.

2. "The employer shall have each employee who is involved in erecting, disassembling, moving, operating, repairing, maintaining, or inspecting a scaffold trained by a **competent person** to recognize any hazards associated with the work in question (Subpart L; 29 CFR 1926.454(b))." Per the standard, the training should include the following topics, as applicable:

    a. The nature of scaffold hazards;

    b. The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting, and maintaining the type of scaffold in question;

c. The design criteria, maximum intended load-carrying capacity and intended use of the scaffold; and

d. Any other pertinent requirements of 1926 Subpart L.

K. Fall Protection

1. "Personal fall arrest systems and components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection until inspected and determined by a **competent person** to be undamaged and suitable for reuse (Subpart M; 29 CFR 1926.502(d)(19))."

2. Where safety monitoring systems are employed, "the employer shall designate a **competent person** to monitor the safety of other employees and the employer shall ensure that the safety monitor complies with the following requirements (Subpart M: 29 CFR 1926.502(h)(1)):

   a. The safety monitor shall be competent to recognize fall hazards;

   b. The safety monitor shall warn the employee when it appears that the employee is unaware of a fall hazard or is acting in an unsafe manner;

   c. The safety monitor shall be on the same walking/working surface and within visual sighting distance of the employee being monitored;

   d. The safety monitor shall be close enough to communicate orally with the employee; and

   e. The safety monitor shall not have other responsibilities which could take the monitor's attention from the monitoring function."

3. "The implementation of the fall protection plan shall be under the supervision of a **competent person** (Subpart M; 29 CFR 1926.502(k)(4)." This section specifically refers to the implementation of fall protection plans on projects where it is infeasible or it creates a greater hazard to use conventional fall protection equipment.

4. "The employer shall assure that a **competent person** qualified in the following areas has trained each employee, as necessary (Subpart M; 29 CFR 1926.503(a)(2))":

a. The nature of fall hazards in the work area;

b. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;

c. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones, and other protection to be used;

d. The role of each employee in the safety monitoring system when this system is used;

e. The limitations on the use of mechanical equipment during the performance of elevated work;

f. The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection;

g. The role of employees in fall protection plans, and

h. The standards contained in 1926 Subpart M.

L. Cranes and Derricks

1. "The employer shall designate a **competent person** who shall inspect all machinery and equipment prior to each use, and during use, to make sure it is in safe operating condition. Any deficiencies shall be repaired, or defective parts replaced, before continued use (Subpart N; 29 CFR 1926.550(a)(5))."

2. "A thorough annual inspection of the hoisting machinery shall be made by a **competent person**, or by a government or private agency recognized by the U.S. Department of Labor. The employer shall maintain a record of the dates and results of inspections for each hoisting machine and piece of equipment (Subpart N; 29 CFR 1926.550(a)(6))."

3. "The personnel platform and suspension system shall be designed by a qualified engineer or a **qualified person competent** in structural design (Subpart N; 29 CFR 1926.550(g)(4)(i)(A))."

4. "A visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground shall be conducted by

a **competent person** immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure (Subpart N; 29 CFR 1926.550(g)(5)(iv))."

5. "At each job site, prior to hoisting employees on the personnel platform, and after any repair or modification, the platform and rigging shall be proof tested to 125 percent of the platform's rated capacity by holding it in a suspended position for five minutes with the test load evenly distributed on the platform (this may be done concurrently with the trial lift). After proof testing, a **competent person** shall inspect the platform and rigging. Any deficiencies found shall be corrected and another proof test shall be conducted. Personnel hoisting shall not be conducted until the proof testing requirements are satisfied (Subpart N; 29 CFR 1926.550(g)(5)(vi))."

M. Material Hoists, Personnel Hoists and Elevators

"Following assembly and erection of hoists, and before being put in service, an inspection and test of all functions and safety devices shall be made under the supervision of a **competent person**. A similar inspection and test is required following major alteration of an existing installation. All hoists shall be inspected and tested at not more than 3-month intervals. The employer shall prepare a certification record which includes the date the inspection and test of all functions and safety devises was performed; the signature of the person who preformed the inspection and test; and a serial number, or other identifier, for the hoist that was inspected and tested. The most recent certification record shall be maintained on file (Subpart N; 29 CFR 1926.552(c)(15))."

N. Excavations

1. "Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a **competent person**. Structural ramps used for access or egress of equipment shall be designed by a **competent person** qualified in structural design, and shall be constructed in accordance with the design (Subpart P; 29 CFR 1926.651(c)(1)(i))."

2. "If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a **competent person** to ensure proper operation (Subpart P; 29 CFR 1926.651(h)(2))."

3. "If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a **competent person** and compliance with paragraphs (h)(1) and (h)(2) of 1926.651 (Subpart P; 29 CFR 1926.651(h)(3))."

4. "Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a **competent person** for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the **competent person** prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated (Subpart P; 29 CFR 1926.651(k)(1))."

5. "Where the **competent person** finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety (Subpart P; 29 CFR 1926.651(k)(2))."

6. Employees shall be protected from cave-ins except where "excavations are less than 5 feet (1.52 m) in depth and examination of the ground by a **competent person** provides no indication of a potential cave-in (Subpart P; 29 CFR 1926.652(a)(1)(ii))."

7. "When material or equipment that is used for protective systems is damaged, a **competent person** shall examine the material or equipment and evaluate its suitability for continued use. If the **competent person** cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service, and shall be evaluated and approved by a registered professional engineer before being returned to service (Subpart P; 29 CFR 1926.652(d)(3))."

8. "Each soil and rock deposit shall be classified by a **competent person** as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix (1926 Subpart P, Appendix A, (a)(2)(C)(1))."

9. "The classification of the deposits shall be made based on the result of at least one visual and at least one manual analysis. Such analyses shall be conducted by a **competent person** using tests described in paragraph (d) of this appendix, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system (1926 Subpart P, Appendix A, (a)(2)(C)(2))."

10. "If after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a **competent person**. The deposit shall be reclassified as necessary to reflect the changed circumstances (1926 Subpart P, Appendix A, (a)(2)(C)(5))."

11. "When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a **competent person** shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved (1926 Subpart P, Appendix B, (c)(3)(iii))."

O. Lift-Slab Operations

"If leveling is maintained by manual controls, such controls shall be located in a central location and attended by a **competent person** while lifting is in progress. In addition to meeting the definition in 1926.32(f), the **competent person** must be experienced in the lifting operation and with the lifting equipment being used (Subpart Q, 29 CFR 1926.705(i))."

P. Steel Erection - Cranes

1. "Cranes being used in steel erection activities shall be visually inspected prior to each shift by a **competent person**; the inspection shall include observation for deficiencies during operation. At a minimum this inspection shall include the following (Subpart R: 29 CFR 1926.753(c)(1)(i)):

    a. All control mechanisms for maladjustments;

    b. Control and drive mechanism for excessive wear of components and contamination by lubricants, water or other foreign matter;

    c. Safety devices, including but not limited to boom angle indicators, boom stops, boom kick out devices, anti-two block devices, and load moment indicators where required;

d. Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation;

e. Hooks and latches for deformation, chemical damage, cracks, or wear;

f. Wire rope reeving for compliance with hoisting equipment manufacturer's specifications;

g. Electrical apparatus for malfunctioning, signs of excessive deterioration, dirt, or moisture accumulation;

h. Hydraulic system for proper fluid level;

i. Tires for proper inflation and condition;

j. Ground conditions around the hoisting equipment for proper support, including ground settling under and around outriggers, ground water accumulation, or similar conditions;

k. The hoisting equipment for level position; and

l. The hoisting equipment for level position after each move and setup."

2. "If any deficiency is identified, an immediate determination shall be made by the **competent person** as to whether the deficiency constitutes a hazard (Subpart R; 29 CFR 1926.753(c)(1)(ii))."

Q. Steel Erection – Structural Steel Assembly

1. "When deemed necessary by a **competent person**, plumbing-up equipment shall be installed in conjunction with the steel erection process to ensure the stability of the structure (Subpart R; 29 CFR 1926.754(d)(1))."

2. "Plumbing-up equipment shall be removed only with the approval of a **competent person** (Subpart R; 29 CFR 1926.754(d)(3))."

R. Steel Erection – Column Anchorage

"All columns shall be evaluated by a **competent person** to determine whether guying or bracing is needed; if guying or bracing is needed, it shall be installed (Subpart R; 29 CFR 1926.755(a)(4))."

S. Steel Erection – Beams and Columns

"A **competent person** shall determine if more than two bolts are necessary to ensure the stability of cantilevered members; if additional bolts are needed, they shall be installed (Subpart R; 29 CFR 1926.756(a)(2))."

T. Underground Construction

1. "The employer shall assign a **competent person** who shall perform all air monitoring required by this section (Subpart S; 29 CFR 1926.800(j)(1)(i)(A))."

2. "Where this paragraph requires monitoring of airborne contaminants 'as often as necessary,' the **competent person** shall make a reasonable determination as to which substances to monitor and how frequently to monitor (Subpart S; 29 CFR 1926.800(j)(1)(i)(B))." The standard indicates the following factors should be considered:

    a. Location of jobsite: Proximity to fuel tanks, sewers, gas lines, old landfills, coal deposits, and swamps;

    b. Geology: Geological studies of the jobsite, particularly involving the soil type and its permeability;

    c. History: Presence of air contaminants in nearby jobsites, changes in levels of substances monitored on the prior shift; and

    d. Work practices and jobsite conditions: The use of diesel engines, use of explosives, use of fuel gas, volume and flow of ventilation, visible atmospheric conditions, decompression of the atmosphere, welding, cutting and hot work, and employees' physical reactions to working underground.

3. "When the **competent person** determines, on the basis of air monitoring results or other information, that air contaminants may be present in sufficient quantity to be dangerous to life, the employer shall:

    a. Prominently post a notice at all entrances to the underground jobsite to inform all entrants of hazardous condition, and

    b. Ensure that the necessary precautions are taken (Subpart S; 29 CFR 1926.800(j)(1)(iv))"

4. "When ventilation has been reduced to the extent that hazardous levels of methane or flammable gas may have accumulated, a **competent person** shall test all affected areas after ventilation has been restored and shall determine whether the atmosphere is within flammable limits before any power, other than for acceptable equipment, is restored or work is resumed (Subpart S; 29 CFR 1926.800(k)(7))."

5. "A **competent person** shall inspect the roof (back), face, and walls of the work area at the start of each shift and as often as necessary to determine ground stability (Subpart S; 29 CFR 1926.800(o)(3)(i)(A))."

6. "A **competent person** shall determine whether rock bolts meet the necessary torque, and shall determine the testing frequency in light of the bolt system, ground conditions and the distance from vibration sources (Subpart S; 29 CFR 1926.800(o)(3)(iv)(B))."

7. "After blasting operations in shafts, a **competent person** shall determine if the walls, ladders, timbers, blocking, or wedges have loosened. If so, necessary repairs shall be made before employees other than those assigned to make the repairs are allowed in or below the affected areas (Subpart S; 29 CFR 1926.800(o)(4)(iii))."

8. "A **competent person** shall inspect all drilling and associated equipment prior to each use. Equipment defects affecting safety shall be corrected before the equipment is used (Subpart S; 29 CFR 1926.800(q)(1))."

9. "A **competent person** shall inspect haulage equipment before each shift (Subpart S; 29 CFR 1926.800(r)(1)(i))."

10. "A **competent person** shall visually check all hoisting machinery, equipment, anchorages, and hoisting rope at the beginning of each shift and during hoist use, as necessary (Subpart S; 29 CFR 1926.800(t)(3)(xix))."

11. "Each safety device shall be checked by a **competent person** at least weekly during hoist use to ensure suitable operation and safe condition (Subpart S; 29 CFR 1926.800(t)(3(xx))."

U. Compressed Air

1. "There shall be present, at all times, at least one **competent person** designated by and representing the employer, who shall be familiar with this Subpart in all respects, and responsible for full compliance

with these and other applicable subparts (Subpart S; 29 CFR 1926.803(a)(1))."

2. "At all times there shall be a thoroughly experienced, **competent**, and reliable **person** on duty at the air control valves as a gauge tender who shall regulate the pressure in the working areas. During tunneling operations, one gauge tender may regulate the pressure in not more than two headings provided that the gauge and controls are all in one location. In caisson work, there shall be a gauge tender for each caisson (Subpart S; 29 CFR 1926.803(h)(1))."

V. Demolition – Preparatory Operations

"Prior to permitting employees to start demolition operations, an engineering survey shall be made, by a **competent person**, of the structure to determine the condition of the framing, floors, and walls, and possibility of unplanned collapse of any portion of the structure. Any adjacent structure where employees may be exposed shall also be similarly checked. The employer shall have in writing evidence that such a survey has been performed (Subpart T; 29 CFR 1926.850(a))."

W. Mechanical Demolition

"During demolition, continuing inspections by a **competent person** shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors, or walls, or loosened material. No employee shall be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means (Subpart T; 29 CFR 1926.859(g))."

X. Blasting and the Use of Explosives

1. Precautions taken to prevent the accidental discharge of electric blasting caps shall include "the prominent display of adequate signs, warning against the use of mobile radio transmitters, on all roads within 1,000 feet of blasting operations. Whenever adherence to the 1,000-foot distance would create an operational handicap, a **competent person** shall be consulted to evaluate the particular situation, and alternative provisions may be made which are adequately designed to prevent any premature firing of electric blasting caps. A description of any such alternatives shall be reduced to writing and shall be certified as meeting the purposes of this subdivision by the **competent person** consulted. The description shall be maintained at the construction site during the duration of the work, and shall be available for inspection by representatives of the Secretary Labor (Subpart U; 29 CFR 1926.900(k)(3)(i))."

2. "The blaster shall be knowledgeable and **competent** in the use of each type of blasting method used (Subpart U; 29 CFR 1926.901(e))."

Y. Ladders

1. "Ladders shall be inspected by a **competent person** for visible defects on a periodic basis and after any occurrence that could affect their safe use (Subpart X; 29 CFR 1926.1053(b))."

2. "The employer shall ensure that each employee has been trained by a **competent person** in the following areas, as applicable:

    a. The nature of fall hazards in the work area;

    b. The correct procedures for erecting, maintaining, and disassembling the fall protection systems to be used;

    c. The proper construction, use, placement, and care in handling of all stairways and ladders;

    d. The maximum intended load-carrying capacities of ladders used; and

    e. The standards contained in this subpart (Subpart X; 29 CFR 1926.1060(a)(1))."

Z. Toxic Substances – Asbestos

1. **"Competent person** means, in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Plan (40 CFR 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2)." (Subpart Z; 29 CFR 1926.1101(b))

2. "The **competent** person shall examine worksuits worn by employees at least once per workshift for rips or tears that may occur during performance of work (Subpart Z; 29 CFR 1926.1101(i)(4)(i))."

3. "On all construction worksites covered by this standard, the employer shall designate a **competent person**, having the qualifications and authorities for ensuring worker safety and health required by Subpart C, General Safety and Health Provisions for Construction (Subpart Z; 29 CFR 1926.1101(o)(1))."

4. "The **competent person** shall make frequent and regular inspections of the job sites, in order to perform the duties set out below in paragraph (o)(3)(i) and (ii) of this section. For Class I jobs, on-site inspections shall be made at least once during each work shift, and at any time at employee request. For Class II, III, and IV jobs, on-site inspections shall be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request (Subpart Z; 29 CFR 1926.1101(o)(3))."

5. "On all worksites where employees are engaged in Class I or II asbestos work, the **competent person** shall perform or supervise the following duties, as applicable:

    a. Set up the regulated area, enclosure, or other containment;

    b. Ensure (by on-site inspection) the integrity of the enclosure;

    c. Set up procedures to control entry to and exit from the enclosure and/or area;

    d. Supervise all employee exposure monitoring required by this section and ensure that it is conducted as required by paragraph (f) of this section;

    e. Ensure that employees working within the enclosure and/or using glove bags wear respirators and protective clothing as required by paragraphs (h) and (i) of this section;

    f. Ensure through on-site supervision, that employees set up, use, and remove engineering controls, use work practices and personal protective equipment in compliance with all requirements;

    g. Ensure that employees use the hygiene facilities and observe the decontamination procedures specified in paragraph (j) of this section;

h. Ensure that through on-site inspection, engineering controls are functioning properly and employees are using proper work practices; and,

i. Ensure that notification requirement in paragraph (k) of this section are met (Subpart Z; 29 CFR 1926.1101(o)(3)(i))."

6. "For Class I and II asbestos work the **competent person** shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, removal and handling; the contents of this standard; the identification of asbestos; removal procedures, where appropriate; and other practices for reducing the hazard. Such training shall be obtained in a comprehensive course for supervisors that meets the criteria of EPA's Model Accreditation Plan (40 CFR part 763, subpart E, Appendix C), such as a course conducted by an EPA-approved or state-approved training provider, certified by EPA or a state, or a course equivalent in stringency, content, and length (Subpart Z; 29 CFR 1926.1101(o)(4)(i))."

7. "For Class III and IV asbestos work, the **competent person** shall be trained in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, the contents of this standard, and the identification of asbestos. Such training shall include successful completion of a course that is consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent in stringency, content and length (Subpart Z; 29 CFR 1926.1101(o)(4)(ii))."

AA. Toxic Substances – Cadmium

1. **"Competent person**, in accordance with 29 CFR 1926.32 (f), means a person designated by the employer to act on the employer's behalf who is capable of identifying existing and potential cadmium hazards in the workplace and the proper methods to control them in order to protect workers, and has the authority necessary to take prompt corrective measures to eliminate or control such hazards. The duties of a **competent person** include at least the following: Determining prior to the performance of work whether cadmium is present in the workplace; establishing, where necessary, regulated areas and assuring that access to and from those areas is limited to authorized employees; assuring the adequacy of any employee exposure monitoring required by this standard; assuring that all employees exposed to air cadmium levels above the PEL wear appropriate

personal protective equipment and are trained in the use of appropriate methods of exposure control; assuring that proper hygiene facilities are provided and that workers are trained to use those facilities; and assuring that the engineering controls required by this standard are implemented, maintained in proper operating condition, and functioning properly (Subpart Z; 29 CFR 1926.1127(b))."

2. "Prior to the performance of any construction work where employees may be potentially exposed to cadmium, the employer shall establish the applicability of this standard by determining whether cadmium is present in the workplace and whether there is the possibility that employee exposures will be at or above the action level. The employer shall designate a **competent person** who shall make this determination. Investigation and material testing techniques shall be used, as appropriate, in the determination. Investigation shall include a review of relevant plans, past reports, material safety data sheets, and other available records, and consultations with the property owner and discussions with appropriate individuals and agencies (Subpart Z; 29 CFR 1926.1127(d)(1)(i))."

3. "Where cadmium has been determined to be present in the workplace, and it has been determined that there is a possibility the employee's exposure will be at or above the action level, the **competent person** shall identify employees potentially exposed to cadmium at or above the action level (Subpart Z; 29 CFR 1926.1127(d)(1(ii))."

4. "The employer also shall institute the exposure monitoring required under paragraphs (d) (2) (i) and (d) (3) of 29 CFR 1926.1127 whenever there has been a change in the raw materials, equipment, personnel, work practices, or finished products that may result in additional employees being exposed to cadmium at or above the action level or in employees already exposed to cadmium at or above the action level being exposed above the PEL, or whenever the employer or **competent person** has any reason to suspect that any other change might result in such further exposure (Subpart Z; 29 CFR 1926.1127(d)(4))."

5. "A **competent person** shall review the comprehensive compliance program initially and after each change (Subpart Z; 29 CFR 1926.1127(f)(5)(iii))."

BB. Toxic Substances – 1,2-Dibromo-3-Chloropropane

"Since many of the duties relating to employee protection are dependent on the results of monitoring and measuring procedures, employers should

assure that the evaluation of employee exposures is performed by a **competent** industrial hygienist or other technically qualified **person** (Subpart Z; 29 CFR 1926.1144; makes direct reference to 29 CFR 1910.1044, Appendix B, IV.B)."

CC. Toxic Substances – Acrylonitrile

"Since many of the duties relating to employee exposure are dependent on the results of monitoring and measuring procedures, employers shall assure that the evaluation of employee exposures is performed by a **competent** industrial hygienist or other technically qualified **person** (Subpart Z; 29 CFR 1926.1145; makes direct reference to 29 CFR 1910.1045, Appendix B, IV.B)."

This supplement defines and lists the areas within the OSHA General Industry Standards where a competent person is required to be part of a particular project activity

A. Powered Platforms, Manlifts, and Vehicle-Mounted Work Platforms

1. **"Competent person** means a person who, because of training and experience, is capable of identifying hazardous or dangerous conditions in powered platform installations and of training employees to identify such conditions (Subpart F; 29 CFR 1910.66(d))."

2. "Related building supporting structures shall undergo periodic inspection by a **competent person** at intervals not exceeding 12 months (Subpart F; 29 CFR 1910.66(g)(2)(i))."

3. "All parts of the equipment including control systems shall be inspected, and, where necessary, tested by a **competent person** at intervals specified by the manufacturer/supplier, but not to exceed 12 months, to determine that they are in safe operating condition. Parts subject to wear, such as wire ropes, bearings, gears, and governors shall be inspected and/or tested to determine that they have not worn to such an extent as to affect the safe operation of the installation (Subpart F; 29 CFR 1910.66(g)(2)(ii))."

4. "A maintenance inspection and, where necessary, a test shall be made of each platform installation every 30 days, or where the work cycle is less than 30 days such inspection and/or test shall be made prior to each work cycle. This inspection and test shall follow procedures recommended by the manufacturer, and shall be made by a **competent person** (Subpart F; 29 CFR 1910.66(g)(3)(i))."

5. "Inspection of governors and secondary brakes shall be performed by a **competent person** (Subpart F; 29 CFR 1910.66(g)(4(v))."

6. "Suspension wire rope shall be inspected by a **competent person** for visible defects and gross damage to the rope before every use and after each occurrence which might affect the wire rope's integrity (Subpart F; 29 CFR 1910.66(g)(5)(ii))."

7. "A thorough inspection of suspension wire ropes in service shall be made once a month. Suspension wire ropes that have been inactive for 30 days or longer shall have a thorough inspection before they are placed into service. These thorough inspections of suspension wire

ropes shall be performed by a **competent person** (Subpart F; 29 CFR 1910.66(g)(5)(iii))."

8. "Any other condition which the **competent person** determines has significantly affected the integrity of the rope (Subpart F; 29 CFR 1910.66(g)(5)(iv)(J))."

9. "Training of employees in the operation and inspection of working platforms shall be done by a **competent person** (Subpart F; 29 CFR 1910.66(i)(1)(iii))."

10. ""**Competent person**" means a person who is capable of identifying hazardous or dangerous conditions in the personal fall arrest system or any component thereof, as well as in their application and use with related equipment (Subpart F; 29 CFR 1910.66 App. C, (I)(b))."

11. "Personal fall arrest systems or components subjected to impact loading shall be immediately removed from service and shall not be used again for employee protection unless inspected and determined by a **competent person** to be undamaged and suitable for reuse (Subpart F; 29 CFR 1910.66 App. C, (I)(e)(7))."

12. ""Comment compatibility considerations." Ideally, a personal fall arrest system is designed, tested, and supplied as a complete system. However, it is common practice for lanyards, connectors, lifelines, deceleration devices, body belts and body harnesses to be interchanged since some components wear out before others. The employer and employee should realize that not all components are interchangeable. For instance, a lanyard should not be connected between a body belt (or harness) and a deceleration device of the self-retracting type since this can result in additional free fall for which the system was not designed. Any substitution or change to a personal fall arrest system should be fully evaluated or tested by a **competent person** to determine that it meets the standard, before the modified system is put in use (Subpart F; 29 CFR 1910.66 App. C, (III)(c))."

B. Explosives and Blasting Agents

1. "Magazines shall be in the charge of a **competent person** at all times and who shall be held responsible for the enforcement of all safety precautions (Subpart H; 29 CFR 1910.109(c)(5)(viii))."

2. "Explosives recovered from blasting misfires shall be placed in a separate magazine until **competent personnel** have determined from the manufacturer the method of disposal.

Caps recovered from blasting misfires shall not be reused. Such explosives and caps shall then be disposed of in the manner recommended by the manufacturer (Subpart H; 29 CFR 1910.109(c)(5)(ix))."

3. "Extinguishers shall be filled and ready for immediate use and located near the driver's seat. Extinguishers shall be examined periodically by a **competent person** (Subpart H; 29 CFR 1910.109(d)(2)(iii)(b))."

4. "The distances in the table apply to ammonium nitrate that passes the insensitivity test prescribed in the definition of ammonium nitrate fertilizer promulgated by the National Plant Food Institute; and ammonium nitrate failing to pass said test shall be stored at separation distances determined by **competent persons** (Subpart H, 29 CFR 1910.109, Table H-22, Footnote (3))."

5. "Every warehouse used for the storage of blasting agents shall be under the supervision of a **competent person** (Subpart H, 29 CFR 1910.109(g)(5)(vii))."

C. Helicopters

"Cargo hooks. All electrically operated cargo hooks shall have the electrical activating device so designed and installed as to prevent inadvertent operation. In addition, these cargo hooks shall be equipped with an emergency mechanical control for releasing the load. The employer shall ensure that the hooks are tested prior to each day's operation by a **competent person** to determine that the release functions properly, both electrically and mechanically (Subpart N, 29 CFR 1910.183(d))."

D. Slings

1. "***Inspections***. Each day before being used, the sling and all fastenings and attachments shall be inspected for damage or defects by a **competent person** designated by the employer. Additional inspections shall be performed during sling use, where service conditions warrant. Damaged or defective slings shall be immediately removed from service (Subpart N, 29 CFR 1910.184(d))."

2. "The thorough inspection of alloy steel chain slings shall be performed by a **competent person** designated by the

employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in length. Where such defects or deterioration are present, the sling shall be immediately removed from service (Subpart N, 29 CFR 1910.184(e)(3)(iii))."

E. Telecommunications

1. "***Support structures***. No employee, or any material or equipment, may be supported or permitted to be supported on any portion of a pole structure, platform, ladder, walkway or other elevated structure or aerial device unless the employer ensures that the support structure is first inspected by a **competent person** and it is determined to be adequately strong, in good working condition and properly secured in place (Subpart R, 29 CFR 1910.268(b)(6))."

2. "***Tools and personal protective equipment -- Generally***. Personal protective equipment, protective devices and special tools needed for the work of employees shall be provided and the employer shall ensure that they are used by employees. Before each day's use the employer shall ensure that these personal protective devices, tools, and equipment are carefully inspected by a **competent person** to ascertain that they are in good condition (Subpart R, 29 CFR 1910.268(e))."

3. "***General***. Safety belts and straps shall be provided and the employer shall ensure their use when work is performed at positions more than 4 feet above ground, on poles, and on towers, except as provided in paragraphs (n)(7) and (n)(8) of this section. No safety belts, safety straps or lanyards acquired after July 1, 1975 may be used unless they meet the tests set forth in paragraph (g)(2) of this section. The employer shall ensure that all safety belts and straps are inspected by a **competent person** prior to each day's use to determine that they are in safe working condition (Subpart R, 29 CFR 1910.268(g)(1))."

4. "The employer shall ensure that pole climbers are inspected by a **competent person** for the following conditions: Fractured or cracked gaffs or leg irons, loose or dull gaffs, broken straps or buckles. If any of these conditions exist, the defect shall be corrected before the climbers are used (Subpart R, 29 CFR 1910.268(g)(3)(ii))."

5. "The employer shall ensure that no employee nor any material or equipment may be supported or permitted to be supported on any portion of a ladder unless it is first determined, by inspections and checks conducted by a **competent person** that such ladder is adequately strong, in good condition, and properly secured in place, as required in Subpart D of this part and as required in this section (Subpart R, 29 CFR 1910.268(h)(1))."

6. "The employer shall ensure that visual inspections are made of the equipment by a **competent person** each day the equipment is to be used to ascertain that it is in good condition (Subpart R, 29 CFR 1910.268(j)(1)(i))."

7. "The employer shall ensure that tests shall be made at the beginning of each shift by a **competent person** to insure the vehicle brakes and operating systems are in proper working condition (Subpart R, 29 CFR 1910.268(j)(1)(ii))."

8. "The employer shall ensure that the derrick and its associated equipment are inspected by a **competent person** at intervals set by the manufacturer but in no case less than once per year. Records shall be maintained including the dates of inspections, and necessary repairs made, if corrective action was required (Subpart R, 29 CFR 1910.268(j)(4)(iv)(F))."

URS SAFETY MANAGEMENT STANDARD

Drilling Safety Guidelines

1. Applicability

This standard applies to URS Corporation and its subsidiary companies on projects using truck-mounted or other engine-powered drill rigs. The primary responsibility for drilling safety is with the drilling contractor.

2. Purpose and Scope

The purpose of this standard is to provide an overview for working safely around drilling operations with truck-mounted and other engine-powered drill rigs. The procedure addresses off-road movement of drill rigs, overhead and buried utilities, the use of augers, rotary and core drilling, and other drilling operations and activities. More detailed drilling safety guidelines are provided in the document *Environmental Remediation Drilling Safety Guidelines.*

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

Drill rig safety and maintenance is the responsibility of the drill rig operator. Drilling subcontractors must be qualified in accordance with SMS 046 – Subcontractor Health, Safety and Environmental Requirements.

4. Requirements

A. General Safety Guidelines

URS technicians, geologists, engineers, or other field staff assigned to oversee drilling operations or collect soil samples will observe the following guidelines:

1. Require a meeting at project startup regarding the drill rig operator's responsibility for rig safety, and any site- and equipment-specific safety requirements.

2. Excluding geoprobe activities, set up any sample tables and general work areas for the URS field staff at a distance of at least the height of the fully extended mast plus 5 feet (1.52 meters), and no less than 30 feet (10 meters) from the rig.

3. URS engineers, technicians, and geologists will not assist the drillers with drilling equipment or supplies, and will not operate the drill rig controls except to activate the emergency shutoff, if needed.

4. Require that all rotary drilling equipment have an emergency shut off/ kill switch. The location of the switch should be reviewed with all field staff.

5. Drilling rigs shall be inspected by the lead driller prior to use daily. Attachment 056-1 NA – Drill Rig Inspection Checklist may be utilized to document the inspection.

6. Sit-on direct push rigs are not permitted on URS sites unless the rig have been modified (in accordance with manufacturer's requirements) to be operated by remote control or the rig has been manufactured with a rollover protection system and seat belt.

7. When using the tooling winches on a drill rig, the down-hole rods shall not extend above the crown of the drilling mast when retrieving soil sampling tools. Drilling rods shall be lifted/lowered using a hoisting plug and not a friction device (e.g., pipe dog, pulling plates etc.).

8. Use of J-hooks and cat-heads is prohibited.

B. Movement of Drill Rigs

1. Before moving a rig, the operator must do the following:

   a. To the extent practical, walk the planned route of travel and inspect it for depressions, gullies, ruts, and other obstacles.

   b. Check the brakes of the truck/carrier, especially if the terrain along the route of travel is rough or sloped.

   c. Discharge all passengers before moving on rough or steep terrain.

   d. Engage the front axle (on 4x4, 6x6, etc., vehicles) before traversing rough or steep terrain.

2. Driving drill rigs along the sides of hills or embankments should be avoided; however, if side-hill travel becomes necessary, the operator must conservatively evaluate the ability of the rig to remain upright while on the hill or embankment. The possibility must be considered that the presence of drilling tools on the rig may reduce the ability of the rig to remain upright (raises the center of mass of the rig).

3. Logs, ditches, road curbs, and other long and horizontal obstacles should be approached and driven over squarely, not at an angle.

4. When close lateral or overhead clearance is encountered, the driver of the rig should be guided by another person on the ground.

5. Loads on the drill rig and truck must be properly stored while the truck is moving, and the mast must be in the fully lowered position.

6. After the rig has been positioned to begin drilling, all brakes and/or locks must be set before drilling begins. If the rig is positioned on a steep grade and leveling of the ground is impossible or impractical, the wheel of the transport vehicle must be blocked and other means employed of preventing the rig from moving or toppling over.

C. Buried and Overhead Utilities

1. The location of overhead and buried utility lines must be determined before drilling begins, and the locations should be noted on boring plans and/or assignment sheets.

2. When overhead power lines are close by, the drill rig mast should not be raised unless the distance between the rig and the nearest power line is at the minimum distance stated in SMS 034 – Utility Clearances and Isolation. The drill rig operator or assistant should walk completely around the rig to make sure that adequate clearance exists.

3. The rig operator should be aware that when the drill rig is positioned near an overhead line, hoist lines and power lines can be moved towards each other by wind. When necessary and approved by the project manager, the utility and/or power lines may be shielded, shut down, or moved by the appropriate personnel.

4. Before performing work, for additional information, please refer to SMS 034 – Utility Clearances and Isolation.

D. Clearing the Work Area

1. Before a drill rig is positioned to drill, the area on which the rig is to be positioned must be cleared of removable obstacles and the rig must be leveled if it is sloped. The cleared/leveled area should be large enough to accommodate the rig and supplies.

E. Safe Use of Augers

1. Never place hands or fingers under the bottom of an auger flight or drill rods when hoisting the augers or rods over the top of another auger or rod in the ground or other hard surfaces, such as the drill rig platform.

2. Never allow feet to get under the auger or drill rod while they are being hoisted.

3. When the drill is rotating, stay clear of the drill string and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason.

4. Move auger cuttings away from the auger with a long-handled shovel or spade; never use hands or feet.

5. Never clean an auger attached to the drill rig unless the transmission is in neutral or the engine is off, and the auger has stopped rotating.

6. Do not wear loose clothing or jewelry while working near the drill rig. Long hair must be pulled back to avoid entanglement with moving parts.

7. Hearing protection is required when working near an operating drill rig.

8. When pulling/lifting augers, a clevis pin or other closed device shall be used. Use of J-hooks is prohibited.

F. Rod Separation

1. Do not use manual tools (e.g., pipe wrenches) in combination with rotation of the drill stem. Manual tools are not designed for the load, and may break. The use of such tools creates a significant impact hazard for those in the work area, because they rotate with the drill stem. URS does not permit drillers to use manual tools in combination with a rotating drill stem to break rods. Manual tools may be used if the drill stem is isolated/positively disengaged.

2. Mechanical means of rod separation that are permitted include:

   a. Opposing hydraulic controls.

   b. Rod locking devices.

   c. Hydraulic breakout tools.

   d. Hydraulic foot clamps.

G. Safe Use of Hand Tools

Review SMS 064 – Hand Safety for information regarding hand tools in addition to the guidelines provided below:

1. Use each tool to perform only tasks for which it was originally designed.

2. Repair damaged tools before use, or discard them.

3. Wear safety goggles or glasses when using a hammer or chisel. Nearby co-workers and bystanders are required to wear safety goggles or glasses also, or move away.

4. Clean tools and store them in an orderly manner when they are not in use.

H. Safe Use of Wire Line Hoists, Wire Rope, and Hoisting Hardware

1. Whenever wire line hoists, wire rope, or hoisting hardware are used, the safety rules described in Title 29 Code of Federal Regulations (CFR) 1926.552, and guidelines contained in the Wire Rope User's Manual published by the American Iron and Steel Institute, will be followed. The driller will provide written reports (upon request) documenting inspections of equipment.

I. Traffic Safety

1. Drilling in streets, parking lots, or other areas of vehicular traffic requires definition of the work zones with cones, warning tape, etc., and compliance with local police requirements. Refer to SMS 032 – Work Zone Traffic Control.

J. Fire Safety

1. Fire extinguishers (type ABC) will be kept on or near drill rigs for fighting small fires.

2. If methane or other flammable gases or vapors are suspected in the area, a combustible gas indicator (CGI) will be used to monitor the air near the borehole, with all work to stop at 20 percent of the Lower Explosive Limit (LEL).

3. Work must stop during lightning storms.

K. Drilling at Potential MEC/UXO Sites

If the project site is suspected of containing munitions and explosives of concern (MEC) or unexploded ordnance (UXO), the UXO team will conduct a reconnaissance and MEC/UXO avoidance to provide clear access routes to each site before drilling crews enter the area. The following procedures will be implemented:

1. Drilling operations on an MEC/UXO site will not be conducted until a complete plan for the site is prepared and approved by the URS UXO Safety Officer. MEC/UXO avoidance must be conducted during drilling operations on known or suspect MEC/UXO sites. Refer to SMS 039 – Munitions Response/Munitions and Explosives of Concern.

2. The UXO team will identify and distinctly mark the boundaries of a clear approach path for the drilling crews, vehicles, and equipment to enter the site. This path will be, at a minimum, twice the width of the widest vehicle. No personnel will be allowed outside any marked boundary.

3. If MEC/UXO is encountered on the ground surface, the UXO team will clearly mark the area where it is found, report it to the proper authorities, and divert the approach path around it.

4. The UXO team will conduct an access survey using the appropriate geophysical instrument over the approach path for avoidance of MEC/UXO that may be in the subsurface. If a magnetic anomaly is encountered, it will be assumed to be MEC/UXO, and the approach path will be diverted around the anomaly. UXO personnel only will operate the appropriate geophysical instrument and identify MEC/UXO.

5. An incremental geophysical survey of the drill-hole location(s) will be initially accomplished by the UXO team using a hand auger to install a pilot hole. If MEC/UXO is encountered or an anomaly cannot be positively identified as inert material, Hazardous, Toxic, and Radioactive Waste (HTRW) sampling personnel will select a new drill-hole location.

6. Once the surface of a drilling site has been cleared and a pilot hole established as described above, the drilling contractor will be notified that the site is available for subsurface drilling.

7. Additional guidance for MEC/UXO support during drilling activities is provided in SMS 039 – Munitions Response/Munitions and Explosives of Concern.

L. Protective Gear

1. Minimum Protective Gear

   At a minimum, items listed below must be worn by all staff working within 30 feet (10 meters) of drilling activities.

   a. Hearing protection.

   b. Hard hat.

   c. Eye protection (safety glasses, goggles, or face-shield).

   d. Safety shoes (steel-toed shoes or boots).

2. Other Gear

   Items listed below must be worn when conditions warrant their use. Some of the conditions are listed after each item.

   a. Safety Harnesses and Lifelines: Safety harnesses and lifelines must be worn by all persons working on top of an elevated derrick beam or mast. Lifelines should be secured at a position that will allow a person to fall no more than 6 feet (2 meters). OSHA Fall Protection (1926 Subpart M) requirements apply. Refer to SMS 040 – Fall Protection for additional information.

   b. Life Vests: Life vests must be used for work over water. Refer to SMS 027 – Work Over Water for additional information.

5. Resources

A. International Association of Drilling Contractors Safety Alerts http://iadc.org/alerts.htm

B. U.S. Occupational Safety and Health Administration (OSHA) Standard Fall Protection – 29 CFR 1926 Subpart M

C. U.S. OSHA - 29 CFR 1926.552, Material Hoists, Personnel Hoists and Elevators

D. Environmental Remedial Safety Drilling Guidelines

E. SMS 026 – Noise and Hearing Conservation

F. SMS 027 – Work Over Water

G. SMS 032 – Work Zone Traffic Control

H. SMS 034 – Utility Clearances and Isolation

I. SMS 039 – Munitions Response/Munitions and Explosives of Concern

J. SMS 040 – Fall Protection

K. SMS 046 – Subcontractor Health, Safety and Environment Requirements

L. SMS 064 – Hand Safety

M. Attachment 056-1 NA – Drill Rig Inspection Checklist

URS	Health, Safety and Environment **DRILL RIG INSPECTION CHECKLIST**	Attachment 056-1 NA Issue Date: December 2009 Revision 6: March 2013

Site / Project Name _____

Rig Inspector (Name/Company) _____

RIG INFORMATION:

Rig Type Rotary/Auger Drilling Rig ☐ Direct Push Type (DPT) ☐

Owner _____ VIN# _____

Year/Make _____ Mileage _____

Model _____ Drill Hrs _____

INSTRUCTIONS: Each shift must inspect all applicable items. If an unsatisfactory condition (fail) is observed, suspend operation of the equipment and report the condition to the site supervisor immediately.

Emergency Switches	
Kill switches are located and accessible to workers on both sides of the rotating stem. NOTE: Location and number of switches depend on the rig manufacturer; please refer to owner's manual (DPT typically has one switch on control panel).	☐ Pass ☐ Fail ☐ N/A
Kill switches installed by the manufacturer are verified to be in operable condition and all workers are familiar with the location and operation of these switches. **NEVER BYPASS, DISABLE, OR REMOVE KILL DEVICES.**	☐ Pass ☐ Fail ☐ N/A
Protective Guards	
Drive shafts, belts, chain drives, and universal joints are guarded to prevent accidental insertion of hands, fingers, or tools.	☐ Pass ☐ Fail ☐ N/A
Cables	
Cables on drill rig are free of kinks, frayed wires, birdcages, flat spots, grease, and worn or missing sections.	☐ Pass ☐ Fail ☐ N/A
Cables are terminated at the working end with a proper eye splice; either swaged, coupled, or using cable clamps.	☐ Pass ☐ Fail ☐ N/A
Cable clamps are installed with the saddle on the live or load side. Clamps are not alternated and are of the correct size and number for the cable size.	☐ Pass ☐ Fail ☐ N/A
Wire ropes are not allowed to bend around sharp edges without cushion material.	☐ Pass ☐ Fail ☐ N/A
Pulleys	
Pulleys are not to be bent, cracked, or broken.	☐ Pass ☐ Fail ☐ N/A
Pulleys operate smoothly and freely, without resistance.	☐ Pass ☐ Fail ☐ N/A
Cable Winches	
Motor is mounted in correct location and tightly secured to drill rig.	☐ Pass ☐ Fail ☐ N/A
Winch is capable of being placed in the free spool (unwind smoothly) and locked position correctly, demonstrating that the cable is suitable for lifting during drilling operations.	☐ Pass ☐ Fail ☐ N/A
Safety Latches	
Hooks installed on hoist cables are the safety type with a functional latch to prevent accidental separation.	☐ Pass ☐ Fail ☐ N/A
Safety latches are functional and completely span the entire throat of the hook and have positive action to close the throat except when manually displaced for connecting or disconnecting a load.	☐ Pass ☐ Fail ☐ N/A
Flights/Augers	
Flights/Augers should not be bent, cracked, or broken. NOTE: Flights/Augers failing inspection must be removed from jobsite.	☐ Pass ☐ Fail ☐ N/A
Flights should be blunt to prevent the risks of cuts.	☐ Pass ☐ Fail ☐ N/A
Auger keys should not be bent, have any cracks/fractures, be excessively worn, or otherwise damaged.	☐ Pass ☐ Fail ☐ N/A
Auger bolt holes and threads should not be damaged.	☐ Pass ☐ Fail ☐ N/A

Inspect flights/augers for metal burns. NOTE: Burrs must be filed to flat surface.	☐ Pass ☐ Fail ☐ N/A
Avoid stacking augers; all should lay flat on ground.	☐ Pass ☐ Fail ☐ N/A
Avoid manually lifting/moving augers. Should be lifted/moved with cable lines, or, at a minimum, by two persons.	☐ Pass ☐ Fail ☐ N/A
Drill String	
Drill string should not be bent or have any cracks/fractures.	☐ Pass ☐ Fail ☐ N/A
Drill string connecting pins should not be bent, have any cracks/fractures, or be excessively worn.	☐ Pass ☐ Fail ☐ N/A
Mast	
Mast is free of bends, cracks, or broken sections.	☐ Pass ☐ Fail ☐ N/A
All mounting hardware (pins, bolts, etc) should be in place.	☐ Pass ☐ Fail ☐ N/A
No moving of drill rig while mast is in vertical position.	☐ Pass ☐ Fail ☐ N/A
Maintenance/repairs to be performed on mast only in horizontal position.	☐ Pass ☐ Fail ☐ N/A
Hammering Device	
Hammer free of cracks, fatigue, or other signs of excessive wear.	☐ Pass ☐ Fail ☐ N/A
Hammer connections are secure.	☐ Pass ☐ Fail ☐ N/A
Leveling Devices	
Outriggers move in/out and up/down smoothly and freely while using controls on drill rig, with no hydraulics leaks.	☐ Pass ☐ Fail ☐ N/A
Outriggers are extended prior to and whenever the mast is raised off its cradle. Outriggers must maintain pressure to continuously support and stabilize the drill rig (even while unattended).	☐ Pass ☐ Fail ☐ N/A
Outriggers are properly supported on the ground surface to prevent setting into the soil (use of outrigger support pads).	☐ Pass ☐ Fail ☐ N/A
Controls	
Controls are intact, properly labeled, have freedom of movement, and have no loose wiring or connections.	☐ Pass ☐ Fail ☐ N/A
Controls are not blocked or locked into an operating position.	☐ Pass ☐ Fail ☐ N/A
Installed lights, signals, gauges, and alarms operate properly.	☐ Pass ☐ Fail ☐ N/A
Lifting Devices	
Slings, chokers, and lifting devices are inspected before using and are in proper working order. NOTE: Damaged units are to be labeled and removed from jobsite.	☐ Pass ☐ Fail ☐ N/A
Shackles/Clevises are in proper working order with pins/screws in place that is to be used while lifting.	☐ Pass ☐ Fail ☐ N/A
Cables and lifting devices are not operated erratically or with a jerking action to overcome resistance.	☐ Pass ☐ Fail ☐ N/A
Hydraulic System	
Hydraulic lines are secure, in good condition with no signs of excessive wear, and not leaking. NOTE: Check while pressurized.	☐ Pass ☐ Fail ☐ N/A
Hydraulic lines are not in a bent or pinched position causing additional fluid restrictions/pressures.	☐ Pass ☐ Fail ☐ N/A
Hydraulic oil reservoir has appropriate amount of oil and not leaking.	☐ Pass ☐ Fail ☐ N/A
Documentation available to confirm that pressure relief valve was checked during shop maintenance activity and noted on maintenance log.	☐ Pass ☐ Fail ☐ N/A
Pump Lines (water, grout, etc)	
Suction/Discharge hoses, pipes, valves, and fittings are secured and not leaking.	☐ Pass ☐ Fail ☐ N/A
High pressure hoses have a safety chain, cable, or strap at each end to prevent whipping in the event of a failure.	☐ Pass ☐ Fail ☐ N/A
Fire Prevention	
A fire extinguisher of appropriate size is located on drill rig and readily available/accessible for drilling crew (recommended 20 lb).	☐ Pass ☐ Fail ☐ N/A

Ladders	
Drill rig has a permanently attached or proper portable ladder to be used for access to drilling platform.	☐ Pass ☐ Fail ☐ N/A
Tracks	
Tracks on rig are not excessively worn and free of any debris or foreign material.	☐ Pass ☐ Fail ☐ N/A
General	
Drill rig meets regulations for transport on state/federal highways (inspection sticker, license plate, etc.).	☐ Pass ☐ Fail ☐ N/A
Does the rig size meet job requirements?	☐ Pass ☐ Fail ☐ N/A
Maintenance log available for previous 3 months to confirm proper maintenance/inspection.	☐ Pass ☐ Fail ☐ N/A
Exhaust	
Exhaust system should be free from defect and routes engine exhaust away from drill rig workers.	☐ Pass ☐ Fail ☐ N/A
Fuels	
Fuel stored in an approved and properly labeled container.	☐ Pass ☐ Fail ☐ N/A
Fuel transfer lines free from signs of excessive wear and not leaking.	☐ Pass ☐ Fail ☐ N/A
Refueling and transferring of fuel is performed in an approved area with sufficient containment to prevent spillage.	☐ Pass ☐ Fail ☐ N/A
Exclusion/Work Zones	
The exclusion/work zone is centered over the borehole and the radius equal to or greater than the height of the mast (measured from ground level).	☐ Pass ☐ Fail ☐ N/A
The exclusion/work zone should be clear of tripping hazards.	☐ Pass ☐ Fail ☐ N/A
Overhead Obstructions	
Except where electrical distribution and transmission lines have been de-energized and visibly grounded, drill rigs will be operated proximate to under, by, or near power lines in accordance with the following: • 50 KV or less – minimum clearance of 10 feet (3 meters) • 50 KV or greater – add 0.4 inches for every KV over 50 KV • If voltage is unknown, maintain at least 20 feet (6.1 meters) of clearance	☐ Pass ☐ Fail ☐ N/A
Rig Repairs	
Repairs, when possible, are conducted offsite to reduce the risk of any onsite incidents.	☐ Pass ☐ Fail ☐ N/A
Specialized PPE	
When working at elevated heights, workers are to wear a fall restraining device attached in a manner to restrict falls to less than six feet (1.83 meters).	☐ Pass ☐ Fail ☐ N/A
When working in wet/slippery conditions, all workers have a lug-type sole or similar slip resistant sole, on their safety footwear to prevent slipping.	☐ Pass ☐ Fail ☐ N/A

Comments:

Signature of Inspector: _____ Date: _____

URS SAFETY MANAGEMENT STANDARD

Vehicle Safety Program

1. Applicability

This standard applies to the operations of Infrastructure & Environment business of URS Corporation and its subsidiary companies.

This standard applies to employees who operate motor vehicles that are owned, rented, or leased by URS and to employees who use personal, client or government-supplied vehicles while conducting URS business. This safety management standard (SMS) does not apply to heavy equipment operations (see SMS 019 – Heavy Equipment Operations).

2. Purpose and Scope

This standard defines the policies that help URS minimize losses, injuries, and legal liabilities associated with improper vehicle use. This policy also provides information for required training and makes all applicable employees aware of their respective duties and obligations when driving on URS business.

The standard applies to operations worldwide. For countries outside the United States, some terminology may need to be read in the context of local or national regulations.

3. Implementation

The overall responsibility for this standard implementation is with the URS Office Manager. Additional responsibilities are as follows:

Fleet Management	Participation in the Vehicle Safety Program, vehicle acquisition, insurance claims reporting, controlling access to vehicles, fueling and maintenance of vehicles, and participation in the incident review processes.
Human Resources	Documentation of driver's license upon hire, and participation in the incident review processes when necessary and any related performance management issues.
Health and Safety	Employee safety training, maintenance of the Vehicle Safety Program, and participation in the incident review processes.
Employee	Familiarization and compliance with the URS Vehicle Safety Program and the personal use of URS-provided vehicles policy (070.007C).

4. Requirements

A. Authorized Drivers

1. Authorized Drivers are those individuals permitted to drive URS-owned, -rented, or -leased vehicles, client vehicles, and employees driving a personal vehicle for work purposes. The Authorized Driver must be at least 18 years of age (noncommercial license) or 21 years of age (commercial license) and have a current driver's license for the appropriate class of vehicle (unless more stringent requirements are established by the leasing/renting agency). Employees with conditional licenses are prohibited from operating vehicles on URS business.

2. Human Resources/Administration will conduct an authorized background check, which includes a driving record. The employee will not be permitted to be an Authorized Driver if the background check indicates legal action involving alcohol or drug use (e.g. driving under the influence [DUI]), a driving without a license violation, or a hit-and-run/leaving the scene of an accident within the past two years.

   Authorized Drivers will produce their driver's license upon request at any time. Authorized drivers who lose their driver's license through legal action or are otherwise unauthorized to drive *must* notify their Human Resources Representative immediately. The Human Resources Representative will notify the Fleet Manager, Office Manager, and Office Safety Representative of this employee's loss of authorization to drive for URS.

3. Authorized drivers must:

   a. Review SMS 057 – Vehicle Safety Program.

   b. Report any conviction for driving under the influence of drugs or alcohol to the Human Resources Representative responsible for the employee's office or operation.

   c. Complete vehicle safety training, including the URS online training module and other sanctioned driving courses described in Section 4.B, Training.

   d. Report all incidents in accordance with Section 4.E, Notifications.

e. Cooperate with any URS investigation concerning the incident.

f. Complete remedial driver safety training described in Section 4.B.3 as appropriate following an incident.

4. Only URS employees are permitted to operate company-issued vehicles unless there is specific contractual language that indicates otherwise. Operation of company-issued vehicles by non-URS employees is restricted to the parameters of the applicable contract and project plans. The office to which the vehicles are registered is liable for any damages to the vehicle being operated by an Authorized Driver.

5. For URS operations or offices that plan vehicle use that requires compliance with Federal Motor Carrier Regulations, the affected manager directing operations at the facility or site must obtain approvals from the Regional Safety Manager and the Fleet Manager. This requirement typically applies to vehicles with a gross vehicle weight over 10,000 pounds, vehicles and trailers with a combined vehicle weight over 26,000 pounds, vehicles carrying more than 15 passengers, or vehicles used for hazardous materials transport. The driver must have an appropriate commercial driver's license, driver's log book, and may be subject to specific training and medical surveillance (see SMS 024 – Medical Screening and Surveillance).

6. Only Authorized Drivers can be reimbursed mileage for the use of their personal vehicle on URS business. Requests for reimbursements for mileage by nondesignated drivers may be denied.

B. Training

1. Within 1 month of their hire date, Authorized Drivers will complete basic driver safety training, including a review of the URS Vehicle Safety Program (SMS 057) and the online Learning Management System (LMS) Vehicle Safety training module.

2. Authorized Drivers will complete a web-based defensive driving training such as the National Safety Council (NSC) or Alert Driving. Other defensive driving training programs that are equivalent or exceed the NSC or Alert Driving training (e.g., the Smith Driving System) may be substituted by approval of the Regional Safety

Manager. All URS Authorized Drivers shall complete web-based defensive driver training or equivalent every three years.

3. Additional training is required for employees who have been involved in multiple work-related, at-fault vehicle incidents where $2,000 in damages was sustained. This additional training will be determined by concurrent agreement from the URS Operating Unit Manager, the URS Fleet Manager, and the Regional Safety Manager and may be in the form of a behind-the-wheel training equivalent to the Smith Driving System.

C. General Operating Policy and Procedure (Applies to Authorized Drivers and Passengers Operating Motor Vehicles on Official URS Business)

1. Only properly licensed employees who are specifically authorized to drive URS vehicles may operate motor vehicles owned, rented, or leased by URS.

2. The use of all mobile communication devices (MCDs) while driving is strictly prohibited. MCDs include all hand-held or hands-free devices including all mobile phones and other portable electronic devices that cause driver distraction such as tablets (iPads), PDAs, pagers, iPods, MP3s, GPS, DVD players, laptops, etc. Employees shall not: use a personal or company MCD while driving a company vehicle; use a company MCD while driving a personal vehicle; or use a personal MCD while driving a personal vehicle on company business. Driving includes the time spent in traffic or while stopped at red lights or stop signs.

3. GPS units and GPS units on smart phones may only be used if factory installed or secured to the vehicle with a bracket that allows the driver to view the image without having to take their eyes off the road.

4. Authorized drivers required to operate vehicles with special hazards (i.e., trucks carrying fuel cells, vehicles used to tow trailers, vehicles with limited visibility, etc.) will be thoroughly briefed on the hazards and control measures necessary for safe operation of the vehicle. The local URS operation will maintain documentation of the briefing.

5. Drivers/operators will know and obey all federal, state, and local motor vehicle laws applicable to the operation of their vehicle.

6. A driver will not permit unauthorized persons to operate a vehicle owned, rented, or leased by URS.

7. URS policy regarding reimbursement and insurance coverage requirements for use of personal automobiles may be found in the Policies and Procedures Manual (Section 074.020). Only Authorized Drivers may be reimbursed mileage for the use of a personal vehicle.

8. Personal vehicles driven by Authorized Drivers for business use must satisfy the state's registration and inspection requirements and may not be modified beyond manufacturer's specifications.

9. All cargo extending 4 feet or more beyond the end of a truck, trailer, or similar vehicle will be clearly marked with a red warning flag or cloth measuring no less than 16 inches square. Red lights must be used at night.

10. URS-owned, -rented, or -leased vehicles are for official business use only and are not to be used for personal activities. Exceptions to this requirement can be made only with the specific approval of a Business Manager, Senior Vice President, or the URS Fleet Manager.

11. Seat belts and shoulder harnesses (occupant restraint systems) will be worn or used whenever the vehicle is in operation. The vehicle may not move until all passengers have fastened their restraints. Vehicles are not to be operated or used by URS employees if seatbelts are not included as part of the vehicle's safety equipment.

12. When parking or leaving a vehicle, the following procedures must be followed: Shut off the engine, engage the transmission in park (automatic transmission) or first gear (standard transmission), set the parking brake, remove the ignition keys, and lock the vehicle.

