



Governance and Priorities Committee Report

For the October 9, 2014 Meeting

To: Governance and Priorities Committee
From: Stephen Stern, Land Development Technologist
Subject: Encroachment Agreement for 1075 Pandora Avenue

Date: September 4, 2014

Purpose

The purpose of this report is to have Council authorize the City of Victoria staff to enter into an Encroachment Agreement with JCP PROPERTIES LTD., 10946 Madrona Drive, North Saanich, BC, V8L 5P2 to allow the anchor rods to remain in the City Street during and upon completion of the construction of the New Building at 1075 Pandora Avenue.

Executive Summary

This project identifies underground parking levels and associated mechanical rooms to a depth of below the current road surface. The building face has a zero set back from the property lines on Johnson Street, Cook Street and Pandora Avenue. In order to place the footing and foundation walls, the contractor will need to either excavate into the right of way of the streets causing traffic disruption or shore the face of the excavation to minimise impact to pedestrian and vehicle activity during the excavating phase.

The geotechnical engineer has proposed anchoring the temporary shoring by means of rock anchors which will encroach into the street under all existing infrastructure. During the backfill portion of the project, the anchors will be de-tensioned and cut off from the shoring within the City right-of-way. The anchors will be left in the right-of-way as there is no practical way to remove them once the building walls are installed.

The City of Victoria will inherit the rock anchors in the road right-of-way upon completion of the project.

There should be no impact to existing City of Victoria or Utility infrastructure. All drawings submitted at time of building permit showing works and services on public right of way will be reviewed to the satisfaction of the Director of Engineering.

Recommendation:

That Council authorize City Staff to prepare and enter into an Encroachment Agreement, to the satisfaction of the Director of Engineering, for the excavation of a portion of the street during construction allowing the shoring material to remain in the right-of-way after completion of the project, for a fee of \$750 plus \$25 per area of exposed shored face during construction.

Respectfully submitted,


Stephen Stern
Land Development Technologist


Dwayne Kalynchuk, P.Eng.
Director of Engineering and Public Works

Report accepted and recommended by the City Manager:

Date:


Sept. 22/2014

RYZUK GEOTECHNICAL

Engineering & Materials Testing

28 Crease Avenue, Victoria, BC, V8Z 1S3 Tel: 250-475-3131 Fax: 250-475-3611 www.ryzuk.com

September 3, 2014
File No: 8-6509-1

JCP Properties LP
10946 Madrona Drive
North Saanich, BC
V8L 5P2

Attn: Dan Cox (danielalexandercox@gmail.com)

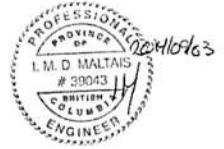
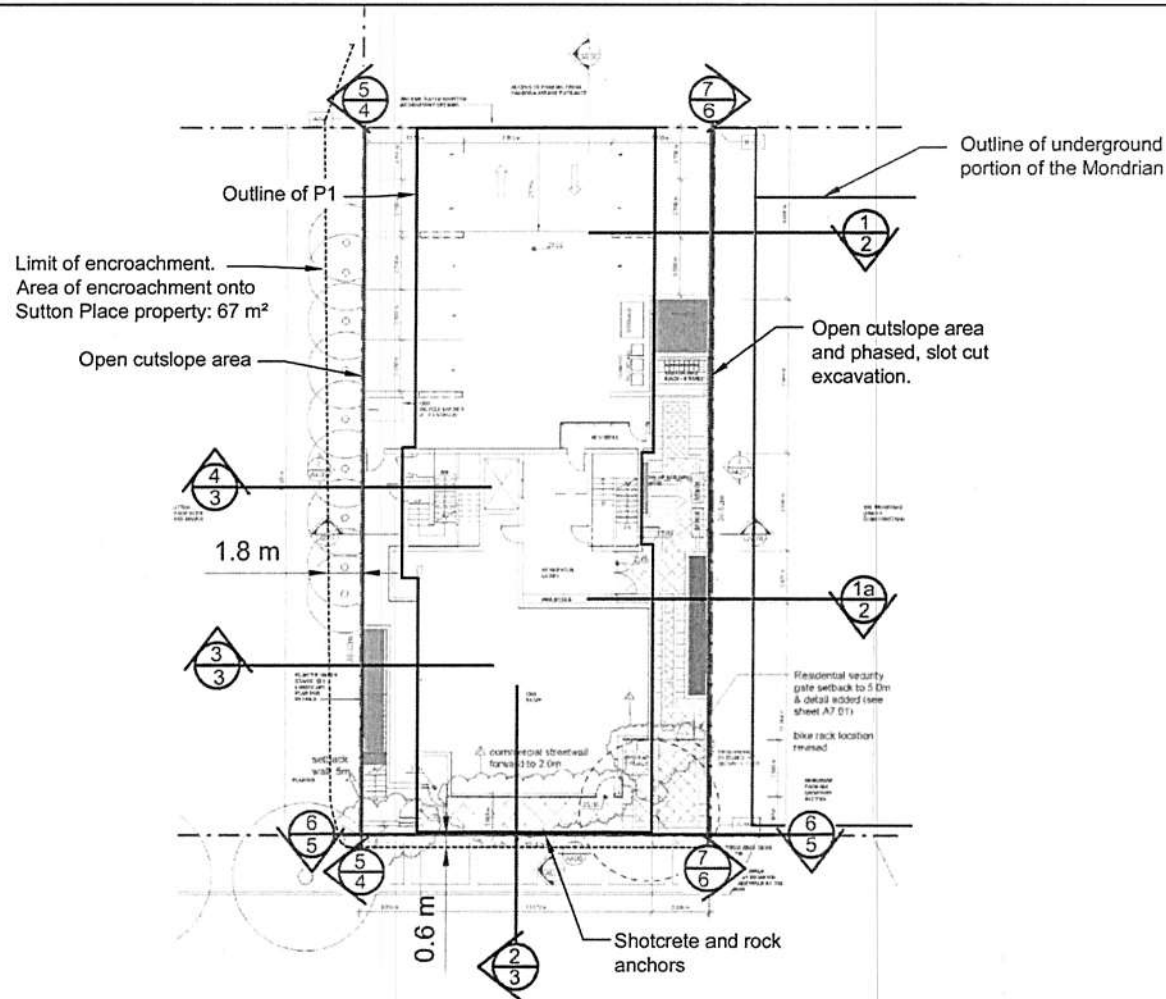
Dear Sir,

Re: Johnson – Pandora Towers
1075 Pandora, Victoria, BC

In support of your application for an excavation permit for the referenced project, please find attached two signed and sealed copies of our drawings 8-6509-1-1 to -17, which provide details relating to excavation and shoring at the site. These drawings entitled Shoring Details are further to and in addition to our formal geotechnical report which was issued on November 12, 2012.

We have calculated 486 m² of shoring system along Pandora Ave, 291 m² along Cook Street, and 60 m² along Johnson Street. This is a total of 837 m² of shoring area for which an encroachment agreement with the City to facilitate installation of the subsurface anchors and shotcrete shoring system will be required.

As part of the requirements and in support of the excavation permit application, the City also requires an estimated cost to fill the excavation back in. We understand that this cost is to cover reinstatement of the site to a safe condition if for some reason after the excavation, building construction does not proceed. Often this would mean filling it to the level of the adjacent sites, or depending on the source of fill material etc., grading it so that there are safe slopes and that the interior of the excavation is able to drain by gravity means. In this instance, and based on our past discussions with local contractors, we expect that such an excavation could be in-filled with suitable clean material excavated from other sites at little to no charge, as the out of town disposal costs can be significant when considering the trucking involved even for clean material.

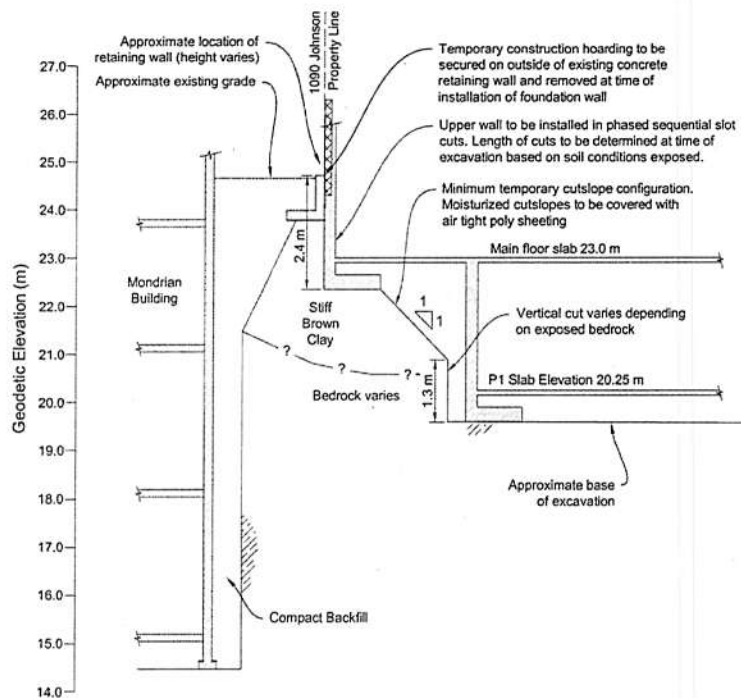


Notes:

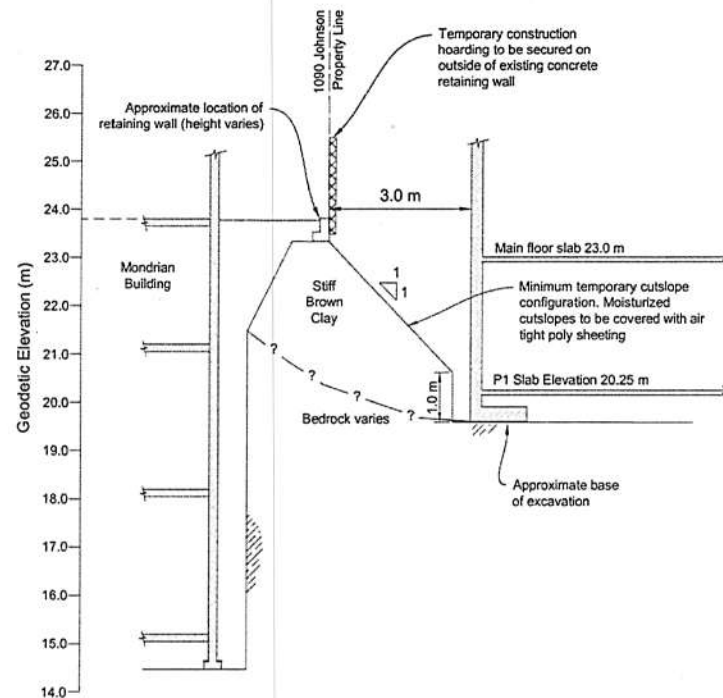
1. Base plan taken from the CEI Architecture drawing A2.00, Site Plan, dated Aug, 2014.
2. See drawings 8-6509-1-2,3,4,5,6 for section and profile details.
3. See drawings 8-6509-1-16,17 for specifications.



