

**APPENDIX 2 to Part B**  
**Owners List of Known Workplace Hazards and**  
**Confined Space Identification and Hazard Assessment**

**CONTRACT TITLE : PS20200477 - SEWERS CCTV INSPECTION RFP**

**PROJECT MANAGER (CITY EMPLOYEE): LARRY KIM**

**CONTRACT NAME & # (IF KNOWN) PS20200477**

**Purpose**

This document shall be completed by the project manager, who shall list all the known worksite hazards and all the existing work process hazards that will be associated with the upcoming contract. The completed document shall then be provided to all potential contractors, as part of the tender package, so the project can be bid appropriately based on the known worksite hazards.

**Definitions**

**Project Manager** - the City employee designated to be the liaison with the contractor for the purpose of managing, overseeing, coordinating or in any other way administering the contract.

**Instructions for Completion**

The document must be completed in full. Choices for each entry are:

**Y** - Yes - the known worksite hazard or existing work process hazard does exist

**N** - No - the known worksite hazard or existing work process hazard does not exist\*

**NA** - Not Applicable - worksite hazard or existing work process is not applicable for this contract type

**TBD** - a third party (environmental consultant) will address the issue (primarily for a hazardous materials assessment)

\*based on reasonable estimation from all input by persons with expertise or relevant knowledge and understanding

**Information from Hazardous Materials Assessments Provided by a Third Party**

A hazardous materials assessment may be completed prior to the Project Manager completing the Owners List of Known Workplace Hazards. Any such assessment should be referenced by the Project Manager in this document and provided with the tender package. Hazardous materials may include asbestos, lead, crystalline silica, ammonia, PCB's, CFC's, moulds, mercury, ozone depleting substances (ODS), radioactive substances.

**Assistance in Completing this Document**

If you have questions while completing this document, or are unsure if the listed hazards apply, please seek assistance from Health and Safety (604.871.6078 or [healthandsafety@vancouver.ca](mailto:healthandsafety@vancouver.ca)).

HAZARD OR ISSUE	Project Manager
<b>1. ASBESTOS-CONTAINING MATERIALS</b> - disturbance or penetrations of flooring, walls, ceiling tiles, pipe lagging, ac pipe, transite siding, particularly in older facilities; e.g., furniture/fixture installation, carpeting/flooring services, and boiler repair/tune-up services.	Yes (Y) No (N) Not Applicable (NA) To Be Determined (TBD)
a) Asbestos containing materials (ACM) will be encountered	Y N <input checked="" type="checkbox"/> NA TBD
b) A hazardous materials assessment for asbestos is provided in the tender package	Y N <input checked="" type="checkbox"/> NA TBD
c) A hazardous materials assessment for asbestos is the responsibility of the contractor	Y N <input checked="" type="checkbox"/> NA TBD

<b>2. LEAD-CONTAINING MATERIALS</b> - disturbance of lead-based paint, particularly in older facilities. Also present in certain electrical circuitry and metal alloys; .e.g., overhead bridge crane maintenance/repair, high-voltage cable splicing services, boiler repair/tune-up services, fixture installation services, and chiller maintenance/repair services.	Yes (Y) No (N) Not Applicable (NA) To Be Determined (TBD)
a) Inorganic lead-containing materials may be encountered	Y N <input checked="" type="checkbox"/> NA TBD
b) A hazardous materials assessment for lead is provided in the tender package	Y N <input checked="" type="checkbox"/> NA TBD
c) A hazardous materials assessment for lead is the responsibility of the contractor	Y N <input checked="" type="checkbox"/> NA TBD