13. The vehicle's engine is to be turned off during refueling. Smoking or cellular phone use is not allowed while refueling.

14. Drivers/operators will not drive or operate vehicles while under the influence of alcohol or illegal drugs. Additional details on the URS Substance Abuse Policy are available in the Policies and Procedures Manual (Section 034.030).

15. Drivers/operators will not drive or operate vehicles while under the influence of medications when told by a physician, another

healthcare provider, or the manufacturer (i.e., instructions on the label) that the activity is unsafe.

16. Smoking is prohibited in URS-owned, -leased and -rented vehicles.

17. Vehicle operators are responsible for any fines levied by law enforcement agencies for the operation of their vehicles.

18. Driver/operators may not deactivate or muffle any backup warning device.

19. Distractions while driving are a major cause of incidents. Distractions include the use of cellular phones (including texting), eating, drinking, smoking, and engaging in intense conversations. URS Authorized Drivers must exercise proper control of the vehicle at all times, including the management of possibly distracting actions and behaviors. If you have to eat, pull over and park. If you become engaged in an intense conversation to the point of distraction, pull over and park or end the conversation.

20. Fatigue is the result of physical or mental exertion that impairs performance. Driver fatigue may be due to lack of adequate sleep, extended work hours, strenuous work or non-work activities, or a combination of other factors. When drivers recognize the signals of drowsiness (e.g., frequent yawning, heavy eyes, or blurred vision) they will pull over in a safe location and rest. Refer to SMS 060 – Fatigue Management for additional information.

21. The use of motorcycles, personal aircraft and boats on URS business is prohibited.

22. The use of all-terrain vehicles and snowmobiles are prohibited without the approval of a Safety Manager. All-terrain vehicle and snowmobile operators will be required to have the proper qualifications, training and personal protective equipment prior to operating the vehicle.

23. When practical, drivers should travel during daylight hours and avoid driving during adverse weather conditions. Drivers should also inform colleagues of their travel itinerary including destination and anticipated departure and arrival times.

24. When practical, alternatives to road travel should be evaluated including teleconferencing/video conferencing, the use of public transportation or carpooling.

D. Field/Site Vehicle Safety

1. Define specific vehicle travel routes and parking areas at field sites. Use fencing, cones, or other markings to define roads and parking. SMS 032 – Work Zone Traffic Control provides additional information.

2. If parking on the shoulder of an active road, park as far off the road as possible.

3. If work (e.g., surveying) is required alongside an active road, park the vehicle behind the area of work to provide a barrier against out-of-control vehicles.

4. URS will not transport DOT-placard quantities of hazardous materials. However, small quantities of hazardous materials (e.g., sample coolers) may be transported if properly packaged. Take precautions to prevent chemical contamination of the vehicle. Further details on DOT shipping may be found in SMS 048 – Hazardous Materials/Dangerous Goods Shipping.

5. Nuclear density meters (e.g., Troxler units) may be transported only by employees who have been trained in the use of nuclear density meters (see SMS 044 – Radiation Safety for Portable Gauges). Nuclear density meters must be secured from movement and locked during transport. Nuclear Regulatory Commission (NRC) and state-specific regulations regarding transport documentation also apply.

6. When performing fieldwork that requires the blocking of traffic lanes (e.g., bridge inspection), follow SMS 032, the Manual on Uniform Traffic Control Devices for Streets and Highways (American National Standards Institute D6.1), and local police requirements for barriers, cones, and flaggers.

7. No employee may ride in the bed of a pickup truck unless seating and restraints are provided for this specific use.

8. Articles (e.g., tools, equipment, stickers, and labels) placed in/on vehicles will not interfere with vision or the proper operation of the vehicle in any way. All items in the vehicle must be secured to prevent them from moving about or out of the vehicle during sudden stops or turning, potentially injuring vehicle occupants, the public or damaging equipment. Company equipment (e.g., tools)

shall be removed from the vehicle when parking overnight, unless parked in a secure area. URS' property insurance does not cover theft from a vehicle. The driver or office will be responsible for replacing any lost equipment.

9. Whenever practicable, backing of a vehicle should be prevented. Trucks or vehicles with obstructed rearview mirrors must observe the following procedures when backing up: Position an employee to act as a spotter at the rear of the vehicles, in the driver's line of sight, to ensure that the area behind the truck is clear. If no other employee is present, then the driver must step out of the vehicle and check the area behind the vehicle before backing up. As an added precaution, avoid backing up whenever possible.

10. All uncontrolled intersections (no traffic lights or traffic signs) will be treated as a four-way stop. The driver will exercise extreme caution at uncontrolled intersections.

11. URS drivers carrying more than 15 passengers will perform route planning using Journey Management Plan – Attachment 057-2 AMER. A Journey Management Plan is also recommended when employees travel to a new location or unfamiliar destination. Route planning will address hazards associated along the intended route, including lack of traffic controls, speed, and hazards associated with road conditions, weather, visibility, and other threats. Route planning will be verified by the Office or Site Manager and will be reviewed by affected employees.

12. On buses and vehicles capable of carrying more than 15 passengers, no passengers may ride in a seat in the driver's row, which would otherwise impede the driver's lateral visibility.

13. Drivers must identify a reliable method of communication (e.g., cell phones) in case of an emergency and vehicles should be equipped with a roadside emergency kit when practical.

E. Incident Response and Reporting

1. In case of emergency situation, call or have someone else call for emergency assistance (e.g., 911) immediately. If you are involved in an incident and are not injured, the following requirements apply:

    a. Contract your supervisor immediately. If you are injured (non-emergency), contact the URS Occupational Nurse immediately.

b. Protect the scene

c. Do not admit liability or place any blame for the incident.

d. Provide only your name, address, driver's license number, and vehicle insurance information.

e. Complete the Auto Claim Report – Attachment 057-1 AMER and obtain the following information:

   i. Name(s), addresses, and telephone number(s) of the owner(s).

   ii. Name(s) of the driver and any occupants of other vehicle(s).

   iii. The owner's insurance company.

   iv. Driver's license number.

   v. Year, make, model, and license number of the vehicle(s).

   vi. Name(s) and addresses of any witnesses.

e. DO NOT

   - Make any admissions of guilt or culpability.
   - Call the insurance company; the Fleet Manager's office will do this (unless the incident involves your personal vehicle).
   - Give a statement to the press.
   - Give a signed or verbal statement to the claims adjuster representing the other driver's insurance company without engaging URS' legal department.

Note: The Auto Claim Report for vehicles owned or leased by URS is located in the vehicle glove compartment. The driver must complete this form at the scene.

2. Notifications

   a. All incidents with a URS-owned or -leased vehicle must be reported in the following manner within 24 hours of the incident:

      - Notify the Office Manager, Regional Safety Manager and Office Safety Representative

- Complete the Auto Claim Report - Attachment 057-1 and distribute per the instructions on the form
- A claim must be filed with PHH (our accident management vendor) at 1-800-446-7052

b. All incidents with a URS rental vehicle must be reported in the following manner within 24 hours of the incident:

- Notify the Office Manager, Regional Safety Manager and Office Safety Representative
- Complete the Auto Claim Report - Attachment 057-1 and distribute per the instructions on the form
- A claim must be filed with the rental agency

c. All incidents occurring in a personally owned vehicle being used for business purposes should be reported in the following manner within 24 hours of the incident:

- Notify the Office Manager, Regional Safety Manager and Office Safety Representative
- Complete the Auto Claim Report - Attachment 057-1 and distribute per the instructions on the form
- Notify your personal insurance company

The Auto Claim Report – Attachment 057-1 should also be uploaded to the URS database as a Non-Injury Incident (if no injury occurred). Additionally, for motor vehicle incidents involving injured parties, the Incident Report Form – Attachment 049-1 AMER must be completed.

Traffic violations received while operating a URS-owned, -rented, or –leased vehicle, client vehicle or with a personally owned vehicle used for company business must be reported to your Office Manager within 24 hours of the violation or on the next business day. Traffic violations on company business are the personal responsibility of the driver.

F. Incident Review

1. A violation of this vehicle safety standard is subject to disciplinary action, including termination. The Fleet Manager will review all incidents involving URS-owned, -rented, or -leased vehicles.

2. URS may suspend the privilege to operate vehicles on URS business because of noncompliance with the URS Vehicle Safety Program, involvement in a motor vehicle incident, or resulting citations or other legal actions associated with motor vehicle violations. Personnel authorized to suspend an employee's status as an Authorized Driver include the following:

    a. A Project Manager with responsibility for dedicated vehicles on a site. The suspension is applicable to those site vehicles only.

    b. A URS Operations Manager responsible for the employee.

    c. The URS Fleet Manager.

    d. The Vice President of Safety.

3. The employee's driving privileges *will be* suspended for any of the following:

    a. Accidents or legal action involving alcohol or drug use (e.g., driving under the influence [DUI]).

    b. Driving without a license.

    c. Hit-and-run driving or leaving the scene of an accident.

    d. Unauthorized use of URS vehicles (i.e., using a URS vehicle for moving personal items, carrying passengers who are not associated with work activities, etc.).

4. The employee's driving privileges *may be* suspended for any of the following:

    a. Two or more at-fault accidents involving the same Authorized Driver within a 12-month period.

    b. Multiple complaints from other employees or members of the public about driving performance.

c. Any accident caused by a URS Authorized Driver where damages exceed $2,000.

d. Failure to comply with the cellular phone use policy.

e. Gross misconduct or violation of policy.

5. An Authorized Driver's driving privileges may be reinstated as follows:

   a. For any suspension resulting from law enforcement agency legal action involving drugs and alcohol on the part of the former Authorized Driver, driving privileges may be reinstated only by concurrent agreement from the URS Operating Unit Manager, the URS Fleet Manager, the Regional Safety Manager, and Human Resources Regional Manager.

   b. For those Authorized Driver's privilege suspensions that are not related to driving under the influence of drugs or alcohol, privileges may be reinstated with concurrent agreement by the URS Operating Unit Manager, the Regional Safety Manager, and Human Resources Regional Manager upon completion of required remedial training (see Section 4.B.3).

6. Disciplinary action may include the following:

   a. Loss of URS driving privileges.

   b. Additional driver safety training. Refer to Section 4.B, Training.

   c. Disciplinary warning.

   d. Termination.

G. Inspection

1. The driver is responsible for inspecting the vehicle prior to use and not driving a vehicle with obvious safety defects. Attachment 057-3 AMER may be used to document the inspection.

2. Basic safety checks must include the following:

   a. Tire condition/pressure.

b. Lights/turn signals.

c. A clean windshield and adequate window washer fluid.

d. Gauges/warning lights indicating a normal condition.

e. Mirrors properly adjusted.

f. Brakes with adequate pedal pressure for proper braking.

Any defects must be reported to the local office Fleet Representative or Office Administrator.

H. Vehicle Maintenance

1. The Office Administrator (or designee) is to ensure that all vehicles owned or leased by URS are properly maintained.

2. Routine maintenance must be performed in accordance with the schedule provided in the owner's manual stored in the vehicle.

3. Reported defects/problems with vehicles must be repaired promptly.

5. Documentation Summary

The following documentation will be maintained in the office/project file:

A. Auto Claim Reports

B. Journey Management Plans

C. Vehicle Inspections

6. Resources

A. AAA Foundation for Traffic Safety
http://www.aaafts.org/

C. Smith Driving System
http://smith-system.com/

D. American National Standards Institute (ANSI) D6.1 – Manual on Uniform Traffic Control Devices for Streets and Highways

E. SMS 019 – Heavy Equipment Operations

F. SMS 024 – Medical Screening and Surveillance

G. SMS 032 – Work Zone Traffic Control

H. SMS 044 – Radiation Safety for Portable Gauges

I. SMS 048 – Hazardous Materials/Dangerous Goods Shipping

J. SMS 049 –Incident Reporting, Notifications & Investigation

K. SMS 060 – Fatigue Management

L. Attachment 057-1 AMER – Auto Claim Report

M. Attachment 057-2 AMER – Journey Management Plan

N. Attachment 057-3 AMER – Vehicle Inspection Checklist

URS	Safety Management Standard **AUTO CLAIM REPORT**	Attachment 057-1 AMER Issue Date: February 2001 Revision 12: September 2013

To be used for **all** vehicle incidents involving URS-leased/owned, client, and rental vehicles and for personal vehicles used on company business.

Name of Employee Involved in Incident _____

Was the employee injured? Yes ☐ No ☐ If Yes, complete SMS 049-1AMER.

Was anyone else injured? Yes ☐ No ☐ **Details:** _____

Office Location _____ **Date of Incident** _____

Employee Phone/Cell # _____ **Office Phone #** _____

Company Vehicle[1] ☐ On Company business at the time of incident Yes ☐ No ☐

Personal Vehicle ☐ Was alcohol or drugs involved at the time of incident? Yes ☐ No ☐

Rental Vehicle[2] ☐ Vehicle Identification Number (company or personal):

Government or Client Vehicle ☐ _____

Year _____ Make _____ Model _____

Other Driver's Information

Name _____ Phone Number _____

Address _____

Insurance Co. _____ Policy # _____

License Plate # _____ Make _____ Model _____

Description of Incident

Time of Accident _____ Police Report # _____

Location of Accident _____ Police Department _____

At any time, were police or authorities called or present? Yes ☐ No ☐

Description (provide a clear, inclusive description of the incident):

_____

_____

_____

Required Distribution: ☐ **Office Manager** ☐ **Regional Safety Manager** ☐ **Office Safety Representative**

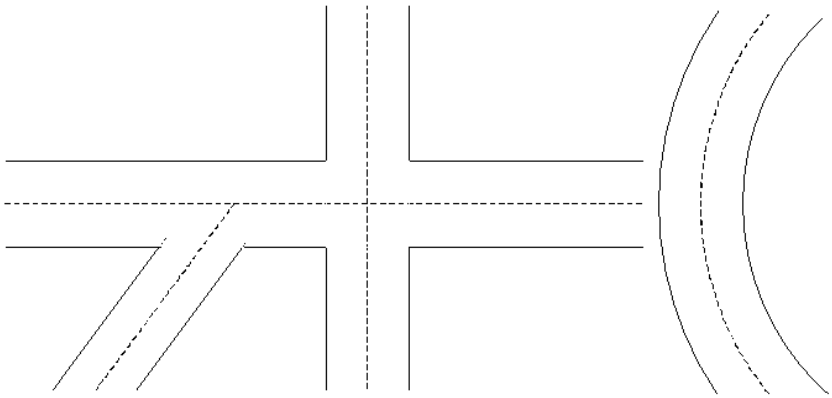
[1] **All incidents occurring in the US to company-owned or –leased vehicles will be reported to:**
PHH
Phone 800 446 7052 Fax 410 771 2619
e-mail: reporting@phh.com

[2] **All incidents occurring in rental vehicles will also be reported to the rental agency.**

URS	Safety Management Standard **AUTO CLAIM REPORT**	Attachment 057-1 AMER Issue Date: February 2001 Revision 12: September 2013

To be used for **all** vehicle incidents involving URS-leased/owned, client, and rental vehicles and for personal vehicles used on company business.

Draw a diagram showing the position of vehicles before and after the accident. Correct the diagram to fit your situation. Attach police report if available.



Check all applicable conditions on each subject

WEATHER
- ☐ Clear
- ☐ Cloudy
- ☐ Fog
- ☐ Rain
- ☐ Snow
- ☐ Sleet
- ☐ Other

LIGHTING
- ☐ Daylight ☐ Dark
- ☐ Dusk ☐ Dawn
- ☐ Dark - no street lights on
- ☐ Dark - street lights on
- ☐ Headlights
- ☐ Headlights on dim
- ☐ Headlights on bright
- ☐ No lights on

ROAD SURFACE
- ☐ Dry
- ☐ Wet
- ☐ Muddy
- ☐ Snowy
- ☐ Snow-covered
- ☐ Ice in places
- ☐ Ice -covered
- ☐ Other

ROAD DESCRIPTION
- ☐ Straight ☐ Curve
- ☐ Level
- ☐ Hill ☐ Up ☐ Down
- ☐ Paved ☐ Black top
- ☐ One-way
- ☐ Two-way
- ☐ Divided road
- ☐ Intersection

ACTION OF DRIVER	You	Other
Exceeding safe speed	☐	☐
On wrong side of street	☐	☐
Did not have right-of-way	☐	☐
Disobeyed traffic signal	☐	☐
Passed illegally	☐	☐
Improper turning	☐	☐
Improper backing	☐	☐
Following too closely	☐	☐
Failure to signal	☐	☐
Improper lane change	☐	☐
Misjudged clearance	☐	☐
Other	☐	☐

What was speed limit?

_____ MPH

Witnesses?

☐ Yes ☐ No

Traffic control
- ☐ Signal lights
- ☐ Caution lights
- ☐ Stop sign
- ☐ Police officer
- ☐ None ☐ Other

Witness Name _____

Address _____

_____

Name _____

Address _____

_____

I understand that any misrepresentation or material omission made by me on this Auto Claim Report will be sufficient cause for immediate termination of employment whenever it may be discovered. I represent and warrant that I have read and fully understand the foregoing, that all information I have provided on this Report is true and accurate.

Signature		Date	

Commencement Point	Destination Point

Issue #: 1 Date:

ROUTE DIRECTIONS	PERSONAL PROTECTIVE EQUIPMENT
TIME AND DISTANCE, ROUND TRIP	SPECIAL INSTRUCTIONS 1. Do not use cell phone or two-way communication devices while driving. 2. Use three points of contact when entering/exiting the cab. 3. Everyone has the authority and responsibility to stop work if conditions are unsafe. 4. Do not drive while under the influence of medication, drugs or alcohol. 5. Do not drive when you are fatigued.
SITE HAZARDS	
ROUTE HAZARDS	EMERGENCY INFORMATION
DESTINATION ENTRY INSTRUCTIONS	EMERGENCY CONTACT NUMBERS Fire/Ambulance/Police:
DESTINATION HAZARDS	SITE CONTACT NUMBERS Site Manager:
	Safety Manager:
DESTINATION EXIT INSTRUCTIONS	CURRENT TRIP INFORMATION UPDATE
RETURN JOURNEY	

ROUTE MAP

URS	Safety Management Standard **VEHICLE INSPECTION CHECKLIST**	Attachment 057-3 AMER Issue Date: June 1999 Revision 12: September 2013

Make/Model/Plate #: _____ Inspector's Name: _____

Mileage: _____ Date: _____

ITEM INSPECTED	CHECK IF SATISFACTORY	COMMENTS
Vehicle Registration	☐	
Insurance Information	☐	
Tires (Tread Depth, Inflation)	☐	
Spare Tire	☐	
Shocks	☐	
Exhaust System	☐	
Engine	☐	
Steering	☐	
Horn	☐	
Mirrors	☐	
First Aid Kit	☐	
Fire Extinguisher	☐	
Brakes	☐	
Parking Brake	☐	
Windshield Wipers	☐	
Windshield	☐	
Washers	☐	
Headlights (High, Low)	☐	
Turn Signals	☐	
Brake Lights	☐	
Back-up Lights	☐	
Instrument Lights	☐	
Tail Lights	☐	
Body Condition	☐	
Back-up Alarm	☐	
Ice Scraper	☐	
Spare Tire	☐	
Clutch	☐	
Safety Restraints	☐	
Fluids	☐	
Engine Oil	☐	
Brake Fluid	☐	
Transmission Fluid	☐	
Engine Coolant	☐	
Washer Fluid	☐	
Power Steering Fluid	☐	

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Please refer to the URS Safety website on the Sourse for the latest version.

URS SAFETY MANAGEMENT STANDARD
Process Safety Management

1. Applicability

This standard applies to all operations of URS Corporation and its subsidiary companies on client work sites that are regulated by Occupational Safety and Health Administration (OSHA) Standard 29 Code of Federal Regulations (CFR) 1910.119, or 29 CFR 1926.64, Process Safety Management (PSM) of Highly Hazardous Chemicals.

In addition, Energy & Construction operations will use this standard in conjunction with Project Execution Procedures (PEP) 363 – Project Hazard Review and PEP 364 – Regulatory Compliance Plan and Compliance Review to ensure that all work associated with safety requirements is organized to satisfy the requirements of the Client and local authorities. This standard is considered as a continuation of the Process Safety Management (PSM) plan developed for the design phase of the project. The activities in PSM cover all systems included in the Contractor's Scope of Work for construction and Pre-Startup of the facilities.

2. Purpose and Scope

The purpose of this standard is to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals that could result in toxic, fire, or explosive hazards. The OSHA PSM standard specifies the responsibilities for both the Site Owner and contractors working on these sites. For this SMS, the term "Client" will be used to represent the Site Owner, and "URS" will be used to refer to the Contractor. This standard describes the responsibilities of URS when working on Client sites regulated under the PSM Standard; it does not address the responsibilities of the Client, except as stated.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location in coordination with the Client Representative.

4. Requirements

A. The following definitions apply to this SMS.

1. *Catastrophic release* means a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemical(s) that presents serious danger to employees in the workplace.

2. *Hazards of Highly Hazardous Chemicals* may include toxicity information; Permissible Exposure Limits, physical data, reactivity data, corrosivity data, thermal and chemical stability data, and the hazardous effects of inadvertent mixing of different materials that could foreseeably occur. Material Safety Data Sheets (MSDSs) may be used to comply if they contain the required information.

3. *Highly hazardous chemical* means a substance possessing toxic, reactive, flammable, or explosive properties.

4. *Hot work* means work involving electric or gas welding, cutting, brazing, or similar flame- or spark-producing operations.

5. *Process* means any activity involving a highly hazardous chemical, including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or any combination of these activities. For purposes of this definition, any group of vessels that are interconnected, as well as separate vessels located such that a highly hazardous chemical could be involved in a potential release, will be considered a single process.

6. *Process equipment* means any equipment associated with the process, and may include materials of construction; piping and instrument diagrams (P&IDs); electrical classification; relief system design and design basis; ventilation system design; design codes and standards employed; material and energy balances; and safety systems (e.g., interlocks, detection, or suppression systems).

7. *Process safety information* means information pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process.

8. *Process technology* may include information pertaining to the technology of the process, and may include a block flow diagram or simplified process flow diagram; process chemistry; maximum intended inventory; safe upper and lower limits for such items as temperatures, pressures, flows, or compositions; and an evaluation of the consequences of deviations.

9. *Trade secret* means any confidential formula, pattern, process, device, information, or compilation of information that is used in a Client's business, and that gives the Client an opportunity to obtain an advantage over competitors who do not know or use it.

B. Pre-Mobilization Planning

1. The PM will contact the Client Representative and verify if the work site and type of work are regulated by the PSM standard. If so, the following information must be provided to the PM by the Client Representative:

    a. The known potential fire, explosion, or toxic release hazards related to the process;

    b. Any other pertinent process information (process equipment, process technology); and

    c. The applicable provisions of the emergency action plan.

    The PM will assure that each URS employee assigned to work on the site is provided with this information.

2. The PM will develop safe work practices to control the entrance into, exit from, and presence of URS personnel in process areas. This will include lockout/tagout procedures, confined space procedures, and any procedures that involve opening equipment or piping. The Client will furnish URS with any work authorization procedure or work permit program that is currently in place.

3. The PM will compare work tasks with hazards of process as provided by the Client. Some items used to develop information for training are MSDSs, P&IDs, Process Flow Diagrams, Block Flow Diagrams, and Process Hazard Analyses. The PM will assure that each URS employee to work on the site is trained in the work practices necessary to perform his/her job (HAZWOPER, Confined-Space Entry, Level B, etc.).

4. The PM will provide URS employees with information on health and safety hazards associated with the chemicals. MSDSs will be provided to meet the training requirements of both the PSM and Hazard Communication Standards.

5. At a minimum, employees will receive training on the topics identified in Attachment 058-1 NA – PSM Training Checklist. The PM will prepare a record containing the names of the URS employees, the date of training, and the means used to verify that the employees understood the training. Attachment 058-2 NA – Training Record for PSM-Regulated Sites, may be used for this purpose.

6. For construction projects, the Project Engineer, together with the Client Representative, will develop a detailed and comprehensive PSM plan for the Construction and Pre-Startup phase. This plan should address the safety issues related to construction and any modifications to the design so that they are identified, systematically assessed, and accommodated. The purpose of the plan is also to ensure that all activities planned during the engineering phases are implemented. The plan should include management of change procedures.

7. The Project Engineer will perform a Pre-Startup Safety Review (PSSR) in coordination with the Client Representative to confirm that:

   a. The design and construction have been completed in accordance with PSM requirements and the work meets all Client and regulatory requirements.

   b. PSM, operating, maintenance, and emergency procedures are in place and are adequate.

   c. All PSM issues have been resolved and all recommendations from HAZOP and other PSM reviews have been correctly implemented.

   d. All changes made to the project during construction and commissioning have been documented and reviewed for their possible impact on the PSM issues of operation.

   e. The information concerning the new or modified process has been properly documented and communicated.

   f. Training of employees in the operating of the process has been completed.

C. Project Implementation

1. URS employees must abide by the Client's safe work practices during operations such as lockout/tagout, confined space entry, opening process equipment or piping, and controls over entrance to the facility.

2. The Site Supervisor will advise the Client of any unique hazards presented by URS' work, and/or of any hazards found by URS while performing work.

3. The Site Supervisor will advise the Client of any changes to be made in the Scope of Work that could produce additional hazards

not previously evaluated. Changes could include substitution of equipment, chemicals, procedures, etc.

4. URS supervisors must obtain a hot work permit from the Client prior to performing any hot work. The permit will document that provisions of 29 CFR 1910.252(a) have been met.

5. URS must immediately report all accidents, injuries, and near misses. URS must participate or assist in any incident investigation as requested by the Client. Each incident that resulted in or could reasonably have resulted in a catastrophic release must be investigated within 48 hours.

6. URS will fully cooperate with the Client in determining and implementing the appropriate resolutions and corrective actions as determined during incident investigations. Resolutions and corrective actions must be documented and maintained for 5 years.

7. URS will fully cooperate with the Client in conducting Compliance Audits and in correcting any deficiencies determined during the audit.

8. All URS employees must respect the confidentiality of trade secret information when the process safety information is released to them.

5. Documentation Summary

The following information will be maintained in the project files:

A. Training attendance records

B. Safety training checklist

6. Resources

A. U.S. OSHA Regulation – Process Safety Management of Highly Hazardous Chemicals – 29 CFR 1910.119

B. U.S. OSHA Regulation – Process Safety Management of Highly Hazardous Chemicals – 29 CFR 1926.64

C. Attachment 058-1 NA – Training Checklist for PSM Regulated Sites

D. Attachment 058-2 NA – Training Record for PSM Regulated Sites

URS	Health, Safety and Environment **TRAINING CHECKLIST FOR PSM REGULATED SITES**	SMS 058-1 NA Issue Date: April 2001 Revision 1: February 2009

Client: _____ Location: _____

_____

_____

_____

_____

_____

Checklist Items

("Yes" indicates item received, prepared, and/or reviewed with employees)

1. Work authorization/permit requested and received ☐ Yes ☐ No
2. Information on potential fire, explosion, toxic release hazards ☐ Yes ☐ No
3. Safe work practices and safety rules as received from Client ☐ Yes ☐ No
4. Emergency action plan ☐ Yes ☐ No
5. Hot work permit required ☐ Yes ☐ No
6. Lockout/tagout procedure required ☐ Yes ☐ No
7. Confined-space entry procedure required ☐ Yes ☐ No
8. Safe access to work area ☐ Yes ☐ No
9. Personal protective equipment needed for work task ☐ Yes ☐ No
10. Hazard communication training (including MSDS) ☐ Yes ☐ No
11. Training conducted in languages of use by all employees ☐ Yes ☐ No
12. Quiz prepared to evaluate training on hazards of process ☐ Yes ☐ No
13. Injury/illness reporting process ☐ Yes ☐ No
14. Training documented through Attachment 058-1 ☐ Yes ☐ No

Instructor: _____ Date: _____

URS	Health, Safety and Environment **TRAINING RECORD FOR PSM REGULATED SITES**	Attachment 058-2 NA Issue Date: April 2001 Revision 1: February 2009

EMPLOYEE NAME(s):

Name (print) _____ Company _____
Signature _____ Date _____

Name (print) _____ Company _____
Signature _____ Date _____

Name (print) _____ Company _____
Signature _____ Date _____

Name (print) _____ Company _____
Signature _____ Date _____

Name (print) _____ Company _____
Signature _____ Date _____

TRAINING CONTENTS: (describe below)

Process Health Hazards:	

Process Equipment:	

Process Technology:	

Means used to verify that the employees understood the training:

[☐] Written Test [☐] Verbal Test [☐] Other (Describe below)

_____

_____

_____

SIGNATURE OF TRAINERS:

Name (print)	Signature

URS SAFETY MANAGEMENT STANDARD

Fatigue Management

1. Applicability

This standard applies to operations of URS Corporation and its subsidiary companies where fatigue can be a factor impacting an employee's fitness for duty. Fatigue is mental or physical exhaustion that stops a person from being able to function normally. It is mainly caused by a lack of sleep, but may also be associated with prolonged periods of physical and/or mental exertion without sufficient time to recover.

Fatigue can be caused by work-related stresses, non–work-related stresses, or a combination of both. Work-related stress may be due to items such as pace of work schedule, location of work, environmental conditions of the work area (e.g., noise, lighting, tasks), and degree and duration of concentration required to perform a task. Non–work-related fatigue is influenced by personal lifestyle, health issues, and family and relationship responsibilities. Long-distance travel causes fatigue primarily by disruption of natural biological rhythms through both external factors and internal factors. Acute Mountain Sickness (AMS) is a group of symptoms including fatigue that jeopardizes the well-being and the work capacity of people who are not acclimated when exposing themselves to altitudes above 3,000 meters. It appears in the first hours after exposure, declining after 1 or 2 days because of acclimatization. Its prevalence is directly related to high-altitude work, ascent speed, and personal susceptibility.

2. Purpose and Scope

The purpose of this standard is to reduce the potential for employee fatigue by providing criteria for recognition, treatment, and management.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Fatigue, and the level to which it impacts an employee, is associated with a number of factors including:

1. The quantity and quality of rest obtained before and after a working day.

2. The time of day in which work takes place.

3. The length of time spent at work and on work-related activities (including travel time to and from work).

4. The type and duration of a work task and the environment in which it is performed.

5. The physical and mental demands of work.

6. Activities outside the workplace, such as sports, family commitments, or second jobs.

7. Disruption of normal circadian rhythms (human clock, bio-rhythms).

8. Individual factors, including existing medical conditions, illnesses, or sleep disorders.

9. Extreme alcohol intake or sleep deprivation.

10. Travel requirements, including daily commute distances and long-distance air travel.

B. Fatigue Recognition

Employees are expected to carry out their work activities in a manner that does not risk the health and safety of themselves, their fellow employees, or any other personnel on the site (e.g., contractors, clients, the public, etc.). If an employee feels that they are unable to perform their work activities safely due to the effects of fatigue, they are required to stop work immediately and notify their supervisor. If this occurs while an employee is driving a vehicle, the employee is required to stop driving and find a suitable location to rest.

Similarly, if an employee suspects a co-worker (including contractors or clients working with the employee) of suffering from the effects of fatigue, they are required to intervene on behalf of the affected person, stopping work and notifying their supervisor.

Characteristics that may assist in the identification of fatigue may include, but are not limited to:

1. Physical Symptoms
    a. Bloodshot eyes
    b. Poor coordination
    c. Slower movements

d. Slower-than-normal response time (e.g., response to commands or radio signals)

2. Cognitive Function Symptoms

   a. Distraction from task

   b. Poor concentration or lapses in concentration

   c. Inability to complete tasks

   d. Short-term memory loss

   e. Nodding off momentarily

   f. Fixed gaze

   g. Reports of blurred vision

3. Emotional/Behavioral Symptoms

   a. Appears depressed

   b. Does not care about work

   c. Easily frustrated with task/irritability

   d. Increased or noticeable level of unexplained or unusual absenteeism

C. Fatigue Treatment

Where fatigue has been identified, employees are suggested to take action to treat the underlying causes of the fatigue. Suggestions include:

1. Getting adequate, undisturbed, regular and consistent amounts of sleep each night. A minimum of 7 hours is recommended.

2. Eating well-balanced and nutritious meals at regular intervals.

3. Ensuring adequate consumption of water throughout the day.

4. Exercising or stretching regularly.

5. Maintaining a reasonable work and personal schedule.

6. Avoiding alcohol, smoking, and drugs. Note that stimulants, including caffeine, may provide temporary relief from certain types of fatigue, but can increase the problem when the effect wears off.

7. Changing stressful circumstances through vacation or personal leave.

D. Fatigue Management

1. Management Responsibilities

   Managers and supervisors are responsible for managing fatigue in the work place. This may include the following:

   a. Identify factors in the work place that may contribute to fatigue. Inform employees of potential fatigue-producing activities and how to manage them. Re-evaluate work tasks periodically to control fatigue.

   b. Monitor employees for the signs and symptoms of fatigue, as described in Section 4.B.

   c. Provide employees with sufficient breaks for food, water, and rest throughout the work day. Calling for unscheduled breaks/meals where fatigue factors are evident may be necessary.

   d. Consult with employees regarding fatigue factors when extended work periods or shift work is anticipated.

   e. Minimize early morning starts before 6:00 AM local time, because early start times give employees less time to get adequate sleep.

   f. Minimize late-evening work after 9:00 PM local time (except where shift work is required), because employee alertness tends to decline after this time.

   g. In the U.S., limit extended work days to a maximum of 14 hours, and extended work weeks to 60 hours. Where this is not feasible, contact the Regional HSE Manager/Business Group Safety Director to develop project-specific fatigue management guidelines for inclusion in site-specific health and safety plans.

   h. For emergency work, a single shift should be limited to 16 hours, and an employee must be off work for at least 12

hours before the next shift start. If the employee is required to work beyond the work-hour limit or cannot meet the mandatory rest period, approval from the next-level manager must be obtained before additional work is scheduled for the employee.

i. Project-specific extended work schedules must be reviewed and approved by the respective Regional HSE Manager/Business Group Safety Director prior to implementation.

j. Shift lengths longer than 12 hours should have two or more long breaks (at least 20 minutes) to allow time for meals.

k. If shift work is required, ensure that employees are given sufficient time to get a continuous 7- to 8-hour period of sleep in each 24 hours, and at least 50 hours every 7 days.

l. At the end of extended night shifts, there should be a minimum of 36 hours or two sleep periods prior to transition to day shift.

m. Project industrial hygienists must consider extended work shifts in personal monitoring, and permissible exposure limits for acute chemical hazard exposures.

n. Review safety observations, near misses, injuries, and incidents that have occurred which may have resulted due to fatigue. Use the findings of these documents to revise project-specific fatigue management procedures, as necessary.

o. Supply adequate supervision for jobs that are physically or mentally demanding, repetitive, or require a high level of vigilance.

p. Develop job rotation and cross-training strategies for repetitive or monotonous work.

q. Consider providing ergonomic equipment such as anti-fatigue mats in areas of prolonged standing and lift assist devices for repetitive lifting tasks.

r. Remove obviously fatigued workers from activities where there is a risk to safety and health. These employees may be rotated to a task that creates a much lower immediate

risk, or advised to go home. Where driving presents a further fatigue risk, provide transportation to ensure the employee reaches their destination safely.

s. Encourage employees to take adequate time away from work through vacations and personal leave. There should be at least one personal weekend in every 4 weeks of work.

t. Train employees on how to recognize fatigue, control fatigue through appropriate work and personal habits, and reporting of fatigue to a supervisor.

u. SMS 072-1 (Behavior-Based Safety Observation) can be used to monitor workers at risk of fatigue.

v. Where fatigue issues recur with an employee, consider referring the employee to the Employee Assistance Program (EAP) for help in the self-management of fatigue or other issues that may have a bearing on fatigue at work. Review working arrangements to assist employees in managing non–work-related fatigue causes.

w. Provide training to all employees as required by project-specific conditions or client-specific requirements.

2. Employee Responsibilities

Employees are responsible for managing personal fatigue in the work place. This may include the following:

a. Report to work well-rested and mentally alert. Manage non–work-related choices that enable fitness for duty, including getting sufficient rest and sleep to recover from prior work duties, and managing personal, commuting, medical, and health issues.

b. Seek medical advice for any personal conditions affecting sleep, such as apnea or insomnia.

c. Advise your physician of any changes in your regular work schedule if you are taking daily prescriptions. Many medications exhibit important differences in the time course and effects depending on when the medication is administered.

d. Notify your manager or supervisor when you are feeling fatigued.

e. Take adequate rest and meal breaks for the working conditions.

f. Do not operate machinery or perform high-risk activities for at least 24 hours if you travel over 6 or more time zones or if you are required to work at elevations above 3,000 meters without adequate acclimatization.

g. Inform managers or supervisors when you suspect a co-worker of being fatigued or if you feel fatigued to a point of increased risk of an incident or error.

h. Consider seeking assistance from the Employee Assistance Program (EAP) for help in the self-management of fatigue or other issues that may have a bearing on fatigue at work.

5. Documentation Summary

The following documentation will be maintained in the project files:

A. Safety observations, near misses, injuries, and incidents that have occurred as a possible result of fatigue.

B. Records of site-specific training in fatigue identification and management issues.

6. Resources

A. Workplace Health and Safety Queensland – Managing Fatigue: A Guide for the Workplace

B. Harvard Medical School – Healthy Sleep

C. National Sleep Foundation – Shift Work and Sleep

D. EU-OSHA Directive 93/104EC, November 1993

E. NIOSH – “Plain Language About Shiftwork” NIOSH Publication # 97-145

F. NIOSH – “Overtime and Extended Work Shifts: Recent Findings on Illness, Injuries, and Health Behaviors,” NIOSH Publication #2004-143, May 2004

G. Paustenbach, D. 1985, Chapter 6 in *Patty's Industrial Hygiene and Toxicology,* Volume IIIA

H. SMS 072 – Behavior-Based Safety

I. Fitness for Duty Policy – URS Infrastructure & Environment Policies and Procedures 034.080

URS SAFETY MANAGEMENT STANDARD

Machine Guarding

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where employees are exposed to moving parts of equipment and machinery.

2. Purpose and Scope

The purpose of this standard is to protect employees from the hazards associated with moving parts of equipment and machinery.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. One or more types of machine guarding is required to protect the operator and other personnel in the machine area from hazards such as those created by point-of-operation, nip points, rotating parts, flying chips, and sparks. The machine area will vary based on the hazard zone or control area associated with the operation. Personnel not participating in machine activities will be restricted from the hazard control area. Specifically, any of the mechanisms listed below that are exposed require guarding:

1. Rotating mechanisms
2. Cutting or shearing mechanisms
3. Nip points
4. Screw or worm mechanisms
5. Forming or bending mechanisms
6. Impact mechanisms.

B. Always guard the point-of-operation of a piece of machinery if the machine operation poses a hazard to the operator. This guard must be designed in accordance with applicable standards. In the absence of any such standard, the guarding device must prevent the operator from having any part of their body in the danger zone during the operating cycle.

C. Guard other areas of machinery where moving parts or other machine hazards can indirectly cause injury. Indirect causes of injury may include work in progress (e.g., flying metal chips, wood discharged from saw); machine failure due to overloading; or improper use and operator error caused by lack of knowledge or skill.

D. Affix guards to the machine where possible, and secure elsewhere, if for any reason attachment to the machine is not possible. The guard will be such that it does not create a hazard.

E. Guard revolving drums, barrels, and containers by an enclosure that is interlocked with the drive mechanism, so that the barrel, drum, or container cannot revolve unless the guard enclosure is in place.

F. Guard revolving shafts (excluding drill rig augers/shafts), wheels, pulleys, and other revolving parts to prevent an employee from contacting the moving part.

G. Securely anchor machines or equipment designed for a fixed location to prevent walking or moving. Tag out-of-service machinery being moved or re-located until it is properly anchored to prevent inadvertent use.

H. Do not wear loose clothing or jewelry while working near the moving equipment. Pull back long hair to avoid entanglement with moving parts.

I. Do not operate equipment without guards in place or other features of the machinery in proper operating order.

J. Tag and remove from service machines and equipment with broken or missing guards until the guard(s) can be repaired or replaced.

K. Employees must obey all operating instructions and warning signs posted for the equipment operation.

L. Prohibit tamping, bypassing, or removing a guard without authorization from management.

M. Use special hand tools for placing and removing material, thus helping prevent the operator from placing their hand in a danger zone. However, these tools must not be used in lieu of other guarding required by this procedure.

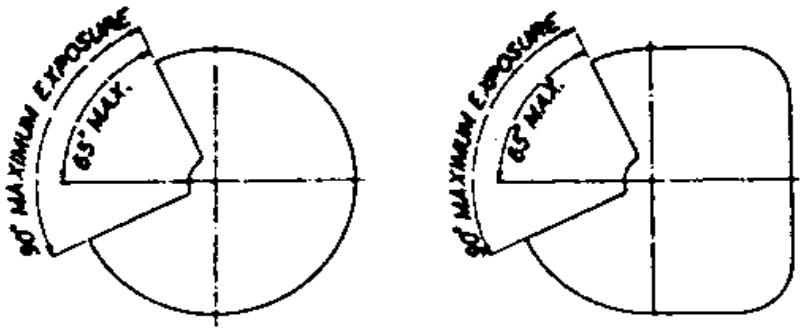
N. Provide employees exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases with the personal protective equipment necessary to protect them from the hazard.

O. Equipment Specific Guarding

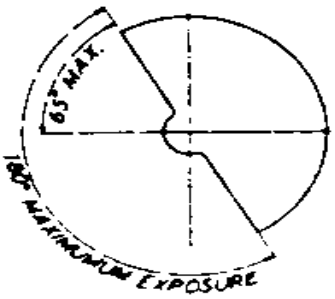
1. Fans – Guard the blades if the periphery of blades of a fan is less than 7 feet (2.13 meters) above the floor or working level. The guard must have openings that are no larger than ½ inch (1.3 cm).

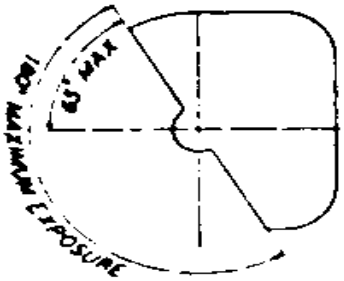
2. Abrasive wheel machinery – Construct guards so that the peripheral protecting member can be adjusted to the constantly decreasing diameter of the wheel. Do not exceed the maximum angular exposure above the horizontal plane of the wheel spindle as specified in 2 and 3, and the distance between the wheel periphery and the adjustable tongue or the end of the peripheral member at the top must never exceed ¼ inch (0.635 cm). Work rests must be adjusted within ⅛ inch (0.3 cm) of the wheel. Guards and tool rests must not be adjusted while the machine is in motion.

3. Bench and floor stands – Do not exceed 90 degrees or one-fourth of the periphery for the angular exposure of the grinding wheel periphery and sides for safety guards used on machines known as bench and floor stands. This exposure shall begin at a point not more than 65 degrees above the horizontal plane of the wheel spindle. If the work requires contact with the wheel below the horizontal plane of the spindle, the exposure must not exceed 125 degrees.



4. Cylindrical grinders – Do not exceed 180 degrees for the maximum angular exposure of the grinding wheel periphery and sides for the safety guards used on cylindrical grinding machines. The exposure will begin at a point not more than 65 degrees above the horizontal plane of the wheel spindle.





5. Table Saws – Guard table saws by a hood that completely encloses the portion of the saw above the table and above the work. The hood must automatically adjust to the thickness of, and remain in contact with, the material being cut. A spreader is required to prevent material from squeezing the saw or being thrown back on the operator. Non-kickback fingers are required when the spreader is in place and must be located to oppose the thrust or tendency of the saw to pick up the material, or to throw it back toward the operator. These devices must be designed to provide adequate holding power for all the thicknesses of materials being cut.

6. Radial Saws – The upper hood must completely enclose the upper portion of the blade down to a point that will include the end of the saw arbor. The upper hood must protect the operator from flying splinters, broken saw teeth, etc.; and deflect sawdust away from the operator. Guard the sides of the lower exposed portion of the blade to the full diameter of the blade by a device that automatically adjusts itself to the thickness of the stock, and remains in contact with the stock to give maximum protection for the operation being performed. Radial saws used for ripping must have non-kickback fingers or dogs located on both sides of the saw to oppose the thrust or tendency of the saw to pick up the material, or to throw it back toward the operator.

7. Bandsaws – Enclose or guard portions of the blade, except for the working portion of the blade between the bottom of the guide rolls and the table. Bandsaw wheels must be fully encased. The guard for the portion of the blade between the sliding guide and the upper-saw-wheel guard must protect the saw blade at the front and outer side. This portion of the guard must be adjustable to raise and lower with the guide.

8. Jointers – An automatic guard is required to cover the entire section of the head on the working side of the fence or gage. The guard must effectively keep the operator's hand from coming in contact with the revolving knives.

The guard must automatically adjust itself to cover the unused portion of the head, and must remain in contact with the material at all times. Portions of exposed head behind the gage or fence must be covered by a guard.

9. Planers – The entire cutting head, and any attached fixtures such as saw blades, must be covered by a metal guard. Feed rolls must be guarded by a good or suitable guard to prevent the hands of the operator from coming in contact with the in-running rolls at any point. The guard must be fastened to the frame carrying the rolls to remain in adjustment for any thickness of stock.

10. Shapers – The cutting heads will be enclosed with a cage or adjustable guard designed to keep the operator's hand away from the cutting edge. The diameter of circular shaper guards will not be less than the greatest diameter of the cutter.

11. Drill Presses – The rotating chuck and swarf that is produced by the drill bit must be guarded by telescoping or adjustable shields.

12. Lathes – Rotating heads must be covered as completely as possible by hoods or shields, which should be hinged so they can opened when making adjustments.

13. Sanding Machines – Feed rolls of self-feed sanding machines must be protected with a semi-cylindrical guard to prevent the hands of the operator from coming in contact with the in-running rolls at any point. The bottom of the guard should come down to within three-eighths of an inch of a plane formed by the bottom or contact face of the feed roll where it touches the stock. Each drum sanding machine must have an exhaust hood or guard that encloses the revolving drum, except for that portion of the drum above the table. Each disk sanding machine must have an exhaust hood, or other guard that encloses the revolving disk, except for that portion of the disk above the table. Each belt sanding machine must have an exhaust hood, or other guard that encloses the unused portion of the belt and nip points where the belt runs onto a pulley.

14. Equip all hand-held, powered platen sanders, grinders with wheels 2 inches (5.1 cm) in diameter or less, routers, planers, laminate trimmers, nibblers, shears, scroll saws, and jigsaws with blade shanks one-fourth of an inch wide or less with only a positive "on-off" control.

15. Equip all hand-held, powered drills, tappers, fastener drivers, horizontal, vertical, and angle grinders with wheels greater than 2 inches (5.1 cm) in

diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similarly operating powered tools with a momentary contact "on-off" control; these may have a lock-on control, provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

16. Equip all other hand-held powered tools, such as circular saws, chainsaws, and percussion tools without positive accessory holding means, with a contact pressure switch that will shut off the power when the pressure is released. Chainsaws must have an automatic chain brake or kickback device.

P. Safeguard Design

Guidance on machine and equipment safeguard design can be found in American National Standards Institute (ANSI) standards and applicable regulations. If specific guidance on safeguard design is available, compliance with the guidance is required. Commercially available safeguards will be used when feasible. When no guidance on safeguard design is available, the following requirements must be followed to ensure the safeguard functions properly.

1. The safeguard must be considered a permanent part of the machine or equipment

2. The safeguard must provide maximum protection, not only to the operator but also to personnel in the vicinity.

3. The safeguard must prevent access to the danger zone or point-of-operation during operation, as well as any other hazardous area of the machine accessible to operators or other employees.

4. The safeguard must not weaken the structure of the machine.

5. The safeguard must not interfere with efficient operation of the machine, cause discomfort to the operator, or complicate maintenance or cleaning of the area around the machine.

6. The safeguard must be designed for the specific job and specific machine (provisions must be made for maintenance and repair of the equipment).

7. The safeguard must be strong enough to resist normal wear and shock, and durable enough to serve over a long period with minimal maintenance.

8. The safeguard must not be a source of additional hazards, such as splinters, pinch points, sharp corners, rough edges, or other potential sources of injury.

9. If possible, a safeguard covering rotating parts should be interlocked with the machine itself so that the machine cannot be operated unless the safeguard is in place.

10. Employees working on or in the vicinity of machines requiring guarding must be instructed in application and function of that guard, and informed that in no case may the guard be bypassed or altered.

5. Documentation Summary

The following information will be maintained in the project file:

A. Equipment and machinery operating manuals.

B. Safeguard design documentation.

6. Resources

A. U.S. Occupational Safety and Health Administration (OSHA) Standard – Machinery and Machine Guarding – 29 Code of Federal Regulations (CFR) 1910.212

B. OSHA Standard – Tools – Hand and Power – 29 CFR 1926.300

C. SMS 016 – Hand and Power Tools

D. ANSI B11.0-2010 – Safety of Machinery: General Requirements and Risk Assessment, The Association of Manufacturing Technology

E. ANSI B11.19-2010 – Performance Requirements for Safeguarding, The Association of Manufacturing Technology

F. OSHA Machine Guarding eTool – http://www.osha.gov/SLTC/etools/machineguarding/index.html

G. OSHA Safeguarding Equipment and Protecting Employees from Amputations http://www.osha.gov/Publications/osha3170.pdf

URS SAFETY MANAGEMENT STANDARD

Railroad On-Track Safety

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where personnel are working on or near railroad transportation systems and are engaged by or under contract to a railroad, transit authority, or private company.

2. Purpose and Scope

This standard is intended to protect personnel and equipment from being struck by a railroad train or other moving railroad equipment.

Working near tracks requires compliance with specialized rail regulations (e.g., Federal Railroad Administration), meeting detailed railroad safety and training requirements, and recognizing the relevant hazards. Proper safety procedures protect the field employee, railroad employees, and members of the public.

3. Implementation

Implementation of this procedure is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Definitions

1. Fouling a track – Placement of an individual or an item of equipment in such proximity to a track that the person or equipment could be struck by a moving train or on-track equipment. Regardless of the situation, the minimum clear distance from the field side of the near-running rail must be 4 feet (1.2 meters) in order not to be considered fouling the track. Maintain 25 feet (7.6 meters) of clearance from the centerline of the track unless the work activities require personnel to enter this area, and specific instructions from the railroad employee in charge have been provided.

2. On-track safety – A state of freedom from the danger of being struck by a moving railroad train or other railroad equipment, provided by operating and safety rules that govern track occupancy by personnel, trains, and on-track equipment.

B. General

1. Employer Responsibility

a. URS is responsible for the on-track safety of URS employees and subcontractors, and any required training.

b. URS guarantees the absolute right for an employee to challenge, in good faith, whether the on-track safety procedures being applied at a job location comply with the rules of the operating railroad. URS also guarantees an employee's right to remain clear of the track until the challenge is resolved. On-track safety challenges are to be discussed with the employee in charge as defined in the site safety briefing. If resolution cannot be achieved, the railroad project representative will be contacted for further information regarding application of the on-track safety rules to the particular situation.

c. As required by the Federal Railway Administration, URS will adopt the on-track safety rules of the railroad being worked on. On-track safety can be achieved by several recognized methods that may vary by railroad entity and/or work project needs.

   i. Project Managers must coordinate all activities in advance with the railroad project representative.

   ii. Project Managers must prepare a Project Hazard Assessment, and a safety plan that meets the requirements of the railroad with which URS is working.

C. Site Safety Briefing

1. Before beginning work and whenever work site conditions change, the Project Manager must contact or coordinate with the railroad project representative for information about current operational conditions. Along with job hazard topics related to the task to be performed, the briefing is to specifically include and document, as applicable:

   a. Designation of the employee in charge;

   b. Method of on-track safety;

   c. Limits of authority (time, milepost-to-milepost);

   d. Tracks that may be fouled; and

   e. Control of movements on adjacent tracks.

2. All employees must acknowledge that they understand fully the on-track safety provisions.

D. Specific Precautions When Working on or near Live Rail

1. Wear personal protective equipment that is appropriate for the work situation. This will typically include a hard hat, steel-toed safety shoes or boots, safety glasses, hearing protection, and American National Standards Institute (ANSI) Class 2 vests.

2. When working around railroad facilities, remind staff to expect rail vehicle and train movement at any time and in either direction on any track. In addition, they must look in each direction prior to entering upon or standing close to the tracks. Employees will cross tracks at designated rail crossings except in those situations where project work requires them to cross elsewhere, in which case other precautions noted in Section 4.D.5 and 8 will be followed.

3. Do not work within 25 feet (7.6 meters) of any active track without authorization.

4. Stop at all railroad crossings.

5. Do not cross tracks immediately after a rail vehicle or train has passed; wait until all adjacent tracks can be observed for a safe distance in both directions.

6. Ensure that all crew members know where to go when it is necessary to clear the track for rail vehicle or train movement. All crew members must clear the track on the same side.

7. Check that all communication equipment is functional.

8. Do not sit, walk, step, or stand on the rail unless it is necessary to perform the work. When required to work in or along the track areas, walk on or cross the tracks on the cross-ties and ballast only. Do not cross tracks at turnout switch points.

9. When working at a stationary location, always ensure that a railroad flag person is present to warn on-coming rail equipment, trains, etc., to slow down or stop.

10. Do not spend unnecessary time fouling a track. Whenever possible, perform all preparations necessary for the work activity in a safe location.

11. Do not use personal radios, CD players, headphones, cell phones, etc.

12. Do not cross tracks between, directly in front of, or behind railcars or locomotives that have stopped. Cross at least 25 feet (7.6 meters) in front of or behind the standing equipment.

13. Do not climb underneath railcars or take other shortcuts. When required by the work, face railroad equipment when getting on or off. Do not get on or off moving equipment.

14. Do not make any movement towards an oncoming train or make any equipment moves in a manner that may lead the train engineer to think that you are about to foul the track.

15. Do not leave unattended equipment within 25 feet (7.6 meters) of the track centerline, fouling the track, or within 250 feet (76 meters) of a crossing.

16. Keep all vehicles at least 15 feet (4.6 meters) away from any active track.

17. Do not wear any unnecessary PPE or clothing that could obstruct your vision or impair your hearing.

18. Do not assume that a train has already passed your location; it may just be late.

19. Keep all air hoses, electrical cords, and the like clear of the track(s). If an air hose, electrical cord, or similar equipment must be placed across any track, run it under the rail.

20. Some rails are conductors of electrical current and an integral part of the railroad operating system. Do not lay devices that could shunt current across rails.

21. In catenary systems, all overhead wires must be considered energized at all times. Watch for high loads; cranes and lifts may interfere with catenary systems.

22. Do not touch dangling wires, or foreign objects hanging from such wires, nor attempt to move them by any means. Immediately report their location to the supervisor; and, if possible, leave someone to protect such wires or foreign objects until their removal by a qualified employee. Other persons in danger of coming in contact must be warned of their location.

23. Regard loose or broken impedance bond connections in the tracks as energized (live), and report immediately to the employee in charge.

24. Adequately insulate all tools used to work on or near electrical equipment or circuits. Use fuse pullers for removing and replacing fuses. De-energize electrical equipment and circuits before any work is done upon same, except when such de-energization interferes with the proper operation of the rail system. If work is to be performed on energized equipment, take all appropriate precautions.

25. Position yourself to be facing the train's directional approach instead of your back.

26. If you are unsure of any aspect of the on-track safety program implementation, stay in a safe location and seek further clarification before approaching the tracks.

27. Report hazardous conditions, safety issues, and security conditions to the railroad employee in charge.

28. Do not position any part of the body in a potential pinch point.

E. Training

1. All employees working near an active railroad will receive training on at least the following topics:

   a. Recognition of railroad tracks and the space around them within which on-track safety is required.

   b. Functions and responsibilities of various persons performing or responsible for on-track safety functions.

   c. Proper compliance with on-track safety instructions given by persons performing or responsible for on-track safety functions.

   d. Signals given by watchmen/lookouts and the proper procedures upon receiving a train approach warning from a lookout.

   e. Hazards associated with working on or near railroad tracks, including review of on-track safety rules and procedures.

2. Employees with additional responsibilities, such as watchers or flaggers, will receive additional training and must demonstrate their proficiency to

perform these duties. Under most circumstances, the railroad will provide flaggers when required.

