

## **Instructions for Updating the 2001 Edition of *Reclamation Safety and Health Standards***

Users of the 2001 edition of *Reclamation Safety and Health Standards* should place the attached pages (title page and errata sheets) at the front of their 2001 edition. These attached pages show the revisions that have been made in the 2009 edition. Additionally, Section 24, Blasting Operations, should be replaced in its entirety.

**Note:** The title page and errata sheets can also be accessed on the Reclamation Safety and Health Standards Web site: <http://www.usbr.gov/ssle/safety/RSHS/rshs.html>.



## ERRATA Reclamation Safety and Health Standards 2001 Edition

While it is believed that the format used to indicate corrections within the Reclamation Safety and Health Standards is largely intuitive, the following guidelines used for this project are being included in an attempt to avoid any misunderstanding.

- All corrections are grouped by section.
- Each correction is preceded by the section and subsection numbers in which the correction is to be made.
- Italicized text within parenthesis is instructional and not to be included in the actual correction.
- Strikethrough indicates deleted text.
- Bolded text is generally text to be used in the correction.
- The use of ... is an indication of the continuation of unedited text within a sentence or paragraph.

**Section 1:** No errata

**Section 2:**

2.2 In addition to the ~~standards and requirements set forth in these standards, operators of Reclamation owned facilities and equipment~~ *(insert)* **all operations on Reclamation facilities and operations utilizing Reclamation equipment** must comply...

**Section 3:**

3.1 The contractor is responsible for ensuring that all work under contract meets or exceeds the OSHA standards ~~contained and referenced in these standards and for ensuring safe work performance~~ *(insert)* **in addition to complying with the Reclamation Safety & Health Standards contained herein. The contractor is responsible for ensuring safe work performance of employees and subcontractors.** These standards also apply to offsite activities...

**Section 4:** No errata

**Section 5:** No errata

**Section 6:** No errata

**Section 7:**

7.3.4. a. The air contaminant...more stringent of OSHA ~~PE~~<sup>s</sup> (*insert*) **PEL's**, ACGIH TLV's...

7.7.2 Establish a written...where the chemical hygiene plan is required.  
 (*insert*) **The OSHA 29CFR1910.1200 mandatory Appendices A, B, and D shall be included in all written programs.**

(*Replace Table 7-4*)

**Table 7-4, Heat Stress Control Measures**

fluid replacement	medical surveillance	reduce radiant heat
self-determination	reduce physical work demands	pacing work
diet	reduce air temperature	sharing work
life style	reduce air humidity	scheduling of work
acclimation	change clothing	circulating air systems
circulating water systems	reflective clothing	ice garments

7.7.7.3. c. Legibly (*insert*) **and prominently labeling** all containers of hazardous substances. The label must identify the material, link it to ...

**Section 8:**

8.5.2. (*Replace entire section with*) **High-Visibility Clothing. Employees exposed to vehicular traffic on roadways or construction sites shall wear high-visibility safety apparel labeled as compliant with the appropriate conspicuity class as defined in ANSI / ISEA 107-1999 American National Standard for High-Visibility Safety Apparel. Contractor Safety Plans or Reclamation work plans shall contain justification for the class of clothing provided to workers.**

**a. Conspicuity Class 1 apparel will be used in activities where traffic speeds do not exceed 25 miles per hour, traffic is well separated from workers, and work tasks permit undivided attention to approaching traffic.**

**b. Conspicuity Class 2 apparel will be used where traffic speeds exceed 25 miles per hour, work tasks divert employee attention from traffic, or work is not well separated from traffic. (Many construction activities will fall in this category)**

**c. Conspicuity Class 3 apparel will be used when workers are exposed to traffic at speeds above 50 miles per hour or other situations where visibility from a greater distance is needed.**

8.5.3 Gloves. ~~Gloves that prevent exposure to biological, chemical, and physical hazards~~ must be provided and used *(insert)* **to prevent contact with biological, chemical and physical hazards**. Substances *(insert)* **which may require protection** include acids, caustics, solvents, herbicides, blood and other infectious or toxic materials. Employees ~~must~~ *(insert)* **will** wear leather-palm gloves when such gloves are essential to safely accomplish the work (e.g. when handling steel-plated cables, barbed wire, and rough-hewn timber) *(insert)* **working with steel cables, barbed wire, rough-sawn timber, or other materials capable of causing lacerations. Insulating gloves will be worn when handling materials of extreme temperatures.**

8.5.6. When work endangers... Work environments that *(insert)* **may** require protective footwear include...

8.5.8.b. Employees must wear... Protective clothing and equipment must cover ~~associated~~ parts of the body *(insert)* **subject to harm** and all normal apparel that is not flash resistant...

