

# INVITATION TO TENDER

## Contract T.2782

### Contract: Francis Road Drainage Pump Station

The City of Richmond invites tenders for construction work at the above-mentioned locations. Work under the Contract generally comprises a comprehensive renovation of the existing Francis Road Drainage Pump Station. Work to complete this project generally includes the following items.

Work generally entails a major refurbishment of the existing Francis Road Drainage Pump Station to bring it to an upgraded, fully functioning system. Generalities of the work include:

- demolition of the existing structure above the foundation, retention of the existing foundation and additional civil works.
- installation of three City supplied 60 HP Flygt drainage pumps and City supplied Motor Control Center.
- supply (except as noted) and installation of all electrical/mechanical items.
- construction of a steel and concrete pump station structure and pedestrian bridge.
- pile driving associated with dyke densification adjacent to the pump station (optional).

The *Contract Documents* are available on or after June 12, 2006 during normal business hours at Front of House of the Richmond City Hall at:

6911 No. 3 Road, Richmond, BC, V6Y 2C1

on payment of a **non-refundable** amount of \$100.00 including GST payable to:

#### City of Richmond

The *Contract Documents* are available for viewing at:

Front of House, Richmond City Hall, 6911 No. 3 Road, Richmond and Vancouver Regional Construction Association, 3636 East 4th Avenue, Vancouver.

#### Tenders are scheduled to close at:

**Tender Closing Time:** 3:00 PM local time

**Tender Closing Date:** June 29, 2006 and will be opened publicly immediately thereafter in Richmond City Hall

**Tender Submission Address:** Manager – Purchasing & Risk  
Front of House, Richmond City Hall  
6911 No. 3 Road, Richmond, BC, V6Y 2C1

A valid tender consists of a submission delivered on time complete with the required Bid Bond, Undertaking of Surety and Undertaking of Liability Insurance.

The lowest or any tender will not necessarily be accepted.

Manager – Purchasing & Risk



## City of Richmond

6911 No.3 Road, Richmond, BC V6Y 2C1  
Telephone (604) 276-4000  
www.city.richmond.bc.ca

June 22, 2006  
File: 10-6340-20-P.03303/Vol 01

**Engineering**  
Telephone: 604-276-4289  
Fax: 604-276-4197

**TO THOSE WHO HAVE RECEIVED COPIES OF T.2782**

Dear Sir/Madam:

**Re: Contract T.2782  
Addendum No. 1  
Drainage Pump Station Renovation  
Francis Road Drainage Pump Station**

This addendum forms part of the Contract Documents and shall be read, interpreted and coordinated with all other parts. The costs of all work contained herein shall be included in the Contract Price. The following revisions supersede the information contained in the original Contract Document to the extent referenced and shall become part thereof.

Tenderers shall acknowledge receipt of this addendum by:

- 1. Inserting its number and date where provided for on the Form of Tender.**
- 2. Section B – Tender Submission Documents**

Delete Page B-15 from the Schedule of Quantities and Prices and substitute therefore the attached Page B-15 Rev 1.

- 3. Section D – Documents Specific to this Contract, Supplementary Specifications (SSP)**

On Page D-20 and D-21, Dyking Authority, Item SSP 20, delete the words under this item and substitute therefore the following words.

“A permit has been received from the Dyking Authority as attached in Section J. The Contractor shall comply with all items noted in the permit at the Contractor’s cost. The dyking Authority has noted conflicting requirements with the FREMP approval. Specifically the FREMP permit requires 40 native shrubs to be planted around the pump station fore bay which is not acceptable to the Dyking Authority. The Contractor shall be prepared to complete supply and planting of the required shrubs at an alternate location at no additional cost to the Owner. The Contractor shall cooperate with the Owner, FREMP and the Dyking Authority through resolution of this conflict at no additional cost to the Owner.

On Page D-21, Temporary Working Space, Item SSP 23, delete the first two sentences under this item and substitute therefore the following words.

“The Owner has completed property negotiation with the owners of 3088 Francis Road and will pay the rental period amount. It shall be the Contractor’s costs for the working space should the work exceed the specified contract time. The Agreement dated May 19, 2006 has been attached as Section L. Per the last paragraph of the agreement, the Contractor shall work together with the Owner and the property owner to determine the commencement date of the working space agreement.”

On Page D-22, Building Permit, Item SSP 27, delete the words under this item and substitute therefore the words.

“A building permit has been received by the Owner and is attached as Section M. The approved building permit drawings and original correspondence shall be provided to the Contractor prior to commencing construction and shall be available for viewing on site at all times to facilitate inspections. The Contractor shall follow the terms as provided in the Building Permit attached as Section M.”

On Page D-22, BC Hydro Transformer, Item SSP 28, delete the words under this item and substitute therefore the following words.

“The Owner will pay the costs for materials purchase as supplied by BC Hydro. The Contractor shall be responsible for pick-up and delivery of materials and complete all coordination with BC Hydro. The BC Hydro contact is Mr. Wes Rinke who can be reached at 604-543-4150.”

On Page D-33, insert the new Item 1.1.1.7 after Item 1.1.1.6

“.7 Riparian Area Regulation”

#### **4. Measurement and Payment for Work**

On Page D-156, delete the pay item **Supply and Installation of the Control Panel – Item 7.2** in its entirety.

#### **5. Section D – Standard Documents (Bound Separately)**

Delete all the words under this section after the words “(Bound Separately)” and substitute therefore the words,

“Master Municipal Construction Documents, Volume II, 2000  
City of Richmond Supplementary Specifications and Detail Drawings, June 2005, V1.0”

#### **6. Section H – March 6, 2006 FREMP Permit**

After the last page of this section, insert the attached letter from Integrated Resource Consultants Inc., dated February 16, 2006.

#### **7. Section J – Dyking Authority Permit**

Insert the attached letter from the Dyking Authority dated June 22, 2006.

## 8. New Sections

Insert the attached new section, **Section L, Working Space Agreement** and **Section M, Building Permit** and include therefore the attached agreement dated May 19, 2006 to Section L and the building permit issued June 14, 2006.

## 9. Drawings

On Drawings 052656-0-401 and 402, delete the note "1000mm x 1000mm x 9mm seepage collars (typ.)" and substitute therefore the note "1800mm x 1800mm x 9mm seepage collars (typ.) The Contractor shall also allow at no extra cost to the Owner the supply of all materials, equipment and labour to install spool pieces 1.25 times the length of the in-line check valves, at the check valve locations to facilitate removal.

