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## 1.0 Persons Affected

This Standard Operating Procedure (SOP) affects:

- All SaskPower personnel and contractors working under the direction or coordination with Transmission Operations and Maintenance.
- All personnel within Transmission Operations and Maintenance involved with:
  - Trenching in ducts in switching stations and substations.
  - Ground grids in switching stations and substations.
  - Other trenching in switching stations and substations.

## 2.0 Purpose

This SOP provides:

- The standard for measures that must be taken to maintain a safe work area at all times. Trenching in stations carries safety risks associated with falling into open trenches, exposure to electric shock due to induction, step, or touch potential, and working with excavating equipment.

## 3.0 Rationale

This SOP ensures the following:

- Major safety steps are highlighted that are required, must be performed or considered when trenching in ducts, grounds grids and other trenching in switching stations and substations.
- Address the appropriate measures to avoid cutting through critical underground infrastructure, such as ground grids and ducts, telephone, fibre and air pressure lines, etc.

## 4.0 Scope

### In-the-Scope of the Procedure

- The procedure includes the following:
  - Trenching in ducts and grounds grids in stations.
  - The roles and responsibilities of everyone involved in the process.

### Out-of-the-Scope of the Procedure

- The procedure does not include the following:
  - SaskPower personnel or contractors negating from their responsibility to perform a Hazard and Risk Assessment or identify safety steps that are not covered in this SOP.
  - Procedures or a specific switching plan that is required by the Standard Protection Code for each specific station installation.

## 5.0 Policies and Regulatory Requirements

This SOP is a result of the following policies, regulations, industry standards, and corporate directives and standards:

### Policies:

- Hazard Controls Policy
- Job Hazard Assessment Policy
- Personal Protective Equipment Policy

### Regulatory Requirement(s)

- none

### Other

- SaskPower Standard Protection Code
- Excavation and Trenching Standard
- Hazard & Risk Assessment Standard
- High Visibility Standard
- Safety Rulebook

## 6.0 Roles, Responsibilities and Prerequisites

In-the-Scope of the Procedure Role(s)	Quantity Required	Responsibilities	Prerequisites
Out-of-Scope Supervisor	1	<ol style="list-style-type: none"> <li>1. Ensure all SaskPower personnel &amp; contractors are aware of the proper methods in performing trenching in switching stations and substations.</li> <li>2. Ensure all SaskPower personnel &amp; contractors have the proper equipment to fulfill the tasks.</li> <li>3. Provide assistance for any related questions or concerns.</li> <li>4. Coordinate the activities of the SaskPower personnel &amp; contractors.</li> <li>5. Ensure the SaskPower personnel &amp; contractors are able to and understand their roles and responsibilities as outlines in this SOP.</li> </ol>	
In-Scope Supervisor	1	Ensure all personnel are performing the tasks outline in this SOP.	
SaskPower Personnel & Contractors	1 or more	Understand and follow the procedures as outlines in this SOP.	<ul style="list-style-type: none"> <li>• Standard Protection Code</li> <li>• Qualified Electrical Worker</li> </ul>

## 7.0 Tools and Equipment

### Tools and Equipment and Quantity Required:

- High Visibility Clothing
- Equipment Checklists
- Station Prints
- Hydro Vac
- Ribbon (for open trenches)
- FR protection

## 8.0 Planning and Preparation Checklist

### Things to Check Before Starting the Procedure:

- Complete Hazard and Risk Assessment
- Applicable Personal Protective Equipment (PPE) is available and in good condition
- Reviewed SaskPower Standard Protection Code and related permits
- Reviewed work practices: limits of approach, testing for absence of potential and proper grounding procedures
- Reviewed and understand how to enter all incidents or near misses

## 9.0 Procedure

### High Level Flowchart

Stations Trenching	
SaskPower Personnel/ Contractor	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>1.0 Trenching in Ducts &amp; Grounds Grids in Stations</p> </div>

## The Procedure

### 1.0 Trenching in Ducts and Grounds Grids in Stations

#### 1.1 Prepare to Complete Work

- 1.1.1 SaskPower personnel/contractor(s) permit holder shall obtain related permits;
- *Obtain Standard Protection Code permits from the Issuing Authority,*
  - *Obtain any line locates and environmental permits when required.*
- 1.1.2 SaskPower personnel/contractor(s) permit holder shall refer to station drawings for approximate locations of lines and other underground facilities;
- *Refer to station drawings for approximate locations of ground grids, ducts, telephone, fibre, air pressure lines, etc.*
- 1.1.3 SaskPower personnel/contractor(s) permit holder shall perform safety checks/inspections of all trenching equipment being used;
- *Perform all equipment checklists and inspections prior to commencing work.*

#### 1.2 Complete Work

- 1.2.1 SaskPower personnel/contractor(s) permit holder shall maintain safe work area;
- *Ribbon off all open trenches to maintain safe work area,*
  - *Instruct workers near the excavation area to stay clear of excavating equipment while ensuring high visibility clothing is worn.*
  - *Appropriate cover up, insulating mats, etc. shall be used to protect the worker from station ground grid GPR.*
- 1.2.2 SaskPower personnel/contractor(s) permit holder shall plan and be aware of their route;
- *Be aware of all station buses and ensure that limits of approach are not violated by personnel or equipment*
    - *Refer to the Safety Rulebook section 706 - Limits of Approach*
  - *All crossings with live circuits, fibre optic cables, or any installed underground facilities in danger of being damaged must be exposed either by hand or by using a hydrovac*
    - *Refer to Safety Rulebook section 701 - Excavating & Trenching.*
    - *Refer to OHC Regulations as required.*

## 10.0 Acronyms, Definitions and Symbols

### Acronyms and Abbreviations

#### GPR:

Ground Potential Rise

**FR:**

Fire Retardant

**Definitions**

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**Excavating:**

Dug-out area of ground other than a trench, tunnel or excavated shaft.

**Ground Potential Rise:**

Also called 'Earth Potential Rise', Ground Potential Rise is a rise in voltage of the ground caused by current entering the soil through a grounding system. The ground voltage is highest at the point the current is entering the soil and dissipates radially. The voltage of a point on the ground can be calculated: 'Ground Potential' = Soil Resistivity x Current / (2 x PI x Distance) where Distance is in metres from the point the current is entering the earth.

**High Visibility Clothing:**

High Visibility clothing requirements include colour, retro-reflection and configuration of the materials. Performance requirements are also provided for the physical properties of background materials used in the construction of high-visibility safety apparel.

**Issuing Authority:**

A person authorized to issue Standard Protection Code Permits.

**Trenches:**

An elongated dug-out area of land whose depth exceeds its width at the bottom.

**Symbols**

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none

## 11.0 Components

The following is a list of components for this SOP which can be accessed through the SOP System:

Component Name	Component Type	Component Description	Location of Component
Stations Trenching Flowchart	Flowchart	High level and mid-level flowchart for the procedure.	SOP Online - SOP Bundle - Stations Trenching Flowchart

## 12.0 Owner



## Stations Trenching

Standard  
Operating  
Procedure

### Owner

Director, Transmission Services

## 13.0 References

none