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BLESSED ARE THE FARMERS

In our plans, designs, proposals and studies for the improvements of our irrigation water delivery systems, we should always keep in mind for whom we are doing this work. The development of the original systems and diversions was for the benefit and at the request of a very important person. We may think that this work is done for the Government because they provide the majority of the financing - funds collected from the tax payers. However, it is really for the benefit of the tax payers so that they can enjoy the fruits of the labor and success of this one individual. That individual of course is the farmer. But who is the farmer. The following has been coined by an unknown author to point out the importance of the farmer to the irrigation industry.

The Farmer

A farmer is the most important person in our business.

A farmer is not dependent on us, we are dependent on him.

A farmer is not an interruption of our work. He is the purpose of it.

A farmer is part of our business, not an outsider.

A farmer is not just money in the cash register. He is a human being with feelings like our own.

A farmer is a person who comes to us with some problems and needs. It is our job to do our best to fill them.

A farmer deserves our courteous attention. He is the lifeblood of this business. Without him we would close our doors. We ought not to forget it

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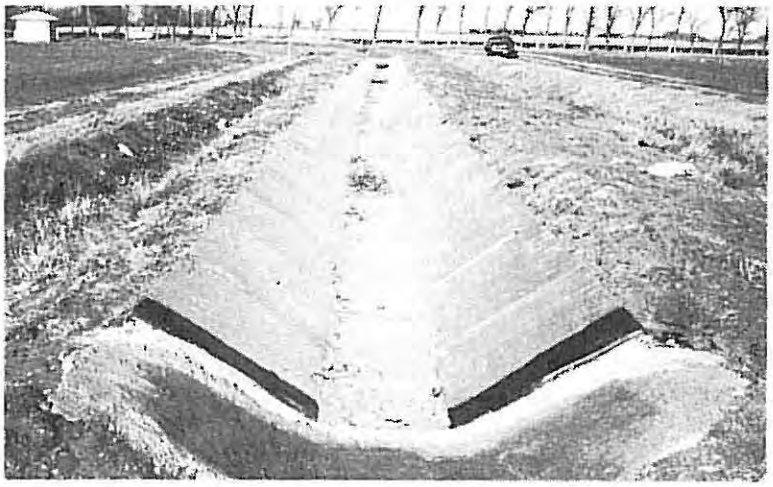
DITCH LINING EVALUATIONS

The search continues in an effort to find the ultimate ditch lining material. We in the Irrigation Division are involved in this endeavor with several projects. As part of this effort several linings are being evaluated at our Gaol Research Plots in Lethbridge. All linings were installed in a 600 mm x 450 mm ditch. This project involves cooperation between CDA, Irrigation Division and three private industrial companies.

In the fall of 1981 a 60 m length of aluminum and a 20 m section of Deci-Fabric lining were installed. The aluminum lining was supplied and installed by Alcan Canada Products Ltd. It was fabricated in 4.6 m long sections utilizing separate H-type aluminum joints and rubber gaskets. Both epoxy coated and unprotected sections were used to check whether ground contact would result in a serious corrosion problem. The 20 m length of Deci-Fabric lining was supplied and installed by Denca Construction Specialists Inc. Installation consisted of rolling out a 3 m wide polypropylene fabric sheet over the ditch section and temporarily securing it with a few spikes along the length. The single component Deci-resin was sprayed on the polypropylene fabric with a high pressure pump. The Deci-resin reacts with water to expand and set up to form an impermeable liner and to bond with the soil below the fabric. Although time has not been long enough to provide any conclusive evaluation, both linings have performed well over one winter and the 1982 summer season.