3. Employees working alone near an active railroad will receive additional training, which will cover the following factors:

   a. Detection of approaching trains and prompt movement to a place of safety upon their approach.

   b. Determination of the distance along the track at which trains must be visible in order to provide the prescribed warning time. Extra precaution must be taken when sight distance is limited by curves, vegetation, tunnels, or other obstructions.

   c. Rules and procedures prescribed by the railroad for individual train detection, establishment of working limits, and definite train location.

   d. On-track safety procedures to be used in the territory on which the employee is to be qualified and permitted to work alone. For additional information, refer to SMS 084 – Lone Workers.

4. Training will be provided initially and at least once every calendar year for affected employees. Additional training will be provided when inadequacies in an employee's knowledge or performance indicate that they have not retained the requisite skill or understanding.

5. Client-specific training requirements will be met.

F. Utilities

1. Many utilities (both overhead and underground) use railroad rights-of-way. Excavation or drilling in these rights-of-way requires assurance of utility clearance before digging. Prior to beginning work, refer to SMS 034 – Utility Clearances and Isolation.

2. Railroad control and signal cables may be buried or above ground. Special care must be taken not to disturb or damage these cables due to their critical safety function.

3. Clearances from energized utilities are specified by the local railroad. When the voltage is not known, keep a minimum distance of 45 feet (13.8 meters).

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Copies of employee training records

B. Project Hazard Assessment(s)

C. Job site safety briefings

D. Safe Work Plan or Health and Safety Plan

E. Any other related safety documentation/communication records

6. Resources

A. 49 Code of Federal Regulations (CFR) 214 – Railroad Workplace Safety

B. Federal Railway Administration (http://www.fra.dot.gov/)

C. Canada Railway Safety Act (http://www.tc.gc.ca/Railway/overview.htm)

D. Railroad Industry e-RAILSAFE Course

E. SMS 084 – Lone Workers

F. SMS 034 – Utility Clearance and Isolation

URS SAFETY MANAGEMENT STANDARD

Hand Safety

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where the potential for hand injuries is present.

Appropriate gloves must be worn when persons work with materials or equipment that presents the potential for hand injury due to sharp edges, corrosives, flammable and irritating materials, extreme temperatures, splinters, etc.

2. Purpose and Scope

This standard is intended to protect employees from activities that may expose them to injury. This standard provides information on recognizing those conditions that require personal protective equipment (PPE) or specific work practices to reduce the risk of hand injury.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Hazard Assessment

1. Perform hazard assessments for those work activities likely to require PPE.

   a. Use the PPE Hazard Assessment Certification Form – Attachment 029-1 AMER to perform the assessment. The Hazard Assessment Certification Form will accompany URS personnel at jobsites for use in the event of a job or task change, or

   b. Use the Gloves Needs Assessment and Selection – Attachment 064-1 AMER to perform the assessment.

   c. Reevaluate completed hazard assessments when the job or task changes.

2. If possible, eliminate the hazards identified through engineering or administrative controls. Examples of controls are chemical substitution, machine guarding, and use of different tools.

3. Select PPE that will protect employees if hazards cannot be eliminated.

    a. Review Safety Data Sheets for project or task-specific chemicals to determine appropriate PPE. If needed, consult with a URS safety representative for assistance.

    b. Review glove manufacturer recommendations for both physical and chemical protection.

    c. Obtain gloves of the correct size for project field staff.

    d. When both chemical and physical protection is of concern, wear the chemical protection gloves (e.g., nitrile) inside the physical protection gloves (e.g., leather, Kevlar®).

    e. Latex gloves are not recommended for chemical protection.

    f. Do not wear metal or metal-reinforced gloves when working with electrical equipment or on electrical services. Proper leather and/or rubber gloves designed and tested for this purpose should be used.

4. Follow glove requirements in the project-specific safety plan.

B. Guidelines for Working With and Around Equipment (Hand Tools, Portable Powered Equipment)

1. General

    a. Employees should be trained in the use of all tools.

    b. Keep hand and power tools in good repair and use them only for the task for which they were designed.

    c. Inspect tools before use and remove damaged or defective tools from service.

    d. Operate tools in accordance with manufacturer's instructions.

    e. Do not remove or bypass a guarding device for any reason.

    f. Keep surfaces and handles clean and free of excess oil to prevent slipping.

    g. Wear proper PPE, including gloves, as necessary.

    h. Do not carry sharp tools in pockets.

i. Clean tools and return to the toolbox or storage area upon completion of a job.

j. Before applying pressure, ensure that wrenches have a good bite.

   i. Brace yourself by placing your body in the proper position so you will not fall if the tool slips.

   ii. Make sure hands and fingers have sufficient clearance in the event the tool slips.

   iii. Always pull on a wrench, never push.

k. When working with tools overhead, place tools in a holding receptacle when not in use.

l. Do not throw tools from place to place or from person to person, or drop tools from heights.

m. Inspect all tools prior to start-up or use to identify any defects.

n. Powered hand tools should not be capable of being locked in the ON position.

o. Require that all power-fastening devices be equipped with a safety interlock capable of activation only when in contact with the work surface.

p. Do not allow loose clothing, long hair, loose jewelry, rings, and chains to be worn while working with power tools.

q. Do not use cheater pipes.

r. Make provisions to prevent machines from restarting through proper lockout/tagout (refer to SMS 023 – Lockout and Tagout Safety).

2. Cutting Tools

a. Always use the specific tool for the task. Tubing cutters, snips, self-retracting knives, concealed blade cutters, and related tools are task specific and minimize the risk of hand injury. For more information about cutting tools, see Supplemental Information A.

b. Fixed open-blade knives (FOBK) are prohibited from use. Examples of fixed open-blade knives include pocket knives, multitools, hunting knives, and standard utility knives.

c. When utilizing cutting tools, personnel will observe the following precautions to the fullest extent possible:

i. Use the correct tool and correct size tool for the job.

ii. Cut in a direction away from yourself and not toward other workers in the area.

iii. Maintain the noncutting hand and arm toward the body and out of the direction of the cutting tool if it were to slip out of the material being cut.

iv. Ensure that the tool is sharp and clean; dirty and dull tools typically cause poor cuts and more hazard than a sharp, clean cutting tool.

v. Store these tools correctly with covers in place or blades retracted, as provided by the manufacturer.

vi. On tasks where cutting may be very frequent or last all day (e.g., liner samples), consider Kevlar® gloves in the PPE evaluation for the project.

vii. Do not remove guards on paper cutters.

viii. In office locations, paper cutters must always be kept in a locked position when not in use.

3. Moving/Rotating Equipment

a. General Requirements for Rotating Equipment (feed augers, chippers, conveyors, etc.)

i. Never place hands, fingers, or extremities near hoppers and operational areas of machinery.

ii. When the equipment is rotating, stay clear of the rotating components and only operate equipment with proper machine guarding in place.

iii. Never clean a jammed piece of equipment unless the transmission is in neutral and the power source or the engine is off, and the moving parts of the equipment have stopped rotating. Refer to SMS 023 – Lockout and Tagout Safety.

4. Other Physical Hazards

a. Activities such as drum handling, fencing, work near razor wire, manhole cover removal, and demolition also pose hazards to hands. Use tools instead of hands for high hazard tasks whenever possible.

b. Plan work to avoid pinch points for hands when moving drums, moving manhole covers into position, and handling other heavy objects.

c. Work handling scrap metal, glass or other sharp edges requires proper hand PPE (Kevlar® or leather gloves).

C. Ergonomics – Hand and Wrist Care

1. Keep your wrist in neutral. Avoid using your wrist in a bent (flexed), extended, or twisted position for long periods of time. Instead try to maintain a neutral (straight) wrist position. Ergonomic tools may be needed for long-term work.

2. Watch your grip. Gripping, grasping, or lifting with the thumb and index finger can put stress on your wrist. When practical, use the whole hand and all the fingers to grasp an object.

3. Minimize repetition. Even simple, light tasks may eventually cause injury. If possible, avoid repetitive movements or holding an object in the same way for extended periods of time.

4. Reduce speed and force. Reducing the speed with which you do a forceful, repetitive movement gives your wrist time to recover from the effort. Using power tools helps reduce the force.

5. Rest your hands. Periodically give your hands a break by letting them rest briefly. Or you may be able to alternate easy and hard tasks, switch hands, or rotate work activities.

6. Consider low vibration or anti- vibration hand power tools when possible.

D. Biological Impacts

1. Poisonous Plants

a. Personnel in regions where there is the potential for contact with poisonous plants should be aware of the hazard.

i. Avoid contact with poisonous plants.

ii. Wear appropriate PPE.

iii. Clean hands thoroughly after contact before performing additional work tasks.

iv. Clean any tools used to cut poisonous plants before returning the tools to storage.

2. Further information can be obtained from SMS 047 – Biological Hazards.

E. Cleaning Hands

1. Avoid contamination of hands by proper use of gloves when contact with physical, chemical, or biological hazards is possible.

2. Use soap and water for normal hand cleaning. Do not use solvents for cleaning as they remove essential oils in the skin and may cause dermatitis. Do not use pressure washers for hand cleaning.

3. If the hands contact a corrosive (e.g., nitric acid), wash the area with water for fifteen minutes and then seek medical attention.

4. Use antibiotic ointment and skin protection on minor breaks/scratches of the skin.

5. In some cases barrier creams may be used to provide limited protection for hands exposed to greases and oils.

F. Safe Hands Observation Tool

1. The Safe Hand Task Review Card (Supplemental Information C) may be used to supplement and reinforce safe work practices and the requirements of this SMS.

2. The observer's responsibilities include:

   a. Two-way conversation with the employees being observed.

   b. Completing the card and mark the applicable fields on the back of the card.

   c. Submitting the completed cards to the supervisor.

3. The supervisor's responsibilities include:

   a. Reviewing the completed cards.

   b. Identifying best work practices and any improvements.

c. Communicating any changes back the employee(s).

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Hand tool training records, as applicable.

6. Resources

A. U.S. OSHA Regulation - 29 Code of Federal Regulations (CFR) 1910.138 – Hand Protection

B. American National Standards Institute/International Safety Equipment Association (ANSI/ISEA) – 105-2011 – American National Standard for Hand Protection Selection Criteria

C. Chemical resistant glove selection: http://www.bestglove.com/

D. Attachment 064-1 – Glove Needs Assessment and Selection

E. SMS 016 – Hand Tools and Portable Equipment

F. SMS 023 – Lockout and Tagout Safety

G. SMS 029 – Personal Protective Equipment

H. SMS 047 – Biological Hazards

I. SMS 054 – Office Ergonomics

J. SMS 056 – Drilling Safety Guidelines

7. Supplemental Information

A. Safer Alternative Tools

B. Guidelines for Safe Hands Free Lifting

C. Safe Hands Task Review Card

Mgr./Supervisor/Lead Name:	Work Area Name:
Task/Operation Being Evaluated:	Date:

1. Using the Protection and Performance Needs Assessment table below:

NOTE: **Function** performance needs must be evaluated thoroughly. If employees have a strong need for dexterity, tactility, and/or grip this should be identified as a priority. Rank priorities in the table below with 1 being the highest priority. Do not assign the same priority more than once. You do not need to rank each one.

Protection and Performance Needs Assessment			
Category	**Properties**	**Protection and Performance Needs**	**Priority** (1=Top Priority)
Mechanical	Cut Resistance	Protection from sharp edges, blades, and other cutting hazards	
	Puncture Resistance	Protection from sharp objects like nails, pins, needles, wire	
	Abrasion Resistance	Durability and resistance to abrasive objects or materials	
	Shielding	Protection from impact, ricochet, small projectiles.	
Chemical	Degradation & Absorption Resistance	Durability and resistance to breaking down and/or permeating the glove from exposure to chemicals. Refer to the chemical's Safety Data Sheet for the appropriate glove choice.	
Thermal	Heat Resistance	Thermal protection from hot objects or materials	
	Cold Resistance	Thermal protection from cold weather, objects, or materials	
Vibration	Anti-Vibration	Vibration reduction from operating certain tools and equipment	
Electrical	Insulation	If performing work on electrical equipment, this must be the top priority.	
Function	Dexterity	Ability to manipulate objects and control hands in the desired manner	
	Tactility	Ability to sense objects by touch	
	Grip	Ability to exert pressure on an object when holding it	

2. Identify a glove that meets the top protection and performance priorities.

NOTE: In most cases there are tradeoffs between hazard protection and functional performance of a glove. These factors are equally important. The higher the severity of the hazard, the more important hazard protection is. The table below offers additional guidance on key considerations when selecting a glove for certain protection and performance properties.

Category	Properties	Key Considerations and Selection Criteria
Mechanical	Cut Resistance	**Testing Standard: ASTM F1790 and ASTM F1970-05** There are 5 levels of cut resistance. 5 is the highest.
	Puncture Resistance	**Testing Standard: EN 388:2003** This testing measures how well the glove material resists loss of material from rubbing on rough surfaces.
	Abrasion Resistance	**Testing Standard: ASTM D3389-05 and ASTM D3884-09** Abrasion resistance testing measures how well the glove material resists loss of material from rubbing on rough surfaces.
	Shielding	Some gloves offer thick padding or hard guards around the back of the hand or knuckles. These can offer good protection against impact.
Chemical	Degradation & Absorption Resistance	Identify which chemical(s) you may be exposed to and refer to the chemical's Safety Data Sheet for the appropriate glove choice.
Thermal	Heat Resistance	**Testing Standard: ASTM F1060-08** This testing measures the insulation provided by the glove when contacting a hot surface. Higher temperatures reported indicate a glove with greater insulation.
	Cold Resistance	**Testing Standard: EN 511:1994 (for ambient temperature)** **Testing Standard: ISO 5085:1989-1 (for cold surfaces)** Choosing the right glove depends on whether you need protection from cold weather or cold surfaces.
Vibration	Anti-Vibration	**Testing Standard: ANSI S2.73-2002 (R2007)** This testing method measures the vibration transmission of the glove.
Electrical	Insulation	**Testing Standard: ASTM D120-09** Glove protection depends on the maximum voltage of energized components. 50 – 240V: Class 00 with Leather Protectors Above 240 – 480V: Class 00 with Leather Protectors 480 – 600V: Class 0 with Leather Protectors 600V and above: Class 0 or higher (depending on maximum voltage) with Leather Protectors
Function	Dexterity	**Testing Method: EN 420:2003** Ability to manipulate objects and control hands in the desired manner. This testing method assesses the wearer's ability to pick up small diameter pins lying on a flat surface with their thumb and forefinger. If high dexterity is needed, and the hazards are relatively low to the forefinger and thumb, consider a glove that is tip less for those two digits.
	Tactility	Ability to sense objects by touch. There is no standard test. However, a common field test is to determine if you can feel a pulse while wearing the glove. This is affected by the thickness of the glove, presence of liners, glove surface characteristics, and properties of the coating material
	Grip	**Testing Standard: NFPA 1971 (Grip)** Ability to exert pressure on an object when holding it.

Types of safety knives or alternative cutting tools:

Self-retracting utility knives (brands – OLFA, Martor, Allway Tools)

Guarded utility knives (brands – The Safety Knife Co., Martor)

Shears, snips, scissors (brands – Ridgid, Craftsman, Wolfcraft)

Concealed blade cutters (brands – The Safety Knife Co., Martor)

Pipe cutters (brands – Ridgid, Empire)

Specialty cutter (brand – Geoprobe)

What is Safe Hands Free Lifting?

The most hazardous parts of a lifting operation are hoisting and landing of the load. Therefore at these critical stages, personnel must be as far away from the load as possible in case the load shifts or drops. To ensure this happens, it is essential to adopt a “hands-free” lifting guideline that is rigidly followed.

Once a load is connected to a mechanical lifting device, personnel should not handle or touch a load with any part of their body as the load is being lifted or before the load is properly set down and all potential energy is released.

However, there will always be certain jobs which will require “hands-on” for final positioning. These should be treated as exceptions to the norm and fully addressed in the risk assessment process with special attention given to the risk of injury to fingers, hands, toes and feet.

Objective of Safe Hands Free Lifting

To eliminate the risk of injury to personnel from pinch points, caught between zones, entanglement hazards and a reduced field of vision.

What are the benefits of Safe Hands Free Lifting?

- Significantly reduces crush, entanglement and hand injuries.
- Clears you of the potential injury zone for dropped objects.
- Clears you of the potential swing area.
- Personnel can see more of the load zone.
- Better posture when pushing and pulling objects.
- Less strain on the lower back and neck area.
- Creates a strong safety culture for all project personnel.

Can every load be guided with Safe Hands Free Lifting?

MOSTLY, but there *may* be times when due to restricted work space, working from elevated work platforms, awkward angles and body posture, that hands will need to be used.

HOWEVER, every load must be assessed in real time as part of the Safe Work Planning process. Remember to document and communicate the process to be used with all involved employees.

How is Safe Hands Free Lifting achieved?

1. The Correct Mindset

   Changing the way we have done things for years always results in an element of "pushback" from people set in their ways. We have to persevere with fresh ideas or we will never change things for the better. It is a natural reaction to hold the rigging in place until the tension is taken up to make sure the load is properly slung and balanced. Nevertheless, how often have you heard of people getting hands, fingers and body pinched, trapped or crushed by the rigging?

2. Tag Lines

   Tag lines must be attached to a load prior to lifting and provided at the appropriate length to allow employees to stay clear of the drop zone and any pinch/crush points the load may create.

   Whether or not to use tag lines has always been a debatable point, but the consensus of opinion is that although their use can introduce additional hazards, their use generally increases the safety of the lift. Having said that, the advantages and disadvantages will be considered and their use determined during the risk assessment and documented.

3. Push / Pull Sticks

   Push / Pull sticks are simply wooden or fiber glass poles with a boat hook at one end and a rubber or leather pad at the other. Ideally, these should be about 2 meters / 6 feet long. Their primary use is to retrieve tag lines hanging vertically down from the load so that personnel do not have to get too close to the suspended load. Their secondary use is to push and maneuver loads into the correct orientation / position for landing or guiding them into tight spaces while remaining hands-free / hands-off.

Achieving "hands-free" lifting is not difficult; it is an awareness of the hazards and planning the work and working the plan. If you do come up against jobs that appear to require "hands-on", think long and hard about how you can change that and if you think it needs special tools or equipment to achieve "hands-free".

What has to happen if you put your hands on the load?

- Safe Work Planning.
- Use proper gloves.
- Agree on the communication method within the lift group.
- Never touch the load with your arm higher than your shoulder level.
- Use hooks to pull tag lines away from the drop zone.
- Keep out of the drop zone.
- Look ahead for the pinch points and crush zones.

Mandatory Safe Hand Practices

- All personnel must have GLOVES in possession 100% of the time.
- Proper GLOVES must be worn anytime there is a potential hazard to the hands.
- All Hoisted Loads should only be touched with a HANDS FREE TOOL.
- DO NOT place any part of your body under a suspended load.

These Guidelines for Safe Hands Free Lifting are in addition to any requirements of the URS Safety Management Standards (SMS).

Safe Hands Free Lifting Tools	
	Rubber dipped or vinyl coated tag lines prevent curling of rope. Eliminates trip and entanglement hazards.
Example of aluminium boat hook modified for Safe Hands Free Lifting. One end rubberised for controlled pushing. Hook ideal for pulling tag lines to you and not walking into the drop zone. 	
Other tool options for Safe Hands Free Lifting 	

Photo Examples

URS SAFETY MANAGEMENT STANDARD

Injury and Claims Management

1. Applicability

This standard applies to all operations of URS Corporation and its subsidiary companies.

2. Purpose and Scope

This standard is designed to ensure that employees receive appropriate, immediate, and high-quality health care services that will minimize disability, promote rapid recovery, and save lives.

3. Implementation

Implementation of this procedure is the responsibility of the manager directing activities of the facility, site, or project location.

4. Requirements

A. Pre-Injury Management

The following proactive plans and procedures will be in place before an injury or illness occurs.

1. Work Site Evaluation

   Project and office locations will evaluate their location for first aid and medical requirements. The following factors should be considered:

   a. Types of accidents that could reasonably occur.

   b. Location of local clinics and hospitals.

   c. Response time for external emergency services.

   d. If corrosive or hazardous materials are in use.

   e. Any industry specific requirements.

   f. Types of training for employees and first aid responders.

   g. What first aid supplies should be available.

2. First Aid Services

   a. First Aid Responders

There will be a sufficient number (but not less than one) of employees on each shift trained in first aid to provide adequate first response medical care available at the work site if either of these conditions exists:

i. If life-threatening injuries can reasonably be expected, trained personnel must be available within 3 to 4 minutes. This generally means that community emergency medical services cannot be relied on since their response time is usually greater than 3 minutes.

ii. If no life-threatening injuries can reasonably be expected, the response time for trained personnel is extended to 15 minutes.

The trained first aid responders should be designated so that the other employees know who they are and how to contact them. The trained responders must have a current first aid certificate and be trained in Bloodborne Pathogens (see SMS 051 – Bloodborne Pathogens).

For certain long-term, heavily staffed, or high hazard projects, URS may opt to establish a first aid station on site. It should be staffed with a person who is a nurse, Emergency Medical Technician (EMT), or Emergency Medical Technician Paramedic (EMT-P) who may practice limited treatment under the direction of a physician.

Where clients provide the services of a first aid station, the project manager will determine the specific services provided and the administrative procedures involved. Employees requiring first aid treatment by a client-provided facility must obtain prior approval from the project manager.

b. First Aid Kits

i. Each site will maintain a first aid kit in accordance with Attachment 065-8 – First Aid Kit Supply List. The contents of the first aid kit will be checked prior to being sent out to each site/project and monthly thereafter to ensure that the expended items are replaced.

ii. First aid kits will be maintained in readily accessible locations on each job site. For mobile or vehicle-based operations in remote locations, first aid kits may be necessary in vehicles.

iii. Kits will be inspected prior to being sent to a work location and at least monthly while in use. Any items not approved for the kit will be removed during inspection unless specifically approved for that site by the URS Occupational Health Nurse or the site health care professional.

iv. At no time will over-the-counter medications such as antacids, aspirin, cold or cough drops, or other sundry items be stored in the kits without the approval of the URS Occupational Health Nurse or a URS-approved health care professional.

c. Emergency Services

The project Safety Representative, in conjunction with the project manager, will identify emergency service providers, including ambulance and hospital services. Each location will post a current list of emergency telephone numbers and maps to access local medical emergency providers (SMS 003 – Emergency Preparedness/Crisis Management Plans). Advance contact with ambulance services to ensure they are familiar with location, access routes, and hospital locations is advised.

d. Eyewash and Safety Shower Facilities

A corrosive material is a highly reactive substance that causes obvious damage to living tissue. Corrosives act either directly by chemically destroying the part (oxidation) or indirectly by causing inflammation. A hazardous material is any substance or compound (including corrosives) that has the capability of producing adverse effects on the health and safety of humans. Review safety data sheets for the health effects of compounds being used at the site to determine whether they meet the criteria defined previously.

If corrosive or otherwise hazardous materials are used, eyewash and body flush facilities must be provided. Where possible, these facilities should be within 10 seconds of the hazard. The water source must be pressure controlled, maintained to prevent freezing and bacterial growth in the water and clearly identified. Portable eyewash stations must be capable of providing at least 15 minutes of potable water flow (generally requires between 7 and 15 gallons depending on flow). See Supplemental Information A for additional guidance on eyewash and shower facilities.

e. Identification of Medical Facilities

The field and office location will identify a suitable local clinic, preferably specializing in occupational medicine, to treat nonemergency injuries and illnesses. In addition, a local hospital emergency room will be identified for treatment of life-threatening or after hours injuries. The URS Occupational Health Nurse, the Workers' Compensation Administrator, or the workers' compensation insurance carrier representative should be contacted to provide a listing of recommended medical facilities.

The project Safety Representative should visit the medical facility and meet with the medical provider to establish expectations. Clinics should be conveniently located, clean, professionally staffed, offer multiple services, and be supportive of early return to work practices.

Field/construction projects will make appropriate arrangements with local ambulance/emergency service providers prior to the start of work activities to ensure that appropriate transportation can be provided in the event of an emergency. These arrangements include establishment of an identifiable project address and emergency access point (i.e., location to meet emergency personnel).

The project Safety Representative will communicate the following with the designated hospitals/clinics:

i. Physical requirements for each trade.

ii. Policies regarding availability of suitable work for partially disabled employees.

iii. Procedures for reporting of treatment diagnosis and treatment plans to the company and its workers' compensation insurance carrier.

iv. Requirements for alcohol and substance abuse testing per company and/or client-required substance abuse policies (as needed).

B. Post-Injury Management

1. Transportation

When employees require urgent medical attention as the result of a work-related injury/illness, transportation will be provided to the doctor's office, clinic, or hospital. Employees should not be permitted to drive unless it is safe to do so.

2. Emergency Injury/Illness Treatment

   In all cases, critical injuries must be immediately referred for professional medical attention. The manner in which the referral is accomplished, and the person responsible for the referral, should be clearly defined in either a project safety plan and/or an office Emergency Preparedness Plan (SMS 003). Critical injuries/illnesses include, but may not be limited to, the following:

   a. Loss of consciousness.

   b. Unexplained chest pain.

   c. Breathing difficulty.

   d. Uncontrolled bleeding.

   e. Fractured bones.

   f. Suspected internal injuries.

   g. Suspected exposure to chemical/biological hazard.

   h. Second or third degree thermal or chemical burns (i.e., blistering).

   i. Electrocution.

   j. Unexplained change in mental state following an injury (may indicate shock or other internal injuries).

3. Nonemergency Injury/Illness Treatment

   When a work-related incident results in a noncritical injury/illness, the primary objective is to provide appropriate medical services to diagnose and treat the injury/illness. Options available to the employee and project/office management in these situations include the following:

   a. First aid treatment and/or review by a qualified first aid responder.

b. First aid treatment and/or review by a qualified first aid responder followed by a referral to an occupational health clinic.

Additional support for the employee and managers in these situations can also be obtained from a URS Safety professional.

Attachment 065-1 AMER – Injury Management Procedures Flow Chart provides a flow chart to assist employees and managers in determining the most appropriate option for obtaining medical services for nonemergency injuries/illnesses.

Note: Some states allow injured workers to choose their own initial medical provider. Employees are to be cautioned that not all medical providers accept workers' compensation insurance and coverage should be verified prior to treatment if an employee lives in a state that permits him/her to elect to see their personal doctor rather than the URS-recommended physician.

C. Workers' Compensation Case Management

1. Safety

a. Occupational Health Nurse/Workers' Compensation Administrator will

i. Evaluate and file workers' compensation claims for cases covered by the URS insurance program. Evaluate and provide consultation for injuries occurring in monopolistic states (Ohio, Washington, North Dakota, and Wyoming). Energy & Construction workers' compensation claims are filed by site personnel.

ii. Provide date of injury support to employees and supervisors, including monopolistic state claims.

iii. Coordinate regular follow-up of all cases, including monopolistic state claims, to ensure effective case management.

iv. Offer pre-injury consultation for offices and project sites.

v. Provide training and communication regarding the workers' compensation process.

b. The Safety Representatives will assist with the early return to work program by interfacing with the supervisor and employee to evaluate whether appropriate and safe temporary transitional work is available.

c. Safety Representatives will

   i. Provide support to ensure that the requirements of this SMS are in place.

   ii. Provide training on this SMS.

   iii. Ensure proper reporting of incidents in accordance with SMS 049 –Incident Reporting, Notifications & Investigation.

   iv. Ensure that requirements of this SMS are incorporated into all project health and safety plans.

2. Human Resources

   Human Resources will

   a. The HR Representatives will forward any external communication (e.g., clinic bills, monopolistic state forms) to the Occupational Health Nurse or Workers' Compensation Administrator upon receipt.

   b. Assist with the return-to-work process, if needed.

3. Supervisor

   The Supervisor (or HR or Safety Representative) will

   a. For initial medical treatment, escort employee to medical treatment provider.

      The supervisor (or designated Safety or HR Representative) will accompany the employee to the medical treatment provider. This reduces the risk of the employee driving while injured, ensures the injured employee is treated by the correct medical provider, coordinates alcohol and drug testing when applicable, and allows for another person to describe to the medical provider how the injury occurred, the type of work activities the injured person performs, and URS' return-to-work program.

   b. Sign the Medical Treatment Referral form (Attachment 065-2 AMER) prior to the employee leaving the site for medical treatment (this will not be necessary in an emergency). The employee will also be given the Medical Authorization Form (Attachment 065-3 AMER) to be signed with copy provided to the employee, health care provider, and Occupational Health Nurse or Workers' Compensation Administrator.

c. Provide transitional job assignments, with consultation and approval of the office manager, whenever possible to enable an injured worker to return to work (Return to Work Policy Attachment 065-4 AMER). Transitional employment is defined as temporary modified or light duty work that covers the time from the injury until the release to full duty from the doctor. The return to work hierarchy includes the following:

   i. Return to own job.

   ii. Return to own job with accommodations/modifications.

   iii. Return to another job at URS with or without accommodations/modifications.

   iv. Placement in alternate jobs through telecommuting or other job assignments determined case by case.

d. Provide, when requested by the treating physician or insurance carrier, the Description of Employee's Job Duties form (Attachment 065-5 AMER).

e. Maintain regular contact with employees who are temporarily disabled (contact at least weekly by phone or email).

4. Employee

   The employees will

   a. Report injuries immediately to their supervisors. Employees are encouraged to contact their supervisor and/or the Occupational Health Nurse or Workers' Compensation Administrator prior to seeking any medical services for nonemergency injuries and illnesses.

   b. Review and comply with Attachment 065-6 – Employee's Responsibilities.

D. URS will follow the recordability requirements of U.S. Occupational Safety and Health Administration (OSHA) (29 CFR 1904 and 1952) for both U.S. and international operations.

   1. For Infrastructure & Environment and Federal Services, the Occupational Health Nurse will maintain OSHA 300 logs for U.S. locations. For Energy & Construction, the Business Group Safety Managers will maintain OSHA 300 logs for U.S. locations. The OSHA 300A forms and 300 logs will be signed by a company official and distributed to the U.S. locations each

January. 300 A forms will be posted from February 1 to April 30 in a location conspicuous to all employees. The posted 300A form must not be altered, defaced, or covered by any other materials.

2. Sites working under the U.S. Mine Safety and Health Administration (MSHA) recordkeeping requirements will meet MSHA requirements, as well as track injuries using OSHA criteria for use in company safety statistics.

3. Energy & Construction - The Business Group Safety Manager/Director will make the decision on recordability of an injury/illness.

4. Federal Services - The site Safety Representative will make the initial decision on recordability of an injury/illness. The Occupational Health Nurse will review the categorization of recordability (or non recordability) and over-ride as necessary. A Recordability Review Committee (RRC) is chaired by the Vice President of Safety. The RRC meets once each quarter or as needed. The intent of the RRC is to review the relevant facts surrounding uncertain recordable and non-recordable cases to make a final determination of recordability.

5. Infrastructure & Environment - The Occupational Health Nurse will make the initial decision on recordability of an injury/illness. A recordability review committee will be appointed by the Vice President of Safety to review the recordable cases on a monthly basis. The review committee (based on OSHA regulations and information regarding the case) will make the final decision on recordability.

6. The injury/illness statistics (e.g., Total Recordable Incident Rate) will be calculated monthly and reported to URS management.

7. Completed logs of recordable cases, including any regulatory required forms (OSHA 300 logs, incident report forms, etc.) will be retained at least five years following the end of the calendar year these records cover.

5. Documentation

A. The following documents will be maintained in the office/project safety file:

1. Posting of medical services providers and emergency phone numbers.

2. List of qualified first aid providers.

3. Documentation of coordination between URS and emergency service providers for field/construction projects.

4. Completed Incident Report Form (Attachment 049-1).
5. Description of Employee's Job Duties form.
6. Medical Treatment Referral form.
7. Medical Authorization Form.

B. Medical records related to an injured employee shall be considered confidential. The following documents will be maintained by the HR or Safety Representative and copied to the Occupational Health Nurse or Workers' Compensation Administrator.

1. Physician's First Report of Injury and follow-up reports.
2. Medical Treatment Referral form.
3. Medical Authorization Form.
4. Description of Employee's Job Duties form.

6. Resources

A. U.S. Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.151 – Medical Services and First Aid

B. OSHA 29 CFR 1910.1030 – Bloodborne Pathogens

C. OSHA 29 CFR 1926.50 – Medical Services and First Aid

D. OSHA 29 CFR 1904 – Recording and Reporting Occupational Injuries and Illnesses

E. OSHA 29 CFR 1952 – Approved State Plans for Enforcement of State Standards

F. American National Standards Institute (ANSI) Z358.1-2009 – Emergency Eyewash and Shower Equipment

G. OSHA Instruction CPL 2-2.53 – Guidelines for First Aid Programs

H. OSHA Safety and Health Topics: Medical and First Aid

I. Red Cross Health and Safety Services – www.redcross.org/services/hss/

J. SMS 003 – Emergency Preparedness/Crisis Management Plans

K. SMS 024 – Medical Screening and Surveillance

L. SMS 049 – Incident Reporting, Notifications & Investigation

M. SMS 051 – Bloodborne Pathogens

N. Medical Services Provider – WorkCare™ 1-800-455-6155

O. Contacts

Infrastructure & Environment	Federal Services	Energy & Construction
Occupational Health Manager	Occupational Health Nurse Workers' Compensation Manager	Claims Manager
Jeanette Schrimsher, RN COHN-S (866) 326-7321 (Toll Free-U.S.) (512) 656-0203 (Cell) (512) 419-6413 (Confidential Fax)	**BJ Heinrich, RN, COHN-S/CM, STS** (877) 878-9525 (Toll Free) (512) 656-8502 (Cell) (512) 419-6413 (Confidential Fax)	**Lori Young, STS, CISR, CRIS** (208) 386-5038 (Office) (208) 891-5660 (Cell) (208) 386-5462 (Confidential Fax)

P. Attachment 065-1 AMER – Injury Management Procedures Flow Chart

Q. Attachment 065-2 AMER – Medical Treatment Referral form

R. Attachment 065-3 AMER – Medical Authorization Form

S. Attachment 065-4 AMER – Return to Work Policy

T. Attachment 065-5 AMER – Description of Employee's Job Duties

U. Attachment 065-6 AMER – Employee's Responsibilities

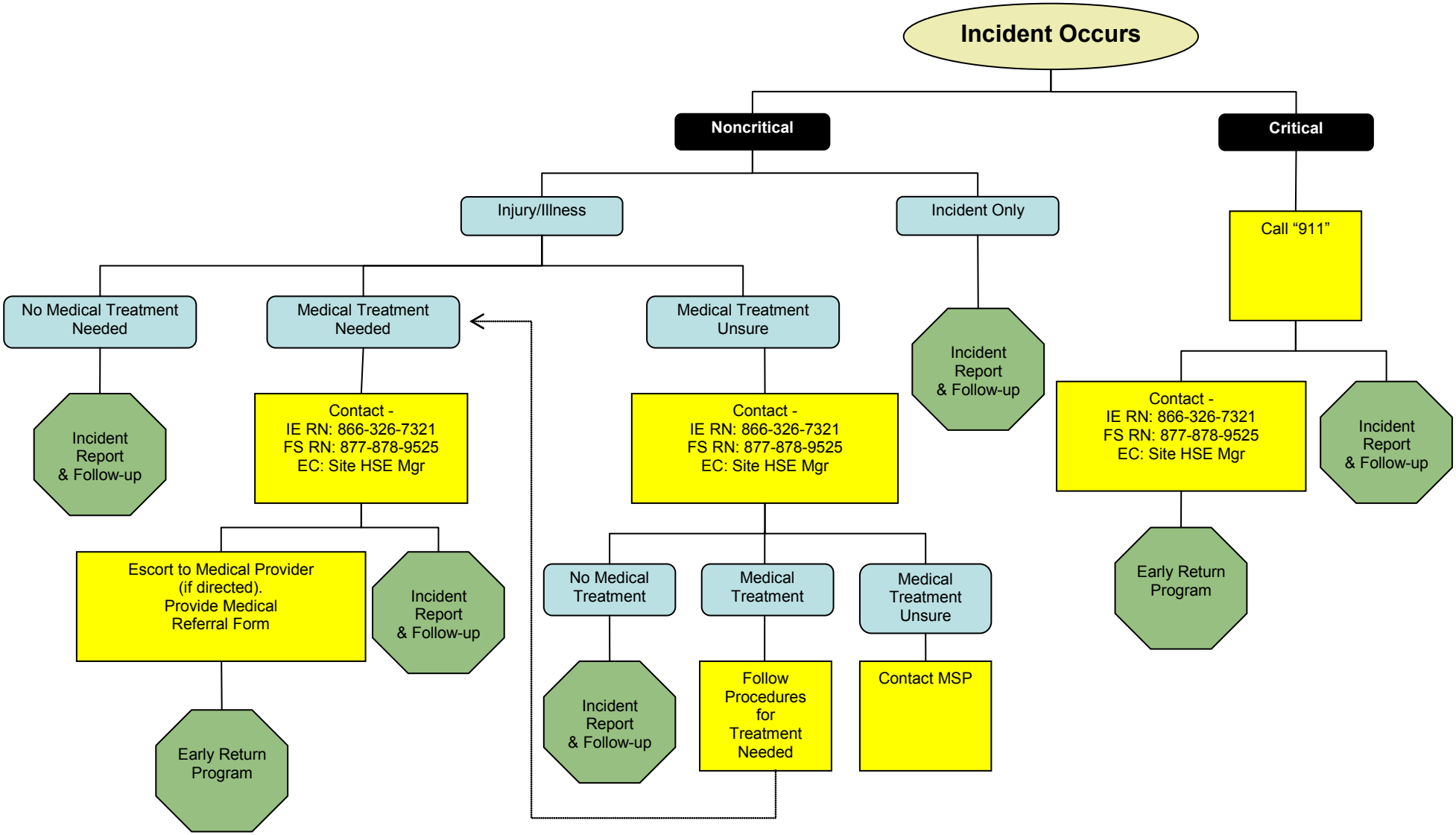
V. Attachment 065-7 AMER – Injury Management Checklist

W. Attachment 065-8 AMER – First Aid Kit Supply List

7. Supplemental Information

A. Emergency Eyewash and Shower Equipment

URS	Safety Management Standard **INJURY MANAGEMENT PROCEDURES FLOW CHART**	Attachment 065-1 AMER Issue Date: January 2003 Revision 8: September 2013



IE – Infrastructure & Environment / FS – Federal Services / EC – Energy & Construction

This document is uncontrolled when printed, saved or copied.
Please refer to the URS Safety website on the Sourse for the latest version.

URS	Safety Management Standard **MEDICAL TREATMENT REFERRAL**	Attachment 065-2 AMER Issue Date: January 2003 Revision 8: September 2013

Date _____ Site Phone Number _____

URS Site Contact _____

Employee Name _____ Social Security # _____

Employee Signature _____

Brief Job Description _____

_____

Date of Injury _____ Body Part Injured _____

Place of Injury _____

Post-accident drug and/or alcohol test required? Yes ☐ No ☐

Medical Provider:

Name _____ Phone _____

Address _____

_____

Employee Transported to Medical Provider by: _____

_____

Workers' Compensation Claims Administrator: **Sedgwick CMS (see attached billing locations)** (except for: Washington, Ohio, North Dakota, Wyoming)

For questions, please contact:

Infrastructure & Environment	Jeanette Schrimsher, RN	(866) 326-7321
Federal Services	BJ Heinrich, RN	(877) 878-9525
Energy & Construction	Terry Sower	(208) 386-6038

Early Return-to-Work and Transitional Employment Policy

To Medical Providers: URS Corporation values its employees and believes that it is helpful to an injured worker's recovery to return to work as soon as medically approved. Please contact us if you have any questions regarding releasing the employee to work either in a modified/light duty status or full duty clearance. Please send a work status report to the site contact listed above following the initial medical evaluation and each follow-up appointment.

_____ _____

Supervisor Name Supervisor Signature

Providers: Send medical bills to Sedgwick CMS at the office address indicated for the state where the claim is filed.

URS Corporation & Sedgwick Claims Management Services, Inc.

Workers' Compensation Claims Handling Offices

Albuquerque, NM	Anchorage, AK	Baltimore, MD	Boise, ID
States Serviced NM	**States Serviced** AK	**States Serviced** DC, DE, MD, PA	**States Serviced** ID
Office Information Sedgwick CMS P.O. Box 14489 Lexington, KY 40512-4489 Toll-Free: 800-255-4349 Tel: 505-255-0437 Fax: 505-256-1412	**Office Information** Sedgwick CMS PO Box 14518 Lexington, KY 40512-4518 Toll-Free: 866-853-0048 Tel: 907-868-2787 Fax: 907-868-3042	**Office Information** Sedgwick CMS P.O. Box 14491 Lexington, KY 40512-4491 Toll-Free: 800-285-3258 Tel: 410-773-4200 Fax: 410-773-4221	**Office Information** Sedgwick CMS P.O. Box 14543 Lexington, KY 40512-4543 Toll-Free: 866-253-1074 Tel: 208-388-3200 Fax: 208-388-3210
Charleston, WV	**Columbia, SC**	**Dallas, TX**	**Denver, CO**
States Serviced WV	**States Services** AL, GA, KY, MS NC, SC, TN, VA	**States Serviced** LA, OK, TX	**States Serviced** AZ, CO
Office Information Sedgwick CMS P.O. Box 14490 Lexington, KY 40512-4490 Toll-Free: 877-393-0022 Tel: 304-347-9600 Fax: 304-347-9610	**Office Information** Sedgwick CMS P.O. Box 14480 Lexington, KY 40512-4480 Toll-Free: 800-426-9218 Tel: 803-772-1111 Fax: 803-750-2885	**Office Information** Sedgwick CMS P.O. Box 14497 Lexington, KY 40512-4497 Toll-Free: 888-899-4694 Tel: 214-922-0600 Fax: 214-922-0650	**Office Information** Sedgwick CMS P.O. Box 14493 Lexington, KY 40512-4493 Toll-Free: 800-507-9656 Tel: 303-713-6000 Fax: 303-713-6056
Portland, ME	**Helena, MT**	**Honolulu, HI**	**Las Vegas, NV**
States Serviced CT, MA, ME NH, RI, VT	**States Serviced** MT	**States Serviced** HI	**States Serviced** NV
Office Information Sedgwick CMS P.O. Box 14492 Lexington, KY 40512-4492 Toll-Free: 800-526-3721 Tel: 207-874-9100 Fax: 207-874-9199	**Office Information** Sedgwick CMS P.O. Box 14544 Lexington, KY 40512-4544 Toll-Free: 866-458-4737 Tel: 406-442-2202 Fax: 406-442-2865	**Office Information** Sedgwick CMS P.O. Box 14541 Lexington, KY 40512-4541 Toll-Free: 866-580-6674 Tel: 808-523-3200 Fax: 808-523-3250	**Office Information** Sedgwick CMS P.O. Box 14483 Lexington, KY 40512-4483 Toll-Free: 888-713-1112 Tel: 702-568-3800 Fax: 702-240-1962
Memphis, TN	**Omaha, NE**	**Portland, OR**	**Rochester, NY**
States Serviced AR	**States Serviced** IA, IL, IN, KS MI, MN, MO NE, SD, WI	**States Serviced** OR	**States Serviced** NJ, NY
Office Information Sedgwick CMS P.O. Box 14423 Lexington, KY 40512-4423 Toll-Free: 866-856-4805 Tel: 901-566-3300 Fax: 901-566-3415	**Office Information** Sedgwick CMS P.O. Box 14513 Lexington, KY 40512-4513 Toll-Free: 800-486-2152 Tel: 402-496-2000 Fax: 402-496-6511	**Office Information** Sedgwick CMS P.O. Box 14514 Lexington, KY 40512-4514 Toll-Free: 800-906-3147 Tel: 503-412-3900 Fax: 503-412-3990	**Office Information** Sedgwick CMS P.O. Box 14515 Lexington, KY 40512-4515 Toll-Free: 866-846-7757 Tel: 585-368-7700 Fax: 585-368-7710
Rancho Cordova, CA	**Salt Lake City, UT**	**Tampa, FL**	
States Serviced CA	**States Serviced** UT	**States Serviced** FL	
Office Information Sedgwick CMS P.O. Box 14433 Lexington, KY 40512-4433 Toll-Free: 866-274-6586 Tel: 916-771-2900 Fax: 916-771-2990	**Office Information** Sedgwick CMS P.O. Box 14485 Lexington, KY 40512-4485 Toll-Free: 866-814-8220 Tel: 801-258-9700 Fax: 801-258-9730	**Office Information** Sedgwick CMS P.O. Box 14437 Lexington, KY 40512-4437 Toll-Free: 888-390-9522 Tel: 813-287-8399 Fax: 813-282-6783	

WORKERS' COMPENSATION
EMPLOYEE AUTHORIZATION LETTER

To Whom It May Concern:

I, _____, hereby authorize any hospital,
Please Print Name

medical practitioner, clinic, other medical or medically related facility, pharmacy, or insurance company to furnish to URS Corporation or its subsidiaries or representatives (orally or in writing) information with respect to any work-related injury or illness, including treatments, consultations, prescriptions, and copies of applicable records that may be requested. I also authorize my employer to disclose information needed to process my workers' compensation claim.

The information provided to URS Corporation, its subsidiaries, or representatives is to be used solely for the administration of my workers' compensation claim.

A photocopy of this authorization is to be considered as valid as the original and is effective for the duration of the claim.

Signature: _____ Date: _____

Signed copies to:
- ☐ Employee
- ☐ Medical Provider
- ☐ URS Occupational Health Nurse/Workers' Compensation Administrator

Our primary goal in safety is the prevention of work-related injuries. When an injury does occur, it is the policy of URS to provide our employees with the best possible recovery program. A major component of any successful recovery program is returning the injured employee to the workforce as soon as medically possible. This type of Early Return Strategy has been shown to dramatically reduce the overall recovery time of injured workers, creating a benefit for the employee, his/her family, coworkers, and the firm.

As part of this policy, Operations; Human Resources; Safety; and our workers' compensation insurance carrier will work together with our employees and their treating physician to establish a recovery program that minimizes both the number of cases and total days away from work experienced by our employees. URS operations will accommodate transitional work (i.e., light duty or modified work) requirements for employees recovering from work related injuries, whenever possible. The work limits, as defined by the treating physician, will be strictly adhered to. Modified job assignments will be structured to meet the capacities and therapy needs of the injured employee.

Print Name: _____

Location: _____ Phone: _____

Job Title: _____ No. Hours/Day:_____ No. Days/Week:_____

General Job Description: _____

_____

1. Check the frequency and number of hours a day the activity is performed:

Activity	**Frequency**		**Number of Hours Per Day**									
	Continuous	Intermittent	0	1	2	3	4	5	6	7	8	9+
Sitting	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Walking	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Standing	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Bending	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Squatting	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Climbing	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Kneeling	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
Twisting	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

2. Hand manipulation required? (If yes, complete 2 a, b, c, d) Yes ☐ No ☐
   - 2a. Simple grasping? Yes ☐ No ☐ Right ☐ Left ☐
   - 2b. Power grasping? Yes ☐ No ☐ Right ☐ Left ☐
   - 2c. Pushing and pulling? Yes ☐ No ☐ Right ☐ Left ☐
   - 2d. Fine manipulation? Yes ☐ No ☐ Right ☐ Left ☐
3. Does the job require reaching at or above shoulder level? Yes ☐ No ☐
4. Does the job require use of the feet to operate foot controls? Yes ☐ No ☐
5. Are there special visual requirements? (Describe) Yes ☐ No ☐

6. Are there special hearing requirements? (Describe) Yes ☐ No ☐

7. Lifting and carrying (check weight lifted, frequency, and how far carried):

Weight	Frequency			Distance Carried
	Hourly	Daily	Weekly	
1-10 lbs.	☐	☐	☐	_____
11-25 lbs.	☐	☐	☐	_____
26-40 lbs.	☐	☐	☐	_____
41-60 lbs.	☐	☐	☐	_____
61-75 lbs.	☐	☐	☐	_____

8. Environmental conditions (check yes or no):

8a.	Work near dust, gas, vapors, or fumes?	Yes ☐	No ☐
8b.	Work in noisy environment?	Yes ☐	No ☐
8c.	Work in extremely hot temperature?	Yes ☐	No ☐
8d.	Work in extremely cold temperature?	Yes ☐	No ☐
8e.	Work at heights?	Yes ☐	No ☐
8f.	Walk on uneven surfaces?	Yes ☐	No ☐

9. Equipment operated (check yes or no):

9a.	Computer and mouse? If yes, hours per day _____ Type of work _____	Yes ☐	No ☐
9b.	Drive car, truck, or van?	Yes ☐	No ☐
9c.	Operate forklift or heavy equipment?	Yes ☐	No ☐
9d.	Other (please describe):		

_____

_____

_____

Print Name:	Signature:	Date:
Supervisor		
_____	_____	_____
Medical Provider		
_____	_____	_____

If an employee is injured at work or becomes ill due to a work-related issue, the employee must abide by the following:

1. Employee shall immediately notify their supervisor and Safety representative, even if the employee does not believe that they need medical attention.

2. With the assistance of their supervisor, the employee shall complete SMS 049-1 (in all cases), and SMS 065-3 (Medical Treatment Referral form) if medical attention is needed.

3. If it is perceived that medical attention is needed, an employee will be provided an opportunity for a telephonic consultation with the Occupational Health Nurse (OHN). During that consultation, if it is determined that an employee will need a physician evaluation, the OHN will contact the clinic with the necessary workers' compensation billing information. Unless it is an emergency, all employees are required to obtain approval from their supervisor and OHN. This ensures that URS, the workers' compensation carrier and the clinic are notified appropriately and timely medical treatment can be provided and follow-up given.

4. Provide the Medical Treatment Referral form to the treating physician. If employees are unable to obtain the form prior to being treated (i.e., onset of symptoms during non-work hours, work in remote locations), they must notify their supervisor as soon as possible on the next scheduled workday.

5. If an employee is treated by a physician, the employee is required to inquire if a consent form will need to be signed by the employee in order for medical records to be released to the URS Occupational Health Team. (Some clinics do not accept form SMS 065-3.) The employee will also need a work status form from the physician indicating if the employee can return to work, has restrictions or must be off work.

6. This work status form must be given to the employee's supervisor and/or Safety Representative ***and*** emailed or faxed to URS Occupational Health Team immediately after the physician visit. Contact information for the URS Occupational Health Team is presented below.

Infrastructure & Environment	Federal Services	Energy & Construction
Occupational Health Manager	Occupational Health Nurse Workers' Compensation Manager	Claims Manager
Jeanette Schrimsher, RN, COHN-S	**BJ Heinrich, RN, COHN-S/CM, STS**	**Terry Sower, CPCU, AIC, CWCP**
Toll-Free U.S.: (866) 326-7321	Toll Free: (877) 878-9525	Office: (208) 386-6038
Cell: (512) 656-0203	Cell: (512) 656-8502	Cell: (208) 890-3843
Confidential Fax: (512) 419-6413	Confidential Fax: (512) 419-5252	Confidential Fax: (208) 386-5462
Email: jeanette.schrimsher@urs.com	Email: bj.heinrich@urs.com	Email: terry.sower@urs.com

a. If a physician has indicated that a follow-up appointment is needed or the employee will need to schedule future follow-up appointments, the employee is required to attend the appointment regardless if the employee is feeling better or having no symptoms. There is a reason the physician felt like he/she needed to see the employee for that follow-up visit, and the visit is required to ensure proper recovery.

b. If an employee has been put on restrictions or is taken off work, once the employee is cleared to return to work the employee must receive a return to work without restrictions release from the physician. This updated work status report must be given to the employee's supervisor and/or Safety Representative immediately. URS cannot return an employee to work without this release.

7. After every medical provider visit (whether the employee is off work/restricted work or is just having a follow-up) the employee is required to contact the URS Occupational Health Team. The employee shall provide an update as to the medical provider visit, plan of care, to ensure that the employee is getting the appropriate care in a timely manner, and to ensure that the physician is being reimbursed accordingly. The employee must also contact their supervisor and/or Safety Representative to inform him/her of their work status.

8. Once the initial information of the employee's injury/illness is received by the URS workers' compensation insurance carrier, it is likely that the employee will be contacted by the workers' compensation carrier either by letter and/or by phone.

9. The claims adjuster, telephonic nurse case manager and/or field case manager may ask that the employee to communicate with them after every medical provider appointment as well. This would be <u>in addition</u> to the employee contacting the URS Occupational Health Team.

Off-Work or Restricted Work

It is URS' goal to return an employee back to work as quickly as possible to decrease an employee's healing time (as supported by medical studies that earlier return to work decreases complications), promote wellness, provide support to an employee during the recovery time, and to return the employee to full wage-earning capacity.

1. If an employee is placed off work by a physician for either personal medical reasons or work-related medical reasons, the employee is required to notify Human Resources, their supervisor, Safety Representative and the URS Occupational Health Team. Human Resources may have additional requirements. For extended absences, an employee will want to discuss with Human Resources the necessary steps that an employee will need to take to maintain benefits that an employee has signed up for in active status (e.g., insurance premiums for personal medical insurance, short term disability, etc.).

2. For work-related incidents, once the workers' compensation carrier has determined that the case is accepted as a claim, the employee will begin receiving workers'

compensation payments up to a state-mandated weekly cap and after the state-mandated waiting period.

3. If an employee must be off work or is given restricted work for injury or illness of any kind, the employee is required to notify their supervisor immediately.

4. If an employee is absent for more than 3 days for personal illness or injury, an employee may be required to provide a physician note indicating the employee's work status and release to return to work. This will need to be provided to Human Resources and the employee's supervisor. For work-related illness or injury a physician's note is required for any absence due to an incident.

INJURY MANAGEMENT CHECKLIST

Before an Injury

- ☐ Identify emergency care service providers.
- ☐ Identify clinic for non-emergency medical care – Occupational Health physicians (give preference to Board-Certified).
- ☐ Post instructions for reporting injuries, medical providers, contact info, and driving directions on safety bulletin board(s).
- ☐ Develop a bank of light-duty positions with descriptions that would accommodate different levels of restrictions.
- ☐ Develop a relationship with the physician and clinic staff (especially Office Manager):
  - Philosophy – most effective treatment, minimize OSHA recordability, minimize impact to employee, light duty always available
  - Visit clinic often to maintain relationship (quarterly)
  - Invite physician to visit site and work areas
  - Provide copies of light-duty position descriptions.
- ☐ Implement first aid treatment program – designate/train first aid responders, keep first aid supplies readily available, etc.
- ☐ Identify who will be responsible for contacting any employees with lost work days.
- ☐ Train employees on program requirements:
  - Immediate reporting as a company mandate
  - Potential delay of treatment for late reporting
  - First aid treatment
  - Advantage for using Company physicians
  - Potential benefit loss and disciplinary action for unauthorized non-emergency treatment
  - Waiting periods for workers' compensation benefits.

When an injury occurs

- ☐ CALL 911 (or equivalent) if this is an emergency situation.
- ☐ Provide first aid treatment (e.g., ice, over-the-counter ibuprofen, bandages, a place to rest).
- ☐ Initiate an immediate investigation to ensure work-related written reports (employee and witnesses); review for red flags.
- ☐ Notify the Occupational Health Department (OHD) before non-emergency medical care; do not take to a clinic unless medically necessary.

Infrastructure & Environment	Federal Services	Energy & Construction
Jeanette Schrimsher (866) 326-7321 (Toll Free)	BJ Heinrich (877) 878-9525 (Toll Free)	Site HSE Manager or Supervisor

- ☐ Influence (or control, depending on state law) choice of treating physician.
- ☐ Escort injured employee to and remain through medical treatment.
- ☐ Remind clinic personnel of transitional duty and OSHA-recordable sensitive treatment.
- ☐ Remind injured worker of transitional-duty benefits – part of the team, receive full pay, save their personal leave time.
- ☐ Notify Safety chain-of-command and follow site communication protocol.
- ☐ Coordinate post-incident drug and alcohol screen.
- ☐ Review return-to-work slip before departing facility. Review restrictions; if unreasonable or unclear, discuss with clinic. Seek alternative solutions to lost time if medically feasible.
- ☐ Accommodate any restrictions.
- ☐ Obtain a second opinion if initial provider's diagnosis (especially lost time) is unreasonable; work closely with OHD
- ☐ Require a return-to-work slip following **all** medical visits and provide a copy to the OHD.
- ☐ Ensure the employee makes any follow-up visits or referrals to another provider – need to ensure to close the loop on workers' compensation claims.
- ☐ Maintain regular and personal contact with the employee:
  - Ensure he/she shows up for work the next day
  - If on restrictions, visit regularly to ensure working within restrictions
  - If on lost time, call on a regular basis to check status (minimum weekly).

