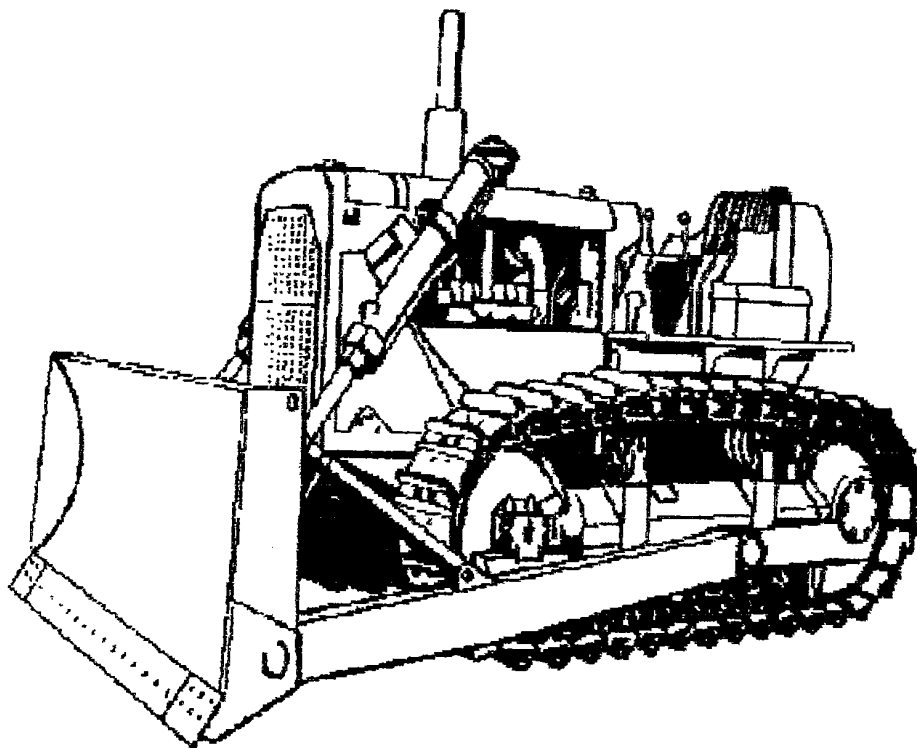


# **CITY OF STOUGHTON STREET DEPARTMENT SAFETY MANUAL**



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02/27/01 ADOPTED BY CITY COUNCIL

## **GENERAL SAFETY RULES:**

1. You are required to be familiar with and to observe all City and department or divisional safety rules.
2. Know the location of fire fighting equipment and how to use it.
3. Drinking of intoxicants during working hours is prohibited.
4. Employees shall not report to work under the influence of alcohol, or controlled substances.
5. Horseplay of any kind is strictly forbidden.
6. Good housekeeping will be the responsibility of all employees.
7. Proper eye protection must be worn in areas designated as being a hazard to the eyes, as indicated by the department or division.
8. Proper head protection (hard hat) will be worn in areas that are designated as presenting a danger.
9. No employee will use any equipment without the proper guards in place.
10. Employees must use seat belts while driving or riding in any City vehicle in which they are equipped.
11. Report all accidents and property damage to your supervisor immediately, whether or not an injury is involved.
12. No tennis, jogging or deck shoes shall be worn on any job.
13. Safety vests shall be worn when working in traffic area in streets.
14. The use or possession of alcohol or controlled substances without a doctor's prescription is prohibited while an employee is on duty.
15. No smoking in any city vehicle or building.

## **General Equipment**

1. Before using assigned equipment, check for the following: brakes, lights, directional lights, horn, tires, rearview mirror, wipers, windows, oil, gas and steering, etc.
2. Keep windows clean at all times.
3. Use seat belts when vehicle is equipped with them.
4. Practice courtesy and good driving habits at all times.
5. Never follow too close to the vehicle ahead (one vehicle length for each 10 miles per hour).
6. Use safety bars and blocking when working under boxes and buckets, etc.
7. Use safety chain where required.
8. Make sure all tools are secure.
9. Report any repairs needed.
10. Obey all traffic laws.
11. Use extreme caution when children are present.