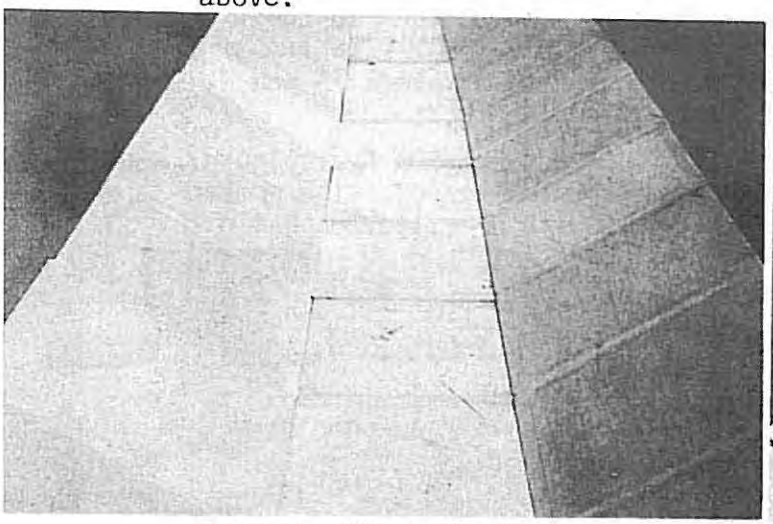


Aluminum Lining

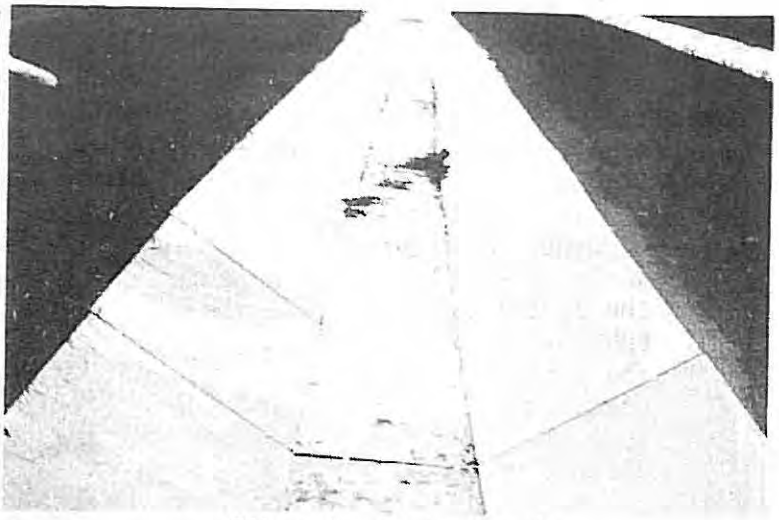
In the spring of 1982 two additional 30 m sections of lining were installed in cooperation with CDA. After ditch preparation a 6 mil polyethylene sheet was placed in the ditch. One 30 m section of fibre concrete panels, supplied by GFC Components Ltd. was placed on top of the polyethylene. The panels were 2400 x 600 mm for the bottom and 1200 x 750 mm for the sides. Only the transverse joints were clipped together to enhance alignment and integrity. The second 30 m section consisted of laying locally manufactured 50 mm thick concrete sidewalk blocks over the polyethylene liner. Blocks 600 x 600 mm and 600 x 750 mm were used for the ditch bottom and sides respectively. Blocks were not secured to each other. The theory behind these two liners is for the polyethylene to provide the seepage seal and the blocks and panels to provide the erosion control, flexibility and durability required of a lined ditch. Both have performed well over the 1982 summer season.

Deci-Fabric Lining

Visits from farmers and Irrigation District staff are welcome. Those interested should contact Larry Spiess (329-5152) to arrange an inspection or to obtain further information on performance of those linings described above.



Concrete Sidewalk Blocks



Fibre Concrete Panels

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PRECAST REINFORCED CONCRETE STRUCTURES: BACKFILL:

The precast reinforced concrete panels or modular units have been firmly established as relatively cheap, durable and versatile for constructing hydraulic structures such as drop, check drops, checks, pipe inlets and outlets, pump intakes, etc. Unfortunately it is sometimes overlooked that these are hydraulic structures and, therefore, they should be watertight with the backfill. Suitable impervious soil should be used for backfill and adequately compacted in small lifts. The backfill material should have adequate moisture (near optimum) to achieve a high degree of compaction. It is a waste of energy and time trying to compact powder dry soil. With the first flow of water in the channel the powdery soil will settle and erode quickly allowing the water to flow around the structure and cause a wash out. If the structure is being installed when the backfill soil is very dry, it may cost a little more to haul in water to provide the moisture needed during compaction.

Note: The specified compaction is obtained using a whacker very close to the structure.