<b>3. OTHER HAZARDOUS MATERIALS</b> - may include ammonia, PCBs, CFCs, moulds, mercury, ozone depleting substances (ODS), radioactive substances, sewage, unknown contaminated materials, other: (list other here)_____	Yes (Y) No (N) Not Applicable (NA) To Be Determined (TBD)
a) A hazardous materials assessment for ammonia is provided in the tender package	Y <input checked="" type="checkbox"/> NA TBD
b) A hazardous materials assessment for (list the specific hazardous material) will be provided in the tender package	Y <input checked="" type="checkbox"/> NA TBD
c) A hazardous materials assessment for (list the specific hazardous materials) will be the contractors responsibility	<input checked="" type="checkbox"/> N NA TBD

<b>4. CONFINED SPACES</b> - working in vaults, chambers, pits, tanks, etc.; e.g., construction, inspection and testing services, water/fuel storage tank clean-out services, and utility corrosion inspection services.	Yes (Y) No (N) or Not Applicable (NA)
a) A hazard assessment (for entry and inspection only) from the City of Vancouver is provided in the tender package	<input checked="" type="checkbox"/> Y N NA
b) The City of Vancouver shall provide procedures to isolate adjacent piping, or to lock out equipment (complicated systems only)	Y <input type="checkbox"/> N NA
c) The contractor shall be responsible for isolation and lockout procedures in the confined space	<input checked="" type="checkbox"/> Y N NA

<b>5. LOCK OUT</b> - industrial equipment maintenance, power machinery repair services, pump maintenance/repair services, mechanical refrigeration systems, elevator repair, overhead bridge crane maintenance/repair services, cathodic protection services, hydraulic test systems repair/service, and air compressor rebuilding services.	Yes (Y) No (N) or Not Applicable (NA)
a) Lockout will be required to isolate or prevent the unexpected release of energy (electrical - potential arc flash or electrical shock, mechanical, hydraulic, chemical, thermal, kinetic, gravitational, pneumatic)	Y N <input type="checkbox"/> NA
b) Work will be performed on or near energized equipment, lines, or circuits	Y N <input type="checkbox"/> NA

If yes to a) or b) describe:

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<b>6. FALL PROTECTION</b> - tree pruning, window and ledge cleaning, window replacement, overhead bridge crane maintenance/repair services, roll-up door replacement, tent installation, awning/canopy installation, overhead air exchange installation, construction inspection and testing services.	Yes (Y) No (N) or Not Applicable (NA)
a) Workers will be exposed to a potential fall in excess of 3 m (10 feet), or to a fall of less than 3 m which would likely result in a serious injury (ex. impalement on rebar)	<input checked="" type="checkbox"/> Y N NA
b) Scaffolding or ladders will be required to be secured to a building or structure	Y N <input type="checkbox"/> NA

<b>7. OVERHEAD AND UNDERGROUND UTILITIES</b> - tree pruning services, tree removal, utility relocation or replacement, underground utility identification (digging with powered equipment), concrete sawing services, pole painting	Yes (Y) No (N) or Not Applicable (NA)
a) There will be electrical hazards (arc flash and/or electrical shock) associated with overhead power lines such as limits of approach and contact or underground utilities	Y N <input checked="" type="checkbox"/> NA
b) Necessary assurances (in writing) have (or will be) obtained by the City, through the utility company, for any work where minimum limits of approach cannot be maintained (provide documentation and review at pre job meeting with the successful contractor candidate)	Y N <input checked="" type="checkbox"/> NA
c) Necessary assurances must be obtained (in writing) by the successful contractor, through the utility company, for any work where minimum limits of approach will not be able to be maintained	Y N <input checked="" type="checkbox"/> NA
d) Underground or hidden utilities are located on the job site. Any excavation or drilling work in proximity to an underground utility service must be undertaken in conformity with the requirements of the owner of that utility service	Y N <input checked="" type="checkbox"/> NA

If yes to c), and the specific physical locations where minimum limits of approach will not be able to be maintained are known, how will this information be provided to the contractor?