## 10. Questions received during tendering period and answers provided

Q1 I am enquiring about the above tender. Is the supply of the control panel included in this contract or will it be city supplied?

A1 The MCC is supplied by the City with the control panel built in. Supply of a control panel by the Contractor is not required. An addendum in this regard will be prepared.

Yours truly,



Jim V. Young, P. Eng.

*Manager Engineering Design and Construction*

<b>T.2782 – Electrical Items – Francis Road Pump Station</b>					
<b>SCHEDULE OF QUANTITIES AND PRICES</b>					
<b>ITEM NO.</b>	<b>DESCRIPTION</b>	<b>UNIT</b>	<b>EST. QTYS</b>	<b>UNIT PRICE (\$)</b>	<b>TOTAL AMT. (\$)</b>
7.	ELECTRICAL ITEMS				
7.1	Installation of the Motor Control Center		Lump Sum		
7.2	<del>Supply and Installation of the Control Panel</del>		Lump Sum		
7.3	Supply and Installation of all Remaining Electrical Items and HVAC Equipment		Lump Sum		
<b>TOTAL FOR ELECTRICAL ITEMS - ITEM 7 (Carry forward to Tender Summary)</b>					<b>\$</b>



INSERT TO  
SECTION H

Suite 160, 14430 River Road  
Richmond, BC, Canada V6V 1L4  
Tel. 604-278-7714 • Fax 604-278-7741  
www.ircintegratedresource.com

16 February 2006

Fraser River Estuary Management Program  
Suite 501 – 5945 Kathleen Avenue  
Burnaby BC V5H 4J7

1 COPY FOR  
JM ALS & FILE  
UNDER PROJECT 03303

Attention: Daria Hasselmann

Reference: Francis Road Pump Station Upgrades, Richmond, BC

Dear Daria,

This letter report is intended to supplement the accompanying FREMP Application for the proposed upgrades to the Francis Road Pump Station in Richmond, BC. This report includes a summary of the proposed construction activities, a description of the existing fish and wildlife habitats, potential impacts to fish and wildlife habitats, mitigation techniques (conditions) to be implemented during the works and recommendations for site restoration and revegetation as required. An application for an approval under Section 9 of the *Water Act* is also being prepared for submission to the Integrated Land Management Bureau of the Ministry of Environment (Service Centre – Surrey) and Associated Engineering has been advised that an approval under the *Dike Maintenance Act* may be required for the work.

*Background*

The City of Richmond contracted Associated Engineering to design and construct upgrades to the existing Francis Road Pump Station. Associated Engineering contracted IRC Integrated Resource Consultants Inc. (IRC) to provide environmental consulting services to the engineering team during the planning and construction phases of the project.

*Property Ownership*

The pump station and proposed outlet structures are located within the City of Richmond's road right-of-way for Francis Road. One of the existing outlet structures scheduled for removal is located on Provincial Crown Property. A sign on-site indicates that this area is part of the BC Environment Boundary Wildlife Management Area. The City of Richmond has indicated that there are no other charges registered on the titles of the Provincial Crown lands to the north and south of the Francis Road allowance (email from Christine McGilvray, Manager, Lands & Property, 23 January 2006).

*Proposed Construction*

Proposed construction activities are as follows and detailed plans are provided:

- Temporarily relocate the existing bridge to the north of the work site to maintain public access to the dyke during construction.
- Remove the existing wood structure (which is in poor condition) from the pump station to the level of the concrete foundation within the forebay.
- Upgrade the concrete foundation as needed and construct the new pump station, in part, on the footprint of the existing pump station.
- Construct a new bridge over the forebay and pump station for public access to the dyke. This work will include the installation of 29 steel piles to support the bridge.
- Install new wing walls and a trash rack in the ditch north of the pump station.
- Relocate the existing headwall for the pipe from the ditch south of the pump station.
- Install a new electrical control building partially set into the dyke.
- Install new discharge pipes and a new outlet discharge structure within the existing dyke footprint.
- Install ~16 m<sup>2</sup> of rip rap for erosion protection in front of the new discharge pipes.
- Remove the existing discharge structures and restore the area currently occupied by them.
- Form new concrete sidewalks along Francis Road.
- Conduct ground densification using piles in the area around the pump station (Optional – to be determined). The number of piles and the final pile type has not yet been determined. Should the ground densification be included in the work, additional details will be submitted to FREMP for review.

#### *Existing Environmental Conditions*

The aquatic habitat around the existing Francis Road Pump Station includes a forebay for the pump station connected to ditches extending north and south from the forebay on the land side of the dyke and outlet pipes located on, and discharging to, the marsh habitat on the Sturgeon Bank side of the dyke.

The on-line FREMP Atlas hosted by the Community Mapping Network (<http://www.shim.bc.ca/FREMP/main.cfm>) was accessed to obtain additional information regarding the tidal and riparian habitats around the Francis Road Pump Station. The shoreline is classified by FREMP as red, indicating that it has high productivity. Development in red coded habitats is restricted, however, this project is designed to upgrade an existing pump station located at the proposed development site.

The second order habitat mapping indicated that the vegetation in the ditches near the Francis Road Pump Station was grass, shrubs and herbs and the tidal area was classified as marsh habitat. The community mapping indicated that the vegetation in the ditch north of the pump station is comprised of low shrubs (<2 m) and the ditch to the south contains low shrubs (<2 m) and dry grass and herbs. The vegetation in the marsh area includes forbs, grasses, dry grass and herbs.

The ditch/pond south of the forebay is connected to the forebay by an existing buried pipe. The distance from the forebay to the open ditch/pond is approximately 19 m. The vegetation on the banks of the open ditch/pond include grass, cattail (*Typha latifolia*), blackberry (*Rubus* spp.) and bulrushes (*Scirpus lacustris*). Vegetation between the

forebay and ditch/pond also included scotch broom (*Cytisus scoparius*). Planted and staked native shrubs and trees were observed around the southeast corner of the forebay and into the private property on the south side of Francis Road.

The ditch north of the forebay is not enclosed adjacent to the pump station. It has a width (top-of-bank to top-of-bank) of approximately 14 m and had a wetted width of approximately 5.4 m, as observed on 25 January 2006. The vegetation adjacent to the ditch was primarily grass and blackberry with some large shrubs observed further north of the project area.

