



BUILD YOUR

CONTOUR BANKS

WITH A

FARM DOZER BLADE

HERE'S HOW!

**This publication was prepared in 1977 by the Soil Conservation Branch of the former Queensland Department of Primary Industries (QDPI). The state agency now responsible for soil conservation matters is the Department of Environment and Resource Management (DERM).**

**Some construction methods may have been modified since the publication was written.**

**People using the information in this publication do so at their own risk.**

**August 2011**

BUILD YOUR CONTOUR BANKS  
WITH A FARM DOZER

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## ACKNOWLEDGEMENTS

The authors wish to thank Darling Downs soil conservation officers for their valuable contributions to this publication.

INTRODUCTION

This publication contains a step by step description of the building of contour banks and will assist the landholder wishing to build his banks with a farm dozer blade.

The information in this publication is to be regarded as a guide and where necessary should be modified to cater for local conditions.

IMPORTANT POINTS

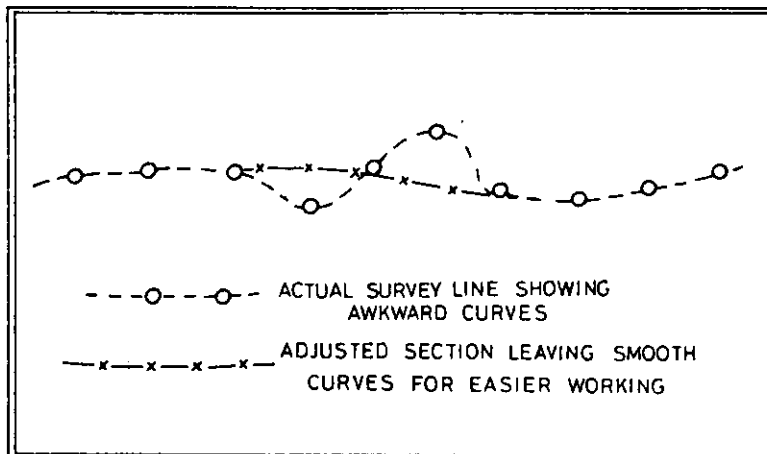
BEFORE YOU START BUILDING CONTOUR BANKS WITH A FARM DOZER, CHECK THESE POINTS FIRST:

EQUIPMENT

1. The ideal equipment needed is a linkage or trailed mouldboard plough and/or a three-tined ripper preferably with sweeps attached.
2. A wing attachment on the open end of the dozer blade to increase blade capacity and reduce spillage of soil around the end of the blade.

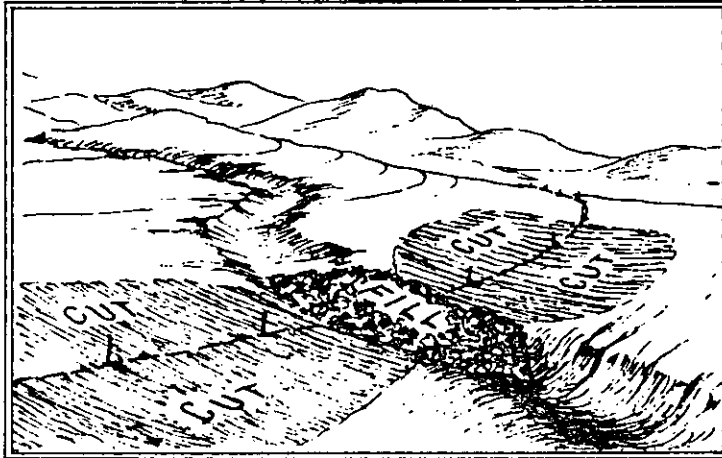
FIELD PREPARATION

1. The line on which survey markers are placed should be checked for awkward curves. Markers should be adjusted at these points in such a way that the overall contourline is easier to work. Do not attempt to adjust the line without assistance from your local soil conservation officer.

