



Date: Jan 26, 2007  
Project No: B53

**EMBASSY DEVELOPMENT CORPORATION**  
#204-4430 Halifax Street  
Burnaby, B.C.  
V5C 5R4

**Attn: Mr. Ryan Bosa, President**

**Re: Vantage  
Proposed High-rise Development  
Royal Avenue, New Westminster, B.C.**

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Dear Sir:

As requested, Davies Geotechnical Inc. has completed a geotechnical investigation at the site of the proposed hi-rise development to be located at the southeast corner of the intersection of Royal Avenue and Merivale Street, within the City of New Westminster, B.C.

The purpose of our investigation was to gather site-specific information regarding subsurface soil and groundwater conditions in order to provide recommendations regarding the following: site preparation, excavation design, dewatering, foundation design, seismic design, permanent drainage, and basement wall design.

The results of the investigation and the aforementioned recommendations are presented within this report.

Attached to the end of this report are the following:

- Figure 1: Borehole Location Plan
- Figure 2: Section A-A
- Figure 3: Section B-B
- Figure 4: Section C-C

- Figure 5: Section D-D
- Borehole Logs : BH-1 to BH-10

## **1.0 SITE DESCRIPTION**

The property is identified as Parcel A Plan LMP 4158 and is bounded to the north by Royal Avenue, the south by St Agnes Street and Cunningham Street, the west by Merivale Street, and the east by St Mary's Street. The site was formerly occupied by St Mary's Hospital. The old hospital buildings have been demolished and removed from site.

Review of the site survey plan provided by Bennet Surveys dated June 22, 2004 indicates that site grades dip relatively steeply down from northwest to southeast with elevation ranging from 208 feet at the northwest corner of the site to 167 feet at the southeast corner of the site.

## **2.0 PROPOSED DEVELOPMENT**

Review of the architectural plans prepared by Arc Design International Corp. indicated that the proposed development will consist of several key elements as follows:

- Three towers, 25 to 27 stories.
- Seniors housing complex on the north side of the site, 3 to 4 stories in height.
- Townhomes surrounding the proposed towers.

The entire development will have a two to five level parkade below grade. The average top of slab elevation for the lowest parkade level has been specified at 151.5 feet (geodetic datum).

## **3.0 SITE INVESTIGATION**

Davies Geotechnical Inc. completed a preliminary site investigation on November 23, 2004. This work involved the completion of 5 Becker boreholes (BOH), 1 Becker Denseness Test (BDT), and the installation of 4 piezometers. The boreholes were completed to depths ranging from 30 feet to 50 feet below original grade.

The drilling was completed using a Becker Hammer drill rig provided by SDS Drilling. The Becker Hammer drilling involved driving a 6 <sup>5</sup>/<sub>8</sub> inch diameter double walled casing into the ground using a 180 Linkbelt diesel hammer delivering 8000 ft-lb of energy. The open-ended holes (BOH), which were completed for the purpose of sampling, involved use of an open-ended casing. During driving, air was forced down between the annulus of the two casings and was returned through the centre of the inner casing bringing samples of the soil to the surface. Grab samples of the soils were retrieved from a cyclone at regular depth intervals. Closed ended Becker Hammer drill holes (BDT) were also completed in order to measure the relative consistency of the subsoils. The

number of blows required to drive the closed ended casing each foot are considered BDT "N" values and are comparable to SPT "N<sub>60</sub>" values up to depths of 50 feet below grade.

A second stage of investigation was completed in November of 2006 and involved the completion of 5 boreholes to depths ranging from 60 feet to 146 feet below existing grade. These boreholes are identified as BH-6 to BH-10 on the site plan attached to this report. Standpipe piezometers were installed within the open boreholes for BH-6, BH-8, BH-9, and BH-10 at varying depths and elevations. The details of the piezometers installations are illustrated on the soil logs attached to this report. Boreholes BH-6 to BH-10 were completed using a Sonic Drill rig, which enabled the recover of a continuous core of the soils encountered at the each borehole location to be recovered. Standard penetration test (SPT) was conducted at regular depth intervals (5 feet on average) within boreholes BH-6 to BH-10.

The approximate locations of all boreholes are shown on Figure 1 – Site Plan attached to this report.

All test holes were logged and sampled by qualified personnel from Davies Geotechnical Inc. Representative samples of the subsoils encountered were returned to our laboratory for further classification and moisture content testing.

Summaries of the soil conditions encountered at each borehole location, as well as the results of SPT testing and laboratory testing, the details regarding piezometers installations, and measured water levels are shown on the borehole logs attached to the end of this report.

## **4.0 RESULTS**

### **4.1 Site Geology**

Review of the Geologic Survey of Canada map 1484 A indicates that the site is located in an area underlain by Vashon drift and Capilano sediments (VC), which are glacial drift, including lodgment and minor flow till, lenses and inter-beds of glacio-fluvial sands. These soils are typically overconsolidated and consequently can be characterized as having high strength and being relatively incompressible.

### **4.2 Soil Conditions**

Summaries of the subsurface conditions at each borehole location are shown on the borehole logs attached to the end of this report. Review of the borehole logs indicates that subsurface conditions are relatively consistent across the site and conform to the known geology of the area and can be summarized as follows:

Soil Unit	Description	Depth (ft)
1	Fill – generally consisting of brown Sand with varying amounts of gravel. The thickness of this layer appears to range from 3 to 5 feet. BDT results range from 8 to 20 plus indicating that the fill is loose to medium dense.	0 to 5
2	Brown / grey Fine to medium Sand, trace silt to silty, interbedded sandy Silt layers. BDT and SPT results are in excess of 30 blows per foot indicating that these soils are dense.	5 to (8 to 18) with thickness greatest on the north side of the site.
3	Till-like silty fine Sand some gravel. BDT and SPT results are in excess of 50 blows per foot indicating that these soils are very dense. The thickness of this layer is variable ranging from 5 feet to 10 feet.	Encountered at depths ranging from 8 feet to 18 feet below original grade.
4	Interlayered: Silt, sandy Silt, silty fine Sand. SPT results indicate blow counts in excess of 50 per 12 inches of penetration testing. It is inferred that these soils are hard / very dense.	Borehole information indicates that these soils were encountered 30 to 60 feet below original grade and extended to the full depth of testing (145 feet).

Review of the borehole logs indicates that the subsoils encountered at the site generally consist of dense / hard, overconsolidated soils with moderate to high shear strength and low compressibility. It was noted from the borehole information that the depths and thicknesses of individual soils layers were highly variable across the site. Examination of the sonic drill cores also indicated that the soils were highly lensed and interbedded.

Profiles of the subsurface soil and groundwater conditions through the site are illustrated on Sections A-A, B-B, C-C, and D-D (Figures 2 to 5) attached to this report.

#### 4.3 Groundwater

Groundwater levels were measured in the open boreholes and the standpipe piezometers. The results of this monitoring are summarized on Table 1 below.

**Table 1 – Groundwater Levels**

Borehole #	Depth to bottom of Screened Section (ft)	Measured Water Level Elevation (ft)

BH1 - P 1	7	186 (estimated)
BH1 - P 2	7	186 (est)
BH1 - P 3	7.5	185 (est)
BH5 - P 4	21	185 (est)
BH6 - P5	75	130 (est)
BH6 - P6	30	180 (est)
BH8 - P7	45	142 (est)
BH8 - P8	20	167 (est)
BH10 - P9	60	182 (est)
BH10 - P10	45	145 (est)
B9 - P11	55	185 (est)

Review of the monitoring results indicates that a downward water gradient exists at the site (e.g. water flow is downward through the soil column. The piezometers monitoring also suggested that water levels within the soils located above the dense till-like soils were higher than the soils located below the till-like soil layer. It is inferred that the water levels within the soils above the till-like zone represent a perched zone and that the till-like soil layer acts as a boundary preventing downwards flow into the soils below the till-like zone.