8.5.8.c. Employees must wear rubber insulating gloves where there is a danger of hand and arm injury from electric shock and burns due to contact with ~~live~~ *(insert)* **energized** parts. Wear hand...

8.6.3 *(Replace entire section with)* **Before each use, visually inspect each personal flotation device for defects that would compromise its effectiveness. At annual intervals, conduct buoyancy test and discard any device with less than 13 pounds buoyancy.**

8.8.5. Inspection and Maintenance. The care, maintenance and... ~~Protect nets and debris from sparks and hot slag~~ *(insert)* **from debris, sparks, and hot slag** resulting from welding...

The ~~competent~~ *(insert)* **responsible** person ~~responsible~~ *(insert)* **conducting the net inspection** for the nets must initial each ~~entry~~ *(insert)* **set of entries in the record.**

**Section 9:** No errata

**Section 10:** No errata

**Section 11:**

11.16.3. **Outdoor Housekeeping.** Keep the areas adjacent...vegetation.  
~~Minimally,~~ Place combustible waste material...

**Section 12:**

12.1.3. **Safety Requirements Before Performing Electrical Work.** The employer will determine...and ground them, as appropriate. ~~A clearance may also be required.~~ Additionally, all the following must be required:

12.5.3. c. Doors and hinged panels. Doors and hinged panels must at least...Do not store parts, tools, and equipment (*add*) **in the clear space** (See figure 12-4).

12.7.6 Extension cords must be...Use cords only in continuous lengths without splice. ~~However, use suitably molded or vulcanized splices when suitably made with insulation equal to the cord being spliced and soldered or with wire connection or other type connections conforming to the National Electrical Code.~~ Do not use worn or frayed...

12.8.3. Provide ~~switches~~ (*insert*) **disconnects** and breakers with a means of locking...

12.9.2 Where GFCI protection is not provided...supply power to lighting outlets, per ~~NEC 305-4(d)~~ (*insert*) **NEC 527.4.(D)**.

**Section 13:**

13.1.1. a. 1. Do not use portable metal ladders ~~and~~ (*insert*) **or** wood ladders with metal reinforcements . . .

13.1.1. a. 3. (*Replace paragraph with*) **Portable ladders, except stepladders must be secured. Fixed ladders must be fixed, and don't require securing for use, portable ladders do not require intermediate support.**

13.1.1. a. 5. Restrictions. Use ladders as work platforms ~~or scaffolding~~ only for short (*insert*) **duration** tasks . . .

13.1.1. b. 4. Employees ~~may work on~~ (*insert*) **working from ladders must remain within 20 feet of the floor** ladders as long as the ladder is no higher than 20 vertical feet from the ladder base.

13.1.1. c. 3. Provide a landing at the top of all fixed ladders ~~by extending~~ *(insert)* **and extend** the side rails, stanchions, or other supports at least 42 inches above the landing.

13.1.1. c. 6. Use non-slip material *(insert)* **on** rungs in slippery areas.

13.1.2.a **Requirement.***(replace paragraph with)* **Use stairways for access to areas 20 feet or more above the adjacent surface, except for scaffolds which are commonly accessed by ladder. If scaffold is to be used for extended time periods, or if employees routinely carry tools or materials, stairs must be provided.**

13.1.2. b. 2. On permanent stairways, riser...and tread must be no ~~more~~ *(insert)* **less** than 10 inches deep. Adjacent steps...

13.1.2. d Stairs with 4 or more risers, or rising more than 30 inches (~~whichever is less~~) must have standard railings and a standard handrail, as specified below: ...

13.1.2. i **Stairwell Platforms.** Protect ~~stairwells and~~ platforms on all open sides with standard guardrails and toe boards.

13.2.1. q **Unsafe Conditions.** Keep scaffolds, platforms...usually wet or slippery. ~~A~~ *(insert)* **The** competent person must...

13.2.2. a **Requirement.** ~~Design materials selected for scaffold working surfaces with a platform that can safely support the specified load.~~ *(insert)* **Select materials for scaffold decking that can safely support the intended load.** The load rating ...

13.2.2. b. 3. *(replace sentence with)* **Use fabricated metal scaffold planks and decks only if they are marked by the manufacturer to show the rated working load.**

13.2.2. d. Planking, when lapped, must overlap at least 12 inches. Scaffold... from 6 to 12 inches, or ~~else~~ be cleated at...

13.2.3. a. 3. Outrigger beams must be...Rest the beams on ~~wood-bearing blocks~~ *(insert)* **wooden blocks** and install...

