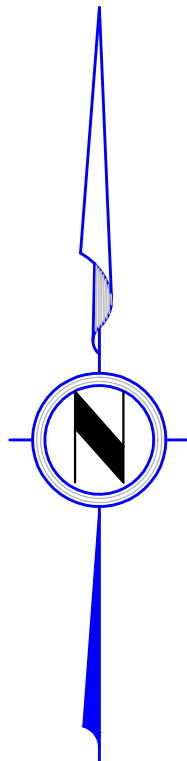
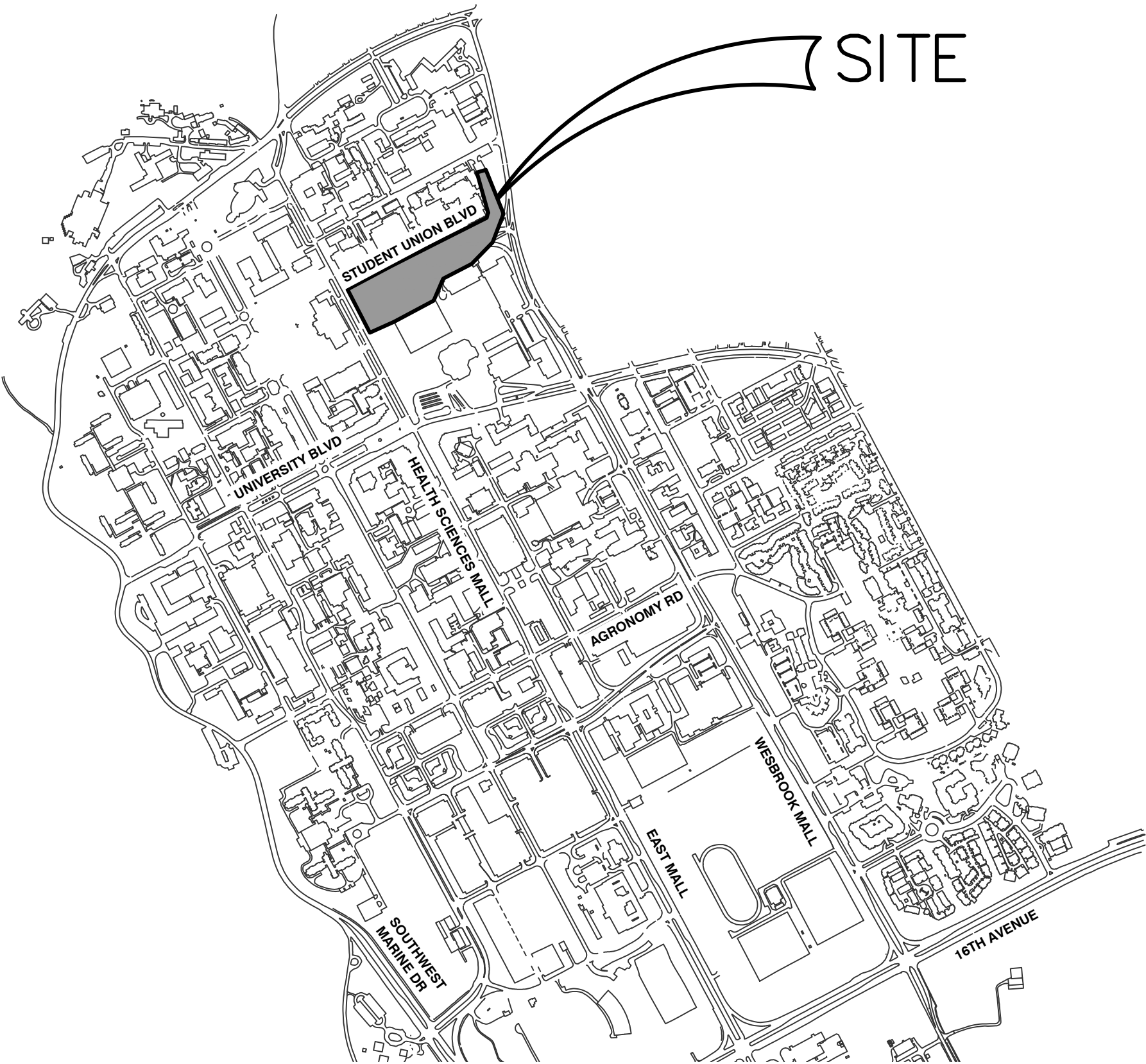




APLIN MARTIN

ENGINEERING ARCHITECTURE PLANNING SURVEYING

#1818 – 1177 West Hastings Street, Vancouver, B.C. V6E 2K3
Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com



SITE LOCATION PLAN
1:1000

DEVELOPER:

UBC PROPERTIES TRUST

SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
PH. 604-731-3103

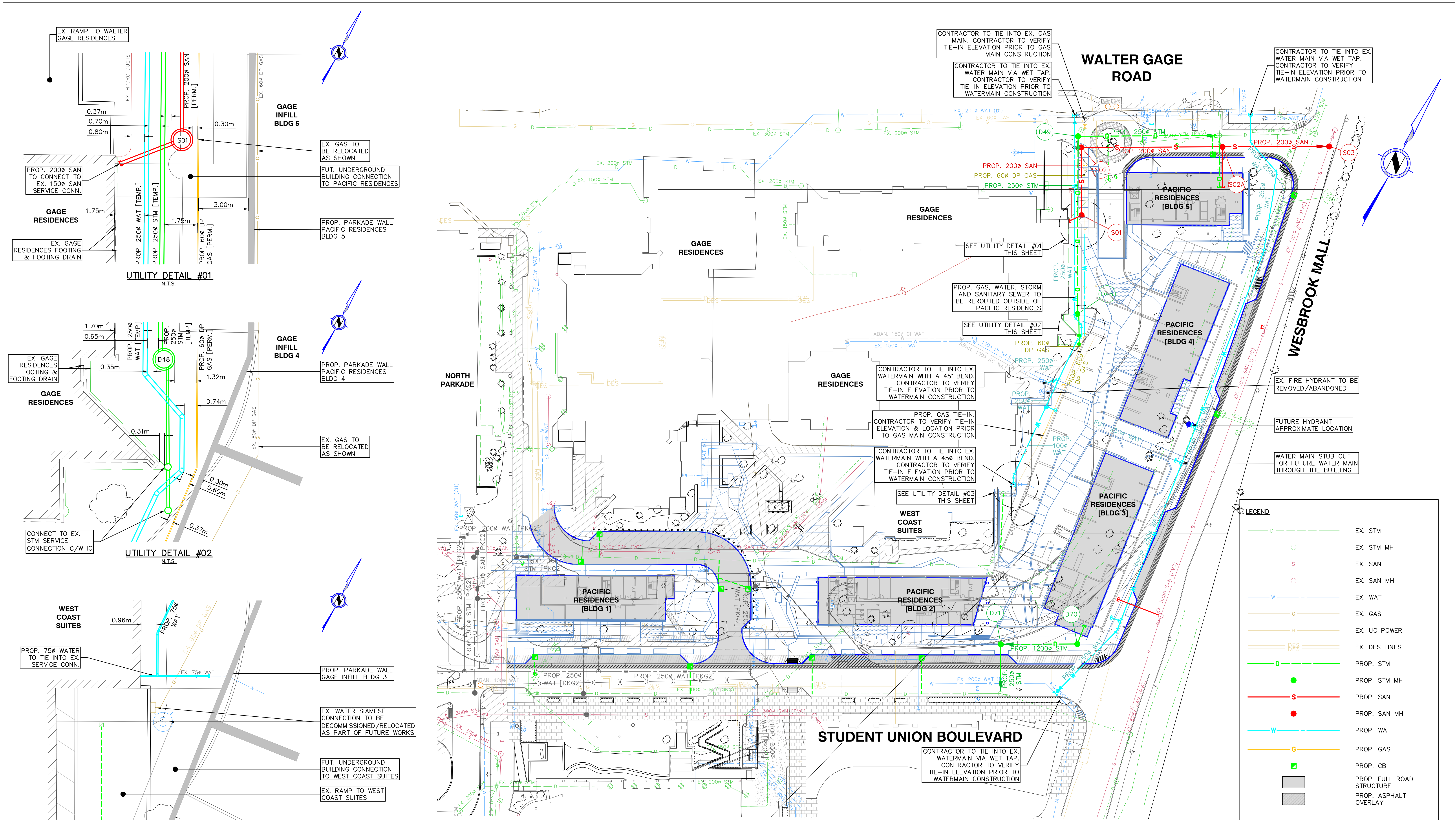


PROJECT:

PACIFIC RESIDENCE
APLIN & MARTIN PROJECT No. 18-5038B1
UBC PROJECT No.

REV. 01
ISSUED FOR UBC PERMIT REVIEW

DWG #	SHEET #	DRAWING TITLE
18-5038 - C00	00 OF 23	COVER PAGE
18-5038 - C01	01 OF 23	KEY PLAN
18-5038 - C02	02 OF 23	UTILITY DEMOLITION PLAN
18-5038 - C03	03 OF 23	STORM CATCHMENT ANALYSIS
18-5038 - C04	04 OF 23	STORM WATER MANAGEMENT PLAN
18-5038 - C05	05 OF 23	SANITARY CATCHMENT ANALYSIS
18-5038 - C06	06 OF 23	ROAD & STORM WORKS STUDENT UNION BOULEVARD STA. 0+950 TO 1+060
18-5038 - C07	07 OF 23	ROAD & STORM WORKS STUDENT UNION BOULEVARD STA. 1+050 TO 1+160
18-5038 - C08	08 OF 23	ROAD & STORM WORKS ROAD A
18-5038 - C09	09 OF 23	ROAD & STORM WORKS WESBROOK MALL STA. 2+950 TO 3+050
18-5038 - C10	10 OF 23	ROAD & STORM WORKS WESBROOK MALL STA. 3+050 TO 3+140
18-5038 - C11	11 OF 23	ROAD & STORM WORKS WALTER GAGE ROAD
18-5038 - C12	12 OF 23	ROAD SECTIONS STUDENT UNION BOULEVARD
18-5038 - C13	13 OF 23	ROAD SECTIONS ROAD A
18-5038 - C14	14 OF 23	ROAD SECTIONS WESBROOK MALL
18-5038 - C15	15 OF 23	ROAD SECTIONS WALTER GAGE ROAD
18-5038 - C16	16 OF 23	WATERWORKS ROW
18-5038 - C17	17 OF 23	WATERWORKS WESBROOK MALL
18-5038 - C18	18 OF 23	STORM WORKS ROW & WALTER GAGE ROAD
18-5038 - C19	19 OF 23	SANITARY WORKS ROW & WALTER GAGE ROAD
18-5038 - C20	20 OF 23	STORM & SANITARY SERVICE CONNECTIONS
18-5038 - C21	21 OF 23	GAS WORKS ROW
18-5038 - C22	22 OF 23	UTILITY SECTIONS ROW
18-5038 - C23	23 OF 23	PAVEMENT MARKING AND SIGNAGE PLAN



LEGEND	
	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	PROP. STM
	PROP. STM MH
	PROP. SAN
	PROP. SAN MH
	PROP. WAT
	PROP. GAS
	PROP. CB
	PROP. FULL ROAD STRUCTURE
	PROP. ASPHALT OVERLAY

NOTICE TO CONTRACTOR
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LEGAL DESCRIPTION				
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD				
REV. NO.	DESCRIPTION	DR	CH	DATE
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019

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CLIENT:
UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

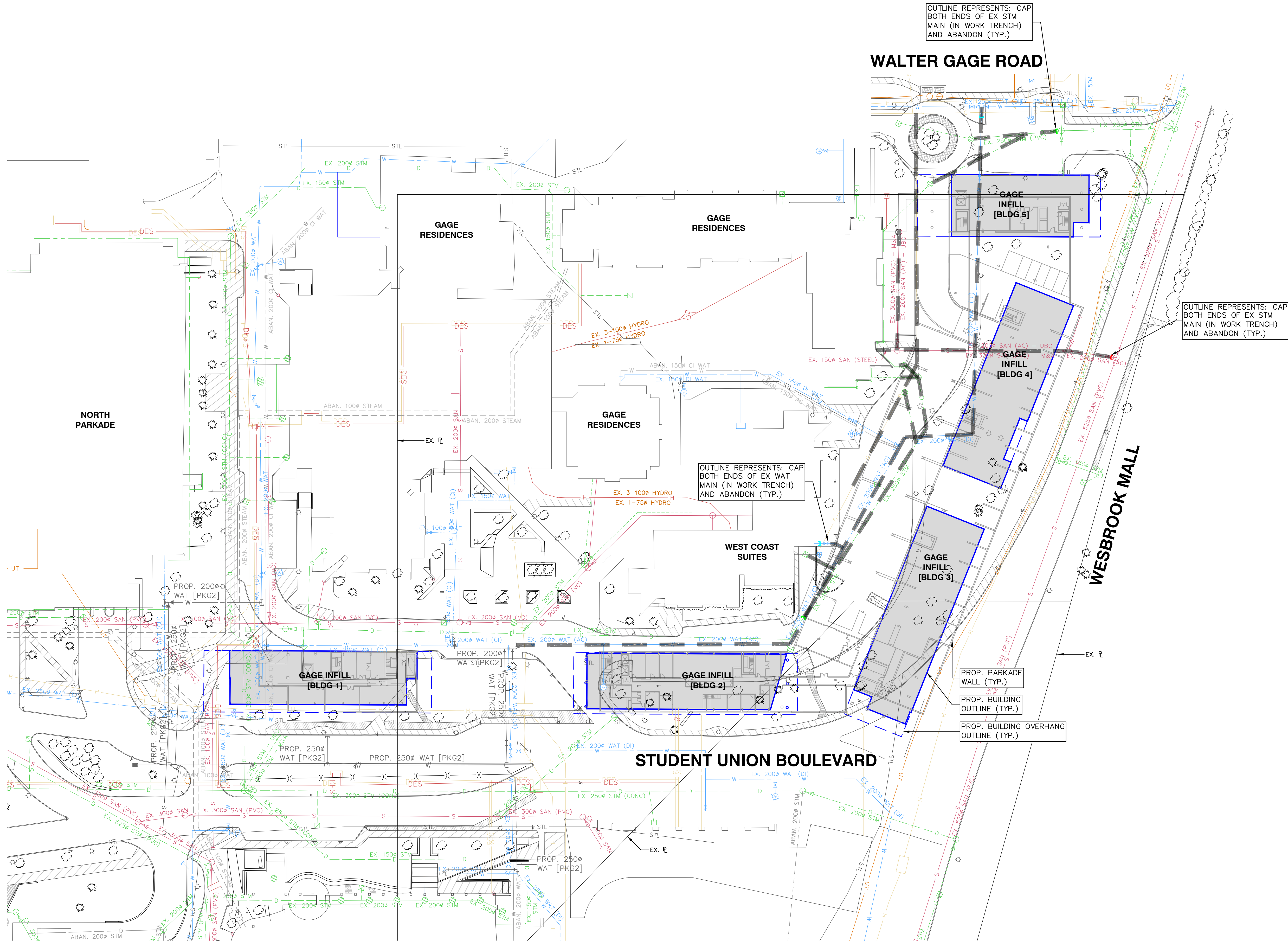
PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of British Columbia

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TITLE:	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:500
UBC PROPERTIES TRUST DRAWING No.	VERT. N/A
-	A&M DRAWING No.
-	18-5038B1-C01

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 01 OF 23	REV. 01



LEGEND	
	EX. STM TO BE REMOVED/ABANDONED
	EX. SAN TO BE REMOVED/ABANDONED
	EX. WAT TO BE REMOVED/ABANDONED
	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	PROP. STM
	PROP. STM MH
	PROP. SAN
	PROP. SAN MH
	PROP. WAT
	PROP. UG POWER

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LEGAL DESCRIPTION				
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REV. NO.	DESCRIPTION	DR	CH	DATE
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019

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CLIENT:
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604 731 3103

PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of British Columbia

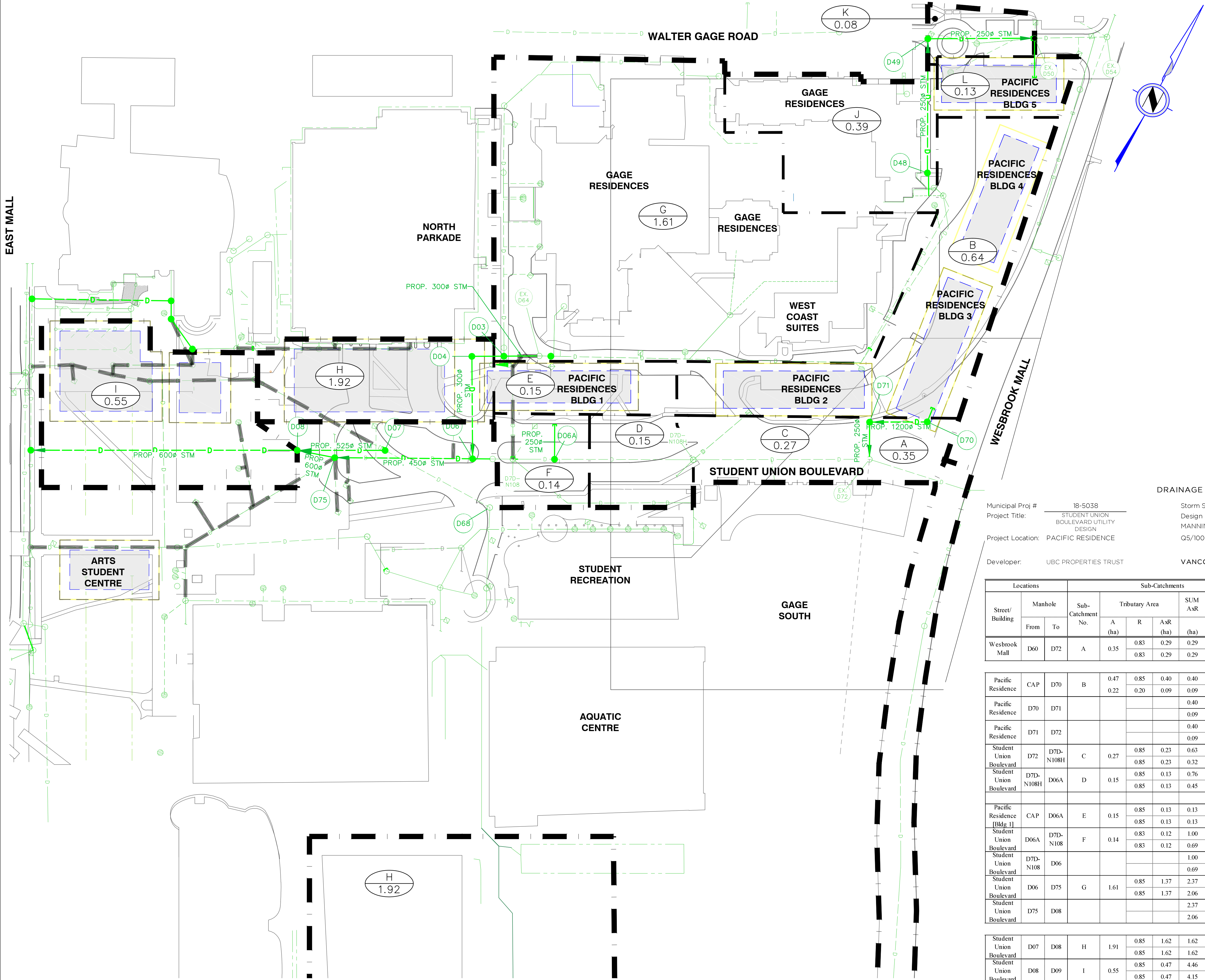
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TITLE:
UTILITY DEMOLITION PLAN

UBC PROPERTIES TRUST PROJECT No. -
SCALE: HORZ. 1:500
VERT. N/A
UBC PROPERTIES TRUST DRAWING No. -
A&M DRAWING No. **18-5038B1-C02**

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 02 OF 23	REV. 01

EAST MALL



THIS DRAWING IS A PRELIMINARY DESIGN ONLY, AND IS PRIMARILY INTENDED TO OUTLINE THE GENERAL SCOPE OF WORK AND PROPOSED ALIGNMENTS FOR UTILITY RELOCATION. DETAILS TO BE CONFIRMED DURING THE ONGOING DESIGN PROCESS.