The outlet pipes from the existing pump station discharge into the marsh area on the Sturgeon Bank side of the dyke. One of the pipes is located within Provincial Crown Land and a sign on-site indicates that this area is part of the BC Environment Boundary Wildlife Management Area. There is a pool of water in front of the outlet pipes and scoured water paths can be viewed out into the marsh. Over top of, and north of, the outlet pipes is a platform (25.3 x 5.8 m) built out from the dyke with a concrete wall drop off to the marsh habitat. The marsh vegetation along the wall is primarily grass, cattail and sedges.

#### *Anticipated Environmental Impacts*

The proposed pump station structure is to be constructed within the existing forebay on the existing concrete foundation, after upgrades. The footprint of the structure is 7.45 x 8.5 m with an additional 1.7 m on either side for stairwells and access requirements. It is not expected that this construction will have a permanent impact on the existing aquatic or riparian vegetation around the forebay.

The proposed bridge structure over the new pump station and forebay will have a length of approximately 16.5 m and a width of 8.5 m. On the dyke side of the bridge the bridge footings will be in an area currently occupied by mowed grass, gravel and/or asphalt. On the land side of the forebay the bridge footings will be in an area currently occupied by mowed grass and/or concrete sidewalk. No loss of riparian vegetation is expected as a result of the new bridge.

The installation of new wingwalls and a trashrack in the ditch north of the pump station are expected to impact approximately 7 m<sup>2</sup> of ditch/riparian (blackberry, grass) habitat.

The removal of the existing discharge structures will restore approximately 10 m<sup>2</sup> of area currently occupied by concrete structures back to marsh vegetation. The new proposed discharge structure will be constructed completely within the dyke footprint with the exception of 16.35 m<sup>2</sup> (10.9 x 1.5 m) of rip rap to be installed in the marsh area adjacent to the existing concrete wall. The discharge structure has been designed with partial walls and a stepped cascading outlet to the rip rap to allow for the dissipation of energy prior to discharge. The rip rap will allow for additional energy dissipation prior to discharge into the marsh habitat.



The electrical control building proposed for construction on the land side of the dyke is expected to occupy an area of approximately 36 m<sup>2</sup> (4 x 9 m) that is currently occupied by mowed and natural grasses, scotch broom and blackberry. The control building will be partially set into the dyke with the roof approximately 0.5 m higher than the existing dyke elevation.

#### *Proposed Timing*

The work is scheduled for tender in March 2006 with work beginning as soon as possible thereafter. The work is expected to take approximately 3 to 4 months to complete. Correspondence with Brian Naito of DFO (emails dated 12 and 17 January 2006) has indicated that work may proceed within the forebay, ditches and intertidal area outside of the standard instream work windows if all works are completely isolated from the waters in the adjacent areas.

#### *Mitigation and Best Management Practices*

The following mitigative measures and best management practices are recommended and are to be included in the tender documents associated with this work:

1. Construction activities must be monitored by qualified environmental professionals full-time during start-up, any instream work or sensitive activity.
2. Work on the Sturgeon Bank side of the dyke must be avoided from March 1 to August 15 unless it can be conducted in complete isolation of the tidal waters.
3. Instream work on the land side of the dyke (ditches and forebay) must be avoided from March 1 to June 15 unless the work can be conducted in isolation of waters in adjacent areas of the drainage channel/forebay.
4. Work must be undertaken and completed in isolation of all flowing water.
5. A fish salvage must be conducted prior to instream works and site isolation.
6. Work must be undertaken and completed in such a manner as to minimize the release of silt, sediment or sediment-laden water, raw concrete or concrete leachate, or any other deleterious substances into any ditch, watercourse, ravine or storm sewer system. The recommendations for sediment and erosion control outlined in the "Land Development Guidelines for the Protection of Aquatic Habitat" will be used for reference.
7. Concrete leachate is alkaline and highly toxic to fish and other aquatic life. All works involving the use of concrete, cement, mortars, and other Portland cement or lime-containing construction materials (concrete) must be conducted to ensure that no sediments, debris, concrete, concrete fines, wash or contact water are deposited, either directly or indirectly, into any watercourse outside of the forms of cast in place structures. A CO<sub>2</sub> tank must be readily available during concrete work for immediate deployment to neutralize pH levels should a spill occur. Containment facilities shall be provided at the site for the wash-down water from concrete delivery trucks, concrete pumping equipment, and other tools and equipment as appropriate. Any spills of sediments, debris, concrete fines, wash or contact water must be reported immediately to 1-800-663-3456, and emergency mitigation and clean-up measures implemented immediately.
8. All concrete work must be completely isolated from any water within or entering into any watercourse or stormwater system for a period of 72 hours after pouring. The pH must be monitored frequently in the watercourse immediately downstream of the

isolated works until completion of works. Emergency measures shall be implemented if downstream pH has changed more than 1.0 pH unit, measured to an accuracy of +/- 0.2 pH units, from the background level, or is recorded to be below 6.0 or above 9.0 pH units. Any water contacting uncured or partly cured concrete during activities, including but not limited to exposed aggregate wash-off, wet curing, or equipment washing, shall be prevented from directly or indirectly entering any watercourse or stormwater system. Any water that contacts uncured or partly cured concrete must be isolated, held and will not be released into any watercourse or stormwater system until the pH is between 6.5 and 8.0 pH units, and the turbidity is less than 25 NTU, measured to an accuracy of +/- 2 NTU.

9. Work must be carried out during favourable weather and low water conditions.
10. Work must be pursued to completion as quickly as possible once started.
11. Equipment and machinery must be in good operating condition (power washed), free of leaks or excess oil and grease. No equipment refueling or servicing may be undertaken within thirty (30.0) metres of any watercourse or surface water drainage.
12. A spill containment kit must be readily accessible on-site in the event of a release of a deleterious substance to the environment. Any spill of a substance toxic to aquatic life of reportable quantities must be immediately reported to the environmental monitor and the Provincial Emergency Program 24 hour phone line at 1-800-663-3456.
13. Machinery must work from the banks of the watercourses and not in the channels to minimize impacts and to better enable mitigation of sedimentation.
14. Work must minimize disturbance to existing vegetation on and adjacent to the watercourse banks.
15. Excavated material and debris must be removed from the site or placed in a stable area above the high water mark or active floodplain of the watercourses, as far as possible from the channel, and protected from erosion by mitigating measures including, but not limited to covering with erosion blankets or seeding/planting with native vegetation. Material that is moved off-site must be disposed of in such a manner as to prevent its entry into any watercourse, floodplain, ravine, or storm sewer system.
16. Disturbed areas within thirty (30.0) metres of the top of the bank must be graded and stabilized upon completion of the work.
17. Disturbed soil areas on the banks and areas adjacent to watercourses must be protected from surface erosion by seeding after completion of the work.
18. All in-channel or active floodplain habitats that are disturbed during the completion of the works must be restored to their original condition and/or enhanced.
19. Riparian areas disturbed during the completion of the works must be restored to their original condition or enhanced with the planting of riparian native vegetation as directed by the environmental monitor upon completion of the work.
20. Fill or other materials used for this project on areas adjacent to the watercourses must be inert, free of contaminants and placed so as to not gain entry into the watercourses.
21. Material, such as rock, riprap, or other materials placed on the banks or within the active channel or floodplain of the watercourse must be inert and free of silt, overburden, debris or other substances deleterious to aquatic life.

