CITY OF WEST KELOWNA

DEVELOPMENT PERMIT WITH VARIANCES

DP 21-03

TO: E12K Systems Inc. (Inc. No. 729179)
200 – 537 Leon Avenue
Kelowna, BC V1Y 2A9

0746043 BC Ltd.
800 – 1708 Dolphin Avenue
Kelowna, BC V1Y 9S4

0746031 BC Ltd.
800 – 1708 Dolphin Avenue
Kelowna, BC V1Y 9S4

1068059 BC Ltd.
1800 – 1631 Dickson Avenue
Kelowna, BC V1Y 0B5

1. This Permit is issued subject to compliance with all of the Bylaws of the City of West Kelowna applicable thereto, except as specifically varied or supplemented by this Permit.

2. This Permit applies to and only to those lands within the City of West Kelowna described below, and any and all buildings, structures and other developments thereon:

   Lot A, District Lot 3478, ODYD, Plan KAP56155, Except Plans KAP56156 and KAP57629 (2802 Smith Creek Road)

3. This Permit allows for the proposed fifty-five (55) lot subdivision consisting of site preparation/grading and construction of fifty-four (54) single family lots and one remainder lot. The application includes a Variance request to vary the front parcel boundary setback on Lots 18 - 20 and 41 - 43 for garage and house from 6.0 m to 3.5 m; and for Lots 44 and 45 for garage from 6.0 m to 4.5 m; and to vary the required minimum parcel frontage for Lots 5 - 14 to allow frontage less than 10% of the perimeter of the parcel. This Hillside, Sensitive Terrestrial Ecosystem and Wildfire Development Permit is subject to the following conditions and related Schedules:

   a. All construction activities to be conducted on the land in general accordance with Schedule 'A' and the following reports and conditions:
      i. With the exception of limited grading and restoration works to accommodate the construction of the north side of Smith Creek Road adjacent to the proposed lots, no additional construction activities, road works or on-site servicing is permitted on the proposed remainder lot to the north of Smith Creek Road until such time as a future Development Permit has been issued;
      ii. 1.2 m high black chain link fencing to be installed as delineated on the red-lined Site Servicing Plan in accordance with Zoning Bylaw No. 0154. Fence construction must either be completed as a condition of final subdivision approval or works agreement with security has been provided;
      iii. Prior to final subdivision approval, a pull-through access to Aspen Park to be installed as delineated on the red-lined Site Grading Plan, and electrical and water service as delineated on the red-lined Site Servicing Plan, including roll-over curb fronting the park with a compacted gravel surface to allow park maintenance

vehicles to pull off Smith Creek Road and pull through to exit back onto Smith Creek Road;

iv. Prior to final subdivision approval, the proposed access to Black Canyon Park through the proposed 4.5 m wide statutory right of way along the back of Lots 18-20 must be constructed in general conformance with the Site Servicing Plan, as a Major Multi-Use Path as per Works and Services Bylaw No. 0249, Drawing No. 105. The access must either be completed or a works agreement with security has been provided as a condition of final subdivision approval;

v. In addition to the silt fence and other sediment control works identified on the Erosion & Sediment Control Plan, additional "Gravel Entrance" areas may be required if other access points are created onto Smith Creek Road beyond the identified single entry point at Road A; and additional dust control may be necessary in periods of excessive drought conditions with any earth-moving on or off the site;

vi. Geotechnical Investigation, prepared by Calibre Geotechnical Engineering Ltd., dated October 4, 2019; and

vii. Prior to final subdivision approval, wildfire mitigation work must be completed to bring fire hazard rating to low to moderate in accordance with the following reports prepared by R.J.P. Holdings Ltd.;

   a. Wildfire Hazard Assessment and Prescription Report, dated June 6, 2014;
   b. Wildfire Hazard Assessment and Prescription Report, dated November 19, 2018; and
   c. Wildfire Hazard Status, dated January 27, 2021.

b. All restoration and construction activities to be in accordance with Schedule 'B' and the following reports and conditions:

   i. Reports prepared by OKGN EHS Services Ltd.;
      a. Environmental Management Plan, dated January 25, 2021, including the updated Landscape Plan in Schedule 'B';
      b. Environmental Impact Assessment Report, dated January 25, 2021;
   ii. All works within Aspen Park require email notification to the Parks Planner prior to the work being completed, where grading, fencing, hydro-seeding and park access require final approval by the Parks Department;
   iii. Prior to the completion of any hillside restoration works following completion of site grading, ensure that the proposed covenant and restoration areas have been flagged for review in conjunction with any required legal surveys for the covenant areas;
   iv. Additional covenant area may be required on proposed Lot 1, which will require additional review following site grading including potential hillside restoration not currently noted on the Landscape Plan or Site Grading Plan;
   v. Any clearing activities between the active bird breeding/nesting window (April 15 to August 15) will require environmental monitoring every 72 hours
   vi. Mechanical or hand pulling of weeds must occur each spring (Mar – Jun) and fall (Sep – Nov) to prevent propagation of weeds for a minimum of three (3) years following restoration planting.

c. Retaining wall construction, design, and finish to be in accordance with Schedule 'C';

   i. Two tier retaining walls along the southern boundary of Lot 17, 18 and 19 in small lock block (Basalite Valley Stone in Tuscany colour finish) to a maximum height of 2.5 m with 2 m separation between the tiers; and
   ii. A separate Building Permit is required for the retaining walls prior to construction.

d. That the following variances to City of West Kelowna Zoning Bylaw No. 0154 in accordance with Schedule 'D' be included as part of this Development Permit:

   i. S.10.4.5(g).1 to reduce the front parcel boundary setback:

a. On Lots 18 – 20 and 41 - 43 for garage or carport having vehicular entry from the front from 6.0 m to 3.5 m; and for house from 4.5 m to 3.5 m, providing that 6.0 m is maintained from garage to laneway or back of curb/sidewalk;
b. On Lots 44 and 45 for a garage or carport having vehicular entry from the front from 6.0 m to 4.5 m, providing that 6.0 m is maintained from garage to laneway or back of curb/sidewalk; and

i. That the required minimum frontage for Lots 5 to 15 be varied to allow frontage less than 10% of the perimeter of the parcel as per exemptions permitted by *Local Government Act*, section 512(1), where the required minimum parcel frontage is still greater than the required 16.0 m for the Single Detached Residential (R1) Zone.

Security

4. As a condition of the issuance of this permit, the property owner shall deposit 125% of the cost estimate for the landscaping ($41,500.00 = $33,200.00 x 125%) as performance security to ensure installation of the required landscape restoration and park grading in accordance with the City's Development Application Procedures Bylaw No. 0260.

5. The City of West Kelowna will hold the security outlined above, to ensure that the development is carried out in accordance with this Permit. Should any interest be earned upon the security, it shall accrue to the Permittee and be paid to the Permittee if the security is returned. The condition of the posting of the security is that should the Permittee fail to carry out the development hereby authorized, according to the terms and conditions of the Permit within the time provided, the City of West Kelowna may use the security to carry out the work by its servants, agents or contractors, and any surplus shall be paid over to the Permittee, or should the Permittee carry out the development approved by this Permit, the security shall be returned to the Permittee.

6. The landscape (hillside revegetation) and park grading security is refundable upon the receipt of a substantial completion report prepared by the qualified environmental professional or similar qualified professional, and site inspection undertaken by staff. In accordance with the City's Development Applications Procedures Bylaw No. 0260, upon substantial completion, the City will return 90% of the security deposit. The City will withhold the remaining 10% as a maintenance bond for up to three growing seasons to ensure that the work has been fully implemented and demonstrated to function as designed as per the recommended time period in the Environmental Assessment.

General Terms

7. The land described herein shall be developed strictly in accordance with the terms and conditions of this Permit and any plans and specifications attached to this Permit, which shall form a part hereof. Should any change be required to this permit, please ensure that you obtain written approval from the City of West Kelowna prior to making any changes.

8. If this Development Permit has not been issued within one year from approval, Development Permit with Variances DP 21-03 shall be deemed to have been refused and the file will be closed.

9. This Permit is not a Building Permit.

10. Subject to the terms of the permit, where the holder of a permit issued under the *Local Government Act* does not substantially commence any construction with respect to which the permit was issued within two years after the date it is issued, the permit lapses.

AUTHORIZING RESOLUTION NO._____ PASSED BY THE MUNICIPAL COUNCIL ON _____

Signed on _____

_____
City Clerk

As received on _____, there is filed accordingly an Irrevocable Letter of Credit or Bank Draft deposit in the amount of $41,500.00.

I hereby confirm that I have read and agree with the conditions of Development Permit with Variances DP 21-03 and will ensure that copies of the Permit will be provided to onsite personnel at time of construction.

Signed on _____

_____
Property Owner or Agent

ISSUED on _____

Schedules:

Schedule A:
1. Drawings prepared by Protech Consulting Ltd. (10 pages):
    a. Lot Layout
    b. Preliminary Site Grading
    c. Site Servicing Plan
    d. Site Grading Cross Sections
    e. Aspen Park Cross Sections
    f. Preliminary Road A Plan/Profile drawings
    g. Preliminary Smith Creek Road Plan/Profile drawings
    h. Sediment and Erosion Control Plan

Schedule B:
1. Drawings and estimate prepared by The Field Room (4 pages)
    a. Landscape Plan
    b. Estimate of Probable Cost

Schedule C:
1. Geotechnical Review of Retaining Walls, prepared by GeoPacific (5 pages)

Schedule D:
1. Development Variance Plan (1 page)

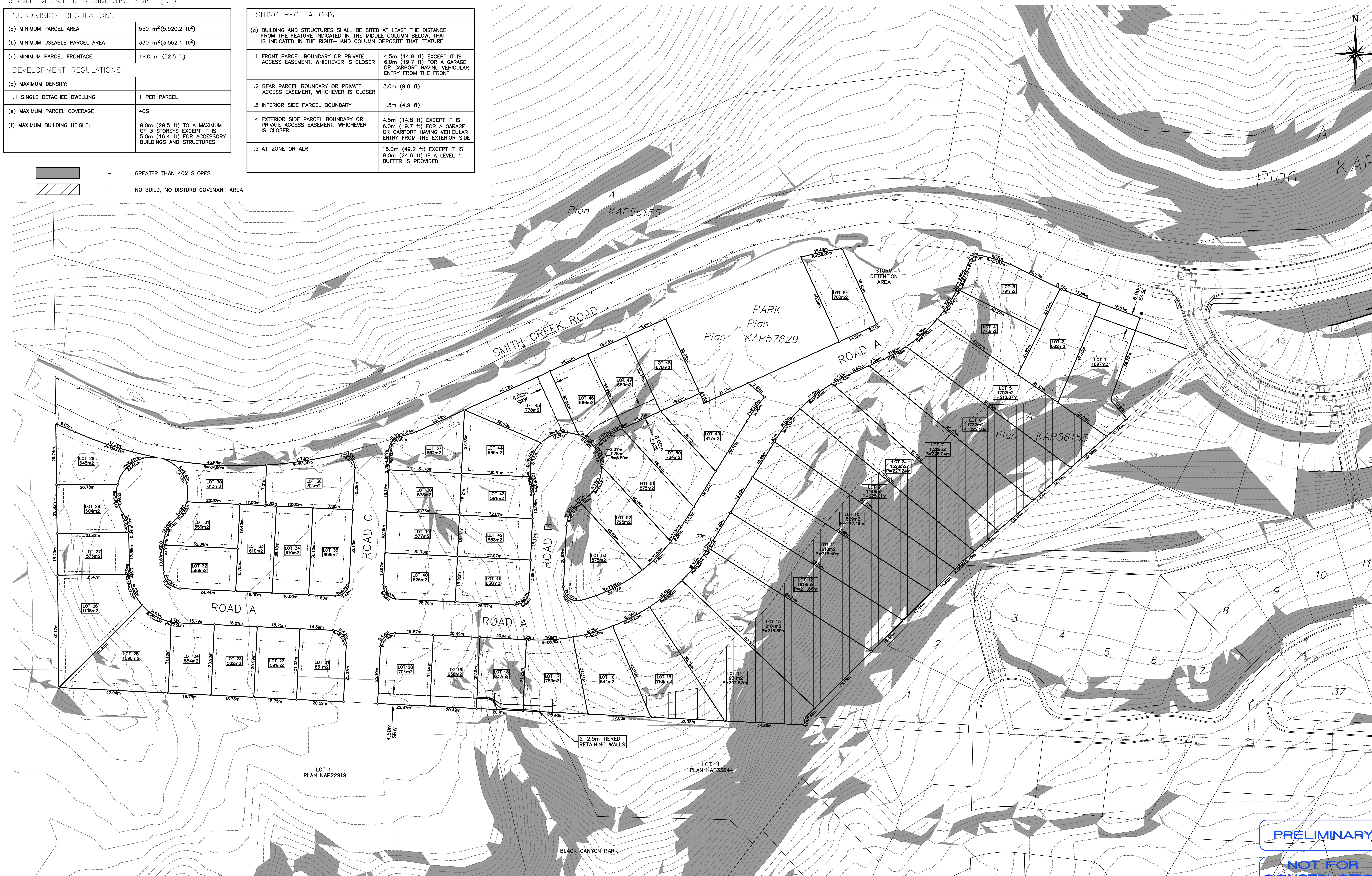
Schedule A

SINGLE DETACHED RESIDENTIAL ZONE (R1)

SUBDIVISION REGULATIONS	
(a) MINIMUM PARCEL AREA	550 m^2(5,920.2 ft^2)
(b) MINIMUM USEABLE PARCEL AREA	330 m^2(3,552.1 ft^2)
(c) MINIMUM PARCEL FRONTAGE	16.0 m (52.5 ft)
DEVELOPMENT REGULATIONS	
(d) MAXIMUM DENSITY:	
.1 SINGLE DETACHED DWELLING	1 PER PARCEL
(e) MAXIMUM PARCEL COVERAGE	40%
(f) MAXIMUM BUILDING HEIGHT:	9.0m (29.5 ft) TO A MAXIMUM OF 3 STOREYS EXCEPT IT IS 5.0m (16.4 ft) FOR ACCESSORY BUILDINGS AND STRUCTURES

SITING REGULATIONS	
(g) BUILDING AND STRUCTURES SHALL BE SITED AT LEAST THE DISTANCE FROM THE FEATURE INDICATED IN THE MIDDLE COLUMN BELOW, THAT IS INDICATED IN THE RIGHT-HAND COLUMN OPPOSITE THAT FEATURE:	
.1 FRONT PARCEL BOUNDARY OR PRIVATE ACCESS EASEMENT, WHICHEVER IS CLOSER	4.5m (14.8 ft) EXCEPT IT IS 6.0m (19.7 ft) FOR A GARAGE OR CARPORT HAVING VEHICULAR ENTRY FROM THE FRONT
.2 REAR PARCEL BOUNDARY OR PRIVATE ACCESS EASEMENT, WHICHEVER IS CLOSER	3.0m (9.8 ft)
.3 INTERIOR SIDE PARCEL BOUNDARY	1.5m (4.9 ft)
.4 EXTERIOR SIDE PARCEL BOUNDARY OR PRIVATE ACCESS EASEMENT, WHICHEVER IS CLOSER	4.5m (14.8 ft) EXCEPT IT IS 6.0m (19.7 ft) FOR A GARAGE OR CARPORT HAVING VEHICULAR ENTRY FROM THE EXTERIOR SIDE
.5 A1 ZONE OR ALR	15.0m (49.2 ft) EXCEPT IT IS 9.0m (24.6 ft) IF A LEVEL 1 BUFFER IS PROVIDED.

- GREATER THAN 40% SLOPES
- NO BUILD, NO DISTURB COVENANT AREA



LEGEND

WATER	MANHOLE (MH)	I.C.
SANITARY SEWER	POWER POLE (P.P.)	C.S.
STORM SEWER	LAMP STANDARD (L.S.)	LPT
GAS	CATCH BASIN (C.B.)	SERVICE BOX
UG TELEPHONE	HYDRANT	
UG ELECTRICAL	TREES	

No.	DATE (MM/DD/YY)	BY	REVISION	Chk'd	No.	DATE (MM/DD/YY)	BY	REVISION	Chk'd
					5	04/14/21	TWJM	ISSUED FOR APPROVAL	KCL
					4	02/19/21	TWJM	ISSUED FOR APPROVAL	KCL
8	06/25/21	TWJM	ISSUED FOR APPROVAL	KCL	3	01/23/21	KCL	ISSUED FOR APPROVAL	KCL
7	06/10/21	KCL	ISSUED FOR APPROVAL	KCL	2	01/15/21	KCL	REVISED SITE GRADING	KCL
6	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL	1	01/12/21	KCL	REVISED SITE GRADING	KCL

WEST KELOWNA

P.ENG.

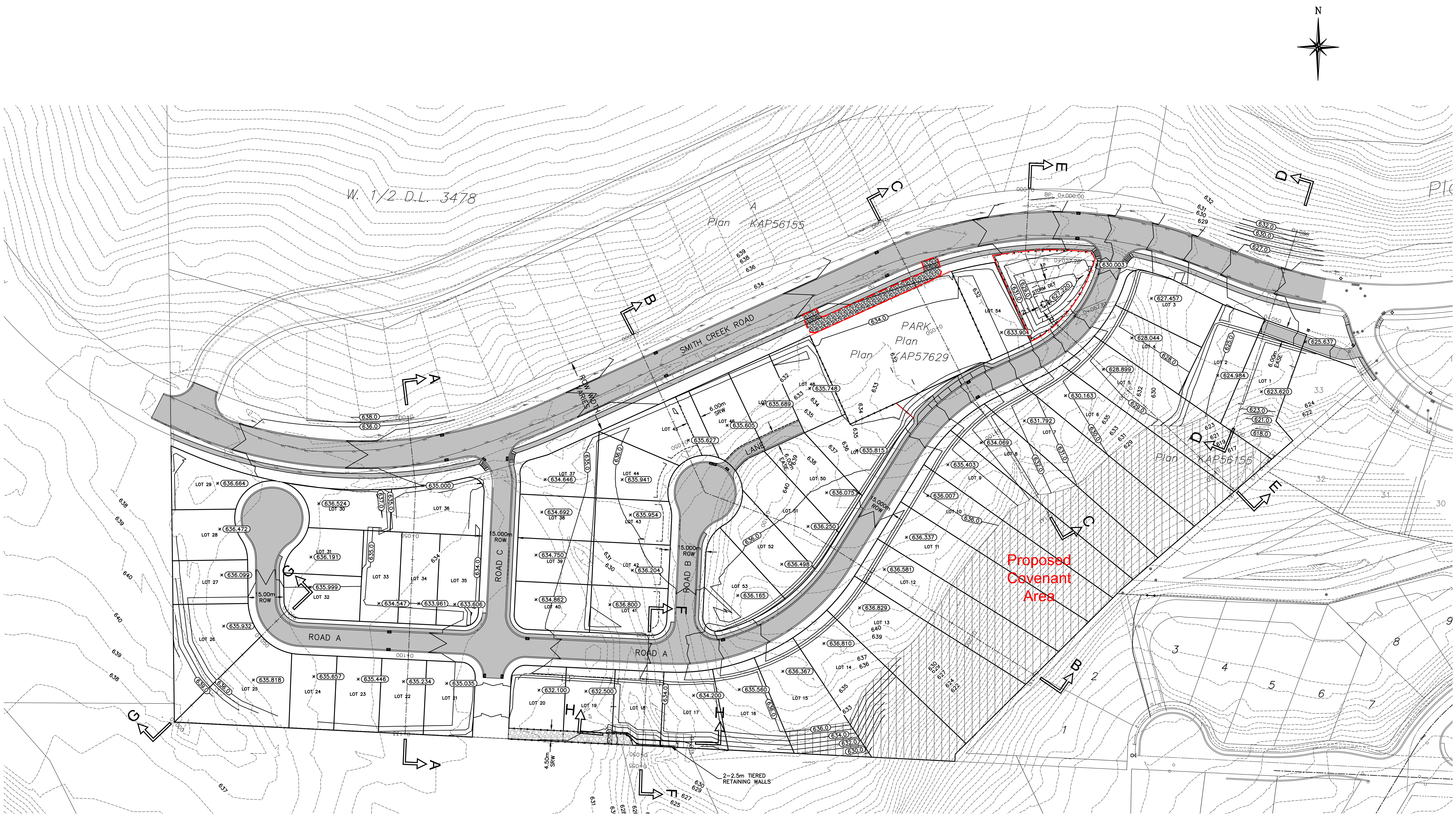
DRAWN	TWJM
DESIGN	TWJM
APPROVED	KCL
DATE	2020.10.08
SCALE HORIZ.	1:750
VERT.	N/A

PROTECH CONSULTING 2012
Phone 860-1771 200 - 1461 St. Paul Street Kelowna, B.C. FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
LOT LAYOUT

DRAWING NO. 20035-P01

REV. NO. 8



▨ – NO BUILD, NO DISTURB COVENANT AREA

PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

WATER	MANHOLE ○ MH	I.C.	
SANITARY SEWER	POWER POLE ● P.P.	C.S.	
STORM SEWER	LAMP STANDARD ☐ L.S.	LPT	
GAS	CATCH BASIN ▨ C.B.	SERVICE BOX	
UG TELEPHONE	HYDRANT		
UG ELECTRICAL	TREES		

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
5	06/25/21	TWJM	ISSUED FOR APPROVAL	KCL
4	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL
3	04/14/21	KCL	ISSUED FOR APPROVAL	KCL
2	01/23/21	KCL	ISSUED FOR APPROVAL	KCL
1	01/12/21	KCL	REVISED SITE GRADING	KCL

WEST KELOWNA

P.ENG.