## **5.0 DESIGN CONSIDERATIONS**

The results of the site investigation indicate that the soils at the site generally consist of glacio-fluvial dense to very dense fine Sand, silty Sand. Silt and sandy Silt with interbeds of very dense till-like soils. These soils typically have high shear strength and low compressibility and are consequently suitable to provide support for the proposed towers and other structures bearing on conventional strip and spread foundations.

Monitoring of piezometers at the site indicated perched water levels within the fine sand, silty sand and sandy silt soils above the basement slab elevation. Due to the interbedded and fine grained nature of the soils encountered on the site lowering of the water levels around the perimeter of the site using conventional methods such as well points and/or dewatering wells will likely not be effective. Completion of the excavation to depths ranging from 20 feet to 60 feet below original grade would then involve excavation below the existing perched water levels. Experience in the New Westminster area and other areas of the lower mainland where interbedded fine sands and silts were encountered below the water table, indicated a high risk of ground loss during excavation and shoring (using conventional methods such as shotcrete with soil anchors) as a result of the non-cohesive soils "running" due to seepage pressures when exposed at the shoring face. It is our opinion that this risk is high and may result in the formation of voids or sinkholes adjacent to the site which could result in damage to the properties surround the subject site. Use of alternate excavation and shoring procedures is recommended at this site to mitigate these risks.

## **6.0 RECOMMENDATIONS**

### **6.1 Excavation and Shoring**

The average top of slab elevation for the lowest parkade slab has been established by the architect at elevation 151 feet geodetic datum. Existing grades around the perimeter of the site are highly variable ranging from 165 feet geodetic datum to 210 feet geodetic datum. The resulting bulk excavation depth will also be variable ranging from approximately 20 feet along the southern boundary to a maximum of approximately 60 feet along the northern boundary.

Use of conventional shoring may be feasible within the soils located above the water table. However, in view of the high water table, potential for ground loss, and high risk of damaging adjacent properties using conventional excavation and shoring methods we recommend that groundwater flows be cut off around the perimeter by the creation of a continuous cut-off wall using soil mixing, jet grouting, or other suitable techniques. Design of this cut-off system should consider the density and grain size distribution of the soils, with consideration of methods to address potential construction difficulties associated with drilling and grouting through very dense till-like soils which may contain boulders.

The shoring system will likely consist of vertical structural elements such as pipe piles or H-Piles installed within the soil mix or jet grout cut-off wall, tied back with soil anchors. The shoring system will have to be designed for the applicable soil and surcharge pressures as well as full hydrostatic pressures. The structural components of the shoring system should be designed or reviewed by a structural engineer with experience in shoring design in the Lower Mainland.

Use of the jet grout or soil mix cut-off system will require encroachment beyond the perimeter of the building of approximately 5 feet, 3 feet to allow the thickness of the cut-off wall and 2 feet of working space between the shoring face and the basement wall. In the event that the upper portion of the excavation can be shored using conventional methods above the water table, additional encroachment beyond the building will be required.

It is recommended that prior to commencing with excavation and shoring that a baseline survey and monitoring program be established for the areas adjacent to the subject property. We also recommend the installation of inclinometers around the perimeter of the site, particularly the north side, to monitor ground movements as the excavation proceeds.

A detailed excavation and shoring plan and specification should be prepared by Davies Geotechnical Inc.

## 6.2 Temporary Dewatering

We anticipate that the cut-off system as proposed will be effective in cutting off horizontal groundwater flows and limiting upwards flow from the base of the excavation so that temporary dewatering could be handled using sump/pumps located at the base of the excavation.

## 6.3 Foundation Design

The borehole information indicates that soils encountered at the proposed design elevation may be variable consisting of dense / hard Silt, sandy Silt and silty Sand. For the purposes of preliminary foundation design the following allowable bearing pressures may be used:

- Pad footings  $Q_a = 6000$  p.s.f. (D.L.+L.L.)
- Strip footings  $Q_a = 4000$  p.s.f. (D.L.+L.L.)

Individual footing settlements are expected to be less than 1 inch. Footing settlements may be larger in the event that adjacent footings are located within the zone of influence of adjacent footings. A detailed review of footing settlements and bearing pressures should be completed by the geotechnical engineer once a detailed foundation plan is available.

Higher bearing pressures may be acceptable for specific foundations subject to a review by the geotechnical engineer.

Footings should be founded a minimum of 18 inches below top of slab or exterior grade elevation.

Footings founded at differing elevations should be founded to that the slope of the line drawn from the underside of one footing to the adjacent footing is at 2 horizontal to 1 vertical or flatter.

Soils encountered at the design elevation are expected to consist of fine grained soils which are sensitive to disturbance when exposed to water or construction traffic. Consequently we recommend that footings be excavated and blinded with a skim coat of lean concrete on the same day. Prior to the placement of the skim coat, all footing subgrades should be inspected and approved in writing by the geotechnical engineer.

## 6.4 Seismic Design Parameters

The site is located in a seismically active area where the effects of earthquake loading must be considered in the design of the proposed buildings.

Based upon N.B.C.C. 2005 and review of the borehole information the site is classified as Site Class C. The soils associated with this site class consist of very dense soils

with  $N_{60}$  values greater than 50 and undrained shear strengths greater than 2000 p.s.f.

A fifty percent increase in allowable bearing pressure for seismic load conditions is considered acceptable, associated with a reduction in safety factor on the ultimate bearing pressure.

### **6.5 Permanent Drainage**

Use of a permanent drainage system will be required to control water levels below slab elevation. We anticipate that this system will comprise of a network of sub floor drains connected to a pumped sump or suitable gravity discharge. The drains should consist of perforated plastic piping surrounded by drain gravel and wrapped with filter fabric, installed within gravel filled trenches with invert elevation at least 12 inches below the underside of slab.

A 12 inch thick drainage blanket consisting of  $\frac{1}{2}$  to  $\frac{3}{4}$  inch clear crushed gravel should be placed immediately below the underside of slab to act as a drainage layer and to allow water to flow laterally to the subfloor drainage system.

The details of the subfloor drain system should be reviewed by the geotechnical engineer once the bulk excavation is completed and a more accurate assessment of groundwater flows can be completed.

### **6.6 Basement Wall Design**

The basement walls will have to be designed to resist the applicable lateral pressures associated with earth pressures, compaction loads, surface surcharges, seismic loads, and hydrostatic pressures (if necessary). The details regarding the shoring system and drainage have not been finalized and therefore Davies Geotechnical Inc. will provide detailed recommendations regarding lateral earth pressures once these design elements are completed.

In the event that the shoring system is designed to cut-off the groundwater flows the perimeter basement walls will have to be designed to accommodate hydrostatic pressure. However, the groundwater will be retained by the shoring system and will not be in direct contact with the basement walls and therefore we do not anticipate the need to waterproof or "tank" the exterior of the basement walls. We recommend the installation of a perforated drain and drain chimney to capture any water that seeps through the cut-off wall.

### **7.0 ADDITIONAL WORK**

Prior to tendering the project we recommend that the geotechnical engineer review the foundation design (including a review of potential settlements).

A review of the proposed sub-floor drain system should also be conducted.



A detailed excavation and shoring design and specification should be prepared by Davies Geotechnical Inc.

Review and inspection will be required by the geotechnical engineer during the construction process. These inspections will include but not be limited to the following:

1. Inspection of the installation of the grout cut-off wall and piling.
2. Inspection and testing of the soil anchors.
3. Monitoring of inclinometers and review of the survey results from the movement monitoring program.
4. Inspection of all footing areas prior to skim coating or placing concrete.
5. Inspection of the installation of the subfloor drain system and subfloor drainage layer.
6. Inspection of the placement of perimeter drainage and backfill.

## **8.0 CLOSURE**

Davies Geotechnical Inc. has completed a geotechnical investigation at the site of the proposed Vantage hi-rise development to be located at Royal Avenue in New Westminster, B.C.