JCP Properties LP		DRAWN	MGPM
JOHNSON BUILDING LOCATION PLAN Proposed 11-13 Storey Towers		DATE	Aug, 2014
		APPROVED	<i>[Signature]</i>
1075 Pandora Avenue		SCALE	1:250
Victoria, B.C.		DRAWING No.	8-6509-1-1
RYZUK GEOTECHNICAL		Engineering & Materials Testing	



1 SECTION - Eastern perimeter adjacent to Mondrian
2 Typical for eastern perimeter where L1 is at PL



1a SECTION - Eastern perimeter adjacent to Mondrian
2 Typical where P1 and L1 are set back 3.0 m from PL

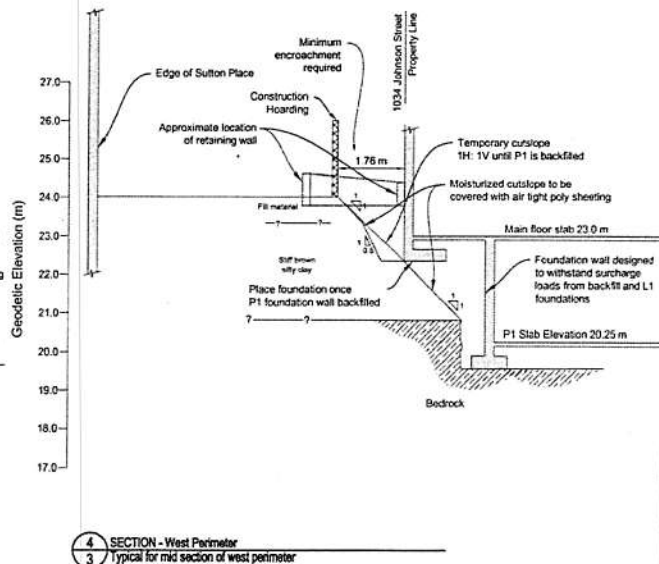
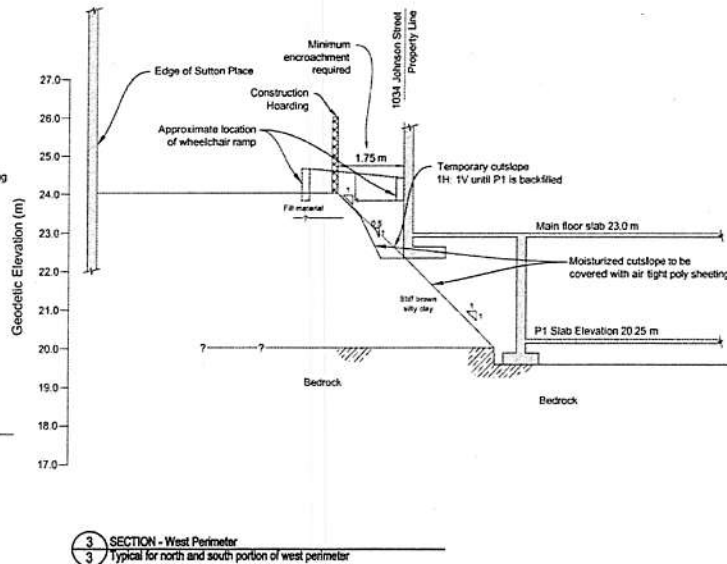
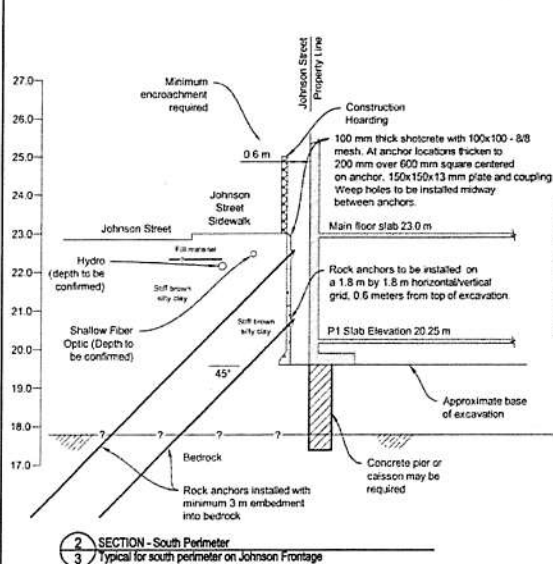
Notes:

1. See drawing 8-6509-1-1 for section locations.
2. Bedrock elevations extrapolated/interpolated from probe hole locations may vary from actual bedrock profile.
3. Existing grade contours from CRD Regional Community Atlas.
4. See drawings 8-6509-1-16,17 for specifications.



JCP Properties LP		DRAWN	MGPM
JOHNSON BUILDING SECTIONS		DATE	Aug, 2014
Proposed 11-13 Storey Towers		APPROVED	114
1075 Pandora Avenue		SCALE	1:100
Victoria, B.C.		DRAWING No.	8-6509-1-2
RYZUK GEOTECHNICAL		Engineering & Materials Testing	





Installation Notes / Material Specifications (refer to general notes for additional details/specifications)

- 1.1 Rock anchors to be installed at 45 degrees and embedded a minimum of 3 m into sound bedrock installed in the center of minimum 125 mm diameter holes. Anchor tendons to be dywidag #3 bar with minimum yield strength of 263 kN. Anchors to be proof tested to 216 kN (1.2 times the design load) and locked off at 160 kN. Additional creep testing and lift off tests to be performed at the discretion of the Project Geotechnical Engineer. Phased installation of shotcrete to be undertaken in sequence approved by geotechnical personnel depending on soil conditions. Anchor installations under existing buildings to be drilled exclusively with grout (no air). Avoid conflict with all utilities. Lift-off tests to be performed on a minimum of 10% of all installed anchors to verify shoring performance or at the discretion of the Project Geotechnical Engineer. All anchors are to be locked off at the design load with an immediate lift off test to verify the lock off load.
- 1.2 Shotcrete to consist of typical shotcrete mix design as provided by local supplier with a minimum compressive strength of 40 MPa at 14 days. Minimum of two standard shotcrete panels to be provided for curing samples, one at the beginning and one mid-way through construction (more panels may be requested at the discretion of the Project Geotechnical Engineer). Wire mesh to be 100x100 8/8 Steel Mesh. Shotcrete to be minimum 100 mm. Minimum overlap of 2 squares of each adjoining mesh section to be maintained. All shoring to be inspected by Ryzyk Geotechnical. Produce Shop drawings for geotechnical review for all items different from those specified.
- 1.3 Shotcrete to be as described above, 100 mm thick in the field and thickened to 150 mm for 0.6 by 0.6 m around the anchor plate with an extra 0.6 m by 0.6 m layer of mesh around the anchor. Typical steel anchor plates to be grade 300W or better (minimum 150 x 150 x 13 mm) to be installed on wet concrete to ensure intimate contact, with bond break around anchor to ensure separation of anchor and shotcrete. All shoring to be inspected by Ryzyk Geotechnical. Produce shop drawings for geotechnical review.

Notes:

1. See drawing 8-6509-1-1 for section locations.
2. Bedrock elevations extrapolated/interpolated from probe hole locations may vary from actual bedrock profile.
3. Existing grade contours from CRD Regional Community Atlas.
4. See drawings 8-6509-1-16,17 for specifications.



JCP Properties LP

JOHNSON BUILDING SECTIONS
Proposed 11-13 Storey Towers

1075 Pandora Avenue

Victoria, B.C.

RYZYK GEOTECHNICAL

Engineering & Materials Testing

DRAWN

MGPM

DATE

Aug. 2014

APPROVED

11/1

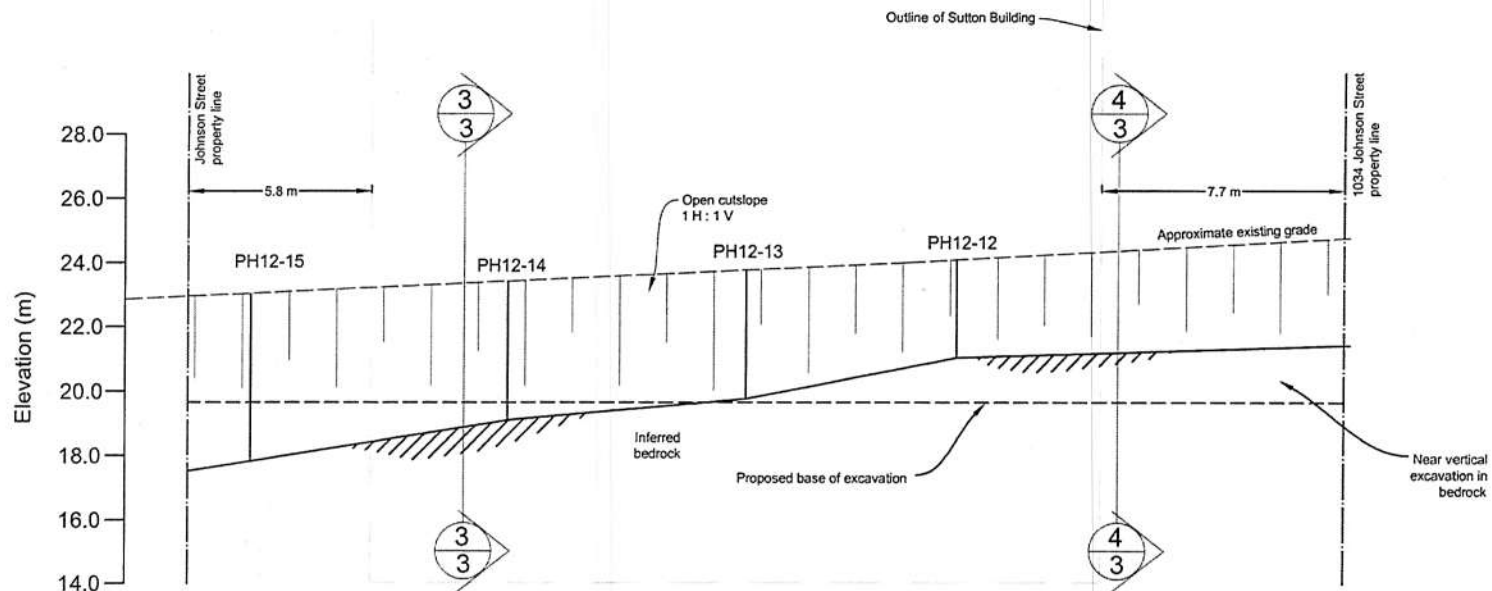
SCALE

1:125

DRAWING No.