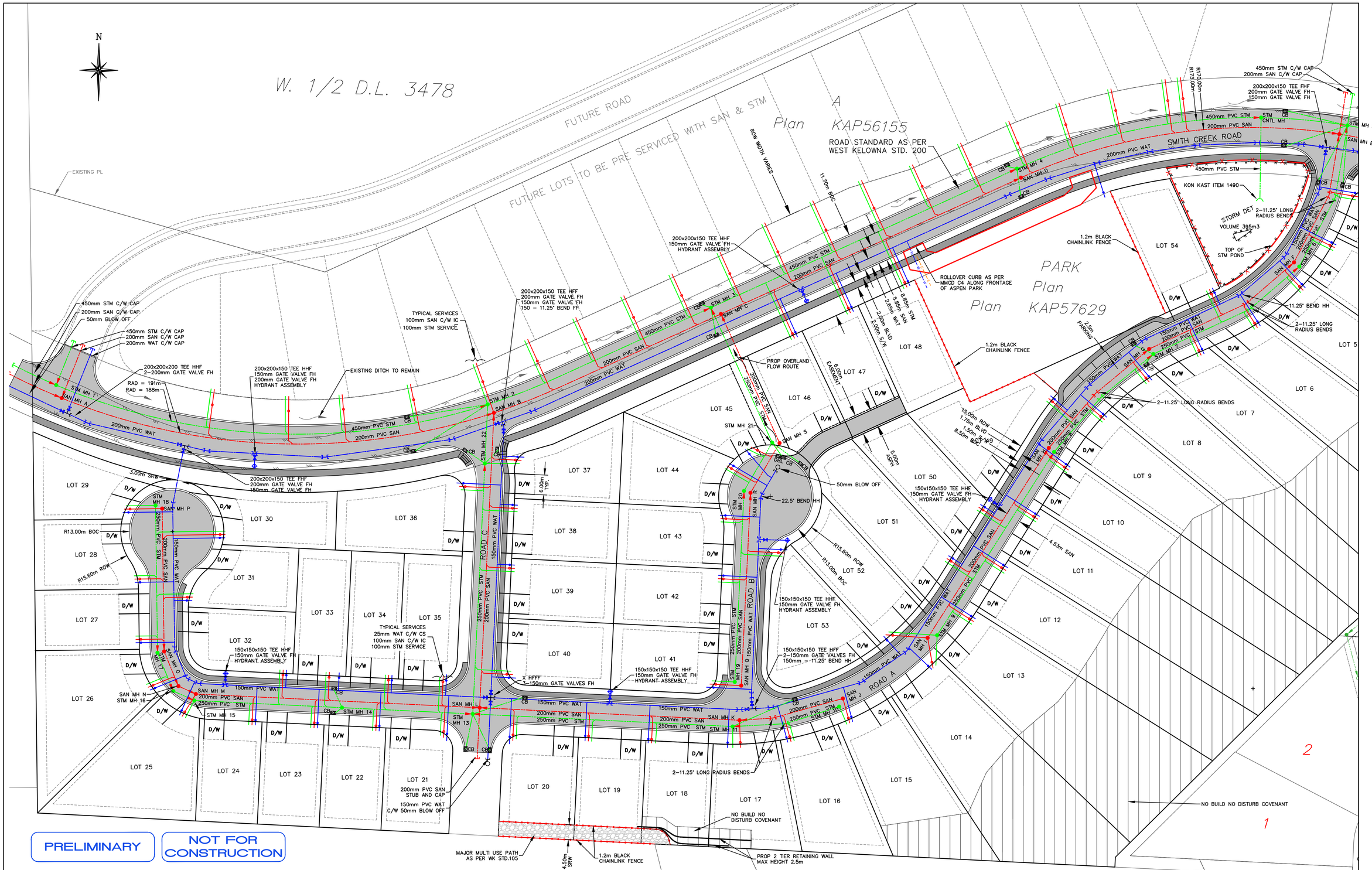
DRAWN	TWJM
DESIGN	TWJM
APPROVED	KCL
DATE	2020.10.22
SCALE HORIZ.	1:750
VERT.	N/A

PROTECH CONSULTING 2012
Phone 860–1771 · 200 – 1461 St. Paul Street Kelowna, B.C. · FAX 860–1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
PRELIMINARY SITE GRADING

DRAWING NO. 20035–P02

REV. NO. 5



LEGEND

WATER
SANITARY SEWER
STORM SEWER
GAS
UG TELEPHONE
UG ELECTRICAL

MANHOLE — MH
POWER POLE — P.P.
LAMP STANDARD — L.S.
CATCH BASIN — C.B.
HYDRANT
TREES

I.C.
C.S.
LPT
SERVICE BOX — S

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
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3	06/10/21	TWJM	ISSUED FOR COORDINATION	KCL
2	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL
1	04/14/21	TWJM	ISSUED FOR APPROVAL	KCL

WEST KELOWNA

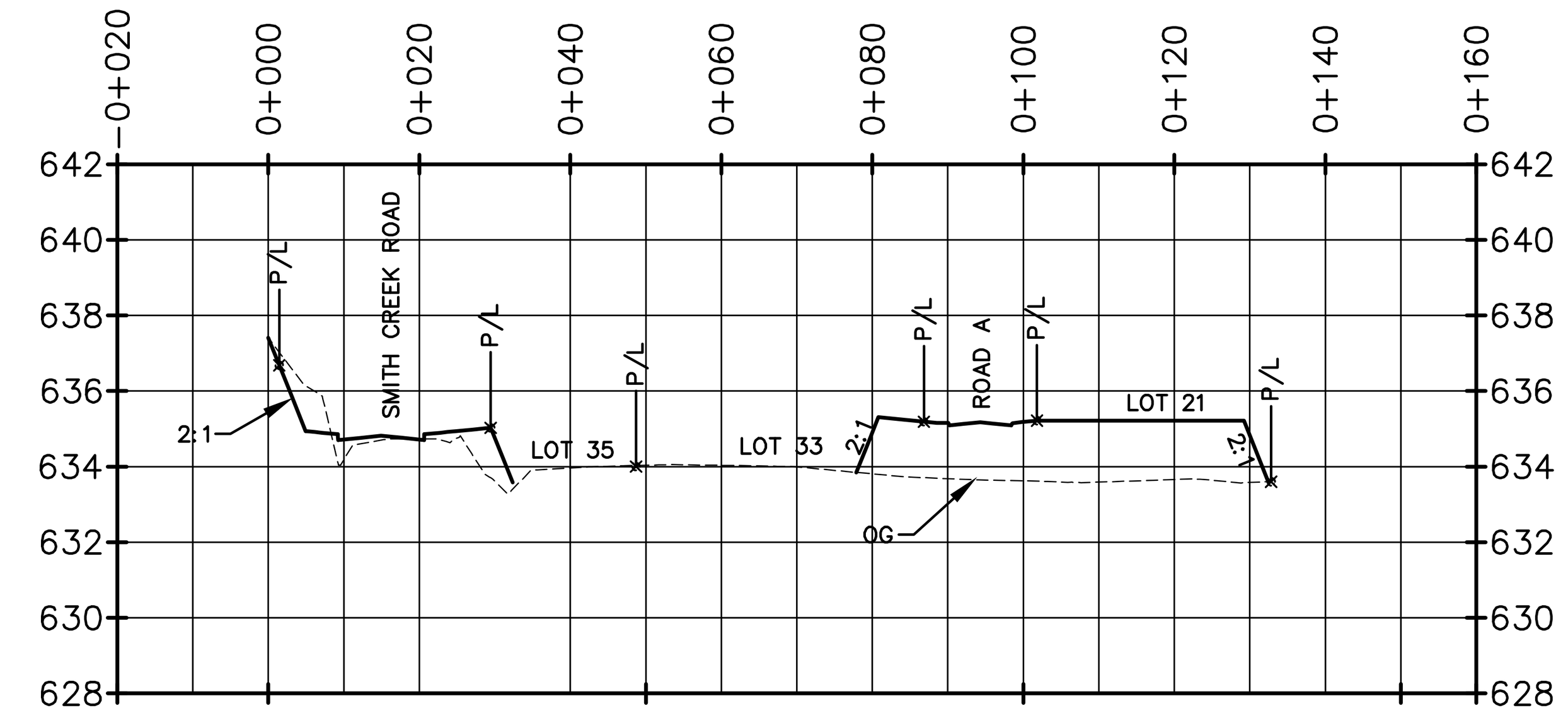
P.ENG.

DRAWN	TWJM
DESIGN	TWJM
APPROVED	KCL
DATE	2021.02.24
SCALE	
HORIZ.	1:500
VERT.	N/A

PROTECH CONSULTING 2012
200 – 1461 St. Paul Street Kelowna, B.C.
Phone 860-1771 FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 3
SITE SERVICING PLAN

DRAWING NO. 20035-P05
REV. NO. 4



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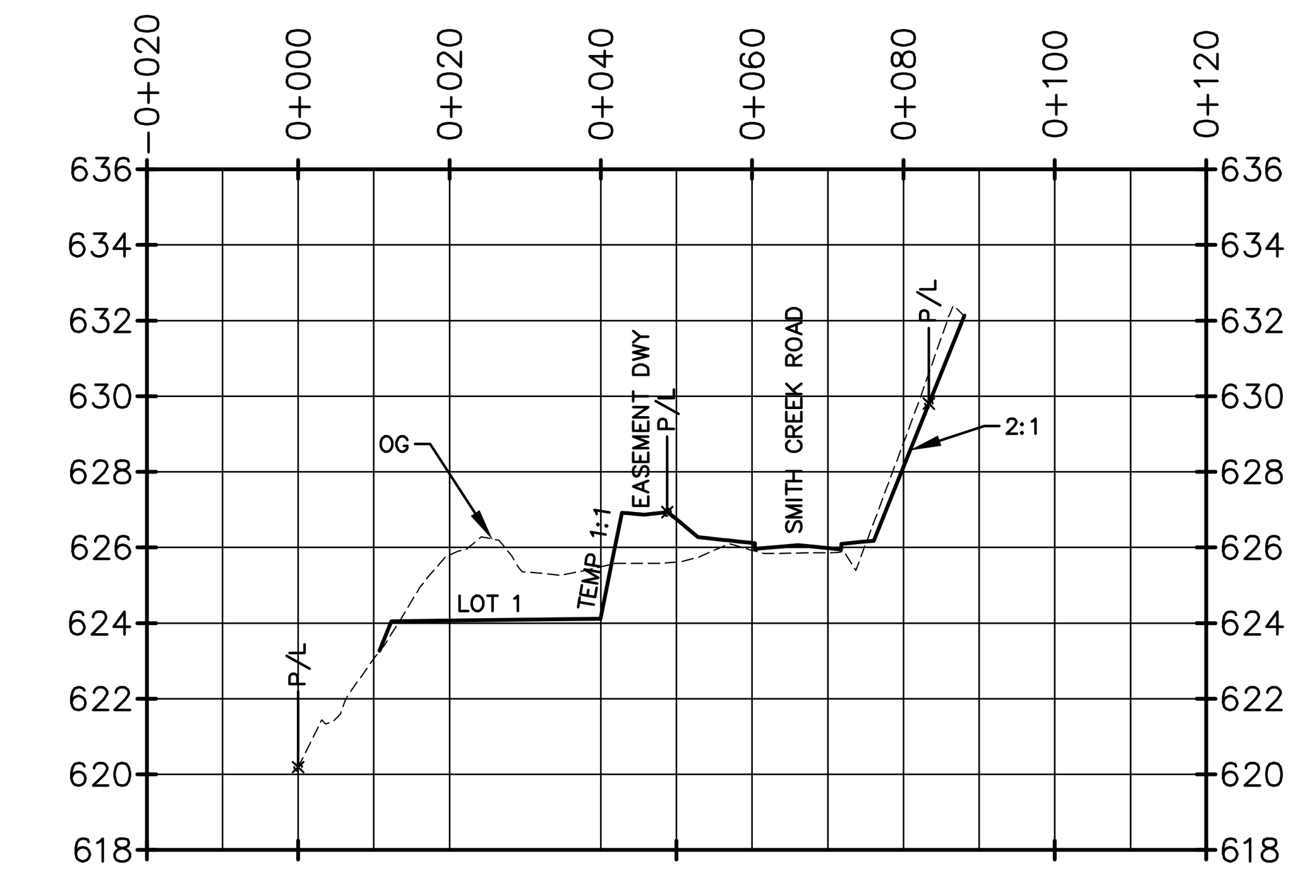

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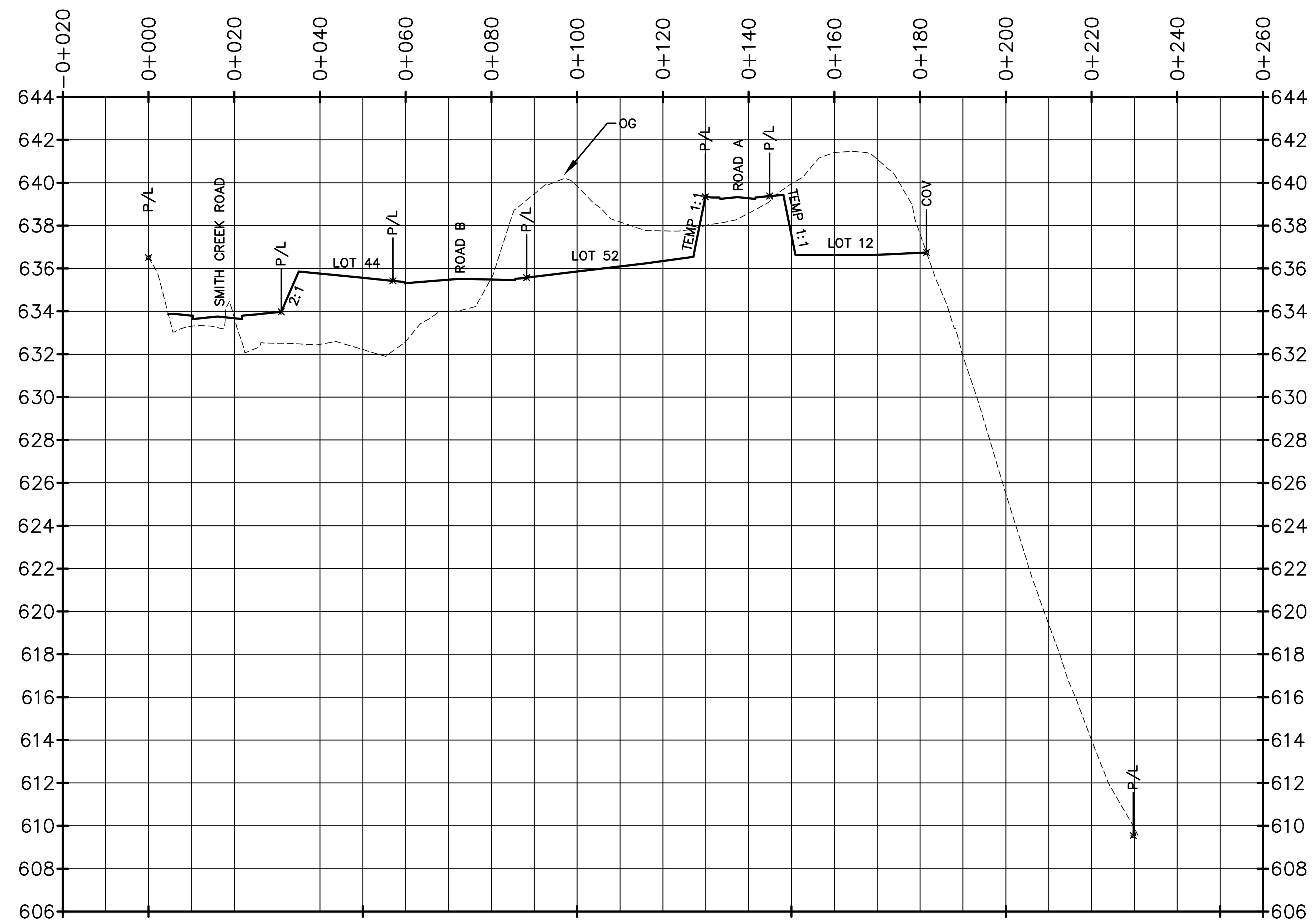

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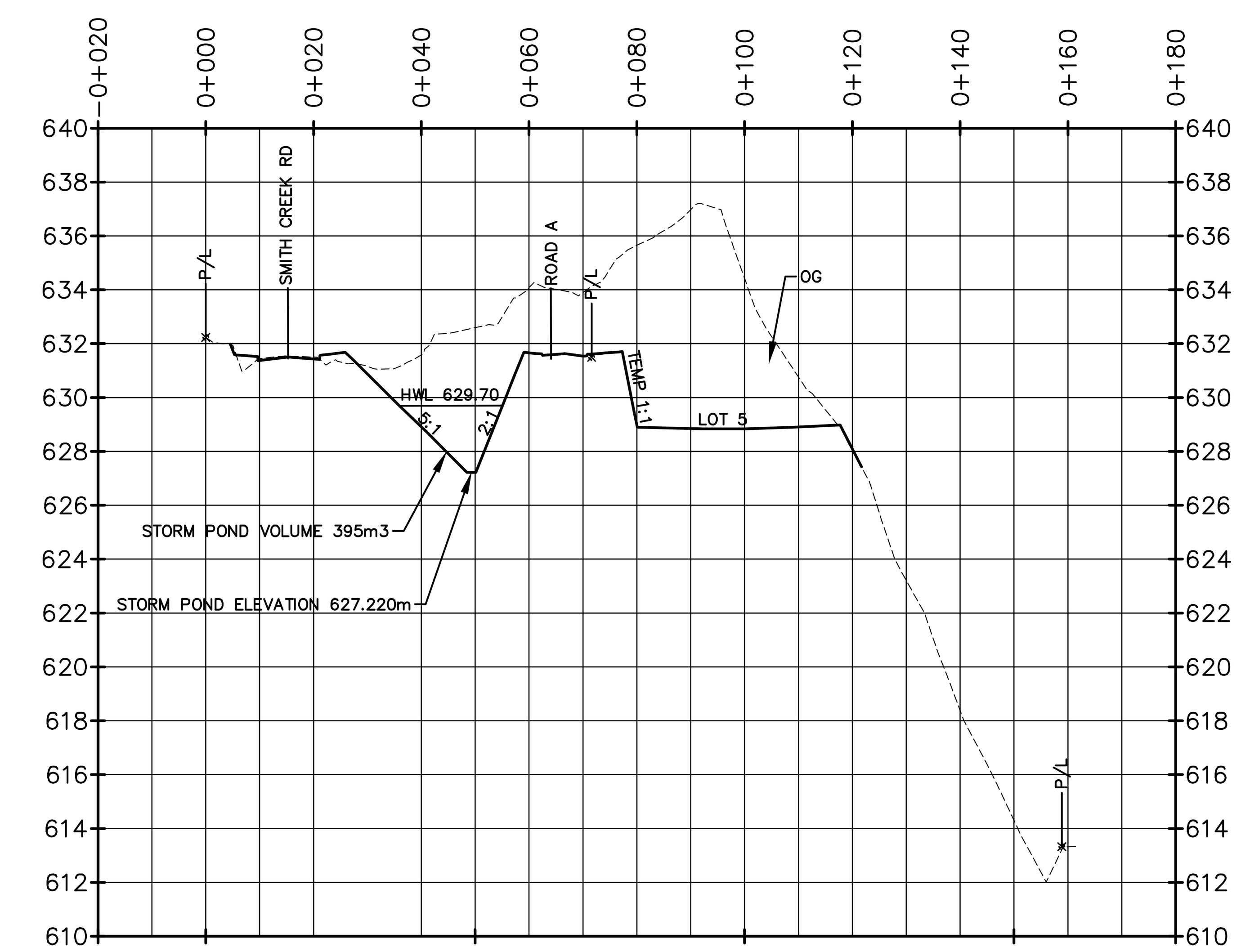

