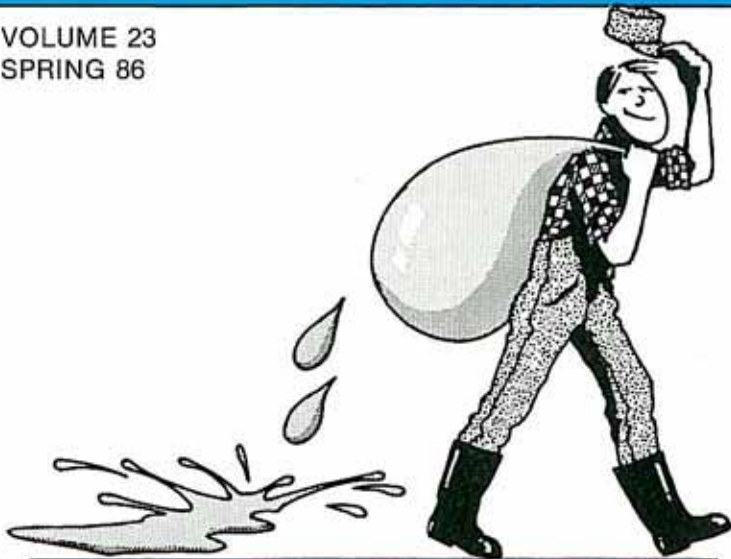


the WATER HAULER'S BULLETIN

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ALBERTA 1st CALL

*Making it easier to avoid
underground danger*

The old saying "Look before you Dig" now should be modified to include "and Dial Alberta 1st Call before you Dig". Alberta contractors now have a new easier means of finding out what major buried utilities they can expect to find in any location within the province.

When a contractor or excavator calls the Alberta 1st Call Location Service (Toll Free 1-800-242-3447) requesting site locations, the 1st call operator will ask a series of questions. The answers provided are entered into the computer. The computer will process the detailed information, such as the Company name, site location, excavation time and place, and the type of excavation. With this information the computer will generate an accurate list of all 1st Call members, directly affected by the planned excavation. These members will receive the "locate" request details, through the Alberta 1st Call, on-line computer network capability. In some cases the caller will be asked to call back in 3 hours to make "on-site" "locate" arrangements or in other cases, the caller will be advised that the affected 1st Call member(s) will contact him/her to make the "on-site" arrangements. Each location request, including the information provided, will be tape recorded for convenient reference and the protection of all concerned. At the conclusion of each location request, the Alberta 1st Call Operator will provide the caller with his/her assigned serial number for that request. This service is available from 7:00 AM to 5:00 PM Monday through Friday.



Operator Shannon taking one of the 70,000 per year incoming location requests.

*To say there's
danger below is
an understatement
in Alberta,*

with all its natural gas pipelines and buried cables. A study during the late 1970's showed there were more than 8500 incidents in Alberta, resulting in more than \$4 million in property damage. From this study, arose the non-profit One-Call Location Corporation initially supported by Alberta Energy Resources Conservation Board, Alberta Utilities & Telecommunications & the Canadian Petroleum Association.

Scott Henley, Manager of this new Calgary based service says "in our first year of business we handled 70,000 phone inquiries". Of the twenty-two companies who now belong to Alberta 1st Call none are Irrigation Districts. We asked Henley, what would a District have to pay to join if it had a total of 50 km of buried irrigation pipeline? He felt it would be in the neighborhood of "\$100 for the initial membership fee, \$50 per annual renewal, and a \$5.50 service charge for each inquiry involving their own pipeline". The inquiring customer never pays for the call or for site location work.

The corporation now has twenty-two members and it is expected to grow to 50 by summer's end. Henley estimates there are approximately 900 companies in Alberta who own underground facilities that are still not on the system.