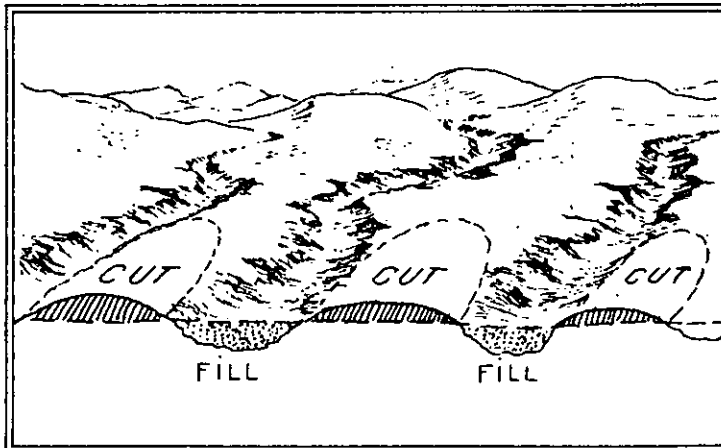


2.

2. Level off gullies where banks will cross. Push soil from high ground into depressions as shown in the sketches below.



LEVELLING OFF SINGLE GULLIES



LEVELLING OFF MULTIPLE GULLIES

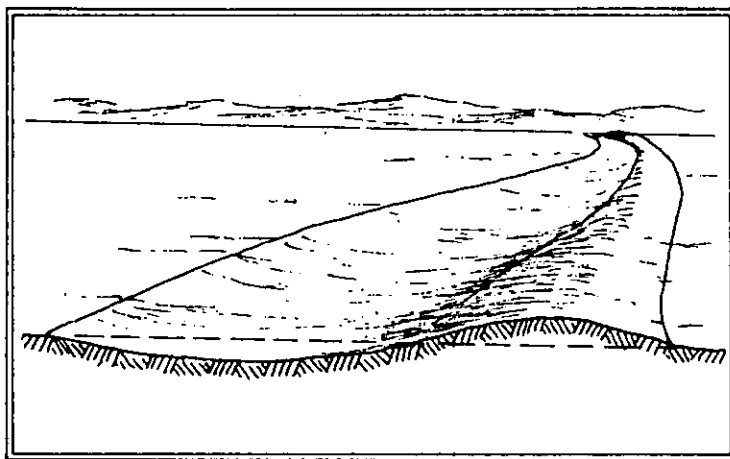
NOTE: After levelling off multiple gullies, arrange for your soil conservation officer to check survey markers.

OTHER IMPORTANT POINTS

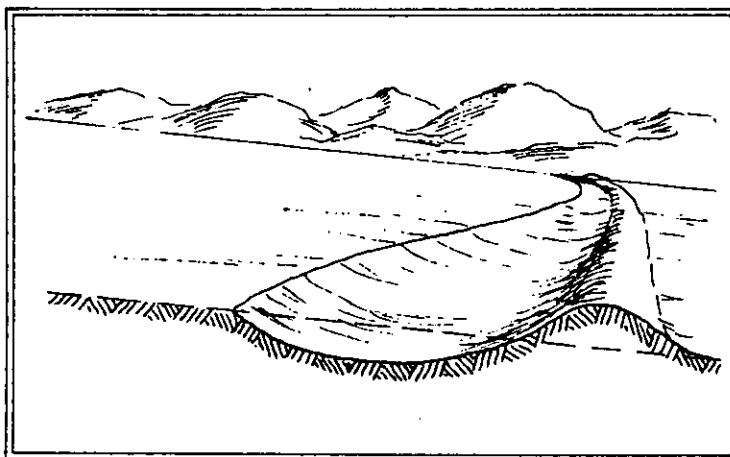
1. Always rip or plough the area on which a bank is to be built, especially in grass land. THIS IS ESSENTIAL FOR ADEQUATE BONDING.

3.

2. Each push should collect just enough soil to completely fill the blade at the end of the push. This lessens spillage. In most cases this means taking only about 60 cm or 2 feet of ploughed or ripped area per push.
3. The shape of the contour bank channel is controlled by the depth of ripping or ploughing. The steeper the land slope, the deeper you need to rip in the middle section.