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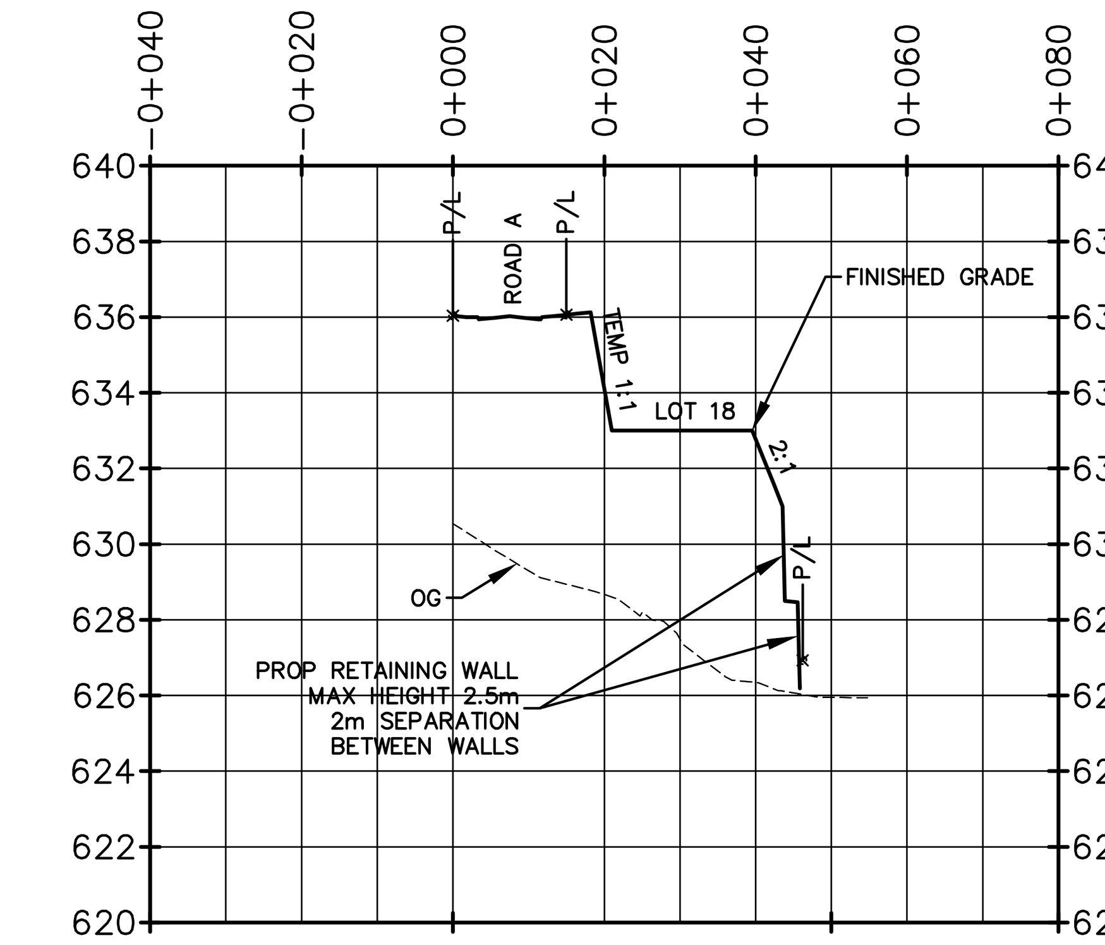

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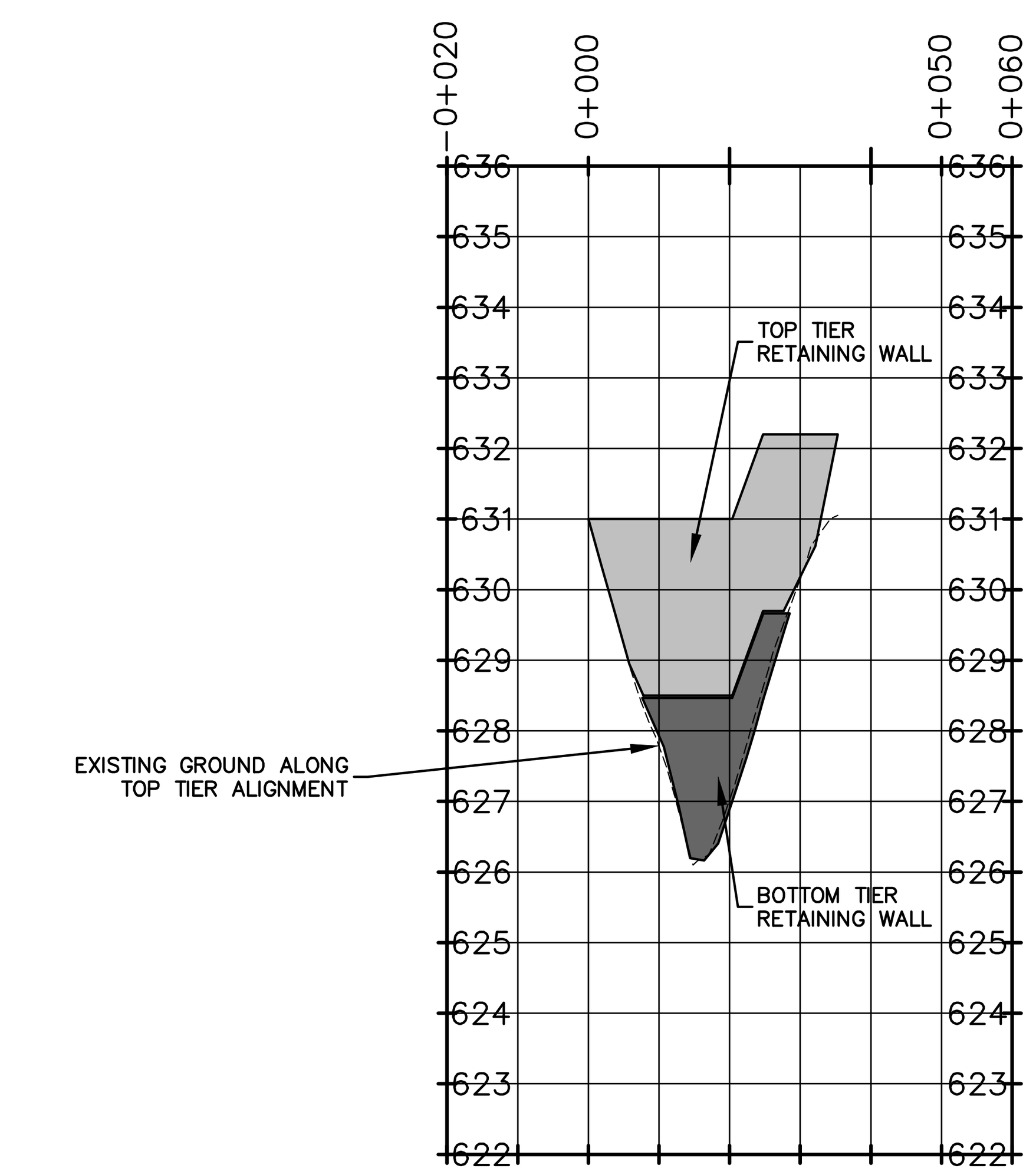

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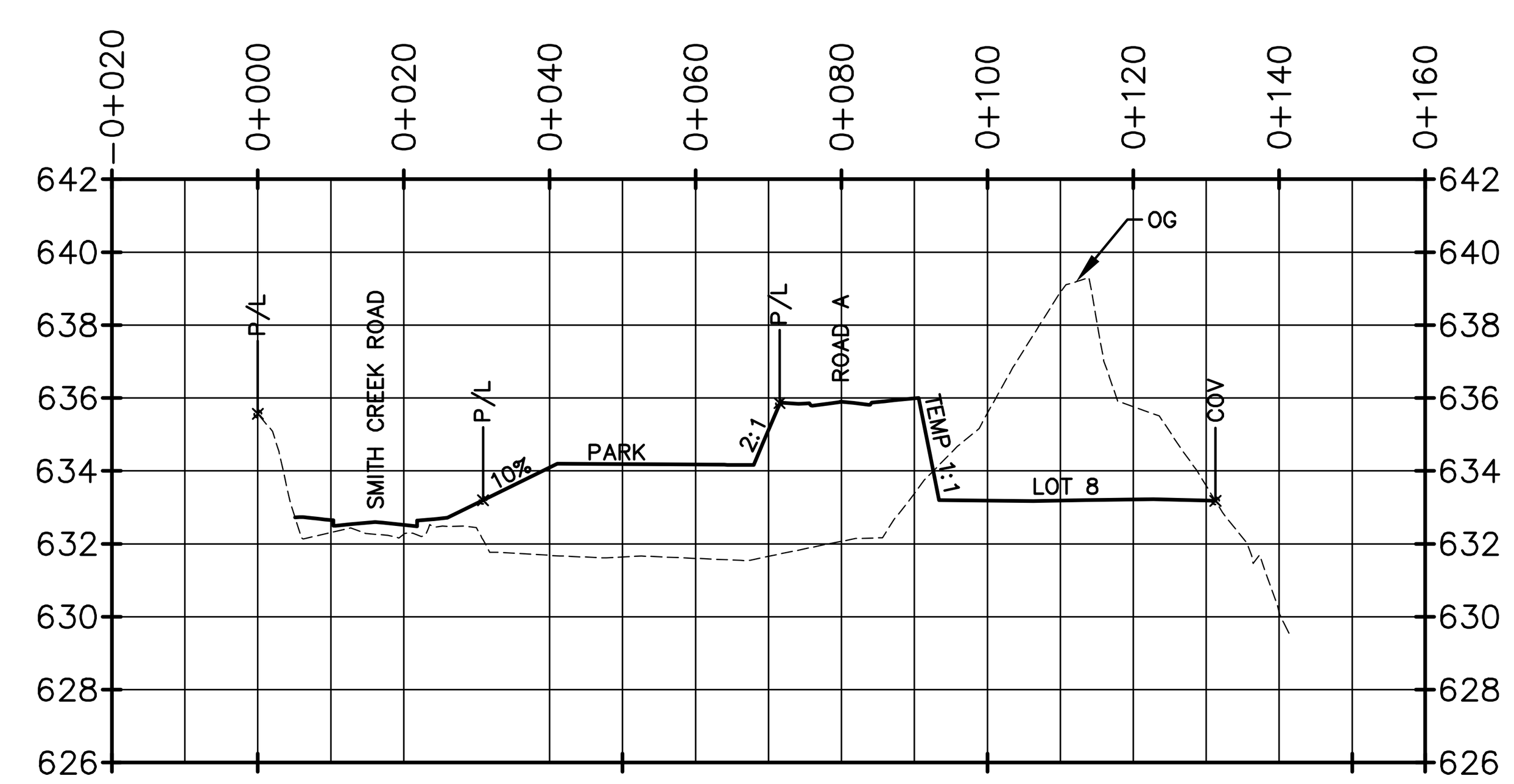

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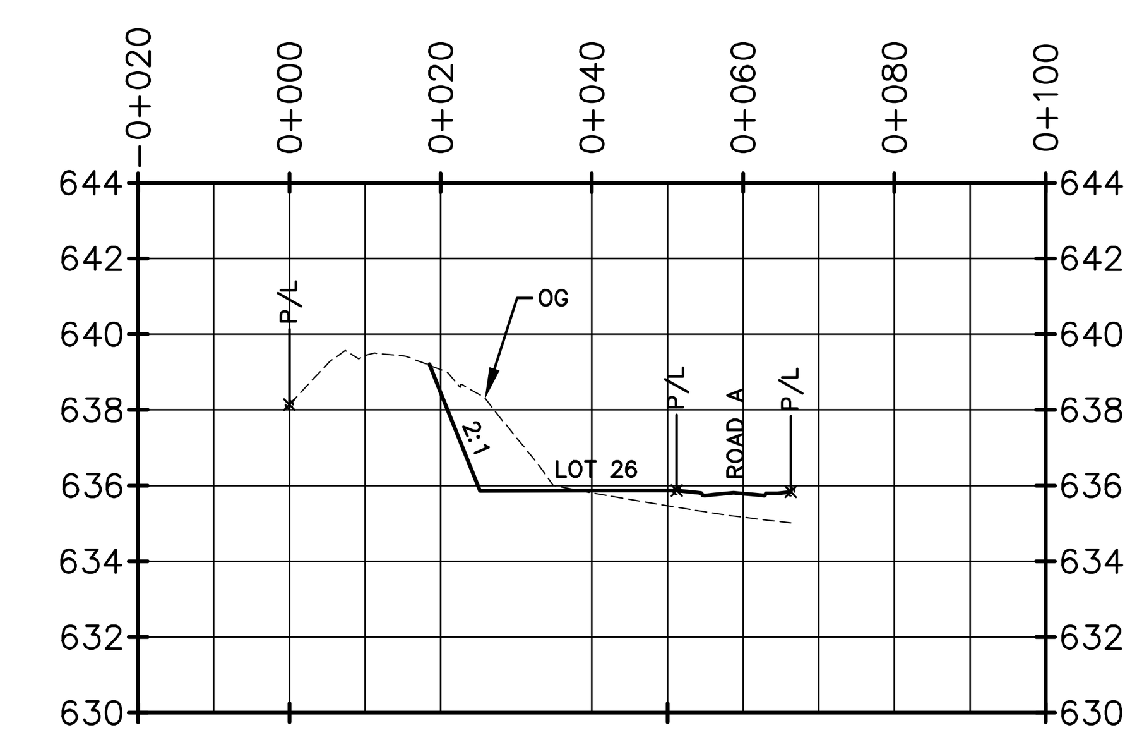


SECTION G–G

PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

WATER	MANHOLE ○ MH
SANITARY SEWER	POWER POLE ● P.P.
STORM SEWER	LAMP STANDARD L.S.
GAS	CATCH BASIN C.B.
UG TELEPHONE	HYDRANT
UG ELECTRICAL	TREES

I.C.
C.S.
LPT
SERVICE BOX

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
5	06/25/21	TWJM	ISSUED FOR APPROVAL	KCL
4	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL
3	04/14/21	KCL	ISSUED FOR APPROVAL	KCL
2	01/23/21	KCL	ISSUED FOR APPROVAL	KCL
1	01/12/21	KCL	REVISED SITE GRADING	KCL

WEST KELOWNA

P.ENG.

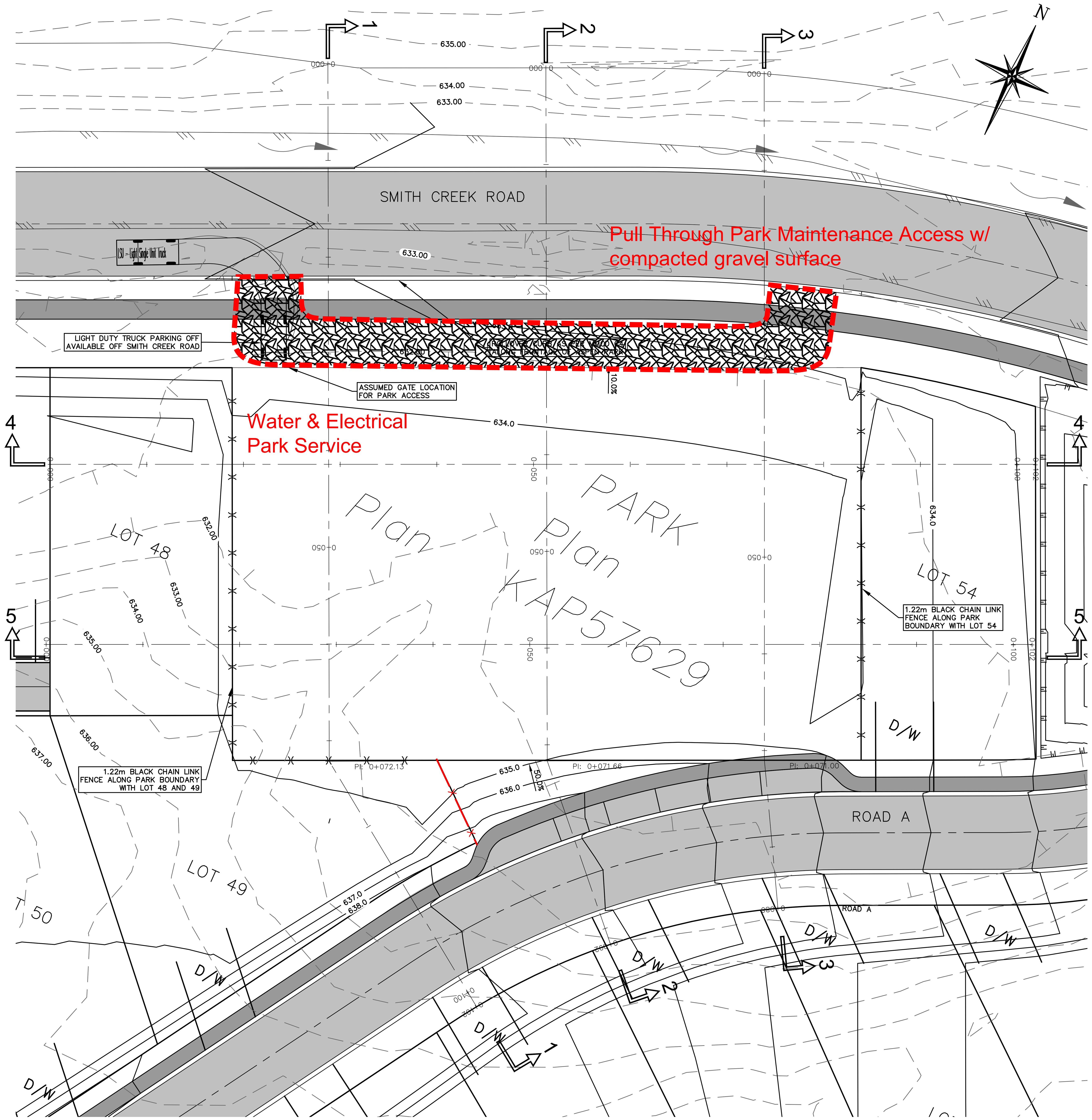
DRAWN	TWJM
DESIGN	TWJM
APPROVED	KCL
DATE	2020.10.22
SCALE HORIZ.	1:1000
VERT.	1:200

PROTECH CONSULTING 2012
Phone 860–1771 200 – 1461 St. Paul Street Kelowna, B.C. FAX 860–1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
SITE GRADING CROSS SECTIONS

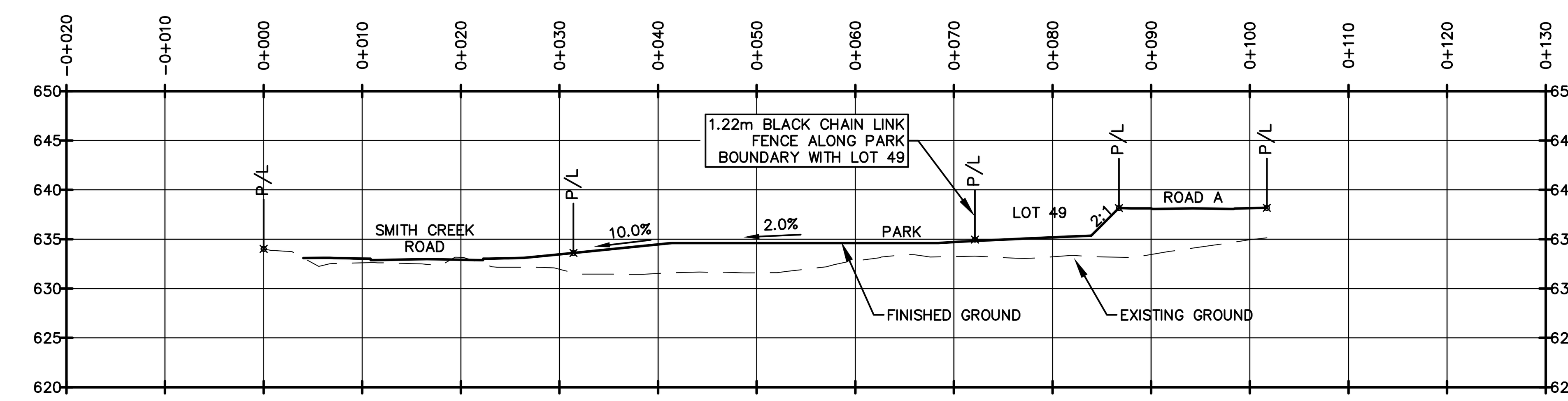
DRAWING NO. 20035–P03

REV. NO. 5



ASPEN PARK PLAN VIEW

SCALE 1:250



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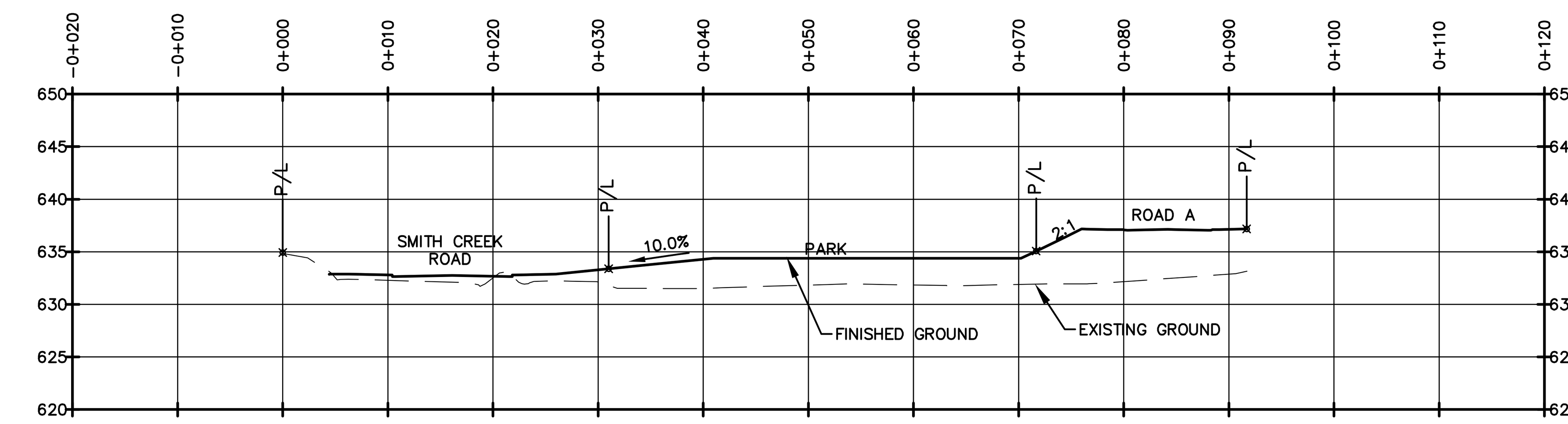