Alberta contractors are indeed fortunate to have a quick means of learning of unseen underground works, and to alert many major utilities owners of their intention to dig with just one call. Members of the Alberta One-Call Location Corporation are looking to prevent personal injuries, loss of life, costly damage and disruption of services. For more information please call Scott Henley at telephone (403) 229-4322 ■

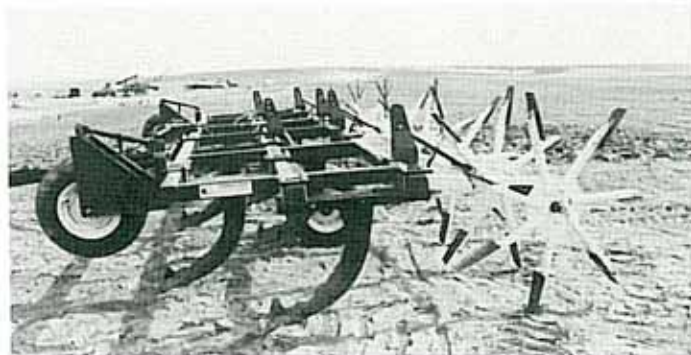
THE LITTLEST IRRIGATION RESERVOIR

New method for water conservation

Think of how syrup is held and soaks into your golden waffle compared to that stack of pancakes, then relate this to your steep sloped irrigated field. Just maybe, the answer is a new machine on the market manufactured by Ag Engineering & Development Company of Washington State which implants gallon sized reservoirs throughout a field. "The Dammer Diker implants approximately 10,000 gallon sized reservoirs per acre" says Claude Rawlins, Vice President of Marketing. "Our Dammer Diker absolutely stops runoff and soil erosion while significantly increasing crop yield and quality" adds Rawlins.

How does the Machine Work?

The Dammer Diker is a totally self-contained pull-type implement that is most commonly used at last cultivation in a growing crop. The mainframe unit of the Dammer Diker is basically a ripper specifically designed for in-row subsoiling in a growing crop. The special "Shark Fin" point employed reduces ground disturbance while doing an excellent job breaking compaction and loosening the furrow generally to a depth of 300 mm.



The Dammer Diker can be used for fall tillage to prevent winter and early spring soil erosion.



The waffle pattern has proven effective in both irrigated and dryland conditions.

The back end attachment comprises the spider wheels, mounted on a common shaft attached by special adjustable arm assemblies to the rear bar of the main-frame. This rotating assembly is ground driven and the spiders alternately penetrate the loose soil and form a subsurface reservoir or pit with an adjacent small dam. The machine is generally pulled at about 10 km per hour and commonly is equipped to do furrowing or other cultivation procedures in the same pass. The resulting field condition has small diameter holes on 450 mm centers successively down the furrow and will entrap water applied by irrigation or rainfall uniformly throughout the field. The spiders are arranged on the shaft so that the 300 mm deep and 200 mm wide holes are alternately spaced from row to row. This prevents water from rilling across the rows and makes it smoother for other small wheeled implements. The field is left relatively smooth because the reservoirs are small, close together, and below the surface.

Thayne Wiser, President of Ag Engineering & Development Co. invented the Dammer Diker in 1980. He saw that every field irrigated with sprinklers had basically the same problem of water accumulation in lower areas, and a degree of irregular crop production directly related to soil moisture variability. After several experimental models, the Dammer Diker hit the market in 1983. The machine caught on quickly and, to date, 550 have been sold in twenty-six states. Seventy percent of Washington State's potato fields are "Dammer Diked".

The first "Dammer Diker" to be brought into Canada, is owned by SLM Spud Farms Ltd. of Purple Springs, Alberta. Louis Ypma, a partner in the company, says "We have been experiencing problems in getting enough moisture from our pivots to stay on the hill tops in our fields, while the low areas get drowned out.

Hopefully, our fertigation will get caught in the holes and stay where we want it, giving us a more uniform crop".

Research by the Universities of Idaho, Utah State, Nebraska, and Kansas have produced some convincing data for reservoir tillage. Professor T. S. Langley stated this in his summary "Reservoir tillage was shown to produce yield increases of 9.5 percent in spring wheat, 31 percent in corn, and 22 percent in potatoes when compared with conventional tillage in commercial fields under center pivot irrigation". John Hanks, a soil scientist of Utah State University, reports that a field which had just been worked with the Dammer Diker required rainfall amounts in excess of 100 to 125 mm per hour before runoff occurred, while the same soils untreated resulted in runoff from conventional ground when as little as 12 mm of rainfall occurred. However, reservoir tillage becomes less effective with the passage of time, as the soil becomes compacted and the reservoirs close back in.