SHAPE OF CHANNEL BED ON 2% LAND SLOPE

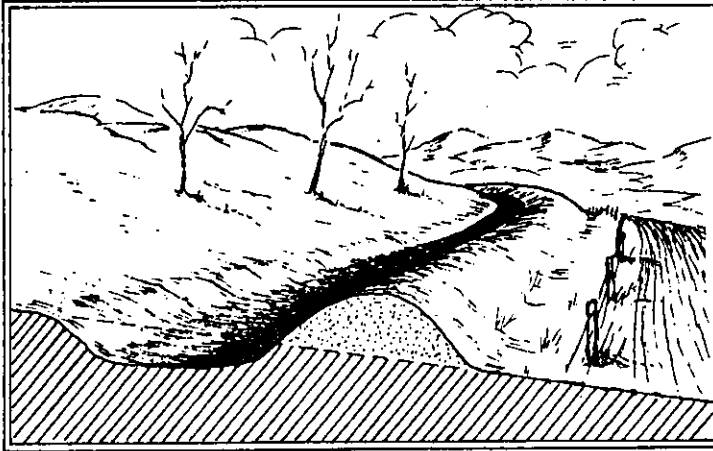


SHAPE OF CHANNEL BED ON 10% LAND SLOPE

## TYPES AND SHAPES OF CONTOUR BANKS

### DIVERSION BANK

This is a large bank mainly located between uplands pasture and lower cultivation land. It is suited to all soil types and slopes.



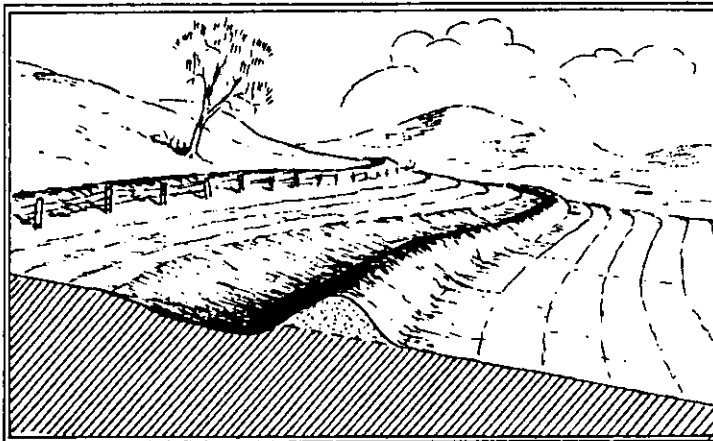
#### DIMENSIONS \*

Minimum Bank Height	Minimum Cross Section

\* To be inserted by your soil conservation officer.

### NARROW BASE BANK

This type is mainly used on steep land over 5% slope and is not cultivated. It is suited to non-cracking soils only.



#### DIMENSIONS \*

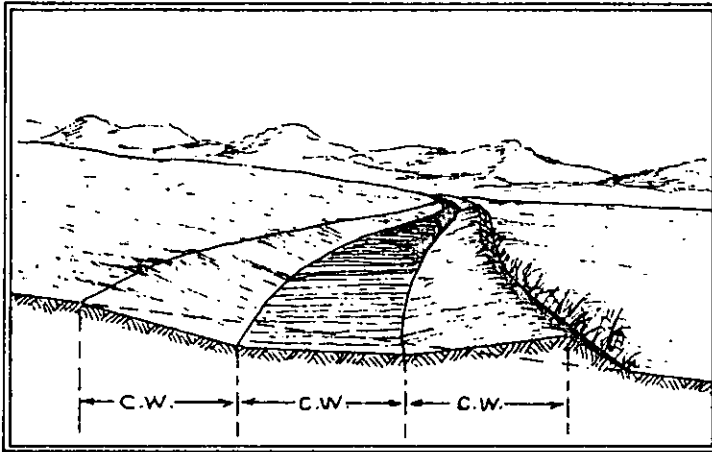
Minimum Bank Height	Minimum Cross Section

\* To be inserted by your soil conservation officer.

## TYPES AND SHAPES OF CONTOUR BANKS

### BROAD BASE TOPSIDE BANK

This type of bank is cultivated on the uphill side only. It is suited to cracking soils but is not recommended on slopes over 8%.