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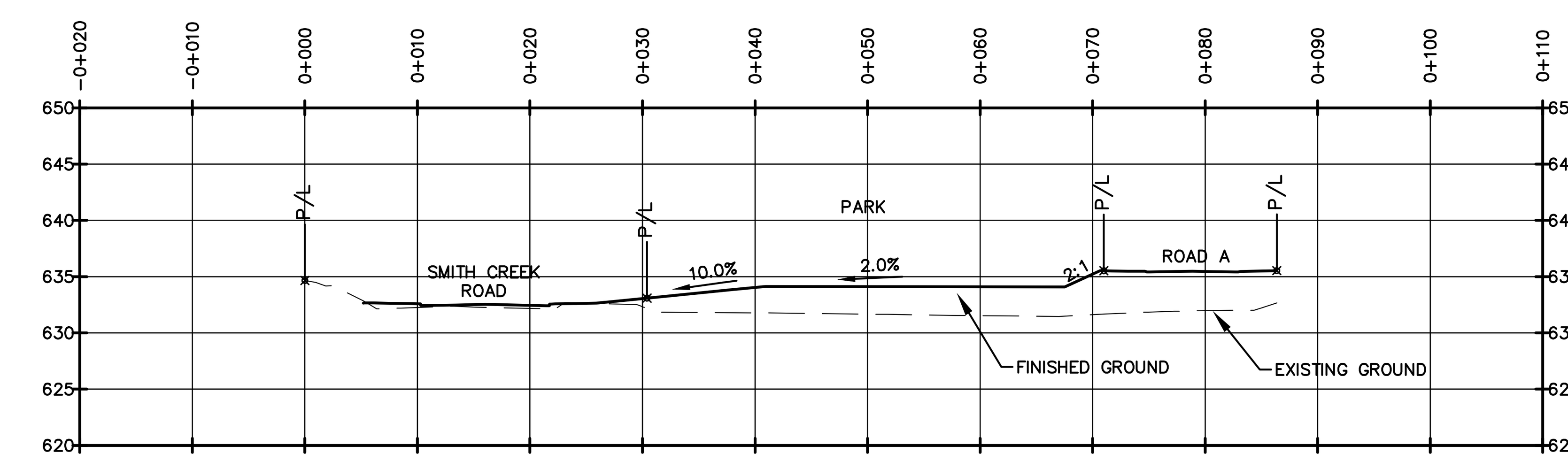

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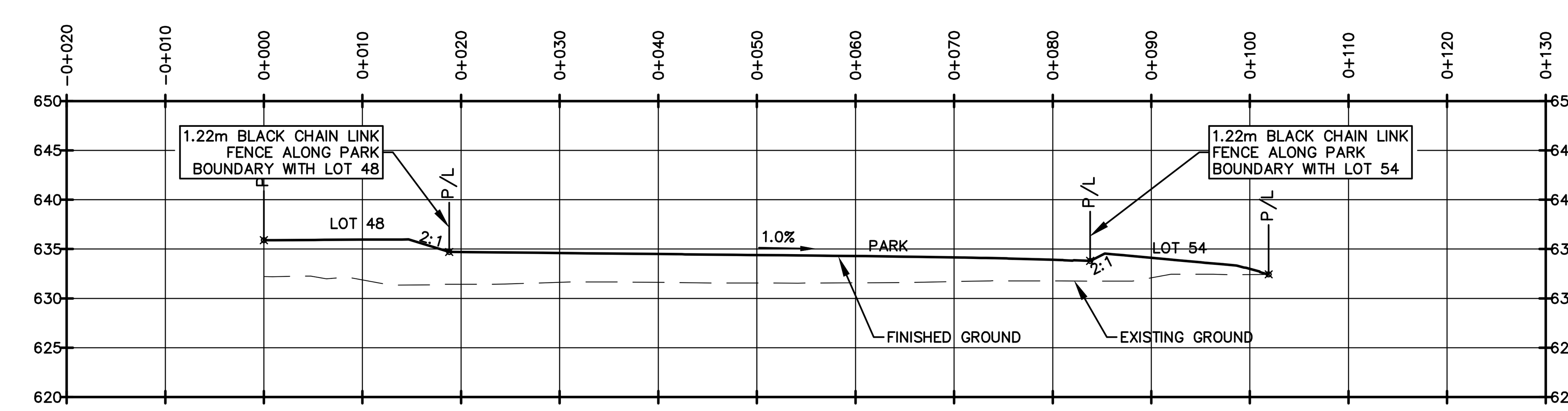

SECTION 4–4

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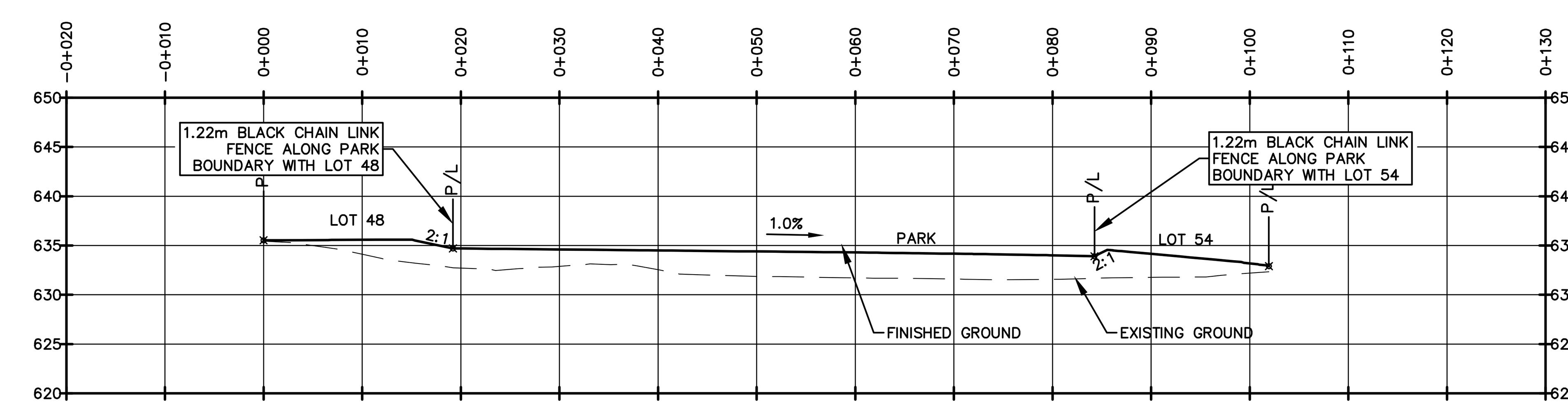

SECTION 5–5

SCALE 1:500

"RED LINED"

PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

WATER	MANHOLE ○ MH	I.C.	
SANITARY SEWER	POWER POLE ● P.P.	C.S.	
STORM SEWER	LAMP STANDARD □ L.S.	LPT	
GAS	CATCH BASIN C.B.	SERVICE BOX	
UG TELEPHONE	HYDRANT		
UG ELECTRICAL	TREES		

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
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2	05/25/21	TWJM	ISSUED FOR COORDINATION	KCL
1	03/18/21	KCL	ISSUED FOR COORDINATION	KCL

WEST KELOWNA

P.ENG.

DRAWN	KCL
DESIGN	KCL
APPROVED	KCL
DATE	MAR 2021
SCALE	AS NOTED

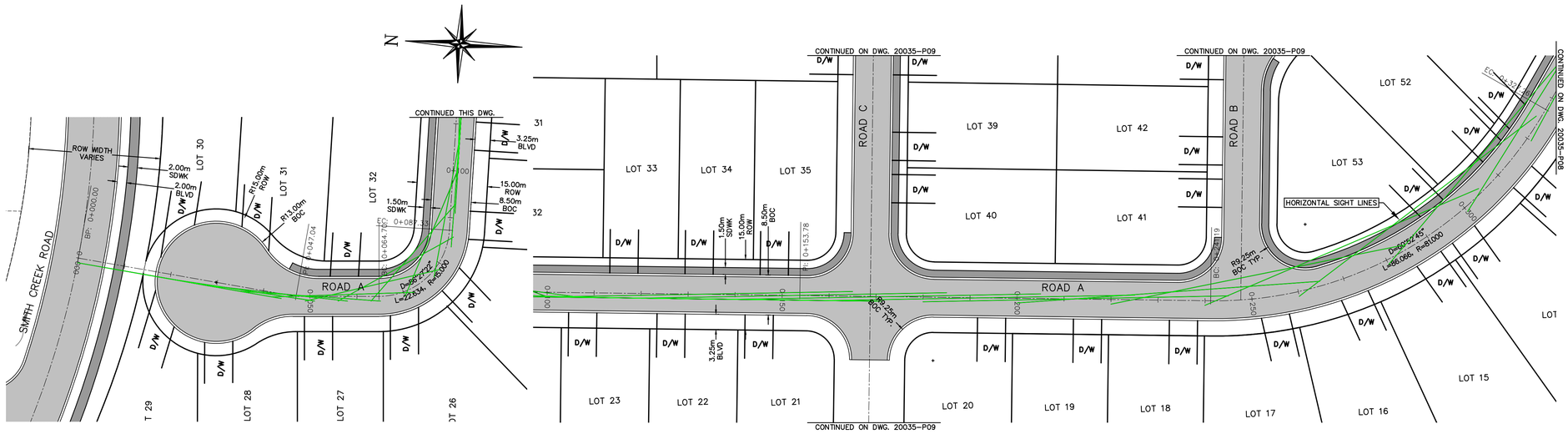
PROTECH CONSULTING 2012

200 – 1461 St. Paul Street Kelowna, B.C. Phone 860–1771 FAX 860–1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
ASPEN PARK CROSS SECTIONS

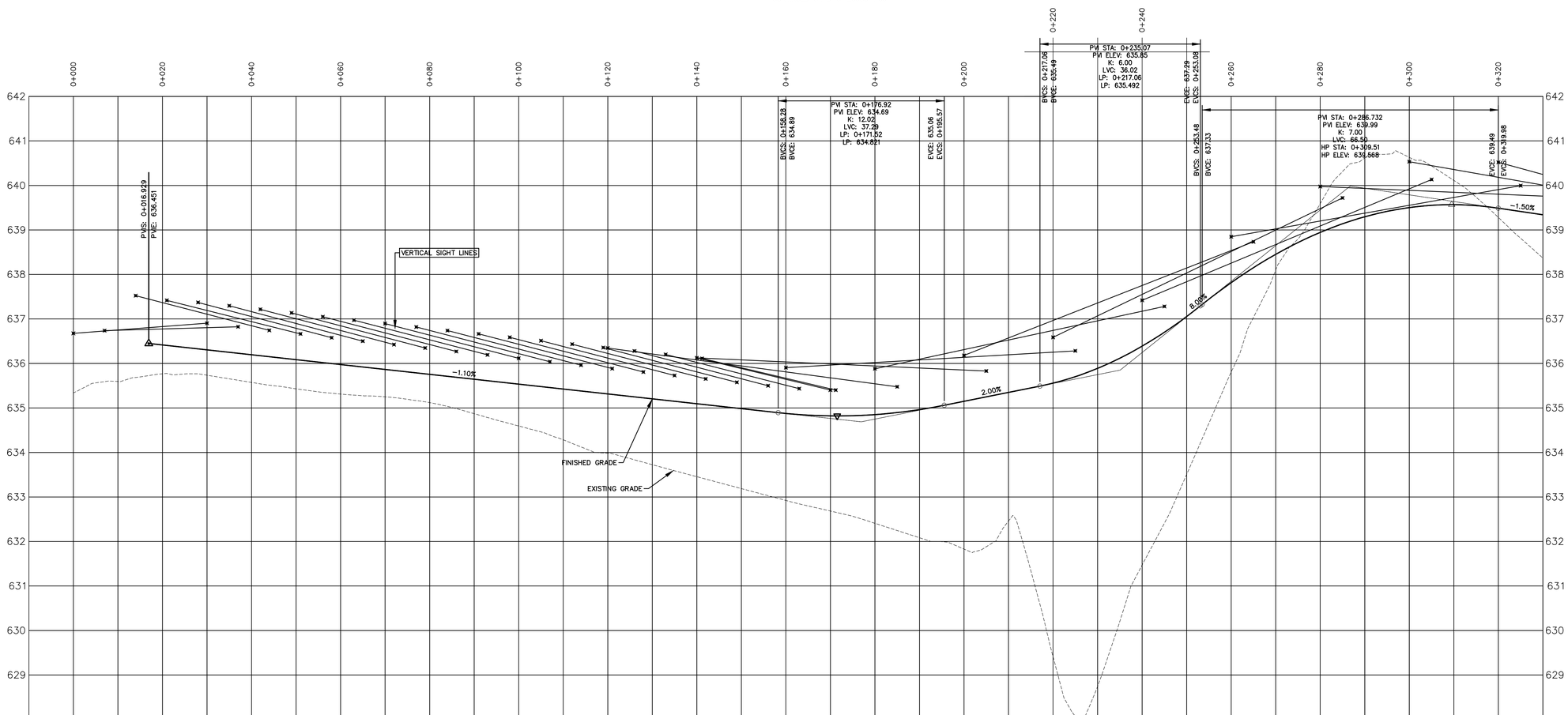
DRAWING NO. 20035–P16

REV. NO. 3



SIGHT LIMITATION ANALYSIS
CRITERIA STA 0+000 TO 0+120
STOPPING SIGHT DISTANCE = 30m (TAC TABLE 2.1.3.4 FOR 30KM/HR)
EYE HEIGHT = 1.05m
EYE OFFSET = 1.0m
TARGET HEIGHT = 0.6m
TARGET OFFSET = -1.0m

SIGHT LIMITATION ANALYSIS
CRITERIA STA 0+120 TO 0+530
STOPPING SIGHT DISTANCE = 65m (CWK BYLAW 0249 LOCAL ROAD)
EYE HEIGHT = 1.05m
EYE OFFSET = 1.0m
TARGET HEIGHT = 0.6m
TARGET OFFSET = -1.0m



PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

WATER	MANHOLE	MH	I.C.
SANITARY SEWER	POWER POLE	P.P.	C.S.
STORM SEWER	LAMP STANDARD	L.S.	LPT
GAS	CATCH BASIN	C.B.	SERVICE BOX
UG TELEPHONE	HYDRANT		
UG ELECTRICAL	TREES		

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
5	06/25/21	TWJM	ISSUED FOR APPROVAL	KCL
4	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL
3	04/14/21	TWJM	ISSUED FOR APPROVAL	KCL
2	03/17/21	KCL	ISSUED FOR APPROVAL	KCL
1	01/20/21	BDK	ISSUED FOR APPROVAL	KCL

WEST KELOWNA

P.ENG.

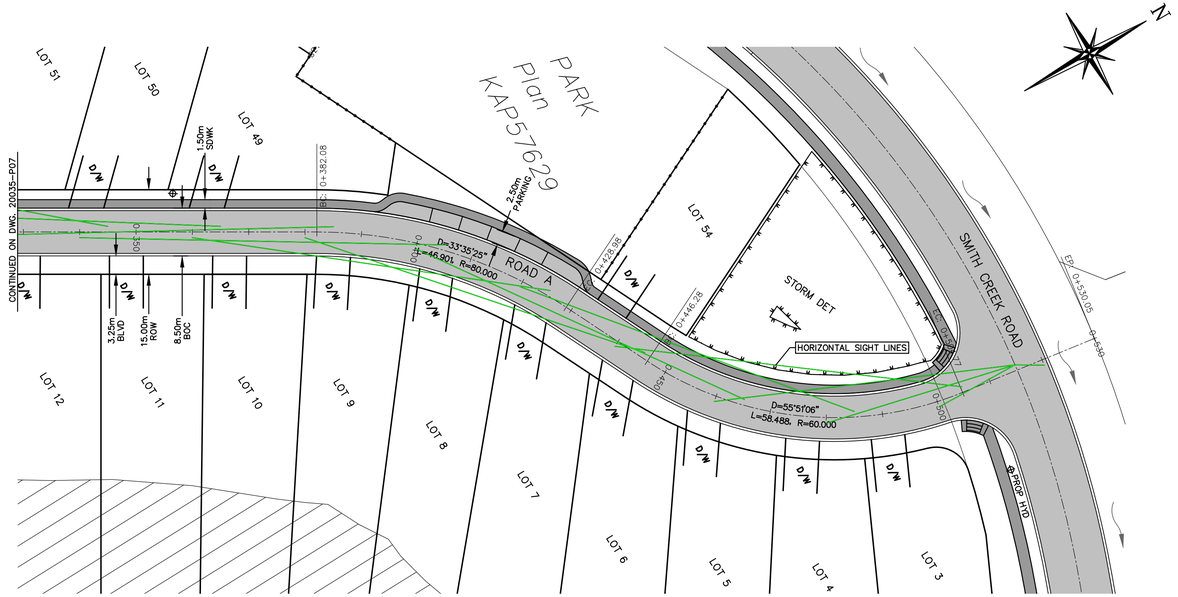
DRAWN	BDK
DESIGN	KCL
APPROVED	KCL
DATE	JAN 2021
SCALE	
HORIZ.	1:500
VERT.	1:50

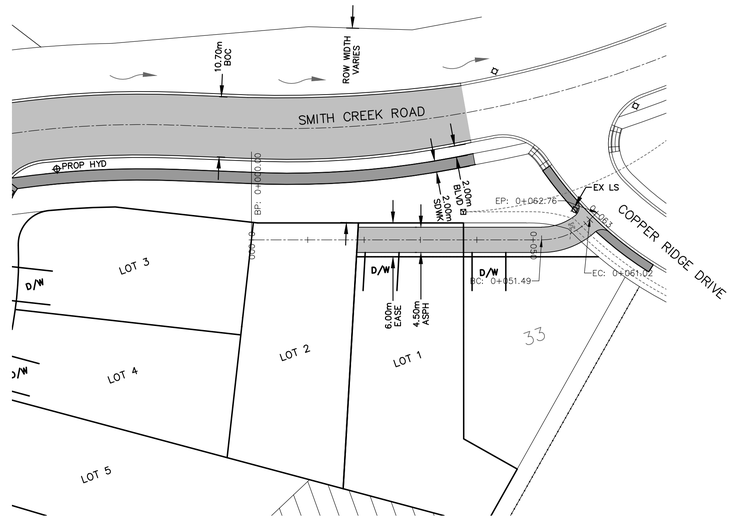
PROTECH CONSULTING 2012
200 – 1461 St. Paul Street Kelowna, B.C.
Phone 860-1771 FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
PRELIMINARY ROAD A PLAN/PROFILE

