



OTTAWA, October 26th, 1927.

Gentlemen,-

I have the honour to transmit herewith an application, in duplicate, of the Creston Reclamation Company, Limited, to the International Joint Commission, for permission to construct certain permanent works in and adjacent to the channel of the Kootenay river in the province of British Columbia at Creston.

The material herewith includes:-

- (a) The application.
- (b) Specifications for the construction of Unit No. 1.
- (c) Tracings - Kootenay Flats.
Plan of Unit No. 1.
Details of Unit No. 1.

All of these have been duly signed by Mr. N. G. Guthrie, Solicitor for the Creston Reclamation Company, and it is understood that fifty additional copies of the application have already been supplied to the Commission.

It will be necessary for the Company to have its proposed works approved by the Dominion Department of Public Works under the provisions of the Navigable Waters Protection Act, application for which has, I believe, already been made.

In transmitting the above application I would respectfully request that the International Joint Commission take appropriate action thereon.

Yours faithfully,

Encls.

The International Joint Commission,
Ottawa,
Ontario.

Specifications for the construction of Unit No 1 of the Reclamation of the Kootenay River Flats, for the Creston Reclamation Company Limited.

General Conditions.

General. The work to be done in connection with this contract is as follows:-

- (1) Constructing a levee or dyke around the area shown on plan of unit No 1 of the Reclamation of the Kootenay River Flats said Levee to be constructed to Elevation 1769.0 of the dimensions shown on plans and specifications.
- (2) To divert the Goat River into the Kootenay River, on section 4 Township 8, in accordance with plans and these specifications.
- (3) To construct within the area reclaimed the necessary drainage ditches to satisfactorily drain said areas.
- (4) To install a 4 foot concrete drainage pipe through the levee with suitable iron sluice way Valve or Flap Valve on the River end of same. Both ends of the drainage pipe to be protected by satisfactory concrete retaining walls.
- (5) To instal the necessary Centrifugal Pumps and Engines on concrete foundations in a suitable building, with the necessary suction and discharge pipes and accessories thereof.

All these works are to be constructed according to these specifications and in accordance with the plans of the works on file with the Secretary of the Creston Reclamation Company Ltd. at Creston, B.C. Should any discrepancy appear in the said spec-

Engineer final
a uthority to the meaning or import of the said specifications and drawings, or about the quality or quantity of materials, or as to the due and proper execution of the work, or as to the measurement, or quality and valuation of the work executed, the same shall be explained by the Engineer in charge of the construction, and this explanation shall be binding on the Contractor.

Engineer Whenever the word "Engineer" occurs in these specifications it is to be held to mean the Engineer in charge of construction, his authorized assistant or other officer appointed to superintend the works.

- Company.** Whenever the word "Company" occurs in these specifications, it is to be held to mean the Creston Reclamation Company Limited with head office in Creston, B.C.
- Contractor.** Whenever the word "Contractor" is used, it shall be held to mean any contractor or firm of contractors, or any member of a firm contracting for the work herein specified, or his or their authorized foreman.
- Responsibility of Contractor.** It is understood that the contractor assumes for himself full responsibility for the acts and neglects of his agent or employees until the final completion and acceptance of the work. The contractor and his sureties shall be held severally responsible for all accidents arising from any cause whatever, and for making good any defects occasioned by carelessness, of the action of the elements, or in any way whatsoever that may occur upon or because of the said works, or until the final percentage is paid.
- Competency of Contractor.** All bidders must satisfy the Company as to the sufficiency of their cash capital for the proper completion of the work, and for their competency for the management of the work. The methods used and the appliances furnished shall be such as in the opinion of the engineer secure a satisfactory quality of work, and enable the contractor to complete the work in the time specified.
- Workmanship.** The workmanship shall not only be of the best quality, but shall be made to conform to the letter and spirit of the specifications and to the requirements of the engineer.
- Lines and grades.** The Levee generally shall be located approximately in the position shown on the plans. Along the Kootenay River it is proposed to build it or near the high part of the river bank. It is the intention that the final selection location will be selected so as to get the best result obtainable, for that reason variations from the location shown on the plan may be made with the approval of the Creston Reclamation Company, or their engineer.

Levee or
Dyke
Selections.

