



SBG O&M OPERATIONAL CONTROL





OPERATIONAL CONTROL

Operational control is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission.

SBG O&M STAFF INDUCTION & TRAINING

SBG O&M provides onsite induction to its newly hired staff. On the job training by the safety team and special training by internal trainer on following issues:-

- ✚ Fire and Safety
- ✚ Maintenance Safety
- ✚ Emergency Action Plan
- ✚ Emergency Evacuation

SBG O&M is providing refresher training to its staff on regular basis on Health & Safety issues in the site. Electrical, electronics, Housekeeping, HVAC & mechanical departments are being trained on following safety issues:-

- ✚ Fire Safety
- ✚ Electrical Safety
- ✚ Maintenance Safety
- ✚ Manual Handling

SBG O&M provides professional training to safety staff. Safety staff is being trained on following topics / issues by internal trainer:-

- ✚ Fire Fighting
- ✚ Rescue Techniques
- ✚ Fire extinguishing drill
- ✚ Hydrant drill
- ✚ Emergency Action & Evacuation
- ✚ Evacuation Drill

Following training will be included in the next training plan:-

- ✚ Fire Safety
- ✚ Electrical Safety
- ✚ Maintenance Safety
- ✚ Manual Handling



FIRE & MAJOR DISASTER PLAN

Following Mechanism will work in the building for fire finding, informing, restricting and Evacuation:-

1. Any fire or smoke sensed by the systems will be noted in Fire Control Room where SBG O&M maintenance team and Fire fighting team personnel are working.
2. Information of such alarm will be given to the fire inspection team rounding in the building to inspect.
3. On finding a real fire Inspection team will inform the following parties:-
 - ✚ Fire Control Room
 - ✚ Maintenance Manager
 - ✚ Manager Fire Department
4. Fire Control Room will inform the Civil Defense and will launch evacuation message through system in the affected area.
5. Maintenance Manager will inform following sub departments
 - ✚ Mechanical Department
 - ✚ Electrical Department
 - ✚ Elevators Department
 - ✚ Logistics Support Department
 - ✚ Safety & Security Department
6. Fire Manager will inform following departments
 - ✚ Fire Extinguishing Team
 - ✚ Evacuation Group
7. Evacuation Team along with all sub departments will carry out the evacuation from affected tower to first Fire Assembly Point.

DEVELOPMENT OF FIRE & MAJOR DISASTER COMMITTEE

Benefits of the Committee

- ✚ Will develop close co-ordination between all the stake holders.
- ✚ Will help in solving the actual / critical issues
- ✚ Will provide a platform to raise the problems
- ✚ Will help in recognizing the rights & duties of each other



- ✚ Will help in establishing a defined path to follow in case of any emergency to avoid any big loss.
- ✚ The non functioning organs will be recognized.
- ✚ Critical issues will be emphasized on routine basis.

MSDS USE & TRAINING

Following departments of SBG O&M are using materials / chemical in different forms:-

- ✚ Civil Department - Paints, Cements, Glues, tiles etc
- ✚ Housekeeping Department - Detergents & Cleaning Agents, cleaning solutions, soaps
- ✚ Stores Department - Materials / Chemical Handling
- ✚ Stationery Store - Printer ink powder, glues, papers, etc
- ✚ Electrical Store - Cleaning solutions for panel board cleaning, Sand papers
- ✚ Mechanical Store - Rust removers, sand papers etc

What is MSDS?

An MSDS is the abbreviation of **Material Safety Data Sheet**. This document comes with any material and contains different type of information related to the material the MSDS is supplied with.

What is inside MSDS?

✚ **Product Identification**

Provide general identification of the chemicals e.g. Synonyms, CAS No., Molecular Weight, Chemical Formula, Product Codes (if applicable)

✚ **Composition / Information on Ingredient**

Provide the percentage or concentration of the chemical. Some may provide additional hazardous information such as PEL (Permissible Exposure Limit), TLV (Threshold Limit Value) etc. Therefore, the seriousness of the chemicals can be referred.

✚ **Hazards Identification**

Provide the degree of hazard with reference to:





- ✚ Health rating
- ✚ Flammability rating
- ✚ Reactivity rating
- ✚ Contact rating



Additional information may include the potential health effects and symptom through inhalation, ingestion, dermal contact, eye contact, chronic exposure & aggravation of pre-existing conditions (if applicable)

First Aid Measures

To provide first aid attention, prior to the arrival of physician when accident takes place. The piece of information provided may refer to the chemical accident due to:

-  Inhalation
-  Ingestion
-  Dermal Contact
-  Eye Contact

Fire Fighting Measures





Provide details on the *Flash point*, *Auto Ignition Temperature*, *Flammability* of the chemical product and *Explosion capability* information. Additional information may inclusive of the proper methods of using *fire extinguishing media* (*dry chemical, foam, water or carbon dioxide*) and type of suitable *fire fighting protective clothing* used during fire emergency

Accidental Release Measures

Provide some essential guideline to deal with for instance how to deal with chemical spillage, ventilation provision, contain and recover liquid when spilled etc.



Handling & Storage

Provide detail to conduct, handling and storing at a safer way. These may include:

-  How to protect the chemical?
-  How to store the chemicals (environment factors consideration)?
-  Is it compatible with other chemicals when stored together?
-  How to use it at a safer way?



Exposure Controls/ Personal Protection

Provide details how to control the exposure of employees at the workplace when using such chemical, for example:

-  Ventilation system
-  PPE (Respirator, safety goggle, glove, SCBA, apron etc) for skin, eye and other bodily related protection

Physical / Chemical Properties

Provide detail of some of properties of chemical, for instance:-

-  Appearance (clear, colourless, milky etc)
-  Odour (type of "smell" of product)



- + Solubility (Water soluble, slight solubility etc)
- + pH
- + Boiling point, melting point (°C or F)
- + Vapour density
- + Vapour pressure
- + Evaporation rate
- + **Stability & Reactivity**

Provide some details on:-

- + Stability and reactivity of the chemical (e.g. during storage)
- + Type of hazardous decomposition products (e.g. release of certain gases such as CO₂ when heated)
- + Compatibilities with other chemicals (for example acrylic acid is incompatible with strong oxidizing agents)
- + **Toxicological Information**

This section may refer to the toxicity of the chemical with reference to the *LD 50* and *LC 50*. The lower the value of the LC the more hazardous will be the chemical

+ **Ecological Information**

Provide some detail on ecological impact of the chemical when it is used or discharged to the air, water or soil. Therefore, the user could take some precautions or probably engineering control when deal with this chemical

+ **Disposal Considerations**

Applied for the chemical that couldn't be recycled, saved or recovered and is considered as hazardous waste. (Must comply with local requirements)

+ **Transport Information**

Provide some detail on the identification during transportation of chemical for both domestic and international purposes

+ **Regulatory Information**

Provide some details of the regulatory information from different relevant countries. Additional item would be the inclusive of *Hazchem Code* from Australia.

+ **Other Information**

Provide certain information on for example:-

- + NFPA rating in term of health, flammability and reactivity rating.
- + Label hazard warning. (E.g. ***DANGER! MAY BE FATAL IF SWALLOWED***)
- + Label pre-cautions. (E.g. ***Do not breathe vapour or mist***)



- ✚ Label of first aid. (E.g. ***Do not induce vomiting, give large plenty of water***)
- ✚ Product use (if applicable)

HOW DO I READ A MATERIAL SAFETY DATA SHEET (MSDS)?

In addition to giving information about the nature of a chemical, an MSDS also tells how to work safely with a chemical and what to do if there is an accidental spill.

Who is responsible for issuing a Material Safety Data Sheet (MSDS)?

The Federal Occupational Safety and Health Administration (OSHA) Hazard Communication Standard requires manufacturers or distributors of chemicals to issue Material Safety Data Sheets (MSDSs) with the first shipment of any hazardous chemical product, and the employer is responsible for having them available for you.

For whom are Material Safety Data Sheets (MSDSs)?

They are designed for following parties:-

- ✚ workers who may be exposed to hazardous materials
- ✚ Emergency personnel (for example, fire-fighters)
- ✚ Who may have to clean up a spill or release?

For whom are Material Safety Data Sheets (MSDSs)?

MSDSs must contain the same basic kinds of information, such as

- ✚ Chemical Identity: Name of the product.
- ✚ Manufacturer's Information: Name, address, phone number and emergency phone number of the manufacturer.
- ✚ Hazardous Ingredients/Identity Information: List of hazardous chemicals.
- ✚ Depending on the state, the list may contain all chemicals even if they are not hazardous, or only those chemicals which have OSHA standards.
- ✚ Since chemicals are often known by different names, all common (trade) names should be listed. The OSHA Permissible Exposure Limit (PEL) for each hazardous ingredient must be listed.
- ✚ Physical/Chemical Characteristics: Boiling point, vapour pressure and density, melting point, evaporation rate, etc.
- ✚ Fire and Explosion Hazard Data: Flash point, flammability limits, ways to extinguish, special fire fighting procedures, unusual fire and explosion hazards.
- ✚ Reactivity Data: How certain materials react with others when mixed or stored together.
- ✚ Health Hazard Data: Health effects (acute= immediate; chronic= long-term), ways the hazard can enter the body (lungs, skin or mouth), symptoms of exposure, emergency and first aid procedures.
- ✚ Precautions of Safe Handling and Use: What to do in case materials spill or leak, how to dispose of waste safely, how to handle and store materials in a safe manner.



- ✚ Control Measures: Ventilation (local, general, etc.), type of respirator/filter to use, protective gloves, clothing and equipment, etc.

Where can I get Material Safety Data Sheets (MSDSs)?

If you are:-

- ✚ At your workplace: All workers must have easy access to them.
- ✚ The employer must request them from the distributor that sold the materials.
- ✚ Workers can also request them.
- ✚ The Internet offers free resources and information on MSDSs, as well.
- ✚ Your union may have MSDSs also.

Sample MSDS



440-R® SMT DETERGENT
MATERIAS SAFETY DATA SHEET (MSDS)

SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: 440-R SMT Detergent

Manufacturer: SMT Detergent Corp.
4607 Lakeview Canyon Rd. #264
Westlake Village, CA 91361
U.S.A.

Telephone Number: +1(818) 707-3110
Fax Number: +1(818) 707-3117
Web Site: <http://www.SMTdetergent.com>

SECTION 2: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Components: None

SECTION 3: HAZARDOUS IDENTIFICATION

Main Hazard: Slightly irritating to skin and eyes

Routes of entry: Inhalation: Yes Skin contact: Yes
Skin absorption: Yes Ingestion: Yes

Potential health effects: Inhalation in concentrated form may cause headache and irritation of the upper respiratory tract. Can cause irritation, burning and redness to eyes. Brief contact should not produce harmful effects. Prolonged contact may cause irritation or burning. Ingestion can cause nausea, vomiting and diarrhea.