- 22. A copy of the recommended mitigative best practices, and appropriate plans, drawings and documents must be forwarded to the contractor/crew supervisor and be readily available at all times at the site while the work is proceeding.
- 23. A pre-construction meeting must be held between the environmental monitor and the contractor undertaking the work on the site to ensure an understanding of the mitigative best practices for the project.

*Habitat Restoration and Proposed planting*

The proposed project is expected to impact approximately 7 m<sup>2</sup> of ditch habitat north of the pump station (wingwalls and trashrack), 16.35 m<sup>2</sup> of intertidal habitat due to the installation of rip rap at the new outlet and 36 m<sup>2</sup> of grass and invasive vegetation due to the installation of the electrical building. The removal of the existing outlet structures will result in the removal of approximately 10 m<sup>2</sup> of existing concrete structures. Once the outlet structures are removed, an area of approximately 20 m<sup>2</sup> will be available for restoration / enhancement with planting of native grasses and cattails (N=20). This will mitigate for the impacts of the rip rap installed adjacent to this area.

In addition, we recommend planting 40 native shrubs (willow, Nootka rose and red-osier dogwood) around the pump station forebay to mitigate for vegetation impacts associated with the wing walls, trashrack and the electrical building.

All disturbed areas will be stabilized and seeded with a native seed mix upon completion of the work.

*Attachments*

The following items are appended to this letter report: 1) the FREMP application form; 2) a location map (Figure 1); 3) FREMP Atlas Air Photos with the habitat classification and first order, second order and community mapping (Figures 2-6); 4) site photographs; and 5) engineers drawings prepared by Associated Engineering.

Sincerely,



Jennifer Phillips, M.Sc., R.P.Bio.  
Fisheries Scientist

cc. Richard Harper, Associated Engineering

*References*

FREMP Atlas hosted by the Community Mapping Network  
<http://www.shim.bc.ca/FREMP/main.cfm>

## **SECTION J**

### **Dyking Authority Permit**



IT'S OUR TIME  
TO SHINE

June 22, 2006

Your File: 052656-5-4  
Our File: R3-1-9 (Francis Pump S)

City of Richmond  
c/o Associated Engineering (BC) Ltd.  
#300 – 4940 Canada Way  
Burnaby, B.C.  
V5G 4M5

Attention: Richard Harper, M.Eng., P.Eng.

Dear Mr. Harper:

**Re: Application for Proposed upgrade to Francis Road Pump Station, Richmond  
West Sea Dike – Deputy Inspector of Dikes Review**

## 1.0 Introduction

This is in regards/reference to an application by Associated Engineering on behalf of the City of Richmond, dated May 17, 2006 requesting approval under the *Dike Maintenance Act* (DMA) to construct a new pump station and outfall through the West Sea Dike in Richmond. The works will be located near the west end of Francis Road at or near station 71+50 of the dike (see referenced as-built drawings).

## 2.0 Reference Materials

We have reviewed your correspondence dated May 17, 2006 along with the drawing(s)<sup>1</sup>, letters and reports listed below:

- Draft Report by Associated Engineering dated July, 2005 entitled “City of Richmond Francis Road Pump Station Upgrade”

<sup>1</sup> The Deputy Inspector of Dikes (DIOD) review of these drawings is restricted to general issues related to the long term functional safety and operation & maintenance of the diking system. It does not include any specific review of the structural, mechanical and electrical components of the pump station – the responsibility for which rests with the Professional Engineer retained by the Diking Authority for the facility’s design, construction & operational employment.

- Report by GeoPacific Consultants Ltd. dated December 20, 2005 entitled "Proposed Pump Station Renovation, Francis Road, Richmond, B.C."
- Contract Specifications for City of Richmond Francis Road Pump Station Contract No. P03303 dated 2006-05.
- Application letter to Fraser River Estuary Management Program (FREMP) prepared by Integrated Resource Consultants Inc. dated Feb 16, 2006 entitled "Francis Road Pump Station Upgrades, Richmond B.C."
- Review letter issued by FREMP dated March 6, 2006 entitled "FREMP #0602F012; City of Richmond – Proposed Francis Road Pump Station Upgrade – Sturgeon Bank"
- The following design drawings prepared by Associated Engineering Ltd., issued for tender 2006/05/10 City of Richmond Contract P03303 (revision 0).

<b>Drawing No.</b>	<b>Sheets</b>	<b>Title</b>
052656-0-001	-	General – Drawing List
052656-0-101	-	General Arrangement Plan
052656-0-102	-	General Profile
052656-0-103	-	General Sections
052656-0-350	-	Structural Specifications
052656-0-351	-	Bridge Layout, Sections & Details
052656-0-352	-	Foundation & Building Layout
052656-0-353	-	Pump station Sections
052656-0-354	-	Pump station Sections
052656-0-355	-	MCC Room General Plan & Sections
052656-0-356	-	Discharge Structure – Layout Plan, Sections & Details
052656-0-357	-	Typical Details
052656-0-358	1 of 2	Structural Reinforcing
052656-0-359	2 of 2	Structural Reinforcing
052656-0-360	-	Demolition Plan
052656-0-361	-	Demolition Notes and Photo Log
052656-0-362	-	Piling Layout
052656-0-363	-	Railing Details & MCC Building Roof Plan
052656-0-401	-	Process Mechanical Fore Bay Discharge Piping Plan
052656-0-402	-	Process Mechanical Fore Bay Discharge Piping Sections
052656-0-501	-	Building Services Genset Building Mechanical General Notes
052656-0-502	-	Building Services Genset Building HVAC Plan and Sections
052656-0-601	-	Single Line Diagram
052656-0-602	-	Power, Control and Lighting Layouts

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052656-0-603 - Miscellaneous Details

