

Ex_1_T_5_S_6_Attach_1_Part 2



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Date Received: 03-NOV-15
Report Date: 11-NOV-15 12:59 (MT)
Version: FINAL

Client Phone: 807-624-5162

Certificate of Analysis

Lab Work Order #: L1697429

Project P.O. #: 11011

Job Reference:

C of C Numbers:

Legal Site Desc:

Rikki Thomson
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID L1697429-1
Description Soil
Sampled Date 03-NOV-15
Sampled Time 14:15
Client ID 1483 BH 48A 0-3M

Grouping	Analyte	
SOIL		
Physical Tests	% Moisture (%)	6.57
	pH (pH units)	5.65
	Redox Potential (mV)	277
	Resistivity (ohm cm)	27700
Leachable Anions & Nutrients	Chloride (ppm)	<5.0
	Sulphide (as S) (mg/kg)	<0.20
Anions and Nutrients	Sulphate (ppm)	46

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
CL-R511-WT	Soil	Chloride-O.Reg 153/04 (July 2011)	EPA 300.0
5 grams of dried soil is mixed with 10 grams of distilled water for a minimum of 30 minutes. The extract is filtered and analyzed by ion chromatography.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
PH-R511-WT	Soil	pH-O.Reg 153/04 (July 2011)	MOEE E3137A
A minimum 10g portion of the sample is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil and then analyzed using a pH meter and electrode.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
REDOX-POTENTIAL-WT	Soil	Redox Potential	APHA 2580
This analysis is carried out in accordance with the procedure described in the "APHA" method 2580 "Oxidation-Reduction Potential" 2012. Samples are extracted at a fixed ratio with DI water. Results are reported as observed oxidation-reduction potential of the platinum metal-reference electrode employed, in mV.			
RESISTIVITY-WT	Soil	Resistivity	MOECC E3138
Resistivity on a soil is a 2:1 extraction of DI water to soil. Sample is tumbled for 30 min. Conductivity of the extraction is taken and the inverse is calculated for resistivity.			
SO4-WT	Soil	Sulphate	EPA 300.0
SULPHIDE-WT	Soil	Sulphide (as S)	APHA 4500S2D
Sulphide in Soil analysis is based on APHA 4500 S2D. A sub-sample of the soil sample is distilled, sulphuric acid and sodium hydroxide are added to the distillate. The sample is then analyzed on a spectrophotometer.			

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

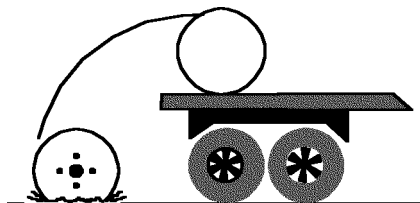
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

Packaging Information

6

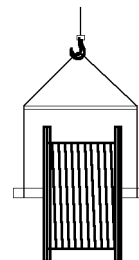
Recommended Reel Handling Procedures



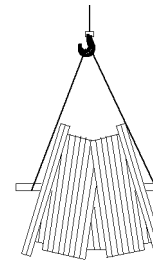
Don't

When off loading reels from a truck, lower reels carefully using a hydraulic gate, hoist or fork lift truck. Never drop reels. If reels must be rolled, roll in opposite direction of the cable wraps to keep cable from loosening on the reel.

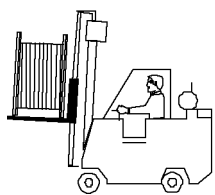
When using a hoist, install a mandrel through the reel arbor holes and attach a sling. Use a spreader bar approximately 6 inches longer than the overall reel width placed between the sling ends just above the reel flanges. This will prevent bending the reel flanges and mashing the cable.



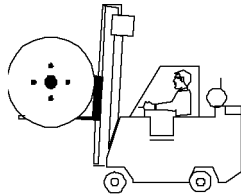
Do



Don't



Do

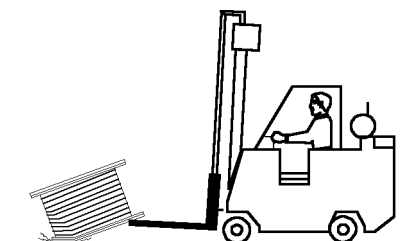


Don't

If a fork lift is used, approach the reel from the flange side. Position the forks such that the reel is lifted by both reel flanges. Do not allow the lift forks to contact the cable. Care must be taken by the fork lift operator not to make sudden turns or stops.

