PORT of vancouver Vancouver Fraser Port Authority	**VANCOUVER FRASER PORT AUTHORITY PROJECT AND ENVIRONMENTAL REVIEW REPORT AND PERMIT**
PER No.:	**19-046**
Tenant:	**City of Vancouver**
Project:	**Stanley Park Water Supply Tunnel – Chilco Shaft Area**
Project Location:	**South side of Lost Lagoon, adjacent to the intersection of Chilco Street and Alberni Street in the City of Vancouver**
Vancouver Fraser Port Authority SID No.:	**VAN051 – Lost Lagoon**
Land Use Designation:	**Recreation**
Applicant/Permit Holder:	**Greater Vancouver Water District**
Category of Review:	**B**
Date of Approval:	**September 10, 2021**
Date of Expiry:	**September 30, 2027**

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1 INTRODUCTION

The Vancouver Fraser Port Authority (the "Port Authority"), a federal port authority, manages lands under the purview of the *Canada Marine Act*, which imparts responsibilities for environmental protection. The Port Authority accordingly conducts project and environmental reviews of works and activities undertaken on these lands to ensure that the works and activities will not likely cause significant adverse environmental effects. This project and environmental review report and project permit (the "Permit") documents the Port Authority's project and environmental review of No. 19-046: Stanley Park Water Supply Tunnel – Chilco Shaft Area (the "Project") proposed by the Greater Vancouver Water District (the "Applicant").

This project and environmental review was carried out to address the Port Authority's responsibilities under the *Canada Marine Act*, and to meet the requirements of the *Impact Assessment Act*, as applicable. The proposed Project is not considered a "designated project" under the *Impact Assessment Act* and an impact assessment as described in the *Impact Assessment Act* is not required. However, Port Authority authorization is required for the proposed Project to proceed and in such circumstances, where applicable, Section 82 of the *Impact Assessment Act* requires federal authorities to assure themselves that projects will not likely cause significant adverse environmental effects. This review provides that assurance. In addition, the Port Authority considers other interests, impacts and mitigations through the project and environmental review.

The project and environmental review considered the application along with supporting studies, assessments and consultations carried out or commissioned by the Applicant, as well as other information provided by the Applicant. In addition, this project and environmental review considered other information available to the Port Authority and other consultation carried out by the Port Authority. A full list of information sources germane to the review is provided in the following pages of this report.

This Permit is the authorizing document allowing the Applicant to proceed with the Project subject to the listed project and environmental conditions.

2 PROJECT DESCRIPTION

To meet the growing demand for drinking water in the Metro Vancouver region and improve the system's overall seismic resiliency, the Greater Vancouver Water District (GVWD) is proposing to conduct works associated with the Stanley Park Water Supply Tunnel Project within Port Authority jurisdiction. Generally, this involves installing a

new section of the existing Capilano Main No. 4 (CA4), referred to as Capilano Main No. 5 (CA5), below the surface of Stanley Park. The new CA5 water main will replace the existing water main CA4, and requires the excavation of a 1,400 m long, 4.2 m diameter water supply tunnel below Stanley Park. The tunnel will range between 45 to 50 m below the ground surface and will be connected to three shaft areas.

The southernmost of these shaft areas, which is referred to as the Chilco Shaft Area, is located partially within the Port Authority's jurisdiction. Generally, the works associated with the Project within Port Authority jurisdiction include:

- Tunneling under Lost Lagoon, and
- Construction activities associated with the Chilco Shaft Area (detailed in Section **2.1 Proposed Works**).

The expected footprint of the Project within Port Authority jurisdiction is approximately 2,900 m^2, and the length of the supply tunnel portion located within (deep underneath) Port Authority managed land is approximately 390 m.

It is envisioned that the tunnel will be excavated using mechanical means, most likely by roadheader. A roadheader is a mechanical excavating device equipped with a rotating cutter head mounted on a swiveling boom. Excavation is expected to occur outwards in both directions from the Central Shaft, which is located outside Port Authority jurisdiction in Stanley Park (the north drive and south drive will be approximately 520 m and 850 m, respectively). Dust generated during excavation will be addressed using typical dust suppression techniques (e.g., spraying the excavation face with water, ventilation, dust suppression systems). Excavated material will be transported from the tunnel drives up the Central Shaft and temporarily stockpiled on surface, outside of any watercourses and riparian areas, before being removed from site.

Following excavation, a 2,591 mm inner diameter steel pipe will be installed within the tunnel. The supply tunnel will then be fully backfilled following pipe installation with low-density cellular concrete or a non-shrink and durable cement grout, with sections of conventional concrete at the base of the Chilco shaft. The steel pipe is expected to be lined (internal surface) and coated (external surface) for corrosion protection and a cathodic protection system will be specified.

Upon completion of the proposed works, and following the successful hydrotest of the CA5 pipe prior to tying CA5 to the existing GVWD water infrastructure, the new line will be cleaned and disinfected. There remains several options available for the disinfection of CA5, with the preferred method to be confirmed as part of the detailed design phase of the Project. Once disinfected, and prior to discharge, the water will be dechlorinated using calcium thiosulphate, which is a preferred agent to address oxygen depletion in water.

In this project permit, the Project means the physical activities authorized by the Port Authority to be carried out pursuant to **PER No. 19-046**, as described below.

2.1 Proposed Works

While the majority of the Project works are outside Port Authority jurisdiction, the Project works located within Port Authority jurisdiction include:

- Tunneling approximately 390 m under Lost Lagoon:
- Construction laydown area, which will include:
    - installation of construction fencing
    - vegetation removal
    - tree clearing
    - temporary site grading
- Movement of construction vehicles
- Construction of temporary pedestrian and cyclist pathways, each approximately 150 m long (new permanent pathways will be reinstated to existing configuration once construction work has completed)
- Replacement of approximately 75 m of the existing West End Interceptor No. 1 (1,067 mm diameter combined storm / sanitary pipe) in the construction laydown area
- Potential protection / replacement of approximately 75 m of the existing West End Interceptor No. 2 (610 mm diameter)
- Installation of temporary instrumentation to support the excavation works
- Identification of utilities (potholing, hydrovac etc.) and protection / relocation / replacement

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- Discharge of construction water, and potentially water main disinfection, into Lost Lagoon / Burrard Inlet through West End Interceptor No. 1, or through a temporary line, if sanitary discharge is not possible via sanitary main – West End Interceptor No. 2 (the disinfection procedure has yet to be determined)
- Final regrading and landscaping, including the installation of minor hardscape elements (i.e. benches, retaining walls, etc.)

The majority of the works occurring within Port Authority jurisdiction are associated with site preparation. Site preparation activities, utilizing typical construction equipment (e.g., excavators), will be conducted five days per week (Monday to Friday), ten hours per day between 7:30 a.m. and 8:00 p.m. for an estimated period of five months. There will also be a ten-hour maintenance shift on Saturdays (between 10:00 a.m. and 8:00 p.m.).

Construction activities beyond Port Authority jurisdiction, such as the shaft and tunnel excavation, will occur five days per week (Monday to Friday), ten hours per day between 7:30 a.m. and 8:00 p.m. for an estimated period of 40 months. There will also be a ten-hour maintenance shift on Saturdays (between 10:00 a.m. and 8:00 p.m.).

Noise management and visual barriers are anticipated to be required for shaft construction due to the shaft's proximity to residences and businesses. Shaft construction will be conducted adjacent to Port Authority jurisdiction.

Once the shaft and tunnel excavation works are completed, site restoration activities will commence, some of which will be within Port Authority jurisdiction, and last for an estimated period of five months. Restoration activities will be conducted five days per week (Monday to Friday), ten hours per day between 7:30 a.m. and 8:00 p.m. for an estimated period of five months. There will also be a ten-hour maintenance shift on Saturdays (between 10:00 a.m. and 8:00 p.m.).

The anticipated construction start is early 2022 and continuing for approximately 50 months, with commissioning expected to commence by 2027.

While the total Project cost associated with construction of the Chilco Shaft Area is estimated at $30,000,000, the costs specifically associated with the works being conducted within Port Authority jurisdiction is undetermined.

3 VANCOUVER FRASER PORT AUTHORITY INTERNAL REVIEWS

The following Port Authority departments have undertaken and completed a review of these works and confirm that the proposal meets their requirements, subject to the listed project and environmental conditions.

☒ Planning ☒ Environmental Programs ☒ Engineering

☒ Public Engagement ☒ Transportation

The Project is located in an area designated as critical habitat for western painted turtle, a federally listed species under the *Species at Risk Act*. The Applicant is working with Environment and Climate Change Canada (ECCC) on appropriate mitigations to avoid effects on western painted turtle.

Condition No. 32 of the Permit requires the Permit Holder to conduct all activities in compliance with the *Species at Risk Act*, submit correspondence with ECCC about the Project, and implement any recommended measures for the protection of western painted turtle (or other species at risk).

4 INDIGENOUS CONSULTATION

The Port Authority has reviewed the proposed works and determined that the project may have the potential to adversely impact Indigenous or Treaty rights.

All reasonable efforts have been made to consult with the following Indigenous groups:

- Cowichan Tribes – notification
- Halalt First Nation – notification
- Lyackson First Nation - notification

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- Musqueam Indian Band
- Penelakut Tribe - notification
- S'ólh Téméxw Stewardship Alliance (STSA) - notification
- Squamish Nation
- Stz'uminus First Nation - notification
- Tsleil-Waututh Nation
- Ts'uubaa-asatx Nation (Lake Cowichan) - notification

The following consultation activities were conducted:

- Referral package and/or project notification with a project location map were sent
- Reminder emails sent regarding the comment window closing
- Responses provided to Nations which provided comments on the project

Below is a table summarizing comments received by the Port Authority and how they were considered as part of the project and environmental review.

