



Hazard Analysis - FEATURE: CONCRETE, CAST-IN-PLACE

27 Aug 2010

RMS Training Contract
W912PP-07-C-0010 NA

Flagstaff Project Office

US Army Corps
of Engineers

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Concrete Testing	Chemical burn	Rubber gloves and boots are required.
	Eye Hazard	Safety glasses w/side shields and/or goggles. Face shield as required.
	Hit by swinging chutes	One personnel will hold chute while testing personnel obtains sample.
Curb Machine	Foot caught in trimmer	Stay clear from trimmer while machine is operating.
	Getting caught between concrete truck and curb machine	Wear reflective vest and stay clear of concrete truck, be visible to the truck driver.
	Hand caught in conveyor	Keep hands clear of conveyor belts.
	Struck by Curb Machine	Stay safe distance from machine.
Curb machine string line	Tripping and fall hazards	Be alert and watch your step.
Double Trowels	Equipment Operation	Ensure that all operators are fully trained in the operations and safe handling procedures for double trowel machine.
Driving Metal Stakes	Smashed hand or fingers	Hold metal stakes loose on sides.
	Struck by hammer head	Beware of loose hammer head.
Hauling materials with flatbed truck	Struck by equipment/working on unsecured equipment	Signal operator and insure he signals to the employee before employee approaches equipment. Always approach equipment from in front of the operator, never from behind. Contact the spotter for access to trucks and dumping areas. 1. A initial equipment inspection and operational check shall be conducted, which includes for back up alarms, hydraulic and other line leaks, and general operating condition. 2. Place in a de-energized state when not in operation. Set emergency brake and use chocks when parked on an incline. 3. Use articulation pin locks when working on equipment.
Loading and unloading metal steel stakes	Fingers pinched or cut	Wear gloves and proper PPE.
Mobilization of manpower, equipment and materials to the jobsite	Emergency Procedures	1. Employees will receive orientation and proper training covering emergency procedures before working onsite. Project is within 5 minutes of Kayenta Medical Center. 2. Should an emergency occur, a responsible person will call 911 or for emergency assistance. FCI will be notified as soon as possible and a report shall be filed with FCI within 24 hours of any injury.
Performing Concrete Test	Crushed Toes	Steel/composite toed boot required.
	Foreign particles in the Eye	Safety glasses with side shields.
	Loud Noise	Ear protection required when exposed to loud equipment and power tools.
	Sharp Object	Pants that protect the full length of the leg, shirt with sleeves that extend at least four inches over the shoulder and are not cropped off. Proper hand protection required.
	Strike to the Head	Hard hats required.
Placing rebar with forklift	Pinch points, cuts, scrapes and crushing hazards	Gloves shall be worn while working around rebar. Have spotter while setting rebar with fork lift.
Pumping concrete/Slab on Grade	Boom Operation	Operator must have clear line of site at all times through boom areas.
	Pump Stability	Ensure that concrete pumps are set up on stable, level ground and that area is frequently inspected to ensure stability.
	Struck by Hazards from boom	All employees in the area must be aware of boom activity and locations at all times.
Rebar Placement	Impalement hazards	Rebar caps must be placed on all standing rebar and metal steel stakes.