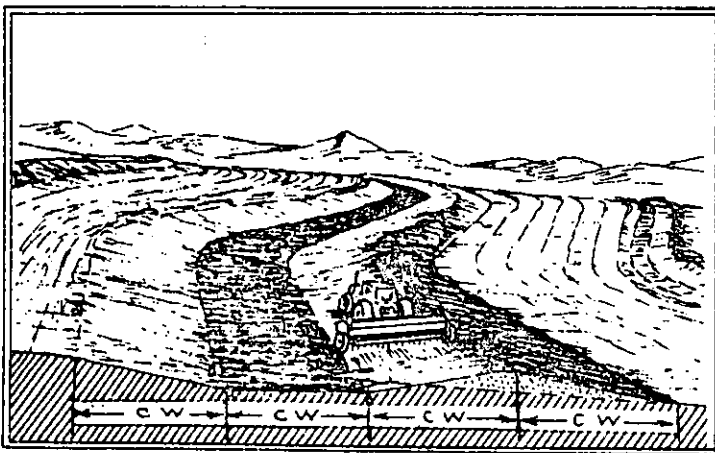
DIMENSIONS \*

Minimum Bank Height	Minimum Cross Section

\* To be inserted by your soil conservation officer.

### BROAD BASE BANK

This type of bank is cultivated on both sides and is mainly used on land with less than 5% slope. It is suited to cracking soils.



DIMENSIONS \*

Minimum Bank Height	Minimum Cross Section

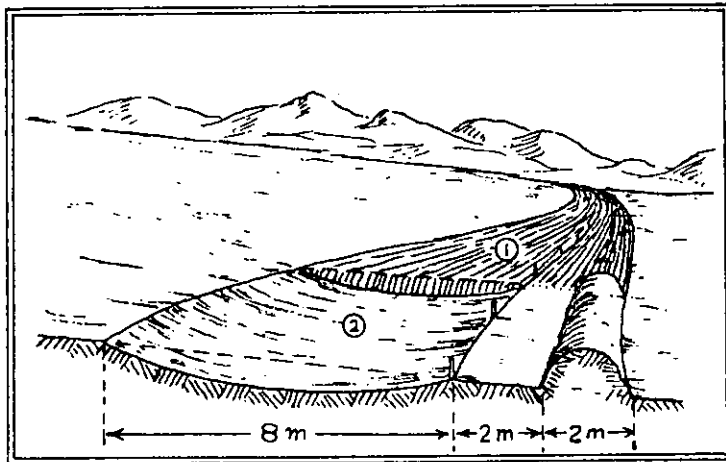
\* To be inserted by your soil conservation officer.

NOTE: C.W. DENOTES YOUR COMBINE WIDTH

## DIVERSION BANKS

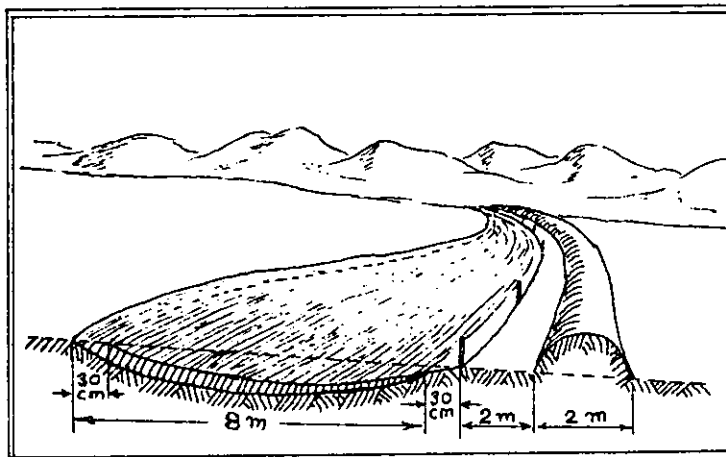
## CONSTRUCTION DETAILS

- STEP 1. Rip or plough an 8 m (24') wide strip above the survey line and a 4 m (12') wide strip below the survey line to ensure bonding.
- STEP 2. Start the first push as shown in sketch below.



STEPS 1 AND 2

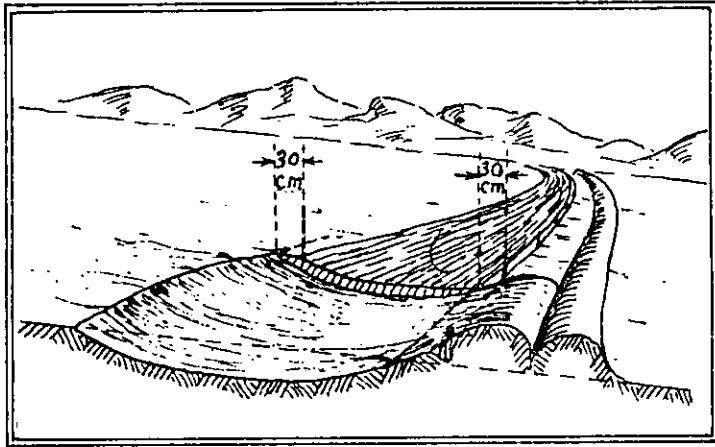
- STEP 3. Again rip or plough an 8 m (24') wide strip, this time leaving about 30 cm (1') untouched above the survey line. Make sure to rip or plough 30 cm (1') wider on the top side of the channel.