SECTION 4: FIRST AID MEASURES

Eyes: Wash eyes with large amounts of water for at least 15 minutes occasionally lifting upper and lower lids. Get medical attention.

Skin: Wash contaminated skin with soap and large amounts of water. Remove clothing and footwear and wash before reuse.

Inhalation: Remove to fresh air. Flush mouth and nasal passages thoroughly with water. Get medical attention. Administer oxygen if necessary.

Ingestion: Do not induce vomiting. Drink milk, follow with diluted vinegar. Seek medical attention.

MSDS: 440-R SMT Detergent

**SECTION 5: FIRE FIGHTING MEASURES**

Flash point (TCC):	None to boiling
Flammable Limits in Air:	Upper limit = No data, Lower limit: = No data
General Hazard:	None
Fire Fighting:	Fire fighters have eye protection and wear self-contained breathing apparatus
Extinguishing Media:	Carbon Dioxide, chemical foam, water fog
Decomposition Products Under Fire Conditions:	None known
Unusual Fire and Explosion Hazards:	None known

SECTION 6: ACCIDENTAL RELEASE MEASURES

Material Release or Spill:	Contain the spill. Absorb small spills with sand, dirt or clay. Large spills may be pumped into containers for recovery or disposal. Flush residue with plenty of water. Avoid wash water entering natural waterways or public water supplies. Neutralize with dilute acid.
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SECTION 7: HANDLING AND STORAGE

Handling and Storage:	Wear eye protection, launder contaminated clothing before reuse. Store drums in a cool place, bung up and closed tightly.
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SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal Protection:	Code "B": Safety glasses and gloves.
Respiratory Protection:	None normally required. Use NIOSH approved dust mask if working with mist.
Ventilation:	Adequate.
Protective Gloves:	Rubber or neoprene.
Eye Protection:	Chemical splash goggles.
Other Protective Clothing or Equipment:	Wear protective clothing to prevent skin contact. Wash hands with soap and water after handling.
Exposure Guidelines:	None established for product as a whole

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear purple liquid
Odor:	Mild and pleasant
Boiling Point:	102° Celsius (Approx.)
Vapor Pressure:	<1
Solubility in Water:	Complete
Specific Gravity:	1.08
pH	12.4 (concentrate)

MSDS: 440-R SMT Detergent

**SECTION 10: STABILITY AND REACTIVITY**

Stability:	Stable under normal conditions
Hazardous Polymerization:	Will not occur
Incompatible Materials:	Strong oxidizing agents
Conditions to avoid:	None known
Hazardous Decomposition Products:	None known

SECTION 11: TOXICOLOGICAL INFORMATION

Health Hazards (Acute and Subchronic):	May be irritating to skin and eyes.
Health Hazards (Chronic)	No subchronic effects expected at industrial use levels when good personal hygiene practices are followed.
Mutagenicity:	No data available

SECTION 12: ECOLOGICAL INFORMATION

Mobility:	Will dissolve completely in water
Degradability:	This product is readily biodegradable
Bio-accumulation:	No data available
Ecotoxicity:	None known
RoHS & REACH	Compliant

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal of Material:	Waste must be disposed of in accordance with government environmental control regulations. This material is not a U.S. EPA hazardous waste.
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SECTION 14: TRANSPORT INFORMATION

U.S. D.O.T. Shipping Name:	Compound, Cleaning Liquid
U.S. D.O.T. Hazardous Class:	None
U.N. / N.A. Number:	None
U.S. D.O.T. Label:	None

MSDS: 440-R SMT Detergent

**SECTION 15: REGULATORY INFORMATION**

Label Information:	X - Irritant
Risk Phases	R36/38 Irritating to eyes & skin, S25 Avoid contact with eyes, S26 In case contact with eyes, rinse immediately with plenty of water and seek medical advice.
Safety Phases:	S2 Keep out of reach of children S39 Wear eye/face protection
EC Annex 1 Classification:	None
Regulations / References:	Refer to the requirements of all relevant local regulations

SECTION 16: OTHER INFORMATION

NFPA Rating:	H = 1, F = 0, R = 0
Effective Date:	1 May 2005
Sections Revised:	All, new format

This material safety data sheet adheres to ANSI standard ANSI Z400.1-1993

RoHS Compliant. 440-R SMT Detergent is compliant with the European Rules 91/155/CEE, 2001/58/EC, 2001/118/EC.

This product does not contain any ozone depleting chemicals or VOCs.

440-R SMT Detergent has been Certified Environmentally Safe and User Safe by the California Environmental Protection Agency and Verified by the U.S. EPA as part of the Environmental Technology Verification (ETV) Program.

This product has been Certified as a Clean Air Solvent (CAS) by California's South Coast Air Quality Management District (AQMD)

This product does not contain SARA Section 313 reportable compounds.

All ingredients are listed on the TSCA Inventory.

Does not contain any chemicals which require warning under California Proposition 65 or the Michigan Critical Materials Register.

The data contained is based on information currently available to SMT Detergent Corp. (SDC) and is believed to be factual. SDC does not manufacture the raw materials used in this product and correspondingly relies on information provided to SDC from material safety data sheets on the specific raw materials in the construction of this material safety data sheet. Such information is, to the best of SDC's knowledge and belief, accurate and reliable as of the date of this MSDS. HOWEVER, NO REPRESENTATION, WARRANTY OR GUARANTEE IS MADE AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THIS DOCUMENT. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular application. This information is not intended to be all-inclusive as of the manner and conditions of use, handling and storage. Other factors may involve other or additional safety or performance considerations. This data is not to be taken as a warranty or representation of which SDC assumes legal responsibility.

Additional information is available on the SMT Detergent Web Site: <http://www.SMTdetergent.com>

MSDS: 440-R SMT Detergent



MSDS will be obtained from manufacturers and will be displayed in the stores and workshops and visible places to be viewed by workers.

All the personnel engaged in the handling of such materials will be provided with training on the following:-

- + What is MSDS?
- + Purpose of MSDS
- + How to read the special symbols and caution signs on the MSDS?
- + Properties of the chemical
- + Precautionary measures while using and handling
- + Actions in case of exposure
- + First aid in case of exposure to hazardous chemicals / materials.

Training plan will be developed after getting the shift information from the concerned departments.

POLICY, PROCEDURES & RISK MANAGEMENT FOR WORK ACTIVITIES

SBG O&M believes in developing safe working procedures and maintaining a 0 injury working environment.

Following process will be adopted for the development and implementation of safe working procedures and practices:-

- + Identification of work activities in all departments
- + Identification of hazards involved in performing activities
- + Identification of available controls to eliminate or diminish the risk
- + Implementation of control measures
- + Regular inspections by safety teams to ensure implementation of control measures
- + Review of the activities for identification of new activities or change in the nature of such jobs.
- + A team will be developed from the safety department to complete the process.



- ✚ The course of action of the team will be to match the job activities with the written procedures
- ✚ To identify the non compliance.
- ✚ After identifying non-compliance the team will put the matter in safety committee meeting.
- ✚ The safety committee will ensure the compliance by the non complying department.

POLICY & PROCEDURES FOR CONFINED SPACES

Any space which has following characteristics will be a confined space:-

- ✚ Limited entry and exit
- ✚ No or limited passage of fresh air
- ✚ No or limited availability of light

As per OSHA guidelines, characteristics of “Non-permit confined space” & “permit-required confined space” are listed below:-

Non-permit confined space

“Means a confined space that does not contain or, with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm”

Permit-required confined space

“Means a confined space that has one or more of the following characteristics:-

- ✚ Contains or has a potential to contain a hazardous atmosphere
- ✚ Contains a material that has the potential for engulfing an entrant
- ✚ Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section or
- ✚ Contains any other recognized serious safety or health hazard.

Following procedure will be adopted for any confined space entry:-

- ✚ Analysis of any alternative solution to avoid such entry.
- ✚ Safety chief will designate a team of safety wardens to inspect the confined space.
- ✚ Safety wardens will suggest the safety precautions before entry.
- ✚ Safety wardens will suggest whether there is any need of ventilation and lighting.



- ✚ Safety wardens will suggest whether any lock out or tag out is required or not.
- ✚ Work permit will be issued after observing all such precautions.
- ✚ Safety warden will sign the work permit.
- ✚ All the activity will be monitored by the safety warden.
- ✚ Safety will be authorized to stop the activity any time sensing it to be dangerous.
- ✚ At the completion of the job safety warden will close the work permit
- ✚ Al Borj will administer or may request to SBG O&M for administering the entry by contractors or other organizations working in All.

Safety wardens will have the power to stop any activity which they think as a confined space entry without permit.

Detailed Procedure of SBG O&M for confined spaces

Background

Death and injuries in confined spaces are often the result when employees disregard proper safety procedures, take short cuts, refuse to accept the fact that a space may have been safe for years in the past, could develop into a deadly hazardous space and when supervisory personnel fail to heed safety standards and management does not remain fully aware as to what is really taking place in their confined space activities.

Confined space accidents are completely preventable, and when proper training, supervision, equipment and devices are applied, confined space entry is a safe and routine working procedure. The currently accepted state-of-the-art policies and requirements for confined space entry is the OSHA standard 29 CFR 1910.146. Contractors providing services are required to follow the OSHA requirements as "host employer" is obligated to furnish to the employer information regarding permit spaces, hazards and internal program requirements.

Procedure

✚ Identification Of Confined Spaces

For the purposes of this Environmental Health and Safety program, a confined space is an enclosed area that must be entered into to perform a maintenance task on a regular or emergency basis. The confined space may be difficult to enter and leave, have one or more physical or chemical hazards, and may have the remote possibility of trapping the person entering, especially if the person is incapacitated. This program will provide a method of planning and documenting an entry into such an area, provide a checklist of safety precautions, and assure that emergency rescue can be immediately accomplished, if it becomes necessary.

By definition, a confined space is a space that:

- ✚ *Is large enough to be entered;*
- ✚ *Has limited means of entry and exit; and*
- ✚ *Is not designed for continuous employee occupancy.*

For the purposes of this program, examples of confined spaces might include:



- ✚ Tanks
- ✚ Vessels
- ✚ Vaults
- ✚ Pits (i.e., swimming pool valve and filter pits, etc.)
- ✚ Elevated water towers
- ✚ Boilers

Note that these spaces could reasonably have atmospheres that are oxygen deficient or contain other hazards for the purposes of this program, examples of spaces not generally defined as confined spaces might include:

- ✚ Building attics
- ✚ Building crawl spaces
- ✚ Some elevator shafts
- ✚ Walk-in HVAC air handling units

Note that these spaces generally contain ambient air of the building, do not present an atmospheric hazard or pose a danger from engulfment or entrapment.

