Date Revised:	August 2024	Overall Task Risk Rating:	Before Controls	A	After Controls	C
Description:	The Infrared Joint Heater machine is designed and intended for the use of heating longitudinal joints on paved asphalt. The heater is designed to be attached to either side of the paver machine.					
Location(s):	Construction Projects					
Associated Documents: Housekeeping WTS, Hazardous Agents (Chemical) WTS, Hazardous Agents (Physical) WTS, Traffic Control WTS, Asphalt Paving WTS, Equipment and Machinery Operation WTS, Compressed Gas WTS, Fuel Powered Tools & Equipment WTS						

RED FLAGS (HOLD WORK UNTIL CORRECTED):

Note:

- If you suspect any leak from the propane cylinder or any of its connections
- Failure to follow manufacturer's safety instructions and/or warnings
- Do not commence work if you are not trained

PERSONAL PROTECTIVE EQUIPMENT (CSA APPROVED)

Head Protection	Foot Protection	High-Vis Protection	Hearing Protection	Hand Protection	Eye Protection	Respiratory Protection	Skin Protection	Face Protection	Fall Protection
☒	☒	☒	☐	☒	☒	☐	☒	☐	☐

Note:

- Workers must wear all PPE listed in the MSDS / SDS for the specific hazardous products that they are to handle
- Additional PPE such as respiratory protection (i.e. a full face respirator) may be required depending on the task.

SAFE WORK PRACTICES (SWP)

Infrared Joint Heater General Operations:

- **DO NOT** run heater in an enclosed area. Exhaust gases contain carbon monoxide, an odourless and deadly poison.
- **DO NOT** ignite entire machine at once.
- **DO NOT** operate the heater while performing any maintenance.
- **DO NOT** leave machine unattended while operating.
- **DO NOT** park machine on a steep grade or slope.
- **DO NOT** smoke while operating the heater.
- **DO NOT** operate the heater near an accumulation of grass, leaves or other combustible material.
- **DO NOT** place hand underneath machine while operating for any length of time.

- **Safety Operational Tips:** Wind skirts should be dragging on the ground.
- When there is a delay such as waiting for a truck, switch to low fire to eliminate burning.
- Depending on temperatures & speed the joint behind the heater should reach temperatures of 220°F or 104.4 °C. The ideal heat should allow for enough heat to compact one size larger than the aggregate the paver is placing. This will allow the material to bond without mashing off the aggregate.

Maintenance - Heater Replacement Safety (Safety information for removing old cartridge Refractory Ceramic Fibre product):

- The product contains a substance which has been identified as a potential cancer hazard by inhalation and may cause temporary irritation to eyes, skin and respiratory tract. The substance is also a potential for fire, smoke and asphyxiation hazards.
- During replacement, minimize air fibres with engineering controls.
- Wear a NIOSH approved respirator. Wear long sleeves, loose fitting clothing eye protection and gloves.
- Wash work clothing separately and rinse the washing machine after use.
- For first aid measures: If on eyes: flush with water. If on skin: wash with soap. For ingestion: Do not induce vomiting and get medical attention if gastrointestinal symptoms develop. If inhaled: Move to fresh air immediately.

- Replacements must only be performed by authorized and trained maintenance personnel in accordance with the manufacturer's instructions.
- Burner Box should be inspected yearly and replaced if it shows signs of cracking and or breaking. The above cautions should be taken when removing and installing the burner box.

Maintenance – Vaporizer Safety:

- **CAUTION:** When performing maintenance on a component in the liquid or vapour line, ENSURE that the LP-gas supply is SHUT OFF to that component before it is removed or disassembled. The vaporizer must be completely blown down before performing service. Be sure that ALL sources of ignition are extinguished within 25 feet of the work area.
- When flaring the contents of the vaporizer, be sure that the burners are on to prevent freezing during the flaring operation.

Propane

Propane is used widely in construction in a number of different ways and forms. Propane is used to operate many different items such as heaters & fuel for equipment. Additional training will be provided for workers that will be using propane as required by legislation.