## **Sweepers and Loaders**

1. Sweeper should never operate too close to parked cars.
2. Always look back before turning into traffic and stop to permit cars to pass.

3. Sweeper, loader and operators shall use extreme caution when operating near overhanging tree limbs or other obstructions.
4. Stop the sweeper when children get too close to the gutter broom.
5. The sweeper, loader and operators should use extreme caution when backing.
6. Loader operators shall never operate loader bucket, loaded or empty, over any personnel.
7. Loader operator shall never leave operator's seat with loader bucket elevated and engine running.
8. While traveling to and from job site, have loader bucket sufficiently high enough to clear all obstructions.
9. Personnel shall not ride in loader bucket when loader is in motion.
10. Be aware of low hanging limbs, wires and viaducts when operating loaders.
11. End loader bucket, when loaded, shall be carried as close to the ground as conditions permit, until in position to unload bucket.
12. Safety bars or blocking shall be used when working beneath loader bucket and beneath sweeper hopper.
13. While traveling to and from job site, end loaders shall be driven at a safe speed with driver and bucket facing direction of travel.
14. Use all warning lights while operating equipment.
15. Hearing protection shall be worn when operating sweepers and loaders.
16. Hydrastatic sweeper: be sure hand brake is off before operating vehicle.

## **Salting and Sanding**

1. When using a tailgate spreader, check elevation of dump box so as to clear wires, branches and viaducts.
2. Use proper truck gear ratio in all operations.
3. When working on tailgate auger, truck engine shall be turned off and tailgate power take-off disengaged.
4. Use all warning lights when salting and sanding.
5. Obey all traffic laws.
6. No personnel shall enter truck box while sander motor is running.

## **Air Hammer**

1. Inspect air compressor hose daily for failures.
2. When hooking up or unhooking compressor, use two persons.
3. Lock hitch and use safety chain when transporting compressor.
4. Secure hammer and hose while transporting compressor.
5. Use all warning lights when approaching and in work area.
6. Check passing traffic before leaving vehicle.
7. Use correct warning devices.

8. All personnel while operating air hammer or working near hammer shall wear eye goggles.
9. Dust respirators shall be worn by all personnel when using air hammer on concrete.
10. When underground electrical conduit is observed, assume it is live.
11. Obey all traffic laws.
12. All personnel shall wear hearing and foot protection.

## **Concrete Repair**

1. Secure tools on truck so they don't protrude out the side of the vehicle.
2. Use warning lights: warning devices such as "high rise", "lane closed" signs and safety cones must be used to warn motorists.
3. Safety vests will be worn at all times.
4. Block only one lane of traffic at a time whenever possible.
5. Saw Cutting:
  - A. Follow all manufactures suggested safety precautions/
  - B. Use funnel when filling saw with gas.
  - C. Wear safety glasses, gloves and ear protection.
6. Safety rules shall be followed on the use of the air hammer
7. Follow manufacturer's safety procedures when operating gas generator.
8. Patch material: follow manufacturer's directions.



## **Blading and Graveling**

1. Grader and truck should always work with traffic.
2. Use all warning lights while grader and gravel truck are operating.
3. Obey all traffic laws.
4. Hearing protection shall be worn while operating grader.
5. Be sure that all stone work is in condition before leaving the job site.
6. Hand graveling crews shall wear safety vests.

## **Blacktop**

1. When using fuel oil, avoid wind spray and clean up any spillage.
2. Stay clear when loading or unloading roller.
3. Safety chain on roller shall be fastened while in transit.
4. When using asphalt tack coat, wear gloves and avoid splattering.
5. Secure tools to truck and make sure they do not protrude out the side of the vehicle.
6. Clean and start equipment at curbside of truck whenever possible.
7. Use all warning lights when approaching and in work area.
8. Check passing traffic before leaving vehicle.
9. When patching at intersections or on busy streets, warning devices such as safety warning cones must be used to warn motorists; and safety vests worn to protect yourself.

10. Obey all traffic laws.
11. Block only one lane or traffic at a time when possible.
12. When using safety arrow, make sure you direct traffic to open lane of traffic.
13. Fire extinguisher shall be available at all times.