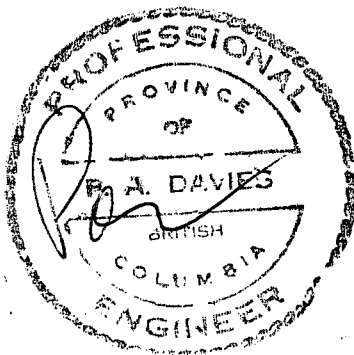
The results of the preliminary indicate that dense soils were encountered close to existing grade across the entire site. Consequently the proposed hi-rise towers and other structures can be founded on conventional strip and spread foundations.

Periodic reviews of the site conditions and construction should be completed by the geotechnical engineer in order to confirm that the site conditions are compatible with the design and the work is completed in general conformance with the project specifications.

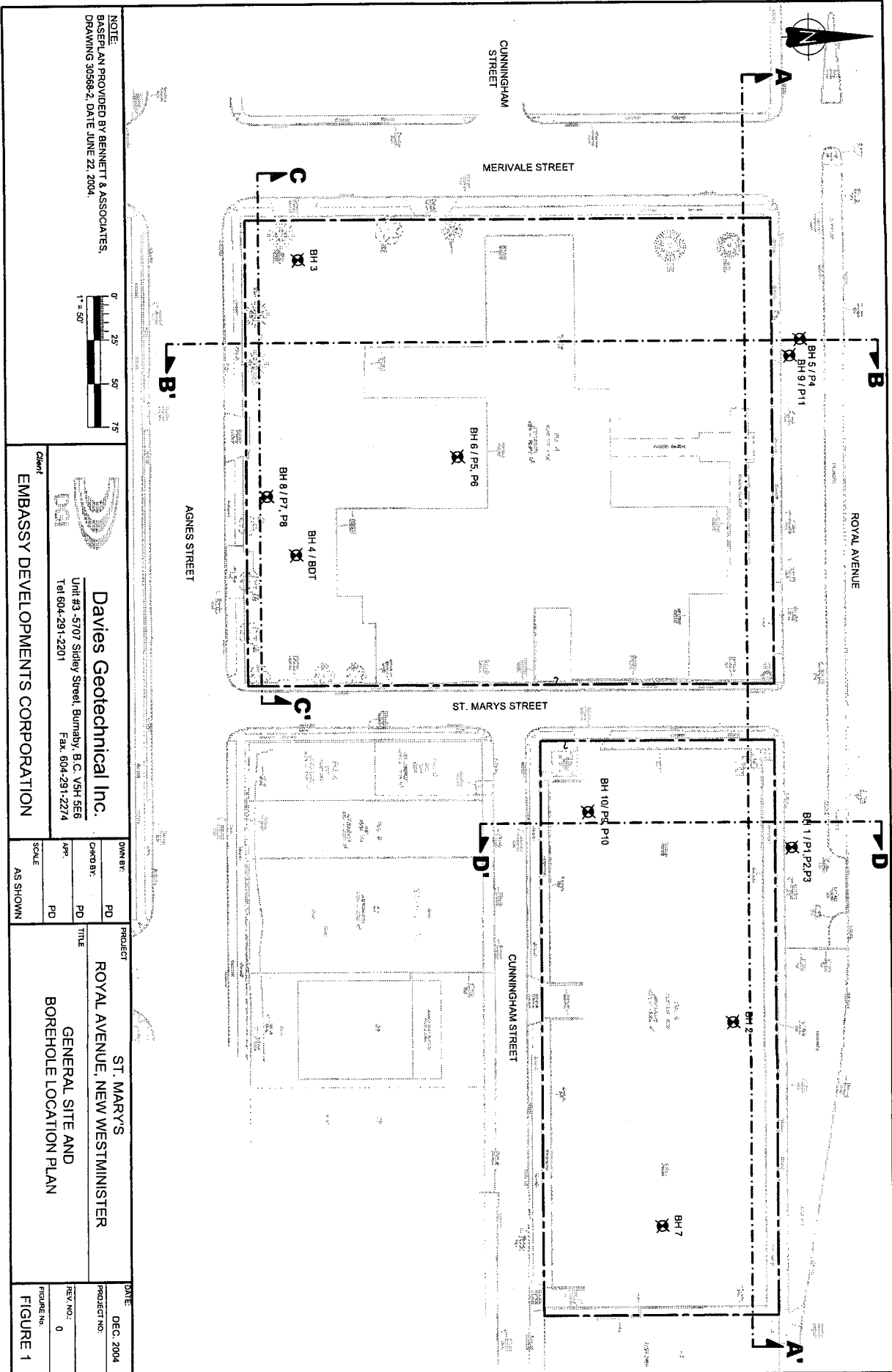
The information provided in this report is intended for the purposes of preliminary design and should not be incorporated directly into specifications without approval by Davies Geotechnical Inc.

We trust that the information provided within this report meets your requirements at this time. If you have any questions or require additional information, please do not hesitate to contact the undersigned at 604-291-2201.

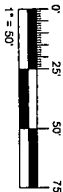
Yours truly,



**DAVIES GEOTECHNICAL INC.**



NOTE:  
BASE PLAN PROVIDED BY BENNETT & ASSOCIATES,  
DRAWING 30588-2, DATE JUNE 22, 2004.



**Davies Geotechnical Inc.**  
Unit #3 - 5707 Sidley Street, Burnaby, B.C. V5H 5E6  
Tel 604-291-2201 Fax 604-291-2274

Client  
**EMBASSY DEVELOPMENTS CORPORATION**

DWN BY:	PD
CARD BY:	PD
APP:	PD
SCALE:	AS SHOWN

PROJECT  
**ST. MARYS  
ROYAL AVENUE, NEW WESTMINSTER**

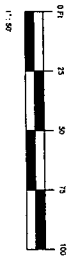
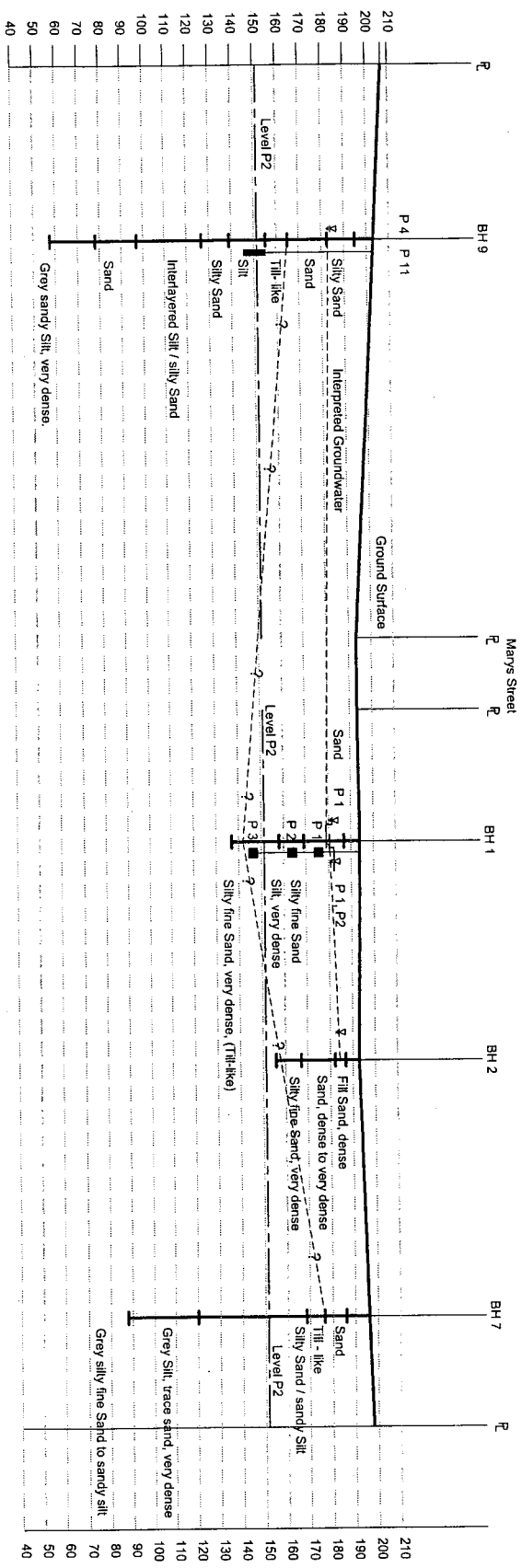
TITLE  
**GENERAL SITE AND  
BOREHOLE LOCATION PLAN**