The Conservation & Development Branch is purchasing a unit for demonstration and research in Alberta. The equipment will be used to demonstrate the reservoir tillage concept in row crops and in applied research projects to quantify effects. The Branch will also use the equipment for precipitation conservation and to control water erosion problems under dryland conditions. It is hoped the Dammer Diker will provide greater uniformity of water distribution in the field and, thus, improve irrigation efficiencies.

For more information on the Dammer Diker please call Ag Engineering & Development Co., Tri-Cities, Washington. Phone: (509) 735-3596 ■

CUTOFF CURTAINS TO REDUCE CANAL SEEPAGE

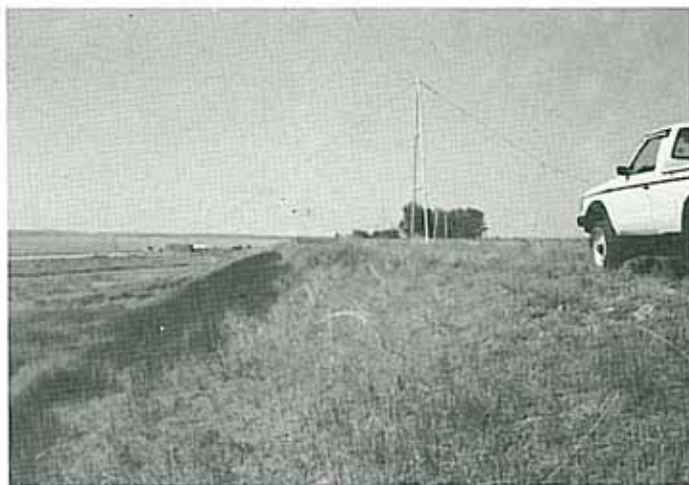
An Economical Alternative

For as long as canals have been in existence in Southern Alberta, so has the problem of unwanted seepage associated with them. In the past, in areas where seepage was quite adverse, canal liners of either plastic or concrete have been used to reduce or eliminate the unwanted water loss. This tends to be a rather cost intensive solution and a more economical alternative is desperately sought after.

In recent years, the introduction of a cutoff curtain, generally composed of a synthetic fabric such as PVC or Fabrene, has met with some favorable response. Hardy Associates (1978) Ltd. has spent the last year investigating the effectiveness of these curtains in Southern Alberta under a research grant from the Heritage Fund, Farming For The Future. This study is nearing completion and the formal results will be available in July 1986.

Preliminary results of the study suggest that Cutoff Curtains can be an effective seepage control measure if installed correctly and under the proper soil conditions.

By the design of a cutoff curtain, seepage is never fully eliminated as is possible with a liner. Flow is directed downward into lower permeable soils and in doing so, seepage tends to be reduced. There is indication that in low laying areas a cutoff curtain probably would have little effect as seepage is still entering the soil and is not being carried away fast enough by the regional groundwater system.



Seepage through the bank is growing lush grass, (darkened area) where vertical cutoff curtain could not be installed because of high pressure gas line.

In the case of a high volume canal as shown in the photograph of the BRID Main Canal near Vauxhall, there is strong visual evidence to the reduction in seepage through the embankment at very least. The section of lush reed grass is located in an area where the cutoff curtain could not be installed, due to a high pressure gas line crossing the canal.

In summary, it appears that cutoff curtains can be used in certain areas to control or reduce seepage, but their application is strongly controlled by soil conditions and local topography. For more information please contact Robert Saunders, P. Eng., Project Engineer, Hardy Associates (1978) Ltd. Phone: (403) 248-4331 ■

"SALT WOES"

Salt Woes", a new Alberta Agriculture film, explains the problems of saline seeps and their causes in dryland areas. It draws attention to the complexity of the phenomenon and the unique properties of saline seeps, demonstrating the need for detailed investigation. It shows up-to-date equipment and methods used to delineate seep areas. It also strongly discourages the indiscriminate use of summerfallow.