## **Concrete and Bituminous Crackfilling**

1. Fire Extinguisher shall be available at all times.
2. Barrels of crackfiller shall be handled by two or more employees.
3. Lock hitch and use safety chains when transporting tar kettle.
4. When loading tar kettle, avoid splattering.
5. Use correct number of flagmen. Also use warning flags and safety vests.
6. Use all warning lights when working.
7. When possible, block only one traffic lane at a time.

## **Office**

1. Desk and filing drawers shall be closed after using.
2. Know the location of fire fighting equipment and how to use it.
3. Know the whereabouts of obstructions on the floors.
4. Keep office area well lighted when personnel are on duty.
5. When obtaining or storing supplies from the shelves above your reach, use proper stand or ladder.

## **Shop Area**

1. Safety goggles shall be worn while operating grinder, drill press, oxygen and acetylene welder.
2. Welding hood shall be used at all times when using a welder.
3. Safety stands shall be used anytime work is being done on raised dump boxes or loader buckets.
4. All safety precautions shall be taken while working on all equipment.
5. All oil spots on the floor shall be covered with sawdust or oil dry.
6. Ladders- make sure they are in good condition and well secured before using. Always use an approved ladder. All ladders shall be equipped with rubber feet.
7. Personnel operating cranes and hoists shall use extreme caution.
8. All vehicles shall be turned off while being fueled.
9. No smoking shall be allowed within fueling area.
10. All tools and equipment shall be properly stored when not in use.
11. Good housekeeping shall be practiced at all times.
12. Know the location of all fire fighting equipment and how to use it.
13. Safety shoes or adequate foot protection must be worn in shop area.
14. Lockout/Tagout when repairing equipment.

## **Snowplowing**

1. All plows shall be equipped with guide rods on each extremity of plow.

2. All snowplow operators shall use good judgment and avoid excessive speed when plowing.
3. When snowplow is in raised position, no personnel shall have any part of their body under snowplow. If work is to be done on plow when in raised position, plow shall be properly blocked.
4. When plowing around parked cars, snowplow operators shall use extreme caution and good judgment
5. Use all warning lights while plowing.
6. All operators shall check area behind vehicle prior to backing up.
7. Obey all traffic laws.
8. All operators shall raise plows when crossing railroad tracks.

## **Sand Barrels**

### **Placing Barrels:**

1. Obey all traffic laws.
2. Use caution climbing in and out of truck box.
3. Use correct shoveling methods when filling barrels.
4. Use all warning lights while working.

### **Removing Barrels:**

1. Obey all traffic laws.
2. When mechanical lift is in operation, stay clear of the lift area.
3. Be aware of swinging sand barrel cover.
4. Loader operator shall exercise extreme caution.

5. While backing end loader or truck, a helper shall help direct the backing operation.
6. Use all warning lights while working.
7. Personnel shall wear gloves while working on barrels and lift unit.

## **Snow Removal**

1. Use all warning lights at all times.
2. Obey all traffic laws.
3. Loader mounted snow blower motor shall be turned off. Also auxiliary motor will be turned off before leaving the vehicle.
4. While changing pins, loader motor will be turned off, as will the auxiliary motor.
5. While loading trucks, vehicles will follow the direction of the guide person.
6. No truck will double park while in snow removal operation.
7. No vehicle will block intersection while loading.
8. Any property damage that occurs will be reported to the office immediately.

## **Stump Grubber**

1. The operator shall be at the controls at all times while the machine is in operation.
2. All shields must be in place when machine is in operation.

3. The engine shall be stopped when making adjustments or repairs on the machine.
4. All spectators must be kept clear of equipment while the machine is in operation.
5. Be sure all safety curtains are in place before removing the stump.
6. The operator must wear safety glasses, hard hat, ear protection and gloves when operating the stump grubber.
7. The cutting wheel shall be centered while in transport.
8. All safety pins shall be in place and safety chain attached before transporting.
9. When changing teeth, face shield, goggles, safety glasses and gloves must be used.
10. Screen guard shall be in place before operating the machine.