DATE  
DEC. 2004

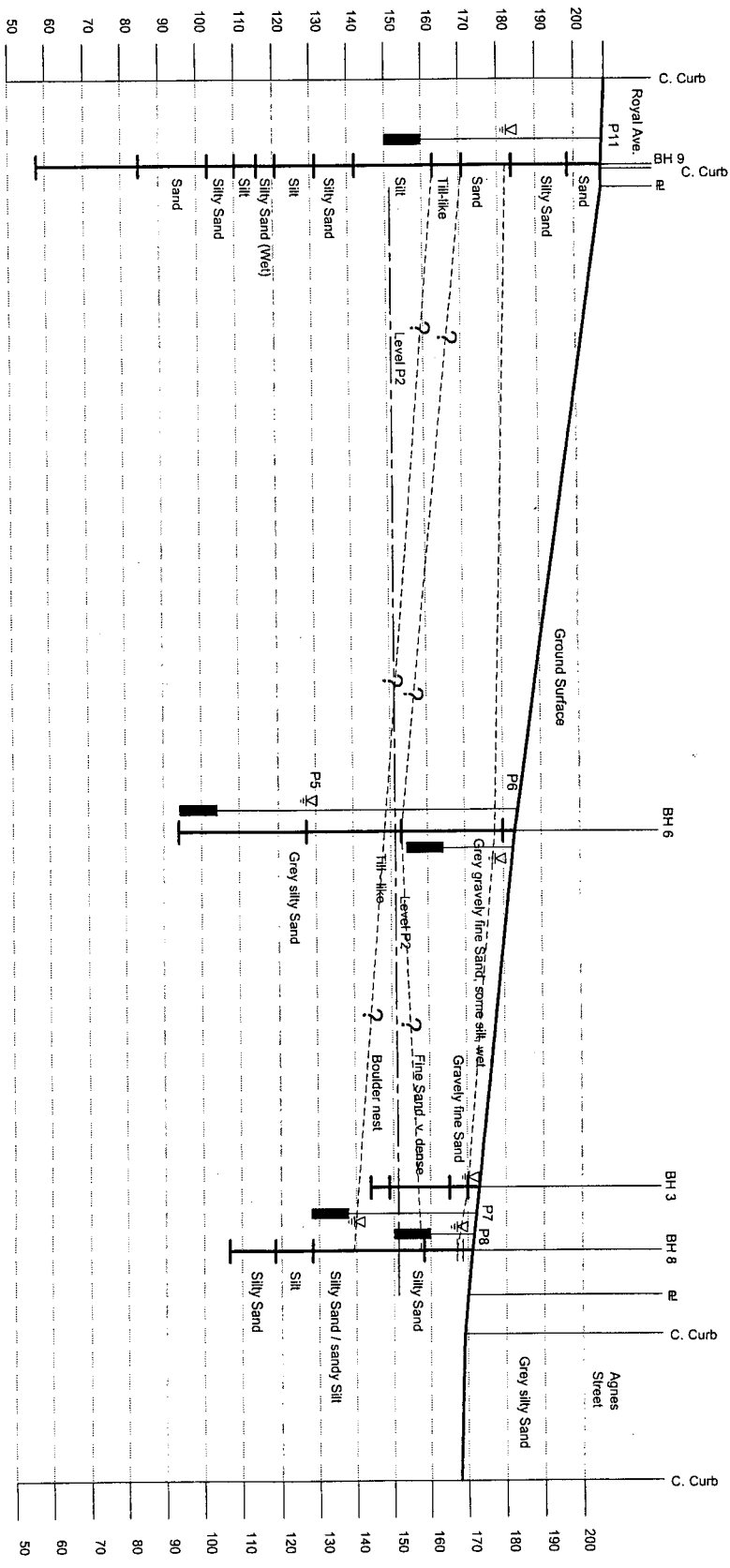
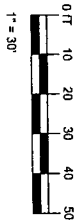
PROJECT NO.


REV. NO. 0

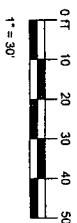
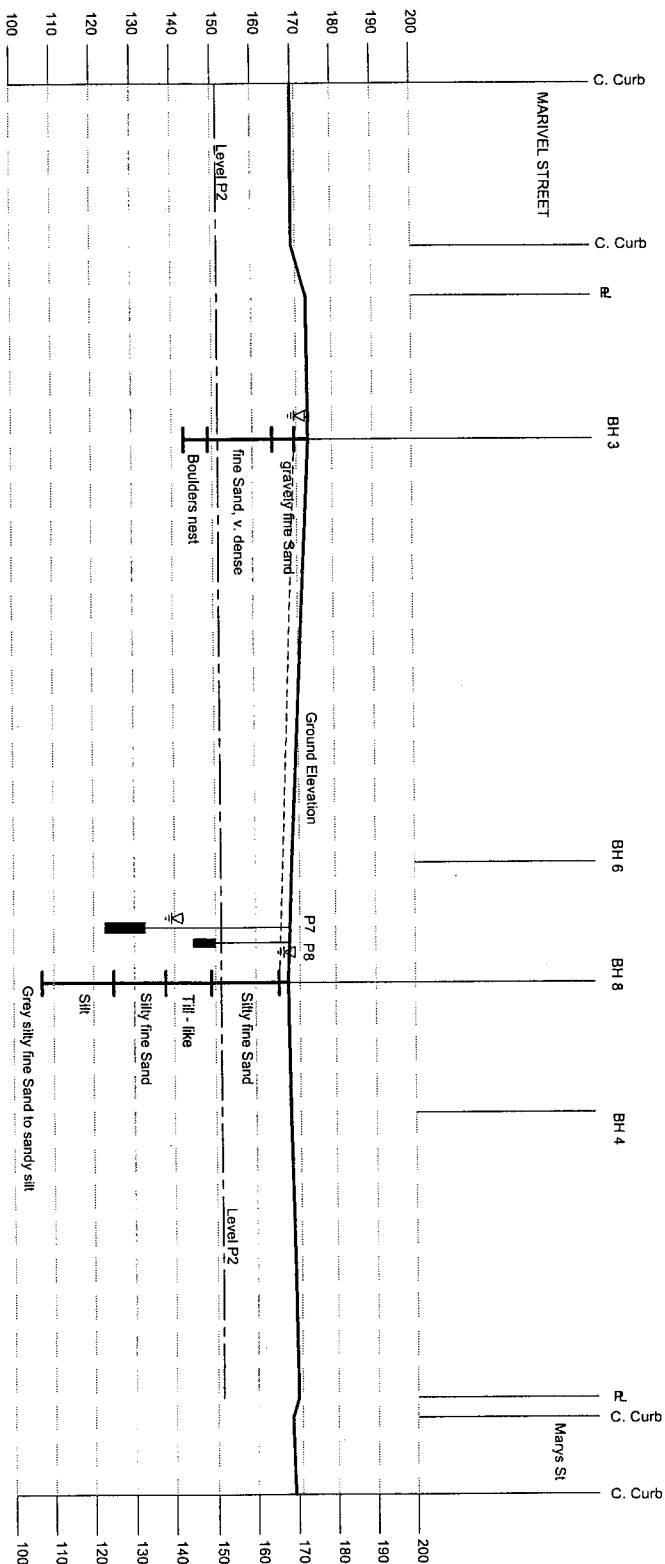
FIGURE NO.  
**FIGURE 1**