The following guidelines should be followed when handling propane:

- Propane is heavier than air and will settle in low areas such as trenches, manholes, and sumps. Avoid using/storing tanks in low lying areas. No smoking or ignition sources are permitted when working in low lying areas (E.g., trenches, pits, basements).
- Understand the hazards associated with propane.
- Always wear proper PPE.
- Never smoke or have an open flame or source of ignition in an area where propane is located.
- Check all connections for leaks, use soapy water.
- Inspect cylinder for any obvious signs of damage.
- Cylinder valves are to be opened slowly.
- All cylinders must be secured in the upright position before being transported in any vehicle.
- Cylinders shall be kept upright unless designed for horizontal use.
- Cylinders shall be stored in a well-ventilated area away from heat.
- Only hoses and fittings approved for propane equipment/appliances shall be used.
- If you are not qualified do not make any repairs to any equipment.
- Any leaking cylinders must be moved outdoors, away from all ignition sources.
- A fire extinguisher must be available and in good working order when propane or other flammable/combustible gases or products are being used.

Infrared Joint Heater (TRANSPORTATION):

- Tie downs should be used when transporting the Joint Heater.
- When possible, the wings should be in the down position.
- If the heaters need to be in the up position a tarp should be used to protect the heaters, and a locking bar/strap to ensure arm does not bend the 5/8 pin.

Infrared Joint Heater Tank Connection

- All connections must be made by a trained worker.
- Inspect the Infrared heater, regulator and hoses for defects. Repair or replace any damaged parts.
- Make sure all hoses and valve connections are clean.
- Use proper fitting wrenches to make connections.
- Secure the propane cylinder with the supplied strap.
- Ensure quick connect is properly connected.
- Check for any propane leaks using a soapy water solution.

Path of Travel:

- Be aware of the sequence of operation and stay out of the Path of Travel of moving vehicles and equipment.

Environmental Considerations:

- Asphalt Paving cannot proceed in rainy conditions, Superintendents and Management shall monitor weather conditions.
- Be aware of heat stress related hazards while working outside in the summer season with hot asphalt.
- For more information, refer to the Hazardous Agents WTS.

Traffic Protection Plan:

- Every employer on a project is required to implement a written Traffic Protection Plan for the employer's workers if they may be exposed to a hazard from vehicular traffic.
- The Gazzola Paving Traffic Protection Plan form shall be completed by the Superintendent or Foreman and the details communicated to the workers as part of the daily GAZZ Card huddle.

Traffic Control Plan:

- A Traffic Control Plan is typically prepared by the Constructor for the project and details the specific measures and devices that are to be used on the project to ensure the safe and efficient movement of traffic throughout the various phases of the project.
- Plans include the use of traffic control devices such as barriers, warning signs, longitudinal buffer areas, police, etc.…
- Considerations when designing a traffic control plan: work duration, road width and traffic volume.
- All workers present must be familiar with the Traffic Control Plan for the project.

Housekeeping:

- Ensure signs & traffic control devices are in good condition, visible and set up to provide clear directions for traffic
- Signs should not be obscured by objects such as vehicles, posts, trees, shrubs and other signs, etc.…
- Do not block walkways with debris / equipment / obstructions forcing pedestrians to step onto the vehicle route
- Refer to Housekeeping WTS for more details.

Inspections:

- A pre-operational safety inspection is to be completed prior to using equipment.
- Do not use defective equipment or machinery, inform your foreman / superintendent & note the defect on the Equipment Inspection Form.
- Before starting machines or equipment, ensure guards and safety devices are in place, adjusted and functioning properly.
- Ensure the cylinder test date has not expired on the propane cylinder.

Training:

- Employee Orientations (including roles, responsibilities, applicable workplace task standards, WHMIS, etc.)
- Workers exposed to, required to work with, or required to clean up / dispose of WHMIS controlled hazardous products, must be trained in WHMIS and have supplemental task specific training.
- Only trained, authorized personnel are allowed to handle and use propane cylinders.
- All workers must be trained in the use and maintenance of any PPE they are required to wear.
- Only trained, authorized personnel are allowed to operate or perform maintenance on vehicles / machinery / equipment.