DRAWING NO. 20035 -P07

REV. NO. 5

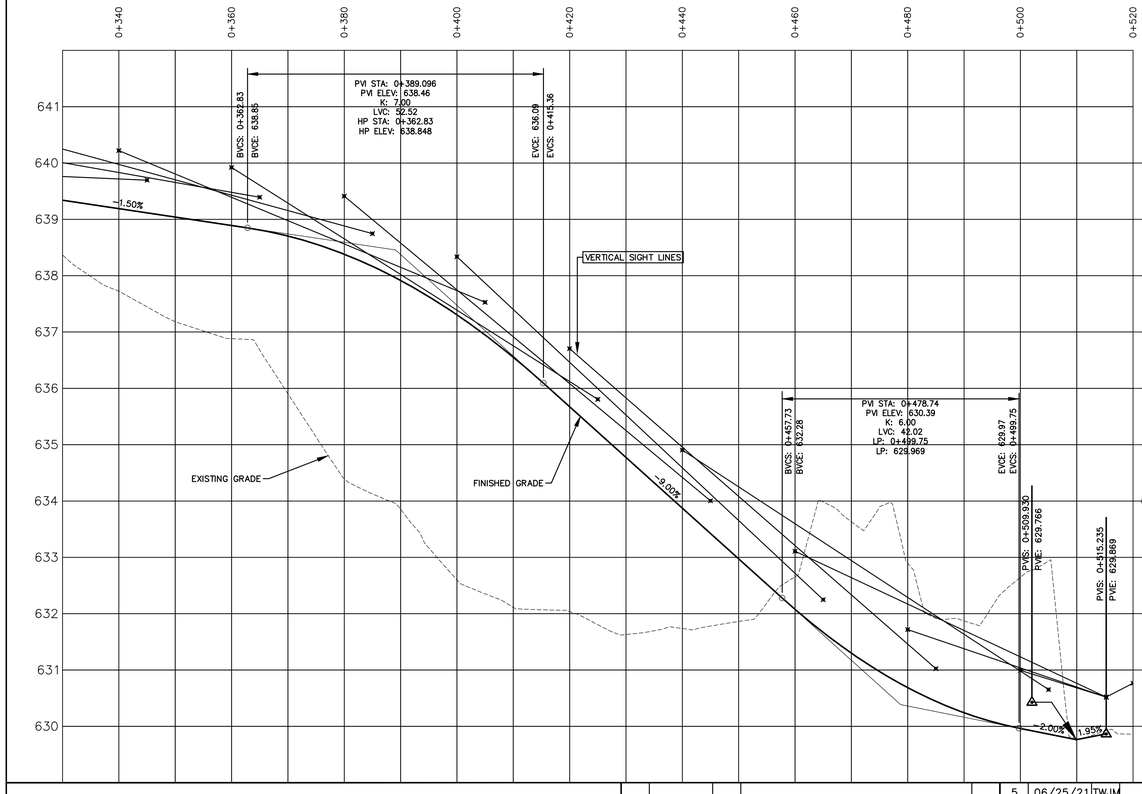


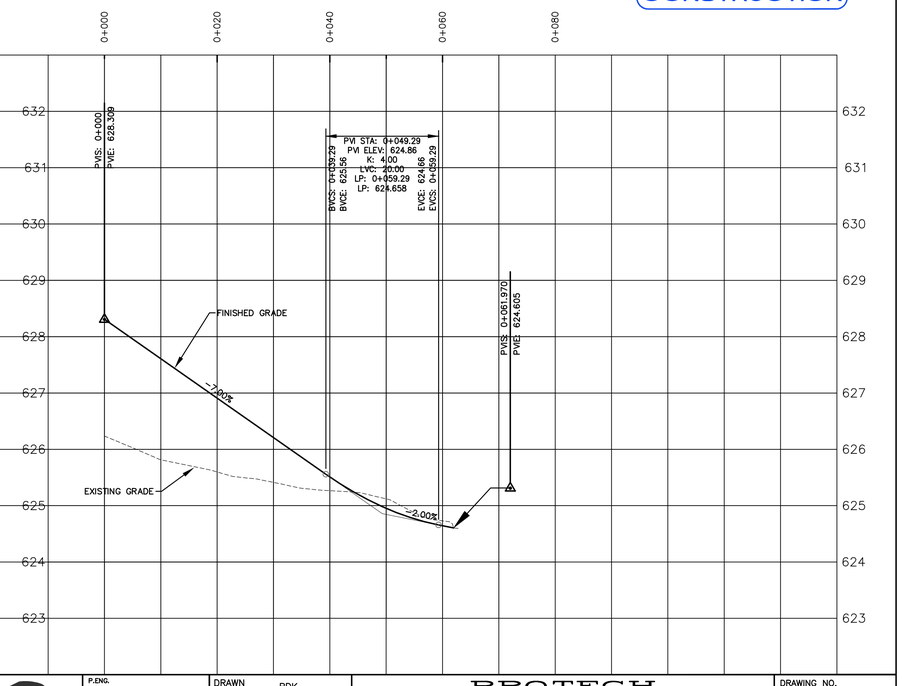


SIGHT LIMITATION ANALYSIS
CRITERIA STA 0+120 TO 0+530
STOPPING SIGHT DISTANCE = 65m (CWK BYLAW 0249 LOCAL ROAD)
EYE HEIGHT = 1.05m
EYE OFFSET = 1.0m
TARGET HEIGHT = 0.6m
TARGET OFFSET = -1.0m

PRELIMINARY

NOT FOR CONSTRUCTION





LEGEND

WATER	MANHOLE	MH	I.C.
SANITARY SEWER	POWER POLE	P.P.	C.S.
STORM SEWER	LAMP STANDARD	L.S.	
GAS	CATCH BASIN	C.B.	LPT
UG TELEPHONE	HYDRANT		SERVICE BOX
UG ELECTRICAL	TREES		

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
5	06/25/21	TWJM	ISSUED FOR APPROVAL	KCL
4	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL
3	04/14/21	TWJM	ISSUED FOR APPROVAL	KCL
2	03/17/21	KCL	ISSUED FOR APPROVAL	KCL
1	01/20/25	BDK	ISSUED FOR APPROVAL	KCL

WEST KELOWNA

P.ENG.

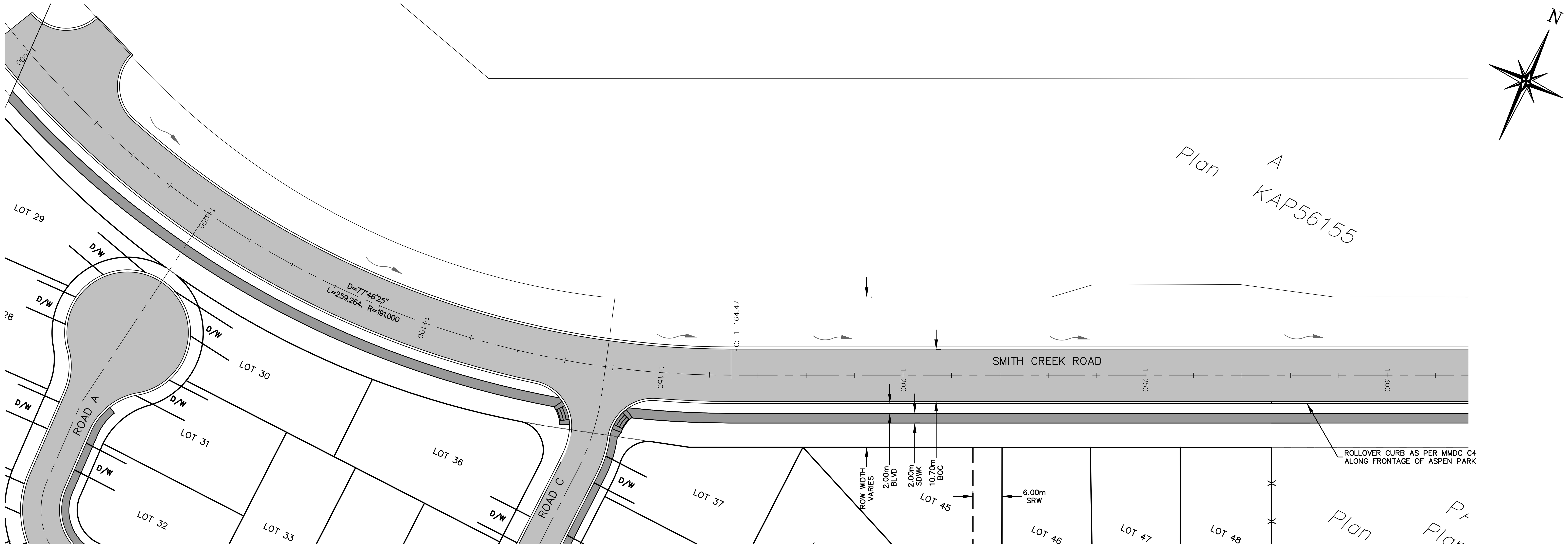
DRAWN	BDK
DESIGN	KCL
APPROVED	KCL
DATE	JAN 2021
SCALE	
HORIZ.	1:500
VERT.	1:50

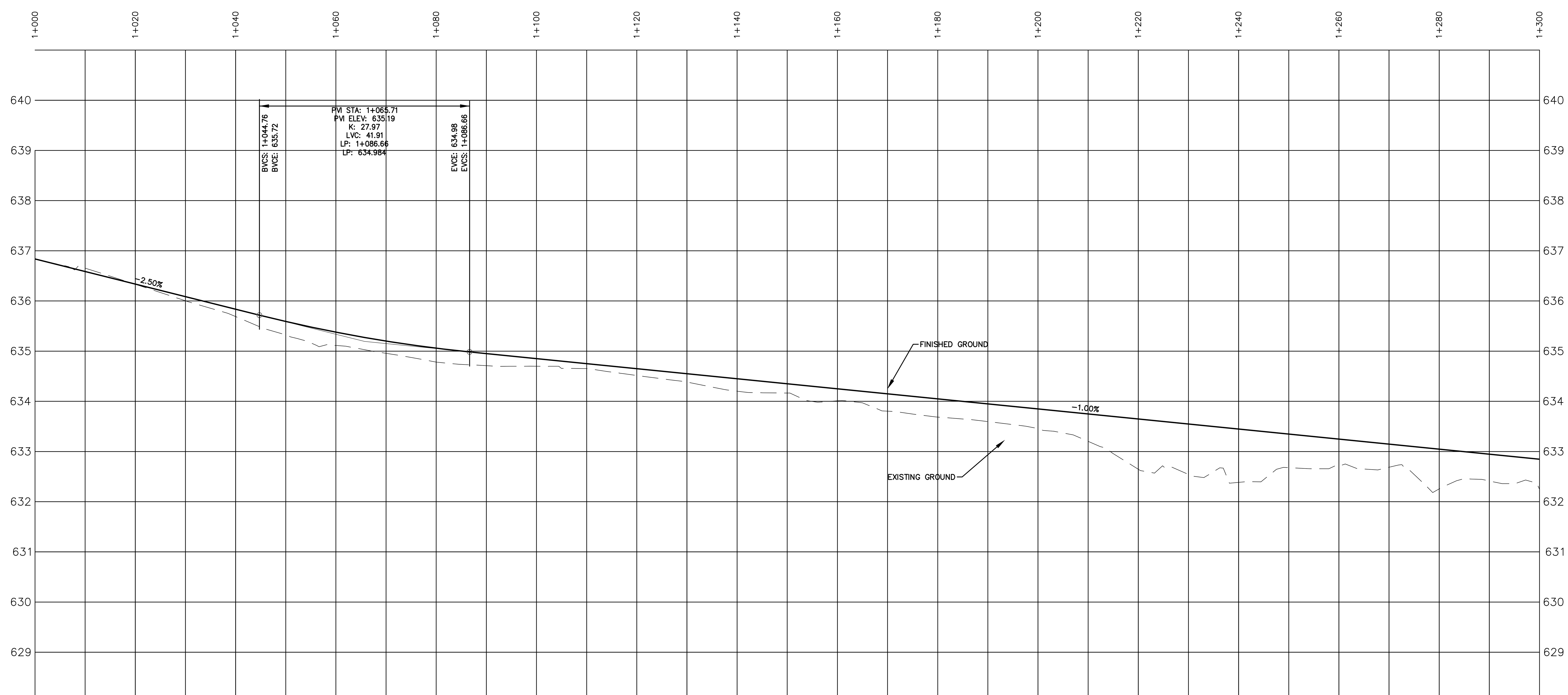
PROTECH CONSULTING 2012
Phone 860-1771 200 – 1461 St. Paul Street Kelowna, B.C. FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
PRELIMINARY ROAD A PLAN/PROFILE 2

DRAWING NO. 20035-P08

REV. NO. 5





PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

WATER		MANHOLE	○ MH	I.C.	
SANITARY SEWER		POWER POLE	● P.P.	C.S.	
STORM SEWER		LAMP STANDARD	◻ L.S.	LPT	
GAS		CATCH BASIN	C.B.	SERVICE BOX	
UG TELEPHONE		HYDRANT			
UG ELECTRICAL		TREES			

No.	DATE	BY	REVISION	Chk'd
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2	03/17/21	KCL	ISSUED FOR APPROVAL	KCL
1	01/20/25	BDK	ISSUED FOR APPROVAL	KCL

(DATE column header: MM/DD/YY)

WEST KELOWNA

P.ENG.

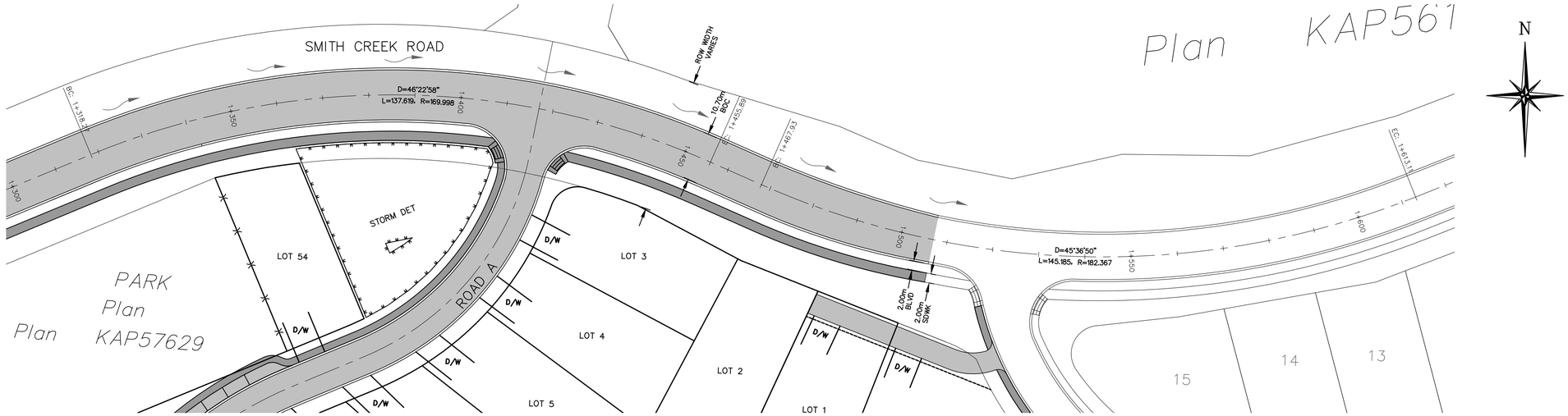
DRAWN	BDK
DESIGN	KCL
APPROVED	KCL
DATE	JAN 2021
SCALE	
HORIZ.	1:500
VERT.	1:50

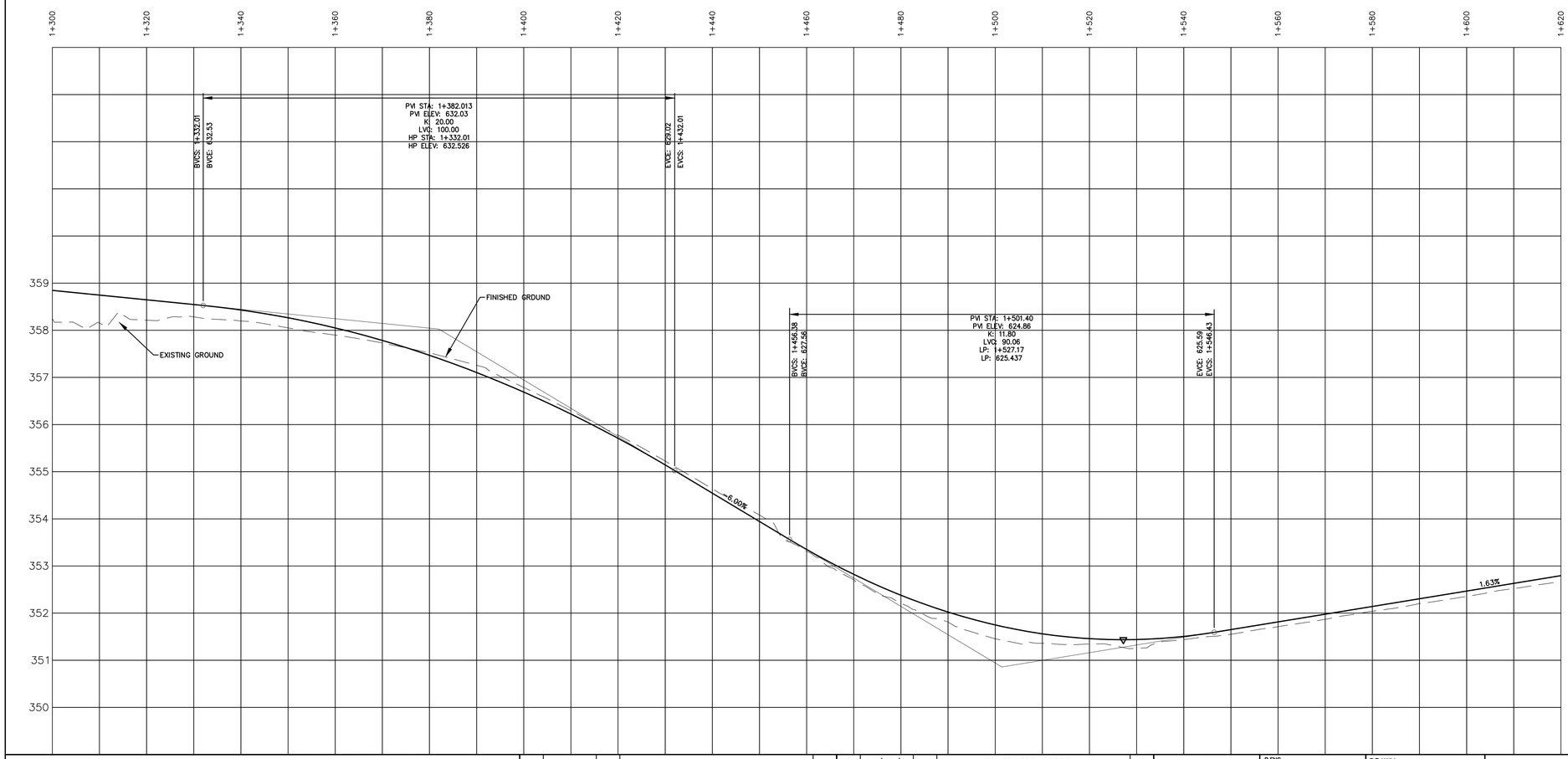
PROTECH CONSULTING 2012
Phone 860-1771 200 - 1461 St. Paul Street Kelowna, B.C. FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
PRELIMINARY SMITH CREEK ROAD P/P

DRAWING NO. 20035 -P10

REV. NO. 5





PRELIMINARY

NOT FOR CONSTRUCTION

LEGEND

WATER	MANHOLE	MH	I.C.
SANITARY SEWER	POWER POLE	P.P.	C.S.
STORM SEWER	LAMP STANDARD	L.S.	LPT
GAS	CATCH BASIN	C.B.	SERVICE BOX
UG TELEPHONE	HYDRANT		
UG ELECTRICAL	TREES		

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2	03/17/21	KCL	ISSUED FOR APPROVAL	KCL
1	01/20/25	BDK	ISSUED FOR APPROVAL	KCL

WEST KELOWNA

P.ENG.

DRAWN	BDK
DESIGN	KCL
APPROVED	KCL
DATE	JAN 2021
SCALE	
HORIZ.	1:500
VERT.	1:50

PROTECH
CONSULTING 2012
Phone 860-1771 200 – 1461 St. Paul Street Kelowna, B.C. FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
PRELIMINARY SMITH CREEK ROAD P/P

DRAWING NO. 20035 –P11

REV. NO. 5

SILT FENCE NOTES:

– ALL DIMENSIONS ARE IN MILLIMETRES OR METRES UNLESS OTHERWISE SHOWN.

