SCOPE OF WORK FOR THE DESIGN & CONSTRUCTION OF THE EFFLUENT TREATMENT PLANT.

BETHLEHEM LOCOMOTIVE DEPOT

Revision 0

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Document Authorities

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Scope of Works (SoW) document for the **Design and Construction of an Effluent Treatment Plant (ETP)**, including a **3m deep collection pit**, **250mm steel overhead pipe connection**, and **hydro jetting of a 600m existing stormwater pipe**:

Scope of Works (SoW)

Project Title: Design and Construction of Effluent Treatment Plant (ETP) with Collection Pit, Overhead Steel Pipeline, and Hydro Jetting of Stormwater Line

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1. Introduction

This Scope of Works outlines the tasks, responsibilities, and deliverables for the **design, supply, installation, testing, and commissioning** of an Effluent Treatment Plant (ETP), a 3-meter-deep collection pit, a 250mm diameter overhead steel pipeline, and hydro jetting of an existing 600-meter-long stormwater pipe.

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2. Objectives

- To design and construct a fully functional ETP meeting environmental and operational standards.
- To ensure safe and efficient effluent collection via a 3m deep pit.
- To install a 250mm diameter overhead steel pipeline from the collection pit to the ETP.
- To clean the existing 600m stormwater line using hydro jetting technology.

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3. Scope of Works

A. Design Works

1. **Site Survey and Investigation**
    - Topographical and geotechnical investigation of the site.
    - Mapping of existing utilities and drainage systems.
2. **ETP Design**
    - Process design, hydraulic design, and layout.
    - Mechanical, electrical, and civil engineering drawings.
    - Selection of treatment technologies based on effluent characteristics.

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3. **Collection Pit Design**
    - 3m deep reinforced concrete structure with inlet and sump pump arrangements.
    - Internal coating to resist chemical corrosion.
    - Access ladder, ventilation, and safety features.
4. **Pipeline Design**
    - Routing design for a 250mm diameter overhead steel pipeline.
    - Support structure for overhead pipeline (steel trestles/brackets).
    - Connection details from pit outlet to ETP inlet.

B. Construction Works

1. **Civil Works**
    - Excavation, formwork, reinforcement, and concrete works for collection pit.
    - Foundation and structural works for ETP units.
    - Construction of ETP housing/building.
2. **Mechanical Works**
    - Supply and installation of pumps, tanks, blowers, screens, clarifiers, filters, etc.
    - Installation of 250mm steel pipeline including support structures.
    - Testing for leaks, alignment, and pressure integrity.
3. **Electrical & Instrumentation**
    - Power supply and control panel installation.
    - Automation (SCADA/PLC) as per design.
    - Instrumentation for flow, level, pH, etc.
4. **Hydro Jetting Works**
    - Mobilization of hydro jetting equipment and personnel.
    - Cleaning of 600 meters of existing stormwater pipe (pipe size to be confirmed on-site).
    - Removal and disposal of debris in accordance with environmental regulations.
    - Post-cleaning inspection using CCTV (optional or as specified).

C. Testing & Commissioning

- Trial run and performance testing of the ETP for compliance with effluent discharge standards.
- Functional testing of collection pit pump and overhead pipeline.
- Flow tests and verification of cleaned stormwater line.

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4. Deliverables

- Design drawings and technical specifications
- As-built drawings and operation manuals

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- Test reports and commissioning certificates
- Training for client personnel
- Maintenance plan and recommended spares list

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5. Standards & Compliance

All works shall be carried out in accordance with:

- Local municipal regulations and environmental laws
- ISO and ASME standards for mechanical systems
- OSHA or local safety standards

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