Cable shipped on pallets should be stored indoors if possible. Cable shipped on wooden or metal reels may be stored outdoors. When selecting a storage site, consideration should be given to:

- Traffic patterns during off-loading
- Grade and condition of the soil or pavement
- Protection from vehicle damage during the time in storage
- Environmental conditions such as exposure to heat, corrosive chemicals, etc.



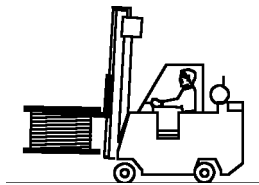
Don't

Cable reels should be stored on hard surfaces resting on the flanges edge (flanges vertical). Align reels flange to flange and, if possible, arrange so that first in is first out. Multiple reels stacked on top of each other ("Pancake" storage), or storing reels flat (flanges horizontal) is not recommended for bare conductor or medium-voltage cable. The weight of the stack can total thousands of pounds creating an enormous load on the bottom reel. Also, damage to the reel and/or cable will likely occur when the reel is flipped for transit. A concentration of stress on the reel flange may cause it to break and subsequently damage the cable.

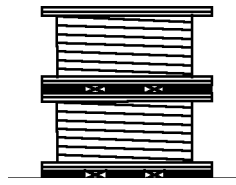
Packaging Information

Recommended Reel Handling Procedures

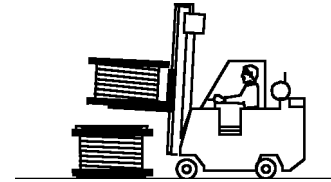
If cable reels must be pancaked or stored in vertical racks, do not lift the reel by the top flange. Spacers placed under the bottom flange and between reels (two 2x4s placed wide side up) create a space to insert the forks and lift the reel without damaging the cable. If nails are used to secure the spacers, make sure the nails do not go through the flange and into the cable.



Don't

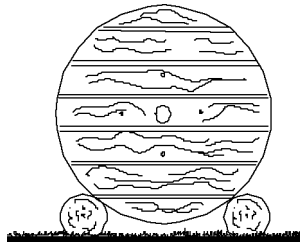


End View of Spacers



Do

For extended storage of bare or insulated cables (spare cable, etc.) reels should be stored cradled between railroad ties, power poles or crossarms. Size and spacing of the supports should raise the flange above the ground.



This helps keep the flanges from decaying and prevents the reels from rolling. At temporary storage sites where soil may be soft, preservative-treated plywood sheets may be used to keep reel flanges from sinking into the ground.

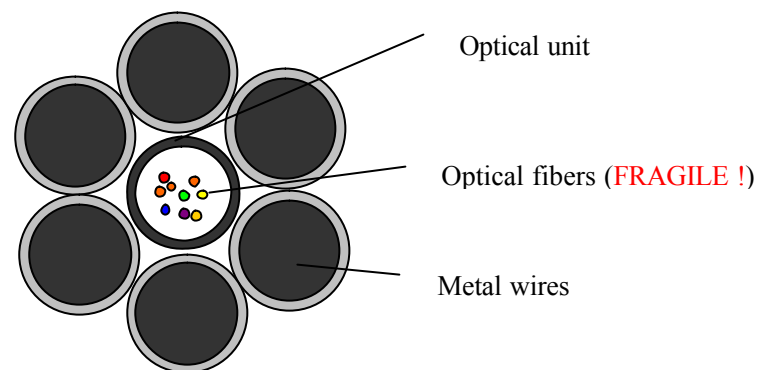
When possible, the reel wrap or lagging supplied on the reels should be replaced to help protect the cable from inadvertent damage. Under extreme environmental conditions, other measures may be necessary. To prevent entrance of water, cable ends should be sealed with plastic end caps. Electrical tape does not offer a sufficient seal. When lengths are cut, cable ends should be immediately resealed and secured.