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A NEW SELF-CLEANING TRASH SCREEN

Plugged intake screens, plugged nozzles, and pumping unit shutdowns. That's the frustrating life of irrigation farmers with heavy trash loads in their water. Many types of self-cleaning screens are available to prevent trash related problems. These have met with varying degrees of success. A new development in Idaho may have significant application in Alberta.

A circular self-cleaning trash screen has been developed by USDA Agricultural Engineer, James A. Boudurant and Soil Scientist, W. Doral Kemper. The screen is simply a horizontal, circular, center-fed screen with a collection basin underneath (Figures 1 & 2). The water is supplied by a pipe to the center of the screen where it bubbles up and rushes out onto the screen, pushing trash outward before falling through the mesh into the basin beneath. The cleaned water then flows to supply a system and the trash collects on the ground outside the structure. Unlike mechanical screens with brushes or pressurized nozzles for cleaning, this "turbulent fountain screen" has no moving parts with the promise of long life and minimum maintenance. The 5 to 6 inch head is the only "power" required.

Figure 1.

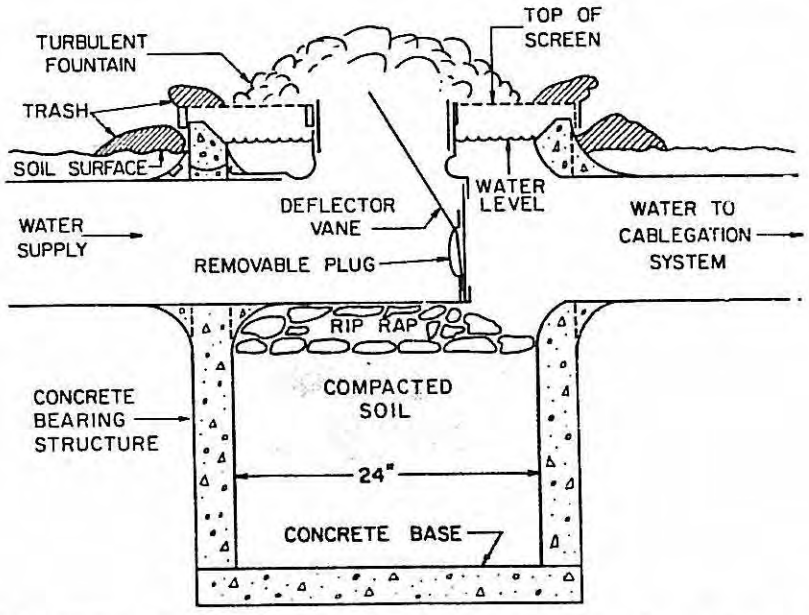

Figure 2.

The USDA staff recommend the following sizes for screens with 8, 10, or 12 inch feed pipes and 10 to 20 mesh screens:

Flow Rate	Screen Diameter	Outlet Pipe Diameter
1 cfs = 450 gpm = 28 L/s	36 - inch	8 - inch
2 cfs = 900 gpm = 57 L/s	42 - inch	10 or 12 - inch
3 cfs = 1350 gpm = 85 L/s	48 - inch	12 - inch
4 cfs = 1800 gpm = 113 L/s	54 - inch	15 - inch
5 cfs = 2250 gpm = 142 L/s	60 - inch	15 - inch

This is approximately 4 square feet of screen for each 1 cfs of flow. Installations for larger flows have not been tested. To remove weed seeds a finer screen (40 or 50 mesh) can be used but the screen diameter must be increased by 6 inches.

What problems could be solved in your District using this device?

Obviously the screen is not suited to all operating conditions common in irrigated Alberta. The typical Idaho installation, designed mainly for gated pipe and trickle irrigation systems, is not adapted to variable head conditions, and to sumps with water supplies below ground level. Here at Alberta Agriculture, staff of the Farm Irrigation Services Branch are working on expanding the potential use of the USDA screen to these operating conditions. This spring will see the testing of a simple device in a typical sump which will operate within known high and low water levels, maintain a constant flow to match pump capacity, shut off the water supply when pumping ceases, and supply trash free water to the pumping unit.

Further information on the screen can be obtained from Ron McMullin or Len Ring at 329-5153 in Lethbridge.