As well, reference has been made to the following:

Fraser River Flood Control Program As-built drawings for Project No. 3; Contract 1, by CBA Engineering Ltd:

<b>Drawing No.</b>	<b>Title</b>	<b>Issue Date</b>
4795-1-6	Typical Dike Sections Sheet 1 of 3	Dec 1973
4795-1-7	Typical Dike Sections Sheet 2 of 3	Dec 1973
4795-1-11	Sea Dike Improvements Drainage Structures – Francis & William Rds General Arrangement & Details	Dec 1973
4795-1-12	Sea Dike Improvements Drainage Structures – Francis & William Rds Details of Discharge Piping	Dec 1973
4795-1-13	Sea Dike Improvements Drainage Structures – Francis & William Rds Details of Discharge Structures	Dec 1973
4795-1-14	Sea Dike Improvements Drainage Structures – Francis & William Rds Details of Pump Discharge Flap Gates	Dec 1973

We carried out a review of the site on June 1, 2006.

### **3.0 Summary of Proposed Works and Deputy Inspector of Dikes Review**

The works associated with the pump station upgrade will generally consist of the following;

- Removal of the existing pump station facility and portions of the foundation,
- temporary relocation and then replacement of an adjacent footbridge
- removal of two existing discharge pipes and their associated discharge structures
- ground densification by driving wood piles throughout the area of the dike, pump station and outfall structures
- installation of 200mm diameter steel pipe piles for support of the new outfall structure, pump station and electrical control building
- construction of the new facility including three new outfall pipes, outfall structure, pump house, electrical control building and underground electrical supply conduits.

The new facility will be constructed partially into the landside toe of the existing dike incorporating concrete retaining walls up to a height of approximately 3 meters. Up to approximately 2 meters of new fill will be placed on the landside of the dike and to the south of the new pump station facility. The height of the dike crest will be increased from 3.2 meters (geodetic) to 3.5 in the vicinity of the pump station. The City of Richmond may raise the dike crest to an elevation of 4.0 m over the long term.

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The facility will utilize three 60 hp Flygt CP3300LT pumps with 804 impellers discharging through three separate 650 mm diameter HDPE or steel discharge pipes with series 37 flanged in-line check valves.

Following our review we discussed the following concerns with you and Mr. Jim Young, P.Eng. of the City of Richmond;

- The proposed work includes a possible option for ground improvement by driving untreated timber densification piles in a grid pattern throughout the area of the dike and pump station facility. The piles would extend through the dike and into the underlying foundation soils to depths of ten or more metres. In the long term, the piles above the groundwater level will be subject to decay and voids may form in the upper portion of the dike, due to wood decay. We understand that the City of Richmond is prepared to carry out inspections and additional long term maintenance in the form of adding and compacting fill at the ground surface.
- The proposed seepage collars detailed in the project drawings for the discharge pipes of the facility do not meet our standard with respect to minimum sizing. We recommend that this detail be upgraded in the project drawings.
- Repair or replacement of in-line check valves for discharge pipes would require significant excavation within the dike footprint. It was recommended that a detail be added to simplify the repair or replacement of the check valves.
- Future planning by the City of Richmond may include raising the sea dike to an elevation of 4.0 meters (geodetic) however the overall plan is uncertain at this stage. We understand that a dike crest elevation of 4.0 was considered during the early planning stages for the new facility however an elevation of 3.5 was chosen on the basis of funding pressures and because the City of Richmond's planning process for upgrades to dike crest elevations has not been completed.

#### **4.0 Issues to be Addressed/Resolved**

The Fraser River Estuary Management Program (FREMP) review of the works includes a requirement to plant 40 native shrubs (willow, Nootka rose and red-osier dogwood) around the pump station fore bay to mitigate for vegetation impacts associated with the wing walls, trash rack and electrical building. These plantings are of concern because of their potential to obstruct visual inspections and the diking authority's ability to detect early symptoms of seepage and piping in and around the dike and infrastructure; accordingly FREMP approval should be sought to eliminate the proposed shrubs or relocate them off of the area of the dike slopes and footprint.



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## 5.0 Conditional Approval

**This letter constitutes approval under the *Dike Maintenance Act* for the above noted works subject to the terms and conditions set forth below:**

### General

1. The approval shall remain valid for a period of 24 months after the date of this letter.

### Design and Construction

2. The design and construction standards for the works should conform, where possible, to the 'Dike Design and Construction Guide – Best Management Practices for British Columbia July 2003<sup>2</sup>,
3. Subject to the additional requirements specified herein, the work shall be done in accordance with the project specifications and standards.
4. Immediately following removal of the underground outfall pipes for the existing facility the excavation shall be backfilled with Impervious Dyke Material – Type 3 (with reference to the project specifications), placed and compacted as per the project specifications.
5. Proposed plantings around the pump station fore bay shall be eliminated or relocated off of the area of the dike slopes and footprint.
6. The project drawings indicate two 1000mm x 1000mm seepage collars for each of the three discharge pipes for the new pump station. These dimensions shall be increased to a minimum of 1700 mm by 1700 mm for each seepage collar.

### Quality Control and Assurance

7. The quality control and assurance (QA/QC) monitoring shall be done under the supervision of a multi-disciplinary team of Professional Engineers.
8. Any damage to the dike (ancillary or otherwise) caused by the construction shall be restored to equal to or better than its former or original state.
9. During installation of piles for foundation support, continuous on-site inspections shall be carried out by the designer or a qualified person responsible to the designer.

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<sup>2</sup> A downloadable copy is available from the Flood Hazard Management webpage  
[http://www.env.gov.bc.ca/wsd/public\\_safety/flood/structural.html](http://www.env.gov.bc.ca/wsd/public_safety/flood/structural.html)

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10. Backfilling shall be inspected by a Professional Engineer with experience in geotechnical engineering for the following;

- i. Backfilling of new underground pipe installations within the dike footprint.
- ii. Backfilling of excavations for removal of the existing outfall pipes
- iii. Compaction at and around the seepage collars for the new discharge pipes

The Professional Engineer shall inspect the excavation prior to commencement of backfilling and ensure that adequate testing is carried out during placement and compaction to certify that backfill material placed will not negatively impact the long term stability of the dike.

### **Operation and Maintenance Manual, As Built Drawings and Construction Completion Report**

11. Operations and Maintenance (O&M): A ministry approved O&M manual<sup>3</sup> that establishes requirements for operation and maintenance of the pump station shall be prepared and issued at the completion of the project. The O&M manual shall include detailed information on pump operations (include Pump manufacture's literature and recommended practices), as well as include the hydraulic design parameters, and any other relevant information. 2 copies of an O&M manual shall be provided to the Diking Authority and the Inspector of Dikes office for record purposes.

