CITY OF VANCOUVER

CITY CLERK'S DEPARTMENT
Access to Information & Privacy Division

File No.: 04-1000-20-2020-387

January 5, 2021

s.22(1)

Dear s.22(1)

Re: **Request for Access to Records under the Freedom of Information and Protection of Privacy Act (the "Act")**

I am responding to your request of July 15, 2020 for:

> **Any geotechnical reports (information regarding soils, foundations, etc.), hydrogeological reports regarding groundwater, addendums/letters to the geotechnical and hydrogeological reports, excavation and shoring drawings, geotechnical field review records (inspections during construction by geotechnical engineers regarding shoring, foundations, groundwater, etc.) for the developments at 4052 Ash Street, 523 West King Edward Avenue, 4055 Cambie Street (with previous addresses of 4083 and 4099 Cambie Street). Date range: January 1, 2000 to July 15, 2020.**

All responsive records are attached.

Please note:
- 4052 Ash Street is a secondary address for 4050 Ash Street.
- 4083 and 4099 Cambie Street are secondary addresses for 4055 Cambie Street.
- 523 - 537 West King Edward Avenue are secondary addresses for 521 West King Edward Avenue.

Under section 52 of the Act, and within 30 business days of receipt of this letter, you may ask the Information & Privacy Commissioner to review any matter related to the City's response to your FOI request by writing to: Office of the Information & Privacy Commissioner, info@oipc.bc.ca or by phoning 250-387-5629.

If you request a review, please provide the Commissioner's office with: 1) the request number (#04-1000-20-2020-387); 2) a copy of this letter; 3) a copy of your original request; and 4) detailed reasons why you are seeking the review.

Yours truly,

[Signature on file]

Barbara J. Van Fraassen, BA
Director, Access to Information & Privacy

Barbara.vanfraassen@vancouver.ca
453 W. 12th Avenue Vancouver BC V5Y 1V4

*If you have any questions, please email us at foi@vancouver.ca and we will respond to you as soon as possible. Or you can call the FOI Case Manager at 604.871.6584.

:ftp

:ma

CITY OF VANCOUVER

CITY OF VANCOUVER
ENGINEERING SERVICES

APPLICATION FOR PERMITS TO USE CITY PROPERTY

DATE: November 7, 2016

Address: 521 W King Edward Avenue, Vancouver, BC

Legal Description: Lot A, Blk. 660, D.L. 526 NWD Plan EPP38033

Owner: 0961456 BC Ltd. in trust for King Edward Trust

Address: 208-6088 No. 3 Road, Richmond Ph: 604-207-0977

Nature of Development: 6 - Storey Concrete with 2 Basements Multi-Family Development

Architect: GBL Architects Inc.

Address: 139 E 8th Avenue, Vancouver Ph: 604-736-1156

General Contractor: UPA Construction Group BC Ltd.

Address 155-4299 Canada Way, Burnaby Ph: 604-437-5501

Professional Engineer: Matt Kokan, Geopacific Consultants

Address: 1779 W 75th Avenue, Vancouver Ph: 604-439-0922

PROPOSED USE OF CITY PROPERTY

(X) WHERE APPLICABLE

G	EXCAVATE _____ DEPTH	G	TEMPORARY ACCESS
G	SLOPE EXCAVATION	G	BACKFILLING
X	INSTALL ANCHORS	G	INSTALL SHORING
G	FENCING	X	PERMANENT ENCROACHMENT
G	CANOPY* G AWNING*	G	OTHER (SPECIFY) _____

*STRUCTURES MUST BE FULLY DEMOUNTABLE AND COMPLY WITH THE VANCOUVER CITY BUILDING BYLAW 8057

SKETCH OF CITY PROPERTY USE OR ATTACH PLANS OF USE OF CITY PROPERTY

SECTION	PLAN
See attached Geotech Plans G-S1, G-S2, G-S3A, G-S3B, G-S4A, G-S4B, G-S5, G-2, G-1 all dated October 21, 2015. Also attached are Clearance letters from Fortis dated August 31, 2016, Translink (email), BC Hydro dated October 29, 2016 and the Encroachment Agreement with our west property neighbor dated August 30, 2016.	

I HEREBY MAKE APPLICATION FOR THE FOLLOWING PERMIT(S):

G **TEMPORARY CROSSING PERMIT** - TO CROSS THE CITY BOULEVARD ON A TEMPORARY BASIS TO SERVE THE ABOVE PROPERTY

G **PERMIT TO WORK ON CITY STREETS** - TO WORK ON THE SURFACE OF CITY PROPERTY AT THE ABOVE LOCATION

X **STREET ENCROACHMENT PERMIT** - TO CONSTRUCT A PERMANENT ENCROACHMENT ON CITY PROPERTY PURSUANT TO THE ENCROACHMENT BYLAW

G **STREET EXCAVATION PERMIT** - TO CONSTRUCT A TEMPORARY EXCAVATION ENCROACHING ONTO CITY PROPERTY.

(PLEASE COMPLETE OTHER SIDE)

In consideration of the granting of the Permit or Permits applied for as indicated on the reverse side hereof, I hereby agree to indemnify and save harmless the City of Vancouver, its servants, agents and employees of and from all manner of actions, causes of action, suits, contracts, claims, demands, damages, liabilities, judgements, costs and expenses of whatsoever kind, which may in any manner accrue or arise against the said City, its servants, agents and employees in consequence of or incidental to the granting of the permit or permits applied for or the carrying out of the work authorized thereby irrespective of when or by whom such work is carried out. I further agree to pay the cost of repairing any damage to City property (including but not limited to, sewers, watermains, street surfaces and sub-surfaces, sidewalks, electrical installations, or traffic devices) or the property of any utility company, which damage is, in the opinion of the City Engineer or his representative, caused by the operations in respect of which the permit or permits herein are applied for. I further agree to conform to all requirements of all Municipal, Provincial or Federal laws in force within City of Vancouver from time to time including, but not limited to, all Bylaws of the City of Vancouver.

If the Permit or Permits applied for include a permit to excavate on or into City property, I agree to locate and protect all utilities contained in the said property.

I have been informed that while the Engineering Department of the City will on request pass on information it has concerning the location of utilities it does not in any manner guarantee the accuracy of such information and shall not be liable for any loss or damage resulting from the inaccuracy of such information whether such inaccuracy results from negligence or otherwise howsoever.

Alfonso Tangsoc
Director
for 0961456 BC Ltd. in trust for King Edward Trust
OWNER

Matthew Ng
WITNESS

208-6088 No. 3 Road, Richmond, BC V6Y 2B3
ADDRESS

VP Development
OCCUPATION

THE CORPORATE SEAL OF _____

_____

WAS HEREUNTO AFFIXED IN THE PRESENCE OF:

Richard Cheng

Project Manager

The above must be signed personally by the Owner and not by an agent or employee of the Owner. The Signature must be witnessed. If the Owner is a company, the corporate seal of the company must be affixed to the document in the presence of its duly authorized officers. The officers must also sign, setting forth their positions in the company.

FORTIS BC

16705 Fraser Highway
Surrey, B.C. V4N 0E8
604-576-7000

Date: August 31, 2015

Fortis BC Excavation File: 2015/3

Mr Al Reese
Engineering Department
453 W 12th Avenue
Vancouver, BC
V5Y 1V4

Dear Mr. Reese:

SUBJECT: Proposed Excavation at 563 567 571 W King Edward Avenue, Vancouver

Please be advised the existing 60 DP/Steel gas main located on lane east of 563, W King Edward Ave, Vancouver and on lane north of 563, W King Edward Ave should not be affected by the excavation as described on the drawings G-S1,G-S2,G-S3A,G-S3B,G-S4A,G-S4B,G-S5,G-1 &G-2(2 sheets) dated July 30 2015, by GeoPacific Consultants Ltd. This office has no objections to an excavation permit being issued upon agreement with the following:

1. A minimum of 0.6m clearance must be maintained between the excavation and the gas main.
2. It is essential that the exact location and depth of this main be confirmed by hand digging at several locations in order to achieve an accurate location of our gas main, prior to any anchors or tie pins being drilled or driven in the vicinity. (See W.C.B. Industrial Health and Safety Regulations, Section 38.04.)
3. All shotcrete is to be removed to 0.3m below the main, to ensure access for future maintenance and service connections
4. Keep 1m offset horizontal distance between surcharge and gas main.
5. Surcharges are temporary and during construction period only.

Note: Please make arrangement to abandon the existing 21mm &42mm DP/ST gas service line to 571, 567, 563 W King Edward Ave, Vancouver before stating excavation.

If we can be of further assistance to you in this matter, please contact the undersigned at 604 273 2750.

Yours truly,

Ronil Perera AScT
Fortis BC Energy Inc.
Planning and Design Technologist 2
Phone 604 273 2750
Email: ronil.perera@fortisbc.com

cc: M J Kokan – GeoPacfic Consultants ltd.

h:\plan\plan26k.doc

We do not have any concerns related to the installation of soil anchors adjacent to King Edward Station.

Thanks

R. Steve Black, PE, P.Eng.
Senior Project Manager
Engineering and Project Services
778.375.7735 Work
604.218.1037 Cel
Steve.Black@translink.ca
www.translink.ca

VACATION ALERT: September 14th through the 25th. Returning on the 28th. Contact Sabrina Lau Texier in my absence.

TransLink
South Coast British Columbia
Transportation Authority
#400-287 Nelson's Court
New Westminster, BC
V3L 0E7 Canada

A better place to live, built on transportation excellence

From: Reception [mailto:reception@geopacific.ca]
Sent: September-22-15 3:17 PM
To: Black, Steve
Cc: 'Richard Cheng'
Subject: RE: Intransit Clearance for King Edward Avenue West of Cambie Street, Vancouver [GeoPacific File #12589]

Hi Steve,

Is there a chance you could look at this and give feed back ? Still waiting for the clearance. Let me know if I can provide any other information that might speed the process.

Thanks,

Anastasia Saenko
#215 - 1200 West 73rd Avenue,
Vancouver, BC, V6P 6G5
P: 604.439.0922
F: 604.439.9189

BC Hydro
Power smart

Customer Projects

Phone: 604.528.1476
Fax: 604.528.2232

29 October 2016

GeoPacific Consultants Ltd.
#215 – 1200 W. 73rd Avenue
Vancouver, BC, V6P 6G5

Dear Anastasia Saenko:

Re: Excavation Drawings for 523 W. King Edward, Vancouver

The City of Vancouver has been notified by copy of this letter that BC Hydro has reviewed the excavation drawing # G-S1, file #12589 which you have submitted for the proposed excavation and shoring activities at the above noted address is satisfactory. I can confirm that excavation support system will not be affected. You can now proceed.

By copy of this letter, The City of Vancouver is notified that approval for excavation drawing(s) for this project is given as long as the following conditions are met:

1. Excavation to be supervised by a qualified person and the customer will be held accountable for any damage to BC Hydro plant.

I trust the above information is satisfactory, however, if you have any questions please do not hesitate to give me a call.

Yours truly,

Godwin Beaumont
Design Technician – Vancouver

CC: Dave Amy
City of Vancouver

CITY ENGINEERING DEPARTMENT
PROJECTS BRANCH DIVISION

EXCAVATION ONTO CITY PROPERTY

THE ATTACHED PROPOSAL TO CONSTRUCT A TEMPORARY EXCAVATION, FOR CONSTRUCTION PURPOSES, ENCROACHING ONTO CITY PROPERTY HAS BEEN RECEIVED. PLEASE REVIEW AND STATE YOUR REQUIREMENTS OR APPROVAL.

DATE: Oct 23 20 15

SITE ADDRESS: 521 W Kay Edward PLAN NO. Review A

LEGAL : _____

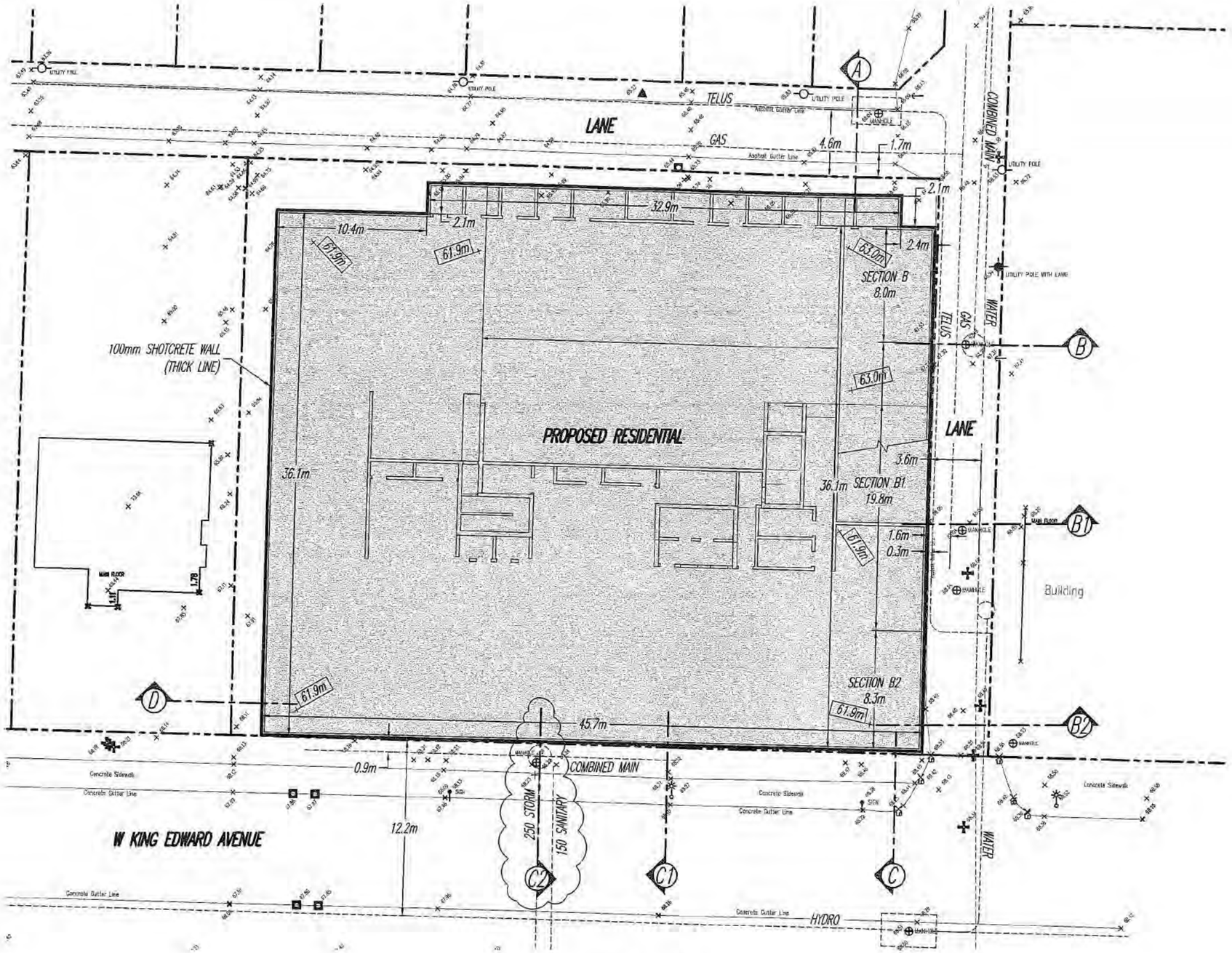
PLEASE PROCESS AND FORWARD TO THE FOLLOWING FOR COMMENTS:

SEWERS: CHECKED BY: JDH DATE: OCTOBER 23RD 20 15

OK

UTILITIES: CHECKED BY: _____ DATE: _____

DEVELOPMENT SERVICES: CHECKED BY: _____ DATE: _____



SITE PLAN

SCALE = 1:300

LEGEND:

180.0m + – PROPOSED SLAB ELEVATION

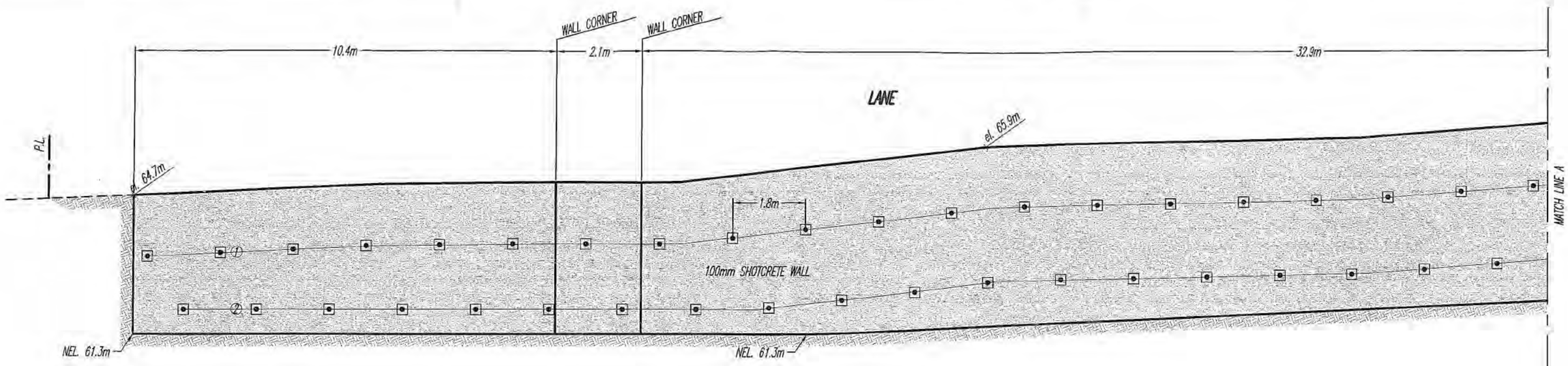
61.9 × – EXISTING ELEVATION

OCT 2 1 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21394

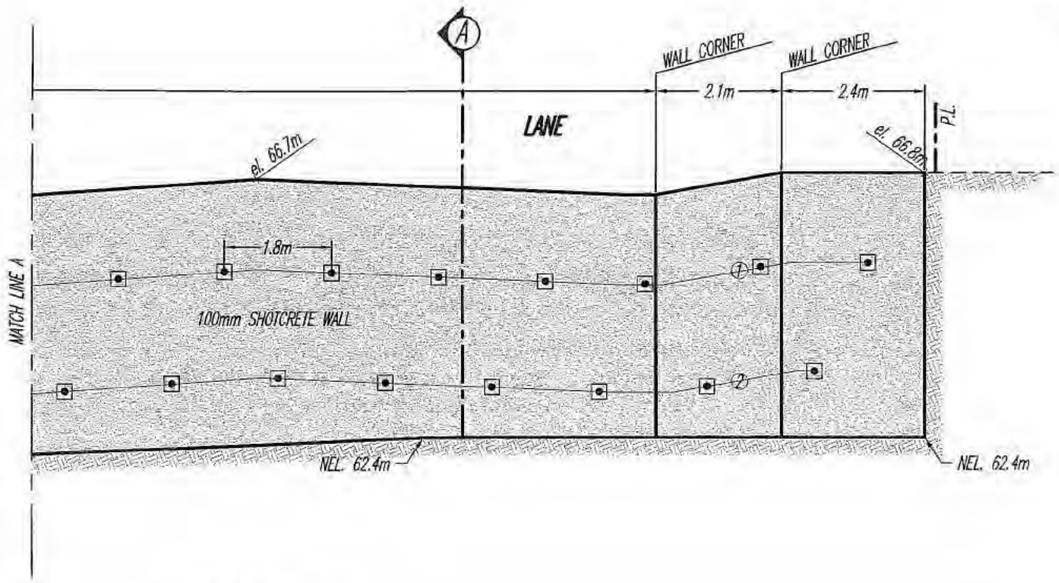
ORIGINAL PAPER SIZE: 11"x17"

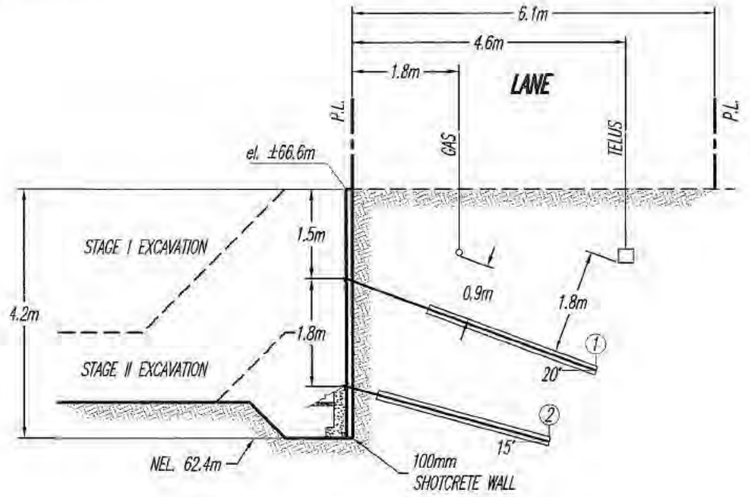
REFERENCE: GBL ARCHITECTS	GEOPACIFIC VANCOUVER KAMLOOPS CALGARY #215-1200 West 73rd Ave. Vancouver, B.C. V6P 6G5 P 604.439.0922 F 604.439.0189	DATE: JULY 22, 2015 DRAWN BY: M.P. / APPROVED BY: M.J.K. / REVIEWED BY: M.J.K. SCALE: AS SHOWN	RESIDENTIAL DEVELOPMENT KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C. SHORING – SITE PLAN	FILE NO.: 12589 DWG. NO.: G-S1	REVISIONS: A. OCTOBER 20, 2015 – COV Comments B. C.



NORTH ELEVATION

SCALE = 1:100





DYWIDAG #6 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	4.6/15	3.0/10	71/16	1.8/6
2	3.7/12	3.0/10	71/16	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION A

SCALE = 1:100

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL
AT PERIMETER = SLAB EL.–0.6m
OR AS SHOWN

OCT 2 1 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21264

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:

GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY

#215-1200 West 73rd Ave.
Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

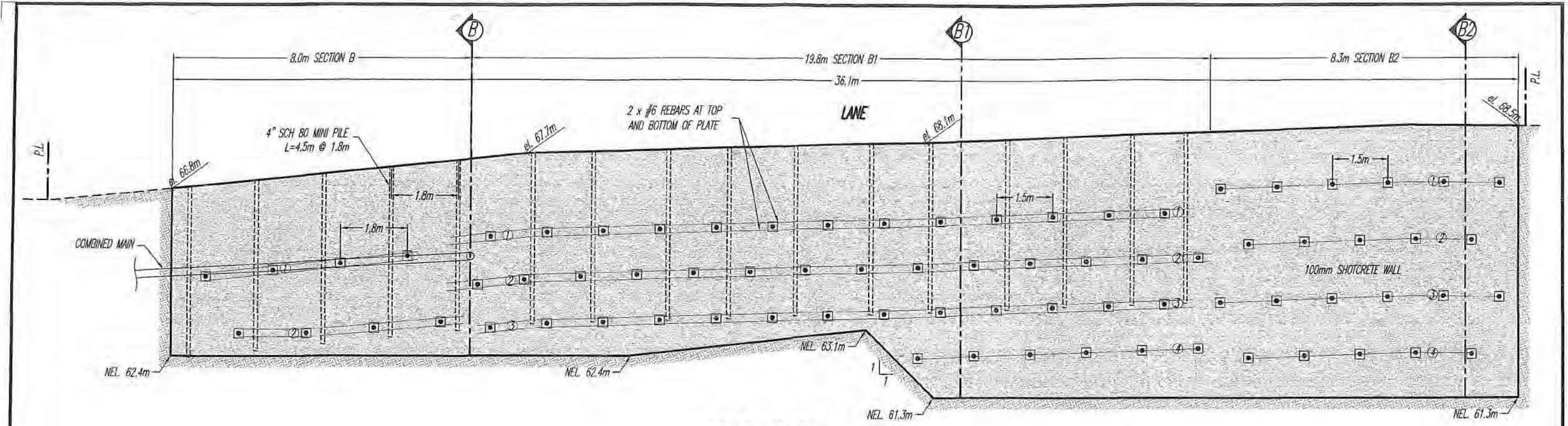
DATE: JULY 22, 2015
DRAWN BY: M.P. | APPROVED BY: M.J.K. | REVIEWED BY: M.J.K.
SCALE: AS SHOWN

RESIDENTIAL DEVELOPMENT

KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
NORTH ELEVATION AND SECTION A

FILE NO.: 12589
DWG. NO.: G-S2

REVISIONS:
A.
B.
C.



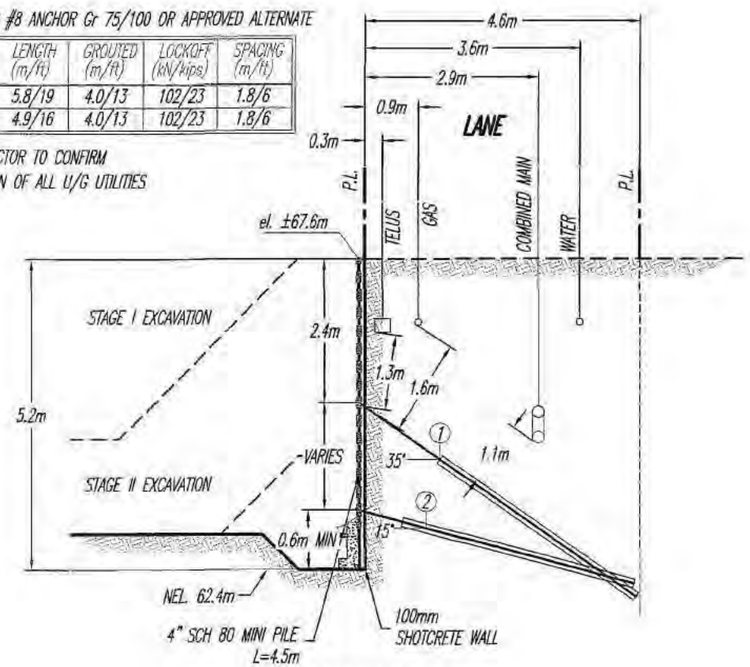
EAST ELEVATION

SCALE = 1:100

DYWIDAG #8 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

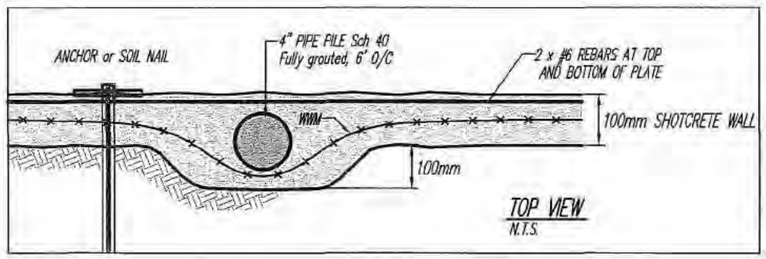
ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	5.8/19	4.0/13	102/23	1.8/6
2	4.9/16	4.0/13	102/23	1.8/6

CONTRACTOR TO CONFIRM LOCATION OF ALL U/G UTILITIES



SECTION B

SCALE = 1:100



TOP VIEW

N.T.S.

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.–0.6m OR AS SHOWN

OCT 2 1 2015

PROFESSIONAL ENGINEER PROVINCE OF M. J. KOKAN # 21164 BRITISH COLUMBIA

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:

GEOPACIFIC VANCOUVER KAMLOOPS CALGARY

#215-1200 West 73rd Ave. Vancouver, B.C. V6P 6G5
P 604.439.0922 F 604.439.9189

DATE: JULY 22, 2015

DRAWN BY:	APPROVED BY:	REVIEWED BY:
M.P.	M.J.K.	M.J.K.

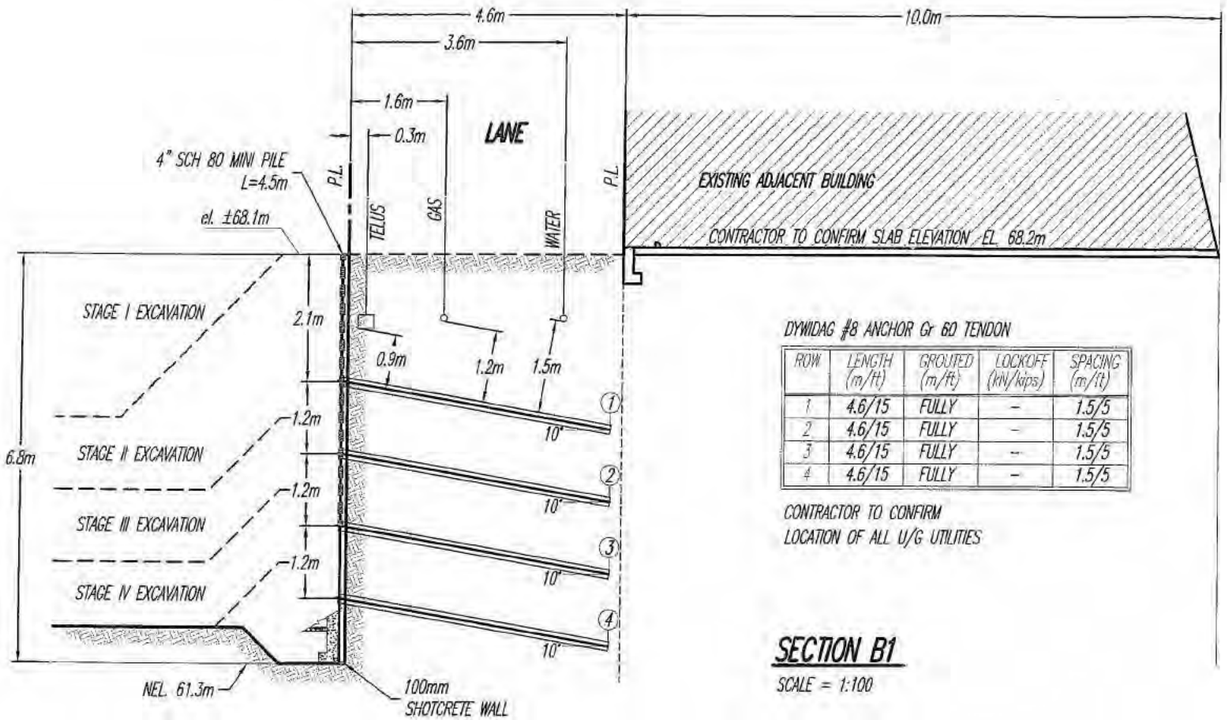
SCALE: AS SHOWN

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
EAST ELEVATION AND SECTION B

FILE NO.: 12589

DWG. NO.: G-S3A

REVISIONS:
A. AUGUST 27, 2015 – ANCHOR DESIGN CHANGE
B.
C.