All confined spaces under the control of SBGOM shall be ENTRY PERMIT REQUIRED CONFINED SPACES. Such confined spaces include, but are not limited to, electrical vaults, storm water manholes, sewage manholes, sewage lift stations, and boilers.

✚ Employees Will Not Enter the Following Confined Spaces Under Any Circumstances

- ✚ Boiler firebox
- ✚ Water tower reservoir tank
- ✚ Energized electrical transformer vaults

DANGER - PERMIT REQUIRED CONFINED SPACE signs, meeting OSHA specifications, shall be posted at all identified confined space entrances. Where not appropriate to place at the entrance (i.e. streets, sidewalks, etc.) the signs will be placed immediately under the cover (hatch, door, lid, etc.) in such a manner as to prevent entry unless the sign is removed.

✚ General Confined Space Entry Procedures

- ✚ All confined space entries will be documented on the Confined Space Entry Form (permit). No entry will be allowed unless the permit is completed and approved by the designated supervisor. An entry can be up to one shift or eight hours in length. If a confined space entry has been completed and must be re-entered during the same shift or eight-hour day, a new entry form or permit must be completed.
- ✚ Confirm that all energy sources in the space are de-energized and are locked and tagged out, in strict compliance with proper lock out/ tag out (LOTO) procedures. Confirm that all engulfment hazards have been eliminated and persons controlling those hazards are aware of the space entry.



- ✦ Before entry is made into any designated confined space, the atmosphere must be tested for adequate oxygen and possible presence of toxic gasses. Proper procedure is to test immediately under the cover (or top), near the middle of the space, and at the bottom of the space. If possible, the space shall be tested before removing the hatch or manhole cover.
- ✦ Hard hats shall be worn at all times while working within confined spaces unless such use prevents a particular job from being performed and creates a greater safety hazard. The supervisor and the person authorizing the entry shall verify all conditions in which hard hats are not to be used.
- ✦ A trained observer with visual or audible contact with the worker and radio contact for emergency forces notification shall be used on all confined space entries. At least one trained observer must be immediately outside the space entrance and in constant contact with entrant during the entire entry.
- ✦ Training provided to employees does not include entry rescue. Rescue must be accomplished by extraction of the worker from confined spaces.

NOTE: 60 PERCENT OF CONFINED SPACE FATALITIES ARE PERSONS ATTEMPTING TO RESCUE DOWNED EMPLOYEES.

- ✦ Entry into a Permit Required Confined Space will not be initiated unless the entering employee is properly wearing a body harness and retrieval system (tripod) is attached.
- ✦ Where more than one worker is required to enter the same space for a particular job, each worker must be attached to a separate retrieval system. Positions and moves must be coordinated to avoid entanglement of the equipment.
- ✦ Mechanical ventilation shall be utilized and maintained for the duration of the entry on all confined space entries.
- ✦ A means of communication (visible, audible, or electronic) must be established and maintained during the entire project between the person in the space and the outside observer. The observer must be fully equipped with all necessary personal protective equipment, and have no other duties or responsibilities than the safety of people inside of the confined space and will not leave that position until the project has been completed and all personnel have evacuated the confined space, or the observer is relieved by another fully qualified and equipped individual.
- ✦ Lock-out/tag-out procedures as per 29CFR 1910.147, requiring the isolation of energy and physical hazards shall be observed.
- ✦ Safety Related Work Practices as per 29CFR 1910.331 through 1910.335 shall be observed.
- ✦ In all Permit Required Confined Spaces, continuous monitoring will be performed in addition to continuous mechanical ventilation. As long as the atmosphere is within safe limits the personnel will continue with the work assignment, inspection, or procedures with no deviations from normal routine. If the atmospheric conditions change, the personnel will exit immediately and take whatever precautions are necessary for self and crew protection. If conditions exist that inevitably will contribute to unsafe atmospheres (i.e. welding, use of hazardous chemicals, sewage manholes and lift stations), work will stop immediately upon the sounding of an alarm and the



employee(s) will exit the space and not re-enter until acceptable limits are restored. Employees will not re-enter the space for one hour after the second evacuation, regardless of the conditions.

- ✚ If the worker becomes drowsy, nauseous, has blurred vision or difficulty in breathing, the worker must evacuate immediately and notify the respective supervisor or foreman. Ringing in the ears indicates a serious lack of oxygen.
- ✚ In the event of a severe injury or asphyxiation, emergency rescue procedures will be enacted immediately. The Department of Public Safety at X999 or by radio, Inform them that you have a "confined space emergency and to contact Ferry Pass/EMS Rescue and an ambulance immediately." Give the dispatcher your name and specific location. The emergency rescue unit will be notified and also the director of EH&S shall be informed.
- ✚ All permit entry files, training records and permits must be kept on file at least 5 years from the date of the last training, inspection, test, maintenance or entry.

✚ **Confined Space Safety And Training Program**

- ✚ All employees performing confined space work will receive a minimum of eight hours initial training and sufficient (eight hours recommended) annual training to ensure competency during the entry.
- ✚ Supervisors (those issuing and authorizing permits) shall receive an initial 20 hours of training and sufficient annual training (eight hours recommended) to maintain proficiency.
- ✚ At least one member of the confined space entry team must be trained in CPR/First Aid. Recommendations are for all confined space entrants to be trained in first aid/CPR. In order to meet the requirements of emergency rescue, the employer shall ensure that rescue services are available. Due to the nature of potential confined space incidents, the time of emergency medical services availability is approximately four minutes. The Site must be prepared to deal with such incidents and potential injuries.
- ✚ Proper training means that the training shall not be considered complete until actual demonstration by the employee to the supervisor, foreman, or safety officer that they have attained an acceptable degree of proficiency for entering and working in confined spaces. Each employee satisfactorily completing the respective training shall be issued an individual identification card or certificate certifying that the employee is qualified to enter and to work in confined spaces.

✚ **Confined Space Emergency Rescue Procedures**

- ✚ When an emergency rescue is necessary from any confined space, the rescue must be immediate. Always have sufficient and adequate emergency rescue equipment available for this purpose. Notify X999 and request an Emergency Rescue Unit immediately. Take steps to make the rescue without endangering other personnel. Do not enter the confined space. No rescue will be attempted by unauthorized personnel. Wait for professional rescue services.
- ✚ Extract the incapacitated worker as quickly and safely as possible with the extraction equipment. Avoid further injury of the employee by guiding body and limbs past obstructions with poles and rods.



- ✚ Immediately assess the injury or the problem to determine the injury, and the condition of the victim. You do not have time to conduct an extensive physical examination, only to determine the specific type of injury and the extent of the injury. Check for serious conditions starting with breathing, heartbeat, bleeding, fractures, and bruises and then related injuries.
- ✚ In the event of a back or neck injury, additional and extreme care must be exercised in order to prevent further damage or death to the victim. During the removal process and the transporting of the victim, the back and neck must be maintained in normal alignment. Do not twist the back or the neck and make all body movements in one movement so as to maintain proper alignment.
- ✚ Following the removal of the victim from the confined space provide for all necessary primary and follow-up life support assistance as necessary.

The safety officer is responsible for providing safety expertise, making safety recommendations and coordinating safety programs as required, coordinating safety training and specialized courses relative to the confined space safety program.

Each employee that may be required to enter into a designated confined space shall be properly trained in subjects that are necessary and applicable to their own confined space entry needs selected from the following list of subjects:

- ✚ The potential hazards that could be confronted.
- ✚ Safety precautions, emergency procedures and hazards exposure treatment.
- ✚ Personal protective equipment, clothing and devices.
- ✚ Inspection, use, selection and fitting of safety harness and life lines.
- ✚ Traffic control and job-site protection.
- ✚ First aid and cardiopulmonary resuscitation (CPR).
- ✚ Proper testing and monitoring of confined spaces.
- ✚ Decontamination of confined spaces.
- ✚ Electrical, mechanical isolation procedures when required.
- ✚ Proper ventilation procedures.
- ✚ Emergency entry and exit procedures including solo escapes.
- ✚ **Typical Hazards Of confined Spaces**
- ✚ Vehicular traffic striking the employee while working on the streets or highways because of no, improper or inadequate job site safety signs, barricades or traffic cones.
- ✚ Metal fatigue of built in steps or improperly installed and secured portable ladders inside the space.
- ✚ Hang up of safety harness or life lines inside structures.
- ✚ Loss of handgrip on steps or ladder while attempting to ascend or descend.



- ✦ Carrying items in the hands instead of having them lowered or raised in a suitable bucket or container.
- ✦ Slipping, tripping or falling in, on, or around internal structures because of water, sewer, grease, poor housekeeping or other debris.
- ✦ Entrapment in trenches over 4-feet deep due to cave-ins.
- ✦ Unexpected surge of sewage into the space due to failure to by-pass the flow while using air bags or J-Plugs, when the surge pressure builds up over the limits of the air bag or J-Plug.
- ✦ Failure or breakdown of the fresh air ventilation device.
- ✦ Carbon Monoxide or other contaminants being pulled into the fresh air blower.
- ✦ Unexpected change of the atmosphere after the initial monitoring is completed. Fifty percent of confined space injuries involve changes to the atmosphere after the initial monitoring is complete and the workers fail to continuously test.
- ✦ Unexpected seepage of methane gas into the space or an underground LP gas line rupture and the gas finding its way along underground sewer lines, water lines or electrical lines or ground cavities into the sewer or station.
- ✦ Excessive noises preventing the worker from hearing the gas detector alarm, the air pack low air warning alarm, or the outside observer directing the worker to exit the space.
- ✦ Objects falling into the space from overhead.
- ✦ Breathing air Oxygen deficiency or enrichment.
- ✦ Combustible gases or vapours.
- ✦ Toxic gases or vapours.
- ✦ Exhaustion of the worker inside the confined space.
- ✦ Electrical hazards.

✦ **Sewage System And Utilities Operations Pumping Stations And Underground Ventilation Procedures**

When necessary to ventilate a station, open all outside or adjacent manholes to provide for escape of incoming contaminants. Thirty-six-inch manhole lids should be lifted with a manhole lid lifter to minimize arm, back, and shoulder or neck injuries.

Open all roll-up doors and windows that would provide for a better inflow of air.

Auxiliary ventilation equipment may also be used to increase the value of the air being forced into the space.

