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	INSTALLATION OF STEEL PIPELINES			
	Company Doc. No. HSEDOCS-ST-00-000	Contractor Ref. No. QHSE-ST-0000	Date 00-00-0000	Revision 00

METHOD STATEMENT FOR INSTALLATION OF STEEL PIPELINES

Project No:	
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REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS
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PREPARED BY:	REVIEWED & APPROVED BY:
QA QC ENGINEER	PROJECT ENGINEER

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1.0 INTRODUCTION

All water main pipe laying and associated fitting installation shall only be carried out by a qualified Water Service Person e.g. National Certificate in Water Reticulation.

2.0 SCOPE

This Methodology highlights the laying of concrete-lined spiral steel (CLSS) pipes for use within the [Write the Project name here] and is to be read in conjunction with the following documents:

- Drawings about the main to be laid (including service drawings)
- Manufacturer's instructions for the handling, storage, and laying of the pipe being used.

3.0 MATERIALS

Acceptable materials.

- 3.1. Steel Pipes: These are the main components of the pipeline. The pipes should be of the appropriate size, wall thickness, and grade to withstand the intended pressure and environmental conditions.
- 3.2. Pipe Fittings: This includes elbows, tees, reducers, and flanges that are necessary to connect and change the direction of the pipes.
- 3.3. Pipe Joints: Various methods can be used to join steel pipes, including welding, threading, and flange connections. The required materials for these joints, such as welding rods, threading tools, and gaskets, should be on hand.
- 3.4. Pipe Coating: Depending on the environmental conditions and the contents being transported, pipes may need protective coatings to prevent corrosion. Common coatings include epoxy, polyethylene, and fusion-bonded epoxy (FBE).
- 3.5. Supports and Hangers: Proper support and hangers are essential to ensure that the pipeline is securely anchored and supported to prevent sagging or movement.
- 3.6. Valves: Valves are used to control the flow of fluids within the pipeline. Gate valves, ball valves, and check valves are commonly used in steel pipelines.
- 3.7. Seals and Gaskets: These are used to ensure that connections are leak-proof. They are particularly important for flange connections.
- 3.8. Backfill Material: When burying pipelines underground, backfill material such as sand or gravel is used to provide support and protect the pipeline from external forces.
- 3.9. Cathodic Protection: In areas where corrosion is a concern, cathodic protection systems may be required to prevent corrosion of the steel pipes. This includes sacrificial anodes and impressed current systems.
- 3.10. Excavation and Trenching Equipment: This includes heavy machinery for digging trenches, such as backhoes and excavators.

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- 3.11. **Welding Equipment:** If welding is the chosen method of joining pipes, welding equipment including welding machines, electrodes, and safety gear is needed.
- 3.12. **Testing Equipment:** Instruments for pressure testing, such as pressure gauges and hydrostatic testing equipment, are required to ensure the integrity of the pipeline.
- 3.13. **Safety Equipment:** Personal protective equipment (PPE), safety barriers, and signage to ensure the safety of the installation crew.
- 3.14. **Documentation:** Plans, specifications, and any necessary permits or approvals should be readily available on-site.
- 3.15. **Environmental Controls:** Measures to prevent environmental contamination, such as spill containment equipment and erosion control measures, may be necessary, especially in environmentally sensitive areas.
- 3.16. **Quality Control and Inspection Tools:** Tools and instruments for inspecting and ensuring the quality of the welds, coatings, and other components of the pipeline.
- 3.17. **Transportation Equipment:** If the pipes and materials need to be transported to the installation site, trucks or other transportation equipment will be required.
- 3.18. **Communication Equipment:** Radios or other communication devices to facilitate coordination and safety during installation.

4.0 HEALTH AND SAFETY MEASURES

The installation of steel pipelines involves various safety measures to protect the workers, the environment, and the integrity of the pipeline. Health and Safety should always be a top priority in any construction project. Here are some essential safety measures for the installation of steel pipelines:

- 4.1. **Safety Training:** Ensure that all workers involved in the installation receive proper training in safety procedures, including handling of equipment, tools, and materials, as well as emergency response protocols.
- 4.2. **Personal Protective Equipment (PPE):** Provide and enforce the use of appropriate PPE, including hard hats, safety glasses, gloves, steel-toed boots, and hearing protection, as necessary.
- 4.3. **Excavation Safety:** Follow proper procedures for trenching and excavation, including shoring and bracing of trenches to prevent collapses.
- 4.4. **Traffic Control:** If the pipeline installation crosses roads or highways, implement proper traffic control measures to ensure the safety of workers and motorists.
- 4.5. **Equipment Safety:** Regularly inspect and maintain all construction equipment, ensuring that they are in good working condition. Operators should be trained and qualified.
- 4.6. **Fall Protection:** If work is conducted at heights, such as when installing pipeline supports or working on elevated platforms, use fall protection equipment like harnesses and guardrails.
- 4.7. **Hazard Communication:** Clearly label hazardous materials, and ensure workers understand the risks associated with handling and storing these materials.
- 4.8. **Gas Detection:** In areas where gas leaks are a concern, use gas detection equipment to monitor for the presence of flammable or toxic gases.
- 4.9. **Fire Safety:** Have fire extinguishers readily available at the worksite, and ensure that workers are trained in their use. Establish a fire safety plan and emergency evacuation procedures.