## **Brush Collection**

1. Loose clothing and jewelry shall not be worn while chipping brush.
2. Personnel shall wear gloves.
3. All warning lights shall be on while loading.
4. When open trucks are hauling brush, make sure taillights are visible  
And there are no loose branches.
5. Brush loads shall not exceed truck body width.
6. Caution shall be used when handing brush up to employee on truck.
7. Hearing protection shall be worn when operating chipper units.

8. Personnel shall wear hard hats.
9. Personnel shall wear safety glasses.
10. While hauling chipper units, safety chains shall be in place.
11. Hitch on truck as well as on chipper shall be checked for wear when new set of blades are changed on chipper unit.
12. Helper shall be out of vehicle and in sight of driver when vehicle is backing up.
13. Safety equipment shall be in place before operating chipper.
14. Engine shall be off and driver stopped before cleaning chute.
15. Secure with safety pins when closing up unit.

## **Mowers**

1. Inspect mower and repair or tighten any loose or broken parts. Be sure all safety guards are in place.
2. Be sure no grease or slippery substance remains on running board or steps on equipment.
3. No riders shall be permitted on tractors.
4. Inspect area to be cut for obstructions and unsafe terrain.
5. Do not take any undue chances while cutting on banks, side hills or uneven terrain. Keep cutting blade uphill.
6. Have wheels blocked while changing tires.
7. When operator leaves driver's seat, tractor shall be turned off and transmission put in gear, or park, or parking brake applied.

8. Obey all traffic laws (use hand signals).
9. Report any injury or insect bites promptly.
10. Extreme caution shall be used when children are in the area.
11. Secure trailer hitches and fasten safety chains when pulling trailers.
12. Inspect all lift devices daily.
13. Use extreme caution when operating near overhanging tree limbs or other obstructions.
14. Travel with tractor in gear do no coast.
15. In transit, both brakes shall be locked as one.

## **Weed Spraying**

1. Obey all traffic laws.
2. Use all warning lights.
3. While mixing chemicals and using chemicals, follow directions exactly.
4. Safety equipment:
  - a. Mask – air
  - b. Gloves
  - c. Vest-safety
  - d. Glasses-safety



## **Safety Rules for Tornado Alert**

1. Employees at the City garage will seek shelter in the locker room (located on the south side of the main garage).
2. Employees in transit or at a work site should seek shelter in a low place if time does not permit better accommodations.

## **Fire Safety Rules**

1. Oil and oily waste rags should be kept off the floor. Dirty rags and wiping towels shall be deposited in approved containers. Containers are to be emptied daily.
2. Flammable liquids shall be kept in approved closed containers and properly tagged.
3. Keep grease and oil and other flammable liquids in fireproof rooms, except for small working supplies.
4. Only vapor proof lamps are to be used in enclosures where petroleum products are stored.
5. Warning signs should be posted at all entrances to fireproof rooms where flammable liquids are stored and all paint spray rooms.
6. All vents and fill openings and gasoline storage tanks should be equipped with flameproof double screen fittings.
7. Metal sticks should never gauge gasoline in tanks. Always use wooden sticks.
8. Gasoline or other flammable must never be used as a cleaning solution for any purpose.
9. Never switch a flashlight on or off near a gas tank opening where gas vapors are present.

10. Open flames or hot objects are prohibited in the vicinity of gasoline, fuel or where other flammable liquids are handled.

## **Eye Protection**

1. Safety goggles/glasses – all personnel are required to wear eye protection, regardless of occupation, when in the areas of the shop where hazardous work is being done. Whether they are working or not.
2. Goggles/face shield- eye protection must be worn for all grinding, wire wheel, cut off wheel operations even though these machines are equipped with shields and guards. A face shield must also be worn by the battery repair person when pouring acid or working with molten lead, and when doing AC condenser wash, or engine wash.
3. Welding helmets and goggles
  - a. Welding goggles or dark face shields, with proper lenses that filter out the injurious radiant energy that is produced by Oxyacetylene welding and cutting must be worn by the welder, and anyone who may be watching the operation.
  - b. Welding helmets must be used when doing any arc welding or heavy gas cutting.
  - c. Do not watch any cutting or welding without the proper shaded goggles or helmet.
  - d. The welding screen must be used at all times when welding.
  - e. Welding gloves and leather protection must be worn when welding or cutting.