Should these efforts fail to provide for a safe atmosphere that is within the acceptable limits, the space must now be considered as a permit entry space and the permit entry space requirements must be met?

✦ **Sewer Lines And Manhole Ventilation Procedures**



All underground sewer lines and manholes will be tested for hydrogen sulphide, methane gas contamination and oxygen deficiency before permitting any person to enter the space for normal working assignments. Contaminated sewer lines and manholes will be decontaminated as follows:









- ✚ Safe atmosphere will contain from between 19.5% and 23.5% oxygen, toxic concentration no higher than 15 PPM, or more the 15 PPM of hydrogen sulphide concentration, flammable and explosive concentrations of less than 10% of its lower flammable limits (LFL).
- ✚ Using a manhole lid lifter, remove all manhole covers both upstream and downstream. Structures over any manhole shall be opened for ventilation. Place appropriate “men working” signs, traffic cones, barricades or markers around the job-site prior to starting the work. If the work is in the street or highway, or within 5-feet of a street or highway employees must wear fluorescent safety vests in addition to hard hats as additional protective measures.
- ✚ Test the atmosphere for safety. Should the atmosphere remain hazardous after the lids have been removed and ventilated for a reasonable period of time, the following procedures shall be conducted:-
- ✚ A fresh air supply capable of ventilating the space shall be placed into position and the fresh air blower duct direct the fresh air into the manhole or sewer line. Do not permit internal combustion engine exhaust near the blower, or upwind of the blower.
- ✚ An exhaust blower should be positioned to remove the atmospheric contamination from the manhole or sewer line should the fresh air blower not force the contamination out of the space.
- ✚ The discharge of the inlet fresh air blower and the intake of the exhaust blower should be positioned to maintain a circular air flow exchange within the sewer line or manhole. Should the atmosphere change within the sewer line or manhole remain above the acceptable limits after considerable attempts to ventilate the space has failed, the following procedures shall be used to further clear the air:
- ✚ J-Plugs or air bags of appropriate size will be inserted in the upstream and downstream lines to isolate the manhole. By-pass pumps will be used to by-pass the manhole or sewer line when necessary. Continuous ventilation should be maintained during the work process.
- ✚ Use extreme caution when using J-Plugs and air bags. Follow the manufacturer’s recommendations regarding sizing and maximum air pressure to be used. Use a hand pump while inflating air bags and wear protective eye and face shields or goggles.
- ✚ For maximum convenience during entry and egress inside of small manholes the sewer saddle vent device should be used thereby permitting continuous ventilation of the manhole with a minimum of sacrificing the amount of open area in entering and leaving the manhole. In the event a rescue is necessary, the rescue can be accomplished without having to take the time to remove the air ventilation hoses.
- ✚ No employee shall be permitted to make a routine entry into any sewer line or manhole in which the atmospheric contamination exceeds the acceptable limits. Entry into a contaminated manhole or sewer line shall be made only for the purpose of emergency rescue, emergency repairs and/or decontamination purposes, and full safety and rescue equipment shall be used by the person entering the space with a standby observer, also



fully equipped, and maintaining audible or visual contact at all times with the person inside of the manhole or the sewer line.

Manhole And Sewer Line Flow Control Operational Procedures


When constant sewage flow in large sewer lines must be stopped, the following procedures will be followed during the entire operation:

-  Prior to the start of the project the entire project will be reviewed by the job-site foreman and the person in charge of manual operation of the involved sewage pumping station, this includes emergency potentials and plans. Coordination between the sewer crew and the pump station operator shall be via direct radio contact.
-  The pump station operator shall determine the safe length of time the particular station can remain out of service and shall inform the sewer crew foreman of the allowable length of available time the crew will have to work when the station is turned off.
-  The sewer crew foreman shall plan his work assignment in accordance with the limited time available during the pump station shut down, and so advise the crew.
-  When the crew is ready to actually begin work, the station operator shall be notified. The station operator shall pump the station wet well down to its lowest level without causing the pumps to become air bound (if the pumps are centrifugal) and then shut the pumping station off. The operator shall notify the sewer crew foreman that the pumps are off and the sewer crew will begin their work.
-  The station operator will notify the sewer crew foreman when one-half of the available time has expired, and thereafter in ten-minute intervals. Five minutes prior to having to start the pumping station pumps, the station operator will radio the sewer crew foreman who shall make certain that all personnel are out of the sewer line or manhole.
-  The sewer crew foreman will notify the station operator when all crew members are out of the manhole or the sewer line and shall instruct the station operator to turn the pumps on.
-  The pumping station operator shall not start up the sewage pumps until notified by the sewer crew foreman that all the members of the crew are out of the sewer line or the manhole.
-  The pumping station operator shall start the pumps in a moderate sequence so as not to hydraulically overload the sewer line and cause a rupture.

Water Reservoir Maintenance

The repair, cleaning, and sterilization of a ground reservoir are a specialized function.

Procedures for reservoir cleaning are to provide safe working conditions and shall be done in the steps as listed below:

-  Inspection of exterior walking and working surfaces, ladders and safety railings. Aeration fans on reservoirs are to be arranged and equipped in a manner as to be inspected and repaired, if needed. Portable blowers must be ready for use if reservoirs are not the type equipped with aeration fans. Following the inspection and repairs, the tank would then be isolated from the treatment system and drained.



- ✦ While the tank is draining, the position of the valves operated during this procedure shall be recorded in the plant log. The operations supervisor also shall be notified of the job status and record pertinent information in the central control log.
- ✦ The reservoir entrance hatches shall be opened following the procedures and precautions necessary for various types of hatches requiring this preventative step. Protective barriers shall be properly placed.
- ✦ Ground fault protected lamps shall be installed to provide illumination. Lamps shall normally be installed through roof openings. If roof openings are not available, lamp installation shall be delayed until the completion of the reservoir interior inspection.
- ✦ The reservoir interior requires inspection before allowing a work crew to enter. The responsible supervisor shall ensure that all necessary protective barriers, warnings and guards are in place and shall examine the structural condition of the reservoir, and determine the type and amount of work to be accomplished.
- ✦ The work to be performed inside the reservoir shall determine the type of protective equipment necessary to complete the task. All protective equipment and devices shall be on site ready for use prior to starting the project. Rubber boots, gloves and rain suits shall be used due to the conditions of the interior, and the type of cleaning procedures. Self-contained breathing apparatus, safety harness, lifeline and a retrieval system shall be on site and ready for emergency use on all reservoirs that do not have ground level access hatches. Pumps and blowers that are operated by internal combustion engines shall be set up away from hatches and air intakes to prevent the exhaust from entering the reservoir.
- ✦ The length of time worked and the length and frequency of rest periods shall be determined by the job supervisor, based on conditions inside of the reservoir.
- ✦ Only after the completion of the cleaning and removal of all equipment and personnel from the reservoir shall sterilization begin. Sterilization requires the use of chlorine compounds.
- ✦ When application of the sterilizing agents is complete, the tank will be filled and allowed to stand for twenty-four hours to ensure complete disinfection. This procedure is recorded in the plant log book and the operations supervisor engineer is also advised.
- ✦ After twenty-four hours, and after 3 bacterial samples have been approved, the tank will be filled with potable water. When returning the tank to service, the valve positions are recorded in the plant log book and the operations supervisor/engineer is notified.

Sample Confined Space Entry Permit

GSA FORM 3625 (10-91)



INSTRUCTIONS

SPECIAL NOTICE 1: THE CONFINED SPACE ENTRY PERMIT IS NOT A PERMIT TO CONDUCT "HOT WORK" OPERATIONS THAT ARE COVERED UNDER THE PROVISIONS OF THE OSHA STANDARD 29 CFR 1910, SUBPART Q-WELDING, CUTTING AND BRAZING. FOR "HOT WORK" OPERATIONS, A SEPARATE PERMIT (GSA FORM 1755) IS REQUIRED. IF "HOT WORK" WILL BE REQUIRED IN CONJUNCTION WITH THE CONFINED SPACE ENTRY TASK, BOTH PERMITS (GSA FORM 1755 AND GSA FORM 3625) ARE REQUIRED.

SPECIAL NOTICE 2: CONFINED SPACE ENTRY IS PROHIBITED IF TEST DATA INDICATES AN UNSAFE OR UNHEALTHFUL CONDITIONS IS PRESENT IN ANY FORM OR QUANTITY. IN SUCH CASES, CONTACT THE REGIONAL SAFETY AND ENVIRONMENTAL MANAGEMENT DIVISION BRANCH FOR INSTRUCTIONS.

Item No.	Description
1:	List the EMERGENCY CONTACT (name and telephone number) in BOLD letters - the RED is preferred.
2:	List the specific location of the confined space.
3:	List the specific description of the confined space.
4:	List the specific reason that entry into the confined space is necessary.
5:	Show the date and the time entry into the confined space will be accomplished. If entry does not take place within 4 hours of schedule, breaks included, a new permit will be required. The permit shall be authorized for one-day entry only and for no more than 4 hours per day for each employee.
6:	Show the date and the time the confined space work is to be completed. If the work is not completed within one hour of the time shown, the entrant will be required to leave the space and explain the circumstances. If the work is to take more than two hours over the time shown, a new permit is required.
7A:	List the name of the supervisor in charge of the confined space. This individual must be available at all times while the confined space is occupied.
7B:	List the telephone number of the person listed in item 7A.
8:	List the name of the person entering the confined space. If more than one entrant is authorized, each individual shall be listed.
9:	List the name of the attendant.
10:	List the name of the person conducting confined space tests. If the tester is a contractor, a business card or other identification, and a copy of the contract specifying the contractor's responsibility should be attached to the form.
11:	If the response is "Yes", a completed copy of GSA Form 1755, Permit for Welding, Cutting or Brazing, must be posted next to the Confined Space Entry Permit, both of which must be in a conspicuous location outside the confined space.
12:	List the specific tests made and the purpose. As minimum, testing of oxygen, lower explosive limits, and carbon monoxide, must be accomplished. For other contaminants, the OSHA permissible exposure limits shall be used as the permissible entry limits.
13A:	List the instruments used for the tests. If more than one instrument is used, enter the required information on a separate sheet of paper and attach it to the form.
14:	Place an "X" in the appropriate box. If the response is "NO" to any item, the supervisor shall indicate the reason in item 18.
15:	The supervisor shall list any additional requirements or precautions necessary for the confined space entry. An example would be if testing is required every 30 minutes, or if monitoring is required at all times during space occupancy. If there are no additional requirements, the entry will so state this fact.
16A-16B:	List the specific protective clothing and equipment required for the task. Check the type of respiratory protective device: Neg. Press - negative pressure, PAPR - powered air purifying respirator, SCBA - self-contained breathing apparatus.
17:	State precisely what the communication procedures will be between the entrant and attendant during the confined space entry period.
18:	The supervisor shall use this space to indicate any exceptions, negative responses in item 14, and any other remarks necessary to ensure a safe and healthful confined space entry task is accomplished.
19:	The regional S&EM office shall use this space to note any deficiencies on the entry permit or any other aspect of the facility confined space entry program. Positive corrective measures are to be noted in this item and the facility manager required to respond to any unfavorable comment.
20:	The entrant and attendant shall sign and date the form. They must sign on the date of entry into the confined space.
21:	The supervisor must sign and date the authorization for the confined space entry. The supervisor must sign on the date of entry. The supervisor shall not sign the form unless all items are completed. There shall not be any blank items allowed for items 1 through 17.