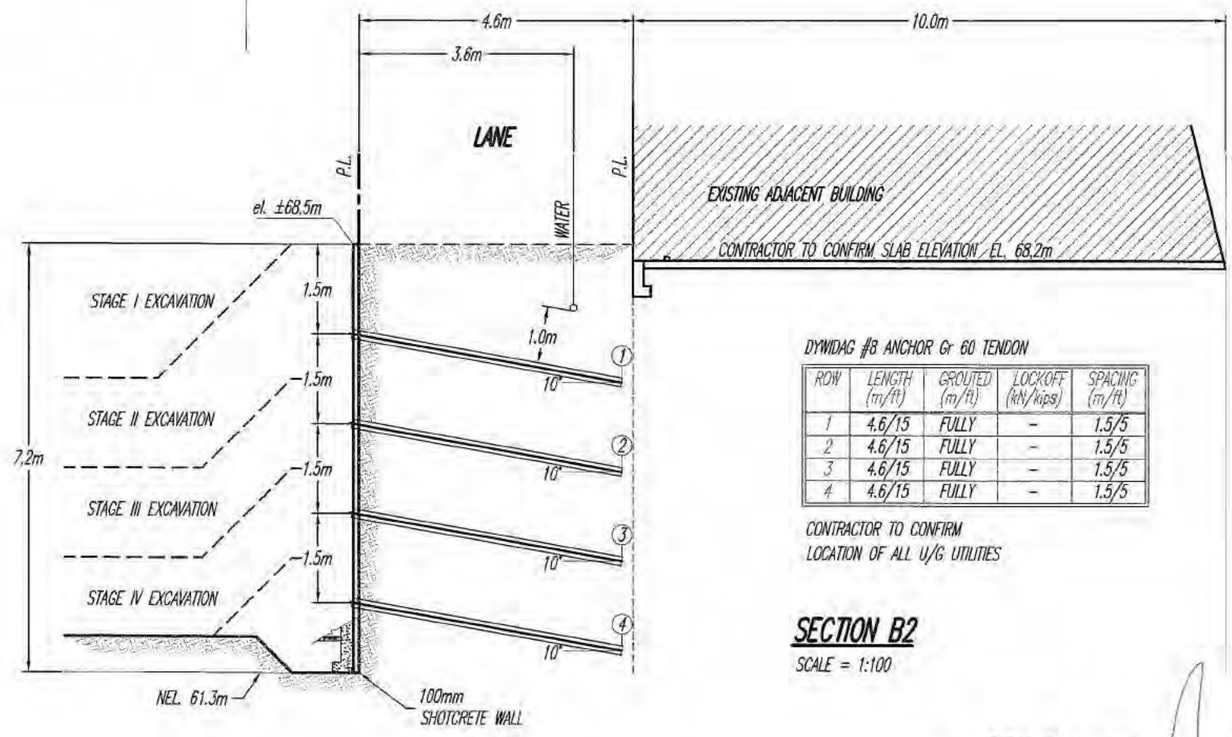
DYWIDAG #8 ANCHOR Gr 60 TENDON

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	4.6/15	FULLY	–	1.5/5
2	4.6/15	FULLY	–	1.5/5
3	4.6/15	FULLY	–	1.5/5
4	4.6/15	FULLY	–	1.5/5

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION B1

SCALE = 1:100



DYWIDAG #8 ANCHOR Gr 60 TENDON

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	4.6/15	FULLY	–	1.5/5
2	4.6/15	FULLY	–	1.5/5
3	4.6/15	FULLY	–	1.5/5
4	4.6/15	FULLY	–	1.5/5

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION B2

SCALE = 1:100

LEGEND:

el.13.55m+ – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.–0.6m OR AS SHOWN

OCT 2 1 2015

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. J. KORAN # 21364

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:

GEOPACIFIC VANCOUVER KAMLOOPS CALGARY

#215-1200 West 73rd Ave. Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

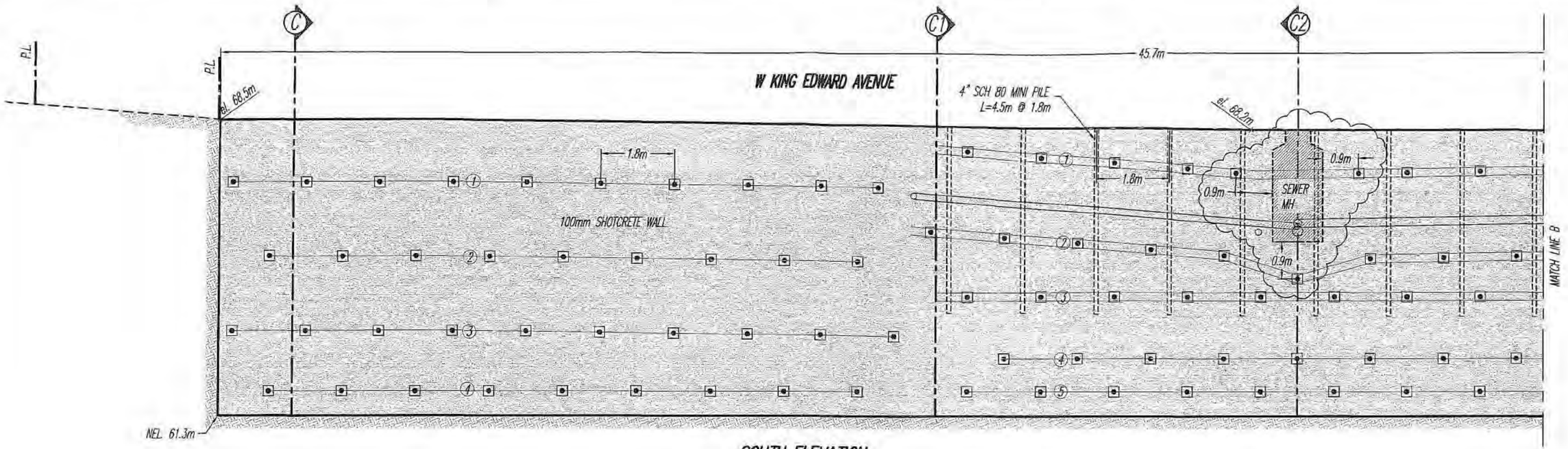
DATE:	JULY 22, 2015	
DRAWN BY: M.P.	APPROVED BY: M.J.K.	REVIEWED BY: M.J.K.
SCALE:	AS SHOWN	

RESIDENTIAL DEVELOPMENT

KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
SECTIONS B1 & B2

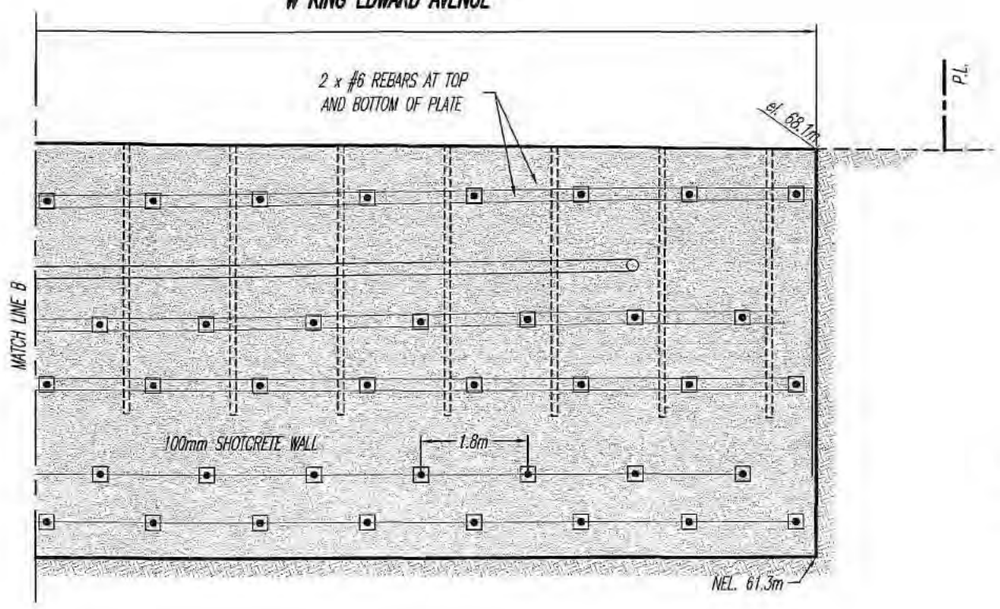
FILE NO.: 12589
DWG. NO.: G-S3B

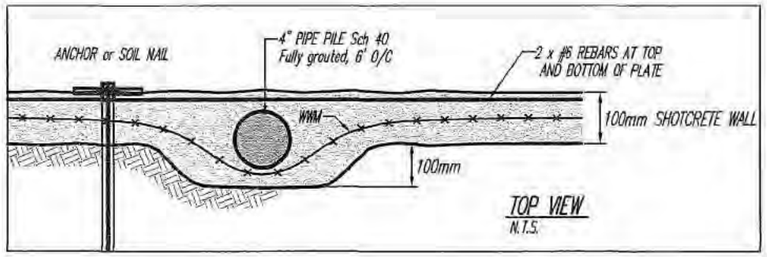
REVISIONS:
A. AUGUST 27, 2015 – ANCHOR DESIGN CHANGE
B.
C.



SOUTH ELEVATION

SCALE = 1:100





TOP VIEW

N.T.S.

LEGEND:

el.73.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.-0.6m OR AS SHOWN

OCT 2 1 2015

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. J. KORAN # 21964

ORIGINAL PAPER SIZE 11"X17"

REFERENCE:

GEOPACIFIC VANCOUVER KAMLOOPS CALGARY

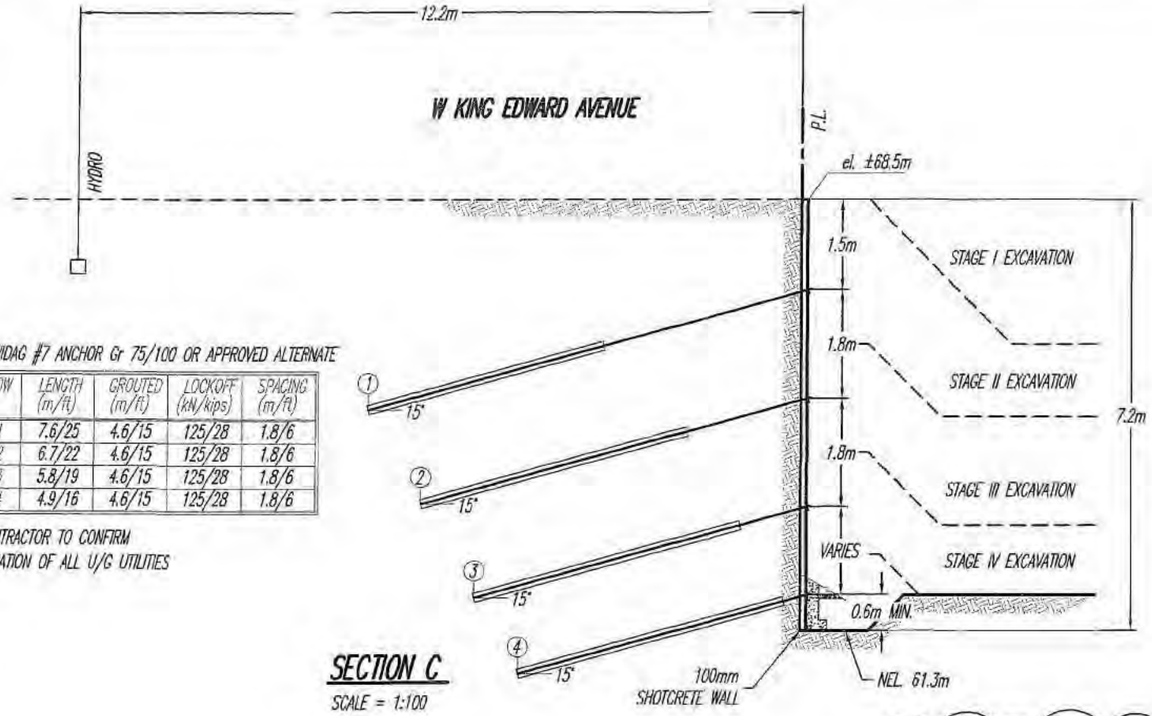
#215-1200 West 73rd Ave. Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

DATE: JULY 22, 2015		
DRAWN BY: M.P.	APPROVED BY: M.J.K.	REVIEWED BY: M.J.K.
SCALE: AS SHOWN		

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
SOUTH ELEVATION

FILE NO.: 12589
DWG. NO.: G-S4A

REVISIONS:
A. OCTOBER 20, 2015
B.
C.

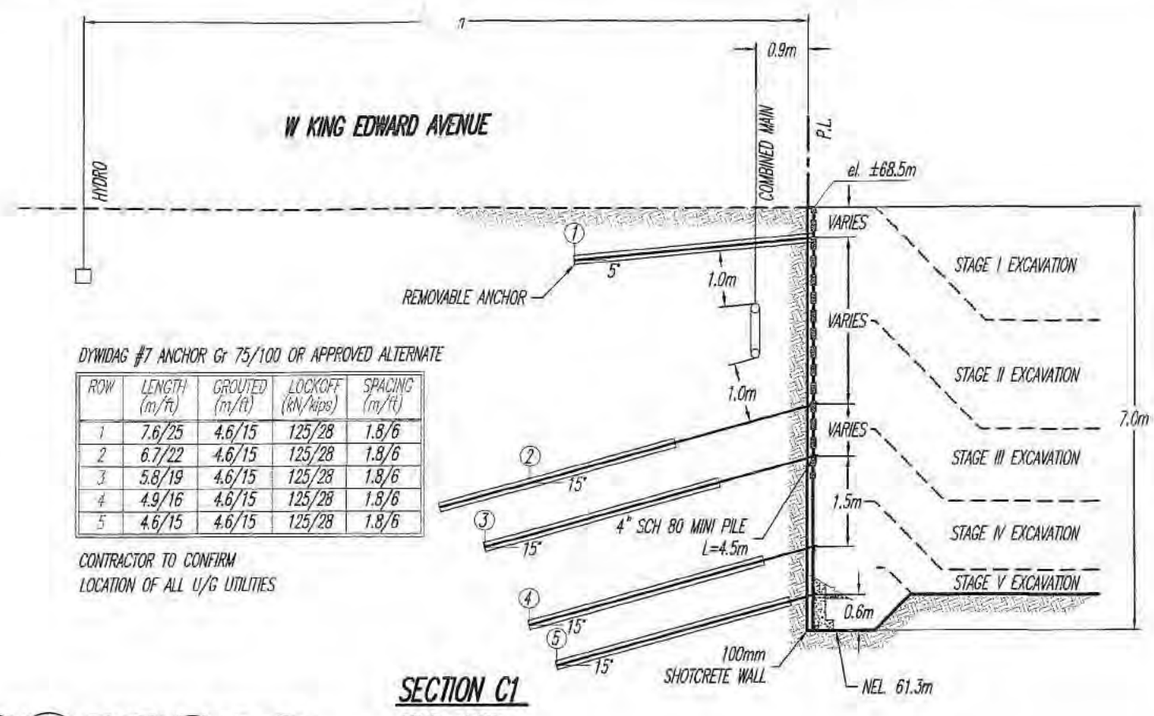


DYWIDAG #7 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	7.6/25	4.6/15	125/28	1.8/6
2	6.7/22	4.6/15	125/28	1.8/6
3	5.8/19	4.6/15	125/28	1.8/6
4	4.9/16	4.6/15	125/28	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION C
SCALE = 1:100

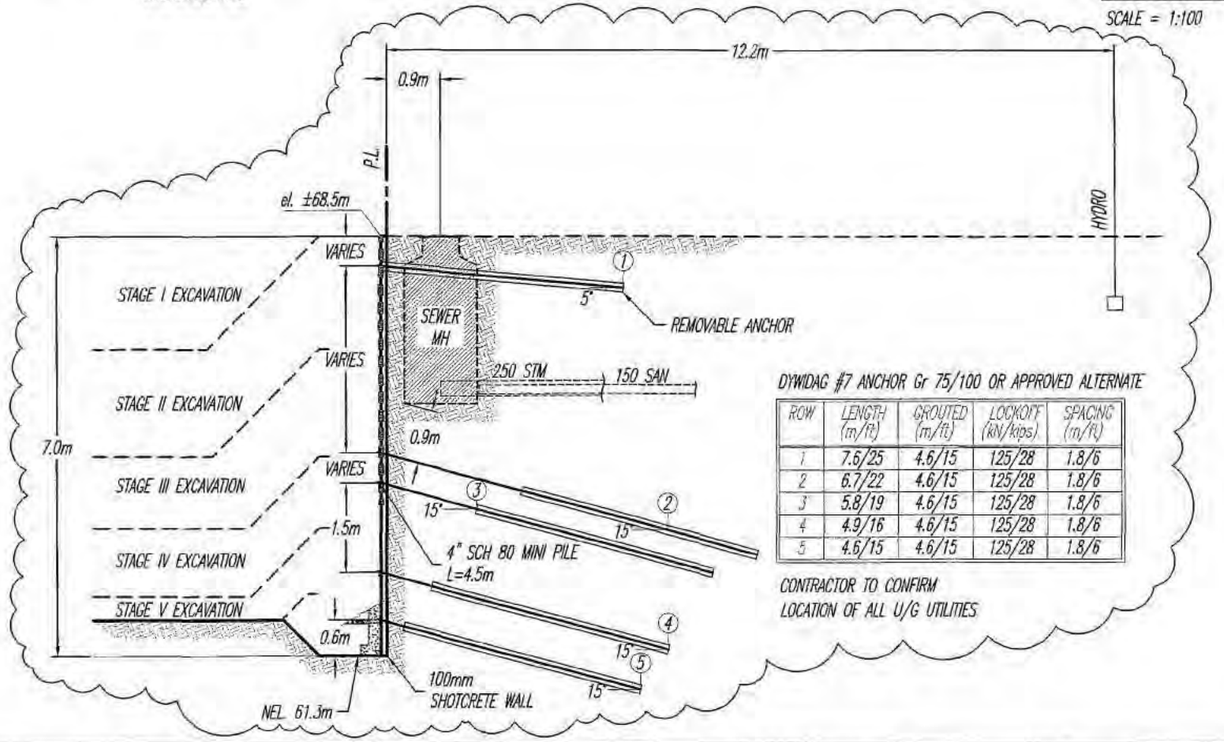


DYWIDAG #7 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	7.6/25	4.6/15	125/28	1.8/6
2	6.7/22	4.6/15	125/28	1.8/6
3	5.8/19	4.6/15	125/28	1.8/6
4	4.9/16	4.6/15	125/28	1.8/6
5	4.6/15	4.6/15	125/28	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION C1
SCALE = 1:100



DYWIDAG #7 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	7.6/25	4.6/15	125/28	1.8/6
2	6.7/22	4.6/15	125/28	1.8/6
3	5.8/19	4.6/15	125/28	1.8/6
4	4.9/16	4.6/15	125/28	1.8/6
5	4.6/15	4.6/15	125/28	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.–0.6m OR AS SHOWN

OCT 2 1 2015

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:

GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY
#215-1200 West 73rd Ave.
Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

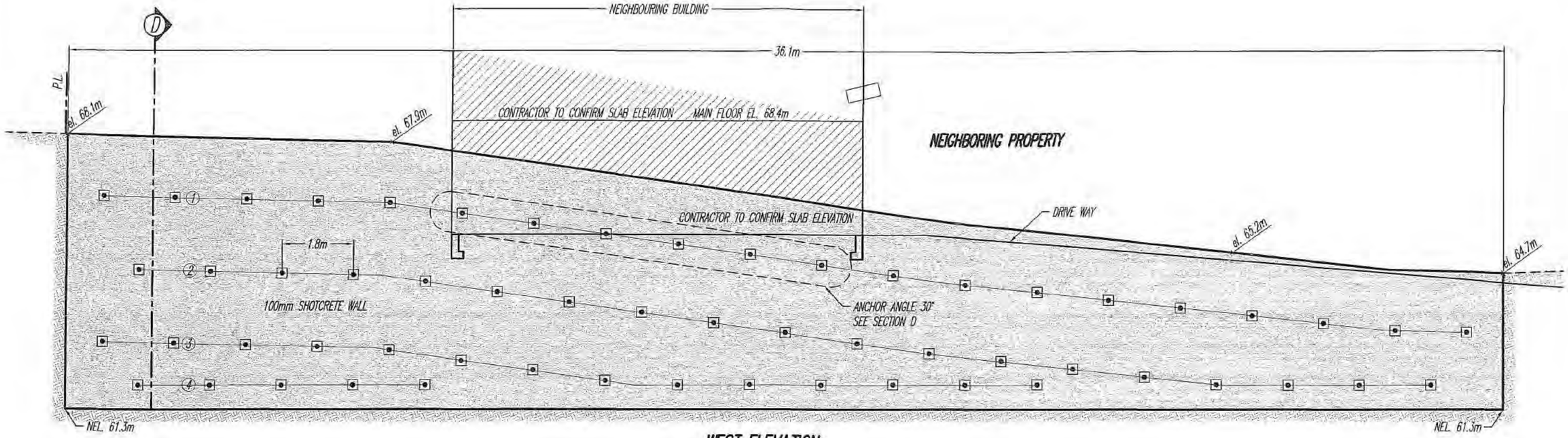
DATE:	JULY 22, 2015	
DRAWN BY: M.P.	APPROVED BY: M.J.K.	REVIEWED BY: M.J.K.
SCALE:	AS SHOWN	

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
SECTION C,C1 & C2

FILE NO.: 12589
DWG. NO.: G-S4B

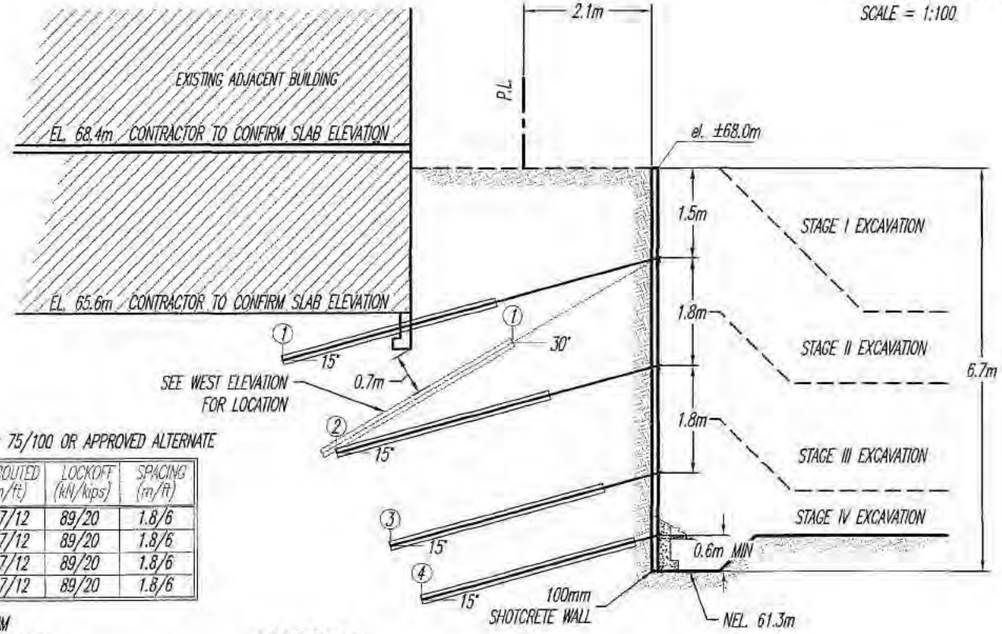
REVISIONS:
A. OCTOBER 20, 2015
B.
C.

M. J. KORAN
21364
PROFESSIONAL ENGINEER



WEST ELEVATION

SCALE = 1:100



DYWIDAG #6 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	6.7/22	3.7/12	89/20	1.8/6
2	5.8/19	3.7/12	89/20	1.8/6
3	4.9/16	3.7/12	89/20	1.8/6
4	4.3/14	3.7/12	89/20	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION D

SCALE = 1:100

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.-0.6m OR AS SHOWN

OCT 2 1 2015

PROFESSIONAL ENGINEER M. J. KOKAN # 21564 PROVINCE OF BRITISH COLUMBIA

ORIGINAL PAPER SIZE: 11"x17"

REFERENCE:

GEOPACIFIC VANCOUVER KAMLOOPS CALGARY

#215-1200 West 73rd Ave. Vancouver, B.C. V6P 6G5.
P 604.439.0922 F 604.439.9189

DATE: JULY 22, 2015
DRAWN BY: M.P. | APPROVED BY: M.J.K. | REVIEWED BY: M.J.K.
SCALE: AS SHOWN

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
WEST ELEVATION AND SECTION D

FILE NO.: 12589
DWG. NO.: G-S5

REVISIONS:
A.
B.
C.

1.0 GENERAL

1.1 In these Notes, the Engineer is GeoPacific Consultants Ltd.

1.2 These Notes must be read in conjunction with the design Drawings.

1.3 The work described and shown involves near vertical excavated slopes or structure using a combination of shotcrete and ground anchors. All slopes shall be covered with secured polyethylene sheeting to prevent erosion.

1.4 The anchors will be installed in ground around the site and the actual soil and groundwater conditions must be assumed.

1.5 The grouted anchor lengths required to resist the design loads are based on the assumed conditions. The capacity of the anchors will be confirmed at the beginning of the contract and may be lengthened or shortened.

1.6 Some utilities, foundations and structures which may affect the installation procedures and techniques are noted on the Drawings.The Contractor shall confirm the locations and condition of ALL man-made elements which may be damaged because of the anchored shotcrete operations. It is the Contractor's responsibility to install the anchored shotcrete in the actual site conditions encountered.

Elements which may, in the opinion of the Contractor, be damaged by the anchored shotcrete operations must be reported to the Engineer well in advance of the work to take place.

1.7 These documents are based on architectural, structural and survey Drawings provided. It is the Contractor's responsibility to verify all dimensions and report discrepancies to the Engineer.

1.8 The Contractor shall schedule and co-ordinate the work to satisfy the reasonable requirements of adjacent Owners and Tenants who shall be given sufficient Notice before carrying out work which may affect their property.

1.9 The Contractor shall erect and maintain a secure closed hoarding around the site for the safety of all persons in the vicinity of the site.

1.10 The Contractor shall inspect the slopes and the support to the slopes and structures daily and shall immediately report any potentially damaging movement or deterioration to the Engineer by telephoning 604-439-0922.

2.0 MATERIALS

2.1 ANCHOR BAR:

The anchors shall be installed in minimum 75 mm (3 inch) diameter holes which shall be drilled, unless otherwise approved in advance by the Engineer. Anchor capacity is dependant upon installation techniques and the drilling equipment and methods shall be subject to the Engineer's approval.

Drilling techniques shall produce a hole which is free of debris and ensure continuous support of the hole and shall not erode or disturb soil around the hole.

2.2 Anchor tendons shall be as shown on the design drawings.

Anchorage equipment couplings and any necessary wedges washers and plates shall be in accordance with the tendon manufacturer's specifications and requirements.

Minimum anchorage length ("fixed" length) and stressing length ("free" length) are shown on the Drawings.

2.3 Grout in the anchorage shall be a prior-approved non-shrink cementitious material mixed with a minimum compressive strength of 5 MPa in 24 hours and 35 MPa in 28 days.

2.4 Shotcrete shall be reinforced with 102 x 102 MW13.3/13.3 (4"x4"-8/8) welded wire mesh as shown on the Drawings. Steel shall have a minimum yield strength of 450 MPa (65 ksi) and shall be in accordance with ASTM A497.

2.5 All shotcreting shall be carried out in accordance with ACI 506 : "Specifications for Materials Proportioning and Application of Shotcrete"

2.6 Shotcrete shall have a minimum compressive strength of 5 MPa in 24 hours and 30 MPa in 28 days. The Engineer may require test panels to be prepared by the Contractor so they can be cored by others to confirm the shotcrete strength. The Contractor shall co-operate with the independent testing laboratory appointed by the Owner for this purpose.

3.0 INSTALLATION

3.1 Hollow Core Bar Installation (if required)

Set the bar on an appropriate drill rig. Start pumping the grout to assure that grout will exit drill bit.

Proceed with rotary drilling and flushing approx. three feet per min (depending on ground condition). Rotation speed should be approx. 60 to 120 RPM. To achieve higher friction values, advance and retract the bars several times for each 3.0 m (10 feet) length of bar installed in the bond zone.

The grout should be applied CONTINUOUSLY during drilling. A grout pump with at least 60 l/min volume and minimum 2 MPa (300 psi) pressure capacity (preferably 10 MPa, 1500 psi) should be used.

Refer to the manufacture's specifications and recommendations for more detail.

3.2 Anchors and shotcrete shall be installed in sequence and stages to maintain stability of the excavation. Excavation of soil from the site shall also take place in stages. Stages shall not exceed 1.8 m (6 feet) vertical.

The Contractor may remove all soil within any mass excavation Stage before anchors in that Stage are installed but further excavation shall not take place until all anchored shotcrete in that Stage is installed and approved by the Engineer.

The mass excavation for any Stage does not include a perimeter berm with a minimum top width of one metre and a side slope of 1 horizontal to 1 vertical.

Ground conditions may locally require a wider berm, flatter slopes and/or other slope protection measures including covering or short-term temporary support.

The perimeter berms in any stage shall be excavated in staggered panels. THE MAXIMUM WIDTH OF A PANEL SHALL BE THE HORIZONTAL SPACING OF THE ANCHOR PLUS 0.6 M (2 FEET). This panel width may be INCREASED OR DECREASED by the Engineer's agreement, in writing, BEFORE increasing the panel width.

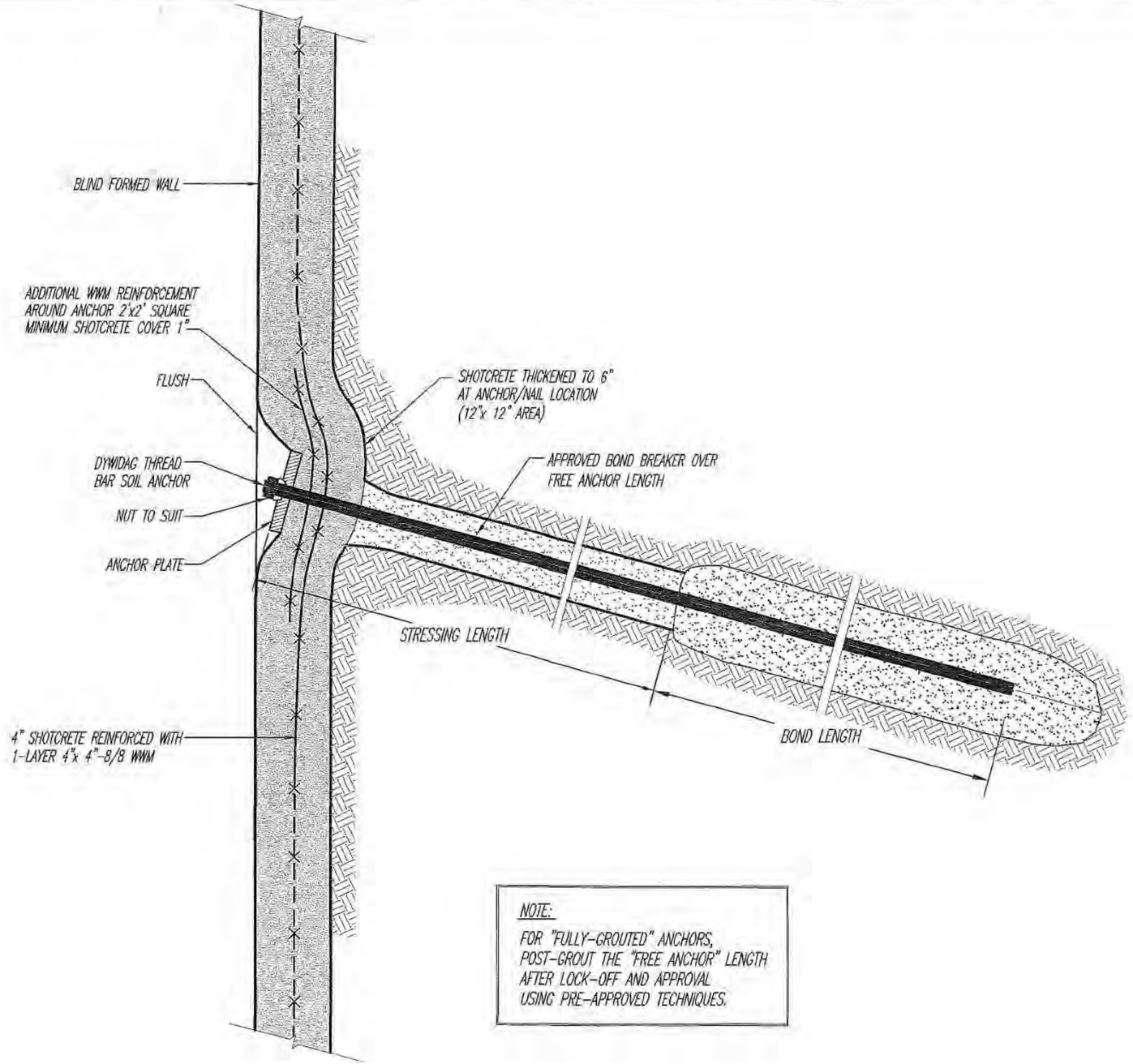
No adjacent panels shall be excavated concurrently and no more than 1/3 of the panels shall be excavated concurrently. In addition no panel shall be excavated into the berm until at least 24 hours after that panel anchor has been grouted.

Anchors and shotcrete may be installed concurrently in different panels. Anchors shall be installed at right angles to the property lines on plan and within 2.5 degrees of the declination shown on the Drawings except with the prior approval of the Engineer.

OCT 2 1 2015

PROFESSIONAL ENGINEER
M. J. KOHAN
21304
PROVINCE OF BRITISH COLUMBIA

REFERENCE:	#215-1200 West 73-rd Ave. Vancouver, B.C. Canada V6P 6G5 Ph. (604) 439-0922 Fax (604) 439-9189 GeoPacific Consultants Ltd.	DATE:	GENERAL NOTES	FILE NO.:	REVISIONS: A. B. C.
		DRN. BY: APP'D:		DWG. NO.: G-2 (SHEET 1 OF 2)	
		SCALE:			



NOTE:

FOR "FULLY-GROUTED" ANCHORS, POST-GROUT THE "FREE ANCHOR" LENGTH AFTER LOCK-OFF AND APPROVAL USING PRE-APPROVED TECHNIQUES.

ANCHORED SHOTCRETE DETAIL

N.T.S.

OCT 2 1 2015

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M J REHAN # 21064

REFERENCE:	#215-1200 West 73-rd Ave. Vancouver, B.C. Canada V6P 6G5 Ph. (604) 439-0922 Fax (604) 439-9189 GeoPacific Consultants Ltd.	DATE:	GENERAL UNDERPINNING & ANCHORED SHOTCRETE DETAILS	FILE NO.:	REVISIONS: A. B. C.
		DRN. BY: KAZ APP'D:		DWG. NO.: G-1	
		SCALE: AS SHOWN			

3.3 Immediately following excavation of the soil berm in a panel the excavated face shall be trimmed back to the required line and mesh reinforcement shall be fixed to the soil to ensure the minimum specified shotcrete cover. Shotcrete shall be applied without delay to thicknesses shown on the Drawings.

Shotcrete panels shall be kept moist to aid curing by spraying with water and covering with sacking or polyethylene sheeting.