8-6509-1-3





5 Profile
4 West Elevation - Along Sutton

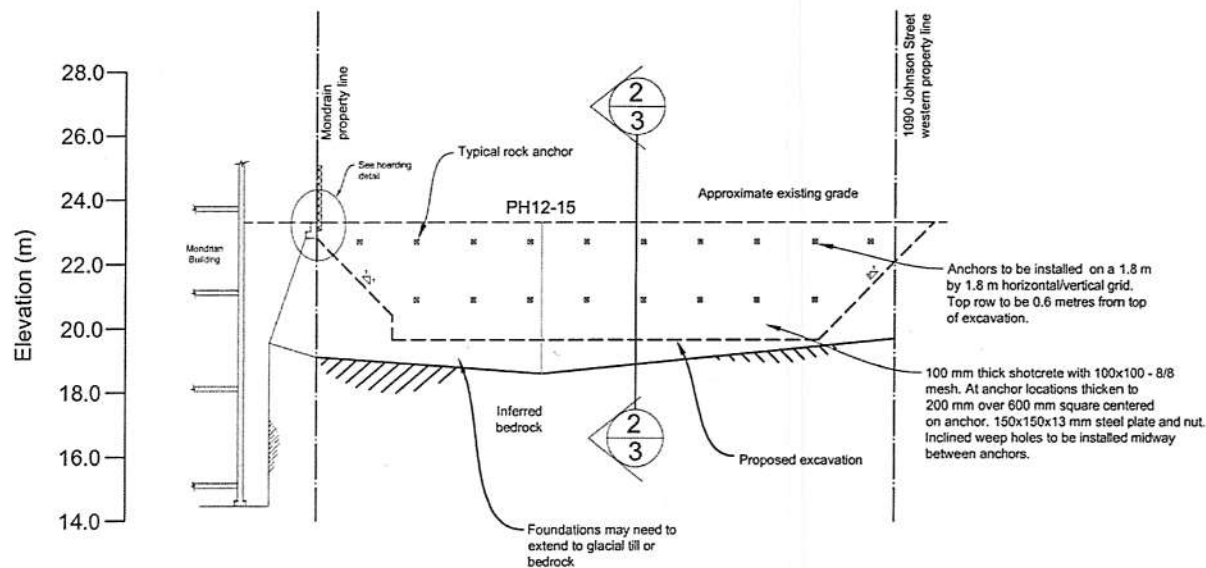


Notes:

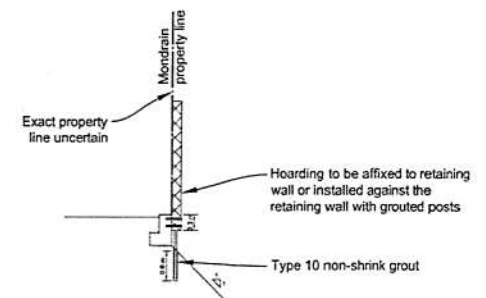
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3. Existing grade contours from CRD Regional Community Atlas.
4. See drawings 8-6509-1-16, 17 for specifications.



JCP Properties LP		DRAWN	MGPM
JOHNSON BUILDING PROFILE		DATE	Aug. 2014
Proposed 11-13 Storey Towers		APPROVED	<i>IM</i>
1075 Pandora Avenue	Victoria, B.C.	SCALE	1:150
RYZUK GEOTECHNICAL Engineering & Materials Testing		DRAWING No.	8-6509-14



6 Profile
5 South Elevation - Johnson Frontage



Hoarding Detail
Along Mondrian Property Line



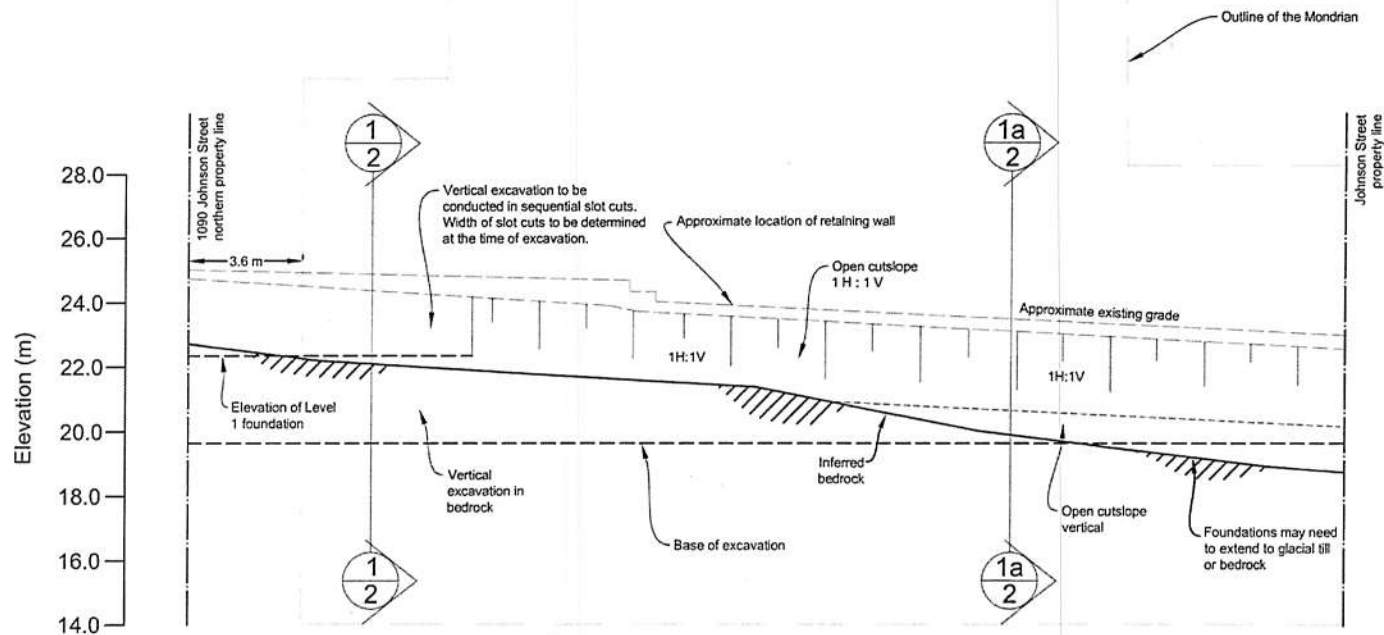
Notes:

1. See drawing 8-6509-1-1 for profile location.
2. Bedrock elevations extrapolated/interpolated from probe hole locations may vary from actual bedrock profile.
3. Existing grade contours from CRD Regional Community Atlas.
4. See drawings 8-6509-1-16, 17 for specifications.

Shoring frontage area = approx 60 m²



JCP Properties LP		DRAWN	MGPM
JOHNSON BUILDING PROFILE		DATE	Aug. 2014
Proposed 11-13 Storey Towers		APPROVED	11/
1075 Pandora Avenue	Victoria, B.C.	SCALE	1:150
RYZUK GEOTECHNICAL Engineering & Materials Testing		DRAWING No.	8-6509-1-5



