## National Park Service Construction Safety Policy

All National Park Service units shall implement Construction Safety programs to protect NPS employees, volunteer workers, contract employees and visitors from hazards associated with construction, demolition, renovation or historical restoration projects. Construction activities that include scaffolds, excavations or fall hazards of six feet or more are responsible for approximately 40 percent of the construction fatalities nationally, and, due to the higher than normal level of risk inherent in these activities, receive special attention within this Reference Manual.

## Scope

This program applies to all NPS units and all NPS employees, NPS volunteers and contract employees under direct supervision by the NPS engaged in construction activities. All NPS units are expected to ensure that contracts for maintenance and construction activities include the requirement to incorporate all pertinent federal Occupational Safety and Health Administration standards, or equivalent state plan safety and health standards where applicable. Contact your Regional Safety Office if you are uncertain which jurisdiction applies to your employees and/or outside contractors.

Construction activities are defined by OSHA as any “construction, alteration and/or repair, including painting and decorating. ”This is differentiated from maintenance activities, which are generally defined as “keeping a structure, fixture or foundation (substrate) in proper condition in a routine, scheduled or anticipated fashion.”

For legal purposes, it may be difficult to ascertain whether a project is maintenance or construction, and therefore governed by OSHA General Industry Standards (29 CFR 1910) or OSHA Construction standards (29 CFR 1926). NPS supervisors shall always use the most protective standard (i.e., the procedures that will best ensure employee safety).

## References

NPS Construction Safety programs will meet the requirements OSHA has codified in Title 29 Code of Federal Regulations Part 1926 (Construction); 29 CFR 1910 (General Industry) where referenced by 1926 standards, and:

1. Regulations specific to scaffold use are 29 CFR 1926.450-454.

2. Regulations specific to fall protection are 29 CFR 1926.500-503.

3. Regulations specific to excavations/trenching are 29 CFR 1926.650-652.

## Program Elements

*1. Competent Person.*

Per OSHA regulation, all construction activities incorporating scaffolds, excavations and trenching, or fall hazards of six feet or more, must have a competent person involved in the project or task. As defined by OSHA, a competent person for scaffolds, excavations or fall protection must possess:

a. Knowledge and experience to be able to identify hazards.
b. Authority from the employer to correct identified hazards.

A competent person typically requires training to gain the knowledge of the foreseeable hazards, applicable OSHA regulations and current industry practices. Training provider sources are listed in Appendix A.

The competent person can be any NPS employee, regardless of WG/GS rating, as long as that person meets the two requirements listed above.

*2. Qualified Person.*

Per OSHA definition, a qualified person means one who, by possession of a recognized degree, certificate or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work or the project. Qualified persons are often contract engineers, consultants or trainers who provide specialized services assessing or designing scaffolds, fall protection systems and trench and excavation protection systems. The requirement to use qualified persons in certain instances is listed in 29 CFR 1926 for scaffolds, trenches and fall protection.

*3. Training.*

It is a supervisory responsibility to ensure all employees engaged in construction activities within the scope of this program receive effective training before engaging in these activities. Employee training requirements and sources are found in Appendices B, C and D.

*4. Inspections.*

NPS Supervisors shall ensure that projects involving scaffolds, excavations and trenches, or fall hazards of six feet or more, are inspected by “Competent Persons” per requirements within the standards.

*5. Safety Plan and Job Hazard Analyses.*

A Job Hazard Analysis (JHA) and Site-Specific Safety Plan should be written and used by affected employees and supervisors. The JHA is a planning tool used by supervisors and employees to identify foreseeable hazards and effective hazard control methods. The Site-Specific Safety Plan incorporates all pertinent JHAs into a comprehensive document that fully describes all phases of the work and specifies work practices, engineering controls and personal protective equipment to control or abate hazards identified in the JHAs. A JHA template can be found in Appendix E. An example of a Safety Plan can be found in Appendix F.

Construction (Scaffold, Fall Protection, Excavation and Trenching) Program Checklist

Step 1 ❑ Identify Shops and Employees who conduct work activities that meet the OSHA definition of construction. Ensure these supervisors and employees are aware of and meeting the OSHA requirements as listed in 29 CFR 1926 and 29 CFR 1910, or state plan equivalent (generally Facilities Maintenance employees).

Step 2 ❑ Identify Shops and Employees who conduct work activities specifically involving scaffolds, fall hazards or trenching and excavations (generally Facilities Maintenance employees).

Step 3 ❑ Identify employees or supervisors who will be designated “Competent Persons” to support Shops and Employees who conduct work activities specifically involving scaffolds, fall hazards or trenching and excavations (generally Facilities Maintenance employees).

Step 4 ❑ Ensure Competent Persons receive training at an OTI Center or equivalent as listed in Appendix A and are granted the authority to identify and immediately control hazards or stop work until hazards can be controlled.

Step 5 ❑ Train exposed workers and their supervisors per appendices B, C or D.