Issue	Mitigations and Permit Conditions	Rationale
Potential impact to unidentified archaeological resources in the project area	Condition No. 22 of the Permit requires the Permit Holder to have a qualified archaeological monitor on site during any project activities that may impact native soils. Condition No. 16 of the Permit requires the Permit Holder to have an Archaeological Chance Find Procedure in place prior to any ground break project activities.	To mitigate any encounter with unanticipated archaeological resources, an archaeological monitor will be present during any ground disturbance work into native soils.
Request for Indigenous monitors on site during construction activities	Condition No. 23 of the Permit requires the Permit Holder to provide opportunities for interested Indigenous groups to monitor and be present on the Project site at all times during ground disturbing activities with the potential to intrude into native soils.	Indigenous monitors to be arranged by archaeological monitor, as needed.

Based on the record of consultation, the Port Authority is of the view that the duty to consult has been met.

5 EXISTING POLICIES OR GUIDELINES

The proposed Project is located within an area designated as "Recreation" within the Port Authority's land use plan. Given that utility uses are permitted in all designations where compatible with the primary uses on the site, the Project is considered to be in conformance with the land use plan.

6 NOTIFICATIONS

6.1 Municipal Notification

The proposed Project was assessed by the Port Authority to have potential impacts to municipal interests. A notification letter was sent to the City of Vancouver on April 29, 2021, notifying them of the proposed Project. The City of Vancouver had no comments as the Applicant has consulted with them throughout the Project's planning phases.

6.2 Tenant Notification

The proposed Project was assessed by the Port Authority to have potential impacts to tenant interests. A municipal notification letter was sent to the City of Vancouver on April 29, 2021, notifying it of the proposed Project. The City of Vancouver did not provide any comments. However, a proposed consent and indemnity agreement between the Port Authority, City of Vancouver and Greater Vancouver Water District is in preliminary discussions to address tenure and consent considerations within the Project site. The Permit Holder must have a valid tenure agreement for the Project site prior to accessing the Project site or commencing construction or any other physical activities on the Project site. This is condition No. 1 in the permit.

6.3 Public Engagement

To meet requirements of section 86 of the *Impact Assessment Act*, the Port Authority posted a description of the Project and notice of public participation to the Canadian Impact Assessment Registry to provide the public 30 calendar days to comment on the project and provide community knowledge.

6.4 Summary of Public Engagement

The comment period ran from April 15 to May 14, 2021. At the close of the 30-calendar day public comment period, no comments were received.

The proposed Project was assessed by the Port Authority to have potential impacts to community interests during construction. These include potential impacts such as park access and detours (pedestrian and cyclists) in Stanley Park adjacent to the construction site due to the proposed construction activities. An area within the park will be utilized as a laydown area construction materials and machinery.

Metro Vancouver indicated they will follow all appropriate notifications needed for a capital project given the wider impacts of the project. Notifications will be sent to adjacent residents and businesses, on-site signage and directional notification will be installed to assist park users, and updates will be shared through Metro Vancouver's website. As a result, Metro Vancouver is required to follow typical channels for notification at least 10 business days prior to the start of the works. This is condition No. 15 in the permit.

7 INFORMATION SOURCES

The Port Authority has relied upon the following sources of information in its review of the Project.

- Application form and materials submitted by the Applicant on behalf of the tenant on November 27, 2020, and were supplemented by a revised scope of works memorandum on May 31, 2021, which was merged with the application document.
- All Project correspondence from month, day, year to month, day year
- All plans and drawings labelled PER No.19-046-A to I
- "Stanley Park Water Supply Tunnel – Summary of Activities and Components on VFPA Lands", May 31, 2021, Hemmera

8 ENVIRONMENTAL REVIEW DECISION

In completing the project and environmental review, the Port Authority has reviewed and taken into account relevant information available on the proposed project and has considered any adverse impact that the Project may have on the rights of Indigenous peoples, Indigenous knowledge, community knowledge, comments received from the public, and measures that would mitigate any significant adverse environmental effects of the Project. We conclude that with the implementation of proposed mitigation measures and conditions described in the project and environmental conditions section below, the Project is not likely to cause significant adverse environmental effects.

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KIM KESKINEN
ACTING MANAGER, ENVIRONMENTAL PROGRAMS

September 10, 2021
DATE OF DECISION

9 CONCLUSION

In completing the project and environmental review, the Port Authority concludes that with the implementation of proposed mitigation measures and conditions described in the project and environmental conditions section below, the Project has appropriately addressed all identified concerns.

PROJECT AND ENVIRONMENTAL REVIEW DECISION

Project Permit PER No. 19-046 is approved by:

ORIGINAL COPY SIGNED
CHRIS BISHOP
MANAGER, PLANNING

September 10, 2021
DATE OF APPROVAL

10 PROJECT AND ENVIRONMENTAL CONDITIONS

The Port Authority has undertaken and completed a review of the Project in accordance with the *Canada Marine Act* and Section 5 of the Port Authorities Operations Regulations and, as applicable, Section 82 of the *Impact Assessment Act*.

If at any time the Greater Vancouver Water District (the "Permit Holder") fails to comply with any of the project and environmental conditions set out in the project permit (the "Permit") below, or if the Port Authority determines that the Permit Holder has provided any incomplete, incorrect or misleading information in relation to the Project, the Port Authority may, in its sole and absolute discretion, cancel its authorization for the Project or change the project and environmental conditions to which such authorization is subject.

Pursuant to Section 29 of the *Port Authorities Operations Regulations*, the Port Authority may also cancel its authorization for the Project, or change the project and environmental conditions to which such authorization is subject, if new information is made available to the Port Authority at any time in relation to the potential adverse environmental and other effects of the Project.

The following are the minimum conditions that must be followed by the Permit Holder to mitigate potential or foreseeable adverse environmental and other effects.

All Port Authority Guidelines and Record Drawing Standards referenced in this document can be located at: https://www.portvancouver.com/permitting-and-reviews/per/project-and-environment-review-applicant/guidelines/.

No.	GENERAL CONDITIONS
1.	The Permit Holder must have a valid tenure agreement for the Project site prior to accessing the Project site or commencing construction or any other physical activities on the Project site. This Permit shall in no way limit any of the Permit Holder's obligations, or the Port Authority's rights, under such tenure agreement.

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2.	The Permit Holder shall at all times and in all respects, comply with and abide by all applicable statutes, laws, regulations and orders from time to time in force and effect, including all applicable environmental, labour and safety laws and regulations.
3.	This Permit in no way endorses or warrants the design, engineering, or construction of the Project and no person may rely upon this Permit for any purpose other than the fact that the Port Authority has permitted the construction of the Project, in accordance with the terms and conditions of this Permit.
4.	The Permit Holder shall indemnify and save harmless the Port Authority in respect of all claims, losses, costs, fines, penalties or other liabilities, including legal fees, arising out of: (a) any bodily injury or death, property damage or any loss or damage arising out of or in any way connected with the Project; and (b) any breach by the Permit Holder of its obligations under this Permit.
5.	The Permit Holder is responsible for locating all existing site services and utilities including any located underground. The Permit Holder is responsible for repair or replacement of any damage to existing site services and utilities, to the satisfaction of the Port Authority, that result from construction and operation of the Project.
6.	The Permit Holder shall undertake and deliver the Project to total completion in a professional, timely and diligent manner in accordance with applicable standards and specifications set out in the sections above entitled Project Description and Information Sources, including the attached plans and drawings numbered **PER No. 19-046-A to I**. The Permit Holder shall not carry out any other physical activities unless expressly authorized by the Port Authority.
7.	The Permit Holder shall cooperate fully with the Port Authority in respect of any review by the Port Authority of the Permit Holder's compliance with this Permit, including providing information and documentation in a timely manner, as required by the Port Authority. The Permit Holder is solely responsible for demonstrating the Permit Holder's compliance with this Permit.
8.	The Permit Holder shall review the Permit with all employees, agents, contractors, licensees and invitees working on the Project site, prior to such parties participating in any construction or other physical activities on the Project site. The Permit Holder shall be solely responsible for ensuring that all such employees, agents, contractors, licensees and invitees comply with this Permit.
9.	The Permit Holder shall make available upon request by any regulatory authority (such as a Fishery Officer) a copy of this Permit.
10.	Unless otherwise specified, the Permit Holder shall provide all plans, documents, and notices required under this Permit to the following email address: **per@portvancouver.com** and referencing **PER No.19-046**.
11.	Unless otherwise specified, all plans, schedules, and other Project-related documentation that the Permit Holder is required to provide under this Permit, and any subsequent updates, must be to the Port Authority's satisfaction.
12.	The Port Authority shall have unfettered access to environmental compliance documentation and the Project site at all times during construction without notice.
13.	The Permit Holder must maintain and retain any records associated with, or produced by, actions or activities undertaken to achieve compliance or that indicate non-compliance with project permit conditions. These records must be made available at the request of the Port Authority.