13.2.3. a. 7. ... manilla rope tiebacks, *(delete second comma)* or equivalent...

13.2.3. a. 8. Construct plank-type platforms...Install cleats ~~at intervals of at least 4 feet and~~ within 6 inches of each end, and *(insert)* **at intervals no greater than 4 feet along planks.** The platform hangers...

13.2.3. a 9. Side stringers...Support the flooring on 2- by 6- inch cross-beams, laid flat and set snugly in the top edge of stingers at intervals *(insert)* **no greater than** ~~of at least~~ 4 feet.

13.2.3. a. 10. *(replace sentence with)* **Use metal platforms only if they are tested and listed by a nationally recognized testing laboratory.**

13.2.5. b. 3. ...posts; secure the bearer coupler to the posts ~~and~~ bearing on the runner coupler.

13.2.5. c. 1. Use tubular welded frame scaffold only if it is designed...rated load. ~~Design and construct tubular metal frame scaffolds, including all load bearing components, to safely support four times the maximum rated load.~~ Place the frames directly over...

13.2.6. b. 3. **Folding type-Brackets.** Bolt or secure folding brackets...

13.2.7. a. Use only type 1A...must not exceed the rated load ~~capacity~~ of the ladders.

13.2.9. b. 1. (a) ~~Do not suspend platforms from boom extension, auxillary boom noses, jibs, swingway fly sections, butt sections, or luffing jibs.~~

13.2.9. b. 1. (f) Do not handle materials ~~or perform lifts~~ when personnel are on the...

13.2.9. b. 1. (k) Do not move a mobile-~~type~~ crane when employees are aloft.

13.2.9. c. 2. (d) The minimum load hoist line wire rope safety factor must be 7 ~~times the maximum intended load~~ (or 10 when using rotation-resistant rope).

13.2.9. c. 2. (g) All critical components ... (Critical components are those in which failure ~~would likely~~ *(insert)* **could** result in free rotation or lowering of the boom or platform.)

13.2.9. c. 4. (a) At the beginning of each shift, a *(insert)* **the** competent person must inspect...

13.8.2. **Fall Protection** Adequate fall protection includes the following:

- a. Restraining lines, ~~belts~~ *(insert)* **harnesses**, lanyards, and safety nets meeting the requirements in the section on fall protection..

**Section 14:** No errata



**Section 15:** No errata

**Section 16:** No errata

**Section 17:**

17.16. 5. c. Test for flammability...Do not weld or *(insert)* **cut** in any area that could...

17.17.2. ~~Construct~~, Transport, handle, store, use and maintain gas cylinders *(insert)* **as** required in this section and with DOT requirements. *(insert)* **Only DOT stamped or labeled gas cylinder are permitted.**

**Section 18:** No errata

**Section 19:**

19.4. 3.a. Operators must have a physician's certification that...to operate hoisting equipment *(insert)* **involving mobile cranes, cableways, cab operated bridge cranes, derricks, mobile excavators, loaders, and similar heavy equipment when used for hoisting materials.** Consider the following physical qualifications...

19.6. A critical lift...the load weight is 75 percent or more *(insert)* **of than** the rated capacity...

19.13.2 A qualified person must inspect the hoist ~~service~~, including all it's...

**Section 20:**

20.1.2. b Do not use...configurations ~~is prohibited~~ until the following information...

Table 20-1, next to last line, change "J1151" to "J1511".

Table 20-1, last line, change "SAE 279.9" to "SAE HS-5600".

20.5.2.a Equip a bus,...requirements in appendix ~~V~~ *(insert)* **G:**

20.6.3 Equip crawler tractors... with enclosures *(insert)* **when** used in tree-clearing...

20.7.2 The employer shall...annually thereafter, and as ~~whenever~~ needed.

20.7.2 b No testing...on slopes less than 3 percent ~~grade~~.

In 20.7.2 c In lieu of ...according to the following procedures:

- Individually test... shown in appendix ~~W~~ (*insert*) **H**.
- Record each test result on the form (*insert*), **then date and sign and dated and signed.** ...

**Section 21**: No errata

**Section 22**: No errata

**Section 23**: No errata

**Section 24**: No errata

**Section 25**:

(Change the following section numbers.)

~~25.5.3~~(*insert*) **25.4.3**

~~25.5.4~~(*insert*) **25.4.4**

~~25.5.5~~(*insert*)**25.4.5**

~~25.5.6~~(*insert*)**25.4.6**

~~25.5.7~~(*insert*)**25.4.7**

**Section 26**

26.3.2 Where erecting skeleton steel ...~~However, the preceding does not apply when gathering and stacking temporary floor planks on a lower floor in preparation for transferring such planks for use on an upper floor.~~ If installing a tightly...