1. SCOPE

This manual covers instructions on handling of OPGW cables during transportation and storage. Proper handling is crucial to guarantee the full function of the OPGW cable after transportation and storage.

2. GENERAL INFORMATION

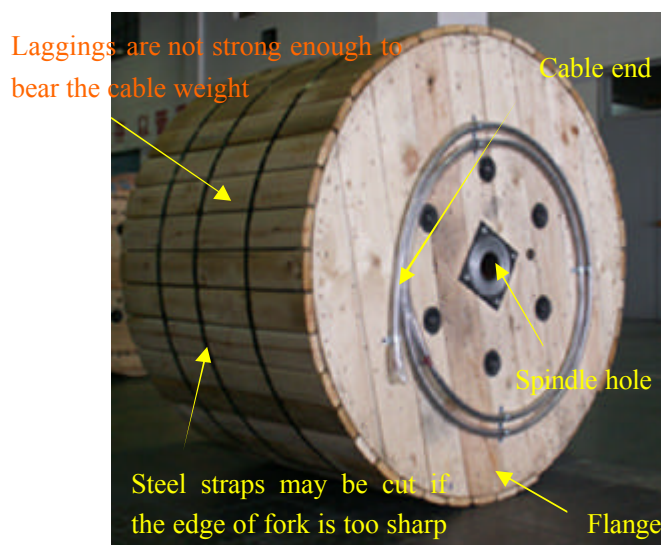
OPGW (Fiber Optic Overhead Ground Wire) is a cable that has the dual functions of a standard ground conductor with telecommunication capacities. More care should be taken than a general conductor cable, as it contains fragile optical fibers inside.



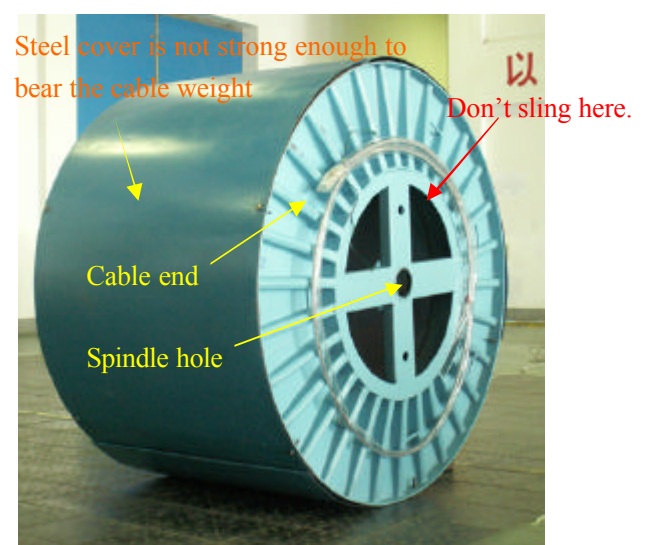
General construction of OPGW cable

OPGW cable is wound either on a wood reel or a metal reel. Both reels are designed to withstand outer force during production, transportation and installation **ONLY** if handled properly.

Below is the general view of the reels with precautions.