	CONDITIONS – PRIOR TO COMMENCING CONSTRUCTION OR ANY PHYSICAL ACTIVITIES	SUBMISSION TIMING (business days)
14.	The Permit Holder shall submit signed and sealed drawings for proposed works approved for construction by a professional engineer licensed to practice in the Province of British Columbia.	5 business days before commencing construction or any physical activities
15.	The Permit Holder shall notify adjacent residents, businesses and park users about construction in accordance with Metro Vancouver's channels for notification. The Permit Holder shall notify the Port Authority when such requirement has been completed.	10 business days before commencing construction or any physical activities
16.	The Permit Holder shall submit an Archaeological Chance Find Procedure for the Project site to the Port Authority's s satisfaction and/or confirm the adoption of the Vancouver Fraser Port Authority's Archaeological Chance Find Procedure. The Permit Holder shall carry out the Project in accordance with this Procedure, and any subsequent updates made to the Port Authority's satisfaction.	10 business days before commencing construction or any physical activities if providing an Archaeological Chance Find Procedure from an archaeological consultant 3 business days before commencing construction or any physical activities if providing confirmation of adopting the Port Authority's Archaeological Chance Find Procedure.
17.	The Permit Holder shall have in place a spill prevention, containment and clean-up plan for hydrocarbon products (including fuel, oil and hydraulic fluid) and any other deleterious substances. Appropriate spill containment and clean-up supplies shall be available on the Project site at all times and all personnel working on the Project shall be trained on the spill prevention, containment and clean-up plan. The Permit Holder shall carry out the Project in accordance with the spill prevention, containment and clean-up plan.	Before commencing construction or any physical activities
	CONDITIONS – DURING CONSTRUCTION OR ANY PHYSICAL ACTIVITIES	
18.	The Permit Holder shall notify the Port Authority upon commencement of construction, or any physical activities (e.g., mobilization to the Project site).	
19.	All general construction and physical activities related to the Project shall be conducted from **Monday to Saturday** between the hours of **7:00 a.m. and 8:00 p.m.** No construction and physical activities shall take place on Sundays or holidays. These hours shall not be modified without prior approval of the Port Authority. To request permission to conduct activities outside these hours, the Permit Holder must submit a written request no less than 30 business days prior to the desired start date.	
20.	The Permit Holder shall notify the Port Authority within two business days of any complaints received from the community and stakeholders during construction and indicate how the Permit Holder has responded to such complaints.	

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21.	The Permit Holder shall remove all abandoned utilities from the project site, both underground and aboveground. At locations of connection to municipal work (i.e., at property lines), the abandoned utilities shall be capped.
22.	The Permit Holder shall ensure that an appropriately qualified archaeological monitor be on the Project site at all times during ground disturbing activities with the potential to intrude into native soils.
23.	The Permit Holder shall provide opportunities for interested Indigenous groups to monitor and be present on the Project site at all times during ground disturbing activities with the potential to intrude into native soils.
24.	The Permit Holder may place temporary construction trailers on the Project site while this Permit remains in effect, provided such trailers meet all of the criteria set out in the Port Authority's Temporary Construction Trailer Criteria, available at: *https://www.portvancouver.com/permitting-and-reviews/building-permits/*. Should one or more of the criteria not be met, a Port Authority Building Permit is required.
25.	Without limiting the generality of permit condition #2, the Permit Holder shall not, directly or indirectly: (a) deposit or permit the deposit of a deleterious substance of any type in water frequented by fish in a manner contrary to Section 36 of the *Fisheries Act*; or (b) adversely affect fish or fish habitat in a manner contrary to Section 35 of the *Fisheries Act*.
26.	The Permit Holder shall contain and collect debris and waste material in the immediate working area within the Project site. The Permit Holder shall dispose of waste material at suitable upland locations and maintain records of off-site disposal.
27.	The Permit Holder shall carry out the Project in accordance with the construction environmental management plan provided by the Permit Holder, and any subsequent updates made to the Port Authority's satisfaction.
28.	The Permit Holder shall engage a qualified environmental professional to monitor the Project in order to ensure that the works are carried out in compliance with this Permit. Monitoring events shall take place as required by the environmental monitor, the construction environmental management plan, or the Port Authority, provided that monitoring will be full time when works are under way that have the potential to adversely affect fish or fish habitat.
29.	The Permit Holder shall provide environmental monitoring reports to the Port Authority's satisfaction as specified in the construction environmental management plan or more frequently if the Port Authority requires.
30.	The Permit Holder shall not dewater excavations unless a dewatering plan has been submitted to the Port Authority's satisfaction.
31.	Prior to discharging any water used to clean/flush the new infrastructure, a discharge plan shall be submitted to the Port Authority's satisfaction.
32.	Without limiting the generality of permit condition #2, the Permit Holder shall conduct all activities in compliance with the *Species at Risk Act* (SARA). The Permit Holder shall submit correspondence with Environment and Climate Change Canada about the Project and implement any recommended measures for the protection of western painted turtle or other species at risk.
33.	The Permit Holder shall maintain equipment in good mechanical condition and free of fluid leaks, invasive species, and noxious weeds.

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	CONDITIONS – PRIOR TO OPERATION	
34.	The Permit Holder shall provide the Port Authority with the confirmed procedure for the disinfection, testing and commissioning of CA5. This procedure is subject to the Port Authority's approval prior to any discharge into Port Authority jurisdiction. If it is confirmed that construction water is to be discharged into the Port Authority's jurisdiction, the Permit Holder shall provide the Port Authority with this procedure for approval.	
	CONDITIONS – UPON COMPLETION	**SUBMISSION TIMING (Business Days)**
35.	The Permit Holder shall notify the Port Authority upon completion of the Project.	Upon substantial completion
36.	The Permit Holder shall provide record drawings in accordance with the Port Authority's Record Drawing Standards (available at: https://www.portvancouver.com/permitting-and-reviews/per/project-and-environment-review-applicant/guidelines/), in both AutoCAD and Adobe (PDF) format to the Port Authority, including a Project site plan that clearly identifies the location of works.	Within 40 business days of completion
The Port Authority reserves the right to rescind or revise these conditions at any time that new information warranting this action is made available to the Port Authority.		
LENGTH OF PERMIT VALIDITY		
The Project must be completed no later than **September 30, 2027** (the Expiry Date).		
AMENDMENTS		
• Details of any material proposed changes to the Project, including days and hours when construction and any physical activities will be conducted, must be submitted to the Port Authority for consideration of an amendment to this Permit. • For an extension to the Expiry Date, the Permit Holder must apply in writing to the Port Authority no later than 40 business prior to that date. **Failure to apply for an extension as required may, at the sole discretion of the Port Authority, result in termination of this Permit.**		

CONTACT INFORMATION

Vancouver Fraser Port Authority
100 The Pointe, 999 Canada Place
Vancouver BC V6C 3T4 Canada

Project & Environmental Review
Tel.: 604-665-9047
Fax: 1-866-284-4271
Email: PER@portvancouver.com
Website: www.portvancouver.com

After normal business hours:

In the event of any land or marine construction incidents or concerns related to works carried out on-site under this permit, please contact the 24/7 Port Operations Centre 604-665-9086. In the event of an emergency requiring 'First Responders', please call 911 first.

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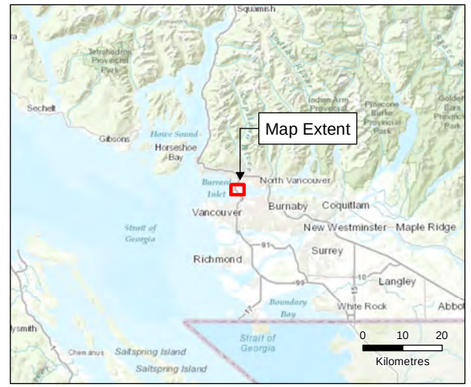
Capilano Main No. 5 - Stanley Park
Water Supply Tunnel
Vancouver, BC

Project Overview



Burrard Inlet Shaft Area
Midpark Connection Area
Central Shaft Area
Chilco Shaft Area
STANLEY PARK CAUSEWAY
STANLEY PARK DR
PIPELINE ROAD
AVISON WAY
Burrard Inlet
Beaver Lake
Lost Lagoon
Coal Harbour

Legend

- Stanley Park Water Supply Tunnel
- Project Footprint

VANCOUVER FRASER PORT AUTHORITY

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Notes

1. All mapped features are approximate and should be used for discussion purposes only.
2. This map is not intended to be a 'stand-alone document, but a visual aid of the information contained within the referenced Capilano Main No. 5 - Stanley Park Water Supply Tunnel, VFPA PER Category B Project Permit Application Document number: 386262-HEM-01-P0-RP-EN-0006. It is intended to be used in conjunction with the scope of services and limitations therein.