26.8.2 When knocking off ~~our~~ (*insert*) **or** backing out rivet...

**Section 27**

27.1.2 Survey the work...Maintain a minimum of 15 feet of clearance from ~~overhead~~(*insert*) **buried** utilities...

27.2.6 Do NOT refuel...to avoid ~~accidental~~ (*insert*) **accidentally** spilling fuel...

**Section 28**: No errata

**Section 29**

29.1.3 Divers, including those...100 feet seawater equivalent only ~~after being gradually introduced or reintroduced to the maximum depth of the planned dive.~~ (*insert*)**if they have previous experience diving to the maximum depth required in the planned dive.**

29.1.7, b. Limit scuba diving to depths...as set forth in ~~the U.S. Navy Standard Decompression Tables~~ *(insert)* **U.S. Diving Manual, Rev. 4, Table 9-6, “Unlimited/ No Decompression Limits and Repetitive Group Designation Table”**. Scuba dive depths must not exceed 100 feet of seawater ~~after altitude adjustment~~.

29.1.7, e. A dive may be made singly if the diver is less than 30 feet deep, ~~there is little current, visibility is good (at the discretion of the Dive Master),~~ *(insert)* **and the diver is tethered from the surface**. All other dives...

29.1.7, f. Provide a standby diver...qualified, fully equipped scuba diver *(insert)*, **positioned to respond quickly to the needs of the diver, and who remains at** ~~on~~ the surface ~~close to the diver~~.

29.2.9 Limit diving operations...decompression staging, in accordance with ~~U.S. Navy standard air decompression tables and the altitude conversion tables developed by R.L. Bell and R.E. Borgwardt (1975).~~ *(insert)* **Table 9-6, U.S Navy Diving Manual, Rev. 4, Table 9-6, “Unlimited/No-Decompression Limits and Repetitive Group Designation Table”**. When diving, do not exceed 100 feet of seawater ~~(after altitude adjustment)~~.

29.2.18 *(Replace section with)* **Before driving to a higher altitude after diving, the diver shall determine the required surface interval as set forth in the U.S. Navy Diving Manual, Rev. 4, Table 9-5, “Required Surface Interval before Ascent to Altitude after Diving”**.

29.2.20 Transport all...If the temperature, ~~elevation~~, or other conditions cannot be controlled...

29.2.21.d. Buddy System. Conduct all scuba diving activities using a buddy system, ~~unless the Dive Master determines that two divers working in close proximity will increase the hazards.~~ A single diver, may work alone, subject to the following conditions:

1. The working depth does not exceed ~~20 feet, or 30 feet with the approval of the Dive Master and Safety Manager~~ *(insert)* **and the diver is tethered to the surface.**
2. ~~A standby diver is provided for the single diver.~~ *(renumber)*  
2. The Dive Master, standby diver, and diver clearly understand that the diver will be working alone.
3. The Dive Master, standby diver, and diver agree, in advance, on the exact operation. The diver must not alter the agree-upon operation or stray from the prescribed locality.

**Appendix H-5**

Part II, A. 1. 4<sup>th</sup> line of Table

Tractors with dozers	30 %	Lowest part of cutting edge to be 18 <del>feet</del> <i>(insert)</i> <b>inches</b> above test surface
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**Appendix H-10**

Refer to Section ~~19~~ *(insert)* **20**...

**Appendix K**

*(Alphabetically Insert)*

**Asbestos, Friable-** Any material containing more than one percent asbestos, and that can be crumbled or reduced to powder by hand pressure. (May include previously non-friable material which becomes broken or damaged by mechanical force.)

*(Alphabetically Insert)*

**Asbestos, Non-Friable-** Any material containing more than 1 percent asbestos that when dry cannot be crumbled, pulverized, or reduced to powder by hand pressure.

*(Alphabetically Insert)*

**Dive Master-** Dive superintendent, diving supervisor, lead diver, or diver-in-charge who has complete responsibility for the diving operation and all diving personnel.

