SCHEDULE F

GEOTECHNICAL ASSESSMENT

Multi-Level Data Center

2090 East Wellington Road
Nanaimo, BC V9S 5V2

Legal Address:
Lot 1, Section 14 and 15, Range 7,
Mountain District, Plan EPP125890
PID: 032-109-831

Prepared For:
2779022 Ontario Inc.
alan.lam@greenvillahomes.com

August 29, 2025

File No.: E3282.01
Revision No.: 00
Prepared by:
Knut Lokken, EIT, GIT
Reviewed by:
Chris Hudec, M.A.Sc., P.Eng.

Lewkowich Engineering Associates Ltd.
1900 Boxwood Road
Nanaimo, BC, V9S 5Y2
250-756-0355 (Office)
250-756-3831 (Fax)
www.lewkowich.com
geotech@lewkowich.com

Permit to Practice Number: 1001802

Lewkowich Engineering Associates Ltd.

DISCLAIMER, ACKNOWLEDGMENTS, AND LIMITATIONS

1. Lewkowich Engineering Associates Ltd. (LEA) acknowledges that this Report, from this point forward referred to as "the Report," may be used by the City of Nanaimo (CoN) as a precondition to the issuance of a development and/or building permit. Notwithstanding any other statement in this Report, this Report may be relied upon by the CoN in considering a development permit application under the Local Government Act and/or in considering a building permit application under Section 56 of the Community Charter. It is acknowledged that this Report and any conditions contained in the Report may be included in a restrictive covenant and registered against the title of the property at the discretion of the CoN.
2. This Report has been prepared in accordance with standard geotechnical engineering practice solely for and at the expense of 2779022 Ontario Inc. We have not acted for or as an agent of the CoN in the preparation of this Report.
3. The conclusions and recommendations submitted in this Report are based upon the data obtained from a limited number of widely spaced subsurface explorations. Subgrade conditions are known only at the exploration locations and have been used to infer conditions throughout the site in preparation of this Report. The nature and extent of variations between these explorations may not become evident until construction or further investigation.
4. The conclusions and recommendations submitted in this Report are based upon information from relevant publications, a visual site assessment of the Property, encountered and inferred subsurface conditions, current construction techniques, and generally accepted engineering practices. No other warrantee, expressed or implied, is made. If unanticipated conditions become known during construction or other information pertinent to the development becomes available, the recommendations may be altered or modified in writing by the undersigned.
5. This Report was authored, to the best of our knowledge at the time of issuance, with considerations for local requirements specific to the Authority Having Jurisdiction (AHJ) and their standards for the preparation of such Reports, the 2024 British Columbia Building Code (BCBC), and current engineering standards. Updates to bylaws, policies, or requirements of the AHJ, and updates to the BCBC or professional practice guidelines, may impact on the validity of this Report.
6. This Report has been prepared by Knut Lokken, EIT, GIT, and reviewed by Chris Hudec, M.A.Sc., P.Eng. Mr. Lokken and Mr. Hudec are both adequately experienced and are also members in good standing with the Engineers and Geoscientists of British Columbia (EGBC).

EXECUTIVE SUMMARY

1. The following is a brief synopsis of the Property, assessment methods, and findings presented in the Report. The reader must read the Report in its entirety; the reader shall not rely solely on the information provided in this summary.
2. The subject property, 2090 East Wellington Road, Nanaimo, BC, from this point forward referred to as "the Property," is located on eastern Vancouver Island within the jurisdictional boundaries of the CoN. The proposed development for the Property at the time of this Report is a multi-storey data center with a slab on grade foundation and surface parking.
3. A site-specific assessment was conducted to identify any potential geotechnical hazards for the Property and proposed development. Our assessment determined that there are mapped abandoned underground coal mine working underlying the property.
4. The Report concludes that the Property is not impacted by the abandoned coal workings due to the thickness of bedrock above the mined coal seam.
5. Based on subsurface investigation results, unsuitable materials for the proposed development were encountered from surface to depths ranging from 0.1m to 1.3m across the site and should be removed prior to the placement of concrete footings.
6. The findings confirm the development is considered safe as proposed, and the land is considered safe for the use intended, provided the recommendations in this Report are followed.

List of Abbreviations and Acronyms Used in the Report

Abbreviation	Title
AHJ	Authority Having Jurisdiction
BCBC	British Columbia Building Code
CoN	City of Nanaimo
DPA	Development Permit Area
EGBC	Engineers and Geoscientists of British Columbia
LEA	Lewkowich Engineering Associates Ltd.
SLS	Service Limit State
TP	Test Pit
ULS	Ultimate Limit State

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 General

a. As requested, LEA has carried out a geotechnical assessment of the subject Property with respect to the proposed development. This Report provides a summary of our findings and recommendations.

1.2 Background

a. We understand the proposed development consists of a new multi-storey data center and surface parking. Architectural drawings were not available at the time of this Report. A site survey with the proposed development location is attached to the Report.

b. We further understand the development will consist of conventional construction methods, including typical cast-in-place concrete foundations, a slab on grade flooring system, and a wood or steel frame superstructure.

c. This property is with the jurisdictional limits of the CoN, and within the DPA 4 – Abandoned Mine Workings Hazard. Therefore, we understand a geotechnical assessment and report is required to assist in determining what conditions or requirements shall be included in the development and/or building permit so that the proposed development is protected from the identified hazards and no increase in hazard is posed to existing development on or near the Property.

d. A Preliminary Geotechnical Assessment authored by WSP Canada Inc. for a future connector road was issued in 2021.[1]

1.3 Assessment Methodology

a. This assessment included a desktop review of relevant background information, including applicable CoN bylaws, registered covenants on title, aerial photographs, geology, topography, and coal mine mapping. Please refer to the list of references at the end of this Report.

b. LEA completed a subsurface investigation on August 12th, 2025, to characterize subsurface conditions across the Property and development area. The investigation involved excavation of eleven TPs to approximate depths ranging from 0.1m to 1.3m utilizing a Bobcat E60 excavator. The TPs provided information regarding soil stratigraphy, groundwater levels, and potential issues such as the presence of unsuitable fill. Two areas of prominent bedrock outcrops at surface were also recorded during the investigation.

c. A site plan showing the locations of the TPs, along with the TP logs, are provided in the appendices at the end of this Report.

1.4 Covenant Review

a. As part of our assessment, we have reviewed the documents registered on the legal title of the Property, specifically, any restrictive covenants registered against the Property that may relate to the conclusions and recommendations provided in this Report.

b. Current to the date of this Report, there are five restrictive covenants registered against the Property, as listed below:

   i. Covenant CB512114 – CoN – Section 219

   ii. Covenant CB512115 – CoN – Road Access

   iii. Covenant CB512116 – CoN – Highway Reservation

   iv. Covenant CB512120 – CoN – Noise Abatement

   v. Covenant CB512121 – CoN – Tree Retention

c. The covenants are not relevant to geotechnical hazards and therefore do not impact the findings, recommendations, or conclusions of this Report.

2.0 SITE CONDITIONS

2.1 Physical Setting

a. The Property is located within the jurisdictional limits of the CoN in central Nanaimo. The Property is identified with the following legal and civic addresses:

   i. Lot 1, Section 14 and 15, Range 7, Mountain District, Plan EPP125890, PID: 032-109-831;

   ii. 2090 East Wellington Road, Nanaimo, BC.

b. The Property is located within the High Tech Industrial (I3) zoning area. The Property is bound by East Wellington Road to the south and Single Dwelling Residential (R1) zoned properties to the north, east, and west.

c. The Property is a nearly rectangular shaped lot with an existing single-family residence in the southwest corner. See Figure 2.1 below.

d. The Property is located within DPA 4 – Abandoned Mine Workings Hazard due to historic coal mines underlying the northern and southern extents, and DPA 7 – Nanaimo Parkway Design due to the proximity to the Nanaimo Parkway. DPA 7 does not relate to geotechnical hazards and is therefore not discussed as part of this Report.

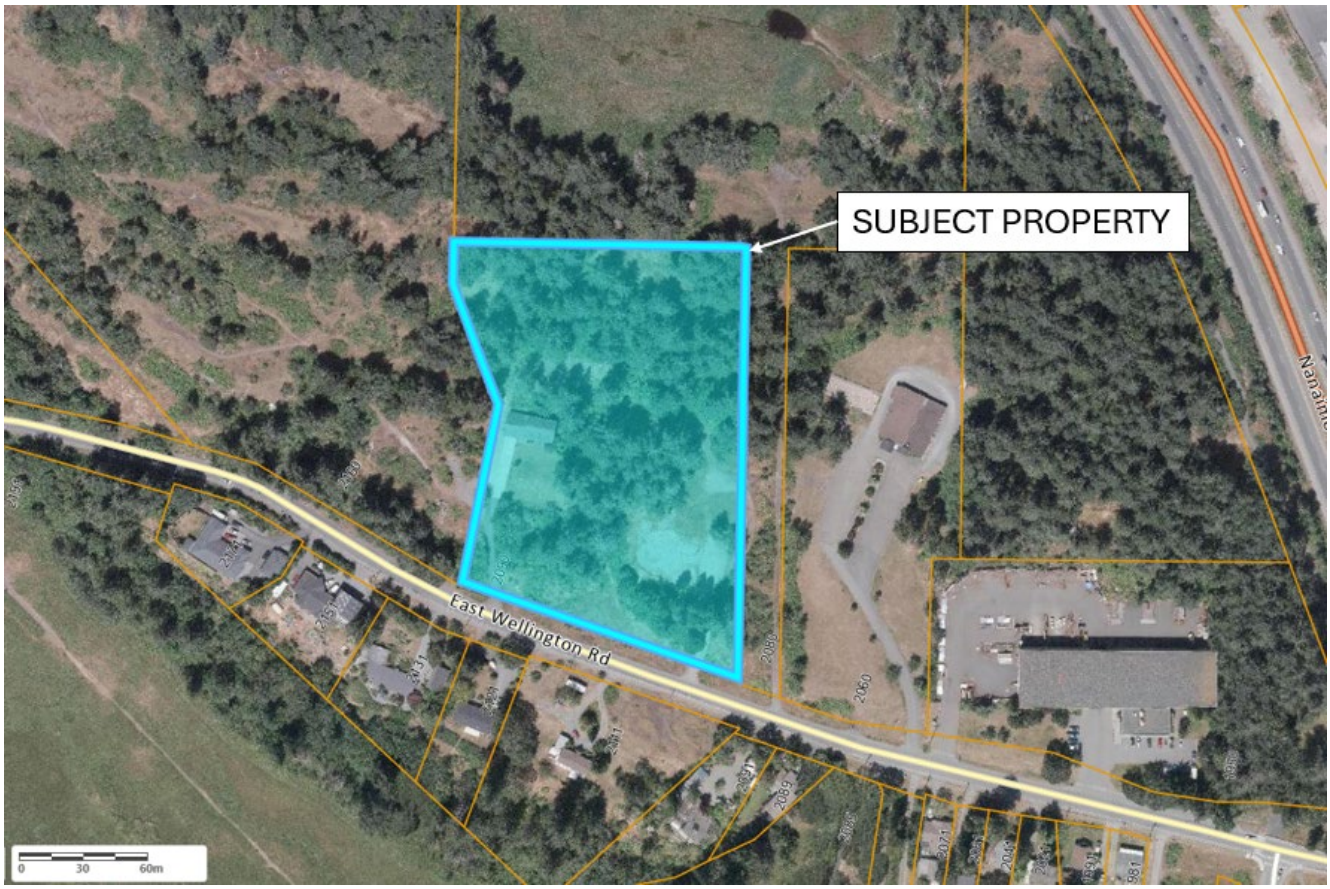


Figure 2.1 – Location of Subject Property[2]

2.2 Terrain and Features

a. The Property is generally flat, with an overall average slope of less than 5 degrees from the north to south. Elevations within the Property range from approximately 83.3m in the southeast corner, up to 90.6m in the north of the property, for a total vertical relief of approximately 7.3m.[3]

b. The Property is vegetated with mixed wood forest of medium to tall trees with shrub understory. Typical residential lawn cover is present surrounding the existing single-family residence in the southwestern corner. Refer to photos 2.2.1 to 2.2.3 below.

Photo 2.2.1 – Residential lawn cover near existing single-family residence at TP25-04, looking southeast.