## **Head Protection**

1. Bump hats are to be used on jobs where there is a possibility of flying or falling objects.

## **Foot Protection**

1. Strong, well-soled safety toe work shoes are required to be worn by all employees. Tennis shoes, sandals, moccasins, etc. are not allowed.

## **Hand Protection**

1. Wear gloves when handling hot, jagged or sharp materials, wood or acid.
2. It is recommended that rings, watches or other jewelry not be worn at work.
3. If you wear gloves around moving machinery, use extreme caution.
4. Do not do repair or adjustment work on machinery until the power is off and the control has a danger sign bearing your name on it. Only the person placing the danger tag or lock shall remove it.
5. When handling cables or wire ropes, always wear leather palm gloves to avoid injury from broken strands.
6. Employees cleaning parts with cleaning solvents should use rubber gloves if advised by solvent instructions.
7. Those doing electrical work should always use approved insulated tools and have their rubber gloves leak tested when appropriate.

## **Respiratory Protection**

1. Employees shall wear a cartridge type respiratory when spray painting, fine sanding, grinding, sandblasting, or when working in the same area as someone doing this work.

## **Clothing and Other Protection**

1. Loose or torn clothing, neckties, dangling sleeves, gloves, suspenders, unbuttoned sweaters must not be worn when working around moving parts. Sleeves of all clothing shall be rolled up or kept buttoned.
2. All employees shall be suitably clothed for their work.

3. Grease or oil soaked clothing should not be worn. This is not only for appearance, but also for safety.

## **Portable Power Tools**

1. Extension cords and air hoses must be kept clear of aisles and walkways.
2. Do not remove or modify manufacturer's guards.
3. All electrical tools should be double insulated or have a three wire cord with a grounded plug.
4. Chuck keys or adjusting wrenches must not be attached to electrically or air operated power tools. They may be attached to the electrical cord or air hose, 18" or more away from the tool.
5. No fuses, automatic cutouts, switches, or other device should be inserted in a grounding line.
6. Continuity of the grounding circuit should be checked periodically.

## **Ladders**

1. Always make sure that both sides of the ladders have secure footing. If there is danger of slipping, or if you have to climb fairly high, fasten the ladder securely or have someone hold it for you.
2. Ladders should always be placed in the position at the proper angle. The base of the ladder, should be out  $\frac{1}{4}$  of the vertical distance to the point of support, unless braced, fastened, or held to prevent slipping.
3. Do not place a ladder in front of a door, which opens towards the ladder unless the door is opened, locked or guarded.
4. Always face the ladder when ascending or descending. Take each step in order with both hands on the side rails. If material needs to be handled, use a rope.

5. Do not use ladders with cracked rails or broken or missing rungs. Withdraw the ladder from service and have a supervisor tag it, “do not use”, then send it to the shop for repair.
6. Do not paint ladders.
7. Do not climb on shelving or supplies to get something. Always use a ladder.
8. When using ladders to work on vehicles, two people are required at all times one to stabilize the ladder, the other to perform the work. When possible, a scaffold should be used.

## **Lifting and Carrying**

1. Do not attempt to lift a heavy load beyond your back’s capacity. Get help for heavy lifts and use hand trucks, cranes, jacks, or other hoisting equipment whenever practical.
2. Proper methods of lifting heavy loads are:
  - a. Consider the size, weight, and shape of object to be carried. Never lift more than you can handle comfortably.
  - b. Get the center of the weight as high as possible. If a sack, stand it up; if a box, stand it on a corner.
  - c. Set your feet as solidly as possible for good balance and stability.
  - d. Get as close to the object as possible. Bend the legs about 90 degrees at the knees. Do not fully squat, it will take twice as much effort to straighten up if you do.
  - e. Keep the back as straight as possible. This does not have to be vertical, but it should not be bent.
  - f. Get a firm grip on the object. Straighten the legs to lift the object, and at the same time, swing the back into a vertical position. If you must turn, turn your feet, not your hips or shoulders.
  - g. Do not carry heavy loads in areas where the footing is uncertain or obscured.
  - h. Do not try to lift on oil or slippery floors. Use sand or other material to insure good footing first.