Personal Protective Equipment:

- Workers on construction projects must wear, at a minimum, head, foot, and high visibility PPE. Eye protection and Neoprene Gloves are required when handling propane cylinders. Skin protection is also required to prevent any contact with liquid propane or hot asphalt.
- Wear the appropriate personal protective equipment for the job at hand (i.e. hearing protection, respirator, etc...)
- Workers must adhere to all requirements of legislated regulations when handling specific designated substances.
- Workers must wear all PPE listed in specific materials MSDS / SDS

JOB HAZARD AND RISK ANALYSIS

RISK RATING SYSTEM	
A	High risk of injury or equipment / property damage.
B	Medium risk of injury or equipment / property damage.
C	Low risk of injury or equipment / property damage.

TASK HAZARDS	RATING BEFORE CONTROLS	TASK CONTROLS	RATING AFTER CONTROLS
• Refractory Ceramic Fibre Heater – Inhalation hazard (Carcinogenic)	A	• Follow all PPE and engineering controls requirements in accordance with the SDS and the manufacturer's instructions	C
• Struck by Equipment / Vehicles & Lack of Signaler	B	• Signalers are required for vehicles and equipment when the operator's view of the path of travel is obstructed • Signallers are required when equipment or machinery is within the safe limits of approach to overhead powerlines	C
• Asphalt Burns	B	• All personnel involved with paving equipment and asphalt handling must wear long pants and shirts with sleeves • Wear appropriate PPE (i.e. gloves) when risk of burns	C
• Heat Stress	B	• Drink water throughout the day (don't wait until you're thirsty)	C

		• Taking rest breaks as needed (in a cool, shady spot) • When possible, do the heaviest work at the coolest times • Use the Buddy System – watch for signs of heat related illnesses in your co-workers • If you think someone has heat stroke or heat exhaustion: call 911, inform the Foreman /Superintendent and begin First Aid	
• Lack of, or Improper, Training and Education	B	• Only trained and competent personnel are permitted to handle propane	C
• Lifting & Moving Propane Tanks (100 Pounders)	B	• Mechanical aids should be used to lift and move propane tanks as much as possible, manual handling must only be performed by at least 2 workers or more as necessary	C
• Connecting Propane Tanks to the Heater Assembly	B	• Connection must be performed by trained workers only • Ensure propane cylinders are secured by straps in place • Ensure all hoses and valve connections are clean and free from defects • Always check for leaks using soapy water after connection and before operation	C
• Flammable Chemicals and Material	B	• Ensure a 4A40BC fire extinguisher is in close proximity • Implement 'Fuelling – Refuelling' Workplace Task Standards • Do not store fuel powered tools and equipment near sources of ignition or heat	C
• Lack of / Improper PPE	C	• All workers must wear high visibility PPE • Additional high-visibility PPE should be worn when working in low visibility conditions e.g. reflective leg bands or high visibility coverall • Ensure any PPE as mandated by the MSDS / SDS is worn while handling the respective hazardous product	C
• Lack of Inspection	C	• A pre-operational safety inspection is to be completed • Do not use defective equipment or machinery, inform your foreman / superintendent • Ensure the cylinder test date has not expired on the compressed gas cylinder • Ensure all propane cylinders come on site free of damage	C
• Poor Housekeeping and Site Planning	C	• Develop and post the Traffic Control Plan, specific to site conditions. • Ensure all signs and traffic control devices are in good condition and provide clear direction	C
• Musculoskeletal disorders (MSD) & Repetitive Strain Injuries (RSI)	C	• If an object or material appears to be awkward in shape or too heavy, it may require additional help to be handled safely • When possible, workers should rotate between repetitive job tasks	C

SAFE JOB PROCEDURES (SJP)

Pre-Task Commencement:

1. Gather and wear the required PPE for the task.
2. The Superintendent/Foreman will complete the Daily GAZZ Card and conduct a crew huddle to review with all workers the shift's tasks and any associated hazards and control strategies.
3. Ensure all workers understand the GAZZ Card contents and sign off in acknowledgement.
4. Ensure controls are in place prior to commencing work so hazards are mitigated / eliminated.
5. The Superintendent/Foreman will complete a Traffic Protection Form and ensure that traffic protection measures are in place in accordance with Ontario Traffic Manual Book 7 and communicate the hazards and controls to workers when workers have the potential to be endangered by traffic (refer to Traffic Control WTS for more detail)
6. Determine what equipment / machinery / tools and material, are required for the completion of the task.
7. Inspect all equipment / machinery / tools prior to use and document the inspections on appropriate forms when required.
8. Ensure preventative maintenance activities have been completed where required, prior to using equipment / machinery / tools.
9. If equipment / machinery / tools are observed to be damaged, remove it from use and notify the Foreman / Superintendent.