12. As-Built Drawings: At the completion of the project 'As-Built' drawings of the works (2 sets – a full size set and a one half (½) size set), sealed by a Professional Engineer, shall be provided to the Diking Authority and the Inspector of Dikes office for record purposes.

- i. The As-built drawings shall include the grading specifications for the various fill, filter and riprap materials

13. Construction Completion Report: At the completion of the project the following completion reports sealed by a Professional Engineer, shall be provided to the Diking Authority and the Inspector of Dikes office for record purposes:

- a. A general construction completion report for structural and mechanical aspects of the pump station.
- b. A completion report for geotechnical aspects of the project including but not limited to; testing, inspections and certification of backfilling, ground improvement, and pile installations.

*Note: The Inspector of Dikes office shall receive written notification of a proposed schedule to complete the works if the works are not substantially complete by the approval expiry date. The Inspector of Dikes office, at its discretion, may grant a time extension and/or may initiate a further review of the project. This may result in amendments to approval requirements or require a new application and approval.*

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<sup>3</sup> A downloadable copy of an O&M manual template is available from the Flood Hazard Management webpage: [http://www.env.gov.bc.ca/wsd/public\\_safety/flood/structural.html](http://www.env.gov.bc.ca/wsd/public_safety/flood/structural.html)

Please note that the above comments pertain only to the *Dike Maintenance Act* and do not apply to any approvals that may be required by other approving agencies.

If you require further information, please contact me at 604.582.5208.

Sincerely,

ORIGINAL SIGNED

John Pattle, P.Eng.  
Deputy Inspector of Dikes  
SBC/-

cc: Jim Young, P.Eng., City of Richmond  
Neil J. Peters, P.Eng., Inspector of Dikes  
John Carter, P.Eng., GeoPacific Consultants, #410-1200 W 73<sup>rd</sup> Ave,  
Vancouver, BC, V6P 6G5

**SECTION L**  
**Working Space Agreement**

**City of Richmond**

6911 No.3 Road, Richmond, BC V6Y 2C1

Telephone (604) 276-4000

www.city.richmond.bc.ca

**RECEIVED**  
MAY 23 2006

May 19, 2006

File: 06-2280-20-147/Vol 01

Finance &amp; Corporate Services Division

Telephone: 604-276-4000

Fax: 604-276-4222

Century 21 Prudential Estates Ltd.,  
7320 Westminister Highway  
RICHMOND, B.C. V6X 1A1

**Attention: Mr. Bernie Leong**  
**Senior Property Manager**

Dear Sirs:

**Re: LMS4591 - 3088 Francis Road**

Thank you for meeting with me on site on Thursday morning. I apologize that the design engineer was unable to join us.

Would you please be good enough to present the following information and proposal to the strata council at its meeting scheduled for the end of May:

1. The upgrade of the pump station at the west end of Francis Road requires the City to obtain a temporary access easement across a corner of the common property at LMS4591. The area of access is shown cross-hatched on the attached sketch plan – an area of 63.45 square metres (682.99 sq.ft.). The access is for workers and equipment to get to the City's adjacent property (Lot H on the sketch plan) from Francis Road.
2. In order to have access through this area, the City's contractors will remove the existing fence and landscaping as necessary, and replace to the same or better condition, to the satisfaction of the owners, at the end of the project or when the temporary access is no longer required.
3. When the fencing is removed from back of sidewalk, it could be temporarily relocated so as to provide a defined edge for the back patio area of the end townhouse, if so desired.
4. The new pump station will be larger than the existing structure but is designed to be constructed within the ditch, with the height being contained at or just below the level of the dyke. The walkway to the dyke from the road end will be maintained during construction (although it may be moved further north). It will later be removed as a new access bridge from the road to the dyke will be built and incorporated into the construction project.

**RICHMOND**  
*Island City, by Nature*

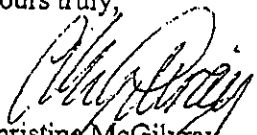
- 5. The construction period is estimated at four months. In order to avoid having to seek an extension to the period of temporary access in the event of anything unforeseen, I suggest the City enter a five month arrangement with the owners, and pay rent for this time period, whether the area is used or not. Rent would be paid at the rate of \$1,500 per month x 5 = \$7,500 payable in full in advance.

Please let me know if you need further information prior to your meeting with the strata council.

If the strata council is agreeable to the payment outlined in paragraph 5 above, please have the authorized signatories sign and return one copy of this letter.

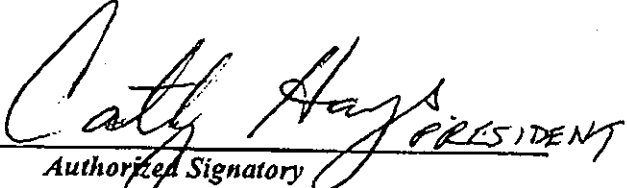
I have enclosed a form of Licence Consent to be completed once the commencement date of the licence is known. (Or you may prefer to submit your own form of licence). The commencement date will be determined by the contractor who is the successful bidder for the pump station contract. The successful bidder should be known by mid-June, 2006.

Yours truly,

  
 Christine McGilvray  
 Manager, Lands and Property

CMG:

*We, the undersigned authorized signatory(ies) of the Owners of the Common Property of Strata Corporation LMS4519, hereby acknowledge and agree to granting a licence of temporary access for a five month period, upon the payment of rent of \$1,500 per month, payable in a lump sum (\$7,500), as described in this letter.*