GSA FORM 3625 BACK (10-91)

POLICY & PROCEDURES FOR WORKING AT HEIGHT



Falls are the leading cause of worker fatalities. Each year, on average, between 150 and 200 workers are killed and more than 100,000 are injured as a result of falls. Following must be considered in this regard:-

- ✚ Where protection is required, select fall protection systems appropriate for given situations.
- ✚ Use proper safety systems.
- ✚ Supervise employees properly.
- ✚ Use safe work procedures.
- ✚ Train workers in the proper selection, use, and maintenance of all protection systems.

Where fall protection is needed

These include, but are not limited to, ramps, runways, and other walkways; excavations; hoist areas; holes; formwork and reinforcing steel; leading edge work; unprotected sides and edges; overhand bricklaying and related work; roofing work; precast concrete erection; wall openings; residential construction; and other walking/working surfaces. The rule sets a uniform threshold height of 6 feet (1.8 meters), thereby providing consistent protection.

Controlled Access Zones

A Controlled access zone is a work area designated and clearly marked in which certain types of work (such as overhand bricklaying) may take place without the use of conventional fall protection systems—guardrail, personal arrest or safety net—to protect the employees working in the zone.

Controlled access zones are used to keep out workers other than those authorized to enter work areas from which guardrails have been removed. Where there are no guardrails, masons are the only workers allowed in controlled access zones.

Controlled access zones, when created to limit entrance to areas where leading edge work and other operations are taking place, must be defined by a control line or by any other means that restrict access. Control lines shall consist of ropes, wires, tapes or equivalent materials, and supporting stanchions, and each must be:

- ✚ Flagged or otherwise clearly marked at not more than 6-foot (1.8 meters) intervals with high-visibility material;
- ✚ Rigged and supported in such a way that the lowest point (including sag) is not less than 39 inches (1 meter) from the walking/working surface and the highest point is not more than 45 inches (1.3 meters)—nor more than 50 inches (1.3 meters) when overhand bricklaying operations are being performed—from the walking/working surface;
- ✚ Strong enough to sustain stress of not less than 200 pounds (0.88 kilo Newton). Control lines shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.
- ✚ Control lines also must be connected on each side to a guardrail system or wall.

When control lines are used, they shall be erected not less than 6 feet (1.8 meters) nor more than 25 feet (7.6 meters) from the unprotected or leading edge, except when precast concrete members are being erected. In the latter case, the control line is to be erected not less than 6 feet (1.8 meters) or more than 60 feet (18 meters) or half the length of the member being erected, whichever is less, from the leading edge.



Controlled access zones when used to determine access to areas where **overhand bricklaying** and **related work** are taking place are to be defined by a control line erected not less than 10 feet (3 meters) nor more than 15 feet (4.6 meters) from the working edge. Additional control lines must be erected at each end to enclose the controlled access zone. Only employees engaged in overhand bricklaying or related work is permitted in the controlled access zones. On floors and roofs where guardrail systems are not in place prior to the beginning of overhand bricklaying operations, controlled access zones will be enlarged as necessary to enclose all points of access, material handling areas, and storage areas. On floors and roofs where guardrail systems are in place, but need to be removed to allow overhand bricklaying work or leading edge work to take place, only that portion of the guardrail necessary to accomplish that day's work shall be removed.

Excavations

Each employee at the edge of an excavation 6 feet (1.8 meters) or more deep shall be protected from falling by guardrail systems, fences, barricades, or covers. Where walkways are provided to permit employees to cross over excavations, guardrails are required on the walkway if it is 6 feet (1.8 meters) or more above the excavation.

Formwork and Reinforcing Steel

For employees, while moving vertically and/or horizontally on the vertical face of rebar assemblies built in place, fall protection is not required when employees are moving. OSHA considers the multiple hand holds and foot holds on rebar assemblies as providing similar protection as that provided by a fixed ladder; consequently, no fall protection is necessary while moving point to point for heights below 24 feet (7.3 meters). An employee must be provided with fall protection when climbing or otherwise moving at a height more than 24 feet (7.3 meters), the same as for fixed ladders.

Hoist Areas

Each employee in a hoist area shall be protected from falling 6 feet (1.8 meters) or more by guardrail systems or personal fall arrest systems. If guardrail systems (or chain gate or guardrail) or portions thereof must be removed to facilitate hoisting operations, as during the landing of materials, and a worker must lean through the access opening or out over the edge of the access opening to receive or guide equipment and materials, that employee must be protected by a personal fall arrest system.

Holes

Personal fall arrest systems, covers, or guardrail systems shall be erected around holes (including skylights) that are more than 6 feet (1.8 meters) above lower levels.

Leading Edges

Each employee who is constructing a leading edge 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems. If the employer can demonstrate that it is infeasible or creates a greater hazard to implement these systems.

Overhand Bricklaying and Related Work

Each employee performing overhand bricklaying and related work 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems, safety net systems, or personal fall arrest systems, or shall work in a controlled access zone. All employees reaching more than 10 inches (25 cm) below the level of a walking/working surface on which they are working shall be protected by a guardrail system, safety net system, or personal fall arrest system.

Precast Concrete Erection and Residential Construction

Each employee who is 6 feet (1.8 meters) or more above lower levels while erecting precast concrete members and related operations such as grouting of precast concrete members and each



employee engaged in residential construction, shall be protected by guardrail systems, safety net systems, or personal fall arrest systems. Where the employer can demonstrate, however, that it is infeasible or creates a greater hazard to use those systems.

Ramps, Runways, and Other Walkways

Each employee using ramps, runways, and other walkways shall be protected from falling 6 feet (1.8 meters) or more by guardrail systems.

Roofing, Low-slope Roofs

Each employee engaged in roofing activities on low-slope roofs with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected from falling by guardrail systems, safety net systems, personal fall arrest systems or a combination of a warning line system and guardrail system, warning line system and safety net system, warning line system and personal fall arrest system, or warning line system and safety monitoring system. On roofs 50 feet (15.24 meters) or less in width, the use of a safety monitoring system without a warning line system is permitted.

Steep Roofs

Each employee on a steep roof with unprotected sides and edges 6 feet (1.8 meters) or more above lower levels shall be protected by guardrail systems with toe boards, safety net systems, or personal fall arrest systems.

Wall Openings

Each employee working on, at, above, or near wall openings (including those with chutes attached) where the outside bottom edge of the wall opening is 6 feet (1.8 meters) or more above lower levels and the inside bottom edge of the wall opening is less than 39 inches (1.0 meter) above the walking/working surface must be protected from falling by the use of a guardrail system, a safety net system, or a personal fall arrest system.

PERSONAL FALL PROTECTION

A worker at risk of falling certain chapter on Guardrails in this manual) protected by guardrails or, if guardrails by a travel restraint system, fall-system, fall-arrest system, or safety net. describes travel-restraint systems and fall-

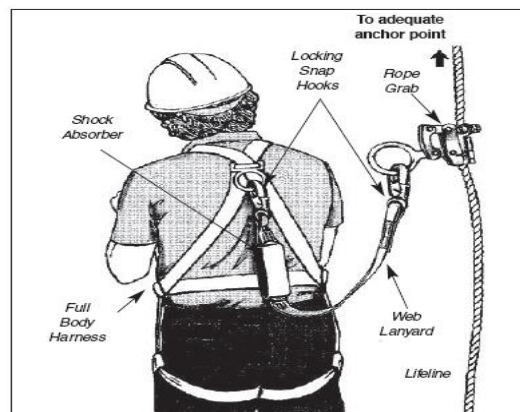
Personal fall protection equipment components shown in the following equipment can be used for travel restraint

Travel-Restraint Systems

A travel-restraint system lets a worker enough to reach the edge but not far over.

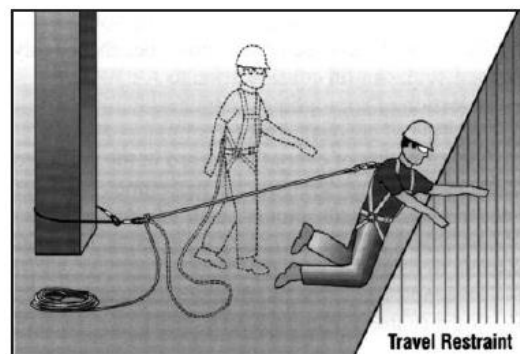
The basic travel-restraint system consists

- ✚ CSA-approved full body harness
- ✚ Lanyard.
- ✚ Lifeline



distances (see must be are not practical, restricting This chapter arrest systems.

consists of the illustration. This or fall arrest.



travel just far enough to fall

of



- ✚ Rope grab to attach harness or lanyard to lifeline
- ✚ Adequate anchorage (capable of supporting a static load of 2 kilonewtons—450 pounds—with a recommended safety factor of at least 2, that is, 4 kilo Newton or 900 pounds).

Travel-restraint arrangements must be thoroughly planned, with careful consideration given to

- ✚ Selection of appropriate components
- ✚ Location of adequate anchor points
- ✚ Identification of every fall hazard in the proposed work area.

Try to select an anchor point that is as close as possible to being

- ✚ Perpendicular to the unprotected edge, and
- ✚ At the centre of the work area.

All fall hazards in the work area must be identified. Pay special attention to work areas with irregular shaped perimeters, floor openings, or locations near corners.

A fully extended lifeline and/or lanyard that adequately restrains a worker from a fall hazard in one section of the work area may be too long to provide the same protection in another section.

Two methods of travel restraint are commonly used in construction.

- ✚ Connecting an adequately anchored lifeline directly to the D-ring of the worker's full body harness. It's absolutely critical that the length of the lifeline, measured from the anchor point, is short enough to restrain the worker from any fall hazard.
- ✚ Attaching a lanyard from the D-ring of the worker's full body harness to a rope grab on an adequately anchored lifeline. There must be some means—such as a knot in the lifeline—to prevent the rope grab from sliding along the lifeline to a point where the worker is no longer restrained from falling.