Sufficient wire mesh reinforcement shall be installed to provide a full strength overlap with adjacent panels. This overlap shall not be less than 200 mm (8 inch).

The end surfaces of panels shall be thoroughly cleaned with compressed air to ensure a full strength bond when adjacent panels are shotcreted.

3.4 Drains to relieve groundwater pressure shall be installed through the shotcrete. Drains shall be a minimum of 50 mm (2 inches) diameter and at normal 3.0 m (10 feet) centres horizontally and 1.5 m (5 feet) centres vertically. The Contractor shall install filters in drains as fines are being removed with the water.

Additional special drains may be required where water seeps are noted. This special drains shall consist of minimum 50 mm (2 inches) diameter perforated ABS pipe installed within 75 mm (3 inches) diameters holes drilled 5 degrees UPWARDS from the 3 metres (10 feet) measured from the face of the shotcrete. These special drains may be required to be filtered with fine sand or gravel or filter fabrics.

3.5 Anchors shall be tensioned as soon as practicable but no sooner than 24 hours after the construction of the applicable shotcrete panel. Anchors shall be tensioned and tested as follows:

3.5.1 Apply a proof load of 1.33 times the lock-off load for two minutes. Monitor the load in the anchor. If the reduction in load is less than 2.5 percent of proof load reduce the load to lock-off load and lock the working load into the anchor.

3.5.2 If the anchor does not hold at least 133 percent of lock-off load for two minutes the Engineer must be informed. Further testing in the presence of the Engineer will required as follows:

Load the anchor in 22 kN (5 kip) increments to 130.5 percent of lock-off load. Hold each increment for 5 minutes except at maximum load when the load shall be maintained for 100 minutes. The increase in length of the anchor shall be measure at the start and end of each load increment except at maximum load when the extension shall be measured at 5 minutes intervals.

This information shall be utilized by the Engineer to deduce the utilized anchor length and to assess the creep characteristics.

Anchors which creep more than 2 mm (0.08 inch) per log cycle of time will not be accepted. The Contractor shall install replacement anchors at the Contractor's expense.

4.0 SHOTCRETE REMOVAL/ANCHOR DETENSIONING

4.1 All excavation and support works within the CITY OF VANCOUVER shall be in strict accordance with the City's requirements.

4.2 No part of the anchor system shall remain in place within 1.5 m (5 feet) of final grade. Anchors 1.5 m (5 feet) below final grade shall be detensioned or fully grouted when no longer required in the opinion of the Engineer.

4.3 No shotcrete shall remain in place within 1.5 m (5 feet) of final grade. A bond breaker must be installed between blind-formed foundation walls and shotcrete on city property to allow for shotcrete removal.

5.0 BACKFILLING ON AND ADJACENT TO CITY PROPERTY

5.1 Backfilling on and adjacent to City property must be in accordance with the City's backfill specifications, with the City's backfill specifications, "Street Restoration Manual" dated AUGUST 18, 2008.

5.2 Backfill Containment dams will be required at excavation corners where excavation to be backfilled against City property.

6.0 REQUIRED INSPECTIONS

6.1 The following are the MINIMUM inspections which are required by the Geotechnical Engineer. The Contractor is responsible for informing the Geotechnical Engineer that the Work is ready for these inspections. The Contractor shall be liable for any loss caused by failure to inform the Geotechnical Engineer that the Work is ready for inspection.

1. 2 days before work commences on site.
2. 1 day before the anchors are detensioned.
3. 2 days before backfilling commences.
4. 1 day before shotcrete removal.

6.2 Daily Inspection is required during installation of anchors, and full time inspection is required during anchor testing.

7.0 CONTRACTOR QUALIFICATION

7.1 Temporary works and shoring installation is highly sensitive to processes including sequence of installation, quality and quantity of materials used, monitoring of the works and other factors. Consequently a high degree of skill and professionalism is required for its successful implementation. As a result, all contractors considered for tender of the shoring work described in the Design Drawings must be approved by the Engineer in advance of tender. The work must be carried out only by a shoring contractor with experience and expertise in shoring construction. The contractors experience and expertise must be with projects of similar size and scope to that shown in the Design Drawings. The following shoring contractors are permitted to undertake the work:

- Matcon Canada
- Southwest Contracting
- Bel Pacific Excavation & Shoring
- Vancouver Shotcrete
- Blue Ace Shoring
- Power Shotcrete Constructions LTD.

7.2 The preceding list does not express or imply any guarantee or warranty of the contractor's performance. It is the responsibility of the contractor to undertake the work shown on the Design Drawings.

7.3 Shoring contractors other than those listed above may be considered by the Engineer only with submission of references and qualifications for at least 10 projects of similar size and scope. GeoPacific reserves the right to accept or reject the qualifications of any shoring contractor.

NOTES:

1. The excavation support design is based on the locations of adjacent structures and utilities which have been supplied. The Contractor shall confirm the locations and elevations of all foundations and utilities which may be affected by the work and raport any discrepancies to GeoPacific Consultants Ltd. (Tel.: 439-0922)
2. All slopes shall be covered with secured polyethylene sheeting to prevent erosion.
3. The extent of the excavation shall be based on the Architectural and Structural Drawings. The Contractor shall confirm the size of the excavation required by the basement and report any discrepancy with these Drawings to GeoPacific Consultants Ltd.
4. The Contractor must obtain prior permission in writing to carry out any work on adjacent private property.
5. The Contractor shall inform GeoPacific Consultants Ltd. of any surcharge loads which will be within half the height of the excavation from the top of the excavation so that the support system can be modified to support the additional loads. The Contractor shall also inform GeoPacific if and when any groundwater seepages occur which may require additional special drains as outlined in Note 3.4, Drawing G-2.
6. The ground conditions must be confirmed by GeoPacific Consultants Ltd. when the excavation is 4 feet deep. The Contractor is responsible for ensuring that GeoPacific personnel inspect the site.

DRAWING LIST:

SITE PLAN---------- G-S1
ELEVATIONS, SECTIONS---------- G-S2, G-S3A, G-S3B G-S4A, G-S4B, G-S5,

GENERAL SHOTCRETE/UNDERPINNING
AND ANCHOR DETAILS---------- G-1
GENERAL NOTES---------- G-2, (SHEET 1 TO 2)
TEMPORARY SEDIMENT CONTROL FACILITY---- G-SP1, G-SP2, G-SP3 & G-SP4

OCT 2 1 2015

J. KOKAN — ENGINEER

REFERENCE:	#215-1200 West 73rd Ave. Vancouver, B.C. Canada V6P 6G5 Ph. (604) 439-0922 Fax. (604) 439-9189 GeoPacific Consultants Ltd.	DATE: FEBRUARY 10, 2012 DRN. BY: APP'D. M.J.K. SCALE: AS SHOWN	RESIDENTIAL DEVELOPMENT KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C. GENERAL NOTES	FILE NO.: 12589 DWG. NO.: G-2 (SHEET 2 OF 2)	REVISIONS: A. B. C.

CITY ENGINEERING DEPARTMENT
PROJECTS BRANCH DIVISION

EXCAVATION ONTO CITY PROPERTY

THE ATTACHED PROPOSAL TO CONSTRUCT A TEMPORARY EXCAVATION, FOR CONSTRUCTION PURPOSES, ENCROACHING ONTO CITY PROPERTY HAS BEEN RECEIVED. PLEASE REVIEW AND STATE YOUR REQUIREMENTS OR APPROVAL.

DATE: Oct 1 20 15

SITE ADDRESS: 521 W KINGEDWARD PLAN NO. _____

LEGAL : _____

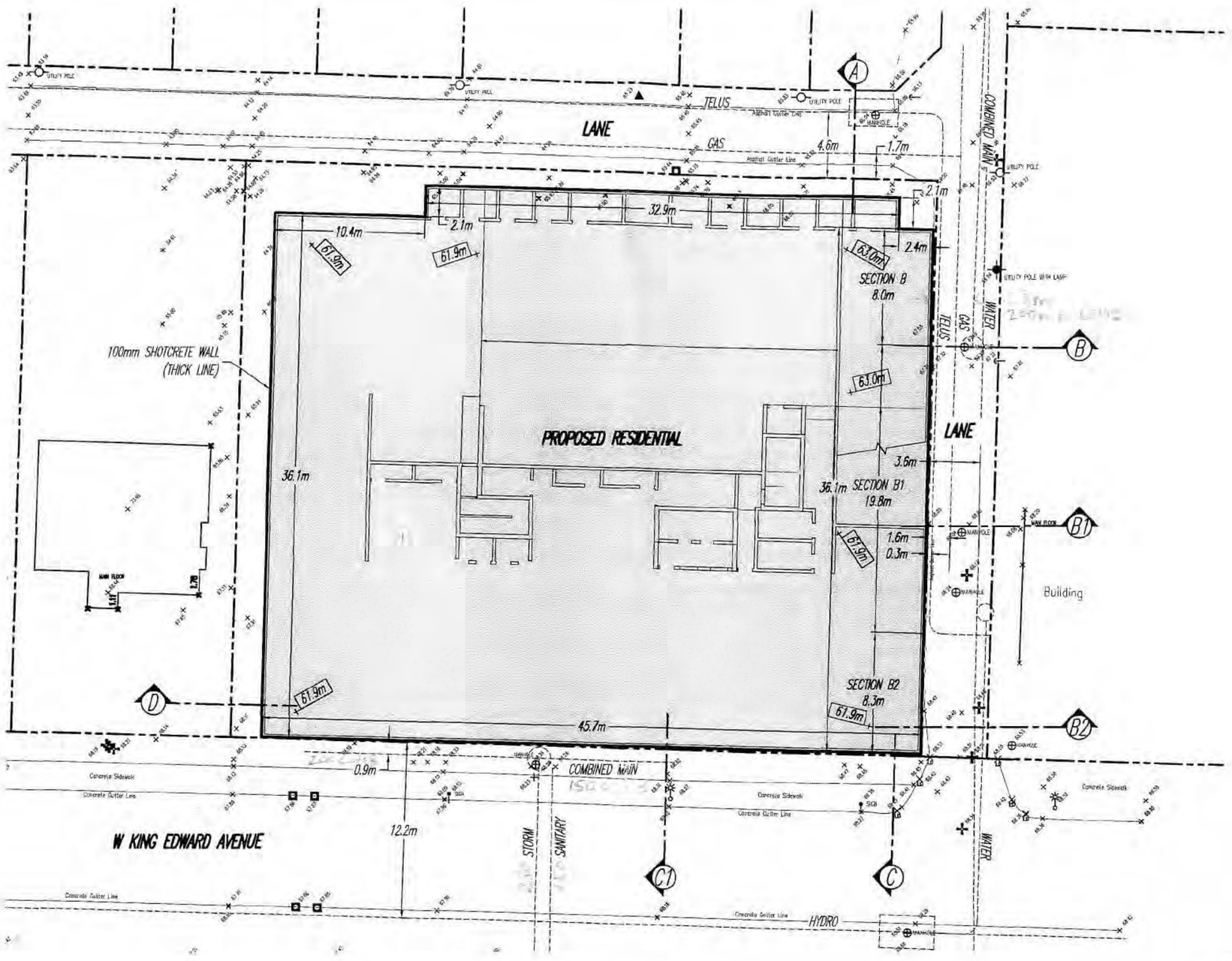
PLEASE PROCESS AND FORWARD TO THE FOLLOWING FOR COMMENTS:

SEWERS: CHECKED BY: JDH DATE: OCTOBER 2nd 20 15

REVISE DRAWING. MAINTAIN 0.9m SEPARATION FROM SEWER MANHOLE.
SHOW SEWER MANHOLE IN X-SECTION AND 250STM/150SAN ~~Rds~~ PIPES THAT ARE CROSSING W KING EDWARD AV.
SHOW SEWER PIPES DIAMETERS.
TV 64.9m-200C IN THE LANE OF CAMBIE // TV 9.5m-150C ON W KING EDWARD //
TV 16.1m-200C ON W KING EDWARD // TV 23.9m-250STM ON W KING EDWARD //
TV 24.7m-150SAN ON W KING EDWARD. TV INSPECTION FEE $2,000+GST

UTILITIES: CHECKED BY: _____ DATE: _____ 20__

DEVELOPMENT SERVICES: CHECKED BY: _____ DATE: _____ 20__



LEGEND:

180.0m + – PROPOSED SLAB ELEVATION

+ – EXISTING ELEVATION

SITE PLAN

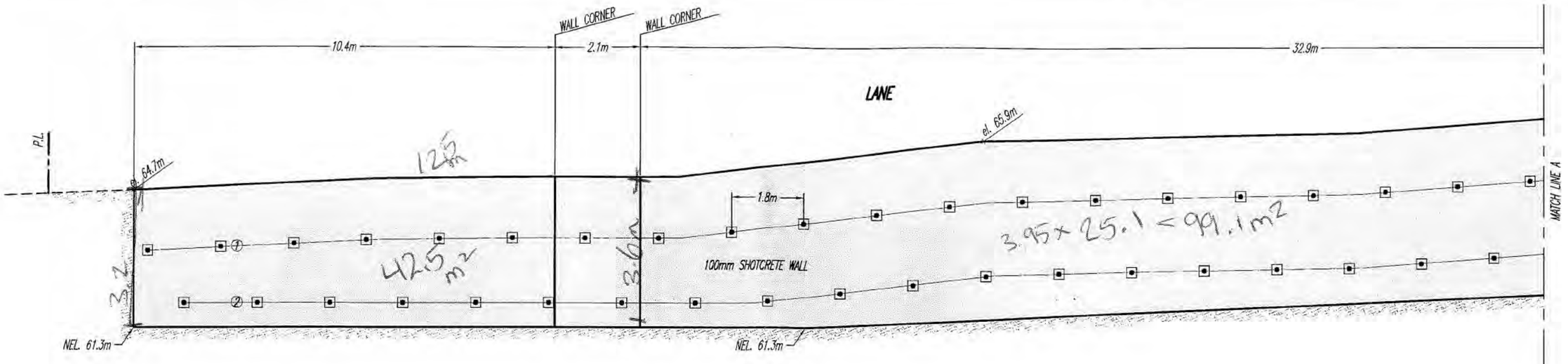
SCALE = 1:300

SEP 2 8 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

ORIGINAL PAPER SIZE 11"x17"

REFERENCE: GBL ARCHITECTS	GEOPACIFIC VANCOUVER ENGINEERING (1982) LTD. 1215-1368 West 73rd Ave, Vancouver, B.C. V6P 6G5 P 604.439.0922 F 604.439.9189	DATE: JULY 22, 2015	RESIDENTIAL DEVELOPMENT KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C. SHORING – SITE PLAN	FILE NO.: 12589
		DRAWN BY: M.P. / APPROVED BY: M.J.K. / REVIEWED BY: M.J.K.		DWG NO.: G-S1
		SCALE: AS SHOWN		REVISIONS: A. B. C.



NORTH ELEVATION

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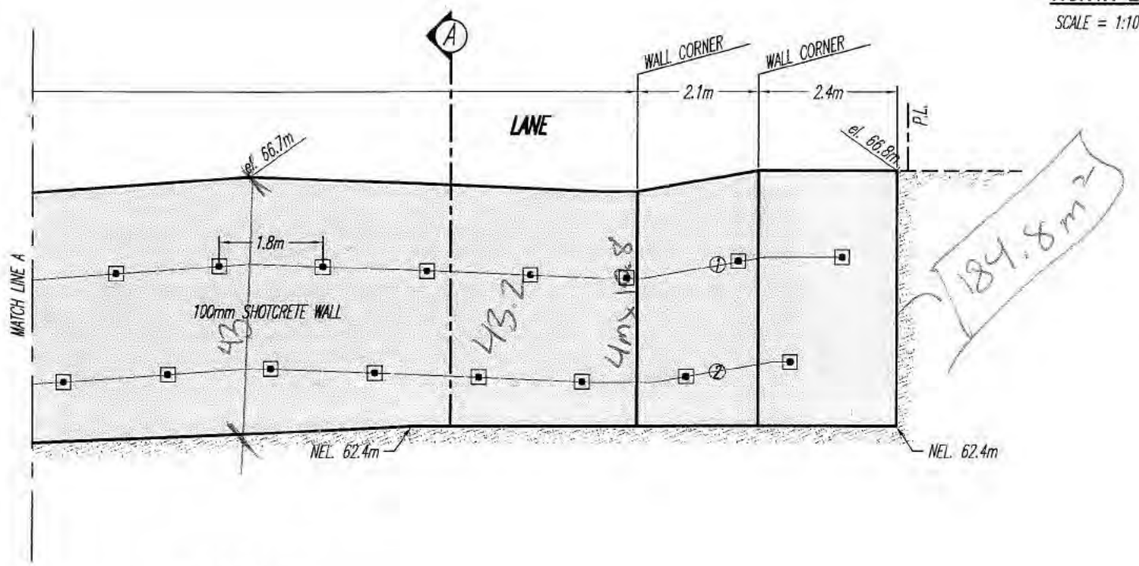
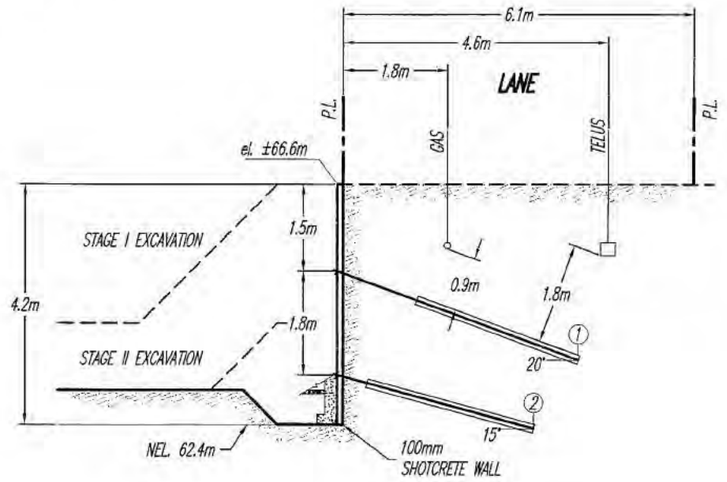




DYWIDAG #6 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	4.6/15	3.0/10	71/16	1.8/6
2	3.7/12	3.0/10	71/16	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

LEGEND:

el.13.35m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL
AT PERIMETER = SLAB EL.–0.6m
OR AS SHOWN

SECTION A

SCALE = 1:100

SEP 2 8 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:

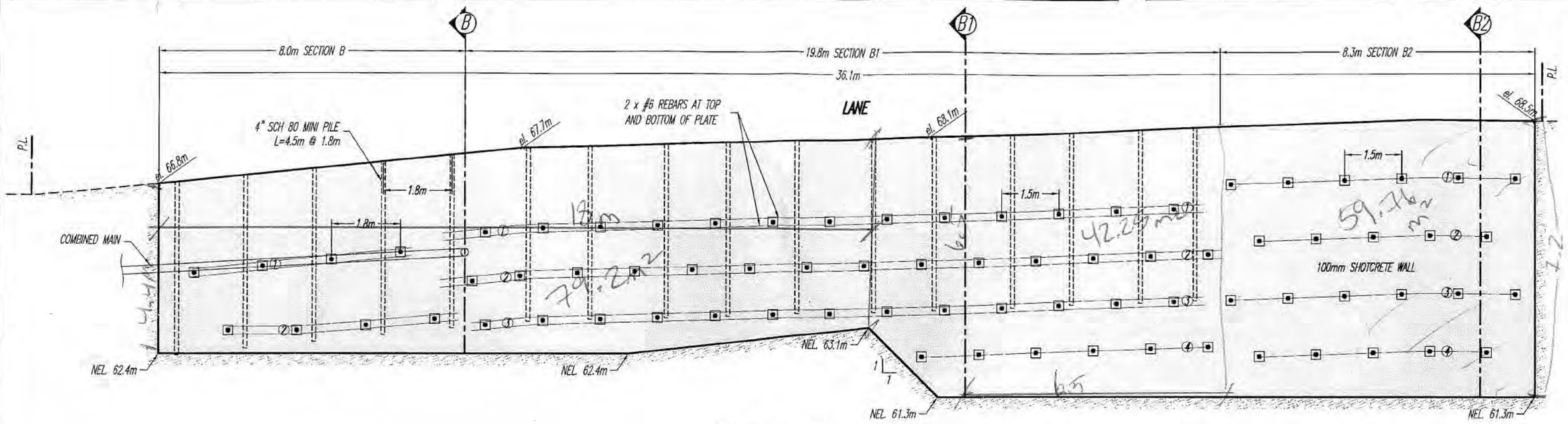
GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY
#235-1200 West 73rd Ave.
Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

DATE:	JULY 22, 2015	
DRAWN BY: M.P.	APPROVED BY: M.J.K.	REVIEWED BY: M.J.K.
SCALE:	AS SHOWN	

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
NORTH ELEVATION AND SECTION A

FILE NO.: 12589
DWG. NO.: G-S2

REVISIONS:
A.
B.
C.



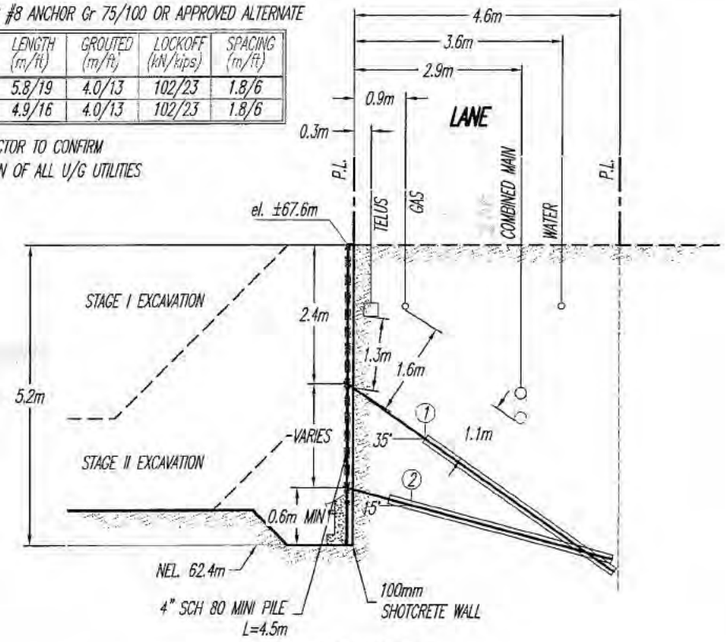
EAST ELEVATION

SCALE = 1:100

DYWIDAG #8 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

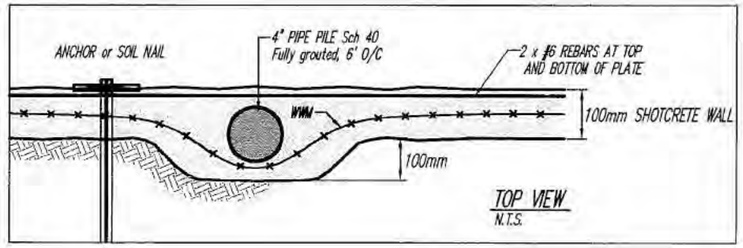
ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	5.8/19	4.0/13	102/23	1.8/6
2	4.9/16	4.0/13	102/23	1.8/6

CONTRACTOR TO CONFIRM LOCATION OF ALL U/G UTILITIES



SECTION B

SCALE = 1:100



TOP VIEW
N.T.S.

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.–0.6m OR AS SHOWN

SEP 2 8 2015

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. J. KOKAN # 21364

ORIGINAL PAPER SIZE 11"x17"

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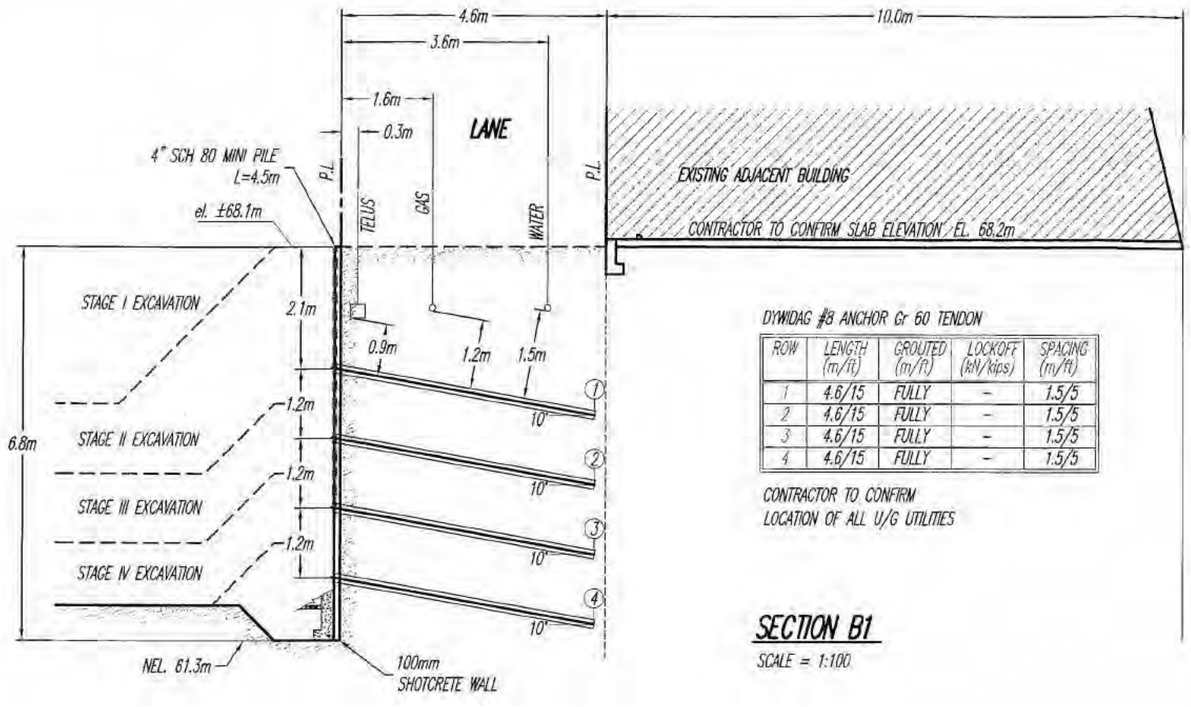
		DRAWN BY: M.P. / APPROVED BY: M.J.K. / REVIEWED BY: M.J.K.		DWG. NO.: G-S3A	B.
		SCALE: AS SHOWN			C.



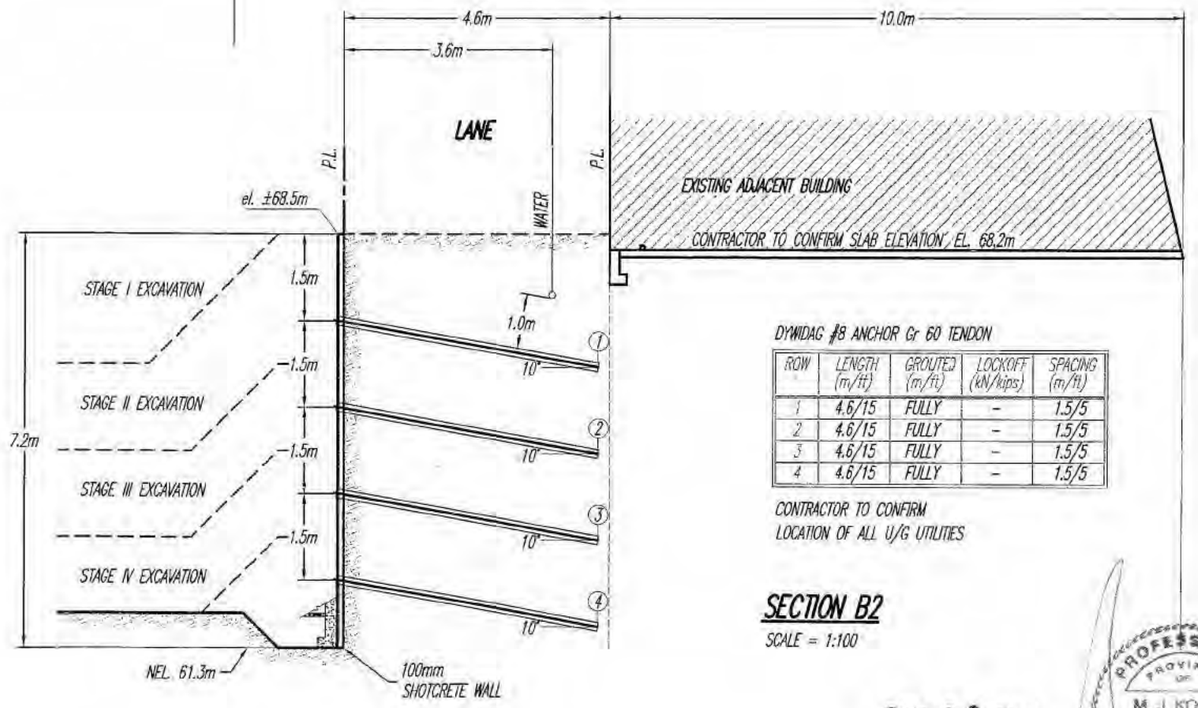
DYWIDAG #8 ANCHOR Gr 60 TENDON

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	4.6/15	FULLY	–	1.5/5
2	4.6/15	FULLY	–	1.5/5
3	4.6/15	FULLY	–	1.5/5
4	4.6/15	FULLY	–	1.5/5

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION B1

SCALE = 1:100



DYWIDAG #8 ANCHOR Gr 60 TENDON

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	4.6/15	FULLY	–	1.5/5
2	4.6/15	FULLY	–	1.5/5
3	4.6/15	FULLY	–	1.5/5
4	4.6/15	FULLY	–	1.5/5

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION B2

SCALE = 1:100

LEGEND:

el. 13.55m. – EXISTING GRADE ELEVATION

N.E.L – NOMINAL EXCAVATION LEVEL
AT PERIMETER = SLAB EL.-0.6m
OR AS SHOWN

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
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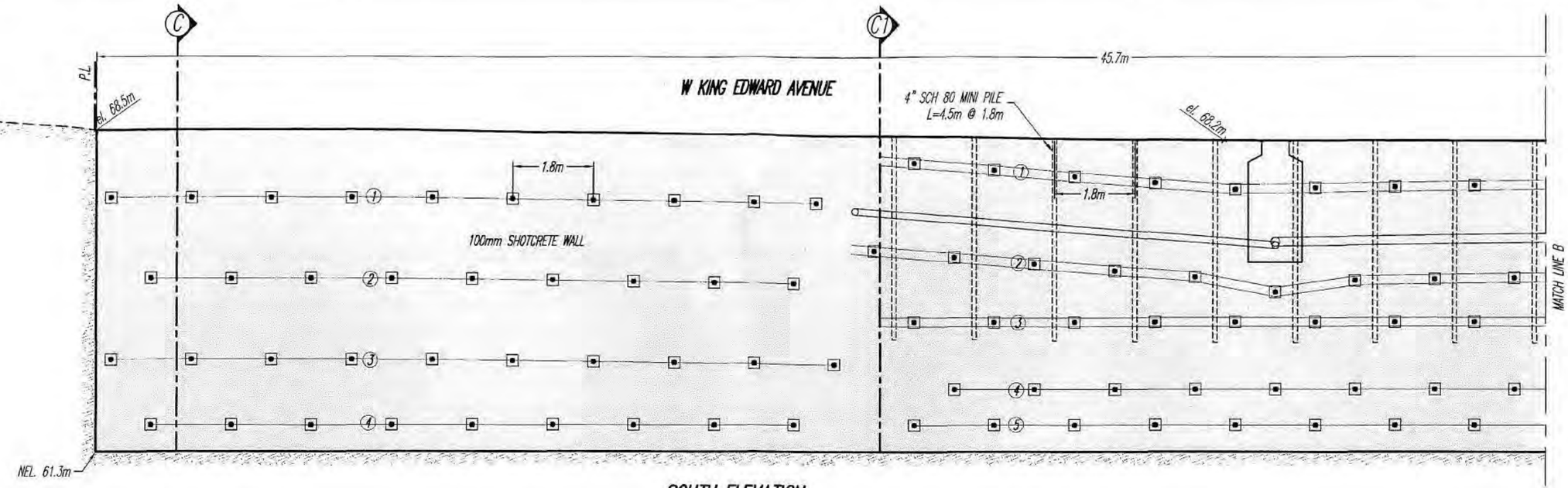
#255-1200 West 73rd Ave.
Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

DATE: JULY 22, 2015
DRAWN BY: M.P. | APPROVED BY: M.J.K. | REVIEWED BY: M.J.K.
SCALE: AS SHOWN

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
SECTIONS B1 & B2

FILE NO.: 12589
DWG. NO.: G-S3B

REVISIONS:
A. AUGUST 27, 2015 – ANCHOR DESIGN CHANGE
B:
C:



SOUTH ELEVATION

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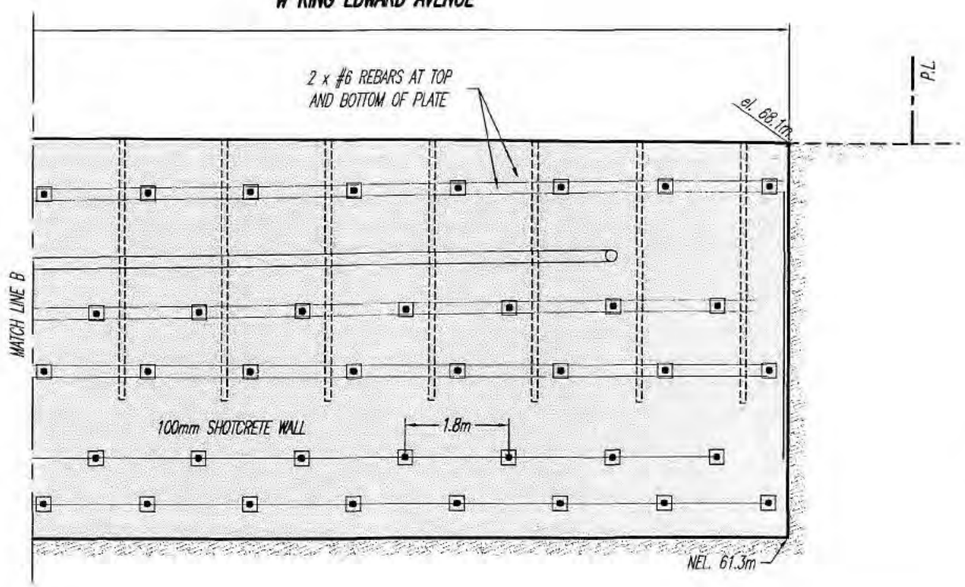
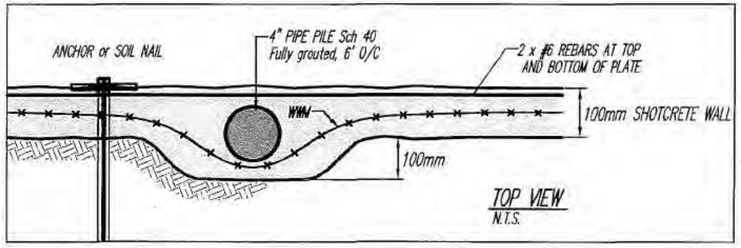




TOP VIEW
N.T.S.