RUNOFF COEFFICIENT (R) TABLE (SCHEDULE D.1 TABLE C2)	
PARKS/GRASSLANDS	0.2
LOW-DENSITY RESIDENTIAL	0.5
MEDIUM DENSITY RESIDENTIAL	0.6
HIGH-DENSITY RESIDENTIAL	0.7
COMMERCIAL/INDUSTRIAL	0.8

LEGEND

MAJOR CATCHMENT BOUNDARY LINE	
SUB CATCHMENT BOUNDARY LINE	
CATCHMENT AREA	CATCHMENT #
EXISTING STORM MAIN	
EXISTING STORM MAIN (TO BE REMOVED/ABANDONED)	
PROPOSED STORM MAIN	

DRAINAGE SYSTEM DESIGN - RATIONAL METHOD CALCULATION SHEET

Municipal Proj #	18-5038	Storm Sewer Design Criteria		A&M Proj #	18-5038
Project Title:	STUDENT UNION BOULEVARD UTILITY DESIGN	Design Return Period:	5 YEAR / 10 YEAR	Page:	ToF 1
		MANININGS "n"	0.013		
Project Location:	PACIFIC RESIDENCE	Q5/100=RAIN	N=0.00278	Designed by:	KAP
				Checked by:	DRS
Developer:	UBC PROPERTIES TRUST			Date:	May-23-19



Locations				Sub-Catchments						Flow Calculations		Pipe Parameters										Comments	
Street/ Building	Manhole		Sub-Catchment No.	Tributary Area			SUM AsR	Time of Concentration		Rain Fall Int. "I"	Q _s Q ₁₀	Sewer Design					Travel Time	Flow Ratios		Hydraulic Slope	Remarks		
	From	To		A (ha)	R	AsR (ha)	(ha)	Inlet (min)	Total (min)	I (mm/hr)	(L/s)	S %	DIA mm	L m	V _{cap} m/s	Q _{cap} (L/s)	(min)	Q _s /Q _{cap} %	Q ₁₀₀ /Q _{cap} %	Q ₁₀₀ %	100 YEAR FLOW ROUTES		
Wesbrook Mall	D60	D72	A	0.35	0.83	0.29	0.29	10.0	10.0	38	30.7	2.00	200	40.89	1.48	46.4	0.5	66%	85%	1.46%	IN PIPE		
					0.83	0.29	0.29			49	39.6												
Pacific Residence	CAP	D70	B	0.47 0.22	0.85 0.20	0.40 0.09	0.40 0.09	10.0	10.0	38 49	42.2 12.8	2.00	250	7.50	1.71	84.1	0.1	50%	15%	0.05%	IN PIPE		
Pacific Residence	D70	D71					0.40 0.09	10.0	10.1	41 52	45.5 13.7	0.50	1200	20.00	2.44	2756.8	0.1	2%	0%	0.00%	IN PIPE		
Pacific Residence	D71	D72					0.40 0.09	10.1	10.2	46 58	51.2 15.2	2.00	250	12.80	1.71	84.1	0.1	61%	18%	0.07%	IN PIPE		
Student Union Boulevard	D72	D7D- N108H	C	0.27	0.85	0.23	0.63	10.2	10.3	47 59	82.0 52.9	1.10	250	70.10	1.27	62.4	0.9	131%	85%	0.79%	IN PIPE		
Student Union Boulevard	D7D- N108H	D06A	D	0.15	0.85	0.13	0.76	10.3	11.3	53 66	111.5 82.3	1.70	375	41.40	2.07	228.6	0.3	49%	36%	0.22%	IN PIPE		
Pacific Residence [Bldg 1]	CAP	D06A	E	0.15	0.85	0.13	0.13	10.0	10.0	39 51	14.0 18.0	2.00	200	17.60	1.48	46.4	0.2	30%	39%	0.30%	IN PIPE		
Student Union Boulevard	D06A	D7D- N108	F	0.14	0.83	0.12	1.00	11.3	11.6	53 66	147.4 126.8	1.75	300	30.50	1.81	127.9	0.3	115%	99%	1.72%	IN PIPE		
Student Union Boulevard	D7D- N108	D06					1.00 0.69	11.6	11.9	53 66	147.4 126.8	2.20	300	8.10	2.03	143.4	0.1	103%	88%	1.72%	IN PIPE		
Student Union Boulevard	D06	D75	G	1.61	0.85	1.37	2.37	11.9	11.9	53 66	349.0 376.6	2.13	450	62.90	2.62	416.1	0.4	84%	91%	1.75%	IN PIPE		
Student Union Boulevard	D75	D08			0.85	1.37	2.06																
							2.37 2.06	11.9	12.3	53 66	349.0 376.6	1.56	600	15.25	2.71	766.9	0.1	46%	49%	0.38%	IN PIPE		
Student Union Boulevard	D07	D08	H	1.91	0.85	1.62	1.62	15.0	15.0	38 49	172.4 222.1	0.60	600	35.00	1.68	475.6	0.3	36%	47%	0.13%	IN PIPE		
Student Union Boulevard	D08	D09	I	0.55	0.85	0.47	4.46	15.0	15.3	53 66	657.1 758.4	0.50	750	106.15	1.78	787.2	1.0	83%	96%	0.46%	IN PIPE		

LEGAL DESCRIPTION .					
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LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD					
REV. NO.	DESCRIPTION	DR	CH	DATE	APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS

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CLIENT: **UBC PROPERTIES TRUST**
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT: **PACIFIC RESIDENCES**
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of British Columbia

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TITLE: **STORM CATCHMENT ANALYSIS**

UBC PROPERTIES TRUST PROJECT No. -

SCALE: HORZ. 1:750 VERT. N/A

UBC PROPERTIES TRUST DRAWING No. -

A&M DRAWING No. **18-5038B1-C03**

DESIGN: KAP CHECK: DRS
DRAWN: KAP APPR: DRS

A & M FILE: **18-5038B**
DRAWING DATE: **MAY, 2019**

SHEET No. **05 OF 23** REV. **01**

Jun 04 2019 - 4:45pm W:\2018\18-5038\DWG\ON SITE PRODUCTION\CONSOLIDATED PACIFIC RESIDENCES\18-5038B1 C03 STM CATCHMENT PLAN.dwg/STM (BLDG ATAGB) KFezeze

UBC Properties Trust
Student Union Boulevard Utility Design
University of British Columbia
Pacific Residence

AM Project: 18-5038
Date: 22-May-19
By: KAP
Checked: DRS

Pre-development Runoff Coefficient Calculation Option 1					
	Area	% Area	Runoff	Area-Weighted Average Runoff	
	m ²		Coefficient		
Total site area	10995				
Parks/Grasslands	5985	54%	0.20	0.54	
Concrete Pavers	0	0%	0.85		
Hardscape	5010	46%	0.95		

Post-development Runoff Coefficient Calculation Option 1					
	Area	% Area	Runoff	Area-Weighted Average Runoff	
	m ²		Coefficient		
Total site area	10995				
Parks/Grasslands	3335	30%	0.20	0.72	
Concrete Pavers	325	3%	0.85		
Hardscape	7335	67%	0.95		

UBC Properties Trust
Student Union Boulevard Utility Design
University of British Columbia
Pacific Residences

AM Project: 18-5038
Date: 22-May-19
By: KAP
Checked: DRS

	Land Use	Tc or Tr min	Runoff Coefficient	Area Ha	Intensity mm/hr	n	Q m ³ /s
Q _{pre-development}	Grass/Road	15	0.54	1.10	39.0	0.00278	0.0646
Q _{post-development}	Residence	10	0.72	1.10	49.0	0.00278	0.1078

10 Yr Storage Volume Required (Modified Rational Method)

Storage Volume = $T_r (Q_{p2} - Q_{rel}) + 0.5 \times T_c \times Q_{rel}^2 (1/Q_{p2} - 1/Q_{p1})$

T_r = Duration of storm (seconds)

T_c = Time to concentration (seconds)

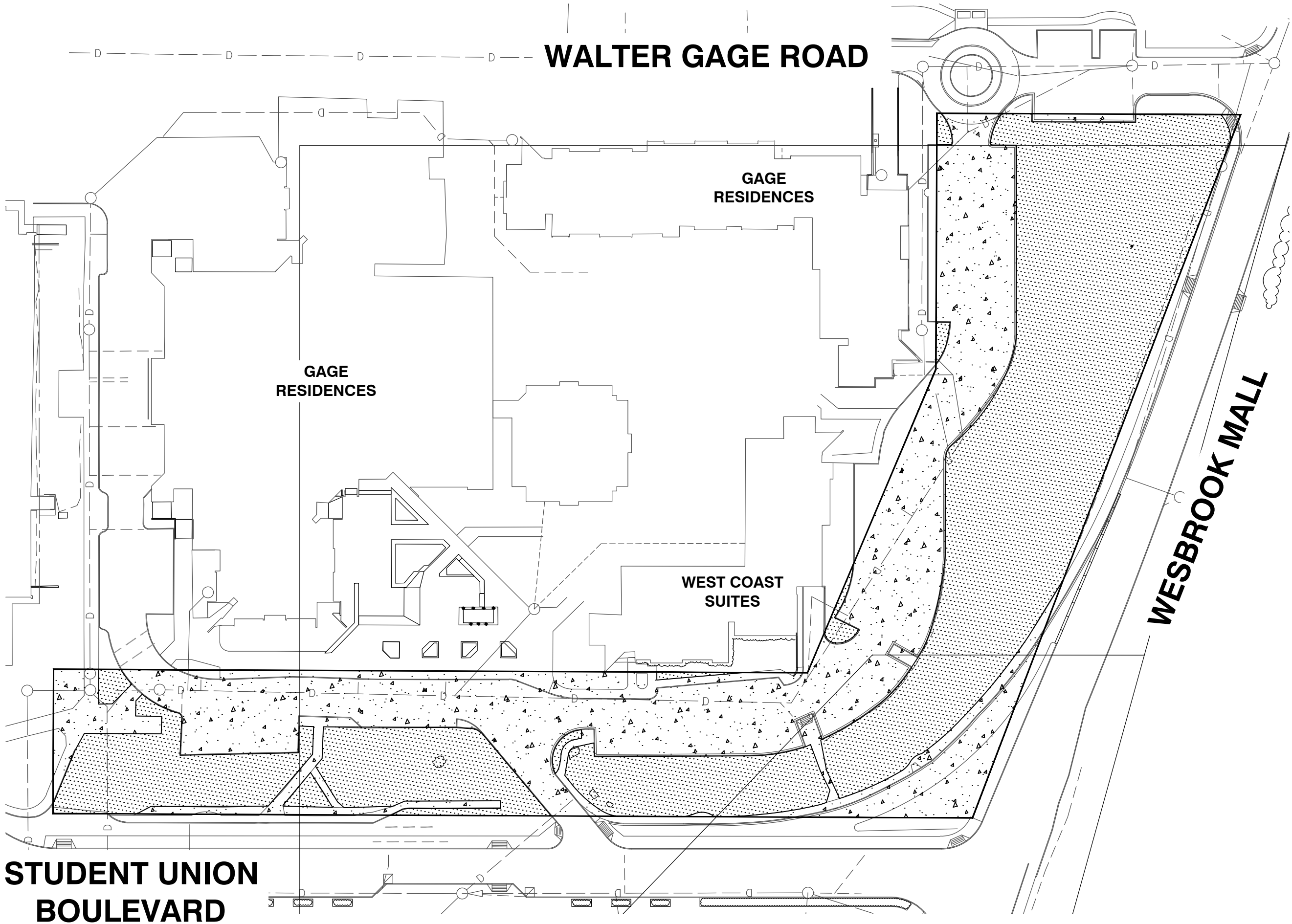
Q_{p1} = Peak flow for storm duration T_r = T_c (m³/s)

Q_{p2} = Peak flow for storm specified (m³/s)

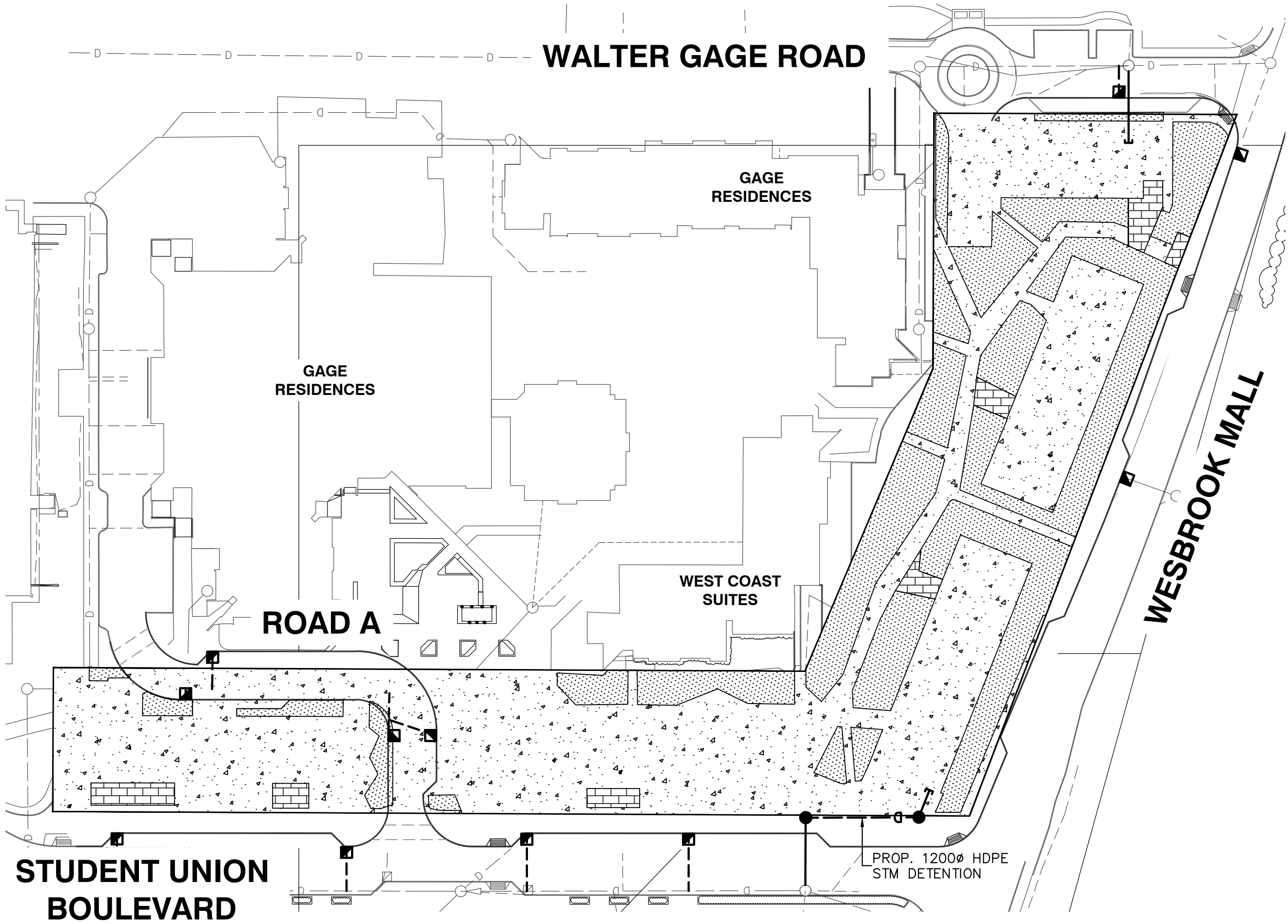
Q_{release} = Maximum release rate (m³/s)

Rainfall Duration Tr min	Rainfall Intensity I mm/hr	Peak Flow Q _{p1} m ³ /s	Peak Flow Q _{p2} m ³ /s	Required Storage m ³
5	59.0	0.108	0.130	17.6
10	49.0	0.108	0.108	25.9
15	39.0	0.108	0.086	22.1
20	33.3	0.108	0.073	18.5
25	27.5	0.108	0.061	7.5
30	21.8	0.108	0.048	-8.2
35	20.6	0.108	0.045	-16.5
40	19.4	0.108	0.043	-26.0
45	18.2	0.108	0.040	-36.8
50	17.0	0.108	0.037	-48.8
55	15.8	0.108	0.035	-61.8
60	14.6	0.108	0.032	-75.9

Maximum Storage Required = 26.0 m³



EXISTING CONDITION LEGEND	
GREEN SPACE (R=0.20)	
5985m ²	
HARDSCAPE (R=0.95)	
5010m ²	



PROP. CONDITION LEGEND	
GREEN SPACE (R=0.20)	
3335m ²	
HARDSCAPE (R=0.95)	
7335m ²	
PAVERS (R=0.85)	
325m ²	

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LEGAL DESCRIPTION .