All first aid kits shall conform to the requirements of the ANSI Z308.1-2003, and shall contain the first aid items indicated below. The quantity, dimensions, or volume listed for each item is the **minimum** for compliance with this standard for Type I, II, or III kits.

- Type I kits are required to have a means for mounting in a fixed position and are generally not intended to be portable.
- Type II kits shall have a carrying handle.
- Type III kits shall have a carrying handle and shall provide a means to be mounted in a fixed position.

Required Contents:

- Absorbent Compress 32 sq in
- (16) Adhesive Bandages, 1X3 in
- Adhesive Tape - 3/8 in X 5 yd
- (10) Antiseptic 0.14 fl. oz. application
- (6) Burn Treatment, 1/32 oz. application
- Medical Exam Gloves
- Sterile pad - 3 X 3 in
- Triangular Bandage - 40 X 40 X 56 in

In addition to the required contents listed above, optional products and sizes may be included, depending on specific hazards, to augment a kit based upon the specific hazards existing in a particular work environment. Optional contents include:

- *Analgesic (Oral)* - Oral analgesics shall be packed in a single dose, tamper evident, package with full labeling as required by FDA regulations, and should contain no ingredients which are known to cause drowsiness.
- *Antibiotic Treatment* - Each antibiotic treatment shall be packaged in individual use applications containing at least 1/32 oz. of ointment. Each individual-use application shall not be reusable.
- *Bandage Compress* - Each compress shall consist of an absorbent, non-adherent pad substantially free from loose ends and raveling. The bandage shall be individually packaged, sealed and sterile.
- *Breathing Barrier* - The barrier shall be a single use disposable medical device for CPR use.
- *Burn Dressing* - Burn dressings shall be gel-soaked pad which is soluble in water and a single use.
- *Cold Pack* - Each cold pack shall be at least 4 X 5 in. and shall reach temperature within 10 seconds of activation. Cold packs shall activate under normal hand pressure and shall not leak under normal conditions of use.
- *Eye Covering* - Eye covering(s) shall have the ability to cover both eyes. Each eye covering shall be individually packaged, sealed, and sterile.
- *Eye Wash* - A minimum of 1 fl. oz. of a sterile isotonic buffered solution shall be contained in at least 0.5 fl. oz. individual use applications.
- *Roller Bandage* - Each bandage shall be at least 2 in. wide and at least 6 yd long. Each bandage shall be free from loose threads and raveling and individually packaged, and sealed.

A. Eyewash Equipment

Plumbed and self-contained eyewash units will meet the following specifications:

1. A controlled flow of flushing liquid will be provided to both eyes simultaneously at a velocity low enough so as to not cause injury to the user.

2. Spray nozzles will be protected from airborne contaminants. The removal of such protection during operation will not require a separate motion by the operator when activating the unit.

3. The eyewash will be designed and installed in such a manner that, once activated, it will not require the use of the operator's hands. The valve controlling the flow from the eyewash will remain open until it is intentionally closed.

4. Units will be constructed in such a manner that they will not corrode in the presence of the flushing fluid.

5. Stored flushing fluids will be protected against airborne contaminants.

6. Eyewash equipment will be capable of delivering flushing fluid to the eyes at a rate of not less than 0.4 gallons per minute (gpm), or 1.5 liters per minute (lpm), for 15 minutes.

7. The unit will be designed to provide sufficient room to allow the eyelids to be held open with the hands while the eyes are in the flushing stream.

8. The valve to open the eyewash flow will be simple to operate and will go from OFF to ON in 1 second or less.

9. The eyewash unit will be assembled and installed in accordance with the manufacturer's instructions.

10. The unit will be in an accessible location that requires no more than 10 seconds to reach. It will be on the same level as the hazard and the path of travel will be free of obstructions. For strong caustics or acids, the eyewash should be immediately adjacent to the hazard.

11. The unit will be located in an area identified with a highly visible sign positioned so that the sign will be visible within the area served by the eyewash. The area around the eyewash will be well lit.

12. The eyewash will deliver tepid flushing fluid.

13. Where the possibility of freezing conditions exists, equipment will be protected from freezing or freeze-protected equipment will be installed.

14. Plumbed eyewash equipment will be activated weekly to verify operation and ensure that flushing fluid is available. Self-contained eyewash equipment will be visually checked regularly to determine whether the flushing fluid needs to be changed or supplemented.

15. All eyewash units will be inspected annually for compliance with the requirements listed in this document.

16. Employees who may be exposed to hazardous materials will be instructed in the location and proper use of emergency eyewash units.

B. Shower Equipment

Plumbed and self-contained shower units will meet the following specifications:

1. A controlled flow of flushing liquid will be provided to both eyes simultaneously at a velocity low enough so as to not cause injury to the user.

2. The shower will be designed and installed in such a manner that, once activated, it will not require the use of the operator's hands. The valve controlling the flow from the eyewash will remain open until it is intentionally closed.

3. Units will be constructed in such a manner that they will not corrode in the presence of the flushing fluid.

4. Stored flushing fluids will be protected against airborne contaminants.

5. Shower equipment will be capable of delivering flushing fluid at a rate of not less than 20 gpm (75.7lpm) for 15 minutes.

6. The valve to open the eyewash flow will be simple to operate and will go from OFF to ON in 1 second or less.

7. The eyewash unit will be assembled and installed in accordance with the manufacturer's instructions.

8. The unit will be in an accessible location that requires no more than 10 seconds to reach. It will be on the same level as the hazard, and the path of travel will be free of obstructions.

9. The unit will be located in an area identified with a highly visible sign positioned so that the sign will be visible within the area served by the shower. The area around the eyewash will be well lit.

10. The shower will deliver tepid flushing fluid.

11. Where the possibility of freezing conditions exists, equipment will be protected from freezing or freeze-protected equipment will be installed.

12. Plumbed shower equipment will be activated weekly to verify operation and ensure that flushing fluid is available. Self-contained shower equipment will be visually checked regularly to determine whether the flushing fluid needs to be changed or supplemented.

13. All eyewash units will be inspected annually for compliance with the requirements listed in this document.

14. Employees who may be exposed to hazardous materials will be instructed in the location and proper use of emergency eyewash units.

C. Eye/Face Wash Equipment

Eye/face wash equipment will meet all the criteria outlined in Section A, except the equipment will be capable of delivering flushing fluid at a rate of not less than 3.0 gpm (11.4 lpm) for 15 minutes.

D. Combination Units

Combination units (eyewash and shower assemblies served by a single source of flushing fluid) will meet all the criteria outlined in Section B.

URS SAFETY MANAGEMENT STANDARD

Incident Investigation

1. Applicability

This standard applies to the operations of URS Corporation and its subsidiary companies.

2. Purpose and Scope

The purpose of this standard is to provide guidance for the investigation of work-related injuries, illness, and incidents.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. The requirements of URS SMS 049 – Injury/Illness/Incident Reporting and Notifications, regarding incident review will be followed for all incidents not classified as Significant by this SMS.

B. A Significant Incident is defined to include the following:

1. A lost-time injury to a URS or subcontractor employee that accounts for 3 or more lost workdays.
2. The hospitalization of one or more URS, subcontractor, or client employees or members of the public.
3. The death of a URS, subcontractor, or client employee or member of the public.
4. A vehicle accident involving a URS employee (while working) where either the employee or a member of the public is hospitalized.
5. Incidents that result in significant adverse public media interest in URS or a URS project.
6. Any citation issued by a federal, state, or local safety, health, or environmental enforcement agency.
7. Any incident that the Vice President/Director of Health, Safety, and Environment (HSE) deems appropriate for an investigation.

8. Any near miss or incident occurring on projects undertaken for specific clients where URS has contractually agreed to participate in safety systems that dictate that all near miss and incidents undergo a root-cause analysis.

9. Any near miss that a HSE Manager determines, if taken to its logical conclusion, would have resulted in a fatality, multi-day lost-workday case, and/or hospitalization of one or more individuals.

10. Damage to Company or Government owned equipment that exceeds $25,000, unless otherwise required by a client.

11. A release to the environment of a substance in excess of a mandated reportable quantity and require the response of external response organizations.

C. Upon notification of a significant incident, the responsible HSE Manager or their designee will initiate an investigation.

In Federal Services, a significant incident report shall be submitted via email within 12 hours of any event listed in Section 4.B. The report should include project name and location; project manager name and contact information; the incident date, time and location; the incident report category (Section 4.B); and a description of the incident. The report shall be distributed to CriticalInformationNotificationList@urs.com, Strategic Business Unit (SBU) Vice President, Program Manager, Division HSE Director, SBU HSE Manager, and Occupational Health Department.

D. Actions: The following actions will be taken to investigate a significant incident:

1. The Occupational Health Manager will notify the responsible HSE Manager that a significant incident has occurred.

2. The responsible HSE Manager may solicit input from URS Legal regarding the investigation.

3. The investigation of a complex incident will typically require that an investigation team be assembled. The team will be selected by the responsible HSE Manager, with input from the affected URS line managers.

4. The responsible HSE Manager will complete the investigation under the direction of URS Legal Counsel and the Business Vice President/Director HSE.

5. The investigation process will include interviews with those involved or those directly witnessing the event. Interview techniques are covered in the URS Investigation and Root Cause Analysis Training.

6. The investigation team lead should ensure that investigation tools are available (e.g., cameras, protective equipment, tape measures, marking devices, etc.).

7. Evidence (e.g., witness statements, photographs, documentation, etc.) that is collected during the investigation will be stored in a secured location. Attachment 066-2 NA – Photo Evidence Sheet may be used to document photo details (e.g., date, time, direction).

8. Attachment 066-3 – Visitors Log may be used to document visitors present during the investigation.

9. A preliminary investigation report will be completed within 48 hours of notification of the event by the HSE Manager. The preliminary report will include the known facts and a proposed schedule for completion of the investigation.

10. An Incident Summary (Attachment 066-1 NA) will be prepared for any significant investigation. The incident summary will contain only basic facts; will be without reference to a site, location, or employee; and will be developed solely for the purpose of conveying lessons learned to prevent a similar accident, illness, or injury.

E. Investigation reports will identify the critical factors involved in the incident. Direct and contributing causes will be developed to identify the root cause(s) of an incident. Investigators will evaluate critical factors associated with human activities, physical causes, and relevant administrative or operational systems. The report will identify corrective actions and assign due dates.

F. Investigations are prepared under the direction of URS Legal Counsel. Release of the Investigation Report may only be authorized by the Business Vice President/Director HSE.

G. Following the completion of the incident investigation and development of corrective actions, it is critical that the requirements for preventing a recurrence of the event be implemented prior to re-starting the activity.

5. Documentation Summary

A summary of each significant incident investigation will be prepared by the Business Vice President/Director HSE for communication to URS staff in order to facilitate the communication of lessons learned. The format for this summary is provided in Attachment 066-1 NA.

6. References

A. Why Tree – RCA Training Materials

B. SMS 049 – Injury/Illness/Incident Reporting and Notifications

C. Attachment 066-1 NA – Significant Incident Summary

D. Attachment 066-2 NA – Photo Evidence Sheet

E. Attachment 066-3 NA – Visitor Log

URS	Health, Safety, and Environment **SIGNIFICANT INCIDENT SUMMARY**	Attachment 066-1 NA Issue Date: September 2004 Revision 6: March 2012

Event:	**Date of Incident:**
Work Location:	**Date of Review:**
Summary Prepared By:	
Summary of Incident:	
Root Cause:	
Contributing Factors	
Equipment	
Environment	
Management Systems	
People	
Lessons Learned / Recommendations:	

Incident/Facility: _____

PHOTO EVIDENCE SHEETS

Instructions:

Pertinent information such as photo number, time and date photos were taken, direction camera was pointing (e.g., north, south, east, or west), and relationship to accident must be recorded below each photo.

Date of Accident: _____

Photos Taken By: _____
(Last) (First) (M.I.)

Job Title: _____

Evidence Sheet Prepared By: _____
(Last) (First) (M.I.)

Job Title: _____

URS	Health, Safety, and Environment **PHOTO EVIDENCE SHEET**	Attachment 066-2 NA Issue Date: September 2004 Revision 6: March 2012

Investigation Name: _____

Attach Photo Here

Attach Photo Here

Print Number: _____

Time/Date Taken: _____

Direction: _____

Notes:

Print Number: _____

Time/Date Taken: _____

Direction: _____

Notes:

URS	Health, Safety, and Environment **VISITOR LOG**	Attachment 066-3 NA Issue Date: September 2004 Revision 6: March 2012

Incident/Facility: _____

Instructions:

It is important to note the name and purpose of each visitor during the incident investigation. Items such as persons interviewed, evidence taken, meetings, and request for information should be noted on this form. Duplicate this form if additional sheets are needed.

Name (Last, First, M.I.)	Affiliation	Date of Visit	Time of Visit	Notes

URS SAFETY MANAGEMENT STANDARD

Manual Material Handling

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where personnel perform manual handling of materials. For this procedure, manual material handling (MMH) is defined as the movement of items by lifting, lowering, pushing, pulling, carrying, holding, or restraining.

2. Purpose and Scope

The purpose of this standard is to prevent common injuries caused by the practice of MMH. Immediate or short-term effects include lacerations, bruises, and muscle fatigue. Long-term effects include chronic pain, frequently in the lower back but also in limb joints and ligaments.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project.

4. Requirements

A. General

1. Prior to lifting, lowering, pushing, pulling, carrying, holding, or restraining an object of any significant size or weight, employees must evaluate the object and the required task to determine whether they can handle the object safely.
2. If the employee has any doubt about whether he or she can safely move the object alone, the employee should obtain additional manual or mechanical help. Consider using lifting equipment such as dollies, hand trucks, lift-assist devices, jacks, carts, or hoists. When applicable, engineering controls such as conveyors, lift tables, and work station design must be considered.
3. Healthy employees with no physician-imposed restrictions should be able to lift and carry a maximum of 50 pounds (23 kilograms) using proper lifting and carrying techniques. Physical and workplace factors may reduce this recommended weight limit (RWL) significantly and should be considered prior to attempting lifts of this magnitude. Examples of physical and workplace factors may include the following:
    a. Physical size of an object.
    b. Slippery container surface or poor grip ability.
    c. Sharp edges.

d. Slippery floors or obstacles on the floor.

e. Cold or hot objects surfaces.

f. Distance and route of travel.

4. An employee's personal "safe" MMH capability is defined as the employee's personal capability to manually lift, carry, push, or pull an object alone. This "safe" limit must consider the employee's past experience and training with MMH, health status, and any other personal or environmental characteristics affecting the employee's ability to perform these tasks. An employee's "safe" MMH capability is typically at or below the calculated RWL. In some cases, a trained and physically conditioned employee may exceed the MMH capability limit, but only after a complete hazard review of the task has determined an acceptable risk for minimizing injury.

5. An MMH task that exceeds an employee's personal "safe" MMH capability or RWL should be brought to the attention of the applicable manager or safety supervisor for the project.

6. If, due to a medical or health condition, the employee's physician or the employee has set a personal "safe" MMH capability, then appropriate medical documentation must be provided to the applicable manager to define these limits. The manager and appropriate safety supervisor should evaluate the tasks to which that employee is assigned and recommend a specific course of action to limit the potential for injury. This should include periodic monitoring of the employee and his/her work environment.

7. A recommended RWL can be calculated using the factors described in Supplemental Information A. The weight limit derived from these calculations is considered to be a load that over 99% of men and over 75% of women can safely handle without application of engineering or administrative controls. **Implementation of the calculations in Supplemental Information A should be attempted only with the assistance of a safety professional knowledgeable in the application of these factors. The calculations are intended to determine RWLs for repetitive lifting scenarios rather than occasional lifts.**

8. Prior to any manual lift, it is suggested that the employee warm up his or her muscles and joints using a combination of stretching and flexing.

B. Preplanning

1. Where MMH will be a necessary function of the task, the manager and/or safety supervisor should perform a thorough evaluation of the activities to determine ergonomic solutions to reduce or eliminate conditions that can cause or contribute to MMH injuries.
2. If a heavy object is to be moved to another location, the safest transport route should be determined prior to the activity.
3. The area around the object and the route over which it will be transported should be checked for slip, trip, and fall hazards. Hazards should be removed prior to initiation of the task. Adequate lighting should be checked and tasks performed in cold conditions may need to consider local heating or warm up break areas.
4. The object to be moved should be inspected for grasping or handling hazards, such as slivers, sharp edges, grease, water, etc. Eliminate or abate any identified hazards where possible. See SMS 064 and Attachment 064 -1 for guidance on selecting proper gloves for the task. Safe grasping or handling points on the object should be determined. Whenever possible, containers with carrying handles should be used for objects because they increase the manual grip strength for holding the object, thus providing better control and reduced muscle fatigue.
5. The distance to be traveled and the length of time that a grip on the object must be maintained should be considered before moving objects. If the travel distance is greater than 10 feet (3 meters) at maximum RWL, the employee should consider using an alternative method, rather than manually carrying the object.

C. Lifting/Lowering Guidelines

1. Reduce or eliminate manual lifting and lowering tasks where possible. Determine whether there are ways to abate the safety and ergonomic hazards associated with manual lifting.
2. The recommended technique for two-handed manual lifting/lowering involves five maneuvers:
    a. Get a firm footing. Keep your feet apart for a stable base. Put one foot slightly in front of the other.
    b. Bend your knees. Do not bend at the waist. When grasping the object, a firm grip should be obtained before lifting/lowering.
    c. Lift/lower with your legs. Lift/lower the load slowly and in a straight line, avoiding sudden movements.

d. Keep the load close to the body. Generally, the closer the load is to the body, the less force it exerts on your back.

e. Keep your back straight, your head and shoulders up, and your stomach muscles tights. Do not add the weight of your body to the load. Avoid twisting.

3. When a turn or change of direction is necessary, the object should be lifted or lowered into a carrying position, then the whole body should be turned with the feet, avoiding any trunk twisting motion.

4. Objects to be lifted to shoulder height should first be lifted to waist height, then rested on a level surface so the grasping position can be changed prior to lifting to a higher level.

5. Employees should never lift a load above shoulder height. Tasks requiring lifts above this height must consider step platforms or lowering the required placement location.

D. Carrying/Holding Guidelines

1. Manual carrying is an inefficient way of transporting materials in the work place. Where possible, reduce or eliminate manual carrying tasks.

2. Never carry a load above the head.

3. Carry an object close to the body using both hands. The optimal carry zone should have the elbows at a 90 degree angle. One-handed carries are awkward and tend to unbalance the employee.

4. Do not carry objects that are so large they will obstruct visibility.

5. Do not change grips on an object while carrying or holding an object. Rest the object on a secure surface prior to changing grip.

6. If an object is of a size, shape, or mass that it requires two people to carry, use two people of similar size and physique. Two-person lifts should be planned and coordinated before performing the lift. Lift the item in unison.

7. Avoid carrying objects on stairs, particularly where the line of sight may be obstructed or the object can interfere with leg movement. All travel on stairs requires use of a handrail at all times, so only carry objects that can be safely handled with one hand. Always maintain handrail contact when carrying an object up or down stairs.

E. Pushing/Pulling Guidelines

1. Check the condition of the floor, ground, or other surface prior to pushing or pulling an object across it.
2. Be aware of the “break out” force of the object; this is the force at which a push or pull overcomes the frictional force between the surface and object. Adjust posture to avoid losing balance when this point is reached.
3. Get assistance when moving or guiding a large load.
4. Where possible, always push rather than pull a load.
5. When possible push at waist height not shoulder. The force capability at shoulder height is 50% less than at waist level.
6. When pulling a load be sure to have a well-lit and clear path of travel.
7. Casters or wheels on carts should be at least 6 inches diameter for heavier loads in order to exercise adequate control on rough or inclined surfaces. Tire materials should be suitable for the surface of travel.
8. Never load the cart or load-carrying device in such a manner that visibility is obstructed in the path of travel.
9. When pushing or pulling an object on an inclined surface, be certain that you can control the load and direction of travel before proceeding. Obtain additional support to control the load if necessary.
10. Never leave carts or loads in an area that will present a hazard to other workers. Make sure carts or transport devices are secured in position before leaving them unattended.

F. Workplace Design

1. Store heavy or bulky materials at heights between the knee and shoulder to avoid the need to stretch or bend. Use step stools to load and access objects above shoulder height.
2. Pack or arrange items to be lifted to avoid shifting of weight in the package. If a box has hand cutouts (e.g., file archive boxes) do not load the box so full that the handles cannot be used for carrying the box.
3. Design work areas to avoid the need to lift, carry, push, or pull heavy or bulky materials for extended distances.
4. Design workplaces with the following in mind:
    a. Lifts from the floor should be avoided.
    b. The torso should never twist while handling loads.
    c. Asymmetrical or unbalanced one-handed lifts should be avoided.

d. Loads should not be lifted with sudden movements.

e. Loads should not be lifted over obstacles.

f. Loads should not be lifted at extended forward or sideway reaches.

g. Uncomfortable or static postures should not be necessary throughout the work cycle.

h. Environmental factors (e.g., task lighting, dry work surfaces, heat or cold stress) should be considered.

G. Training

1. Personnel who may have MMH as part of their duties are required to receive training that includes the following topics:

   a. Showing personnel how to avoid unnecessary physical stress and strain during MMH operations.

   b. Teaching personnel to become aware of what they can comfortably handle without undue strain.

   c. Instructing personnel on the proper use of equipment.

   d. Teaching personnel to recognize potential hazards and how to prevent or correct them.

2. This training must be completed prior to an employee being assigned to a task that involves MMH activities.

3. Assistance with training or training materials is available through the HSE staff.

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Training rosters.

B. Other proof of completion of MMH training.

6. Resources

A. National Institute for Occupational Safety and Health (NIOSH) – Work Practices Guide for Manual Lifting http://www.cdc.gov/niosh

B. Canadian Centre for Occupational Health and Safety http://www.ccohs.ca/oshanswers/ergonomics/

C. Oregon OSHA – Ergonomics of Manual Materials Handling
http://www.cbs.state.or.us/external/osha/pdf/workshops/206w.pdf

D. North Carolina Department of Labor – A Guide to Manual Materials Handling and Back Safety http://www.nclabor.com/osha/etta/indguide/ig26.pdf

7. Supplemental Information

A. Recommended Weight Limit (RWL) Calculations

This lifting equation, developed by the National Institute for Occupational Safety and Health (NIOSH), takes into account the weight of an object plus several other variables in lifting tasks that contribute to the risk of injury. For example, if the situation requires frequent lifts or lifting loads far away from the body, there is an increased risk of injury. Under these conditions, the weight limit would be reduced from a baseline weight or "load constant" (LC) to a recommended weight limit (RWL). A "load constant" (LC) of 23 kg (about 51 pounds) has been established by NIOSH as a load that, under ideal conditions, is safe for 75% of females and 90% of males.

To calculate the RWL, you must first measure or assess several variables related to the lifting task. The six variables that are considered in determining the RWL are:

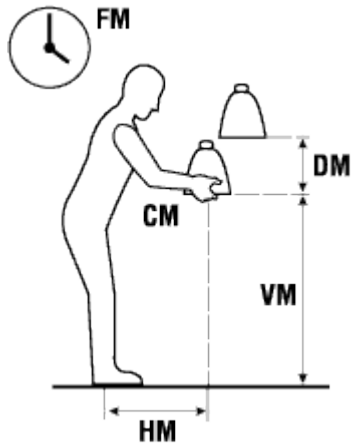
- The horizontal distance (H) the load is lifted (distance of hands from midpoint between ankles),
- The starting height of the hands from the ground (V),
- The vertical distance of lifting (D),
- The time between lifts or frequency of lifting (F),
- The angle of the load in relation to the body (e.g., straight in front of you or off to the side, A), and
- The quality of the grasp or handhold based on the type of handles available (hand-to-load coupling, C).

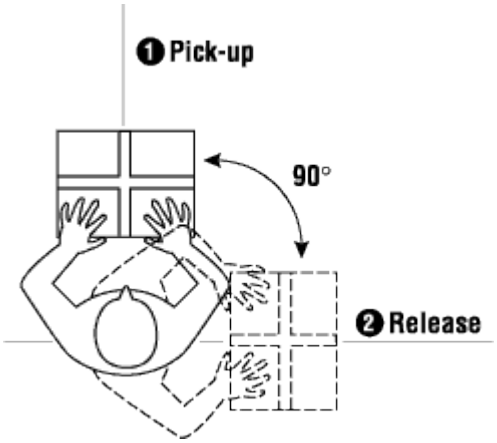
Each of these variables is then assigned a numerical value (multiplier factor) from look-up charts. The equation includes six multiplier factors to calculate the RWL:

$$RWL = LC \times HM \times VM \times DM \times FM \times AM \times CM$$

Where LC is the load constant (23 kg) and other factors in the equation are:

- HM, the "Horizontal Multiplier" factor,
- VM, the "Vertical Multiplier" factor,
- DM, the "Distance Multiplier" factor,
- FM, the "Frequency Multiplier" factor,
- AM, the "Asymmetric Multiplier" factor, and
- CM, the "Coupling Multiplier" factor.





Horizontal Multiplier is the distance the object is from the body. Measure (in centimeters) the distance from in between the person's ankles to their hands when holding the object. Write down this number. Next, look up the number on the accompanying chart and find the matching "multiplier factor". Use this factor in the lifting equation.

Vertical Multiplier is measured as the starting point of the lift and is the distance in centimeters of the hands up from the ground. Measure this distance and use the number to determine which value to use on the chart.

Distance Multiplier is the number of centimeters the load travels up (or down) from the starting position. Measure this distance and use the number to determine which value to use on the chart.

Frequency Multiplier is how often the lift is repeated within a certain time period. You need to determine if the lift is done while standing or stooping, for more or less than one hour (in total time for the shift), and how much time there is for rest between lifts.

Asymmetric Multiplier measures if the body must twist or turn during the lift. This measurement is done in degrees (with 360° being one complete circle).

Coupling Multiplier determines the "coupling" or type of grasp the person has on the container. It rates the type of handles as good (handles), fair (make-shift cut outs in cardboard boxes) or poor. You also need to know if the lift is done in a standing or stooping position.

When these multipliers are placed into the equation, determine the RWL. If the weight of the object to be lifted exceeds the RWL, the task is considered to be dangerous. Assess the relevant factors which contribute most to the risk (the lower the factor, the more it contributes to the risk) and redesign the handling task.

The lifting equation only applies in certain situations. It does not apply in situations where a person is lifting (or lowering):

- With one hand,
- For over 8 hours,
- While seated or kneeling,
- In a restricted work space,
- Objects that are unstable (such as buckets or containers of liquids),
- While pushing or pulling,
- With wheelbarrows or shovels,
- With high speed motion (faster than about 30 inches/second),
- Extremely hot or cold objects or in extreme temperatures, or
- With poor foot/floor coupling (high risk of a slip or fall).

This equation applies to most workers for:

- Two-handed lifting,
- Comfortable lifting postures, and
- Comfortable environments and non-slip floorings.

FACTORS USED IN RWL CALCULATIONS

Horizontal Multiplier (HM): Horizontal distance (H, in cm) from the midpoint between the ankles to the hands while holding the object.

H = Horizontal Distance (cm)	HM Factor
25 or less	1.00
30	0.83
40	0.63
50	0.50
60	0.42

Vertical Multiplier (VM): The vertical distance (V, in cm) of the hands from the ground at the start of the lift.

V = Starting Height (cm)	VM Factor
0	0.78
30	0.87
50	0.93
70	0.99
100	0.93
150	0.78
175	0.70
>175	0.00

Distance Multiplier (DM): The vertical distance (D, in cm) that the load travels.

D = Lifting Distance (cm)	DM Factor
25 or less	1.00
40	0.97
55	0.90
100	0.87
145	0.85
175	0.85
>175	0.00

Asymmetric Multiplier (AM): The twisting angle (A) of the body while lifting, measured in degrees.

A = Angle (degrees)	AM Factor
90°	0.71
60°	0.81
45°	0.86
30°	0.90
0°	1.00

Frequency Multiplier (FM): The frequency (F) of lifts and the duration of lifting (in minutes or seconds) over a work shift.

F = Time Between Lifts	FM Factor			
	Lifting While Standing		Lifting While Stooping	
	One Hour or Less	Over One Hour	One Hour or Less	Over One Hour
5 min	1.00	0.85	1.00	0.85
1 min	0.94	0.75	0.94	0.75
30 sec	0.91	0.65	0.91	0.65
15 sec	0.84	0.45	0.84	0.45
10 sec	0.75	0.27	0.75	0.27
6 sec	0.45	0.13	0.45	-
5 sec	0.37	-	0.37	-

Coupling Multiplier (CM): The quality of grasp (or coupling, C) classified as good, fair or poor and depends on the body position (either standing or stooping).

C = Grasp	CM Factor	
	Standing	Stooping
Good (handles)	1.00	1.00
Fair	1.00	0.95
Poor	0.90	0.90

URS SAFETY MANAGEMENT STANDARD

Powered Industrial Trucks

1. Applicability

This standard applies to the operations of URS Corporation and its subsidiary companies that use powered industrial trucks. A powered industrial truck is defined as a mobile, power-propelled truck used to carry, push, pull, lift, stack, or tier materials. Forklifts, pallet trucks, rider trucks, fork trucks, lift trucks, pallet jacks, motorized hand trucks, and skid steer loaders are all types of powered industrial trucks. This standard does not apply to aerial lifts, cranes, or vehicles intended primarily for earth-moving or over-the-road hauling.

2. Purpose and Scope

The purpose of this standard is to provide direction for the safe operation of powered industrial trucks on all operations of URS Corporation and its subsidiary companies, thus limiting the potential for injury to both the operators of the equipment and ground personnel working in the immediate vicinity.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site or project location.

4. Requirements

A. Eligibility

1. Train and authorize employees operating a powered industrial truck to use the specific type of truck to which they are assigned. Training and evaluation must be conducted by personnel with adequate knowledge, training, and experience in the operation of the truck.
2. Maintain employee training documentation in the health and safety files.
3. Training will consist of a combination of formal instruction, practical training, and an evaluation of the operator's performance, and should consist of the following subjects:
   a. Operating instructions, warnings, and precautions;
   b. Differences between the truck and automobiles;
   c. Truck controls and instrumentation;
   d. Engine/motor operation;
   e. Steering and maneuvering;
   f. Visibility, including restrictions;
   g. Attachment adaptation, operation, and use limitations;

h. Vehicle capacity and stability;

i. Refueling and/or recharging;

j. Vehicle inspection and maintenance required by the operator;

k. Operating limitations; and

l. Any other instructions, warnings, and precautions listed in the operator's manual.

4. Operators completing training will receive a certificate of completion. The certificate will include:

- Name of the operator
- Date of training
- Date of evaluation
- Identity of the person(s) performing the training evaluation.

5. Refresher training must be conducted at least once every 3 years. Refresher training may be conducted on an as-needed basis if:

a. The operator is observed to be using the truck in an unsafe manner;

b. The operator has been in an accident or a near-miss incident that is attributable to the operation of the truck;

c. The operator receives an evaluation that indicates unsafe operation of the truck;

d. The operator is assigned a different type of truck; or

e. A change occurs in the workplace that could affect the safe operation of the truck.

B. Inspections

1. Inspect the truck daily or before each shift.

2. Inspections should include each of the following:

a. Adjustment and wear of the control mechanisms;

b. Operation of safety devices (e.g., horns, seat belts, etc.);

c. Operation/deterioration of the hydraulic systems;

d. Operation of electrical systems and lights;

e. Operation of steering and breaking systems;

f. Condition of truck tires; and

g. Attachments/forks.

3. Use Attachment 070-1 AMER as a guide to inspections for battery-operated lift trucks, and Attachment 070-2 AMER as a guide to inspections for engine-powered lift trucks.
4. Report any damage or problems identified during the inspection to your immediate supervisor. Tag and remove equipment from service when defects are found that can affect the safe operation. Do not use equipment until the damage or problems have been corrected.
5. Approved trucks will carry labels, nameplates, or identifying marks indicating the following:
   a. Approval of the truck for fire safety purposes by a nationally recognized testing laboratory;
   b. Capacity of the truck and its attachments;
   c. Operation and maintenance instructions; and
   d. Designation of the truck, based on fuel type and fire safety features. The eleven standard truck designations are discussed in Supplemental Information A.
6. Ensure that all labels, nameplates, or identifying marks are maintained in legible condition.

C. Operation

1. There are many types of powered industrial trucks for various applications. Use a type suitable for the task. Supplemental Information A provides additional information on the types of powered industrial trucks available.
2. Review and follow truck operating instructions as provided in the machine's operator manual.
3. Securely fasten seat belts or other restraining devices. Remain seated at all times while the truck is in operation.
4. Keep body parts within the truck while driving. Do not place any part of the body between mast uprights or any other part of the truck where a shear or crushing hazard may exist.
5. Look toward and keep a clear view of the path of travel.
6. Do not permit passengers to ride on the truck unless a separate seat and restraining device are provided.
7. Use extreme caution on or near ditches, holes, embankments, grades, ramps, or other slopes. Avoid turning on grades. Avoid use of the truck in areas where cracks and crumbling surface

materials may be present. Never run over loose objects on the roadway surface.

8. Do not make quick starts, jerky stops, or turns at excessive speeds.
9. Slow the truck and sound the horn at cross aisles, intersections, building corners, or other locations where vision is obstructed. Lightly tap the horn to warn pedestrians when approaching from behind.
10. Operate the truck only at those speeds that will permit it to be stopped safely. Pay particular attention to wet or slippery surfaces.
11. Do not drive the truck up to anyone standing in front of a fixed object.
12. Observe all traffic regulations and signage. Maintain at least three truck lengths from other vehicles following the same travel path.
13. Cross railroad tracks or other bumps in the travel path diagonally where possible.
14. Engage the parking brake, lower any lifting devices, and neutralize all controls (e.g., remove keys) before dismounting from the truck. Block or chock the wheels.
15. Turn off the truck engine when it is not under direct control of the operator (e.g., within 10 feet [3 meters] of the operator).
16. Stunt driving or horseplay is strictly prohibited.
17. Never allow anyone to ride on a truck's lifting device (if present) unless a legally acceptable elevating platform is used. If an elevating platform is used to raise personnel to a higher level, secure the elevating platform to the lifting carriage of the truck. Additionally, use a restraining device such as a rail, chain, or body belt with a lanyard for the employee on the platform.
18. In the event that a truck overturns, do not attempt to jump from the machine. Stay in the truck, holding on firmly and leaning in the opposite direction of the overturn.
19. Restrict the use of trucks in areas where large numbers of pedestrians are present (e.g., break areas, primary exits, etc.).
20. Use trucks only for the purpose for which they were designed. Do not use trucks to bump, push, or otherwise move materials or other trucks.

D. Lifting and Moving Loads

1. Handle only stable or safely arranged loads.
2. Place heavy objects with the weight as low as possible.
3. Block or tie objects as necessary to prevent tipping or rolling.
4. Do not load objects to a height that blocks the view of the operator. If the load is obstructing the operator's view, then back the truck using a spotter.
5. Do not exceed the rated capacity of the truck or of any attachments. Attachments must have a load rating plate affixed indicating the weight that may safely be carried.
6. Do not raise or lower a truck's lifting devices while the truck is in motion.
7. Use extreme care when tilting loads. Tilting a truck attachment forward (e.g., forks, etc.) is prohibited except when picking up or depositing a load.
8. On grades, tilt the load back slightly and raise it only as far as is needed to clear the road surface. For grades in excess of 10 percent, keep the load pointed upslope when ascending or descending.
9. If using a truck to load or unload materials from a trailer or rail car, ensure that their brakes are set and that wheel blocks have been set prior to loading or unloading. Inspect the flooring of trailers and rail cars for breaks or weakness prior to driving onto them.
10. Ensure that dock boards and/or bridge plates are properly secured before being driven over. Drive over dock boards and bridge plates slowly. Never exceed the rated capacity of a dock board or bridge plate.
11. Be observant of overhead installations and utilities such as doorways, pipes, sprinklers, and lights. Review travel pathways for sufficient clearance.

E. Ground Personnel

1. Separate truck traffic and ground personnel where possible.
2. If possible, install physical barriers between workstations and truck travel paths.
3. Do not stand or pass underneath the raised portion of a truck.
4. Do not stand between an operating truck and a fixed object (i.e., walls, posts, docks, benches).

5. Do not ride on the forks. Do not ride in the cab of a truck unless specifically permitted to do so (see Section C).

F. Service and Maintenance

1. Turn off engines before filling or replacing fuels tanks or recharging/replacing batteries. Ensure that “No Smoking” signs are posted in refueling and/or recharging areas. Immediately clean up any fuel, oil, or electrolyte leaks.
2. Provide appropriate personal protective equipment to personnel assigned to charging and changing batteries, including, but not limited to, eye protection, protective barrier creams, protective clothing, safety boots, gloves, and respiratory protection.
3. Battery charging locations must be provided with facilities for:
   a. Flushing and neutralizing spilled electrolyte;
   b. Fire protection;
   c. Protection of charging apparatus; and
   d. Adequate ventilation for dispersal of fumes.
4. Remove trucks in need of repair from service until restored to a safe operating condition. Repairs may only be completed by qualified maintenance personnel or organizations.
5. Disconnect (lockout/tagout) power sources before repairs can be started. Refer to SMS 023 AMER, Lockout and Tagout Safety for additional information.
6. Modifications, additions, or attachments that will affect the capacity and safe operation of the truck are prohibited without the written approval and new capacity chart provided by the manufacturer.
7. Manufacturer approval is required if the truck will be used as a work platform.
8. Trucks shall be maintained in accordance with manufacturer’s instructions and inspections conducted in accordance with any local regulatory requirements.

G. Hazardous Atmospheres

1. Classify the atmosphere of a work location as to whether it is hazardous or non-hazardous prior to considering which designation of powered industrial truck to use in the area.
2. Do not use powered industrial trucks in atmospheres containing hazardous concentrations of acetylene, butadiene, ethylene oxide, hydrogen (or gases or vapors equivalent in hazard to hydrogen,

such as manufactured gas), propylene oxide, acetaldehyde, cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical dimethyl hydrazine (UDMH).

3. Do not use powered industrial trucks in atmospheres containing hazardous concentrations of aluminum (and its commercial alloys), magnesium (and its commercial alloys), or other metals of similarly hazardous characteristics.
4. A list describing the use of powered industrial trucks in hazardous atmospheres by truck designation is provided in Supplemental Information A.
5. Evaluate carbon monoxide concentrations to ensure that they do not exceed published exposure limits when using fuel-powered trucks in an enclosed area.

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Employee training records.

B. Truck inspections.

6. Resources

A. U.S. Occupational Safety and Health Administration (OSHA) 29 Code of Federal Regulations (CFR) 1910.178 (Powered Industrial Trucks)

B. American Society of Mechanical Engineers B56.1-2000

C. SMS 023 – Lockout and Tagout Safety

D. Daily Battery-Powered Industrial Truck Safety Inspection Checklist – Attachment 070-1 AMER

E. Daily Engine-Powered Industrial Truck Safety Inspection Checklist – Attachment 070-2 AMER

7. Supplemental Information

A. Powered Industrial Truck Designations and Use in Various Hazardous Locations

B. Fixed and Extendable Reach Forklift Skill Evaluation

URS	Safety Management Standard **DAILY BATTERY-POWERED INDUSTRIAL TRUCK SAFETY INSPECTION CHECKLIST**	Attachment 070-1 AMER Issue Date: September 2004 Revision 3: September 2013

Equipment ID No.: _____ Inspector's Name: _____

Equipment Name: _____ Employee Number: _____

INSTRUCTIONS: The operator will inspect all applicable items indicated at the start of each shift. If an unsatisfactory condition is observed, immediately suspend operation of the truck and report the unsatisfactory condition to the site supervisor.

ITEM INSPECTED	SATISFACTORY?		COMMENTS
Falling Object Protective Structure	☐ Yes	☐ No	
Seat Belts	☐ Yes	☐ No	
Grab Handles	☐ Yes	☐ No	
Back-up Alarm	☐ Yes	☐ No	
Lights	☐ Yes	☐ No	
Horn	☐ Yes	☐ No	
Mirrors	☐ Yes	☐ No	
Fire Extinguisher	☐ Yes	☐ No	
Battery Connection	☐ Yes	☐ No	
Battery Charge	☐ Yes	☐ No	
Battery Load Test	☐ Yes	☐ No	
Hydraulic System	☐ Yes	☐ No	
Hydraulic Controls	☐ Yes	☐ No	
Gauge and Instrument Operation	☐ Yes	☐ No	
Tires	☐ Yes	☐ No	
Steering	☐ Yes	☐ No	
Brakes: Service and Emergency	☐ Yes	☐ No	
Attachments	☐ Yes	☐ No	
Informational Plates/ Markings	☐ Yes	☐ No	
Other (as appropriate)	☐ Yes	☐ No	

Operator Signature: _____

Date: _____ Time: _____

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Please refer to the URS Safety website on the Sourse for the latest version.

URS	Safety Management Standard **DAILY ENGINE-POWERED INDUSTRIAL TRUCK SAFETY INSPECTION CHECKLIST**	Attachment 070-2 AMER Issue Date: September 2004 Revision 3: September 2013

Equipment ID No.: _____ Inspector's Name: _____

Equipment Name: _____ Employee Number: _____

INSTRUCTIONS: The operator will inspect all applicable items indicated at the start of each shift. If an unsatisfactory condition is observed, immediately suspend operation of the truck and report the unsatisfactory condition to the site supervisor.

ITEM INSPECTED	SATISFACTORY?		COMMENTS
Falling Object Protective Structure	☐ Yes	☐ No	
Seat Belts	☐ Yes	☐ No	
Grab Handles	☐ Yes	☐ No	
Back-up Alarm	☐ Yes	☐ No	
Lights	☐ Yes	☐ No	
Horn	☐ Yes	☐ No	
Mirrors	☐ Yes	☐ No	
Fire Extinguisher	☐ Yes	☐ No	
Fuel level	☐ Yes	☐ No	
Oil Pressure and Level	☐ Yes	☐ No	
Radiator Water Level	☐ Yes	☐ No	
Hydraulic System	☐ Yes	☐ No	
Hydraulic Controls	☐ Yes	☐ No	
Gauge and Instrument Operation	☐ Yes	☐ No	
Tires	☐ Yes	☐ No	
Steering	☐ Yes	☐ No	
Brakes: Service and Emergency	☐ Yes	☐ No	
Attachments	☐ Yes	☐ No	
Informational Plates/ Markings	☐ Yes	☐ No	
Other (as appropriate)	☐ Yes	☐ No	

Operator Signature: _____

Date: _____ Time: _____

This document is uncontrolled when printed, saved or copied.
Please refer to the URS Safety website on the Sourse for the latest version.

Designation	Description
D	Diesel powered units having minimum acceptable safeguards against inherent fire hazards
DS	Diesel powered units provided with additional safeguards to the exhaust, fuel, and electrical system
DY	Diesel powered units provided with DS unit safeguards which have no electrical equipment (including ignition) and are equipped with temperature limitation features
E	Electrically powered units having minimum acceptable safeguards against inherent fire hazards
ES	Electrically powered units provided with additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures
EE	Electrically powered units that have the electric motor and all other electrical equipment completely enclosed
EX	Electrically powered units in which electrical fittings and equipment are so designed, constructed, and assembled that the units may be used in certain atmospheres containing flammable vapors or dusts
G	Gasoline powered units having minimum acceptable safeguards against inherent fire hazards
GS	Gasoline powered units provided with additional safeguards to the exhaust, fuel, and electrical systems
LP	Liquefied petroleum gas powered units having minimum acceptable safeguards against inherent fire hazards
LPS	Liquefied petroleum gas powered units provided with additional safeguards to the exhaust, fuel, and electrical systems

Designation	Use Location
D	Piers, wharves, general storage, industrial or commercial properties with no hazardous atmospheres
DS	• Storage of hazardous liquids in sealed containers • Storage of liquefied or compressed gases in containers • Storage or handling of easily ignitable fibers • Any location designated for D units
DY	• Areas where volatile flammable liquids or gases are handled, processed, or used, but in which the hazard is normally contained within a closed container or system • Areas where deposits of accumulations of ignitable dusts are sufficient to be ignited by arcs or sparks originating from the truck • Areas where ignitable fibers or flyings are present, but are not likely to be present in quantities to produce ignitable mixtures

Designation	Use Location
	• Any location designated for DS units
E	Piers, wharves, general storage, industrial or commercial properties with no hazardous atmospheres
ES	• Storage of hazardous liquids in sealed containers • Storage of liquefied or compressed gases in containers • Storage or handling of easily ignitable fibers • Any location designated for E units
EE	• Areas where volatile flammable liquids or gases are handled, processed, or used, but in which the hazard is normally contained within a closed container or system • Areas where deposits of accumulations of ignitable dusts are sufficient to be ignited by arcs or sparks originating from the truck • Areas where ignitable fibers or flyings are present, but are not likely to be present in quantities to produce ignitable mixtures • Any location designated for ES units
EX	• Areas where combustible dust is or may be in suspension constantly, intermittently, or periodically under normal conditions in quantities sufficient to produce explosive or ignitable mixtures (typically includes grain, flour, starch, or other organic dust-producing facilities; coal pulverizing plants; metal dust and powder producing facilities; and other similar locations) • Any location designated for EE units
G	Piers, wharves, general storage, industrial or commercial properties with no hazardous atmospheres
GS	• Storage of hazardous liquids in sealed containers • Storage of liquefied or compressed gases in containers • Storage or handling of easily ignitable fibers • Any location designated for G units
LP	Piers, wharves, general storage, industrial or commercial properties with no hazardous atmospheres
LPS	• Storage of hazardous liquids in sealed containers • Storage of liquefied or compressed gases in containers • Storage or handling of easily ignitable fibers • Any location designated for LP units

URS	Safety Management Standard **FIXED AND EXTENDABLE REACH FORKLIFT SKILL EVALUATION**	SMS 070 AMER Supplemental Information B Issue Date: September 2013

Date _____ Employee Name _____ Evaluator _____

Description:

Operates a rubber tire forklift with attached forks or attachments. Moves a lever to raise and lower forks and attachments. Machine is used to load materials from and onto trucks, move materials in warehouse and around project site.

STEPS KEYPOINTS	SATISFACTORY
1) Demonstrated abilities a) Pre-shift inspection check list (SMS Attachment 019-1, EQ 505 or equivalent) i) Check equipment for loose bolts and leaks; check oil, air, hydraulic fluid and water ii) Make sure area around the equipment is clear of people and other equipment iii) Check for fire extinguisher iv) Make sure that the following equipment is operational a) Brakes b) Lights c) Back-up alarms d) Hand rails & ladders e) Seat belts f) Tires g) Glass, wipers h) Gauges, including temperature, oil, air and fuel i) Wheel chocks v) Notify supervision of any equipment that is not operational vi) The operator can park a piece of equipment that is unsafe to operate if it poses a danger or hazard to employees or property b) Maintain three points of contact while entering and exiting the equipment	☐ Yes ☐ No
2) Identification of equipment controls	☐ Yes ☐ No
3) Loading techniques a) Use of attachments b) Offloading trucks c) Loading trucks d) Move and stack materials around site	☐ Yes ☐ No
4) Control handling of materials	☐ Yes ☐ No
5) Shifting and traveling	☐ Yes ☐ No
6) Proper use of outriggers, if applicable	☐ Yes ☐ No
7) Parking and shut down procedures a) Equipment line-up i) Straight line ii) Allow easy access for maintenance and servicing b) Turn off all accessories c) Lower bucket to the ground d) Place and position wheel chocks e) Perform a general walk around looking for maintenance items	☐ Yes ☐ No

URS SAFETY MANAGEMENT STANDARD
Behavior-Based Safety

1. Applicability

This standard applies to all operations of URS Corporation and its subsidiary companies.

2. Purpose and Scope

The purpose of this standard is to describe the URS approach to implementing our behavior-based safety program.

Behavior-based safety is a process that provides a higher level of safety excellence by promoting proactive involvement, building ownership, and fostering communication that relates to employee safety. A primary concept is that most accidents are due to at-risk behavior, and behavioral changes may be made that significantly reduce accident potential.

3. Implementation

Implementation of this procedure is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Definitions

1. At-Risk Behavior: Individual actions that increase the chance of injury, despite knowledge of the hazard. An example is excessive speed while driving.

2. Activators: Items that are intended to produce desired behaviors. URS activators for safety include, but are not limited to, policy statements, safety management standards (SMS), training, safety slogans, posters and signs, health and safety plans, safe work plans, safety meetings, and rules and regulations.

3. Behaviors: Visible actions on the part of individuals and can be characterized as safe (following health and safety plans, using work practices that minimize risk, coaching others on safe behavior, having safety as a priority over speed and convenience, etc.), or at-risk.

4. Consequences: Result of safe and at-risk behaviors, and can therefore be positive or negative. Examples of consequences include self-approval, reprimand, peer approval, penalty, feedback, inconvenience, and comfort. The most effective consequences are positive, immediate, and certain.

B. Values of Behavior-Based Safety

1. Employees hold safety as a core value.

2. Each employee feels responsible for the safety of their coworkers as well as themselves, and takes action accordingly.

3. Each employee is willing and able to “go beyond the call of duty” on behalf of the safety of others.

C. Roles for Safe Behavior

1. Supervisor’s Role:

   a. Provide clearly defined safety expectations and encourage/reinforce the implementation of safety observations using the SMS 072-1 NA checklist or equivalent.

   b. Provide consequences for observed behaviors throughout the course of the work shift.

2. Co-Worker Role

   a. Intervene when observing at-risk behavior.

   b. Provide positive feedback for safe behavior.

   c. Volunteer to be observed.

C. Identification of At-Risk Behaviors

Observations and review of incident and near miss data will be used by URS Safety Officers to help identify at-risk behavior.

1. Employee observations.

   a. Observation checklists, either project-specific or Attachment 072-1 NA, will be used as a tool to help identify safe and at-risk behaviors and why the behavior(s) occurred.

   b. Employees will be instructed on using the checklists.

   c. Checklists will be included in the site-specific health and safety plan or the safe work plan.

   d. The checklists will include the expected safe behaviors.

e. Peers will complete the checklist for applicable work tasks.

f. Checklists may change throughout the project to include additional behaviors.

E. Feedback to Employees

1. Observers will immediately provide one-on-one feedback to the observed, noting both safe and at-risk behaviors.

2. Observer and observee will discuss the identified barriers to safe behavior, and potential solutions.

3. Near-Miss and Incident Reports will be reviewed to identify at-risk behaviors and corrective actions.

4. Management and Health, Safety, and Environment staff will verify compliance with this standard.

F. Feedback Follow-up

1. Observation checklists will be collected and discussed at periodic safety meetings.

2. The manager will review the trends for at-risk and safe behavior, and report the trends to the employees.

3. Project-specific trends are analyzed and areas of additional action are identified.

5. Documentation Summary

The following documentation will be maintained in the project file:

A. Behavior-Based Safety Checklists.

6. Resources

Attachment 072-1 NA – Behavior-Based Safety Checklist

URS	Health, Safety and Environment **BEHAVIOR BASED SAFETY CHECKLIST**	Attachment 072-1 NA Issue Date: September 2003 Revision 2: February 2009

Job Location: _____ Date: _____

Task/Work Observed: _____ Observer: _____

	Safe	Unsafe	Comments *
Personal Protective Equipment			
Head	☐	☐	
Hand	☐	☐	
Feet	☐	☐	
Eyes/Face	☐	☐	
Skin	☐	☐	
Hearing	☐	☐	
Fall Protection	☐	☐	
Equipment / Tools			
Proper tool for the job	☐	☐	
Condition	☐	☐	
Proper Use	☐	☐	
Body Use / Position			
Lifting	☐	☐	
Pinch Point	☐	☐	
Ladder / stairs	☐	☐	
Hand placement	☐	☐	
Travel path / speed	☐	☐	
Body position	☐	☐	
Work Practices			
Follow Safety Plan / Procedures	☐	☐	
Housekeeping	☐	☐	
Other			
_____	☐	☐	
_____	☐	☐	
_____	☐	☐	

* Use comment column when unsafe behavior / conditions were observed. Describe what was observed and why this occurred.

URS SAFETY MANAGEMENT STANDARD

Short Service Employees

1. Applicability

This standard applies to all operations of URS Corporation and its subsidiary companies.

2. Purpose and Scope

The purpose of this standard is to provide direction for the mentoring and oversight of newly hired or transferred employees. It is understood that proportionally more incidents/injuries occur among less experienced staff members. The goal is to prevent incidents involving these employees, and to ensure they have a good understanding of the URS Health, Safety, and Environment (HSE) Program and Behavior-Based Safety (BBS) expectations.

3. Implementation

Implementation of this program is primarily the responsibility of the URS line and project managers.

A. Line Managers (e.g., Group Leaders, Unit Leaders, Hiring Managers, Supervisors) will be responsible for identifying Short-Service Employees (SSEs) in their groups, and for assigning a mentor to that person.

B. Project Managers (PMs) are responsible for working with a person's mentor to designate someone on the field team to provide additional supervision and guidance for all SSEs during the time they are considered an SSE.

C. Mentors are responsible for ensuring that SSEs understand what training they are required to take, and are familiar with the URS HSE program and how to access various resources. Mentors also need to be available to answer HSE-related questions and concerns from the SSEs they are mentoring. They will work with the field PMs to identify an experienced field team member to provide temporary mentorship, oversight and guidance to SSEs during field activities. NOTE: The mentor may fill this role when working on the same field project with the SSE. A mentor providing field guidance may not be assigned more than one SSE.

4. Requirements

A. General

1. SSEs are those who have been newly hired or transferred to a different position in the company (e.g., one with new and possibly unfamiliar hazards and safe operating procedures).

2. An employee will be designated as an SSE, and the requirements of this SMS will be applicable to that individual, based on the schedule provided in Section 4.A.3. Specific circumstances may warrant the extension of the SSE designation, or variance from the time schedule.

3. SSE Status Schedule

   a. 0- to 6-Month SSE Status – Field employees who are new to URS or who are new to their current job assignment (e.g., someone who has experience in groundwater monitoring who transfers to a unit that performs stack sampling).

   b. 0- to 3-Month SSE Status – All non-field employees who are new to URS. This requirement acknowledges that approximately one-third of URS incidents occur in an office, rather than a field environment.

   c. Former employees who return to URS within 12 months and are placed into the same job assignment will not be designated as SSEs.

   d. Attachment 078-1 NA – SSE Variance for Field Staff or 078-2 NA – SSE Variance for Office Staff will be used to document progress.

   e. Section H of this SMS provides variance/exemptions from this schedule.

B. SSEs working in the field should not be assigned to work alone. Additionally, crew sizes of five employees or fewer shall no more than one SSE assigned to the team.

C. SSEs must be able to be easily identified in the field environment. SSEs are required to wear an orange stripe around their hardhat or be clearly identified by some other system. In the event a client has an existing SSE program, URS will defer to the identification system required by the client. When required by a client, URS will notify the client of a SSE working onsite.

D. The SSE status will be monitored by line management while performing field operations. The SSE status will be removed based on the schedule shown in Section 4.A.3 if the employee's mentor determines the SSE has worked safely, followed URS and client HSE requirements, and has not been involved in an incident involving an injury, property damage, or a significant business interruption. Attachment 078-1 NA or Attachment 078-2 NA will be used for documentation.

E. Line managers will notify the appropriate safety representative of employees who fall under the SSE designation, along with the end date for the SSE status. They should also notify the representative of anyone whom they have exempted from this designation.

F. It is preferred that staff monitoring an SSE in the field will be assigned no more than one SSE at a time.

G. Mentors will be sure that SSEs assigned to them know:

1. How to access information on the URS Safety Management System and the appropriate Safety Management Standards for the work they will be assigned to do.

2. Their roles and responsibilities with respect to HSE.

3. What training they are required to have (e.g., computer-based training, classroom sessions, outside courses) and how to register for this training.