7 Profile
6 East Elevation - Along Mondrian

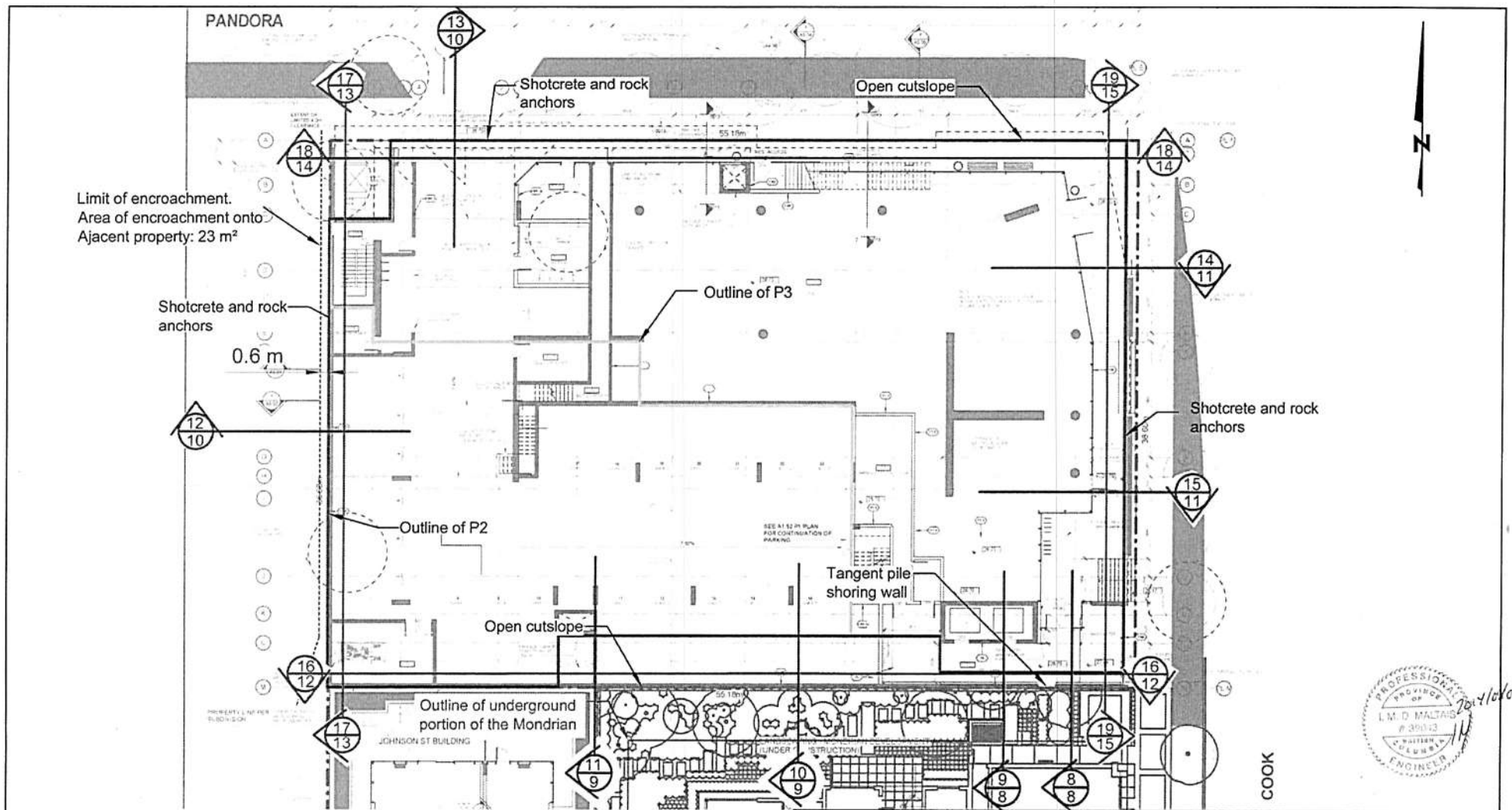
Notes:

1. See drawing 8-6509-1-1 for profile location.
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3. Existing grade contours from CRD Regional Community Atlas.
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JCP Properties LP		DRAWN	MGPM
JOHNSON BUILDING PROFILE		DATE	Aug, 2014
Proposed 11-13 Storey Towers		APPROVED	<i>[Signature]</i>
1075 Pandora Avenue		SCALE	1:150
Victoria, B.C.		DRAWING No.	8-6509-1-6
RYZUK GEOTECHNICAL		Engineering & Materials Testing	



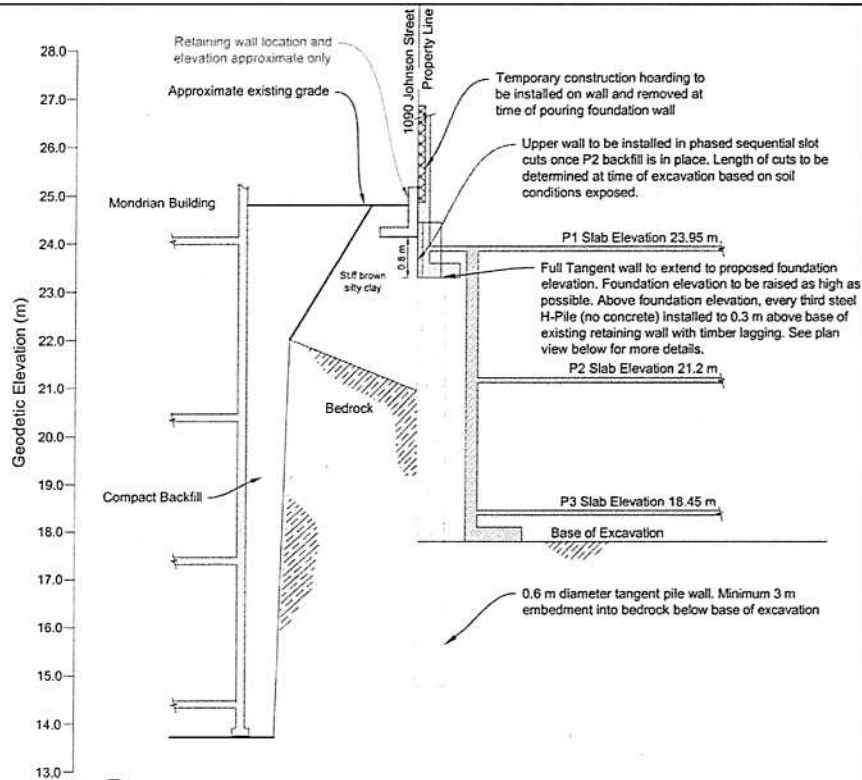


Notes:

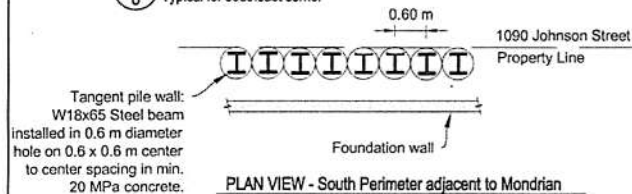
1. Base plan taken from the CEI Architecture drawing A1.53, Level 1 Plan, dated 2014-06-11. See drawings 8-6509-1-8,9,10,11,12,13,14,15 for section and profile details.
2. See drawings 8-6509-1-16,17 for specifications.



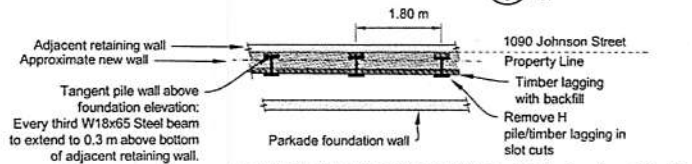
JCP Properties LP		DRAWN	MGPM
PANDORA BUILDING LOCATION PLAN		DATE	Aug. 2014
Proposed 11-13 Storey Towers		APPROVED	<i>[Signature]</i>
1075 Pandora Avenue		SCALE	1:250
Victoria, B.C.		DRAWING No.	8-6509-1-7
RYZUK GEOTECHNICAL		Engineering & Materials Testing	



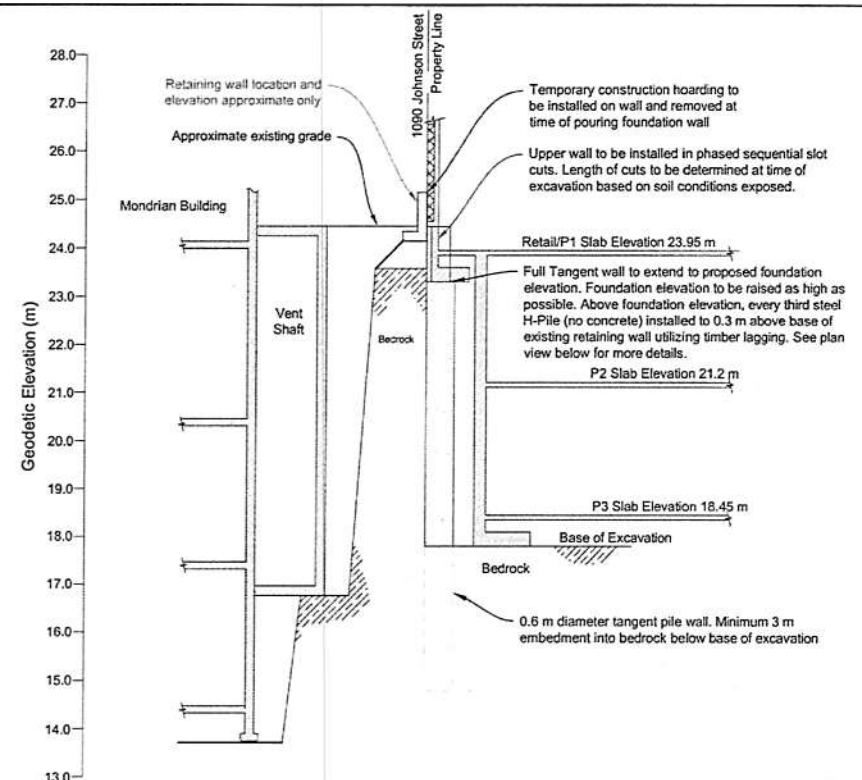
8 SECTION - South Perimeter adjacent to Mondrian
8 Typical for southeast corner



PLAN VIEW - South Perimeter adjacent to Mondrian
Typical for tangent pile wall below foundation elevation



PLAN VIEW - TIMBER LAGGING OPTION - South Perimeter adjacent Mondrian
Typical for tangent pile wall above foundation elevation



9 SECTION - South Perimeter adjacent to Mondrian
8 Typical for southeast corner next to vent shaft

Notes:

1. See drawing 8-6509-1-7 for section locations.
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4. See drawings 8-6509-1-16, 17 for specifications.