Sources

- Aerial Image: ESRI World Imagery
- Inset Basemap: ESRI World Topographic Map

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MOTT MACDONALD

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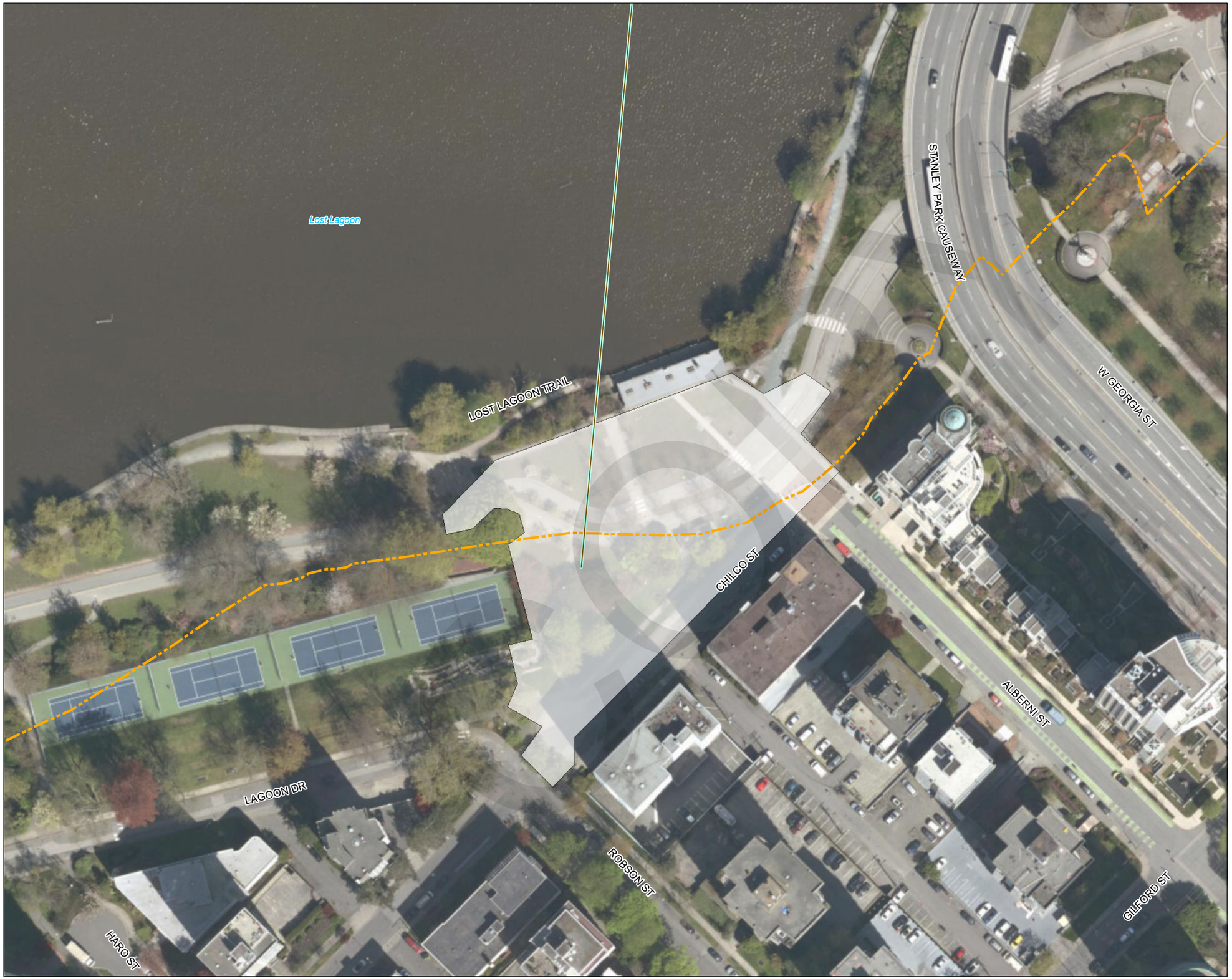

Capilano Main No . 5 - Stanley Park
Water Supply Tunnel
Vancouver, BC

Chilco Shaft Area Footprint

Legend

- Stanley Park Water Supply Tunnel
- Project Footprint
- VFPA Jurisdictional Boundary

VANCOUVER FRASER PORT AUTHORITY

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PER No. 19-046-C

VANCOUVER FRASER PORT AUTHORITY

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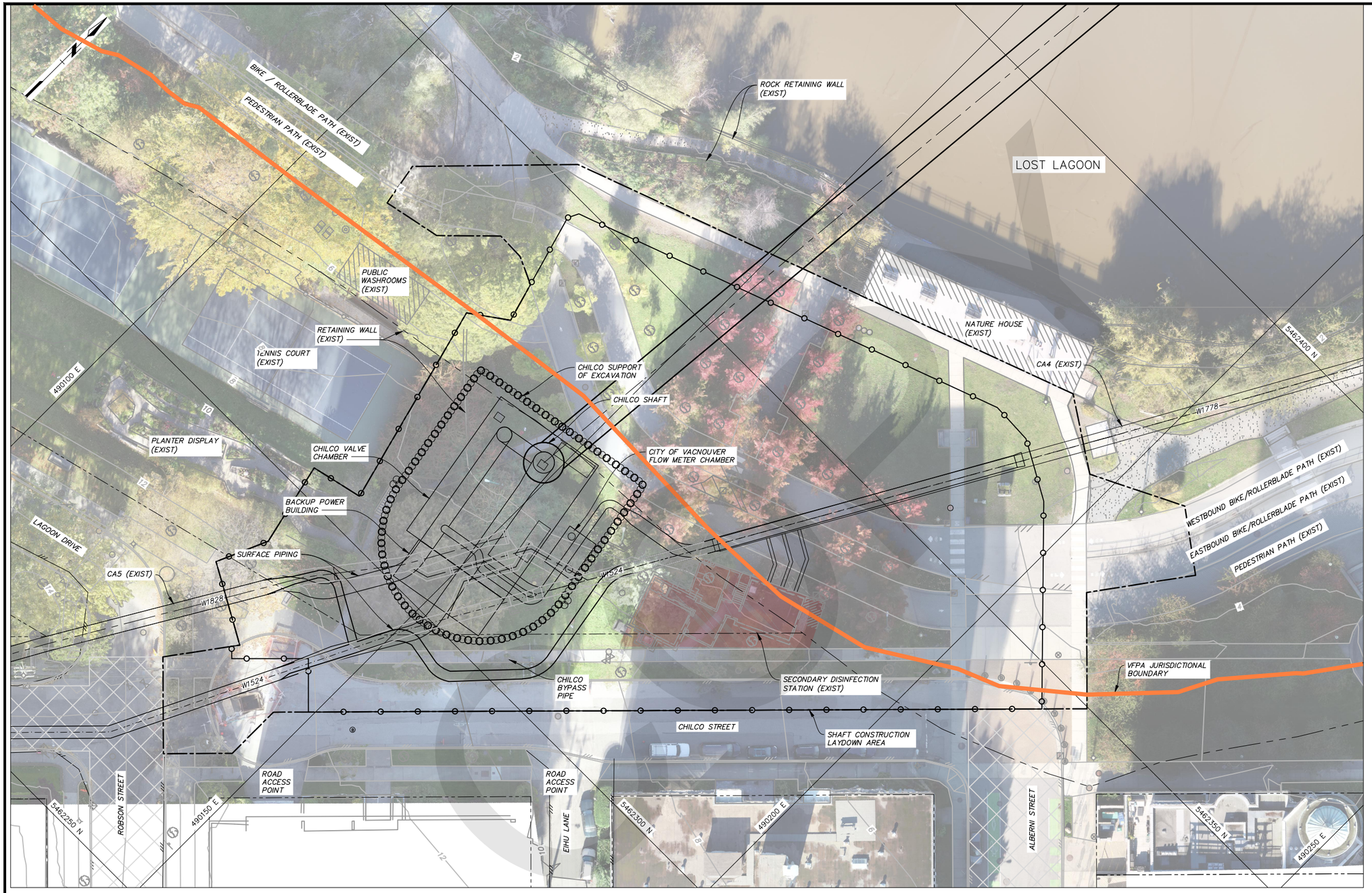

PLAN
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LEGEND

- LEGAL BOUNDARY
- CONTRACTOR AREA
- EXISTING STREAM
- EDGE OF ROAD
- UNDERGROUND STRUCTURE
- FENCE
- SECURITY FENCE
- CONSTRUCTION ACCESS ROUTE
- STRUCTURE
- RESTRICTED ACCESS
- LOAD RESTRICTION
- GUY WIRE
- ELECTRICAL POLE
- LP LEAD PLUG
- CO CLEANOUT
- DECIDUOUS TREE
- CONIFEROUS TREE
- CULTURALLY MODIFIED TREE
- CATCH BASIN
- MANHOLE
- LAYDOWN WAYPOINT
- WATER VALVE
- STREET LIGHT
- GAS VALVE
- AIR VENT
- SIGN
- BOLLARD
- ELECTRICAL BOX
- MONUMENT
- IRRIGATION VALVE

MOTT MACDONALD

CHECK PRINT

THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS OR OMISSIONS.

Professional Seal

Issue	Date	Desn	Dr'n	Chkd	Appd	Description
P1	2020.05.08	CL	LY		PJP	SKETCH FOR PROJECT DESCRIPTION

0 20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

GREATER VANCOUVER WATER DISTRICT

Design: CL
Drawn: JP
Checked:
PJP Approved
PJP Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