## **HAND AND POWER TOOLS**

Five basic rules can help prevent hazards associated with the use of hand and power tools:

1. Keep tools in good condition with regular maintenance.
2. Use the right tool for the job.
3. Examine each tool for damage before use and do not use damaged tools.
4. Operate tools according to the manufacturers' instructions.
5. Provide and use properly the right personal protective equipment.

Employees and employers should work together to establish safe working procedures. If a hazardous situation is encountered, it should be brought immediately to the attention of the proper individual for hazard abatement.

Hand tools are tools that are powered manually. Hand tools include anything from axes to wrenches. The greatest hazards posed by hand tools result from misuse and improper maintenance.

Some examples include the following:

- If a chisel is used as a screwdriver, the tip of the chisel may break and fly off, hitting the user or other employees.
- If a wooden handle on a tool such as a hammer or an axe is loose, splintered, or cracked, the head of the tool may fly off and strike the user or other employees.
- If the jaws of a wrench are sprung, the wrench might slip.
- If impact tools, such as chisels, wedges, or drift pins have mushroomed heads, the heads might shatter on impact, sending sharp fragments flying toward the user or other employees.

Employees, when using saw blades, knives, or other tools, should direct the tools away from aisle areas and away from other employees working in close proximity. Knives and scissors must be sharp; dull

tools can cause more hazards than sharp ones. Cracked saw blades must be removed from service.

Wrenches must not be used when jaws are sprung to the point that slippage occurs. Impact tools such as drift pins, wedges, and chisels, must be kept free of mushroomed heads. The wooden handles of tools must not be splintered.

Iron or steel hand tools may produce sparks that can be an ignition source around flammable substances. Where this hazard exists, spark-resistant tools made of non-ferrous materials should be used where flammable gases, highly volatile liquids, and other explosive substances are stored or used.

Power tools must be fitted with guards and safety switches; they are extremely hazardous when used improperly. The types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic, and powder-actuated.

To prevent hazards associated with the use of power tools, employees should observe the following general precautions:

- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect it from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not using them, before servicing and leaning them, and when changing accessories such as blades, bits, and cutters.
- Keep all people not involved with the work at a safe distance from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool.
- Maintain tools with care; keep them sharp and clean for best performance.
- Follow instructions in the user's manual for lubricating and changing accessories.

- Be sure to keep good footing and maintain good balance when operating power tools.
- Wear proper apparel for the task. Loose clothing, ties, or jewelry can become caught in moving parts.
- Remove all damaged portable electric tools from use and tag them: "Do Not Use."

## **Guards**

The exposed moving parts of power tools need to be safeguarded, Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded.

Machine guards, as appropriate, must be provided to protect the operator and others from the following:

- Point of operation.
- In-running nip points.
- Rotating parts.
- Flying chips and sparks

## **Electric Tools**

Employees using electric tools must be aware of several dangers. Among the most serious hazards are electrical burns and shocks.

The following general practices should be followed when using electrical tools:

- Operate electric tools within their design limitations.
- Use gloves and appropriate safety footwear when using electric tools.
- Store electric tools in a dry place when not in use.
- Do not use electric tools in damp or wet locations unless they are approved for that purpose.
- Keep work areas well lighted when operating electric tools.
- Ensure that cords from electric tools do not present a tripping hazard.



## **Pneumatic Tools**

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders.

There are several dangers associated with the use of pneumatic tools. First and foremost is the danger of getting hit by one of the tool's attachments or by some kind of fastener the worker is using with the tool.

In general, the same precautions should be taken with an air hose that are recommended for electric cords, because the hose is subject to the same kind of damage or accidental striking, and because it also presents tripping hazards.

Eye protection is required, and head and face protection is recommended, for employees working with pneumatic tools.

## **Hydraulic Power Tools**

The fluid used in hydraulic power tools must be approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed.

A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up. Put a block under the base of the jack when the foundation is not firm, and place a block between the jack cap and load if the cap might slip.

To set up a jack, make certain of the following:

- The base of the jack rests on a firm, level surface;
- The jack is correctly centered;
- The jack head bears against a level surface; and
- The lift force is applied evenly.