"Salt Woes" is the fourth film in a series dealing with issues in soil conservation. The film is available on a free-loan basis from Alberta Agriculture, 7000 - 113 St., Edmonton, Alberta, T6H 5T6. Purchase information is available from Doug Pettit, Head of the Broadcast Media Branch, Alberta Agriculture. Telephone: (403) 427-2127 ■

THE BLANKET SOLUTION

Revegetation is always difficult but not impossible with the Blanket

Construction is completed, the site is free and clear of the work; the embankments around the structure are ready for seeding. But what seeding method, broadcasting, hydroseeding, or the new Proseed Mulch Blanket? What is a mulch blanket?

The Proseed Mulch Blanket is a patented natural fibre biodegradable mat containing any seed mixture specified. The Alberta produced organic mulch blanket is designed to scientifically reproduce the optimal growing conditions found in nature. The blanket itself consists of natural fibre (usually flax straw for commercial uses) which is sprayed with a biodegradable polymer, cured, and then rolled. In the process nutrients, seed and other additives are added as specified.



Not all grass seed mixtures are good for every section of a canal bank reclamation project. Each "blanket" can provide the ideal grasses.

The "Blankets" are the product of 10 years of research and testing by Proseed Inc. The Proseed story began in 1976, when Klaus Bartholl conceived and developed the product on his farm in Riverfield, Quebec. Patented in the United States, and with a patent pending in Canada, the Company is now located in a 2340 m² plant in Calgary.

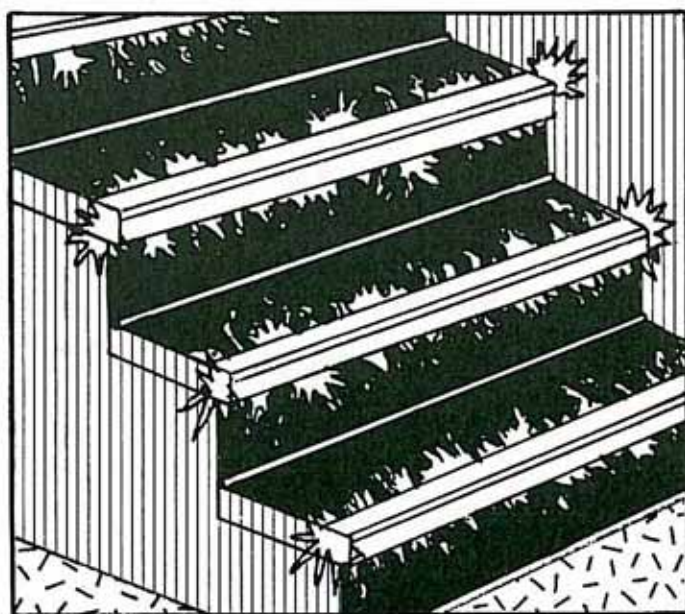
Unlike hydroseeding, no costly or specialized equipment is required to install the blanket. The weight of the blanket is only about 22 kg and measures 1½ m wide by 30 m long making it possible for one man to handle it — a simple job for two people. Seed bed preparations are the same as for conventional seeding. The bed is either hand raked or scarified by machine. The blanket is rolled out, compacted with a roller to ensure there is good contact between the seed and

soil bed. Anchoring is not normally required, however, where high winds may lift the blanket, clumps of dirt work well until the roots take hold. Unused blankets can be stored for very long periods with little loss of seed germination.

Barren soil left on steep construction sites invites erosion. The Proseed Blanket may be the answer to rapidly re-establishing an attractive, protective, vegetative cover around rehabilitated irrigation works. For more information please call Proseed at (403) 279-4141 ■

GLOW-IN-THE-DARK TAPE

Seton Name Plate Corporation of New Haven, has announced a glow-in-the-dark tape for that added measure of safety for locating possible hazards in total darkness. It can serve as a backup to emergency lighting or as an aide to locating shut-off valves, engine cutout switches, ladder rungs, or light switches in areas of dim lighting.



Glow-in-the-Dark tape on darkened stairwell gives added protection.