Photo 2.2.2 – Mixed wood forest at TP25-07, looking west.

Photo 2.2.3 – Bedrock outcrop at Rock Outcrop 1, looking northwest.

2.3 Regional Geology

a. Surficial geology mapping indicates the Property falls within an area of bedrock outcrop.[4]

b. Bedrock geology mapping indicates the Property falls within an area identified as the Nanaimo Group, comprised of undivided sedimentary rock from the Upper Cretaceous period, generally consisting of boulder, cobble, and pebble conglomerate, coarse to fine sandstone, siltstone, shale, and/or coal.[5,6]

2.4 Soil Conditions

a. Soil conditions varied across the site, where both historic fills, natural soils, and bedrock outcrops were encountered during subsurface investigation. The observed bedrock was generally consistent with the published geological mapping.

b. All eleven TPs encountered bedrock, inferred by effective refusal of the excavator. The inferred bedrock depth ranged from 0.1m to 1.3m, varying in depth across the study area. Bedrock was observed at surface in two locations on the Property.

c. Loose silt topsoil directly overlying shallow bedrock was encountered in TP25-01, TP25-02, and TP25-08. Similar topsoil was encountered at surface in all TPs but TP25-05, TP25-10, and TP25-11, ranging from surface to a depth of 0.2m. An original loose silt topsoil layer was encountered below historic fills in TP25-

04, TP25-05, and TP25-11, ranging from 0.4m to 1.3m depth.

d. Historic silty sand fills with varying percentages of gravel were observed in all TPs apart from TP25-01, TP25-02, and TP25-08, ranging from surface to a depth of 1.0m.

Table 2.1 – Summary of Encountered Soil Strata

Soil Stratum No.	Soil Description	Depth Range (m)	
		From	To
1	GRAVEL, some sand, trace organics (rootlets, matter), loose, grey, dry (FILL)	0.0	0.1
2	Sandy SILT, some organics (sod, rootlets, roots, matter), trace to some gravel, loose, brown to black, moist to dry (TOPSOIL)	0.0	1.3
4	Silty gravelly SAND, trace cobble and boulders, trace debris (concrete, plastic), loose to dense, light brown to black, dry to moist (FILL)	0.1	1.0

2.5 Groundwater Conditions

a. No groundwater or seepage was encountered during excavation of the TPs and there was no ponding water observed on the Property.

b. A groundwater well is located on the Property in the southeast corner, near the footprint of a historic single-family residential development that is no longer present. The well was installed in conglomerate bedrock at 48.8m depth with a static water level of 14.3m below ground surface.[6] We expect similar groundwater conditions throughout the Property, where the static groundwater level is below the bedrock elevation.

c. Considering the shallow bedrock conditions, we expect a perched groundwater level and surface water flow may be present seasonally during winter months.

d. Groundwater levels can be expected to fluctuate seasonally with cycles of precipitation. Groundwater conditions at other times and locations can differ from those observed at the at the time of our assessment.

3.0 ABANDONED COAL MINE WORKINGS

3.1 Review of Available Mine Information

a. There are documented underground coal mine workings within this area of Nanaimo. Therefore, as part of our assessment, we have reviewed available coal mine abandonment plans as referenced at the end of this

Report[7,8,9]. In addition to the referenced materials, a series of untitled/unsigned hand drawn maps were reviewed as part of our assessment.

b. Based on a review of the available coal mine information, the Property is partially undermined across the center of the property. These documented workings, known as the Chandler Mine, extracted the Wellington Seam from 1882 to 1893. The mine workings below the Property were exploratory workings extending from the No. 1 Chandler Shaft located near the intersection of Maxey Road and East Wellington Road. The surface elevation at the approximate shaft location is 64m. The shaft hit the coal seam at approximately 76m (250 feet) depth, or an elevation of -12m. The coal workings were irregular and thickness ranged from 0.0m to 2.4m.[10] The workings east of the No. 1 Chandler Shaft were mined from 1882 to 1884, after which they were abandoned as they did not encounter commercially workable coal.[10,11]

c. Based on the available mine abandonment plans and the attached Site Plan, the proposed multi-storey data center development overlays the mine extent. The extents of the Chandler Mine in relation to a Google Earth satellite image of the Property is shown in Figure 3.1 below. The Figure shows the approximate location of the exploratory excavated tunnels and mine extents. We note the mapping and overlay figure is not exact, and there could be up to 10m of discrepancy.

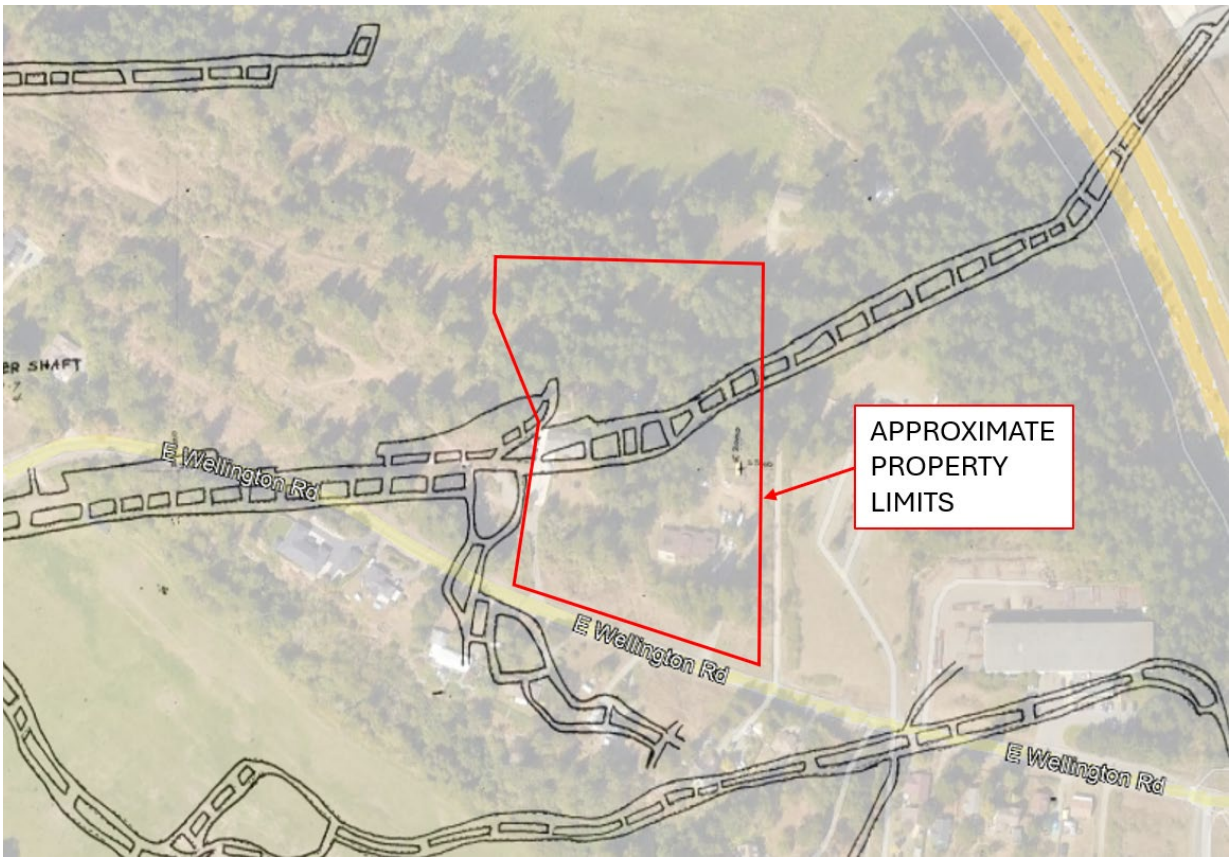


Figure 3.1: Approximate limits of the Chandler underground coal mine workings

d. The workings in this area included a series of mine entrances in the form of vertical shafts. The nearest documented shaft entrances to the Property is the No. 1 Chandler Shaft, located approximately 350m west of the Property.

3.2 Mine Hazard Assessment

a. Based on a review of the available coal mine information as discussed in Section 3.1 of this Report, we conclude the Chandler Mine workings below the Property are approximately 95m to 102m below the current ground surface.

b. Based on site investigation observations and a review of published geology mapping, the depth to bedrock on site is 0.0m to 1.3m.

c. The Property is located approximately 350m away from the nearest documented surface opening, which is a shaft entrance. This is adequate horizontal separation to negate any potential impact to the development from the nearest documented surface opening. Please note there is a margin for error with transcription details from abandonment plans to current imagery and Property lines.

d. Based on the mine abandonment plans, the most likely form of mining operations and coal extraction below the property was by the Room & Pillar method for exploratory workings. The most common failure mechanism associated with the Room & Pillar method is "caving." Caving occurs as the roof over a mine opening fractures and collapses into the space where the extraction has occurred. This caving process continues until the space is either occupied with bulked fallen debris, or the caving reaches the surface and causes subsidence. Therefore, the thickness of the surficial cover over the mine becomes the critical factor in determining the subsidence potential in these areas.

e. There are several methods used to determine a minimum soil and/or bedrock thickness above a coal seam beyond which caving subsidence will not be expected to reach the surface. Piggott and Eynon[12] provide relations that predict the propagation / height of collapse above a mine (H), based on the geometry of the collapse, extraction thickness (h), and overburden bulking factors (bf). Based on bulking factor of 30% for typical coal measure bedrock strata, they suggest subsidence will not propagate to the ground surface over Room & Pillar workings where the thickness of surficial cover (H) to extraction thickness (h) ratio (H/h) exceeds 10. Based on this method, the H/h ratio within the Property is approximately 95m/2.4m = 39. This assumes 95m of typical coal measure bedrock strata above the workings, and a coal seam thickness of 2.4m (maximum thickness of the exploratory workings[10]).

f. The calculated H/h ratio is beyond the margin of error for the anticipated subsurface soil and mine conditions. Therefore, we conclude the Property is unlikely to be impacted by abandoned coal mine workings. Foundation reinforcement and/or other mitigating measures are not warranted for the proposed construction due to abandoned mine workings in the area.

4.0 DESIGN PHASE

4.1 Foundation Design

a. Prior to construction, the foundation areas should be stripped to remove all unsuitable materials to provide an undisturbed natural subgrade for footing support.

b. Foundation loads should be supported on bedrock or structural fill, approved for use as a bearing stratum by our office, and may be designed using the following values:

   i. For foundations constructed on structural fill as outlined in Section 5.2 of this Report, an SLS bearing pressure of 150 kPa and a ULS of 225 kPa may be used for design purposes. These values assume a minimum 0.45m footing embedment depth.

   ii. For foundations constructed on bedrock, an SLS bearing pressure of 250 kPa and a ULS of 375 kPa may be used for design purposes. These values assume a minimum 0.45m footing embedment depth.

c. Exterior footings should be provided with a minimum 0.45m depth of ground cover for frost protection.

d. The Geotechnical Engineer should evaluate the subgrade conditions at the time of construction to confirm that subsurface conditions do not materially differ to those encountered during the subsurface investigation and that footings are based on appropriate and properly prepared founding material.

4.2 Seismic Criteria

a. Based on the 2024 BCBC (Division B, Part 4, Section 4.1.8.4.), the encountered and inferred subgrade conditions would be designated as “Site Class C” (very dense soil or soft rock).

b. A site specific determination of the Vs30 value is likely to result in a better Vs30 value than the Vs30 value of 360 that a generic Site Class C determination provides. Please request a quote for this testing if desired.

c. Refer to the attached 2020 NBC Seismic Hazard Values.

5.0 CONSTRUCTION PHASE

5.1 General Excavation – Future Building Sites

a. Prior to construction, all unsuitable materials should be removed to provide a suitable base of support. Unsuitable materials include any non-mineral material such as vegetation, topsoil, peat, fill, or other materials containing organic matter, as well as any soft, loose, or disturbed soils.

b. Based on the TP investigation, unsuitable materials were encountered to depths ranging from 0.1m to 1.3m below ground surface, with an average depth of approximately 0.5m.

c. Groundwater ingressing into any excavations should be controlled with a perimeter ditch located just outside of the building area, connected to positive drainage and/or discharged using conventional sumps and pumps.

d. Prior to placement of concrete footings, any bearing soil that has been softened, loosened, or otherwise disturbed during the course of construction, should be removed or else compacted following our recommendations for structural fill. Compaction will only be feasible if the soil has suitable moisture content and if there is access to heavy compaction equipment. If no structural fill is placed, a smooth-bladed clean up bucket should be used to finish the excavation.

e. The Geotechnical Engineer is to confirm the removal of unsuitable materials and approve the exposed competent inorganic subgrade, prior to placement of any structural fill.