  
 \_\_\_\_\_  
 Authorized Signatory  
 Strata Corporation LMS4519

Date: May 31/06

  
 \_\_\_\_\_  
 Authorized Signatory  
 Strata Corporation LMS4519

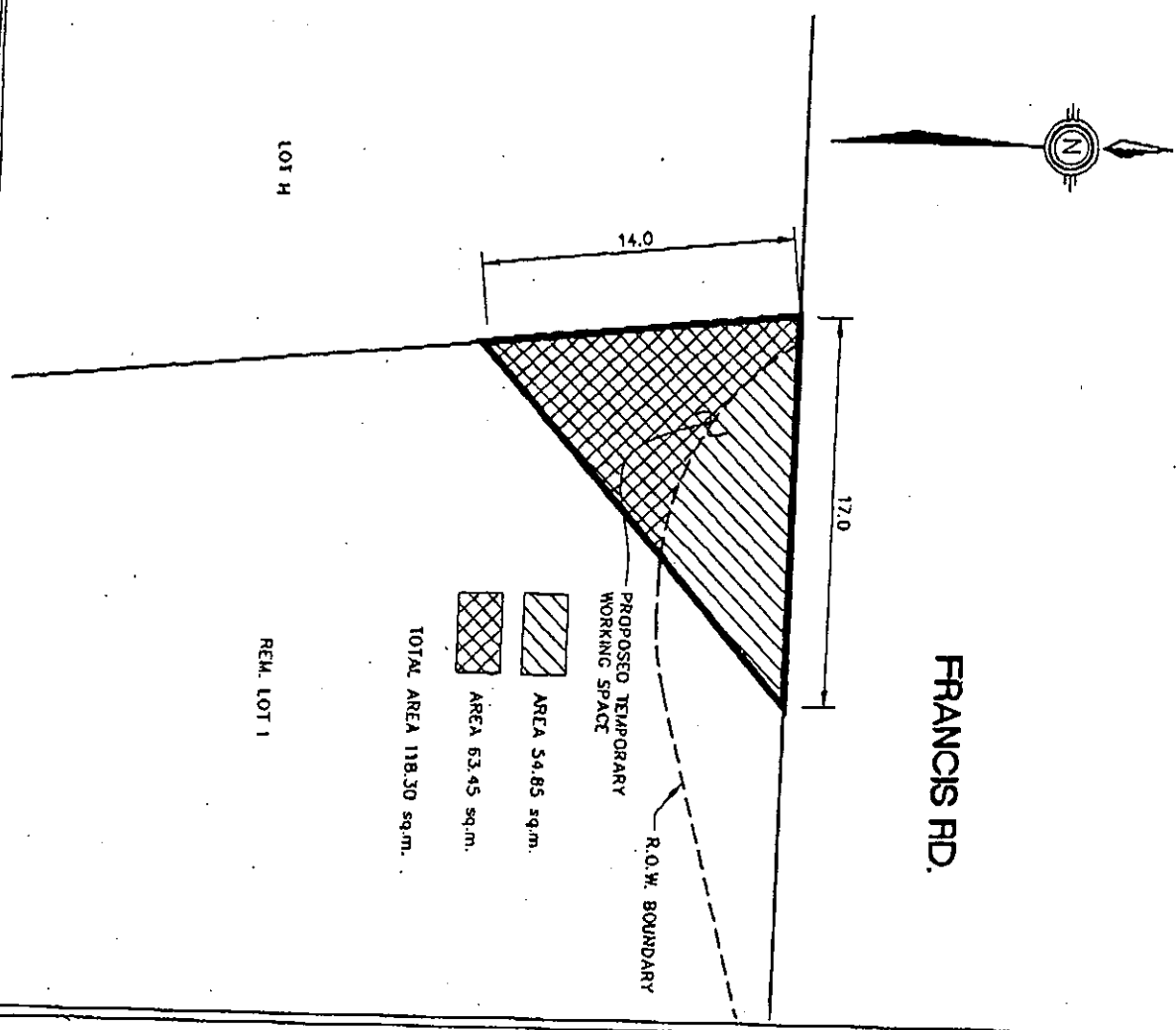
Date: May 31/06

City of Richmond  
8711 No. 3 Road Richmond B.C. V6V 2C1

TITLE: PROPOSED TEMPORARY WORKING SPACE  
FRANCIS RD. PUMP STATION UPGRADE  
(FRANCIS RD AND WEST DYKE)

DESIGN: \_\_\_\_\_  
DRAWN: \_\_\_\_\_  
CHECKED: \_\_\_\_\_  
ENGINEER: \_\_\_\_\_

DATE: MAY 2006



AREA 54.85 sq.m.  
AREA 53.45 sq.m.  
TOTAL AREA 118.30 sq.m.

LOT H  
REM. LOT 1

FRANCIS RD.

**SECTION M**  
**Building Permit**



City of  
RICHMOND

6911 No. 3 Road  
RICHMOND, B.C. V6Y 2C1

Permit Centre  
Telephone 276-4111

**BUILDING PERMIT  
APPLICATION/PERMIT**

---

**MISCELLANEOUS**

---

Site Address: 2111 Francis Rd  
Folder Name: 2111 Francis Rd  
Legal: Sec/BN/RW: //  
Zone:  
Sub Type: Pump Stations  
Description:

Permit #: **06 330721**  
Issued: June 14, 2006

Work Proposed: New

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Owner: City of Richmond  
6911 No. 3 Rd RICHMOND BC V6Y 2C1

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Construction Value 800000

Using Registered Prc No

---

1998 BCBC--Inspector - D. Rempel - (604) 276-4356 Upgrade of existing pump station.

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By granting this permit, the City of Richmond assumes no responsibility whatsoever for opening roads and lanes or providing water or any other service for or in connection with the property concerned.

Where a professional engineer or architect, registered as such under provincial legislation, has certified that the plans comply with the current BC Building Code and any other applicable enactment, it should be expressly understood that the City has relied on such certification in issuing this permit and is not liable, directly or vicariously, for any damage, loss or expense caused or contributed to by an error, omission or other neglect in relation to its approval of the plans submitted. The issuance of a permit, the review of plans and supporting documents, or inspections by the building inspector or a registered professional are not a guarantee that the development complies with the BC Building Code or other applicable enactments and do not in any way relieve the owner, or his or her agent, from the responsibility of carrying out construction in substantial compliance with the requirements of the BC Building Code, this bylaw and other applicable bylaws of the City.

---

Name: \_\_\_\_\_

Phone: \_\_\_\_\_

Signature: \_\_\_\_\_

Issued By:  \_\_\_\_\_

City of Richmond

Inspection Requests:  
(604) 276-4111



City of Richmond

General Enquiries:  
(604) 276-4118 or (604) 276-4000

## Building Approvals

Unit No.

No.

2111

Street

FRANCIS ROAD

Lot No.

Permit No.

06-330721

This card must be posted on the site and be visible from the road  
as required by Richmond Building Bylaw.