PLAN
LAYDOWN AREA & EXISTING FACILITIES
CHILCO SHAFT AREA

SCALE: AS NOTED
DISTRICT FILE W-3195
DRAWING NUMBER X-C-116

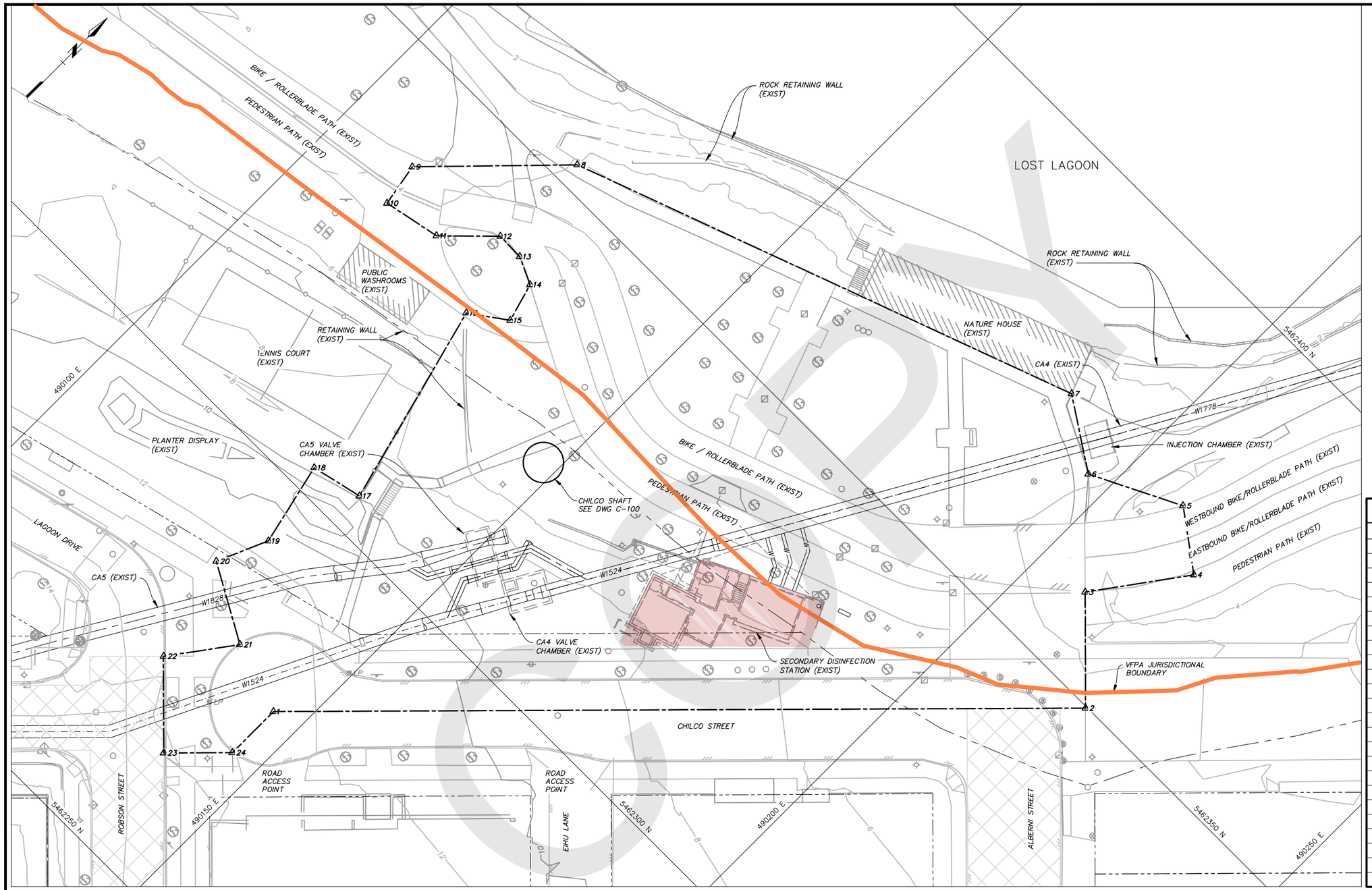
SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → P1

PRINTED: 2021-05-20 10:35 YU80873 C:\gwworking\hmm_tunnels\yu80873\d0109664\X-C-116.dwg

xref files: C000BW3195 C000CW3195 C000SW3195 C000UW3195 C000HW3195 C000AAW3195 C000AEW3195 C000AFW3195 C000WW3195 C000MW3195

SAVED BY: YU80873 2021-05-19 18:14

PER No. 19-046-D



PLAN
1:250

2 m 0 1:250 10 m

NOTES

1. SEE DWG G–125 FOR GENERAL NOTES.
2. ROAD ACCESS TO BE RETURNED TO ORIGINAL STATE ON COMPLETION.
3. LIMITED UTILITIES SHOWN FOR CLARITY. REFER TO DWG C–215 FOR DETAILED UTILITY PLAN.
4. ALL SURFACE RUN–OFF DRAINAGE WITHIN CONSTRUCTION LIMITS TO BE COLLECTED AND DISPOSED OF AS PER SPECIFICATIONS.
5. PUBLIC FACILITIES WITHIN STANLEY PARK ARE OFF LIMITS TO THE CONTRACTOR.

VANCOUVER FRASER PORT AUTHORITY

This drawing has been reviewed by the Vancouver Fraser Port Authority solely for the purpose of VFPA's issuance of a Project Permit. This permit in no way denotes design, engineering or structural approval or endorsement.

LAYDOWN WAYPOINT COORDINATES

Waypoint #	Northing	Easting
1	5462278.219	490146.319
2	5462349.828	490217.324
3	5462359.984	490207.107
4	5462371.048	490215.138
5	5462376.164	490208.115
6	5462370.622	490197.020
7	5462376.210	490188.500
8	5462352.905	490124.984
9	5462338.241	490110.674
10	5462332.828	490111.656
11	5462334.306	490118.858
12	5462339.881	490124.503
13	5462339.790	490127.990
14	5462338.232	490131.371
15	5462333.366	490132.762
16	5462330.149	490128.246
17	5462304.696	490134.941
18	5462303.213	490128.480
19	5462292.750	490130.882
20	5462286.395	490128.095
21	5462281.156	490137.494
22	5462273.433	490131.822
23	5462264.942	490140.312
24	5462271.000	490146.319

LEGEND

- LEGAL BOUNDARY
- CONTRACTOR AREA
- EXISTING STREAM
- EDGE OF ROAD
- UNDERGROUND STRUCTURE
- FENCE
- CONSTRUCTION ACCESS ROUTE
- STRUCTURE
- NO ACCESS
- LOAD RESTRICTION
- GUY WIRE
- ELECTRICAL POLE
- LP LEAD PLUG
- CO CLEANOUT
- DECIDUOUS TREE
- CONIFEROUS TREE
- CULTURALLY MODIFIED TREE
- CATCH BASIN
- MANHOLE
- LAYDOWN WAYPOINT
- WATER VALVE
- STREET LIGHT
- GAS VALVE
- AIR VENT
- SIGN
- BOLLARD
- ELECTRICAL BOX
- MONUMENT
- IRRIGATION VALVE

MOTT MACDONALD

CHECK PRINT

THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

Professional Seal

Issue	Date	Desn	Dr'n	Chkd	Appd	Description
P5	2020.10.21	CL	JP	DT	PJP	ISSUED FOR 90% DESIGN REVIEW
P4	2020.04.10	CL	JP	DT	PJP	ISSUED FOR 60% DESIGN REVIEW
P3	2020.03.17	CL	JP	DT	PJP	PROGRESS UPDATE
P2	2019.10.01	CL	JP	DT	PJP	ISSUED FOR 30% DESIGN
P1	2019.07.08	CL	JP	DT	PJP	ISSUED FOR 30% DESIGN REVIEW

0 20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

GREATER VANCOUVER WATER DISTRICT

Design: CL
Drawn: JP
Checked: DT
PJP Approved
PJP Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

PLAN
LAYDOWN AREA & EXISTING FACILITIES
CHILCO SHAFT AREA

SCALE: AS NOTED
DISTRICT FILE W–3195
DRAWING NUMBER C–205

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → P5

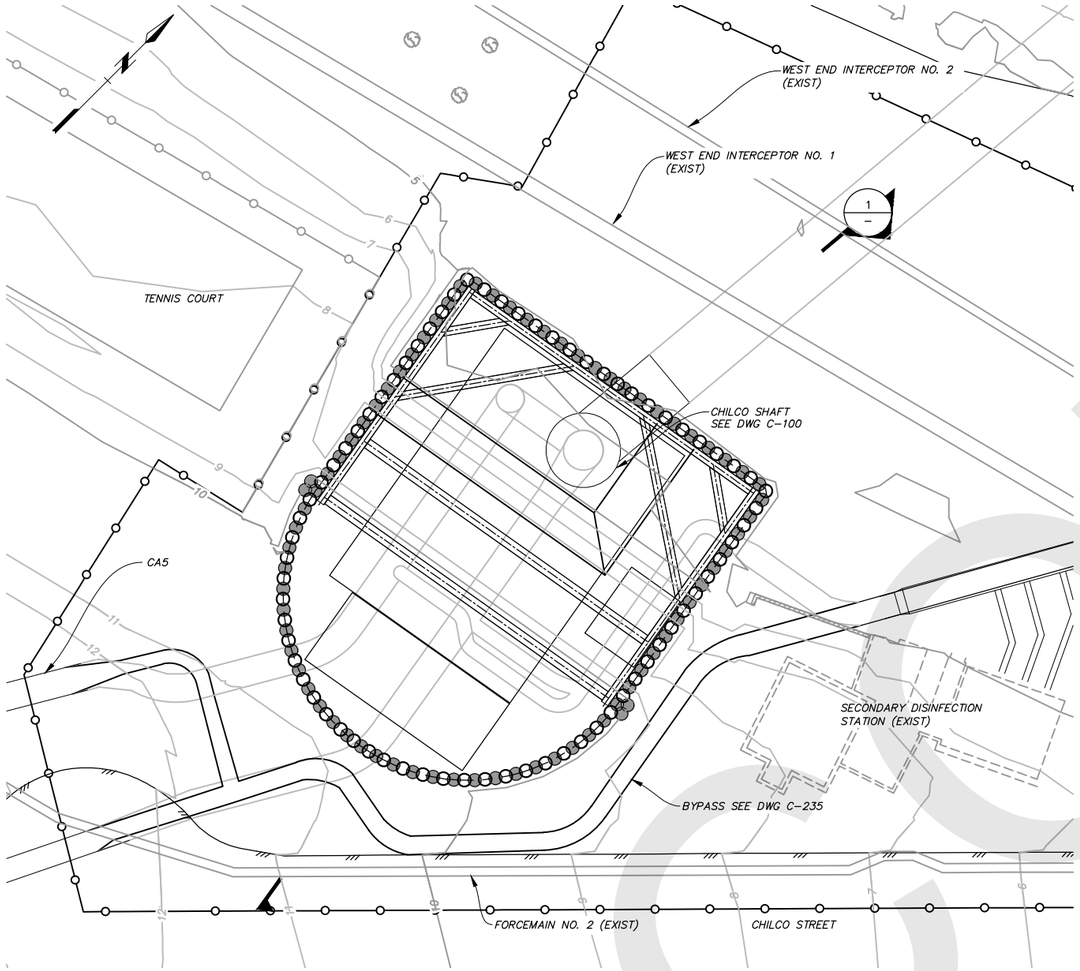
PRINTED: 2021–05–20 10:31 YU80873 C:\pwworking\trmm_tunnels\yu80873\d0109661\C205W3195.dwg