## **CONFINED SPACE ENTRY AND RESCUE PROCEDURE**

1. Definition

Confined area- a space, which by design has limited openings for entry and exit, unfavorable natural ventilation, which could contain or produce dangerous air contaminants, and which is not intended for continuous employee occupancy. Confined spaces encountered by City of Stoughton Employees include, but are not limited to, storm water holding tanks..

2. NO smoking within a twenty foot radius of a manhole. No smoking in a confined space.
3. Guarding of Street Openings (When applicable).
4. Approaching the job site.
  - a. Beacon and 4-way flashers shall be activated upon approach to the confined area to be entered.
  - b. The vehicle shall be parked in such a way that traffic will flow in the most unobstructed manner, and where possible, the vehicle shall provide protection for the entry crew.
  - c. The vehicle shall be parked in such a manner that exhaust fumes are not drawn down into the manhole. If this is not possible, the exhaust stack shall be extended above the vehicle.
5. Cone Placement
  - a. Before uncovering the manhole, traffic safety cones shall be placed around the manhole and vehicle, visible to traffic in all directions.
  - b. Cones shall be placed to protect the crew and to channel traffic flow. Cones shall be placed at sufficient distances and intervals to adequately warn oncoming traffic.
6. Additional Safety Signals
  - a. In areas of high traffic volume, or other sites warranting additional highly visible safety equipment, illuminated

traffic arrows, barricades, and “Men Working” signs shall be used.

- b. When placement of the vehicle creates a situation of having only one open lane of traffic in a congested area, a flagman shall be used to direct traffic flow.
- c. When a flagman is necessary, an additional crewmember is required to attend the employee in the manhole.
- d. Traffic safety vests or equivalent shall be worn at all times when working on the street or easement surface in the field.
- e. In case openings or obstructions in the street, sidewalk, or on private property are being worked on, or left unattended, danger signals, such as warning signs, cones and flags, shall be effectively displayed; under these same conditions at night, warning lights shall be prominently displayed. Excavations and openings shall be enclosed with suitable barricades.
- f. When working on private or public property, reasonable effort shall be made to avoid creating hazards to persons or causing unnecessary property damage. Signs, barricades, tools, equipment and excess materials shall be removed from the site when the job is completed.
- g. When necessary to leave equipment or other obstructions on a roadway overnight, the following precautions shall be taken:
  - 1. They shall not be left open next to fire hydrants or directly in front of entrances to areas or buildings unless necessary, e.g., parks, playgrounds, churches, houses, or schools.
  - 2. They shall be locked, blocked or otherwise secured.
  - 3. Approved warning devices shall be placed where needed.

## 7. Air Quality

- a. Employees shall be properly equipped and trained to recognize, understand, and control air quality hazards that may be encountered.
- b. A sampling of the atmosphere in every confined area shall be performed before entry.
- c. A meter(s), which incorporates tests for oxygen deficiency, combustible gas, and hydrogen sulfide, shall be provided and used to test the atmosphere.

8. Oxygen Deficiency

- a. The meter shall be calibrated at the time of the test.
- b. Calibration shall be performed where the air is most likely to contain the natural 20.9% oxygen.
- c. Upon sampling the confined space, a non-sparking probe shall be inserted through the pick-hole of the manhole cover, or the cover shall be pried open on the upwind side to allow just enough room for insertion of the probe. NOTE: The instrument can be lowered rather than a probe.
- d. The instrument or probe shall be lowered into the space slowly to determine air quality at all levels and all areas.
- e. If the oxygen content is less than 10.5%, the confined space shall not be entered.

9. Combustible Gas

- a. A sampling of the atmosphere for combustible gas shall be conducted in the same manner as oxygen.
- b. Calibration shall be conducted at least once a month with a standardized combustible gas supply.
- c. The instrument shall be zeroed prior to the test.
- d. The confined space shall not be entered if the instrument indicated 20% or more of the Lower Explosive Limit (L.E.L.)

10. Toxic Gases

- a. The sampling of the confined space shall be performed for hydrogen sulfide in the same manner as oxygen or combustible gases before entry.
- b. The unit shall be zeroed and tested by a suitable method.