Step 6 ❑ Take steps to eliminate or control hazards by engineering or administrative controls as may be recommended by competent or qualified persons.

Step 7 ❑ Provide workers with appropriate personal protective equipment when engineering and administrative control measures (Step 3) fail to control hazards. Ensure workers know how to use this equipment properly. Use JHAs and Site Specific Safety Plans per Appendices E and F.

Step 8 ❑ Identify contracts and contractors that conduct work activities involving scaffolds, fall hazards or trenching and excavations. Ensure that contractors are aware of OSHA requirements and provide for the presence of a competent person at such jobs.

Step 9 ❑ Set up a system to maintain training records.

## Technical Appendices

Appendix A: Competent Person Training Requirements and Sources

Appendix B: Required Training Elements for Scaffolds

Appendix C: Required Training Elements for Fall Protection

Appendix D: Required Training Elements for Trenching and Excavations

Appendix E: Job Hazard Analysis Template Appendix F: Site-Specific Safety Plan Example

## Appendix A: Competent Person Training Requirements and Sources

Training to become a competent person for Scaffolds, Fall Protection or Trenching and Excavation activities in construction can be received from many sources. The following is a description of training available from OSHA, and an abbreviated national listing of OSHA-approved training providers.

*1. OSHA Training Institute*

The Occupational Safety and Health Administration Training Institute (OTI) in Des Plaines, Illinois, provides separate courses of instruction designed to provide the knowledge necessary to function as a Competent Person for Scaffold Erection and Use, Excavation and Trenching Operations and Fall Protection Training, as well as many other safety training topics. The annual schedule of courses OTI provides can be found at the OSHA Web site at www.osha.gov under the tab for Training.

*2. OTI Outreach Centers*

The table below also lists the OTI Outreach Training Centers or training providers that provide Safety and Health related training nationally using OSHA-developed curriculum. Call or contact the most convenient center in your locale.

| | | |
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| **Keene State College**<br>**OSHA Education Center**<br>175 Ammon Drive<br>Manchester, NH 03103-3308<br>Phone: (800) 449-6742<br>Fax: (603) 358-2569<br>Keene State College | **Rochester Institute of Technology**<br>31 Lomb Memorial Dr.<br>Rochester, NY 14623-5603<br>Phone: (866) 385-7470 x-2919<br>Fax: (585) 475-6292<br>Rochester Institute of Technology | **Atlantic OSHA Training Center**<br>**Univ. of Medicine & Dentistry NJ**<br>317 George St. Suite 203<br>New Brunswick, NJ 08901<br>Phone: (732) 235-9459<br>Fax: (732) 235-9460<br>Univ. of Medicine & Dentistry NJ |
| **Atlantic OSHA Training Center University of Buffalo** 3435 Main Street Room 134 Buffalo, NY 14214-3000 Phone: (716) 829-2125 Fax: (716) 829-2806 University of Buffalo | **Atlantic OSHA Training Center Universidad Metropolitana** PO Box 21150 San Juan, PR 00928-1150 Phone: (787) 766-1717 x-6553 Fax: (787) 751-5540 Universidad Metropolitana | **Minnesota Safety Council Continuing Education** 474 Concordia Avenue St. Paul, Minnesota 55103 Phone:(800)444-9150 Fax:(651)291-7584 Minnesota Safety Council |
| **West Virginia University Safety and Health Extension** 130 Tower Lane Morgantown, WV 26506-6615 Phone: (800) 626-4748 Fax: (304) 293-5905 West Virginia University | **Keystone Occupational Safety and Health Center (KOSH) Science Center** 3701 Market St. 3rd Floor Philadelphia, PA 19104 Phone: (800) 318-4846 Fax: (215) 387-6321 KOSH Center | **Keystone Occupational Safety and Health Center Indiana University of Pennsylvania** 1010 Oakland Ave Indiana, PA 15705-1087 Phone: (724) 357-3019 Indiana University of Pennsylvania |