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	Material handling forklift operation	<ol style="list-style-type: none"> 1. Inspect forklift and rigging prior to use. 2. Use spotter when necessary. 3. Ensure all operators are properly trained.
Rebar Placement/tie rebar	Impalement, puncture hazards of protruding steel rebar	Provide caps for rebar. Ensure that enough rebar caps will be available prior to installing rebar at the site.
	Strains, sprains and other hazards associated with improper manual lifting techniques	Use proper lifting techniques. Lifting devices shall be used when the task requires them. Gloves shall be work while working with rebar.
Single Trowels	Equipment Operations	Ensure that operators are fully trained and physically capable personnel to operate walk behind single trowel.
Trenching	Access and egress of trench greater than 4 ft. in depth.	Ladder or steps must be provided within 25 ft in all directions of employees for trenches over 4 ft. deep.
	Cave in of trench greater than 5 ft. in depth	All trenches 5 ft. deep or greater must be benched, sloped or otherwise protected from cave in.
	Falling objects into trenches (PPE)	Ensure that employees in trenched wear proper PPE.
	Overall Safety and Stability of trench on daily basis/fall hazards into trenches	<ol style="list-style-type: none"> 1. Competent person will inspect daily. 2. Ensure that trench spoils are placed no less than 2 ft. away from the edge of the trench.
	Stability of trench floors (washout)	Daily inspection will ensure that no water gathers in floors of trenches.
Working with Concrete	Concrete Burns and Blisters	Wear proper PPE, including rubber gloves and rubber boots (if necessary).
	Concrete Splashing	Worker(s) at end of chute or concrete pump hose and vibrator operators must use eye protection and gloves.
	Concrete vendor and worker access	Clear and safe path or roadway, no debris, well lighted when needed. Eliminate trip and other surface hazards.
	Dermal Irritant/Eye Irritant	For job specific training, review MSDS and avoid contact with wet station (portable or stationary) shall be located in the immediate work area. The location shall be told to the employee. Maintain dust control by application of wet mist for dust control but avoid direct contact to wet concrete. Wear long sleeve shirt, safety glasses, and rubber gloves.
Working with Concrete Bonding Agent	Dermal Contact	Have MSDS on site for job specific training. Review MSDS and avoid contact with the chemical. Wear acetate/acid resistant gloves and booties specific to chemical and face shield.
	Inhalation Hazard	Provide adequate ventilation.
Working with Concrete Pump Truck	Dermal irritant/eye irritant	Review concrete MSDS and avoid contact with wet concrete or dry. Provide job specific training for concrete hazards prior to it's use. Have MSDS available in case of an emergency. Eyewash station shall be located in the immediate work area. Inform employee of the location of the station. Maintain dust control by application of wet mist for dust control. Avoid direct contact with wet concrete. Wear long sleeve shirt, safety glasses and rubber gloves.
	Equipment left unattended in an energized state	Set emergency break. Use chocks when parked on an incline and not in use.
	Fire in equipment/hydraulic line leaks/working on unsecured equipment	Inspect equipment for improper mechanical or operational deficiencies: Fire Extinguisher required.
Working with a forklift	Equipment unoccupied in an energized state	Place in a de-energized state when not in operation. Set emergency brake when not in motion.



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	Struck by moving equipment	Keep from the swing radius of the equipment; maintain fork at a 6-inch height when operating forklift unless a greater clearance is required. Signal the operator, insure he signals to the employee before the employee approaches equipment, and approach equipment in full view of operator.
	Uncontrolled fluid spill	Inspect equipment for improper mechanical or operational deficiencies: back up alarm, Fire extinguisher, seat belts, operating turn lights, hydraulic lines, observe posted speed limit. Use inspection form.
Working with Concrete mixing truck and concrete material	Dermal irritant/eye irritant	Review concrete MSDS and avoid contact with wet concrete or dry. Provide job specific training for concrete hazards prior to it's use. Have MSDS available in case of an emergency. Eyewash station shall be located in the immediate work area. Inform employee of the location of the station. Maintain dust control by application of wet mist for dust control. Avoid direct contact with wet concrete. Wear long sleeve shirt, safety glasses and rubber gloves.
	Equipment left unattended in an energized state	Set emergency brake. Use chocks when parked on an incline and not in use.
	Fire in Equipment/Hydraulic line leak/working on unsecured equipment	Inspect equipment for improper mechanical or operational deficiencies: back-up alarm, Fire Extinguisher, seat belts, operating turn lights, hydraulic lines, observe posted speed limit.



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Equipment to be used	Inspection Requirements	Training Requirements
1. Forklift 2. Backhoe/Gannon 3. Curb Machine 4. Concrete Pump Truck 5. Trowel machines	1. Initial and Daily inspection of equipment 2. Initial and Daily inspection of equipment 3. Initial and Daily inspection of equipment 4. Initial and Daily inspection of equipment once onsite. 5. Daily inspection of equipment	1. Certified operators 2. Certified Operators 3. Qualified Operator 4. Qualified Operator 5. Trained Personnel