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Included in the Pitt Polder Pump Station Project is the construction of a new pump station adjacent to the existing Pitt Polder Pump Station, as well as, upgrades to the existing Pitt River Culverts where the Sturgeon Slough meets the Pitt River. This document will serve as a description of the works associated with the upgrades to the Pitt River Culverts only.

Project Introduction

ISL Engineering and Land Services (ISL) was retained by the City of Pitt Meadows to undertake the design and construction services for the rehabilitation and upgrades for the Pitt River Culverts at the west end of the Sturgeon Slough. In 2013, ISL completed an initial design, however, the project was shelved due to lack of budget. In 2017, with the help of ISL Engineering the City of Pitt Meadows was able to obtain just under \$5 million dollars to upgrade the existing Pitt Polder Pump Station through the New Building Canada Fund – Small Communities Fund, and the rehabilitation and upgrades of the culverts were included in the scope of work.

Background

The City of Pitt Meadows is located at the confluence of the Fraser and Pitt Rivers within the Lower Mainland of British Columbia. A large portion of the City (approximately 86%) is located within a flood plain. The City is divided into four drainage areas that are protected with continuous dike system. The drainage areas convey flows through a network of ditches, flood boxes and six pump stations for flood protection.

There are four existing corrugated steel pipe culverts located under the Pitt River dike where the Sturgeon Slough meets the Pitt River. Three of the pipes (on the south side of the slough) are utilized as culverts while the fourth (located on the north side of the slough) is used as a flood box complete with gate. In order to provide irrigation water supply and improved flood protection, upgrades to the flood box and culverts at the Pitt River dike are required immediately as they are rusted and disintegrating.

Site Works

First and Foremost, as part of the rehabilitation and upgrades to the existing culverts, the existing dike will not be raised or widened. As part of this project it is proposed that the pipes be relined with 1015mm diameter HDPE pipe and grouted to renew the life of the culverts without disturbing the integrity of the dike integrity. Concrete headwalls will be installed on the west side (Pitt River side) of the three culverts complete with two (2) flap gates and (1) combination gate to allow for more flow control. Additionally, concrete headwalls are to be installed at both end of the proposed flood box complete with two (2) combination gates. Timber decks will be built to the headwalls to provide City of Pitt Meadows operations staff access to the gates. Rip rap is to be placed at any outlet or inlet, in accordance with the BC Dike Design guide and the Rip Rap installation guide, to mitigate possible erosion.

Sheet piling, and dewatering, will be utilized to isolate the culverts for construction and steel piles will be driven as supports for the timber decks. Some demolition will occur in order to remove existing gates and concrete slabs as per the design drawings.



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