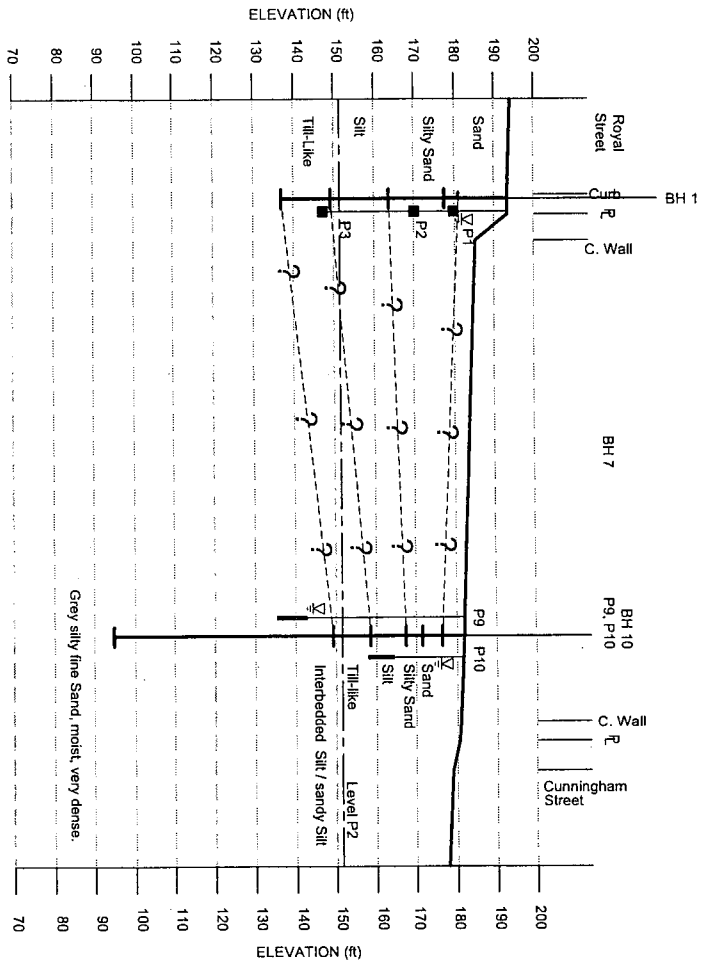
 <p><b>Davies Geotechnical Inc.</b> Unit #3, 5707 Sidley Street, Burnaby, B.C. V5H 5E6 Tel: 604-291-2201 Fax: 604-291-2274</p>		<p><b>PROJECT</b></p> <p>ST. MARY'S ROYAL AVENUE, NEW WESTMINSTER</p>		<p><b>DATE</b></p> <p>DECEMBER 06</p>	
<p><b>OWN BY:</b></p> <p>PO</p>		<p><b>PROJECT</b></p> <p>ROYAL AVENUE, NEW WESTMINSTER</p>		<p><b>DATE</b></p> <p>DECEMBER 06</p>	
<p><b>CHD BY:</b></p> <p>PD</p>		<p><b>PROJECT</b></p> <p>ROYAL AVENUE, NEW WESTMINSTER</p>		<p><b>DATE</b></p> <p>DECEMBER 06</p>	
<p><b>APR:</b></p> <p>PD</p>		<p><b>PROJECT</b></p> <p>ROYAL AVENUE, NEW WESTMINSTER</p>		<p><b>DATE</b></p> <p>DECEMBER 06</p>	
<p><b>SCALE</b></p> <p>AS SHOWN</p>		<p><b>SECTION A - A</b></p>		<p><b>FIGURE NO.</b></p> <p>FIGURE 2</p>	
<p><b>EMBASSY DEVELOPMENT CORPORATION</b></p>		<p><b>FIGURE NO.</b></p> <p>FIGURE 2</p>		<p><b>REV. NO.</b></p> <p>1</p>	




 <p><b>Davies Geotechnical Inc.</b> Unit #3 -5707 Sidley Street, Burnaby, B.C. V5H 5E6 Tel 604-291-2201 Fax 604-291-2274</p>		<p>DATE: DECEMBER 06 PROJECT NO: 853</p>	
<p>Client: EMBASSY DEVELOPMENTS CORPORATION</p>		<p>PROJECT: ST. MARY'S ROYAL AVENUE, NEW WESTMINSTER</p>	
<p>SCALE: AS SHOWN</p>		<p>SECTION B - B</p>	
<p>FIGURE NO. 1</p>		<p>FIGURE NO. 3</p>	



 <b>Davies Geotechnical Inc.</b> Unit #3 - 5707 Sidley Street, Burnaby, B.C. V5H 5E6 Tel 604-291-2201 Fax 604-291-2274		DATE: DECEMBER 06 PROJECT NO: B53 REV. NO.: 1 FIGURE NO.: FIGURE 4	
<b>Client</b> EMBASSY DEVELOPMENTS CORPORATION		<b>PROJECT</b> ST. MARY'S ROYAL AVENUE, NEW WESTMINSTER SECTION C - C	
DWN BY: PO CKD BY: PO APP: PO SCALE: AS SHOWN	TITLE: SECTION C - C		

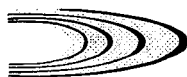


SECTION D - D

 <b>Davies Geotechnical Inc.</b> Unit #3-5707 Sidley Street, Burnaby B.C. V5H 5E6 Tel 604-291-2201 Fax 604-291-2274		DWN BY: PD CHKD BY: PD APP: PD		PROJECT: ST. MARY'S ROYAL AVENUE, NEW WESTMINSTER		DATE: DECEMBER 2006 PROJECT NO: B53	
Client: EMBASSY DEVELOPMENTS CORPORATION		SCALE: AS SHOWN		TITLE: SECTION D - D		REV. NO.: 1 FIGURE No: FIGURE 5	

# TEST HOLE LOG - BH-1

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 194 ft		COHESION - KPa		
WEIGHT HAMMER					ELEV. GROUND		100 200 300 400		
HEIGHT DROP							● FIELD VANE ▲ LAB VANE ■ UNCONF.		
DEPTH	PEIZO. 1	PEIZO. 2	PEIZO. 3		BOH-1		PLASTIC LIMIT	WATER CONTENT	LIQUID LIMIT
(ft)/(m)				DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.	X	0	X	
					0 25 50 75 100	10	30	50 70 90%	
5 ft 1.5m		▼	▼	Brown medium to coarse SAND, trace to some gravel, moist, medium dense to dense					
10 ft 3.0m									
15 ft 4.5m				Grey silty fine SAND, occasional gravel, moist, occasional sandy silt lense, very dense, wet @ 23'					
20 ft 6.0m									
25 ft 7.6m				Grey SILT, some fine sand to sandy, trace coarse sand, trace fine sand, wet, very dense					
30 ft 9.1m									
35 ft 10.6m									
40ft									



**Davies Geotechnical Inc.**

Unit #3 -5707 Sidley Street, Burnaby, B.C. V5H 5E6  
Tel 604-291-2201 Fax. 604-291-2274

JOB No.: B53

PROJECT: ST. MARY'S

LOCATION: Royal Avenue, New Westminster

HOLE No.: BH-1

DATE: NOV. 25, 2004

PLATE: 1 of 2



# TEST HOLE LOG - BH-1 CONT'D

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 194 ft		ELEV. GROUND		BOH-1		COHESION - KPa				
WEIGHT HAMMER											100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.				
HEIGHT DROP											PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X 0 X				
DEPTH	PEIZO. 1	PEIZO. 2	PEIZO. 3		DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.								
(ft)/(m)						0	25	50	75	100	10	30	50	70	90%
45 ft					Grey silty fine SAND, occasional gravel, wet, very dense										
1.5m					Grey silty fine SAND, some gravel, wet (TILL-LIKE), very dense										
50 ft															
3.0m					END OF HOLE										