JCP Properties LP

PANDORA BUILDING SECTIONS
Proposed 11-13 Storey Towers

1075 Pandora Avenue

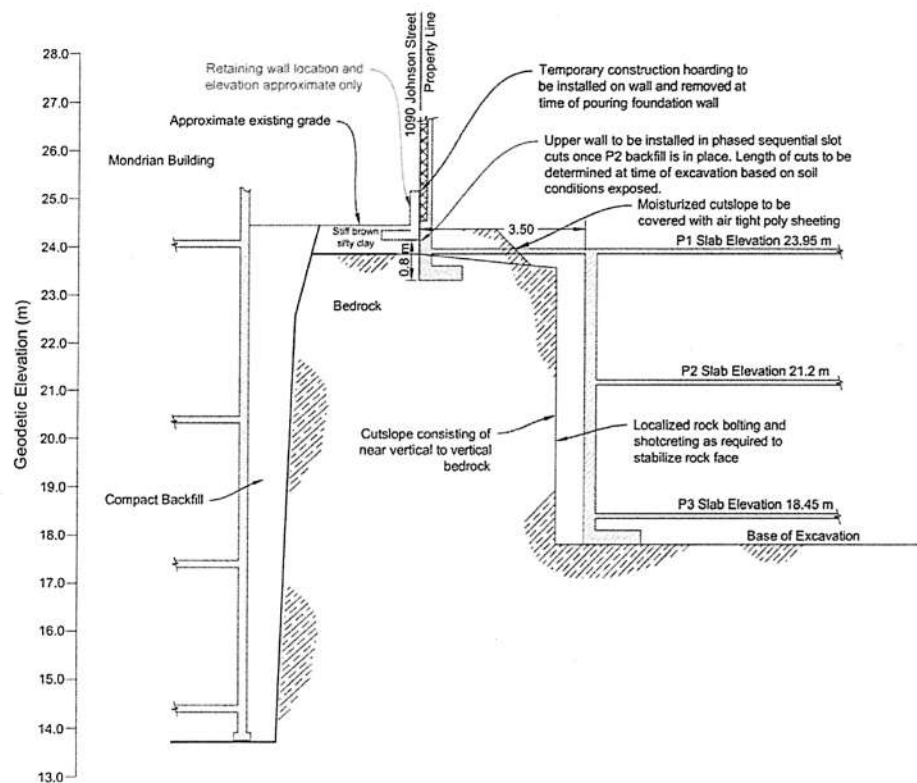
Victoria, B.C.

RYZUK GEOTECHNICAL

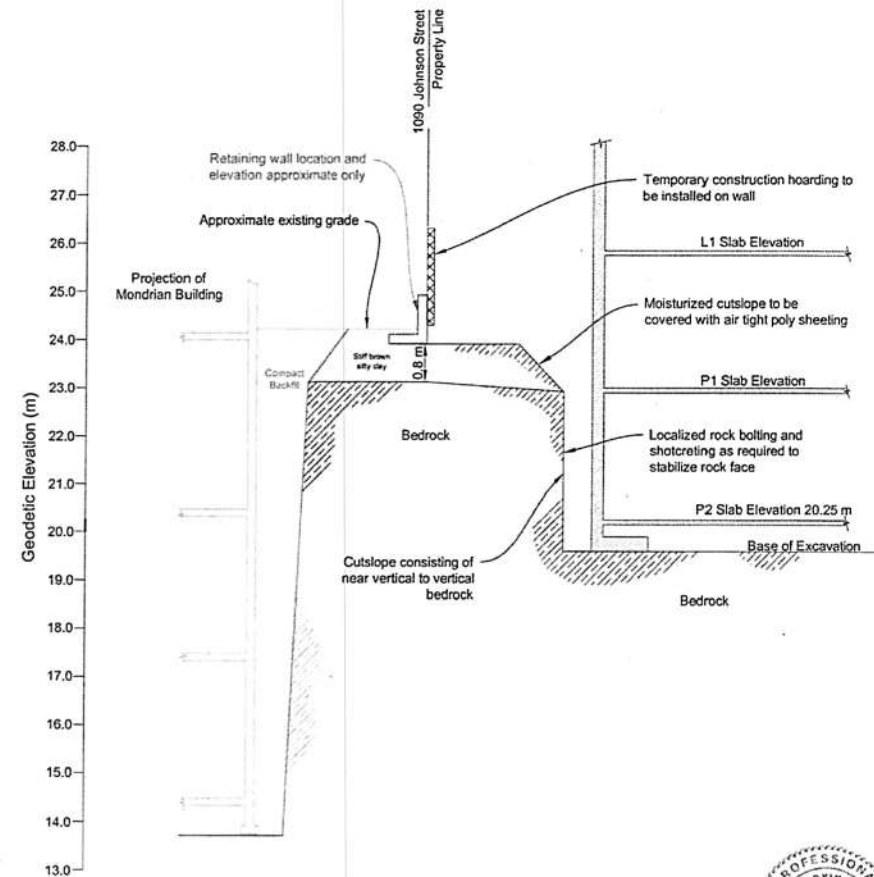
Engineering & Materials Testing

DRAWN	MGPM
DATE	Aug. 2014
APPROVED	11
SCALE	1:100
DRAWING No.	8-6509-1-8





10 SECTION - South Perimeter at PL with Mondrian
9 West of stairwell



11 SECTION - South Perimeter to the west at PL with Mondrian
9 Typical west of stairwell

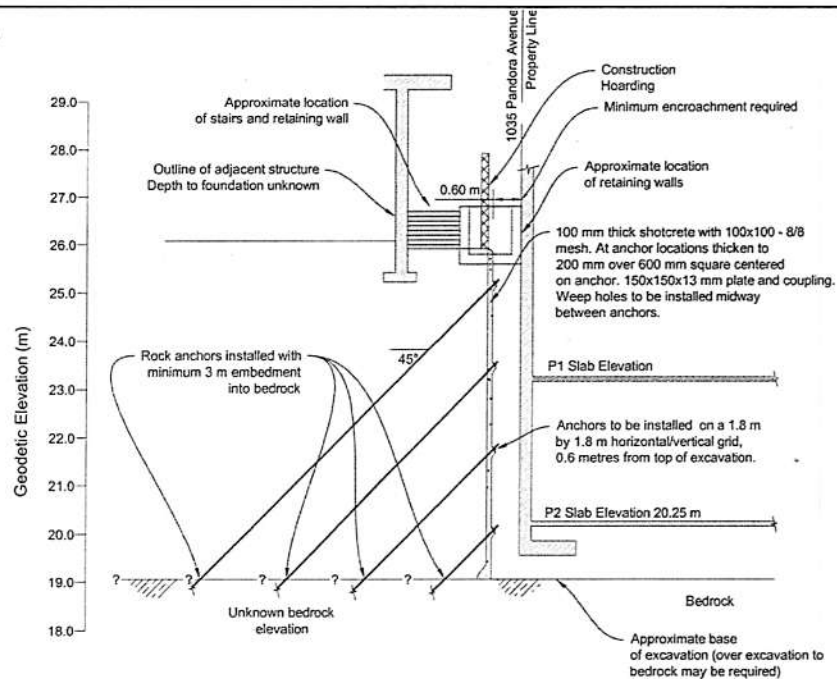


Notes:

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3. Existing grade contours from CRD Regional Community Atlas.
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JCP Properties LP		DRAWN	MGPM
PANDORA BUILDING SECTIONS		DATE	Aug. 2014
Proposed 11-13 Storey Towers		APPROVED	11/
1075 Pandora Avenue		SCALE	1:100
Victoria, B.C.		DRAWING No.	8-6509-1-9
RYZUK GEOTECHNICAL		Engineering & Materials Testing	



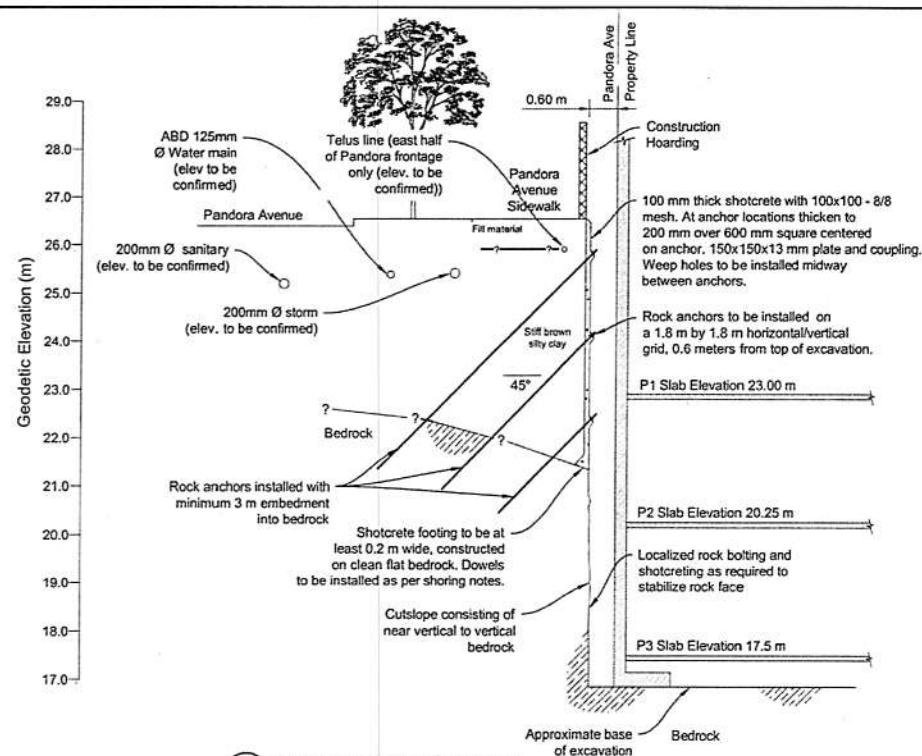
12 SECTION - Western perimeter - Near adjacent structure
10 Worst case for western perimeter

Installation Notes / Material Specifications (refer to general notes for additional details/specifications):

- 1.1 Rock anchors to be installed at 45 degrees and embedded a minimum of 3 m into sound bedrock installed in the center of minimum 125 mm diameter holes. Anchor tendons to be de-widged #8 bar with minimum yield strength of 253 kN. Anchors to be proof tested to 216 kN (1.2 times the design load) and locked off at 180 kN. Additional creep testing and lift off tests to be performed at the discretion of the Project Geotechnical Engineer. Phased installation of shotcrete to be undertaken in sequence approved by geotechnical personnel depending on soil conditions. Anchor installations under existing buildings to be drilled exclusively with grout (no air). Avoid conflict with all utilities. Lift-off tests to be performed on a minimum of 10% of all installed anchors to verify shoring performance or at the discretion of the Project Geotechnical Engineer. All anchors are to be locked off at the design load with an immediate lift off test to verify the lock off load.
- 1.2 Shotcrete to consist of typical shotcrete mix design as provided by local supplier with a minimum compressive strength of 40 MPa at 14 days. Minimum of two standard shotcrete panels to be provided for curing samples, one at the beginning and one mid-way through construction (more panels may be requested at the discretion of the Project Geotechnical Engineer). Wire mesh to be 100x100 8/8 Steel Mesh. Shotcrete to be minimum 100 mm. Minimum overlap of 2 squares of each adjoining mesh section to be maintained. All shoring to be inspected by Rytek Geotechnical. Produce Shop drawings for geotechnical review for all items different from those specified.
- 1.3 Shotcrete to be as described above. 100 mm thick in the field and thickened to 150 mm for 0.6 by 0.6 m around the anchor plate with an extra 0.6 m by 0.6 m layer of mesh around the anchor. Typical steel anchor plates to be grade 300W or better (minimum 150 x 150 x 13 mm) to be installed on well concrete to ensure intimate contact, with bond break around anchor to ensure separation of anchor and shotcrete. All shoring to be inspected by Rytek Geotechnical. Produce shop drawings for geotechnical review.