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

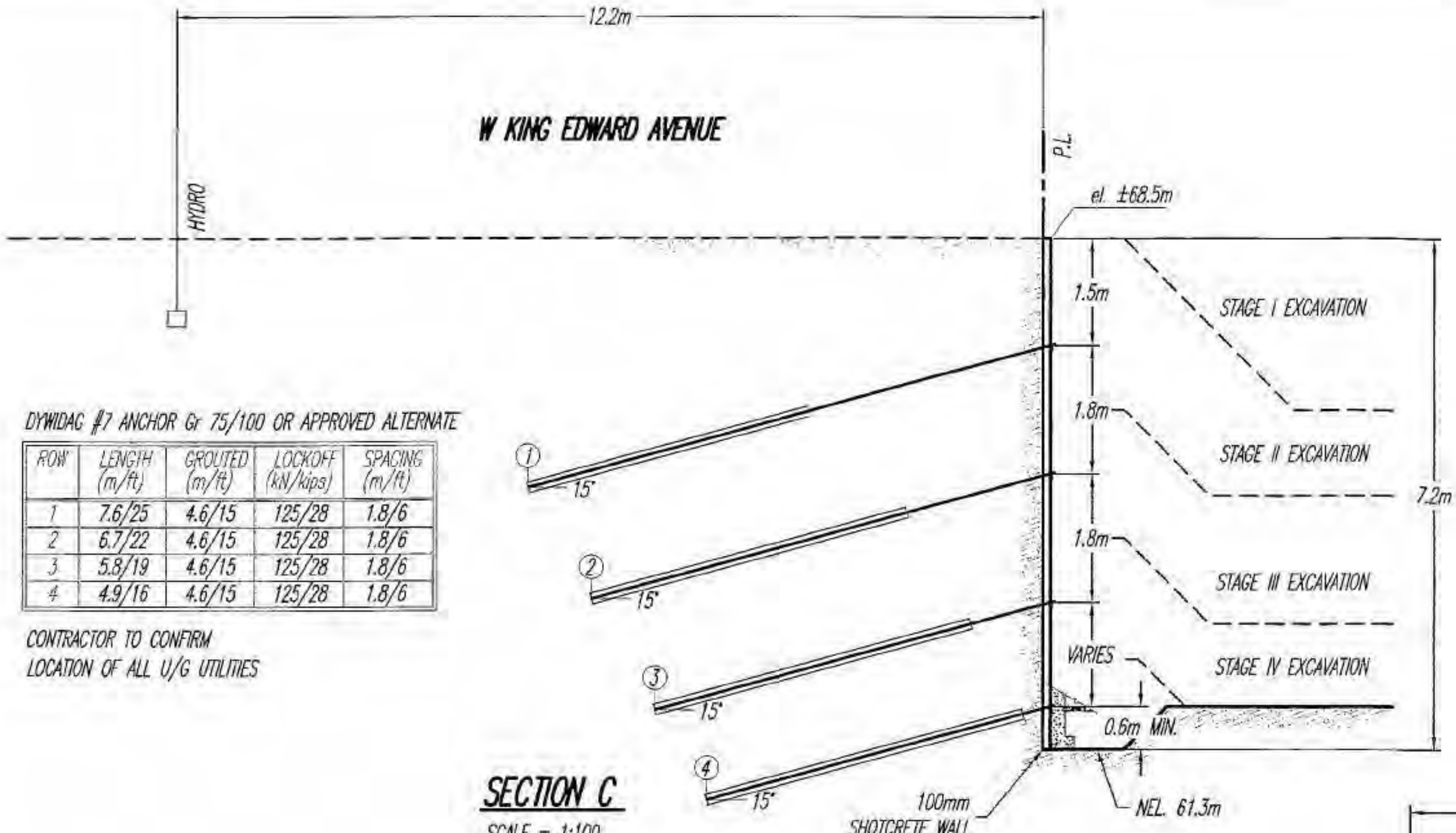
N.E.L. – NOMINAL EXCAVATION LEVEL
AT PERIMETER = SLAB EL.–0.6m
OR AS SHOWN

SEP 28 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:	GEOPACIFIC VANCOUVER KAMLOOPS CALGARY #225-1200 West 73rd Ave Vancouver B.C. V6P 6G5 P 604.439.0922 F 604.439.9189	DATE: JULY 22, 2015 DRAWN BY: M.P. / APPROVED BY: M.J.K. / REVIEWED BY: M.J.K. SCALE: AS SHOWN	RESIDENTIAL DEVELOPMENT KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C. SOUTH ELEVATION	FILE NO.: 12589 DWG. NO.: G-S4A	REVISIONS: A. B. C.

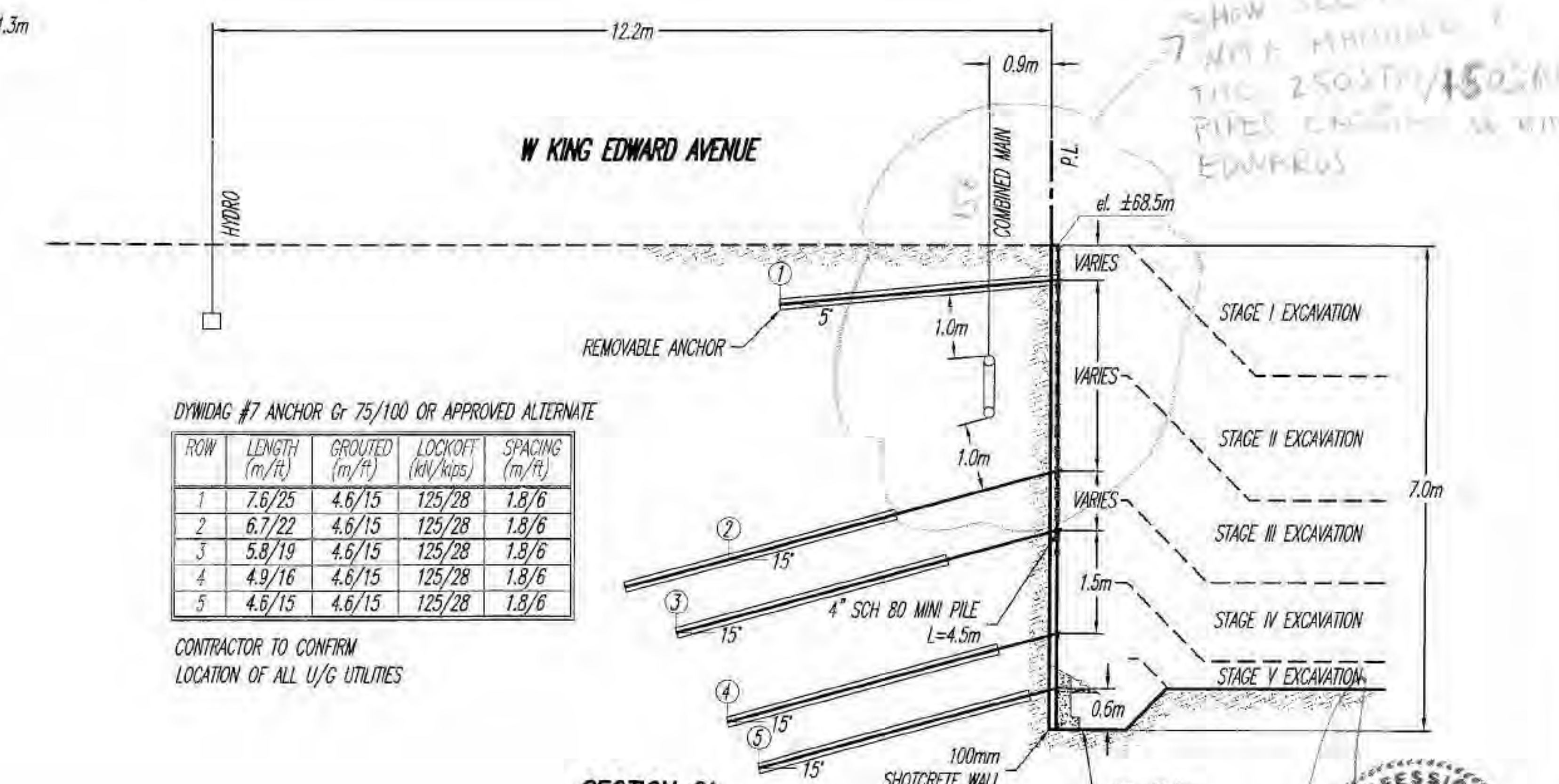


DYWIDAG #7 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	7.6/25	4.6/15	125/28	1.8/6
2	6.7/22	4.6/15	125/28	1.8/6
3	5.8/19	4.6/15	125/28	1.8/6
4	4.9/16	4.6/15	125/28	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION C
SCALE = 1:100



DYWIDAG #7 ANCHOR Gr 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	7.6/25	4.6/15	125/28	1.8/6
2	6.7/22	4.6/15	125/28	1.8/6
3	5.8/19	4.6/15	125/28	1.8/6
4	4.9/16	4.6/15	125/28	1.8/6
5	4.6/15	4.6/15	125/28	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION C1
SCALE = 1:100

SEP 28 2015

PROFESSIONAL PROVINCE OF BRITISH COLUMBIA M. J. KOKAN # 21364 ENGINEER

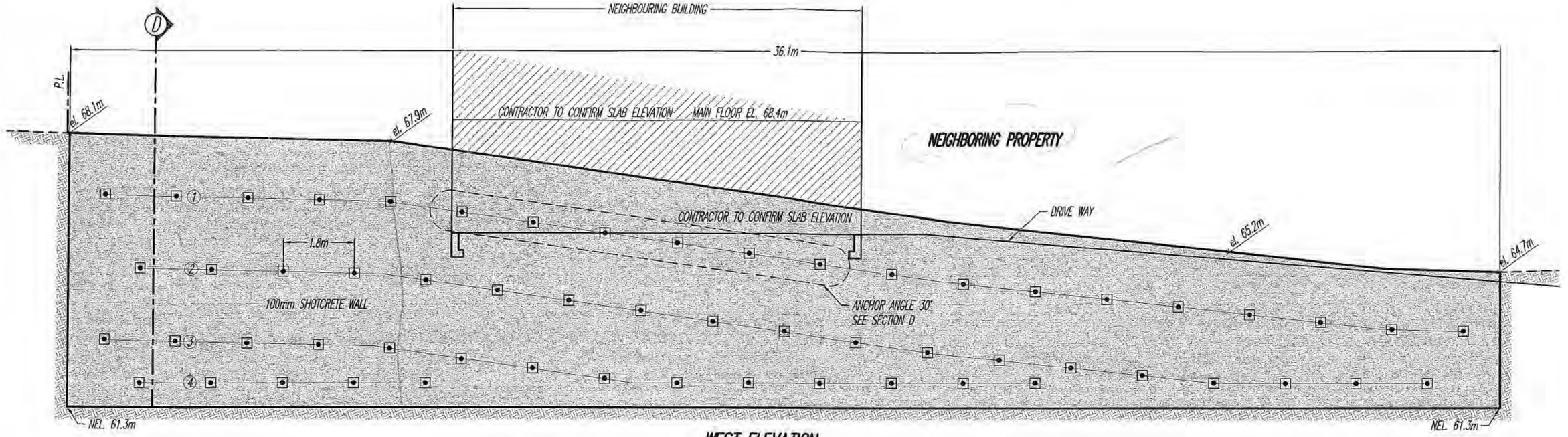
LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL AT PERIMETER = SLAB EL.–0.6m OR AS SHOWN

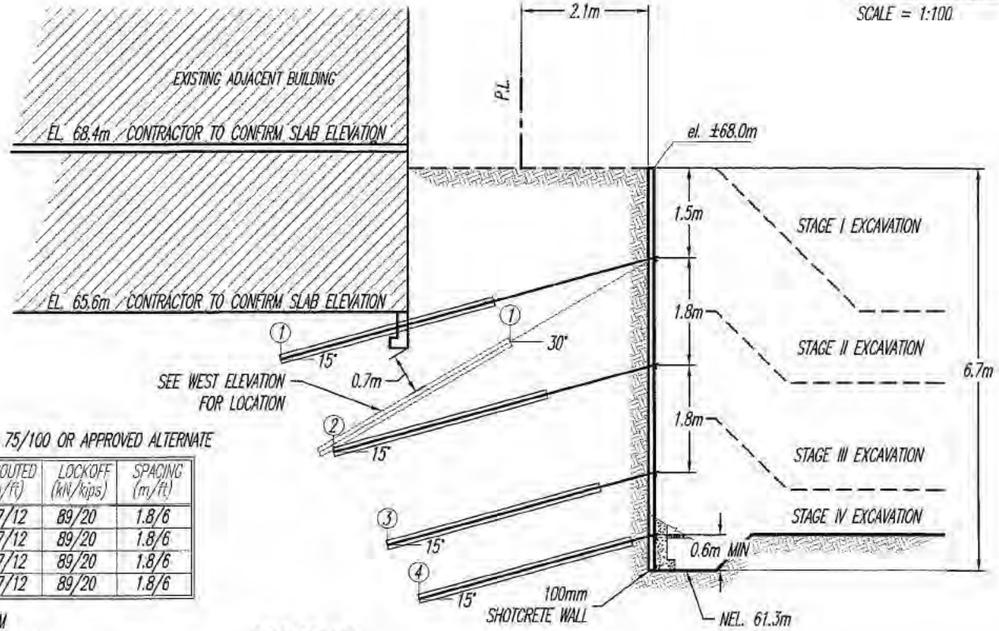
ORIGINAL PAPER SIZE 11"x17"

REFERENCE:	GEOPACIFIC VANCOUVER KAMLOOPS CALGARY — #235-1200 West 73rd Ave. Vancouver, B.C. V6P 6G5 P 604.439.0922 F 604.439.9189	DATE: JULY 22, 2015 / DRAWN BY: M.P. / APPROVED BY: M.J.K. / REVIEWED BY: M.J.K. / SCALE: AS SHOWN	RESIDENTIAL DEVELOPMENT KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C. SECTION C & C1	FILE NO.: 12589 / DWG. NO.: G-S4B	REVISIONS: A. B. C.



WEST ELEVATION

SCALE = 1:100



DYWIDAG #6 ANCHOR Gr. 75/100 OR APPROVED ALTERNATE

ROW	LENGTH (m/ft)	GROUTED (m/ft)	LOCKOFF (kN/kips)	SPACING (m/ft)
1	6.7/22	3.7/12	89/20	1.8/6
2	5.8/19	3.7/12	89/20	1.8/6
3	4.9/16	3.7/12	89/20	1.8/6
4	4.3/14	3.7/12	89/20	1.8/6

CONTRACTOR TO CONFIRM
LOCATION OF ALL U/G UTILITIES

SECTION D

SCALE = 1:100

LEGEND:

el.13.55m – EXISTING GRADE ELEVATION

N.E.L. – NOMINAL EXCAVATION LEVEL
AT PERIMETER = SLAB EL.–0.6m
OR AS SHOWN

SEP 2 8 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

ORIGINAL PAPER SIZE 11"x17"

REFERENCE:

GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY

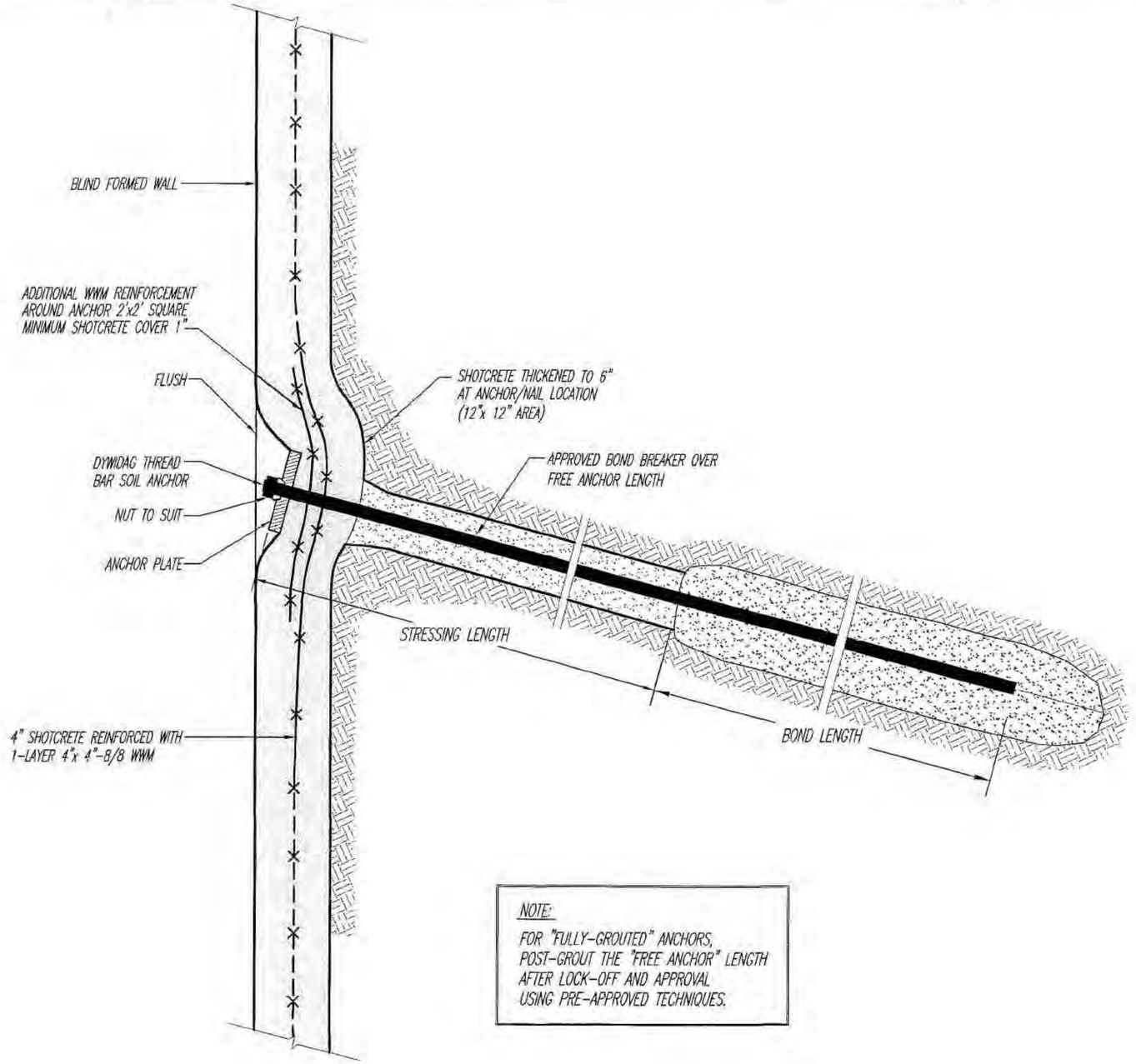
#215-1200 West 73rd Ave.
Vancouver, B.C. V6P 6G5
P 604.439.0922
F 604.439.9189

DATE: JULY 22, 2015
DRAWN BY: M.P. | APPROVED BY: M.J.K. | REVIEWED BY: M.J.K.
SCALE: AS SHOWN

RESIDENTIAL DEVELOPMENT
KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C.
WEST ELEVATION AND SECTION D

FILE NO.: 12589
DWG. NO.: G-S5

REVISIONS:
A.
B.
C.



NOTE:
FOR "FULLY-GROUTED" ANCHORS, POST-GROUT THE "FREE ANCHOR" LENGTH AFTER LOCK-OFF AND APPROVAL USING PRE-APPROVED TECHNIQUES.

ANCHORED SHOTCRETE DETAIL
N.T.S.

SEP 2 8 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

REFERENCE:	#215–1200 West 73–rd Ave. Vancouver, B.C. Canada V6P 6G5 Ph. (604) 439–0922 Fax (604) 439–9189 GeoPacific Consultants Ltd.	DATE:	GENERAL UNDERPINNING & ANCHORED SHOTCRETE DETAILS	FILE NO.:	REVISIONS: A. B. C.
		DRN. BY: KAZ. APP'D.		DWG. NO.: G–1	
		SCALE: AS SHOWN			

1.0 GENERAL

1.1 In these Notes, the Engineer is GeoPacific Consultants Ltd.

1.2 These Notes must be read in conjunction with the design Drawings.

1.3 The work described and shown involves near vertical excavated slopes or structure using a combination of shotcrete and ground anchors. All slopes shall be covered with secured polyethylene sheeting to prevent erosion.

1.4 The anchors will be installed in ground around the site and the actual soil and groundwater conditions must be assumed.

1.5 The grouted anchor lengths required to resist the design loads are based on the assumed conditions. The capacity of the anchors will be confirmed at the beginning of the contract and may be lengthened or shortened.

1.6 Some utilities, foundations and structures which may affect the installation procedures and techniques are noted on the Drawings.The Contractor shall confirm the locations and condition of ALL man-made elements which may be damaged because of the anchored shotcrete operations. It is the Contractor's responsibility to install the anchored shotcrete in the actual site conditions encountered.

Elements which may, in the opinion of the Contractor, be damaged by the anchored shotcrete operations must be reported to the Engineer well in advance of the work to take place.

1.7 These documents are based on architectural, structural and survey Drawings provided. It is the Contractor's responsibility to verify all dimensions and report discrepancies to the Engineer.

1.8 The Contractor shall schedule and co-ordinate the work to satisfy the reasonable requirements of adjacent Owners and Tenants who shall be given sufficient Notice before carrying out work which may affect their property.

1.9 The Contractor shall erect and maintain a secure closed hoarding around the site for the safety of all persons in the vicinity of the site.

1.10 The Contractor shall inspect the slopes and the support to the slopes and structures daily and shall immediately report any potentially damaging movement or deterioration to the Engineer by telephoning 604-439-0922.

2.0 MATERIALS

2.1 ANCHOR BAR:

The anchors shall be installed in minimum 75 mm (3 inch) diameter holes which shall be drilled, unless otherwise approved in advance by the Engineer. Anchor capacity is dependant upon installation techniques and the drilling equipment and methods shall be subject to the Engineer's approval.

Drilling techniques shall produce a hole which is free of debris and ensure continuous support of the hole and shall not erode or disturb soil around the hole.

2.2 Anchor tendons shall be as shown on the design drawings.

Anchorage equipment couplings and any necessary wedges washers and plates shall be in accordance with the tendon manufacturer's specifications and requirements.

Minimum anchorage length ("fixed" length) and stressing length ("free" length) are shown on the Drawings.

2.3 Grout in the anchorage shall be a prior-approved non-shrink cementitious material mixed with a minimum compressive strength of 5 MPa in 24 hours and 35 MPa in 28 days.

2.4 Shotcrete shall be reinforced with 102 x 102 MW13.3/13.3 (4"x4"-8/8) welded wire mesh as shown on the Drawings. Steel shall have a minimum yield strength of 450 MPa (65 ksi) and shall be in accordance with ASTM A497.

2.5 All shotcreting shall be carried out in accordance with ACI 506 : "Specifications for Materials Proportioning and Application of Shotcrete"

2.6 Shotcrete shall have a minimum compressive strength of 5 MPa in 24 hours and 30 MPa in 28 days. The Engineer may require test panels to be prepared by the Contractor so they can be cored by others to confirm the shotcrete strength. The Contractor shall co-operate with the independent testing laboratory appointed by the Owner for this purpose.

3.0 INSTALLATION

3.1 Hollow Core Bar Installation (if required)

Set the bar on an appropriate drill rig. Start pumping the grout to assure that grout will exit drill bit.

Proceed with rotary drilling and flushing approx. three feet per min (depending on ground condition). Rotation speed should be approx. 60 to 120 RPM. To achieve higher friction values, advance and retract the bars several times for each 3.0 m (10 feet) length of bar installed in the bond zone.

The grout should be applied CONTINUOUSLY during drilling. A grout pump with at least 60 l/min volume and minimum 2 MPa (300 psi) pressure capacity (preferably 10 MPa, 1500 psi) should be used.

Refer to the manufacture's specifications and recommendations for more detail.

3.2 Anchors and shotcrete shall be installed in sequence and stages to maintain stability of the excavation. Excavation of soil from the site shall also take place in stages. Stages shall not exceed 1.8 m (6 feet) vertical.

The Contractor may remove all soil within any mass excavation Stage before anchors in that Stage are installed but further excavation shall not take place until all anchored shotcrete in that Stage is installed and approved by the Engineer.

The mass excavation for any Stage does not include a perimeter berm with a minimum top width of one metre and a side slope of 1 horizontal to 1 vertical.

Ground conditions may locally require a wider berm, flatter slopes and/or other slope protection measures including covering or short-term temporary support.

The perimeter berms in any stage shall be excavated in staggered panels. THE MAXIMUM WIDTH OF A PANEL SHALL BE THE HORIZONTAL SPACING OF THE ANCHOR PLUS 0.6 M (2 FEET). This panel width may be INCREASED OR DECREASED by the Engineer's agreement, in writing, BEFORE increasing the panel width.

No adjacent panels shall be excavated concurrently and no more than 1/3 of the panels shall be excavated concurrently. In addition no panel shall be excavated into the berm until at least 24 hours after that panel anchor has been grouted.

Anchors and shotcrete may be installed concurrently in different panels. Anchors shall be installed at right angles to the property lines on plan and within 2.5 degrees of the declination shown on the Drawings except with the prior approval of the Engineer.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21366

SEP 28 2015

REFERENCE:	#215-1200 West 73-rd Ave. Vancouver, B.C. Canada V6P 6G5 GeoPacific Consultants Ltd. Ph. (604) 439-0922 Fax (604) 439-9189	DATE:	GENERAL NOTES	FILE NO.:	REVISIONS:
		DRN. BY: APP'D.			A.
		SCALE:		DWG. NO.: G-2 (SHEET 1 OF 2)	B.
					C.

3.3 Immediately following excavation of the soil berm in a panel the excavated face shall be trimmed back to the required line and mesh reinforcement shall be fixed to the soil to ensure the minimum specified shotcrete cover. Shotcrete shall be applied without delay to thicknesses shown on the Drawings.

Shotcrete panels shall be kept moist to aid curing by spraying with water and covering with sacking or polyethylene sheeting.

Sufficient wire mesh reinforcement shall be installed to provide a full strength overlap with adjacent panels. This overlap shall not be less than 200 mm (8 inch).

The end surfaces of panels shall be thoroughly cleaned with compressed air to ensure a full strength bond when adjacent panels are shotcreted.

3.4 Drains to relieve groundwater pressure shall be installed through the shotcrete. Drains shall be a minimum of 50 mm (2 inches) diameter and at normal 3.0 m (10 feet) centres horizontally and 1.5 m (5 feet) centres vertically. The Contractor shall install filters in drains as fines are being removed with the water.

Additional special drains may be required where water seeps are noted. This special drains shall consist of minimum 50 mm (2 inches) diameter perforated ABS pipe installed within 75 mm (3 inches) diameters holes drilled 5 degrees UPWARDS from the 3 metres (10 feet) measured from the face of the shotcrete. These special drains may be required to be filtered with fine sand or gravel or filter fabrics.

3.5 Anchors shall be tensioned as soon as practicable but no sooner than 24 hours after the construction of the applicable shotcrete panel. Anchors shall be tensioned and tested as follows:

3.5.1 Apply a proof load of 1.33 times the lock-off load for two minutes. Monitor the load in the anchor. If the reduction in load is less than 2.5 percent of proof load reduce the load to lock-off load and lock the working load into the anchor.

3.5.2 If the anchor does not hold at least 133 percent of lock-off load for two minutes the Engineer must be informed. Further testing in the presence of the Engineer will required as follows:

Load the anchor in 22 kN (5 kip) increments to 130.5 percent of lock-off load. Hold each increment for 5 minutes except at maximum load when the load shall be maintained for 100 minutes. The increase in length of the anchor shall be measure at the start and end of each load increment except at maximum load when the extension shall be measured at 5 minutes intervals.

This information shall be utilized by the Engineer to deduce the utilized anchor length and to assess the creep characteristics.

Anchors which creep more than 2 mm (0.08 inch) per log cycle of time will not be accepted. The Contractor shall install replacement anchors at the Contractor's expense.

4.0 SHOTCRETE REMOVAL/ANCHOR DETENSIONING

4.1 All excavation and support works within the CITY OF VANCOUVER shall be in strict accordance with the City's requirements.

4.2 No part of the anchor system shall remain in place within 1.5 m (5 feet) of final grade. Anchors 1.5 m (5 feet) below final grade shall be detensioned or fully grouted when no longer required in the opinion of the Engineer.

4.3 No shotcrete shall remain in place within 1.5 m (5 feet) of final grade. A bond breaker must be installed between blind-formed foundation walls and shotcrete on city property to allow for shotcrete removal.

5.0 BACKFILLING ON AND ADJACENT TO CITY PROPERTY

5.1 Backfilling on and adjacent to City property must be in accordance with the City's backfill specifications, with the City's backfill specifications; "Street Restoration Manual" dated AUGUST 18, 2008.

5.2 Backfill Containment dams will be required at excavation corners where excavation to be backfilled against City property.

6.0 REQUIRED INSPECTIONS

6.1 The following are the MINIMUM inspections which are required by the Geotechnical Engineer. The Contractor is responsible for informing the Geotechnical Engineer that the Work is ready for these inspections. The Contractor shall be liable for any loss caused by failure to inform the Geotechnical Engineer that the Work is ready for inspection.

1. 2 days before work commences on site.
2. 1 day before the anchors are detensioned.
3. 2 days before backfilling commences.
4. 1 day before shotcrete removal.

6.2 Daily Inspection is required during installation of anchors, and full time inspection is required during anchor testing.

7.0 CONTRACTOR QUALIFICATION

7.1 Temporary works and shoring installation is highly sensitive to processes including sequence of installation, quality and quantity of materials used, monitoring of the works and other factors. Consequently a high degree of skill and professionalism is required for its successful implementation. As a result, all contractors considered for tender of the shoring work described in the Design Drawings must be approved by the Engineer in advance of tender. The work must be carried out only by a shoring contractor with experience and expertise in shoring construction. The contractors experience and expertise must be with projects of similar size and scope to that shown in the Design Drawings. The following shoring contractors are permitted to undertake the work:

- Matcon Canada
- Southwest Contracting
- Bel Pacific Excavation & Shoring
- Vancouver Shotcrete
- Blue Ace Shoring
- Power Shotcrete Constructions LTD.

7.2 The preceding list does not express or imply any guarantee or warranty of the contractor's performance. It is the responsibility of the contractor to undertake the work shown on the Design Drawings.

7.3 Shoring contractors other than those listed above may be considered by the Engineer only with submission of references and qualifications for at least 10 projects of similar size and scope. GeoPacific reserves the right to accept or reject the qualifications of any shoring contractor.