**Davies Geotechnical Inc.**

Unit #3 -5707 Sidley Street, Burnaby, B.C. V5H 5E6  
Tel 604-291-2201 Fax. 604-291-2274

JOB No.: B53

PROJECT: ST. MARY'S

LOCATION: Royal Avenue, New Westminster

HOLE No.: BH-1

DATE: NOV. 25, 2004

PLATE: 2 of 2

# TEST HOLE LOG - BH-2

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 185 ft		ELEV. GROUND		BOH-2		COHESION - KPa				
WEIGHT HAMMER					ELEV. GROUND		BOH-2		COHESION - KPa						
HEIGHT DROP					ELEV. GROUND		BOH-2		COHESION - KPa						
DEPTH	PEIZO.	BLOWS	NO.		ELEV. GROUND		BOH-2		COHESION - KPa						
(ft)/(m)		FT		DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.		COHESION - KPa							
					FILL, brown, gravelly, medium to coarse SAND, trace silt, dense										
5 ft															
1.5m															
10 ft					Grey fine SAND, trace to some silt, moist, dense to very dense										
3.0m															
15 ft															
4.5m															
20 ft					Grey silty fine SAND, moist, very dense										
6.0m															
25 ft															
7.6m															
30 ft															
9.1m															
35 ft					END OF HOLE										
10.6m															
40ft															



**Davies Geotechnical Inc.**

Unit #3 -5707 Sidley Street, Burnaby, B.C. V5H 5E6  
Tel 604-291-2201 Fax. 604-291-2274

JOB No.: B53

PROJECT: ST. MARY'S

LOCATION: Royal Avenue, New Westminster

HOLE No.: BH-2

DATE: NOV. 25, 2004

PLATE: 1 of 1

# TEST HOLE LOG - BH-3

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 173 ft		ELEV. GROUND		COHESION - KPa			
WEIGHT HAMMER									100 200 300 400 • FIELD VANE ▲ LAB VANE ■ UNCONF.			
HEIGHT DROP									PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X			
DEPTH	PEIZO.	BLOWS	NO.		DESCRIPTION OF MATERIAL		BOH-3		PENETRATION RESISTANCE - BLOWS/FT.			
(ft)/(m)		FT						10 30 50 70 90%				
5 ft 1.5m	▼				Brown gravelly fine SAND, some cobbles, wet							
10 ft 3.0m						Brown/Grey fine SAND, trace to some silt, wet, very dense						
15 ft 4.5m						Boulder nest						
20 ft 6.0m							END OF HOLE					
25 ft 7.6m												
30 ft 9.1m												
35 ft 10.6m												
40ft												



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Unit #3 -5707 Sidley Street, Burnaby, B.C. V5H 5E6  
Tel 604-291-2201 Fax. 604-291-2274

JOB No.: B53

PROJECT: ST. MARY'S

LOCATION:

HOLE No.: BH-3

DATE: NOV. 25, 2004

PLATE: 1 of 1

# TEST HOLE LOG - BH-4

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 171 ft		COHESION - KPa				
WEIGHT HAMMER					ELEV. GROUND		100 200 300 400 • FIELD VANE ▲ LAB VANE ■ UNCONF.				
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X 0 X				
DEPTH	PEIZO.	BLOWS FT	NO.		DESCRIPTION OF MATERIAL	BOH-4 / BDT -4	PENETRATION RESISTANCE - BLOWS/FT.				
(ft)/(m)						0 25 50 75 100	10	30	50	70	90%
5 ft	▼			FILL - grey-brown, mottled SANDY SILT, trace gravel, moist, loose to medium, dense							
1.5m											
10 ft				Grey silty fine SAND/ trace sandy SILT, moist, very dense	BDT -4						
3.0m											
15 ft				Grey silty fine SAND, trace sandy SILT, moist, very dense	BOH -1						
4.5m											
20 ft				Grey silty fine to coarse SAND, some gravel/ gravelly medium to coarse SAND, trace silt, wet, very dense							
6.0m											
25 ft				END OF HOLE							
7.6m											
30 ft											
9.1m											
35 ft											
10.6m											
40ft											



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JOB No.: B53

PROJECT: ST. MARY'S

LOCATION: Royal Avenue, New Westminster

HOLE No.: BH-4

DATE: NOV. 25, 2004

PLATE: 1 of 1

# TEST HOLE LOG - BH-5

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 205 ft		COHESION - KPa		
WEIGHT HAMMER					ELEV. GROUND		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.		
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X		
DEPTH	PEIZO.	BLOWS FT	NO.		DESCRIPTION OF MATERIAL	DCPT PENETRATION RESISTANCE - BLOWS/FT.			
(ft)/(m)					0 25 50 75 100	10 30 50 70 90%			
5 ft				Grey silty fine SAND, wet, loose					
1.5m									
10 ft				Brown, gravelly medium to coarse SAND, trace silt, dense, moist					
3.0m									
15 ft				Brown fine SAND, trace to some silt, moist, interlayered with occasional sandy silt, dense to very dense, moist					
4.5m									
20 ft									
6.0m									
25 ft									
7.6m									
30 ft									
9.1m									
35 ft				Grey fine SAND, trace silt, wet below 35', very dense					
10.6m									
40ft									



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JOB No.: B53

PROJECT: ST. MARY'S

LOCATION: Royal Avenue, New Westminster

HOLE No.: BH-5

DATE: NOV. 25, 2004

PLATE: 1 of 2

# TEST HOLE LOG - BH-5 CONT'D

SAMPLE DATA				SYMBOL	ELEV. COLLAR : 205 ft		COHESION - KPa		
WEIGHT HAMMER					ELEV. GROUND		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.		
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X		
DEPTH	PEIZO.	BLOWS FT	NO.		DESCRIPTION OF MATERIAL	DCPT PENETRATION RESISTANCE - BLOWS/FT.			
(ft)/(m)					0 25 50 75 100	10 30 50 70 90%			
45 ft				Grey silty fine SAND, trace gravel, wet, (TILL-LIKE), very dense					
1.5m				Grey SAND & GRAVEL, waterbearing					
50 ft				END OF HOLE					
3.0m									



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JOB No.: B53

PROJECT: ST. MARY'S

LOCATION: Royal Avenue, New Westminster

HOLE No.: BH-5

DATE: NOV. 25, 2004

PLATE: 2 of 2

# TEST HOLE LOG - BH- 6

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		ELEV. GROUND:		COHESION - KPa						
WEIGHT HAMMER									● FIELD VANE    ▲ LAB VANE    ■ UNCONF. PLASTIC LIMIT    WATER CONTENT    LIQUID LIMIT X ————— 0 ————— X						
HEIGHT DROP															
DEPTH	PIEZO 6	PIEZO 5	NO.	DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.									
(ft)/(m)						0	25	50	75	100	10	30	50	70	90%
					Brown gravelly medium Sand, trace silt, (fill).										
5.0 ft					Grey gravelly fine Sand, some silt, wet.										
1.5m															
10 ft				20.7	S1										
3.0m					Grey fine Sand, trace silt, saturated.										
15 ft				24.5	S2										
4.6m					Grey silty fine Sand, interlayered with fine silt lenses.										
20 ft				26.8	S3										
6.0 m					Grey sandy Silt with thin silt interlayers										
25 ft					Grey medium Sand										
7.6m					Grey Silt, trace to some fine sand										
30 ft				10.9	S4										
9.0m					Grey silty fine Sand, some f-m-c gravel, very dense (dry), till-like.										
35 ft				19.1	S5										
10.6 m					Grey silty fine Sand/sandy silt, very dense.										
40 ft															