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| **Eastern Kentucky University**<br>521 Lancaster Ave. Room 202<br>Richmond, KY 40475-3100<br>Phone: (888) 401-1956<br>Fax: (859) 622-6205 | **Georgia Institute of Technology**<br>151 Sixth Street<br>Atlanta, GA 30332-0837<br>Phone: (800) 653-3629<br>Fax: (404) 894-8275 Georgia Institute of Technology | **University of South Florida**<br>13201 Bruce B. Downs Blvd.<br>MDC 56<br>Tampa, FL 33612-3805<br>Phone: (866) 697-0975 Fax: (813) 974-9972 |
| **Mid-America OSHA Trng. Inst. Sinclair Community College** 444 W. 3rd St. Dayton, OH 45402-1460 Phone: (937) 512-3242 Fax: (937) 512-2279 Mid-America OSHA Trng. Inst. | **Mid-America OSHA Trng Inst. Ohio Valley Const. Ed. Foundation** 33 Greenwood Lane Springboro, OH 45066-3034 Phone: (866) 444-4412 Fax: (937) 704-9394 Mid-America OSHA Trng. Inst | **University of South Florida** National Safety Education Center Northern Illinois University 590 Garden Rd. RM 318 DeKalb, IL 60115-2854 Phone: (800) 656-5317 Fax: (815) 753-4203 Northern Illinois University |
| **National Safety Education Center Construction Safety Council** 4100 Madison Street Hillside, IL 60162-1768 Phone: (800) 552-7744 Fax: (708) 544-2371 Construction Safety Council | **National Safety Education Center National Safety Council** 1121 Spring Lake Drive Itasca, IL 60143-3201 Phone: (800) 621-7615 Fax: (630) 285-1613 | **Great Lakes Region OSHA Training Consortium MWC for Occ Safety & Hlth** 2221 Univ. Ave. SE Ste. 350 Minneapolis, MN 55414 Phone: (800) 493-2060 Fax: (612) 626-4525 MWC for Occup. Safety & Health |
| **Motor City Education Center Eastern Michigan University**<br>2000 Huron River Drive, Ste. 101<br>Ypsilanti, MI 48197-1699<br>Phone: (800) 932-8689<br>Fax: (734) 481-0509<br>Eastern Michigan University | **Midwest OSHA Education Center, Kirkwood Community College**<br>6301 Kirkwood Blvd. SW<br>Cedar Rapids, IA 52404<br>Phone: (800) 464-6874<br>Fax: (319) 398-1250 Kirkwood Community College | **OSU OSHA Training Institute Oklahoma State University**<br>512 Engineering North<br>Stillwater, OK 74078-5023<br>Phone: (866) 449-7993<br>Fax: (405) 744-5369<br>Oklahoma State University |
| **Southwest Education Center**<br>**Texas Engineering Ext. Service**<br>15515 IH-20 at Lumley<br>Mesquite, TX 75181-3710<br>Phone: (800) 723-3811<br>Fax: (972) 222-2978<br>Southwest Education Center | **Midwest OSHA Education Center**<br>**National Safety Council**<br>11620 M Circle<br>Omaha, NE 68137-2231<br>Phone: (800) 592-9004<br>Fax: (402) 896-6331 National Safety Council | **Midwest OSHA Education Centers**<br>**Saint Louis University**<br>3545 Lafayette Ste. 300<br>St. Louis, MO 63104-8150<br>Phone: (888) 382-3756<br>Fax: (314) 977-8150 Saint Louis University |
| **Metropolitan Community Colleges/ Business & Technology College** 1775 Universal Avenue Kansas City, MO 64120-1313 Phone: (800) 841-7158 Fax: (816) 482-5408 Business & Technology College | **Rocky Mountain Education Center Red Rocks Community College** 13300 West Sixth Avenue Lakewood, CO 80228-1255 Phone: (800) 933-8394 Fax: (303) 980-8339 Rocky Mountain Education Center | **Mountain West OSHA Trng & Outreach Ctr Consortium of Salt Lake C.C./ University of Utah** 75 South 2000 East Salt Lake City, UT 84112 Phone: (801) 581-4055 Fax: (801) 585-5275 Mountain West OSHA Training |

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| **Region IX OSHA Training Center University of California, San Diego** 15373 Innovation Drive, Ste. 105 San Diego, CA 92128-3424 Phone: (800) 358-9206 Fax: (858) 485-7390 Pacific Coast Education Center | **Georgia Institute of Technology WESTEC Westside Energy Services** 210 East Center Street Taft, CA 93268-3605 Phone: (866) 493-7832 Fax: (661) 763-5162 Westside Energy Services | **Region X OSHA Training Center University of Washington** 4225 Roosevelt Way NE #100 Seattle, WA 98105-6099 Phone: (800) 326-7568 Fax: (206) 685-3872 University of Washington |
| **Niagara County Comm. College** 50 Main Street Street Lockport, NY 14094-3607 Phone: (800) 280-6742 Fax: (716) 433-5155 Niagara County Comm. College | | |

## Appendix B: Required Training Elements for Scaffolds

This Appendix is provided as a guide for NPS supervisors when evaluating the training needs of employees who are using scaffolds at NPS work sites. Initial training is required before allowing NPS employees to erect, dismantle or work on any scaffold.

The following training provisions for scaffolds are from 29 CFR 1926.454. They supplement and clarify OSHA's general training requirements listed in 29 CFR 1926.21.

*Scaffold Erector*

The supervisor 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. The training shall include the following general topics:

- The nature of scaffold hazards.
- The correct procedures for erecting, disassembling, moving, operating, repairing, inspecting and maintaining the type of scaffold in question.
- The design criteria, maximum intended load-carrying capacity and intended use of the scaffold.