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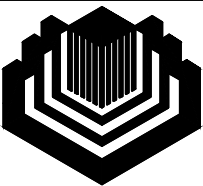


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CLIENT:

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SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103



PROJECT:

PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL



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TITLE:

STORMWATER MANAGEMENT PLAN

UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:750
UBC PROPERTIES TRUST DRAWING No.	VERT. N/A
-	A&M DRAWING No.
	18-5038B1-C04

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS

A & M FILE:
18-5038B
DRAWING DATE:
MAY, 2019

SHEET No.	REV.
04 OF 23	01

LEGEND

MAJOR CATCHMENT BOUNDARY LINE

SUB CATCHMENT BOUNDARY LINE

CATCHMENT AREA CATCHMENT # AREA (ha)

EXISTING SANITARY MAIN

EXISTING SANITARY MAIN (TO BE REMOVED/ABANDONED)

PROPOSED SANITARY MAIN

RESIDENTIAL				
DEVT SITE	# OF BEDS	# OF STOREYS	AREA/ STOREY	CAP/HA
A1	195	6	1500	217
A2	395	6	1925	342
B	200	8	750	333
C	360	8	1150	391
D	340	17	605	331
E	120	8	3057.5	49
AVE				277

Municipal Proj # 18-5038

Project Title: UTILITY DESIGN

Project Location: STUDENT UNION BOULEVARD
BETWEEN WESBROOK MALL
AND EAST MALL

Developer: UBC PROPERTIES TRUST

SANITARY SYSTEM DESIGN - CALCULATION SHEET

AVERAGE DAILY FLOW
Student Residential (RES-S)= 230 L/cap/day
Mixed Building Use (M-RCO)= 90 L/cap/day

MAXIMUM DEPTH OF FLOW
50% for Prop. Local Sewers
70% for Prop. Trunk Sewers
Peaking Factor = Harmon Equation

POPULATION DENSITY

MANNINGS "n" 0.013
Inflow & Infiltration 11,200 L/hectare/day

Consultant: APLIN MARTIN

APLIN MARTIN
ENGINEERING ARCHITECTURE PLANNING SURVEYING

A&M Proj # 18-5038
Page: 1 of 1

Designed by: KAP
Checked by: DRS
Date: January-24-19

Locations			Sub-Catchments							Flow Calculations					Pipe Parameters					Results				
Street	Manhole		Sub-Catchment No.	Area	Cum Area	Land Usage	Pop Density	Population	Cum Pop	Usage Level	Avg Flow	Peaking Factor	Peak Flow	Design Flow	Sewer Design					Flow Ratio	Partial Velocity	Velocity Check	Depth of Flow	
	From	To		A (ha)	(ha)		(beds/ha)			L/cap/ day	ADWF (L/s)	P _r	PDWF (L/s)	I&I (L/s)	Q (L/s)	S %	DIA mm	L m	V _{cap} m/s	Q _{cap} (L/s)	Q/Q _{cap} %	V _{act} (m/s)	V _{act} ≥ 0.60 (m/s)	d/D %
	S01	S02	A	0.49	0.49	RES-S	277	136	136	230	0.36	4.20	1.52	0.06	1.58	1.50	200	22.20	1.28	40.17	4%	0.62	OK	14%
	S02	S03			0.49		277		136	230	0.36	4.20	1.52	0.06	1.58	1.50	200	74.50	1.28	40.17	4%	0.62	OK	14%
	S06A	S06	B	0.57	0.57	RES-S M-RCO	327	186	186	320	0.69	4.16	2.87	0.07	2.95	1.00	150	38.50	0.86	15.23	19%	0.67	OK	30%
	S04	S06	C	2.32	2.32	RES-S	277	643	643	230	1.71	3.92	6.70	0.30	7.00	2.00	250	48.70	1.71	84.10	8%	1.04	OK	20%
	S06	S61			2.89				829	320	3.07	3.85	11.82	0.37	12.20	2.00	300	6.00	1.93	136.76	9%	1.20	OK	20%
	S61	S62			2.89				829	320	3.07	3.85	11.82	0.37	12.20	3.40	300	12.08	2.52	178.31	7%	1.44	OK	18%
	S62	S07	D	2.44	5.33	RES-S M-RCO	327	798	1627	320	6.03	3.65	22.02	0.69	22.71	0.38	300	15.20	0.84	59.61	38%	0.79	OK	43%
	S07	S09	E	0.43	5.76	RES-S M-RCO	327	141	1768	320	6.55	3.63	23.74	0.75	24.49	0.74	375	52.40	1.37	150.83	16%	1.00	OK	27%
	S09	S10	H	0.53	7.30	RES-S M-RCO	327	173	2221	320	8.22	3.55	29.20	0.95	30.14	0.70	375	103.20	1.33	146.69	21%	1.04	OK	31%
	S35A	S36	F	0.83	0.83	OTHER	277	230	230	320	0.85	4.13	3.51	0.11	3.62	1.00	100	6.90	0.66	5.17	70%	0.71	OK	62%
	S36	S09	G	0.18	1.01	RES-S	277	50	280	320	1.04	4.09	4.24	0.13	4.37	1.04	200	42.40	1.06	33.45	13%	0.74	OK	24%
	S30	S32	I	2.07	2.07	M-RCO	327	677	677	320	2.51	3.90	9.78	0.27	10.05	1.48	250	9.40	1.47	72.35	14%	1.04	OK	25%
	S32	S32A			2.07		327		677	230	1.80	3.90	7.03	0.27	7.30	1.43	250	51.50	1.45	71.11	10%	0.93	OK	22%
	S32A	S33			2.07		327		677	90	0.71	3.90	2.75	0.27	3.02	1.34	250	20.50	1.40	68.84	4%	0.70	OK	14%

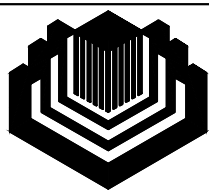
LEGAL DESCRIPTION .				
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD				
REV. NO.	DESCRIPTION	DR	CH	DATE APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019 DRS

APLIN MARTIN
ENGINEERING ARCHITECTURE PLANNING SURVEYING

Apelin & Martin Consultants Ltd.
#1818 - 1177 West Hastings Street Vancouver, B.C. V6E 2K3
Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com

CLIENT: UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT: PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL



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TITLE: SANITARY CATCHMENT ANALYSIS

UBC PROPERTIES TRUST PROJECT No. -

SCALE: HORZ. 1:1000
VERT. N/A

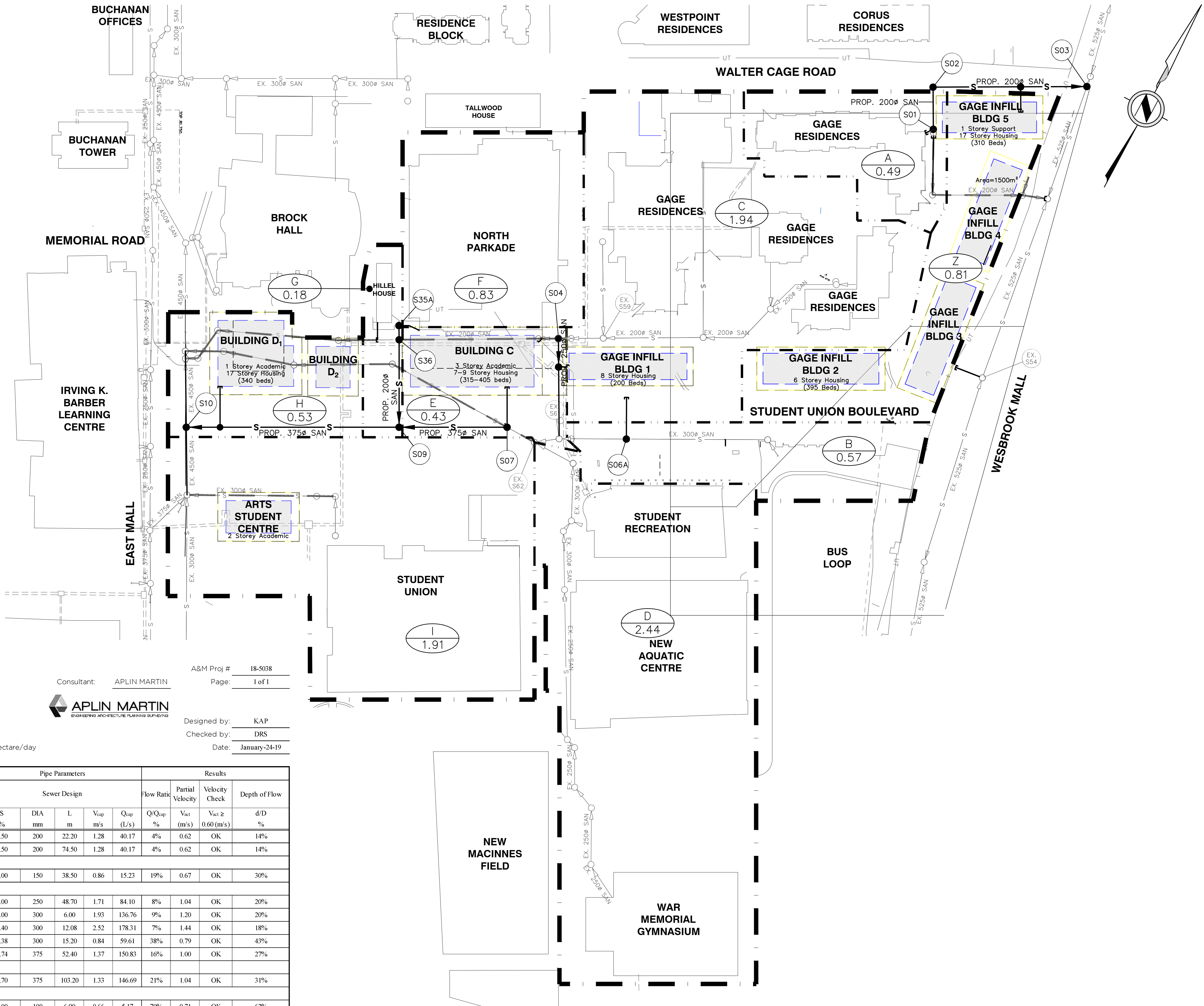
UBC PROPERTIES TRUST DRAWING No. -

A&M DRAWING No. 18-5038B1-C05

DESIGN: KAP CHECK: DRS
DRAWN: KAP APPR: DRS

A & M FILE: 18-5038B
DRAWING DATE: MAY, 2019

SHEET No. 05 OF 23
REV. 01



NOTICE TO CONTRACTOR

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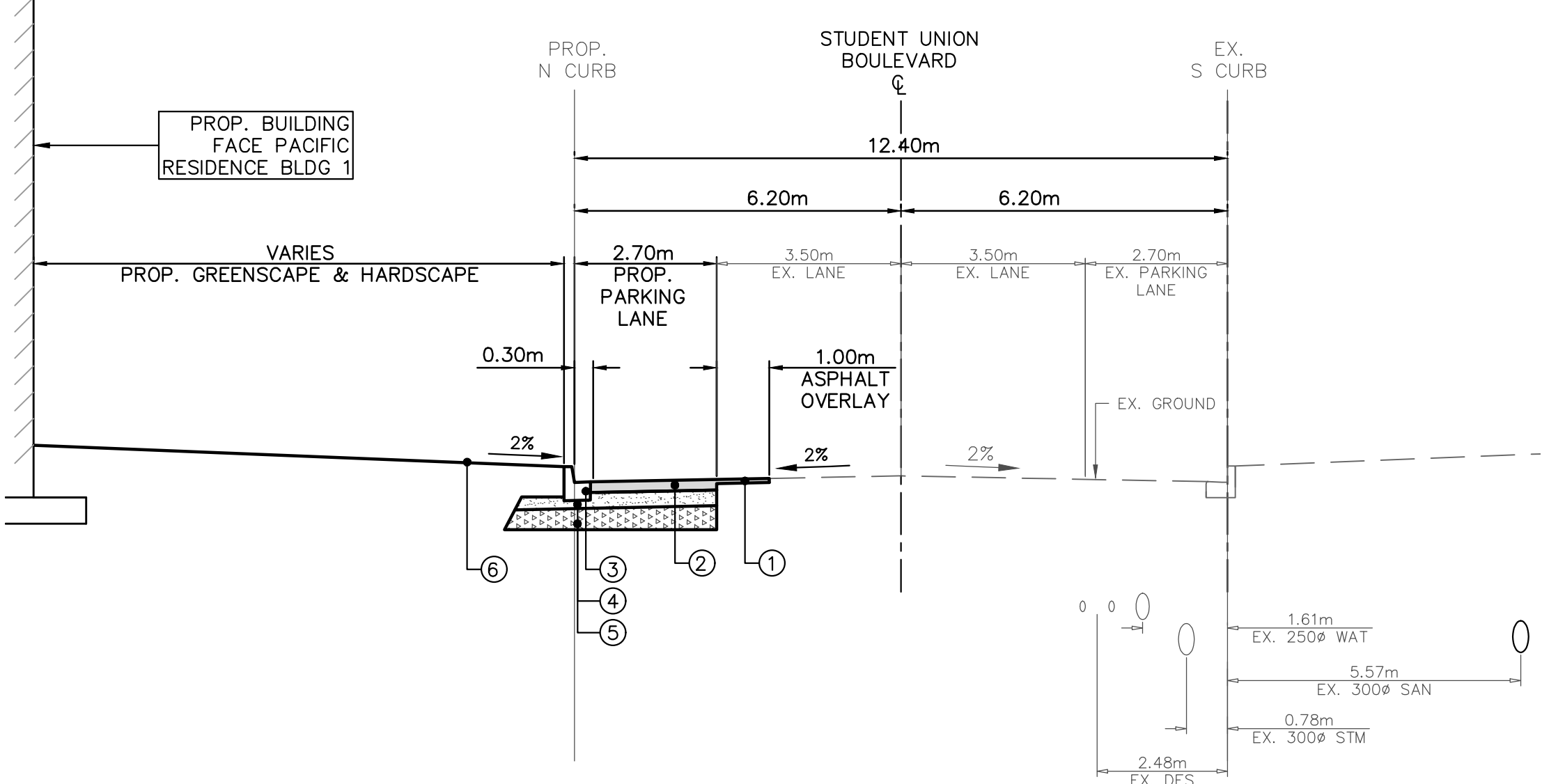
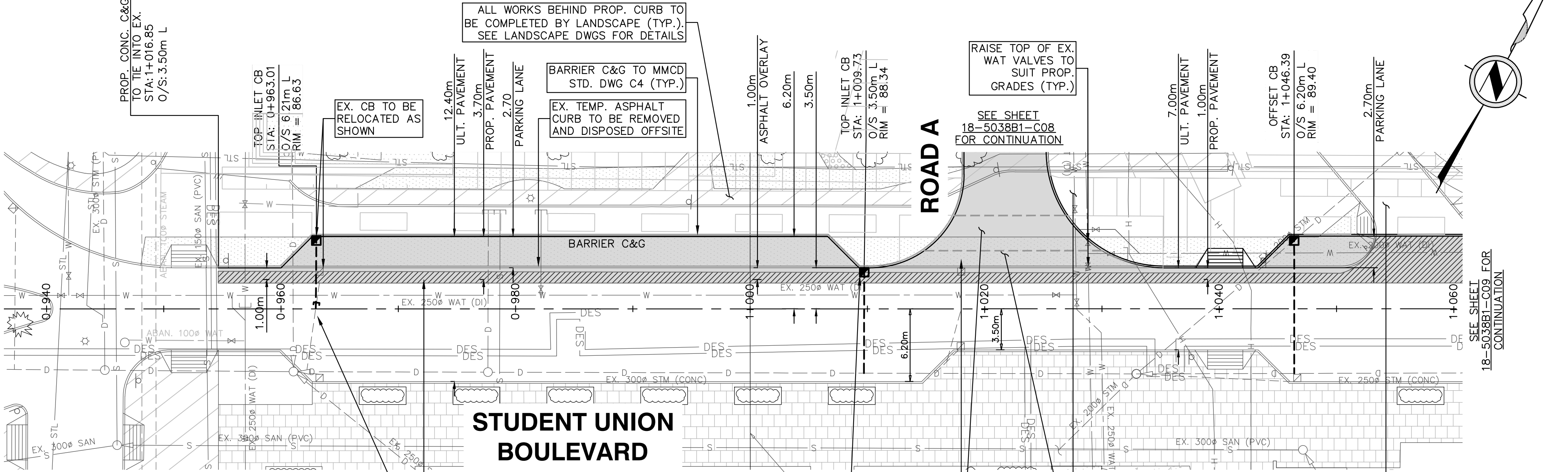
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C. STORM SEWER NOTES

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-200mmØ TO 600mm SDR35 TO ASTM 03034 SPECS.
- ALL PIPES SHALL HAVE CLOSED JOINTS.
- BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS FOR PIPE DEPTH AND SLOPE PER SOIL CONDITIONS.
- ALL STORM & SANITARY SEWER MANHOLES TO BE 50mmØ WITH MARKINGS PER UBC REQUIREMENTS UNLESS OTHERWISE NOTED.
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TYPICAL CROSS SECTION - WITH PARKING LANE
STUDENT UNION BOULEVARD
1:100

TYPICAL ROAD STRUCTURE

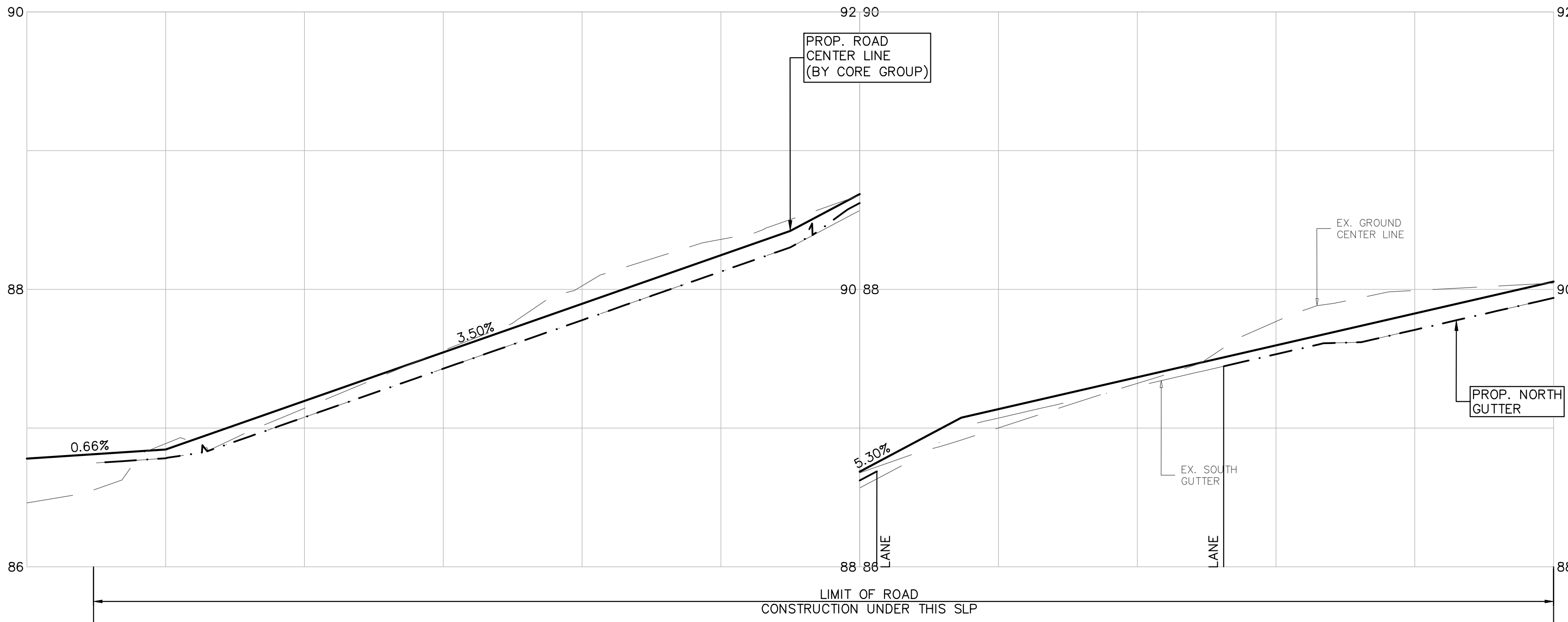
- 100mm HOT MIX ASPHALTIC CONCRETE IN TWO LIFTS
- 40mm - 12.5mm UPPER COURSE 1
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- 40mm - 12.5mm UPPER COURSE 1
- 60mm - 19.0mm LOWER COURSE 1
- CONCRETE BARRIER OR ROLLOVER CURB & GUTTER AS PER MMCD STD. DWG-C5
- 150mm - 19mm CRUSHED GRANULAR BASE W/ <5% FINES CONTENT
- 200mm - 75mm CRUSHED GRANULAR SUBBASE WITH <5% FINES CONTENT
- GREENSCAPE AND HARDSCAPE BY LANDSCAPE

LEGEND

FULL PROPOSED ROAD STRUCTURE

ASPHALT OVERLAY

PROPOSED CB



CENTRELINE ROAD ELEVATIONS		EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
		NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH	NORTH	SOUTH
PROP. CURB GUTTER ELEV.																			
CHAINAGE		0+950	0+960	0+970	0+980	0+990	1+000	1+010	1+020	1+030	1+040	1+050	1+060	1+070	1+080	1+090	1+100	1+110	1+120

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LEGAL DESCRIPTION .

