



final report

Project Code: B.LIV.0358
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Date published: November 2008
ISBN: 9 781 741 913 286

PUBLISHED BY
Meat and Livestock Australia Limited
Locked Bag 991
NORTH SYDNEY NSW 2059

Sheep Trolley Draft Design

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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Abstract

In our vast overseas market for live sheep, stockmen and customers are observed and videoed dragging sheep, it could be to a stock pen, through a stock yard or to a waiting vehicle. This practice seems to have evolved from how the local sheep are moved. The local sheep are easily convinced to follow the lead sheep even if it is being dragged.

We need to reduce this practice as it is hard on the sheep and the person doing the dragging, it causes injuries and dislocations of joints to the sheep. Taking advantage of the sheep's pressure points that shearers might use to immobilise a sheep a trolley was developed.



One of many examples of dragging sheep in the Middle East

Executive Summary

In the Middle East it is not uncommon for sheep to be moved from one location to another by dragging, the majority of times backwards. The objective of the project was to develop a practical trolley for distribution to reduce this practice.

The trolley was to have the following features:

- Cheap to manufacture
- Use an existing trolley that is able to be purchased locally as the base
- Relatively comfortable
- Easy to load with a sheep and easy to push or pull the trolley
- Reduce the need to tie the sheep
- Not suitable for other uses (if it is like a wheel barrow it would go missing in very short time)
- Easy to copy or duplicate

A prototype trolley suitable for transporting sheep is now being used in Amman, Jordan. It has had minor adjustments since the original test in March, and a second test was carried out in the sheep lairage of the Amman municipal abattoir. The trolley will receive further adjustments after review by MLA personnel in the Middle East.

The final design of the sheep trolley should be completed prior to the commencement of Ramadan (30th September 2008). During the month of October sheep sales to individuals at livestock markets will increase and they will need to be transported to the customers' cars.

The people or stockmen that carry or drag the sheep are usually the lowest paid in the market chain. These people will take on a new concept if it makes their life easier.

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1 Project objective

The consultant will design and produce drawings of a trolley suitable to restrain a single 50-70kg sheep in a comfortable position.

2 Methodology

Based on knowledge of sheep restraint used by shearers, an attempt was made to use those principals in the design of a sheep trolley as it is an accepted method of restraint with the sheep held in a relatively comfortable position.

The trolley was designed to have the following features:

- Cheap to manufacture
- Use an existing trolley that is able to purchased locally as the base
- Relatively comfortable
- Easy to load with a sheep and easy to push or pull the trolley
- Suitable for the Arabic or fat tailed sheep
- Reduce the need to tie the sheep
- Not suitable for other uses (if it is like a wheel barrow it would go missing in very short time)
- Easy to copy or duplicate

A trolley, typical of those available in the Middle East (Figure 1), was purchased in Darwin to use as a base from which to develop the design (see photo in appendix). The “trough” or “cradle” fitted to the base trolley of the first prototype was too shallow. It was modified in Amman and in March was transported to Greater Amman Municipality (GAM) Slaughter House at Marka, a suburb of Amman city in Jordan. Here it was trialled again using Merino wethers. A local engineering workshop in Jordan was subcontracted to make the first prototype trolley and subsequent modifications.

3 Results

The initial sheep trolley prototypes, final prototype and final drawings are shown in Figures 2 - 8.



Figure 1: Trolleys displayed for sale in Darwin – typical of those for sale in the Middle East.



Figure 2: Final trolley prototype (above figures are JPEGs developed from the AutoCAD drawings).



Figure 3: The prototype trolley built in Amman Jordan.



Figure 4: Trialling the first prototype trolley with local sheep in Jordan.



Figure 5: The modified trolley being trialled with Australian sheep in Jordan.

Armal Services Pty. Ltd.
Darwin, NT, Australia

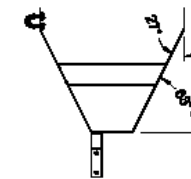
Project Proposed Sheep Trolley
First Development
Title Cradle & Mounting Bld.
Cutting & Folding Dimensions

Project No. 1082
Drawing No. 100
Scale at A3 As Noted
Author DFB 5-03-2008

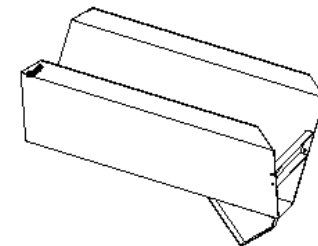
Note: All holes 80 unless otherwise shown.