STEP 3

## DIVERSION BANKS

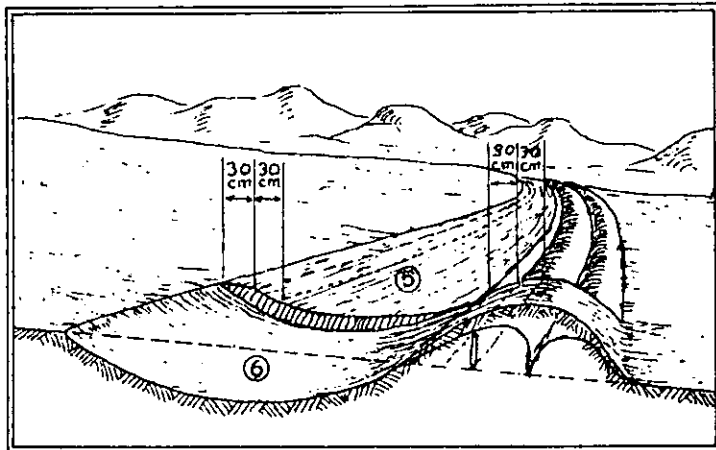
- STEP 4. Start second cut and push soil against first mound of soil as shown below.



STEP 4

- STEP 5. Again rip or plough an 8 m (24') wide strip, this time leaving an additional 30 cm (1') untouched above the survey line. Make sure to rip or plough 30 cm (1') wider on the top side of the channel.

- STEP 6. Start final cut and push soil onto the first and second mounds as shown below.



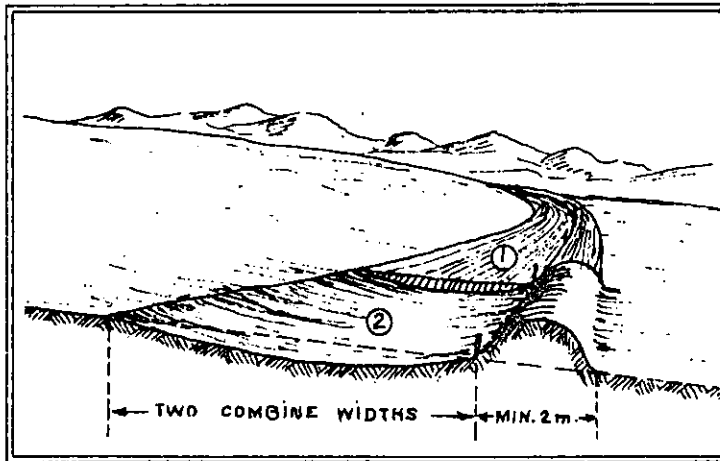
STEPS 5 AND 6

NOTE: IF GREATER CAPACITY IS NEEDED REPEAT STEPS 5 & 6 TO INCREASE BANK HEIGHT.