5.2 Structural Fill

a. Where fill is required to raise areas that will support foundations, slabs, or pavements, structural fill should be used. The Geotechnical Engineer should first approve the exposed subgrade in fill areas, to confirm the removal of all unsuitable materials.

b. Structural fill should be inorganic sand and gravel. If structural fill placement is to be carried out in the wet season, material with a fines content limited to 5% passing the 75µm sieve should be used, as such a material will not be overly sensitive to moisture, allowing compaction during rainy periods of weather.

c. Structural fill should be compacted to a minimum of 95% of Modified Proctor maximum dry density (ASTM D1557) in foundation and slab areas, as well as in pavement areas.

d. Structural fill under foundations, slabs, and pavements should include the zone defined by a plane extending down and outward a minimum 0.5m from the outer edge of the foundation at an angle of 45 degrees from horizontal to ensure adequate subjacent support. This support zone is shown below in Figure 5.2.

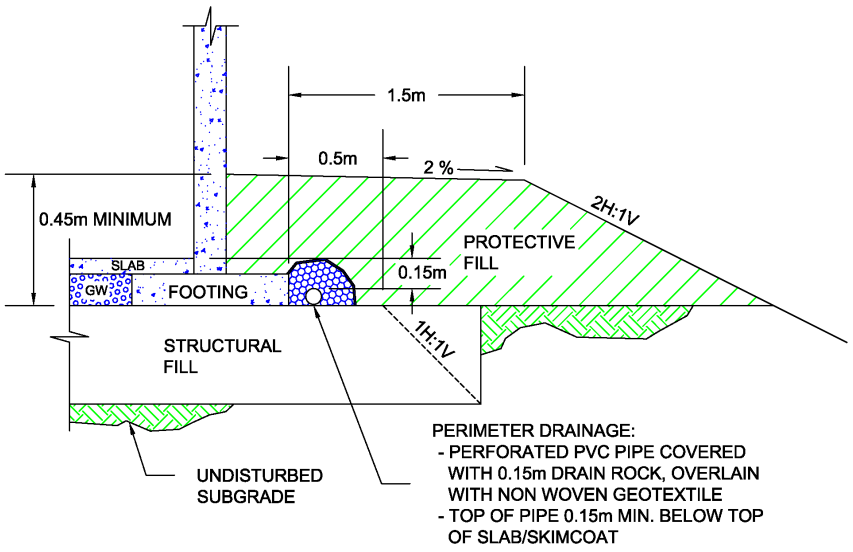


Figure 5.2 – Typical Section, Structural Fill

e. Compaction of fill should include moisture conditioning as needed to bring the soil to the optimum moisture content and compacted using vibratory compaction equipment in lift thicknesses appropriate for the size and type of compaction equipment used.

f. A general guideline for maximum lift thickness is no more than 100mm for light hand equipment such as a "jumping-jack," 200mm for a small roller, and 300mm for a large roller or heavy (>500 kg) vibratory plate compactor or a backhoe mounted hoe-pac or a large excavator mounted hoe-pac, as measured loose.

g. It should be emphasized that the long-term performance of foundations, slabs, and pavements is highly dependent on the correct placement and compaction of underlying structural fill. Consequently, we recommend that structural fill be observed and approved by the Geotechnical Engineer. This would include approval of the proposed fill materials and performing a suitable program of compaction testing during construction.

5.3 Foundation Drainage

a. Our assessment did not identify any abnormal groundwater conditions that would necessitate special foundation drainage measures outside of the 2024 BCBC. Conventional requirements of the 2024 BCBC pertaining to building drainage are considered suitable at this site.

b. In addition to BCBC requirements, a layer of non-woven geotextile with a minimum weight of 140 g/m^2 shall be placed between the 150mm thick drain rock layer and the foundation backfill in order to prevent the migration of fine-grained soil particles into the drainage system.

c. The final site grades shall be sloped to direct surface water away from the building and foundation areas.

d. We assume all foundation drainage systems will be designed, inspected, and approved by Others (i.e., the

project Civil or Mechanical Consultant).

5.4 Stormwater Management

a. As part of the geotechnical investigation, field observations of the subgrade conditions with respect to the on-site infiltration and disposal of stormwater were carried out.

b. Subgrade conditions consist of thin surficial fill/soil (0.1m to 1.3m thickness) overlying bedrock at shallow depth. No groundwater table was encountered during test pitting.

c. Based on the subgrade conditions encountered during the geotechnical investigation, it is the opinion of LEA that site conditions are not conducive to the installation of on-site stormwater infiltration measures.

d. Site conditions may be conducive to the installation of storm water detention measures. Any proposed detention measures shall be reviewed by the Geotechnical Engineer to determine if the design methods and/or locations pose a hazard to the development, the Property, or any adjacent or adjoining properties.

e. We assume all site drainage systems will be designed, inspected, and approved by Others (i.e., the project Civil or Mechanical Consultant).

5.5 Pavement Design – Private Works

a. Any organic or deleterious material should be removed from beneath the designated roadway, driveway, or parking areas prior to subgrade preparation. If fill is required to bring the subgrade up to the desired elevation, structural fill should be used.

b. The subgrade should be proof rolled after final compaction and any areas showing visible deflections should be inspected and repaired. The Geotechnical Engineer shall review the pavement subgrade conditions during the course of excavation.

c. All subgrade and pavement structures should be sloped to provide adequate drainage as per the design and direction of the Civil Consultant.

d. An estimated soaked California Bearing Ratio of 30% and a 20-year design life have been used in calculating pavement designs. See Tables 5.5.1 and 5.5.2 below.

Table 5.5.1 – Pavement Design Recommendations for Light Traffic/Low Volume Areas

Areas Subject to Cars and Small Trucks	
Estimated Equivalent Single-Axle Load: 2×10^4	
Asphaltic Concrete Pavement	50mm
19mm Well-Graded Granular Base Course	100mm
75mm Select Granular Subbase (SGSB)	250mm

Table 5.5.2 – Pavement Design Recommendations for Heavy Traffic/High Volume Areas

Areas Subject to Large Trucks	
Estimated Equivalent Single-Axle Load: 2×10^5	
Asphaltic Concrete Pavement	75mm
19mm Well-Graded Granular Base Course	150mm
75mm Select Granular Subbase (SGSB)	300mm

e. It is recommended that a reinforced concrete slab be utilized where garbage dumpsters are located. The slab should be large enough to contain the disposal unit and front tires of the garbage truck during disposal operations.

f. The above recommendations for subgrade and pavement structure are in accordance with current best practices. If the recommendations provided here prove cost-prohibitive or restrictive, alternative options may be considered, through a balance of reduced preparation efforts with a corresponding reduction in pavement design life.

6.0 CONCLUSIONS

6.1 Local Government Conformance Statement

a. From a geotechnical point of view, and provided the recommendations in this Report are followed, the land is considered safe for the use intended (defined for the purposes of this Report as a new multi-storey data center with a slab on grade foundation and surface parking), with the probability of a geotechnical failure resulting in Property damage of less than:

   i. 2% in 50 years for geotechnical hazards due to seismic events, including slope stability; and,

   ii. 10% in 50 years for all other geotechnical hazards.

6.2 Geotechnical and Quality Assurance Statement

a. The 2024 BCBC requires that a Geotechnical Engineer be retained to provide Geotechnical Assurance services for the construction of buildings that are outside of Part 9 of the BCBC. Geotechnical Assurance services include review of the geotechnical components of the plans and supporting documents, and responsibility for field reviews of these components during construction.

7.0 CLOSURE

a. LEA appreciates the opportunity to be of service on this project. If you have any comments, or additional requirements at this time, please contact us at your convenience.

Respectfully Submitted,
Lewkowich Engineering Associates Ltd.

2025-08-29

Prepared by:
Knut Lokken, EIT, GIT
Geotechnical Engineer-in-Training
Geoscientist-in-Training

Reviewed by:
Chris Hudec, M.A.Sc., P.Eng.
Senior Project Engineer

8.0 ATTACHMENTS

1. Newcastle Engineering Ltd., 2090 East Wellington Road, Project 1195-001, Dwg No. 100 to 107, dated January 24, 2025.
2. LEA, Test Pit Location Plan, Dwg No. E4757-01, dated August 14, 2025.
3. LEA, Test Pit Logs, TP25-01 to TP25-11, dated August 12, 2025.
4. 2020 NBC Seismic Hazard Values.

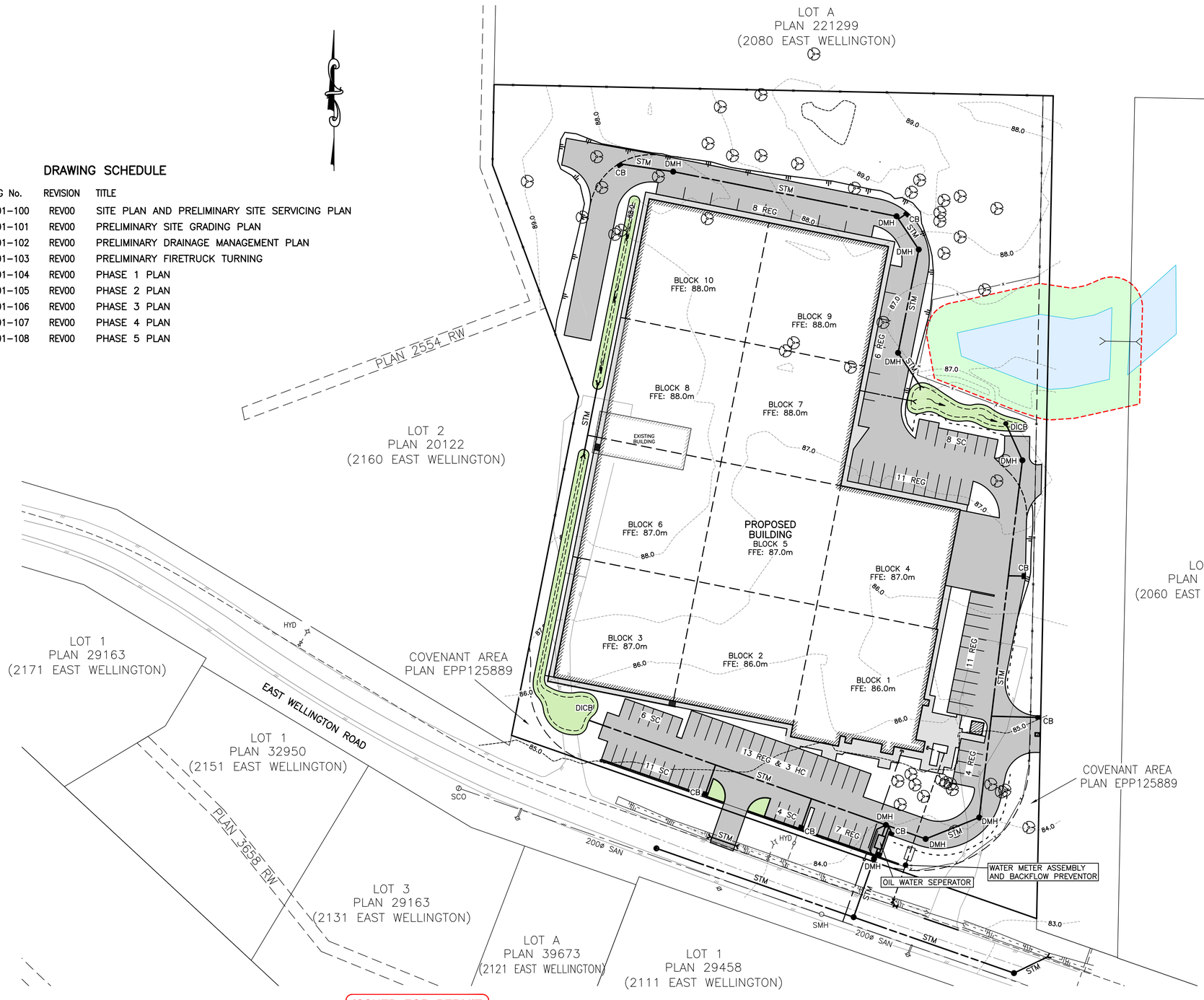
9.0 REFERENCES

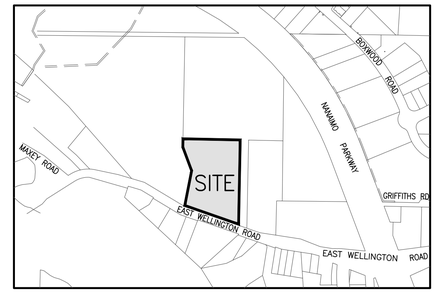
1. WSP Canada Inc., File No. 211-02737-01, Preliminary Geotechnical Assessment 2086 and 2090 East Wellington Road – Future Connector Road, dated November 8, 2021.
2. City of Nanaimo, Online GIS Mapping System, accessed July 2025.
3. LidarBC, Open Lidar Data Portal, BCGS Time Names: bc_092G011_3_3_1_xyes_8_utm10_20240214_20240331, Data Acquisition: 2024.
4. Geological Survey of Canada, Surficial Geology Nanaimo, British Columbia, Map 27-1963, Sheet 92 G/4 and 92 F/1 East, 1963.
5. British Columbia Geological Survey, Geology of British Columbia, South Sheet, Geoscience Map 2005-3, Massey, N.W.D, MacIntyre, D.G., Desjardins, P.J. and Cooney, R.T., 2005.
6. Province of BC, Interactive Web-Map, iMapBC, accessed July 2025.