All scaffold erectors and dismantlers should receive the general overview and specific training for the type of supported scaffold being used as listed below:

**General Overview of Scaffolding**

- regulations and standards
- erection/dismantling planning
- PPE and proper procedures
- fall protection
- materials handling
- access
- working platforms
- Foundations
- guys, ties and braces

**Tubular Welded Frame Scaffolds**

- specific regulations and standards
- components
- parts inspection
- erection/dismantling planning
- guys, ties and braces
- all protection
- general safety
- access and platforms
- erection/dismantling procedures
- rolling scaffold assembly
- Putlogs

**Tube and Clamp Scaffolds**

- specific regulations and standards
- components
- parts inspection
- erection/dismantling planning
- guys, ties and braces
- fall protection
- general safety
- access and platforms
- erection/dismantling procedures
- buttresses, cantilevers and bridges

**System Scaffolds**

- specific regulations and standards
- components
- parts inspection
- erection/dismantling planning
- guys, ties and braces
- fall protection
- general safety
- access and platforms
- erection/dismantling procedures
- buttresses, cantilevers and bridges

*Certification of Training*

The supervisor must verify compliance with these training requirements by preparing a written training certification record. The written certification record shall contain the name(s) of the employee(s) trained, the date(s) of the training, a synopsis of the curriculum used, and the signature of the person who conducted the training or the signature of the supervisor. If the NPS supervisor relies on training conducted by another park, the certification record shall indicate the date the supervisor confirmed that the prior training was adequate rather than the date of actual training.

Retraining Requirements

When the supervisor has reason to believe that an employee lacks the skill or understanding needed for safe work involving the erection, use or dismantling of scaffolds, the supervisor shall have each such employee retrained so that the requisite proficiency is regained. Retraining is required in at least the following situations:

- Where changes at the work site present a hazard about which an employee has not been previously trained.

- Where changes in the types of scaffolds, fall protection, falling object protection or other equipment present a hazard about which an employee has not been previously trained.

- Where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

## Appendix C: Required Training Elements for Fall Protection

This Appendix is provided to serve as a guide for NPS supervisors when evaluating the training needs of employees who use fall-protection systems at NPS work sites. Initial training is required before allowing NPS employees to be exposed to fall hazards, or install or use fall-protection systems.

The following training provisions for fall-protection systems are from 29 CFR 1926.503. They supplement and clarify OSHA's general training requirements listed in 29 CFR 1926.21.

*Training Program*

NPS supervisors shall provide an effective training program for each NPS employee who is exposed to fall hazards. The goal of the training program is to enable NPS employees to recognize fall hazards and understand the procedures to be followed to control or minimize these hazards.

Training must be conducted by a competent or qualified person and cover the following topics:

- The nature of fall hazards in the specific work area.
- The correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used.
- 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.
- The role of each employee in the safety-monitoring system when this system is used.
- The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs.
- The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.
- The role of employees in fall-protection plans.
- The standards contained in 29 CFR 1926.500.

*Certification of Training*

The supervisor shall verify compliance with these training requirements by preparing a written training certification record. The written certification record shall contain the name(s) of the employee(s) trained, the date(s) of the training, a synopsis of the curriculum used, and the signature of the person who conducted the training or the signature of the supervisor. If the NPS supervisor relies on training conducted by another park, the certification record shall indicate the date the supervisor confirmed that the prior training was adequate rather than the date of actual training.

*Retraining Requirements*

When the supervisor has reason to believe that an NPS employee who has previously been trained lacks the skill or understanding needed for safe work involving the use of fall-protection systems, the supervisor shall have each such employee retrained so that the requisite proficiency is regained. Retraining is required in at least the following situations:

- Where changes at the work site present a hazard about which an employee has not been previously trained.

- Where changes in the types of fall hazards, fall-protection systems and equipment, falling-object protection or other equipment present a hazard about which an employee has not been previously trained.

- Where inadequacies in an affected employee's work involving fall hazards indicate that the employee has not retained the requisite proficiency.

## Appendix D: Required Training Elements for Trenching and Excavation

This Appendix is provided to serve as a guide for NPS supervisors when evaluating the training needs of employees who conduct Trenching or Excavation operations at NPS work sites. Initial training is required before allowing NPS employees to enter trenches or excavations, or be exposed to trenching or excavation hazards.

While there are no specific training requirements listed for Trenching or Excavations in 29 CFR 1926.650-653, OSHA's Safety Training and Education standard, 29 CFR 1926.21, puts forth the general requirement for the employer to instruct each NPS employee in the recognition and avoidance of unsafe conditions and the regulations applicable to control or eliminate any hazards. This duty falls to the supervisor.

*Training Program*

NPS supervisors shall provide an effective training program for each NPS employee who is exposed to trenching or excavation hazards. The goal of the training program is to enable NPS employees to recognize these hazards and understand the procedures to be followed to control or minimize them.