## 2009 Revisions for Chapter 24

Replace paragraph 24.1.8 “Vibration and Damage Control,” with the following:

**24.1.8 Damage Control.** Take precautions to minimize ground vibration, airblast, and flyrock. Include a damage control section in the site blasting plan that addresses these issues. Use blasting mats where flyrock damage is possible. Use modern blasting seismographs and methods to measure ground vibrations and air blast levels at designated structures or locations. Unless otherwise specified, control the blasting so that ground vibrations and airblast levels do not exceed the following:

Ground Vibration Limits <sup>1</sup>		
Type of Structure <sup>2</sup>	Peak Particle Velocity (inches per second)	
	At Low Frequency <sup>3</sup> (<40 Hertz)	At High Frequency (>40 Hertz)
Modern homes, drywall interiors	0.75	2.0
Older homes, plaster on wood lath construction for interior walls	0.5	2.0

Reference: Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, “Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting.” U.S. Department of the Interior, Bureau of Mines, Report of Investigations RI 8507, 1980.

<sup>1</sup>The graph in Appendix B of the above reference may be used in lieu of the limits listed in this table.

<sup>2</sup>For precarious structures not listed in the table, use the limits for older homes; for all other structures not listed in the table, use the limits listed for modern homes.

<sup>3</sup>All spectral peaks within 50 percent amplitude of the predominant frequency must be analyzed.

Airblast Limits	
Instrumentation	Air Blast (decibels)
0.1 hertz high-pass system	134
2 hertz high-pass system	133
5 or 6 hertz high-pass system	129
C-slow (for events not exceeding 2 seconds’ duration)	105

Reference: Siskind, D.E., V.J. Stachura, M.S. Stagg, and J.W. Kopp, “Structure Response and Damage Produced by Airblast from Surface Mining,” U.S. Department of the Interior, Bureau of Mines, Report of Investigations RI 8485, 1980.

## 2009 Revisions for Chapter 25

Replace 25.4 “Surface Preparation” through 25.5.7, “Fall Protection,” with the following paragraphs:

### **25.4 Surface Preparation**

**25.4.1 Green Cutting or Abrasive Blasting.** Employees engaged in green cutting must wear eye and face protection. Employees engaged in wet or dry abrasive blasting using silica sand must wear an approved abrasive blasting air-line respirator, heavy-duty footwear, and hardhat. (See the section, "Personal Protective Equipment," for specific requirements.)

### **25.5 Formwork and Falsework**

**25.5.1 Design and Erection.** In addition to the specific requirements set forth in this section, the design and erection of formwork or falsework shall be in accordance with specifications, pertinent provisions of the latest edition of ACI 347, “Guide to Formwork for Concrete,” and ACI 318, “Building Code Requirements for Reinforced Concrete,” and current edition of ANSI A10.9, “Safety Requirements for Masonry and Concrete Work.”

**25.5.2 Safety Factor.** Design, erect, brace, and maintain formwork, falsework, structural shoring, and bracing to safely support all vertical and lateral loads that might be applied until the structure can support such loads. Incorporate the minimum safety factors (as specified in ANSI A10.9, "Construction and Demolition Operations - Concrete and Masonry Work") in the design and erection of all framework, shoring, falsework, and formwork accessories.

**25.5.3 Construction Loads.** Do not impose any construction loads on the partially completed structures unless such loading has been considered in the design and is shown on the formwork design drawings or specifications.

#### **25.5.4 Drawings and Plans**

- a. A PE must approve and sign detailed design calculations and working drawings for all formwork or vertical shoring installations when any of the following conditions exist:
  - The height, as measured from the top of the sills to the soffit of the superstructure, exceeds 14 feet
  - Individual horizon span lengths exceed 16 feet
  - Provisions are made for vehicular or railroad traffic through the falsework or vertical shoring.

b. For all formwork and vertical shoring installations not discussed in subparagraph a. above, one of the following must approve and sign the formwork plan or shoring layout:

- A PE
- A manufacturer's authorized representative
- A contractor's representative, qualified in using and erecting formwork and vertical shoring.

c. Make drawings or plans showing the jack layout, formwork, shoring, working decks, and scaffolding available at the jobsite.

**25.5.5 Form Anchors.** Design form anchors that support forms and scaffolding with a minimum safety factor of three. Impose no load on form anchors or concrete anchorages until the concrete has set the minimum period of time set forth in the subsection, "Releasing and Moving Forms." Form sections supported by form anchors must be no more than 50 feet long and must be designed and installed so that no forces, incurred by form or anchorage failure, can transfer to an adjacent section.

**25.5.6 Housekeeping.** In all areas where persons must work or pass, remove and stockpile all stripped forms and shoring promptly after stripping. Pull or cut protruding nails, wire ties, and other unneeded accessories to avoid hazards.

**25.5.7 Fall Protection.** Employees, when working 6 feet or more above any adjacent work surface (and not protected by fixed scaffolding, guardrails, or safety net) must use a personal fall protection system. Employees working in a stationary position may use a positioning system, but only until they need to relocate to a new position.