7. Spatial Systems Ltd., Coal Mine Underground Workings Atlas, dated August 2004.
8. Island Geotechnical Services Ltd., prepared for the Ministry of Energy, Mines and Petroleum Resources, Coal Workings – Nanaimo Field, Composite Plan, Sheet 3, dated July 1979.
9. City of Nanaimo, Guidelines for Geotechnical Assessments above Abandoned Mine Workings, Updated May 2024.
10. Annual Report of the Minister of Mines, Province of British Columbia, dated December 31, 1883.
11. Annual Report of the Minister of Mines, Province of British Columbia, dated December 31, 1884.
12. Piggott and Eynon, Ground Movements Arising from the Presence of Shallow Abandoned Mine Workings, dated 1977.

DRAWING SCHEDULE

CITY DWG No.	NEL DWG No.	REVISION	TITLE
.	1195-001-100	REV00	SITE PLAN AND PRELIMINARY SITE SERVICING PLAN
.	1195-001-101	REV00	PRELIMINARY SITE GRADING PLAN
.	1195-001-102	REV00	PRELIMINARY DRAINAGE MANAGEMENT PLAN
.	1195-001-103	REV00	PRELIMINARY FIRETRUCK TURNING
.	1195-001-104	REV00	PHASE 1 PLAN
.	1195-001-105	REV00	PHASE 2 PLAN
.	1195-001-106	REV00	PHASE 3 PLAN
.	1195-001-107	REV00	PHASE 4 PLAN
.	1195-001-108	REV00	PHASE 5 PLAN





LOCATION PLAN
N.T.S.

NOTES:

1. ALL WORK AND MATERIALS ARE TO BE AS DESCRIBED IN THE 2020 EDITION OF THE CITY OF NANAIMO'S ENGINEERING STANDARDS AND SPECIFICATIONS OR AS OTHERWISE APPROVED BY THE CITY OF NANAIMO'S ENGINEERING SERVICE DIVISION.
2. THE CITY OF NANAIMO'S CONSTRUCTION DIVISION SHALL BE NOTIFIED 48 HOURS PRIOR THE COMMENCEMENT OF WORK ON-SITE.
3. CONNECTION TO, OR ALTERATION OF EXISTING CITY OWNED UTILITIES WILL BE UNDERTAKEN BY CITY OF NANAIMO FORCES ONLY, UNLESS OTHERWISE AUTHORIZED BY THE DIRECTOR OF PUBLIC WORKS.
4. A "PERMIT TO INSTALL WORKS WITHIN CITY STREETS, LANES, AND CITY PROPERTY AREAS" WILL BE REQUIRED WHERE CONSTRUCTION IS TO BE UNDERTAKEN IN THESE AREAS.
5. CONTRACTOR IS TO COMPLY WITH ALL APPLICABLE MINISTRY OF ENVIRONMENT AND FISHERIES & OCEANS CANADA REQUIREMENTS AT ALL TIMES DURING CONSTRUCTION.
6. LOCATE FIRE HYDRANTS SO THAT STREET SIDE PORT DOES NOT PROTRUDE OVER SIDEWALK.
7. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.
8. CONTRACTOR TO CONFIRM THE LOCATION AND INVERT OF EXISTING UTILITIES AT ALL CROSSINGS AND CONNECTION POINTS AND REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION
9. CONTRACTOR TO CONFIRM THAT THE ELEVATION, LOCATION AND GRADIENT OF CURB AND GUTTER MATCH EXISTING PRIOR TO PLACEMENT OF CONCRETE.
10. EXISTING EDGE OF PAVEMENT TO BE SAWCUT STRAIGHT BACK TO THE REQUIRED THICKNESS OF SOUND PAVEMENT TO ENSURE POSITIVE DRAINAGE TO PROPOSED GUTTER, OR AS DIRECTED BY THE CITY OF NANAIMO PUBLIC WORKS INSPECTOR.
11. ALL WORK TO BE EXECUTED IN COMPLIANCE WITH WORKSAFE BC REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR FAMILIARIZING THEMSELVES AND ALL PERSONNEL INVOLVED IN THE PROJECT WITH THE MOST CURRENT VERSION OF THESE REQUIREMENTS AND ENSURING THAT THEY ARE ADHERED TO AT ALL TIMES.
12. TO AVOID IMPACTS AND CONFLICT WITH SECTION 34 OF THE WILDLIFE ACT ALL LAND CLEARING ACTIVITIES SHOULD BE SCHEDULED TO OCCUR DURING THE AUGUST 1 – MARCH 1 PERIOD. ANY LAND CLEARING ACTIVITIES UNDERTAKEN DURING THE MARCH 1 – AUGUST 1 MUST BE PRECEDED BY A BIRD NEST SITE SURVEY. ACTIVE NEST SITES SHOULD BE IDENTIFIED AND FLAGGED SO THE THE NEST SITES CAN BE LEFT UNDISTURBED UNTIL THE YOUNG BIRDS HAVE FLEDGED AND LEFT THE NEST. SECTION 34(c) OF THE WILDLIFE ACT PROHIBITS THE DISTURBANCE OF A BIRD, EGG, OR NEST WHILE THE NEST IS OCCUPIED.
13. ALL ON-SITE WATER, SEWER & DRAINAGE WORKS NOT COVERED BY NFPA 13 OR THE CITY OF NANAIMO MANUAL OF ENGINEERING STANDARDS & SPECIFICATIONS ARE TO COMPLY WITH THE B.C. PLUMBING CODE.
14. ALL ON-SITE FIRE SUPPLY WATERWORKS ARE REQUIRED TO BE TESTED IN ACCORDANCE WITH NFPA-13. A LICENSED PLUMBER HOLDING AS TRADE QUALIFICATION CERTIFICATE MUST PERFORM THE TEST, CONSISTING OF AS 200 psi HYDROSTATIC PRESSURE TEST TWO HOURS IN DURATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH THE REQUIREMENTS OF NFPA-13.
15. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
16. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.
17. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.

AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

BC 1 CALL
1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

SCALE 1:500

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.	PROP.	EXIST.
WATERMAIN		HYDRANT	
STORM SEWER		ABOVE GROUND FLUSHOUT	
SANITARY SEWER		BELOW GROUND FLUSHOUT	
GAS MAIN		CATCHBASIN	
ELECTRICAL DUCT		DITCH INLET CB	
INLET/OUTLET HEADWALL		MANHOLE	
DITCH INLET/OUTLET		CLEANOUT	
SWALE		HYDRO POLE	
EDGE OF PAVEMENT		CAP	
VALVE BOX		STREETLIGHT	
LIMIT OF CONSTRUCTION		FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL

EGBC PERMIT TO PRACTICE NUMBER: 1000856

DESIGN	BH
DRAWN	LG
CHECKED	
PLOT DATE	01-24-25
PRINT DATE	
HORIZONTAL SCALE	1:500
VERTICAL SCALE	

CLIENT NAME
2779022 ONTARIO INC.

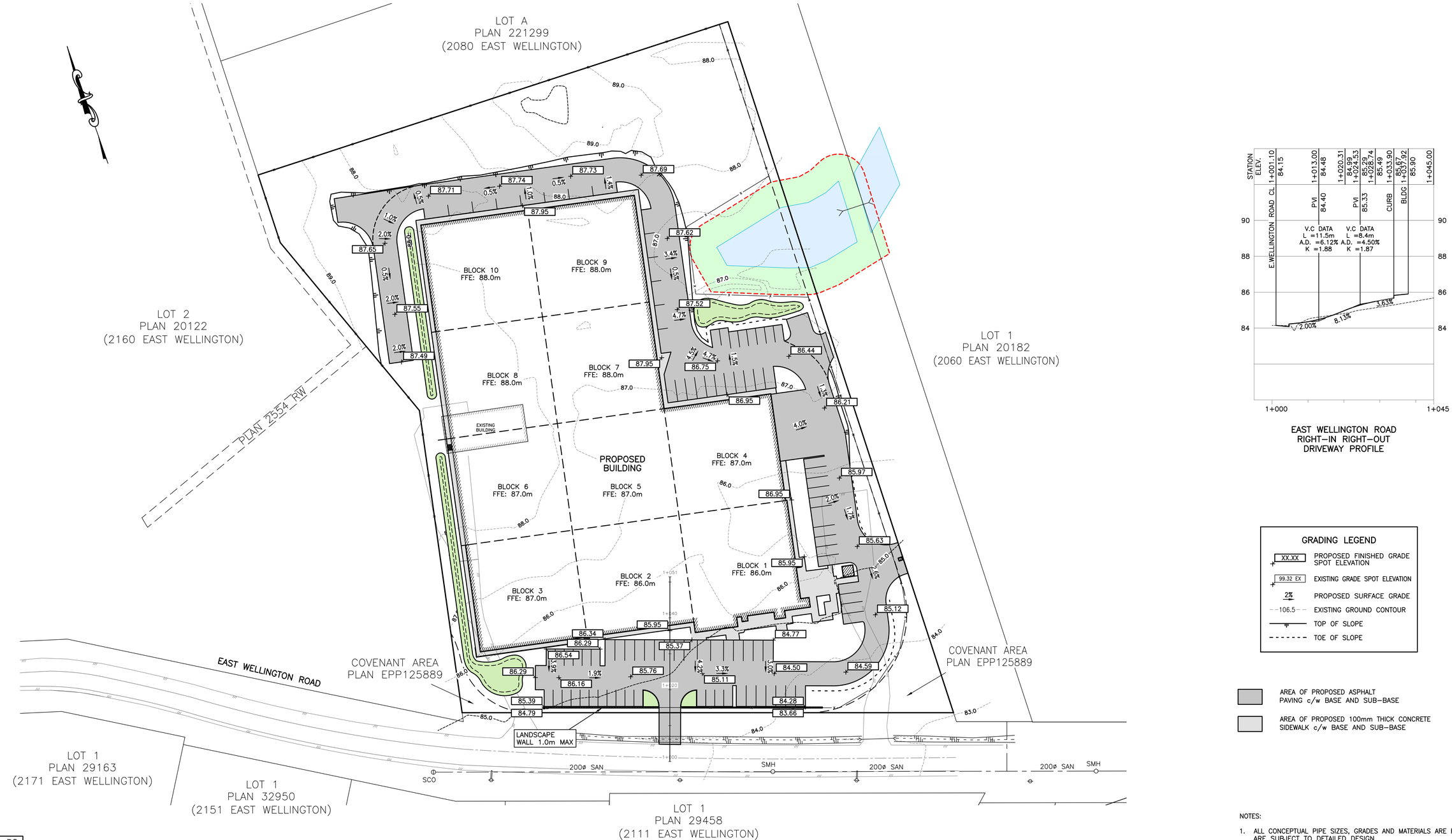
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
SITE PLAN AND PRELIMINARY SITE SERVICING PLAN

NEWCASTLE ENGINEERING LTD.
4-3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756-9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195-001	100	00	

1:24:2025 P:\10000 - PROJECTS\11000 - PROJECT FILES\11001-11991\1195-001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195-001 DP REV00 BH OH PHASING OPTION A.DH



EAST WELLINGTON ROAD
RIGHT–IN RIGHT–OUT
DRIVEWAY PROFILE

GRADING LEGEND

- XX.XX — PROPOSED FINISHED GRADE SPOT ELEVATION
- 99.32 EX — EXISTING GRADE SPOT ELEVATION
- 2% — PROPOSED SURFACE GRADE
- 106.5 — EXISTING GROUND CONTOUR
- TOP OF SLOPE
- TOE OF SLOPE

AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB–BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB–BASE

NOTES:

1. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
2. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

BC 1 CALL 1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

SCALE 1:500

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T.B. HUGHES 2025-02-03

EGBC PERMIT TO PRACTICE NUMBER: 1000856

DESIGN	BH
DRAWN	LG
CHECKED	
PLOT DATE	01-24-25
PRINT DATE	
HORIZONTAL SCALE	1:500
VERTICAL SCALE	1:100

CLIENT NAME
2779022 ONTARIO INC.