Whether method 1 or 2 is used, the system must be adjusted so that the fully extended lifeline and/or lanyard prevent the worker from reaching any point where the worker may fall. The system must also be securely anchored.

Fall-Arrest Systems

Where workers cannot be protected from falls by guardrails or travel restraint, they must be protected by at least one of the following methods:

- ✚ Fall-restricting system
- ✚ Safety net
- ✚ Fall-arrest system

In the event of a fall, these systems must keep a worker from hitting the ground, the next level below, or any other objects below.

A fall-restricting system is designed to limit a worker's free fall distance to 0.6 metres (2 feet). One type uses a belt grabs or belly hook that attaches to a safety rail on a fixed ladder.



A safety net system must be designed by a professional engineer. The system is installed below a work surface where a fall hazard exists.

A fall-arrest system

- ✚ must include a CSA-approved full body harness
- ✚ Must include a lanyard equipped with a shock absorber unless the shock absorber could cause a falling worker to hit the ground or an object or a level below the work
- ✚ Must include an adequate fixed support; the harness must be connected to it via a lifeline, or via a lanyard and a lifeline
- ✚ Must prevent a falling worker from hitting the ground or any object or level below the work
- ✚ Must not subject a falling worker to a peak fall-arrest force greater than 8 kilo Newton.

The construction regulation (O. Reg. 213/91) requires that

- ✚ All fall protection equipment must be inspected for damage, wear, and obvious defects by a competent worker before each use
- ✚ Any worker required to use fall protection must be trained in its safe use and proper maintenance.

Any defective component should be replaced by one that meets or exceeds the manufacturer's minimum performance standards for that particular system.

The regulation also requires that any fall-arrest system involved in a fall be removed from service until the manufacturer certifies all components safe for reuse.

For any worker receiving instruction in fall protection, the manufacturer's instructions for each piece of equipment should be carefully reviewed, with particular attention to warnings and limitations.

Components

Canadian fall protection standards are regularly updated to incorporate the most current changes to fall protection systems. The following is a list of current CSA standards for personal fall protection equipment:

- ✚ CAN/CSA-Z259.1-M99 - Body Belts and Saddles for Work Positioning and Travel Restraint
- ✚ CAN/CSA-Z259.10-06 - Full Body Harnesses
- ✚ CAN/CSA-Z259.11 - Energy Absorbers and Lanyards
- ✚ CAN/CSA-Z259.12 - Connecting Components for Personal Fall Arrest Systems (PFAS)
- ✚ CAN/CSA-Z259.14 - Fall Restrict Equipment for Wood Pole Climbing
- ✚ CAN/CSA-Z259.2.1 - Fall Arresters, Vertical Lifelines and Rails



- ✚ CAN/CSA-Z259.2.2 – Self-Retracting Devices for Personal Fall-Arrest Systems
- ✚ CAN/CSA-Z259.2.3 – Descent Control Devices.

For any component not covered by these standards, confirm with the manufacturer that the component is suitable for the particular system being considered.

The minimum strength of fall-arrest components depends on whether or not the system uses a shock absorber.

- ✚ In systems without shock absorbers, all components, including lifeline and lifeline anchorage, must be able to support a static load of at least 8 kilonewtons (1800 pounds) without exceeding the allowable unit stress of the materials used for each component.
- ✚ In systems with shock absorbers, all components, including lifeline and lifeline anchorage, must be able to support a static load of 6 kilo Newtons (1350 pounds) without exceeding the allowable unit stress of the materials used for each component.

In designing both systems, it is recommended that a safety factor of at least two be applied to the stated minimum load capacity. In practical terms, anchorage should be strong enough to support the weight of a small car (about 3600 pounds).

Lifelines

There are three basic types of lifelines:

- ✚ Vertical
- ✚ Horizontal
- ✚ Retractable.

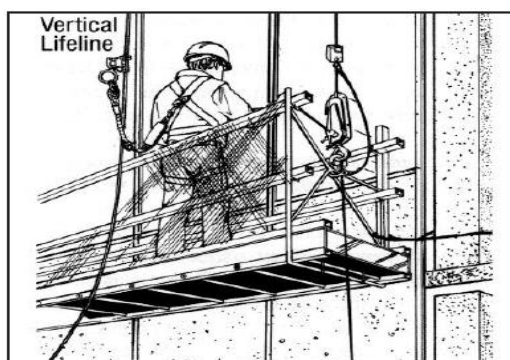
All lifelines must be inspected daily to ensure that they are:

- ✚ Free of cuts, burns, frayed strands, abrasions, and other defects or signs of damage
- ✚ Free of discolouration and brittleness indicating heat or chemical exposure.

Vertical Lifelines

Vertical lifelines must comply with the of the applicable CSA standard and the minimum requirements:

- ✚ Only one person at a time may use a
- ✚ A vertical lifeline must reach the above ground where the worker can
- ✚ A vertical lifeline must have a prevent the rope grab from running the lifeline.
- ✚ Vertical lifelines are typically 16-millimetre (5/8-inch) synthetic rope (polypropylene blends).



current edition following

vertical lifeline.

ground or a level safely exit.

positive stop to off the end of



Horizontal Lifelines

The following requirements apply to lifeline system

- ✚ The system must be designed by engineer according to good practice.
- ✚ The design can be a standard specifically engineered for the

The design for a horizontal lifeline

- ✚ Clearly indicate how the system arranged, including how and anchored.
- ✚ List and specify all required components
- ✚ Clearly state the number of workers that can safely be attached to the lifeline at one time
- ✚ Spell out instructions for installation, inspection, and maintenance
- ✚ Specify all of the design loads used to design the system.
- ✚ The system must be installed, inspected, and maintained in accordance with the professional engineer's design.

Before each use, the system must be inspected by a professional engineer or competent worker designated by a supervisor. A complete and current copy of the design must be kept on site as long as the system is in use.

CAUTION: The construction regulation requires that "a horizontal or vertical lifeline shall be kept free from splices or knots, except knots used to connect it to a fixed support." Knots along the length of either a horizontal or vertical lifeline can reduce its strength by as much as 40%.

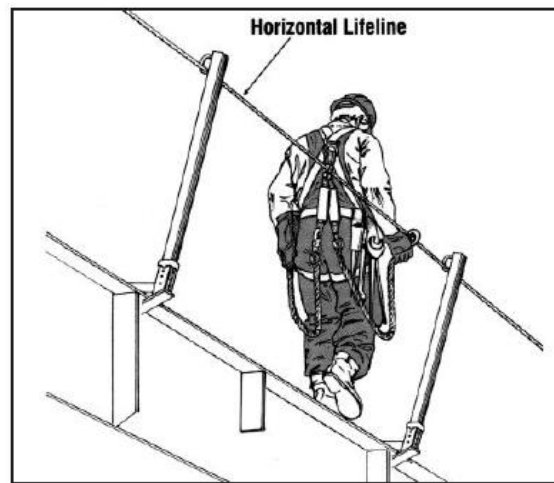
Retractable Lifelines

Retractable lifelines consist of a lifeline retracting device attached to adequate

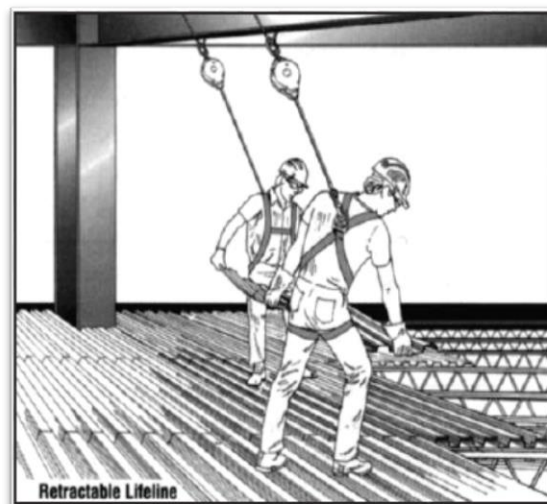
Retractable lifelines must comply with CAN/CSAZ259.2.2.

In general, retractable lifelines

- ✚ Are usually designed to be the worker
- ✚ Employ a locking mechanism that off the drum under the slight by a user's normal movements
- ✚ Automatically retract when tension is removed, thereby preventing slack in the line
- ✚ Lock up when a quick movement, such as that caused by a fall, is applied



any horizontal
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engineering
design or
site.
system must:-
is to be
where it is to be



spooled on a
anchorage.

anchored above
lets line unwind
tension caused



Are designed to minimize fall distance and the forces exerted on a worker's body by fall arrest

Always refer to the manufacturer's instructions regarding use, including whether a shock absorber is recommended with the system.

Any retractable lifeline involved in a fall arrest must be removed from service until the manufacturer or a qualified testing company has certified it for reuse.

Lifeline Hazards

Ultraviolet light - Exposure to the sun may damage or weaken synthetic lifelines. Ensure that material being considered for lifelines is UV-resistant.

Temperature - Extreme heat can weaken or damage some lifelines while extreme cold can make others brittle. Ensure that material being considered for lifelines can stand up to the most extreme conditions expected.

Friction and abrasion - Normal movement may wear, abrade, or otherwise damage lifelines in contact with sharp or rough surfaces. Protection such as wood softeners or rubber mats can be used at contact points to prevent wear and tear.

Sparks or flame - Hot work such as welding or flame cutting can burn, melt, cut, or otherwise damage a lifeline.

Ensure that material being considered for lifelines is flame-resistant or provide appropriate protection where sparks or flame may be encountered.

Chemicals - Chemical exposure can burn or degrade a lifeline very quickly. Ensure that material being considered for lifelines will resist any chemicals encountered on the job.

Storage - Always store lifelines separately. Never store them where they may contact hazards such as sharp objects, chemicals, or gasoline.