Training must be conducted by a competent or qualified person and cover the requirements in 29 CFR 1926.650-653, with an emphasis on the following topics:

- Identifying and controlling hazards posed by surface encumbrances and underground installations.
- Access and egress of excavations and trenches.
- Protection from vehicular traffic.
- Protection from falling loads.
- Warning system for mobile equipment.
- Hazardous atmospheres and ventilation.
- Emergency rescue equipment.
- Protection from hazards associated with water accumulation.
- Stability of adjacent structures.
- Protection of employees from loose rock or soil.
- Inspections.
- Fall protection.

*Certification of Training*

The supervisor shall verify compliance with these training requirements by preparing a written training certification record. The written certification record shall contain the name(s) of the employee(s) trained, the date(s) of the training, a synopsis of the curriculum used, and either the signature of the person who conducted the training or the signature of the supervisor. If the NPS supervisor relies on training conducted by another park, the certification record shall indicate the date the supervisor confirmed that the prior training was adequate rather than the date of actual training.

*Retraining Requirements*

When the supervisor has reason to believe that an NPS employee who has already been trained lacks the skill or understanding needed for safe work in trenches or excavations, the supervisor shall have each such employee retrained so that the requisite proficiency is regained. Retraining is required in at least the following situations:

- Where changes at the work site present a hazard about which an employee has not been previously trained.

- Where changes in the types of soils, equipment or techniques present a hazard about which an employee has not been previously trained.

- Where inadequacies in an affected employee's work involving trenches and excavations indicate that the employee has not retained the requisite proficiency.

## Appendix E: Job Hazard Analysis Example/Template

This Appendix provides an example of a useful Job Hazard Analysis (JHA) template designed to help identify hazards and recommended controls associated with specific tasks. The JHA is most effective when supervisors and employees familiar with the tasks work together to identify the steps necessary to complete the jobs and the hazards that are foreseeable at each step, as well as the procedures, techniques and equipment necessary to control or minimize the hazards.

**HISTORIC PRESERVATION**
**JOB HAZARD ANALYSIS – YOSEMITE NATIONAL PARK**

JSA #11
JOB / ACTIVITY: USING POWER TOOLS
Date Revised: 9/17/02
PPE: Eye protection, ear protection

| TASK/STEP | HAZARDS/SAFETY CONCERNS | SAFETY PROCEDURE |
|---|---|---|
| Training inexperienced Workers | Injuries of all types due to a lack of knowledge. | All employees will receive safety and operational training before operating any power equipment. |
| General use of power tools | Bodily injury from major malfunction<br><br>Electrocution<br><br>Serious injury from contact with moving parts, blades, wheels. | Close inspection of power tools prior to use should include checking housing, electrical cords, accessories, bits, blades and wheels for defects. Replace damaged parts/accessories and label of discard defective ones.<br><br>Be sure that operators are protected from becoming potential ground. Use ground fault-protected circuits, plugs and extension cords. Avoid working where there are puddles that could increase ground potential. Make sure outer casing on electrical cords are in excellent condition.<br><br>Be sure that power source can put out amperage required to run equipment at proper rating<br><br>All factory installed guards and shields will remain in place and will be inspected for proper operation before job onset.<br><br>Operators should not be wear any loose clothing that could get caught in moving parts. |
| Operating power saws | Major cuts from blades<br><br>Kickback from binding blade. | Be sure spring-loaded blade guard is operating properly; returning after each cut.<br><br>Do not allow cut in material to close behind blade. This is called binding and will cause the power saw to “kick-back” toward the operator. |

| TASK/STEP | HAZARDS/SAFETY CONCERNS | SAFETY PROCEDURE |
|---|---|---|
| | | Manage cords, to ensure you do not cut through them. |
| | Cutting through underlying supports. | Check blades before use. Damaged blade pieces can become missiles. |
| | | Check blade tightness. Do not assume that they are tight or attached properly. |
| | Wood splinters in eyes. | Check that there are no nails or screws in material being cut. |
| | | Work in areas with minimal amount of casual traffic of unprotected individuals. |
| | | Adjust blade to cut slightly more than material width. |
| | | Observe where saw horses are in relation to cut. |
| | | Wear safety glasses. |
| Operating drills | Drilling into body parts/Severe injuries with long-term or permanent disabilities. | Never drill using pressure that is aimed at any person. Any slip of the bit off of material being drilled should go to "free" space. |
| | | Be sure hands, etc., are clear when drilling through any material. |
| | "Bit binding" causing twisting injuries to wrists and forearms. | Do not over commit to drill by gripping too hard. Be sure you can release and avoid twisting injury. |
| Operating recipro-cating saws | Stabbing or laceration injuries from unprotected blades. | Avoid running saw outside of material being cut. Having the blade buried in material you are cutting is the safest place for it. |
| | | Be sure no one is standing or leaning against material on other side (injury common during demolition work). |
| | | Adjust blade guards. |
| Drill press | Drilling into body; flying debris; object being drilled rotating at high speed. | Clamp objects being drilled to prevent them from moving unpredictably if the bit binds. |
| | | Wear safety glasses. |
| | | Proper settings should be used depending on materials being drilled, (e.g., set drill rpm, adjust drill press mast, etc.), to ensure safe and smooth transition through the drilling process (e.g., when starting the bit or when boring through). |
| Table saws | Bodily injury (i.e., loss of limbs, digits, hearing or sight). | Provide extensive training before unsupervised use of this equipment is permitted. This includes general maintenance like periodically |
| | Kickback of material. | |