Available in 9 m length rolls the phosphorescent-luminous tape has a width of approximately 25 mm. For more information call Seton Name Plate Corporation, New Haven, Conn., phone (203) 488-0085 ■

ABC BRIDGES

An alternate for small and medium size canal crossings

Simple as "A-B-C" you say — note quite! An ABC bridge is more technically referred to as an Arch Beam Culvert bridge. ABC bridges use a unique structural system which is intended for use as an alternate in the design and construction of conventional culvert and bridge type crossings. It is an Alberta 1st, having been designed by Bill Peterson of W. Peterson Engineering Ltd. of Edmonton. Now in the process of being marketed world-wide, with twelve foreign patents issued and pending, over thirty of the new structures are already in place in Alberta.

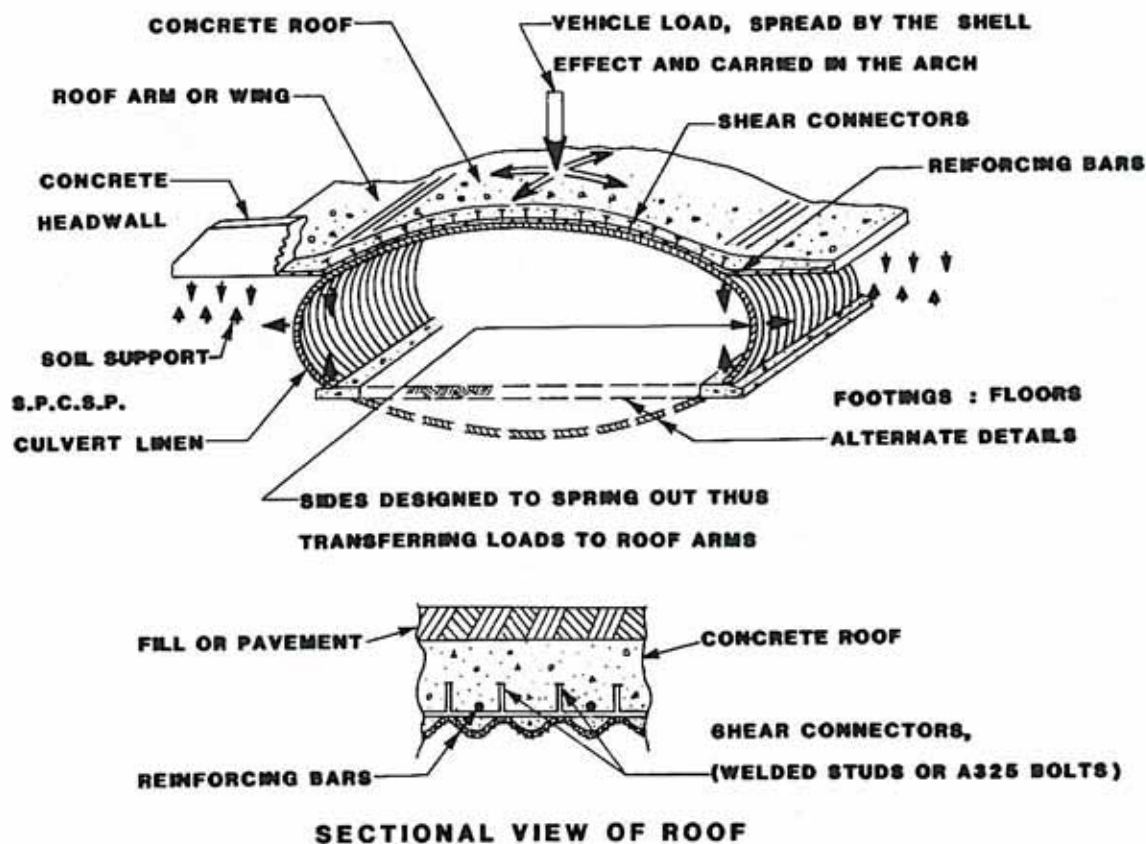
The ABC structural system combines most of the desirable structural and performance features of both of the above mentioned conventional crossing types and has the unique ability to provide large soil confining forces and load transfer which allow structures to be installed with very low profiles and shallow covers.

This is accomplished by the reinforced concrete arch-beam, with extended roof arms or wings, which is constructed over the multi-plate structure.

As a result of the arch-beam being able to spread vehicle loads by the "shell effect" across the arch, the ring loading on the arch pipe itself is reduced. This reduction in ring loading allows the use of thinner side wall and roof plates on the multi-plate structure all of which contributes to cost savings. Little or no covering fill is required on this type of structure, but they may have covering fill to any reasonable depth desired. The combination of new flat profiled structures with low "cover" requirements allow for highly efficient shaped structures to be installed especially where headroom is limited by approaching gradelines of roadways over existing irrigation canals.