B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631
LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD

REV. NO. DESCRIPTION DR CH DATE APP

01 ISSUED FOR UBC PERMIT REVIEW KAP DRS 04/06/2019 DRS

APLIN MARTIN
ENGINEERING ARCHITECTURE PLANNING SURVEYING

Aplin & Martin Consultants Ltd.
#1818 - 1177 West Hastings Street Vancouver, B.C. V6E 2K3
Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com

CLIENT:

UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT:

PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of British Columbia

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TITLE:

ROAD & STORM WORKS
STUDENT UNION BOULEVARD
STA. 0+950 TO 1+060

UBC PROPERTIES TRUST PROJECT No. -
UBC PROPERTIES TRUST DRAWING No. -

SCALE:
HORIZ. 1:250
VERT. 1:50

A&M DRAWING No.
18-5038B1-C06

DESIGN: KAP CHECK: DRS
DRAWN: KAP APPR: DRS

A & M FILE:
18-5038B
DRAWING DATE:
MAY, 2019

SHEET No.
06 OF 23

REV.
01

A. GENERAL NOTES

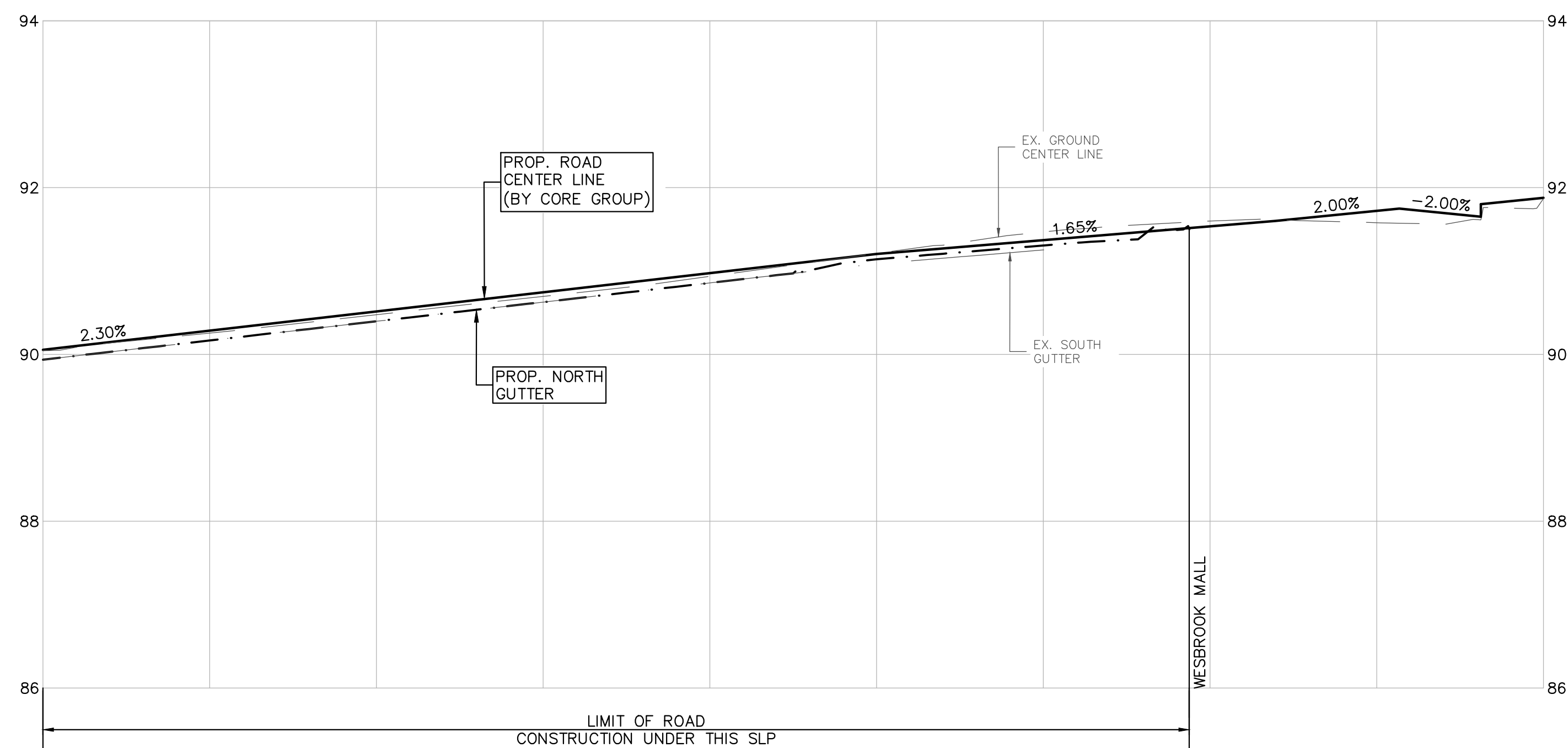
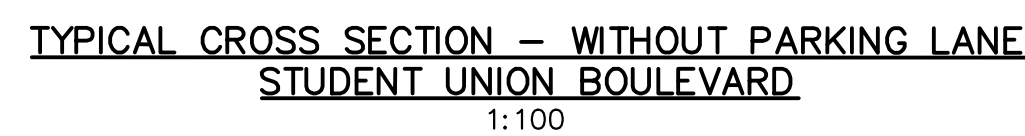
- B.
- ROADWORKS NOTES

- C. STORM SEWER NOTES

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- ① 100mm HOT MIX ASPHALTIC CONCRETE
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BASE W/ <5% FINES CONTENT
- ⑤ 200mm – 75mm CRUSHED GRANULAR
SUBBASE WITH <5% FINES CONTENT
- ⑥ GREENSPACE AND HARDSCAPE BY
LANDSCAPE



CHAINAGE	PROP. CURB GUTTER ELEV.	CENTRELINE ROAD ELEVATIONS
1+060	NORTH 500.14 89.94 89.94	EXISTING 90.04 90.06
1+070	90.17 89.17	90.25 90.23
1+080	90.40 90.40	90.48 90.52
1+090	90.63 90.63	90.70 90.75
1+100	90.86 90.86	90.94 90.98
1+110	91.14 91.09	91.21 91.21
1+120	91.31 91.25	91.47 91.37
1+130		91.60 91.34
1+140		91.58 91.72
1+150		91.77

LEGEND

FULL PROPOSED ROAD STRUCTURE

ASPHALT OVERLAY

PROPOSED CB

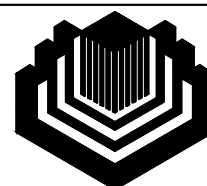
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TITLE:	ROAD & STORM WORKS STUDENT UNION BOULEVARD STA. 1 +060 TO 1 +150		DESIGN: KAP	CHECK: DRS
			DRAWN: KAP	APPR: DRS
	A & M FILE: 18-5038B			
UBC PROPERTIES TRUST PROJECT No.	SCALE:		DRAWING DATE:	
-	HORIZ. 1:250 VERT. 1:50		MAY, 2019	
UBC PROPERTIES TRUST DRAWING No.	A&M DRAWING No.		SHEET No.	REV.
-	18-5038B1-C07		07 OF 23	01

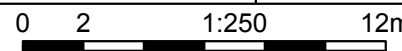
LEGAL DESCRIPTION .						
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631						
LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD						
REV. NO.	DESCRIPTION	DR	CH	DATE	APP	
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS	



CLIENT:	UBC PROPERTIES TRUST SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8 604 731 3103
PROJECT:	PACIFIC RESIDENCES STUDENT UNION BOULEVARD AND WESBROOK MALL

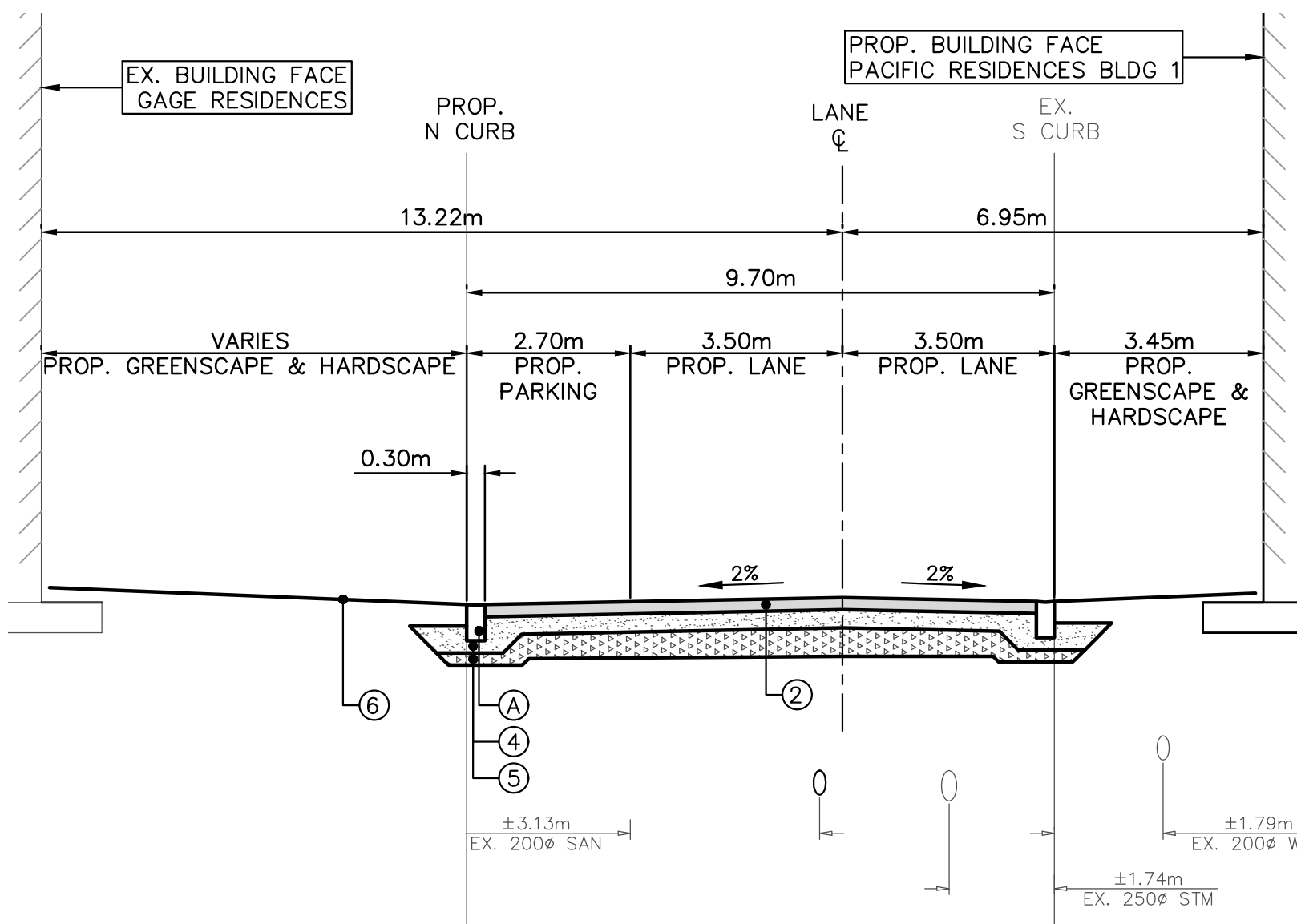


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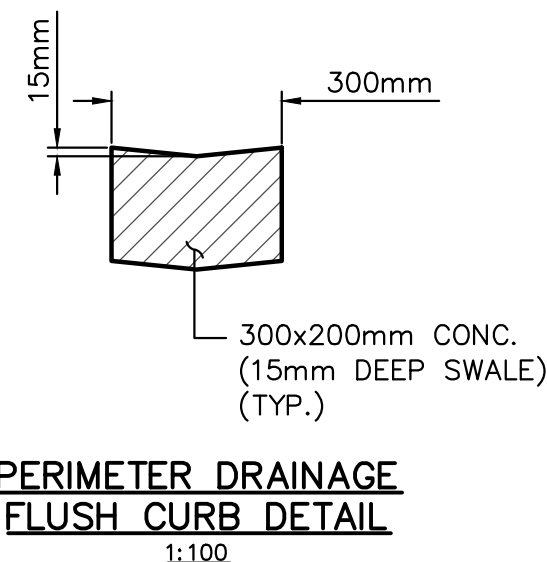




LANE										
NUMBER	LENGTH	AZIMUTH	START STA.	END STA.	START NORTHING	START EASTING	END NORTHING	END EASTING	DELTA	RADIUS
L2	22.297	151° 56' 18.67"	+2000.000	+2022.297	5459632.667	481998.179	5459612.992	482008.668		
C1	20.410	106° 56' 24.01"	+2022.297	+2042.707	5459612.992	482008.668	5459607.638	482026.246	89°59'49"	12.994
L3	34.086	61° 56' 29.34"	+2042.707	+2076.794	5459607.638	482026.246	5459623.671	482056.326		
C2	15.708	106° 56' 28.71"	+2076.794	+2092.502	5459623.671	482056.326	5459619.550	482069.855	89°59'59"	10.000
L4	37.457	151° 56' 28.07"	+2092.502	+2129.959	5459619.550	482069.855	5459586.495	482087.474		



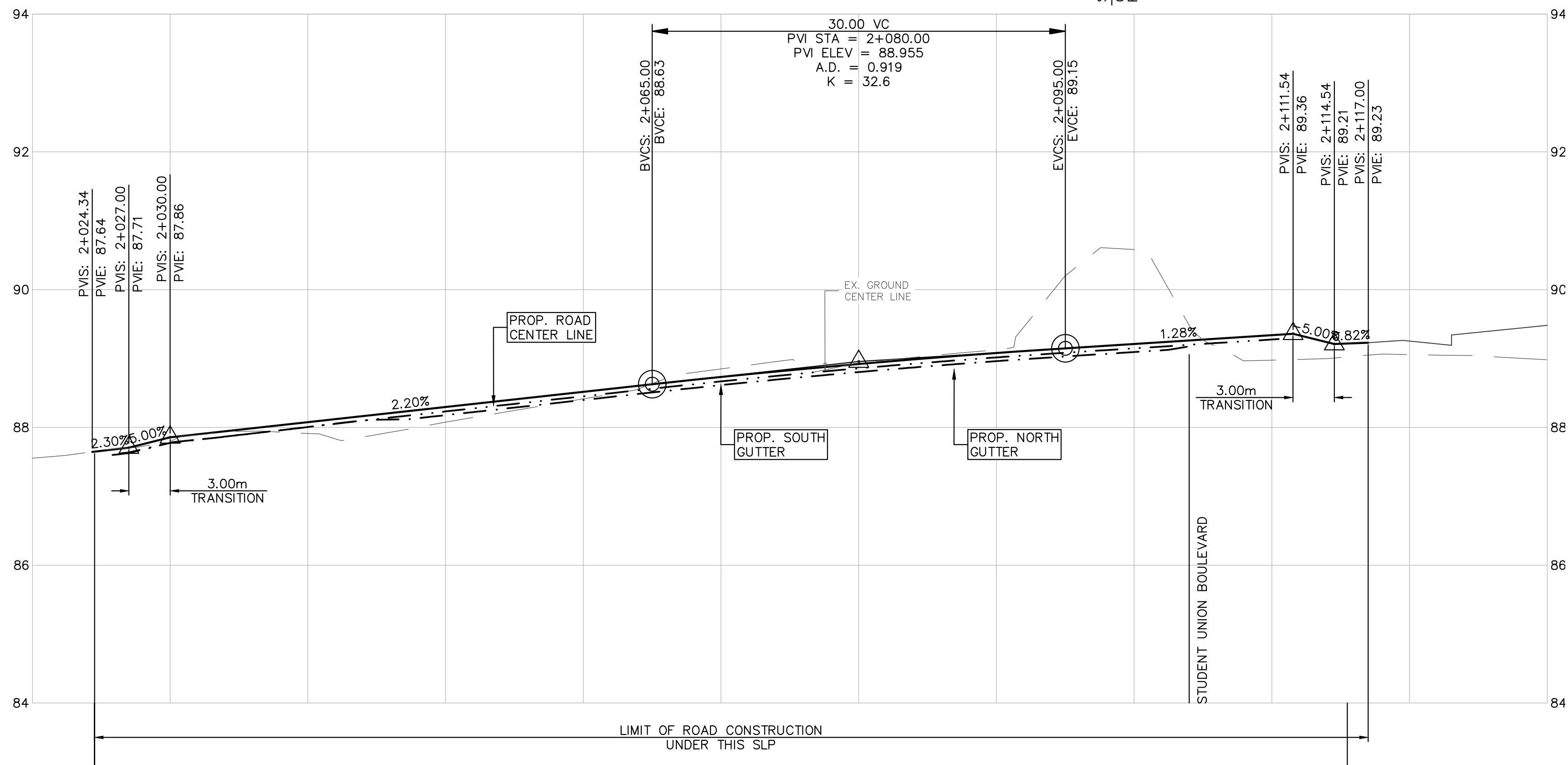
TYPICAL CROSS SECTION
LANE
1:100



PERIMETER DRAINAGE
FLUSH CURB DETAIL

TYPICAL ROAD STRUCTURE
ROAD A

- ② 100mm HOT MIX ASPHALTIC CONCRETE
IN TWO LIFTS
– 40mm – 12.5mm UPPER COURSE 1
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- ③ 300mm WIDE CONC. PERIMETER CURB.
SEE THIS SHEET FOR DETAIL
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SUBBASE WITH <5% FINES CONTENT
- ⑥ GREENSCAPE AND HARDSCAPE BY
LANDSCAPE



CHAINAGE	NORTH SOUTH	CENTRELINE ROAD ELEVATIONS	
		EXISTING	PROPOSED
2+020			87.55
2+030		87.78	87.86
2+040		88.01	88.08
2+050		88.18	88.30
2+060		88.40	88.52
2+070		88.61	88.73
2+080		88.80	88.92
2+090		88.96	89.08
2+100		89.09	89.21
2+110		89.28	89.34
2+120			89.06
2+130			

ENGINEERING DRAWING NOTES

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LEGEND

- FULL PROPOSED ROAD STRUCTURE
- ASPHALT OVERLAY
- PROPOSED CB

NOTICE TO CONTRACTOR

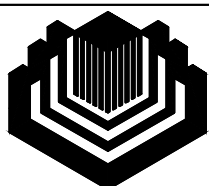
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LEGAL DESCRIPTION

[illegible]

CLIENT:	
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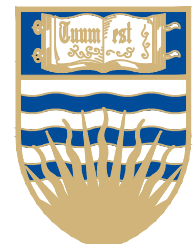
UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103



PROJECT:

PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

**University of
British Columbia**



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TITLE:

ROAD & STORM WORKS

ROAD A

UBC PROPERTIES TRUST PROJECT No.

■ **THE FUTURE OF THE FIRM**

UBC PROPERTIES TRUST DRAWING No.

