

LINED DITCHES

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Ditch lining has become a rather common practice in this area, as it probably has in most irrigated areas. Asking farmers why they line their ditches generally brings forth two reasons. They are saving of water and saving labor costs. After lining their ditches, farmers report that they are irrigating up to one third more acreage per day, when using their wells. This would indicate that they had been losing up to 25% by seepage. Labor cost savings are mainly in ditch cleaning. Farmers who clean their ditches four or five times a year report that the costs run from about \$200 to \$220 per mile of ditch per year, mostly for hoeing weeds and grass. This cost is not entirely eliminated by lined ditches, but keeping down growth on the outside banks can be done at much less expense by mowing or by use of chemical sprays.

The cost of constructing concrete lined ditches involves the cost of shaping the dirt and the concrete work. Contractors prices are quite uniform, and are generally for a complete and finished job. Costs reported by farmers doing their own work vary considerably, ranging from \$1.08 to \$1.50 per linear foot. This wide range in reported cost is probably due to the omission of some cost items such as equipment and the farmers own time for supervision. But on the other hand many farmers are using equipment already on hand, and using labor between times of other farm work. Also, it should be noted that most farmers building their own ditches are making larger ditches with a greater capacity than contractors build using slip forms.

The cost of construction does not always represent the amount of the investment however, because many farmers are applying ACP cost sharing toward ditch lining. In general, this works out that the farmer gets back about one third of the cost on the contractor-constructed ditches and about one half the cost where they do their own work. The difference is due to the fact that ACP payments are made on a basis of cubic yards of concrete poured, and contractor-built ditches generally run more linear feet per cubic yard of concrete at a higher cost per linear foot. Farmers should also look into the matter of tax credit on concrete lined ditches.

As might be expected, there is less lining done on tenant operated farms because the landlord, who would normally pay for such improvements, would derive only a portion of the benefits. Under most rental deals in this area, the landlord pays for the water. Benefits of water saving would accrue to the landlord, whereas savings in the ditch cleaning would accrue to the tenant.

Most ditch lining is done by contractors in areas where they are available, such as in Mesilla and El Paso Valleys. In the Hatch Valley, however, most

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lining is being done by farmers, because it is difficult to interest contractors in moving all their equipment that distance except for large jobs. Most farmers use angle iron forms or templets, made of 2 inch stock, built to the shape and size of ditch desired. In preparing the ditch for lining, some farmers reshape the existing ditch, and others work down the old banks to construct a completely new base. The general opinion is that it is better and less costly to completely rebuild the dirt ditch. After being V'd out the ditch should be filled with water and allowed to settle and dry out before being finally shaped to the exact dimensions and grade desired. Then, using templets, alternate sections of about six feet each, are poured to the set grade. Filling in the gaps is relatively simple since the sections already poured serve as forms. Many farmers in the Hatch Valley have hauled their own sand and gravel from local pits, and some have used arroyo sand, but most agree that it is better and cheaper to buy good clean material from commercial sources. They generally train 6 to 8 men for a ditch lining crew, and frequently several farmers use the same crews and equipment.

An important thing to consider in ditch lining is that the ditch has adequate capacity to carry the larger head of water when using canal water. Careful planning and engineering will determine the size and grade needed for a ditch that will serve many years.