- c. The confined space shall not be entered if the instrument indicated 10 ppm.

11. Other Toxic Materials

- a. If other toxic materials are suspected or detected by smell, additional tests shall be conducted.

11. Air Quality Good

- a. Entry to the confined space shall be made only after the tests show adequate air quality.
- b. Continuous monitoring shall be conducted at the employee's breathing zone while in the confined space.
- c. Monitoring shall be achieved by a surface instrument or one worn on the employee's belt.
- d. Signals from the device(s) shall dictate exiting of employees from the confined space.

12. Air Quality Not Good

- a. A Supervisor must be notified immediately when oxygen deficiency, toxic gases or a combustible atmosphere is determined to exist. The Supervisor will notify the police and fire department of the portion of the community involved.
- b. Forced ventilation shall be provided until air quality measuring devices indicate a safe atmosphere.
- c. Forced air shall not be used in lieu of air quality measuring devices.
- d. The air quality devices(s) shall accompany employees' entering and shall remain operating.
- e. If air quality standards cannot be met by forced ventilation, a self-contained breathing apparatus or air line respirator shall be used.
- f. If an explosive atmosphere is discovered:
  - (1) Do not remove manhole cover.
  - (2) NO ATTEMPT shall be made to enter a work area containing a potentially explosive atmosphere or environment, even though using the self-contained air units. Entry shall be made using self-contained air units only after the work area involved has

- been properly and thoroughly ventilated. To ventilate, use nearest manholes up and downstream and start venting.
- (3) Route traffic to reduce potential for explosion until police or fire department arrive, who will then take over.

14. Entry Team

- a. Under no circumstances shall an employee enter a confined area without another person standing by at the entrance.
- b. Employee(s) making entry shall have voice or other means of communication to employees outside.
- c. Employee(s) entering vertically into a confined space shall wear a shoulder harness secured to a lifeline. The shoulder harness shall have a waist belt, shoulder straps, leg straps, and ring attached no lower than the shoulder blades.
- d. The area immediately around the manhole opening including the manhole ring and lid ledge should be cleaned and the loose debris removed. Employees should sweep the area before removing the manhole cover and clean the ring ledge after the cover has been removed.
- e. Check manhole steps carefully before using. If dangerous, use some other approved means of entry.
- f. Employees entering a manhole shall carry nothing in their hands. Needed equipment shall be lowered prior to entry by the employee when possible. Equipment should be lowered only when ordered and never dropped.
- g. Equipment and materials on the surface shall be kept far enough away from the manhole so that it will not be accidentally kicked or dropped into the manhole.
- h. A winch shall be set up at the manhole for rescue, in the event of an emergency.
- i. Employees making horizontal movement, such as in a sewer, or having to descend in such a way that a vertical hoist is not possible, shall have voice communication to the surface at all times. The employee entering shall wear a harness for possible rescue. The employee entering shall wear a self-contained breathing apparatus.
- j. The employee(s) monitoring at the top shall be equipped with at least one self-contained breathing apparatus or airline

respirator. There shall be a means of communicating for more help in case of emergency.

k. When power tools are used in confined spaces, the applicable requirements for testing the working atmosphere and use of personal protective equipment must be in force with the continuous atmosphere monitoring.

l. No fuel tools are to be used in confined spaces.

m. Rescue

1. Call for help.
2. Employee(s) entering for rescue shall be provided with and wear a self-contained breathing apparatus, lifeline, harness, and other necessary equipment before entering the confined space.
3. Upon reaching the victim, assess injury and the nature of the accident.
4. Remove victim with care.
5. Administer first aid.
6. There must always be a top person even during rescue attempts.

n. Equipment should include, but is not limited to the following:

1. Safety Cones
2. Safety vest
3. Barricades (as required)
4. Men working signs (as required)
5. Safety Flags
6. Manhole Hook (or pick)
7. Gas Detector
8. Utility ropes
9. Safety Harness
10. Safety Rope
11. Fire Extinguisher
12. First aid kit
13. Safety ladder
14. Manhole access bracket
15. Self contained air units
16. Rubber Gloves
17. Hard hats
18. Safety Glasses
19. Safety Shoes