4. Who their local, regional, and corporate HSE resources are.

5. How to report an incident, near miss, at-risk behavior, or unsafe condition.

6. The basic principles of the URS Behavior-Based Safety Program.

7. How to prepare a basic job safety analysis.

H. Variance

1. In general, the SSE status schedule of Section 4.A.3 of this SMS will be followed.

2. Based on experience, knowledge of the URS HSE program, and the tasks to be performed, the line manager may recommend a variance from the full SSE time period. Attachment 078-1 NA or 078-2 NA must be used to document the exemption, and must be approved by the appropriate HSE representative.

3. Due to the wide variety of URS operations, a competency-based alternative system for SSE may be used. A competency-based system requires adequate training and safety skill demonstration for the specific tasks an individual is deemed competent to perform. An example of a competency-based system would be the project hiring of

an experienced and well-trained heavy equipment operator.) Competency-based systems must be approved by the HSE Manager.

5. Documentation Summary

The following documentation will be maintained in the office or project safety file:

A. Attachment 078-1 or 078-2

6. Resources

A. Attachment 078-1 – SSE Variance for Field Staff

B. Attachment 078-2 – SSE Variance for Office Staff

URS	Health, Safety and Environment **SSE VARIANCE FOR FIELD STAFF**	Attachment 078-1 NA Issue Date: September 2005 Revision 5: September 2012

Employee Name: _____ Employee Number: _____

Manager Name: _____ Date: _____

Training:

☐ Yes ☐ No Employee HSE Orientation on-line module completed

☐ Yes ☐ No Vehicle Safety on-line module completed

☐ Yes ☐ No 4-Hour Field Safety class completed, ***or***

☐ Yes ☐ No HAZWOPER training

Manager / Mentor Assessment:

☐ Yes ☐ No Understands URS safety expectations and how to access the URS HSE website

☐ Yes ☐ No Demonstrates ability to prepare a proper Safe Work Plan or Health and Safety Plan (HASP)

☐ Yes ☐ No Demonstrated ability to prepare a basic Job Safety Analysis

☐ Yes ☐ No Complies with safety plan during field work

☐ Yes ☐ No Ability to conduct initial and daily safety briefings

☐ Yes ☐ No Demonstrated experience in Near Miss Reporting (see SMS 049)

☐ Yes ☐ No Understands personal protective equipment (PPE) requirements and always wears correct PPE

☐ Yes ☐ No Willing to stop work if conditions do not appear safe

Field Experience:

Dates	Type of Project	Hazards

Comments:

_____

_____

_____

_____

_____

_____

_____

Employee Statement:

I am familiar with the URS Safety Management system, the roles and responsibilities for HSE as outlined in that system, and the URS Behavior-Based Safety Program. I have been instructed on HSE resources available to me and how to access the program and associated information.

Employee Signature: _____ **Date:** _____

Manager Signature: _____ **Date:** _____

URS	Health, Safety and Environment **SSE VARIANCE FOR OFFICE STAFF**	Attachment 078-2 NA Issue Date: September 2005 Revision 5: September 2012

Employee Name: _____ Employee Number: _____

Manager Name: _____ Date: _____

Training:

☐ Yes ☐ No Employee HSE Orientation on-line module completed
☐ Yes ☐ No Vehicle Safety on-line module completed
☐ Yes ☐ No Ergonomics on-line module completed

Manager / Mentor Assessment:

☐ Yes ☐ No Understands URS safety expectations and how to access the URS HSE website
☐ Yes ☐ No Demonstrates the ability to work safely and correct observed safety hazards
☐ Yes ☐ No Understands local HSE requirements including the Emergency Action Plan and Incident Reporting
☐ Yes ☐ No Has conducted a self-ergonomic evaluation of workstation using SMS 054
☐ Yes ☐ No Demonstrated experience in Near Miss Reporting (see SMS 049)
☐ Yes ☐ No Willing to stop work if conditions do not appear safe

Comments:

_____

_____

_____

Employee Statement:

I am familiar with the URS Safety Management system, the roles and responsibilities for HSE as outlined in that system, and the URS Behavior-Based Safety Program. I have been instructed on HSE resources available to me and how to access the program and associated information.

Employee Signature: _____ **Date:** _____

Manager Signature: _____ **Date:** _____

URS SAFETY MANAGEMENT STANDARD

Managing Risks

1. Applicability

This standard is applicable to URS Corporation and its subsidiary companies.

2. Purpose and Scope

This standard requires hazard identification, risk evaluation, control measures, and written procedures to manage health, safety, and environment risks on the job.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location. The term “manager” may include Office Manager, Project Manager, Program Manager, and/or Site Manager.

4. Requirements

A. Each manager directing activities for a facility or project must evaluate the risks, and then implement an approach that is consistent with managing these risks.

The primary documents used to define and implement the risk control measures are Health and Safety Plan (HASPs), Safe Work Plans (SWPs), and Job Safety Analysis (JSA) or Job Hazard Analysis (JHAs). (Note: JSA and JHA are often used interchangeably but both represent the same level of hazard analysis). These are discussed further in Section 4.E.

B. Each Safety Manager will assess operations within their areas of responsibility to assure compliance with this SMS.

C. All operational work entails risk. The risk may be minor (e.g., risk associated with travel and site assessments) or it might be significant (e.g., risks associated with construction, demolition, working at heights, working with chemicals or chemical contaminants, or confined-space entry). Many common project/site risks have associated Safety Management Standards (SMS) that apply; this standard does not replace or modify those SMS requirements in any way. Rather, the intent of this standard is to define a risk assessment strategy, and the written safety procedures to be developed as part of the overall strategy of managing risks.

Employees will be instructed on the recognition of hazards and the applicable procedures and control measures used to mitigate the hazards.

D. Risk Assessment Strategy

1. Hazard Identification

Hazard identification is the precursor to being able to assess risk. A hazard is something that has the potential to cause human injury or illness, property damage, damage to the environment, business interruption, or a combination of these.

Before undertaking any activity, the hazards have to be identified by persons competent to recognize them using professional experience and training including the following:

a. Utilization of a formal hazard identification process;
b. The proper use/care of protective equipment;
c. Information from review and improvement processes;
d. Consideration of hazardous materials required for task(s);
e. Location of work and proximity to outside hazards or equipment;
f. Anticipation or possible change of conditions;
g. Consideration of risk of human error;
h. Identifying level of training required for task; and
i. Any other factors that can introduce hazard or risk into the activity.

Hazard identification should consider:

a. Routine and non-routine activities;
b. Activities of all persons having access to the workplace (including contractors and visitors);
c. Human behavior and capabilities;
d. Identified hazards originating outside the workplace capable of adversely affecting the health and safety of persons under the control of URS within the workplace;
e. Hazards created in the vicinity of the workplace by work-related activities under the control of URS;
f. Infrastructure, equipment, and materials at the workplace, whether provided by URS or others;

g. Changes or proposed changes in the organization of URS, its activities, or materials;

h. Modification to the safety management system, including temporary changes, and their impacts on operations, processes, and activities;

i. Any applicable legal obligations relating to risk assessment and implementation of necessary controls; and

j. The design of work areas, processes, installations, machinery/equipment, operating procedures, and work organization, including their adaptation to human capabilities.

2. Risk Assessment

a. Evaluate the work area for hazards as defined above. This applies to field, office, and travel settings. Use hazard recognition tools such as 4sight or the "Work Planning Guide" (Energy & Construction: SAFTRAIN 014-1/10) pocket hand book and the SMS Checklist to evaluate the job/task to be performed and the potential hazards that could be present.

b. Determine whether identified hazards could affect employees, subcontractors, members of the public, visitors, or others.

c. Assess the probability and consequence of any identified hazard occurring. This is generally based on experience, although incident statistics are available for most industries. The assessment of probability must also take into consideration the frequency with which exposure to a particular hazard will take place (e.g., the probability of occurrence is much greater if the activity is a daily event involving a number of individuals, compared with the same activity carried out twice a year by few individuals as part of a maintenance procedure). See 4.D.3 for a semi-quantitative risk table.

d. Severity

Be realistic when considering how severe the result of exposure to a hazard could be. For example, it is remotely possible that someone tripping over a cable in an office may

be killed, but the most probable result is bruising or a fractured bone. If, however, the cable is trailing across the top of a very busy stairway, a more severe injury is possible.

The following scale can be used to assist in severity estimation:

Severity	Rating	Examples
Catastrophic	5	May result in multiple fatalities, equipment or property destroyed.
Hazardous	4	May result in multiple serious injuries/illnesses, limited fatalities. Operations unable to perform or complete activities/missions. Serious impact to the community or customer.
Major	3	May result in serious occupational injury/illness. Reduction in ability to deal with adverse operating conditions. Impact to community or customer.
Marginal	2	May result in a minor injury/illness to be treated with first aid. Nuisance to operations. Use of emergency procedures. Minor incidents.
Negligible	1	Minimal threat to health, safety, security or the environment.

e. Likelihood

Determining the likelihood of a hazard actually causing harm can be much more difficult than determining the severity. An assessor's experience of actual incidents is usually limited. The factors affecting the analysis of likelihood are:

i. The number of times the situation occurs

ii. The position of the hazards

iii. Distractions

iv. The duration of exposure

v. Quantities of materials involved

vi. Environmental conditions

vii. Competence of the people involved

viii. Condition of equipment.

Other important factors to take into account are the control measures already provided, or to be provided. However, in analyzing the likelihood of harm, it will be necessary to take into account the possibility of the control measures not being used because of human error, lack of maintenance, difficulty in compliance, complexity, etc. Any control measures included in the analysis must be referred to or recorded.

The following scale can be used to assist in likelihood estimation:

Likelihood	Rating	Examples
Frequent	5	Likely to immediately occur, highly probable during task/activity
Probable	4	Quite likely to occur, may occur during task/activity
Occasional	3	May occur in time or during the during the task/activity
Remote	2	Seldom occurs, unlikely to occur during task/activity
Improbable	1	Highly unlikely to occur, but possible during task/activity

3. Risk Rating Determination

A semi-quantitative risk rating can be derived for each hazard using the following table.

Likelihood	Severity				
	5 (Catastrophic)	4 (Hazardous)	3 (Major)	2 (Marginal)	1 (Negligible)
5 (Frequent)	3	3	3	2	2
4 (Probable)	3	3	2	2	1
3 (Occasional)	3	2	2	1	1
2 (Remote)	2	2	1	1	1
1 (Improbable)	2	1	1	1	1

4. Risk Rating Table Use

   Use of the semi-quantitative risk table shown above can help to determine whether or not the level of risk is tolerable. Attachment 086-1 AMER may be used to document severity, likelihood, and the semi-quantitative risk rating for a project. This can assist in deciding priorities for action. In general, higher risks (the heavier shaded areas) may require the provision of considerable additional resources involving special equipment, training, high levels of supervision, and consideration of the most effective methods of eliminating or controlling hazards. Lower-level risks may be considered as acceptable, but actions should still be taken to try to reduce them further, if possible. The risk rating for a project should be revised if the scope of work changes and at a minimum, the risk rating should be re-assessed on an annually basis.

   The risk table can be used to provide an initial breakdown of the hazards into categories as defined below. Note that further definitions and discussions of HASPs, SWPs, and JSAs are provided in Section 4.E.

   a. Acceptable Risks (Risk Rating of 1): In this category, the minimum level of written procedures should be an SWP with a completed JSA for each defined activity.

   b. Acceptable Risk with Mitigation (Risk Rating of 2): In this category, an HASP is required for the site or facility operations. A rigorous JSA process will be incorporated into the HASP, with JSAs required for all defined critical tasks.

      All construction, demolition (excluding multi-story buildings), and hazardous waste operations sites fall into this category. Other examples of operations in this category include aviation and vehicle maintenance operations, warehouse operations, and activities that expose employees to the following hazards:

      i. Chemical, biological, or radiation hazards.

      ii. Falls from heights above 4 feet (1.2 meters) for general industry activities or above 6 feet (1.8 meters) for construction activities.

      iii. Entry into a permitted confined space.

iv. Lockout/tagout (energy management on equipment and facilities).

v. Work in high-risk security or low-income countries (see SMS 036).

vi. Work in excavations.

vii. Entry into non-habitable structures.

viii. Working in areas where wildlife has been disturbed (e.g., floods, hurricanes, earthquake, or other natural disaster area).

ix. Working on and over water (see SMS 027 and 053).

A JSA/JHA will be implemented for each activity at the discretion of the applicable Safety Manager responsible for the site.

c. High Risk with Extensive Mitigation Efforts (Risk Rating of 3): In this category, a detailed HASP with complimentary JSAs/JHAs (and Standard Operating Procedures if applicable) and oversight by a competent safety professional with knowledge of the task and operations is required. Examples include:

i. Demolition of multistory structures; or

ii. Unexploded ordnance recovery or destruction operations of munitions larger than .50 caliber (130 millimeters).

iii. Work in areas involving extremely toxic chemicals or highly radioactive materials or potential Immediately Dangerous to Life and Health (IDLH) or explosive conditions.

E. Written Procedures

Written procedures include HASPs, SWPs, and JSAs/JHAs. Templates and examples of each are available on the URS safety website, or from Safety Managers.

Approvals for written procedures shall be valid for a maximum of one year. If the project continues past one year, the written procedures must be reviewed and reapproved.

1. **Health and Safety Plan (HASP)**. An HASP is required for work in any high-risk operation, such as construction, demolition, hazardous waste operations, or any activity specified as high risk by the appropriate Safety Manager. The HASP is often required by regulation, insurance policy requirements, or client requirement. A HASP template is provided in Supplemental Information A. A typical HASP includes the following components:

    a. Descriptions of roles and responsibilities for the activity.

    b. Hazard analysis for each task and operation found in the work plan.

    c. Supervision.

    d. Training requirements.

    e. Personal protective equipment requirements for the separate tasks or operating areas.

    f. Medical surveillance requirements (for chemical exposure, noise, radiation, etc.).

    g. Frequency and types of monitoring for physical and chemical hazards.

    h. Pre-entry briefings requirements for visitors and workers.

    i. Emergency and routine medical treatment hospital/clinic locations.

    j. Emergency action and fire protection procedures.

    k. An HASP for hazardous waste operations may also include:

        i. Site access and control measures

        ii. Site specific information on chemical, biological or radiation hazards

        iii. Decontamination procedures

        iv. Emergency Response Plan

        v. Confined Space Entry plan

        vi. Spill containment Plan

        vii. Waste management.

l. An HASP for construction activities may also include:
   i. Traffic plan and site access controls
   ii. Electrical and machinery protective measures
   iii. Trench and excavation safety
   iv. Fall protection and rescue plans
   v. Storage for combustible and flammable materials
   vi. Sediment and community noise control plans.

m. An HASP for a demolition project may also include:
   i. Materials movement plan
   ii. Critical task sequencing
   iii. Explosives safety
   iv. Dust control measures
   v. Removal of asbestos and lead-containing materials.

n. An HASP for work in a High Security Risk Country (see SMS 036) may also include:
   i. A security plan.
   ii. Emergency procedures for evacuation or demobilization in the event of injury, death, or security threat.
   iii. Immunization and prophylactic treatment requirements for disease prevention.

2. **Safe Work Plan (SWP)**. An SWP is an abbreviated HASP and can be used for lower risk field activities. A SWP template is provided in Supplemental Information B. The SWP contains the following components:

   a. Descriptions of roles and responsibilities for the activity.
   b. Emergency contacts and facilities (hospital and clinic).
   c. Description of each task, the associated hazards, and the mitigations for each hazard.
   d. Training requirements.

e. Personal protective equipment requirements.

f. Daily project review.

3. **Job Safety Analysis (JSA)**. A JSA describes the task being performed, the inherent risks, and the control measures for those risks. Typically, JSAs are completed before the task begins and are updated regularly based on task revisions and lessons learned. All workers involved in the task should participate in the JSA process so that best practices are shared and all possible hazards of the task are identified. Workers also feel ownership of the hazard control process when they are part of the analysis team. Workers should stop any work on a task if conditions change from the planned and agreed approach to the work. The JSA should be updated to reflect new conditions or changes in task methods.

   JSAs may be completed as a stand-alone document, or may be incorporated into an HASP or an SWP. JSAs are similar to Activity Hazard Analysis (AHA), Job Hazard Analysis (JHA), and other terms and formats; however, unless otherwise indicated by client requirement, the URS JSA format should be followed. Various JSA template options are provided in Supplemental Information C-E and G.

4. **Task Safety Analysis (TSA).** A TSA is the most important element in an effective hazard identification and risk reduction program. A TSA shall be accomplished before every assigned task at the work location. The focus of the analysis shall be on the specific assigned task and the evaluation of risks and assignment of control measures based on actual work conditions. TSA shall be accomplished through the use of the URS 4sight method. 4sight can be used informally as a thought process by an individual or a conversation amongst a team or formally documented (Supplemental Information F may be used to document a TSA). 4sight empowers employees to ask 4 simple questions before beginning a task:

   What am I about to do?
   - Have I stepped through the task in my mind?
   - Do I really understand the task?
   - Have I done this task before?

   What could go wrong?
   - What could move slip or fall?
   - Does the equipment need to be checked?
   - Could something spill, splash or leak?

What could be done to make it safer?

- Should I get help with the task?
- Do I have the right tools, PPE, or equipment?
- Do I need to review the JSA/Procedures?

What have I done to communicate the hazards?

- Have I spoken to my team about the hazards?
- Have I informed others in the area?
- Does someone know where I am and what I am about to do?

F. Preplanning for Development of Written Procedures

1. Coordination must be made by project management with representatives of the client, medical provider, regulatory authorities (if needed), and other appropriate personnel to determine and coordinate such items as:

    a. Measures to protect the public and/or other persons exposed to the work operations.

    b. Client, local, state, and/or federal laws and regulations that are applicable to the project.

    c. Procedures for handling and reporting incidents, property damage, and other emergencies.

    d. Disciplinary policies and management of restricted access for company employees and subcontractors/vendors.

2. As soon as possible, conduct an initial investigation of the project site and review the proposed work to determine, to the extent possible, existing or probable hazardous conditions and restricted areas.

3. Use a Pre-Project Startup Checklist (Attachment 086-2 AMER) to plan for and establish the written project safety documents. Note that client requirements and formats may have to be followed when completing written documents, specifically the HASP and JSA documents.

4. Contact the appropriate Safety Manager, the client's safety representatives, and/or other appropriate advisors or consultants for assistance when necessary.

G. Implementation of the Written Programs

1. Establish adequate safety, fire prevention, medical, security, occupational health and environmental protection measures as required by the contract and mandatory regulations.

2. Make arrangements for hospital, doctor, ambulance, and fire-fighting and police services. Post the telephone numbers and/or other instructions for obtaining these services at the telephones in key project locations.

3. The active involvement of the project's managers and supervisors at all levels in safety training, enforcement, inspection, and incident investigation activities are necessary to maximize the effectiveness of the HASP/SWP.

4. The site safety representative and other supervisors will inspect work areas at least daily. Inadequate and deficient protection measures and unsafe work practices that are noted will be immediately brought to the attention of the appropriate supervisor and/or the Project Manager for correction.

5. Restrict access to the work areas. Prior to the start of work, delineate the limits of the work areas. Supervisory personnel and subcontractors will be responsible for maintaining diligent surveillance to make certain that areas outside work limits remain undisturbed. The importance of enforcing the access restrictions should be periodically reviewed with the project team.

6. As soon as workplace hazards are discovered, take steps to eliminate or control these hazards. Control methods should be reviewed to determine that additional hazards will not be created as a result of implementation. General control methods include the following:

    a. Substituting material that is dangerous to health with a less harmful product.

    b. Changing or alternating a process to minimize worker contact.

    c. Isolating or enclosing a process or work operation to reduce the number of persons exposed.

d. Using wet methods to reduce airborne particulate concentrations in dusty environments.

e. Removing or controlling contaminants at their source before they reach workers (e.g., local exhaust ventilation).

f. Ventilating areas with clean air to provide a safe environment.

g. Using personal protective equipment and monitoring devices.

h. Maintaining good housekeeping. This includes the cleanliness of the work area, waste disposal, adequate washing, toilet and eating facilities, healthful drinking water, and control of insects and rodents.

i. Whenever appropriate, using special control methods for specific hazards, such as reduction of exposure time, personal film badges or dosimeters, continuous or frequent area monitoring or personal sampling with monitoring device and medical programs to detect exposure to physical agents or the possible intake of toxic materials.

j. Maintain an adequate training and education program to supplement engineering controls.

H. Key Elements in Risk Control on the Project Site

1. Regularly, or at least once per month, conduct safety meetings for supervisory personnel, including those of other contractors and subcontractors. Suggested action items for these meetings include:

   a. Reviewing of the safety procedures and policies applicable to the project.

   b. Identifying responsibilities of the various parties, including contractor(s) and subcontractor(s) obligations.

   c. Reviewing noted and anticipated hazards, and plan methods to eliminate or control them.

   d. Discussing incidents and near misses to determine causes and steps necessary to prevent reoccurrence.

e. Discussing suggestions and ideas for improving the project's safety program.

f. Maintaining a record of these meetings; this will be done by the safety representative or supervisor.

2. Include safety (tailgate) meetings for all project personnel in the project scheduling, with meetings at least weekly, and a clear responsibility for management of meetings. A record of the meetings will include the name of all attendees, items discussed, and date/time of meeting. Supplemental Information H or I may be used to document the meeting. The safety representative or supervisor will maintain records of the meeting.

3. Regular inspections of active work areas will be made by the project supervisors and the site safety representative. To be effective, such inspections should occur on all shifts, should be unannounced, and should occur at varied intervals.

    a. Imminent danger situations must be stopped and corrected immediately.

    b. Inadequate or deficient protective measures and unsafe or unhealthy work practices must be brought to the immediate attention of the appropriate supervisor and/or Project Manager for correction and disciplinary action, as required.

    c. Inform the Project Manager of all deficiencies not immediately correctable, and/or that may result in damage to facilities, equipment, or work in progress, or that create hazardous exposures to employees or the public.

    d. Inspect all flammable storage areas, explosives storage, shops, warehouses, and other facilities at regular intervals.

4. Appropriate mechanical safety inspections are a part of the equipment preventive maintenance program. These inspections will ensure:

    a. Accurate and complete maintenance and repair records are an important part of the preventive maintenance program. These records will be accessible to the site safety representative, who will make periodic reviews to determine if the equipment is being maintained in a safe condition.

b. Pre-shift safety inspections will be made by the operators of equipment or by mechanics. These inspections will be documented and defective equipment tagged and removed from service until repairs are made.

c. Project management should note that federal, state and client stipulations for testing and inspections of equipment and vehicles may be required and these requirements should be identified as part of the HASP/SWP.

5. Signs and posters of appropriate size and design, and bearing standard pertinent regulations, will be used to convey warnings, directions, and instructions to personnel and the public, as required by the client and other applicable regulations. The observance of such safety and incident prevention signs will be strictly required of company employees and visitors while on the project site.

6. The project's organization will reflect the importance given to safety. It is important to plan for and provide adequate resources for the implementation of the project HASP/SWP to ensure for their effectiveness. The safety staff must be provided with adequate transportation, telephone and/or radio units, suitable office and storage facilities, clean eating and change room areas, data entry or computer resources, training aids, testing equipment, and administrative support.

7. Consideration must be given to make the project environmental protection plan effective. The type and extent of the measures needed for pollution control, hazardous materials handling, hazardous waste control and disposal, and for relating occupational health issues will depend upon the contract stipulations, hazard involved, type of operation, and the mandatory requirements of regulatory authorities. Such measures will include appropriate control methods necessary to prevent or reduce to safe levels exposure to hazardous substances.

8. It is the practice of URS to commend and reward employees and their supervisors for achieving excellence in their field of work, particularly when that work is performed safely. Project management is encouraged to promote and participate in safety recognition programs by developing project-specific safety goals and including safety incentive programs in project budgets. Project goals should include proactive goals such as training participation and training support, safety observations conducted, and

management participation in safety reviews (e.g., safety walk-downs).

9. All employees are empowered and expected to stop work or not start work when it is unsafe. Employees will be trained on stop work authority upon initial assignment.

   Any employee who believes a health, safety, or environmental violation exists or a situation poses physical harm or imminent danger, are expected to refuse to work under such conditions. An employee who exercises this right must immediately report the situation to their supervisor or an alternate member of management. The supervisor, or alternate member of management, will immediately investigate the situation to determine if there are reasonable grounds to believe that a violation or danger exists, and then take appropriate actions to correct the situation before work is allowed to proceed. Employees will not be reprimanded for stopping work when conditions are unsafe.

   Stop work interventions will be documented in accordance with the project/site specific program. Stop work interventions will review be reviewed by the Project Manager or designee to determine how to prevent unsafe conditions/acts from reoccurring.

5. Documentation Summary

A. Retain copies of the HASP, SWP, and JSA as appropriate for 3 years or longer if required by contract.

6. Resources

A. Attachment 086-1 AMER – Risk Assessment Form

B. Attachment 086-2 AMER – Pre-Project Setup Checklist

7. Supplemental Information

A. Health and Safety Plan Template

B. Safe Work Plan Template

C. Job Safety Analysis Template #1

D. Job Safety Analysis Template #2

E. Job Safety Analysis Template #3

F. Task Safety Analysis

G. Job Safety Analysis Template #4

H. Tailgate Meeting Form #1

I. Tailgate Meeting Form #2

Identify Operations From Risk Matrix Table

Type of Activities Performed	Severity Rating (1-5)	Frequency Rating (1-5)	Risk Assigned (1-3)
Average Severity Rating			
Average Frequency Rating			
Final Risk Assigned (Round up to whole number)			

Site/Facility Manager Name: _____

Signature: _____

Date: _____

Safety Manager Name: _____

Signature: _____

Date: _____

This list may vary for different field operations and may not include all items required for your project. However, it does contain the essential elements for establishing an effective safety and loss prevention program.

	Task	Assigned To	Date Completed
1.	Select Safety Supervisor(s) or Representative.		
2.	Determine medical requirements for project work, as necessary.		
3.	Obtain and establish first aid facility and emergency vehicle, as necessary. Order first aid kits and supplies.		
4.	Order required personal protective equipment (e.g., hard hats, eye and hearing protection, respirators, etc.).		
5.	Plan and establish safety indoctrination and training program.		
6.	Establish schedule for project safety meetings.		
7.	Evaluate project for inherent hazards or special requirements and develop specific project safety rules and procedures.		
8.	Plan and develop procedures for administering subcontractors' safety programs, including a pre-job safety conference.		
9.	Determine requirements and conduct pre-work inspection for performance and load tests of cranes, derricks, hoists, etc., and similar equipment. Complete documentation is required.		
10.	Establish and assign safety responsibilities and duties.		
11.	Plan jobsite inspection program. Frequency of inspection, documentation requirements, and type of inspection should be included.		
12.	Implement preventive maintenance program, as necessary		
13.	Determine record-keeping and reporting requirements for regulatory authorities (OSHA, MSHA, USACE, etc.), client, and URS. Delegate tasks to responsible staff.		
14.	Evaluate security requirements and the need to have security guards, perimeter fencing, and lighting. Arrange for planned security personnel and/or facilities.		
15.	Evaluate the need for occupational health or environmental monitoring (e.g., noise, water, air and dust surveys, gas monitoring).		

Task	Assigned To	Date Completed
16. Determine and establish safety enforcement and disciplinary sanctions for violations of safety programs. Distribute this information to all employees.		
17. Plan and establish an emergency action plan for medical emergencies, fire, flooding, bomb threats, civil disturbances, hazardous material/waste, spills, releases of pollutants or toxic gases, etc.		
18. Plan and implement measures required for public safety (e.g., lighting, flag persons, traffic control devices, fences, and warning signs, etc.).		
19. Determine requirements to control and prevent unsafe conditions (e.g., scaffolding, standard guardrails, guards, access ways, ladders, lockout/tagout procedures, confined-space entry).		
20. Develop a fire prevention plan; determine fire extinguisher and fire protection requirements. Order and install equipment.		
21. Implement safety incentive and promotion program, as necessary. Post safety instruction signs, poster, and other promotional ideas.		
22. Determine accident investigation, environmental incident investigations and claims-handling procedures.		
23. Make contacts and establish working relationships with local medical personnel and facilities, local ambulance service, fire station, and client's safety representatives.		
24. Establish goals for safety performance, and methods to monitor and document progress.		
25. Develop and implement a hazard communications program to train employees and monitor health hazards.		
26. Determine environmental permit requirements and local, state, and federal environmental regulations. Establish an environmental protection program to prevent pollution.		
27. Order and place appropriate equipment and media for response to accidental spills or releases of hazardous materials, as necessary.		
28. Establish drug screening and EAP programs, as required.		

TEMPLATE

This is a template designed for petroleum hydrocarbon sites however with more extensive editing (e.g., air monitoring section) it can be used for other hazardous waste operations or construction activities. Additional information must be provided (and non-applicable information deleted) before the template can be considered an acceptable site-specific health and safety plan. Site-specific information is required wherever blue text is found. A Safety Manager or designee, must review and approve the plan before it can be finalized. Note that many of our clients have specific requirements for health and safety plans that may not be covered by this template. This template is intended to address work activities conducted by URS personnel. Subcontractors are normally responsible for developing their own health and safety plans with the URS plan serving as minimum requirements.

This template also references a number of URS Safety Management Standards (SMSs). Referenced SMSs must be available for use in the field. These SMSs are available on the Safety page of the Sourse.

Please contact your Safety Representative or Safety Manager if you have any questions.

Disclaimer:

This Health and Safety Plan, and each of its provisions, is applicable only to, and for use only by, URS Corporation, its affiliates, and its subcontractors. Any use of this Plan by other parties, including, without limitation, third party contractors on projects where URS is providing engineering, construction management or similar services, without the express written permission of URS, will be at that party's sole risk, and URS Corporation shall have no responsibility therefore. The existence and use of this Plan by URS shall not be deemed an admission or evidence of any acceptance of any safety responsibility by URS for other parties unless such responsibility is expressly assumed in writing by URS in a specific project contract.

Enter Site Name

HEALTH AND SAFETY PLAN

Enter Date

Prepared by:
URS Corporation
Enter office location

Approved: _____ _____
Enter Name — Date
URS Project Manager

Approved: _____ _____
Enter Name — Date
URS Safety Manager

THIS HASP IS TO BE USED FOR THE SPECIFIC PROJECT DESCRIBED HEREIN. IT IS NOT TO BE USED FOR ANY OTHER PROJECT. THIS PLAN MUST BE REVISED AS APPROPRIATE TO ADDRESS CHANGING SITE CONDITIONS OR MODIFIED SCOPE OF WORK.

Health and Safety Plan

1. Introduction

Enter Client Name and URS Corporation (URS) are committed to providing a safe and healthful work environment. Our goal is zero incidents, meaning that we strive to complete every project without injury, illness, property damage or environmental damage. Safety must always take precedence over expediency.

This Health and Safety Plan (HASP) summarizes health and safety hazard information for URS field activities associated with the Enter Project Name and Location. The URS HASP delineates procedures that will allow personnel to work safely and respond quickly and appropriately to site emergencies. All site work will be conducted in accordance with requirements of the URS Safety Program and Management System and Safety Management Standards (SMSs) that is available on the Safety page of the Sourse. All site work will be conducted in accordance with applicable regulatory requirements. Refer to SMS 005 Injury and Illness Prevention Plan for work in California.

A URS Safety Manager reviewed this HASP to verify compliance with applicable requirements. The Safety Manager must approve any modifications to the procedures in this plan. The Project Manager is responsible for implementation of this plan.

2. Scope of Work

Activities covered under this HASP include all field activities associated with the Enter Project Name and Location. This plan has been developed for URS personnel only.

This plan is valid from Enter Dates. The Project Manager and Site Safety Officer(s) are responsible for implementation of this plan.

Scope of work and major tasks	• Fill in this section
URS employees assigned	• Fill in this section
Equipment needed	• Fill in this section
Dates of the work	• Fill in this section
What are the major hazards associated with each work activity?	See attached Job Safety Analysis (Attachment B).

3. Key Personnel - Fill in this section		
Position	**Name**	**Phone Numbers**
URS Project Manager		
URS Field Supervisor		
Client Representative		
Office Safety Representative		
Safety Manager		
Occupational Health Manager		

4. Task/ Operation Health and Safety Hazard Assessment	
Site Location and History	Fill in this section
Chemical Hazards	Add specific information regarding site contamination; hazards must be addressed in job safety analysis Safety Data Sheets for chemicals that will be used onsite are attached in Attachment D.
Physical Hazards	Edit to include specific hazards; hazards must be addressed in job safety analysis
Biological Hazards	Edit to include specific hazards; hazards must be addressed in job safety analysis
Hazard Controls	Chemical, physical, and biological hazards will be minimized through engineering controls, employee training, administrative controls, and when necessary, personal protective equipment (PPE). Site specific controls are addressed in the Job Safety Analysis (JSA) contained in Attachment B.
Client Requirements	Many clients have specific HSE requirements. Insert client specific requirements here.

5. Employee Medical Qualifications and Training Requirements	
All personnel	All personnel will participate in documented daily health and safety tailgate meetings to discuss site conditions, hazards, and hazard controls. All personnel who are not required by project activities to have HAZWOPER training must have current field safety training.
Personnel entering the exclusion zone	40-hour HAZWOPER training with a current 8-hour refresher and medical qualification Refer to SMS 024 Medical Screening and Surveillance Refer to SMS 055 Training
Field Supervisor and/or Site Safety Officer	8-hour HAZWOPER Supervisor Training First Aid Training for remote sites Refer to SMS 055 Training

6. Engineering and Administrative Controls
URS will implement engineering and administrative controls to reduce the spread of contamination, isolate contaminants, shield workers, prohibit access to hazardous areas, warn of physical hazards and/or otherwise minimize the likelihood of worker injury or exposure. Specific engineering and administrative controls for each URS activity are listed in the Job Safety Analysis (Attachment B).

7. Personal Protective Equipment	
All site personnel	• Work clothes as appropriate • Gloves specific for the task • Hardhat • Safety toe boots with good tread • Safety glasses with side shields • ANSI Class 2 high visibility apparel (Class 3 apparel is required for work at night or during periods of poor visibility) • Hearing protection – when voice communication becomes difficult due to noise • Refer to SMS 029 Personal Protective Equipment
All personnel working in areas where action levels are exceeded – see Section 8	• Appropriate coveralls (Tyvek or equivalent) • Outer nitrile gloves • Full-face air purifying respirator with organic vapor cartridges. To use a respirator, employees must be trained, fit tested and medically qualified. • Refer to SMS 042 Respiratory Protection Program

8. Air Monitoring

Air monitoring will be conducted with a photoionization detector (PID) with a 10.2 or 10.6 ev lamp calibrated to isobutylene to evaluate concentrations of volatile organic compounds (VOCs). The monitoring equipment must be calibrated in accordance with the manufacturer's instructions. In addition, the results of daily instrument calibrations must be recorded in the field notes. Continuous monitoring is required during intrusive work. Document readings in the field notes. Additional monitoring may be required to enter an excavation or confined space (refer to Attachment B). The action levels below assume that no more than 4% of the VOCs present are benzene. This action level table is for BTEX contaminated sites. If the site contaminants of concern are different than BTEX, the table below needs to be revised to reflect the specific contaminants. If needed, contact a Safety Manager for assistance.

Air Monitoring Action Levels

Analyzer Reading	Location	Duration	Action	Personal Protective Equipment
< 10 ppm	Point of Operations/ Release Source point	_____	Continue periodic monitoring.	Minimum Site Ensemble (Hardhat, Steel-toed boots, eye protection, hearing protection)
> 10 ppm	Point of Operations/ Release Source point	>1 minute	Monitor OBZ; don protective clothing; establish work zones	Minimum Site Ensemble, Plus: Coveralls, Nitrile Outer Gloves, and Nitrile Inner (surgical) Gloves
< 10 ppm	OBZ	-----	No respirators required.	Same as above
> 10 ppm	OBZ	>1 minute	Improve engineering controls, if not effective Provide respiratory protection; establish decontamination area and contact the Safety Manager	Add full-face air purifying respirators with organic vapor cartridges. Cartridges will be changed on a daily basis.
>100 ppm OR > 100 ppm	OBZ OBZ	>1 minute instanta-neous	Stop work; move upwind while vapors dissipate. If elevated levels remain, cover boring and cuttings, evacuate upwind and notify the Safety Manager	As specified by the Safety Manager

(OBZ - Operator's Breathing Zone)

9. Site Control and Decontamination	
Site Control	Work area barricades may be used to prevent access by unauthorized persons. Yellow caution tape, traffic cones and/or sawhorse-type barricades can be used for this purpose. Formal work zones (i.e., exclusion zone, contamination reduction zone, and support zone) will be implemented if the PID reading exceeds 10 ppm for more than one minute at the point of operations. No eating, drinking, or smoking is allowed in potentially contaminated areas.
Coordination With Owners or Operators	URS must receive permission to access private property from land owners and site operators.
Personnel and PPE Decontamination	Personnel should wash hands and face after leaving the work zone and before eating. Formal decontamination procedures are required if the analyzer reading exceeds 10 ppm for more than 1 minute. Wash all reusable equipment with soap and water. Remove and containerize, and appropriately dispose of any disposable PPE in the contamination reduction zone.
Equipment Decontamination	Equipment decontamination will be performed as appropriate to limit the spread of contamination, limit worker exposure to contamination, and to meet Quality Assurance/Quality Control (QA/QC) requirements. Remove disposable PPE prior to leaving the work zone. Contain decontamination water as appropriate and comply with any applicable disposal requirements.

10. Emergency Contingency Plan	
Prior to beginning work at the site, the client representative and URS field personnel will identify a site evacuation route and place of refuge as well as the best means of communication from the site (i.e., are cell phones allowed, do they work, can responders find our location, etc.). In the event of an emergency at the site, first contact the appropriate emergency services, next secure the site, and then notify the URS Project Manager. The URS Project Manager and/or Safety Manager will notify the client and other appropriate agencies. In the event of an incident, follow the reporting procedures in URS SMS 049, Incident Reporting, Notifications & Investigation and SMS 065, Injury Management.	
Medical Emergencies	URS personnel may administer first aid on a voluntary basis if they are trained to do so. Remember to follow "universal precautions" if blood or body fluids are present (i.e., assume all blood and bodily fluids are contaminated and avoid contact with these fluids). Use nitrile or latex gloves when performing first aid. Contact the RSM if you are exposed to another individual's blood or body fluids. For serious injuries or illnesses, transport the victim to the hospital via ambulance by calling 911. If exposure to hazardous substances is suspected, or if any symptoms of exposure are experienced, leave the contaminated area. If a dermal or ocular exposure is suspected, wash the affected area with plenty of water for a minimum of 15 minutes. If symptoms are serious in nature seek medical assistance immediately. In the event of any work-related injury or illness, contact the Safety Manager and the URS Occupational Health Manager to report the incident and to begin the Workers' Compensation claims process, in accordance with SMS 065, Injury Management.
Emergency Medical Services	See the emergency phone numbers and maps below. Minor injuries should be treated at an occupational health clinic when possible. Significant injuries should be treated at the nearest hospital.
Emergency Equipment List	Each URS work area will be equipped with the following equipment: • Cellular phone • First aid kit • Eye wash • Fire extinguisher • Drinking water • Extra set of PPE

10-1. Emergency Phone Numbers - Fill in this section		
Organization	**Name**	**Phone numbers**
Police		**911**
Ambulance		**911**
Hospital		
Fire/HAZMAT		**911**
Poison Control Center		**(800) 332-3073**
URS Occupational Health Manager		
Client Representative		
Subcontractor Representative		
URS Project Manager		
URS Safety Representative		
URS Safety Manager		

Insert Medical Clinic Location, Route and Map

Insert Hospital Location, Route and Map

ATTACHMENT A
FORMS

Daily Tailgate Meeting Form –
SMS 086 AMER – Supplemental Information H or I

(Shall be completed daily prior to work activities)

ATTACHMENT B
JOB SAFETY ANALYSIS

ATTACHMENT C
SMS CHECKLIST & APPLICABLE SMSs

SMS CHECKLIST

The following URS Safety Management Standards (SMS) generally apply to all field projects. Review the requirements of each SMS and determine appropriate steps to ensure project compliance with the requirements.

Determine the applicability of these SMS to your project	Yes	See SMS #	Determine the applicability of these SMS to your project	Yes	See SMS #
Behavior Based Safety	**Yes**	072	Management System Elements	**Yes**	000
Compliance Assurance	**Yes**	068	Managing Risks	**Yes**	086
Emergency Preparedness Plan	**Yes**	003	New Employee Orientation	**Yes**	025
Environmental Compliance	**Yes**	099	Regulatory Inspections	**Yes**	001
Housekeeping	**Yes**	021	Sanitation	**Yes**	030
Incident Reporting, Notifications & Investigation	**Yes**	049	Training	**Yes**	055
Injury and Claims Management	**Yes**	065	Vehicle Safety	**Yes**	057
Management of Change	**Yes**	098			

The following URS SMS only apply when specific activities are conducted by URS and URS subcontractor personnel. If you answer "Yes" to any of the questions below, review the SMS indicated and determine the appropriate steps necessary to ensure project compliance with the requirements.

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
Abrasive blasting or exposure to abrasive blasting media or waste?	☐	☐	006	Excavations or exposure to excavation hazards?	☐	☐	013
Potential exposure to ticks, snakes, poisonous plants, and other biological hazards?	☐	☐	047	Flammable or combustible materials used or stored which could constitute a fire hazard?	☐	☐	014,015
Use of aerial lifts?	☐	☐	007	Use of portable, gas powered, electric, and/or powder actuated hand tools?	☐	☐	016
Potential exposure to air contaminants in hazardous concentrations?	☐	☐	043, 042, 050	Hazardous materials shipping?	☐	☐	048
Asbestos surveys or abatement oversight?	☐	☐	008	Hazardous substances – chemical or health hazards?	☐	☐	002
Potential exposure to Bloodborne Pathogens (i.e. blood or other bodily fluids)?	☐	☐	051	Hazardous waste activities (investigative or remedial)?	☐	☐	017
Work on, above, immediately adjacent to, or within 6 feet of water that is more than 3 feet deep, or water where a drowning hazard	☐	☐	027	Heat stress potential to employees working in: • Hot environments; or • Impermeable Chemical Protective	☐	☐	018

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
exists?				Clothing?			
California job activities?	☐	☐	005	Heavy equipment in use at this project site?	☐	☐	019
Corrosive materials used or handled?	☐	☐	009	Hot work (welding, cutting, grinding)?	☐	☐	020
Confined space entries?	☐	☐	010	Industrial site access of any kind?	☐	☐	004
Cranes or hoists?	☐	☐	038,041	Lead exposures (lead paint removal, lead in dust, etc.)?	☐	☐	022
Demolition activities of any type of structures?	☐	☐	011	International travel?	☐	☐	036
Drilling activities?	☐	☐	056	Use of manbasket (Crane Suspended Personnel Platforms) for working at heights?	☐	☐	038, 041
Work on vessels (e.g., boats, watercraft, workboats, rescue boats, ships)?	☐	☐	053	Work on or near streets and/or roadways?	☐	☐	032
Exposure to chemical/physical/biological agents and/or activities that require Medical Surveillance? Examples would include exposures to; Noise, Asbestos, Lead, Hazardous Waste, High Altitudes, Carcinogens, Respirator Use.	☐	☐	024	Exposure to uncontrolled energy sources including electrical, fluid, pneumatic, fuel, steam, gravity, and hazardous material?	☐	☐	023
Noise exposures?	☐	☐	026	Potential exposure to subsurface and/or overhead utilities?	☐	☐	034
Ladder use?	☐	☐	028	Potential exposure to Unexploded Ordnance/Chemical Warfare agents?	☐	☐	039
Exposure to eye, head, hand, foot, or other hazards that require the use of personal protective equipment?	☐	☐	029	Underground Storage Tank investigation, removal, etc.?	☐	☐	033
Use of portable gauges (e.g., nuclear-density gauges) containing sealed radioactive source materials?	☐	☐	044	Work with live electrical systems?	☐	☐	012
Respiratory protection use – required and/or voluntary?	☐	☐	042	Work at altitudes greater than 7,000 feet (~ 2,100 meters)?	☐	☐	035
Scaffolding?	☐	☐	031	Working at heights of greater than 4 feet (1.22 meters) or 6 feet (1.83 meters) for construction/demolition?	☐	☐	040
Manual lifting and/or material handling?	☐	☐	069	Use of computer workstations for data entry, CADD, word processing, etc.?	☐	☐	054
Work on or near railroad transportation systems?	☐	☐	063	Exposure to recognized hand hazards?	☐	☐	064

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
Work at a client site requiring compliance with the OSHA Process Safety Management Standard?	☐	☐	058	Are employees or contractors required to operate Powered Industrial Vehicles (e.g., forklift trucks)?	☐	☐	070
Subcontractors to perform high risk activities (including drilling and excavation) with their own personnel and/or equipment?	☐	☐	046	Potential exposure to ionizing radiation?	☐	☐	052
Potential personnel exposure to temperatures below 32°F?	☐	☐	059	Down-hole geologic logging operations associated with geotechnical explorations or caisson inspections?	☐	☐	077
URS personnel newly hired or transferred from another position?	☐	☐	078	Potential inhalation of chromium VI (hexavalent chromium)?	☐	☐	083
Diving activities?	☐	☐	085	Working alone in an area where they cannot be seen/heard by another person?	☐	☐	084
Work at a site regulated by the Mine Safety Health Administration (MSHA)?	☐	☐	037	Hoists, elevators or conveyors being used?	☐	☐	045
Coordinate building material storage on-site?	☐	☐	062	Tunnels, shafts and caissons?	☐	☐	082
Operating and testing compressed air systems?	☐	☐	087	Signs, signals or barricades will be used onsite?	☐	☐	088
Temporary floors being created?	☐	☐	089	Project security will be required?	☐	☐	090
Concrete will be poured or handled?	☐	☐	091	Installation of cofferdams being performed?	☐	☐	092
Steel erection activities being performed?	☐	☐	093	Use or handling of explosive or blasting agents?	☐	☐	094
				Mining operations are conducted or controlled by URS?	☐	☐	096
Working conditions or schedule (more than 12 hours/day) may increase worker fatigue?	☐	☐	060	Exposure to hazards associated with moving parts of equipment and machinery?	☐	☐	061
Will an Automated External Defibrillator (AED) be available and potentially used?	☐	☐	079	Exposure to pandemic viruses?	☐	☐	097

ATTACHMENT D
SAFETY DATA SHEETS

This is designed to assist the Project Manager and Project Team in the identification of potential hazards (Hazard Analysis) and in the development of a Safe Work Plan (SWP). Hazard analysis is accomplished in a six-step process that allows the project team to focus resources on those major definable features of work. The process also provides a means for the project team to continually recognize, evaluate, and control all potential hazards that may confront the team in the field. ***Please note that any work covered by the HAZWOPER standard must have a site specific Health and Safety Plan prepared in accordance SMS 017 and SMS 086.***

Step 1: Scope of Work: Describe the overall scope and major definable features of work and the personnel involved.

Step 2: Emergency Contacts and Facilities: Provide all applicable emergency contacts and emergency facility information for project-related activities in Section 2.

Step 3: Applicable URS Safety Management Standards: The SMS Checklist is provided to assist the preparer in completing this section of the SWP.

Step 4: Job Safety Analysis: Use the Job Safety Analysis to identify specific hazards and control methods associated with each major definable feature of work. Hazards include those that could cause physical harm (e.g., fall hazards, excavation hazards, live electrical hazards) or those that require special consideration during the planning stages of the project due to regulatory and/or client constraints (i.e., potential exposure to airborne hazards that require respiratory protection, confined space entries, use of nuclear density gauges, hazardous material shipping/handling, etc.).

Step 5: Finalize the Safe Work Plan: The completed document must be approved by the Project Manager and an appropriate Safety Representative, Safety Manager, or safety professional (CIH or CSP). If the work activities covered under this SWP pose a high risk (e.g., working at heights, excavation, demolition, confined space entry, work over water or drilling), the completed document must be approved by a Safety Manager.

Step 6: Review Hazards And Control Measures Prior To Actual Field Work: Prior to conducting any field work, the project team should review the final Safe Work Plan as part of the initial site safety briefing. Additionally, the field team supervisor and all team members should participate in the completion of the Daily Tailgate Meeting Form prior to each day's work.

Project Name / Client: _____

Project Number: _____ Project Manager _____

Scope of Work	
Scope of Work and Major Tasks	
Job Location (Provide as much detail as possible)	
URS employees assigned	
Subcontractors and their scope of work	
Minimum Required Personal Protective Equipment	• Hard hat • Safety glasses with side shields • Safety toed boots/shoes • ANSI Class 2 high visibility apparel for work near roads or heavy equipment (Class 3 apparel is required for work at night or during periods of poor visibility) • Gloves specific for the task • Refer to JSA for additional PPE requirements for specific tasks Note: Downgrading/upgrading of the above mentioned PPE must be approved by the Safety Manager or designee.
Required Training	
Dates of the work	

Emergency Contacts and Facilities		
Fire		
Police		
Medical		
EMERGENCY Nearest **Hospital**	Name:	Phone Number:
Address & Directions to Nearest **Hospital** (Map Attached? ☐ YES ☐ NO)	Address:	Directions:
NON-EMERGENCY Nearest **Occupational Health Clinic**	Name:	Phone Number:
Address & Directions to Nearest **Occupational Health Clinic** (Map Attached? ☐ YES ☐ NO)	Address:	Directions:

Responsible Personnel			
Project Manager	Name	Office Phone #	Cell Phone #
Safety Representative	Name	Office Phone #	Cell Phone #
Safety Manager	Name	Office Phone #	Cell Phone #
Client	Name	Office Phone #	Cell Phone #
Subcontractor(s)	Name	Office Phone #	Cell Phone #
URS Occupational Nurse	Name	Office Phone #	Cell Phone #

Complete the SMS Checklist**. Print all applicable SMS and attach to this plan**

The following URS Safety Management Standards (SMS) generally apply to all field projects. Review the requirements of each SMS and determine appropriate steps to ensure project compliance with the requirements.

Determine the applicability of these SMS to your project	Yes	See SMS #	Determine the applicability of these SMS to your project	Yes	See SMS #
Behavior Based Safety	**Yes**	072	Management System Elements	**Yes**	000
Compliance Assurance	**Yes**	068	Managing Risks	**Yes**	086
Emergency Preparedness Plan	**Yes**	003	New Employee Orientation	**Yes**	025
Environmental Compliance	**Yes**	099	Regulatory Inspections	**Yes**	001
Housekeeping	**Yes**	021	Sanitation	**Yes**	030
Incident Reporting, Notifications & Investigation	**Yes**	049	Training	**Yes**	055
Injury and Claims Management	**Yes**	065	Vehicle Safety	**Yes**	057
Management of Change	**Yes**	098			

The following URS SMS only apply when specific activities are conducted by URS and URS subcontractor personnel. If you answer "Yes" to any of the questions below, review the SMS indicated and determine the appropriate steps necessary to ensure project compliance with the requirements.

SMS CHECKLIST

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
Abrasive blasting or exposure to abrasive blasting media or waste?	☐	☐	006	Excavations or exposure to excavation hazards?	☐	☐	013
Potential exposure to ticks, snakes, poisonous plants, and other biological hazards?	☐	☐	047	Flammable or combustible materials used or stored which could constitute a fire hazard?	☐	☐	014,015
Use of aerial lifts?	☐	☐	007	Use of portable, gas powered, electric, and/or powder actuated hand tools?	☐	☐	016
Potential exposure to air contaminants in hazardous concentrations?	☐	☐	043, 042, 050	Hazardous materials shipping?	☐	☐	048
Asbestos surveys or abatement oversight?	☐	☐	008	Hazardous substances – chemical or health	☐	☐	002

SMS CHECKLIST

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
				hazards?			
Potential exposure to Bloodborne Pathogens (i.e. blood or other bodily fluids)?	☐	☐	051	Hazardous waste activities (investigative or remedial)?	☐	☐	017
Work on, above, immediately adjacent to, or within 6 feet of water that is more than 3 feet deep, or water where a drowning hazard exists?	☐	☐	027	Heat stress potential to employees working in: • Hot environments; or • Impermeable Chemical Protective Clothing?	☐	☐	018
California job activities?	☐	☐	005	Heavy equipment in use at this project site?	☐	☐	019
Corrosive materials used or handled?	☐	☐	009	Hot work (welding, cutting, grinding)?	☐	☐	020
Confined space entries?	☐	☐	010	Industrial site access of any kind?	☐	☐	004
Cranes or hoists?	☐	☐	038,041	Lead exposures (lead paint removal, lead in dust, etc.)?	☐	☐	022
Demolition activities of any type of structures?	☐	☐	011	International travel?	☐	☐	036
Drilling activities?	☐	☐	056	Use of manbasket (Crane Suspended Personnel Platforms) for working at heights?	☐	☐	038, 041
Work on vessels (e.g., boats, watercraft, workboats, rescue boats, ships)?	☐	☐	053	Work on or near streets and/or roadways?	☐	☐	032
Exposure to chemical/physical/biological agents and/or activities that require Medical Surveillance? Examples would include exposures to; Noise, Asbestos, Lead, Hazardous Waste, High Altitudes, Carcinogens, Respirator Use.	☐	☐	024	Exposure to uncontrolled energy sources including electrical, fluid, pneumatic, fuel, steam, gravity, and hazardous material?	☐	☐	023
Noise exposures?	☐	☐	026	Potential exposure to subsurface and/or overhead utilities?	☐	☐	034
Ladder use?	☐	☐	028	Potential exposure to Unexploded Ordnance/Chemical Warfare agents?	☐	☐	039
Exposure to eye, head, hand, foot, or other hazards that require the use of personal protective equipment?	☐	☐	029	Underground Storage Tank investigation, removal, etc.?	☐	☐	033
Use of portable gauges (e.g., nuclear-density gauges) containing sealed radioactive source materials?	☐	☐	044	Work with live electrical systems?	☐	☐	012

SMS CHECKLIST

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
Respiratory protection use – required and/or voluntary?	☐	☐	042	Work at altitudes greater than 7,000 feet (~ 2,100 meters)?	☐	☐	035
Scaffolding?	☐	☐	031	Working at heights of greater than 4 feet (1.22 meters) or 6 feet (1.83 meters) for construction/demolition?	☐	☐	040
Manual lifting and/or material handling?	☐	☐	069	Use of computer workstations for data entry, CADD, word processing, etc.?	☐	☐	054
Work on or near railroad transportation systems?	☐	☐	063	Exposure to recognized hand hazards?	☐	☐	064
Work at a client site requiring compliance with the OSHA Process Safety Management Standard?	☐	☐	058	Are employees or contractors required to operate Powered Industrial Vehicles (e.g., forklift trucks)?	☐	☐	070
Subcontractors to perform high risk activities (including drilling and excavation) with their own personnel and/or equipment?	☐	☐	046	Potential exposure to ionizing radiation?	☐	☐	052
Potential personnel exposure to temperatures below 32°F?	☐	☐	059	Down-hole geologic logging operations associated with geotechnical explorations or caisson inspections?	☐	☐	077
URS personnel newly hired or transferred from another position?	☐	☐	078	Potential inhalation of chromium VI (hexavalent chromium)?	☐	☐	083
Diving activities?	☐	☐	085	Working alone in an area where they cannot be seen/heard by another person?	☐	☐	084
Work at a site regulated by the Mine Safety Health Administration (MSHA)?	☐	☐	037	Hoists, elevators or conveyors being used?	☐	☐	045
Coordinate building material storage on-site?	☐	☐	062	Tunnels, shafts and caissons?	☐	☐	082
Operating and testing compressed air systems?	☐	☐	087	Signs, signals or barricades will be used onsite?	☐	☐	088
Temporary floors being created?	☐	☐	089	Project security will be required?	☐	☐	090
Concrete will be poured or handled?	☐	☐	091	Installation of cofferdams being performed?	☐	☐	092

SMS CHECKLIST

Will project activities involve any of the following?	No	Yes	See SMS #	Will project activities involve any of the following?	No	Yes	See SMS #
Steel erection activities being performed?	☐	☐	093	Use or handling of explosive or blasting agents?	☐	☐	094
Exposure to pandemic viruses?	☐	☐	097	Mining operations are conducted or controlled by URS?	☐	☐	096
Working conditions or schedule (more than 12 hours/day) may increase worker fatigue?	☐	☐	060	Exposure to hazards associated with moving parts of equipment and machinery?	☐	☐	061
Will an Automated External Defibrillator (AED) be available and potentially used?	☐	☐	079				

JOB SAFETY ANALYSIS

For those major tasks identified in the Scope of Work, complete the Job Safety Analysis below. Use additional sheets, as necessary.