NOTES:

1. The excavation support design is based on the locations of adjacent structures and utilities which have been supplied. The Contractor shall confirm the locations and elevations of all foundations and utilities which may be affected by the work and raport any discrepancies to GeoPacific Consultants Ltd. (Tel.: 439-0922)
2. All slopes shall be covered with secured polyethylene sheeting to prevent erosion.
3. The extent of the excavation shall be based on the Architectural and Structural Drawings. The Contractor shall confirm the size of the excavation required by the basement and report any discrepancy with these Drawings to GeoPacific Consultants Ltd.
4. The Contractor must obtain prior permission in writing to carry out any work on adjacent private property.
5. The Contractor shall inform GeoPacific Consultants Ltd. of any surcharge loads which will be within half the height of the excavation from the top of the excavation so that the support system can be modified to support the additional loads. The Contractor shall also inform GeoPacific if and when any groundwater seepages occur which may require additional special drains as outlined in Note 3.4, Drawing G-2.
6. The ground conditions must be confirmed by GeoPacific Consultants Ltd. when the excavation is 4 feet deep. The Contractor is responsible for ensuring that GeoPacific personnel inspect the site.

DRAWING LIST:

SITE PLAN---------- G-S1
ELEVATIONS, SECTIONS---------- G-S2, G-S3A, G-S3B G-S4A, G-S4B, G-S5,

GENERAL SHOTCRETE/UNDERPINNING
AND ANCHOR DETAILS---------- G-1
GENERAL NOTES---------- G-2, (SHEET 1 TO 2)
TEMPORARY SEDIMENT CONTROL FACILITY---- G-SP1, G-SP2, G-SP3 & G-SP4

SEP 2 8 2015

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

REFERENCE:	#215-1200 West 73-rd Ave. Vancouver, B.C. Canada V6P 6G5 GeoPacific Consultants Ltd. Ph. (604) 439-0922 Fax (604) 439-9189	DATE: FEBRUARY 10, 2012 DRN. BY: APP'D. M.J.K. SCALE: AS SHOWN	RESIDENTIAL DEVELOPMENT KING EDWARD AVENUE, WEST OF CAMBIE STREET, VANCOUVER, B.C. GENERAL NOTES	FILE NO.: 12589 DWG. NO.: G-2 (SHEET 2 OF 2)	REVISIONS: A. B. C.

CITY OF VANCOUVER
ENGINEERING SERVICES
Peter Judd, P.Eng., General Manager

FAX

TO:	PIONEER ENGINEERING CONSULTANTS LTD	FROM:	Alan Reese, Construction Review, Lead Engineering Development Services
FAX:		DATE:	October 13, 2015

SUBJECT: Engineering Holds & Requirements for BU #466138 - 521 W King Edward , Vancouver B.C.

City Sewers Department indicated changes required to approve your shoring design. The following changes must be found on your resubmission:

- Maintain 0.9m Separation from sewer manhole;
- Show sewer manhole in cross section and 250 STM/150 SAN pipes that are crossing W King Edward Avenue;
- Show sewer pipe diameters.

In addition to this, please refer to information required to approve your Building Permit and submit documents at your earliest convenience.

Thank you

Alan Reese, Construction Review, Lead
Engineering Development Services
Phone: 604.873.7423

AR/ar

Pioneer Internal Web

Outbound Log: 140222

PIONEER ENGINEERING CONSULTANTS LTD.
1933 WEST BROADWAY
VANCOUVER, B.C. V6J 1Z3

Recipient:	Al Reese, Engineering Services, City of Vancouver, 5th Floor, 507 West Broadway, Vancouver
Project Number:	140222
Description:	For your review and approval: 1 x Schedule B--Geotech, s/s Kokan 1 x Soils Report 2 x Excavation/Shoring drawings, s/s Kokan
Date & Time:	01/10/2015 10:15 AM
Sender:	Natalie Chow
Type of Item/s:	Documents (envelope)
Transit Method:	Courier
Delivered by:	K&H Dispatch, Trip#340875
Project Address:	521 West King Edward Avenue Vancouver, BC
Building Permit #:	BU 466138

Created at 01/10/2015 10:19 AM by Natalie Chow
Last modified at 01/10/2015 10:20 AM by Natalie Chow

GEOPACIFIC
VANCOUVER KAMLOOPS CALGARY

P (604) 439 0922
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www.geopacific.ca
#215-1200 West 73rd Ave,
Vancouver, B.C. Canada V6P 6G5

0961456 BC Ltd
The King Edward Trust
Suite 208, 6088 No. 3 Road
Richmond, BC
V6Y 2B3

November 6, 2014
File: 12589

Attention: Richard Cheng

Re: Geotechnical Investigation Report - Proposed Residential Development
521 West King Edward Avenue, Vancouver, BC

1.0 INTRODUCTION

We understand that a new residential development is proposed for the above reference site in Vancouver, BC. The proposed buildings will have up to six stories of above grade construction over one and a half below grade parking levels. We anticipate reinforced concrete construction for all of the proposed buildings on site. The structural loading is expected to be moderately heavy.

This report has been prepared exclusively for our client, for their use and the use of others on their design team for this project. This report describes the results of our geotechnical site investigation and makes recommendations for the design and construction of the proposed building and temporary excavations.

2.0 SITE DESCRIPTION

The site is located on the northwest corner of Cambie Street and west King Edward Avenue in Vancouver, BC. The site is bounded by City lane ways to the east and north, west King Edward Avenue to the south, and a residential property to the west. The site consists of three residential properties and each property was occupied by an existing single home at the time of our investigation. The King Edward Canada Line station is just beyond the eastern city lane boundary.

The site is rectangular in shape with a length of about 40 m on the west property line and 49 m on the south property line. Based on our observations, the site slopes downward gently from south to north with approximately 3.0 m of elevation difference. The location of the site and the existing improvements is shown on the attached Drawing, No. 12589-1.

3.0 FIELD INVESTIGATION

GeoPacific Consultants Ltd. was on site November 3, 2014 to conduct a site investigation of the subsurface soil and groundwater conditions. A total of three (3) solid stem auger holes were drilled to a depth of 7.6 m below current site grades using a truck mounted drill rig supplied by Uniwide Drilling Co. Ltd. of Burnaby, BC. One Dynamic Cone Penetration Test (DCPT) was performed beside one of the boreholes to determine the relative density of the soils encountered. All boreholes were sealed immediately in accordance with provincial abandonment requirement upon completion of logging. The site investigation was supervised and the soils encountered were logged and collected for laboratory analysis in the field by qualified personnel from our office.

The borehole logs are presented after the text of this report. The DCPT sounding was conducted adjacent to one of the boreholes and thus the results are presented on the borehole logs. The approximate borehole locations are shown on our Drawing 12589-1, following the text of this report. All depths are referenced from the existing ground surface at the borehole locations.

4.0 SOIL CONDITIONS

4.1 Soil Profile

The soil classification used herein is based on the "Unified Soil Classification System", except as otherwise noted.

According to "Surficial Geology - Vancouver (MAP 1486A)" published by Geological Survey of Canada, this region is understood to be underlain by Vashon Drift deposits that overlies Tertiary bedrock consisting of sedimentary and basalt bedrock.

In general, the soil profile noted in our borehole locations from the surface downwards, consists of thin layer of TOPSOIL, overlying loose SILTY SAND, overlying dense to very dense GLACIAL TILL. The glacial till was noted to consist of well graded sand and gravel with some silt. All boreholes were terminated at depths of 7.6 meters below the existing grades within the very dense glacial till. It should be noted that the glacial till contains cobbles to boulder based on our experience in this area, and our investigation of this site. The glacial till is believed to be underlain by sandstone bedrock, though bedrock was not encountered within our exploration depths.

Please refer to the individual borehole logs following the text of this report, and our Drawing No. 12589-1 for the borehole and referenced borehole locations.

4.2 Groundwater Conditions

Static groundwater was not encountered within the exploration depths of up to 7.6 m below the current site grades. However some seepage should be anticipated from sandy zones of the glacial till. Seepage should be relatively light and readily managed with pumped sumps.

5.0 DISCUSSION

5.1 General

The proposed development will include three buildings over one and a half levels of below grade parking. The proposed buildings will be up to six stories above grade over the parking levels. We anticipate reinforced concrete construction over the entire building. We expect loading induced by the new development to be moderately heavy with loading of up to 4,000 kN or less on columns and 150 kN per lineal metre or less on walls. Floor loads are expected to be light, in the range of 4 to 6 kPa.

To accommodate the proposed underground structure, we anticipate that temporary excavation depths will be up to about 7 metres below the adjacent road grades. Based on the site plan drawings by GBL Architects Inc., dated September 9, 2014, we assume that the excavation will be in close proximity to the property lines. The vertical cuts necessary for these excavations will require shoring. Some seepage should be expected from sandy zones of the glacial till as described in Section 4.2. Staged excavation

City of Vancouver - 2020-387 - Page 31 of 382

expected from sandy zones of the glacial till as described in Section 4.2. Staged excavation with a conventionally pumped de-watering system is expected to be adequate to maintain the groundwater inflows.

Based on the observed ground conditions, the proposed development can be constructed on conventional pad and strip foundations that are placed on native dense to very dense glaciated soils. The presence of the bedrock is unlikely within the anticipated excavation depths.

We confirm, from a geotechnical point of view, that the proposed development is feasible provided that the recommendations outlined in the following sections are incorporated into the overall design and construction.

5.2 Seismic Analysis

We did not encounter any soils considered to be prone to liquefaction or strain softening during cyclic loading caused by the design earthquake defined in Vancouver Building By-Law (VBBL) 2014.

6.0 SITE PREPARATION & TEMPORARY EXCAVATION RECOMMENDATIONS

6.1 Site Preparation for Building

Existing structures, pavements, underground services, all organic materials, fills, and loose or otherwise disturbed soils must be removed from the construction area.

We expect that the depth of stripping at this site will be dictated by the proposed underground parking elevations rather than the condition of the soils present on-site.

It is very important that the stripped subgrade of glacial till is blinded and protected with lean mixed concrete immediately after final trimming and review by GeoPacific to preserve its bearing qualities. It is also important that it remain dry and free of ponded water prior to pouring concrete for foundations. Any softened, disturbed subgrade should be removed and replaced with lean mix (minimum 5.0 MPa unconfined compressive strength) concrete beneath the foundations. Crushed gravel as described in Section 7.3 or engineered fill can be placed beneath the slab-on-grade only.

"Engineered Fill" is generally defined as ***clean sand to sand and gravel*** *containing silt and clay less than 5 % by weight*, compacted in 300 mm loose lifts to a minimum of 98% of the ASTM D698 (Standard Proctor) maximum dry density at a moisture content that is within 2% of optimum for compaction.

6.2 Temporary Excavation & Shoring

We assume that the excavation will extend to the property lines, all excavation faces need to be shored to allow vertical cuts. Shoring anchors would extend beyond property lines, therefore shoring encroachment permission must be obtained from the city of Vancouver, InTransit BC, and the private property owner on the western site boundary. InTransit BC has requested the opportunity to review shoring designs on the eastern property boundary.

We anticipate that excavation depths will be approximately 7 m below the existing site grades. Some ground movements should be expected during installation of the shoring system. Based on the soil conditions identified in our boreholes and our experience with similar sites, we expect movements of up to 12 mm

face. Normally improvements on the City property can tolerate this magnitude of movement without sustaining damage.

It is our opinion that the natural soils are sufficiently strong that vertical cuts may be supported with the use of shotcrete shoring with ground soil anchors, which is the most economical system available in Greater Vancouver. Hollow core (self-drilling) anchors should be anticipated in the sandy zone of the glacial till.

Our observations during our site investigation as well as our experience in this area indicate that cobbles and boulders are present within the glacial till. Cobbles and small boulders can typically be removed with conventional excavation equipment. However, large boulders may require splitting/blasting to facilitate their removal from the site.

Some seepage into excavations from surficial soils and sandy lenses within the glacial till should be expected. We envisage that groundwater inflows can generally be controlled with conventional sumps and sump pumps.

6.3 Re-Used of Excavated Material as Fill

The glacial till is heterogeneous and contains higher amounts of silt in some area. Soil with elevated silt content is unsuitable to use as engineering fill in wet conditions. The glacial till should only be used as fill in the dryer months of the year.

7.0 BUILDING RECOMMENDATIONS

7.1 Foundations and Bearing Capacity

Based on the design information provided and our borehole information we envisage that the new building foundations will be constructed on the native dense to very dense glacial till.

We recommend that footings placed on the native dense to very dense glacial till can be designed using a serviceability limit state (SLS) bearing pressure of 500 kPa, and a factored ultimate limit state (ULS) bearing pressure of 750 kPa for transient loading such as those by winds or earthquakes.

We expect that the settlement of footings designed as recommended should be within the normally acceptable limits of 25 mm maximum and up to about 20 mm differential over a 10 m span.

Irrespective of bearing pressures, foundations should not be less than 450 mm in width for strip foundations and not less than 600 mm in width for square or rectangular foundations. Foundations should also be buried a minimum of 450 mm below the surface for frost protection.

Adjacent foundations constructed at differing elevations should be offset from each other by a minimum distance of twice the difference in elevation 2:1 (H:V). For example, two foundations separated by 1.0 m in elevation should be offset horizontally from each other by a minimum distance of 2.0 m as measured from the inside edges of those foundations. Foundations constructed within 2:1 (H:V) of each other may impose additional vertical and horizontal forces on lower foundations, columns, and/or foundation walls. GeoPacific should review foundation layouts which do not achieve the minimum 2:1 (H:V) offset.

All foundation subgrades must be reviewed by GeoPacific prior to foundation construction.

7.2 Seismic Design of Foundations

The recommended maximum allowable bearing pressure can be increased by up to one half for short-term, transient loadings such as those induced by winds and earthquakes.

The subgrade condition underlying this site is classified as Site Class C as defined in Table 4.1.8.4.A. of Vancouver Building By-Law (VBBL) 2014. The 1:2,475 2014 VBBL design earthquake is expected to generate a peak ground acceleration of 0.929 g.

7.3 Slab-On-Grade Floors Preparation

The floor slab should be underlain by a minimum of 150 mm of 20 mm clear crushed gravel fill to inhibit upward migration of moisture beneath the slab.

The crushed gravel fill should be compacted to a minimum of 98% of the ASTM D698 (Standard Proctor) maximum dry density at a moisture content that is within 2% of optimum for compaction.

Compaction of the slab-on-grade fill must be reviewed by GeoPacific.

7.4 Foundation Drainage Systems

A perimeter drainage system will be required for the below grade structure to prevent the development of water pressure on the foundation walls and the basement floor slabs.

Groundwater flows are expected to be moderate, likely in the range of 25 litres/minute for the entire excavation. These flow rates should be confirmed at the time of construction.

7.5 Earth Pressures on Foundation Walls

We recommend that foundation walls be designated for static and seismic earth pressure,

We recommend that the wall be designed for a static pressure distribution of 4.5 H (kPa) triangular, where H is the height of the restrained soil in metres. Dynamic loading induced by the design earthquake should be added to the static loads and should be taken as 4.0 H (kPa) inverted triangular. The preceding loading recommendations assume that the backfill is a clean, free draining sand and gravel, the backfill is level behind the wall, and the wall is frictionless.

Our calculations assume that a back-of-wall drainage system will be installed to prevent the buildup of any water pressure behind the walls. All earth pressures provided herein are unfactored soil parameters and are assumed to be unfactored loads.

Backfill materials and procedures on or adjacent to the City properties should be in accordance with "The City of Vancouver Street Restoration Manual (Rev. August 2008)" by the City of Vancouver.

7.6 Utility Design and Installation

Site utilities will be required beneath the slabs-on-grade. The design of these systems must be consider the locations and elevations of the foundations. The service trenches and excavations required for the installation of the underground pipes, vaults and/or manholes must be located outside of a 1.5:1 (H:V) slope measured downward from the edge of adjacent foundations.

installation of the underground pipes, vaults and/or manholes must be located outside of a 1.5:1 (H:V) slope measured downward from the edge of adjacent foundations.
All excavations and trenches must conform to the latest Occupational Health and Safety Regulation supplied by the Worker Compensation Board of British Columbia. Any excavation in excess of 1.2 m in depth requiring man-entry must be reviewed by a professional geotechnical engineer.

7.7 Methane Potential

No methane prevention or extraction system are required for the proposed building since no organic soils exist on the building envelope beneath the foundation grade.

8.0 DESIGN REVIEWS AND CONSTRUCTION INSPECTIONS

The preceding section make recommendations for the design and construction of the proposed development. We have recommended the review of certain aspects of the design and construction. It is important that these reviews are carried out to ensure that our intentions have been adequately communicated. It is also important that any contractors working on the site review this document prior to commencing their work.

It is the responsibility of the contractors working on-site to inform GeoPacific a minimum of 48 hours in advance that a field review is required. In summary, reviews are required by geotechnical engineer for the following portions of the work.

1. Stripping	Review of stripping depth.
2. Excavation	Review of temporary slopes and soil conditions.
3. Shoring	Review of shoring installation and tests.
4. Engineered Fill	Review of materials and compaction degree.
5. Foundation	Review of foundation subgrade.
6. Slab on Grade	Review of foundation subgrade / under slab fill materials and compaction.
7. Backfill	Review of placement of backfill along foundation walls.

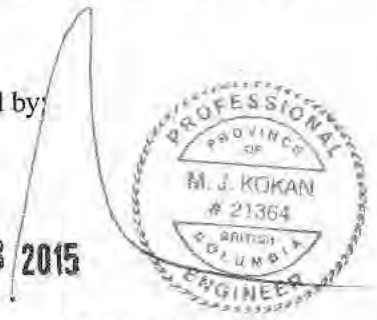
9.0 CLOSURE

This report is prepared solely for used by our client and their Design Team for this project as described to the general standards of similar work for similar projects in this area. GeoPacific Consultants Ltd. accepts no responsibility for any other use of this report.

We are pleased to assist you with this project and we trust this information is helpful and sufficient for your purposes at this time. However, please do not hesitate to call if you should require any clarification.

For:
GeoPacific Consultants Ltd.

Reviewed by:



SEP 2 8 2015

Peter Wittstock, B.A.Sc., EIT,
Geological Engineer

Matt Kokan, M.A.Sc., P.Eng.,
Principal

SITE PLAN

SCALE = 1:1000

LEGEND:

⊕ BH14-# – BORE HOLE (BH) LOCATION
HOLE LOCATIONS ARE APPROXIMATE

REFERENCE:

#215–1200 West 73rd Ave.
Vancouver, B.C.
Canada V6P 6G5
Ph. (604) 439-0922
Fax (604) 439-9189
GeoPacific Consultants Ltd.

DATE:	NOVEMBER 4, 2014
DRN. BY:	M.P.
APP'D.	M.J.K.
SCALE:	AS SHOWN

RESIDENTIAL DEVELOPMENT
KING EDWARD AVE, WEST OF CAMBIE ST, VANCOUVER, B.C.
TEST HOLE PLAN

FILE NO.: 12589
DWG. NO.: G-TH1

REVISIONS:
A.
B.
C.

Test Hole Log: BH14-01

File: 12589
Project: Proposed Development
Client: 0961456 BC LTD - The King Edward Trust
Site Location: West King Edward Avenue at Cambie Street

GeoPacific Consultants Ltd.
215 - 1200 West 73rd Avenue, Vancouver, BC, V6P 6G5
Tel: 604-439-0922 Fax:604-439-9189

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)	Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
0 / 0		Ground Surface	0.0				The static groundwater table was not encountered in this borehole
		TOPSOIL (FILL) Topsoil with grass and roots.	0.3				
		SILTY SAND (FILL) Silty fine to medium grained sand with trace gravel, loose, damp, orange to brown.	0.6				
1 / 1			1.5	18%			
		SILTY fine SAND (FILL) Silty fine sand with trace gravel, dense, moist, beige with rusty streaks.	2.4				
2 / 3		*SAND and GRAVEL (TILL)* Fine sand to gravel with trace silt, moderately dense to dense, moist, grey.	3.0				
		SILTY SAND (TILL) Fine sand with silt and some gravel, dense, moist, grey.					
4		*SILTY SAND (TILL)* Silty fine to medium grained sand with trace gravel, 3mm lenses of clean medium grained sand, dense, moist, grey.	4.6				
5 / 6		*SAND (TILL)* Fine to coarse grained sand with trace silt and gravel, dense to very dense, damp, grey.	6.1				
		SAND and GRAVEL (TILL) Medium grained sand to gravel with trace fine sand and silt, dense to very dense, grey, moist.					
7			7.6				
		End of Borehole					

Logged: PW
Method: Auger
Date: November 3, 2014

Datum: Ground Surface
Figure Number: A.1
Page: 1 of 1

Test Hole Log: BH14-02

File: 12589
Project: Proposed Development
Client: 0961456 BC LTD - The King Edward Trust
Site Location: West King Edward Avenue at Cambie Street

GeoPacific Consultants Ltd.
215 - 1200 West 73rd Avenue, Vancouver, BC, V6P 6G5
Tel: 604-439-0922 Fax:604-439-9189

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)	Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
0 / 0		Ground Surface	0.0				The static groundwater table was not encountered in this borehole
		TOPSOIL (FILL) Topsoil with grass and roots.	0.3				
3 / 1		*SILTY SAND with ORGANICS (FILL)* Silty fine to medium grained sand and trace gravel with organics, loose to moderately dense, moist, rust stained in upper 1', beige from 1-3.5'.	1.2		1, 2, 4, 33, >50		
6 / 2		*SAND (TILL)* Fine to medium sand with trace silt and some gravel, dense, moist, brown to grey.	1.8				
10 / 3		*SAND and GRAVEL (TILL)* Gap graded fine sand to gravel with no coarse sand, dense, moist, grey.	4.6				
16 / 5		*SAND and GRAVEL (TILL)* Gap graded silt to small cobbles with no coarse sand, dense, moist, grey.	6.1				
20 / 6		*SAND and GRAVEL (TILL)* Gap graded silt to gravel with no coarse sand, dense, moist, grey.	7.6				
25 / 7		End of Borehole					

Logged: PW
Method: Auger
Date: November 3, 2014

Datum: Ground Surface
Figure Number: A.2
Page: 1 of 1

Test Hole Log: BH14-03

File: 12589
Project: Proposed Development
Client: 0961456 BC LTD - The King Edward Trust
Site Location: West King Edward Avenue at Cambie Street

GeoPacific Consultants Ltd.
215 - 1200 West 73rd Avenue, Vancouver, BC, V6P 6G5
Tel: 604-439-0922 Fax:604-439-9189

INFERRED PROFILE

Depth (ft / m)	Symbol	SOIL DESCRIPTION	Depth (m)	Moisture Content (%)	DCPT (blows per foot) 10 20 30 40	Groundwater / Well	Remarks
0 / 0		Ground Surface	0.0				The static groundwater table was not encountered in this borehole
		ASPHALT Asphalt					
		CRUSHED ROCK (FILL) Well graded silt to gravel, 19mm minus fill, moist, dark brown.	0.2				
		SILTY SAND and GRAVEL (FILL) Well graded silt to gravel, loose, damp, orange and brown.	0.3				
1		*SILTY SAND and GRAVEL (FILL)* Well graded silt to gravel, moderately dense, moist, light brown.					
2							
3							
4			1.2				Drilling terminated due to a large boulder which the drill was not capable of augering through
		BOULDER Granotoid boulder of unknown size.	1.4				
5		End of Borehole					

Logged: PW
Method: Auger
Date: November 3, 2014

Datum: Ground Surface
Figure Number: A.3
Page: 1 of 1

SCHEDULE B

Forming Part of Subsection 2.2.7, Div. C of the Building By-law

BU 466138
Building Permit No.
(for Building Official's use)

ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW

Notes: (i) This letter must be submitted prior to the commencement of *construction* activities of the components identified below. A separate letter must be submitted by each *registered professional of record*.
(ii) This letter is endorsed by: Architectural Institute of B.C., Association of Professional Engineers and Geoscientists of B.C.
(iii) In this letter the words in italics have the same meaning as in the Building By-law.

To: *The Chief Building Official*

Re: Proposed Residential Development
Name of Project (Print)
521 West King Edward, Vancouver BC
Address of Project (Print)

Legal Description of Project (Print)

The undersigned hereby gives assurance that the design of the
(Initial those of the items listed below that apply to this *registered professional of record*. All the disciplines will not necessarily be employed on every project.)

_____ **ARCHITECTURAL**
_____ **STRUCTURAL**
_____ **MECHANICAL**
_____ **PLUMBING**
_____ **FIRE SUPPRESSION SYSTEMS**
_____ **ELECTRICAL**
S **GEOTECHNICAL — temporary**
_____ **GEOTECHNICAL — permanent**

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

(Professional's Seal and Signature)

September 28th 2015
Date

components of the plans and supporting documents prepared by this *registered professional* in support of the application for the *building permit* as outlined below substantially comply with the Building By-law and other applicable enactments respecting safety except for *construction* safety aspects.

The undersigned hereby undertakes to be responsible for *field reviews* of the above referenced components during *construction* as indicated on the "SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS" below.

TB
CRP's Initials

Schedule B - *Continued*

BU 466138
Building Permit No.
(for Building Official's use)

521 West King Edward, Vancouver
Project Address

Geotechnical
Discipline

The undersigned also undertakes to notify the *Chief Building Official* in writing as soon as possible if the undersigned's contract for *field review* is terminated at any time during *construction*.

I certify that I am a *registered professional* as defined in the Building By-law.

Matt J. Kokan, P. Eng.
Registered Professional's Name (Print)

215 - 1200 W. 73 Avenue
Address (Print)

Vancouver, BC V6P 6G5

604-439-0922
Phone No.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

(Professional's Seal and Signature)

September 28th 2015
Date

(If the *Registered Professional of Record* is a member of a firm, complete the following.)

I am a member of the firm GeoPacific Consultants Ltd
and I sign this letter on behalf of the firm. (Print name of firm)

Note: The above letter must be signed by a *registered professional of record*, who is a *registered professional*. The Building By-law defines a *registered professional* to mean

(a) a person who is registered or licensed to practise as an architect under the Architects Act, or
(b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

TB
CRP's Initials

Schedule B - *Continued*

BU 466138
Building Permit No.
(for Building Officials use)

521 West King Edward, Vancouver
Project Address

Geotechnical
Discipline

SUMMARY OF DESIGN AND FIELD REVIEW REQUIREMENTS

(Initial applicable discipline below and cross out and initial only those items not applicable to the project.)

ARCHITECTURAL

1.1 Fire resisting assemblies
1.2 *Fire separations* and their continuity
1.3 *Closures*, including tightness and operation
1.4 Egress systems, including *access to exit* within *suites* and *floor areas*
1.5 Performance and physical safety features (guardrails, handrails, etc.)
1.6 Structural capacity of architectural components, including anchorage and seismic restraint
1.7 Sound control
1.8 Landscaping, screening and site grading
1.9 Provisions for firefighting access
1.10 *Access* requirements for *persons with disabilities*
1.11 Elevating devices
1.12 Functional testing of architecturally related fire emergency systems and devices
1.13 Development Permit and conditions therein
1.14 Interior signage, including acceptable materials, dimensions and locations
1.15 Review of all applicable shop drawings
1.16 Interior and exterior finishes
1.17 Dampproofing and/or waterproofing of walls and slabs below *grade*
1.18 Roofing and flashings
1.19 Wall cladding systems
1.20 Condensation control and cavity ventilation
1.21 Exterior glazing
1.22 Integration of building envelope components
1.23 Environmental separation requirements (Part 5)
1.24 Building envelope, Part 10 requirements

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21364

(Professional's Seal and Signature)

September 28th 2015
Date

STRUCTURAL

2.1 Structural capacity of structural components of the *building*, including anchorage and seismic restraint
2.2 Structural aspects of *deep foundations*
2.3 Review of all applicable shop drawings
2.4 Structural aspects of unbonded post-tensioned concrete design and construction

MECHANICAL

3.1 HVAC systems and devices, including high *building* requirements where applicable
3.2 *Fire dampers* at required *fire separations*
3.3 Continuity of *fire separations* at HVAC penetrations
3.4 Functional testing of mechanically related fire emergency systems and devices
3.5 Maintenance manuals for mechanical systems
3.6 Structural capacity of mechanical components, including anchorage and seismic restraint
3.7 Review of all applicable shop drawings
3.8 Mechanical systems, Part 10 requirements

TB
CRP's Initial

Schedule B - *Continued*

BU 466138
Building Permit No.
(for Building Official's use)

521 West King Edward, Vancouver
Project Address

Geotechnical
Discipline

_____ PLUMBING

4.1 Roof *drainage systems*
4.2 Site and foundation *drainage systems*
4.3 *Plumbing systems* and devices
4.4 Continuity of *fire separations* at plumbing penetrations
4.5 Functional testing of plumbing related fire emergency systems and devices
4.6 Maintenance manuals for *plumbing systems*
4.7 Structural capacity of plumbing components, including anchorage and seismic restraint
4.8 Review of all applicable shop drawings
4.9 Plumbing systems, Part 10 requirements

_____ FIRE SUPPRESSION SYSTEMS

5.1 Suppression system classification for type of *occupancy*
5.2 Design coverage, including concealed or special areas
5.3 Compatibility and location of electrical supervision, ancillary alarm and control devices
5.4 Evaluation of the capacity of city (municipal) water supply versus system demands and domestic demand including pumping devices where necessary
5.5 Qualification of welder, quality of welds and material
5.6 Review of all applicable shop drawings
5.7 Acceptance testing for "Contractor's Material and Test Certificate" as per NFPA Standards
5.8 Maintenance program and manual for suppression systems
5.9 Structural capacity of sprinkler components, including anchorage and seismic restraint
5.10 For partial systems — confirm sprinklers are installed in all areas where required
5.11 Fire Department connections and hydrant locations
5.12 Fire hose standpipes
5.13 Freeze protection measures for fire suppression systems
5.14 Functional testing of fire suppression systems and devices

_____ ELECTRICAL

6.1 Electrical systems and devices, including high building requirements where applicable
6.2 Continuity of *fire separations* at electrical penetrations
6.3 Functional testing of electrical related fire emergency systems and devices
6.4 Electrical systems and devices maintenance manuals
6.5 Structural capacity of electrical components, including anchorage and seismic restraint
6.6 Clearances from *buildings* of all electrical utility equipment
6.7 Fire protection of wiring for emergency systems
6.8 Review of all applicable shop drawings
6.9 Electrical systems, Part 10 requirements

_____ GEOTECHNICAL — Temporary

7.1 *Excavation*
7.2 Shoring
7.3 Underpinning
7.4 Temporary construction dewatering

_____ GEOTECHNICAL — Permanent

8.1 Bearing capacity of the soil
8.2 Geotechnical aspects of *deep foundations*
8.3 Compaction of engineered fill
8.4 Structural considerations of soil, including slope stability and seismic loading
8.5 Backfill
8.6 Permanent dewatering
8.7 Permanent underpinning

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. J. KOKAN
21004

(Professional's Seal and Signature)

September 28th 2015
Date

CRP's Initials

BUILDING BY LAW 2014 CITY OF VANCOUVER

SCHEDULE C-B

Forming Part of Subsection 2.2.7, Division C of the Building By-law

Building Permit No. BP-2016-03679

ASSURANCE OF PROFESSIONAL FIELD REVIEW AND COMPLIANCE

Notes: (i) This letter must be submitted after completion of the project but prior to final inspection by the *Chief Building Official*. A separate letter must be submitted by each *registered professional of record*.
(ii) This letter is endorsed by: Architectural Institute of B.C., Association of Professional Engineers and Geoscientists of B.C.
(iii) In this letter the words in italics have the same meaning as in the Building By-law.

To: *The Chief Building Official*

Re: Geotechnical
Discipline (e.g. Architectural, etc.) (Print)

Residential Development
Name of Project (Print)

523 West King Edward, Vancouver BC
Address of Project (Print)

Lot 25, 26 & 27, All of Block 660, District Lot 586, NWD Plan 2976
Legal Description of Project (Print)

(Each *registered professional* of *record* shall complete the following:)

Matt J. Kokan, P. Eng.
Name (Print)

1779 West 75th Avenue
Address (Print)

Vancouver, B.C. V6P 6P2

604-439-0922
Phone No.

PROFESSIONAL PROVINCE OF M. J. KOKAN # 21364 BRITISH COLUMBIA ENGINEER

(Professional's Seal and Signature)

October 24, 2018
Date

I hereby give assurance that

(a) I have fulfilled my obligations for *field review* as outlined in Subsection 2.2.7, Division C of the Building By-law and in the previously submitted Schedule B, "ASSURANCE OF PROFESSIONAL DESIGN AND COMMITMENT FOR FIELD REVIEW, and
(b) those components of the project opposite my initials in Schedule B substantially comply in all material respects with
  (i) the applicable requirements of the Building By-law and other applicable enactments respecting safety, not including construction safety aspects, and
  (ii) the plans and supporting documents submitted in support of the application for the *building* permit,
(c) I am a *registered professional of record* as defined in the Building By-law.

(If the *registered professional of record* is a member of a firm, complete the following:)

I am a member of the firm GeoPacific Consultants Ltd.
(Print name of firm)
and I sign this letter on behalf of the firm.

Note: The above letter must be signed by a *registered professional of record*, who is a *registered professional*. The Building By-law defines a *registered professional* to mean
(a) a person who is registered or licensed to practise as an architect under the Architects Act, or
(b) a person who is registered or licensed to practise as a professional engineer under the Engineers and Geoscientists Act.