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<b>8. CONSTRUCTION, EXCAVATION, SHORING AND DEMOLITION</b>	Yes (Y) No (N) or Not Applicable (NA)
a) As Prime Contractor, the City of Vancouver project manager will submit the Notice of Project	Y N <input checked="" type="checkbox"/> NA
b) Workers will be required to enter an excavation over 1.2m (4 ft) in depth	Y N <input checked="" type="checkbox"/> NA

<b>9. CHEMICALS, SOLVENTS, FUMES, VAPORS, AND/OR DUSTS</b> (existing work processes or known worksite hazard only) - ice rinks, swimming pools, cleaning solvents, adhesives, paints, coatings, binders; e.g., storage tank clean-out services, countertop installation (epoxies), and flooring	Yes (Y) No (N) or Not Applicable (NA)
a) The worksite has chemicals solvents, fumes, vapors or dusts that may affect the contractor	Y N <input checked="" type="checkbox"/> NA
b) Material Safety Data Sheets for chemicals currently in use at the worksite will be available, on request, to the contractor	Y N <input checked="" type="checkbox"/> NA

If yes to a), list the work processes and/or chemicals in use:


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<b>10. NOISE</b> - (existing work processes only)	Yes (Y) No (N) or Not Applicable (NA)
a) Employees will be exposed to noise levels above 85dbA	Y N <input checked="" type="checkbox"/> NA

<b>OTHER HAZARDS (NOT IDENTIFIED ABOVE)</b>
a) Traffic Hazard
b) Engulfment Hazard
c) Insect/Animal Hazard, Exhaust fumes Hazard

<b>KNOWN WORKPLACE HAZARDS LIST COMPLETED BY</b>	
Project Manager Name (print): Larry Kim	
Project Manager Signature: 	Date: June 23, 2020
Title: Asset Management Supervisor	Phone: 604-873-7299

	<b>Confined Space Identification and Hazard Assessment</b>	Assessed by: Andrew Ross Date Assessed: 2003-10-17
	Engineering Services - Sewers - Sewer Manhole Sewer manhole 15 inch dia. or smaller connections (ID: 551 )	Location: CityWideInventory includes about 22,000 sewer manholes in the City.

Not Designed or intended for Continuous occupancy	Enclosed or partially enclosed?	Limited or restricted entry or exit?	Large enough and configured to perform work?
yes	yes	yes	yes

Access Means, Dimensions	Single 22" or 24" diameter hole protected by steel manhole cover. Steel rungs imbedded into concrete or ladder fixed to concrete descending to the bench at the bottom of the manhole.
Space Description and Dimensions	Typically 4 ft in diameter made from pre-cast concrete manhole sections ranging in height from 5 ft to 24 ft and average 12 ft. Max vol: 300 ft <sup>3</sup> . Sewer pipe connections are 15 inches in diameter or less.
Equipment	Steel rungs imbedded in concrete. Two or more connections entering or exiting the space. May be inspection ports to look up sewer mains at a higher grade than the bench and ramps to gradually drop sewage to the bench. Weirs, sluice gates or flapgates may be present.
Purpose/function	Connect sewer mains and allow access points to the sewer system. Points to block, divert or allow overflow in the system.

#### Rescue Pre-Plan

Basic information for VFRS	Space Type (NFPA 1006-36)	Internal Congested (y/n)	Hauling System required (y/n)	Victim lowering required (y/n)	Anchorage overhead (y/n)	Anchorage Type
	CS TYPE 4	N	Y	N	N	
Comment	Contact Sewer dispatch 604 326 4680					

#### Rescue Plan

#### Pre Entry Hazard Assessment

HAZARD	PRESENT		HAZARD RATING			REASON FOR HAZARD AND RATING
	NO	YES	LOW	MOD	HIGH	
Electrical	X					
Oxygen deficiency		X		X		Oxygen deficiency may be present from bacterial growth consuming oxygen. Variable air exchange in sewer contributes to changing oxygen levels.
Oxygen enrichment	X					
Chemical presence		X		X		Hydrogen sulfide and methane gas may be present from bacterial growth. Illegal dumping of solvents, ammonia, acids and other chemicals may be present. Variable air exchange determines presence and concentration of contaminants.