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 6

DATE: November 10, 2006

PLATE: 1 of 3

# TEST HOLE LOG - BH- 6

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa				
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.				
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X				
DEPTH		PIEZO	NO.	DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.					
(ft)/(m)		5				25 50 75 100	10 30 50 70 90%				
45.0 ft 13.7m	▽		24.6	S6	Grey silty fine Sand / sandy Silt, very dense.	SPT: (27-59-107)					
50.0 ft 15.2m				S7	Grey fine sandy Silt, hard						
55.0 ft 16.7m				S8	Grey Silt, trace sand to some sand, very dense.	SPT: (12-28-50)					
60.0 ft 18.2m											
65.0 ft 19.8m											
70.0 ft 21.3m	S9	Grey Silt to silty Sand, very dense.	SPT: (17-21-37)								
75.0 ft 22.8 m											
80.0 ft			SPT: (20-50-70)								



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 7


DATE: November 10, 2006

PLATE: 2 of 3



# TEST HOLE LOG - BH- 6

SAMPLE DATA			MOISTURE (%)	ELEV. COLLAR :		ELEV. GROUND:		COHESION - KPa			
WEIGHT HAMMER								100 200 300 400 • FIELD VANE ▲ LAB VANE ■ UNCONF.			
HEIGHT DROP								PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X			
DEPTH		NO.		DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.					
(ft)/(m)	PIEZO 5				0 25 50 75 100	10 30 50 70 90%					
85.0 ft 25.9m			Grey silty fine Sand, very dense								
					SPT: (15-51-100)						
90.0 ft 27.4m			END OF HOLE AT 87'								
95.0 ft 28.9m											
100 ft 30.4m											
105 ft 32.0m											
110 ft 33.5m											
115 ft 35.0 m											
120 ft											



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 6

DATE: November 10, 2006 PLATE: 3 of 3

# TEST HOLE LOG - BH-7

SAMPLE DATA				SYMBOL	ELEV. COLLAR :		COHESION - KPa	
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400	
HEIGHT DROP							● FIELD VANE ▲ LAB VANE ■ UNCONF.	
DEPTH		MOISTURE %	NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.	PLASTIC LIMIT X	WATER CONTENT 0
(ft)/(m)					0 25 50 75 100	10 30 50 70 90%		
				Brown gravelly silty Sand, very dense.				
5.0 ft 1.5m				Grey fine to medium Sand, very dense.	SPT: (13-20-28)			
10 ft 3.0m	9.5	S1		Grey silty medium to coarse Sand, trace gravel, interlayered with occasional silt, (till-like), very dense.	SPT: (50-80)			
15 ft 4.6m	24.5	S2		Grey silty fine Sand, moist, very dense.	SPT: (17-15-41)			
20 ft 6.0m	20.3	S3		Grey sandy Silt, with silt interlayers, moist, very dense.	SPT: (16-26-37)			
25 ft 7.6m	14.7	S4		Grey silty Sand, trace gravel, very dense.	SPT: (37-38-57)			
30 ft 9.0m	21.3	S5		Grey Silt, trace sand, moist.				
35 ft 10.6m	25.5	S6		Grey Silt, hard.	SPT: (31-58-100)			
40 ft	28.9	S7						



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westminster

HOLE No.: B HOLE - 7

DATE: November 10, 2006

PLATE: 1 of 3

# TEST HOLE LOG - BH- 7

SAMPLE DATA				SYMBOL	ELEV. COLLAR :		ELEV. GROUND :		COHESION - KPa			
WEIGHT HAMMER									100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.			
HEIGHT DROP									PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X 0 X			
DEPTH	PIEZO.	MOISTURE	NO.		DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.					
(ft)/(m)						0 25 50 75 100	10 30 50 70 90%					
45.0 ft 13.7m		22.2	S8		Grey sandy Silt, with silt interlayers, very dense.	SPT (20-36-69)						
50.0 ft 15.2m					Grey sandy Silt, with fine sand interlayers, very dense.							
55.0 ft 16.7m						SPT (24-46-64)						
60.0 ft 18.2m		31.6	S9									
65.0 ft 19.8m		30.9	S10		Grey Silt, trace sand, wet, dense.	SPT (13-23-20)						
70.0 ft 21.3m												
75.0 ft 22.8 m		28.6	S11									
80.0 ft		28.0	S12		Grey silty fine Sand , wet.							



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister


HOLE No.: B HOLE - 7

DATE: November 10, 2006

PLATE: 2 of 3

# TEST HOLE LOG - BH-7

SAMPLE DATA				SYMBOL	ELEV. COLLAR :	COHESION - KPa									
WEIGHT HAMMER					ELEV. GROUND:	● FIELD VANE    ▲ LAB VANE    ■ UNCONF.									
HEIGHT DROP						PLASTIC LIMIT    WATER CONTENT    LIQUID LIMIT X                      0                      X									
DEPTH	PIEZO.	MOISTURE	NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.									
(ft)/(m)						0	25	50	75	100	10	30	50	70	90%
						SPT: (14-31-69)									
					Grey silty Sand to sandy silt, very dense.										
					Grey Silt, dense.										
85.0 ft 25.9m		34.3	S13			SPT: (11-18-24)									
					Grey Silt, trace sand, dense.										
90.0 ft 27.4m		28.6	S14												
					Grey silty fine Sand to sandy silt, very dense.										
95.0 ft 28.9m		29.2	S15			SPT: (15-23-46)									
					END OF HOLE AT 95'										
100 ft 30.4m															
105 ft 32.0m															
110 ft 33.5m															
115 ft 35.0 m															
120 ft															



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 7

DATE: November 10, 2006 PLATE: 3 of 3

# TEST HOLE LOG - BH- 8

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa							
WEIGHT HAMMER					ELEV. GROUND:		● FIELD VANE    ▲ LAB VANE    ■ UNCONF. PLASTIC LIMIT    WATER CONTENT    LIQUID LIMIT X ————— X							
HEIGHT DROP														
DEPTH	PIEZO 8	PIEZO 7	NO.		DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.							
(ft)/(m)						25	50	75	100	10	30	50	70	90%
5.0 ft 1.5m			S1	10.4	Fill - Brown silty Sand, some gravel, dense.	SPT: (6-16-19)								
10 ft 3.0m			S2	17.2	Brown silty fine Sand, trace gravel, interlayered with sandy silt, moist, compact.	SPT: (6-11-14)								
15 ft 4.6m			S3	21.8										
			S4	23.4	Grey silty fine Sand, with thin silt interlayers, dense.	SPT: (14-17-24)								
20 ft 6.0m						SPT: (12-17-15)								
25 ft 7.6m			S5	7.9	Grey silty medium to coarse Sand, trace gravel, ( till-like), very dense.	SPT: (18-37-51)								
30 ft 9.0m			S6	9.1										
			S7	17.6	Grey silty fine Sand, trace gravel, with thin silt interlayers, very dense.	SPT: (50-72-100)								
35 ft 10.6m														
40 ft					Grey silty fine Sand, interlayered with silt, wet, very dense.									