Certified Professional Program
MAR 18 2019
1 of 1
This stamp shall only operate to signify that these documents form part of the CP Project and shall not constitute an approval of design services rendered by others.
MICHAEL MESZAROS

CRP's Initials

Pioneer Internal Web

Outbound Log: 140222

Recipient:	City of Vancouver, Attn: Al Reese, Eng.Dept, 5th floor, 507 W. Broadway
Project Number:	140222
Description:	2 sets revised excavation/shoring dwgs Fortis BC clearance all as requested in your email + Appl. for Permits to Use City Property
Date & Time:	22/10/2015 8:00 AM
Sender:	Darlene Yampolsky
Type of Item/s:	
Transit Method:	Courier
Delivered by:	
Project Address:	521 King Edward
Building Permit #:	bu 466138

Sent to Sewers Oct 22 2015 KM

Created at 21/10/2015 1:03 PM by Darlene Yampolsky
Last modified at 22/10/2015 5:40 AM by Darlene Yampolsky

604-737-0333
x 6

275 – 3001 Wayburne Drive, Burnaby, BC V5G 4W3 Canada
T: 604.874.1245 F: 604.874.2358 | www.exp.com

Field Review, Dewatering and Anchor Review Memorandums

4083 Cambie Street, Vancouver, BC

Our Ref: VAN-00217815-A0

June 26, 2015 – December 24, 2015

exp.

FIELD MEMO

62265

page 1/4

☑ BURNABY OFFICE
275 - 3001 Wayburne Drive
Burnaby, B.C., Canada V5G 4W3
Phone: 604 874-1245 Fax: 604 874-2358

☐ KAMLOOPS OFFICE
Unit 100B, 1425 Pearson Place
Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

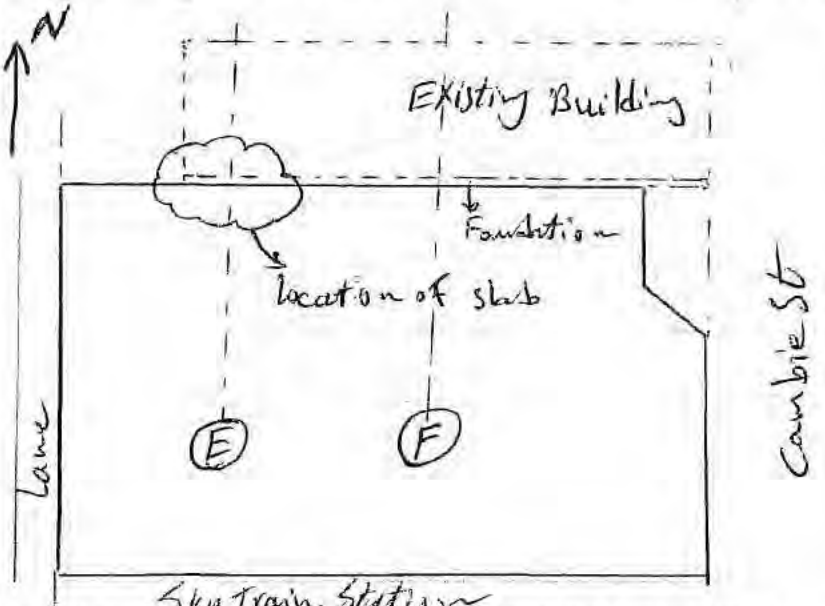
CLIENT: W.T. Leung Architects Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: June 26, 2015
CC: ITC Construction Group
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary shoring construction at North side of the Excavation

LOCATION:
4083 Cambie St., Vancouver, BC

OBSERVATIONS:

- Exp was on site to review first row of at north side of excavation underside of foundation of the existing Building.
- First stage of Excavation was completed as shown to half way of Grid (E) and Grid (F).



- Drilling was on going from east to west at North side
- Foundation of the building at North side of excation was exposed. It was observed that the buildy was found

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FIELD MEMO

62266

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☐ KAMLOOPS OFFICE
Unit 100B, 1425 Pearson Place
Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

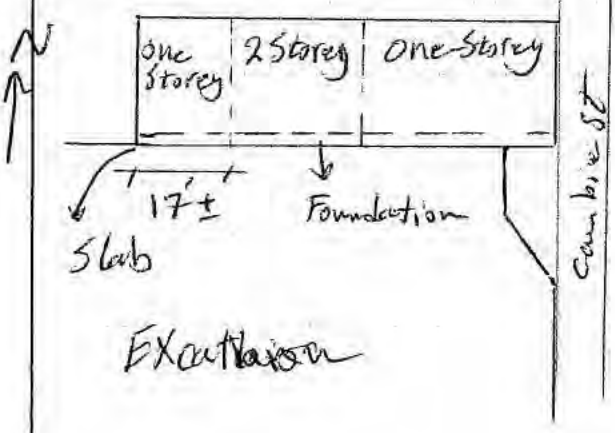
CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Korning Tam
DATE: June 26, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of shoring at North side of Excavation

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

on strip footing from east to about Grid line (E), From this point to the west a one storey was founded to be on a slab of about 4-5" as shown below. The slab was measured to be in order of 17'ft ±1 from west of the Exsiting building.



- Elevation was measured by the on site surveyors and the elevation at the underside of this footing was at about 216.3±ft, which was generally matches with the elevation shown on shoring drawings.
- The slab was located at 15" height than t base of the foundation

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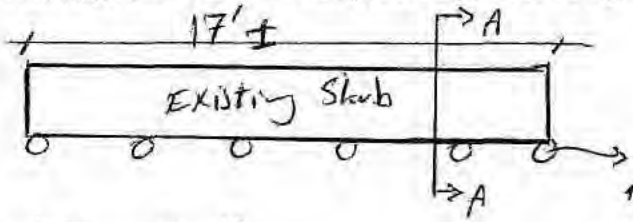
CLIENT: W.T. Leung Architects Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: June 26, 2015
CC: ITC
FROM: Mahdi Hosseyni.
ATTENTION: Antonio Pavi & Michael Scott

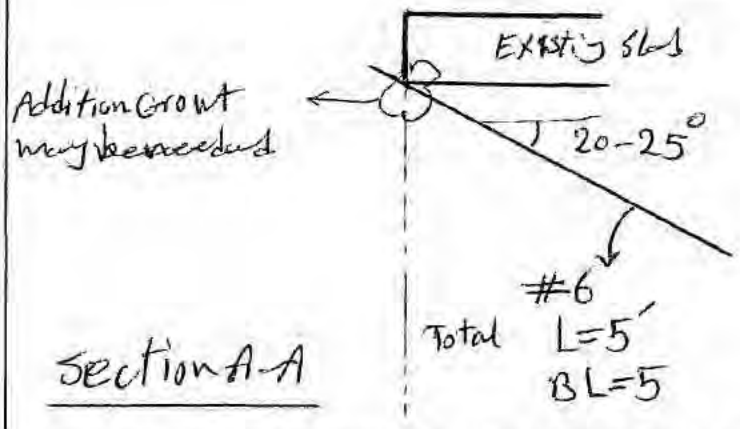
SERVICE PROVIDED: Review of Temporary Excavatia at North side of Excation.
LOCATION: 4083 Cambie st, Vancouver, BC

OBSERVATIONS:

Concolusion and Recommendations: At underside of the slab (at western of buiding footprint) additional Soil nails are required to make sure the slab is secured before any soil removal.



Looking North



Section A-A

The Soil Nails should be fully bonded and drilled right at bottom of the slab, and soil should Not be removed until the Grout

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: W.T.L. Leung Architect Inc. PROJECT NO.: VAN-00217815-A0

ATTENTION: Konning Tam DATE: June 26, 2015

CC: ITC FROM:

ATTENTION: Antonio Pavi and Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring at Northside

LOCATION:
4083 Cambie St, Vancouver, BC

OBSERVATIONS:

achieved enough strength (24 hours needed).

- Additional Grouting may be required to make sure the soil nails are tied up to the slab.
- Soil nail should be placed in 2 stages and should be please befor any soil removal.
- Anchors at Underside of the slab should be installed as shown in the attached Sketch.

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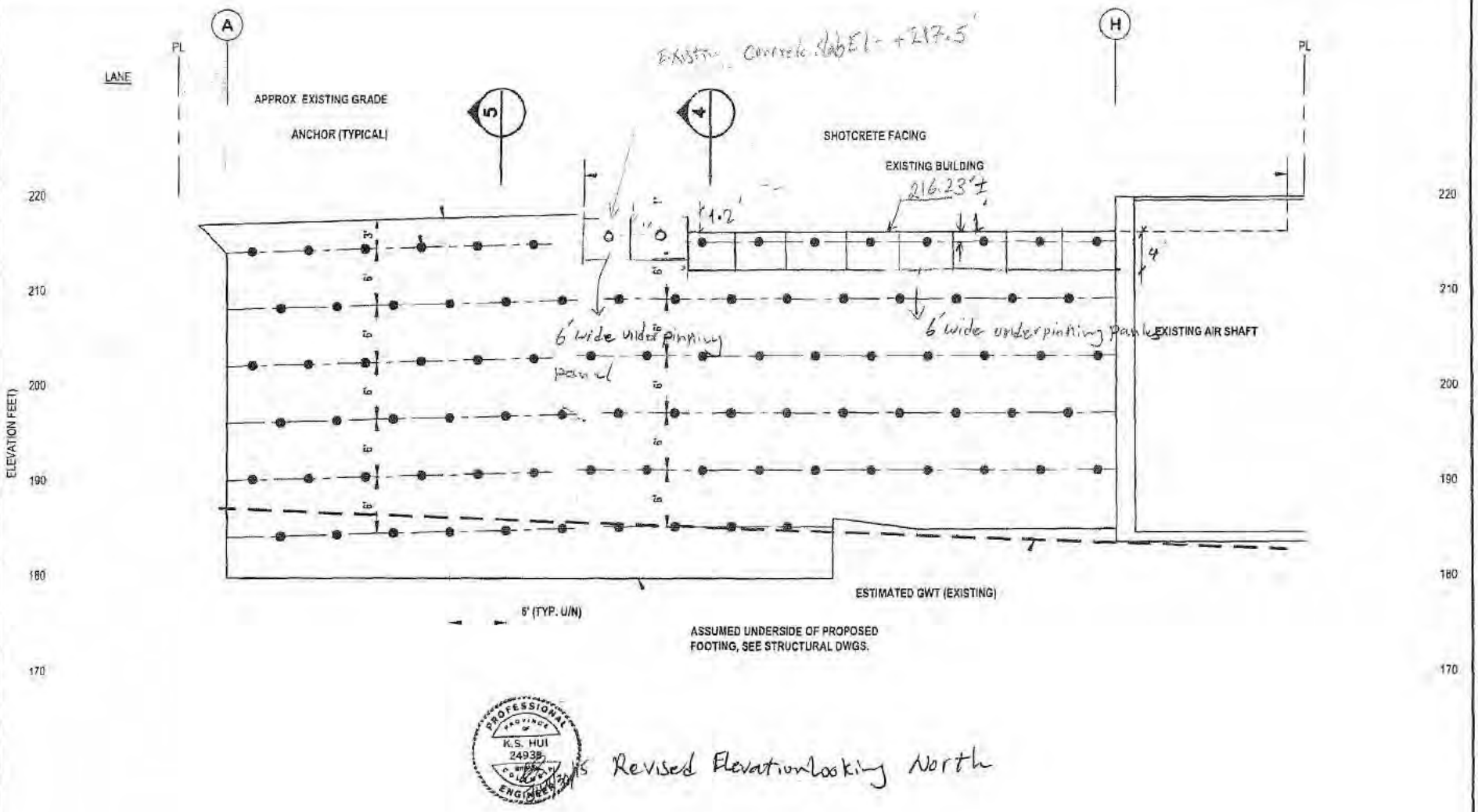

Existing Concrete Slab El. +217.5'

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA K.S. HUI 24938

Revised Elevation looking North

exp Services Inc.

MG

9	ISSUED FOR CONSTRUCTION	2015-05-22
8	TELUS DUCTS ADDED IN LANE	2015-05-21
7	SEWER MANHOLE LOCATION REVISED	2015-04-29
6	RE-ISSUED FOR BUILDING PERMIT	2015-03-05

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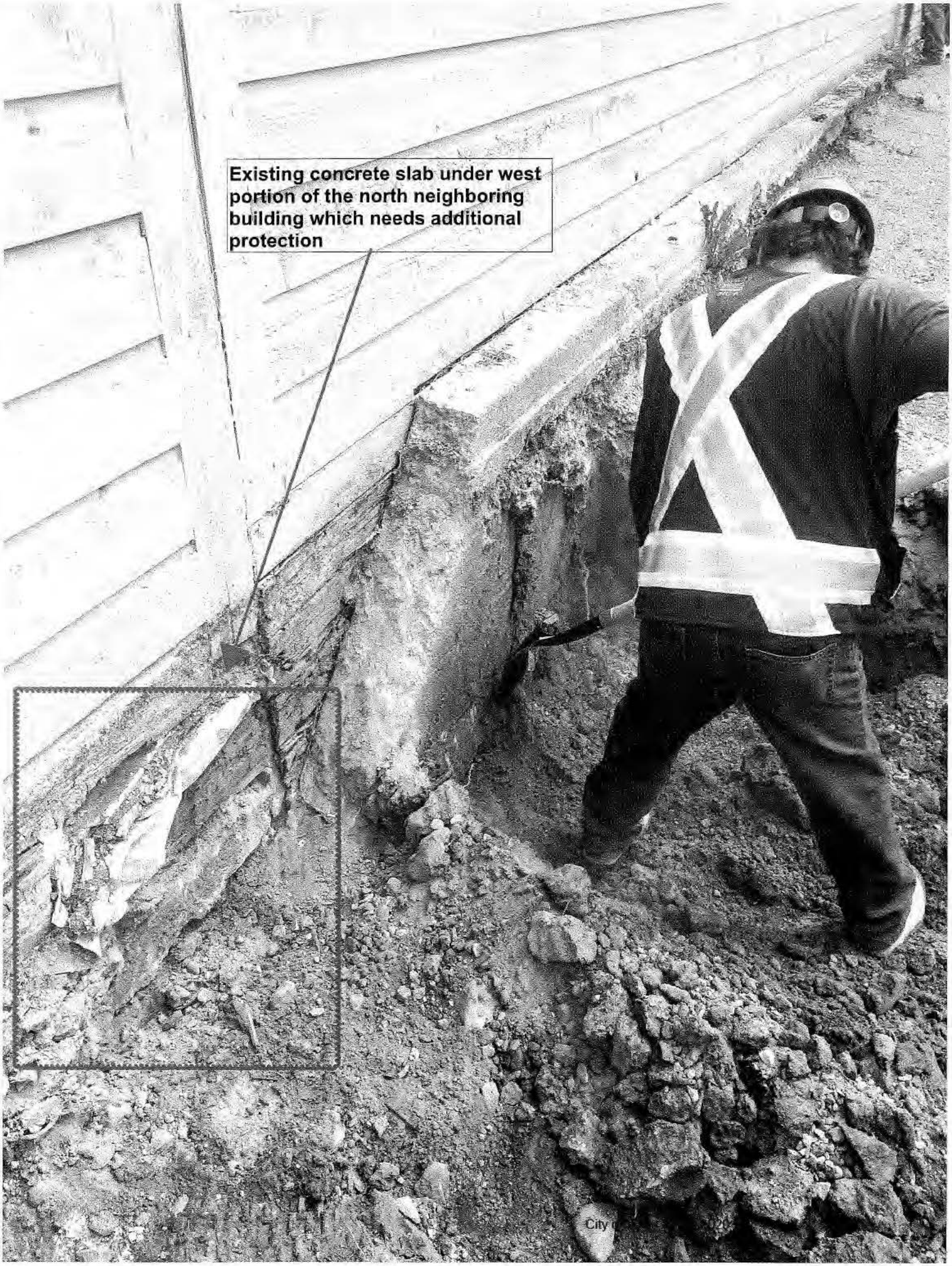
COMMERCIAL & MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 4083 CAMBIE, VANCOUVER, B.C.

VAN-00217815-A0

BULK EXCAVATION SHORING ELEVATION LOOKING NORTH

2014-05-16

1"=10'


Existing concrete slab under west portion of the north neighboring building which needs additional protection

FIELD MEMO

62272

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☐ KAMLOOPS OFFICE
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page 1/1

CLIENT: W.T.L Leung Architect Inc. PROJECT NO.: VAN-00217815-00

ATTENTION: Konning Tam DATE: June 29, 2015

CC: I.T.C FROM: Mahdi Hosseyni & Graeme Macleod

ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of temporary shoring at South side - next to the Skytrain Station

LOCATION: 4083 Cambie St., Vancouver, BC

OBSERVATIONS:

Exp was on site (on June 26, 2015) to review temporary shoring constructed at South side next to the Skytrain Station. Following are our comments regarding to First Row of Anchors as shown in the attached sketches (Sketch 1 & Sketch 2). To provide clearance from substructures of the skytrain building, First Row of Anchors shall be installed at 25° to horizontal as shown in the attached sketches. (Two sketches attached)

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PROFESSIONAL ENGINEER D. G. MacLEOD BRITISH COLUMBIA June 30/15

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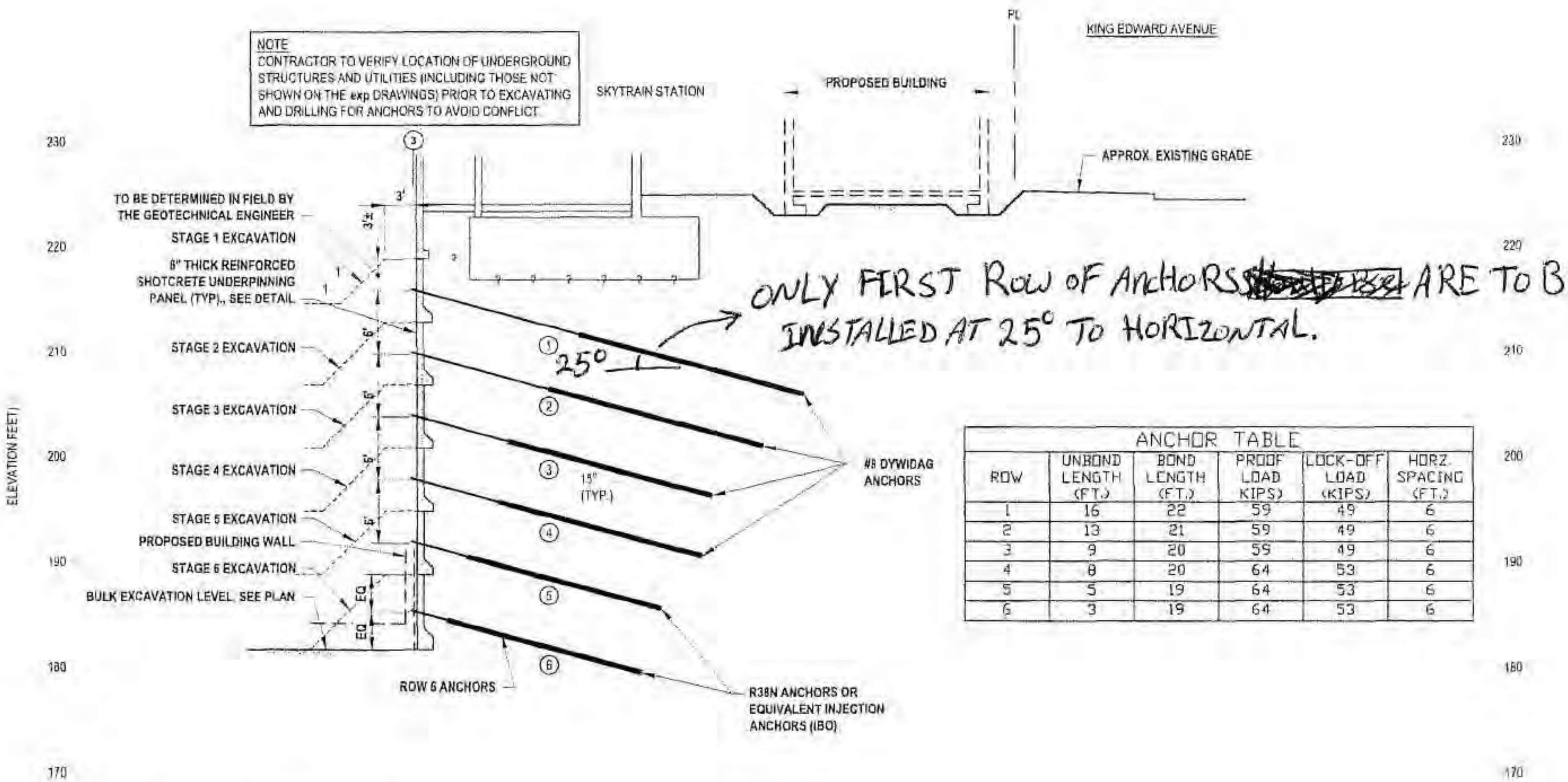

ANCHOR TABLE					
ROW	UNBOND LENGTH (FT.)	BOND LENGTH (FT.)	PROOF LOAD KIPS)	LOCK-OFF LOAD (KIPS)	HORZ. SPACING (FT.)
1	16	22	59	49	6
2	13	21	59	49	6
3	9	20	59	49	6
4	8	20	64	53	6
5	5	19	64	53	6
6	3	19	64	53	6

① Issued June 29, 2015

SECTION "7"

exp Services Inc.

K.S. HUI 24938 — PROFESSIONAL ENGINEER

MG
GM
KSH

9	ISSUED FOR CONSTRUCTION	2015-05-22
8	TELUS DUCTS ADDED IN LANE	2015-05-21
7	SEWER MANHOLE LOCATION REVISED	2015-04-29
6	RE-ISSUED FOR BUILDING PERMIT	2015-03-05

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VAN-00217815-A0

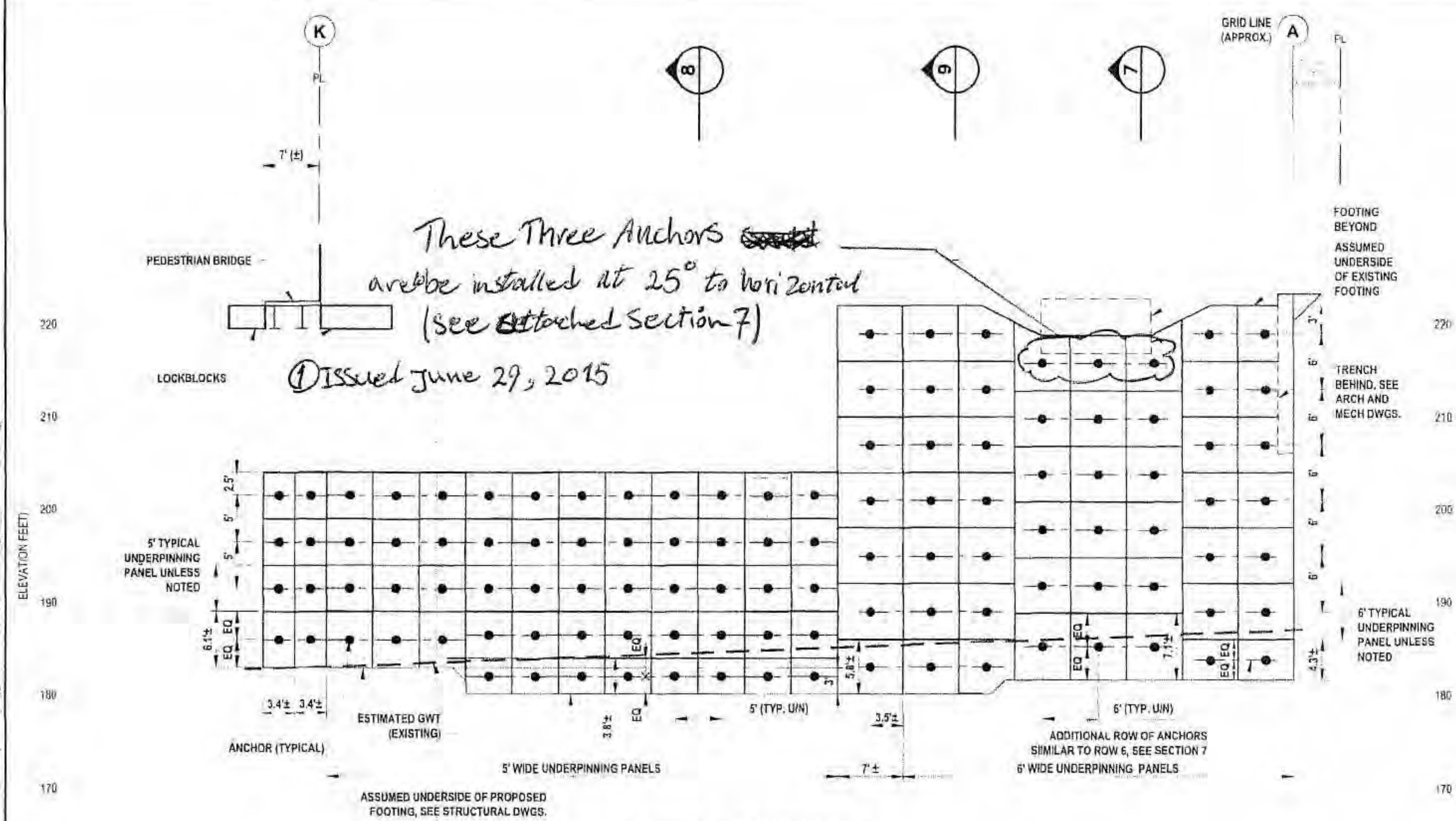
2014-05-16

BULK EXCAVATION SHORING SECTION "7"

1"=10'

D. G. G. Watt ... 2015

"Sketch 1"



ELEVATION LOOKING SOUTH

exp Services Inc.

MG
GM
KSH

9	ISSUED FOR CONSTRUCTION	2015-05-22
8	TELUS DUCTS ADDED IN LANE	2015-05-21
7	SEWER MANHOLE LOCATION REVISED	2015-04-23
6	RE-ISSUED FOR BUILDING PERMIT	2015-02-05

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BULK EXCAVATION SHORING
ELEVATION LOOKING SOUTH

2014-05-16
1"=10'

"Sketch 2"

exp.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WTL Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: June 29, 2015
CC: ITC
FROM: Mahdi Hosseyni & Graeme Macleod
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring at west side - next to the lane.

LOCATION:
4083 Cambie St., Vancouver, BC.

OBSERVATIONS:

Further to ITC Superintendent's (Mr. Mitchell Scott) email dated Jun 26, 2015 regarding vertical shotcrete and cut at west side of the excavation (next to the lane), exp was on site (Jun 26, 2015) to review the excavation shoring.

Required revisions of shoring design at west side were made. Three attached sketches provide new recommendation for vertical cut slope next to the lane. Additional Reinforcing from top of first Row of Anchors to existing Ground elevation all along the lane are needed as shown in the attached sketches. (sketche 1 & 2 and 3). The additional Reinforcing shall be 15M @ 12" c/c as shown in the sketches.

Horizontal Spacing from existing Fence to face of the excavation was about 16", so 1H:1V as proposed in Shoring Desing Drawing needed to be revised.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WTL Leung Architect INC.
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio Pavi & Mitchell Stott

PROJECT NO.: VAN-00217815-A0
DATE: 2015-06-30
FROM: Mahdi Hosseyni & Graeme Macleod

SERVICE PROVIDED: Review of shoring construction at East side (next to Cambie St.)
LOCATION:
4083 Cambie St., Vancouver, BC

OBSERVATIONS:

• Mitchell Scott of ITC (Superintendent) ~~added~~ informed exp that the last four Anchors of first Row at East side (next to exsiting Air Shaft as shown in the attached Drawing sketch), north portion collapsed During Drilling. It seems the area next to the Air shaft (Translink property) was backfill with Sand and Gravel.

Exp was on site on Tuesday June 30, 2015 to Review the shoring constr and the issue. Anchors of first Row at East side are #8 DYWIDAG Required revisions of shoring Design at north portion of East side were made and Anchors were replaced with hollow bar IBO R32- as shown in the attached sketch 1. (one sketch is attached)

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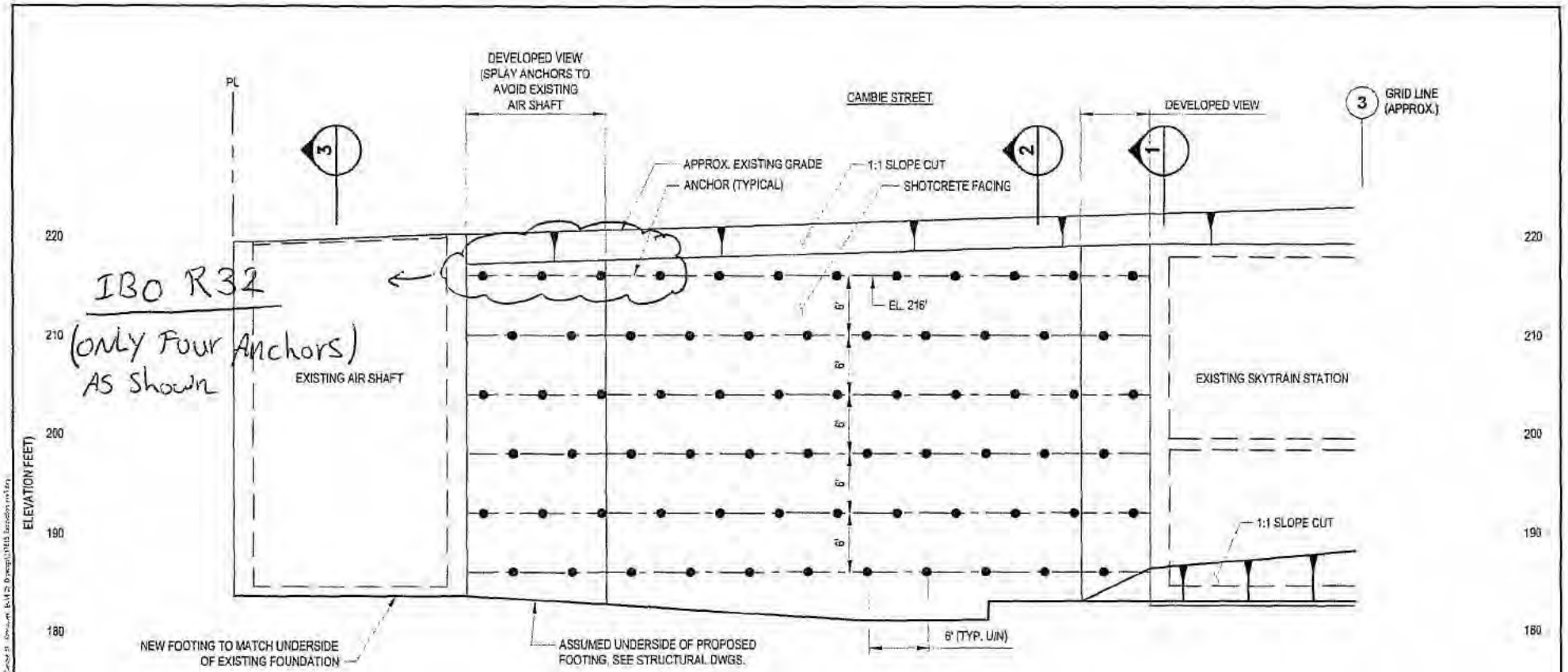

ELEVATION LOOKING EAST

"SKETCH 1" (attached to memo dated June 30, 2015)

exp Services Inc.
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Fax 604-874-3358
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DRN	DES	CHK
MG	GM	KSH

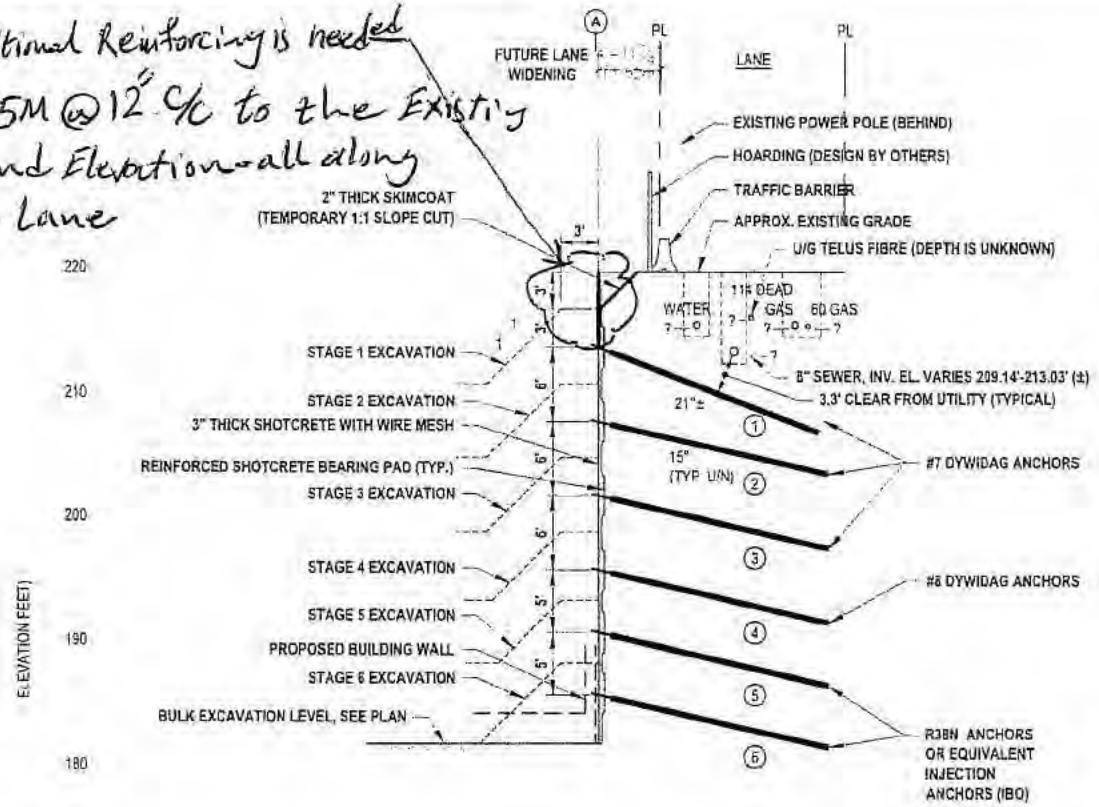
REVISIONS		
NO.	DESCRIPTION	DATE
3	ISSUED FOR BUILDING PERMIT	2014-11-04
2	REVISED TO CURRENT ARCHITECTURAL PARKING PLANS	2014-10-08
1	ISSUED FOR REVIEW	2014-08-22

CLIENT: YUANHENG CKE DEVELOPMENTS LTD
PROJECT: COMMERCIAL & MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 4099 CAMBIE, VANCOUVER, B.C.
PROJECT NO.: VAN-00217815-A0

BULK EXCAVATION SHORING
ELEVATION LOOKING EAST

DATE: 2014-05-16 | SCALE: 1"=10' | DWG. NO.: G11

Additional Reinforcing is needed
2-15M @ 12" c/c to the Existing
Ground Elevation-all along
the Lane



NOTES
1. CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND STRUCTURES AND UTILITIES (INCLUDING THOSE NOT SHOWN ON THE exp DRAWINGS) PRIOR TO EXCAVATING AND DRILLING FOR ANCHORS TO AVOID CONFLICT.
2. EXCAVATION AND SHORING DESIGNED FOR NORMAL TRAFFIC ONLY. FOR CONSTRUCTION MACHINES AND TRAFFIC, APPROVAL BY THE GEOTECHNICAL ENGINEER IS REQUIRED. ADDITIONAL SHORING MAY BE REQUIRED.