SCALE:

HORZ. 1:250
VERT. 1:50

A&M DRAWING N

18-5038B

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS

A & M FILE:
18-5038B

	DRAWING DATE
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MAY, 2019

SHEET No. 08 OF 23	REV. 01
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0 2 1:250 12m

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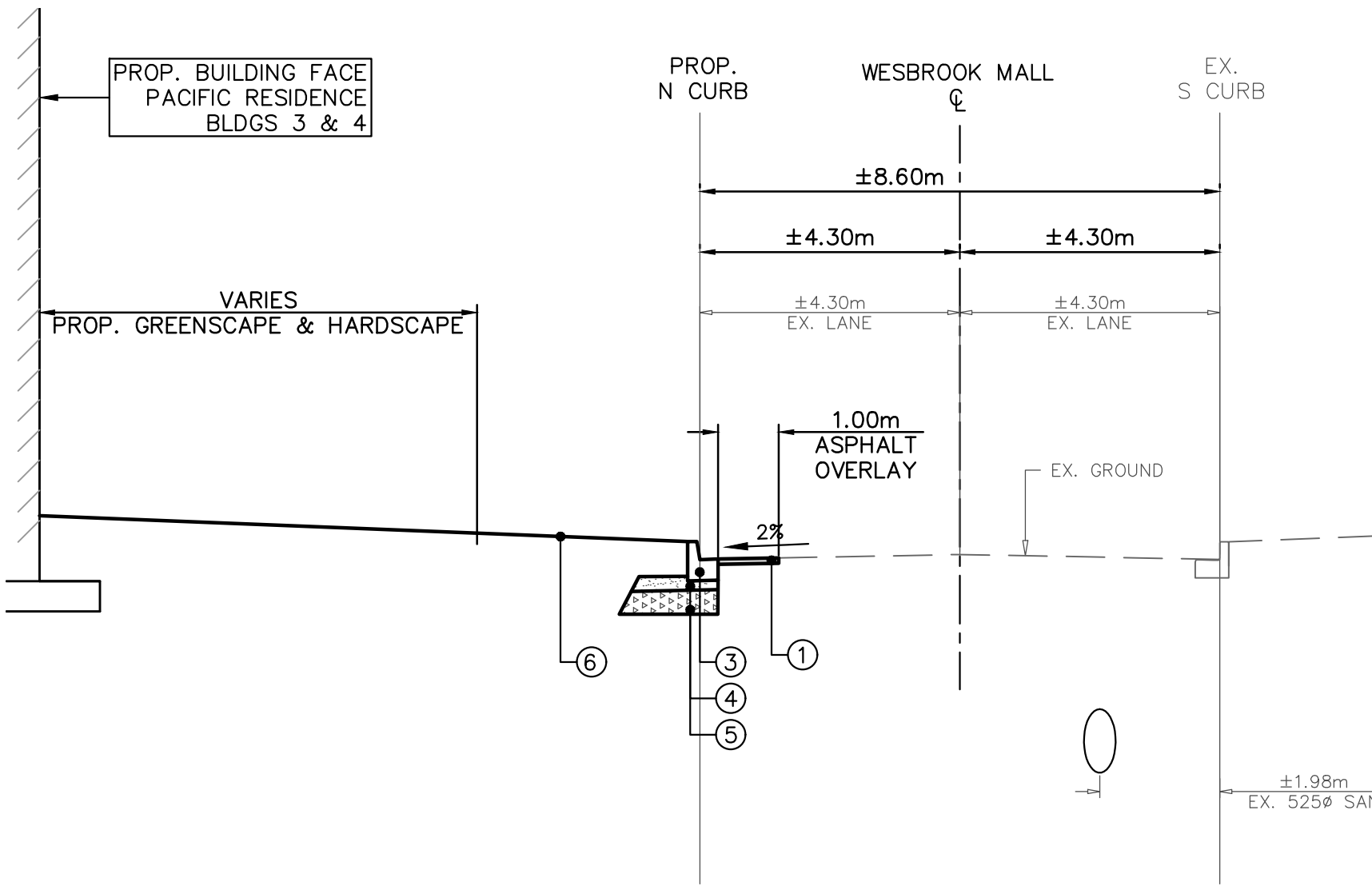
B. ROADWORKS NOTES

- ALL WORKS SHALL BE IN ACCORDANCE WITH THE PLATINUM VERSION OF MMCD (MASTER MUNICIPAL CONSTRUCTION DOCUMENTS) AND CITY OF VANCOUVER SUPPLEMENTARY SPECIFICATIONS.
- ALL DIMENSIONS AND ELEVATIONS ARE IN METERS UNLESS SPECIFIED OTHERWISE.
- ALL EXCAVATION, FILL PLACEMENT AND COMPACTION TO BE IN ACCORDANCE WITH GEOTECHNICAL CONSULTANTS REPORT.
- ALL SPECIFIED GRADE CHANGES SHALL BE FORMED BY SMOOTH CURVES.

C. STORM SEWER NOTES

- ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT UBC TECHNICAL GUIDELINES AND MMCD SPECIFICATIONS.

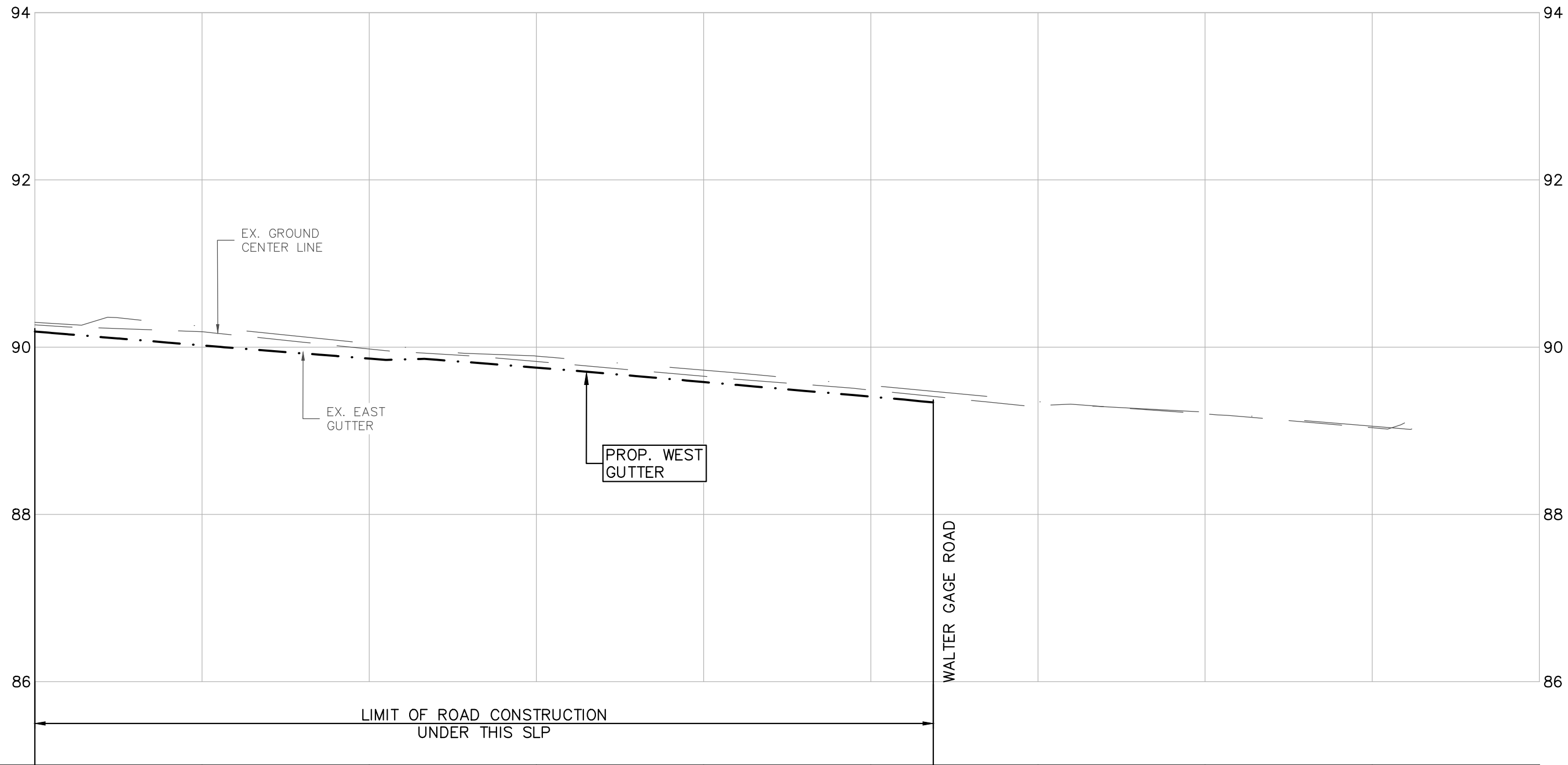
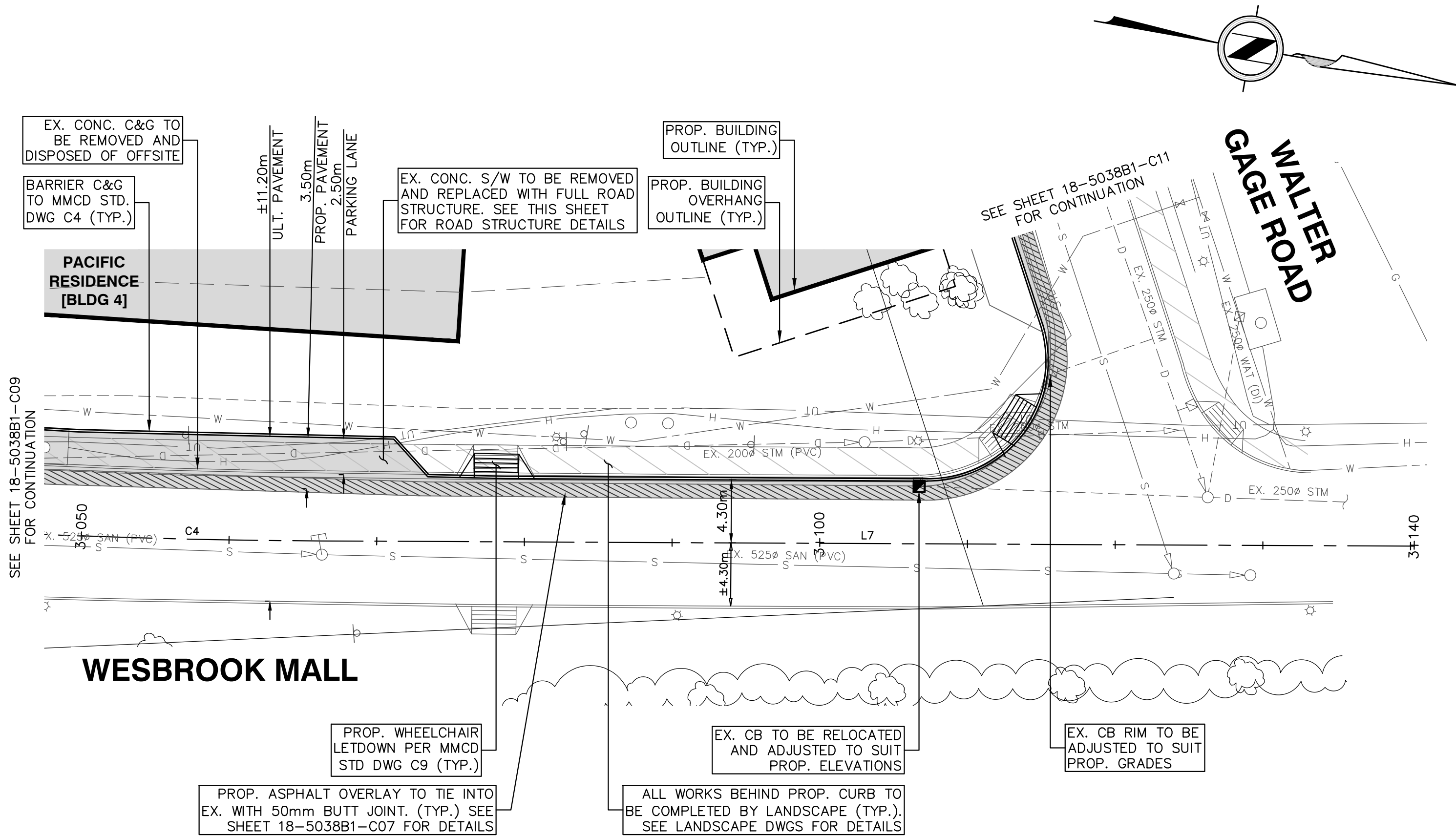
- PIPE BEDDING SHALL BE GRANULAR PIPE BEDDING AND SURROUND MATERIAL CONFORMING TO MMCD CLAUSE 2.7, SECTION 02226.
- PIPE BACKFILL SHALL BE 100mm PIT RUN GRAVEL MATERIAL CONFORMING TO MMCD CLAUSE 2.3, SECTION 02226..
- ALL PIPES UP TO AND INCLUDING 600mmØ PVC PIPE TO UBC SPECIFICATIONS AS FOLLOWS (UNLESS OTHERWISE NOTED):
-150mmØ & SMALLER SDR28
-200mmØ TO 600mm SDR35 TO ASTM 03034 SPECS.
- ALL PIPES SHALL HAVE CLOSED JOINTS.
- BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS FOR PIPE DEPTH AND SLOPE PER SOIL CONDITIONS.
- ALL STORM & SANITARY SEWER MANHOLES TO BE 50mmØ WITH MARKINGS PER UBC REQUIREMENTS UNLESS OTHERWISE NOTED.
- ALL CATCH BASIN LEADS TO TIE-IN TO PROPOSED MAINS.
- ALL MANHOLES TO BE BENCHED UNLESS NOTED OTHERWISE.
- CONTRACTOR TO CONFORM ANY FOUNDATION STABILIZATION REQUIREMENTS OF EXISTING STRUCTURES IN TRENCHING AREA WITH GEOTECHNICAL ENGINEER.
- EXISTING SANITARY AND STORM SERVICE STUBS ARE TO BE CCTV INSPECTED AFTER SHORING. SUBMIT THE CCTV INSPECTION REPORTS AND VIDEOS TO UTILITIES TO ENSURE NO CONSTRUCTION DAMAGE ON EXISTING SERVICES STUBS.



TYPICAL CROSS SECTION – WITHOUT PARKING LANE
WESTBROOK MALL
1:100

TYPICAL ROAD STRUCTURE

- 100mm HOT MIX ASPHALTIC CONCRETE IN TWO LIFTS
- 40mm - 12.5mm UPPER COURSE 1
- 100mm HOT MIX ASPHALTIC CONCRETE IN TWO LIFTS
- 40mm - 12.5mm UPPER COURSE 1
- 60mm - 19.0mm LOWER COURSE 1
- CONCRETE BARRIER OR ROLLOVER CURB & GUTTER AS PER MMCD STD. DWG-C5
- 150mm - 19mm CRUSHED GRANULAR BASE W/ <5% FINES CONTENT
- 200mm - 75mm CRUSHED GRANULAR SUBBASE WITH <5% FINES CONTENT
- GREENSCAPE AND HARDSCAPE BY LANDSCAPE



CENTRELINE ROAD ELEVATIONS	WEST	EXISTING	PROPOSED										
				90.27	90.18	89.98	89.83	89.65	89.49	89.30	89.20	89.04	
PROP. CURB GUTTER ELEV.				90.02	89.75	89.86	89.76	89.58	89.41	89.35	89.22	89.05	
CHAINAGE	3+050			3+060	3+070	3+080	3+090	3+100	3+110	3+120	3+130	3+140	

LEGEND

- FULL PROPOSED ROAD STRUCTURE
- ASPHALT OVERLAY
- PROPOSED CB

NOTICE TO CONTRACTOR

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LEGAL DESCRIPTION .				
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631				
LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD				
REV. NO.	DESCRIPTION	DR	CH	DATE
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019

APLIN MARTIN
ENGINEERING ARCHITECTURE PLANNING SURVEYING

Aplin & Martin Consultants Ltd.
#1818 – 1177 West Hastings Street Vancouver, B.C. V6E 2K3
Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com

CLIENT: **UBC PROPERTIES TRUST**
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT: **PACIFIC RESIDENCES**
STUDENT UNION BOULEVARD AND WESTBROOK MALL

University of British Columbia

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TITLE: **ROAD & STORM WORKS
WESTBROOK MALL
STA. 3+050 TO 3+140**

UBC PROPERTIES TRUST PROJECT No. -
UBC PROPERTIES TRUST DRAWING No. -

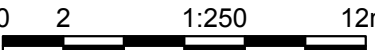
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VERT. 1:50**

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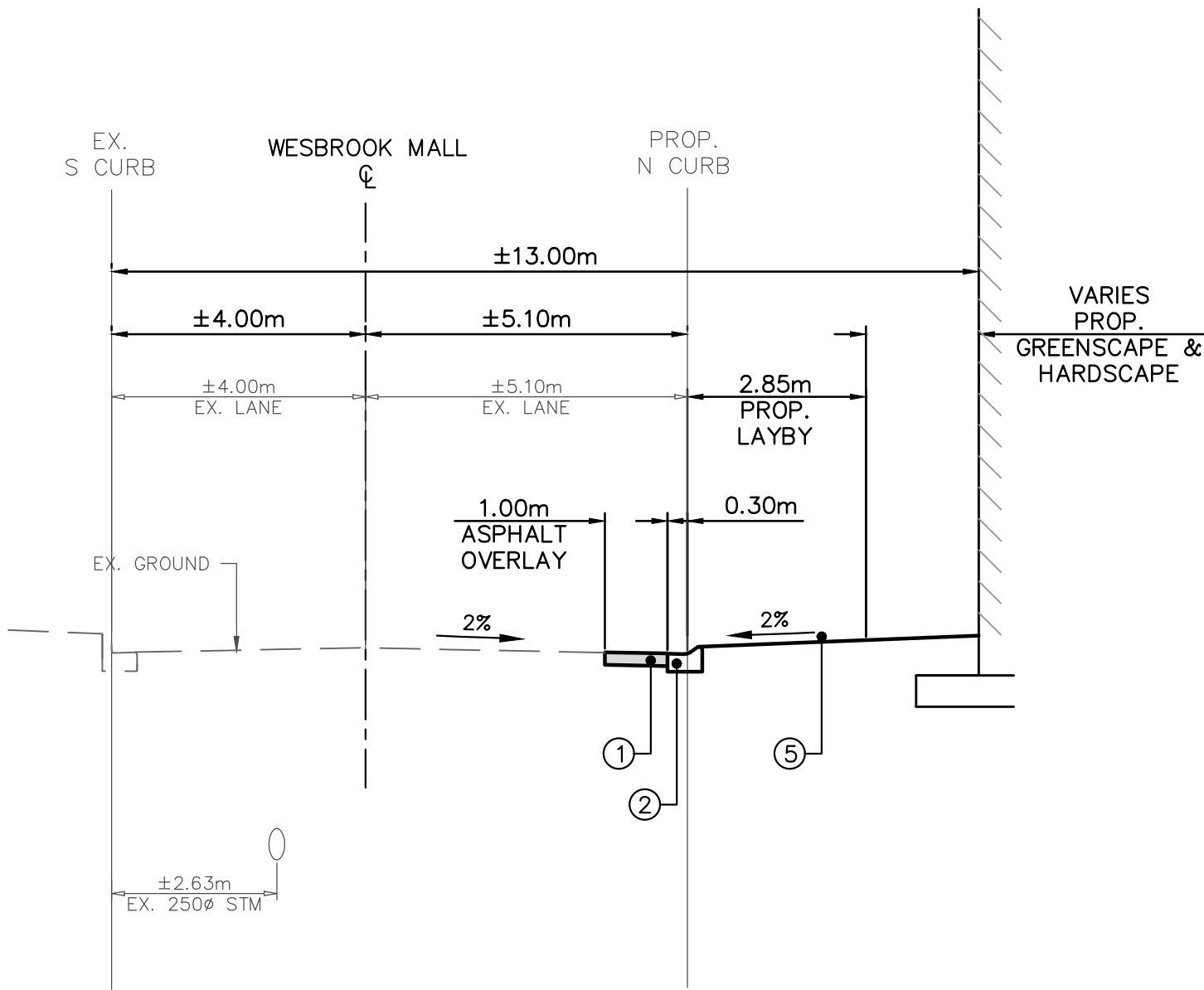
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DRAWING DATE: **MAY, 2019**