Notes:

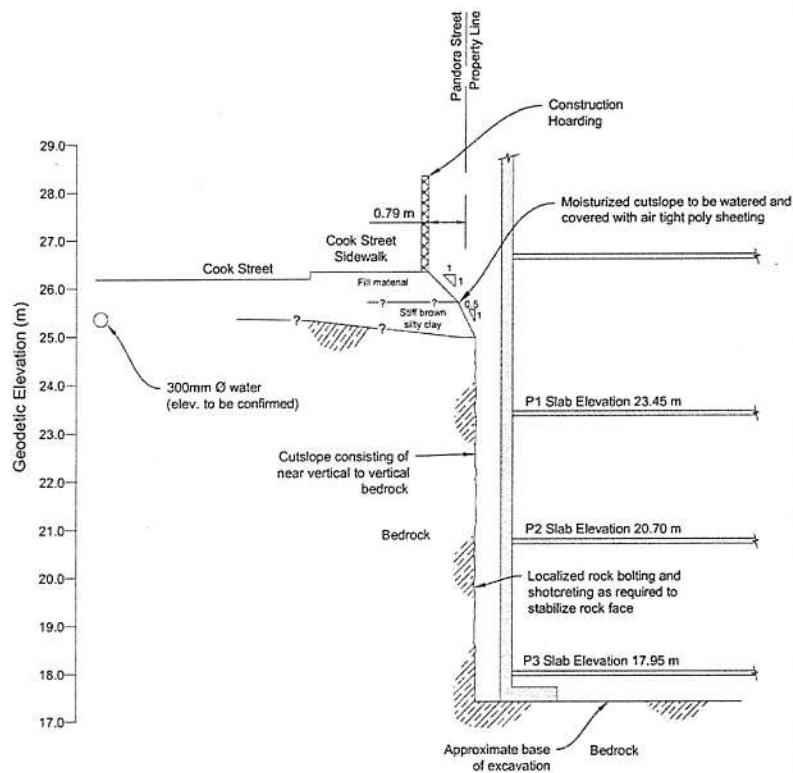
1. See drawing 8-6509-1-7 for section locations.
2. Bedrock elevations extrapolated/interpolated from probe hole locations may vary from actual bedrock profile.
3. Existing grade contours from CRD Regional Community Atlas.
4. See drawings 8-6509-1-16,17 for specifications.



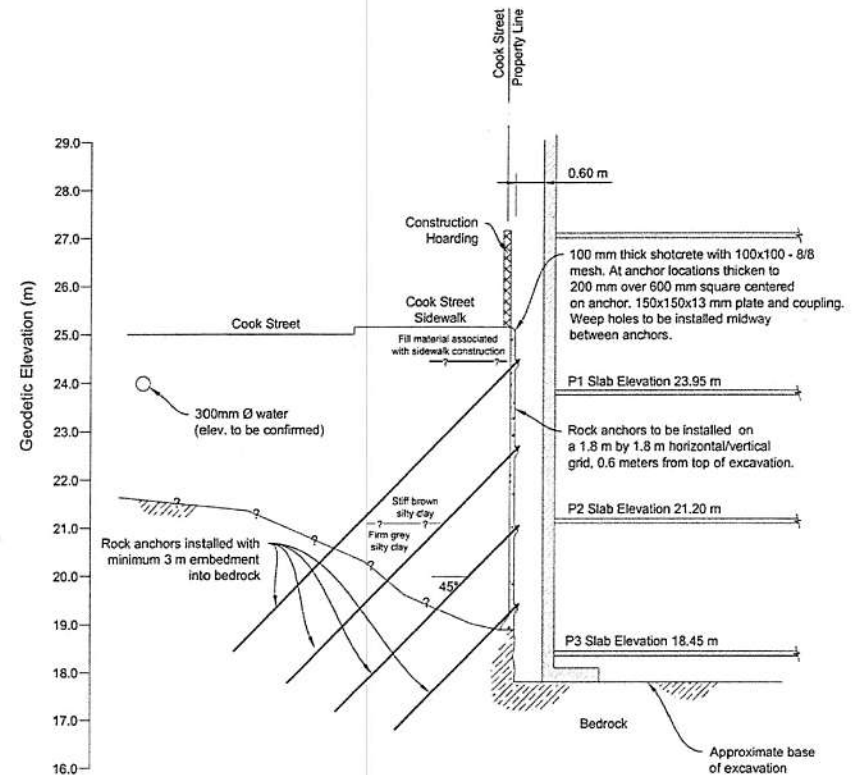
13 SECTION - Northern perimeter - West end
10 Typical for west end of north perimeter



	JCP Properties LP		DRAWN	MSPM
	PANDORA BUILDING SECTIONS		DATE	Aug. 2014
	Proposed 11-13 Storey Towers		APPROVED	
	1075 Pandora Avenue	Victoria, B.C.	SCALE	1:100
RYTEK GEOTECHNICAL		Engineering & Materials Testing		DRAWING No. 8-6509-1-10



14 SECTION - East perimeter
11 Typical for northern section where bedrock is less than 1.5 m deep



15 SECTION - East perimeter - South section
11 Typical for East perimeter where bedrock is greater than 1.5 m

Notes:

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4. See drawings 8-6509-1-16,17 for specifications



JCP Properties LP

PANDORA BUILDING SECTIONS
Proposed 11-13 Storey Towers

1075 Pandora Avenue

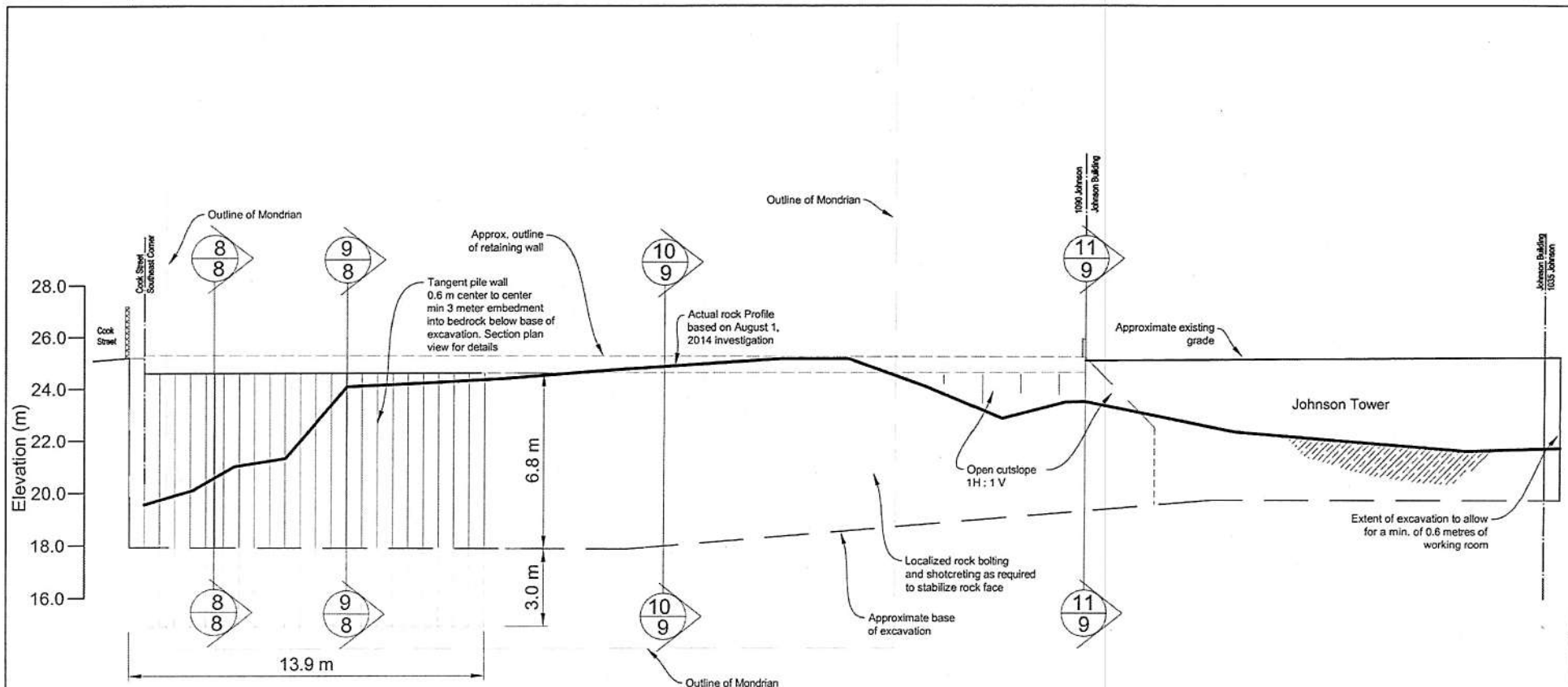
Victoria, B.C.