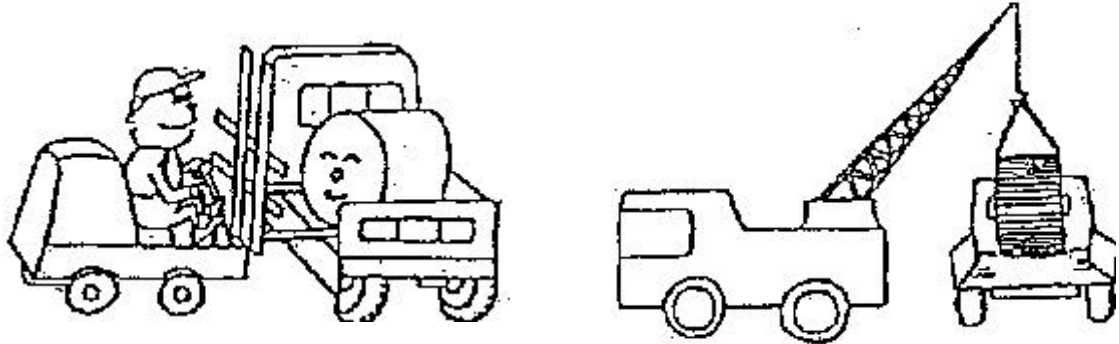


OPGW on wood reel

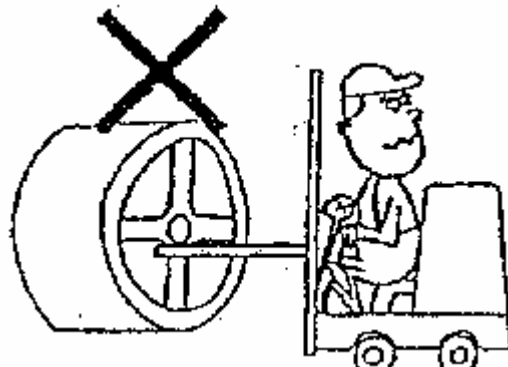
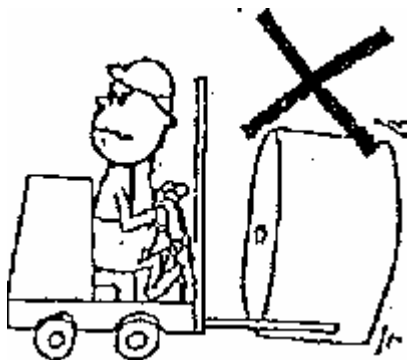
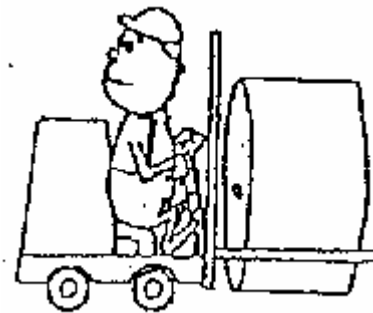
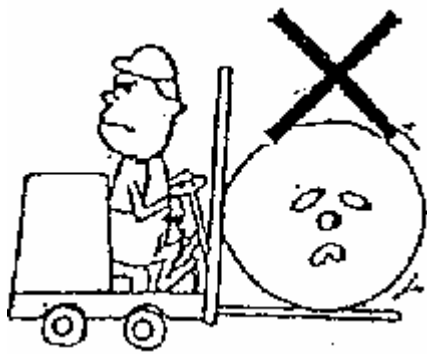


OPGW on metal reel

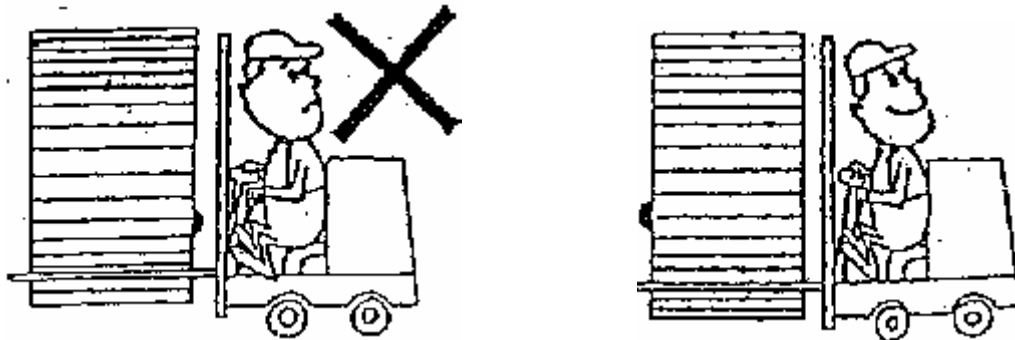
3. PRECAUTIONS WHEN HANDLING



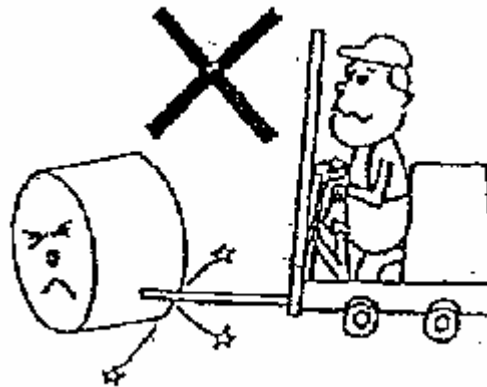
- When lifting, place the fork from the bottom of the reel with a direction parallel to the axle.
- Be sure that the tips of the forks reach the other side of the flange to cover the full width of the reel before lifting.



