WATER & SEWER
RISK MANAGEMENT POOL

Ladder Safety Program

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The following safety related program is for informational purposes only. The SORT committee hopes that each participating district will look at this program and discuss how it compares to the district's own practices. This program is NOT a complete safety program, but intended as guidelines. There is no guarantee that following a given program will eliminate or substantially reduce the risk of claim or injuries. It is expected that member districts will consider this program and adapt or modify it to fit the district's particular needs and circumstances.

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PURPOSE / SCOPE

This ladder safety program covers the use of portable, non-fixed ladders. Use of the district's fixed ladders is covered in the Fall Protection Program.

Portable ladders are a common tool in the workplace. Most accidents are caused by improper use. Accidents can range from minor to serious.

This is intended to be a universal document that describes precautions and procedures that must be followed in all cases. Field management and staff will develop Standard Operating Procedures for work at specific sites and for specific work tasks, which will take into account all safety issues and will define the most effective methods of accomplishing the work objectives safely and efficiently.

EXEMPTIONS / EXCLUSIONS

Regarding clearances, when unavoidable obstructions are encountered, the minimum perpendicular clearance between the centerline of the rungs, cleats, steps and an obstruction on the climbing side may be reduced to twenty-four inches if a deflection device is installed to guide persons around the obstruction. Fixed ladders in elevator pits may reduce the minimum clearance from the ladder to the nearest permanent object in back of the ladder to four and one-half inches.

HAZARD ANALYSIS

Portable and job-made ladders manufactured on or after January 1, 2006 must meet American National Standards Institute (ANSI) ANSI A14.1-2000, A14.2-2000 , A14.5-2000 and ANSI A14.4 2002. Ladders manufactured before January 1, 2006 must meet ANSI A14.1, A14.2 and A14.5. All commercially manufactured portable ladders should have a label indicating it meets the requirements of the ANSI standard. If in doubt, check with the manufacturer.

Ladders come in four types:
Type IA: Extra heavy duty normally used in industry, utilities and contractors. Maximum intended load is 300 lbs.
Type I: Heavy duty normally used in industry, utilities and contractors. Maximum intended load is 250 lbs.
Type II: Medium duty normally used by painters, in offices and for light maintenance. Maximum intended load is 225 lbs.
Type III: Light duty normally used in general household use. Maximum intended load is 200 lbs.

Sizing a ladder for the job is important. An extremely dangerous situation exists when an undersized ladder is used.

Generally, portable ladders are made either of wood, aluminum, or fiberglass. The main consideration when selecting a ladder by its material is whether or not an electrical hazard exists. Please Note: Aluminum ladders are highly conductive.

Hazard Description
A portable ladder can cause injury from falling.

Hazard Evaluation
Ladders set up in an area where work activities can cause equipment or personnel to come in accidental contact with the ladder.

Working around or near electrical lines can cause accidental contact or arcing of electricity. Please Note: This condition can cause an electrical shock.

Methods of Evaluation

All ladders shall receive an inspection each time it is used. Ladders shall receive periodic inspection by the designated person even if the ladder is rarely used. At a minimum, an annual inspection is recommended.

Exposure Determination

All employees and contractors are exposed to the hazards of portable ladders.

RESPONSIBILITES

District

- Train employees to recognize ladder hazards and procedures to minimize any hazard.
- Have a competent person train employees in the proper construction, use, placement, maximum intended load capacities and care in handling ladders.
- Retrain as necessary to assure they know and understand the content of original training.
- Verify that ladders are inspected, maintained, stored and transported properly.

Designated Person

- Verify any repairs restore the ladder to a condition meeting its original design criteria.
- Prohibit repairs to a deflective side rail.
- Verify that all personnel are trained in the hazards

Managers

- Verify all employees and contractors follow the district's safety programs.
- Assure that all employees are fully trained.

Employees

- Follow the safety procedures explained in this safety program.
- Know the hazards and the precautions that can be used to prevent injuries or accidents.
- Have knowledge to recognize any defects of the ladders or safety equipment.

GUIDELINES/RULES

Ladder inspections must be performed by a competent person periodically or after any occurrence that could affect the safe use of the ladder. Inspection shall include but not limited to:

- Corrosion of any metal parts or components.
- Make sure all parts and surfaces are free of splinters, sharp edges, burns or projections that may be hazardous to persons using the ladder.
- Broken or missing rungs, steps or cleats.
- Condition of non-skid devices on rungs, steps or cleats.
- Condition of safety feet designed to keep ladder base from slipping.
- Extension devices, such as ropes and pulleys, on extension-type ladders.
- Hinges and metal spreaders or locking devices on step (self-supporting) ladders.
- All rungs, steps, cleats and side rails must be free from oil, grease or other slippery materials.
- All moveable parts operate freely without binding or excessive play.
- Joints between the steps or rungs and the side rails are tight.
- All bolts and rivets are in place and secure.
- Ropes are not frayed or badly worn.
- Verify that wood ladders are not coated with an opaque covering except for the minimum amount necessary for identification and warning information which may be placed on one face only of a side rail.