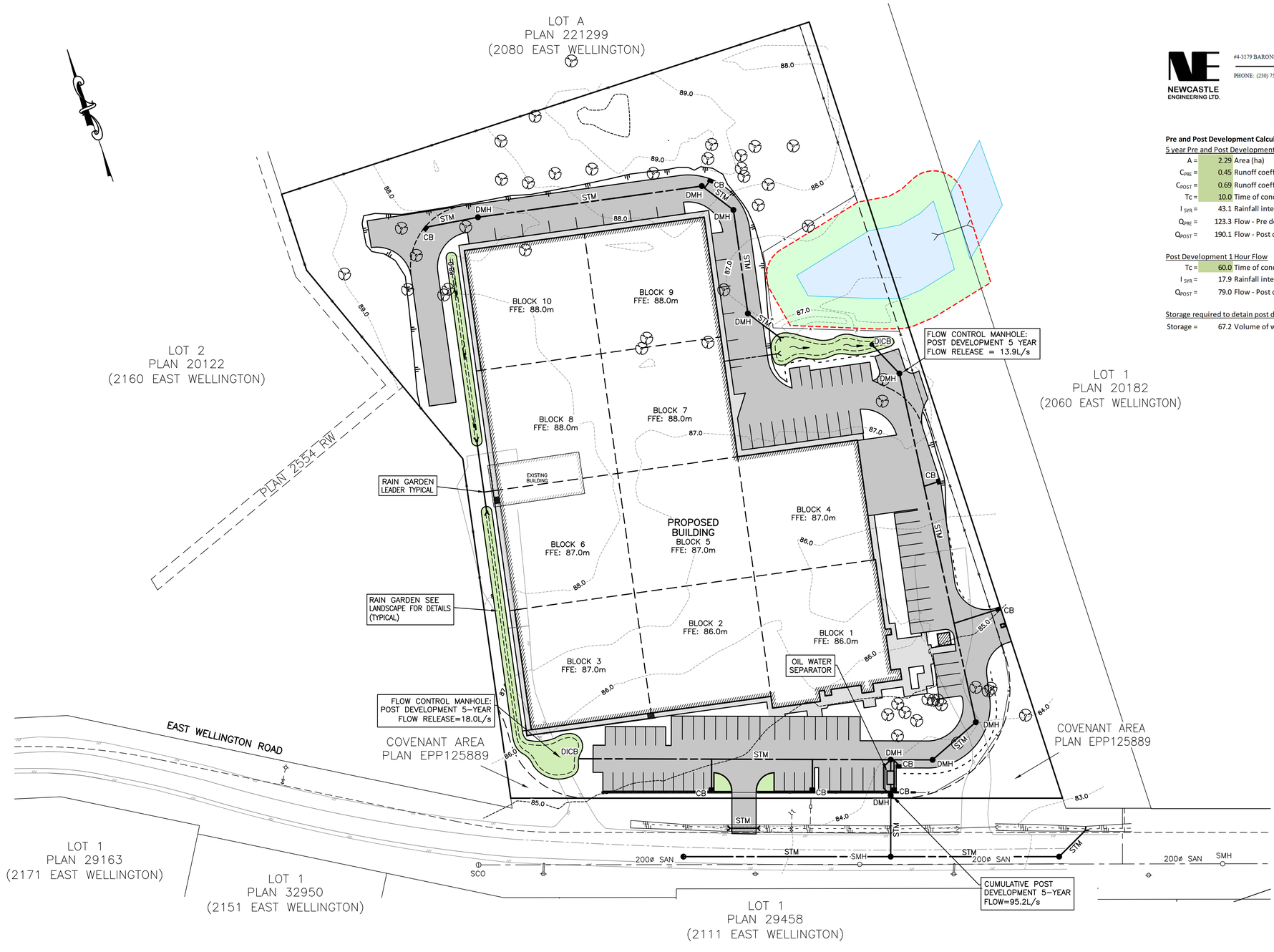
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
PRELIMINARY
SITE GRADING PLAN

NEWCASTLE ENGINEERING LTD.
4–3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 758–9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195–001	101	00	

1:24:2025 P:\10000 – PROJECTS\11000 – PROJECT FILES\1100–1199\1195–001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195–001 DP REV00 BH GPT #2 BH PHASING OPTION A.DWG



NEWCASTLE ENGINEERING LTD.
#4-3179 BARONS ROAD, NANAIMO, B.C. V9T 5W5
PHONE: (250) 756-9553 FAX: (250) 756-9503

Project: 2090 East Wellington Road
File: 1195-001
Date: 17-Oct-24
Engineer: Brayden hughes

Pre and Post Development Calculations

5 year Pre and Post Development Flows

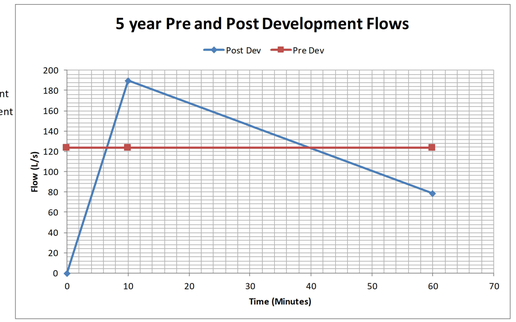
A =	2.29	Area (ha)
C_{PRE} =	0.45	Runoff coefficient - Pre development
C_{POST} =	0.69	Runoff coefficient - Post development
Tc =	10.0	Time of concentration (minutes)
I_{5YR} =	43.1	Rainfall intensity (mm/hr)
Q_{PRE} =	123.3	Flow - Pre development (l/s)
Q_{POST} =	190.1	Flow - Post development (l/s)

Post Development 1 Hour Flow

Tc =	60.0	Time of concentration (minutes)
I_{5YR} =	17.9	Rainfall intensity (mm/hr)
Q_{POST} =	79.0	Flow - Post development (l/s)

Storage required to detain post development flows

Storage =	67.2	Volume of water (m^3)



NEWCASTLE ENGINEERING LTD.
#4-3179 BARONS ROAD, NANAIMO, B.C. V9T 5W5
PHONE: (250) 756-9553 FAX: (250) 756-9503

Weighted Average Post Develoment Runoff Coefficient Calculation

Total Site Area (m^2):	22896
Impermeable Site Area (m^2):	14140
Undisturbed Site Area (m^2):	3577
Permeable Site Area (m^2):	5179
Area Check	22896
Impermeable Area Runoff Coefficient:	0.9
Undisturbed Area Runoff Coefficient:	0.45
Permeable Area Runoff Coefficient:	0.3
Weighted Post Development Runoff Coefficient:	0.694

AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

NOTES:

1. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMENCEMENT OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.
2. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
3. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

BC 1 CALL
1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

SCALE 1:500

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW - NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF B.C. T.B. HUGHES
2025-08-05

DESIGN	BH
DRAWN	LG
CHECKED	
PLOT DATE	01-24-25
PRINT DATE	

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE	VERTICAL SCALE
1:500	

CLIENT NAME
2779022 ONTARIO INC.

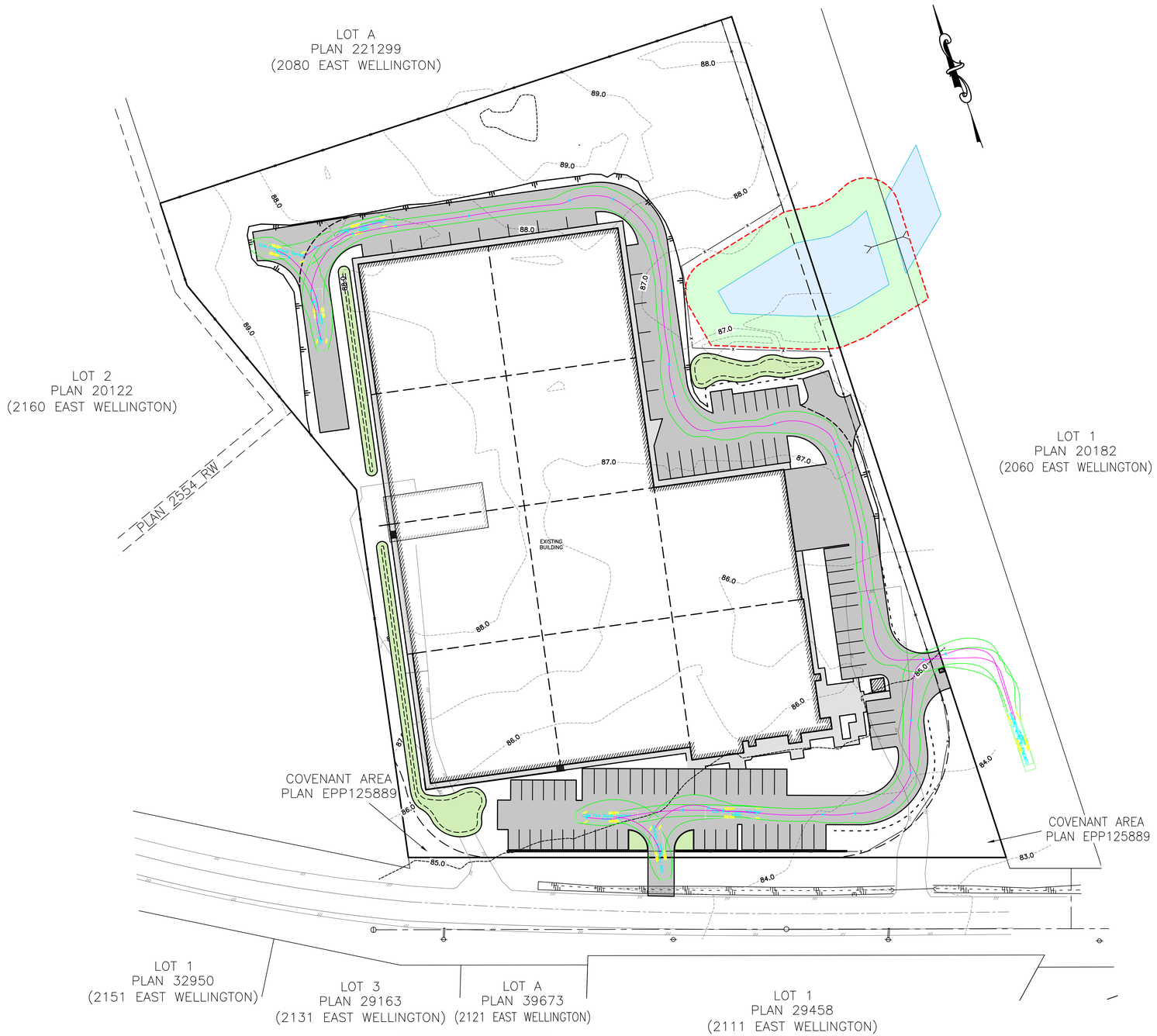
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
PRELIMINARY DRAINAGE MANAGEMENT PLAN

NEWCASTLE ENGINEERING LTD.
4-3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756-9553

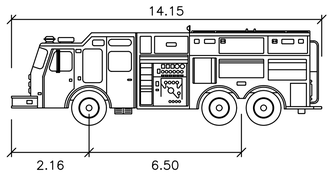
PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195-001	102	00	

1:24:2025 P:\10000 - PROJECTS\11000 - PROJECT FILES\1160-1199\1195-001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195-001 DP REV00 BH OPT #2 BH DH PHASING OPTION A DH



ISSUED FOR PERMIT PURPOSES ONLY

0 10 30m
1:500



CON Fire Truck Tandem

	meters
Width	: 2.44
Track	: 2.44
Lock to Lock Time	: 6.0
Steering Angle	: 40.0

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T. B. HUGHES
2025-02-03

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE	1:500
VERTICAL SCALE	

DESIGN	BH
DRAWN	LG
CHECKED	
PLOT DATE	01-24-25
PRINT DATE	

CLIENT NAME
2779022 ONTARIO INC.

PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
VEHICLE MOVEMENT SIMULATION PLAN

NEWCASTLE ENGINEERING LTD.
4–3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 758–9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195–001	103	00	

1:24:2025 P:\10000 – PROJECTS\11000 – PROJECT FILES\1100–1199\1195–001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195–001 DP REV00 BH OPT #2 BH PHASING OPTION A DH

LOT A
PLAN 221299
(2080 EAST WELLINGTON)

LOT 2
PLAN 20122
(2160 EAST WELLINGTON)

LOT 1
PLAN 20182
(2060 EAST WELLINGTON)

PLAN 2554 RW

EXISTING BUILDING

PROPOSED BUILDING
BLOCK 1
FFE: 86.0m

TEMPORARY GARBAGE ENCLOSURE

TEMPORARY LOADING BAYS

TEMPORARY FLOW CONTROL MANHOLE (PHASES 1 & 2)

LOADING

COVENANT AREA
PLAN EPP125889

COVENANT AREA
PLAN EPP125889

EAST WELLINGTON ROAD

LOT 1
PLAN 29163
(2171 EAST WELLINGTON)

LOT 1
PLAN 32950
(2151 EAST WELLINGTON)

LOT 1
PLAN 29458
(2111 EAST WELLINGTON)

88.0 89.0 87.0 86.0 85.0 84.0 83.0

CB DMH SCO DCO HP SMH HYD WM WAT STM SAN 200ø SAN 300ø STM

AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

NOTES:

1. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
2. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

BC 1 CALL
1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

0 5 10 20
SCALE 1:500

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T.B. HUGHES 2025-02-03

DESIGN	BH
DRAWN	DH
CHECKED	
PLOT DATE	02-03-25
PRINT DATE	

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE 1:500 | VERTICAL SCALE

CLIENT NAME
2779022 ONTARIO INC.

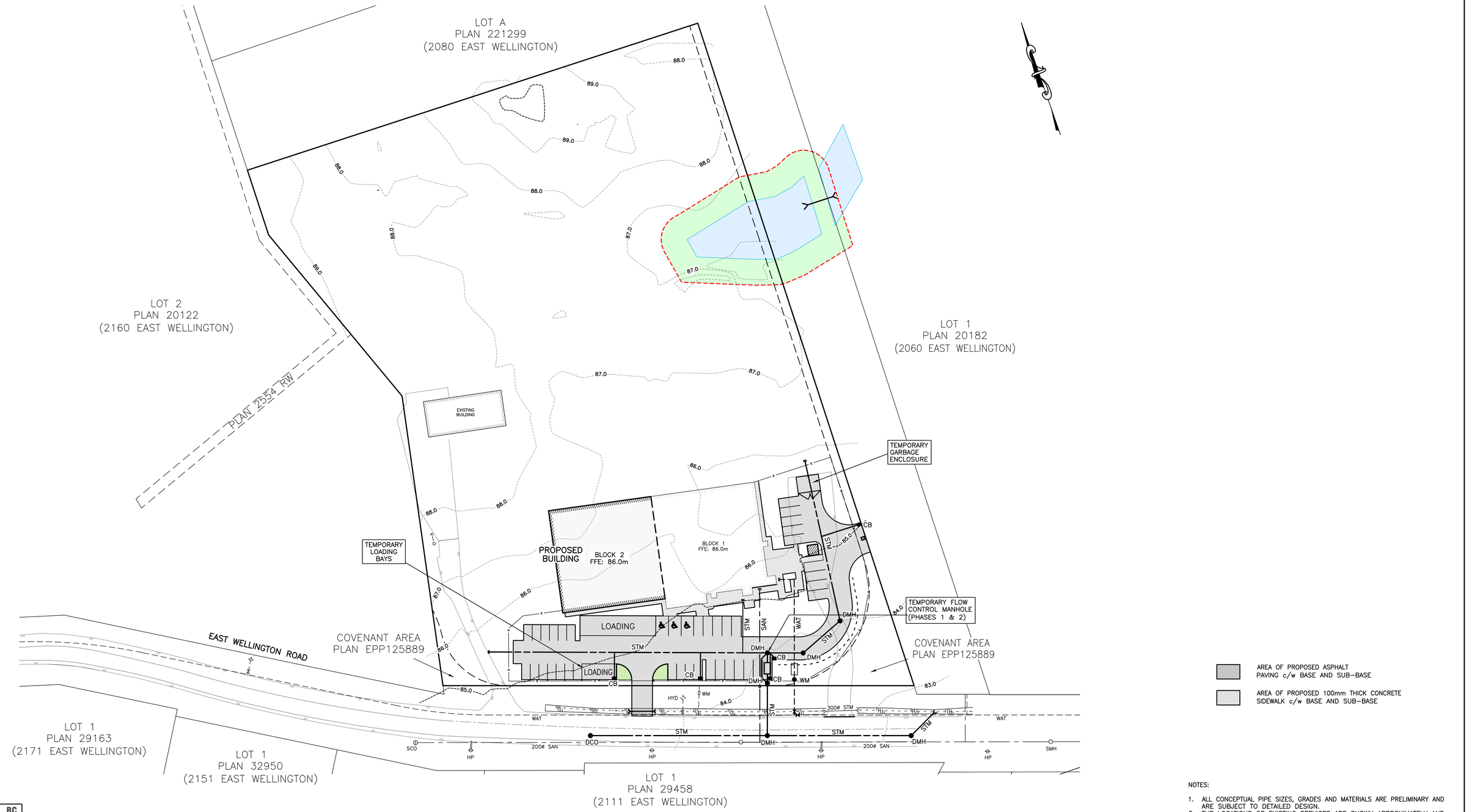
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
PHASE 1 PLAN

NEWCASTLE ENGINEERING LTD.
4–3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756–9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195–001	104	00	

2.3.2025 P:\10000 – PROJECTS\11000 – PROJECT FILES\1100–1199\1195–001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195–001 DP REVDO BH OPT #2 BH DH PHASING OPTION A DH



AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

NOTES:

1. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
2. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

BC 1 CALL 1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

0 5 10 20
SCALE 1:500

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T.B. HUGHES 2025-02-03

DESIGN	BH
DRAWN	DH
CHECKED	
PLOT DATE	02-03-25
PRINT DATE	

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE	VERTICAL SCALE
1:500	

CLIENT NAME
2779022 ONTARIO INC.

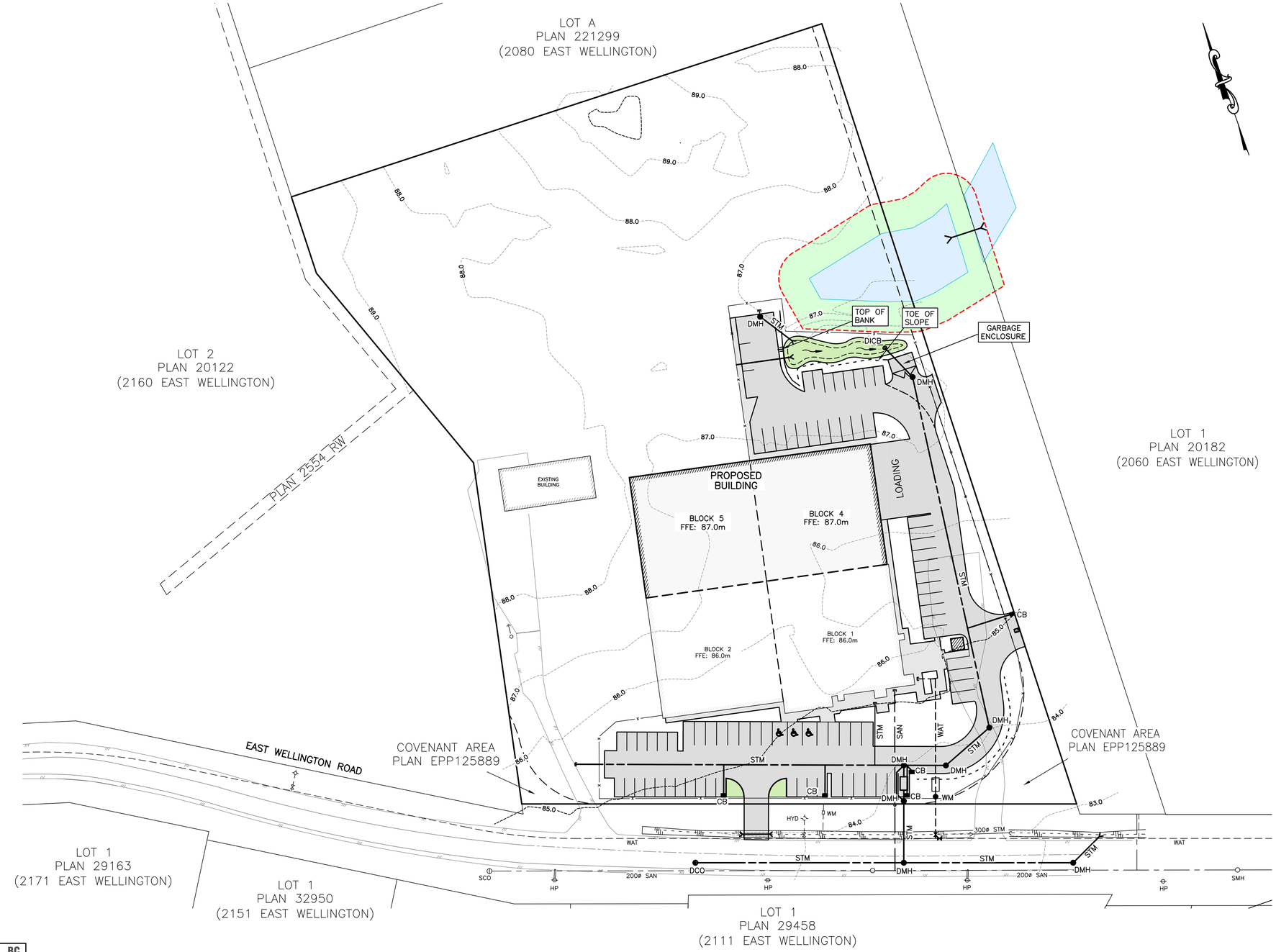
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
PHASE 2 PLAN

NEWCASTLE ENGINEERING LTD.
4–3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756–9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195–001	105	00	

2.3.2025 P:\10000 – PROJECTS\11000 – PROJECT FILES\1100–1199\1195–001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195–001 DP REVDO BH OPT #2 BH DH PHASING OPTION A DH



AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

BC 1 CALL
1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

SCALE 1:500

NOTES:

1. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
2. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T.B. HUGHES 2025-09-03

DESIGN	BH
DRAWN	DH
CHECKED	
PLOT DATE	02-03-25
PRINT DATE	

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE	VERTICAL SCALE
1:500	

CLIENT NAME
2779022 ONTARIO INC.