RYZUK GEOTECHNICAL

Engineering & Materials Testing

DRAWN	MCPM
DATE	Aug. 2014
APPROVED	<i>IM</i>
SCALE	1:100
DRAWING No.	8-6509-1-11





Notes:

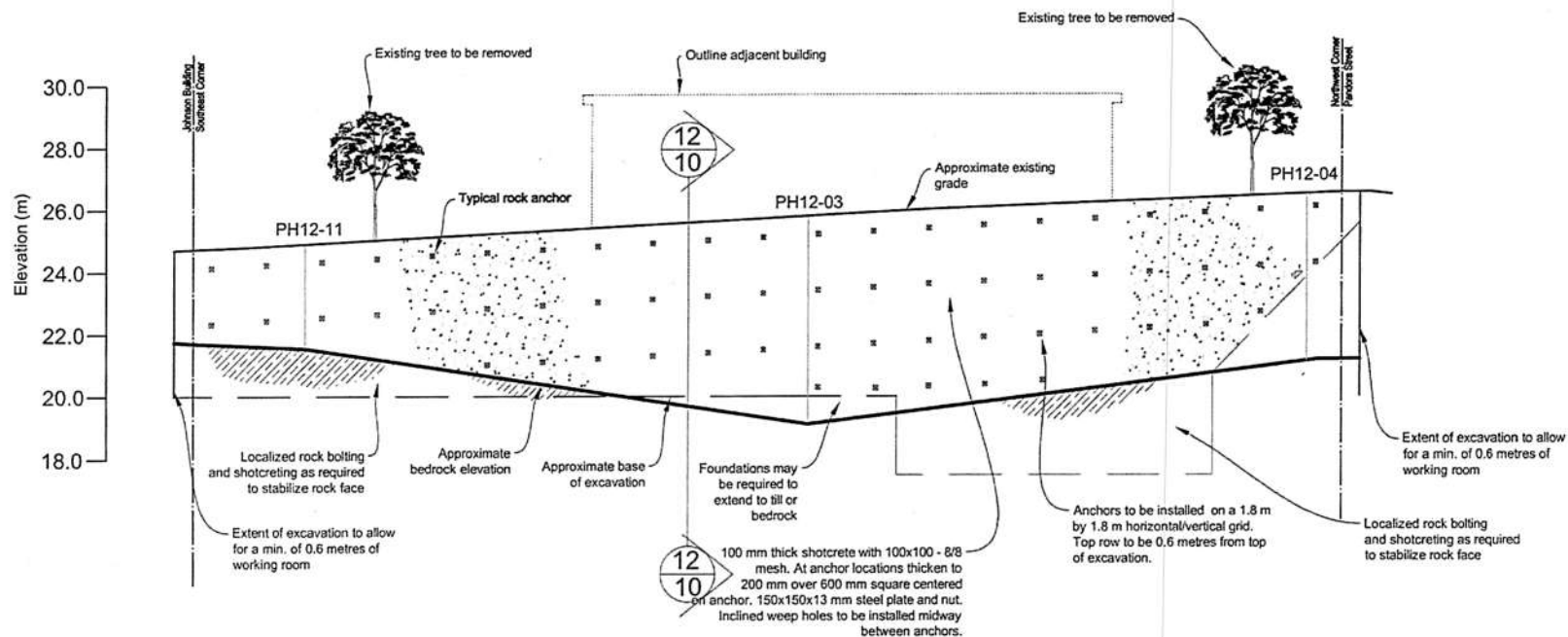
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JCP Properties LP		DRAWN	MGPM
PANDORA BUILDING PROFILE		DATE	Aug. 2014
Proposed 11-13 Storey Towers		APPROVED	IM
1075 Pandora Avenue		SCALE	1:150
Victoria, B.C.		DRAWING No.	8-6509-1-12
RYZUK GEOTECHNICAL		Engineering & Materials Testing	



2014/08/03



17 Profile
13 West Elevation



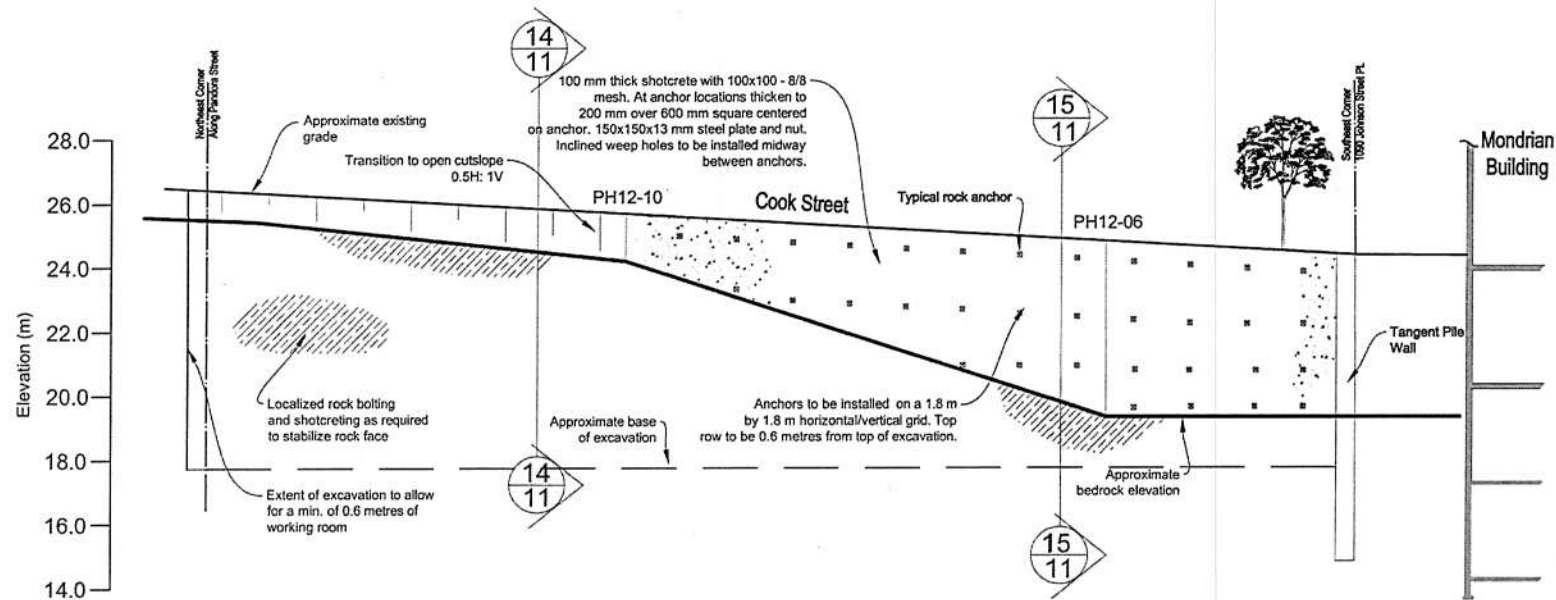
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2. Bedrock elevations extrapolated/interpolated from probe hole locations may vary from actual bedrock profile.
3. Existing grade contours from CRD Regional Community Atlas.
4. See drawings 8-6509-1-16, 17 for specifications.



Shoring Frontage Area: 187 m²

JCP Properties LP		DRAWN	MCPM
PANDORA BUILDING PROFILE		DATE	Aug. 2014
Proposed 11-13 Storey Towers		APPROVED	11/1
1075 Pandora Avenue		SCALE	1:150
Victoria, B.C.		DRAWING No.	8-6509-1-13
RYZUK GEOTECHNICAL		Engineering & Materials Testing	



19 Profile
15 East Elevation - Cook Street Frontage



Shoring Frontage Area = 93 m²

Notes:

1. See drawing 8-6509-1-7 for profile location.
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4. See drawings 8-6509-1-16, 17 for specifications.



JCP Properties LP

PANDORA BUILDING PROFILE
Proposed 11-13 Storey Towers

1075 Pandora Avenue

Victoria, B.C.

RYZUK GEOTECHNICAL

Engineering & Materials Testing

DRAWN	MGPM
DATE	Aug. 2014
APPROVED	<i>[Signature]</i>
SCALE	1:150
DRAWING No.	8-6509-1-15

1.0 GENERAL REQUIREMENTS

- 1.1 Ryzuk Geotechnical is the Project Geotechnical Engineer of Record, and is the Owner's Representative in regard to the shoring design, installation procedures and displacement monitoring as well as all other geotechnical aspects of the proposed development.
- 1.2 Location of all services to be completed by Shoring Contractor. Report all discrepancies between actual conditions and excavation drawings immediately. Drilling for installation of anchors is not to commence until all service locations have been established.
- 1.3 All relevant permits from governing authorities must be in place prior to start of construction.
- 1.4 All relevant information which may affect the performance of the shoring system must be reported in writing to Project Geotechnical Engineer and Project Manager prior to start of construction. This includes, but is not limited to the location of site trailers, storage areas, or heavy vehicle/machine loads near the edge of the excavation.
- 1.5 Permission from adjacent property owners for encroachment is the responsibility of the Owner. The Shoring Contractor is responsible for all due care in assuring no damage is caused to adjacent properties. Any damage caused by the installation of the shoring is the responsibility of the Shoring Contractor.
- 1.6 Site to be enclosed by fencing or hoarding prior to start of excavation. Fencing/hoarding to be acceptable to municipal bylaws.

2.0 SHORING DESIGN PARAMETERS

- 2.1 Soil conditions are generally as outlined in the Ryzuk Geotechnical soils report provided. Where unexpected soil or site conditions are encountered, revisions to the excavation drawings may be required.
- 2.2 All attempts have been made to ensure that these drawings are the latest revisions. However, the Shoring Contractor should ensure that discrepancies do not exist between the excavation drawings and those provided by the other consultants. All discrepancies or dimensional inaccuracies are to be reported to Ryzuk Geotechnical prior to commencement of the work. Bedrock elevations are extremely erratic, and cannot be accurately estimated between boreholes. Contractors using the drawings for quantity take-offs do so at their own risk.
- 2.3 Locations of adjacent structures are obtained by site inspections, and where possible, by review of available drawings. We accept no responsibility for accuracy of this data.
- 2.4 Utility data is provided by the municipality and the site survey plan. Site inspections to determine location of utilities either shown or not shown on the drawings is the responsibility of the Shoring Contractor. Information placed on the drawings is to be used as a preliminary guide only. Report any discrepancies between the drawings and actual utility locations. Installation of anchors is not to proceed until discrepancies have been resolved.