– FILTER FABRIC MAY BE A PERVIOUS SHEET OF SLIT FILM WOVEN POLYPROPLENE, NYLON, POLYESTER, OR ETHYLENE YARN HAVING THE FOLLOWING MINIMUM CRITERIA:

FILTERING EFFICIENCY	90%
FLOW RATE	0.012m³/m²/minute
GRAB TENSILE STRENGTH	700N
EQUIVALENT OPENING SIZE	0.15mm

– FILTER FABRIC MATERIAL MUST CONTAIN ULTRAVIOLET RAY INHIBITORS AND STABILIZERS TO PROVIDE A MINIMUM OF SIX MONTHS OF EXPECTED USABLE CONSTRUCTION LIFE AT TEMPERATURE RANGE OF –18°C TO 49°C (0°F TO 120°F)

– FILTER FABRIC MUST BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH MUST BE SPLICED TOGETHER ONLY AT SUPPORT POSTS.

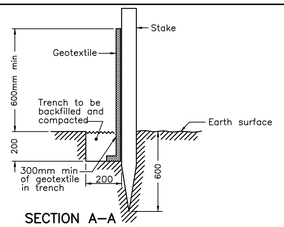
MAINTENANCE:

– INSPECT IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIR AS NECASSARY

– SEDIMENT MUST BE REMOVED WHEN IT REACHES ONE HALF THE HEIGHT OF THE FENCE.

– ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE FILTER FENCE IS NO LONGER REQUIRED, MUST BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED, AND SEEDED.

Direction of flow



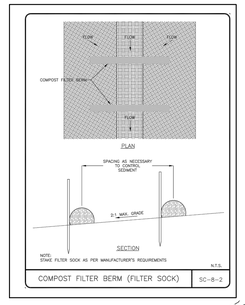
SECTION A–A

NOTE:

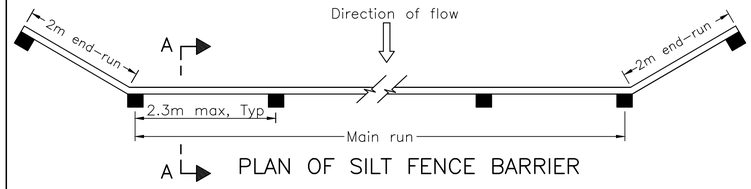
A All dimensions are in millimetres or metres unless otherwise shown.

SILT FENCE DETAIL

NTS



SECTION VIEW



▬▬▬▬▬ – SILT FENCE

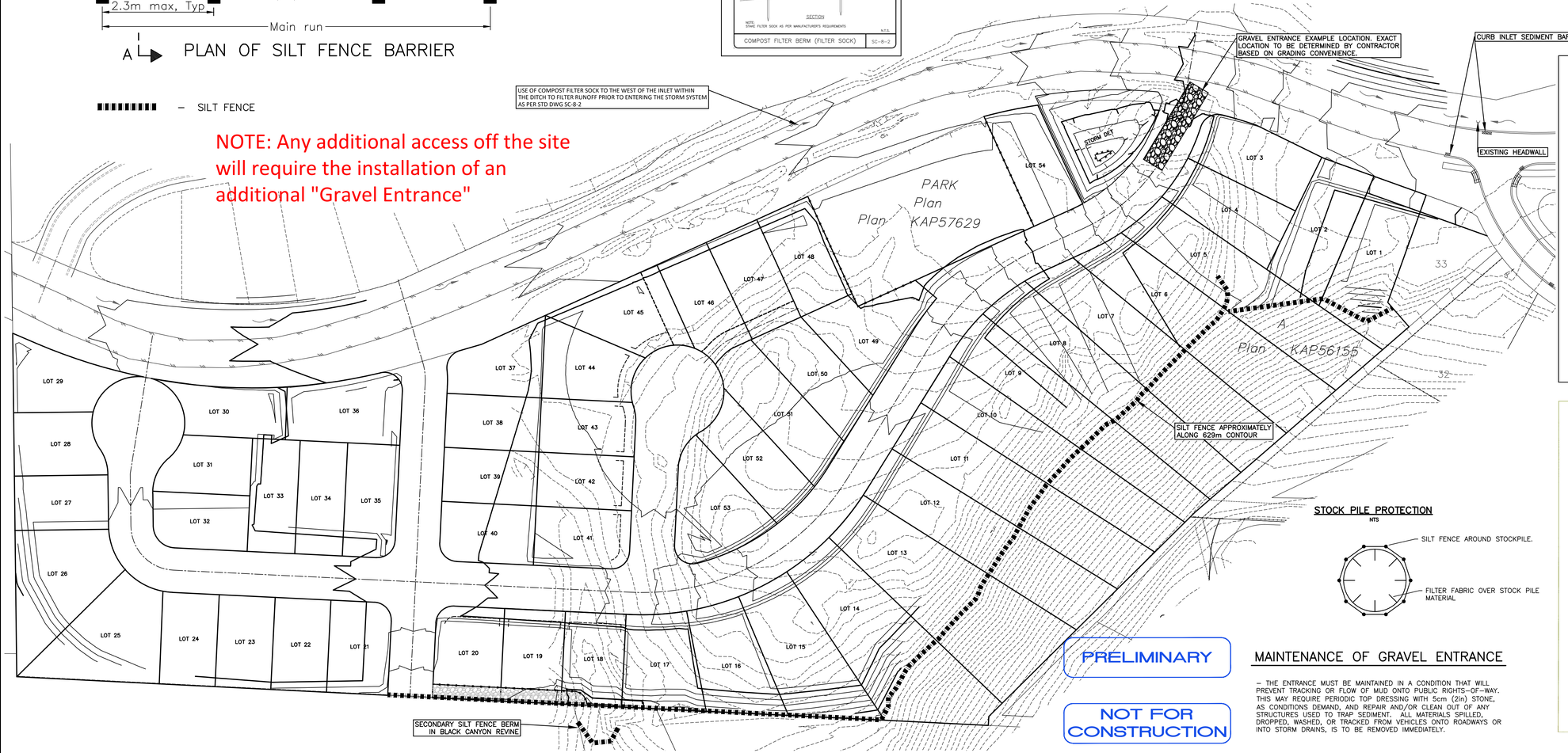
EROSION AND SEDIMENT CONTROL PLAN

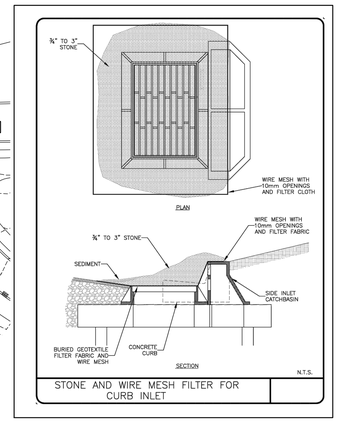
GENERAL NOTES

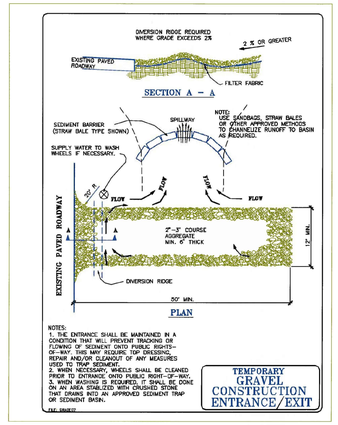
1. EROSION AND SEDIMENT CONTROL DRAWINGS MAY NOT INCLUDE ALL THE MEASURES REQUIRED. THE CONTRACTOR(S) SHALL COMPLY WITH ALL REGULATORY AUTHORITIES, MINISTRY OF THE ENVIRONMENT, DEPARTMENT OF FISHERIES AND OCEANS CANADA AND CITY OF WEST KELOWNA IN THE PROTECTION OF FISH AND RECEIVING WATERBODIES DURING THE CONSTRUCTION OF THE WORKS AND SHALL BE RESPONSIBLE FOR ALL COSTS IN COMPLYING WITH THESE REQUIREMENTS. CONTRACTOR TO REFER TO CITY OF WEST KELOWNA BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL.
2. PRIOR TO, AND DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ADEQUATE STEPS, INCLUDING BUT NOT LIMITED TO: DIVERTING FLOWS FROM EXPOSED AREAS, INSTALLATION OF SEDIMENT FENCES AROUND THE DEVELOPMENT PERIMETER AS SHOWN, AND SOIL STOCKPILES, INLET PROTECTION OF OF ALL CATCH BASINS, STABILIZED CONSTRUCTION ENTRANCES, AND ANY OTHER MEASURES AS MAY BE NECESSARY TO PREVENT SEDIMENT AND OTHER DELETERIOUS MATERIALS FROM THE WORKS ENTERING THE STORM SEWER SYSTEM AND RECEIVING WATER COURSE.
3. ALL WORK TO BE UNDERTAKEN AND COMPLETED BY THE CONTRACTOR IN SUCH A MANNER AS TO PREVENT THE RELEASE OF TURBID AND SEDIMENT LADEN WATER INTO ANY WATER COURSE AND STORM SEWER. THE QUALITY CRITERIA FOR THE SITE IS THAT ALL RUNOFF GENERATED FROM THE SITE IS TO CONTAIN LESS THAN 75mg/L TSS AFTER SIGNIFICANT RAINFALL EVENTS. TURBIDITY TO BE 25 NTU'S OR LESS DURING NORMAL WEATHER CONDITIONS (LESS THAN 25mm OF RAIN IN A 24 HOUR PERIOD).
4. ALL SEDIMENT CONTROLS FACILITIES TO REMAIN IN PLACE UNTIL 90% OF ON–SITE CONSTRUCTION IS COMPLETE.
5. WHILE CIVIL SITE CONSTRUCTION IS ONGOING, THE SITE SERVICING CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING SEDIMENT CONTROL FACILITIES ARE INSTALLED, MAINTAINED AND WORKING ADEQUATELY TO CONTROL ALL DISCHARGES FROM THE SITE. ALL FACILITIES SHALL BE INSPECTED BY THE ENVIRONMENTAL MONITOUR ON A WEEKLY BASIS AND AFTER EVERY RAINFALL EVENT TO ENSURE PROPER OPERATION UNTIL REMOVAL.
6. DURING HOME CONSTRUCTION, AND ONCE ALL CIVIL SITE WORKS ARE COMPLETE, THE DEVELOPER IS RESPONSIBLE FOR ENSURING THAT SEDIMENT CONTROL FACILITIES ARE MAINTAINED AND WORKING ADEQUATELY TO CONTROL ALL DISCHARGES FROM THE SITE.
7. ANY IRREGULARITIES SHALL BE REPORTED TO THE ENGINEER OF RECORD IMMEDIATELY.
8. THE CONTRACTOR SHALL HAVE AN EMERGENCY SUPPLY OF EROSION CONTROL MEASURES ON SITE AT ALL TIMES INCLUDING PUMPING EQUIPMENT THAT CAN BE UTILIZED IN AN EMERGENCY SITUATION TO DIVERT FLOWS TO VEGETATED AREAS.
9. CONTRACTOR TO PERFORM EFFORT AND WORKS FOR EROSION AND SEDIMENT CONTROL TO MATCH PAYMENT ITEM IN CONTRACT

STAGE 1 –CLEARING, GRUBBING, STRIPPING & GRADING

1. CONTRACTOR TO INSTALL SILT FENCE AT LOCATIONS AS SHOWN ON THIS DRAWING, AND WHERE REQUIRED AS PER EROSION CONTROL DETAILS.
2. CONTRACTOR SHALL INSTALL CATCH BASIN SEDIMENT TRAPS BY LAYFIELD (OR APPROVED EQUAL) AND INLET PROTECTION, AS PER DETAILS, IN EXISTING CATCH BASINS PRIOR TO COMMENCING CONSTRUCTION.
3. STOCKPILES OF EXCAVATED MATERIALS REMAINING ONSITE FOR A DURATION OF TIME (2–3 DAYS, OR OVER WEEKENDS) ARE TO BE COVERED AND PROTECTED WITH 6mm THICK POLYETHYLENE SHEETING (OR SIMILAR) AND SURROUNDED BY SILT FENCE TO MINIMIZE SOIL EROSION DUE TO RAINFALL EVENTS, AND DUST PREVENTION FROM WIND.
4. CONTRACTOR TO PROVIDE DUST CONTROL DURING CONSTRUCTION ON SITE. SPRINKLE WATER ONSITE UNTIL SURFACE US WET AND REPEAT AS NECESSARY, OR SPRAY WITH DUST PALLIATIVE. OIL MUST NOT BE USED FOR DUST SUPPRESSION. CHECK WITH CITY TO DETERMINE WHICH OTHER DUST PALLIATIVES ARE ACCEPTABLE FOR USE IN THE AREA.
5. CONTRACTOR TO PROVIDE MECHANICAL SWEEPING OF ROADS TO REMOVE ANY ACCUMULATIONS OF SEDIMENT AS A RESULT OF CONSTRUCTION ACTIVITIES. SUCH OPERATIONS TO BE CARRIED OUT ON A WEEKLY BASIS (MIN) OR AS DIRECTED BY THE ENGINEER OF RECORD OR HIS REPRESENTATIVE, PARTICULARLY IN ADVANCE OF INCLEMENT WEATHER CONDITIONS. NO FLUSHING ALLOWED.
6. CONTRACTOR TO TRACK ROUGHEN ALL PERMANENT SLOPES AND FINISH WITH TOP SOIL AND HYDROSEED IMMEDIATELY AFTER GRADING COMPLETION.







STOCK PILE PROTECTION

NTS

PRELIMINARY

NOT FOR CONSTRUCTION

MAINTENANCE OF GRAVEL ENTRANCE

– THE ENTRANCE MUST BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH 5cm (2in) STONE, AS CONDITIONS DEMAND, AND REPAIR AND/OR CLEAN OUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES ONTO ROADWAYS OR INTO STORM DRAINS, IS TO BE REMOVED IMMEDIATELY.

LEGEND

WATER	MANHOLE	○ MH	I.C.
SANITARY SEWER	POWER POLE	● P.P.	C.S.
STORM SEWER	LAMP STANDARD	□ L.S.	
GAS	CATCH BASIN	▨ C.B.	LPT
UG TELEPHONE	HYDRANT		SERVICE BOX
UG ELECTRICAL	TREES		

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
3	06/25/21	TWJM	ISSUED FOR APPROVAL	KCL
2	05/25/21	TWJM	ISSUED FOR APPROVAL	KCL
1	01/23/21	KCL	ISSUED FOR APPROVAL	KCL

WEST KELOWNA

P.ENG.

DRAWN	KCL
DESIGN	KCL
APPROVED	KCL
DATE	JAN 2021
SCALE	1:500

PROTECH CONSULTING 2012
Phone 860–1771 200 – 1461 St. Paul Street Kelowna, B.C. FAX 860–1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
PRELIMINARY EROSION & SEDIMENT CONTROL PLAN

DRAWING NO. 20035–P12

REV. NO. 3

P:\PROJECTS\20035 – Smith Creek Phase 2\1 – CAD FILES\2 – Production Sheet Drawings\1 – Preliminary Design\20035–P12 ESC.dwg PRINTED ON:

Schedule B

2802 SMITH CREEK ROAD, PHASE 2

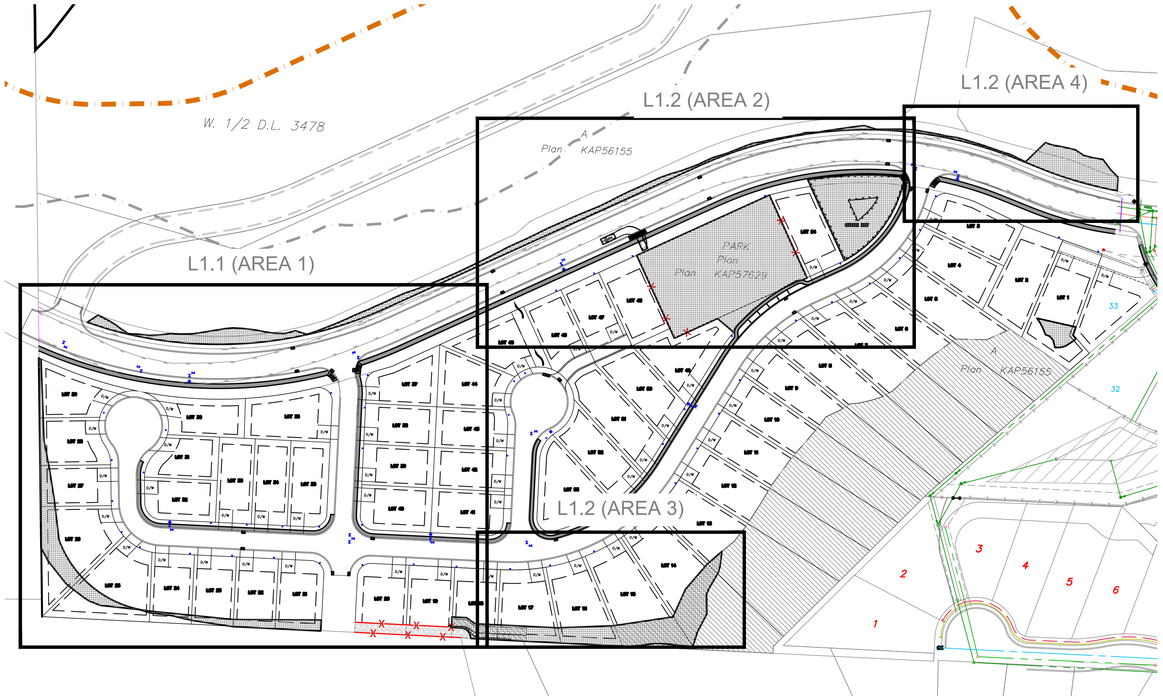
Landscape Restoration Plan

Schedule 'B'

SARAH ENNS
Landscape Designer
250.300.4286
thefieldroom@gmail.com

DRAWING LIST

L 1.0 Site Key, Notes, Legend + Plant List
L 1.1 Area 1
L 1.2 Area 2 + Area 3 + Area 4



1 / L1.0 SITE RESTORATION KEY

Not to scale

LANDSCAPE NOTES

1 | OKGN EHS Services Ltd. has been retained to be the qualified environmental professional and to function as the site inspector as it relates to the environment during construction.

2 | Plant material and construction methods shall conform to minimum standards established in the latest edition of the Canadian landscape standards, published by the C.N.L.A. and the C.S.L.A. as well as the City of West Kelowna landscape standards.

3 | The landscape design designated herein reflects the minimum City of West Kelowna guidelines.

4 | Final planting selections may vary depending upon availability at the time of construction. Substitutions to be reviewed and approved by project landscape designer prior to installation.

5 | Shrubs to be placed within planting pockets with adequate topsoil, minimum 0.45m (1.5') deep.

6 | To ensure plant survivability temporary irrigation to be installed and restoration area to be weeded for duration of maintenance period. Maintenance period is (3) years as per environmental report by OKGN EHS Services Ltd.

7 | All weeds to be removed by hand prior to planting.

8 | Native grass seed, to be grade "A" premium seed mix, placed on top of 100mm (4") imported growing medium. Multiple applications may be required for full establishment.

Seed Mix:

Blue bunch	25%
Creeping fescue	25%
Rough fescue	25%
Slender wheatgrass	25%
Seed Rate: 50kg/ha	

9 | Planting and hydroseed to occur in fall or spring weather windows (September - October, March - April). Regardless of seasonal planting, temporary irrigation is required.

10 | Plant survivability is expected to be 50% at the end of the maintenance period. Re-planting at the end of each growing season is expected in order to meet this requirement.

PLANT LIST

SHRUBS

QTY	BOTANICAL NAME	COMMON NAME	PLANT SIZE	SPACING
41	Amelanchier alnifolia	Saskatoon	#1 Pot	As Shown
27	Ericameria nauseosa	Rabbitbush	#1 Pot	As Shown
56	Mahonia aquifolium	Oregon grape	#1 Pot	As Shown
59	Symphoricarpos albus	Snowberry	#1 Pot	As Shown

revision . issue		
revised	July 14	04
revised	June 22	03
issued	Jan 24	02
review	Jan 22	01
DESCRIPTION	DATE	NO.

PROJECT

2802 Smith Creek
Kelowna BC

SHEET TITLE

Landscape Restoration Plan
Cover Sheet

design by . Sarah Enns
project number . 21001
date . July 14, 2021

NORTH

SCALE
as shown
PAGE
24" x 36"

SHEET NUMBER

L-1.0

REFER TO L-1.1 FOR NOTES AND PLANT LIST

1 / L1.1 AREA 1
1:300

the FIELD room
SARAH ENNS
Landscape Designer
250.300.4286
thefieldroom@gmail.com

LEGEND

- AMELANCHIER
- ERICAMERIA
- MAHONIA
- SYMPHOCARPUS
- NATIVE GRASS HYDROSEED [SEE NOTES]

revision . issue		
revised	July 14	04
revised	June 22	03
issued	Jan 24	02
review	Jan 22	01
DESCRIPTION	DATE	NO.