## NARROW BASE BANKS

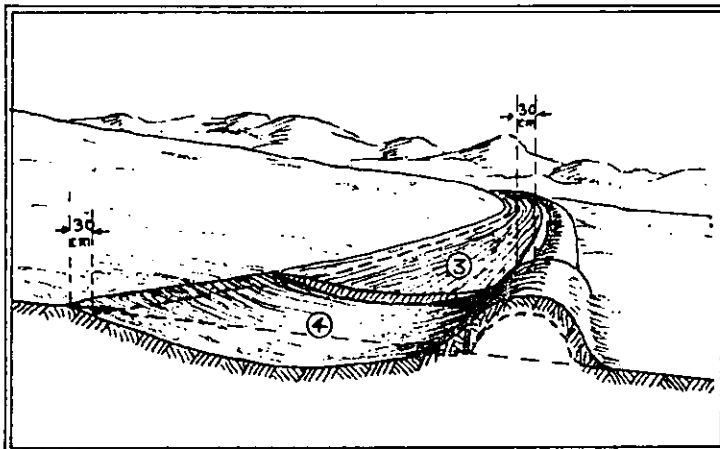
### CONSTRUCTION DETAILS

- STEP 1. Rip or plough a 2 combine width strip above the survey line and at least a 2 m (6') wide strip below the survey line.
- STEP 2. Start first push as shown below. NOTE: IF MORE CAPACITY IS NEEDED CARRY ON WITH STEPS 3 AND 4.



### STEPS 1 AND 2

- STEP 3. Again rip or plough a 2 combine width strip, this time leaving about 30 cm (1') untouched above the survey line. Make sure to rip or plough 30 cm (1') wider on the top side of the channel.
- STEP 4. Start second cut and push soil on top of first mound as shown below.

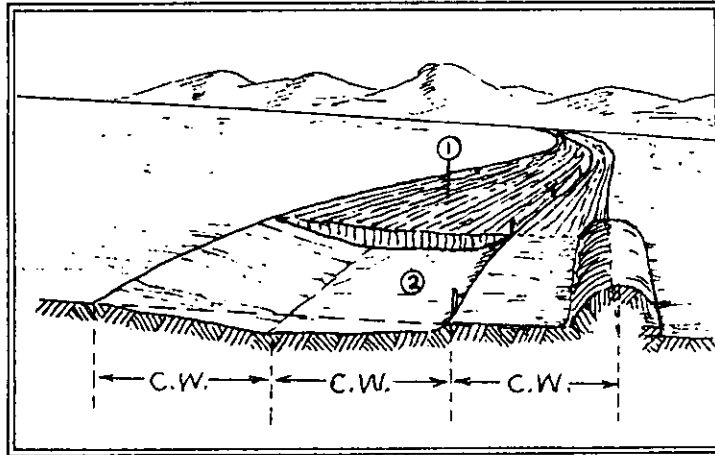


### STEPS 3 AND 4

## BROAD BASE TOPSIDE BANKS

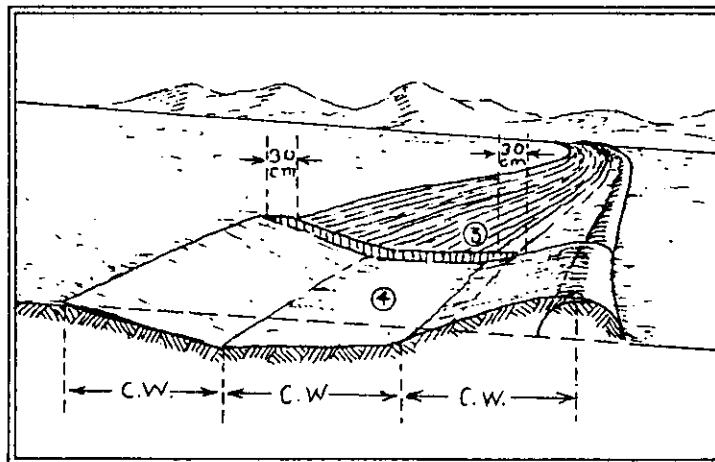
### CONSTRUCTION DETAILS

- STEP 1.** Rip or plough a 2 combine width strip above the survey line and 1 combine width strip below the survey line.
- STEP 2.** Start first cut and push soil in such a way that the middle of the mound is 1 combine width below the survey line as shown below.



STEPS 1 AND 2

- STEP 3.** Again rip or plough a 2 combine width strip, this time leaving about 30 cm (1') untouched above the survey line. Make sure to rip or plough 30 cm (1') wider on the top side of the channel.
- STEP 4.** Start second cut and push soil in such a way that it fills the gap between the survey line and the top of the first mound.