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 8

DATE: November 10, 2006

PLATE: 1 of 2

# TEST HOLE LOG - BH- 8

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa				
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.				
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X				
DEPTH	PIEZO 8	PIEZO 7	NO.	DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.					
(ft)/(m)						0 25 50 75 100	10 30 50 70 90%				
			S8	22.0							
45.0 ft			S9	22.8	Grey Silt, trace sand, very dense.						
13.7m						SPT: (21-44-94)					
50.0 ft			S10	25.6	Grey Silt, trace sand, dense.						
15.2m											
55.0 ft			S11	24.8	Grey Silt, hard.						
16.7m						SPT: (16-20-29)					
60.0 ft			S12	26.9	Grey silty fine Sand to sandy silt, dense.						
18.2m						SPT: (12-20-24)					
					END OF HOLE AT 61'						
65.0 ft											
19.8m											
70.0 ft											
21.3m											
75.0 ft											
22.8m											
80.0 ft											



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JOB No.: B53  
 PROJECT: B53 Marys Street  
 LOCATION: Marys Street at Royal Ave. New Westmister  
 HOLE No.: B HOLE - 8  
 DATE: November 10, 2006 PLATE: 2 of 2

# TEST HOLE LOG - BH- 9

SAMPLE DATA			MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa									
WEIGHT HAMMER				ELEV. GROUND:		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.									
HEIGHT DROP						PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X ————— X 0									
DEPTH	PIEZO	NO.		DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.									
(ft)/(m)	11				0	25	50	75	100	10	30	50	70	90%	
5.0 ft 1.5m				Brown silty fine Sand.											
10 ft 3.0m				Brown silty fine Sand to sandy silt, compact to dense.											
15 ft 4.6m		S1	23.8												
20 ft 6.0m		S2	17.7	Brown gravelly silty Sand, dense to very dense.											
25 ft 7.6m		S3	18.6	Brown fine Sand, trace silt to some silt, very dense.											
30 ft 9.0m				Grey fine Sand, trace silt to some silt, very dense.											
35 ft 10.6m		S4	24.0												
40 ft															



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 9

DATE: November 10, 2006

PLATE: 1 of 4

# TEST HOLE LOG - BH- 9

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa	
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400	
HEIGHT DROP							● FIELD VANE ▲ LAB VANE ■ UNCONF.	
DEPTH		PIEZO	NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.	PLASTIC LIMIT	WATER CONTENT
(ft)/(m)		11				0 25 50 75 100	X 10 30 50 70 90% X	
45.0 ft 13.7m			S5	23.3	Grey silty Sand, interlayered with silt/some gravel, (till-like), very dense.	SPT: (23-46-77)		
50 ft 15.2m			S6	32.9	Grey Silt, trace fine sand.			
55 ft 16.7m						SPT: (23-74-110)		
60 ft 18.2 m			S7		Grey Silt, wet, some fine to coarse sand at 63', very dense.			
65 ft 19.8m				14.0	Grey silty Sand, some gravel, very dense.	SPT: (45-146)		
70 ft 21.3m			S8					
75 ft 22.8 m				11.0	Grey silty Sand, some gravel, very dense.	SPT: (18-46-77)		
80 ft					Grey Silt, trace sand, very dense.			



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 9

DATE: November 10, 2006

PLATE: 2 of 4



# TEST HOLE LOG - BH- 9

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa	
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.	
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X	
DEPTH	PIEZO		NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.		
(ft)/(m)	1					0 25 50 75 100	10 30 50 70 90%	
85.0 ft 25.9m			S9	30.2	Grey Silt, trace sand, dense to very dense.	SPT: (13-31-63)		
90 ft xxm					Grey silty fine Sand, wet.			
95 ft 4.6m			S10	32.3	Grey Silt, trace sand, wet, dense.	SPT: (9-17-25)		
100 ft 6xx m					Grey silty fine Sand, wet, compact to very dense.			
105 ft 7xxm			S11	18.1	Grey fine to coarse Sand, trace silt to some silt, very dense.	SPT: (4-26-64)		
110 ft 9xxm								
115 ft xx m			S12	21.8		SPT: (32-58-71)		
120 ft								



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 9

DATE: November 10, 2006

PLATE: 3 of 4

# TEST HOLE LOG - BH- 9

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa	
WEIGHT HAMMER					ELEV. GROUND:		● FIELD VANE    ▲ LAB VANE    ■ UNCONF. PLASTIC LIMIT    WATER CONTENT    LIQUID LIMIT X ————— 0 ————— X	
HEIGHT DROP								
DEPTH			NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.	100 200 300 400 10 30 50 70 90%	
(ft)/(m)								
125 ft			S13	20.2	Grey fine to coarse Sand, trace silt to some silt, very dense.			
38.1m						SPT: (30-73-45)		
130 ft					Grey Silt, trace sand, very dense.			
39.6m								
135 ft					Grey Silt, some fine sand.			
41.1m								
140 ft					Grey Silt to sandy silt, very dense.			
42.2m								
145 ft			S14	25.9				
44.1m						SPT: (24-38-96)		
150 ft					End of Hole at 146'			
45.7m								
155 ft								
47.2m								
160 ft								



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 9

DATE: November 10, 2006

PLATE: 4 of 4

# TEST HOLE LOG - BH- 10

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa		
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.		
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X — 0 — X		
DEPTH (ft)/(m)	PIEZO 10	PIEZO 9	NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT. 0 25 50 75 100	10 30 50 70 90% X — 0 — X		
5.0 ft 1.5m					Fill - Brown medium to coarse Sand, trace gravel to some gravel, compact.	SPT: (6-10-12)			
10 ft 3.0m			S1	16.5	Grey silty fine Sand, dense.	SPT: (9-14-16)			
15 ft 4.6m			S2	13.3	Grey Silt, trace to some sand, interlayered with sandy silt, dense to very dense.	SPT: (10-14-34)			
20 ft 6.0 m			S3	12.1		SPT: (15-27-40)			
			S4	15.4					
25 ft 7.6m			S5	13.5	Grey Silt, trace sand, trace gravel, (till-like), very dense.	SPT: (23-74-120)			
			S6	17.2					
30 ft 9.0m			S7	6.4	Grey Silt, trace sand, very dense.				
35 ft 10.6 m			S8	12.4		SPT: (37-129-115)			
40 ft			S9	17.5					



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JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westminster

HOLE No.: B HOLE - 10

DATE: November 10, 2006

PLATE: 1 of 3

# TEST HOLE LOG - BH- 10

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :	COHESION - KPa										
WEIGHT HAMMER					ELEV. GROUND:	100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.										
HEIGHT DROP						PLASTIC LIMIT X WATER CONTENT 0 LIQUID LIMIT X										
DEPTH		PIEZO	NO.		DESCRIPTION OF MATERIAL	PENETRATION RESISTANCE - BLOWS/FT.										
(ft)/(m)		9				0	25	50	75	100	10	30	50	70	90%	
			S10	12.9	Grey sandy Silt , interlayered with silty fine sand, very dense.											
45.0 ft																
13.7m																
			S11	13.0												
50.0 ft																
15.2m																
55.0 ft																
16.7m																
			S12	12.7	Grey silty fine Sand to sandy silt, dense.											
60.0 ft																
18.2m																
			S13	22.4												
65.0 ft																
19.8m																
			S14	29.0	Grey silty fine Sand, dense.											
70.0 ft																
21.3m																
			S15	30.7	Grey sandy Silt to silt, with part of leaves interlayers, dense.											
75.0 ft																
22.8 m																
			S16	28.2												
80.0 ft																



**Davies Geotechnical Inc.**

Unit #3 -5707 Sidley Street, Burnaby, B.C. V5H 5E6  
 Tel 604-291-2201 Fax. 604-291-2274

JOB No.: B53

PROJECT: B53 Marys Street

LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 8

DATE: November 10, 2006

PLATE: 2 of 3

# TEST HOLE LOG - BH- 10

SAMPLE DATA				MOISTURE (%)	ELEV. COLLAR :		COHESION - KPa		
WEIGHT HAMMER					ELEV. GROUND:		100 200 300 400 ● FIELD VANE ▲ LAB VANE ■ UNCONF.		
HEIGHT DROP							PLASTIC LIMIT WATER CONTENT LIQUID LIMIT X 0 X 10 30 50 70 90%		
DEPTH		PIEZO	NO.	DESCRIPTION OF MATERIAL		PENETRATION RESISTANCE - BLOWS/FT.			
(ft)/(m)		9				0 25 50 75 100			
85.0 ft				S17	21.7	Grey silty fine Sand, moist, very dense.	SPT: (14-23-55)		
25.9m									
90.0 ft						END OF HOLE AT 87'			
27.4m									
95.0 ft									
28.9m									
100 ft									
30.4m									
105 ft									
32.0m									
110 ft									
33.5m									
115 ft									
35.0 m									
120 ft									



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LOCATION: Marys Street at Royal Ave. New Westmister

HOLE No.: B HOLE - 8

DATE: November 10, 2006

PLATE: 3 of 3