- Don't damage any part of the cable reel, pay attention especially to the cable end exposed outside of the flange. It is preferable to approach the reel from the other side of the cable end.



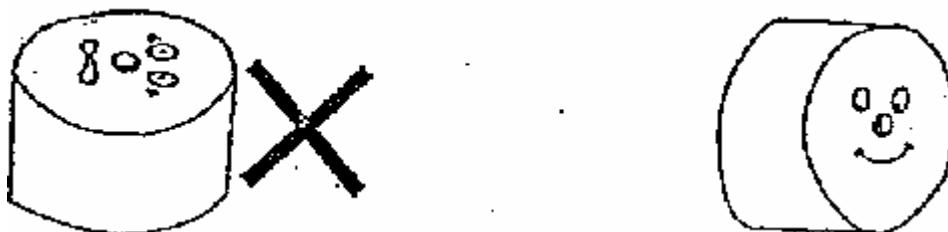
- Handle with care. Don't hit the reel with the fork. Pay attention not to cut the steel straps wrapped over the reel. If the edge of the forks of lift truck is sharp, wrap them with rags for protection.



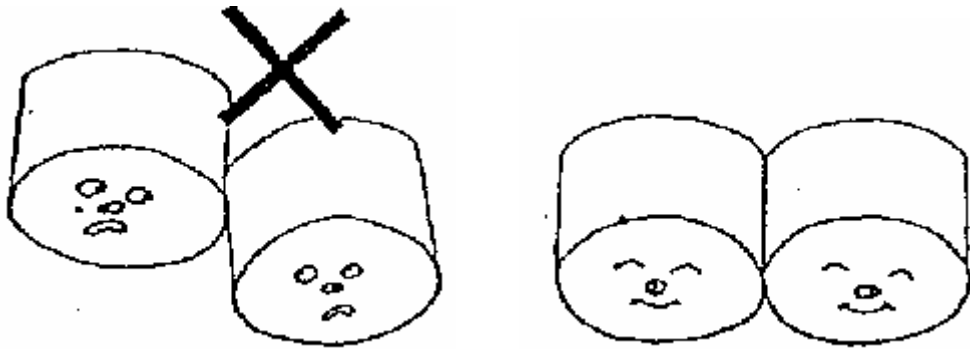
- Don't roll the reel.



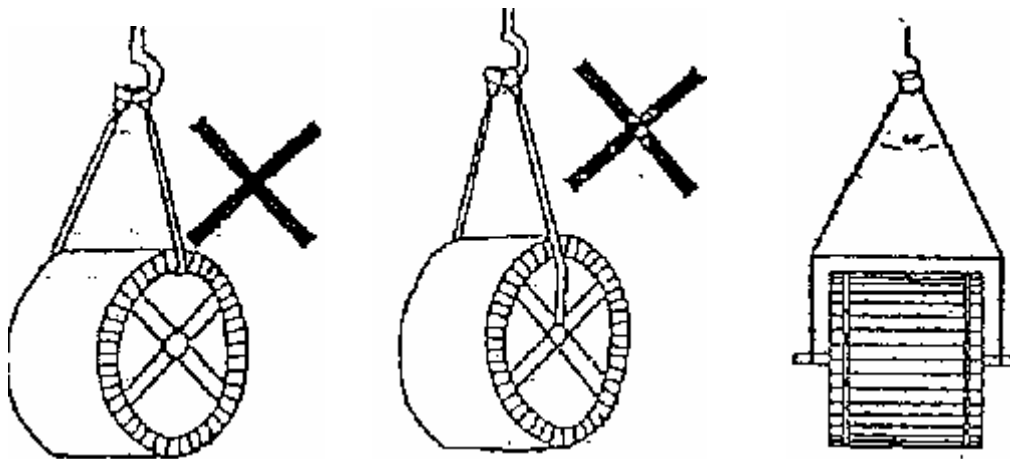
- Don't lay the reel flat.