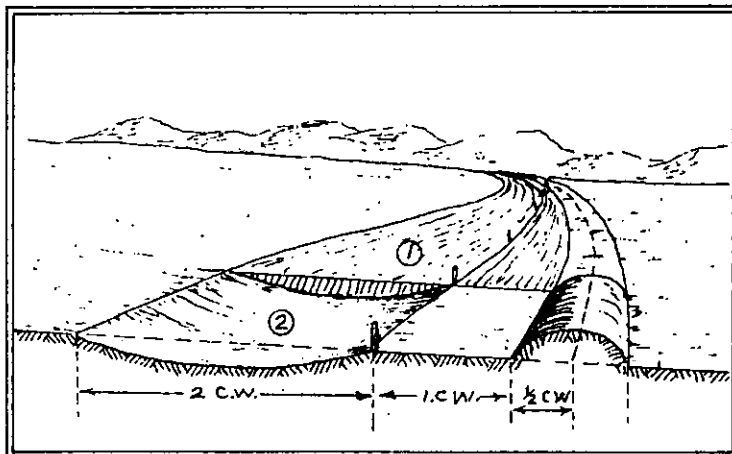
STEPS 3 AND 4

**NOTE:** IF GREATER CAPACITY IS NEEDED REPEAT STEPS 3 AND 4 TO INCREASE BANK HEIGHT.

## BROAD BASE BANKS

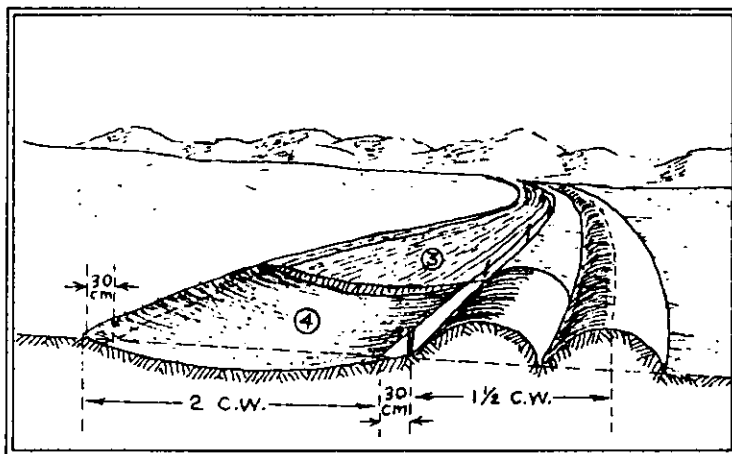
### CONSTRUCTION DETAILS

- STEP 1. Rip or plough a 2 combine width strip above the survey line and 1 combine width strip below the survey line.
- STEP 2. Start first cut and push soil in such a way that the middle of the first mound is  $1\frac{1}{2}$  combine widths below the survey line as shown.



STEPS 1 AND 2

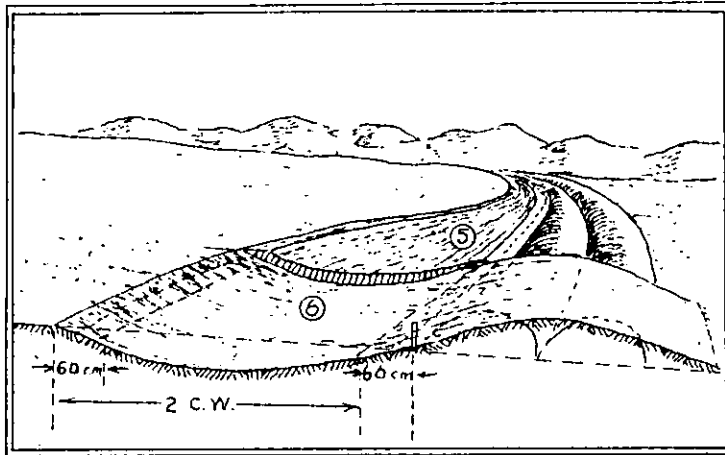
- STEP 3. Again rip or plough a 2 combine width strip, this time leaving about 30 cm (1') untouched above the survey line. Make sure to rip or plough 30 cm (1') wider on the top side of the channel.
- STEP 4. Cut and push soil against first mound as shown below.