| TASK/STEP | HAZARDS/SAFETY CONCERNS | SAFETY PROCEDURE |
|---|---|---|
| | | clearing debris from workspace and replacing dull blades. And it should address specific techniques such as how to avoid kickback due to blade bind or pinch, use of common saw tools and attachments as extension tables, push sticks and feather boards, and use of proper clothing to prevent being pulled into machinery.<br><br>Use of blade guard and splitter.<br><br>Use of safety glasses and hearing protection.<br><br>Anchor industrial table saws when in use, either fixed to the floor or wheel locks engaged. |
| Bench-mounted grinder and wire wheel | Injury from flying pieces of broken wheel. | With each installation of new grinding wheels, a “ring” test needs to be performed to determine their structural soundness.<br><br>Operators should stand to one side when using grinders or wheels to minimize risk of injury due to malfunctions that discharge flying debris. Debris will discharge in a line consistent with the direction the wheel is spinning (directly in front of grinder).<br><br>All guards and safety shields must be in use during operation and adjusted per OSHA standard, and operator wears ANSI-approved face shield when necessary. |
| Hand-held grinder | Injury from flying debris. | Use face shield or safety glasses due to absence of shield fixed to machinery.<br><br>Operator can direct majority of grinding discharge (i.e., sparks and debris) by using different parts of grinding wheel. Discharge should be directed away from personnel, and fuel sources and toward the ground when possible. |
| Air Tools (Up to 120 psi) | Impact injuries from charged hoses.<br><br>Accidental discharge of bits during operation. | Inspect all hoses and hose connections before charging air lines.<br><br>Be certain that operating handles are in off position before charging air lines.<br><br>Avoid slicing, pinching or kinking air hoses.<br><br>Inspect individual air tools for defects before using them.<br>Specifically check the chuck on |

| TASK/STEP | HAZARDS/SAFETY CONCERNS | SAFETY PROCEDURE |
|---|---|---|
| | | these tools for cracks or deformities and be sure that chuck-locking devices function properly. |
| Operating generators | Electrocution. | Workers should be made aware of this hazard and the preventive measures they can take such as checking generator for ground fault circuit interrupter (GFCI) or use of extension cords with this feature. |
| Chain mortiser | Serious injury from contact with moving parts and blades. | Keep guards in place and in working order. Remove adjusting keys and wrenches.<br><br>Don't force tool, it will do the job better and faster at the rate for which it was designed. Secure work. Use both hands to operate tool. Keep tool sharp and clean for best and safest performance. Never leave tool running unattended. Turn power off. Make sure switch is in off position before plugging in. |
| | Electrocution. | Don't use in damp or wet locations or expose to rain. This tool should be grounded while in use to protect the operator. Use only three-prong extension cords that have three-prong grounding-type plugs and three-prong receptacles that accept the tool's plug.<br><br>When used outdoors or in damp locations, a ground fault circuit interrupter (GFCI) must be used for employee protection from electrical shock hazard. |

## Appendix F: Site-Specific Safety Plan Template

NPS units engaged in construction projects are encouraged to use Site-Specific Safety Plans to address hazards proactively. This planning document identifies procedures, tools, equipment and special skills and/or training that will be necessary to complete projects safely, on time and within budget. The Site-Specific Safety Plan should capture all of the JHAs written for this series of tasks necessary to complete the entire project. An example Site-Specific Safety Plan is provided below:

### SITE-SPECIFIC SAFETY PLAN EXAMPLE

Roadway Repair at Highway 41 in Yosemite NP

*Scope*

(Note: This describes the project and resources, personnel and tools that will be used.)

This project entails the repair of roadway sections on Highway 41 from South entrance to the Wawona Tunnel. The repair will include the cutout and replacement of deteriorated asphalt pavement. Once the cutouts are completed, the crew will lay in AR-4000 hot mix in cutouts. There will be a Backhoe in position to remove old pavement from the cutouts, a Distributor Oiler will be used to spray hot Tac-Oil to help stick the AR-4000 material to the existing pavement and a Grader will lay it in with the grader blade. A Roller will be used for proper compaction of the AR-4000. This job will also include repair of the decaying shoulders that accrue on Highway 41 and centerlines of the roadway. If materials are low in the cutouts, the L-9000 will be on hand to help distribute aggregate material to the cutouts. After the process is complete, the roadway will be swept clean of all loose rock and pavement material.