During Task:

TANK CONNECTION PROCEDURE

1. All connections must be made by a trained worker.
2. Inspect the Infrared heater, regulator and hoses for defects. Repair or replace any damaged parts.
3. Make sure all hoses and valve connections are clean.
4. Use proper fitting wrenches to make connections.
5. Secure the propane cylinder with the supplied strap.
6. Ensure quick connect is properly connected.
7. Check for any propane leaks using a soapy water solution.

LIGHTING PROCEDURE

1. Check visually all components of your machine. Check that everything is in place and if nothing is loose, including propane components, before turning on the gas. If everything is OK proceed with #2.
2. Turn gas on slowly on tank one, then open the valve slowly, the liquid propane will flow through the system, filling up the vaporizer. If opened to fast, the excess flow valve will close. If this occurs the tank valve should be closed and the procedure should be re-started, opening the valve even slower.
3. Light the vaporizer as per unit instructions, by turning the control knob to pilot position, with the lighting device such as a small torch, place the flame of the torch next to the pilot light burner. After ignition of the pilot, keep on holding the button down for 30 seconds, (pilot should stay lit at this point) Adjust control knob to position 3.
4. Ensure the main power supply is off.
5. Open all valves downstream of vaporizer.
6. Make sure the joint heater panel is powered.
7. Adjust the heater deck to approximately 2 to 3" from the asphalt with the jacks.

HEATING PROCEDURE

1. Energize the glow plugs by turning the glow plug selectors switch to the ON position. This will energize the glow plugs for 30 seconds. After 10 seconds turn the gas selector switch into the high heat position. (NOTE THAT THE HEATERS MUST BE LIT IN HIGH HEAT MODE) Visually check that the heaters have ignited. If any heaters have not lit then repeat the glow plug start-up.
2. With the heaters running on high, visually check to ensure that all heaters are running.
3. Check the asphalt temperature at all times to ensure that it does not overheat.
4. THE GAS PRESSURE IS FACTORY SET FOR FOLLOWING:

   HIGH HEAT - 35PSI (RANGE -30-55 PSI)

   LOW HEAT - 15 PSI (RANGE -5-25 PSI)

The settings could be changed accommodate job demands, follow the guidelines above to ensure that the temperature ranges are not exceeded. Exceeding the pressure ranges could damage the heaters and or their components.

The settings on the joint heater should be set as to not slow the paver down. The operator should limit running at pressures of 50+ for long periods. If faster speeds are required, another heater may be required.

Task Completion:

SHUT DOWN PROCEDURE

1. Close outlet valve at EXIT of the vaporizer.
2. Ensure all tank valves are open with no restrictions of flow back to the storage tank. A check valve restricting flow back to the storage tank must never be used in a vaporizer installation.
3. Start the burner per the instructions in the operations manual and turn the thermostat temperature dial to the “HIGH” setting.
4. After the burner cycles off; turn the thermostat knob to the “OFF” position, shut off the igniter (If installed) and check that the pilot flame is extinguished.
5. After the pilot flame is extinguished close the tank outlet valve.
6. Now open vaporizer outlet valve and flare or allow attached equipment to consume remaining gas in the line.
7. After verifying the pressure in the lines are zero and no sources for ignition are present in that area, the vaporizer can now be disconnected.
8. Ensure all tools are cleaned and stored appropriately in the designated location.
9. Implement any housekeeping or maintenance as required.
10. Ensure equipment is properly shut down, secured from movement and parked in a safe location off the travelled portion of the road where possible or clearly marked by traffic control devices to ensure safe movement of traffic.