Anchor Systems

There are three basic types of anchor systems for fall protection:

Designed fixed support. Load-rated anchors specifically designed and permanently installed for fall protection purposes as an integral part of the building or structure (for example, roof anchors on high-rise buildings)

Temporary fixed support. anchor systems designed to be connected to the structure using specific installation instructions (for example, nail-on anchors used by shingles)

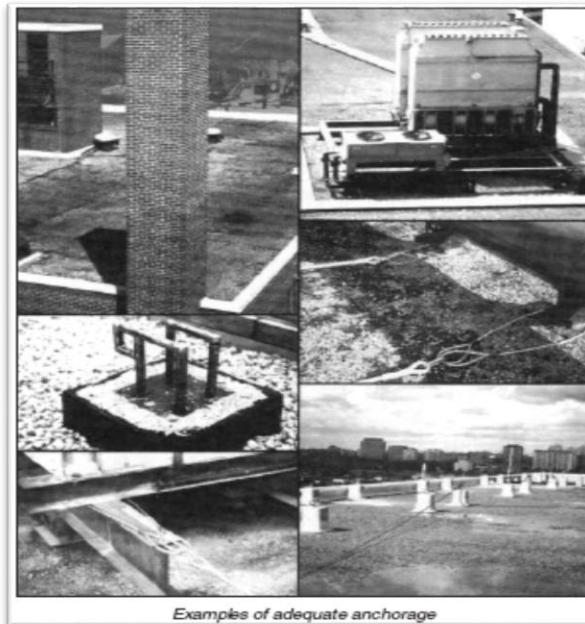
Existing structural features or equipment. Not intended as anchor points but verified by a professional engineer or competent person as having adequate capacity to serve as anchor points (for example, roof top mechanical rooms, structural steel, or reinforced concrete columns).



Designed fixed support can be used arrest system, fall-restricting system, restraint system if the support has according to the Building Code and is practical to use.

Temporary fixed support can be used it meets the following conditions:

- ✚ It can support at least 8 kilo pounds) without exceeding the stress for each material used
- ✚ When used with a fall-arrest incorporating a shock support at least 6 kilo Newton without exceeding the stress for each material used;
- ✚ When used with a travel-system, it can support at least 2 kilo Newton (450 pounds) without exceeding the allowable unit stress for each material used.



to anchor a fall-or travel-been installed safe and

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Newton (1800 allowable unit

system absorber, it can (1350 pounds) allowable unit or

restraint the allowable

In all cases, a **safety factor of at least two** should be applied when determining the minimum load that an anchor point must support.

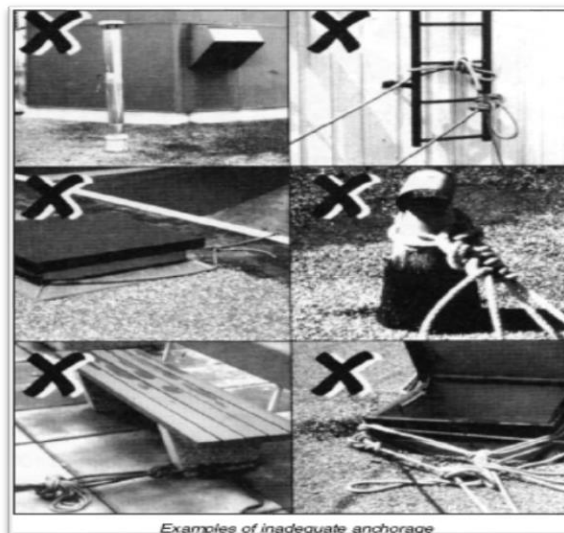
As a general rule with fall-arrest systems, choose an anchor capable of supporting the weight of a small car (about 3600 pounds).

When existing structural features or equipment are used as anchor points, avoid corners or edges that could cut, chafe, or abrade fall protection components.

Where necessary, use softeners such as wood blocking to protect connecting devices, lifelines, or lanyards from damage.

Never anchor to

- ✚ Roof vents or stink pipes
- ✚ Roof hatches
- ✚ Small pipes and ducts
- ✚ Metal chimneys
- ✚ TV antennas
- ✚ Stair or balcony railings.



Full Body Harness



Chest strap should be adjusted so that it's snug and located near the middle of the chest. In a headfirst fall a properly adjusted chest strap will prevent the worker from coming out of the harness.

- ✚ Leg straps should be adjusted so the user's fist can fit snugly between strap and leg.
- ✚ Harness straps should be adjusted to put the D-ring between the shoulder blades. A properly positioned D-ring will keep a worker upright after fall arrest.

Inspect harness for

- ✚ Burns, cuts, or signs of chemical damage.
- ✚ Loose or broken stitching.
- ✚ Frayed web material.
- ✚ D-ring and keeper pads free from distortion and signs of undue wear or damage.
- ✚ Grommets and buckles free of damage, distortion, or sharp edges.

Lanyards

- ✚ Use manufactured lanyards only. They can be made of synthetic fibre rope, or synthetic webbing.
- ✚ Lanyards are manufactured to specific lengths. Never lanyard by tying knots in it. Knots can seriously reduce strength.
- ✚ Never store lanyards around chemicals, sharp objects, Never leave them exposed for long periods to direct



wire rope,

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its rated

or in wet places.
sunlight.

Inspect lanyards for:

- ✚ Burns, cuts, or signs of chemical damage
- ✚ Loose or broken stitching
- ✚ Frayed web material.

Shock Absorbers

- ✚ Shock absorbers absorb some of the force generated by fall arrest. Shock absorbers can be purchased as separate equipment or built into lanyards.
- ✚ One end of the shock absorber must be connected to the D-ring on the full body harness.
- ✚ In most cases the shock-absorbing component is enclosed in a snug-fitting jacket to protect it from the user's day-to-day activities. In a fall, the jacket tears open as the shock absorber deploys.
- ✚ Check the cover jacket for stress or tearing (many shock absorbers have a tag on the jacket that tears if the unit is exposed to a shock load—make sure this tag is intact).
- ✚ Ensure that a shock absorber built into a lanyard has a constant cross-section or diameter.

Connecting Devices



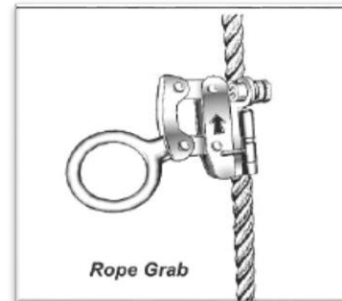
Locking Snap Hook. Has a spring-loaded keeper across the opening of the hook that cannot be opened unless the locking mechanism is depressed.

Karabiner (D-Clip). Designed not to open under twist loads. To open the gate or keeper requires two separate actions: 1) twisting the locking mechanism and (2) pulling the locking mechanism back. When released, the spring-loaded locking mechanism flicks back into the locked position.

Rope Grab. Used to connect lanyard to lifeline. These devices can be moved up and down the lifeline when a steady force is applied but will lock tug or pull is applied. They will remain locked on the applied force is released.

Each rope grab is designed and manufactured for use diameter and type of lifeline. Rope grab and lifeline compatible. Specifications are usually listed on the

The rope grab must also be attached to the lifeline in direction—not upside down. On most rope grabs an the direction in which to orient the device. In addition, each rope grab is designed for use with a specific length of lanyard, normally two or three feet maximum.



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the correct arrow indicates

Check all connecting devices for

- ✚ Damage, cracking, dents, bends, or signs of deformation
- ✚ Connecting rings centred—not bent to one side or otherwise deformed
- ✚ Rust
- ✚ Moving parts working smoothly
- ✚ Signs of wear or metal fatigue.

Fall-Arrest Planning

Before deciding on a fall-arrest system, assess the hazards a worker may be exposed to in case of a fall.

Before the fall is arrested, will the worker "bottom out," that is, hit ground, material, equipment, or a lower level of the structure? Will the pendulum effect cause the worker to swing from side to side, possibly striking equipment, material, or structure? In the event of fall arrest, how will the suspended worker be rescued? Planning must take into account these and other concerns.

Total Fall Distance is the distance required to fully arrest a fall. It consists of

- ✚ Free Fall Distance, which should be kept to 1.5 metres (5 feet) or less, plus
- ✚ Fall Stopping Distance, which includes stretch in the lanyard (minimal) and lifeline, slack in the harness (maximum 30 cm or 1 foot due to allowable adjustments for user's comfort), and deployment of the shock absorber (maximum 1.1 metres—or 42 inches).



Free Fall Distance is measured from the D-ring of a worker standing on the work surface down to the point where either the lanyard or the shock absorber begins to arrest the fall. It is strongly recommended that this distance be kept as short as possible.

To minimize free fall, workers should tie off to an anchor overhead and use as short a lanyard as the work will allow.

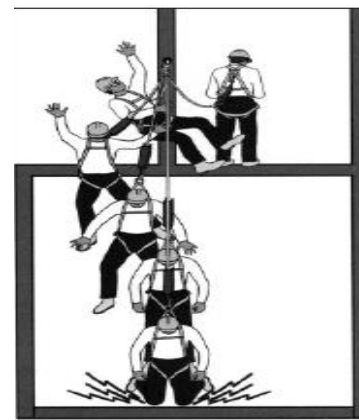
Where a worker is connected to a vertical lifeline by a rope grab, the rope grab should be positioned as high above the D-ring as the work will allow. By doing this, the worker minimizes not only the Free Fall Distance but also the Fall Stopping Distance required to completely arrest a fall.

Bottoming Out

Bottoming out occurs when a falling worker hits a lower level, the ground, or some other hazard before the fall is fully arrested.

This occurs when Total Fall Distance is greater than from the work surface to the next level, the ground, or hazard below.

Fall-arrest systems must be planned, designed, and prevent any risk of bottoming out.



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Pendulum Effect

The farther you move sideways from your anchor greater the chance of swinging if you fall. This is "pendulum effect." And the more you swing, the with which you'll strike columns, walls, frames, or other objects in your path.

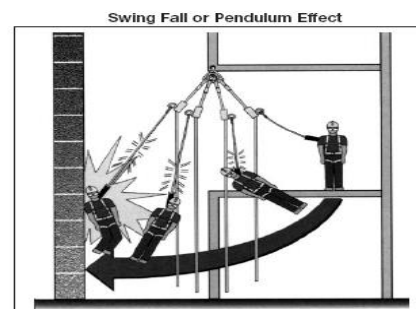
Swinging may even cause your taut lanyard or lifeline to break where it runs over rough or sharp edges.

Swing fall or Pendulum Effect

To minimize pendulum effect, workers should lifeline perpendicular from edge to anchor.

Where work extends along an open edge, anchor changed to keep lanyard or lifeline perpendicular progresses.

Another solution is to run a horizontal lifeline edge. The worker attaches lanyard to lifeline, edge, and the lanyard travels at the same pace, remaining close to perpendicular at all times.



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Emergency Rescue

The construction regulation (O. Reg. 213/91) requires that before workers use any fall-arrest system or safety net on a project, the employer must develop written rescue procedures. It's important that a worker involved in a fall arrest be brought to a safe area as quickly as possible without causing injury or putting rescuers at risk.



In many cases, the rescue plan can be simple. A ladder or elevating work platform can be used to reach suspended workers and get them down safely. Other workers may be hauled back up to the level from which they fell or pulled in through a nearby window or other opening.