xref files: C000BW3195 C000SW3195 C000UW3195 C000HW3195 C000AAW3195 C000CW3195

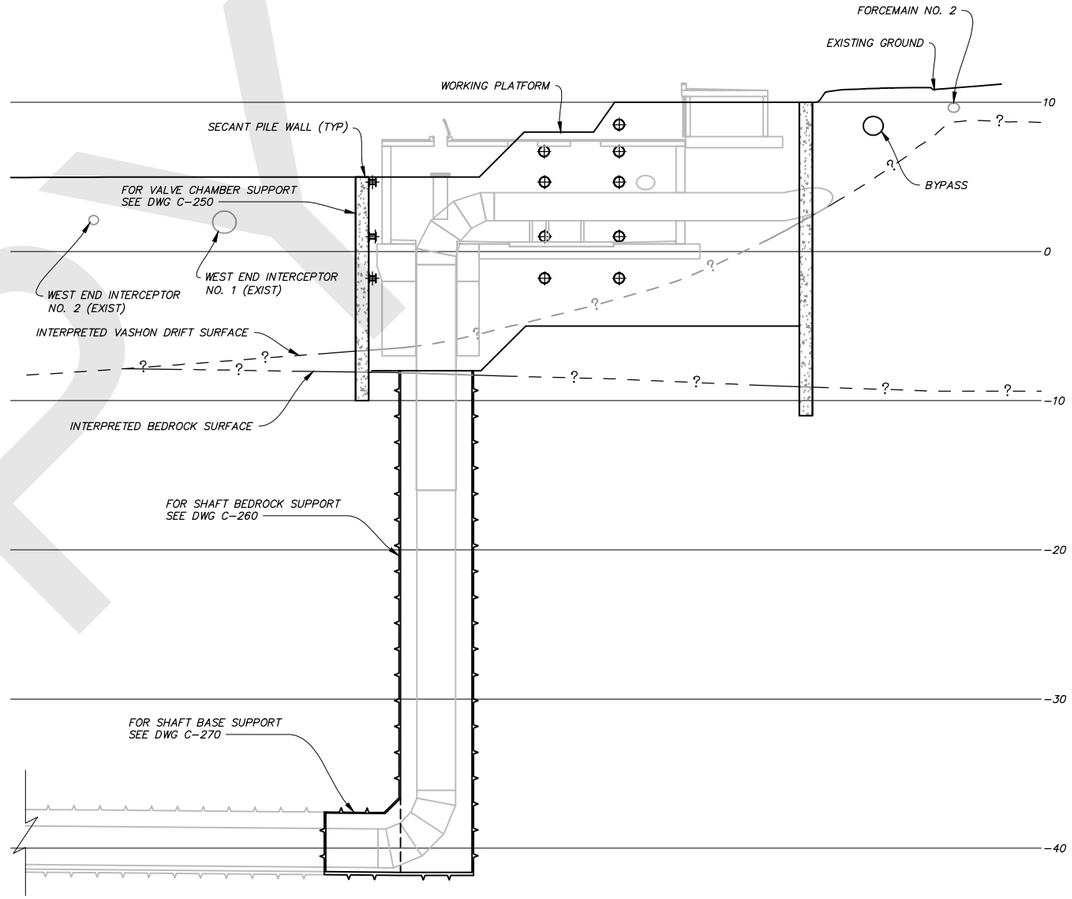
SAVED BY: YU80873 2021–05–19 18:00

NOTES

1. SEE DWG G–125 FOR GENERAL NOTES.
2. CONSTRUCTION GRADING PLAN NOT SHOWN. TO BE DEVELOPED DURING DETAILED DESIGN.



PLAN
1:200



SECTION 1
1:200

2 m 0 1:200 10 m

LEGEND

- EDGE OF ROAD
- CONTRACTOR AREA
- THEORETICAL EXCAVATION LINE
- FENCE
- SECURITY FENCE
- PRIMARY PILES
- SECONDARY PILES

VANCOUVER FRASER PORT AUTHORITY

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MOTT MACDONALD

CHECK PRINT

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Professional Seal

Issue	Date	Desn	Dr'n	Chkd	App'd	Description
P4	2020.10.21	CL	JP	DT	PJP	ISSUED FOR 90% DESIGN REVIEW
P3	2020.04.10	CL	JP	DT	PJP	ISSUED FOR 60% DESIGN REVIEW
P2	2019.10.01	CL	JP	DT	PJP	ISSUED FOR 30% DESIGN
P1	2019.07.08	CL	JP	DT	PJP	ISSUED FOR 30% DESIGN REVIEW

0 20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

GREATER VANCOUVER WATER DISTRICT

Design: CL
Drawn: JP
Checked: DT
PJP Approved
PJP Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

PLAN AND SECTION
VALVE CHAMBER AND SHAFT EXCAVATION
CHILCO SHAFT AREA

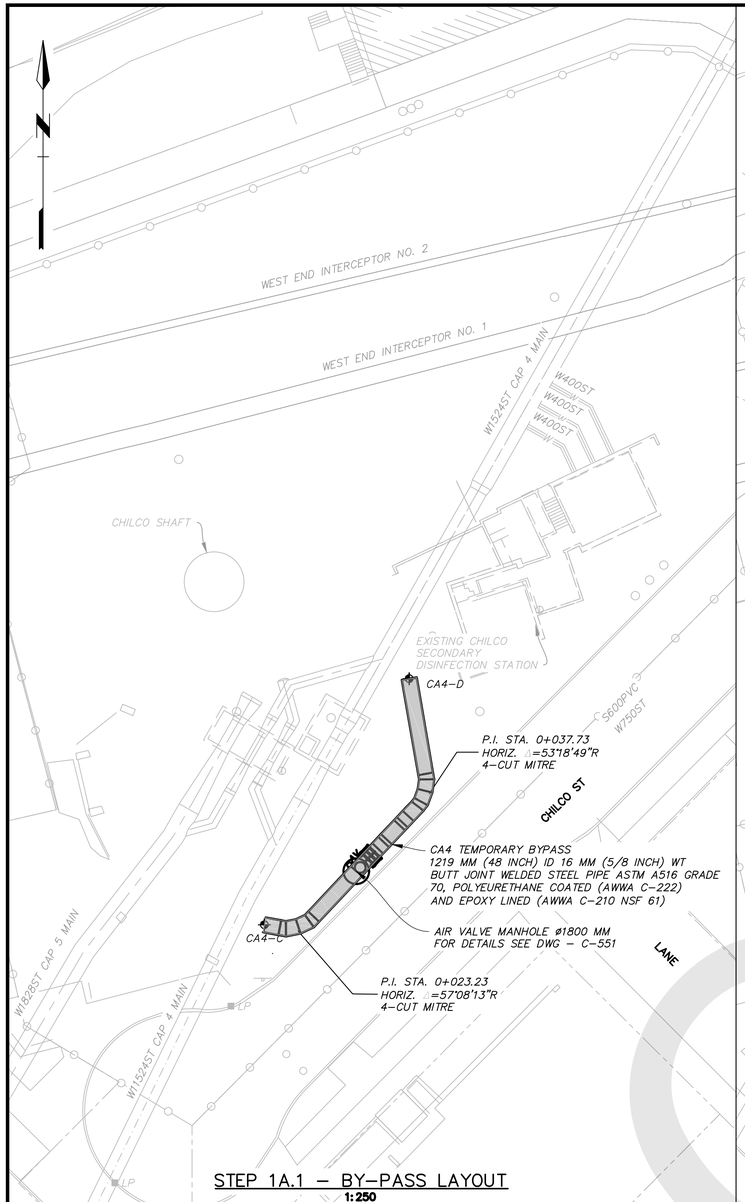
SCALE: AS NOTED
DISTRICT FILE W–3195
DRAWING NUMBER C–240