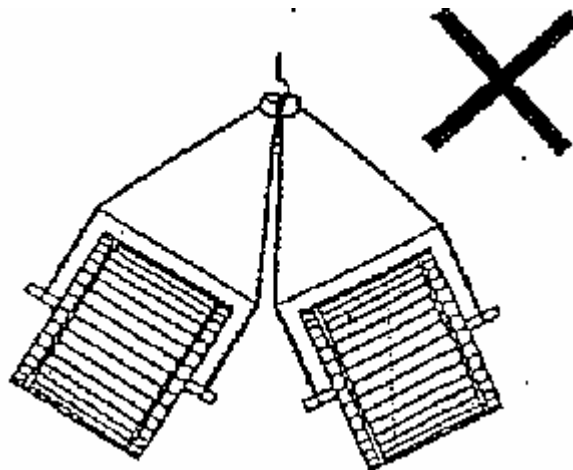
- When arranging multiple reels with the same size for loading or storing, place them with the flanges facing each other. (The middle of the lagging may be destroyed if compressed by the adjacent reel.)



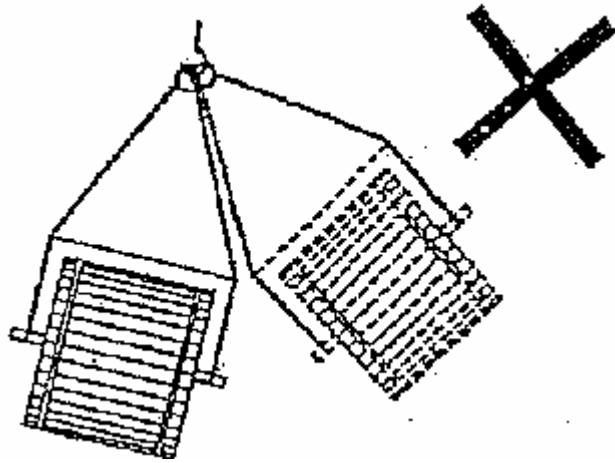
- Don't sling the reel at the inner barrel. Sling at a bar passed through the spindle holes.
- Use a separation bar shall be installed to avoid direct contact of sling on the top of the flanges.
- The angle between the slings shall not exceed 60 degrees.



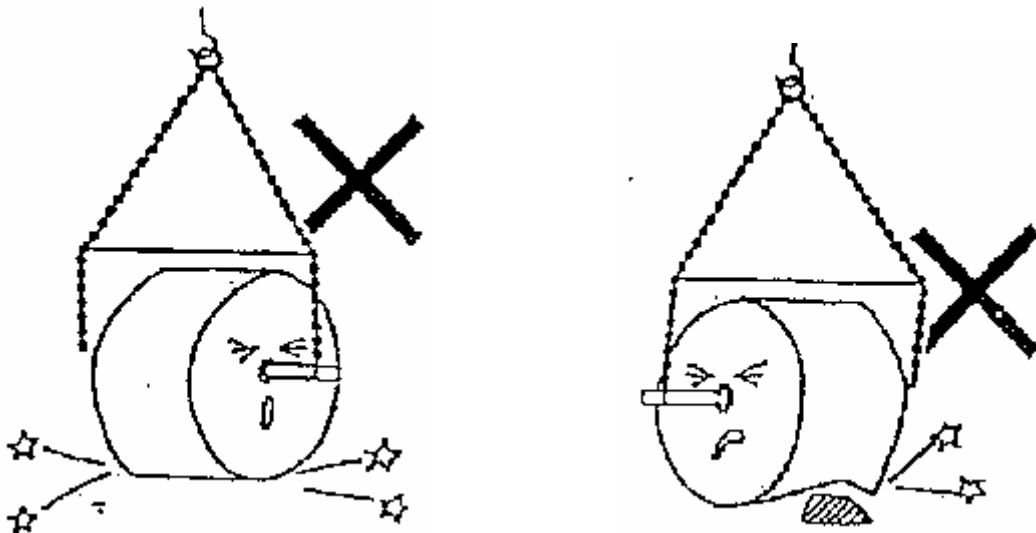
- Sling only one reel at a time.