PROJECT
2802 Smith Creek
Kelowna BC

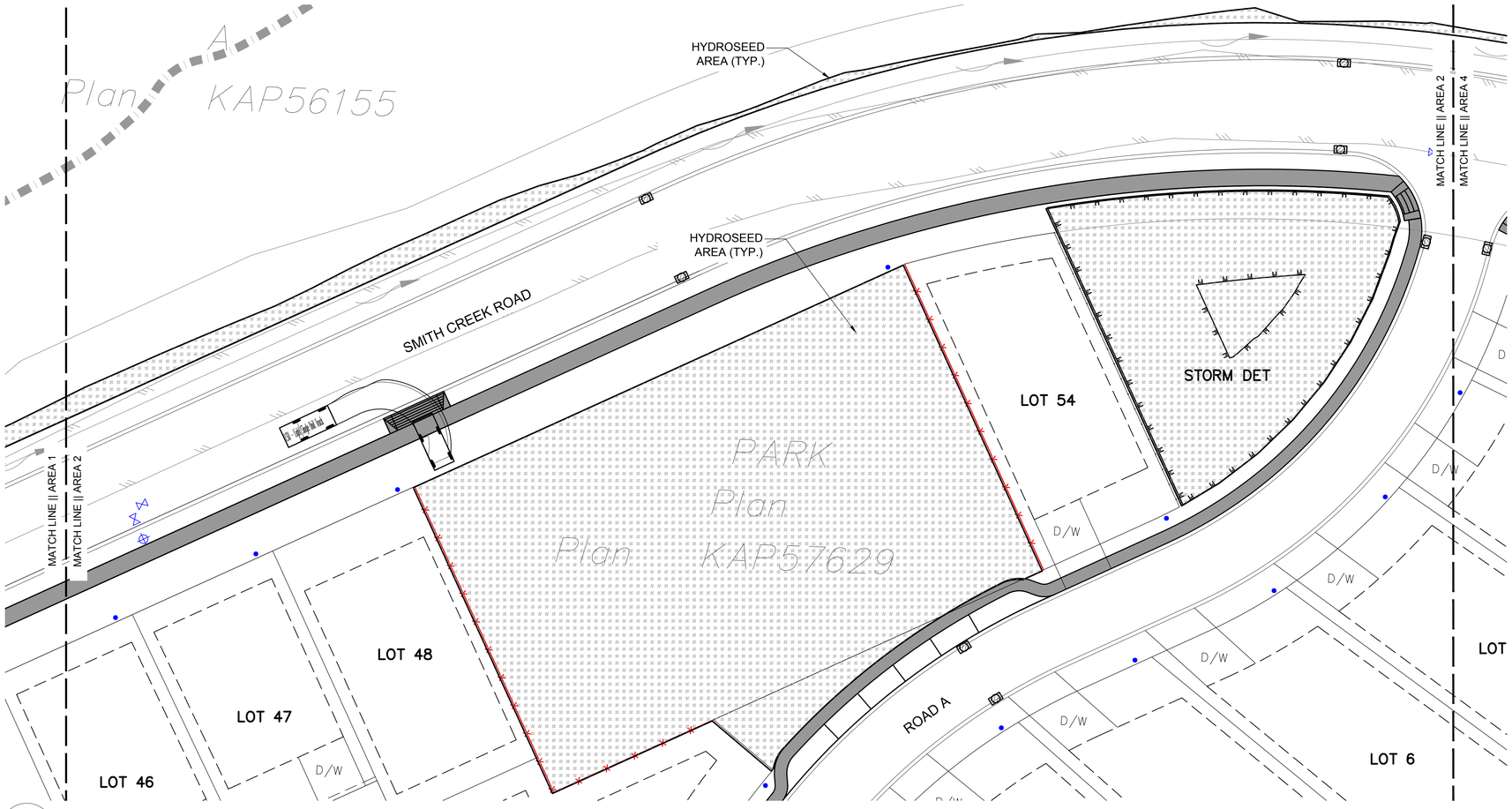
SHEET TITLE
Landscape Restoration Plan
Area 1

design by . Sarah Enns
project number . 21001
date . July 14, 2021

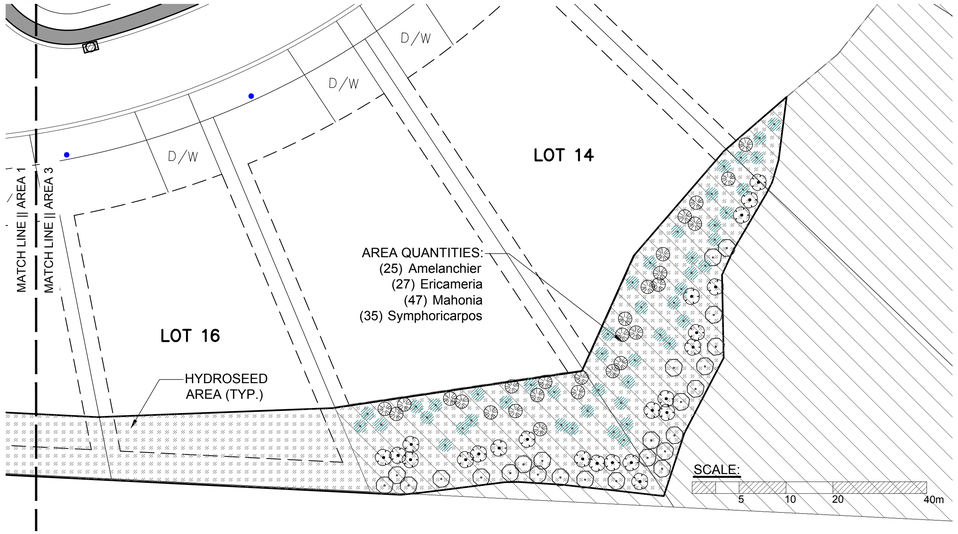
NORTH
SCALE as shown
PAGE 24" x 36"

SHEET NUMBER
L-1.1

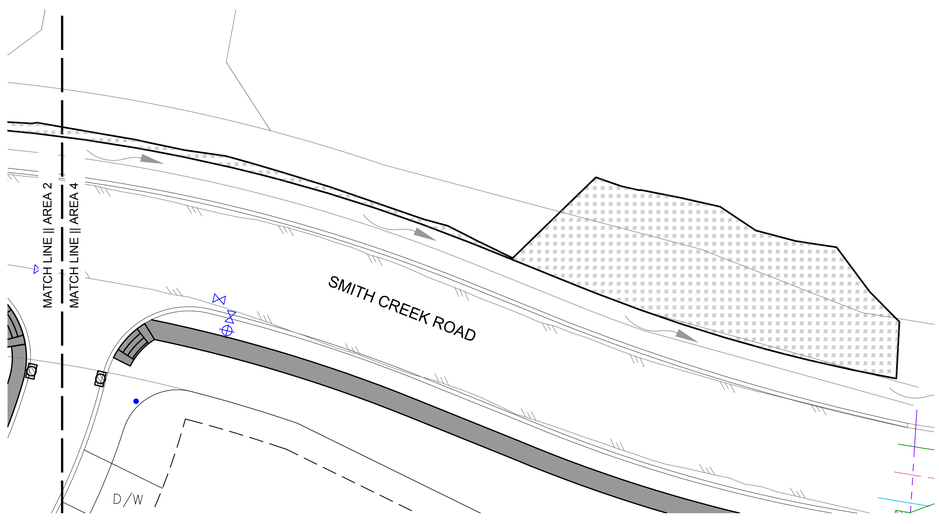
REFER TO L-1.1 FOR NOTES AND PLANT LIST



1 AREA 2
L1.2 1:300



2 AREA 3
L1.2 1:300



3 AREA 4
L1.2 1:300

the FIELD room
SARAH ENNS
Landscape Designer
250.300.4286
thefieldroom@gmail.com

LEGEND

- AMELANCHIER
- ERICAMERIA
- MAHONIA
- SYMPHOCARPUS
- NATIVE GRASS HYDROSEED [SEE NOTES]

revision . issue

DESCRIPTION	DATE	NO.
revised	July 14	04
revised	June 22	03
issued	Jan 24	02
review	Jan 22	01

PROJECT
2802 Smith Creek
Kelowna BC

SHEET TITLE
Landscape Restoration Plan
Area 1

design by . Sarah Enns
project number . 21001
date . July 14, 2021

NORTH
SCALE as shown
PAGE 24" x 36"

SHEET NUMBER
L-1.2

the FIELD room
SARAH ENNS
Landscape Designer
250.300.4286
thefieldroom@gmail.com

Estimate of Probable Cost
Restoration Landscape Plan

PROJECT NAME | Smith Creek, Phase 2
PROJECT No. | 21008
DATE | June 22, 2021

No.	ITEM	UNIT	QTY	COST	PRICE
1.0	GROWING MEDIUM				
1.1	Shrub growing medium, planting pocket 0.45m depth	m3	16	$20	$320
1.2	Hydroseed growing medium, 0.10m depth	m3	713	$20	$14,260
				1.0 TOTAL	**$14,580**
2.0	PLANT MATERIAL				
2.1	Shrub - #1 pot	ea.	183	$15	$2,745
				2.0 TOTAL	**$2,745**
3.0	Hydroseed				
3.1	Native, grade "A" premium, grass seed	m2	7133	$2	$10,700
				3.0 TOTAL	**$10,700**
4.0	LABOUR				
4.1	Professional monitoring	per year	3	$525	$1,575
4.2	Weed management plan	per year	3	$1,200	$3,600
				4.0 TOTAL	**$5,175**
				TOTAL	**$33,200**

Plus 25% $8,300

NOTES:
1. See corresponding restoration drawings L-1.0 - L1.2 Issued June 22, 2021

Total Security: $41,500

Schedule C

GEOPACIFIC

201-1889 Spall St.
Kelowna, B.C. V1Y 4R2

Westbank Joint Venture
c/o Bill Bonn
1109 Churchhill Road
Kelowna, BC
V1Y 8K9

July 13, 2021
File: 19254

Attention: Bill Bonn

Re: Geotechnical Comments: Proposed Valley Stone Retaining Wall – Sunset Ranch Subdivision Phase 2 – Copper Ridge Drive and Smith Creek, West Kelowna, BC

We understand that a Valley Stone retaining wall is proposed at the above referenced site. The wall will span between Lots 17 and 19 and will be up to two tiers in height. The wall locations and heights are shown in the Smith Creek Stage 2 design drawings by Protech Consulting, dated June 25, 2021. The maximum wall heights will be 2.5 metres and the tiers will be separated by 2.0 metres (see Section F-F of Protech Drawing No. 20035-P03). We have also reviewed the wall design drawings provided by Basalite, dated June 2021, for this project which are attached to this letter. The drawings provide wall profiles, geogrid lengths, material specifications, cross-sections and other typical details which we expect are sufficient for your submission to the City of West Kelowna for Development Permit application. This letter is intended for the use of our client and their design team as well as the City of West Kelowna for use in the permitting process.

We have completed an analysis of the wall system including the geogrid reinforcement shown on the Basalite drawing, the wall geometry shown in the Protech drawings, and assuming compacted blast rock backfill within the geogrid zones. The results of our analysis indicate adequate factors of safety under both static and seismic conditions. Therefore, we are satisfied with the retaining wall design drawings attached to this letter. We are also satisfied with the location of the proposed retaining walls, as shown on the Protech drawings and we confirm there are no further setbacks required from a geotechnical perspective. We also confirm that these drawings are suitable for Development Permit submission for this project from a geotechnical perspective. GeoPacific will provide Issued for Construction drawings prior to the project proceeding to construction.

For:
GeoPacific Consultants Ltd.

Reviewed By:

Kevin Bodnar, M.Eng., P.Eng., P.E.
Principal

Albert Losch, P.Eng.
Senior Geotechnical Engineer

SMITH CREEK - STAGE 2 - LOTS 17-19

BASALITE WALL DESIGN PACKAGE

GENERAL DESIGN NOTES

1. The following effective strength design parameters were assumed in the preparation of structural calculations for the Basalite retaining wall system:

	ϕ	c	γ (kN/m3)
Reinforced Soil	**36°**	**0**	**20**
Retained Soil	**36°**	**0**	**20**
Foundation Soil	**36°**	**0**	**20**

Soil types and design properties shall be confirmed by the Owner or its geotechnical engineer prior to wall construction. Basalite accepts no responsibility for the interpretation or verification of subsurface conditions.

2. The system has been evaluated for internal stability and simple external sliding and overturning. Unless otherwise specified, the design maintains a minimum factor of safety of 1.5 on all elements of the wall design.

3. The walls are designed to support the following maximum surcharge loadings:

Live Load: 0 kPa
Dead Load: 100 kPa Line Load and 20 kPa
Backslope: 27 degrees

4. The wall foundation soils at each wall location shall be capable of safely supporting 150kN/m2 (3000psf) or as indicated on the wall elevations without failure or excessive settlement. Local bearing capacity shall be confirmed by the site engineer.

5. The Contractor shall provide surface and subsurface drainage, grading, and erosion control during and after wall construction to avoid damage to the wall structure.

6. The Contractor is responsible for obtaining all permits and easements necessary for wall construction. The Contractor is responsible for protecting adjacent property from wall construction activities.

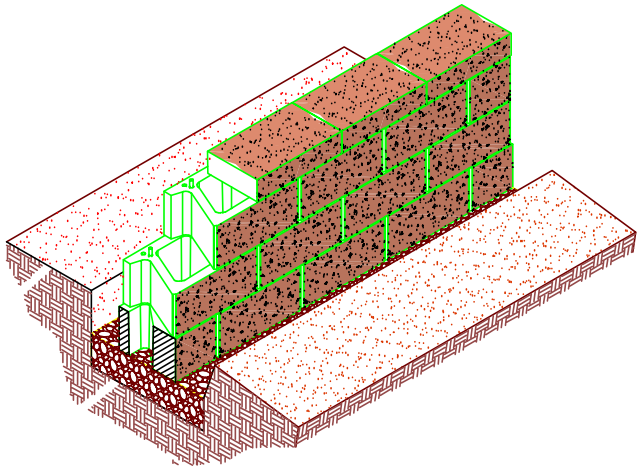


FIGURE INDEX	
Description	Sheet No.
Title Sheet	1
Wall Elevations	2
Specifications	3
Valleystone Unit Details	4

QUALITY ASSURANCE PROVISIONS

1. Wall construction shall be monitored by a qualified Engineer to verify field conditions. If this work is not performed by the site geotechnical engineer, the geotechnical engineer shall be consulted in those matters pertaining to soil conditions and wall performance.

2. The foundation soils at each wall location shall be inspected by the Engineer and any unsuitable soils or improperly compacted embankment material removed and replaced as directed by the Engineer prior to wall construction to provide adequate bearing capacity and minimize settlement.

3. All wall excavation and retained soils shall be inspected for groundwater conditions and any additional drainage provisions required in the field shall be incorporated into the wall construction as directed by the Engineer.

4. Wall backfill material shall be tested and approved by the Engineer for use in the reinforced soil zone meeting the minimum requirements of the approved design plans.

5. All soil backfill shall be tested by the Engineer for moisture, density, and compaction periodically (every geogrid layer) meeting the minimum requirements of the approved design plans or project specifications.

6. Wall construction shall be periodically inspected by the Engineer to ensure the geogrid reinforcement elevations and lengths are installed in accordance with the approved design plans.

THIS DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION UNLESS REVIEWED AND AND STAMPED BY A PROFESSIONAL ENGINEER

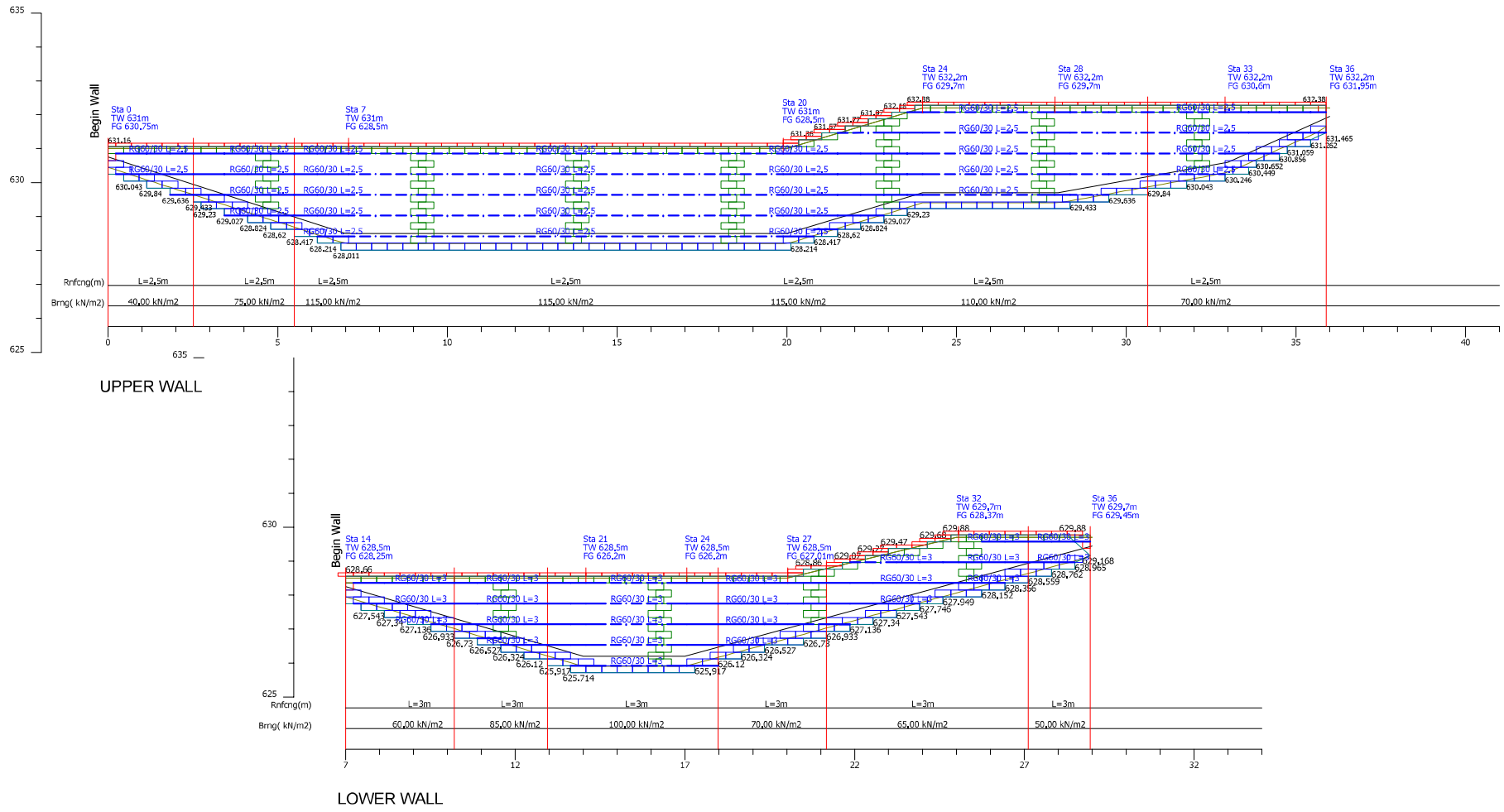
BASALITE®

Title Page

Basalite Retaining Wall Systems
Typical Wall Details

June 2021

Figure 1



LEGEND
TW: Top of Wall Elevation
FG: Finished Grade at Bottom of Wall Elevation

General Notes:

1. The wall shall be constructed with Basalite Valleystone units using the 0 degree batter
2. The design requires KPNE RG60/30 soil geogrid reinforcements Mirafi 5XT or Strata350 is equivalent).

BASALITE®

Wall Elevation - Lots 17-19

June 2021

Basalite Retaining Wall Systems
Typical Wall Details

Figure 2

SPECIFICATION GUIDELINES (Short Form)

PART 1: GENERAL

1.01 DESCRIPTION

A. Work includes furnishing and installing a BASALITE retaining wall to the lines and grades shown on the construction drawings and as specified herein.
B. Work includes preparing foundation soil, furnishing and installing leveling pad, unit fill and backfill to the lines and grades shown on the construction drawings.
C. Work includes furnishing and installing all related materials required for construction of the retaining wall as shown on the construction drawings.

1.02 REFERENCE STANDARDS

A. ASTM C1372 Specification for Segmental Retaining Wall Units
B. ASTM D 422 Particle Size Analysis
C. ASTM D 698 Laboratory Compaction Characteristics using Standard Effort.
D. ASTM D 4318 Liquid Limit, Plastic Limit, Plasticity Index of Soils
E. ASTM D 4595 Tensile Properties of Geotextiles - Wide Width Strip
F. ASTM D 5262 Unconfined Tension Creep Behavior of Geotextiles
G. NCMA SRWU-1 Test Method for Determining Connection Strength of SRW

1.03 QUALITY ASSURANCE

A. Owner will be responsible for soil testing and inspection quality control during wall construction and earthwork operations.