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → P4

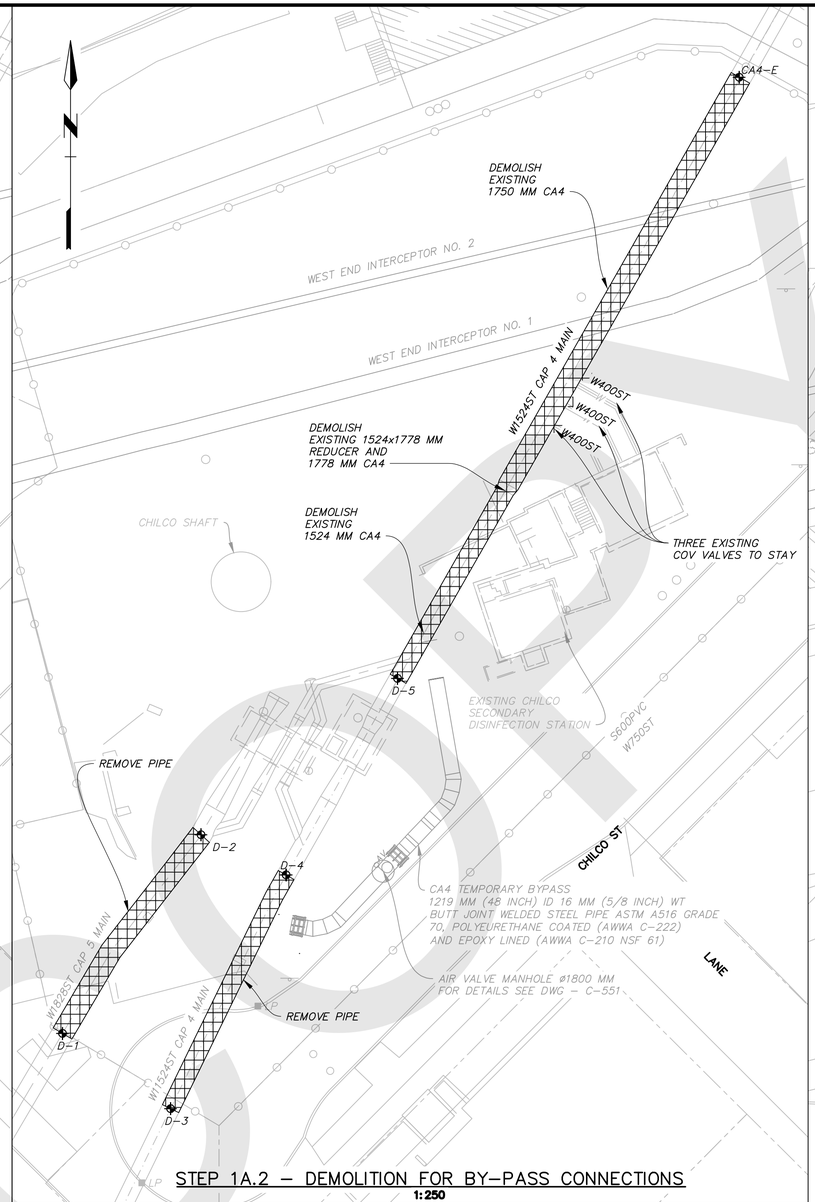
PRINTED: 2020–10–21 11:50 YU80873 C:\pwworking\hmm\tunnels\yu80873\d0109661\C240W3195.dwg

xref files: C000BW3195 C000SW3195 C000HW3195 C000NW3195 C000UW3195 C000WW3195 C000ACW3195 C000CW3195

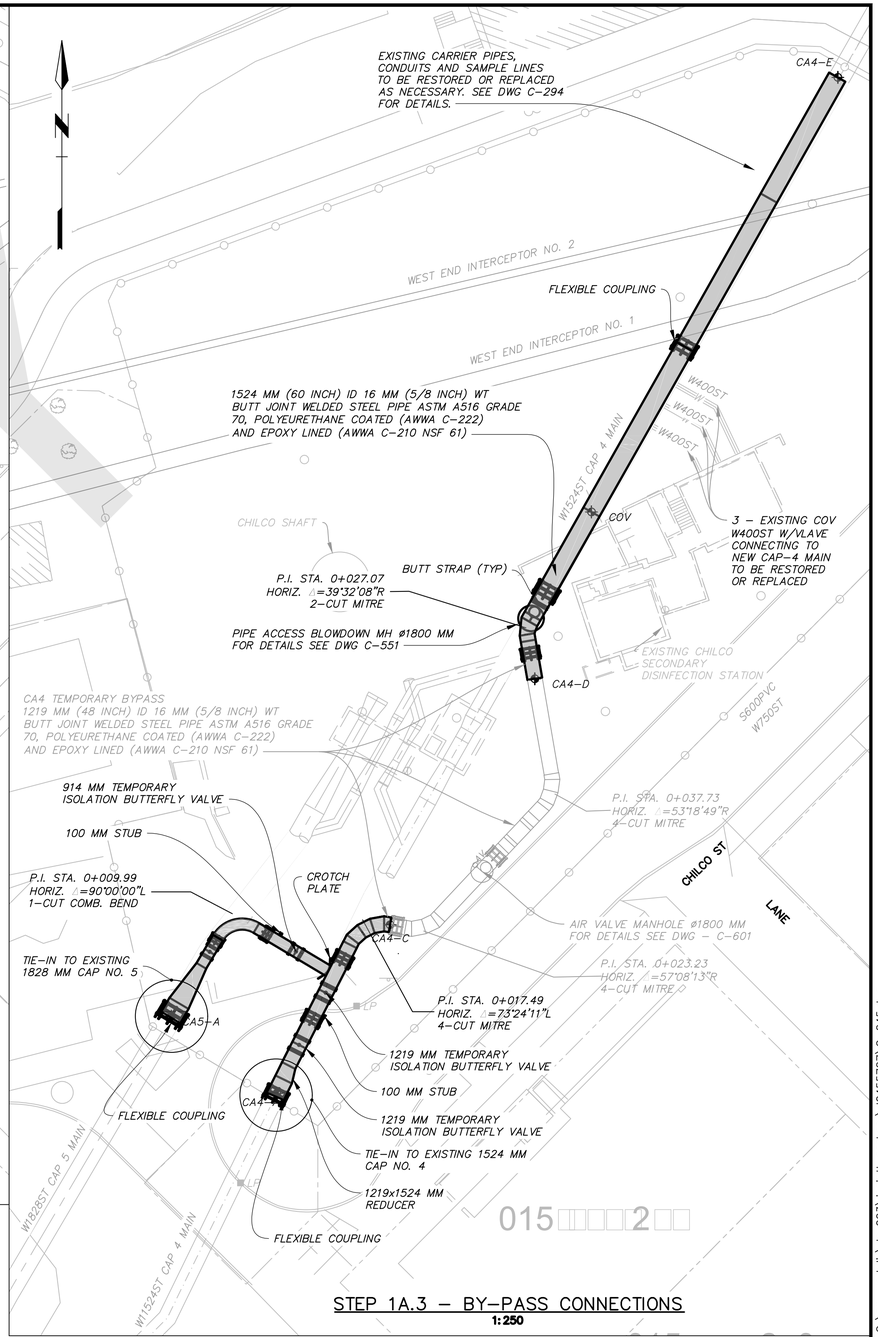
SAVED BY: YU80873 2020–10–21 11:50



STEP 1A.1 – BY–PASS LAYOUT
1:250



STEP 1A.2 – DEMOLITION FOR BY–PASS CONNECTIONS
1:250



STEP 1A.3 – BY–PASS CONNECTIONS
1:250

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BY–PASS COORDINATES

NOTES:
1. SEE DRAWING G–125 FOR GENERAL NOTES.

*DENOTES ITEM SUPPLIED BY THE CORPORATION

LEGEND:

PROPOSED PIPING

DENOTES AREA FOR DEMOLITION

VANCOUVER FRASER PORT AUTHORITY

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Professional Seal

Issue	Date	Desn	Dr'n	Chkd	Appd	Description
P4	OCT. 2020	MP	MG	AL	AL	ISSUED FOR 90% DESIGN REVIEW
P3	MAR. 2020	MP	JH	AL	AL	ISSUED FOR 60% DESIGN REVIEW
P2	OCT. 2019	MP	JH	AL	AL	ISSUED FOR 30% DESIGN
P1	05.2019	MP	JH	AL	AL	ISSUED FOR 30% DESIGN REVIEW

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GREATER VANCOUVER WATER DISTRICT

Design: MP
Drawn: MG
Checked: AL
AL Approved
BS Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

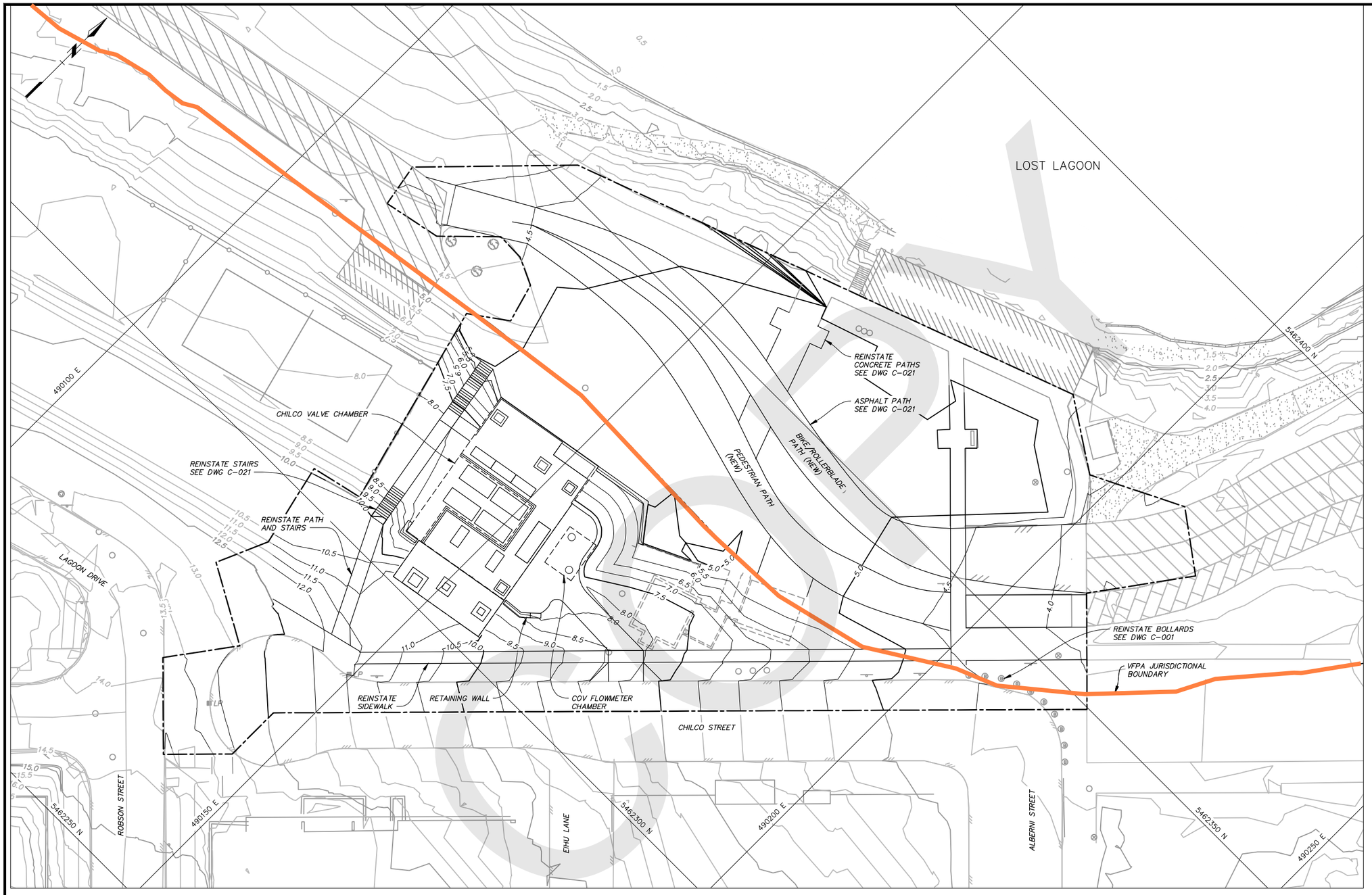
PIPING PLAN
TEMPORARY BY–PASS LAYOUT STEPS
CHILCO SHAFT AREA