All folds upwards on folding line and 90° unless otherwise shown.

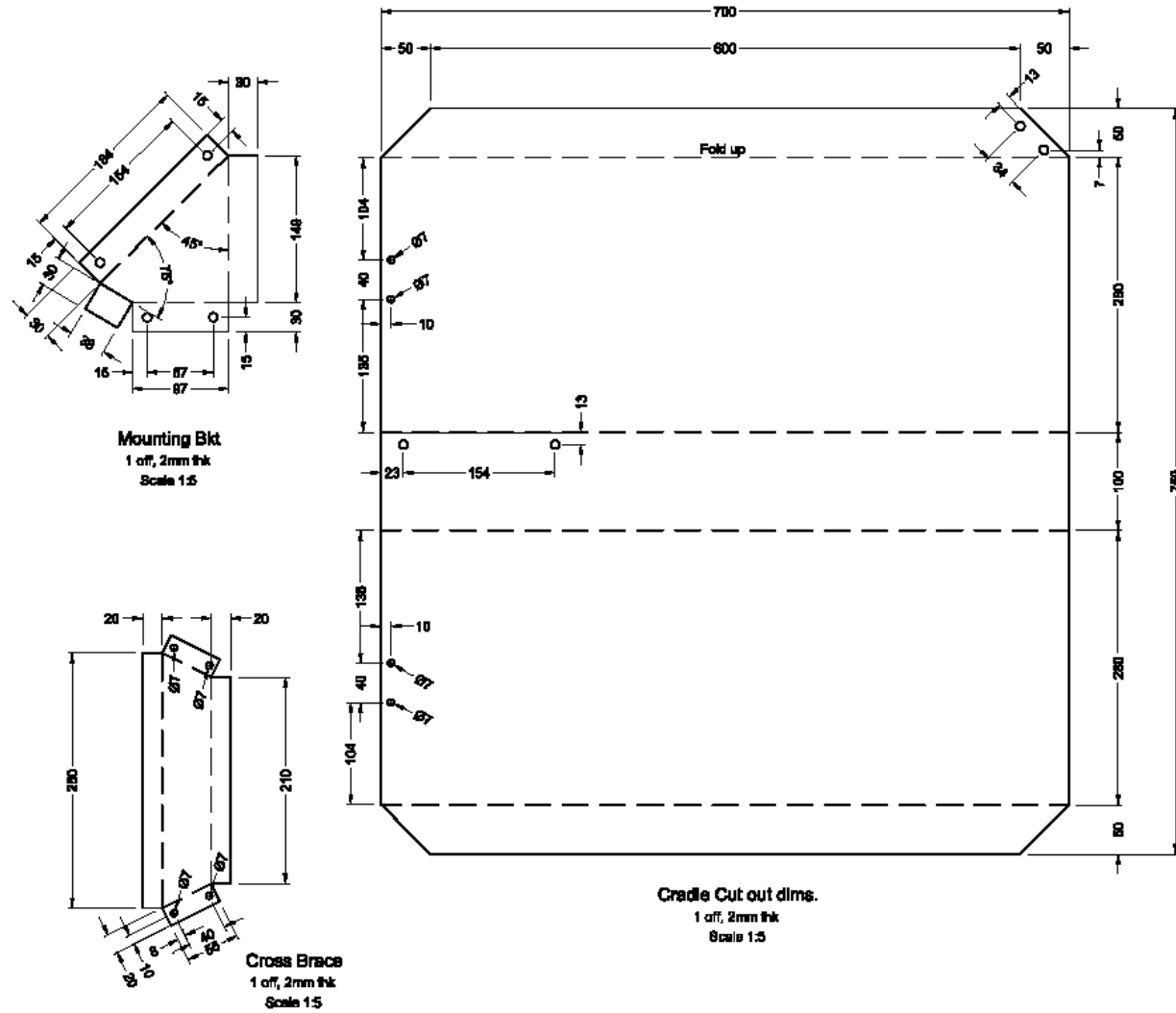
80 to 100 round bar welded to outer edge of cradle, where possible, for protection