DATE:	☐ NEW	☐ REVISED	PAGE of
WORK ACTIVITY (Description):			

DEVELOPMENT TEAM	POSITION/TITLE	REVIEWED BY	POSITION/TITLE

JOB STEPS[1]	POTENTIAL HAZARDS[2]	HAZARD CONTROL PROCEDURES[3]

JOB STEPS[1]	POTENTIAL HAZARDS[2]	HAZARD CONTROL PROCEDURES[3]

Person drafting this Safe Work Plan:	Name	Signature	Title	Date
Project Manager Approval:	Name	Signature	Title	Date
Safety Approval *	Name	Signature	Title	Date

** Note: Approval must be by the designated Safety Representative, the Safety Manager, or any URS Certified Industrial Hygienist (CIH) or Certified Safety Professional (CSP). If the work activities covered under this SWP pose a high risk (e.g., working at heights, excavation, electrical, lockout/tagout, confined space entry, work on or over water, demolition, unexploded ordinance), the completed document must be approved by a Safety Manager.*

Plans are only valid for one year from the date of approval, unless otherwise noted.

1 Each Job or Operation consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the associated hazards in Column 2.

2 A hazard is a potential danger. What can go wrong? How can someone get hurt?

3 Aligning with the first two columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".

ATTACHMENT A
FORMS

Daily Tailgate Meeting Form –
SMS 086 AMER – Supplemental Information H or I
(Shall be completed daily prior to work activities)

ATTACHMENT B
SAFETY MANAGEMENT STANDARDS

Job Safety Analysis

For those major tasks identified in the Scope of Work, complete the Job Safety Analysis below. Use additional sheets, as necessary.

Site: _____ **Date:** _____

Prepared By: _____ **Approved By:** _____

Work Activity:

Key Hazard (s)	Training Requirements	Protective Equipment Use

Equipment Required	Other Hazard Control Measures

Work Activity:

Key Hazard (s)	Training Requirements	Protective Equipment Use

Equipment Required	Other Hazard Control Measures

Work Activity:

Key Hazard (s)	Training Requirements	Protective Equipment Use

Equipment Required	Other Hazard Control Measures

Work Activity:

Key Hazard (s)	Training Requirements	Protective Equipment Use

Equipment Required	Other Hazard Control Measures

URS	Safety Management Standard **JOB SAFETY ANALYSIS**	SMS 086 AMER Supplemental Information D Issue Date: August 2010

PROJECT NAME / LOCATION (City, State):			
DATE:		☐ **NEW** ☐ **REVISED**	**PAGE of**
WORK ACTIVITY (Description):			

DEVELOPMENT TEAM	POSITION/TITLE	REVIEWED BY:	POSITION/TITLE

MINIMUM REQUIRED PERSONAL PROTECTIVE EQUIPMENT
(SEE CRITICAL ACTIONS FOR TASK-SPECIFIC REQUIREMENTS)

☐ REFLECTIVE VEST ☐ HARD HAT ☐ SAFETY GLASSES ☐ PPE CLOTHING ☐ FACE SHIELD OR CHEMICAL GOGGLES ☐ WATERPROOF OR SPLASH APRON	☐ SAFETY SHOES ☐ Steel-toe ☐ Steel shank ☐ HEARING PROTECTION ☐ Plugs ☐ Muffs	☐ AIR PURIFYING RESPIRATOR required as specified in HSP and determined by SSO ☐ SUPPLIED AIR RESPIRATOR	☐ OUTER GLOVESas required by task-specific critical actions of JSA ☐ INNER OR LINER GLOVES ☐ OTHER All PPE must be worn as specified in task-specific critical actions of JSA

JOB STEPS[1]	POTENTIAL HAZARDS[2]	CRITICAL ACTIONS TO MITIGATE HAZARDS[3]

1 Each Job or Operation consists of a set of steps. Be sure to list all the steps in the sequence that they are performed. Specify the equipment or other details to set the basis for the associated hazards in Column 2.

2 A hazard is a potential danger. What can go wrong? How can someone get hurt? Consider, but do not limit, the analysis to: **Contact** - victim is struck by or strikes an object; **Caught** - victim is caught on, caught in or caught between objects; **Fall** - victim falls to ground or lower level (includes slips and trips); **Exertion** - excessive strain or stress/ergonomics/lifting techniques; **Exposure** - inhalation/skin hazards. Specify the hazards and do not limit the description to a single word such as "Caught".

3 Aligning with the first two columns, describe what actions or procedures are necessary to eliminate or minimize the hazards. Be clear, concise and specific. Use objective, observable and quantified terms. Avoid subjective general statements such as, "be careful" or "use as appropriate".

HAZARD EVALUATION

Site: _____ **Date:** _____

Prepared By: _____ **Approved By:** _____

Principal Steps	Potential Safety/Health Hazards	Initial RAC	Control Measures	Final RAC
List principle steps involved in the activity	Identify each safety or health hazard	1, 2, or 3	Identify engineering and administrative controls and any specific PPE that is required	1 required
STEP 1 –				
STEP 2 –				
STEP 3 –				
STEP 4 –				
STEP 5 –				
STEP 6 –				

SPECIAL REQUIREMENTS

Step #	Equipment to be Used	Inspection requirements	Training Requirements
	List equipment to be used in work activity	List inspection/permit requirements for work activity	List training requirements including hazard communication
1			
2			
3			
4			
5			
6			

TEAM MEMBER SIGNATURES

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

INSTRUCTIONS AND RISK ASSESSMENT MATRIX

Hazard Evaluation – Identify principle steps of the task. Identify potential safety/health hazards for each step and determine initial Risk Assessment Code (RAC) using the matrix provided below. Identify control measures including PPE for each hazard. Re-evaluate hazard potential and assign a final RAC. If the final RAC is a 2 or 3 (medium/high risk), additional hazard controls shall be identified and applied until the final RAC is reduced to 1(low risk). Add additional rows as required to cover all major steps/aspects of the activity.

Special Requirements – Identify equipment to be used including specific PPE required. Identify inspection requirements such as competent person, permit issue, documented task hazard analysis, etc. Identify training requirements such as hazard communication, scaffold user, fall protection, etc.

High ← → Low

	Hazard Likelihood	Hazard Severity				
		Catastrophic - May result in multiple fatalities, equipment or property destroyed.	**Hazardous** - May result in multiple serious injuries/illnesses, limited fatalities. Operations unable to perform or complete activities/missions. Serious impact to the community or customer.	**Major** - May result in serious occupational injury/illness. Reduction in ability to deal with adverse operating conditions. Impact to community or customer.	**Marginal** – May result in a minor injury/illness to be treated with first aid. Nuisance to operations. Use of emergency procedures. Minor incidents.	**Negligible** – Minimal threat to health, safety, security or the environment.
High	**Frequent** Likely to immediately occur, highly probable during task/activity	3	3	3	2	2
↑	**Probable** Quite likely to occur, may occur during task/activity	3	3	2	2	1
	Occasional May occur in time or during the task/activity	3	2	2	1	1
↓	**Remote** Seldom occurs, unlikely to occur during task/activity	2	2	1	1	1
Low	**Improbable** Highly unlikely to occur, but possible during task/ activity	2	1	1	1	1

RAC 3 (red) are high risk , RAC 2 (yellow) are medium risk, and RAC 1 (green) are low risk

Risk Assessment Code Matrix

Task Safety Analysis

INSTRUCTIONS: Complete and attach Task Safety Analysis to each job order. Company personnel performing the work should participate in the task hazard analysis and completion of this form.

Reference Number: ef _____

Task (Identify specific work requirements)

Hazards (Describe potential hazards associated with the work activity)

Specialized Operations (require additional hazard assessments, specialized training, permits, etc)

- ☐ Asbestos/Lead
- ☐ Confined Space Entry
- ☐ Crane Rigging
- ☐ Digging or Trenching
- ☐ Energized Electrical
- ☐ Fall Arrest/Restraint
- ☐ Flight/Flightline Ops
- ☐ Hazardous Waste
- ☐ Lockout/Tagout
- ☐ Scaffolding
- ☐ Welding (Hot Work)
- ☐ Other _____

Personnel Involved (list personnel assigned to task and designate one person in-charge)

Person In-Charge: _____

Workers: _____

_____

_____

Special Items of Concern (address under additional protective measures/work practices below)

- ☐ Animal/Insect/Reptile
- ☐ Hazardous Material
- ☐ Material Handling/Lifting
- ☐ Multi-Employer Site
- ☐ Remote Operations
- ☐ Temperature Extremes
- ☐ Site Control/Access
- ☐ Traffic Hazards
- ☐ Others _____

Personal Protective Equipment Requirements (check all that apply and list type and rating in space provided)

- ☐ Body: _____
- ☐ Eye: _____
- ☐ Face: _____
- ☐ Foot _____
- ☐ Hand: _____
- ☐ Head _____
- ☐ Hearing: _____
- ☐ Respiratory: _____
- ☐ Other: _____

Additional Protective Measures/Work Practices Required

Equipment/Tools Required

Person Completing Task Safety Analysis

Name: _____ Title: _____ Date: _____

URS	Safety Management Standard **JOB SAFETY ANALYSIS**	SMS 086 AMER Supplemental Information G Issue Date: January 2011

Project Number/Name:	
Job/Task Description **(What am I about to do?):**	

List the steps required to perform the task (What am I about to do, step-by-step?)	**Hazards** (What could go wrong?)	**Controls** (What can be done to make it safer?)

Staff briefed on JSA (What have I done to communicate the hazards?):

Analysis Prepared By: Date:

URS	Safety Management Standard **Daily Tailgate Meeting Form #1**	SMS 086 AMER Supplemental Information H Issue Date: January 2011 Revision 1: March 2012

Job Location:		Date:	
URS Site Supervisor:		Person conducting Tailgate Meeting:	

List activities to be performed today:		
Permitted Activities (specific permit to be competed):	☐ Not Applicable ☐ Confined Space Entry (SMS 010) ☐ Work on Live Electrical Systems (SMS 012) ☐ Hot Work (SMS 020)	☐ Excavation/Trenching (SMS 013) ☐ Hoisting/Rigging (SMS 038) ☐ Lockout/Tagout (SMS 023) ☐ Radiation Work (SMS 052) ☐ Borehole Entry (SMS 077)

Muster Point:		Spill Kit Location:	
First Aid Kit Location:		Fire Extinguisher Location:	

Has the Site Manager / Owner been notified of our activities?	☐ Yes ☐ No ☐ N/A
Was the Site Manager / Owner present during pre-work site walk?	☐ Yes ☐ No ☐ N/A
Have all personnel reviewed and understand the site-specific safety plan?	☐ Yes ☐ No*
Are current JSAs in place for each of the tasks to be performed today and understood by all site staff?	☐ Yes ☐ No*
Does each subcontractor have JSAs for their activities?	☐ Yes ☐ No* ☐ N/A
Has a site walk been performed to identify additional hazards?	☐ Yes ☐ No*
Have any newly identified hazards been documented on the JSA?	☐ Yes ☐ No* ☐ N/A
Have all members of the work team confirmed understanding of the work, hazards, and controls/ mitigation?	☐ Yes ☐ No*
Have work areas been properly cordoned-off to protect workers, site staff, and the public?	☐ Yes ☐ No* ☐ N/A
Have equipment checks been completed, documented, and reviewed?	☐ Yes ☐ No* ☐ N/A
Do all site workers understand injury/ intervention reporting requirements including immediately notifying the URS Site Supervisor of any injury near miss, unsafe condition or hazard observation?	☐ Yes ☐ No*
Personnel are wearing hardhat, high visibility vest, safety glasses, and safety shoes" for all work outside of vehicles and field offices?	☐ Yes ☐ No*

** if No, then work cannot be performed until corrective action is completed and documented.*

Topics covered in today's tailgate meeting including specific JSAs:	

Other Items Discussed Today:	**Stop Work Authority & Obligation**
	* All employees will stop the job any time anyone is concerned or uncertain about safety. * All employees will stop the job if anyone identifies a hazard or additional mitigation not recorded on the JSA. * All employees will be alerted to any changes in personnel or conditions at the worksite. * All employees will stop the job and reassess a task, hazards, and mitigations, and then amend the JSA as needed.

URS	Safety Management Standard **Daily Tailgate Meeting Form #1**	SMS 086 AMER Supplemental Information H Issue Date: January 2011 Revision 1: March 2012

SITE WORKERS (including URS Contractors and Subcontractors): By signing here, you are stating the following:
* You have been involved in reviewing the JSAs and understand the hazards and control measures associated with each task you are about to perform.
* You understand the permit to work requirements applicable to the work you are about to perform (if it includes permitted activities).
* You are aware that no tasks or work (that is not risk-assessed) is to be performed.
* You are aware of your authority and obligation to 'Stop Work'.

I arrived and departed fit for duty:
* You are physically and mentally fit for duty.
* You are not under the influence of any type of medication, drugs, or alcohol that could affect your ability to work safely.
* You are aware of your responsibility to immediately report any illness, injury (regardless of where or when it occurred), or fatigue issue you may have to the URS Site Supervisor.
* You signed-out uninjured unless you have otherwise informed the URS Site Supervisor.

Print Name & Company	Signature	Initials & Sign In Time	Initials & Sign Out Time
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit
		In & Fit	Out & Fit

(Attach additional Site Worker sign-in/out sheets if needed)

SITE VISITOR / SITE REPRESENTATIVE

Name	Company Name	Arrival Time	Departure Time	Signature

To be completed once field activities for the day have been concluded:

Were there any Incidents, Near Misses, Potential Incidents, or Positive Interventions today?	☐ Yes ☐ No	If yes, details:
Were there any 'Stop Work' interventions?	☐ Yes ☐ No	If yes, details:
Were there any areas for improvement noted?	☐ Yes ☐ No	If yes, details:
Has the Site Manager/Owner conducted a post-work site walk and/or are they happy with the way you left the site (including the location of waste drums or equipment)?	☐ Yes ☐ No	If no, details:
At the conclusion of the day, the job site is being left in a safe condition and there were no reports of injury or first aid.	☐ Yes ☐ No	URS Site Supervisor Signature:

URS	Safety Management Standard **Daily Tailgate Meeting Form #2**	SMS 086 AMER Supplemental Information I Issue Date: January 2011

Date:	Time:	Job number:
Client:		
Site location:		
Task:		
SAFETY TOPICS PRESENTED		
Safety observations / lessons learned from previous day:		
Physical hazards and controls:		
Chemical hazards and controls:		
Biological hazards and controls:		
Job safety analysis review:		
Other topics:		
Emergency procedures review:		
Remember that all employees have the responsibility to stop work if safety risks are identified. Report all safety observations and near miss events. Practice 4sight (What am I about to do; What can go wrong; What can be done to make is safer; and What have I done to communicate the hazard(s) to others?).		
ATTENDEES		
Printed Name	**Signature**	**Company/Office**

Meeting Conducted By:
Signature:

URS SAFETY MANAGEMENT STANDARD
Compressed Air Systems and Testing

1. Applicability

This standard applies to URS Corporation and its subsidiary companies on construction projects where air compressors are used or pneumatic testing with compressed air is performed.

2. Purpose and Scope

The purpose of this standard is to require the safe use of compressed air systems, including air compressors, during both normal operations and when used as a tool in the pneumatic testing of constructed piping systems.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

4. Requirements

A. Air Compressor Safety

1. Do not modify air compressors without prior written authorization from the manufacturer.

2. Check couplings daily before use. Use only couplings designed for compressed air services. All hose couplings shall be provided with a positive locking device (whip checks between hoses and on all couplers).

3. Check hoses daily before use. When using compressed air, use only hoses designed for compressed air service. Take precautions that include the following:

    a. Check all hoses for cuts, breaks, and loose connections before assembling the system.

    b. Do not crimp, couple, or uncouple hoses while pressurized.

    b. Unless the equipment has quick-change connectors (with internal check valves), shut off air at the air supply valve ahead of the hose before breaking the connection.

    c. When possible, route airlines and hoses through areas with little or no vehicular or pedestrian traffic. Do not lay air hoses across roadways unless they are protected from traffic.

Suspend airlines and hoses crossing pedestrian walkways at least 7 feet (2.13 meters) above the ground or floor, or provide trip protection.

d. Provide all hoses exceeding ½ inch (1.25 cm) inside diameter with a safety device (an excess flow valve) at the source of supply or branch line to reduce pressure in case of hose failure. Equip all air hose connections over 1 inch (2.54 centimeters) in diameter with safety chains or an equivalent restraint that is secured when the connection is made.

e. Hoses equipped with special connections require special tightening techniques or equipment. One example is hammer union connection, which will be tightened with a hammer. Another example is spanner wrench connections, which will be tightened with a spanner wrench. Do not tighten these or similar connections by hand.

f. Secure hose connections before turning on air valves.

g. Do not direct air hoses at personnel.

h. Ensure that air hose connections that are designed to accept a pin are securely pinned in the holes provided to prevent disconnection.

i. When hanging an air hose in the vertical position, support hose connections above and below the connections to prevent the weight of the hose from pulling the connection apart, or pulling the connection out of the hose.

4. Compressed air for cleaning will not exceed 30 pounds per square inch (psi) [2.11 kilograms per square centimeter (kg/cm^2]. Use monogoggles or a face shield over safety glasses when cleaning with compressed air. Do not use compressed air to clean harmful dust or fibers that could be dispersed such as lead or asbestos.

5. Equip blowguns with an automatic shut off so that if the operator releases the blowgun, it shuts off (e.g., kill switch, dead man switch).

6. Equip each compressor with a properly sized relief valve maintained according to local, state, and federal regulations.

7. Provide and wear hearing protection if the air compressor and/or the compressed air create a noise level over 85 decibels.

8. Shut off air compressors and provide a fire extinguisher shall be accessible during refueling.

B. Pneumatic Testing with Compressed Air

Pneumatic testing of constructed systems uses pressurized air. At pressures most frequently encountered on our projects, the amount of energy contained in air is more than 1,000 times the energy contained in water at the same pressure and volume. For this reason, hydraulic pressure testing is by far the safest method and should be used whenever possible. Pneumatic testing is potentially dangerous and should be carried out only in circumstances where the use of this method is unavoidable, and when the testing procedure has been approved by the Project Safety Manager.

This document is intended to provide advice on the precautions necessary during pneumatic testing to avoid conditions likely to result in danger to personnel in the field. The advice given, however, is limited to general principles and does not attempt to cover in detail the wide range of conditions that may arise. The test system volume, test pressure, the type of components, test temperature, and the materials of construction are factors that have a bearing on the degree of danger involved, and the precise nature of the precautions to be taken.

Where practical, take steps to reduce to a minimum the internal volume of the system to be tested. This has the effect of reducing the energy stored in the system while under pressure, thereby reducing the consequences in the event of component failure. This can often be achieved by breaking a large system down into smaller systems. Care should be taken to ensure that openings in the test unit or system are adequately secured and sealed before starting a test.

1. Approval

   a. Approval for pneumatic testing will be based on a review of the submitted test documents to determine the dangers involved in each test. In most cases, the Project Safety Manager will need to examine the proposed test installation before approving a pneumatic test.

b. The Project Safety Manager may stipulate additional safety requirements for a test that is not covered by this procedure, or for any special site conditions that may be encountered.

c. If test pressure is greater than 200 pounds per square inch gauge (psig) (14.1 kilograms per square centimeter gauge [kg/cm^2g]), test shall not be performed without the approval of both the Project Engineer and the Project Safety Manager.

2. Notification

The Project Safety Manager must be notified by the Test Engineer prior to any pending pneumatic test(s), and sufficiently in advance of the proposed test to allow familiarization with the test conditions in each circumstance, and to expedite timely approval. The test package will be reviewed by the Project Safety Manager or his designee. Each test package will contain the following:

a. Type of components being tested

b. Materials of construction

c. Test system volume

d. Test pressure (full and reduced for examination; should be less than 200 psig (14.1 kg/cm^2g))

e. Test temperature (ambient at test unit maximum and minimum)

f. Testing medium

g. Test location

h. Any applicable special site conditions and/or circumstances that might be applicable to the particular package.

3. Codes and Specifications

Perform pneumatic testing in accordance with American Society of Mechanical Engineers (ASME) B31.3, Compressed Gas Association (CGA) C10, and the project specifications.

4. Responsibility for Monitoring Safety Procedures

   Designate a Test Engineer to coordinate and monitor each pneumatic test or group of tests. The Test Engineer will also be responsible for, but not limited to, the following:

   a. Coordinating test personnel.

   b. Making personnel aware of the test before it begins, and the hazards involved in conducting the test.

   c. Obtaining approval of the necessary testing documents.

   d. Ensuring that all safety devices and test instruments have been properly sized and calibrated, and are in place for the test.

   e. Reviewing and implementation of the required safety procedures for each test.

   f. Notifying all required witnesses in time for the test.

   g. Verifying that QA/QC has accepted the welds on the system.

   h. Protecting adjacent circuits designed for lower pressure from possible over-pressure.

   i. Checking the material used to connect the test medium to the circuit being tested.

   j. Maintaining an accurate record of the test and obtaining signatures of the test witnesses.

5. Limits for Pneumatic Testing

   The safety limits for pneumatic testing are difficult to define because the magnitude of a catastrophic failure is indefinable in exact terms until after it has occurred. The extreme cautions necessary to provide complete protection to personnel and property during a pneumatic test are generally not practical (i.e., build special test bunkers around the test unit, or not allowing personnel within 10,000 feet [3,050 meters] of the test, etc.). Some compromises may be necessary in conducting a pneumatic test while providing maximum protection to life and property without causing project costs and schedules to become unreasonable.

Discussion by all the parties involved based on good judgment and some reasonable guidelines is mandatory prior to undertaking any pneumatic test. It should be remembered that the degree of hazard in pressure systems is proportional to the amount of energy stored, not the amount of pressure present. Therefore, low-pressure, high-volume systems can be as hazardous to personnel as high-pressure systems.

6. Pressure-Relieving Devices

    a. The Test Engineer must ensure that a pressure relief valve (with the discharge directed away from personnel) is fitted in the supply line between the test assembly and the compressor. The valve must relieve at a pressure approximately 10 percent greater than the test pressure.

    b. The Test Engineer, prior to the test, must verify the relief valve set point. The inlet diameter of the relief valve must be at least 5 percent greater than the diameter of the pressure line from the compressor to the test unit or assembly. A properly designed rupture disk for the appropriate pressure may be used in place of the relief valve, using the same restrictions as noted above.

7. Testing Procedure

    a. Pneumatic test below 50,000 P.V. limit (pressure [P] in pounds per square inch gauge [psig] times volume [V] in cubic feet) and less than 200 psig (14.1 kg/cm^{2}g) can be completed during the work shift with the following precautions:

        i. Notify work crews in the area of the test.

        ii. Do not allow welding or burning within 2 feet (0.61 meter) of the line under pressure.

        iii. Place “DO NOT OPERATE” tags on all boundary valves.

        iv. Place red barricade tape (DANGER – DO NOT ENTER) at test station areas, secondary gauge area, and “high traffic” areas. After the test is complete and the pressure is removed from the test system, remove the signs and barricade.

b. Tests that have a pressure greater than 200 psig and below 50,000 P.V. will require the following precautions:

   i. The Project Safety Manager will walk the system before the 200 psig (14.1 kg/cm^{2}g) limit is exceeded. The walk-down will be with a representative of the test crew and will include, but not be limited to, checks for tags, blinds, proper instruments and their placement, employees working in the area, and flagging or barricades.

   ii. Place “DO NOT OPERATE” tags on all boundary valves.

   iii. Place red barricade tape (DANGER – DO NOT ENTER) a minimum of 50 feet (15 meters) from the test area with signs signifying pneumatic testing.

   iv. No one, except the test crew checking the system and the Project Safety Manager or his designee, will be allowed to violate a pneumatic test barricade.

   v. Use monitors, as necessary, to ensure the barricades are not violated.

5. Documentation Summary

The following documentation must be maintained in the project files:

A. Tests of safety valves on air receivers.

B. Test packages indicating components being tested, materials of construction, and test conditions.

C. Written approvals for pneumatic testing by Project Safety Manager and Test Engineer (if test pressure greater than 200 psig (14.1 kg/cm^{2}g) is used).

D. Test record and results, including signatures of test witnesses.

6. Resources

A. U.S. Occupational Safety and Health Administration (OSHA) Construction Standard – Air Receivers – 29 Code of Federal Regulations (CFR) 1926.306ASME B.31.3 – 2002, Process Piping

B. CGA C-10 – Recommended Procedures for Changes of Gas Service for Compressed Gas Cylinders

URS SAFETY MANAGEMENT STANDARD
Signs, Signals, and Barricades

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where signs, signals, tags, and/or barricades are used as methods of accident prevention.

2. Purpose and Scope

The purpose of this standard is to identify those situations where the application of signs, signals, tags, and/or barricades may assist in the control of accidents on URS Corporation project sites.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site or project location.

4. Requirements

A. Definitions

1. Barricade – An obstruction to prevent the passage of persons or vehicles

2. Signs – A display warning of hazards, temporarily and permanently affixed or placed, at locations where said hazards exist

3. Signals – Moving signs, provided by workers such as flaggers, or by devices, such as flashing lights, to warn of possible or existing hazards

4. Tags – Temporary signs, usually attached to a piece of equipment or part of a structure, to warn of existing or immediate hazards.

B. Types of Signs and Tags

1. Danger Signs

a. Danger signs will be used where an immediate hazard exists.

b. Danger signs will have red as the predominant color for the upper panel, white lettering spelling “Danger” in the upper panel, black outline on the border, and a white lower panel for additional sign wording (in black).

2. Caution Signs

    a. Caution signs will be used only to warn against potential hazards or to caution against unsafe practices.

    b. Caution signs will have yellow as the predominant color, black upper panel and borders, yellow lettering spelling “Caution” on the black upper panel, and the lower yellow panel for additional sign wording. Black lettering will be used for additional wording.

3. Exit Signs

    Exit signs, when required, will be lettered in legible red letters, not less than 6 inches (15.25 centimeters [cm]) high, on a white field. The principal width of the lettering will be at least three-quarters of an inch (1.9 cm) in width. Exit signs must also meet all state and local requirements.

4. Safety Instruction Signs

    Safety instruction signs, when used, will be white with a green upper panel with white letters to convey the principal message. Any additional wording on the sign will be black letters on the white background.

5. Directional Signs

    Directional signs other than automotive warning and temporary traffic control signs specified in Paragraph 6 of this section will be white with a black panel and a white directional symbol. Any additional wording on the sign will be black letters on the white background.

6. Traffic Signs

    a. Construction areas will be posted with legible traffic signs at points of hazards.

    b. Traffic control signs or devices used for protection of construction personnel will conform to the Manual on Uniform Traffic Control Devices (MUTCD). Refer to SMS 032 – Work Zone Traffic Control, for additional information.

7. Accident Prevention Tags

   Accident prevention tags will be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc. They will not be used in place of, or as a substitute for, accident prevention signs.

8. Additional Rules

   Signs and tags will be visible at all times when work is being performed, and will be removed or covered promptly when the hazards no longer exist.

C. Signaling

1. When operations are such that signs and barricades do not provide the necessary protection on or adjacent to a highway or street, flaggers or other appropriate traffic controls will be provided.

2. Signaling directions by flaggers will conform to the MUTCD – Section 6E (2003), unless specific state regulations are applicable.

3. Hand signaling by flaggers will be by use of sign paddles meeting MUTCD requirements – Section 6E.03 (2003) or red flags at least 24 inches square. Signs are preferred over flags because they give more positive guidance to the motorist. In periods of darkness, red or white flashing lights on the sign paddles can be used to increase conspicuity. When flashing lights are used, the flash rate will be no less than 50 and no more than 60 flashes per minute.

4. Flaggers will be provided with and will wear apparel in accordance with SMS 029 – Personal Protective Equipment.

D. Barricades

1. Barricades must conform to the MUTCD – Section 3F (2003), unless specific state regulations are applicable.

2. If cones or tubular markers are used, they must be predominantly orange and made of a material that can be struck without causing damage to the impacting vehicle. Cones and tubular markers must be a minimum of 28 inches (71 centimeters) in height for all road applications.

3. Develop a barricade plan if a site or facility will routinely use barricades.

5. Documentation Summary

The following documentation must be maintained in the project file:

A. Barricade plans, as applicable.

6. Resources

A. Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices (2003)

B. American National Standards Institute (ANSI) 107-2004 – Standard for High-Visibility Safety Apparel

C. ANSI Z535.2-2006 – Environmental and Facility Safety Signs

D. ANSI Z535.4-2006 – Safety Tags and Barricade Tapes

E. U.S. Occupational Safety and Health Administration (OSHA) Construction Standard – Signs, Signals and Barricades – 1926 Subpart G

F. SMS 029 – Personal Protective Equipment

G. SMS 032 – Work Zone Traffic Control

URS SAFETY MANAGEMENT STANDARD

Concrete

1. Applicability

This standard applies to URS Corporation and its subsidiary companies where concrete is poured or handled. This standard also applies to Portland cement, mortar, stucco, and other applications of cementitious products.

2. Purpose and Scope

The purpose of this standard is to ensure the safety of URS Corporation personnel during the installation of concrete forms, pouring of new concrete structures, or installation of preformed concrete structures.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site or project location.

4. Requirements

A. General

1. Provide employees working more than 6 feet (1.8 meters) above any adjacent working surfaces, placing and tying reinforcing steel in walls, piers, columns, etc., with a safety harness or equivalent protective device in accordance with 29 Code of Federal Regulations (CFR) 1926.500 Subpart M.

2. No employees will be permitted to work above an impalement hazard (e.g., rebar) unless it has been protected to eliminate the hazard of impalement.

3. Prohibit riding of concrete buckets for any purpose. Keep vibrator crews out from under concrete buckets suspended from cranes or cableways.

4. Provide an employee with a whistle or other sound-producing device to watch for approaching buckets and warn employees to stand clear while the concrete is dumped.

5. Where practical, use tag lines to control and position suspended concrete buckets.

6. Provide PumpCrete™ or similar systems using discharge pipes with pipe supports designed for 100 percent overload. Provide compressed-air hoses in such systems with positive fail-safe joint connectors, or otherwise secure them to prevent separation of sections when pressurized.

7. All nozzle men applying cement, air, sand and water through a pneumatic or high-pressure hose must wear protective head, hand, and face equipment.

8. All concrete workers must wear protective clothing, including safety glasses; rubber boots, and gloves, to reduce the danger of concrete burns. Refer to SMS 029 – Personal Protective Equipment for additional information.

9. Wear appropriate personal protective equipment when using tools and equipment associated with concrete masonry work.

10. Finishers must wear safety glasses and face shields when chipping, wire brushing, or using power-impact or rotary tools in patching concrete.

11. In the pour area, or any area where dry Portland cement is being handled or mixed with water or aggregate, provide means to flush eyes (e.g., eyewash station, bottles) for 15 minutes. If the material contacts skin, wash skin with water and ph-neutral soap or mild detergent.

12. Provide temporary winter protection enclosures with adequate ventilation, lighting, and fire protection.

13. Equip pavers with a loud warning bell or horn that sounds when a paver moves ahead or the bucket is run out.

14. Provide conical or tapered bottoms with mechanical or pneumatic means of starting the flow of materials for bulk storage bins, containers, or silos.

15. Construct handles on bull floats used where they may contact energized electrical conductors of nonconductive material, or insulate with a nonconductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

16. Do not extend handles of buggies beyond the wheels on either side of the buggy. Installation of knuckle guards on buggy handles is recommended.

17. Provide concrete buckets equipped with hydraulic or pneumatically operated gates with positive safety latches or similar safety devices installed to prevent premature or accidental dumping. The buckets will be designed to prevent excess aggregate and loose material from accumulating excessively on the top and sides of the bucket.

18. Block the wheels of ready-mix trucks and set the brakes to prevent movement when discharging on a slope.

19. Properly guard exposed gears, chains, and rollers of mixers.

20. Secure sections and ends of tremies, elephant trunks, and similar concrete conveyances with wire rope, chain, or similar safe fastener.

21. Equip powered and rotating-type concrete troweling machines that are manually guided with a control or dead-man switch that will automatically shut off the power whenever the operator removes his hands from the equipment handles.

22. The use of ready-mix concrete trucks may create traffic problems, which proper planning and care can lessen and/or eliminate. Control backing operations through the use of a properly trained and attired flag person/spotter who will be positioned so that they have a clear view of the area behind the truck, as well as be clearly visible to the truck driver. Route movement of personnel and project equipment away from this area so that they do not have to cross the truck's means of egress.

B. Forms and Shoring

1. The completed shoring setup should be a homogenous unit or units. For example, do not use tubular steel shoring in combination with adjustable wood or jack-type shoring.

2. Ensure that formwork and shoring are be designed, erected, supported, braced, and maintained so that they will safely support all vertical and lateral loads that may be imposed upon them during placement of concrete.

3. Ensure that drawings or plans showing the jack layout, formwork, shoring, working decks, and scaffolding are available at the jobsite.

4. Remove and stockpile stripped forms and shoring promptly after stripping in all areas in which persons are required to work or pass. Remove and dispose of adhered concrete from forms and planking before stacking when possible to prevent generation of concrete dust. Pull, cut, or remove by other means any protruding nails, wire ties, and other form accessories not necessary to subsequent work to eliminate the hazard.

5. Do not impose any construction loads on the partially completed structure unless such loading has been considered in the design and approved by the engineer-architect.

6. When temporary storage of reinforcing rods, material, or equipment on top of formwork becomes necessary, strengthen these areas to meet the intended loads.

7. Provide sills for shoring that are sound, rigid, and capable of carrying the maximum intended load.

8. Inspect all shoring equipment prior to erection to determine that it is as specified in the shoring layout. Do not use any equipment for shoring that is found to be damaged.

9. Inspect erected shoring equipment immediately prior to, during, and immediately after the placement of concrete. Immediately reinforce or re-shore any shoring equipment that is found to be damaged or weakened.

10. Provide re-shoring when necessary to safely support slabs and beams after stripping, or where such members are subjected to superimposed loads due to construction work done.

11. Build shoring or form systems in accordance with the URS SMS governing excavation procedures when working in excavations over 5 feet (1.5 meters) deep.

C. Tube and Coupler Shoring

1. Use tubular steel frames for shoring layouts in accordance with each manufacturer's recommended safe working load based on tests conducted according to the "Recommended Procedure for

Compression Testing Scaffolds and Shores" by the Scaffolding and Shoring Institute.

2. Prior to erection of steel frame shoring, conduct a thorough inspection to ensure material is not heavily rusted, bent, dented, or otherwise damaged or defective.

3. Provide final adjustment of adjustment screws prior to placement of concrete. Keep screw extensions to a minimum for maximum load carrying capacity.

4. Plan, design and construct any form, regardless of size, with an adequate factor of safety.

5. Do not use couplers (clamps) if they are deformed, broken, have defective or missing threads on bolts, or other defects.

6. Use material for the coupler (clamps) that is of a structural type such as drop forged steel, malleable iron, or structural grade aluminum. Do not use gray cast iron.

7. When checking the erected shoring towers with the shoring layout, confirm that the spacing between posts does not exceed that shown on the layout; check all interlocking of tubular members and tightness of couplings.

8. Confirm that all base plates, shore heads, extension devices, or adjustment screws are in firm contact with the footing sill and the form material, and are snug against the posts.

D. Vertical Slip Forms

1. Ensure that the steel rods or pipe on which the jacks climb or by which the forms are lifted are designed specifically for that purpose. Brace any rods not encased in concrete.

2. Position jacks and vertical supports in such a manner that the vertical loads are distributed equally and do not exceed the capacity of the jacks.

3. Provide the jacks or other lifting devices with mechanical dogs or other automatic holding devices to provide protection in case of failure of the power supply or the lifting mechanism.

4. Lift steadily and uniformly, and do not exceed the predetermined safe rate of lift.

5. Provide lateral and diagonal bracing of the forms to prevent excessive distortion of the structure during the jacking operation.

6. During jacking operations, the form structure must be maintained in line and plumb.

7. Provide all vertical lift forms with scaffolding or work platforms completely encircling the area of placement.

E. Pre-Stressed and Post-Stressed Concrete

1. Keep tools and strand devices clean and in good repair to prevent failure.

2. Do not permit employees to stand in line or directly over the jacking equipment during tensioning operations. Provide signs and barriers to prevent employees from working behind the jack. Shield all jacking equipment and attachment pieces to protect the workers performing the stressing operations.

3. Carefully stack stressed members on a level base.

4. Pre-stressed girders and beams are often unstable when tipped; brace during transportation and handle in such a way to keep the member upright.

5. Handle stressed members at pick points specifically designated on the manufacturer's drawings, and with the lifting devices recommended by the manufacturer or the engineer in charge.

6. Do not allow personnel under stressed members during lifting and erection.

7. Keep anchor(s) turned up close to the anchor plate during jacking operations of any tensioning element(s).

8. Frequently inspect pulling heads, bolts, and hydraulic rams for indication of fatigue, and the threads on bolts and nuts for diminishing cross section.

F. Pre-Cast Concrete and Tilt-Up Operations

1. Do not permit employees under pre-cast walls, panels, or sections while they are being lifted or tilted into position.

2. Use properly attached tag lines, especially if the load is to be lifted and moved into place.

3. Adequately brace pre-cast walls or vertical concrete panels during construction.

4. Securely attach braces or shores to the concrete member.

5. Ensure lifting inserts on or in tilt-up pre-cast concrete members are capable of supporting at least two (2) times the maximum intended load applied or transmitted to them.

6. Ensure lifting hardware can support at least five (5) times the maximum intended load applied or transmitted to the lifting hardware.

G. Masonry Work

1. Handle and store masonry building materials in accordance with URS Safety Management Standards for material handling; scaffolds for masonry construction must be built in accordance with the URS Safety Management Standard for scaffolding.

2. Equip power saws for cutting brick or stone with dust collectors or wet cutting methods to control dust. The exhausted dust will be directed away from vehicle or personnel traffic. If brick, stone, or mortar contains more than 1 percent crystalline silica, respirators may be required until air sampling determines that the task does not constitute a potential respiratory hazard.

3. Employees cutting brick or stone must wear approved safety goggles or face shields over safety glasses, and hearing protection as appropriate for the task noise levels.

4. Keep mortar tubs free from ragged edges that may cut the hands, legs, and arms of bricklayers.

5. Properly brace all walls or vertical surfaces during construction to withstand wind and other pressure.

6. Dried mortar will not be dropped from planks, crushed by vehicles, or otherwise handled in such a manner as to create a dust hazard.

7. Masons and other workers with dusty clothes must remove their outer clothing or otherwise remove masonry-generated dust from their clothes prior to leaving the work area for breaks or end of work. Do not use high-pressure air to remove dust.

5. Documentation Summary

The following documentation must be maintained:

A. Training of flagmen/spotters

B. Inspections of shoring equipment

C. Air sampling logs for crystalline silica, as needed

6. Resources

A. U.S. Occupational Safety and Health Administration (OSHA) Construction Standard – Concrete and Masonry Construction – 29 CFR 1926, Subpart Q

B. U.S. OSHA General Industry Standard – Toxic Substances – 29 CFR 1910.1000, Table Z-3

C. U.S. National Institute for Occupational Safety and Health (NIOSH) Alert, Publication 96-112 (1996) - Preventing Silicosis and Deaths in Construction Workers

D. OSHA Special Emphasis Program (SEP) for Silicosis, Memo from Joseph Dear, May 2, 1996

E. SMS 029 – Personal Protective Equipment

7. Supplemental Information

A. Health Effects of Exposure to Concrete Products

Powdered cement products are responsible for a wide variety of occupational health hazards, including inhalation, dermal, and eye hazards.

Dermal and Eye Hazards: Exposure to powdered cement products may cause drying of the skin and mild irritation, or more significant effects from the aggravation of other conditions. Wet cement is typically caustic (pH > 12) and dermal exposure may cause more severe skin effects, including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of chemical (caustic) burns. Eye exposures may cause immediate or delayed irritation or inflammation of the cornea. Eye contact with larger amounts of dry powder or splashes of wet cement may cause effects ranging from moderate eye irritation to chemical burns and blindness.

Some individuals who are exposed to cement may exhibit an allergic response, which can result in symptoms ranging from mild rashes to severe skin ulcers. Cement dermatitis may be irritant contact dermatitis induced by the alkaline, abrasive, and hygroscopic (water-absorbing) properties of cement.

Where these compounds are used, eyewash stations and drenching equipment should be staged in close proximity. OSHA requires that suitable facilities for quick drenching or flushing be provided within the work area for immediate use if an employee's eyes or body may be exposed to corrosive materials.

PPE: OSHA's general standards for personal protective equipment (PPE), 29 CFR 1910.132 for general industry and 29 CFR 1926.95 for construction, require employers to ensure that appropriate PPE is provided, effectively used, and maintained. Appropriate PPE should include boots and gloves, and may also include eye protection, such as safety glasses with side shields or goggles, in some circumstances. Such equipment must be maintained in a sanitary and reliable condition when not in use, and employees must be able to clean or exchange their equipment if it becomes ineffective or contaminated on the inside with cement. In addition to long-sleeved shirts and long pants, protective clothing such as coveralls may also be appropriate to prevent the skin from coming in contact with cement.

Sanitation: OSHA's Sanitation standard for general industry explicitly requires that lavatories with running water, hand soap, and individual hand towels or air-blowers be available in all places of employment (see 29 CFR 1910.141(d)(2)).

In construction operations where employees may be exposed to harmful contaminants, the sanitation standard requires employers to "provide adequate washing facilities in near proximity to the worksite [that must] be so equipped as to enable employees to remove such substances (29 CFR 1926.51(f)(1)).”

Inhalation Hazards/PELs: Inhalation of dry cement may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system, or may cause or aggravate certain lung diseases or conditions. Although powdered cement

products are not recognized as carcinogenic by NTP, OSHA, or IARC, they may contain small amounts of substances, such as crystalline silica and Cr(VI), which are recognized as carcinogens by these organizations.

OSHA's PELs for both cement and particulates not otherwise regulated (PNOR) are 15 mg/m^3 as total dust, and 5 mg/m^3 for the respirable fraction where listed. Because there are only trace amounts of Cr(VI) in portland cement, these PELs provide greater protection against Cr(VI) inhalation hazards than the new Cr(VI) PEL of 5 µg/m^3; that is, an employee exposed to 15 mg/m^3 of portland cement dust with a Cr(VI) concentration below 20 µg/g, will be exposed to less than 0.3 µg/m^3 of Cr(VI).

Compliance officers must confirm that concentrations of cement dust are at or below the 15 mg/m^3 PEL. If maintaining dust levels below 15 mg/m^3 is not feasible, exposed employees must wear respiratory protection in accordance with 29 CFR 1910.134. This would be most likely in construction operations such as terrazzo work, mixing mortar and jobsite mixing of concrete.

Training/Hazard Communication: Powdered cement is considered a hazardous chemical under OSHA's Hazard Communication standard; it should be included in the employer's Hazard Communication program. Employers whose employees are exposed to cement must provide appropriate training, maintain labels and copies of MSDS for cement products in their workplaces, and ensure that these documents are readily accessible during each work shift.

The Hazard Communication standard also requires chemical manufacturers and importers to assess the hazards of chemicals that they produce or import and disseminate information regarding those hazards. Among other information, each MSDS must identify the hazardous chemicals it pertains to, and the health hazards presented by those chemicals, "including signs and symptoms of exposure," as well as generally applicable precautions for safe handling and use and control measures.

Because powdered cement is a mixture, the Hazard Communication standard provides two ways in which the MSDS can list the hazardous chemicals it contains. If the mixture is tested as a whole to determine its hazards, the standard allows the MSDS to list only "the ingredients which contribute to these known hazards." For a mixture that has not been tested as a whole, the MSDS must include the ingredient(s) present in a concentration below 1% (0.1% for a carcinogens) - as is likely for the Cr(VI) in portland cement - "if there is evidence that the ingredients(s) could be released from the mixture in concentrations which could present a health risk to employees".

OSHA's general construction training standard, 29 CFR 1926.21(b), and the Hazard Communication training provision, 29 CFR 1910.1200(h), are applicable to operations with powdered cement exposure.

Further health and safety information on the concrete industry is available at the OSHA website.

URS SAFETY MANAGEMENT STANDARD
Management of Change

1. Applicability

This standard applies to operations of URS Corporation and its subsidiary companies.

Applicability of this standard is not required at operations meeting the following criteria:

- Client-mandated systems are in place and are not subject to change by their contractors (e.g., flight operations or ground operations);
- Activities of the URS work force are directed by an alternate site owner or manager (i.e., locations at which URS provides labor, but does not manage the workplace processes or systems); and
- Compartmentalized or classified client operations which limit the ability to discuss systemic or operational changes across functions.

At these operations, URS personnel should familiarize themselves with client requirements for management of change (MOC) and follow them accordingly.

2. Purpose and Scope

The purpose of this standard is to protect personnel from hazards caused by changes in the work environment. In any operation, situations may arise that were not foreseen or accounted for when the operating procedures or plans were developed. A change in the way the operations are conducted will be needed so that the work can be performed safely. The changes may be temporary or permanent. When managing change, the following must be considered:

- The reason for the change (i.e., technical, environmental, organizational, or personal);
- Impact of the change on health and safety risks;
- Modifications required to operating procedures or plans;
- Time period required to safely implement the change; and
- Authorizations required for the change.

The health, safety, security, environmental, technical, and other impacts of temporary and permanent changes are to be assessed, managed, documented, and approved. Employee participation in the process is critical, as regular observations on the part of URS employees drive the identification of work environment changes.

3. Implementation

Implementation of this standard is the responsibility of the URS manager directing activities of the facility, site, or project location.

Implementation of this standard is also the responsibility of any employee identifying changes in the work environment. Review of the implementation of this standard should be part of regular project reviews and office audits.

Definitions:

1. Affected Employee – An employee who is affected by temporary or permanent changes.

2. Authorizer – The individual responsible for authorizing the implementation of the change. The Authorizer is responsible for confirming that the MOC process has been followed appropriately.

3. Coordinator – The employee responsible for coordinating the evaluation and implementation of a change. Coordinators must understand the time commitment associated with the MOC process.

4. Reviewer – An individual whose expertise and experience qualifies him or her to be recognized as competent on the issues addressed by the MOC process.

5. Initiator – The employee who recognizes an opportunity for change and initiates the MOC process.

4. Requirements

A. Temporary Changes

1. Temporary changes are deviations from normal practice. They do not change the regular operating procedures. Examples of temporary changes are:

    a. Changing construction materials

    b. Using alternate or replacement equipment or machinery different from that specified in the work plan

    c. Working in changing weather or daylight conditions

    d. Changing site layout or characteristics

e. Temporarily removing equipment alarms and safety systems

f. Changing work scope daily

g. Using temporary electrical equipment and connections

h. Unexpectedly using subcontractors

i. Working without a full team or with substitute team members

j. Changing drilling or excavation locations

2. Temporary changes will be addressed in the following manner.

a. Identify the Change

i. Initiator advises the Supervisor of the change.

ii. The Supervisor verifies the conditions identified by the Initiator and determines whether change is warranted.

iii. If change is warranted, an MOC Coordinator is identified. In the case of a site project, this would typically be the Supervisor. In the office, this would typically be a senior professional or Project Manager.

b. Risk Analysis Review

i. The MOC Coordinator assigns an evaluation team and appropriate Reviewers.

ii. The evaluation team determines health, safety, environment, security, and operational risks of the change.

iii. Risk mitigation measures are identified.

c. Obtain Change Authorization

The MOC Coordinator obtains approval for the change and mitigating measures from the appropriate Authorizer. In the case of a site project, the Authorizer is typically the Project Manager. In an office the Authorizer is typically the Office Manager.

d. Implement the Change

i. Communicated change and its implications and timing to all affected employees.

ii. Provide necessary training.

iii. Modify or note documentation (e.g., job safety analysis, health and safety plans, safe work plans, permits, work orders), as appropriate.

iv. Implement change.

v. The MOC Coordinator verifies that the change took place as expected.

C. Permanent Changes

1. Permanent changes modify normal practices and may require revisions in standard operating procedures. Examples of permanent changes are:

a. Major changes to the project scope

b. Changes to regulatory requirements affecting the project

c. Changes in company structure

d. Changes in work teams/departments

e. Changes in client requirements

f. Changes to company standards or requirements

g. Selling new services or starting a new business line

2. Permanent changes shall be addressed in the following manner:

a. Identify the Change

i. The Initiator advises the Supervisor of the change.

ii. The Supervisor shall verify the conditions identified by the Initiator and determine whether change is warranted.

iii. If change is warranted, an MOC Coordinator is assigned.

b. Risk Analysis Review

i. The MOC Coordinator assembles an evaluation team representing all areas affected by the change.

ii. The Evaluation Team determines health, safety, environment, security, operational, legal, and financial risks of the change.

iii. The Evaluation Team determines the appropriate risk mitigation measures.

iv. The MOC Coordinator assembles an appropriate team of Reviewers representing all areas affected by the change to review the document.

v. The MOC Coordinator maintains a record of the evaluation with the Reviewers' signatures.

c. Obtain Change Authorization

i. The MOC Coordinator obtains approvals for the change and mitigating measures from the Authorizer(s). The Authorizer(s) could vary greatly depending on the magnitude of the change.

ii. The MOC Coordinator communicates the timeline for implementation with the appropriate Authorizer(s).

iii. The MOC Coordinator documents the process. Attachment 098-1 NA may be used for this purpose.

d. Implement the Change

i. Implement the change timeline.

ii. Revise the appropriate control documents as required to implement the change.

iii. Communicate change and its implications and timing to all Affected Employees.

iv. Provide necessary training.

v. Complete the change.

vi. The MOC Coordinator verifies that change took place as expected.

5. Documentation Summary

The following documentation will be maintained in the project or office file:

A. Attachment 098-1 NA or equivalent

6. Resources

A. Attachment 098-1 NA – Management of Change Authorization Form

URS	Health, Safety and Environment **MANAGEMENT OF CHANGE AUTHORIZATION FORM**	Attachment 098-1 NA Issue Date: April 2010

Description of the Change (include the scope of the change and affected employees):	
Risks Identified:	**Mitigation Measures:**
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

MOC Coordinator:		
Print Name	Signature	Date

Evaluation Team:		
Print Name	Signature	Date

Reviewers:		
Print Name	Signature	Date

Timeline for Implementation:

Comments/Conditions:

Authorizer Approvals:		
Print Name	Signature	Date

Attachment H

Visitor Log Form

(Also included in CD)

Visitor Log Form
Shell **Kast** Project

Name	Company	Date	Purpose	Time In	Time Out

Attachment I

Task Hazard Analyses

(Also included in CD)

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
TASK HAZARD ANALYSIS	Task Name: Ariel Lift	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Aerial Lift Requirements	Requirements	4	3	12	Medium	Requirements - The manufacturer's operating manual for the aerial lift must be available on the machine. Personnel must be authorized to operate aerial lifts and trained on the specific equipment being used. NOTE: **Personnel without operator training may utilize aerial lifts when the lifts are operated by properly trained personnel. Personnel not trained but utilize aerials lifts must be trained with respect to personal protective equipment**. Inspections shall be made at the beginning of each shift during which the equipment is to be used. Inspections must be documented. Operator must verify that the vehicle has a reverse signal alarm audible above the surrounding noise level or the vehicle is backed up only when an observer signals that it is safe to do so. Both lower and platform controls must be plainly marked as to their function. Boom and basket load limits set by the manufacturer must never be exceeded.
4	Aerial Lift Inspection	Inspection	4	3	12	Medium	Inspection - The lift controls must be tested each day to determine whether they are in safe working order. Immediately before the work trip, the route must be checked for overhead obstructions, holes, slopes, ditches, bumps, floor obstructions, debris, power lines, and other potential hazards. Brakes must be set and outriggers positioned on flat, solid surfaces before elevating the basket.

S3NA-209-FM TASK HAZARD ANALYSIS

5	Fall Protection	Fall Protection	4	3	12	Medium	Fall Protection - Personnel must wear fall protection (SMS 040 – Fall Protection) in the form of a full body harness and lanyard attached to the manufacturer's prescribed anchorage point. Personnel must never tie-off to an adjacent pole, structure, etc. Fall protection is not required for scissors lifts utilizing standard guardrails unless specifically required by the manufacturer.
6	Energized Power Lines	Electrical	4	3	12	**Medium**	Electrical - Operation near high-voltage power lines: **Normal Voltage, kV (Phase to Phase)** — **Minimum Required Clearance in Feet (meters)** Up to 50 — 10 (3.05) Over 50 to 200 — 15 (4.60) Over 200 to 350 — 20 (6.10) Over 350 to 500 — 25 (7.62) Over 500 to 750 — 35 (10.67) Over 750 to 1,000 — 45 (13.72) Operation in Transit With No Load and Boom or Mast Lowered: **Normal Voltage, kV (Phase to Phase)** — **Minimum Required Clearance in Feet (meters)** Up to 0.75 — 4 (1.22) Over 0.75 to 50 — 6 (1.83) Over 50 to 345 — 10 (3.05) Over 345 to 750 — 16 (4.87) Over 750 to 1,000 — 20 (6.10) **NOTE: Environmental conditions such as fog, smoke, or precipitation may require increased clearances.** Aerial lifts must be electrically ground or barricaded when they are near energized lines or equipment.
7	Aerial Lift Chemicals	Chemicals	3	3	9	Medium	Chemicals - When lifts are used inside buildings, consideration must be given to carbon monoxide emissions. Lifts that are propane driven or have air-purifying scrubbers generate less carbon monoxide.
8	Fueling Equipment	Chemical - Exposure to hazardous chemicals	3	4	12	Medium	Chemical - Wear nitrile gloves. Maintain erect posture while fueling to avoid vapor. Use funnel to pour gasoline into equipment. Place absorbent pad beneath equipment to capture spills. Turn equipment off while fueling. Cell phone (or similar electronic devises) not allowed within 10-feet radius.
9	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
10	**Hazards noticed in field:**				0		
11					0		

S3NA-209-FM TASK HAZARD ANALYSIS

12					0		
13					0		
14					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
SUMMARY OF CONTROLS	Task Name: Ariel Lift		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)	
	CSA/ANSI Safety-Toed Boots (Leather/Rubber)
	CSA/ANSI Safety Glasses or Goggles
	CSA/ANSI-approved Hard Hat
	CSA/ANSI Type II Reflective Traffic Safety Vest
	Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

	Required Training (associated with this THA)	**Key SOPs (associated with this THA)**		**Client & Other Requirements**
1	Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2	40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3	Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4	Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5		S3NA-520-PR Spill Response, Incidental		
6				

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
EMERGENCY RESPONSE PLAN	Task Name: Ariel Lift	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 9/25/2015
TASK HAZARD ANALYSIS	Task Name: Asbestos	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Licensing/Training	Licensing/Training Requirements	3	4	12	Medium	Licensing/Training Requirements - Require that all personnel conducting asbestos surveys, including those associated with Phase I Environmental Site Assessments, have completed and successfully passed a building inspector's training course and associated refreshers in accordance with U.S. Environmental Protection Agency (EPA's) Asbestos Hazard Emergency Response Act of 1986 (AHERA) Model Accreditation Program (MAP) (or country-specific equivalent) from an approved and/or accredited training provider. Provide training at the time of initial assignment, and at least annually, for those potentially exposed to airborne concentrations of asbestos at or above published permissible exposure limits (PELs).