STEPS 3 AND 4

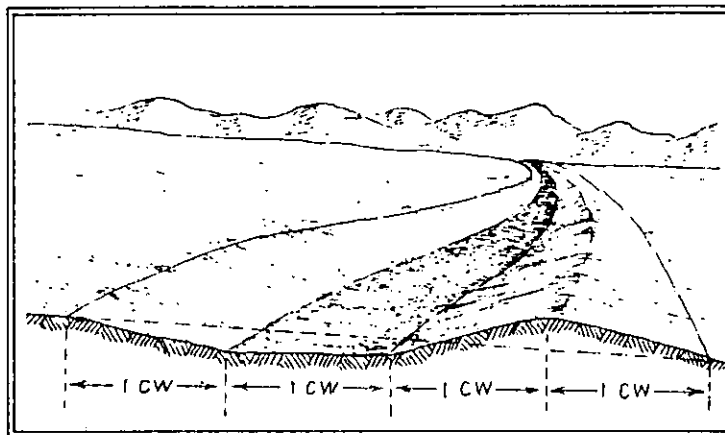
## BROAD BASE BANKS

- STEP 5. Repeat STEP 3 and leave an additional 30 cm (1') untouched above the survey line. Make sure to rip or plough an extra 30 cm (1') wide on the top side of the channel.
- STEP 6. Cut and push soil over the top of first and second mounds. This forms the front batter and leaves extra soil in a mound along the lower edge.



STEPS 5 AND 6

- STEP 7. Smooth out the extra soil and trim the bank and channel to final shape by blading parallel to the bank line.

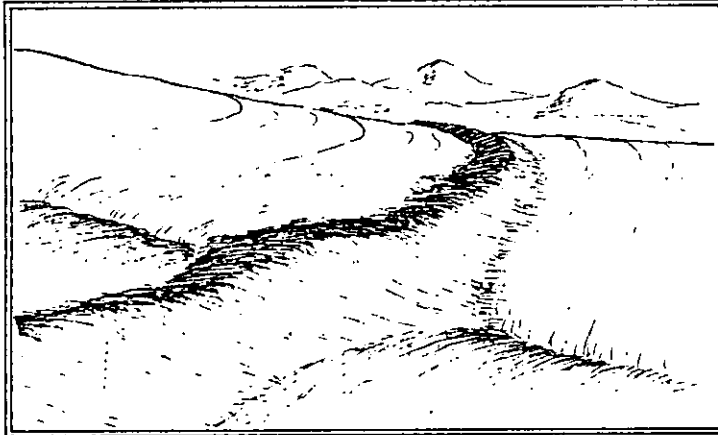


STEP 7

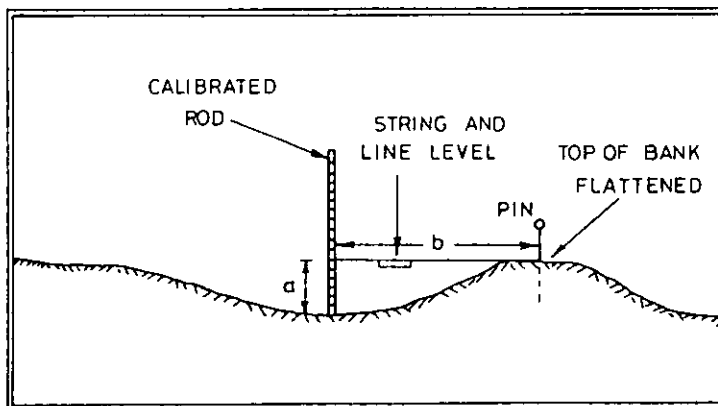
NOTE: If greater capacity is needed repeat STEPS 3 and 6 but make sure to leave an additional 30 cm (1') untouched above the survey line and to rip or plough an extra 30 cm (1') wide on the top side of the channel.

## CHECKING THE JOB

1. Make sure that banks are high enough where they cross gullies. The deeper the gully the more soil is needed to allow for settlement.



2. Make sure channel beds are level especially where they cross old headlands or old fence lines.
3. Make sure that outlets are turned downhill far enough to allow water to flow easily out of the excavated channel, but not so far as to cause erosion of the channel. The distance the outlet needs to be turned downhill depends on land slope and the depth of excavation of the channel. This will be marked by the officer doing the surveying.
4. Make sure that the cross section and the bank height are according to specifications. Use the checking method shown below.



NOTE: (i) Make sure the line is taut when checking bank height 'a'.  
(ii) Multiply height 'a' by distance 'b' to obtain area of cross section.

5. After checking the job, rip or plough the channel area to stop soil from drying out and setting hard. This is particularly important for banks which will be used for cropping.