Brake System

**FUNCTION** The brake system is used for the two ends of the trolley during landing at the down station by applying force to the handle. The control for brake should be applied to the brake handle at the other end.

**Specification**
- The factor of safety should be at least 3 or more
- 6x7 strand steel core F 10-12mm wire rope for control wire rope
- 6x7 strand steel core F 8-10mm wire rope for support wire rope
- The total length of the wire rope (L) is \( l \cdot [1 + 0.5 \cdot \left( \frac{h}{l} \right)^2 + \frac{8}{3} \cdot \left( \frac{b}{l} \right)^2] + l \cdot \frac{h}{e} \cdot 4 \cdot l \), where,
  - \( l \) is Horizontal distance
  - \( e \) is Lowest point horizontal distance from highest point
  - \( b \) is Sagging at mid-way from highest point

**Design**
- The center of gravity of the trolley should be balanced during operating condition.
- The brake system is used for control of the speed of the trolley during landing at the down station by applying force to the handle.

**Trolley Guide Pulley System**

**FUNCTION** Trolley guide pulley system guides and prevents the contacting effect to the support wire rope and converts gravitational force into kinetic energy. The system consists of pulley guide and dummy system guides and provides cushioning effect to the support wire rope.

**Specification**
- The total length of the wire rope (L) is \( l \cdot [1 + 0.5 \cdot \left( \frac{h}{l} \right)^2 + \frac{8}{3} \cdot \left( \frac{b}{l} \right)^2] + l \cdot \frac{h}{e} \cdot 4 \cdot l \), where,
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**Support and Control Wire Rope**

**FUNCTION** The support wire rope is used for the stability of the system.

**Specification**
- The total length of the wire rope (L) is \( l \cdot [1 + 0.5 \cdot \left( \frac{h}{l} \right)^2 + \frac{8}{3} \cdot \left( \frac{b}{l} \right)^2] + l \cdot \frac{h}{e} \cdot 4 \cdot l \), where,
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**Design**
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**Brake System**

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**Trolley Guide Pulley System**

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**FOR FURTHER INFORMATION**

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www.practicalaction.org
functions and components of the gravity ropeway

Top Station Central Pulley
- The top station central pulley is used to control the movement of the two trolleys with constant tension and force. It ensures that the transport system can operate evenly and maintain a consistent speed throughout the ropeway.
- The pulley is designed to work with a control cable that connects to the central control panel. This panel can be operated manually or through a remote control system.

Down Station Control Pulley with Fly Wheel
- The down station control pulley is equipped with a flywheel, which helps to absorb any sudden changes in speed or tension. It also helps to smooth out any vibrations or shocks that may occur during the ropeway's operation.
- The flywheel is positioned on the shaft of the pulley, and it rotates to maintain a constant speed of the trolley. This helps to ensure a smooth and safe journey for passengers and goods.

Bearing and Housing
- The bearing and housing system is crucial for supporting the weight of the trolley and ensuring that it can move smoothly along the ropes. It is designed to withstand the constant tension and force applied by the gravity ropeway.
- The bearing and housing system is typically made from durable materials such as steel or bronze, and it is designed to last for many years with minimal maintenance.

Practical Action Nepal Transport Programme

Practical Action Nepal commenced its transport programme in 1998. It is an improved and promoted innovation for the transport of goods and people to mountainous and remote areas. The programme aims to improve transport and replace affordable, accessible, and appropriate modes of transport which often contribute to the improvement of livelihoods of local people.

Gravity ropeway technology was transferred from Northern India to Nepal. Practical Action Nepal collaborated with international centres for Trans-actionating Transport Development (ICORD) and partners with ICORD and EWRC. Practical Action Nepal established a couple of demonstration projects in 1996. The initial study showed that the transportation cost of agro-based products decreased by at least 75% after being sent by gravity ropeway system. Such encouraging results provided confidence to the suppliers to open purchasing offices at the end stations.

In 2000, the government and private sector constructed several ropeways for hydropower stations. The first constructed in Nepal was 22 km long. In 1964 it was 36 km long. By 2000 the government and private sector had constructed several ropeways for hydropower stations. The first was 22 km long. In 1964 it was 36 km long.

Practical Action Nepal is a non-governmental development organisation. It operates primarily in Nepal, focusing on the provision of support to local people in remote areas. It aims to enhance their living standards by providing affordable, accessible, and appropriate modes of transport. The organisation works closely with communities, local governments, and international partners to implement sustainable transport solutions.

Gravity ropeways are an inexpensive and simple means of transportation. They operate basically by gravitational force without the use of external power. The gravity ropeway consists of two trolleys, each with an outer cable attached to each end of a control pulley. The trolley is pulled downward by the force of gravity, the other trolley is pulled upward by means of a control cable. The trolley at the top station is pulled upward automatically by means of a control cable. The gravity ropeway is an improved version of the traditional cable car. The gravity ropeway has fewer moving parts and is easier to maintain.

The gravity ropeway was developed in 1998 by Practical Action Nepal in collaboration with ICORD. The system is designed to be adaptable to different geographical conditions. It can be constructed on a variety of terrains and can operate on inclines of up to 45 degrees.

Gravity ropeways operate basically by gravitational force without the use of external power. They are an inexpensive and simple means of transportation. They are an improved version of the traditional cable car. The gravity ropeway has fewer moving parts and is easier to maintain. It is a viable alternative mode of transport that can improve accessibility and mobility of people, transport of goods and services, and support development efforts.