In other cases, procedures may be more complicated. For instance, workers trapped on a failed swing stage, or hanging from it, may need to be rescued by specially trained and equipped personnel from the local fire department. Aerial ladder trucks or other high-reach equipment may be necessary. In extreme cases, the fire department may use rappelling techniques to reach trapped workers and lift or lower them to a safe level.

Plans should cover the on-site equipment, personnel, and procedures for different types of rescue. Any off-site rescue services that might be required should be contacted and arranged in advance to familiarize them with the project. CSAO's Emergency Response poster (P103) can be used to indicate the nearest hospital and the phone numbers of fire, ambulance, and police services.

Site management must ensure that

- ✚ Everyone on site is aware of the rescue plan
- ✚ Equipment and other resources are available
- ✚ Designated personnel are properly trained.

Workers must receive training from their employer regarding the specific fall protection equipment and procedures they will use. Products differ not only between manufacturers but also between product lines in a single company. Training must therefore cover the exact harness, lanyard, shock absorber, rope grab, lifeline, and anchorage each worker will rely on, as well as the applications to be encountered.

Conclusion

Employers, supervisors, and workers all have responsibilities in reducing or eliminating falls in construction.

This section has provided guidelines for fall protection, including both fall prevention and fall arrest. But the information means nothing unless employers, supervisors, and workers apply it on the job.

Workers who have any questions about fall hazards or fall protection should ask their supervisor. When it comes to fall protection, make sure you know how the equipment works and how to use it. Your life depends on it.

PERSONAL FALL PROTECTION



Sample Work at height permit

WORKING AT HEIGHT PERMIT		Permit #:
Working at Heights is defined as where a person is working within 2 metres of an unprotected edge which exposes them to a fall of 2 metres or more.		
Questions	Response	Action
Can risk be eliminated? Eg. Can work be done without working at heights?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Can risk be isolated by erection of temporary barrier?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Can Engineering controls be applied, secure platform, scaffolding, elevated work platforms (EWP)?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Are personnel trained and competent?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Any other hazards in the area?	<input type="checkbox"/> YES <input type="checkbox"/> NO	
SECTION 1 – Specification of Work		
Location of Work:		
Description of Work:		
Date:	Time:	Duration: hrs
SECTION 2 – Persons Working at Height		
I am competent to operate the equipment to be used in this task, I do not suffer from any condition that may impede my ability to work at height safety. Eg. (vertigo, epilepsy).		
Name (Print)	Date	Signature
SECTION 3 – Authorisation to Work		
I accept this Permit, agree to be bound by the conditions detailed above and the associated procedure(s), and accept responsibility as the person directly in charge of the work.		
I have read the attached risk assessment / Job Safety Analysis (JSA), procedures and Rescue plan and have the observed risk controls in place.		
Name:	Signature:	Date: / /
I authorise the Work at Heights project to the conditions/precautions of the Risk Assessment / JSA as indicated on this Permit.		
Name:	Signature:	Date: / /
SECTION 4 – Completion, Suspension or Cancellation of Work Please TICK the appropriate response:		
All work associated with this Working at Heights Permit has been:	<input type="checkbox"/> COMPLETE <input type="checkbox"/> CANCELLED <input type="checkbox"/> SUSPENDED	
The work area and adjacent areas have been inspected after completion of the work and all hazards have been made safe.	<input type="checkbox"/> YES <input type="checkbox"/> NO	
Additional comments:		
.....		
DPW Site Representative:	Signature:	Date cancelled: Time:


SECTION 5 – Performance of Work (Use these questions when assessing the risk)
General

Can part of the job be performed at ground level?	Can people be excluded from the fall risk area?
Will persons be kept more than 2m from unprotected edge?	Are alternative walkways and emergency egress/exit routes identified?
Is barricading and signage required?	All trip hazards identified and controlled?
Equipment suitable for task?	Are tools fitted with a lanyard?
Is there a potential for objects to fall from height? <ul style="list-style-type: none"> Tools fitted with lanyards Debris nets Screened scaffolding? 	Can objects be prevented from striking people? <ul style="list-style-type: none"> NO GO ZONES Overhead protection
People trained in equipment use?	Do all persons involved have a helmet chin strap attached?

1. Scaffolding

For scaffolds of a height greater than 4m the scaffold must be designed and erected by ticketed scaffolders and a scaffold tag installed.

Is scaffolding in good condition and on stable ground?

Will scaffolding be sufficient for the task?

2. EWP

Pre start and harness inspection and log book completed?

Has stability of ground been inspected for approaching plant or passing traffic?

Any overhead/ underneath hazards?

Is the ground level and stable?

Will a standby person be required?

3. Fall restraint/arrest

Have fall restraint and fall arrest differences been properly identified and suitable equipment selected?

Equipment in good condition, inspected and tagged?

Have the working at heights equipment requirements been identified?

If inertia reels are required are attachment points located overhead and properly placed and secured?

Are anchor points suitable, anchor points inspected and serviceable?

Is rescue available for a suspected person who may fall in a harness?

4. Ladders

Are you using a ladder within the ladder length of a handrail or moving equipment?

Is ladder in good working order?

Is the ground level and stable & ladder secure from falling over?

5. Additional Checks Required/Completed

Additional comments:

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SAFETY COMMITTEE

SBG O&M will form a safety committee which will consist of following members: -



- ✚ Safety Chief
- ✚ Safety Engineer
- ✚ 1 Supervisor of every department working in All

Following will be the action plan of safety committee: -

- ✚ Safety committee members will meet once in a month
- ✚ Committee members will make safety inspections in their area of concern and will present the identified hazards in the meeting and will suggest solutions.
- ✚ All the minutes of the meeting will be shared with safety department and site management
- ✚ Safety committee will ensure implementation of safety department instructions and safe working procedures developed in the policy of the company.
- ✚ Committee will identify the training needs inside the respective departments and will inform the management for arrangements of such training to the targeted manpower.
- ✚ Will answer to the objections raised by the safety department on noncompliance with the procedures.
- ✚ Will assure the application of laid safety rules and regulations as per preventive maintenance instruction systems.
- ✚ Will establish a mechanism to inspect and supervise the activities of contractors as per safety rules.
- ✚ Will establish a system to penalize the noncompliance parties.

SAFETY DEPARTMENT SCOPE OF WORK

As per OSHA and HSE guidelines, it is required by an employer to hire and train a team of people for following purposes: -

- ✚ Identify major fire hazards
- ✚ Monitor accumulation of combustible materials in the building
- ✚ Maintain equipment used to control sources of ignition and fires

SBG O&M Safety department is a team of professionals. Details are as follows:-

Safety Chief:

Safety Supervisors:

Safety Wardens:

All the personnel are highly qualified and possess wide range of expertise in their respective field.

Most of them are graduates of sciences & IT. More personnel have Master's degree in Human Resources, Sciences and Safety Management.

We have technical personnel with over 5 years of experience in the fields of fire & safety



We have developed a training center for the team and our trainers are expert in following concerns:-

- ✚ Fire & safety
- ✚ Fire Fighting
- ✚ Rescue
- ✚ First aid & CPR
- ✚ Fire hydrant & Fire hose reel drill
- ✚ Ladder drill
- ✚ Confined space entry
- ✚ Emergency evacuation
- ✚ Work at height
- ✚ Lone working

The total strength is divided into 2 teams which are as following:-

1. **Surveillance Team**

This team consists of following members:-

Safety Chief :

Shift Supervisors :

Safety Wardens :

This team inspects all the area on routine basis and reports the observations to the concerns.

Projects are inspected on monthly basis and reports are forwarded to the hotel management.

Inspection includes following building safety aspects:-

- ✚ Fire Hazards Identification
- ✚ Stacking of combustibles in the area
- ✚ Electrical fire hazards
- ✚ Electrical, Mechanical & IT Rooms
- ✚ Fire Extinguishing Equipment
- ✚ Fire Suppression systems
- ✚ Fire Sprinkling system
- ✚ Fire Detection systems
- ✚ Fire Alarm Systems
- ✚ Emergency exit routes for obstructions



✚ Exit signs

This is the team which is responsible for evacuation in the podium area. SBG O&M is planning an extensive refresher training plan for this team which will be site specific.

This plan will include following:-

- ✚ Fire risk assessment
- ✚ Emergency response
- ✚ Locations of firefighting equipment
- ✚ Building evacuation
- ✚ Effective communication & Co-ordination
- ✚ Chaos management
- ✚ First Aid
- ✚ Evacuation of disabled and injured

In future when the building will be fully active the nature of the job of safety department will be more critical. As the building has a capacity of more than 50,000 guests and when Hajj or Ramadan season starts the building operates at its full capacity.

2. Safety Engineering / Maintenance Team

This team is working under the supervision of Safety Engineer with following.: -

Safety Engineer :

Shift Supervisors :

Safety Wardens :

Elect / Mech. Persons :

The team is looking after / maintaining following:-

- ✚ Fire Extinguishers
- ✚ Fire Hose Cabinets
- ✚ Hose Reels
- ✚ Hose Racks
- ✚ MCPs
- ✚ Exit Signs
- ✚ Exit routes and stairs
- ✚ Hazard Identification in the assigned area

This team replaces the expired fire extinguisher in all the areas of responsibility.

They inspect the equipment in the assigned area with the view of operation and performance.



Designation wise job descriptions are as follows:-

Supervisor

- ✚ Responsible for the assigned shift
- ✚ Check all the staff under control for uniform & outlook at the start of the shift.
- ✚ Make roll call and brief on shift matters.
- ✚ Don't allow anyone to mark attendance without complete uniform
- ✚ If a warden doesn't act upon the instructions, write a report to safety chief.

(If a supervisor doesn't stop / report any indiscipline, he will be issued with warning and disciplinary action will be taken against him on not reporting.)

- ✚ Report any abnormality regarding location to Safety Chief.
- ✚ Visit the assigned area on interval basis, not less than 4 visits a shift.
- ✚ Make shift end report to chief in writing.
- ✚ Prepare monthly report of assigned area.
- ✚ Hand over the responsibility to next shift reliever.
- ✚ Report to the duty 15 minutes earlier for any meeting / briefing etc.

Warden

- ✚ To obey company's rules and regulations
- ✚ To show respect to client and customers
- ✚ To respect the time of work and his appearance
- ✚ To stay in his post until a relief warden arrives
- ✚ To be aware of his complete duties
- ✚ To pass on information that might be important for safety purposes to his supervisor immediately
- ✚ To communicate with his supervisor at regular intervals about the post situation
- ✚ To be 15 minutes early at work for any briefing.