Ladders used to access an upper level must have the rails extended at least three feet above the landing surface. If three feet cannot be achieved; secure the ladder at the top to a rigid support that will not deflect or provide a grasping device, such as a grabrail, to assist in mounting and dismounting the ladder.

Use ladders with nonconductive side rails where the ladder could contact uninsulated, energized electric lines or equipment. Metal ladders specifically designed to permit grounding or dissipation of static electricity may be used if using nonconductive ladders would present a greater hazard than using conductive ladders. Ladders are marked and identified as being conductive or the ladder is grounded when used near energized lines or equipment.

Rungs must be parallel, level and uniformly spaced throughout the length of the ladder so the distance from the centerline of one rung to the center of the next rung does not exceed twelve inches. Rungs must have minimum diameters. Rungs of wood ladders are at least one and one-eighth inches. Rungs of metal ladders subject to unusually corrosive exposures, such as individual metal rungs imbedded in concrete, which serve as access to pits and to other areas under floors, shall be at least one inch. Rungs of all other metal ladders shall be three-quarters inch.

The minimum inside clearance of the stepping surface of the rung, step or cleat shall be sixteen inches. Each individual rung or step-type ladder shall be shaped so that a person's foot cannot slide off the end.

Side rails shall provide an adequate gripping surface and be uniform throughout the length of the climb.

Applicable SOPs

- Climb only well supported and secure ladders.
- Inspect the soles of footwear for any debris that cause slipping.
- Use both hands while climbing and face the ladder
- Do not carry tools or materials in your hands while climbing ladders. Carry tools on a tool belt or pull them up in a bucket on a rope. Do not have tools thrown to you while on the ladder and do not throw them back to the ground. Unused tools should be kept on a tool belt instead of balanced on a rung.
- Never try to move a ladder while you are on it by shaking it or jumping up and down on it.
- Only one person on a ladder at any time.
- Never climb the cross bracing or rear section of a stepladder.
- The top of a stepladder is not to be used as a step.
- Do not store material on ladders.
- Store ladders on racks designed to protect them when not in use. The racks should have enough supporting points to prevent sagging.
- Do not store wood ladders near sources of heat, moisture or dampness.
- Ladders shall be handled with care and not subject to unnecessary dropping, jarring or misuse.

- Face the ladder when climbing or descending.
- Ladders transported on vehicles shall be properly supported. Ladders shall be on racks positively secured in a fixed position with supporting points made of a soft material, such as hardwood or rubber covered iron pipe, to minimize the chafing and effects of road shock. Tying the ladder to each support will also reduce the damage due to road shock.
- Do not use worn, broken or improperly maintained ladders.
- Do not exceed the maximum intended load or the manufacturers rated capacity.
- When erecting a ladder ensure sufficient support at the base. The ladder shall be placed on a secure footing on a firm, level support surface free of any snow, ice or other slippery surface or substance.
- Do not allow the buildup of slick material on ladder steps or rails, which may cause the user to slip.
- Use ladders only for their intended purpose. Unless specifically recommended by the manufacturers do not use a ladder as a brace, skid, lever, gangway, platform, scaffold plank or material hoist.
- Do not place ladders on boxes, barrels or other unstable bases to obtain height.
- Place the ladder so the side rails are equally supported by the top support.
- Non-self supporting ladders shall be set at the proper angle. The horizontal distance from the top support to the foot of the ladder is approximately one-quarter the working length of the ladder.
- Keep the area around the top and bottom of ladders clear.
- Do not use single-rail ladders.
- Make sure ladder is not moved, shifted or adjusted while anyone is on it.
- Secure the ladder at top and bottom when working from it.
- Do not tie or fasten ladder sections together to make longer ladders unless the manufacturer endorses this type of use and you have hardware fittings specifically designed for this purpose.
- When multi-section ladders are fully extended and locked in position, make sure each section overlaps the adjacent section as required. Ladder lengths up to 36 feet are required to overlap by 3 feet, 36 feet to 48 feet must have 4 feet of overlap and 48 feet to 60 feet must have 5 feet.
- Do not use self-supporting ladders as single ladders or in the partially closed position.
- Self-supporting and stepladders shall be used fully open and the spreaders locked.

Required PPE

- Barricades, caution tape or cones for isolation of an area.

Prevention Actions

Ladders shall only be used for purpose for which they were designed.

Using an appropriate and properly maintained ladder for the work to be performed can prevent accidents.

Braces must be locked and cross bracing of rear sections or stepladders shall not be used as steps unless designed as such.

The top of a stepladder shall not be used as a step.

Sections of extension ladders must overlap by a minimum of three feet. Sections need to be locked into place before climbing begins.

If the ladder is being used to reach a platform or roof, the top of the ladder must extend above the edge by at least three feet.

The base of the ladder is to be placed from the wall one foot for every four feet of ladder height (4 to 1 rule). This will set the ladder at the optimal 75-degree angle the ladder must be leaned against something solid and stable.

Ladders shall be taken out of service, inspected, repaired and/or replaced if they are tipped over, dropped, come in contact with a vehicle, are exposed to excessive heat or come in contact with certain acids or alkali solutions.