ANCHOR TABLE

ROW	UNBOND LENGTH (FT.)	BOND LENGTH (FT.)	PROOF LOAD KIPS)	LOCK-OFF LOAD (KIPS)	HORZ. SPACING (FT.)
1	1	18	16	13	4.5
2	1	18	18	15	4.5
3	1	18	25	21	4.5
4	1	18	33	26	4.5
5	1	18	44	36	4.5
6	1	18	55	45	4.5

NOTE: (see Attached Fig G13) & The Memo
① Issued June 29, 2015

SECTION "6"

"Sketch 1"

D. G. E. MacLeod June 30/15

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MG
GM
KSH

9	ISSUED FOR CONSTRUCTION	2015-05-22
8	TELUS DUCTS ADDED IN LANE	2015-05-21
7	SEWER MANHOLE LOCATION REVISED	2015-04-24
6	RE-ISSUED FOR BUILDING PERMIT	2015-03-05

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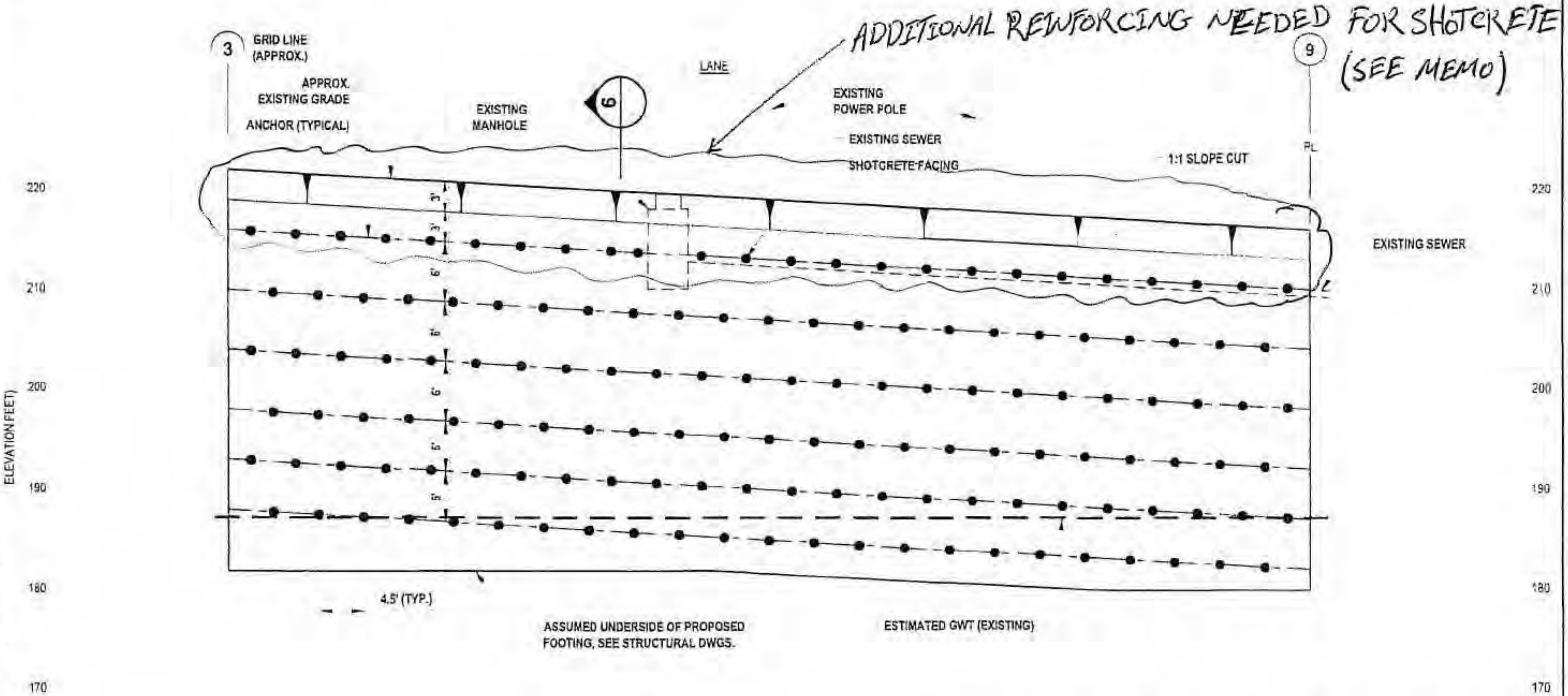
COMMERCIAL & MULTI-FAMILY RESIDENTIAL DEVELOPMENT, 4083 CAMBIE, VANCOUVER, B.C.

BULK EXCAVATION SHORING SECTION "6"

VAN-00217815-A0 | 2014-05-16 | 1"=10'



ELEVATION LOOKING WEST - Location of additional Rebar for Shotcrete

NOTE:

- Additional Reinforcing 15M @ 12" o/c are needed to be installed Along the lane as shown is "section 6" (see attached)

exp. exp Services Inc.

PROFESSIONAL ENGINEER K.S. HUI 24938

MG	9	ISSUED FOR CONSTRUCTION	2015-05-22
GM	8	TELUS DUCTS ADDED IN LANE	2015-05-21
KSH	7	SEWER MANHOLE LOCATION REVISED	2015-04-29
	6	RE-ISSUED FOR BUILDING PERMIT	2015-03-05

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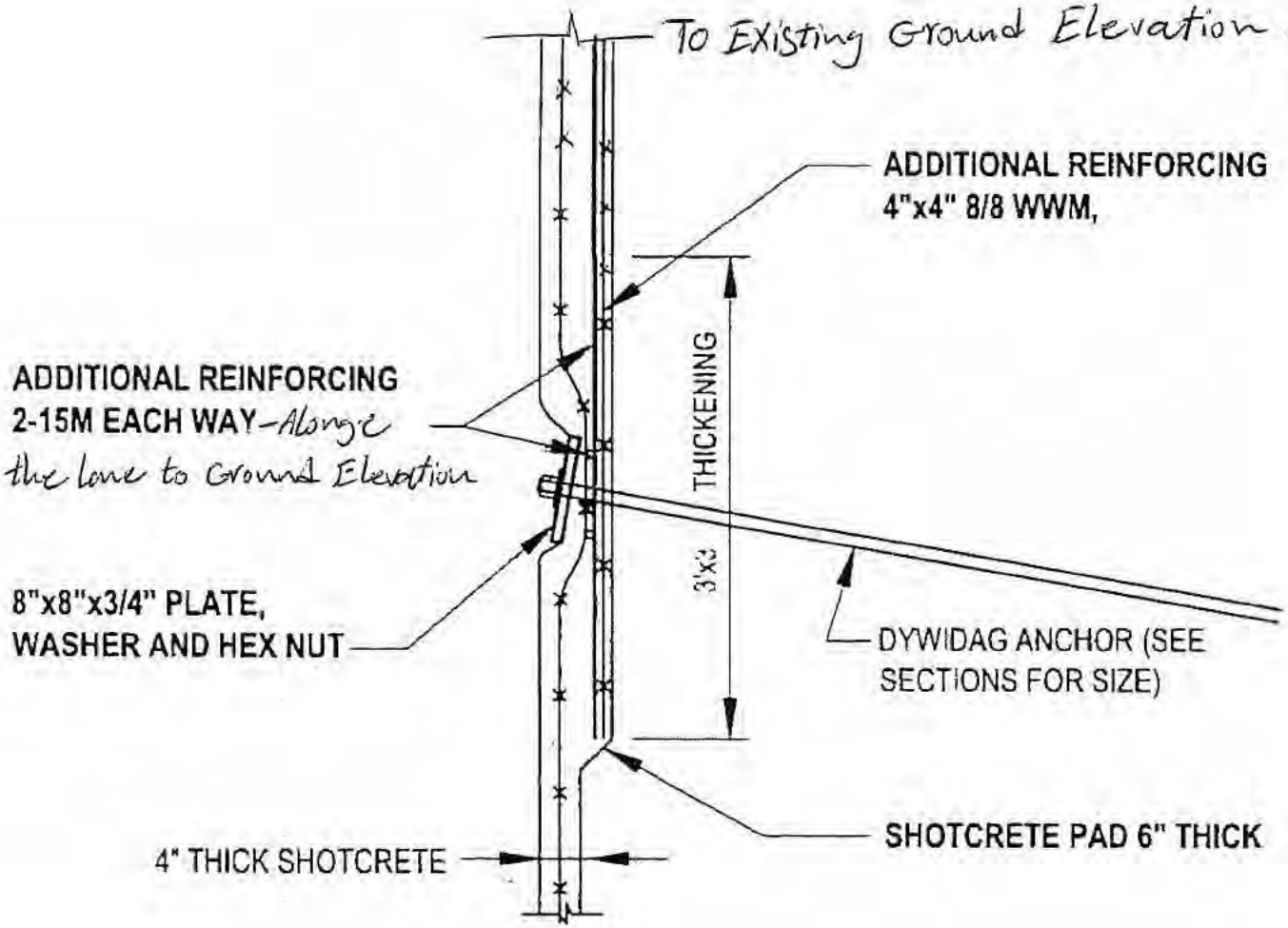
BULK EXCAVATION SHORING
ELEVATION LOOKING WEST
2014-05-16 1"=10'

① Issued June 29, 2015

"Sketch 2"

D. G. MacLeod



SHOTCRETE BEARING PAD SECTION &

ADDITIONAL REINFORCING AT EAST SIDE

① issued: June 29, 2015

"Sketch 3"

exp.

FIELD MEMO
62001

page 1/2

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WTL Leung Architect Inc.
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio Pavi & Mitchell Scott

PROJECT NO.: VAN-00 207815-A0
DATE: July 3, 2015
FROM: Mahdi Hosseyni and Graeme Macleod

SERVICE PROVIDED: Review of Temporary Shoring construction and Anchor Testing, first Row of Anchors

LOCATION: 4083 Cambie St., Vancouver, B.C.

OBSERVATIONS:

Exp was onsite at 7:20 am on July 3rd, 2015 to test anchors of Temporary shoring at above reference site.

→ East Side (next to Cambie St.): Anchor are #8 DYWIDAG, however, four Anchor at north portion of excavation (next to exisiting air shaft) were replaced by R32 hollow bar R32, as the drilled holes were collapsed and were hard to keep the hole open (see exp's Field Memo dated June 30, 2015).

- Two Anchor (one #8 and one R32) were tested to 44 Kips and lock-off at 37 Kips as specified on the shoring Drawings and stated the Design Requirment.

→ North Side: Anchors are Bar #8 DYWIDAG with 3" bond grout.

- 5 Anchors were tested to 44 Kips and lock-off at 37 Kip

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WTL Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 3, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of temporary Shoring and Anchor Testing at First Row of Anchors.

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

as specified in Shoring Design Drawings and met the Design Requirment

West Side:

- Anchors are Bar #7 DYWIDAG at 4.5 ft horizontal Spacing with 3" bondgrout.
- 4 Anchor were tested (first Row of Anchors) ato 16 kips and lock off at 13 kips as specified in shoring Design Drawing and stated the Design requirment.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WTL Leung Architecs
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio Pavi & Mitchell Scott

PROJECT NO.: VAN-00217815-A0
DATE: July 3, 2015
FROM: Mahdi Hosseyni & Graeme Macleod

SERVICE PROVIDED: Review of Shoring Construction (Temporary) at west side

LOCATION: 4083 Cambie St., Vancouver, BC

OBSERVATIONS:

Furthe to question raised by shoring construction sub-Contractor (A&A) regarding additional support at location of power poles along the lane at west side. Exp was on site and reviewed the shoring construction. The power poles were located at about 5' from face of excavation.

The sub-Contractor (A&A) informed exp that results of their Hydro-Vac indicated that the water line is located at depth 5ft (Five ft) and 7'ft from face of the Excavation.

In order to provide required Clearance from utility lines, required revision of shoring design at west side were made. In General "Typical power pole support Detail as provided in shoring Design Drawing shall be followed. Howere, Anchor length for first Row should be installed

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Signature

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FIELD MEMO

62004

page 2/2

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 3 - 2015
CC: ITC
FROM: Mahdi Hosseyni and Graeme Macrae
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of shoring at west side (next to power poles along the lane)
LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

at 30 degree to horizontal as shown in the attached "Sketch 1" with total bond length of 10ft (Total length 10ft & Bond Legth 10ft). The first Row of the support Anchors shall be installed at 3'ft below exiting Ground as shown in the attached "Sketch 1".

(one Sketch attached)

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exp Services Inc. Per

Signature

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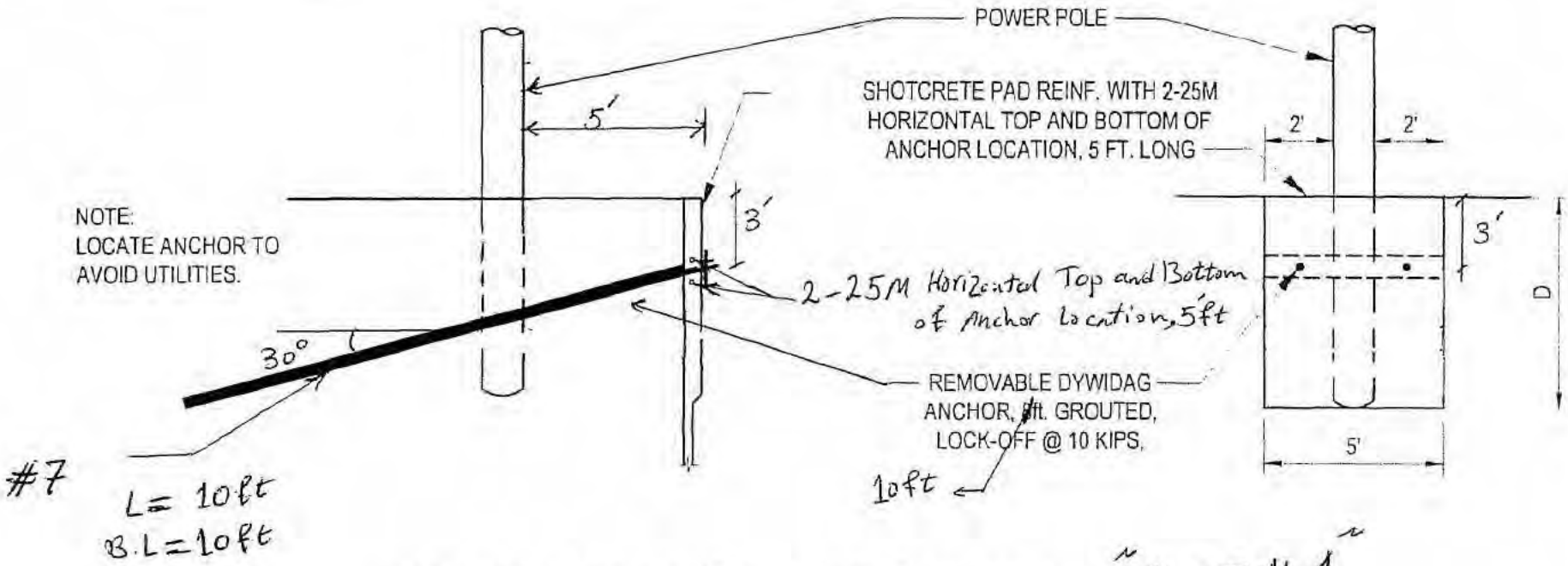
Distribution: White – Client Canary – Field Pink – File Golden Rod - Book

NOTE
CONTRACTOR TO VERIFY LOCATION OF UNDERGROUND STRUCTURES AND UTILITIES (INCLUDING THOSE NOT SHOWN ON THE **exp** DRAWINGS) PRIOR TO EXCAVATING AND DRILLING FOR ANCHORS TO AVOID CONFLICT.



TYPICAL POWER POLE SUPPORT DETAIL – "SKETCH 1"

exp.

FIELD MEMO
62005

page 1/3

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Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: 2015-07-04
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi, Mitchell Scott

SERVICE PROVIDED: Review of Shoring Construction (Temporary) and Anchor Testing
LOCATION: 4083 Cambie St., Vancouver, BC

OBSERVATIONS:

Exp was on site at 8:50 am on Saturday July 4, 2015 to Review Temporary Shoring construction and Anchor testing.

→ East side: - one Anchor #8 DYWIDAG was tested to 44 kips and lockoff at 37 kips as specified on the Shoring Design Drawings and stated Design Requirment.
- one IBO Anchor # R32 was tested to 44 kips and lockoff at 37 kips and stated Desig Requirment as shown on Design Drawings.

→ North side: - 3 (Three) Anchors #8 DYWIDAG were tested to 44 kips and locked-off at 37 kips and stated Desig Requirment as shown on Design Drawings. (at location north neighbouring Building Footing)
- NOTE: Rebars spacing of underpining were observed to be about

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62006

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CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 4, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

14-15". In the Desig Drawing it shows 12" at upper part and at location of Anchor plat 8" inches. The Rebar spacing of under pining at East portion (2 phase were not based on Design Drawings.

- 2 Anchors #8 DYWIDAG were tested to 44 kips and locked-off at 37 kips and Stated Design Requirment as show on Design Drawing. (out side of north neighbouring building - west portion)

West side: Four Anchors #7 were tested to 26 kips and locked off at 13 kips horizontal spacing were about 45ft and met the Design requirments as stated on Design Drawings.

NOTE: At location of power poles at this side (Along the lane) There a typical detail for Additional Anchors at sides of the power poles and additional rebars as shown in Drawing G15. This detail were

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CLIENT: WT leung Architect Inc
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning
DATE: July 4, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St., Vancouver, BC

OBSERVATIONS:

not stated the design requirments. The contractor representatives (Jordan and Nik) were notified and instructed to follow design drawings. Desig Revision (only Angle of Anchors to horizontal) was provided in a sparate memo. The subcontractors site supervisor (Alan) was NOT on site (on saturday July 4 at 9-10:45 am) so he was informed of the missing portion of Additional Anchors at power pole location.

NOTE: at north side (west portion of north neighbouring building) additional Anchors (Soil nail) were proposed (memo date June 26, 2015 by exp). one soil nail at East corner of the concrete slab was missed, the subcontractor (A&A) representatives were informed to put the Anchor in place befor underpining completetion.

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FIELD MEMO
62008

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architect Inc.
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio pavi & Mitchell Scott

PROJECT NO.: VAN-00217815-00
DATE: July 6, 2015
FROM: Mahdi Hosseyni

SERVICE PROVIDED: Review of Shoring (Temporary) construction and Anchor Testing

LOCATION:
4083 Cambie St, Vancouver, BC

OBSERVATIONS:

EXP was on site at 7:25 am on Monday July 6, 2015 to Review temporary shoring costruction and Anchor Testing.

observation and Testing Summary:

→ East side: - 2 Anchors #8 DYWIAG were tested (At south portion) to 44 kips and locked-off at 37 kips as shown on shoring desig drawing and stated the desig requirments.

- one #R32 Anchor was tested to 44 kips and locked-off at 37 kips and Stated Design requirment.

NOTE: one Anchor #R32 at location of Air shaft area (north portion of east side) as shown in the attached sketch, was installed behind the surface of shotcrete into the excavation as shown in the attached photo. The subcontractor representative

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62009

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CLIENT: WT leung Architect Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 6, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED: Review of temporary shoring construction and Anchor Testing

LOCATION: 4083 Cambie St., Vancouver, BC

OBSERVATIONS:

was informed and instructed to fixed that Anchor to avoid interruption or difficulty with structural construction. (one sketch and one photo are attached).

North side: - 4 Anchors #8 were tested to 44 kips and locked off at 37 kips and stated Design requirments.

NOTE: one Soil Nail (Memo June 26, 2015) at east of Concrete slab was not instal (see attached photo) Response to RFI0003 by exp

~~west side~~

West side: - 6 Anchor #7 were tested to 16 kips and locked-off at 13 kips and Stated Desig requirments.

NOTE: Additional Soil Nail at location of power poles along the lane (at west side) as shown in Design Drawing G15 were not installe

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62010

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CLIENT: WT Leung Architect Inc.
ATTENTION: Konning Tam
CC: ITC
ATTENTION:

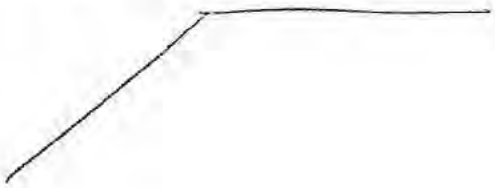
PROJECT NO.: VAN-00217815
DATE: July 6, 2015
FROM: Mahdi Hosseyni

SERVICE PROVIDED: Anchor Testing and Shoring Costruction Review

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

The additional Soil Nails at location of the powe poles were reviewed and Revised as per exp's memo dated July 3, 2015. The sub-contractor (A&A) representative was informed for the missing soil nails on saturday (July 4th) and subsequently on Monday July 6, 2015 (see attached photo)



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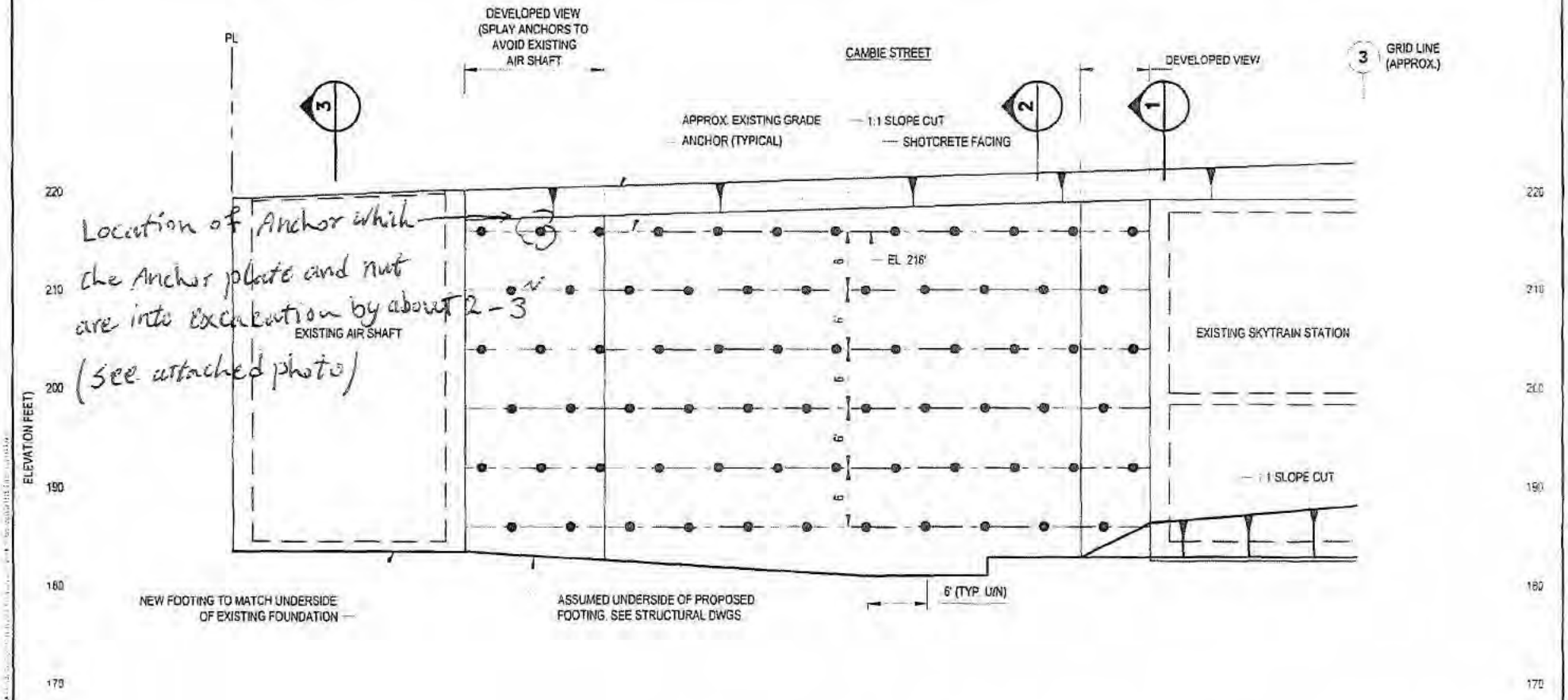

ELEVATION LOOKING EAST – "SKETCH 1" attached to Memo dated July 6, 2015

exp Services Inc.

MG			
GM	3	ISSUED FOR BUILDING PERMIT	2014-11-04
KSH	2	REVISED TO CURRENT ARCHITECTURAL PARKING PLANS	2014-10-08
	1	ISSUED FOR REVIEW	2014-09-22

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VAN-00217815-A0

BULK EXCAVATION SHORING
ELEVATION LOOKING EAST

2014-05-16 | 1"=10' | G11

SOWING ANCHOR OUT OF SHORING DESIGN SURFACER BY ABOUT 2-3INCHES


ADDITIONAL ANCHORS AT LOCATION OF
POLER POLES WERE NOT INSTALLED

exp.

FIELD MEMO

62011

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 08-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary shoring Construction and Anchor Testing
LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to review temporary shoring construction at above reference sites. 10 Anchors were Tested as follows.

North Side: one #8 DYWIDAG was tested to 44 kips and locked off at 37 kips. The anchor stated the design specification as specified in the shoring Design Drawing.

East side: one #8 DYWIDAG was tested to 44 kips and Lockedoff at 37 kips and stated Design Requirments.

NOTE: one R32 IBO Anchor at north portion was tested to 44 kips and before reaching to this load, the Anchor failed.

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62012

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects Inc
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 08-2015
CC: ITC
FROM: Mahdi Hossaini
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of temporary shoring construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

NOTE: The subcontractor representative (A&A) and the Site Superintendent (ITC) was advised to drive a new Anchor IB0 R32 as close as possible to the failed Anchor.

West side.
- 8 Anchors #7 were tested to 13.5 kips and locked off at 10 kips as required in the design Drawings.
- These Anchors are additional Anchors at location of the power poles.

NOTE: In the design Drawing it was stated that these Anchors should be Removable anchors, however, the sub contractor (A&A) informed us that the Anchors at second Row are not Removable as shown (see next page)

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62013

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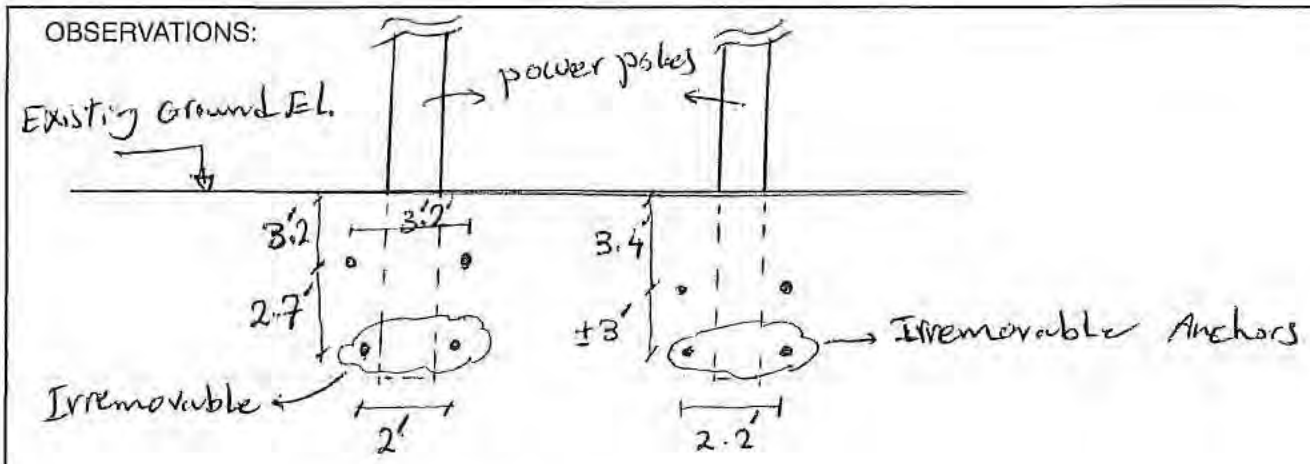
CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 08-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Shoring Construction

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:



Looking West

NOTE: The north neighbouring Consultant representative (Horizon Engineering) visited the shoring ~~work~~ at north side.

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FIELD MEMO

62014

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 10, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

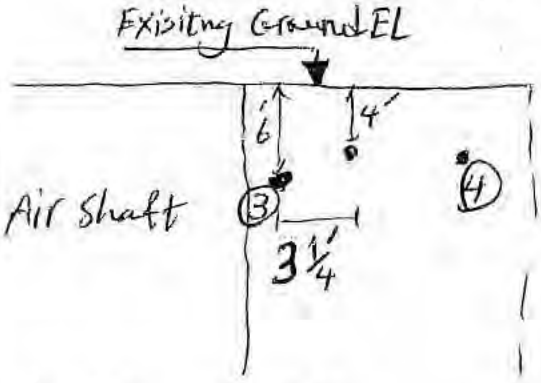
SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing

LOCATION: 4083 Gambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site on July 10, 2015 to review temporary shoring construction and Anchor Testing. 20 Anchors were tested and locked as per design shoring Drawings as follows:

East side: • 2 Anchor #8 were tested to 44 kips and locked-off at 37 kips and stated design requirment.



Looking East

• one Anchor R32 (designated ④ on the sketch) was installed next to the failed Anchor on July 08, 2015. This Anchor was tested to 44k, and locked off at 37 kips and Stated design requirment.

• one Anchor R32 (designated ③ on the sketch)

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62015

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CLIENT: WT leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 10, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED: Review of Shoring & Anchor Testing
LOCATION: 4083 Cambie St, Vancouver, BC.

OBSERVATIONS:

Was not installed at Design Elevation(1' below the Design EL.). This Anchor was tested to 44 kips and locked off at 37 and stated Design requirment.

North side: - 3 Anchors #8 DYWIDAG and 5 Anchor IBO R32 were tested to 44 kips and locked-off at 37 kips and stated Design requirment as specified on the shoring Design drawings

NOTE: At north side, 10 holes were collapsed during Drilling and conventional Anchors (#8 DYWIDAG) were replaced with equivalent IBOs R32.

West side: - 6 Anchors #7 DYWIDAG were tested to 18 kips and locked-off to 15 kips and stated Design requirment.

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FIELD MEMO

62016

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CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 10, 205
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED: Review of Shoring and Anchortesting

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

NOTE:- It was observed that the Shoring Subcontractor ~~was~~ constructed the Temporary shoring at west side and north side (2nd Row of Anchors) based on "2 day sequence" which was not specified in the Shoring Design Drawing. The subcontractor representative and ITC Superintendent were informed to follow construction Staging as specified in G18 of shoring Design Drawing.

- At East side (next to Air shaft) Two Anchors (R32) were installed so that their plate and head were out of the Shotcrete face Design as shown in attached photo.