- Be sure to position the sling symmetrically so that the reel is well balanced before lifting.

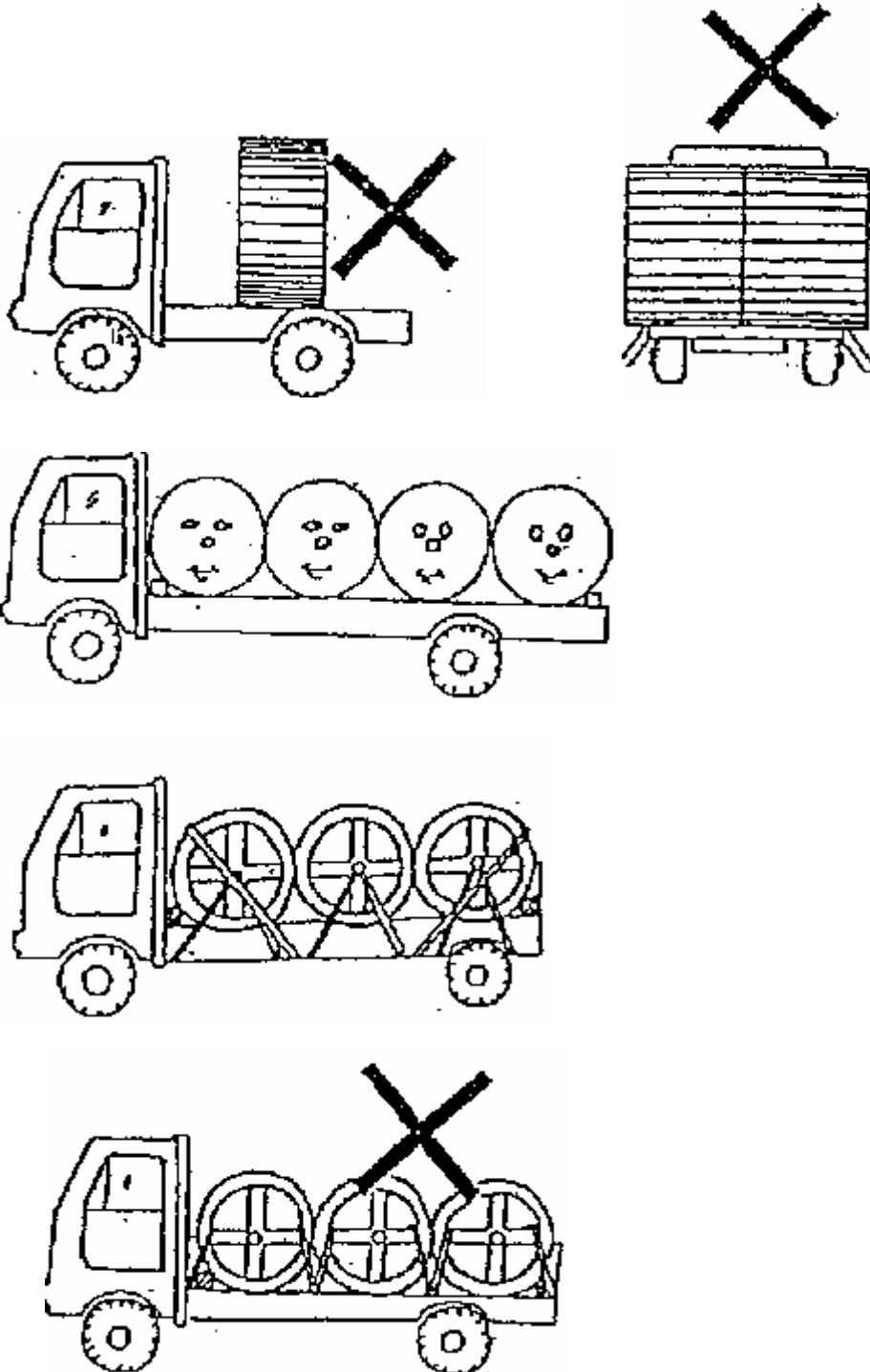


- Land the reel slowly. Avoid sudden movement.
- Remove any obstacles on the ground.