Cradle Ass.
Folding angles.
Scale 1:10



Cradle Ass.
Isometric view



Cradle Cut out dims.
1 off, 2mm thk
Scale 1:5

Mounting Bkt
1 off, 2mm thk
Scale 1:5

Cross Brace
1 off, 2mm thk
Scale 1:5

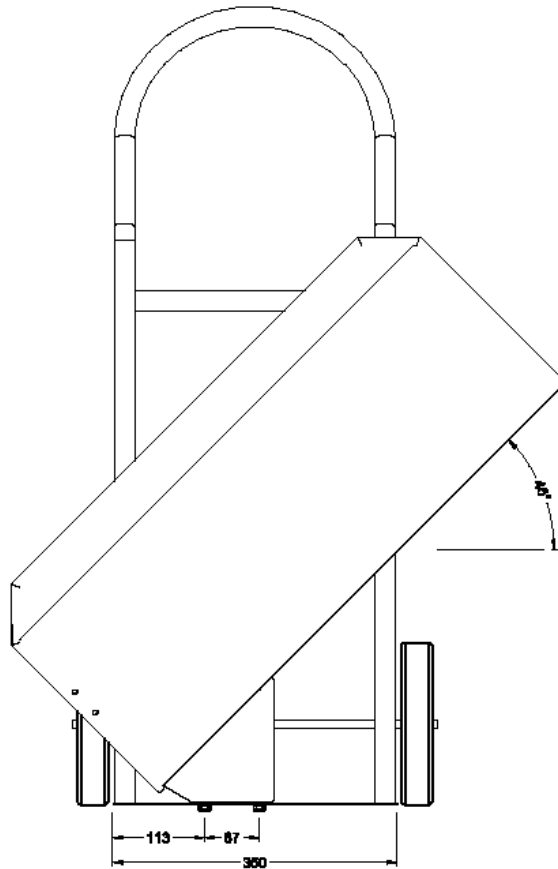
Figure 6: Drawings of cradle of sheep trolley.

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Darwin, NT, Australia

Project Proposed Sheep Trolley
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Title Cradle & Mounting Bids.
Cutting & Folding Dimensions

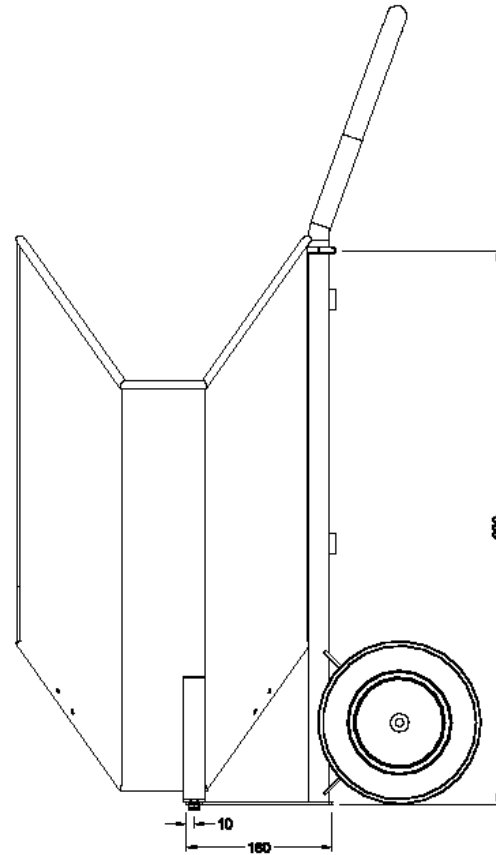
Project No. 10E2
Drawing No. 102
Scale of AS As Noted
Author DFB 09-03-2008

Note: All holes 80 unless otherwise shown.
All folds upwards on folding line and 90° unless otherwise shown.
80 to 100 round bar welded to outer edge of cradle, where possible, for protection.
All dimensions in millimeters.

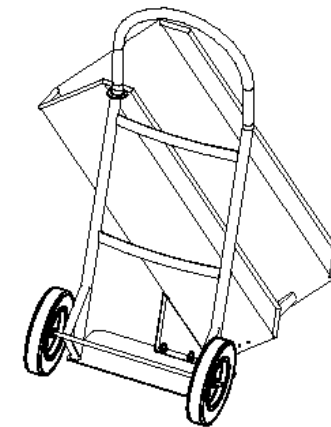


Mounting Position
Front View.
Scale 1:5

Note: Mounting position dimensions are approximate and may vary with different commercial trolleys



Mounting Position
Side View.
Scale 1:5



Cradle Ass.
Isometric view

Figure 7: Drawings of sheep cradle and trolley.