If ladders are exposed to oil or grease they must be cleaned immediately.

Damaged ladders shall be tagged and taken out of service. Ladders shall be repaired only by qualified personnel and restored back to its original design criteria or destroyed. Makeshift repairs to a ladder are NOT acceptable.

Ladders that are set up in a location where they could be displaced by workplace activities or by traffic shall be secured to prevent accidental displacement or use a barricade to keep the activities or traffic away from the ladder. Ladders set up in front of doors require precautions such as blocking the door, locking the door or guarding the door to prevent it from opening into the ladder.

Ladders exposed to elements where decay, corrosion or rust can occur shall be painted or treated to prevent damage to the ladder. Care shall be taken to not cover or obscure the identification and warning information located on the face of the side rail.

Do not overload ladder or exceed either the maximum intended load or the manufacturer's rated capacity.

EMERGENCY PROCEDURES

N/A

First Aid Awareness and Actions

- If an employee falls or is electrocuted. Apply basic first aid.
- Call 911

FORMS USED

N/A

TRAINING

Required Materials

- Ladder safety program and any other material that would be appropriate.

Employee Training

- All employees will be trained every two years, when changes occur in the ladder safety program or when supervisors or management believes it is necessary.

Supervisor Training

N/A

REFERENCES/RESOURCES

WAC 296-876-15005,20005,30005,30010,30015,30020, 40005, 40010, 40015, 40020, 40025, 40030, 40035, 40040, 40045, 40050 and 900

ANSI A14.1-2000, A14.2-2000, A14.5-2000, A14.4-2002, A14.1, A14.2 and A14.5

OSHA 1926.1053(b)(1),(2),(b3),(b4),(11),(13),(16),(17),(18),(20),(21),(22)

REVISION RECORD

Revision No.	Revision Date	Approval Date	Change
1.0.0	01-08-09		Initial design.
2	1-28-09		Updated Robert Smart
3	2-1-11		Updated Bob Forslin
4	5-24-16		Updated James Freeman

APPROVALS

Safety Committee Chairperson	Date	General Manager	Date

DEFINITIONS

Cleat
A ladder crosspiece used in climbing or descending. Also called a step or rung.

Extension ladder
A non-self-supporting portable ladder consisting of two or more sections. The sections travel in guides or brackets that allow the length of the ladder to be changed. The size is designated by the sum of the lengths of each section, measured along the side rails.

Failure
The ladder or ladder component loses the ability to carry the load, breaks or separates into component parts.

Fastenings
A fastening is a device to attach a ladder to a structure, building or equipment.

Grab bars
Handholds placed adjacent to or as an extension above ladders for the purpose of providing access beyond the limits of the ladder.

Job made ladder
A ladder that is made, not commercially manufactured, to fit a specific job situation. They are for temporary use until a particular phase of construction is completed or until permanent stairways or fixed ladders are ready to use.

Ladder
A device having steps, rungs or cleats that can be used to climb or descend.

Ladder type
The designation that identifies the maximum load (working load) of the ladder.

Landing
Any area such as the ground, roof or platform that provides access or egress to a ladder.

Maximum intended load
The total load of all persons, equipment, tools, materials, transmitted loads and other loads reasonably anticipated to be applied to a ladder or ladder component at any one time. Sometimes referred to as working load.

Pitch
The included angle between the horizontal and the ladder, measured on the opposite side of the ladder from the climbing side.

Portable ladder
A ladder that can be readily moved or carried.

Reinforced plastic
A plastic that has high-strength fillers embedded in the base resin to increase strength.

Reinforced plastic ladder
A ladder whose side rails are reinforced plastic. The crosspieces, hardware and fasteners may be made of metal or other suitable material.

Rung
A ladder crosspiece used in climbing or descending. Also called a cleat or step.

Side step ladder
A fixed ladder that requires a person to step to the side of the ladder side rails to reach the landing.

Single ladder
A non-self-supporting portable ladder, nonadjustable in length, consisting of one section. The size is designated by the overall length of the side rail.

Single-rail ladder
A portable ladder with crosspieces mounted on a single rail. Single-rail ladders are prohibited from use.

Special-purpose ladder
A portable ladder that is made by modifying or combining design or construction features of the general-purpose types of ladders in order to adapt the ladder to special or specific uses.

Step
A ladder crosspiece used in climbing or descending. Also called a cleat or rung.

Stepladder
A self-supporting portable ladder, nonadjustable in length, with flat steps and hinged at the top. The size is designated by the overall length of the ladder measured along the front edge of the side rails.

Through ladder
A fixed ladder that requires a person to step between the side rails of the ladder to reach the landing.

Trestle ladder
A self-supporting portable ladder, nonadjustable in length, consisting of two sections hinged at the top to form equal angles with the base. The size is designated by the length of the side rails measured along the front edge.

Working length
The length of a non-self-supporting ladder, measured along the rails, from the base support point of the ladder to the point of bearing at the top.

ANNEX

N/A

APPENDIX

N/A