3.0 MINIMUM MATERIALS REQUIREMENTS

- 3.1 The following should be considered the minimum required material specification:
 - SHOTCRETE - Compressive strength of 40 MPa in 14 days.
 - TIE-BACK ANCHORS - Minimum of Dywidag Threadbar (or similar) with suitable ultimate tensile strength as detailed in design notes. DSI-MAI injection anchors to be used where conditions do not allow conventional drilling or as directed by the Project Geotechnical Engineer.
 - WELDED WIRE MESH - Minimum yield of 400 MPa, size 4: x 4: 8/8 unless noted otherwise. CSA G30.5 M1983
 - REINFORCING - Minimum yield of 400 MPa, CSA G30.12 M197
 - ANCHOR GROUT - Non-shrinking cementitious Ocean microsil grout or equivalent, with a minimum compressive strength of 20 MPa in 48 hours, and 25 MPa in 4 days.
 - TANGENT PILE Wall - W18x65 steel beam installed in 0.6 m dia hole and min. 20 MPa concrete. Minimum 3 m embedment into solid intact bedrock below design excavation level.

4.0 GROUND AND SURFACE WATER CONTROL

- 4.1 All surface water run-off is to be collected and transmitted away from the excavation.
- 4.2 All cracks in the asphalt and/or concrete which can allow water into the retained soils of the shoring system are to be carefully sealed.
- 4.3 50 mm weep holes are to be provided within the shoring system on a minimum 1.5 m by 1.5 m horizontal/vertical spacing to relieve hydrostatic pressures against the back of the shotcrete. Incline the holes into the soil slope a minimum of 0.5 m to promote drainage.
- 4.4 Where visible seepage is evident, a drain mat is to be installed prior to shotcreting, with subsequent weep holes provided to drain the base of the drain mat.
- 4.5 Additional special drains may be required where water seeps are noted. The special drain shall consist of minimum 50 mm diameter perforated PVC wrapped in filter cloth, installed at 5 degrees from horizontal. Depth and spacing to be specified by Project Geotechnical Engineer as required by site conditions.

5.0 OPEN EXCAVATION CUTSLOPE STABILITY

- 5.1 All interior excavation slopes not shown on the excavation shoring drawings shall be completed in conformance with the Workers' Compensation Board.
- 5.2 Steeper excavation outcrops are possible provided they are assessed and approved by the Project Geotechnical Engineer.
- 5.3 All significant slope or shoring deterioration to be reported to Ryzuk Geotechnical immediately.
- 5.4 Where it is desired that open excavation outcrops are to remain stable and safe for an extended period of time (more than 7 days from time of excavation) such slopes should be protected with 6 mil polyethylene sheeting, carefully secure to the slope. Slopes not protected will begin to dry out and ravel during summer months, and/or will be prone to water ingress and destabilization during the winter months.

6.0 CONSTRUCTION SEQUENCING

- 6.1 The Excavation Contractor will maintain a minimum of at least a 2 m wide unexcavated horizontal bench, plus a 1H:1V (Horizontal:Vertical) slope below, around the perimeter during the shoring installation unless otherwise directed by the Project Geotechnical Engineer.
- 6.2 The shoring will be constructed in a phased or sequential method, whereby windows are cut into the slope at the following intervals, depending on the location and depth:
 - Where not adjacent to a building, the uppermost roughly 5 m of soil depth can be excavated in 1.8 m high continuous rows. Below 5 m overall depth, and where the soils are stiff grey silty clays, the shoring is to be installed in a two phased method, whereby two panel widths are excavated leaving two unexcavated panels between. In the firm grey silty clay (shear strength below 50 kPa), the shoring is to be installed in a three phased method, whereby a single panel/window is excavated, leaving two unexcavated and/or shored panels between.
 - Where there is a building adjacent or retaining wall structure, the shoring is to be installed in a three phased/window approach whereby a single panel width is excavated, leaving two unexcavated and/or shored panels between. One panel width is equal to 2 m. The size of the panel/window may decrease significantly where sand or heavy seepage is encountered. This will be assessed at the time of excavation, but could involve panel/window size as small as 1 m².
- 6.3 All anchors to be tensioned and locked-off at design loads prior to excavation of adjacent panels. Anchors with only one side of the shotcrete complete should be temporarily tensioned to half of the design load.
- 6.4 Previously installed stabilizing anchors may be encountered adjacent to Mondrian (installed during construction of the Mondrian).

- 6.5 Controlled blasting in front of the tangent pile shoring wall will be required.

7.0 SHOTCRETE / ANCHOR INSTALLATION

- 7.1 Specified anchors to be placed in minimum 125 mm diameter holes at the lengths noted. Anchor tendons shall have a minimum ultimate capacity of 351 kN, and a minimum yield load of at least 263 kN.
 - 7.2 It is the responsibility of the Shoring Contractor to drill the anchor holes with no adverse affect to adjacent structures. The injection of air and/or water during the drilling stage in areas below sensitive utilities and/or buildings is not recommended.
 - 7.3 It is the responsibility of the Project Geotechnical Engineer to determine the time allowance between shotcrete installation, the tensioning of anchors, and the subsequent excavation of the next phase of shoring installation.
 - 7.4 All mesh joints must be a minimum overlap of two squares. The mesh must be suitably supported from the soil face and positioned to provide required cover as shown on the detail drawings.
 - 7.5 Steel reinforcing is to overlap a minimum of 24 diameters for tension splices and 18 diameters for compression splices with minimum 38 mm of cover unless noted otherwise on drawings.
 - 7.6 Shotcrete to be placed in such a manner that segregation of materials or post placement slumping does not occur. Upward placement of shotcrete for underpinning panels is not acceptable.
 - 7.7 All reinforcing and welded mesh to be fully contained in the shotcrete with at least 38 mm cover in all areas. Removal of defect shotcrete to be at contractor's expense.
 - 7.8 Where the shotcrete extends onto bedrock, a shotcrete "footing" should be provided, roughly 0.3 m in height and 0.3 m thickness, by cutting into the soil slope by hand shovel. The bedrock face should be cleaned of all loose material. If rock blasting is proposed below the elevation of the base of the shoring, it is recommended that 450 mm long, grouted steel dowels be installed on a 1.2 m spacing, with the dowels installed on a 60 degree angle (off horizontal) into solid bedrock, and protruding out at least 150 mm. The protruding dowels should be incorporated into the subsequent steel mesh and shotcrete.
 - 7.9 Where rock blasting and/or hoe ramming undermines the shoring, the Shoring Contractor will install two rows of horizontal rock dowels at 600 mm (horizontal and vertical spacing) below the base of the shotcrete, and extend the shotcrete down onto the bedrock slope.
- ## 8.0 TESTING PROCEDURES
- 8.1 The Shoring Contractor will provide all required testing apparatus including recently calibrated jack and ramp compatible with the anchor test load, nuts, plates, couplers, wrenches, and tensioning chair, together with personnel to set up and operate the equipment.
 - 8.2 All anchors to be stress tested. Lift-off tests are to be completed immediately following each stress test to verify that the design load has been properly locked off.
 - 8.3 All excavation works, anchor testing and shoring installation will be closely monitored by the Project Geotechnical Engineer. Ryzuk Geotechnical must be informed at least 24 hours in advance of any required inspections.
 - 8.4 Any anchors which fail upon stress proofing will be replaced at the Contractor's expense. Failure rates in excess of 10% will be investigated to determine the cause of the failures and will form an extra only where soil conditions can be provided to be significantly different than those reported in the project soils report.



JCP Properties LP		DRAWN	MGPM
SPECIFICATIONS (1 of 2)		DATE	Aug, 2014
Proposed 11-13 Storey Towers		APPROVED	IM
1075 Pandora Avenue		SCALE	N/A
Ryzuk Geotechnical		DRAWING No.	8-6509-1-16
Engineering & Materials Testing		Victoria, B.C.	

- 8.5 Lift-off tests will be conducted on 10% of all anchors above the current row of anchors being installed to determine the long-term performance. Additional lift-off tests and/or retensioning of anchors will be at the discretion of the Project Geotechnical Engineer.
- 8.6 Shotcrete samples in 0.6m x 0.6m x 0.1m wood form panels will be provided by the contractor.
- during the first day shotcrete is used on the site.
 - approximately halfway through the project.
 - when request by the Project Geotechnical Engineer.
- 8.7 Contractor to provide grout samples:
- during first day of anchor installation.
 - at halfway point of project.
 - as requested.
- 8.8 Special requirements for shotcrete protection will be necessary during cold weather. No shotcreting allowed below -10°C.
- 10.0 BACKFILL
- 10.1 Backfill materials to conform to the City of Victoria specifications, compacted to at least 95% Modified Proctor Density. Surface finishing, including base course(s), if applicable, to be provided to City Standards e.g. sod boulevard or concrete sidewalk.
- 10.2 Sufficient testing of the backfills is required and will be as deemed necessary by the Project Geotechnical and/or Civil Engineer to meet City of Victoria requirements.
- 10.3 Samples of all fills to be used on the site are to be provided to the Project Geotechnical Engineer to allow tests of gradation for any granular material placed (road base or birdseye and controlled density fill). These samples must be provided prior to delivery of materials to the site and at least 48 hours prior to their use on the project. Additional appropriate testing shall establish that the material which has been placed conforms with the requirements of these specifications.
- 10.4 The Project Geotechnical Engineer must be notified at least 24 hours prior to placement of backfill, anchor detensioning, and/or shotcrete removal in order that verification of conformance may be provided.
- 11.0 DRAWING REVISIONS AND DRAWING USE
- 11.1 Revisions to shoring installation sequence or shoring details can be made only with written confirmation by Ryzuk Geotechnical personnel.
- 11.2 These drawings have been prepared for the exclusive use of the Owner and the Owner's Representatives. The noted parameters indicate minimum requirements based on limited or assumed soil conditions. The actual shoring design may vary depending on actual conditions encountered during construction.
- 12.0 PRECONSTRUCTION SURVEYS/MONITORING
- 12.1 It is strongly recommended that preconstruction surveys be completed on adjacent structures in order that deficiencies of these structures can be documented prior to start of construction.



	JCP Properties LP	DRAWN	MGPM
	PANDORA SPECIFICATIONS (2 of 2)	DATE	Aug. 2014
	Proposed 11-13 Storey Towers	APPROVED	IH
	1075 Pandora Avenue	SCALE	N/A
	Victoria, B.C.	DRAWING No.	8-6509-1-17
RYZUK GEOTECHNICAL		Engineering & Materials Testing	