Throughout this entire operation, it will take two flaggers and a pilot car to move visitor traffic in and out of the working area in a safe manner at 15 to 20 miles per hour. There will be a supervisor at all times within the area to ensure the safety and compliance of the workers, machines and the traffic.

The total list of heavy equipment includes backhoe, grader, 210-gal. Tac-Oil trailer, L-9000 dump truck, three-ton roller and trailer, and a pull-behind sweeper. A wide variety of hand tools will also be used, including: shovels, steel rakes and pavement rakes. Two sets of “Construction Ahead” traffic signs, two sets of “Flagger Ahead” signs and two 25-mph signs will be necessary.

*Safety Program and References*

(Note: This describes the NPS unit’s specific safety program requirements and any pertinent standards or regulations from OSHA, EPA, DOT, etc.)

An aggressive safety program, including the review of Job Hazard Analyses (JHA) at the outset of performing new tasks, weekly tailgate safety sessions, weekly work site inspections and daily safety reminders involving all employees on the work-site.
All employees are encouraged to report unsafe conditions and to incorporate any suggestions brought into the construction site by visiting management and other observers. Per park superintendent verbal instruction, all employees are authorized to stop work when unsafe/unhealthful conditions are observed.

Work on this site will be performed per requirements listed in the Park Safety Policies found in the “Workers Guide to Safety” and the OSHA 29 CFR 1926 requirements for Construction that the supervisor has been issued. Another copy of the 29 CFR 1926 may be found in the park Safety Office.

*Job Hazard Analyses (JHAs) For Associated Tasks*

(Note: This lists all the specific JHAs that the employees and supervisor have worked up for this project, and the JHAs identified here should be appended to the end of this plan.)

Flagging Operations: JHA 1
Pilot Car Operation: JHA 2
950- Cat Loader: JHA 3
Paving and Overlaying: JHA 4
SS1 Tac-Oil: JHA 5
Two Drum, 3-ton rollers: JHA 6
Road Sweeping Pull Broom: JHA 7
Core-Cut, Self-Propelled Pavement Cutter: JHA 8
Backhoe Operation: JHA 9

*Personal Protective Equipment*

(Note: This lists the personal protective equipment (PPE) requirements for this specific job, and this list should take into account hazards that are a result of the job, such as movement of heavy equipment, use of material handling equipment and environmental factors such as traffic, weather, etc. This section should also list PPE requirements for visitors, such as contracting officers, park management, etc.)

Employees will wear yellow hardhats, safety glasses, retro-reflective traffic vests in fluo-rescent green or orange, steel-toe boots, long pants and gloves. Hearing protection will be worn when required, and hand-held radios will be used regularly on this construction site. Hardhats, safety glasses, steel-toe boots and traffic vests will be ANSI-approved. Due to hot weather and heat stress conditions, all crews will have five-gallon water coolers on hand to prevent dehydration as well as sunscreen. When specified by JHAs, employees will use specific protective equipment, such as respirators for quarrying and chainsaw chaps when sawing.

When heavy equipment is operating on the site, ALL persons on the site will wear orange or lime-green safety vests and radios in addition to the standard PPE.
All visitors to the job site, including park management, will be escorted and must wear hardhats and traffic vests. Three sets of hardhats and lime-green traffic vests will be kept in the supervisor’s truck for such purpose

*Work Zone Controls*

(Note: Protection of the general public must always be considered and addressed.)
Through the use of barricades, flagging, traffic cones, signage and flagging guards, the visiting public and park personnel will be kept “out of harm’s way.”These closures will be left in place throughout the period in which injury could be incurred due to heavy equipment or other obstacles caused by project procedures. All park personnel must wear the proper PPE to enter the work site.

*Flagging Operations*

(Note: These are the specific rules the flagging operations supervisor has adopted to protect his work zone from traffic.)

1. High-Visibility Clothing

   All Flaggers and Workers will wear orange or yellow-green fluorescent warning garments (ANSI-approved Type II vest).

   Approved Standard Hard Hats (Wide Brim) From Sun Protection

2. Flagger Equipment

   A STOP/SLOW paddle (C28A & B) in good shape.

   Advanced warning signs for day or night operations.

Channelizing devices such as traffic cones. A method of communications (Park Radio Channel 8) Drinking Water Protective clothing (raincoat in case of expected bad weather).

3. Work Zone Layout

   Approved transitions to channelize traffic from normal to a new path (per MUTCD and ATSSA guidelines).

   An Active area should consist of a work space, traffic space and buffer space and a termination area to return traffic to the normal traffic path.

4. Flagger Station

   Shall have the proper advance warning signs. Will be visible to approaching traffic at all times. Have an escape route. Adequate lighting (out of shadows) during the daylight hours. When flaggers are no longer needed, be sure to cover or remove

   “Flagger Ahead” and “Prepare to Stop” signs. Park all vehicles away from the flagging station. Eliminate distractions like chairs, books and music radios.