The levee or dyke must conform to the following dimensions. Where the height is nine feet or less, it shall be eight feet wide on top, the slope on the river or water side shall be two feet horizontal to one foot vertical and on the land side a slope of $1\frac{1}{2}$ to 1. Where the height is between nine feet and twelve feet, the top width shall be eight feet, the slope on the water side to be three horizontal to one foot vertical, while on the land side the slope shall be $1\frac{1}{2}$ horizontal to 1 foot vertical. For all levee work over twelve feet in height the top width shall be not less than sixteen feet the slope on the water side to be 3 feet horizontal to two feet vertical, and on the land side the slope shall be two feet horizontal to 1 foot vertical.

The top of all levees after allowing for natural settlement shall not be less than elevation 1769.0 feet, established by assuming Bench Mark No 11 near the Ferrymans house to be 1762.6 elevation.

To allow for settlement, all levees must be carried to height 10% higher than the central vertical height of same, so that where the height of the levee is 10 feet it shall be carried to a height of 11 feet, etc.

Clearing.

The site for levees, ditches, berms and borrow pits, shall be cleared of all trees, brush and shrubs.

All trees requiring cutting for the removal of same, shall be cut as near the ground as possible, but not to exceed 18 inches in height. No blasting or shooting stumps or trees for their removal will be permitted.

All dead or decayed stumps shall be removed by the drag line or otherwise. All small trees and brush shall be grubbed off close to the ground.

All cleared material shall be disposed of by burning.

Bond trench. A ditch four feet in width shall be constructed underneath all levees of sufficient depth to penetrate impervious material at least one foot. This ditch shall be located approximately one third of the width of the base in from the flood water toe of

the levee. Selected material shall be placed in the bond ditch, and the outside slope of the levee.

In no case will the placing of material with leaf mold or other perishable material be permitted in the bond trench or outside slope of the levee.

Where the levee crosses the Goat River and the bond trench would have to be excavated under water, it will be permissible to omit the bond trench and substitute double thickness of Wakefield sheet piling 16 feet long with a penetration of not less than 10 feet. On the south levee where it crosses the gravel wash of the old Goat River channel, great care must be taken to prevent the seeps of water under the levee, the trench must be filled with selected clay of the best kind, and thoroughly tamped.

Borrow pits. Borrow pits may be located on either side of the levee, but in no case shall the borrow pit be less than 8 feet from the toe of the levee and the width of the berm shall not be less than the vertical height of the levee from this berm the borrow pit must have a slope of not less than 2 feet horizontal to 1 foot vertical, In no case will it be permissible to have a borrow pit on both sides of the levee. Where the borrow pit is close to the levee it must not be continuous, but must have a dam or berm at intervals of 400 feet.

Flood Gate and Outlet pipe. Through the levee embankment there shall be laid a 4 foot concrete reinforced concrete pipe for drainage purposes, at a low enough elevation to permit of proper drainage of the reclaimed area. Both ends of this pipe shall be protected by concrete bulk head retaining walls.

A suitably constructed iron sluice gate shall be installed on the outside of River end of this drainage pipe with proper gate lifting appliances. The Gate to be of the same dimensions as the drain pipe.

Drainage Canals. The contractor must provide proper and efficient drainage for the whole area reclaimed. For this purpose the Goat River, and the Goat River Slough channels will provide the main drainage channel deepened if necessary.

A main drainage channel will also have to be provided on the

easterly portion of the Flats by deepening and straitening the slough channel on the east edge of the Flats and extending north and south throughout the entire length of the reclaimed lands. From these drainage channels, subsidiary drains must be made so as to efficiently drain the whole of the reclaimed area.

Pumping
Plant.

The contractor shall provide a proper and efficient pumping plant with ample capacity to handle all the water accumulating in the drainage ditches when the sluice gate is closed. These pumps shall be single stage centrifugal pumps driven by internal combustion engines using fuel oil or gasoline, provided with the necessary iron suction and discharge pipes and gate valves and appurtenances.

The pumping plant must include at least one pump of capacity of 7500 gallons per minute against a head of 30 feet.

The machinery must be set on suitable concrete foundations, and housed in a suitable building.

Concrete

The concrete used on the work shall be composed of one part of cement, to three parts of sand and five parts of broken stone. The concrete may however be made of gravel providing the gravel has the above proportions. The cement used must be up to the standard set by the Engineering Institute of Canada, the quality of the concrete must be first class in every respect.

A. L. McCulloch

Consulting Engineer.

Nelson, B.C. Sept 2nd/27

M. J. Sullivan
Solicitor for Creston
Reclamation Company
Oct 14th 1927