The ABC structures can be built with extremely low structure depths and still maintain large, open cross-sectional areas to handle irrigation flows at low head. Their large, low profile, single open areas are superior for irrigation flows especially where debris and maintenance are a consideration and where low headlosses are required.

ABC STRUCTURE ARCH BEAM CULVERT



Any amount of extra load capacity may be built into the bridge structure by simply thickening the monolithic concrete roof usually by only a few millimetres.

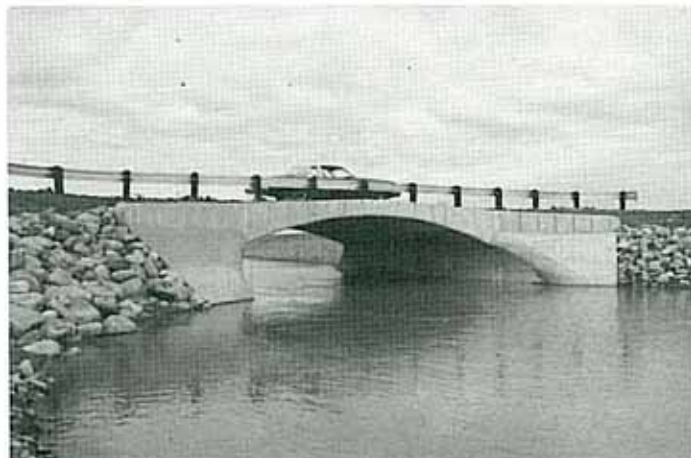
Any amount of extra load capacity may be built into the bridge structure by simply thickening the monolithic concrete roof usually by only a few millimetres. The most commonly used concrete strength is 30 MPa. No "extra strength" or "high strength" concrete is required for the roof. The fact that the roof and headwalls are constructed as a monolithic unit, makes for a highly supportive structure which is very stable against "Dead" or "Live" loads.

Installation of the structure is relatively simple and economical since little forming or finishing is required. It can be constructed with a small on-site work force with the use of local materials and equipment. Little or no maintenance is required on this type of structure, thus reducing overall life cycle costs.



The seventy cubic meter concrete pour is completed in one day.

As compared to a 3-span conventional bridge with pre-cast concrete girders on concrete and steel substructures requiring approximately six weeks to construct, the ABC structure can be installed in approximately three weeks. Cost savings can be considerable, up to 40% in some cases. This cost saving, along with the versatility of the ABC structure has made it a very popular choice. At present, irrigation canal and stream crossings having design flows ranging from 15 m³/s to 170 m³/s can easily be accommodated by twin or multiple installations.



ABC Bridge Structure installed in the L.N.I.D.'s Monarch Branch Canal — headloss is only 100 mm.

The structure is aesthetically pleasing to the eye and can be designed to meet most sensitive environmental conditions. It may also be designed for virtually any loading requirements and may be tailored to meet all hydraulic and structural design criteria.

For more information contact:

C. W. (Bill) Peterson, P. Eng.
Nova Span International Ltd.
200, 7603 - 104 Street
Edmonton, Alberta T6E 4C3
Phone: (403) 432-7698

NEW AERIAL PHOTOGRAPHY

The Project Planning Branch of Alberta Agriculture, in Lethbridge, has a set of 1985 1:30,000 black and white photographs covering the area shown on the map. Anyone wishing to view these photos are welcome to do so. If users wish to purchase any of these photographs, they may be obtained from any of the Maps Alberta (Energy and Natural Resources) outlets in the province. There is one Maps Alberta outlet in Lethbridge located on the third floor of the Sun Center and one in Calgary located in Room 804 of the J. J. Bowlen Building ■

1985 1:30 000 AERIAL PHOTOGRAPHY



WATER HAULER'S BULLETIN SUCCESS

Communicate your resourcefulness by having an article published in the Bulletin. Its success depends upon your help in obtaining and submitting new and useful ideas.

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, editor, at Area Code (403) 381-5164, Lethbridge.

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