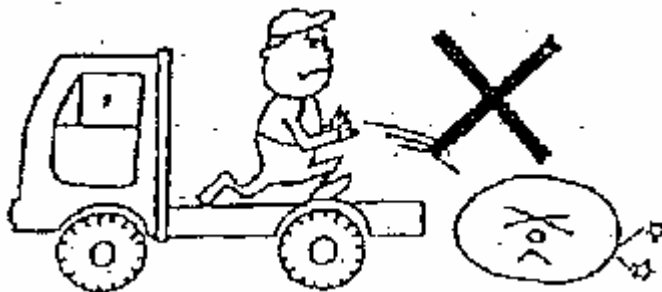


4. TRANSPORTATION

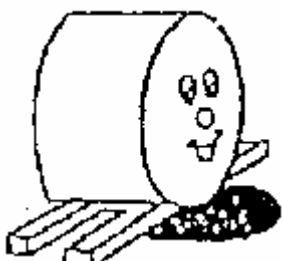
- The reels shall be loaded on truck with the flanges upright and along the line. Limit the number of reels so that all the reels are placed securely within the truck bed. Use battens to fix the reels firmly on the truck.



- Don't throw the reel from the truck when unloading. Use a forklift or a hoist crane.

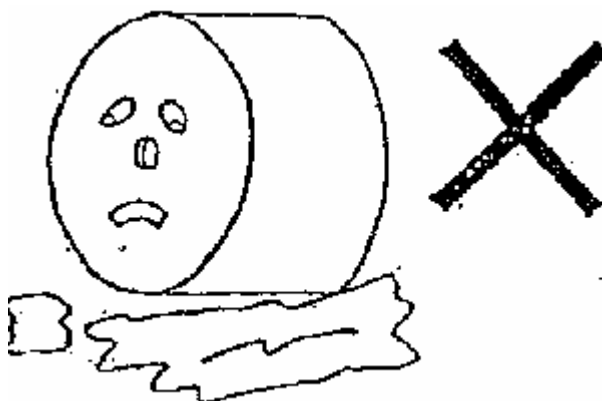


- After unloading, use battens to prevent the reel from rolling.



5. STORING

- Don't leave the reel outdoors for long term. For temporary outdoor storage, place the reel at least 10cm above to the ground. Cover the reel with a waterproof sheet and be sure that the ground is well drained.

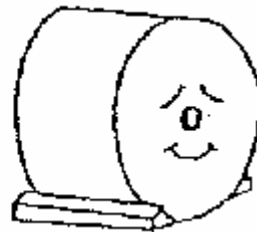


- Use battens to prevent the reel from rolling. Battens shall be long enough to cover the full width of the reel. If small pieces of battens are used, position them right below the flanges, not below the middle of the laggings.

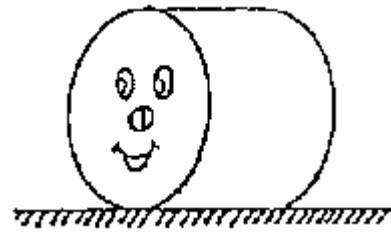
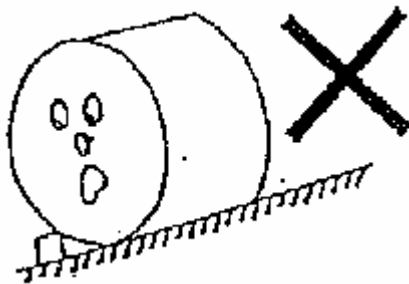
- Below is the recommended size of battens.

Reel diameter
up to 1700mm
up to 2700mm

Batten thickness
90mm
120mm



- Keep a space of at least 15cm from the wall of warehouse.
- Don't store the reel on an angled slope.



- Don't put anything on the reel during storage.
- For a long term storage, it is recommended to open some part of the reel by removing some of the laggings to keep better ventilation.