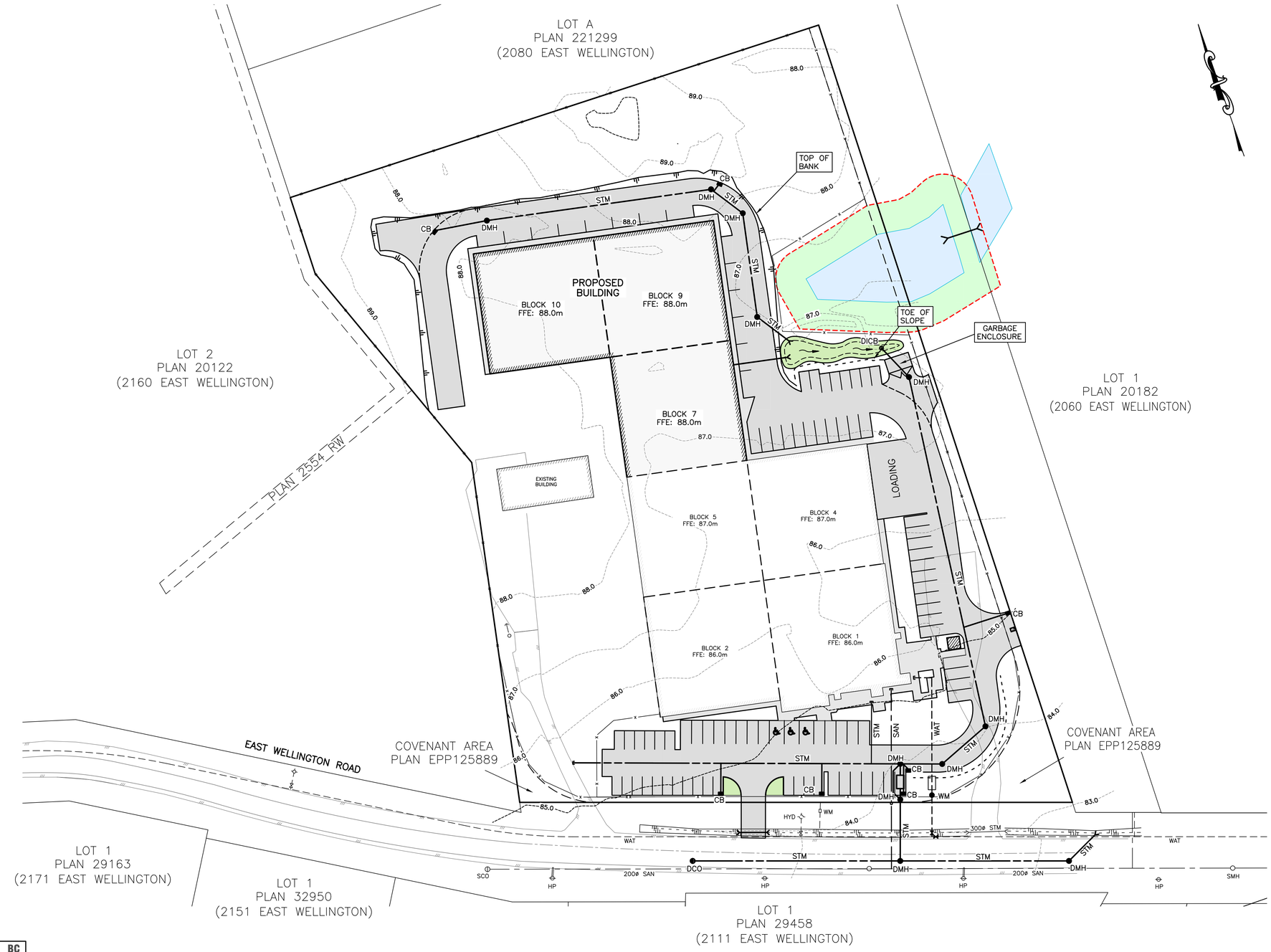
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
PHASE 3 PLAN

NEWCASTLE ENGINEERING LTD.
4–3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756–9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195–001	106	00	

2.3.2025 P:\10000 – PROJECTS\11000 – PROJECT FILES\1100–1199\1195–001 2090 EAST WELLINGTON ROAD\AUTOCAD\1195–001 DP REV00 BH.dPT #2 BH DH PHASING OPTION A DH



AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

NOTES:

1. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
2. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

BC 1 CALL 1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

0 5 10 20
SCALE 1:500

DP00____/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION

LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION

ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA T.B. HUGHES 2025-08-03

DESIGN	BH
DRAWN	DH
CHECKED	
PLOT DATE	02-03-25
PRINT DATE	

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE	VERTICAL SCALE
1:500	

CLIENT NAME

2779022 ONTARIO INC.

PROJECT NAME

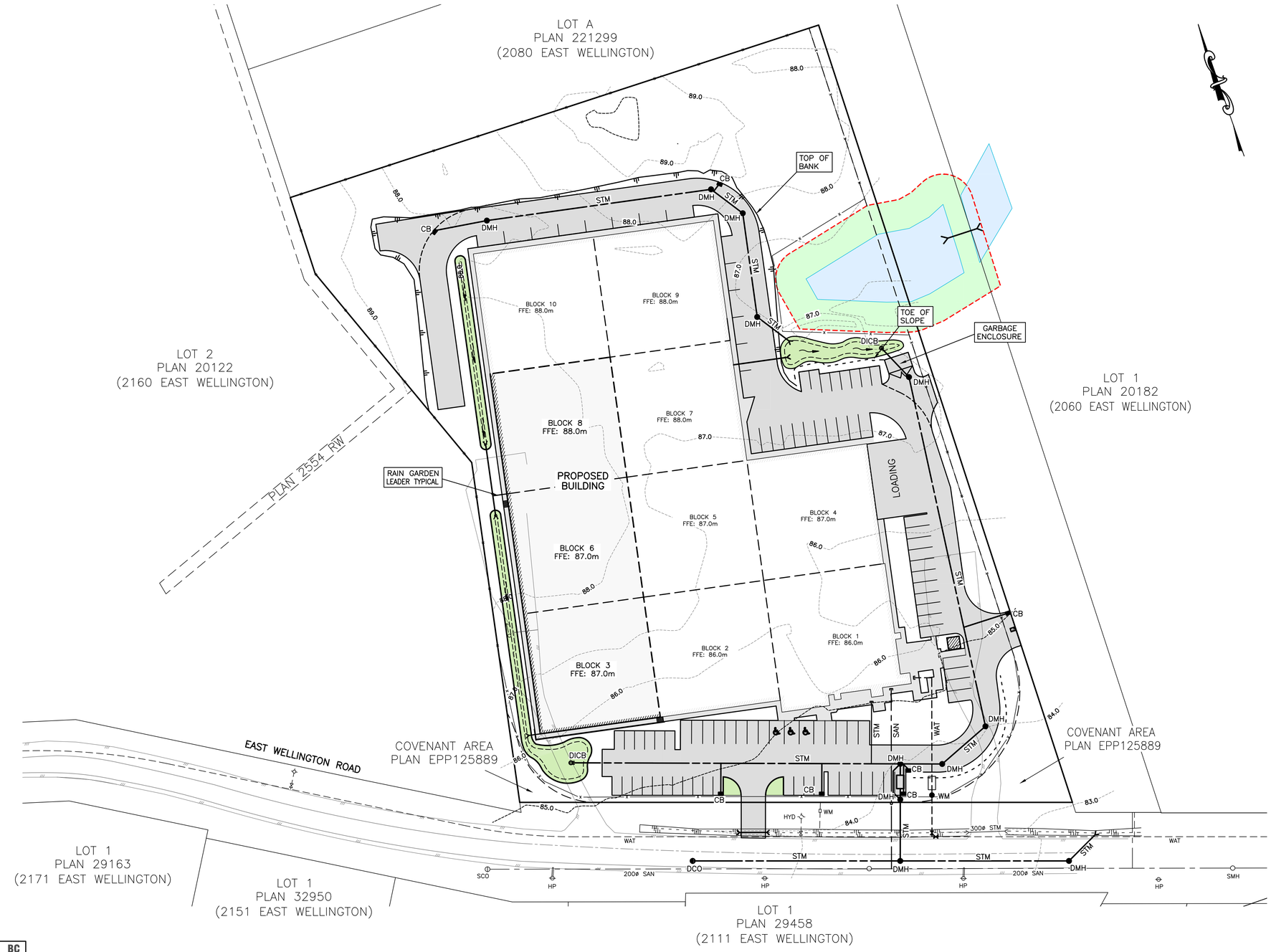
2090 EAST WELLINGTON ROAD

DRAWING TITLE

PHASE 4 PLAN

NEWCASTLE ENGINEERING LTD.
4-3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756-9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195-001	107	00	



AREA OF PROPOSED ASPHALT PAVING c/w BASE AND SUB-BASE

AREA OF PROPOSED 100mm THICK CONCRETE SIDEWALK c/w BASE AND SUB-BASE

NOTES:

1. ALL CONCEPTUAL PIPE SIZES, GRADES AND MATERIALS ARE PRELIMINARY AND ARE SUBJECT TO DETAILED DESIGN.
2. THE LOCATIONS OF EXISTING SERVICES ARE SHOWN APPROXIMATELY AND SHALL BE CONFIRMED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE COMMUNICATION OF WORK. EXISTING & PROPOSED SERVICES MAY REQUIRE ADJUSTMENT WHERE A CONFLICT OCCURS. THE ENGINEER SHALL BE NOTIFIED OF ANY CONFLICT.

BC 1 CALL 1-800-474-6886

ISSUED FOR PERMIT PURPOSES ONLY

0 5 10 20
SCALE 1:500

DP00___/ENG_____

Rev. No.	DATE	BY	REVISION DESCRIPTION	ENG
00	11/13/24	LG	SUBMITTED TO CITY OF NANAIMO FOR REVIEW – NOT FOR CONSTRUCTION	BH

RECEIVED
DP1376
2025-SEP-12
Current Planning

LEGEND

PROP.	EXIST.		PROP.	EXIST.
WATERMAIN			HYDRANT	
STORM SEWER			ABOVE GROUND FLUSHOUT	
SANITARY SEWER			BELOW GROUND FLUSHOUT	
GAS MAIN			CATCHBASIN	
ELECTRICAL DUCT			DITCH INLET CB	
INLET/OUTLET HEADWALL			MANHOLE	
DITCH INLET/OUTLET			CLEANOUT	
SWALE			HYDRO POLE	
EDGE OF PAVEMENT			CAP	
VALVE BOX			STREETLIGHT	
LIMIT OF CONSTRUCTION			FENCE	

SITE LEGAL DESCRIPTION
LOT 1, SECTIONS 14 AND 15, RANGE 7, MOUNTAIN DISTRICT, PLAN EPP125890.

BENCHMARK DESCRIPTION
ELEVATIONS ARE GEODETIC AND ARE REFERRED TO MONUMENTS 89H5639 (ELEVATION 85.093m) AND 89H5640 (ELEVATION 80.930m).

ENGINEER'S SEAL
PROFESSIONAL ENGINEER PROVINCE OF T.B. HUGHES COLUMBIA
2025-08-03

DESIGN	BH
DRAWN	DH
CHECKED	
PLOT DATE	02-03-25
PRINT DATE	

EGBC PERMIT TO PRACTICE NUMBER: 1000856

HORIZONTAL SCALE	VERTICAL SCALE
1:500	

CLIENT NAME
2779022 ONTARIO INC.