Fire/Explosion		X		X		Explosive atmospheres are rare but do occur. Methane gas from bacterial growth, illegal dumping of solvents, gasoline and paint thinner.
Biohazard aerosol		X	X			Bacterial and mold aerosols will be present in sewer spaces. Sensitive individuals may experience allergic reactions.
Ingestion/Skin contact		X	X			Hand to mouth or splashed contact of sewer to mouth could result in acute stomach illnesses.
Noise/Vibration	X					
Heat/Cold stress	X					
Radiation or Laser	X					
Personal Confinement		X	X			Ladder access to space through manhole limits access. Siphons of other by-passes may be present in floor of manhole.
Mechanical Hazard	X					
Hydraulic/Pneumatic	X					
Process Hazard	X					
Traffic		X		X		Manholes usually in streets or intersections. Set up traffic control appropriate for conditions
Structural	X					
Engulfment		X	X			Uncontrolled flowing sewage or storm water in space. Flow rate dependant on time, location and rainfall. See comments at end of document.
Fall		X	X			Ladder rungs may be slippery. Falls over 10 feet may be possible.
Slip/Trip		X	X			Bench may be slippery
Visibility/Light		X	X			Low light conditions may make inspections difficult.
Hot/Cold surfaces	X					
Biohazards		X		X		Abandoned needles may be present
Insect/Animal		X	X			Rodents may be present.
Sharp objects		X		X		Broken glass or other sharp debris may be present in the space.
Other	X					

**Job Hazards - Inspection, tool removal less than 5 minutes**

HAZARD	PRESENT	HAZARD RATING			REASON FOR HAZARD AND RATING
		LOW	MOD	HIGH	
Chemical presence	X	X			Ventilation of manhole will quickly dilute any air contaminants and slightly pressurize the space pushing chemical gases away from manhole
Personal Confinement	X	X			Ladder access with limited room to move at the bottom. Difficult for rescuers to attend to victim. Wearing harness for short entries will assist rescuers.
Engulfment	X	X			Pipe diameter is too small for worker to enter accidentally. Water depth designed to less than 50% of the pipe diameter, harness assists rescue in unlikely event of debilitating injury during short inspection.
Fall	X	X			Check rungs for weakness (rust, failed concrete). Always maintain 3 points of contact on rungs and use extra caution when wet. If defective rungs are found use SOP for Entry 5 min or more. Report manhole problems to Sewers office.
Other	X	X			Harness must be worn for entry but lifeline/man hoist does not need to be set up. If there is a medical emergency and the worker loses consciousness the risk of engulfment (drowning) is increased.

**Inspection, tool removal less than 5 minutes Hazard Assessment Summary**

Lockout Required	Atmospheric Hazard	Ventilation Required	Fall Protection or Lifeline Required	Permit Required
No	Low	Yes	No	Yes

**Job Hazards - Work longer than 5 minutes - Inspect, tool removal, blocking**

HAZARD	PRESENT	HAZARD RATING			REASON FOR HAZARD AND RATING
		LOW	MOD	HIGH	
Chemical presence	X	X			Ventilation of manhole will quickly dilute any air contaminants and slightly pressurize the space pushing chemical gases away from manhole
Personal Confinement	X	X			Ladder access with limited room to move at the bottom. Wearing harness and lifeline minimizes hazard.
Engulfment	X	X			15 inch and smaller diameter sewer pipes are too small for a worker to accidentally enter. Harness and lifeline worn when work requires longer periods of time to be spent in manhole minimizes immersion hazard.
Fall	X	X			see comment under inspection task

**Work longer than 5 minutes - Inspect, tool removal, blocking Hazard Assessment Summary**

Lockout Required	Atmospheric Hazard	Ventilation Required	Fall Protection or Lifeline Required	Permit Required
No	Low	Yes	Yes	Yes

**Air Quality Readings**


Date	Reading for	Measurement	Gas Detector Serial No.	Reading by
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**Comments**

**Engulfment hazard.**

Sanitary sewers are designed for a max capacity (from early to mid morning and late afternoon thru mid evening) of 50% full or less. Storm sewers are designed for 25% full for regular rainfall and 85% full during a 10 year storm event.