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LAND CLASSIFICATION FOR IRRIGATION

Alberta Irrigation Act of 1968 requires that any parcel of land to receive water rights must be classified suitable for irrigation. Land classified as non-irrigable cannot be granted water rights.

This legal requirement is designed to achieve three basic objectives:

(a) Only land that is suitable for irrigation and will not be harmed by irrigation will be irrigated. This is intended to assure continuous productivity and conservation of land resources.
(b) Limited water supplies will be used for irrigating only suitable lands making maximum use of limited water.
(c) Farmers are protected against financial loss of their investment which would occur when unsuitable land is irrigated and it would salinize or become waterlogged as a result of irrigation.

For the listed reasons a land irrigability report is required before water rights can be issued. This may appear to be an unnecessary bureaucratic requirement to some, but an orderly utilization of our soil and water resources makes it necessary.

Occasionally a few people ignore the legal requirement for land classification and a need for a water license before proceeding with irrigation. This action is illegal besides being unwise because in that case an assured water supply may not always be available in the future. If the land is classified as unsuitable for irrigation it usually has serious limitations which are likely to jeopardize the capital investment and the future of the project.

All prospective irrigators are strongly advised to work closely with: their Irrigation Districts, Irrigation Division, and the Alberta Department of Environment before making irrevocable decisions regarding irrigation development. This will guarantee an orderly sound development and may prevent financial losses and in some cases litigation procedures.

For further information contact K. Pohjakas, Head of the Land Classification Branch at 329-5121.

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SPRING & WINTER SOIL EROSION ON IRRIGATED FARMS

Every year thousands of acres of irrigated land is damaged by wind and/or water erosion and all too often ending up in canals and drain ditches. In most instances, these losses can be prevented.

The most effective preventives are perennial crops such as are normally used for hay and/or pasture. If the farmer does not have livestock or does not have neighbors who would buy the forage or pasture, the loss in revenue as compared to an annual cereal crop should be compared to the potential land loss over a period of years.

Fall seeded crops such as fall rye and winter wheat are the next most effective erosion preventers, especially if they are grown to maturity. The economics may indicate that the next year's spring seeded sugar beets or spuds be sown directly into the winter wheat or fall rye. To prevent seedling competition, the overwintered cereal is usually killed with a sprayed band of glyphosate (to cut costs the chemical is applied only where the row crop is to be seeded), and the inter row spaces cultivated out after the spring crop is sufficiently high to prevent erosion. This method controls wind and water erosion well until the inter row spaces are cultivated, then the water erosion control is reduced. Current observations seem to indicate that extra fertility is not usually necessary but that irrigation is the key to success.

Non-crop erosion control involves cultivation techniques which leave the soil with a rough cloddy surface as soon as the harvest is completed. Because irrigated soils seem to have an accelerated freeze-thaw cycle, supplementary cultivation may be necessary during the non-crop portion of the year.

Obviously, if a good stubble exists in the fall, it will prevent erosion better if it is not cultivated before winter. For adequate weed control, fall applied broadleaf herbicides may be necessary.

Shelterbelts, trap rows (unharvested plants) and contour fields and field machine patterns have a beneficial effect but can only be used in a limited number of cases.

In some cases where water, equipment and weather are right, irrigation can arrest wind erosion, especially if it is commenced before the situation becomes desperate.

For further information contact Blair Shaw at 329-5124.

Canal partially filled with drift soil from adjacent fields.

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ORTHOPHOTOGRAPHS NOW AVAILABLE

Orthophotographs on a township format at a scale of 1:20,000 prepared from aerial photography taken in August-September 1981 are now available covering all Irrigation Districts. For further information regarding availability of these orthophotos contact Art Potvin at 329-5170.