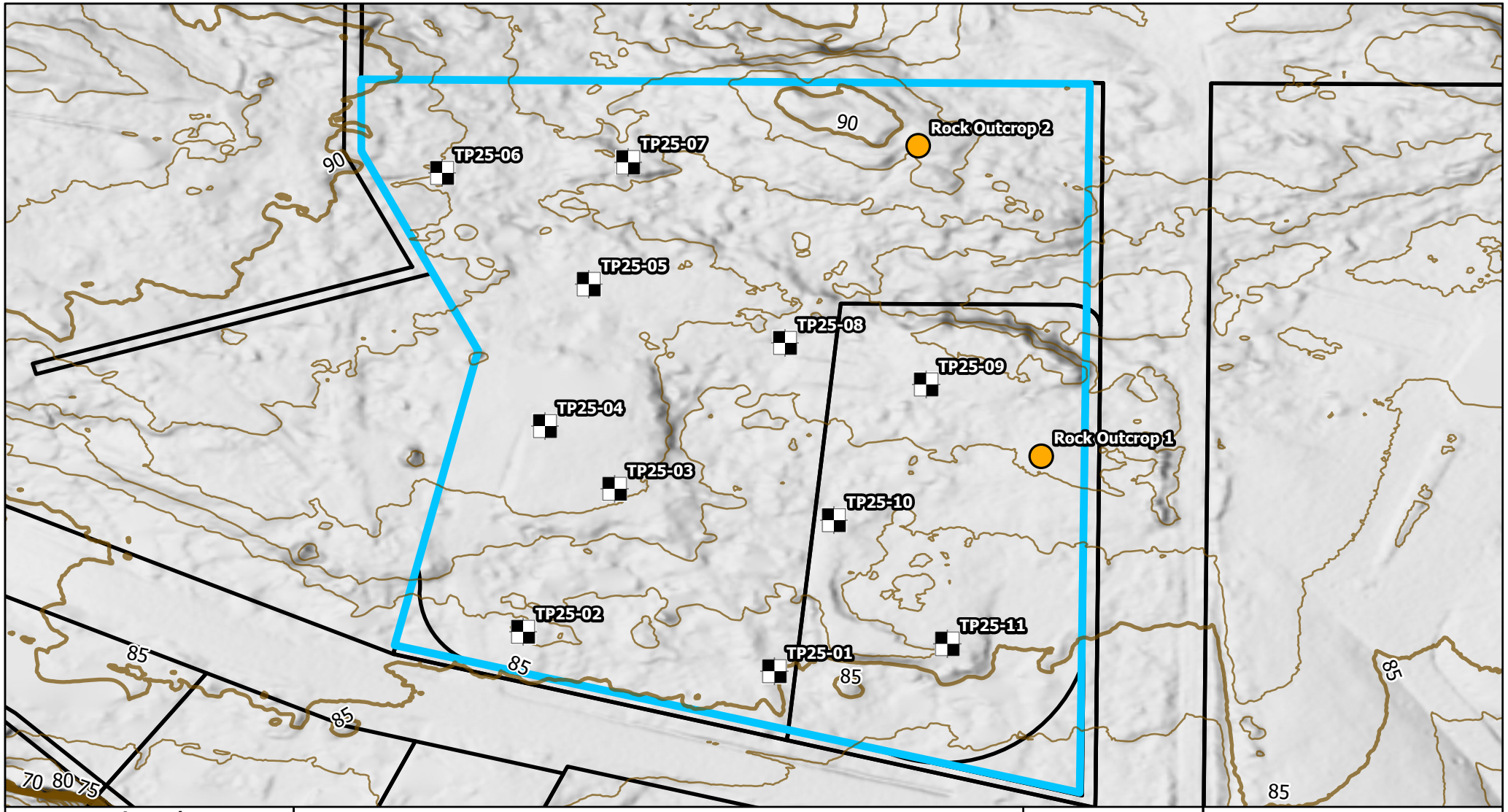
PROJECT NAME
2090 EAST WELLINGTON ROAD

DRAWING TITLE
PHASE 5 PLAN

NEWCASTLE ENGINEERING LTD.
4-3179 BARONS ROAD
NANAIMO, B.C. V9T 5W5
PHONE (250) 756-9553

PROJECT No.	DRAWING No.	REVISION No.	CITY PLAN FILE No.
1195-001	107	00	

2.3.2025 P:\10000 - PROJECTS\11000 - PROJECT FILES\11100-11991\1195-001 - 2090 EAST WELLINGTON ROAD\AUTOCAD\1195-001 DP REV00 BH OPT #2 BH DH PHASING OPTION A DH



Legend

- Subject Property
- Property Lines
- Test Pit
- Bedrock at Surface
- Contour: 1m, 5m

RECEIVED
DP1376
2025-SEP-12
Current Planning

PROJECT NAME: 8900 East Wellington Road, Nanaimo, BC	Drawing No. E3282-01
DRAWING TITLE: Test Pit Site Plan	Date: 2025-08-14 / Drawn By: KL
LEGAL DESCRIPTION: Lot 1, Section 14 and 15, Range 7, Mountain District, Plan EPP125890, PID 032-109-831	Lidar Acquisition Date: 2024 Coordinate System: NAD 1983 CSRS UTM Zone 10N Vertical Datum: CGVD 2013

Lewkowich Engineering Associates Ltd.

0 20 40 60 Meters

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-01
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 85.2m
Coordinates: 49.180868°N, -123.991762°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.1m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, moist (TOPSOIL)
		No observed groundwater seepage. End of test pit at 0.1m (refusal on inferred bedrock).
0.5		
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-02
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 86.2m
Coordinates: 49.180968°N, -123.992401°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.2m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, moist (TOPSOIL)
		No observed groundwater seepage. End of test pit at 0.2m (refusal on inferred bedrock).
0.5		
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-03
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 88.1m
Coordinates: 49.181332°N, -123.992168°W

Depth (m)	Soil Symbol	Description
0.0		Ground Surface
		0.0-0.15m Sandy SILT and ORGANICS (sod, rootlets, matter), loose, light brown, dry (TOPSOIL)
		0.15-0.7m Silty gravelly SAND, trace cobble, trace debris, compact to dense, light brown, dry (FILL)
0.5		
		Fill materials to 0.7m. No observed groundwater seepage. End of test pit at 0.7m (refusal on inferred bedrock).
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-04
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 88.6m
Coordinates: 49.181492°N, -123.992346°W

Depth (m)	Soil Symbol	Description	Sample Type	Sample No.
0.0		Ground Surface		
		0.0-0.15m Sandy SILT and ORGANICS (sod, rootlets, matter), loose, light brown, dry (TOPSOIL)		
		0.15-0.7m Silty gravelly SAND, trace cobble, trace debris, compact to dense, light brown, dry (FILL)		
0.5				GS-01
		0.7-0.9m Silty SAND, some gravel, compact, grey to black, moist (FILL)		
		0.9-1.3m Sandy SILT, some organics (rootlets, roots, matter), trace gravel, loose, moist (ORIGINAL TOPSOIL)		
1.0				
		Fill materials to 0.9m. No observed groundwater seepage. End of test pit at 1.3m (refusal on inferred bedrock).		
1.5				

Sample Type: SPT Grab Bulk Shelby Tube Core No Recovery

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-05
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 88.4m
Coordinates: 49.181853°N, -123.992234°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.1m GRAVEL, some sand, trace organics (rootlets, matter), loose, grey, dry (FILL)
		0.1-0.4m Silty gravelly SAND, trace cobble, compact, light brown, dry (FILL)
		0.4-0.5m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, moist (ORIGINAL TOPSOIL)
0.5		Fill materials to 0.4m. No observed groundwater seepage. End of test pit at 0.5m (refusal on inferred bedrock).
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-06
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 88.9m
Coordinates: 49.182136°N, -123.992607°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.15m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, dry (TOPSOIL)
		0.15-0.4m Silty SAND, trace gravel, loose, orangish brown, dry
		No observed groundwater seepage End of test pit at 0.4m (refusal on inferred bedrock)
0.5		
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-07
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 88.7m
Coordinates: 49.182163°N, -123.992134°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.1m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, moist (TOPSOIL)
		0.1-1.0m Silty gravelly SAND, trace cobbles and boulders, loose, brown, dry (FILL)
0.5		
1.0		Fill materials to 1.0m. No observed groundwater seepage. End of test pit at 1.0m (refusal on inferred bedrock).
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-08
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 87.4m
Coordinates: 49.181704°N, -123.991735°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.1m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, moist (TOPSOIL)
		No observed groundwater seepage End of test pit at 0.1m (refusal on inferred bedrock)
0.5		
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-09
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 87.7m
Coordinates: 49.181598°N, -123.991376°W

Depth (m)	Soil Symbol	Description
0.0		Ground Surface
		0.0-0.1m Sandy SILT, some organics (rootlets, matter), trace to some gravel, loose, brown to black, dry (TOPSOIL)
		0.1-0.4m Silty gravelly SAND, trace cobble, compact, light brown, moist (FILL)
0.5		Fill materials to 0.4m. No observed groundwater seepage. End of test pit at 0.4m (refusal on inferred bedrock).
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-10
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 86.5m
Coordinates: 49.181253°N, -123.991610°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-0.2m Silty SAND, some organics (rootlets, matter), trace gravel, loose, brown, dry (FILL)
		0.2-0.5m Silty SAND, some gravel to gravelly, trace debris (concrete, plastic), compact to dense, dark grey to brown, dry (FILL)
0.5		Fill materials to 0.5m. No observed groundwater seepage. End of test pit at 0.5m (refusal on inferred bedrock).
1.0		
1.5		

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Lewkowich Engineering Associates Ltd.

TEST PIT

File Number: E3282 TP25-11
Client: 2779022 Ontario Inc.
Project: 2090 East Wellington Road
Location: Nanaimo, BC

Elevation: 85.8m
Coordinates: 49.180938°N, -123.991322°W

Depth (m)	Soil Symbol	Description
		Ground Surface
0.0		0.0-1.0m Silty SAND, some gravel, trace cobble and boulder, trace organics (rootlets, roots, matter), trace debris (concrete, fabric, plastic), loose to compact, brown, dry to moist (FILL)
1.0		1.0-1.3m Sandy SILT, some organics (rootlets, matter), trace gravel, loose, black to dark brown, moist to wet (ORIGINAL TOPSOIL)
1.5		Fill materials to 1.0m. No observed groundwater seepage. End of test pit at 1.3m (refusal on inferred bedrock).

Logged By: Knut Lokken, EIT, GIT
Reviewed By: Chris Hudec, M.A.Sc., P.Eng.
Digging Method: Bobcat E60 Excavator

Date: August 12, 2025
Page 1 of 1

1900 Boxwood Road
Nanaimo, British Columbia, V9S 5Y2
Phone: 250-756-0355
Fax: 250-756-3831
Email: geotech@lewkowich.com

Government of Canada Gouvernement du Canada

2020 National Building Code of Canada Seismic Hazard Tool

This application provides seismic values for the design of buildings in Canada under Part 4 of the National Building Code of Canada (NBC) 2020 as prescribed in Article 1.1.3.1. of Division B of the NBC 2020.

Seismic Hazard Values

User requested values

Code edition	NBC 2020
Site designation X_S	X_C
Latitude (°)	49.18
Longitude (°)	-124.001

Please select one of the tabs below.

NBC 2020 | Additional Values | Plots | API | Background Information

The NBC 5% damped spectral acceleration values can be viewed in the NBC tab. Additional hazard values for your site can be found below.

The 5%-damped spectral acceleration (S_a(T), where T is the period, in s) and peak ground acceleration (PGA) values are given in units of acceleration due to gravity (g, 9.81 m/s^2). Peak ground velocity (PGV) is given in m/s. Probability is expressed in terms of percent (%) exceedance in 50 years.

By default, all probabilities for the user-specified site designation are shown. Other site designations can be selected from the respective drop-down menu in the table. In low hazard regions, a minimum value of 0.001g for T ≤ 2.0s and of 0.0001g for T > 2.0s is assigned. Further information on the calculation of seismic hazard is provided in the *Background Information* tab.

Site Designation: XC	Probability: All	S_a(0.05)	S_a(0.1)	S_a(0.2)	S_a(0.3)	S_a(0.5)	S_a(1.0)	S_a(2.0)	S_a(5.0)	S_a(10.0)	PGA	PGV
X_C	2	0.769	1.11	1.32	1.38	1.15	0.685	0.429	0.115	0.046	0.565	0.685
X_C	2.5	0.706	1.03	1.22	1.27	1.05	0.622	0.383	0.0994	0.0385	0.522	0.617
X_C	3.5	0.619	0.898	1.07	1.1	0.911	0.53	0.317	0.0791	0.0294	0.459	0.526
X_C	5	0.532	0.775	0.918	0.943	0.772	0.441	0.253	0.0612	0.0223	0.397	0.436
X_C	7	0.457	0.666	0.791	0.805	0.65	0.365	0.199	0.0473	0.0172	0.342	0.361
X_C	10	0.383	0.559	0.664	0.668	0.531	0.291	0.15	0.0353	0.0129	0.288	0.291
X_C	14	0.32	0.467	0.553	0.551	0.43	0.23	0.112	0.0263	0.00958	0.24	0.232
X_C	20	0.258	0.377	0.446	0.438	0.335	0.174	0.0812	0.0189	0.00674	0.194	0.178
X_C	30	0.192	0.282	0.336	0.325	0.242	0.123	0.0551	0.0126	0.00435	0.145	0.127
X_C	40	0.15	0.22	0.264	0.253	0.186	0.0927	0.041	0.00927	0.00309	0.113	0.0968

Download CSV

← Go back to the seismic hazard calculator form

Date modified: 2021-04-06