4	Asbestos-Containing Materials (ACM)	Construction	3	3	9	Medium	Construction - demolition or salvage, removal or encapsulation, new construction or alteration, clean-up and maintenance operations, and/or transportation and disposal. Signs must be posted around the perimeter.
5	Collecting Asbestos-Containing Material Samples	Chemical - Chemical exposure Gravity - Slips, trips and falls. Mechanical - Tools	3	3	9	Medium	Chemical - Wear nitrile gloves when handling sample. Place collected sample container or package in a separate, larger package capable of being tightly sealed for a "double seal." Repair sample location as applicable to minimize and/or reduce further potential fiber release. Place all wet wipes, drop cloths, and disposable clothing and protective equipment into a labeled plastic bag. Seal and retain the bag until laboratory results are received. If all samples are negative for asbestos, dispose of the bag as normal refuse. If any of the samples are positive, the waste bag must be handled as asbestos waste and disposed of in accordance with applicable regulations. If sufficient data or experience exist to indicate that such assessments are not necessary (e.g., that no employee exposure to airborne concentrations of asbestos above 1.0 fiber/cc of air in 30 minutes, or 0.1 fibers/cc of air in 8 hours), then no initial exposure assessment is necessary. Respiratory protection must be worn until such assessments have been conducted, and it is determined that respiratory protection is not warranted. Gravity - Keep bottles in secured location and flat surface. Mechanical - Use appropriate sample collection tools to extract the sample. Wet-wipe the sample collection tools after sample extraction.
6	Testing	Testing	3	3	9	Medium	Testing - Samples are sent to a certified laboratory. Asbestos-containing material (ACM) is defined as any material that contains greater than 1 percent asbestos (>1%) by weight. This means that any material containing 1 percent or less asbestos is considered a non-regulated ACM.
7	Asbestos Removal Projects	Asbestos Removal Projects	3	3	9	Medium	Asbestos Removal Projects - Asbestos removal projects are divided into four classes, each with different requirements for engineering controls, work practices, and procedures: Class I activities involving removal of thermal system insulation (TSI) or surfacing material greater than 1% asbestos. Class II activities involving removal of other ACM, such as asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics. Class III repair and maintenance operations where ACM is intentionally disturbed. This can include gasket removal (if gasket is crumbled, pulverized, or otherwise made friable), TSI, refractory, or cementitious material removal of less than one bag. Class IV maintenance and custodial activities during which employees contact but do not disturb ACM or PACM, and cleanup of dust, waste, and debris resulting from Class I, II, and III jobs. Gasket removal may occur if the gasket remains largely intact.

S3NA-209-FM TASK HAZARD ANALYSIS

8	Asbestos Removal Activities	Chemical - Chemical exposure Gravity - Slips, trips and falls. Mechanical - Tools	3	3	9	Medium	Chemical - Respirators must be provided as required. Protective clothing must be provided and used as required. Once the work area has been isolated, use non-aggressive removal methods to the extent feasible to ensure material will be removed in an intact state. Use wet methods to remove materials that are not intact, unless such wet methods are not feasible or will create safety hazards. Glove bags may be used for removal of pipe runs and other insulation materials within regulation-prescribed limits. ACM removed from elevated areas such as transite boards and shingles will be lowered to the ground and be put in enclosed bags or in an enclosed container by the end of each workday. Enclosed ACM will then be transported to a client-specified hazardous waste storage area. Demolition operations may use water spray during large-scale operations according to an approved work plan. All exposed surfaces within the removal area will be final-cleaned by HEPA vacuuming and wet cleaning prior to visual inspection by the competent person to ensure complete removal of visible ACM. Do not mix asbestos waste with other construction debris, industrial waste, or soil. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Decontaminate all equipment and tools used in the asbestos abatement process. Discard used filters (i.e., discarded as asbestos-contaminated).
9	Asbestos Cleanup	Asbestos Cleanup	3	3	9	Medium	Asbestos Cleanup - Place asbestos wastes in a hazardous waste storage area designated by the client. AECOM will work with the client to ensure that only ACM removed from the designated work site is placed in the storage area. The Competent Person shall inspect the storage area to assure that waste containers are properly labeled, sealed, and stored according to applicable regulations. Asbestos waste must be collected and labeled according to applicable regulations. Do not mix asbestos waste with other construction debris, industrial waste, or soil. An approved contracted refuse disposal company will be responsible for transporting the waste to an EPA-approved landfill, and signing the appropriate shipping manifests. Disposal documentation and identification numbers should be in the client or site owners name for all ACM.

S3NA-209-FM TASK HAZARD ANALYSIS

10	Hygiene Facilities	Types of Hygiene Facilities	3	3	9	Medium	Class I work requires a decontamination area, consisting of an equipment room to remove and bag protective clothing; a shower area where feasible; and a clean change room. Class II, III, or IV work, where exposure levels exceed the PEL, or there is no negative exposure assessment (NEA), requires an equipment room (or area). Class IV work done in conjunction with a higher work class and in a regulated area requires the same hygiene practice used for the regulated-area employees.
11	Personal Protective Equipment	Chemical - Chemical exposure	4	3	12	Medium	Chemical - Full-face air purifying (negative-pressure or PAPR) respirator with P100 (HEPA) filters. Wear hooded Tyvek® coverall suit, hard hat, safety boots, fall protection system as appropriate, and nitrile gloves. Activities Outside Negative Pressure Containment: safety glasses, hard hat, safety boots, fall protection system as appropriate, and nitrile gloves.
12	Dust monitoring	Motion - Struck by/struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure. Noise - Sound	3	3	9	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Wear nitrile gloves - replace often. Use PID to monitor VOC concentrations and monitor breathing according to HASP provisions. Noise - wear hearing protection when noise greater than 85 dB
13	Investigation derived waste	Chemical - Exposure to hazardous gases and liquids. Misdirected waste Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves (replace immediately if damaged). Monitor breathing zone according to HASP. Wear high visibility leather gloves when transporting drums. Place a drum label on all drums identifying contents, content origin, contact person, contact number, and generation date. Verify current approved waste facilities with project manager prior to shipment. Maintain accurate record of drums, verify number upon removal. Coordinate with waste management subcontractor for removal. Motion - Use power lift truck, drum dolly, and/or other mechanical method to transport drums to staging area. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Watch hand/finger positioning when closing drum lid and power lift gate.

S3NA-209-FM TASK HAZARD ANALYSIS

14	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
15	**Hazards noticed in field:**				0		
16					0		
17					0		
18					0		
19					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 9/25/2015

SUMMARY OF CONTROLS

Task Name: Asbestos

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 9/25/2015
EMERGENCY RESPONSE PLAN	Task Name: Asbestos	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
TASK HAZARD ANALYSIS	Task Name: Concrete Coring/Cutting	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	General	Requirement	4	3	12	Medium	Requirement - Provide employees working more than 6 feet (1.8 meters) above any adjacent working surfaces, placing and tying reinforcing steel in walls, piers, columns, etc., with a safety harness or equivalent protective device in accordance with 29 Code of Federal Regulations (CFR) 1926.500 Subpart M. No employees will be permitted to work above an impalement hazard (e.g., rebar) unless it has been protected to eliminate the hazard of impalement.
3	Setting up equipment at site	Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against. Motion - Pinch points, Strain from lifting, Impaired vision	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
4	Personal Protective Equipment (PPE)	PPE	4	4	16	High	PPE - All nozzle men applying cement, air, sand and water through a pneumatic or high-pressure hose must wear protective head, hand, and face equipment. All concrete workers must wear protective clothing, including safety glasses; rubber boots, and gloves, to reduce the danger of concrete burns. Finishers must wear safety glasses and face shields when chipping, wire brushing, or using power-impact or rotary tools in patching concrete. In the pour area, or any area where dry Portland cement is being handled or mixed with water or aggregate, provide means to flush eyes (e.g., eyewash station, bottles) for 15 minutes. If the material contacts skin, wash skin with water and ph-neutral soap or mild detergent.

S3NA-209-FM TASK HAZARD ANALYSIS

5	Inspection	Inspection	3	3	9	Medium	Inspection - Prior to erection of steel frame shoring, conduct a thorough inspection to ensure material is not heavily rusted, bent, dented, or otherwise damaged or defective. Inspect all shoring equipment prior to erection to determine that it is as specified in the shoring layout. Do not use any equipment for shoring that is found to be damaged. Inspect erected shoring equipment immediately prior to, during, and immediately after the placement of concrete. Immediately reinforce or re-shore any shoring equipment that is found to be damaged or weakened. Frequently inspect pulling heads, bolts, and hydraulic rams for indication of fatigue, and the threads on bolts and nuts for diminishing cross section.
6	Concrete Coring/ Cutting	Motion - Spinning blade, Strain from lifting Electricity - Electrical Noise - Sound	4	4	16	High	Motion - Keep body parts out of line of fire and wear heavy work gloves. Keep personnel out of work area. Wear high visibility leather gloves when operating machinery. Lift heavy objects using leg strength and proper posture. Observe a 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Blade and bits get hot; therefore, wet them when cutting/coring. Noise - wear hearing protection when noise greater than 85 dB Electricity - Inspect condition of extension cords and receptacles, must use GFCI whip cord.
7	Fueling generator/equipment	Chemical - Chemical exposure, Chemical release, Fire	3	3	9	Medium	Chemical - Use funnel to pour gasoline/diesel into equipment. Monitor breathing according to HASP provisions. Place absorbent pad beneath equipment to capture spills. Keep fire extinguisher onsite, maintain current certification. Only refuel equipment with gasoline when engines are cool. SSO must be onsite supervising fueling operations. Cell phone (or similar electronic devices) not allowed during refueling. Do not fuel equipment in bed of truck if a bed liner is installed.

S3NA-209-FM TASK HAZARD ANALYSIS

8	Investigation derived waste	Chemical - Exposure to hazardous gases and liquids. Misdirected waste Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves (replace immediately if damaged). Monitor breathing zone according to HASP. Wear high visibility leather gloves when transporting drums. Place a drum label on all drums identifying contents, content origin, contact person, contact number, and generation date. Verify current approved waste facilities with project manager prior to shipment. Maintain accurate record of drums, verify number upon removal. Coordinate with waste management subcontractor for removal. Motion - Use power lift truck, drum dolly, and/or other mechanical method to transport drums to staging area. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Watch hand/finger positioning when closing drum lid and power lift gate.
9	Pump setup and operation	Chemical - Exposure to hazardous gases and liquids. Pressure - Injury from compressed air and hose whip. Mechanical - Pinch points. Gravity - Slips, trips and falls. Lifting injury. Dropped equipment. Electrical - Shock from control box or pump	4	3	12	Medium	Chemical - Use PID and 4-gas meter to check initial concentration. Maintain continuous air monitoring at open well. Refer to HASP for threshold levels. Wear nitrile gloves. Use secondary containment and verify discharge hose connections are secure. Pressure - Verify air hose connections are properly secure. Use whip checks on all air hose connections. Avoid line of fire. Mechanical - Avoid line of fire and use heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Electrical - Inspect all cords are in good working order and all equipment is connected properly.
10	Sample Collection	Gravity - Dropped bottles Chemical - Exposure to hazardous chemicals	3	4	12	Medium	Gravity - Keep bottles in secured location and flat surface. Chemical - Wear nitrile gloves when handling sample containers.
11	Disconnecting equipment and retrieval of pump from well	Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Chemical - Exposure to hazardous gases and liquids. Potential for spill. Pressure - Residual pressure remaining in air hose.	3	3	9	Medium	Mechanical - Avoid line of fire and use heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Chemical - Use PID to check initial concentration. Maintain continuous air monitoring. Refer to HASP for threshold levels. Wear nitrile gloves. Keep absorbent pads around well in case of water splashes Pressure - Depressurize air line before disconnecting
12	Decontamination of equipment	Chemical - Exposure to hazardous gases and liquids. Potential for spill. Gravity - Slips, trips, and falls. Dropped equipment.	3	3	9	Medium	Chemical - Use PID to check initial concentration. Maintain continuous air monitoring. Refer to HASP for threshold levels. Wear nitrile gloves. Use secondary containment Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.

S3NA-209-FM TASK HAZARD ANALYSIS

13	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
14	**Hazards noticed in field:**				0		
15					0		
16					0		
17					0		
18					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Robert Ponce		Date: 6/4/2015

SUMMARY OF CONTROLS

Task Name: Concrete Coring/Cutting

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
EMERGENCY RESPONSE PLAN	Task Name: Concrete Coring/Cutting	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/20/2015
TASK HAZARD ANALYSIS	Task Name: Confined Space Entry	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points and Strain from lifting Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves (PPE required). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Working Outside	Heat Illness - Dehydration - Sunburn - Heat Stress	3	3	9	Medium	Heat Stress - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioning. Apply sunscreen and wear protective clothing. Watch out for each other. Wear light-colored clothing.

4	Requirements	Permits	4	3	12	Medium	A non-permit space is a confined space that presents no existing or potential hazards, nor will the work performed or natural environment therein create a hazardous condition. A permit-required space is a confined space that may present one or more potential hazards. A permit-required space may be changed to a non-permit space if all known and potential hazards are eliminated. When the entry is complete, cancel the permit by obtaining the signature of the entry supervisor and recording the time and date on the permit. This should be accomplished after the space is resealed, and signs and barricades are removed. If the space cannot be closed until a later time, provisions must be maintained (barricades, warning signs) to discourage persons from entering the space.
5	Space Isolation	Chemical - Chemical Hazard Exposure Gravity - Slips, trips and falls. Dropped equipment. Electrical - Electrical Hazard	4	3	12	Medium	Chemical - Verify that the confined space is emptied, purged, flushed, ventilated with air, or otherwise made free of hazardous substances. Isolate the confined space as described on the permit. Isolation procedures typically include disconnection or blocking of lines, pipes, or other material conveyances to or through the confined space that may be carrying fuels, liquids, or gases. Obtain readings for oxygen first, followed by %Lower Explosive Limit, (%LEL) then for other contaminants of concern (if applicable). Gravity - Examine work surfaces. Good housekeeping. Clear debris, tools, and any other materials in the working area. Electrical - Isolate and lockout/tagout all forms of potential energy inside the confined space (includes electrical, mechanical, thermal, pneumatic, and hydraulic)
6	Ventilation	Chemical - Chemical Hazard Exposure Gravity - Slips, trips, and falls.	4	3	12	Medium	Chemical - Open as many openings as possible in the space to aid in cross ventilation. **Never ventilate confined spaces with oxygen.** Provide five (5) air changes per hour or at least 10,000 cubic feet/minute (cfm) for large spaces. If a generator is used to provide power, be sure that the exhaust does not enter the space. Carbon monoxide monitoring may be required. Gravity - Examine work surfaces. Good housekeeping. Use safe lifting techniques. Clear debris, tools and any other materials in the working area. Stand with feet at hip width for balance. Place blower ductwork such that it does not create a hazard by impairing the line of vision of attendants observing space entrants or by blowing contaminants to other workers.

S3NA-209-FM TASK HAZARD ANALYSIS

7	Rescue	Mechanical - Pinch points.	4	3	12	Medium	Mechanical - Non-entry rescue will require the use of a retrieval line and full-body harness. Mechanical extraction devices, usually consisting of a tripod, winch, and lanyard affixed to the full-body harness, are required for non-entry extraction of personnel from vertical spaces more than 5 feet (1.5 meters) in depth. Wristlets will not be used for non-entry rescue procedures unless it can be demonstrated that the use of a chest or full-body harness is not feasible or unsafe and that the use of wristlets is the most effective alternative. Entry rescue personnel must be staged at the entry site any time conditions within the confined space are or could become immediately dangerous to life or health (IDLH).
8	Non-Permit Confined Space Entry	Chemical - Chemical Hazard Exposure	4	3	12	Medium	Chemical - The first step toward reclassification of a permit-required space as a non-permit space is to eliminate all its hazards without entering the space. If this is not practical and it becomes necessary for an employee to enter a permit-required space in order to eliminate its hazards, the entry must occur in accordance with the written permit-required confined space program. Permit-required spaces with actual or potential atmospheric hazards that can be controlled but not eliminated by ventilation cannot be downgraded to non-permit spaces. The control of atmospheric hazards using forced air ventilation does not constitute elimination of those hazards and thus cannot be used to downgrade a permit-required space to a non-permit space.
9	Permit-Required Confined Space Entry	Chemical - Chemical Hazard Exposure	4	3	12	Medium	Chemical - Arranges for Authorized Entrants, Attendants, and rescue service personnel, where required. Identifies all equipment necessary for the job: 1. Testing and monitoring equipment. 2. Ventilating equipment. 3. Communications equipment. 4. PPE 5. Lighting 6. Barriers and shields to protect entrants from external hazards. 7. Equipment necessary for safe ingress and egress. 8. Rescue and emergency equipment. 9. Any other equipment required for safe entry and exit from the confined space.

10	Alternate Entry Confined Space Criteria	Chemical - Chemical Hazard Exposure	4	3	12	Medium	Alternate procedures for entering permit-required spaces containing atmospheric hazards can be used if it can be demonstrated that forced air ventilation alone will control all hazards in the space. Continuous forced air ventilation will be used, as follows: 1. An employee may not enter the space until the forced air ventilation has eliminated any hazardous atmosphere. 2. The forced air ventilation will be so directed as to ventilate the immediate areas where an employee is or will be present within the space and will continue until all employees have left the space. 3. The air supply for the forced air ventilation will be from a clean source and may not increase the hazards in the space. **If a hazardous atmosphere is detected during entry:** 1. Each employee will leave the space immediately. 2. The space will be evaluated to determine how the hazardous atmosphere developed. 3. Measures will be implemented to protect employees from the hazardous atmosphere before any subsequent entry takes place.
11	Atmospheric Tests	Chemical - Chemical Hazard Exposure	4	3	12	Medium	Chemical - Calibrate monitoring equipment before and after sampling and record information. Make initial atmospheric tests of the space with the ventilation OFF. Attach extension probes or lengths of silicone or similarly inert tubing material to the monitoring equipment to reach the bottom of the space. For horizontal spaces, the probe may need to be attached to a pole. Take atmospheric measurements in several locations (bottom, middle, top, corners), allowing extra response time from the instrumentation to register, especially if a tubing extension is used. **Obtain readings for oxygen first, followed by %Lower Explosive Limit, (%LEL) then for other contaminants of concern (if applicable).** If acceptable entry conditions exist, determine times that the monitoring will be repeated or determine whether continuous monitoring will be needed. Monitor continuously for oxygen and %LEL if hot work will be performed in the space.
12	Hazardous Atmosphere Detected	Chemical - Chemical Hazard Exposure Gravity - Slips, trips, and falls.	4	3	12	Medium	Chemical - Each employee will leave the space immediately. The space will be evaluated to determine how the hazardous atmosphere developed (for additional information, refer to excavation THA). Gravity - Examine work surfaces. Good housekeeping.

S3NA-209-FM TASK HAZARD ANALYSIS

13	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Secure load to ensure it does not shift during transport. Uneven ground exists – maintain footing awareness. Visually inspect site for debris before leaving site – place in trash can.
14	**Hazards noticed in field:**				0		
15					0		
16					0		
17					0		
18					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/20/2015

SUMMARY OF CONTROLS

Task Name: Confined Space Entry

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/20/2015
EMERGENCY RESPONSE PLAN	Task Name: Confined Space Entry	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
7:00 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
TASK HAZARD ANALYSIS	Task Name: Construction Oversight	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Secure load to ensure it does not shift during transport. Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.

2	Construction oversight	Motion - Pinch points, Strain from lifting, Impaired vision, Struck by/ struck against. Mechanical - Equipment Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Radiation - Heat stress	3	3	9	Medium	Motion - Park vehicle away from construction zone and clear of any pedestrian or vehicular traffic. When onsite, verify that vehicle has two cones, which must be place in front and behind the vehicle when not parked in a designated parking stall. Perform 360° walk-around the vehicle prior to moving. Place orange magnet (available in field office) on hood or door as a reminder. If working off tailgate, ensure that tailgate area is away from vehicle traffic. Avoid working on the street-side of vehicle. Look out for vehicle and heavy equipment traffic when overseeing Site operations. Wear high visibility traffic vest (as required). Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Mechanical- Stay clear of construction equipment. Communicate with equipment operator if you will be in the area. Make eye contact with operator prior to walking within the operating radius of any equipment. Develop hand signals to be used by all personnel. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques. Conduct site walk to identify trip hazards. Wear proper footwear and inspect for excess wear. Maintain footing awareness Radiation - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioned office.
3	Investigation derived waste	Motion - Struck by/struck against Mechanical - Pinch points. Gravity - Slips, trips and falls. Chemical - Chemical exposure and Misdirected waste	3	3	9	Medium	Motion - Use power lift truck, drum dolly, and/or other mechanical method to transport drums to staging area. Mechanical - Wear nitrile gloves or high visibility leather gloves when transporting drums. Use appropriate tools. Avoid placing hands/fingers beneath heavy objects. Watch hand/finger positioning when closing drum lid Gravity - Good housekeeping. Lift heavy objects using leg strength and proper posture. Uneven ground exists – maintain footing awareness. Chemical - Monitor breathing zone according to HASP. Place a drum label on all drums identifying the contents, content origin, contact person, contact number, and generation date. Verify current approved waste facilities with project manager prior to shipment. . Maintain accurate record of drums - verify number upon removal. Coordinate with waste management subcontractor for removal. Verify waste tank connections are intact – prevent spillage. Verify waste tanks are properly labeled.

S3NA-209-FM TASK HAZARD ANALYSIS

4	Site Cleanup/Demobilization	Motion - Pinch points. Strain from lifting Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury. Radiation - Heat stress	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Lift heavy objects using leg strength and proper posture Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Secure load to ensure it does not shift during transport. Uneven ground exists – maintain footing awareness. Visually inspect site for debris before leaving site – place in trash can. Remove free standing water by sweeping and/or absorbent material Radiation - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioned office.
5	**Hazards noticed in field:**				0		
6					0		
7					0		
8					0		
9					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
SUMMARY OF CONTROLS	Task Name: Construction Oversight		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
EMERGENCY RESPONSE PLAN	Task Name: Construction Oversight	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
TASK HAZARD ANALYSIS	Task Name: CPT, Direct Push, & HSA Drilling		Regularity of Task: One-time Routine

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Rig Inspection	Inspection	4	3	12	Medium	Inspection - Drilling rigs shall be inspected by the lead driller prior to use daily.
2	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Move drilling rig (with mast down) over designated well location using a spotter. Verify hand-signal communication prior to moving rig. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
3	Loading / Unloading vehicle with equipment / supplies at each location.	Motion - Pinch points Gravity - Slips, trips, falls. Lifting heavy equipment	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Watch hand position when opening/closing hinged lids/gates (i.e., tailgates, utility boxes, doors, hood, etc.). Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Lift heavy objects using leg strength and proper posture.

S3NA-209-FM TASK HAZARD ANALYSIS

4	Boring clearance to 7 feet below ground surface (bgs).	Motion - Strain from lifting Gravity - Slips, trips, falls. Lifting injury. Struck by/ Struck against. Mechanical - Pinch points Electricity - Electrical Chemical - Exposure to hazardous gases and liquids	3	3	9	Medium	Motion - Lift heavy objects using leg strength and proper posture. Avoid muscle strain by not overexerting force applied to auger rotation Gravity - Do not force augers when advancing cutting head or retrieving sampler. Obtain assistance when lifting >50 lbs. – do not lift alone/split material bags. Use proper/safe lifting techniques. Uneven ground exists – maintain footing awareness Mechanical - Wear leather gloves to avoid cut/scratch. Use appropriate tools – hand auger and/or air assist vacuum rig. Vacuum rig operators must wear face shields while clearing boring. Electrical - Obtain USA ticket number (list subcontractor on ticket). Verify utility markings before commencing work and location has been cleared using geophysical methods. Verify auger handles are insulated with rubber grips Chemical - Decontaminate equipment before/between locations. Attempt to conduct soil sampling from least-impacted to most-impacted
5	Drill soil boring/install well	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Heavy equipment. Lifting injury. Struck by/ Struck against. Electricity - Electrical Chemical - Exposure to hazardous gases and liquids Noise - Sound	4	4	16	High	Motion - Maintain eye contact with operators at all times. Do not proceed if operator has not acknowledged your presence. Only authorized personnel are allowed in the exclusion zone. Verify overhead obstructions are not present prior to raising the drill rig mast. Watch hand/finger positioning when working around drill rig. No shoveling while auger in motion (operator should take their hands off the controls). Never place hands or fingers under the bottom of an auger flight or drill rods when hoisting the augers or rods over the top of another auger or rod in the ground or other hard surfaces, such as the drill rig platform. When the drill is rotating, stay clear of the drill string and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason. Gravity - Only properly trained personnel are allowed to operate heavy equipment. Be aware of auger movements – do not approach augers in motion. Obtain assistance when lifting >50 lbs. – do not lift alone/split material bags. Use proper/safe lifting techniques. Electrical - Stay at least 10 feet away from energized lines/de- energize. Wear leather gloves while conducting mechanical work. Chemical - Wear nitrile gloves while handling soil cuttings. Monitor breathing zone according to safety plan. Decontaminate equipment before/between locations. Attempt to conduct soil sampling from least-impacted to most-impacted.

6	Monitor vapors in work area / breathing zone	Chemical - Chemical exposure to vapors	4	3	12	Medium	Chemical - Monitor organic vapors with a PID equipped with an 10.6 eV lamp (onsite) or 11.7 eV lamp (offsite) for total organic vapors. Regularly monitor operator's breathing zone during drilling and sampling activities (typically every 5 to 10 minutes). Regularly monitor augers and waste cuttings pile during drilling with hollow-stem auger. Monitor borehole opening with PID in areas specified, above, prior to starting work / drilling each day and after stopping of drilling activities for any period (e.g., after lunch break, drilling shutdown for sample retrieval, etc.). Use tubing extension on PID to sample vapors at least 1 foot into borehole below ground surface. Notify AECOM field supervisor and drilling contractor's supervisor if PID readings exceed action levels in HASP to determine whether upgrade of PPE is necessary. **Never allow personnel to stand directly over open borehole** during drilling or sampling activities unless borehole has been monitored for vapors and it is documented that vapor concentrations are below action levels immediately prior to working over borehole and continually while person is working directly over open borehole.
7	Collect soil core	Chemical - Exposure to hazardous gases Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves while handling soil cuttings and cores. Monitor breathing zone according to HASP. Label cores with appropriate designation – wrap with cellophane for transport. Motion - Work carefully with correct posture – use legs for lifting. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Make eye contact with operator before approaching to collect soil core. Wear leather gloves while cutting acetate liners; cut liners away from body
8	Sample collection	Chemical - Exposure to hazardous gases Sample misidentification Container breakage	3	3	9	Medium	Chemical - Wear nitrile gloves – replace often. Use appropriate tools (i.e., t-handle for encores) Sample misidentification - Verify sample labels for accuracy prior to placing in cooler containing ice Container breakage - Inspect glass for breaks/cracks – do not attempt to use broke/cracked glass – place immediately in trash. Close glass sample containers carefully to avoid breakage – use finger tip strength.
9	Hand Tools	Hand Tools	3	3	9	Medium	Hand Tools - Use each tool to perform only tasks for which it was originally designed. Repair damaged tools before use, or discard them. Wear safety goggles or glasses when using a hammer or chisel. Nearby co-workers and bystanders are required to wear safety goggles or glasses also, or move away. Clean tools and store them in an orderly manner when they are not in use.

S3NA-209-FM TASK HAZARD ANALYSIS

10	Wire Line Hoists, Wire Rope, and Hoisting Hardware	Wire Line Hoists, Wire Rope, and Hoisting Hardware	3	3	9	Medium	Wire Line Hoists, Wire Rope, and Hoisting Hardware - Whenever wire line hoists, wire rope, or hoisting hardware are used, the safety rules described in Title 29 Code of Federal Regulations (CFR) 1926.552, and guidelines contained in the Wire Rope User's Manual published by the American Iron and Steel Institute, will be followed. The driller will provide written reports (upon request) documenting inspections of equipment.
11	Fueling generator/equipment	Chemical - Exposure to hazardous chemicals	3	4	12	Medium	Chemical - Wear nitrile gloves. Maintain erect posture while fueling to avoid vapor. Use funnel to pour gasoline into equipment. Place absorbent pad beneath equipment to capture spills. Turn equipment off while fueling. Cell phone (or similar electronic devises) not allowed within 10-feet radius.
12	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury. Chemical - Chemical Exposure	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Visually inspect site for debris before leaving site – place in trash can. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness. Chemical - Hydraulic spills to be wiped up with absorbent pads and dispose properly as hazardous material.
13	Investigation derived waste	Mechanical - Pinch points. Gravity - Slips, trips, falls. Lifting heavy equipment Chemical - Exposure to hazardous	3	3	9	Medium	Mechanical - Watch hand/finger positioning when opening/closing/transporting drums. Use appropriate tools for opening/closing/transporting drums–ratchet/dolly. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. If possible, use power lift truck, drum dolly, and/or other mechanical methods to transport drums to a staging area. Chemical - Wear nitrile gloves – replace often. Wear leather gloves when transporting containment drums. Place drum label on waste containers identifying contents, contents origin, contact person, contact number, and generation date.
14	**Hazards noticed in field:**				0		
15					0		

S3NA-209-FM TASK HAZARD ANALYSIS

16					0		
17					0		
18					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/12/2015
Task Name: CPT, Direct Push, & HSA Drilling		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
EMERGENCY RESPONSE PLAN	Task Name: CPT, Direct Push, & HSA Drilling	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
TASK HAZARD ANALYSIS	Task Name: Encountering Methane During Drilling		Regularity of Task: One-time Routine

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Move drilling rig (with mast down) over designated well location using a spotter. Verify hand-signal communication prior to moving rig. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Loading / Unloading vehicle with equipment / supplies at each location.	Motion - Pinch points Gravity - Slips, trips, falls. Lifting heavy equipment	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Watch hand position when opening/closing hinged lids/gates (i.e., tailgates, utility boxes, doors, hood, etc.). Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Lift heavy objects using leg strength and proper posture.

S3NA-209-FM TASK HAZARD ANALYSIS

3	Boring clearance to 7 feet below ground surface (bgs).	Motion - Strain from lifting Gravity - Slips, trips, falls. Lifting injury. Struck by/ Struck against. Mechanical - Pinch points Electricity - Electrical Chemical - Exposure to hazardous gases and liquids	3	3	9	Medium	Motion - Lift heavy objects using leg strength and proper posture. Avoid muscle strain by not overexerting force applied to auger rotation Gravity - Do not force augers when advancing cutting head or retrieving sampler. Obtain assistance when lifting >50 lbs. – do not lift alone/split material bags. Use proper/safe lifting techniques. Uneven ground exists – maintain footing awareness Mechanical - Wear leather gloves to avoid cut/scratch. Use appropriate tools – hand auger and/or air assist vacuum rig. Vacuum rig operators must wear face shields while clearing boring. Electrical - Obtain USA ticket number (list subcontractor on ticket). Verify utility markings before commencing work and location has been cleared using geophysical methods. Verify auger handles are insulated with rubber grips Chemical - Decontaminate equipment before/between locations. Attempt to conduct soil sampling from least-impacted to most-impacted
4	Drill soil boring/install well	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Heavy equipment. Lifting injury. Struck by/ Struck against. Electricity - Electrical Chemical - Exposure to hazardous gases and liquids Noise - Sound	4	4	16	High	Motion - Maintain eye contact with operators at all times. Do not proceed if operator has not acknowledged your presence. Only authorized personnel are allowed in the exclusion zone. Verify overhead obstructions are not present prior to raising the drill rig mast. Watch hand/finger positioning when working around drill rig. Gravity - Only properly trained personnel are allowed to operate heavy equipment. Be aware of auger movements – do not approach augers in motion. Obtain assistance when lifting >50 lbs. – do not lift alone/split material bags. Use proper/safe lifting techniques. Electrical - Stay at least 10 feet away from energized lines/de- energize. Wear leather gloves while conducting mechanical work. Chemical - Wear nitrile gloves while handling soil cuttings. Monitor breathing zone according to safety plan. Decontaminate equipment before/between locations. Attempt to conduct soil sampling from least-impacted to most-impacted. Noise - Wear hearing protection while drill rig is operating

5	Monitor vapors in work area / breathing zone	Chemical - Chemical exposure to vapors	4	3	12	Medium	Chemical - Monitor organic vapors with a PID equipped with an 10.6 eV lamp (onsite) or 11.7 eV lamp (offsite) for total organic vapors. Regularly monitor operator's breathing zone during drilling and sampling activities (typically every 5 to 10 minutes). Regularly monitor augers and waste cuttings pile during drilling with hollow-stem auger. Monitor borehole opening with PID in areas specified, above, prior to starting work / drilling each day and after stopping of drilling activities for any period (e.g., after lunch break, drilling shutdown for sample retrieval, etc.). Use tubing extension on PID to sample vapors at least 1 foot into borehole below ground surface. Notify AECOM field supervisor and drilling contractor's supervisor if PID readings exceed action levels in HASP to determine whether upgrade of PPE is necessary. **Never allow personnel to stand directly over open borehole** during drilling or sampling activities unless borehole has been monitored for vapors and it is documented that vapor concentrations are below action levels immediately prior to working over borehole and continually while person is working directly over open borehole.
6	Encounter methane during drilling	Chemical - Chemical exposure to vapors	4	3	12	Medium	Chemical - Monitor LEL with a Landtec GEM 2000, 4-gas meter, or methane instrument. Regularly monitor operator's breathing zone during drilling and sampling activities (typically every 5 to 10 minutes). The action level for LEL is 20%. To reduce or remove possible ignition sources use vapor suppressant, helium, dry ice, or water. Notify AECOM field supervisor and drilling contractor's supervisor if LEL readings exceed action levels in HASP to determine whether upgrade of PPE is necessary (ie. fan on surface to ventilate).
7	Collect soil core	Chemical - Exposure to hazardous gases Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves while handling soil cuttings and cores. Monitor breathing zone according to HASP. Label cores with appropriate designation – wrap with cellophane for transport. Motion - Work carefully with correct posture – use legs for lifting. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Make eye contact with operator before approaching to collect soil core. Wear leather gloves while cutting acetate liners; cut liners away from body
8	Sample collection	Chemical - Exposure to hazardous gases Sample misidentification Container breakage	3	3	9	Medium	Chemical - Wear nitrile gloves – replace often. Use appropriate tools (i.e., t-handle for encores) Sample misidentification - Verify sample labels for accuracy prior to placing in cooler containing ice Container breakage - Inspect glass for breaks/cracks – do not attempt to use broke/cracked glass – place immediately in trash. Close glass sample containers carefully to avoid breakage – use finger tip strength.
9	Fueling generator/equipment	Chemical - Exposure to hazardous chemicals	3	4	12	Medium	Chemical - Wear nitrile gloves. Maintain erect posture while fueling to avoid vapor. Use funnel to pour gasoline into equipment. Place absorbent pad beneath equipment to capture spills. Turn equipment off while fueling. Cell phone (or similar electronic devises) not allowed within 10-feet radius.

S3NA-209-FM TASK HAZARD ANALYSIS

10	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Visually inspect site for debris before leaving site – place in trash can. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness.
11	Investigation derived waste	Mechanical - Pinch points. Gravity - Slips, trips, falls. Lifting heavy equipment Chemical - Exposure to hazardous	3	3	9	Medium	Mechanical - Watch hand/finger positioning when opening/closing/transporting drums. Use appropriate tools for opening/closing/transporting drums–ratchet/dolly. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. If possible, use power lift truck, drum dolly, and/or other mechanical methods to transport drums to a staging area. Chemical - Wear nitrile gloves – replace often. Wear leather gloves when transporting containment drums. Place drum label on waste containers identifying contents, contents origin, contact person, contact number, and generation date.
12	**Hazards noticed in field:**				0		
13					0		
14					0		
15					0		

S3NA-209-FM TASK HAZARD ANALYSIS

16				0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
SUMMARY OF CONTROLS	Task Name: Encountering Methane During Drilling		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
EMERGENCY RESPONSE PLAN	Task Name: Encountering Methane During Drilling	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
TASK HAZARD ANALYSIS	Task Name: Excavation		Regularity of Task: One-time Routine

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.

S3NA-209-FM TASK HAZARD ANALYSIS

3	Oversee remedial excavation	Motion - Struck by/ Struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure, Chemical release, Fire. Exposure to hazardous gases and liquids. Misdirected waste against. Electrical - Utility damage Pressure - Utility damage Noise - Sound	4	3	12	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Discuss parking area before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Use funnel to pour gasoline/diesel into equipment. Monitor breathing according to HASP provisions. Place absorbent pad beneath equipment to capture spills. Keep fire extinguisher onsite, maintain current certification. Only refuel equipment with gasoline when engines are cool. SSO must be onsite supervising fueling operations. Cell phone (or similar electronic devices) not allowed during refueling. Do not fuel equipment in bed of truck if a bed liner is installed. Electrical/Pressure - Ensure Digalert ticket is active. Verify utility marks - must hand dig within 2ft of known utilities. Be aware of overhead utilities. Work within 15 ft. requires high hazard work permit. Noise - wear hearing protection when noise greater than 85 dB
4	Shoring	Forms and Shoring	4	3	12	Medium	Forms and Shoring - The completed shoring setup should be a homogenous unit or units. For example, do not use tubular steel shoring in combination with adjustable wood or jack-type shoring. Remove and stockpile stripped forms and shoring promptly after stripping in all areas in which persons are required to work or pass. Remove and dispose of adhered concrete from forms and planking before stacking when possible to prevent generation of concrete dust. Pull, cut, or remove by other means any protruding nails, wire ties, and other form accessories not necessary to subsequent work to eliminate the hazard. When temporary storage of reinforcing rods, material, or equipment on top of formwork becomes necessary, strengthen these areas to meet the intended loads. Build shoring or form systems in accordance with the SMS governing excavation procedures when working in excavations over 5 feet (1.5 meters) deep.
5	1166 air monitoring	Motion - Struck by/struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure. Noise - Sound	4	3	12	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Wear nitrile gloves - replace often. Use PID to monitor VOC concentrations and monitor breathing according to HASP provisions. Noise - wear hearing protection when noise greater than 85 dB

6	Dust monitoring	Motion - Struck by/struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure. Noise - Sound	3	3	9	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Wear nitrile gloves - replace often. Use PID to monitor VOC concentrations and monitor breathing according to HASP provisions. Noise - wear hearing protection when noise greater than 85 dB
7	Sample Collection	Motion - Struck by/struck against Gravity - Dropped bottles Chemical - Exposure to hazardous chemicals	3	4	12	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Keep bottles in secured location and flat surface. Chemical - Wear nitrile gloves when handling sample containers.
8	Entry into Excavation/Boring	Entry into Excavation/Boring	3	4	12	Medium	Entry into Excavation/Boring - **This standard is to be used when remote down-hole cameras, video, or other testing means are not possible. Entry into a borehole must be considered as a last resort when other means of inspection and testing are not viable.** Requirements - Be trained in confined space entry. Permit Acquisition - Local and state governments may require a specific permit for down-hole logging that may include air monitoring results, names of entrants, protective equipment, and related information. Surface Casing and Proximity of Material to the Shaft Opening - Equip the upper portion of the shaft with a surface ring-collar to provide casing support of the material within the upper 5 feet (1.5 meters) or more of the shaft. The ring collar shall extend to 1 foot (.3 meter) above the ground surface, or as high as necessary to prevent drill cuttings and other loose material or objects from falling into or blocking access to the shaft. Place drill cuttings, detached auger buckets, and other loose equipment 2 feet (.6 meter) back from the shaft opening, or secure in a fashion that would prevent them from falling into the shaft. Air Monitoring - The oxygen level will be 19.5 percent to 23.5 percent combustible gas, less than 5 percent Lower Explosive Limit (LEL), and toxic gases less than one-half the Threshold Limit Value (TLV) or National Institute for Occupational Safety and Health (NIOSH) Recommended Exposure Limit (REL) before entry is permitted without respiratory protection. Use the TLV or REL value that is lower as the exposure limit.

S3NA-209-FM TASK HAZARD ANALYSIS

9	Document sample location	Gravity - Slips, trips and falls. Collapsing walls. Chemical - Cross contamination.	3	3	9	Medium	Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Use rangefinder to document sample locations >4 ft. deep. Chemical - Decontaminate equipment before starting and between each location.
10	Investigation derived waste	Chemical - Exposure to hazardous gases and liquids. Misdirected waste Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves (replace immediately if damaged). Monitor breathing zone according to HASP. Wear high visibility leather gloves when transporting drums. Place a drum label on all drums identifying contents, content origin, contact person, contact number, and generation date. Verify current approved waste facilities with project manager prior to shipment. Maintain accurate record of drums, verify number upon removal. Coordinate with waste management subcontractor for removal. Motion - Use power lift truck, drum dolly, and/or other mechanical method to transport drums to staging area. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Watch hand/finger positioning when closing drum lid and power lift gate.
11	Fueling generator/equipment	Chemical - Chemical exposure, Chemical release, Fire	3	3	9	Medium	Chemical - Use funnel to pour gasoline/diesel into equipment. Monitor breathing according to HASP provisions. Place absorbent pad beneath equipment to capture spills. Keep fire extinguisher onsite, maintain current certification. Only refuel equipment with gasoline when engines are cool. SSO must be onsite supervising fueling operations. Cell phone (or similar electronic devices) not allowed during refueling. Do not fuel equipment in bed of truck if a bed liner is installed.
12	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
13	**Hazards noticed in field:**				0		
14					0		

S3NA-209-FM TASK HAZARD ANALYSIS

15					0		
16					0		
17					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Robert Ponce		Date: 6/4/2015

SUMMARY OF CONTROLS

Task Name: Excavation

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
EMERGENCY RESPONSE PLAN	Task Name: Excavation	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/20/2015
TASK HAZARD ANALYSIS	Task Name: Fall Protection	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Fall Protection	General Industry Construction/Mining Steep Slope	4	3	12	Medium	General Industry - Fall hazards greater than 4 feet (1.2 meters) exist including: -Workers are conducting inspection of existing facilities not under construction -Working in environmental remediation activities where no construction activities are occurring -Working in manufacturing operations -Working in vehicle and aircraft maintenance, and repair operations -Working in warehouses -Working on towers, poles, or other elevated structures. Construction/Mining – Fall hazards exceed 6 feet (2 meters). Activities include maintenance, mining, demolition, renovation, and construction support inspections and surveying. Steep Slope – Fall protection measures must be used whenever the slope angle exceeds 30 degrees from horizontal (note that this excludes roofing applications, which are covered under Construction activities). Activities include the inspection of dams, environmental surveys of timbered slopes, or other applications where traditional fall protection systems are impractical.

S3NA-209-FM TASK HAZARD ANALYSIS

4	Fall Hazard	General	4	3	12	Medium	Fall hazards include, but are not limited to, excavations, highwalls, unprotected elevations, ladders, scaffolds, floor holes, wall openings, formwork, rebar tying, inspection of dams, working on top of vehicles, equipment, or airframes, working over operating machinery, working above hazardous substances, and all other locations and operations where potential fall hazards exist.
5	Fall Hazard	Hazards must be addressed by one of five means	3	3	9	Medium	1. Elimination or substitution controls such as moving planned work to ground level or substitution of a process, sequence, or procedure so that employees are no longer exposed to a fall hazard. 2. Passive fall protection such as isolating or separating employees from the fall hazard through the use of guardrails or covered floor openings. 3. Fall restraint, which includes securing an employee to an anchor using a lanyard that is short enough to prevent the employee's center of mass from reaching the actual fall hazard. 4. Fall arrest, which includes systems to stop an employee's fall after it has begun (e.g., personal fall arrest systems, safety nets, etc.). 5. Administrative controls, including safety observers, boundary markings (i.e., tape, cable, or barricades) located 6 feet (2 meters) or more from an exposed edge, and maintaining three-points of contact.
6	Guardrail Systems	Require that guardrail systems meet the following criteria:	4	3	12	Medium	1. Install toprails 42 inches (1.1 meters) above the walking/working surface capable of withstanding, without failure, a minimum force of 200 pounds (91 kilograms) in any outward or downward direction with no more than 3 inches (7.6 centimeters) of deflection. 2. Install midrails 21 inches (53 centimeters) above the walking/working surface capable of withstanding, without failure, a minimum force of 150 pounds (68 kilograms) in any outward or downward direction. 3. Space posts not more than 8 feet (2.5 meters) apart on centers.

7	Personal Fall Arrest Systems	Full-body harnesses, shock-absorbing lanyards, lifelines, and anchorage points	3	3	9	Medium	Use only full-body harnesses, shock-absorbing lanyards, lifelines, and anchorage points that meet the following criteria: -Body harness design and construction must meet the specifications set forth in 29 CFR 1926.500-.503 (or equivalent) and ANSI Z359.1. -All snaphooks must be of the locking type and must be able to withstand a force of 3,600 pounds (1,633 kilograms) in all directions of potential loading to the gate. -All hardware must be dropforged or pressed steel with a corrosion-resistant finish. Surfaces must be smooth and free of sharp edges. D-rings and snaphooks must have a minimum tensile strength of 5,000 pounds (2,270 kilograms). -Ropes and webbing used in lanyards, lifelines, and body harnesses must be made of synthetic fibers. -The attachment point (D-ring) of a body harness should be located in the center of the wearer's back near shoulder level, or above the wearer's head. -Horizontal lifelines must be designed, installed, and used under the supervision of a Competent Person, and be capable of supporting at least 5,000 pounds (2,270 kilograms) of force per employee attached. -Lanyards and vertical lifelines must have a minimum breaking strength of 5,000 pounds (2,270 kilograms). -Self-retracting lifelines and lanyards that limit free-fall to 2 feet (60 centimeters) or less must be capable of sustaining a minimum tensile load of 3,000 pounds (1,360 kilograms) in the fully extended position. -Self-retracting lifelines and lanyards that do not limit free fall to 2 feet (60 centimeters) or less, ripstitch, and other shock-absorbing lanyards must be capable of sustaining a minimum tensile load of 5,000 pounds (2,270 kilograms) in the fully extended position. -Protect lifelines against being cut or abraded. -Anchorage points for personal fall protection systems must be independent of any anchorage point being used to support or suspend platforms and must have a static strength of at least 5,000 pounds (2,270 kilograms) per employee attached. -Anchorage points for work positioning systems (systems designed to support a worker on a vertical system while working with hands free) and rescue systems must have a static strength of at least 3,000 pounds (1,365 kilograms). -Anchorage points for worker restraint systems (systems designed to limit a worker's travel in such a manner that he/she cannot reach a fall hazard zone) must have a static strength of at least 1,000 pounds (455 kilograms). Worker restraint systems are only to be used on walking or working surfaces with a slope of less than 18.4°.
8	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.

S3NA-209-FM TASK HAZARD ANALYSIS

9	**Hazards noticed in field:**				0		
10					0		
11					0		
12					0		
13					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/20/2015

SUMMARY OF CONTROLS

Task Name: Fall Protection

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/20/2015
EMERGENCY RESPONSE PLAN	Task Name: Fall Protection	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
TASK HAZARD ANALYSIS	Task Name: Forklifts	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Move drilling rig (with mast down) over designated well location using a spotter. Verify hand-signal communication prior to moving rig. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Loading / Unloading vehicle with equipment / supplies at each location.	Motion - Pinch points Gravity - Slips, trips, falls. Lifting heavy equipment	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Watch hand position when opening/closing hinged lids/gates (i.e., tailgates, utility boxes, doors, hood, etc.). Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Lift heavy objects using leg strength and proper posture.
3	Forklift Operator	Roles and Responsibilities	3	3	9	Medium	Roles and Responsibilities - Not operate the truck while carrying loose items, tools or other equipment in the cab. Not drive or attempt to lift or lower loads with vision obstructed without the assistance of a qualified spotter. Slow down and sound the horn at intersections and where vision is obstructed. Operate the truck in reverse if the load obstructs forward view. Operate the truck at a speed of not more than 5 miles (8 kilometers) per hour. When leaving a truck unattended, will lower forks to ground level, neutralize controls, shut power off, and set brakes. Wheel chocks will be used if truck is parked on an incline. Never leave a truck unattended with a suspended load. Not lift loads that exceed that rated capacity of the truck.

S3NA-209-FM TASK HAZARD ANALYSIS

4	Using forklift equipment to lift personnel platform	Requirements	4	3	12	Medium	Requirements - Employees must be secured to the anchorage point with a full-body harness and fall arrest system. The platform will have a full railing system on all four sides. The lift equipment will be capable of supporting the weight of the platform, personnel and equipment to be used. The platform will be secured to the lift equipment in addition to the support provided by the forks. Employees will be trained to use the platform and regarding fall protection. Employees will wear fall protection devices and be secured within the platform to the manufacturer's anchorage point. If the equipment is operated by a separate Operator and not by employees within the platform, coordination between the Operator and Employees will be established.
5	Forklift Loading	Loading	4	3	12	Medium	Loading - Only stable or safely arranged loads will be handled. Caution will be exercised when handling off-center loads which cannot be centered. Only loads within the rated capacity of the truck will be handled. Trucks equipped with attachments will be operated as partially loaded trucks when not handling a load. A load-engaging means will be placed under the load as far as possible; the mast will be carefully tilted backward to stabilize the load. Extreme care will be used when tilting the load forward or backward, particularly when high tiering. Tilting forward will only be permitted during load pick-up or when depositing on a rack or stack. Tilting backwards will only be permitted to stabilize a load.
6	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - When not in use, remove all rigging from the immediate work area so it does not present a hazard to employees. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Visually inspect site for debris before leaving site – place in trash can. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness.
7	**Hazards noticed in field:**				0		
8					0		

S3NA-209-FM TASK HAZARD ANALYSIS

9					0		
10					0		
11					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/31/2015
Task Name: Forklifts		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
EMERGENCY RESPONSE PLAN	Task Name: Forklifts	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/26/2015
TASK HAZARD ANALYSIS	Task Name: Hot Work	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against. Flammable/Combustible Material	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques. Flammable/Combustible - Perform housekeeping in hot work areas to remove all flammable or combustible materials. Move all flammable and combustible materials at least 35 feet (10.7 meters) from the work area. Cover all wood planking, scaffolds, wooden forms, and other combustible material that cannot be removed, with fire blankets or other suitable material. Additionally, employ spark guards and methods of confining welding slag to protect the flammable or combustible materials.
3	Hot Work Permit	Permit	4	3	12	Medium	Permit - Permit is needed for any work that will generate sufficient heat or sparks and has the potential to ignite combustible and/or flammable materials. Complete the Hot Work Permit just prior to hot work activities commencing. Permits are not required for well-defined areas (e.g., maintenance shops, equipment lay-down areas).

4	Fire Watch	Fire Watch	4	3	12	Medium	Provide a fire watch when performing hot work in areas where fires might develop, including: 1. Where combustible materials are closer than 35 feet (10.7 meters) from the location of hot work; 2. Where easily ignited combustibles are located more than 35 feet (10.7 meters) from the hot work; 3. Where wall or floor openings are within 35 feet (10.7 meters) of the hot work, and may expose combustible materials; or 4. Where combustible materials are adjacent to the opposite side of a metal wall, floor, or ceiling, and are likely to be exposed to radiant heat from the hot work.
5	Air Monitoring (Gas Testing)	Chemical - Exposure to hazardous gases and liquids.	3	4	12	Medium	Chemical - If a potentially hazardous atmosphere exists, atmospheric conditions must be tested before hot work begins, and monitored periodically throughout the shift. The atmosphere inside a container/vessel will be monitored for flammable vapor prior to performing any welding, cutting, or grinding on the container surface. **Acceptable atmospheric conditions are: Oxygen content between 19.5 and 23.5%; combustible gasses less than 10% of the lower explosive limit (LEL).** If unsafe conditions are detected, stop work immediately.
6	Personal Protective Equipment	PPE	3	3	9	Medium	PPE - Proper eye protection, such as welding hood with proper shade lens; cutting or burning goggles for torch cutting; and full face-shields for grinding. Safety glasses must be worn under hoods and face-shields. Fire-resistant welding jackets or leathers. High-top boots. Clothing free of oil and grease, and preferably woven of non-synthetic fiber. Hard hat. Appropriate respiratory protection as required.
7	Cylinder Handling	Chemical - Exposure to hazardous gases and liquids. Misdirected waste Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves (replace immediately if damaged). Wear high visibility leather gloves when transporting cylinder. Never drop cylinders or permit them to strike one another violently, even when empty. Motion - Move cylinders by tilting and rolling them on their bottom edges; by use of a bottle cart; or with motorized equipment. Never lay cylinders on their sides and roll them. Use only warm, not boiling, water to thaw cylinders and valves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Secure cylinders in an upright position at all times, except for short periods of time while cylinders are actually being hoisted or carried, if necessary. Do not use magnets, chokers, or slings to hoist cylinders. Use a cradle or bottle rack designed and constructed for hoisting purposes. Mechanical - Keep hands and fingers out of line of fire.

S3NA-209-FM TASK HAZARD ANALYSIS

8	Type of Metal	Type of Metal	3	3	9	Medium	Type of Metal - Identify the type of metal to be worked on and protective coatings that have been applied to the metal. Where coatings are flammable or toxic the coating will be stripped a minimum of four inches (10 centimeters) from the areas of heat application.
9	Pressure Reducing Regulators	General	3	3	9	Medium	General - When a pressure-reducing regulator is attached to a compressed gas cylinder, the cylinder valve must be opened just slightly at first so that the regulator can take on pressure slowly, after which the valve may be turned open to its normal position. If the regulator takes on pressure too suddenly, it can damage the regulator and pressure gauges. The operator must stand to the side of the glass-covered gauges and not in front of them.
10	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Use metal buckets or containers for disposal of electrode stubs.
11	**Hazards noticed in field:**				0		
12					0		
13					0		
14					0		
15					0		

S3NA-209-FM TASK HAZARD ANALYSIS

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/26/2015
Task Name: Hot Work		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/26/2015
EMERGENCY RESPONSE PLAN	Task Name: Hot Work	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
TASK HAZARD ANALYSIS	Task Name: Indoor Air Sampling	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Secure load to ensure it does not shift during transport. Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision, Struck by/ struck against. Gravity - Slips, trips, falls. Dropped equipment. Lifting injury.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Sample the indoor air (using a summa canister) at each location.	Motion - Struck by/struck against Mechanical - Pinch points. Gravity - Slips, trips and falls. Collapsing walls. Biological - Biological hazard	3	3	9	Medium	Motion - Use goggles or safety glasses to protect eyes from flying debris. Mechanical - Wear nitrile gloves and leather gloves when handling heavy equipment/supplies. Use appropriate tools. Avoid placing hands/fingers beneath heavy objects. Gravity - Good housekeeping. Lift heavy objects using leg strength and proper posture. Uneven ground exists – maintain footing awareness. Biological - Identify possible biological hazards in the sampling locations
4	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Secure load to ensure it does not shift during transport. Uneven ground exists – maintain footing awareness. Visually inspect site for debris before leaving site – place in trash can.

S3NA-209-FM TASK HAZARD ANALYSIS

5	**Hazards noticed in field:**				0		
6					0		
7					0		
8					0		
9					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
SUMMARY OF CONTROLS	Task Name: Indoor Air Sampling		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
EMERGENCY RESPONSE PLAN	Task Name: Indoor Air Sampling	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
TASK HAZARD ANALYSIS	Task Name: LNAPL Recovery	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Avoid U-turns, K-turns, and 3-point turns; drive around the block. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Secure load to ensure it does not shift during transport. Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Traffic Control	Motion - Vehicular accident. Struck by/struck against.	4	3	12	Medium	Motion - Setup traffic control as specified on permit(s) for jobsite before beginning work and work within limits of traffic control. Communicate with certified traffic control subcontractor (if being used) for positioning of vehicles, equipment, etc. Wear high-visibility safety vest
3	Setting up equipment at site	Motion - Strain from lifting, Impaired vision, Struck by/ struck against. Mechanical - Pinch points Gravity - Slips, trips, falls. Dropped equipment. Lifting injury.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Mechanical - Use appropriate gloves and tools for task. Incorporate whip checks on quick-coupled pressurized connections. Ensure integrity of connections and flow path to receiving vessels. Provide secondary containment and/or plastic sheeting. Incorporate static dissipative equipment on receiving vessel. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.