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Italian Kitchen Gallery
Anchors' head out of design surface into excavation

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62017

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CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 13 - 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of temporary Shoring Construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site at 7:30 am to Review shoring construction and Anchor Testing.

observations:

East side: - 4 Anchors Bar #8 DYWIDAG were tested to 44 kips and locked off at 37 kips and stated design requirments as stated in the shoring Design Drawings.
- 2nd row of Anchors were under construction.

North side: - 3 Anchors #8 DYWIDAG and 4 Anchors R32 IBO were tested to 44 kips and locked off at 37 kips as specified in the shoring Design Drawing and stated Design requirments
- Two boulders of about 3-5 ft were outcroped at about

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62018

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CLIENT: WT Leung Architects Inc
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: July 13-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Shoring and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

elevation of sencound Row of Anchors. The subcortctore (A&A) personnel were Drilling into ~~the~~ the rocks. They ~~were~~ were advice to prevent making any hole under footings of north neighbouring Building.

west side:

- ~~87~~ Anchors Bar ~~#87~~ DYWIDAG were tested to 18 Kips and Locked off at 15 kips (2nd row of Anchors) and stated Design requirments as specified on the Design Drawings.
- 1 (one) Anchor #7 DYWIDAG was tested to 16 Kips and ~~locked~~ at 13 Kips (First Row of Anchors) and indicated Design requirment as shown on the shoring Design Drawing

NOTE: For Futture Testing or Retensioning, head of Firs two rows (Top Two rows) should not be cut at this side.

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FIELD MEMO
62019

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CLIENT: WT Leung Architect Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 17- 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi and Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing
LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site at 7:30 am on July 17, 2015 to Review shoring constru and Achors Testing.

Observations:

East Side: - 4 Anchors #8 DYWIDAG were tested to 44 kips and locked-off at 37 kips and Stated the Design requirments.

NOTE: At the location next to the "Air Shaft" spacing were not based on the Design shoring Drawing. In addition vertical Arrangment of Anchors were not ~~be~~ matched with shoring Design Drawings. The subcontractor's representative was told to fix the problem. He expressed they are going to add (install) one more anchor at

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT:

PROJECT NO.: VAN-00217815

ATTENTION:

DATE:

CC:

FROM:

ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver

OBSERVATIONS:

- each row (at this location) with an A&A cost. The additional Anchor should be installed based on specifications as shown in the shoring Design drawings. for the same Row.
- Concrete from the shoring of East Neighbouring property (i.e. Candda Line) was observed at east side, next to the air shafts. From air shaft to the 6th Anchor to the south - about 35ft.

North side: - one #8 DYWIDAG and 6 IBO R32 were tested to 44 kips and locked-off at 37 kips. The anchor stated the Design requirments.

NOTE: As the ground was gravely the conventioned #8 Anchors were not be appropriate, so Anchors were replaced with equivalent

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT:
PROJECT NO.: VAN-00217815
ATTENTION:
DATE:
CC:
FROM:
ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver

OBSERVATIONS:

IBO R32.

- At north side at elevation of 3rd Row of Anchors, double meshes were used because of gravely ground.

West side: - 6 Anchors #7 DYWIDAG were tested and locked off as specified on the shoring Design Drawings and stated Design Requirments.

NOTE: Existing Gravelly ground at this elevation (3rd Row of Anchors) required Double meshes for shotcrete. Double meshes were used for central and north portion of West side.

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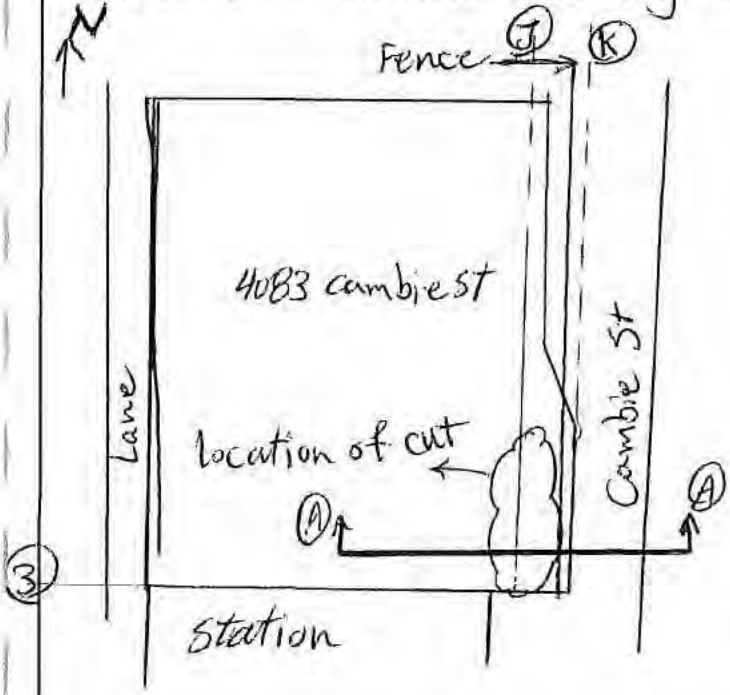
CLIENT: WT Leung Architect
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio Pavi & Mitchell Scott

PROJECT NO.: VAN-00217815
DATE: July 20 - 2015
FROM: Mahdi Hosseyni & Graeme Macleod

SERVICE PROVIDED: Review of Temporary cut slope
LOCATION: 4083 Cambie St., Vancouver, BC

OBSERVATIONS:

Exp was on site to review temporary cut slope at South_East corner next to the station Building at Grids #(3) and (K) & (J) as shown.



Observations

- A vertical cut of 9ft height and 9ft wide was observert at SE corner as shown. Crest of the cut was about 7ft away from the existing fence Along the Cambie St.

Next page →

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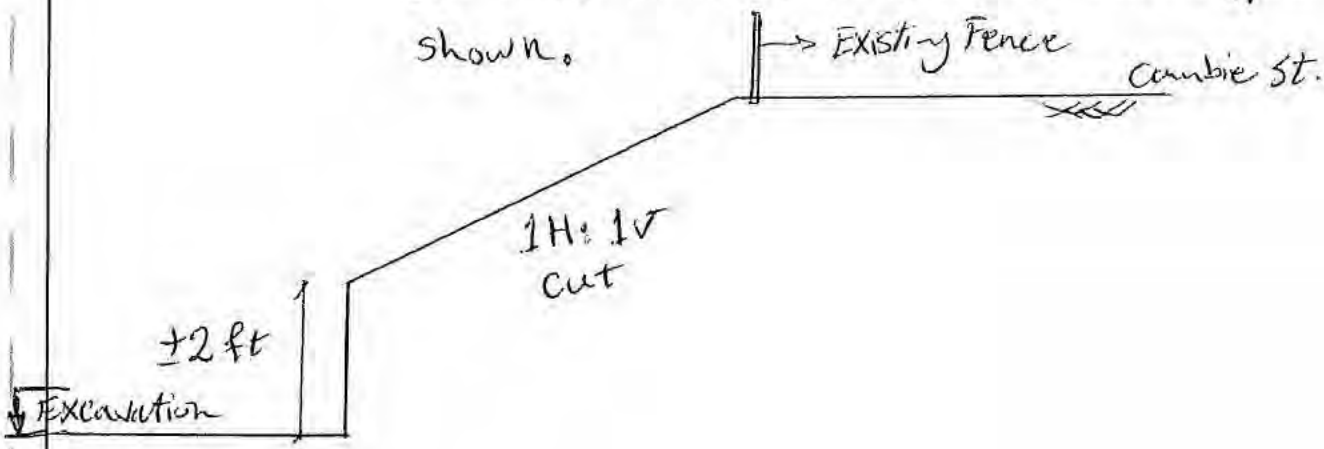
CLIENT: WT leung Architect Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 20, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED:

LOCATION:

OBSERVATIONS:

Conclusions: Temporary cut slope should not be steeper than 1V:1H, however, there is not enough room for 1:1 cut slope. The slope cut could have 2' vertical cut and sloped 1H:1V as shown.



Looking North - Section A-A (page 1)

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Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: W T Leung Architects Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 29, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Chris McGee

SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to Review Temporary Shoring Construction at above mentioned site and Complete Anchor Testing as indicated on the shoring design Drawings.

observations and conclusions:

North side: - 7 IBO R32 Anchors were tested to 44 Kips and locked off at 37 Kips and indicated the design requirment as specified on the shoring Design Drawings.

West side: - 5 Anchors #7 were tested to 25 Kips and locked-off at 21 Kips (3rd Row of Anchors) and showed the design requirment as specified on the Drawings.

NOTE: Horizontal spacing for Two Anchors was observed to be more

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CLIENT: WT Leung Architects Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 29, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Chris McGee

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

than 4.5 ft as specified on the shoring Design Drawings.

East side: - 2 Anchors #8 DYWIDAG were tested to 44 kips and locked-off at 37 kips and met the Design requirements as specified on the shoring Design Drawings.

NOTE: Along East side of excavation (next to Cambie St), Two layer of concrete backfill as shown on the attached photos were observed. It seems the concretes are part of backfill along the canada line; However, need more investigation.

"Two photos are enclosed"

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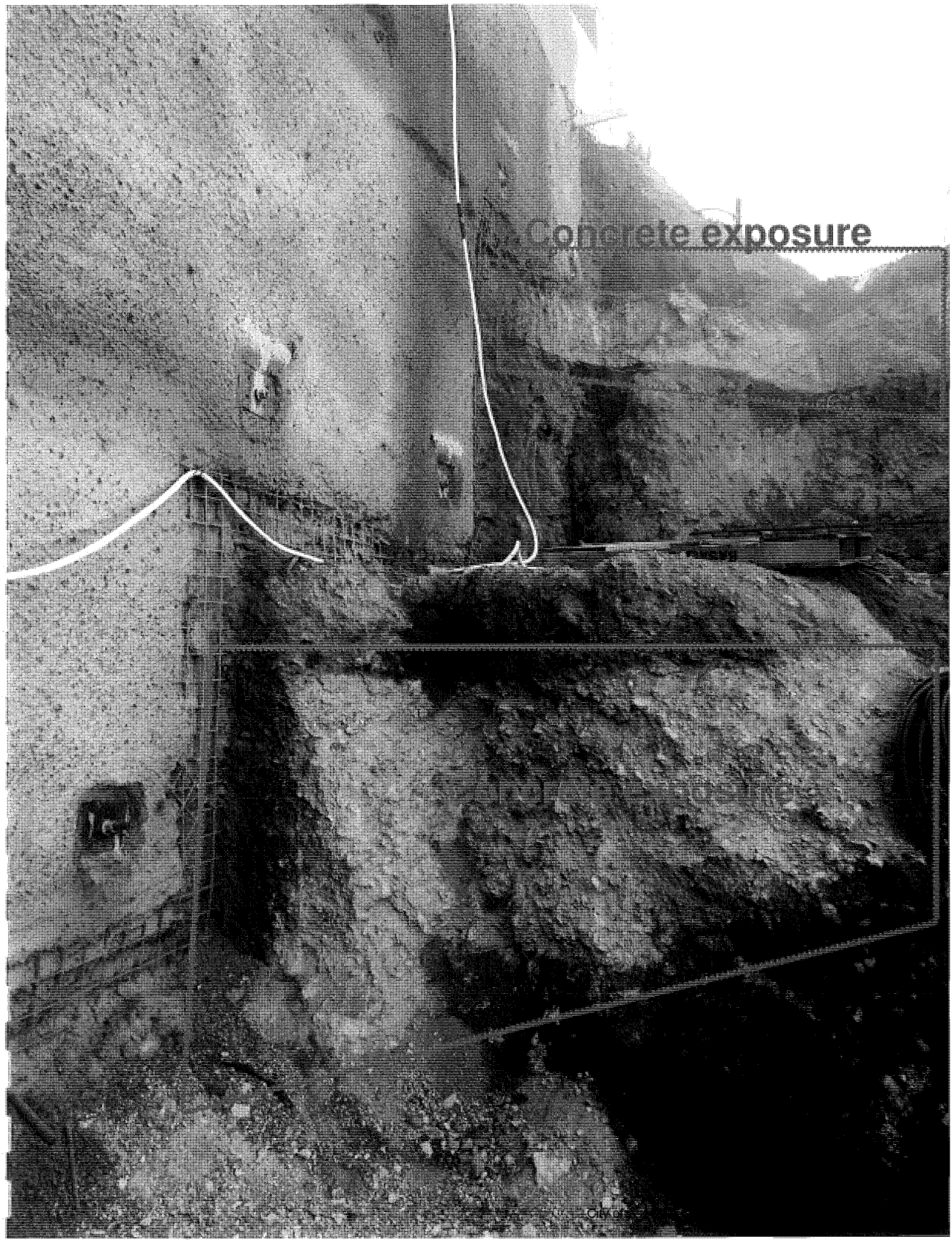
concrete exposure

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architect INC.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 30, 2015
FROM: Mahdi Hosseyni
CC: ITC
ATTENTION: Antonio pavi & Chris McGee

SERVICE PROVIDED: Review of Shoring Construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

EXp was on site to Review Temporary Shoring Construction and conduct Anchor Testing.

Observation and Conclusion:

West side: 2 Anchors #8 DYWIDAG were tested to 16 kips and locked-off at 13 kip and stated design requirments as specified on the Drawings.

South side: 2 Anchors #9 DYWIDAG were tested to 59 kips and locked-off at 49 kips and stated Design requirments as specified on the Drawings.

NOTE: Because of existing backfill Sand underneath of the station building Double mesh was required. Therefore thickness of the underpinning increases to about 11" to 14". The Design thickness was 8".

East Side: one Anchor #8 DYWIDAG was tested to 44 kips and locked-off to 37 kips and stated Design requirments as specified on the Drawings.

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CLIENT: WT Leung Architects, Inc.
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio Pavi &

PROJECT NO.: VAN-00217815-A0
DATE: July 31, 2015
FROM: Mahdi Hosseyni

SERVICE PROVIDED: Review of construction of Temporary shoring Design.

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

EXP was on site to review Construction of Temporary Shoring at above noted site.

observation:

South side:
- Reinforcing Rebars for underpinning were not based on exp's shoring design drawings.
- Bearing pad rebars were missed for location of three Anchors.
- Rebar spacing were not matches the shoring design Drawings
- Bearing pad rebars were observed to be 34" while Desing drawing show 36".

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: July 31, 2015
CC: ITC
FROM:
ATTENTION: Antonio Pavi

SERVICE PROVIDED:

LOCATION:

OBSERVATIONS:

observations:

West side: - Rebar for continued Bearing pad were not based on shoring Desing Drawings.

- Two Bearing pad were not installed at location of Two Anchors. At south portion of west side.
- Bearing pad Rebar Arrangments have not met the shoring Desing Requirments.

conclusions and Recommendations:

(1) The shoring subcontractor should fix the rebar Arrangments based on the Shoring Design Drawings. Add the missed Bearing pads and rebars.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: W T Leung Architects Inc
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: 31 July-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Conclusion and Recommendations:

② Rebars for underpinning should be installed as per shoring Design Drawings.

③ concrete trucks and concrete pump should not be placed next to unshored excavation along the lane.

④ All Rebars for shoring, Bearing pads and UNDERPINNING should be reviewed by exp before shotcrete conducted. Exp (Mahdi Hosseyni will be available to reviewed the shoring construction 7 days.

⑤ concrete cover behind the rebars (3") should be provided as per desing Drawings.

– Five photos are attached for your information and Records.

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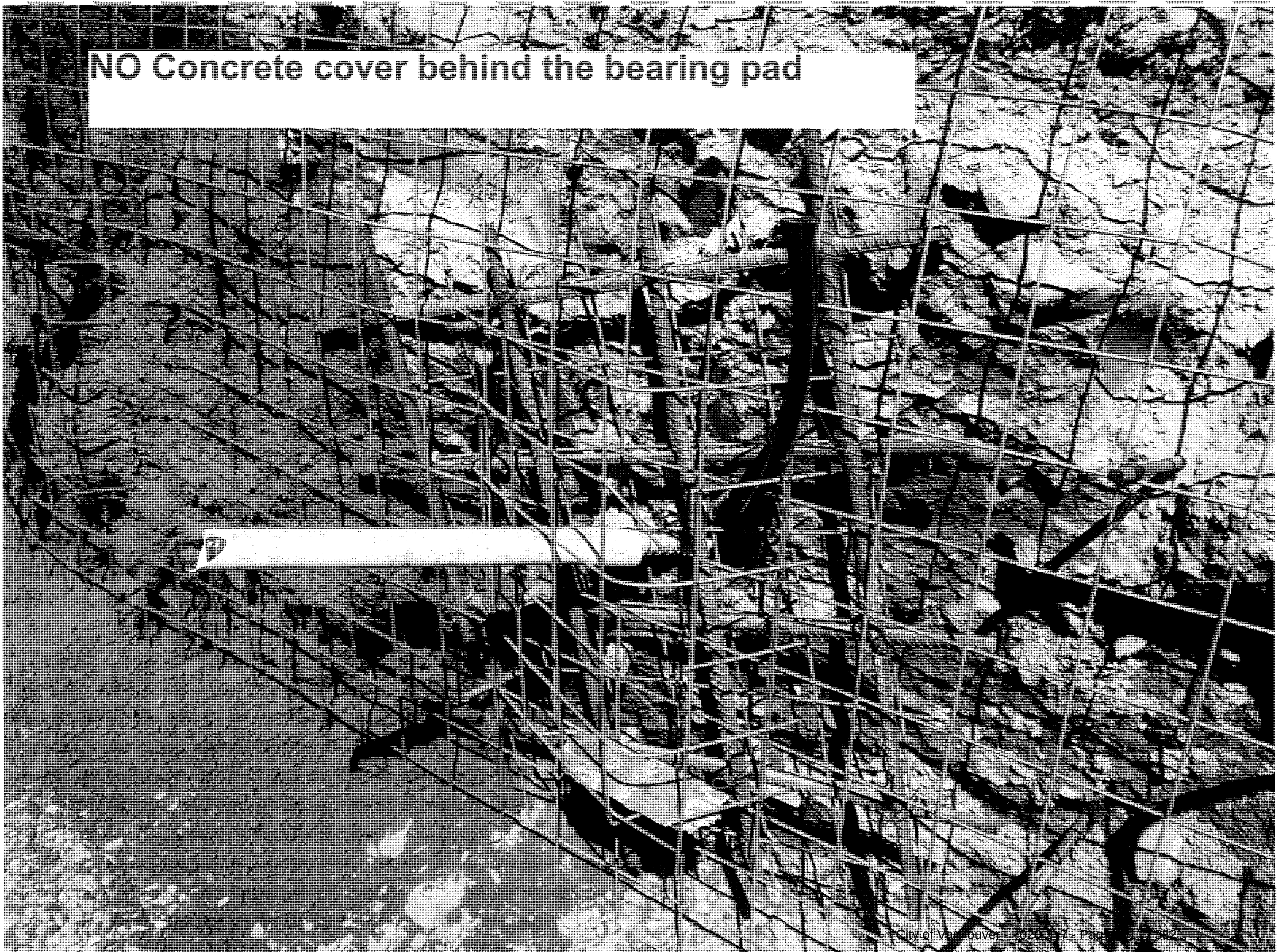
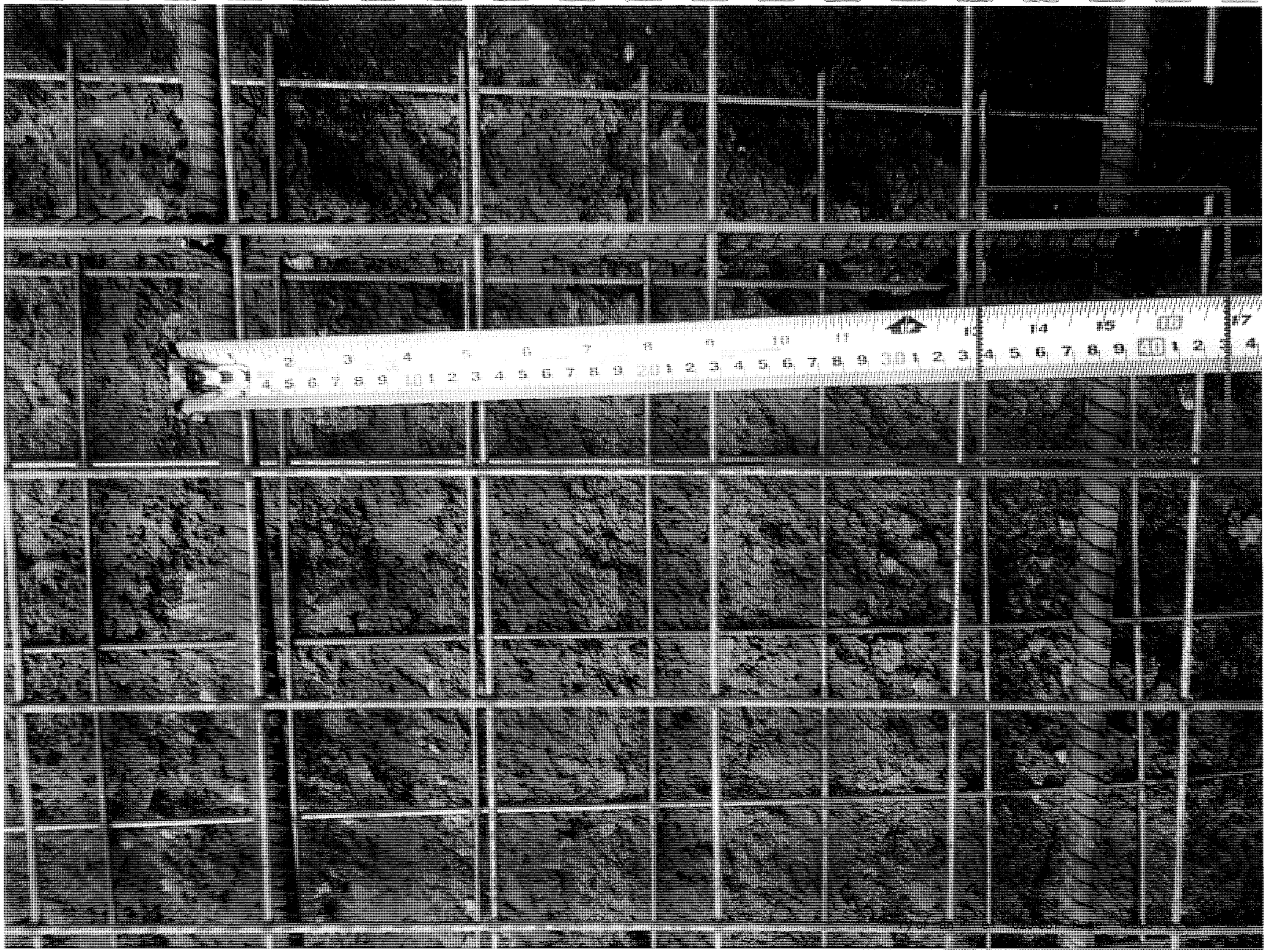
NO Concrete cover behind the bearing pad




Sheet Bearing Pad and Anchors are missing



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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 05-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio pavi & pedro Gregorio

SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing

LOCATION: 4083 Cambie st, Vancouver, BC

OBSERVATIONS:

Exp was on site to review Temporary construction and conduct Anchor Testing at above mentioned site.

Observations:

West side: - 4 Anchors #8 DYWIDAG at first row (sout portion) were tested to 16 kips and locked-off at 13 kips and stated Design Requirments.

- 2 Anchors #7 DYWIDAG at 3rd row were tested to 25 kips and locked-off at 21 kips and stated Design requirments as specified on the Design Drawings.

South side: - 5 Anchors #9 DYWIDAG (west portion) were tested to 59 kips and locked-off at 49 kips and stated Design requirments.

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CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 05-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St

OBSERVATIONS:

East side: - 2 removable Anchor #8 DYWIDAG at the location of the Trailer bridge (north end) were tested to 15 kips and locked-off at 11 kips as per Design Drawings.

NOTE: These Two Anchors were design to be R32 (IBO); however, equivalent conventional #8 were used and stated Design requirments.

- 2 IBO R32 at first Row (south portion next to air shaft) were tested to 44 kips and locked-off to 37 kips and stated design requirments.

NOTE: It seems Granular back fill next to Canadaline required to change conventional Anchor (#8) to IBO.

- 1 (one) Anchor #8 DYWIDAG (3rd row) was tested to 44 kips and locked-off at 37 kips and stated Design requirment.

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CLIENT: WT Leung Architect Inc.
ATTENTION: Konning Tam
CC: ITC
ATTENTION:

PROJECT NO.: VAN-00217815
DATE: August 05-2015
FROM: Mahdi Hosseyni

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

North side: - one conventional Anchor #8 DYWIDAG (3rd row) was tested to 44 kips and locked-off at 37 kips and stated design requirments.

- one IBO R32 (3rd row) was tested to 44 kips and locked-off at 37 kips and stated design requirments.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc.
ATTENTION: Konning Tam
CC: ITC
ATTENTION: Antonio Pavi

PROJECT NO.: VAN-00217815
DATE: August 7, 2015
FROM: Mahdi Hosseyni

SERVICE PROVIDED: Review of Temporary Shoring construction

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site on August 7, 2015 to Review Temporary shoring construction at the above mentioned site.

Observations and Conclusions:

Rebar size, Spacing and arrangment of second row of Anchors were checked and stated Design Requirments as shown on the temporary shoring Design Drawings.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 11-2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site at 7:30 am for Construction Review and Anchor Testing at above subject site.

observations:

South side: - 6 Anchors #9 DYWIDAG were tested to 59 kips and locked off at 49 kips and stated Design Requirments.

side: - 3 #7 DYWIDAG (At first Row) were tested to 16 kips and locked-off at 13 kips. 7 Anchors #7 DYWIDAG (At second Row) were tested to 18 kips and locked-off at 15 kips and stated Design Requirments as specified in the Design Drawings.

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CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 11- 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION:

SERVICE PROVIDED:

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

East side: - 3 Anchors #8 DYWIDAG were tested to 44 kips and locked-off at 37 kips and stated Design Requirements.

NOTE: Exp visited the site to Review Rebar and Reinforcing Arrangme for underpinning at south side (unde the station building). The visit was conducted in the afternoon and indicated that the rebars are as according to the Shoring Design Drawings.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 11, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to Review the Temporary Shoring construction at above subject site.

observations: East side: - one Anchor #8 DYWIDAG was tested and stated Design Requirments.

- Ground slope cut for next stage was observed to be steeper than 1H:1V.

South side: Three Anchors #9 DYWIDAG weretested to 59 kips and locked-off at 49 Kips and Stated Design Requirments.

West side: Three Anchors #7 tested to 18 kips (2nd row) and Locked-off at 15 kips and stated Design Requirments.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 13, 2015
CC: ITC
FROM: Kai-Sing Hui
ATTENTION: Antoniopavi, Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring Construction

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to Review Construction of Temporary Shoring construction at above subject site. Exp agreed to chang the Anchor Installation and Shotcreting from 3 days sequencing to 2 days sqeeiung only For 3rd row of Anchors at wes side (Laneway Side) of the Excavation. For othe areas of shoring construction the Design Squencing shall be Followed, SUBJECT TO FURTHER REVIEW. Additional changes to Anchor Installation and Shotcrete Squencing is subject to site Review During Excavation for next Row of Anchors.

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62316

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☐ KAMLOOPS OFFICE
Unit 100B, 1425 Pearson Place
Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: W T Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 17, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary shoring Construction and Anchor Testing
LOCATION: 4083 Cambie St, Vancouver, Bc

OBSERVATIONS:

Exp was on site at 7:30 am to review shoring construction and, Conduct Anchor Testing at above Subject site.

Observations:

West side – 6 Anchors #7 DYWIDAG were tested to 25 kips (Anchors of the 3rd Row) and locked off at 21 kips. In addition one Anchr #7 (at 2nd row) was tested to 18 kips and locked off at 15 kips. All Anchors stated the Design Requirment as shown on Design Drawings.

South side: – 3 Anchors #9 DYWIDAG were tested to 59 kips and locked-off at 49 kips and Stated Design Requirements.

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Unit 100B, 1425 Pearson Place
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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: Aug 17, 2015
CC: ITC
FROM:
ATTENTION:

SERVICE PROVIDED:

LOCATION:

OBSERVATIONS:

East Side: one Anchor #8 by WIDAG was tested to 44 kips and locked off at 37 kips and stated Design Requirements as specified on Design Drawings.

Exp also visited the site in the afternoon to review Rebar arrangement of Temporary Shoring and Underpinning. The rebars were done in accordance to shoring Design Drawings.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: W T leung Architects, Inc.

PROJECT NO.: VAN-00217815

ATTENTION: Konning Tam

DATE: August 18 - 2015

CC: ITC

FROM: Mahdi Hosseyni

ATTENTION: Antonio pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to Review temporary shoring construction and conduct Anchor Testing at above mentioned site.

observations: East Sidee - Five (5) Anchors #8 DYWIDAG were tested to 44 kips and locked-off at 37 kips and stated Design Requirments.

South Side: TWO (2) Anchor #9 DYWIDAG were Tested to 59 Kips (at 3rd row of Anchors) and locked off at 49 Kips and stated Design Requirments as specified on shoring Design Drawings.

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: W T leung Architects, Inc.
PROJECT NO.: VAN-00217815
ATTENTION: Konning Tam
DATE: August 21, 2015
CC: ITC
FROM: Kai-Sing Hui
ATTENTION: Antonio pavi & Mitchell Scott

SERVICE PROVIDED: Review of Existing Temporary Shoring at west side where the concrete pump is located

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to Review Existing shoring at west side of the site where the sub-contractor's concrete pump has been placed.

From the information provided to us and the pumps catalog, it is understood that the weight of the pump is about 2700 kg and is supported on three jacks when operating; Two jacks at the back and one jack to the front.

In order to minimize overloading to the Existing Shotcrete wall, the concrete pump should be placed on 2"x10" Timber (wood) and the jacks are placed at a minimum of 2ft away from face of the shoring

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc.
PROJECT NO.: VAN-00217815-A0
ATTENTION: Konning Tam
DATE: August 21, 2015
CC: ITC
FROM: Mahdi Hosseyni
ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring Construction and Anchor Testing

LOCATION:
4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to review construction of Temporary Shoring and conduct Anchor Testing at above subject site.

Observations: West side:

- 7 Anchors #7 DYWIDAG were tested to 25 kips (Anchors of 3rd Row) and locked off at 21 kips and stated Design Requirements.

South side:

- 4 Anchors #9 were tested as specified on the Shoring Design Drawings and Stated Design Requirements

NOTE: 2 Anchors were located at 3rd Row and 2 Anchors were located at 4th Row.

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☐ KAMLOOPS OFFICE
Unit 100B, 1425 Pearson Place
Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architesets, Inc.
PROJECT NO.: VAN-00217815

ATTENTION: Kanning Tam
DATE: August 21, 2015

CC: ITC
FROM:

ATTENTION:

SERVICE PROVIDED:

LOCATION:

OBSERVATIONS:

NOTE: At East portion of shoring at south side at about EL. 204 ft, the subdrain system of skytrain station building was exposed. The subdrainage was observed to be less than 2ft in height and covered by paper bags and poly before shotcrete to be conducted.

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Unit 100B, 1425 Pearson Place
Kamloops, B.C., Canada V1S 1J9
Phone: 250 372-5321 Fax: 250 372-1678

CLIENT: WT Leung Architects, Inc. PROJECT NO.: VAN-00217815

ATTENTION: Konning Tam DATE: August 24, 2015

CC: ITC FROM: Mahdi Hosseyni

ATTENTION: Antonio Pavi & Mitchell Scott

SERVICE PROVIDED: Review of Temporary Shoring construction and Anchor Testing

LOCATION: 4083 Cambie St, Vancouver, BC

OBSERVATIONS:

Exp was on site to Review construction of Temporary shoring and conduct Anchor Testing at above subject site.

observations:

East Side: 2 #8 DYWIDAG (at 4th row of Anchor) were Tested to 44 kips and locked-off at 37 kips.

West Side: 6 Anchors #8 DYWIDAG (at 4th row) were tested and locked of as specified on Shoring Design Drawing. all Anchors at East and west sides Stated Design requirements.

South side:

- 8 Anchors #9 DYWIDAG were Tested to 67 kips and locked-off to 56 and Stated Design requirements.

NOTE:

- 2 Anchor IBO R38N were replaced at First row

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Phone: 250 372-5321 Fax: 250 372-1678

CLIENT:

PROJECT NO.: VAN-00217815

ATTENTION:

DATE: Aug 24, 2015

CC:

FROM:

ATTENTION:

SERVICE PROVIDED:

LOCATION:

OBSERVATIONS:

of East portion of South side (underside of the station building). These Two Anchor were tested to 67 kips and locked-off to 56 and started Design requirements.

- 3 Anchors #9 (4th row - west portion) were tested to 64 kips and locked-off at 53 kips and shown design requirements

NOTE: It was observed that Temporary cut slope was steeper than 1H:1V. The contractor superintendent and Subcontractor supervisor were informed to cut back the temporary slopes to 1H:1V. A photo is attached to this memo for your information.

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+/-8ft