For problems or comments on the information, please contact Andrew Ross (Manager Organizational Safety) 604-871-6459

	<b>Confined Space Identification and Hazard Assessment</b>	Assessed by: Andrew Ross Date Assessed: 2004-11-15
	Engineering Services - Sewers - Sewer Manhole City-Wide - Sewer manhole 16 inch diameter and greater connections (ID: 615 )	Location: CityWideCity wide. Inventory includes 22,000 sewer manholes.

Not Designed or intended for Continuous occupancy	Enclosed or partially enclosed?	Limited or restricted entry or exit?	Large enough and configured to perform work?
yes	yes	yes	yes

Access Means, Dimensions	Single 22" or 24" diameter hole protected by steel manhole cover. Steel rungs imbedded into concrete descending to the bench at the bottom of the manhole.
Space Description and Dimensions	Typically 4 ft in diameter made from pre-cast concrete sections manholes ranging in height from 5 ft to 24 ft and average 12 ft. Max vol: 300 ft3. Sewer pipe connections are greater than 16 inches in diameter.
Equipment	Steel rungs imbedded in concrete. Two or more connections entering or exiting the space. May be inspection ports to look up sewer mains at a higher grade than the bench and ramps to gradually drop sewage to the bench. Weirs, sluice gates or flapgates may be present
Purpose/function	Connect sewer mains and allow access points to the sewer system. Points to block, divert or allow overflow in the system. Larger diameter mains are more likely to be storm drains with high flow rates in periods of rain.

### Rescue Pre-Plan

Basic information for VFRS	Space Type (NFPA 1006-36)	Internal Congested (y/n)	Hauling System required (y/n)	Victim lowering required (y/n)	Anchorage overhead (y/n)	Anchorage Type
	CS Type 4	N	Y	N	N	
Comment	Contact sewers dispatch 604 326 4680					

### Rescue Plan

### Pre Entry Hazard Assessment

HAZARD	PRESENT		HAZARD RATING			REASON FOR HAZARD AND RATING
	NO	YES	LOW	MOD	HIGH	
Insect/Animal		X	X			Rodents may be present.
Oxygen deficiency		X		X		Oxygen deficiency may be present from bacterial growth consuming oxygen. Variable air exchange in sewer contributes to changing oxygen levels
Oxygen enrichment	X					
Chemical presence		X		X		Hydrogen sulfide and methane gas may be present from bacterial growth. Illegal dumping of solvents, ammonia, acids and other chemicals may be present. Variable air exchange determines presence and concentration of contaminants.

Fire/Explosion		X		X		Explosive atmospheres are rare but do occur. Methane gas from bacterial growth, illegal dumping of solvents like gas and paint thinner.
Biohazard aerosol		X	X			Bacterial and mold aerosols will be present in sewer spaces. Sensitive individuals may experience allergic reactions.
Ingestion/Skin contact		X	X			Hand to mouth or splashed contact of sewer to mouth could result in acute gut illnesses.
Noise/Vibration	X					
Heat/Cold stress	X					
Radiation or Laser	X					
Personal Confinement		X		X		Ladder access to space through manhole limits access. Siphons of other by-passes may be present in floor of manhole.
Mechanical Hazard	X					
Hydraulic/Pneumatic	X					
Process Hazard	X					
Traffic		X		X		Manholes usually in streets or intersections. Set up traffic control appropriate for conditions
Structural	X					
Engulfment		X		X		Uncontrolled flowing sewage or storm water in space. Flow rate dependant on local sewer usage and rainfall. Larger diameter pipe increases risk of engulfment with increasing water flows pushing worker down sewer pipe.
Electrical	X					
Fall		X		X		Ladder rungs may be slippery. Falls over 10 feet may be possible.
Slip/Trip		X	X			Bench may be slippery
Visibility/Light		X	X			Low light conditions may make inspections difficult.
Hot/Cold surfaces	X					
Biohazards		X		X		Abandoned needles may be present
Sharp objects		X		X		Broken glass or other sharp debris may be present in the space.
Other	X					