5. Pilot Car

   All traffic waits for pilot car.

   Provides guidance and speed control. During long lane closures, two pilot cars may be used. Pilot cars require special signs and radios.

6. Emergency Vehicle and Traffic Accidents and Violations.

When informed in advance of an approaching emergency vehicle, the Flagger should clear an unimpeded path for the emergency traffic in both directions. Ensure the supervisor is informed immediately so that all work is stopped in the working area.

When an unauthorized, uncontrolled vehicle has entered the work zone, warn all workers and equipment operators that a vehicle has run the stop sign. Stop all traffic from continuing and hold till told to let go. Prepare for this ahead of time and have an escape route in your plan in case of this emergency.

7. Traffic Accidents:

   Notify your supervisor and call for help.

   If an accident happens in the line of waiting traffic, stay at your station and continue to control traffic until you receive instruction from your supervisor or park ranger. If an accident happens in the controlled area, hold approaching traffic and follow instructions from your supervisor, safety officer or park ranger.

   Flaggers are to communicate with each other before releasing or stopping traffic.

   There is a handbook with the JHAs for flagging.

*Heavy Equipment*

When mechanized heavy equipment is used on site, all vehicles will be checked daily for proper operation of all equipment, with particular emphasis on backup alarms, mirrors (if equipped), brakes, seatbelts, etc.

When so equipped, seatbelts will be worn at all times. Ground guides will be used to direct heavy equipment.
During refueling operations, operators must use catch pans and have spill control absorbent materials on hand to prevent environmental damage.

*Job-Site Inspections*

(Note: All projects of more than a day's duration should have job-site inspection requirements to ensure that changing job-site conditions do not create new hazards.)

**Before the project starts:** All employees will be familiar with the requirements of this program before work commences.

**Daily:** Supervisors will inspect the job site daily before work starts and will brief the work crew on the Job Safety Analysis for that phase of work and expected actions to enhance safety.

**Weekly:** Supervisors will inspect the job site weekly using checklist provided in the below listed appendix. The checklist will be kept on file for the duration of the job.

*Stop-Work Policy*

(Note: This is a policy specific to this park and is a policy that would have to be approved by park management and the superintendent.)

Any park employee on this site has authority to stop work when unsafe/unhealthful conditions are noted. The supervisor will address the issue before work commences or on the day the condition was reported. If the employee is not satisfied with the supervisor's actions, the employee will file an unsafe/unhealthful from directly with the Safety Officer, either by phone call or by filling out and forwarding to the Safety Officer the written Park Unsafe/Unhealthful Form.

*Crew Training Requirements*

(Note: This section is used by the supervisor to identify any training requirements necessary to complete the job safely or as required by NPS directive or regulations from OSHA, the EPA, DOT, FHWA, State or Local authorities, etc.)

Hazcom training
CPR/ First-aid certification
Loader training
JHAs
Tailgate-safety meeting
Grader operations
Tac-oil operations
Roller operations
Backhoe operations
Radio communications
Hand-signals training
Core-cut pavement cutter (self-propelled)
Flagger operations
All training rosters will be submitted to the Safety Office

*Emergency Response Plan*

*Life-Threatening Injuries*

- Call 911 and/or dispatch.
- Perform first-aid/ first-responder protocols.
- Contact clinic and transport ASAP.

- Wilderness First Responder and Crew First Aid Kits located in “Job Box” at work site.

- Notify the Safety Office when the incident is under control.

*Non-Life-Threatening Injuries*

- First-aid first (contact clinic and transport if necessary).

- Notify Safety Office and immediate supervisor.

- Each individual employee carries minimal first-aid kits in personal packs.

*Hazardous Materials Spills*

MSDS located in “Job Box” at work site or equipment.

Any spill over five gallons: Contain and then call 911 to notify dispatch.

Smaller spills: immediately contain hazardous materials using spill kits. Spill kits will be provided for each piece of equipment and be updated and restocked as necessary.

Refuel heavy equipment in maintenance area when possible. Use spill pans and absorbent material to prevent HazMat spills onto soil or water. Wrap absorbent material around any leaking hydraulic hose fittings. Supply and re-supply each maintenance kit for hand-held equipment with spill kits. Always use absorbent blankets when refueling hand-operated equipment.

*Emergency Phone Numbers*

911 – Life-threatening injuries / Hazardous spills more than five gallons
Dispatch _____
Medical Clinic _____
Fire- _____
Police/LE Rangers- _____
Safety Officer: Phone _____
Pager _____

A COPY OF THE JOB SAFETY PLAN, JHAs AND FLAGGING HAND BOOK WILL BE KEPT AT THE JOB SITE IN THE SUPERVISOR'S VEHICLE FOR EMPLOYEE REVIEW.