SHEET No. **10 OF 23** REV. **01**



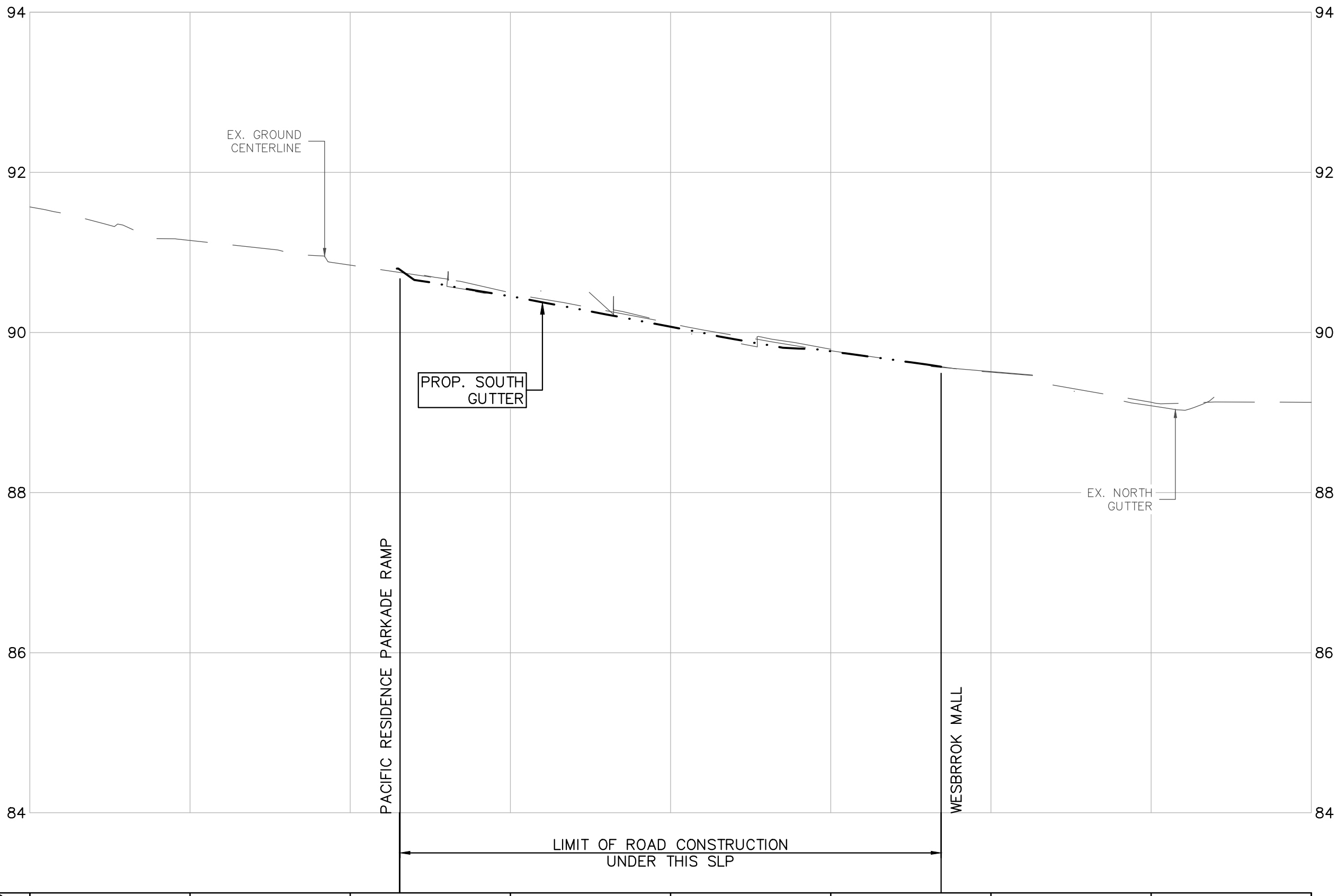
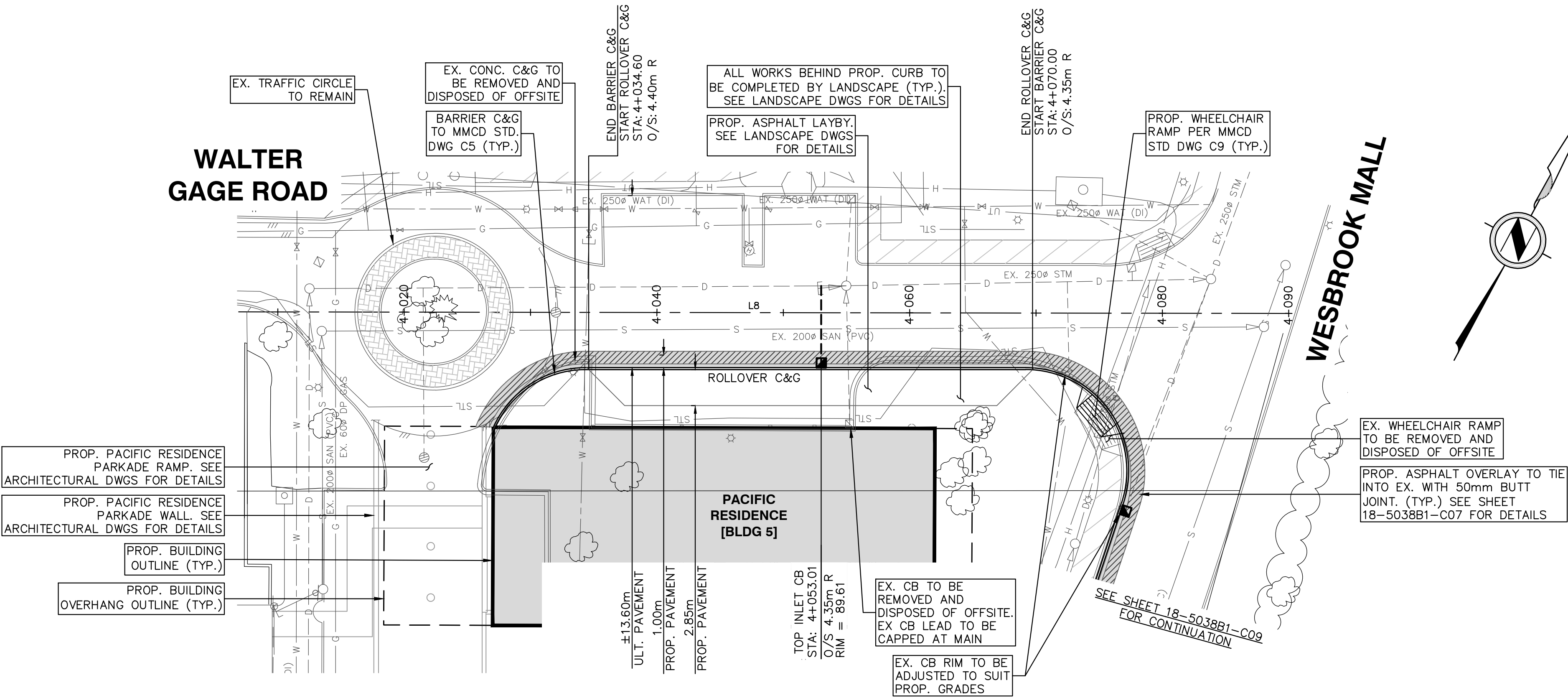
TYPICAL ROAD STRUCTURE

- ① 100mm HOT MIX ASPHALTIC CONCRETE IN TWO LIFTS
- 40mm - 12.5mm UPPER COURSE 1
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- ③ CONCRETE BARRIER OR ROLLOVER CURB & GUTTER AS PER MMCD STD. DWG-C5
- ④ 150mm - 19mm CRUSHED GRANULAR BASE W/ <5% FINES CONTENT
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- ⑥ GREENSCAPE AND HARDSCAPE BY LANDSCAPE

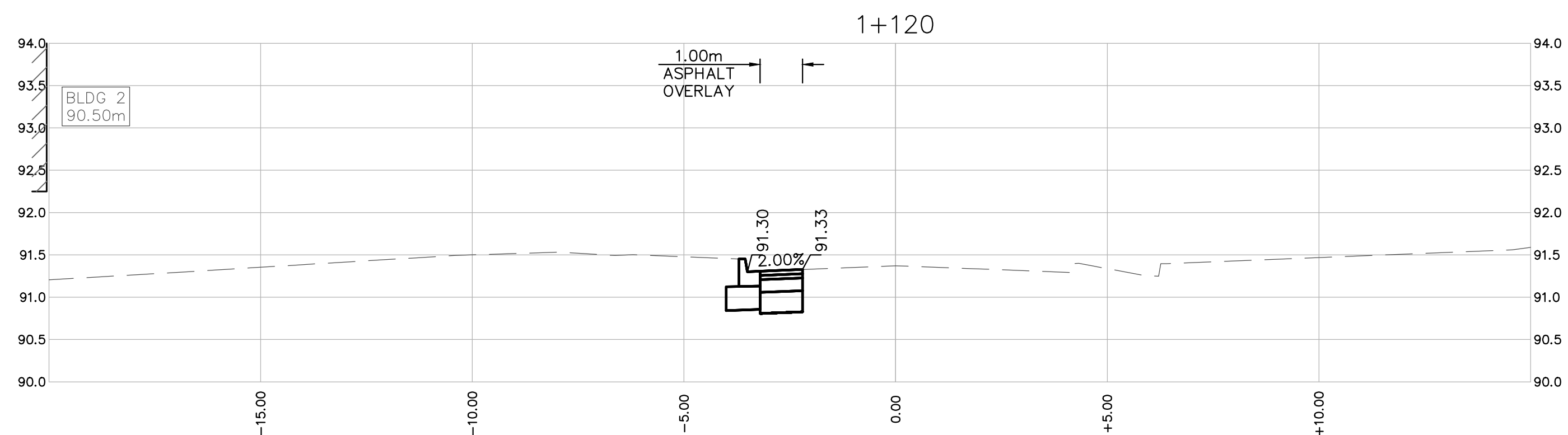
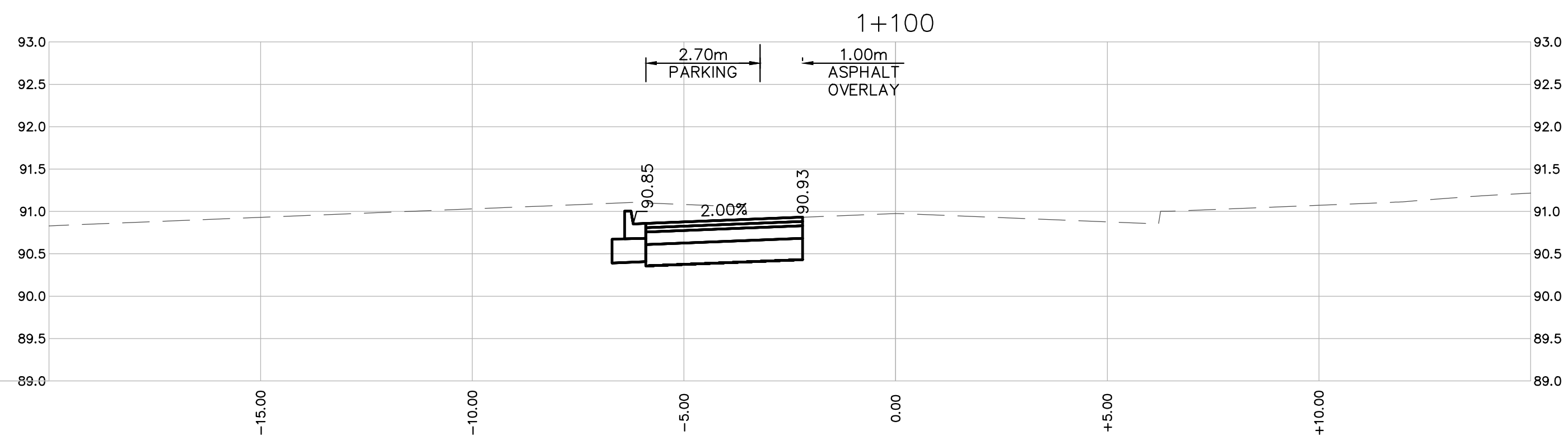
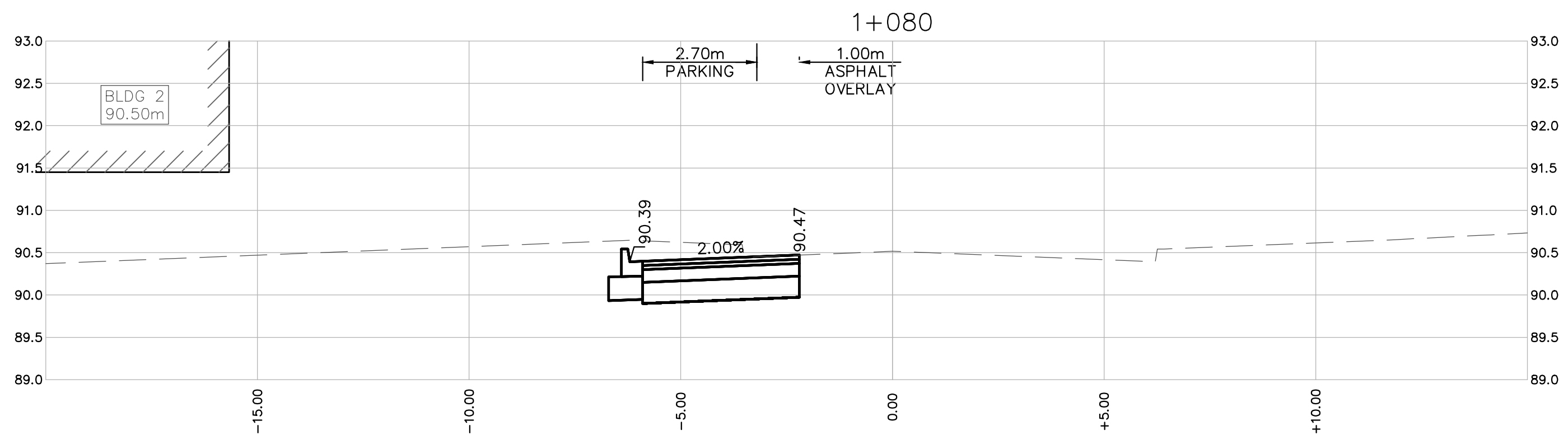
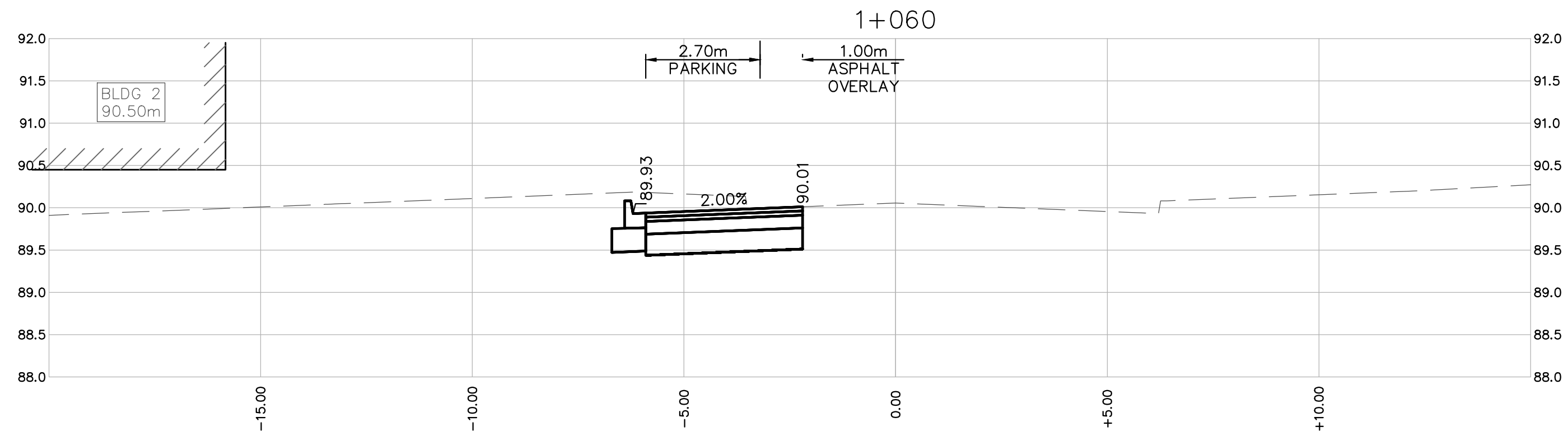
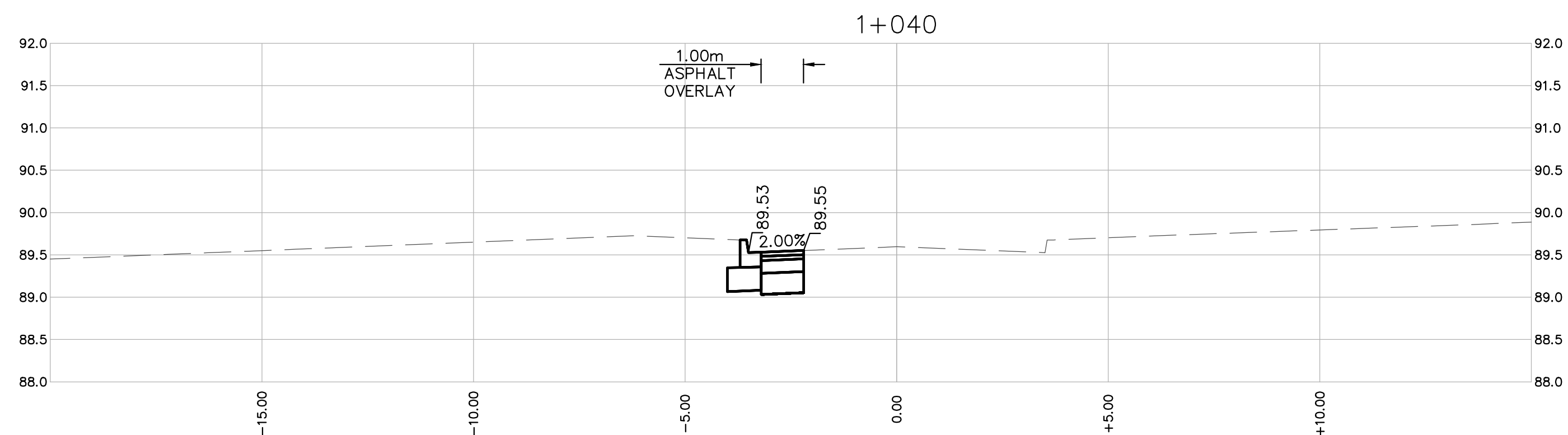
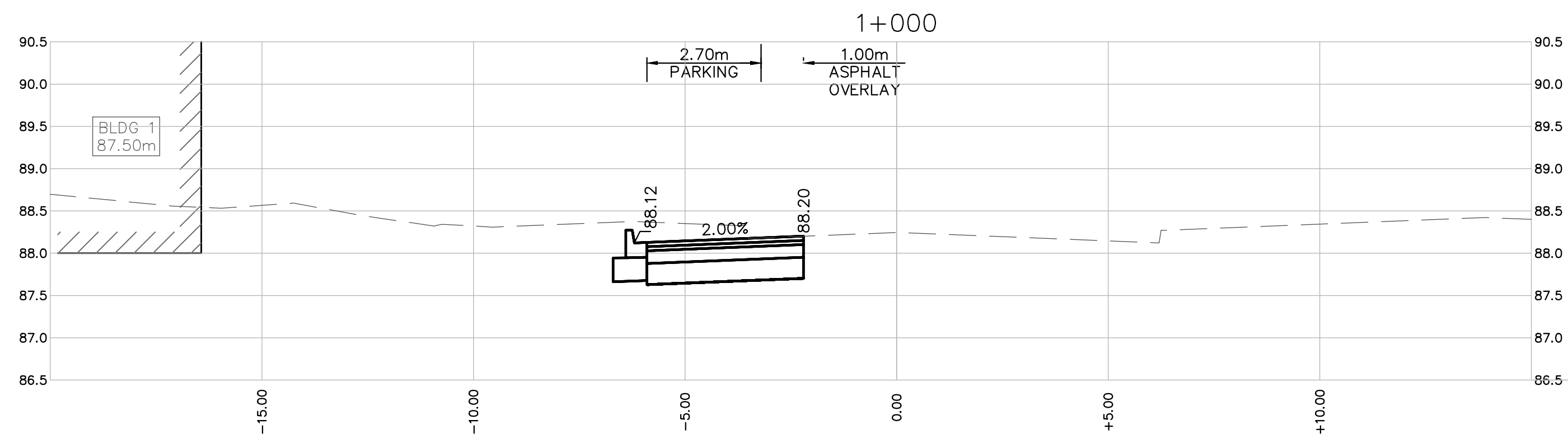
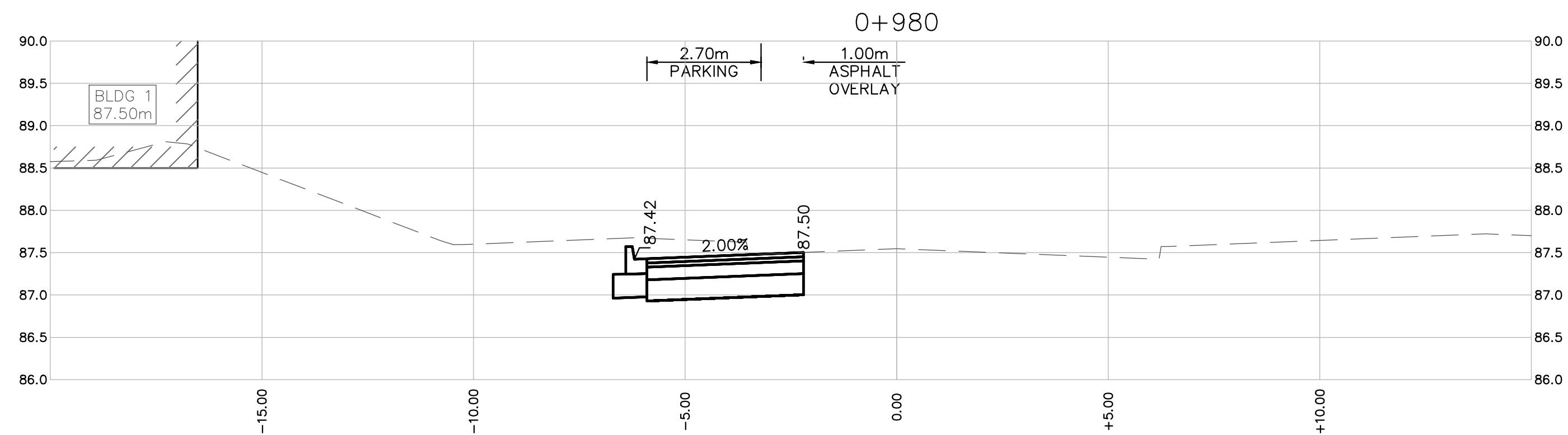
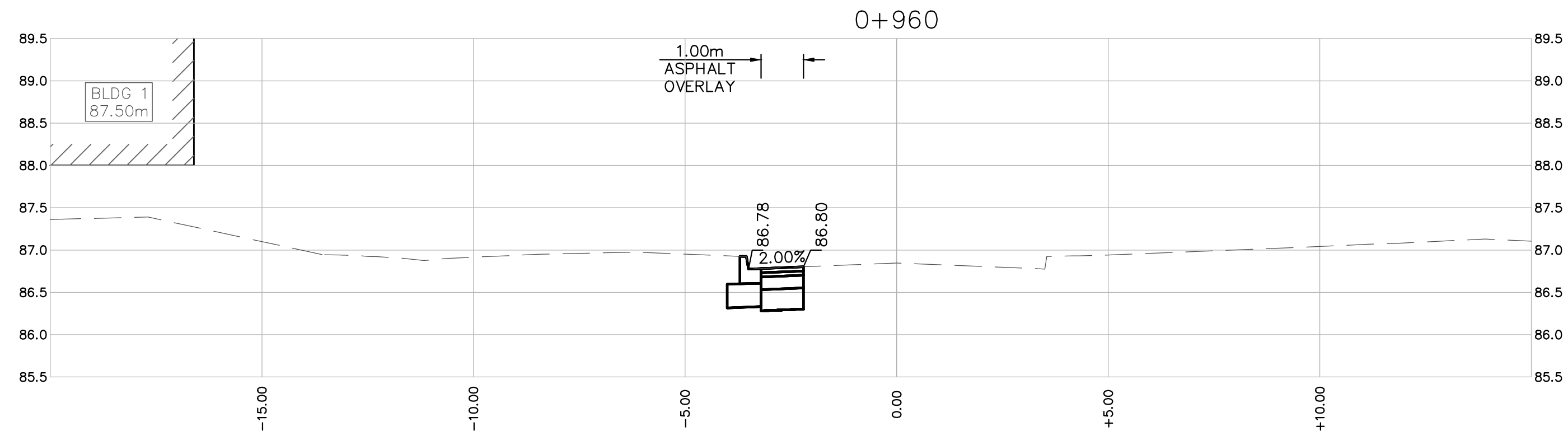