PART 2: MATERIALS

2.01 DEFINITIONS

A. Concrete Units - a BASALITE (Pro) modular concrete facing unit, machine made from portland cement, water and mineral aggregates.
B. Structural Geogrid - a structural geogrid formed by a regular network of integrally connected tensile elements with apertures of sufficient size to allow interlocking with surrounding soil, rock, or earth and function primarily as reinforcement.
C. Unit Drainage Fill - drainage aggregate which is placed within and immediately behind the modular concrete units.
D. Reinforced Backfill - Compacted soil which is within the reinforced soil volume as shown on the plans.

2.02 BASALITE UNITS

A. BASALITE (Valleystone) wall units shall have a minimum 28-day compressive strength of 3,000 psi. Standard weight concrete shall have a maximum moisture absorption of 8% (6% in northern climates).

2.03 FIBERGLASS CONNECTING PINS

A. Connecting pins shall be 1/2" diameter thermoset isopthalic polyester resin pultruded fiberglass reinforcement rods supplied by the unit manufacturer.

2.04 CONSTRUCTION ADHESIVE

A. Material shall conform to ASTM 2339 and shall be supplied by the BASALITE unit supplier.

2.05 GEOGRID REINFORCEMENT

A. Geogrid shall be the type as shown on the drawings having the property requirements described within the manufacturer's specifications and required by the design calculations.

2.06 BASE LEVELING PAD MATERIAL

A. Material shall consist of compacted crushed stone or unreinforced concrete as shown on the construction drawings.

2.07 UNIT DRAINAGE FILL

A. Unit fill shall consist of clean 1" minus crushed stone or crushed gravel meeting the following gradation:

Sieve Size	% Passing
1 inch	100
3/4"	75-100
No. 4	0-10
No. 50	0-5

2.08 REINFORCED BACKFILL

A. Reinforced backfill shall be free of debris or organic material meeting the following gradation tested in accordance with ASTM D-422:

Sieve Size	% Passing
75 mm	100
37.5 mm	60-100
19 mm	35-80
9.5 mm	25-60
4.75 mm	20-40
2.36 mm	15-30
1.18 mm	10-20
0.30 mm	3-10
0.075 mm	0-8

B. Material can be site excavated material when the above requirements are met. Unsuitable soils for backfill (high plastic clays or organic materials) shall not be used in the reinforced soil mass.
C. Contractor shall submit reinforced fill sample and test results to the Architect/Engineer for approval prior to construction.

2.09 DRAINAGE PIPE

A. When required, drainage pipe shall be perforated or slotted PVC pipe manufactured in accordance with ASTM F794 and F949 equivalent to A-2000 Perforated Pipe by Contech Construction Products.

2.10 GEOTEXTILE FILTER FABRIC

A. When required, geotextile filter fabric shall be a 4.0 oz/sy, polypropylene, needle punched nonwoven fabric equivalent to C45NW.

PART 3: EXECUTION

3.01 EXCAVATION

A. Contractor shall excavate to the lines and grades shown on the construction drawings. Contractor shall be careful not to disturb embankment and foundation materials beyond lines shown.

3.02 FOUNDATION SOIL PREPARATION

A. Foundation soil shall be excavated as required for leveling pad dimensions shown on the construction drawings, or as directed by the Engineer.
B. Unsuitable soils shall be removed and replaced with approved compacted material as directed by the Engineer
C. Over-excavated areas shall be backfilled with approved compacted backfill material.

3.03 BASE LEVELING PAD

A. Leveling pad materials shall be placed upon an approved foundation as shown on the construction drawings to a minimum thickness of 150 mm (6").
B. Aggregate material shall be compacted to provide a dense, level surface on which to place the first course of modular units. Compaction shall be to 95% of Modified Proctor Density as determined in accordance with ASTM D1557. For crushed rock, material shall be densely compacted as determined by visual observation.

3.04 UNIT INSTALLATION

A. The first course of concrete modular wall units shall be carefully placed on the base leveling pad. Each unit shall be checked for level and alignment.
B. Units are placed side by side for full length of wall alignment. Alignment may be done by means of a string line or offset from a base line.
C. Install fiberglass connecting pins and fill all voids in and around the modular units with unit fill material. Tamp or rod unit fill to insure that all voids are completely filled.
D. Sweep excess material from top of units and install the next course. Ensure that each course is completely unit filled, backfilled and compacted prior to proceeding to next course.
E. Place each subsequent course ensuring that pins protrude into adjoining courses a minimum of 1". Two pins are required per unit. Pull each unit forward, away from the fill zone, locking against the pins in the previous course and backfill as the course is completed. Repeat procedure to the extent of wall height.

3.05 GEOGRID INSTALLATION

A. Geogrid shall be laid at the proper elevations and orientation as shown on the construction drawings or as directed by the Engineer.
B. Correct orientation (roll direction) of the geogrid shall be verified by the contractor with the strongest direction placed perpendicular to the wall.
C. Geogrid soil reinforcement shall be connected to the BASALITE wall units by placing the geogrid over fiberglass pins and laying the grid back on compacted fill. Place the next course of units over the geogrid.
D. The geogrid shall be pulled taut to eliminate loose folds and pretension the reinforcement. Stake or secure back edge of geogrid prior to and during backfill and compaction. Geogrid shall be placed side by side with no gaps.

3.06 FILL PLACEMENT

A. Backfill material shall be placed in 300 mm (12") lifts and compacted to 95% of Modified Proctor density as determined in accordance with ASTM D1557. The inplace moisture content shall not exceed the optimum moisture content as determined in accordance with ASTM D1557 and be no lower than 3% below optimum moisture content
B. Backfill shall be placed, spread and compacted in such a manner that minimizes the development of slack or loss of pretension of the geogrid.
C. Only hand-operated compaction equipment shall be allowed within 3' of the back surface of the BASALITE units.
D. Backfill shall be placed from the wall back towards the embankment to ensure that the geogrid remains taut.
E. Tracked construction equipment shall not be operated directly on the geogrid. A minimum backfill thickness of 6" is required prior to operation of tracked vehicles over the geogrid. Turning of tracked vehicles should be kept to a minimum to prevent tracks from displacing the fill and damaging the geogrid.
F. Rubber-tired equipment may pass over the geogrid reinforcement at slow speeds, [less than 10 mph.] Avoid sudden braking and sharp turning.
G. At the end of each day's operation, the Contractor shall grade the backfill away from the wall and direct runoff away from the wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3.07 CAP INSTALLATION

A. Place BASALITE Cap units over projecting pins from units below. Apply adhesive to top surface of unit below and place cap unit into position. Backfill and compact to finished grade with low permeability soil.

THIS DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION UNLESS REVIEWED AND AND STAMPED BY A PROFESSIONAL ENGINEER

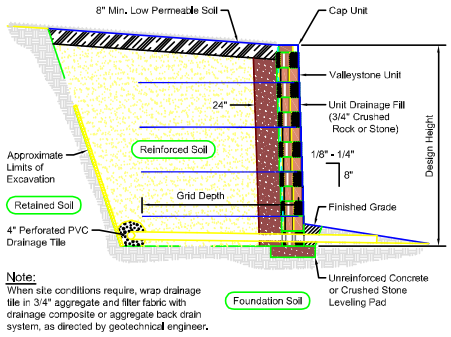
BASALITE®

Basalite Specifications

June 2021

Basalite Retaining Wall Systems
Typical Wall Details

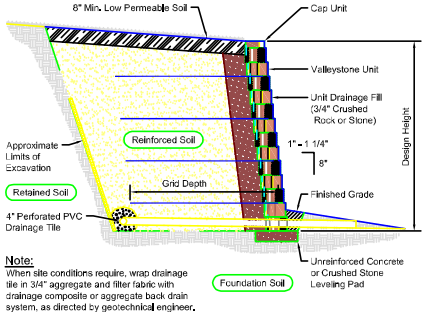
Figure 3



Note:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.

Typical Reinforced Wall Section

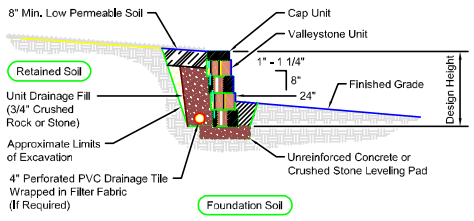
Valleystone Unit - Near Vertical Setback



Note:
When site conditions require, wrap drainage tile in 3/4" aggregate and filter fabric with drainage composite or aggregate back drain system, as directed by geotechnical engineer.

Typical Reinforced Wall Section

Valleystone Unit - 8,8 Degree Setback



Typical Gravity Wall Section

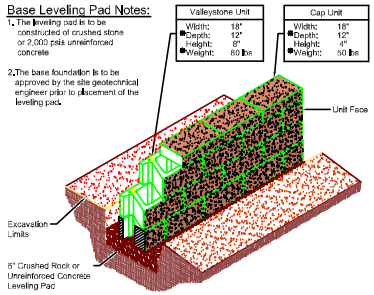
Valleystone Unit - 8,8 Degree Setback

Base Leveling Pad Notes:

1. The leveling pad is to be constructed of crushed stone or 2,000 psi± unreinforced concrete
2. The base foundation is to be approved by the site geotechnical engineer prior to placement of the leveling pad.

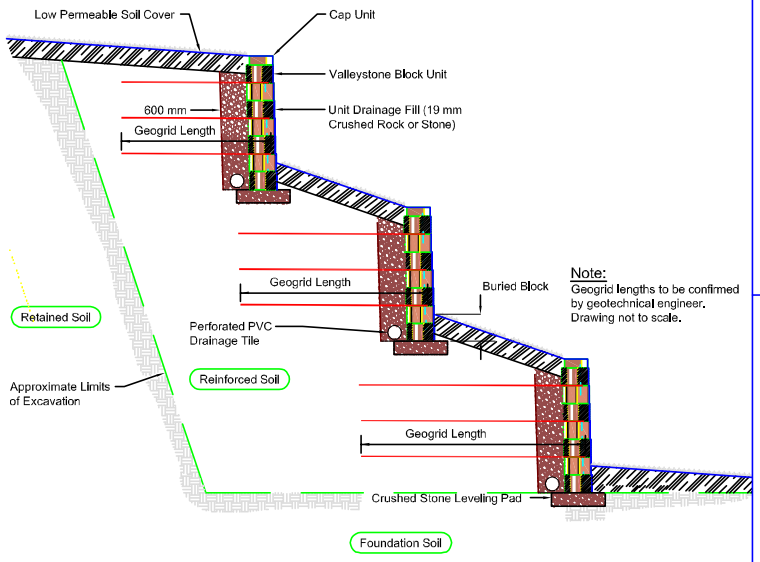
Valleystone Unit	
Width:	18"
Depth:	12"
Height:	8"
Weight:	80 lbs

Cap Unit	
Width:	18"
Depth:	12"
Height:	4"
Weight:	50 lbs

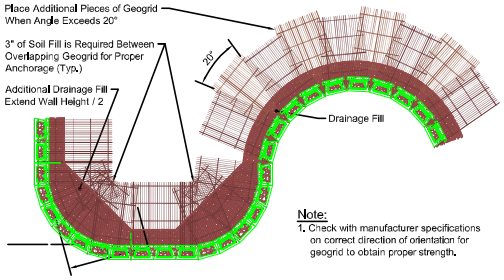


Valleystone Unit/Base Pad Isometric Section View

* Dimensions & Weight May Vary by Region

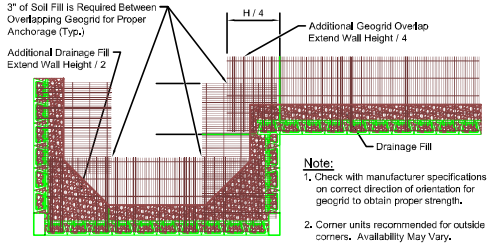


Note:
Geogrid lengths to be confirmed by geotechnical engineer. Drawing not to scale.



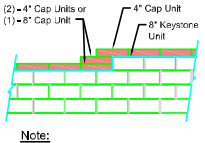
Note:
1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.

Block Geogrid Installation on Curves



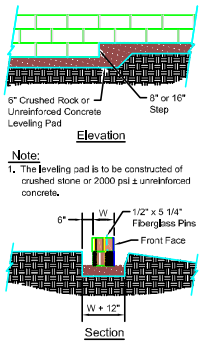
Note:
1. Check with manufacturer specifications on correct direction of orientation for geogrid to obtain proper strength.
2. Corner units recommended for outside corners. Availability May Vary.

Block and Geogrid Installation at Corners



Note:
1. Secure all cap units with Keystone Kapseal or equal.

Top of Wall Steps

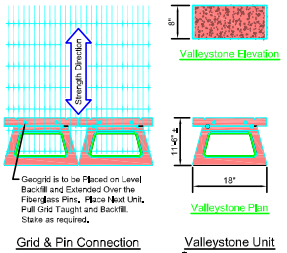


Elevation

Note:
1. The leveling pad is to be constructed of crushed stone or 2000 psi ± unreinforced concrete.

Section

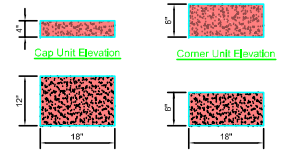
Leveling Pad Detail



Grid & Pin Connection

Valleystone Unit

* Dimensions May Vary by Region



Universal Cap Unit Option

* Dimensions & Availability Will Vary by Region

Universal Corner Unit Option

* Dimensions & Availability Will Vary by Region

THIS DESIGN IS PRELIMINARY AND NOT FOR CONSTRUCTION UNLESS REVIEWED AND STAMPED BY A PROFESSIONAL ENGINEER

VALLEY STONE™ Patent Pending
Basalite® Retaining Walls

BASALITE® Retaining Wall Systems

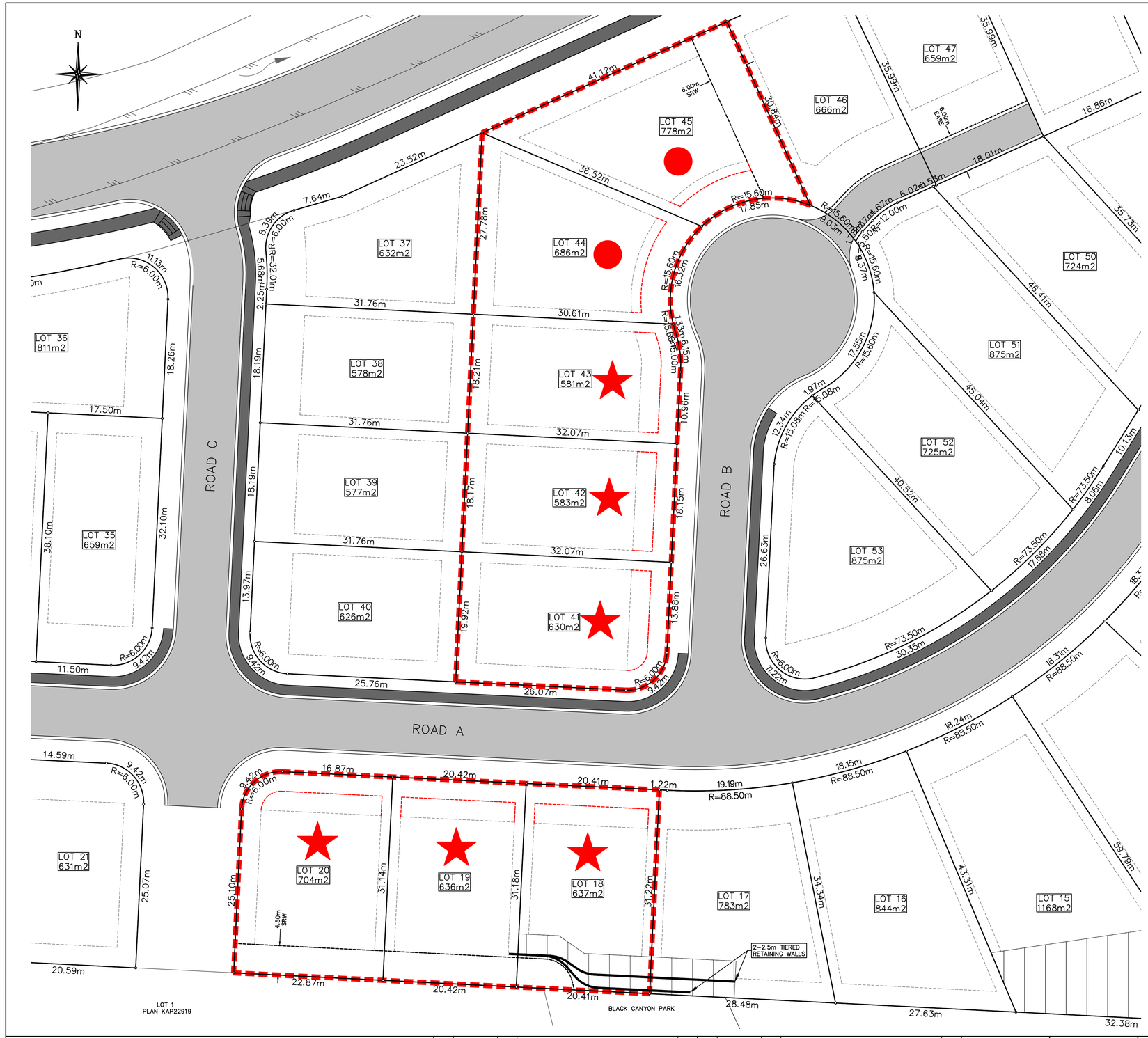
Valleystone Unit - Details

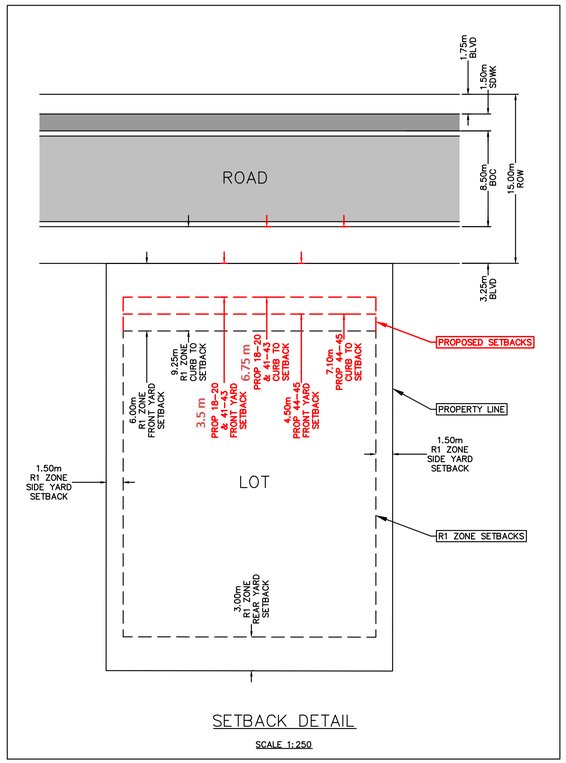
AUGUST 2013

Typical Retaining Wall Details

FIGURE 4

Schedule D





SETBACK DETAIL

SCALE 1:250

LEGEND

- PROPERTY LINE
- EXISTING SETBACK LINE
- PROPOSED SETBACK LINE
- PROPERTIES INCLUDED IN THE VARIANCE APPLICATION
- VARIANCE TO FRONT PARCEL SETBACK 6.0m TO **3.5 m**
- VARIANCE TO FRONT PARCEL SETBACK 6.0m TO 4.5m

PRELIMINARY

NOT FOR CONSTRUCTION

"RED LINED"

LEGEND

WATER	MANHOLE	MH	I.C.
SANITARY SEWER	POWER POLE	P.P.	C.S.
STORM SEWER	LAMP STANDARD	L.S.	LPT
GAS	CATCH BASIN	C.B.	SERVICE BOX
UG TELEPHONE	HYDRANT		
UG ELECTRICAL	TREES		

No.	MM/DD/YY DATE	BY	REVISION	Chk'd
2	06/12/21	KCL	ISSUED FOR APPROVAL	
1	06/10/21	KCL	ISSUED FOR APPROVAL	

WEST KELOWNA

P.ENG.

DRAWN	KCL
DESIGN	KCL
APPROVED	KCL
DATE	JUNE 2021
SCALE	
HORIZ.	1:300
VERT.	N/A

PROTECH CONSULTING 2012
Phone 860-1771 200 – 1461 St. Paul Street Kelowna, B.C. FAX 860-1994

WESTBANK JOINT VENTURE
SMITH CREEK STAGE 2
DEVELOPMENT VARIANCE PLAN

DRAWING NO. 20035–P19

REV. NO. 2