4	Assemble total fluids pump at field office	Mechanical - Pinch points/Cuts/Abrasions Gravity - Lifting heavy equipment	3	3	9	Medium	Mechanical - Wear appropriate gloves when handling equipment/supplies or when constructing /assembling equipment. Watch hand position when tightening/loosening screws, bolts, clamps, etc. Use proper tool(s) for the task. Do not use fixed open blade knives, use proper cutting tool Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. or bulky objects – do not lift alone. Avoid placing hands/fingers beneath heavy objects
5	Open/close well vault	Motion - Struck by/struck against Gravity - Slips, trips and falls. Biological - Insects Chemical - Exposure to hazardous chemicals	4	3	12	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Gravity - Kneel instead of bending at waist. Lift heavy objects using leg strength and proper posture. Use knee pads when task places knees on ground. Uneven ground exists – maintain footing awareness Biological - Inspect well vault and lids for biological hazards (i.e. spiders, insects, etc.) Chemical - Monitor point of operations and breathing zone per HASP. Use appropriate PPE as dictated in HASP, incorporate engineering controls prior to upgrading PPE.
6	Gauge groundwater and LNAPL levels	Motion - Strain from lifting, Impaired vision, Struck by/ struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Chemical - Exposure to hazardous chemicals	3	3	9	Medium	Motion - Only authorized personnel are allowed in the exclusion zone. Use goggles or safety glasses to protect eyes from flying debris. Mechanical - Wear leather gloves to avoid cut/scratch, otherwise use nitrile gloves. Use appropriate tools. Move obstructions or unnecessary equipment/tools/material away from work area. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. Bend at the knees when working on floor slab. Uneven ground exists – maintain footing awareness. Chemical - Monitor point of operations and breathing zone per HASP. Use appropriate PPE as dictated in HASP, incorporate engineering controls prior to upgrading PPE.
7	Adjust pump to desired level	Motion - Awkward position Mechanical - Pinch points. Well or equipment damage/loss Gravity - Slips, trips and falls. Chemical - Chemical exposure.	3	3	9	Medium	Motion - Only authorized personnel are allowed in the exclusion zone. Use goggles or safety glasses to protect eyes from flying debris. Mechanical - Wear leather gloves to avoid cut/scratch, otherwise use nitrile gloves. Use appropriate tools. Secure pump with safety cable/rope to minimize potential for down-hole loss. Gravity - Lift heavy objects using leg strength and proper posture. Lower weight close to the body. Obtain assistance when lifting >50 lbs. – do not lift alone. Kneel instead of bending at waist. Use knee pads when task places knees on ground. Uneven ground exists – maintain footing awareness Chemical - Monitor point of operations and breathing zone per HASP. Use appropriate PPE as dictated in HASP, incorporate engineering controls prior to upgrading PPE

S3NA-209-FM TASK HAZARD ANALYSIS

8	Pump out LNAPL into drums/monitor LNAPL/Water interface depth	Motion - Strain from lifting, Impaired vision, Struck by/ struck against, traffic. Mechanical - Pinch points. Gravity - Slips, trips and falls. Chemical - Exposure to hazardous chemicals Noise - Sound	3	3	9	Medium	Motion - Only authorized personnel are allowed in the exclusion zone. Use goggles or safety glasses to protect eyes from flying debris. Look for traffic before entering street Mechanical - Wear leather gloves to avoid cut/scratch, otherwise use nitrile gloves. Use appropriate tools. Move obstructions or unnecessary equipment/tools/material away from work area, wipe-up spills immediately (slip hazard). Verify that all equipment guards are in place and securely fastened. Wear face shields as appropriate. Ensure secondary containment is around drums and conveyance piping is leak-free and securely fastened to receiving vessel. Do not force open/close equipment (i.e. valves, doors, etc.). Have appropriate fire extinguishers up-wind in work zone. Maintain integrity of static electricity dissipative equipment. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. Bend at the knees when working on floor slab. Uneven ground exists – maintain footing awareness. Chemical - Monitor point of operations and breathing zone per HASP. Wear respirators as appropriate, incorporate engineering controls prior to upgrading PPE Noise - Wear ear plugs while air compressor is operating
9	Pull pump from well	Motion - Strain from lifting, Impaired vision, Struck by/ struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Chemical - Exposure and Spills/releases Fire / Explosion	3	3	9	Medium	Motion - Only authorized personnel are allowed in the exclusion zone. Use goggles or safety glasses to protect eyes from flying debris. Mechanical - Wear nitrile coated work gloves and be aware of hand/body position. Use appropriate tools. Move obstructions or unnecessary equipment/tools/material away from work area. Verify that all equipment guards are in place and securely fastened. Wear face shields as appropriate. Place pump and hose inside containment drum, work over containment when possible, wipe up spills immediately. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. Kneel instead of bending at waist. Uneven ground exists – maintain footing awareness. When possible, pull tool toward body. Chemical - Monitor point of operations and breathing zone per HASP. Wear respirators as appropriate, incorporate engineering controls prior to upgrading PPE. Fire - Have appropriate fire extinguishers up-wind in work zone.

S3NA-209-FM TASK HAZARD ANALYSIS

10	Decontaminate equipment	Motion - Strain from lifting, Impaired vision, Struck by/ struck against, traffic. Mechanical - Pinch points Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Chemical - Chemical exposure.	3	3	9	Medium	Motion - Only authorized personnel are allowed in the exclusion zone. Use goggles, safety glasses, or face shield (as appropriate) for eye protection. Look for traffic before leaving work zone/entering traffic areas. Mechanical - Wear nitrile coated work gloves. Use appropriate tools. Ensure secondary containment is around drums. When possible, pull tool toward body. Do not force open/close equipment (i.e. valves, doors, etc.). Verify that all equipment guards are in place and securely fastened. Move obstructions or unnecessary equipment/tools/material away from work area. Gravity - Lift heavy objects using leg strength and proper posture. Lower weight close to the body. Obtain assistance when lifting >50 lbs. – do not lift alone. Kneel instead of bending at waist. Use knee pads when task places knees on ground. Uneven ground exists – maintain footing awareness Chemical - Monitor point of operations and breathing zone per HASP. Wear respirators as appropriate, utilize engineering controls before upgrading PPE.
11	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Remove traffic control after site clean up. Look for traffic before leaving work zone/entering traffic areas. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness. Visually inspect site for debris before leaving site – place in trash can.
12	**Hazards noticed in field:**				0		
13					0		
14					0		
15					0		
16					0		

S3NA-209-FM TASK HAZARD ANALYSIS

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
SUMMARY OF CONTROLS	Task Name: LNAPL Recovery		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
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- [ ]
- [ ]
- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/11/2015
EMERGENCY RESPONSE PLAN	Task Name: LNAPL Recovery	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
TASK HAZARD ANALYSIS	Task Name: Nuclear Density Gauges	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Nuclear Density Gauges	General	3	3	9	Medium	General - The detectors in the gauge measure the radiation emitted by the source rod. Gamma photons reaching the detectors must first pass through the material colliding with the electrons present in the material. A high material density will result in a high number of collisions and reduce the number of photos reaching the detectors (i.e. the lower the number of photons reaching the detector the more dense the material).

4	Nuclear Density Gauges	Testing	4	3	12	Medium	Testing location - The location must be flat, free of voids and loose material. Surface voids and irregularities can be filled with -400 µm sand or native material. Testing locations must have a clearance from trench walls and pipes of 0.5 m, to avoid erroneous reading due to the sphere of influence (neutron rebound) of the moisture sensor. Material being tested must be at minimum 50 mm thicker than desired testing depth (i.e. 100 mm lift should be tested using 50 mm direct transmission or where the soil is unstable backscatter may be permitted).
5	Prepare location for testing by soil type	Subgrade (Clay/Silt)	3	3	9	Medium	Subgrade (Clay/Silt) - Trim and level test location slightly larger than the scraper plate with a square nose shovel until a representative moisture condition is reached. Avoid tearing out pieces of the soil and creating voids. Slide the guide plate around to level and fill voids, this will also reveal any voids. If there are any voids they can be filled with -400 µm sand or native material. The -400 µm sand or native material will also be required if the gauge “rocks” when moved in the test position on the prepared test site. With the guide plate slightly tamp the prepared surface. This removes roughness and provides a good base for the gauge. (Use a minimal amount of -400 µm sand or native material. This material is not to be used as a substitute for poor site preparation.)
6	Prepare location for testing by soil type	Granular Course (Base and Sub base)	3	4	12	Medium	Granular Course (Base and Sub base) - Location must be representative of material being tested. Avoid locations where material appears segregated and excessively voided or a rough surface area. Slide the guide plate around to level and fill voids, this will also reveal any voids. If there are any voids they can be filled with -400 µm sand or native material. The -400 µm sand or native material will also be required if the gauge “rocks” when moved in the test position on the prepared location. With the guide plate slightly tamp the prepared surface. This removes roughness and provides a good base for the gauge. (Use a minimal amount of -400 µm sand or native material. This material is not to be used as a substitute for poor site preparation.) For lifts of 50 mm or greater use direct transmission providing the aggregate is not too coarse, i.e.: should be less than 50% of plus 5.0 mm material. If the material is very course backscatter position must be used, with fine sand levelling to provide a good seating of the gauge. For lifts less than 50 mm the backscatter position should be used, with fine sand levelling where necessary.

7	Prepare location for testing by soil type	Asphalt Mixes	3	3	9	Medium	Asphalt Mixes - Location must be representative of material being tested, avoid locations where material appears segregated and excessively voided or a rough surface area. If there are any voids they can be filled with -400 µm sand or native material. The -400 µm sand should be applied to provide an even distribution on the surface. It is important that the sand only fills the voids and does not provide a cushion for the gauge as too much sand will affect the readings. The backscatter mode is to be used on lifts greater than 50 mm and may be used on thinner lifts without a correction factor if the underlying material has a similar density. When thin lifts are tested and the underlying material has a substantially lower density (such as subgrade) the gauge's results should be corrected. For further details as to how the correction is used refer to the gauge's instruction manual. Core samples should be taken at the beginning of the paving contract or at any change in the job mix formula to correlate the density results of asphalt concrete pavements obtained with a nuclear density gauge.
8	Prepare location for testing by soil type	Direct Transmission Testing	3	3	9	Medium	Direct Transmission Testing - Insert the drill rod through the hole on the guide plate. Place one foot on the scraper plate and drive the drill rod through one of the guides on the plate perpendicular to the prepared surface. Drive the drill rod into the soil at least 50 mm deeper than the desired testing depth. (i.e. hole must be 350 mm deep for a 300 mm test). When the lifts are thinner than 50 mm the underlying material will influence the results of the test. Remove the rod by pulling straight up. Avoid disturbing the surface around the hole. In heavy clay tap and rotate the rod to loosen it as it is being pulled up. Do not use the guide plate as an extraction device. Position the gauge on the prepared site and align the source rod with the hole. This can be done by slightly tilting the gauge to one side releasing the source rod from the safe position and sliding it down the handle until the rod is through the bottom of the gauge. Insert the rod into the hole and continue to push the source rod down the hole until it has reached the desired testing depth. A click should be heard when the rod is locked into the proper depth position. Gently slide the gauge towards the key pad of the gauge until the source rod makes contact with the side of the hole.
9	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.

S3NA-209-FM TASK HAZARD ANALYSIS

10	**Hazards noticed in field:**				0		
11					0		
12					0		
13					0		
14					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/31/2015
Task Name: Nuclear Density Gauges		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/31/2015
EMERGENCY RESPONSE PLAN	Task Name: Nuclear Density Gauges	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
TASK HAZARD ANALYSIS	Task Name: Pipe Installation Oversight		Regularity of Task: One-time Routine

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	1166 air monitoring	Motion - Struck by/struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure. Noise - Sound	4	3	12	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Wear nitrile gloves - replace often. Use PID to monitor VOC concentrations and monitor breathing according to HASP provisions. Noise - wear hearing protection when noise greater than 85 dB

S3NA-209-FM TASK HAZARD ANALYSIS

4	Oversee remedial excavation	Motion - Struck by/ Struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure, Chemical release, Fire. Exposure to hazardous gases and liquids. Misdirected waste against. Electrical - Utility damage Pressure - Utility damage Noise - Sound	4	3	12	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Discuss parking area before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Use funnel to pour gasoline/diesel into equipment. Monitor breathing according to HASP provisions. Place absorbent pad beneath equipment to capture spills. Keep fire extinguisher onsite, maintain current certification. Only refuel equipment with gasoline when engines are cool. SSO must be onsite supervising fueling operations. Cell phone (or similar electronic devices) not allowed during refueling. Do not fuel equipment in bed of truck if a bed liner is installed. Electrical/Pressure - Ensure Digalert ticket is active. Verify utility marks - must hand dig within 2ft of known utilities. Be aware of overhead utilities. Work within 15 ft. requires high hazard work permit. Noise - wear hearing protection when noise greater than 85 dB
5	Dust monitoring	Motion - Struck by/struck against Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure. Noise - Sound	3	3	9	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Chemical - Wear nitrile gloves - replace often. Use PID to monitor VOC concentrations and monitor breathing according to HASP provisions. Noise - wear hearing protection when noise greater than 85 dB
6	Sample Collection	Motion - Struck by/struck against Gravity - Dropped bottles Chemical - Exposure to hazardous chemicals	3	4	12	Medium	Motion - Stay outside of excavator swing radius, communicate with operator or spotter before approaching. Do not approach equipment from rear, discuss blind spots with equipment operator before work. Gravity - Keep bottles in secured location and flat surface. Verify sample labels for accuracy prior to placing in cooler containing ice Chemical - Wear nitrile gloves when handling sample containers. Use appropriate tools (i.e. T-Handle).

S3NA-209-FM TASK HAZARD ANALYSIS

7	Documenting Excavation Location	Gravity - Slips, trips and falls. Collapsing walls. Mechanical - Heavy Equipment Chemical - Cross contamination.	3	3	9	Medium	Gravity - Be aware of footing at excavation edge, maintain 1:1 distance from edge excavations. Secure open excavations with fencing at the end of the day. Do not enter excavations >4 ft. deep without shoring or sloping approved by competent person. Use rangefinder to document sample locations >4 ft. deep. Uneven ground exists at railroad crossing and dirt areas– maintain footing awareness Mechanical - Wear leather gloves when working on equipment. Stay away from work zone – signal spotter before approaching excavation edge. Do not approach heavy equipment from behind. Be aware of lifting activities (pipe removal, etc.) – stay out of swing radius. Chemical - Decontaminate equipment before starting and between each location. Attempt to conduct soil sampling from least-impacted to most-impacted.
8	Investigation derived waste	Chemical - Exposure to hazardous gases and liquids. Misdirected waste Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves (replace immediately if damaged). Monitor breathing zone according to HASP. Wear high visibility leather gloves when transporting drums. Place a drum label on all drums identifying contents, content origin, contact person, contact number, and generation date. Verify current approved waste facilities with project manager prior to shipment. Maintain accurate record of drums, verify number upon removal. Coordinate with waste management subcontractor for removal. Motion - Use power lift truck, drum dolly, and/or other mechanical method to transport drums to staging area. Gravity - Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Watch hand/finger positioning when closing drum lid and power lift gate.
9	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness.
10	**Hazards noticed in field:**				0		
11					0		
12					0		

S3NA-209-FM TASK HAZARD ANALYSIS

13					0		
14					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/12/2015
Task Name: Pipe Installation Oversight		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/12/2015
EMERGENCY RESPONSE PLAN	Task Name: Pipe Installation Oversight	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/21/2015
TASK HAZARD ANALYSIS	Task Name: Rigging and Lifting Operations	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Move drilling rig (with mast down) over designated well location using a spotter. Verify hand-signal communication prior to moving rig. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Loading / Unloading vehicle with equipment / supplies at each location.	Motion - Pinch points Gravity - Slips, trips, falls. Lifting heavy equipment	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Watch hand position when opening/closing hinged lids/gates (i.e., tailgates, utility boxes, doors, hood, etc.). Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Lift heavy objects using leg strength and proper posture.
3	Rigging	General Gravity Electrical	3	3	9	Medium	General - Inspect all rigging before each use and as necessary during use; immediately remove any defective rigging from service. Rigging must be compatible with the environments where it is to be used (e.g., nylon slings are not to be used around torch cutting). Do not stand or pass under a suspended load. Do not use synthetic rope or metal mesh slings as bridles on suspended personnel platforms. Gravity - Know the load weight, including the weight of the rigging. Use chocks, blocks, or other means to prevent movement of materials when unhooking a load. Keep the load line plumb to maintain a stable load. Never stand in line with or next to the leg(s) of a sling that is under tension. Electrical - Always maintain safe working distances from energized power lines and equipment, as defined in SMS 034 – Utility Clearances and Isolation.

4	Chain Hoist and Come-a-Longs	Mechanical - Pinch points. Gravity - Slips, trips, and falls. Dropped equipment.	4	3	12	Medium	Mechanical - Confirm the capacity of the chain hoist or come-a-long is clearly marked on the housing or handle of the equipment. Also ensure that this capacity is not exceeded. Mark the control actuator on come-a-longs to indicate the direction of the resultant motion. Do not use scaffolding as a point of attachment for lifting devices such as tackle, chain falls, and come-a-longs, unless the scaffolding is specifically designed for that purpose. Gravity - Confirm that the straps, shackles, and the beam or overhead structure to which a hoist is secured are of adequate strength to support the weight of the load plus gear. The upper hook must be secured to prevent it from coming free of its support.
5	Testing Guidelines	Operational Tests Load Test	4	3	12	Medium	Operational Tests - Check all functions of the hoist with the hoist suspended in the unloaded state, or nominally loaded, as necessary. After the test, apply a load of at least 50 pounds—times the number of load-supporting parts of chain—to the hoist in order to check proper load control. Load Test - A qualified person shall determine the need to load-test the hoist. Prepare a written report of the test and place it on file. The test load shall not be less than 100% of the rated load of the hoist, or more than 125% of the same, unless otherwise recommended by the manufacturer or a qualified person. The replacement of load chain is excluded from this load test; however, make an operational test of the hoist in accordance with this standard prior to placing the hoist back in service. A qualified person will approve test anchorages or suspensions for testing.
6	Inspection of Hoists	Inspection	4	3	12	Medium	Inspection - A competent person will inspect all new, altered, or modified hoists prior to initial use. Do not use a hoist with a defect or in need of adjustment or repair until the hoist has been repaired. Daily, or before use if the hoist is not used daily, inspect the hoist to ensure there is no obvious damage to the hoist, load line, or hooks. Inspections must include operating mechanism, upper-limit device (if powered hoists), hoist braking system, hooks and latches, load line or chain, and load line reeving. Visual inspections (determined by service application) must be performed and documented by a competent person. All operating parts of the hoist must be inspected for wear, loose fasteners, corrosion, cracks, or distortion. ASME B30.16 must be reviewed to ensure compliance. Repairs or alterations to hoists will be made by the manufacturer's representative or manufacturer's trained personnel only. After all repairs or alterations are completed, test the hoist per ASME B30.16-2.2 Testing.
7	Below-the-Hook Lifting Devices	Lifting Beam Inspection	4	3	12	Medium	Lifting Beam (spreader beam) - The rated load and all required information for lifting devices must be legible, and on the lifting devices. Provide all devices with individual, legible-rated loads and required information, if multiple lifting devices are assembled for use. Mark all structural and mechanical lifting devices with, but not limited to, the following: manufacturer's name and address; serial number; weight of device (if over 100 pounds); and rated load. Inspection - Confirm that the operator performs a visual inspection prior to and during each lift. Document frequent visual inspection.

S3NA-209-FM TASK HAZARD ANALYSIS

8	Wire Rope Slings	Identification Tags General	4	3	12	Medium	Identification Tags - Name or trademark of the manufacturer. Rated load for type(s) of hitch(es), and the angle upon which it is based. Diameter or size. Number of legs, if more than one. Serial number (may request from sling manufacturer, but not required). General - Wire rope slings must have a design factor of no less than 5:1. Wire rope slings must be manufactured from new/unused regular lay cable. Do not use rotation resistant wire rope. Do not use wire rope slings for overhead hoisting that have hand-tucked eyes, eyes that are created with cable clamps, or eyes that are created with molly hogans. Keep wire rope slings lubricated, in accordance with the sling manufacturer's recommendations.
9	Rigging Hardware	Rigging Hardware Gravity	4	3	12	Medium	Rigging Hardware - Hardware includes shackles, links, rings, swivels, turnbuckles, eyebolts, hoist rings, wire rope clips, wedge sockets, rigging blocks, and load-indicating devices. Gravity - Stand clear of all rigging when it is under tension.
10	Compression Hardware	Wire Rope Clips Wedged Sockets	3	4	12	Medium	Wire Rope Clips - Place the saddle on the live end and the U-bolt on the dead end when ending terminations. Use the minimum number and spacing of clips as per the manufacturer or qualified person recommendations. Load the assembly to at least the expected working load both before and after putting it into service. Once the load is removed from the assembly, retighten clips to the proper torque, as recommended by the manufacturer or qualified person. Do not use wire rope clips to form eyes in slings for hoisting. Wedged Sockets - Assemble sockets as recommended by the manufacturer. Live end of the connection must be in line with sockets pin. Match the socket and wedge assembly for the rope size being installed. Do not interchange wedges between the manufacturers, sockets, or models. Secure the dead end tail extending beyond the wedge, as recommended by the manufacturer. Do not secure dead end of the rope to the live end of the wire rope (unless a double saddle clip of the proper size is used). Apply a load to fully seat the wedge before use after assembly of the wedge socket is complete.
11	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - When not in use, remove all rigging from the immediate work area so it does not present a hazard to employees. Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Visually inspect site for debris before leaving site – place in trash can. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness.
12	**Hazards noticed in field:**				0		
13					0		

S3NA-209-FM TASK HAZARD ANALYSIS

14					0		
15					0		
16					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/21/2015

SUMMARY OF CONTROLS

Task Name: Rigging and Lifting Operations

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/21/2015
EMERGENCY RESPONSE PLAN	Task Name: Rigging and Lifting Operations	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Chris Elmore		Date: 7/28/2015
TASK HAZARD ANALYSIS	Task Name: Soil Transport	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points and Strain from lifting Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves (PPE required). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Working Outside	Heat Illness - Dehydration - Sunburn - Heat Stress	3	3	9	Medium	Heat Stress - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioning. Apply sunscreen and wear protective clothing. Watch out for each other. Wear light-colored clothing.
4	Using Hand Tools	Gravity - Dropped Tools and Injuries	3	4	12	Medium	Gravity - Keep tools secure. Wear appropriate PPE. Inspect tools before each use to make sure they are in good condition. Always pass tools to others handle first and never throw tools to another person. Ensure workers have proper training before using a particular tool for the first time. Store tools and materials vertically, with the points and heavy ends down.

S3NA-209-FM TASK HAZARD ANALYSIS

5	Using the Wheelbarrow	Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points and Hand Injuries.	3	3	9	Medium	Motion - Balance your load over the wheel for good control. When you raise and lower the handles of a wheelbarrow, treat them like any other heavy load you lift. Keep your back straight and bend your knees. Use safe lifting techniques. Gravity - Examine work surfaces. Good housekeeping. Clear debris, tools, and any other materials from walking path. Don't overload the wheelbarrow. Mechanical - Wear proper gloves. Keep your speed under control and keep a tight grip on the handles. If you lose control of a wheelbarrow, let go of the handles and shout a warning to others. Keep wheelbarrows properly lubricated for easier use.
6	Using the Shovel	Motion - Hand and Back Injuries. Gravity - Slips, trips, and falls.	4	3	12	Medium	Motion - Wear proper gloves to protect your hands from blisters. Loosen your muscles by stretching and performing light exercise before and after using a shovel. Bend from you knees not your back. Tighten your stomach muscles while lifting. Avoid twisting while lifting. Don't overextend your arms or shoulders to load a shovel. Shovel loads should not be thrown above about four feet or further than about three feet. Never toss of flip shovel loads over your shoulder. Keep shovel loads under 15 pounds. Gravity - Examine work surfaces. Good housekeeping. Use safe lifting techniques. Clear debris, tools and any other materials in the working area. Stand with feet at hip width for balance. Hold shovel close to your body. Space hands apart to increase leverage.
7	**Hazards noticed in field:**				0		
8					0		
9					0		
10					0		
11					0		

S3NA-209-FM TASK HAZARD ANALYSIS

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Chris Elmore		Date: 7/28/2015
Task Name: Soil Transport		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Chris Elmore		Date: 7/28/2015
EMERGENCY RESPONSE PLAN	Task Name: Soil Transport	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
7:00 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
TASK HAZARD ANALYSIS	Task Name: Street Work	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against. Motion - Pinch points, Strain from lifting, Impaired vision	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Traffic Control	Motion - Struck by traffic	4	3	12	Medium	Motion - Set up traffic control before beginning work. Refer to HASP and AECOM SMS. Communicate with certified traffic control subcontractor (if being used) for positioning of vehicles, equipment, etc.
4	Loading/unloading vehicle with equipment/supplies at each location	Motion - Vehicular accident. Mechanical - Pinch points. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	3	3	9	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.

S3NA-209-FM TASK HAZARD ANALYSIS

5	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	3	3	9	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
6	**Hazards noticed in field:**				0		
7					0		
8					0		
9					0		
10					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Robert Ponce		Date: 6/4/2015
Task Name: Street Work		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
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- [ ]

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
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H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
EMERGENCY RESPONSE PLAN	Task Name: Street Work	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 5/28/2015
TASK HAZARD ANALYSIS	Task Name: Sub-slab soil gas probe installation and sampling		Regularity of Task: One-time Routine

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Secure load to ensure it does not shift during transport. Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Pinch points, Strain from lifting, Impaired vision, Struck by/ struck against. Gravity - Slips, trips, falls. Dropped equipment. Lifting injury.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Locate proposed probe location	Motion - Struck by/ struck against Gravity - Slips, trips and falls. Electrical - Utility damage Pressure - Utility damage	3	3	9	Medium	Motion - Set up exclusion zone around work area using traffic cones/delineators and/or caution tape (25 feet in diameter as practical). Discuss parking area before work and be aware of moving vehicles when working in the street. Gravity - Carefully walk to proposed probe location. Good housekeeping. Move any obstructions away from work area. Electrical/Pressure - Ensure Digalert ticket is active. Look for and identify any lines that may affect the work and pose as hazards. Verify that selected probe locations are clear of any known subsurface lines as marked by USA and/or cleared by subsurface geophysics.
4	Unloading equipment and supplies from vehicles and mobilizing to each location. Setup at each location.	Motion - Struck by/struck against Gravity - Slips, trips and falls.	4	3	12	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Watch hand position when opening/closing hinged lids/gates (i.e., tailgates, utility boxes, doors, hood, etc.). Gravity - Obtain assistance when lifting >50 lbs. – do not lift alone

S3NA-209-FM TASK HAZARD ANALYSIS

5	Core into and through concrete slab using rotohammer or hand drill into underlying soil	Motion - Struck by/ Struck against Mechanical - Pinch points. Gravity - Slips, trips and falls. Electrical - Utility damage Pressure - Utility damage Noise - Sound Chemical - Exposure to hazardous chemicals	3	3	9	Medium	Motion - Visitors must never enter exclusion zone while equipment is operating. Use goggles or safety glasses to protect eyes from flying debris Mechanical - Wear leather gloves to avoid cut/scratch. Use appropriate tools. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. Bend at the knees when working on floor slab. Uneven ground exists – maintain footing awareness Electrical/Pressure - Obtain USA ticket number (list subcontractor on ticket). Verify utility markings before commencing work. Verify that selected probe locations are clear of any known subsurface lines as marked by USA and/or cleared by subsurface geophysics Noise - Use earplugs or ear protection per HASP. Warn others in area of drilling and noise hazards/issues and notify personnel around area to wear ear protection. Chemical - Visually observe for concrete dust and use vacuum to remove dust and dirt. Monitor point of operations per HASP. Monitor breathing zone according to health and safety plan. Have a fire extinguisher readily available. Decontaminate drill bit before/between locations
6	Vapor probe installation and sealing	Motion - Struck by/struck against Mechanical - Pinch points. Gravity - Slips, trips and falls. Collapsing walls. Chemical - Chemical exposure. Noise - Sound	3	3	9	Medium	Motion - Visitors must never enter exclusion zone while equipment is operating. Use goggles or safety glasses to protect eyes from flying debris. Mechanical - Wear leather gloves to avoid cut/scratch. Use appropriate tools. Gravity - Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting >50 lbs. – do not lift alone. Bend at the knees when working on floor slab. Uneven ground exists – maintain footing awareness Chemical - Wear nitrile gloves when mixing and pouring concrete - replace often. Noise - wear hearing protection when noise greater than 85 dB
7	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Secure load to ensure it does not shift during transport. Uneven ground exists – maintain footing awareness. Visually inspect site for debris before leaving site – place in trash can.

S3NA-209-FM TASK HAZARD ANALYSIS

8	**Hazards noticed in field:**				0		
9					0		
10					0		
11					0		
12					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 5/28/2015

SUMMARY OF CONTROLS

Task Name: Sub-slab soil gas probe installation and sampling

Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 5/28/2015
EMERGENCY RESPONSE PLAN	Task Name: Sub-slab soil gas probe installation and sampling	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/10/2015
TASK HAZARD ANALYSIS	Task Name: Surveying	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by / Struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Open/Close well vault (includes minor well maintenance)	Motion - Pinch points and Strain from lifting Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by / Struck against. Mechanical - Tools Chemical - Chemical Exposure Biological - Biological Exposure	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves (PPE required). Use kneeling pad or knee pads. Kneel instead of bending at waist Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques. Mechanical - Use proper tools to open/close well vault lid (i.e., wrench, screw driver, etc.). Do not force open/close at awkward position and when possible - pull tool towards body. Wear leather gloves when opening or closing well lid. Turn well lids upside down to prevent “rocking”. If well will be left open, place cones, delineators, and/or caution tape to prevent access. Chemical - Monitor breathing zone according to HASP (PID 10.6eV Lamp) Biological - Open lid slowly to inspect well vault for insects (see SMS 47 in HASP).
3	Working Outside	Heat Illness - Dehydration - Sunburn - Heat Stress	3	3	9	Medium	Heat Stress - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioning. Apply sunscreen and wear protective clothing. Watch out for each other. Wear light-colored clothing.

S3NA-209-FM TASK HAZARD ANALYSIS

6	Using Hand Tools	Gravity - Dropped Tools and Injuries	3	4	12	Medium	Gravity - Keep tools secure. Wear appropriate PPE. Inspect tools before each use to make sure they are in good condition. Always pass tools to others handle first and never throw tools to another person. Ensure workers have proper training before using a particular tool for the first time. Store tools and materials vertically, with the points and heavy ends down.
8	Survey location	Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points and Hand Injuries.	3	3	9	Medium	Motion - Make eye contact with passing vehicles, be aware of truck operations. Use safe lifting techniques. Set up lane closure while working in the street. Point truck into traffic while working in the street Gravity - Examine work surfaces. Good housekeeping. Clear debris, tools, and any other materials from walking path. Obtain assistance when lifting heavy objects – maximum lifting weight per person is 50 lbs. Lift heavy objects using leg strength and proper posture. Lift heavy objects using leg strength and proper posture. Mechanical - Wear high visibility work gloves.
9	Site cleanup	Motion - Hand and Back Injuries. Gravity - Slips, trips, and falls.	4	3	12	Medium	Motion -Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting heavy objects – maximum lifting weight per person is 50 lbs. Gravity - Examine work surfaces. Good housekeeping. Use safe lifting techniques. Clear debris, tools and any other materials in the working area. Maintain footing awareness around uneven ground.
10	**Hazards noticed in field:**				0		
11					0		
12					0		
13					0		
14					0		

S3NA-209-FM TASK HAZARD ANALYSIS

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/10/2015
SUMMARY OF CONTROLS	Task Name: Surveying		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- [ ] CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- [ ] CSA/ANSI Safety Glasses or Goggles
- [ ] CSA/ANSI-approved Hard Hat
- [ ] CSA/ANSI Type II Reflective Traffic Safety Vest
- [ ] Fire Retardant Clothing
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]
- [ ]

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/10/2015
EMERGENCY RESPONSE PLAN	Task Name: Surveying	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
7:00 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/24/2015
TASK HAZARD ANALYSIS	Task Name: Utility Clearances and Isolation		Regularity of Task: One-time Routine

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by / Struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Working Outside	Heat Illness - Dehydration - Sunburn - Heat Stress	3	3	9	Medium	Heat Stress - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioning. Apply sunscreen and wear protective clothing. Watch out for each other. Wear light-colored clothing.
3	Using Hand Tools	Gravity - Dropped Tools and Injuries	3	4	12	Medium	Gravity - Keep tools secure. Wear appropriate PPE. Inspect tools before each use to make sure they are in good condition. Always pass tools to others handle first and never throw tools to another person. Ensure workers have proper training before using a particular tool for the first time. Store tools and materials vertically, with the points and heavy ends down.

4	Overhead Power Lines	Electrical - Electrical Exposure	3	3	9	Medium	Electrical - No work is to be conducted within 50 feet (15 meters) of overhead power lines without first contacting the utility company to determine the voltage of the system and the height (at the lowest point) of the line has been measured. No aspect of any piece of equipment is to be operated within 50 feet (15 meters) of overhead power lines without first making this determination. An exclusion zone shall be created at ground level beneath and 50 feet (15 meters) perpendicular to the overhead power lines on each side. This exclusion zone shall be demarcated with visual indicators (e.g., signage, flagging, paint, cones). No equipment shall enter the exclusion zone without approval. Operations adjacent to overhead power lines are prohibited unless one of the following conditions is satisfied: 1. Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage. 2. The minimum clearance from energized overhead lines is presented below, or the equipment will be repositioned and blocked so that no part, including cables, can come within the minimum clearances listed below. <u>Nominal System (kilovolt, kV) ; Minimum Required Distance</u> 0–50 ; 10 feet (3 meters) 51–100 ; 12 feet (3.6 meters) 101–200 ; 15 feet (4.6 meters) 201–300 ; 20 feet (6.1 meters) 301–500 ; 25 feet (7.6 meters) 501–750 ; 35 feet (10.7 meters) 751–1000 ; 45 feet (13.7 meters) 3. The power line(s) has been isolated through the use of insulating blankets, which have been properly placed by the utility. If insulating blankets are used, the utility will determine the minimum safe operating distance; get this determination in writing with the utility representative's signature.

S3NA-209-FM TASK HAZARD ANALYSIS

5	Underground Utilities	Electrical - Electrical Exposure	3	3	9	Medium	Electrical - Do not begin subsurface work (e.g., trenching, excavation, drilling, etc.) until a check for underground utilities and similar obstructions has been conducted. Contact utility companies or the state/regional utility protection service at least two (2) working days prior to excavation activities to advise them of the proposed work and to ask them to establish the location of the underground utility installations prior to the start of actual excavation. One Call utility location service is available throughout the United States by calling 811. Where these services are unavailable (e.g., private properties), contract with an independent utility locating service to perform an evaluation of subsurface utilities. Obtain utility clearances for subsurface work on both public and private property. Clearances are to be in writing and signed by the party conducting the clearance. Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. Do not conduct mechanical-assisted subsurface work (e.g., work using a powered drill rig, mechanical excavator, etc.) within five (5) feet (1.5 meters) of a confirmed or suspected utility or other subsurface structure. Confirm minimum distances for mechanical-assisted subsurface work with the utility owner, as distances beyond this five-foot minimum may be required. Nondestructive clearance techniques (e.g., vacuum extraction or other hand clearing means) are required prior to drilling/excavating in higher risk locations, including chemical plants, retail service stations, or other locations with complex underground utility systems. Subsurface work within five feet (1.5 meters) of a confirmed or suspected utility or other subsurface structure must be done by nondestructive clearing techniques to the point where the obstruction is visually located and exposed. Once the obstruction location is confirmed in this manner, mechanical-assisted work may begin.
6	Site cleanup	Motion - Hand and Back Injuries. Gravity - Slips, trips, and falls.	4	3	12	Medium	Motion -Lift heavy objects using leg strength and proper posture. Obtain assistance when lifting heavy objects – maximum lifting weight per person is 50 lbs. Gravity - Examine work surfaces. Good housekeeping. Use safe lifting techniques. Clear debris, tools and any other materials in the working area. Maintain footing awareness around uneven ground.

S3NA-209-FM TASK HAZARD ANALYSIS

7	**Hazards noticed in field:**				0		
8					0		
9					0		
10					0		
11					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Linda Lockhart		Date: 8/24/2015
Task Name: Utility Clearances and Isolation		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 8/24/2015
EMERGENCY RESPONSE PLAN	Task Name: Utility Clearances and Isolation	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
7:00 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
TASK HAZARD ANALYSIS	Task Name: Well Vault Replacement	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls) Severity	Likelihood	Risk Level	Hazard Classification	Controls (List controls that AECOM will implement)
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Gravity - Slips, trips, falls. Dropped equipment. Lifting injury. Struck by/ Struck against. Motion - Pinch points, Strain from lifting, Impaired vision	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.
3	Remove Damaged Well Vault	Electrical/Pressure - Subsurface utilities, electrical cords Motion - Strain from lifting, Struck by, Repetitive motion Noise - Sound Radiation - Heat Stress	4	3	12	Medium	Pressure/Electricity - Contact USA and verify utility markings before beginning work. Obtain excavation permit from Tesoro Unit Operators before digging. Inspect condition of extension cords and receptacles, must use GFCI whip cord Motion - Keep body parts out of line of fire and wear heavy work gloves. Keep personnel out of work area. Wear high visibility leather gloves when operating machinery. Lift heavy objects using leg strength and proper posture. Observe a 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Wear safety glasses and goggle/face shield to protect from flying debris. Protect vehicles and pedestrians adjacent from work area. Inspect all connections and verify condition of equipment. Operate equipment no longer than 30 minutes per person. Alternate personnel operating the jackhammer. Wear leather gloves while operating equipment. Noise - wear hearing protection when noise greater than 85 dB Radiation - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioning.

S3NA-209-FM TASK HAZARD ANALYSIS

4	Install Well Vault	Chemical - Dust Motion - Strain from lifting, Struck by, Repetitive motion Gravity - Slip, trips and falls. Radiation - Heat Stress	4	3	12	Medium	Chemical - Wear dust mask to avoid inhaling concrete dust. Stand upwind when mixing concrete. Motion - Keep body parts out of line of fire and wear heavy work gloves. Keep personnel out of work area. Wear high visibility leather gloves when operating machinery. Lift heavy objects using leg strength and proper posture. Observe a 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Wear safety glasses and goggle/face shield to protect from flying debris. Protect vehicles and pedestrians adjacent from work area. Inspect all connections and verify condition of equipment. Use proper posture when mixing concrete with shovel. Noise - wear hearing protection when noise greater than 85 dB Gravity - Examine work surfaces. Good housekeeping. Visually inspect area before leaving site, place debris in trash. Radiation - Hydrate regularly (see HASP). Take breaks as needed in shade or air conditioning.
5	Fueling generator/equipment	Chemical - Chemical exposure, Chemical release, Fire	3	3	9	Medium	Chemical - Use funnel to pour gasoline/diesel into equipment. Monitor breathing according to HASP provisions. Place absorbent pad beneath equipment to capture spills. Keep fire extinguisher onsite, maintain current certification. Only refuel equipment with gasoline when engines are cool. SSO must be onsite supervising fueling operations. Cell phone (or similar electronic devices) not allowed during refueling. Do not fuel equipment in bed of truck if a bed liner is installed.
6	Investigation derived waste	Chemical - Exposure to hazardous gases and liquids. Misdirected waste Motion - Lifting injury. Gravity - Slips, trips and falls. Dropped equipment. Mechanical - Pinch points.	3	3	9	Medium	Chemical - Wear nitrile gloves (replace immediately if damaged). Monitor breathing zone according to HASP. Wear high visibility leather gloves when transporting drums. Place a drum label on all drums identifying contents, content origin, contact person, contact number, and generation date. Verify current approved waste facilities with project manager prior to shipment. Maintain accurate record of drums, verify number upon removal. Coordinate with waste management subcontractor for removal. Motion - Use power lift truck, drum dolly, and/or other mechanical method to transport drums to staging area. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Mechanical - Keep hands and fingers out of line of fire. Watch hand/finger positioning when closing drum lid and power lift gate.

S3NA-209-FM TASK HAZARD ANALYSIS

7	Site Cleanup/Demobilization	Mechanical - Pinch points. Motion - Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Ensure equipment is secure prior to moving vehicle. Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
8	**Hazards noticed in field:**				0		
9					0		
10					0		
11					0		
12					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM

Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
THA Developed By: Robert Ponce		Date: 6/4/2015
Task Name: Well Vault Replacement		Regularity of Task: One-time Routine

SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Robert Ponce		Date: 6/4/2015
EMERGENCY RESPONSE PLAN	Task Name: Well Vault Replacement	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 10/14/2015
TASK HAZARD ANALYSIS	Task Name: Remediation System O&M (3000VES)	Regularity of Task: One-time Routine	

	Job Event Sequence (List the major steps of the individual task)	Hazards (List primary hazards)	Hazard Classification (before controls)				Controls (List controls that AECOM will implement)
			Severity	Likelihood	Risk Level	Hazard Classification	
1	Loading equipment and mobilizing to the site	Motion - Vehicular accident. Struck by/struck against. Mechanical - Pinch points. Gravity - Slips, trips and falls. Dropped equipment. Lifting injury. Struck by/ struck against.	4	3	12	Medium	Motion - Practice defensive driving. Visually inspect vehicle prior to driving (tires, lights, etc.). Attach seatbelts prior to engaging vehicle. Seatbelts must be worn at all times by driver and passengers while vehicle is in motion. Cell phone usage is prohibited while driving a vehicle (including hands free devices such as a handset or speaker phones). Obey posted speed limits and traffic laws. Avoid U-turns, K-turns, and 3-point turns; drive around the block. Implement "first move forward" by backing into locations upon arrival. Back vehicle into location slowly - use spotter in sensitive areas (homes, sidewalks, driveways). Ensure equipment is secure prior to moving vehicle. Secure load to ensure it does not shift during transport. Do not obstruct vision by placing equipment/supplies within the mirrors “line-of-sight” (i.e., inside cab and/or truck bed). Mechanical - Keep body parts out of line of fire and wear heavy work gloves. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques.
2	Setting up equipment at site	Motion - Strain from lifting, Impaired vision, Struck by/ struck against. Mechanical - Pinch points Gravity - Slips, trips, falls. Dropped equipment. Lifting injury.	3	3	9	Medium	Motion - Keep body parts out of line of fire and wear heavy work gloves. Do not jump out of tailgate, climb out maintaining three points of contact. Do not place equipment above mirror line of sight (ie inside cab and/or truck bed). Mechanical - Use appropriate gloves and tools for task. Incorporate whip checks on quick-coupled pressurized connections. Ensure integrity of connections and flow path to receiving vessels. Provide secondary containment and/or plastic sheeting. Incorporate static dissipative equipment on receiving vessel. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Obtain assistance (ie buddy system) when lifting heavy objects. Use proper/safe lifting techniques.

S3NA-209-FM TASK HAZARD ANALYSIS

3	Daily Operations and Maintenance at recovery unit pad	Noise Hot surfaces Slip-trip-fall Cuts/lacerations Poor data acquisition Chemical Exposure Electrical Back/or other muscle sprain Pinch points/entanglement in equipment Pressurized assemblies/stored energy-pneumatic systems	4	3	12	Medium	Noise - Hearing protection is needed when noise is >85 dB Hot surfaces - Be aware that portions of the oxidizer, blower skid and stack are or can be hot. Appropriate gloves and skin protection (long sleeves) should be worn when working near equipment with elevated temperatures. Slip-trip-fall - Plan travel path when walking amongst equipment skids, avoid carrying equipment/material that hinders view of travel path. Maintain 3 points of contact when climbing stack access ladder or access ladder on to top of oxidizer or when stepping over components of skids or pipe racks. Do not carry tools while using ladder or stairs- alternatively utilize a bucket and rope to lift tools to elevated work areas. Cuts/lacerations - Wear gloves appropriate for task. Poor data acquisition - Compare with previous data, always verify that data is being acquired from the correct point and recorded correctly. Verify equipment gathering data (PID/FID/multi-gas) is calibrated properly. Chemical Exposure - Proper PPE, nitrile gloves for liquids. Proper monitoring of atmosphere with appropriate equipment (PID/FID/multi-gas) and following action levels in HASP. Electrical - **Under no circumstances are the blower motor starters, high voltage switchgear or transformers to be opened by unauthorized personnel. Only competent personnel should open PLC cabinet or other low-voltage (480 volt or less) electrical enclosures or cabinets.** Be mindful of live circuitry. Avoid wearing jewelry. Use correct tools for job Back/or other muscle sprain - Use proper lifting techniques. Be mindful of body positioning and force being exerted when operating hand wheels or other tools/equipment. Pinch points/entanglement in equipment - Be aware of automated equipment such as, though not limited to, valves, actuators and pumps that are controlled remotely and may start/stop at any time. At no time, other than during trouble-shooting, should any guards be removed and equipment allowed to operate, with the exception of management-approved trouble-shooting. Operation of any equipment with guarding removed is not allowed without approval from Management. Removal or over-riding of safety critical equipment other than for pre-approved features for troubleshooting is not allowed without permission from management. Equipment is to be stopped and locked-out prior to removal or replacement of guarding or re-installation of safety features safety critical equipment. Be mindful of hand/body positioning and force being exerted when operating hand wheels of valves or when using tools or other equipment. Know where your hand/body would go if the implement you are using breaks free. Pressurized assemblies/stored energy-pneumatic systems - De-pressurize pneumatic or other pressurized equipment prior to disassembly. Use whip checks on portable equipment with quick-connect style fittings.

S3NA-209-FM TASK HAZARD ANALYSIS

4	Start-Stop of Vapor Recovery System	Electrical Noise Exposure Cuts/lacerations Equipment damage Pinch points/entanglement in equipment	4	3	12	Medium	Electrical - **Under no circumstances are the blower motor starters, high voltage switchgear or transformers to be opened by unauthorized personnel**. Only competent personnel should open PLC cabinet or other low-voltage (480 volt or less) electrical enclosures or cabinets. Be mindful of live circuitry. Avoid wearing jewelry . Noise Exposure - Hearing protection is needed when noise is >85 dB Cuts/lacerations - Use hand protection as specified for task and as per HASP. Be mindful of sharp edges on equipment, protect if possible. Equipment damage - Inspect all equipment for readiness to start- valve positions, blower oil levels, dilution air filters etc. Remove all LOTO equipment as per permit upon verifying removal is appropriate. Pinch points/entanglement in equipment - At no time should any guards be removed and equipment allowed to operate. Removal or over-riding of safety critical equipment other than for pre-approved troubleshooting is not allowed. Equipment is to be stopped and locked-out prior to removal or replacement of guarding or safety critical equipment. Verify location of any other personnel prior to start and that personnel are aware that the systems are generally automated and can start-stop at any time.
5	Opening Equipment Enclosures -PLC cabinet/electrical enclosures -Valve actuators/pumps	Electrical Back/muscle sprain Pinch points/line-of-fire/motion Chemical and noise exposure Cuts/lacerations/abrasions	4	3	12	Medium	Electrical - Care when opening PLC cabinet or other electrical enclosures. Only competent personnel should open PLC cabinet or other low-voltage (480 volt or less) electrical enclosures or cabinets. Be mindful of live circuitry. Avoid wearing jewelry. Under no circumstances are the blower motor starters, high voltage switchgear or transformers to be opened by unauthorized personnel. Be mindful of tool usage within cabinets or equipment enclosures and potential to drop tools/parts/debris into or onto sensitive equipment. LOTO of remotely activated and/or automated equipment. Disablement of PLC is not to be considered sufficient to Lock Out equipment. All energy sources to the particular equipment must be disabled. Back/muscle sprain - Obtain assistance when lifting >50 lbs or bulky items. Use proper lifting techniques. Pinch points/line-of-fire/motion - Ensure LOTO of equipment/energy sources to equipment being worked on is disabled prior to work activities. Be aware of hand/body position relative to tools and equipment. Be mindful of hand/body positioning and force being exerted when operating hand wheels of valves or when using tools or other equipment. Know where your hand/body would go if the implement you are using breaks free. Block or chock doors or panels open when working within to avoid accidental closure. Chemical and noise exposure - Proper PPE and vapor monitoring, see HASP for proper equipment and action levels. Use hearing protection in designated areas. Cuts/lacerations/abrasions - Wear cut resistant gloves appropriate for task. Be aware of sharp edges in work area, remove if possible.

6	Work in well field -Monitoring of vacuum/flow at well field -Obtaining vapor samples at well field -Opening vaults/adjusting flow at well field -Maintenance of knock-out systems	Biological Back/muscle sprain Chemical exposure Pinch points/entanglement in equipment Electrical Miss-labeled samples Release to environment	4	3	12	Medium	Biological - Be aware of stray animals/wild animals- do not approach. Insects- vaults, brush, open pipes etc. will harbor insects. Be mindful of the potential for insects while accessing various assets in the well field. Always wear gloves while opening vaults. Back/muscle sprain - Use proper lifting techniques. Be mindful of body positioning and force being exerted when operating hand wheels of valves or other tools/equipment. Assistance when lifting/moving >50lbs or bulky items, proper lifting techniques- legs as opposed to back. Use appropriate tools to assist with opening valve vaults. Chemical exposure - Proper PPE, nitrile gloves when exposure to liquids is possible such as when working with knock-out equipment. Monitor for vapors as per HASP. Pinch points/entanglement in equipment - Be mindful of hand/body position when opening vaults. Vault lids should be chocked with a suitable implement to prevent accidental closure. Be mindful of hand/body positioning and force being exerted when operating hand wheels of valves or when using tools or other equipment. Know where your hand/body would go if the implement you are using breaks free. LOTO of pumps when servicing. Electrical - Care when opening PLC cabinet or other electrical enclosures. Only competent personnel should open PLC cabinet or other low-voltage (480 volt or less) electrical enclosures or cabinets. Be mindful of live circuitry. Avoid wearing jewelry. Be mindful of tool usage within cabinets or equipment enclosures and potential to drop tools/parts/debris into or onto sensitive equipment. Miss-labeled samples - Verify sample source/name of well or port sample is being taken from. Release to environment - Verify system integrity after work has been performed on piping/fluid conveyance equipment. Use containment schemes when undoing fluid connections- buckets/rags/pans etc.
7	Equipment Modification -Additions or alterations to equipment	Equipment damage/environmental release Hazards to employees	4	3	12	Medium	Equipment damage/environmental release - Verify alteration does not inhibit safety critical equipment or exceed design parameters. Verify alteration does not affect permitting requirements affecting discharge. Hazards to employees - Communicate and document changes, especially if change alters operating procedures. Verify that alteration does not pose a new safety hazard such as slip/trip/fall, pinch point etc. Update JSA if necessary.
8	Site Cleanup/Demobilization	Motion - Pinch points. Vehicular accident. Gravity - Slips, trips, and falls. Dropped equipment. Lifting injury.	4	3	12	Medium	Motion - Practice defensive driving. Keep body parts out of line of fire and wear heavy work gloves. Avoid placing hands/fingers beneath heavy objects. Secure load to ensure it does not shift during transport. Remove traffic control after site clean up. Look for traffic before leaving work zone/entering traffic areas. Gravity - Examine work surfaces. Good housekeeping. Observe 50 lb. lifting limit per person. Use safe lifting techniques. Uneven ground exists – maintain footing awareness. Visually inspect site for debris before leaving site – place in trash can.

S3NA-209-FM TASK HAZARD ANALYSIS

9	**Hazards noticed in field:**				0		
10					0		
11					0		
12					0		
13					0		

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 10/14/2015
SUMMARY OF CONTROLS	Task Name: Remediation System O&M (3000VES)		Regularity of Task: One-time Routine

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (**reference HASP monitoring plan**)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

S3NA-209-FM TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By: Linda Lockhart		Date: 10/14/2015
EMERGENCY RESPONSE PLAN	Task Name: Remediation System O&M (3000VES)	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
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Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		

Attachment J

Blank Daily Task Hazard Analysis Form

(Also included in CD)

TASK HAZARD ANALYSIS

AECOM	Project Name: Former Kast Property	Project Number: 60422689	Client: Shell Oil Products US
	Supervisor: Robert Ponce	Project Manager: Chris Osterberg	Location: Carson, CA
	THA Developed By:		Date:
TASK HAZARD ANALYSIS	Task Name:	Regularity of Task: One-time Routine	

	Job Event Sequence *(List the major steps of the individual task)*	Hazards *(List primary hazards)*	Hazard Classification *(before controls)*				Controls *(List controls that AECOM will implement)*
			Severity	Likelihood	Risk Level	Hazard Classification	
1							
2							
3							

TASK HAZARD ANALYSIS

4							
5							
6							
7							

TASK HAZARD ANALYSIS

8							
9							
10							
11							

TASK HAZARD ANALYSIS

12	**Hazards noticed in field:**						
13							
14							
15							
16							

Hazard Classification Guidelines

Severity

1 Remote potential for injury, property damage/$ loss, or environmental damage

2 Potential for minor first aid injury, property damage/$ loss, or environmental damage

3 Potential for moderate personnel injuries, including medical treatment, property damage/$ loss, environmental damage, or negative public impact

4 Potential for a serious injury, major property damage/$ loss, serious impact to the environment, and public health

5 Catastrophic damage to people, property/equipment, environment, or public health

Likelihood of Occurrence

1 Very unlikely

2 Unlikely

3 Likely

4 Very likely

5 Certain

Hazard Classification Matrix

Likelihood \ Severity	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25

Risk Level
Low
Medium
High

Risk Level = Likelihood x Severity

TASK HAZARD ANALYSIS

AECOM

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SUMMARY OF CONTROLS

Personal Protective Equipment (*check all that apply*)

- CSA/ANSI Safety-Toed Boots (Leather/Rubber)
- CSA/ANSI Safety Glasses or Goggles
- CSA/ANSI-approved Hard Hat
- CSA/ANSI Type II Reflective Traffic Safety Vest
- Fire Retardant Clothing

Air Monitoring (reference HASP monitoring plan)

No air monitoring required

Air monitoring required (*see procedures below*)

Parameter	Location/Monitoring Interval	Response/Action Levels	Response Activity
VOCs by PID	BZ, continuous	1 ppm	Don respiratory protection
H2S	BZ, continuous	10 ppm	Stop Work
Carbon Monoxide	Work Area	50 ppm	Stop Work
Oxygen	Work Area	<19.5% or >23.5%	Stop Work
LEL	Work Area	> 5%	Stop Work

Required Training (associated with this THA)	Key SOPs (associated with this THA)		Client & Other Requirements
1 Site specific trainings	S3NA-307-PR Housekeeping, Worksite	S3NA-507 PR Hazardous Materials Communication / WHMIS	
2 40 Hour HAZWOPER	S3NA-308-PR Manual Lifting, Field	S3NA-511-PR Heat Stress Prevention	
3 Safe and Defensive Driving	S3NA-313-PR Wildlife, Plants & Insects	S3NA-521-PR Decontamination	
4 Respiratory Fit Testing	S3NA-502-PR Benzene	S3NA-519-PR Respiratory Protection Program	
5	S3NA-520-PR Spill Response, Incidental		
6			

Acknowledgement / Signatures

Project Manager / Supervisor (signature): Date:

Name	Signature	Company	Date	Name	Signature	Company	Date

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EMERGENCY RESPONSE PLAN	Task Name:	Regularity of Task: One-time Routine	

Check-in Procedures

Check-in Times	Check-in Person	Phone Number	Cell Phone Number
6:30 am & 5:00 pm (pacific time)	Robert Ponce	(714) 720-4051	(714) 720-4051
Alternate:			

Emergency Coordinators / Key Personnel

Name	Title	Phone Number	Cell Phone Number
Robert Ponce	Site Manager	(714) 720-4051	(714) 720-4051
Devon Molitor	AECOM Orange HSSE Rep	(714) 689-7230	(858) 531-9666
Galen Cooter	Area Safety Manager	(562) 213-4164	(805) 452-3523
	Incident Reporting Line (BY THE END OF THE SHIFT)		

Emergency Agencies / Public Utilities

Name	Type	Details	Phone Number
Carson Police Department	Police		9-1-1 (emergency)
	Fire		9-1-1
	Ambulance		9-1-1
Occupational Health Nurse: Workcare	Non-emergency medical treatment only		(888) 449-7787
	Emergency medical treatment		9-1-1
	Poison Control Center (US)		(800) 222-1222
	Pollution / Environmental (US)		(800) 292-4706
	INFOTRAC *(AECOM's Account # 74984)*		(800) 535-5053

Emergency Equipment & Supplies		Other Emergency Plan Details
First Aid Kit - Type:	Eye Wash	
Blankets / Survival:	Spill Kit	
Fire Extinguishers Type:	Other:	
Communication Device		
Vehicle Safety Equipment		