SCALE: AS NOTED
DISTRICT FILE W–3226
DRAWING NUMBER C–245

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → P4

PRINTED: 2020–10–15 08:02 GASKAM C:\pw_workdir\den003\jejgint1_gaskam\d0455727\C–245.dwg

SAVED BY: GASKAM 2020–10–14 18:37



PLAN
1:250

2 m 0 1:200 10 m

NOTES

1. SEE DWG G–125 FOR GENERAL NOTES.
2. ROAD ACCESS TO BE RETURNED TO ORIGINAL STATE ON COMPLETION.
3. SEE DWG L–201 FOR SITE RESTORATION DETAILS.

VANCOUVER FRASER PORT AUTHORITY

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LEGEND

- EDGE OF ROAD
- FENCE
- UNDERGROUND STRUCTURE
- CONTRACTOR AREA
- CONCRETE
- BRICK PATHWAY
- GRAVEL TRAIL
- STRUCTURE
- GUY WIRE
- ELECTRICAL POLE
- LP LEAD PLUG
- CO CLEANOUT
- DECIDUOUS TREE
- BOLLARD
- SIGN
- CATCH BASIN
- MANHOLE
- LAYDOWN WAYPOINT
- WATER VALVE
- STREET LIGHT
- GAS VALVE
- AIR VENT
- ELECTRICAL BOX

MOTT MACDONALD

CHECK PRINT

THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

Professional Seal

Issue	Date	Desn	Dr'n	Chkd	Appd	Description

0 20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

GREATER VANCOUVER WATER DISTRICT

Design: CL
Drawn: HRS
Checked: DT
PJP Approved
PJP Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

PLAN
FINISHED GRADING
CHILCO SHAFT AREA

SCALE: AS NOTED
DISTRICT FILE W–3195
DRAWING NUMBER X–C–171

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO → P1

PRINTED: 2021–05–20 10:32 \\U80873 C:\pwworking\hmm\tunnels\yu80873\d0109664\X–C–171.dwg

xref files: C000BW3195 C000SW3195 C000HW3195 C000AAW3195 C000UW3195

SAVED BY: YU80873 2021–05–19 18:39

DWSR_DWG 800mm X 520mm Rev. July 2013

'WATCH OUT FOR BIKE' CROSSING SIGNAGE
BIKE DISMOUNT LOCATION WITH SIGNAGE
EXISTING LIGHT TO BE REMOVED
BOLLARD AT ENTRY INTO DISMOUNT
2.0m RECYCLED CONCRETE UNIT PAVER MULTI DIRECTIONAL PEDESTRIAN PATH
3m ASPHALT MULTI DIRECTIONAL BIKE/ROLLER LANE
0.5m SOD LAWN LANDSCAPE BUFFER

3m ASPHALT MULTI DIRECTIONAL BIKE/ROLLER LANE TO TIE INTO EXISTING NETWORK
2.0m RECYCLED CONCRETE UNIT PAVER MULTI DIRECTIONAL PEDESTRIAN PATH TO TIE INTO EXISTING NETWORK

BICYCLE DISMOUNT POINTS

NATURE HOUSE

BIKE/ROLLER PATH
PED. PATH
LAY DOWN AREA

PROPOSED LAY DOWN AREA

CHILCO STREET

EXISTING LIGHT TO BE REMOVED
BOLLARD AT ENTRY INTO DISMOUNT
BIKE DISMOUNT LOCATION WITH SIGNAGE

3.6m WESTBOUND ASPHALT ROLLER PATH TO TIE INTO EXISTING NETWORK
EXISTING LIGHTPOST
EXISTING GUARDRAIL TO BE CUT BACK
3.6m EASTBOUND ASPHALT BIKE LANE TO TIE INTO EXISTING NETWORK
EXISTING CONCRETE UNIT PAVER PEDESTRIAN PATH TO BE RETAINED
2.0m RECYCLED CONCRETE UNIT PAVER MULTI DIRECTIONAL PEDESTRIAN PATH
2.0m EXISTING CONCRETE PATHWAY
EXISTING LIGHTPOST
BIKE DISMOUNT LOCATION WITH SIGNAGE
2.0m EXISTING CONCRETE PATHWAY
EXISTING UNIT PAVERS
EXISTING PEDESTRIAN CROSSING
EXISTING LETDOWN – CONTRACTOR TO IMPLEMENT TRAFFIC CONTROLS TO PREVENT PEDESTRIAN USE

ROLLER PATH
BIKE PATH
PED. PATH
PEDESTRIAN PATH
LAY DOWN AREA

PLAN

VANCOUVER FRASER PORT AUTHORITY

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0 5 10 15 20 m

GENERAL NOTES:

1. SEE DWG G-125 FOR GENERAL NOTES.
2. SEE DWG C-225 FOR CONTRACTOR LAYDOWN DETAILS.

PWL partnership

MOTT MACDONALD

CHECK PRINT

THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

Professional Seal

Issue	Date	Desn	Dr'n	Chkd	Appd	Description
P5	2020.10.16		RO	GB,PL		ISSUED FOR 90% DESIGN REVIEW
P4	2020.08.10		RO	GB,PL		REVISED FOR LOOKOUT ISSUED FOR 60% DESIGN REVIEW
P3	2020.04.10		LC	GB,PL		ISSUED FOR 60% DESIGN REVIEW
P2	2019.10.01		LC	GB,PL		ISSUED FOR 30% DESIGN
P1	2019.07.08		LC	GB,PL		ISSUED FOR 30% DRAWING REVIEW

0 20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

GREATER VANCOUVER WATER DISTRICT

Design: PL
Drawn: RO
Checked: PL GB
Approved
Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

PLAN
PATH BYPASS
CHILCO SHAFT AREA

SCALE: 1:500
DISTRICT FILE W-3195
DRAWING NUMBER L-200

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P5

PRINTED: 2019-07-03 09:45 str32974 C:\Users\str32974\Documents\cmn5\template\Border_in_papers\paced.dwg

SAVED BY: Str32974 2019-07-03 09:59

PER No. 19-046-I

PLAN

VANCOUVER FRASER PORT AUTHORITY

This drawing has been reviewed by the Vancouver Fraser Port Authority solely for the purpose of VFPA's issuance of a Project Permit. This permit in no way denotes design, engineering or structural approval or endorsement.

0 5 10 15 20 m

GENERAL NOTES

1. SEE DWG G-125 FOR GENERAL NOTES.
2. SEE DWG C-295 FOR ROUGH FINAL GRADING INFORMATION.
3. SEE DEG S-205 FOR MAN ACCESS DETAILS.
4. ALL CONSTRUCTION DAMAGE INSIDE FENCE AND ALONG ACCESS ROUTES TO BE RESTORED TO THE ORIGIONAL CONDITIONS.

PWL partnership

MOTT MACDONALD

CHECK PRINT

THIS DRAWING HAS NOT BEEN APPROVED, AND MAY CONTAIN ERRORS AND OMISSIONS.

Professional Seal

Issue	Date	Desn	Dr'n	Chkd	Appd	Description
P5	2020.10.16		RO	GB,PL		ISSUED FOR 90% DESIGN REVIEW
P4	2020.08.10		RO	GB,PL		REVISED FOR LOOKOUT ISSUED FOR 60% DESIGN REVIEW
P3	2020.04.10		LC	GB,PL		ISSUED FOR 60% DESIGN REVIEW
P2	2019.10.01		LC	GB,PL		ISSUED FOR 30% DESIGN
P1	2019.07.08		LC	GB,PL		ISSUED FOR 30% DRAWING REVIEW

0 20 Bar is 20mm On Original Drawing. If Not On This Sheet, Adjust Scales Accordingly.

GREATER VANCOUVER WATER DISTRICT

Design: PL
Drawn: RO
Checked: PL GB
Approved
Manager

CAPILANO MAIN NO. 5
SOUTH SHAFT TO CHILCO
STANLEY PARK WATER SUPPLY TUNNEL

PLAN
SITE RESTORATION
CHILCO SHAFT AREA

SCALE: 1:500
DISTRICT FILE W-3195
DRAWING NUMBER L-201

SUPERSEDES PRINTS OF THIS DRAWING NUMBER WITH LETTERS PREVIOUS TO P5

PRINTED: 2019-07-03 09:45 str32974 C:\Users\str32974\Documents\cnm5\template\Border_in_paperspace.dwg

SAVED BY: Str32974 2019-07-03 09:59

DWGBR DWG 800mm X 520mm Rev. July 2013