**Job Hazards - Inspection, non-air contaminating tasks**

HAZARD	PRESENT	HAZARD RATING			REASON FOR HAZARD AND RATING
		LOW	MOD	HIGH	
Chemical presence	X	X			Ventilation of manhole quickly dilutes any air contaminants and slightly pressurizes space to push sewer gases away from entry manhole
Personal Confinement	X	X			Ladder access with limited room to move at the bottom. Wearing harness and lifeline minimizes hazard
Engulfment	X	X			Manholes to 16 inch and larger pipes create a chance of engulfment if worker accidentally enters the pipe. Wearing a harness and lifeline eliminates this hazard.
Fall	X	X			Check rungs for weakness (rust, failed concrete). Always maintain 3 points of contact on rungs and use extra caution when wet.

**Inspection, non-air contaminating tasks Hazard Assessment Summary**

Lockout Required	Atmospheric Hazard	Ventilation Required	Fall Protection or Lifeline Required	Permit Required
Yes	Low	Yes	Yes	Yes


**Air Quality Readings**

Date	Reading for	Measurement	Gas Detector Serial No.	Reading by
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**Comments**

**Engulfment hazard. Sanitary sewers are designed for a max capacity (from early to mid morning and late afternoon thru mid evening) of 50% full or less. Storm sewers are designed for 25% full for regular rainfall and 85% full during a 10 year storm event.**

**For problems or comments on the information, please contact Andrew Ross (Manager Organizational Safety) 604-871-6459**

	<b>Confined Space Identification and Hazard Assessment</b>	Assessed by: Andrew Ross Date Assessed: 2004-09-30
	Engineering Services - Sewers - Sewer Manhole 6th and Cambie Siphon (ID: 610 )	Location: Manhole located on corner of 6th where it becomes a merge lane for south bound traffic on Cambie at the base of the Cambie street bridge

Not Designed or intended for Continuous occupancy	Enclosed or partially enclosed?	Limited or restricted entry or exit?	Large enough and configured to perform work?
yes	yes	yes	yes

Access Means, Dimensions	24 inch diameter manhole descends 9 ft into a 'L' shaped chamber. Steel rungs embedded in concrete for access.
Space Description and Dimensions	Space is 'L' shaped with 2 openings to sanitary-storm sewers. One opening is at the elbow of the L and the other at the far end of the space. Passage to the far end is narrow (2ft wide). Dimensions are about 10 ft to the elbow and 10 ft to the end and about 5 ft wide.
Equipment	Steel rung access ladders, steel railing around one opening to
Purpose/function	Access to the siphon arrangement in the sewer and storm drains.

### Rescue Pre-Plan

Basic information for VFRS	Space Type (NFPA 1006-36)	Internal Congested (y/n)	Hauling System required (y/n)	Victim lowering required (y/n)	Anchorage overhead (y/n)	Anchorage Type
	CS TYPE 4	Y	Y	N	N	
Comment	Contact Chief Pump Mechanic: 604 802 2530. Unusual space with narrow sections and offset drops. Rescue team inspection required.					