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CANRON USING NEW FLEX-PROTEX JOINT FILLER

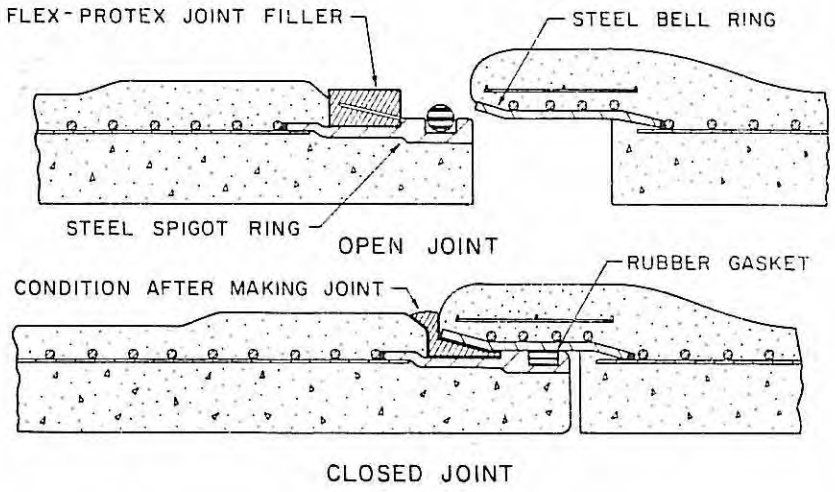
Portland cement grout has long been the standard for protection of exposed metal in concrete pipe joints. The alkalinity of portland cement provided a chemical environment that inhibited corrosion. Steel embedded in concrete for years emerged bright and uncorroded when stripped of the concrete.

"The new Flex-Protex joint filler provides a new and easy method of protecting Hyprescon exposed metal end rings" says Bob Brick of Canron Pipe.

The Flex-Protex joint filler is made of polyurethane foam with unhydrated portland cement dispersed throughout. It is formed into a loop to fit the size of pipe used. This loop is placed around the spigot ring behind the rubber gasket groove prior to coupling the joint. As the joint is forced together the Flex-Protex loop is compressed, filling the annular space. Ground moisture, as it becomes available, hydrates the cement giving the alkaline protection required to prevent corrosion.

Hydration of the cement in the Flex-Protex joint is very slow. Hydration starts, releasing the alkalinity, as soon as moisture becomes available. However, complete set requires several weeks. During this time the joint is flexible and pliable. This allows the pipe to be backfilled and to settle without damage to the joint material.

Backfill can begin immediately after the pipe is laid since no further joint preparation is required. This allows the entire crew to work closer together with less open ditch. Grout pouring labor is eliminated and the entire job moves faster.



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1982 FARMING FOR THE FUTURE APPLIED RESEARCH PROJECTS

The following applied research projects are presently under study by the staff of Alberta Agriculture, Irrigation Division, and have been funded from the Farming for the Future - Heritage Trust Fund.

Project	Title and Purpose
Rigid Canal Linings S. Jonas Irrigation Division	Economical and Relatively Impermeable and Durable Canal Lining for Southern Alberta Environment. To evaluate the durability, seepage control and maintenance requirements of these canal linings.
Subsurface Drainage D. B. Harker Irrigation Division	Development of Optimum Subsurface Drainage Depth and Spacing Criteria for Medium to Fine Textured Soils Within Southern Alberta. To establish guidelines for the reclamation of salinized and waterlogged land under irrigation.
Mapping of Saline Areas D. B. Harker Irrigation Division (Deferred until 1983)	Development of a Computerized Classification System Utilizing Landsat Digital Data to Detect, Map and Monitor Saline/Waterlogged Areas Under Irrigation. To develop a computerized procedure capable of repetitively monitoring the location and size of saline/waterlogged areas.
Low Volume Wind Turbines B. A. Paterson Irrigation Division	Evaluation of Low Volume Wind Turbines for Pumping Water. To evaluate the economics and efficiency of using wind turbines to pump water on drainage and irrigation projects in Alberta. (Cooperation from E.N.R.)
Seepage Control Eric Jensen C. W. Farmland Reclamation & B. A. Paterson Irrigation Division	Evaluation of Cut-Off Curtains for Seepage Control on Irrigation Canals in Southern Alberta. To evaluate the feasibility of using plastic cut-off curtains to control seepage from irrigation canals.

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THE WATER HAULER'S BULLETIN

Designed to provide the operation and management personnel of Irrigation Districts with items of interest in their line of work. Comments are welcome. Please contact Duncan Lloyd at 329-5164, Lethbridge.

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