TYPICAL CROSS SECTION
WALTER GAGE ROAD
1:100

WALTER GAGE									
NUMBER	LENGTH	AZIMUTH	START STA.	END STA.	START NORTHING	START EASTING	END NORTHING	END EASTING	RADIUS
L8	90.000	62° 01' 26.32"	4+000.000	4+090.000	5459780.636	482088.301	5459822.856	482167.784	



CENTRELINE ROAD ELEVATIONS		EXISTING		PROPOSED		NORTH		SOUTH		PROPOSED	
PROP. CURB GUTTER ELEV.		NORTH		SOUTH		PROPOSED		NORTH		SOUTH	
CHAINAGE		4+010		4+020		4+030		4+040		4+050	



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LEGAL DESCRIPTION .					
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631					
LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD					
REV. NO.	DESCRIPTION	DR	CH	DATE	APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS

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CLIENT:
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SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of British Columbia

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TITLE:
ROAD SECTIONS
STUDENT UNION
BOULEVARD

UBC PROPERTIES TRUST PROJECT No. -
UBC PROPERTIES TRUST DRAWING No. -

SCALE:
HORZ. 1:250
VERT. 1:50

A&M DRAWING No.
18-5038B1-C12

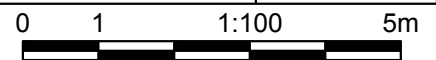
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DRAWN: KAP APPR: DRS

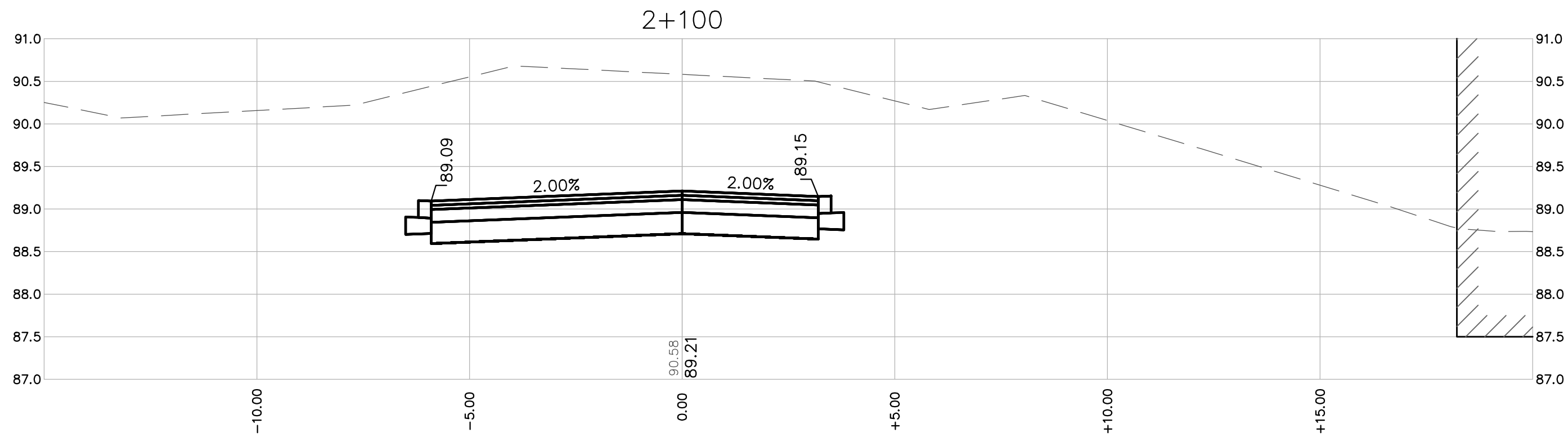
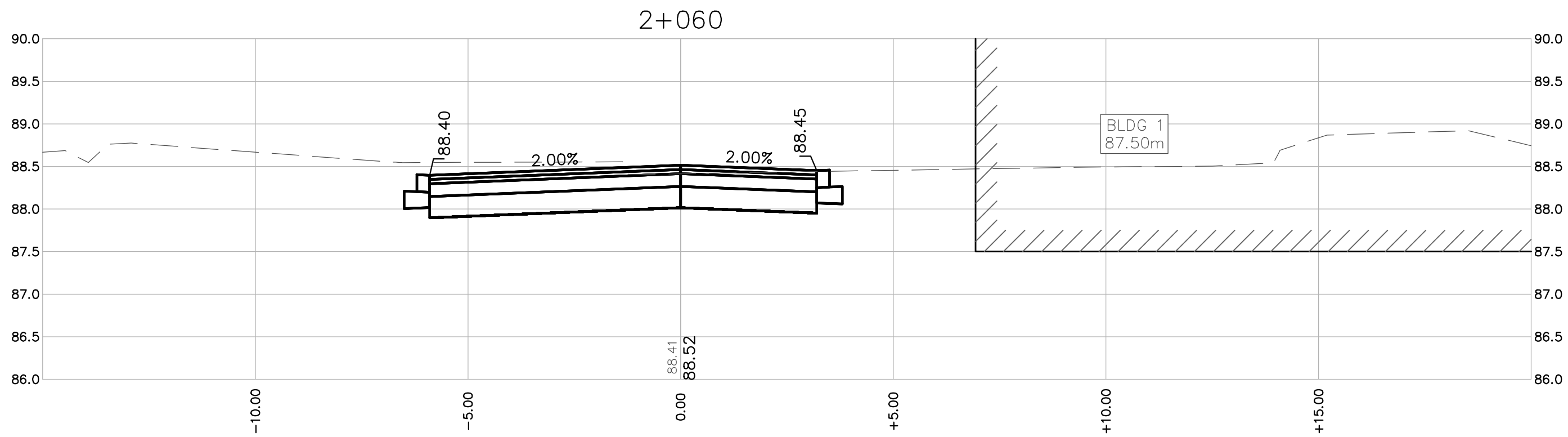
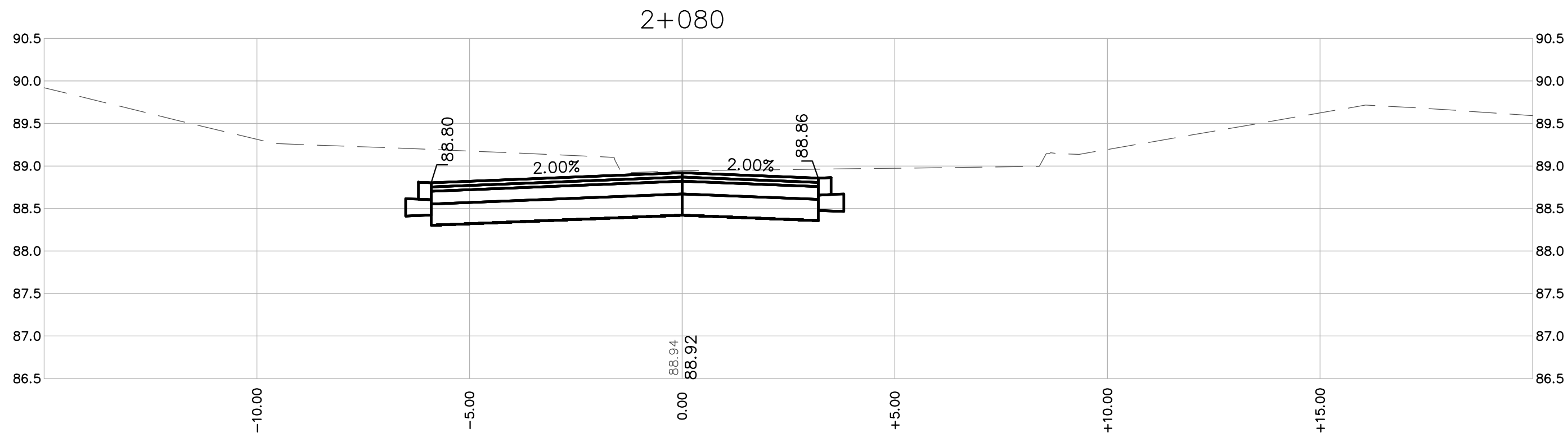
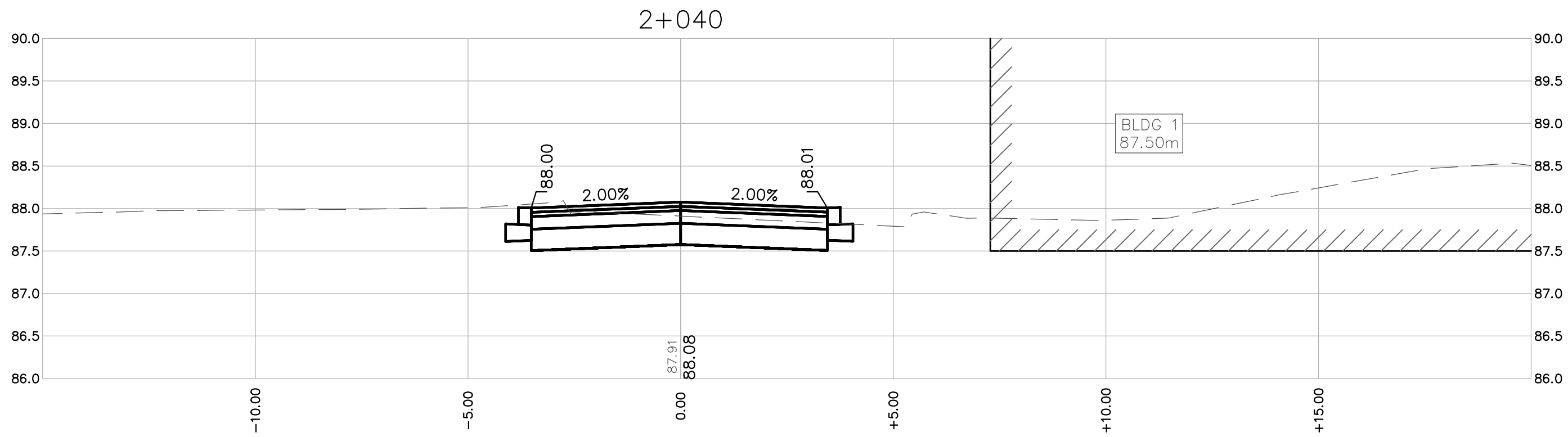
A & M FILE:
18-5038B

DRAWING DATE:
MAY, 2019

SHEET No.
12 OF 23

REV.
01





NOTICE TO CONTRACTOR

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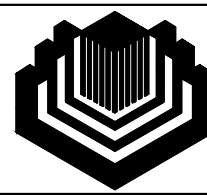
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LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD					
REV. NO.	DESCRIPTION	DR	CH	DATE	APP
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PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