# Summary of Inspections Required

(Please refer to the "System User Guide" handout for additional information)

Building	Plumbing	Site Services	Site Services	Gas
100 Forms	300 Underground	Single Family Dwellings	Multi/Family/Res/Commercial	405 Gas Vent
105 Elevation	305 Rough In	200 Sanitary Sewer Res	220 Sanitary Sewer Com/I	410 Gas Piping
110 Crawl Space	310 Shower/Bath	205 Infiltration Test	225 Infiltration Test/Com/I	415 Visual Air
115 Sheathing	315 Water Service	210 Storm Sewer Res	230 Storm Sewer Com/I	420 Air Test Certificate
120 Frame	320 Piping - Plumbing	215 Final Site Res	235 Final Site Compl	425 Final Gas
125 Insulation	325 Final Plumbing	240 Water/Fire Main	240 Water/Fire Main	
130 Heating	340 Cross Connection	Sprinkler		
135 Final Building	345 Backflow Preventer	600 Sprinkler - Rough In		
140 Commercial Cook Hood	Sign	605 Final Sprinkler		
142 Retaining Wall	700 Sign Forms F/S			
<b>Demolition</b>	705 Final Sign			
500 Final Demolition				

**No work is to be covered until approved by Inspector.**

**24 Hour Inspection Request Line  
(604) 276-4111**

Office Hours: Open from 8:15 am to 5:00 pm weekdays, except Statutory Holidays  
Inspections requested during a business day, before 8:00 pm, will be made on the next business day.



**City of Richmond**

6911 No. 3 Road  
Richmond, BC V6Y 2C1

**Bulletin**  
Building Approvals Department  
Permits Section

**(604) 276-4000 Fax (604) 276-4063**

**Identifying Sub-Trades for  
Construction Permits**

**No.: PERMITS-08**

**Date: 1998-02-13**

**Revised: 2004-05-26**

**Purpose:**

- To inform owners of City requirements concerning identifying all trades involved on a construction project.

**Background:**

- Concerns have been expressed with regard to licencing of trades conducting business with the City.

**Implementation:**

- The Richmond Business Licence Bylaw No. 7360 prescribes the business licence requirements for all trades conducting business or work within the City.
- For all construction permits issued on or after the date of issuance of this Bulletin, all trades and sub-trades involved on a construction project must be confirmed by the owner or agent.
- The attached "Trades Data Sheet" must be submitted at the permit application stage to confirm the designer, general contractor and those sub-trades known at this stage.
- A completed "Trades Data Sheet" must be submitted to the Building Inspector prior to final inspection to confirm all other sub-trades on the project.
- Should you have any questions, comments or suggestions concerning this bulletin please contact either Mr. Ernie Nishi, Supervisor, Permits Section at (604) 276-4278 or Mr. Larry Johnson, Supervisor, Building Inspections Section at (604) 276-4315.

See attached →



**City of Richmond**  
 6911 No. 3 Road  
 Richmond, BC V6Y 2C1

**Trades Data Sheet**  
 Permits Section

(604) 276-4000 Fax (604) 276-4063

**Building Address:** \_\_\_\_\_

**Owner/Agent:** \_\_\_\_\_

**General Contractor – Company Name:** \_\_\_\_\_ **HPO Builder Licence No.:** \_\_\_\_\_

**Business Licence No.:** \_\_\_\_\_ **Address:** \_\_\_\_\_

**Project Designer Name:** \_\_\_\_\_ **Address:** \_\_\_\_\_

**Business Licence No.:** \_\_\_\_\_ **Address:** \_\_\_\_\_

Trade	Company Name	Business Licence No.	Address	Phone No.
Alarm System Installer				
Cabinetry				
Concrete Placement				
Drywall Installer				
Electrical Installer				
Excavation				
Finish Carpentry				
Finished Flooring				
Fireplace				
Framer				

Gas					
Gutters & Downpipes Installer					
Heating (Forced Air)					
Heating (Hydronic)					
Insulation Installer					
Landscaping					
Masonry Including Chimney					
Painting					
Plumbing					
Roofing Installer					
Sewer (Site Services)					
Siding Installer					
Soils Preparation					
Sprinkler					
Stucco Installer					
Vacuum Rough-In Installer					

June 26, 2006  
File: 10-6340-20-P.03303/Vol 01

**Engineering**  
Telephone: 604-276-4289  
Fax: 604-276-4197

TO THOSE WHO HAVE RECEIVED COPIES OF T.2782

Dear Sir/Madam:

**Re: Contract T.2782  
Addendum No. 2  
Drainage Pump Station Renovation  
Francis Road Drainage Pump Station**

This addendum forms part of the Contract Documents and shall be read, interpreted and coordinated with all other parts. The costs of all work contained herein shall be included in the Contract Price. The following revisions supersede the information contained in the original Contract Document to the extent referenced and shall become part thereof.

Tenderers shall acknowledge receipt of this addendum by:

**1. Inserting its number and date where provided for on the Form of Tender.**

**2. Specifications**

**Section 05500 – Part 2.5.1.1**

Add: Hatches can be aluminum or galvanized steel.

**Section 05500 – Part 2.5.1.5**

Add MAXAM and US Foundry as approved products.

**3. Drawings**

On Drawings 052656-0-351 and 355, change reference on pump access hatches and MCC Building access hatches to include aluminum or galvanized steel hatches.

**4. Questions received during tendering period and answers provided**

Q1 Are aluminum hatches for the bridge and control building acceptable?

A1 See Addendum #2

Yours truly,

Jim V. Young, P. Eng.  
*Manager Engineering Design and Construction*

June 28, 2006  
File: 10-6340-20-P.03303/Vol 01

**Engineering**  
Telephone: 604-276-4289  
Fax: 604-276-4197

TO THOSE WHO HAVE RECEIVED COPIES OF T.2782

Dear Sir/Madam:

**Re: Contract T.2782  
Addendum No. 3  
Drainage Pump Station Renovation  
Francis Road Drainage Pump Station**

This addendum forms part of the Contract Documents and shall be read, interpreted and coordinated with all other parts. The costs of all work contained herein shall be included in the Contract Price. The following revisions supersede the information contained in the original Contract Document to the extent referenced and shall become part thereof.

Tenderers shall acknowledge receipt of this addendum by:

- 1. Inserting its number and date where provided for on the Form of Tender.**
- 2. Questions received during tendering period and answers provided**

Q1 What are the back pressure requirements for the discharge check valves?

A1 The back pressure is 2m. The pressure resulting from pump operation is 3m

Q2 Who is responsible for testing of the piles ?

A2 Testing is the responsibility of the Contractor as defined in Section 02452

Yours truly,

Jim V. Young, P. Eng.  
*Manager Engineering Design and Construction*