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- 4.10. Hot Work Permit: Implement a hot work permit system for activities like welding and cutting, and ensure that fire hazards are controlled during such operations.
- 4.11. Emergency Response Plan: Develop and communicate an emergency response plan that includes procedures for dealing with accidents, injuries, and hazardous material spills.
- 4.12. Utility Location: Before excavation, verify the location of underground utilities to avoid accidental damage, which can lead to dangerous situations.
- 4.13. Environmental Protection: Implement measures to protect the environment, including erosion control, spill containment, and proper disposal of waste materials.
- 4.14. Pipeline Integrity: Ensure that all welding and connections are performed by qualified personnel, and conduct regular inspections to check for defects or leaks.
- 4.15. Hydrostatic Testing: Perform hydrostatic testing to verify the integrity of the pipeline and fittings, following established safety protocols.
- 4.16. Communication: Maintain clear communication among workers and supervisors, especially in noisy or remote work areas. Use radios or other communication devices as needed.
- 4.17. Weather Conditions: Monitor weather conditions and take appropriate measures to protect workers from extreme heat, cold, or adverse weather events.
- 4.18. Safety Audits and Inspections: Regularly conduct safety audits and inspections to identify and address potential hazards and non-compliance with safety protocols.
- 4.19. Record-Keeping: Maintain detailed records of safety training, equipment inspections, incidents, and near misses to track safety performance and identify areas for improvement.
- 4.20. Compliance with Regulations: Ensure that the installation complies with all relevant safety regulations and industry standards.

5.0 HANDLING AND STORAGE

Procedures for the handling and storage of pipes (and pipe fittings) shall be as recommended by the pipe manufacturer.

Notwithstanding the above, the following shall apply:

- No hooks, wire slings, or chains shall be used to lift the pipes. This is not a safe practice.
- Pipes larger than 450mm in diameter shall not be stacked more than 2 pipes high.
- Defects in the lining or coating shall be repaired to the satisfaction of the Council.

6.0 PIPELAYING

5.1. Trench Excavation

Trench widths within the region of the pipe invert to simply above the pinnacle of the pipe shall be saved to a minimum consistent with good exercise and safety for workers.

5.2. Bedding

Water primary pipes shall be bedded on suitably fine, evenly-graded granular material, either natural or imported, of a minimum depth of 100 millimeters.

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5.3. Laying Of Pipes and Fittings

- 5.3.1. The Pipes shall be laid according to the approved pipe manufacturer's specifications.
- 5.3.2. The Pipes and fittings shall be free of defects (internally & externally) and dirt on the inside, before lowering them into the excavation.
- 5.3.3. The Pipes shall be set true to line and level and care taken to make sure that joints are kept free from dirt or other contaminations.
- 5.3.4. The Pipes shall be laid with product labeling uppermost in the trench.
- 5.3.5. At any time when the Contractor is not working on the pipeline, open pipe ends shall be blanked off in a manner that prevents the ingress of animals and deleterious material.

5.4. Backfill and Reinstatement

- 5.4.1. Backfill material in the vicinity of the pipeline, haunch support, mid-section support, and pipe cover, shall be of the same material as approved for the pipe bedding material in Section 5.2.
- 5.4.2. This material shall be compacted to optimum density in layers not exceeding 100mm depth. This material shall provide pipe cover to a depth of at least 100mm.
- 5.4.3. Trenches shall be backfilled and reinstated by the requirements of Clause 13 of Part 3 (Roadwork) of this Volume.

7.0 JOINTING

6.1. Welded Joints

- 6.1.1. Welding plant and equipment shall comply with the requirements of NZS 4701 (latest edition) and workmanship shall be by the latest editions of BS 499 Parts 1 & 2 and BS 2971.
- 6.1.2. All welding shall be carried out by fully certificated welders.
- 6.1.3. Where access to the inside of the joint is feasible, then both this and the external joint shall be fully welded with 6mm fillet welds using standard welding bands.
- 6.1.4. Once completed, all welds shall be hydrostatically tested to 100m for 30 mins with no drop in test pressure, or visible leakage.
- 6.1.5. The completed welds shall be signed off on an appropriate weld test sheet.

6.2. Rubber Ring Joints (where applicable)

- 6.2.1. The joint shall be made by the manufacturer's recommendation and inspected internally (where feasible).
- 6.2.2. All joints should be inspected externally to ensure that the rubber ring is in the correct position and is located at an even distance from the socket end of the pipe.

6.3. Corrosion Protection

- 6.3.1. On welded joints, the internal welds (where possible) shall be brushed clean, and a cement mortar, or other approved material, applied to the joint to the same thickness as the pipe lining.

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6.3.2. The exterior of the pipe shall be completely protected by the manufacturer's applied coating or a heat shrink sleeve (Raychem WPC or similar) to provide corrosion resistance.

8.0 ATTACHMENTS

- 8.1.1 Risk Assessments
- 8.1.2 Safety Checklists
- 8.1.3 Permit to Work Systems (Confined Space, Work at Height, Hot work, etc.)