### Rescue Plan

### Pre Entry Hazard Assessment

HAZARD	PRESENT		HAZARD RATING			REASON FOR HAZARD AND RATING
	NO	YES	LOW	MOD	HIGH	
Mechanical Hazard	X					
Hydraulic/Pneumatic	X					
Process Hazard	X					
Traffic		X		X		Manhole located on corner of two busy roads.
Structural		X	X			Conditions to be verified by inspection, recent photo indicates no obvious indicators of deterioration
Engulfment		X		X		Space open to storm main 6.5ft and below that to a sewer main 4ft. Peak periods of flow should be avoided.
Electrical	X					

Fall		X			X	Low risk of fall into main chamber but is a ladder entry. Risk of falling greater into storm and sewer mains.
Slip/Trip		X		X		Surfaces will be slippery.
Visibility/Light		X		X		Low light conditions could result in fall into open sewer at end of chamber.
Hot/Cold surfaces	X					
Biohazards		X	X			Live sewage in space.
Insect/Animal		X	X			Rodents and insects may be present in space.
Oxygen deficiency		X		X		Bacterial growth in sewer and storm systems may deplete oxygen levels. Rapid clearance of waste water minimizes growth and stagnant conditions
Oxygen enrichment	X					
Chemical presence		X		X		Hydrogen sulfide (H <sub>2</sub> S) may be present from bacterial growth. Illegal dumping of solvents or other chemicals may be present.
Fire/Explosion		X	X			Methane from bacterial growth is possible but unlikely from rapid waste water clearance and minimal stagnation in system. Illegal dumping of solvents possible.
Biohazard aerosol		X	X			Mould spores and airborne bacteria probably present. Sensitive individuals may experience flu like symptoms
Ingestion/Skin contact	X					
Noise/Vibration	X					
Heat/Cold stress	X					
Radiation or Laser	X					
Personal Confinement		X	X			Ladder entry with narrow sections in space.
Sharp objects		X		X		Glass or needles or other sharp objects may be present in mains.
Other	X					

**Job Hazards - Inspection**

HAZARD	PRESENT	HAZARD RATING			REASON FOR HAZARD AND RATING
	YES	LOW	MOD	HIGH	
Oxygen deficiency	X		X		Oxygen deficient atmospheres may migrate from storm or sewer system open to space. Risk is lowered by lack of stagnant conditions within system
Chemical presence	X		X		Sulphur dioxide, illegal dumping of solvents or caustics may be present. Non-industrial catchment area, risk is lower.
Traffic	X		X		Manhole located on busy corner, appropriate traffic control required.
Fall	X	X			Short ladder entry. Fall risk assessment excludes entering storm or sewer main.

**Inspection Hazard Assessment Summary**

Lockout Required	Atmospheric Hazard	Ventilation Required	Fall Protection or Lifeline Required	Permit Required
Yes	Medium	Yes	No	Yes

**Job Hazards - Installing plate**

HAZARD	PRESENT	HAZARD RATING			REASON FOR HAZARD AND RATING
	YES	LOW	MOD	HIGH	
Oxygen deficiency	X		X		Oxygen deficient atmospheres may migrate from storm or sewer system open to space. Risk is lowered by lack of stagnant conditions within system
Chemical presence	X		X		Sulphur dioxide, illegal dumping of solvents or caustics may be present. Non-industrial catchment area, risk is lower.
Noise/Vibration	X	X			Hilti-gun will be loud with reverberation in small space. Hearing protection required
Traffic	X		X		Manhole located on busy corner, appropriate traffic control required
Engulfment	X		X		Entry into storm main must be done during dry weather and off peak sewer flows to minimize risk of any water in space during entry.
Fall	X		X		Lifeline and/or fall restraint system required for entry into storm main.

**Installing plate Hazard Assessment Summary**

Lockout Required	Atmospheric Hazard	Ventilation Required	Fall Protection or Lifeline Required	Permit Required
Yes	Medium	Yes	Yes	Yes

**Air Quality Readings**

Date	Reading for	Measurement	Gas Detector Serial No.	Reading by
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**Comments**

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