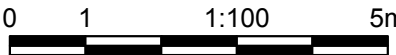
University of British Columbia

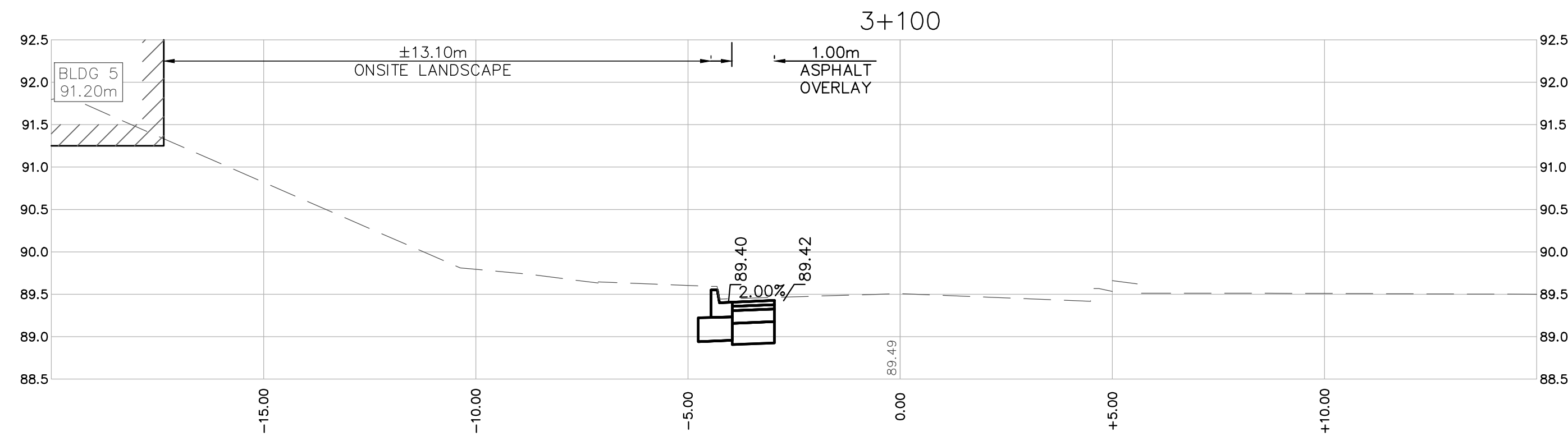
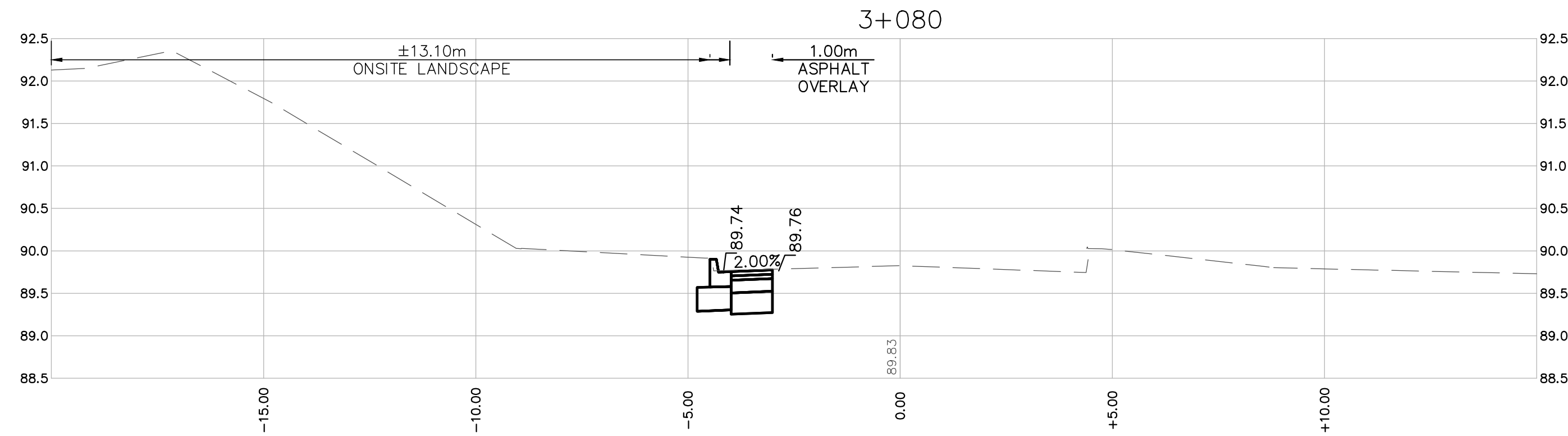
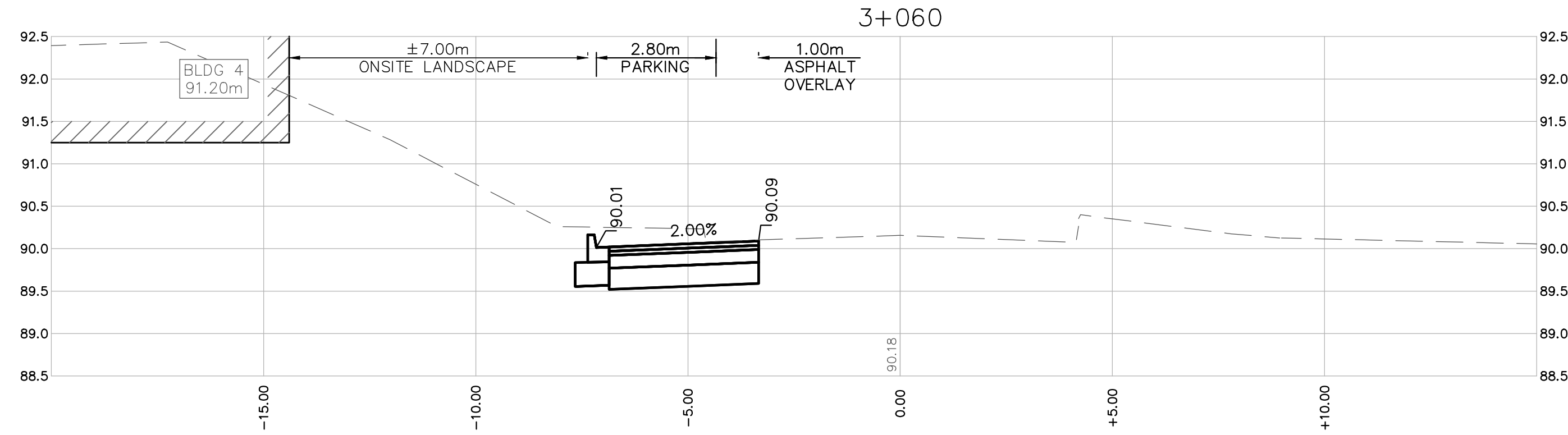
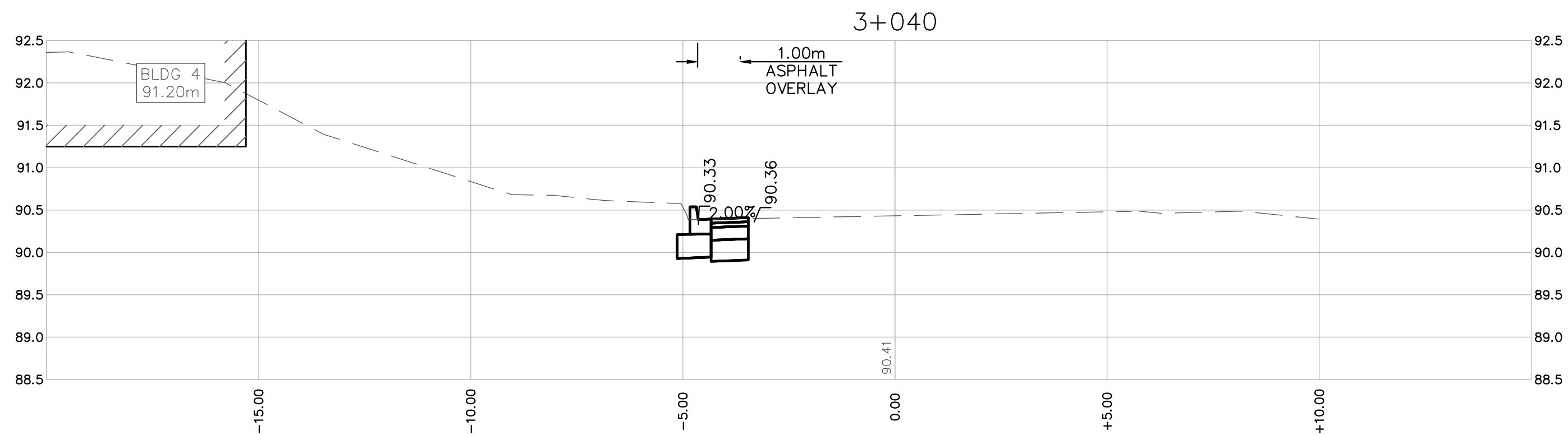
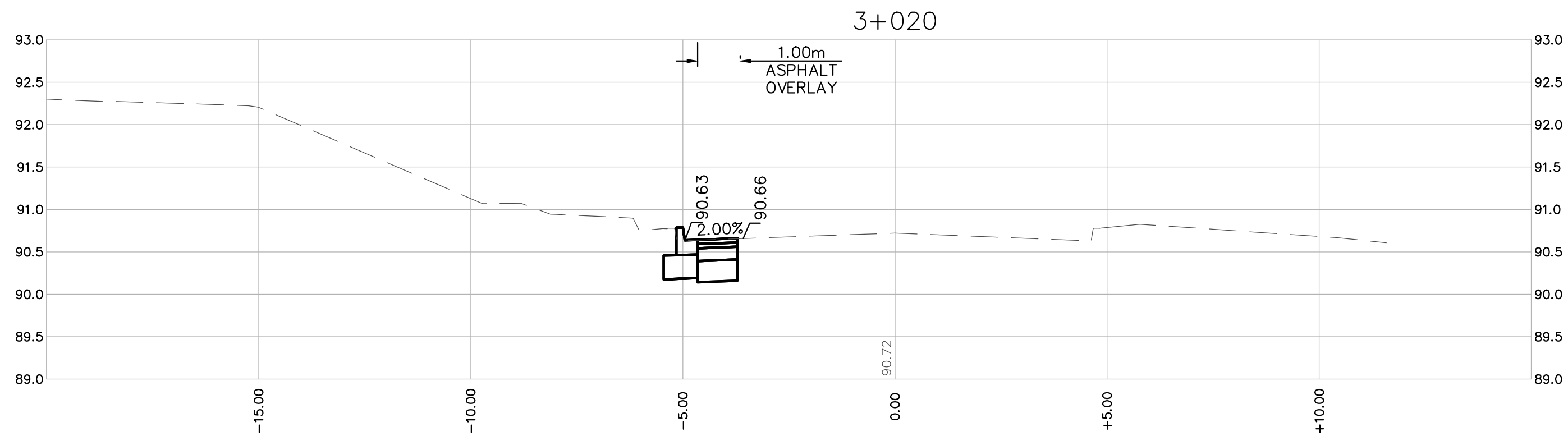
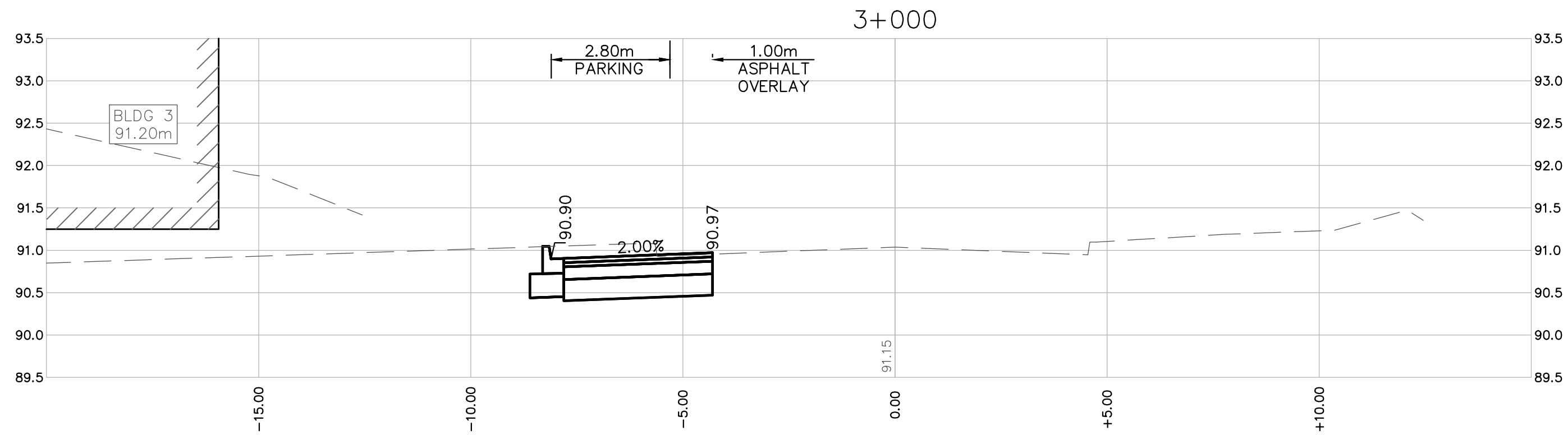
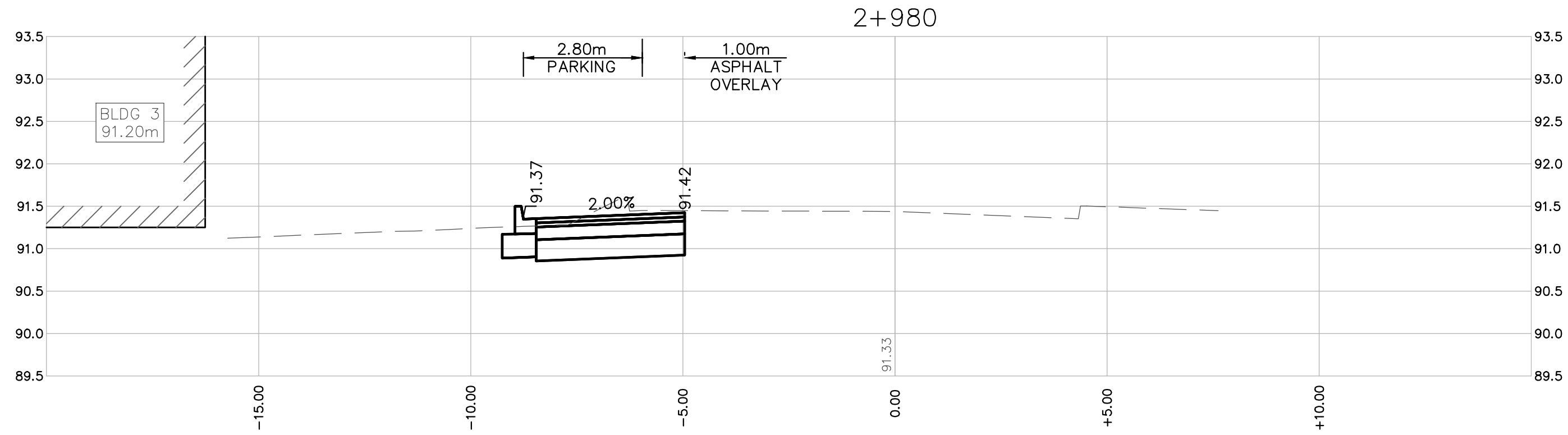


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ROAD SECTIONS	
ROAD A	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:250
UBC PROPERTIES TRUST DRAWING No.	VERT. 1:50
-	A&M DRAWING No.
	18-5038B1-C13

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE:	
18-5038B	
DRAWING DATE:	
MAY, 2019	
SHEET No.	REV.
13 OF 23	01





NOTICE TO CONTRACTOR

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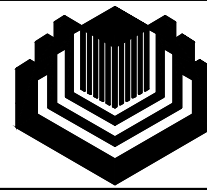
LEGAL DESCRIPTION .					
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631					
LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD					
REV. NO.	DESCRIPTION	DR	CH	DATE	APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS

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SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

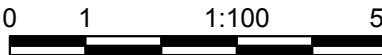
PROJECT: **PACIFIC RESIDENCES**
STUDENT UNION BOULEVARD AND WEBBROOK MALL

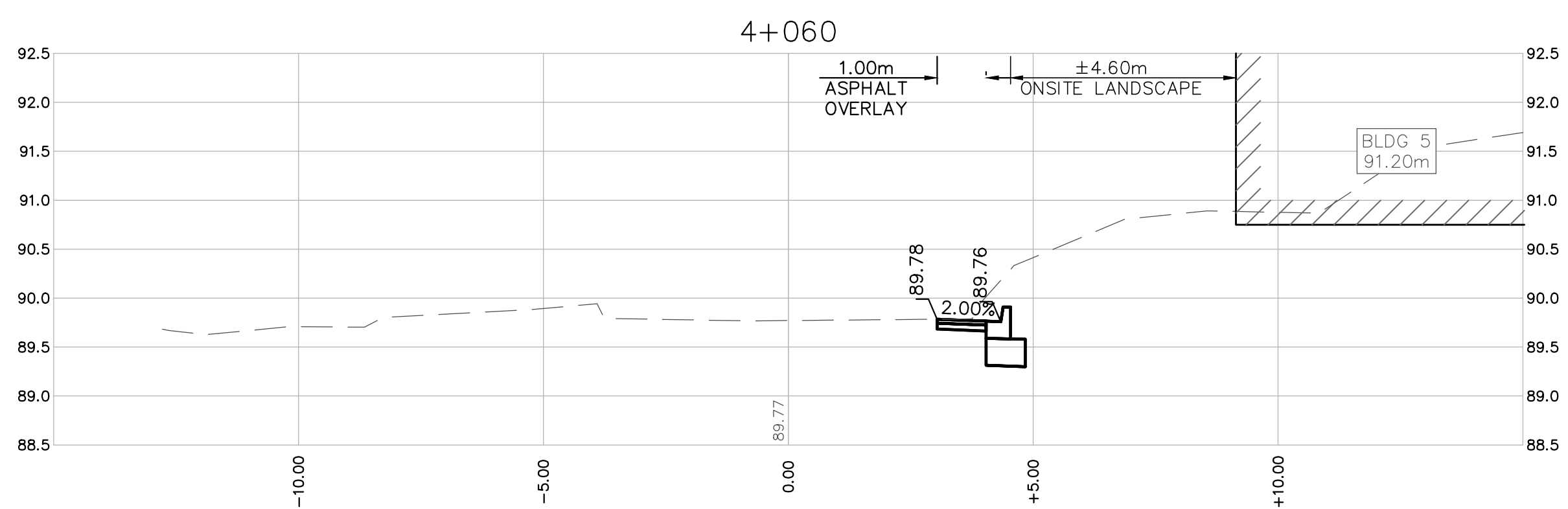
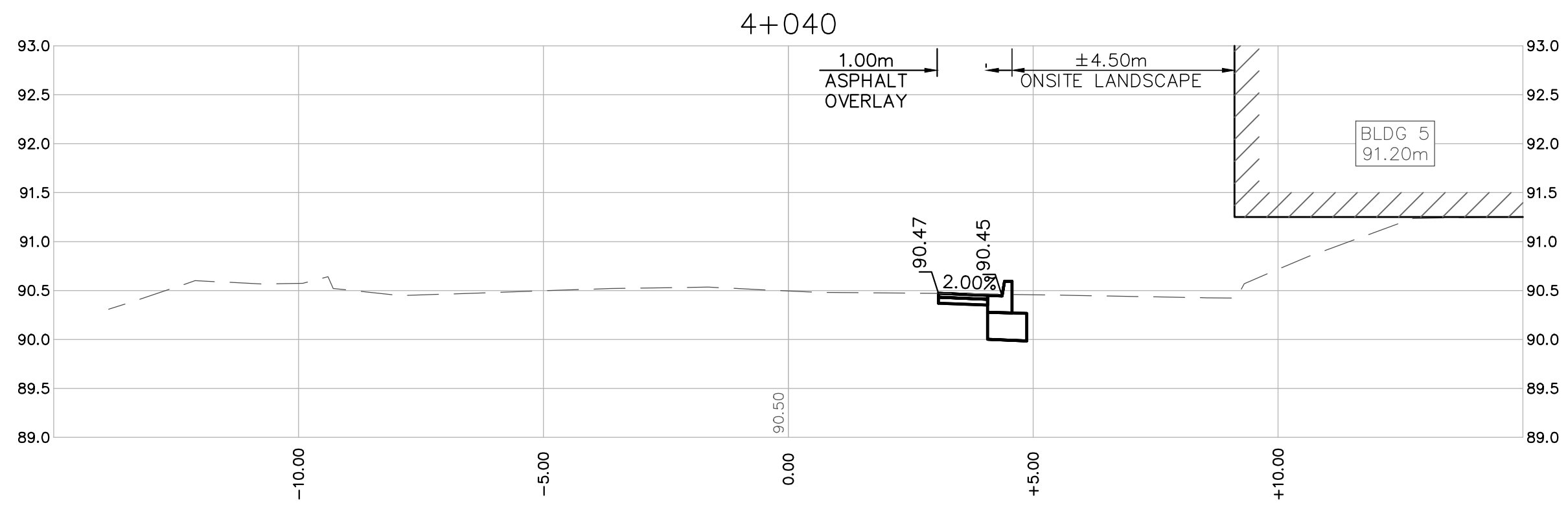


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ROAD SECTIONS WEBBROOK MALL	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:250
UBC PROPERTIES TRUST DRAWING No.	VERT. 1:50
-	A&M DRAWING No.
	18-5038B1-C14

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 14 OF 23	REV. 01





NOTICE TO CONTRACTOR

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REV. NO.	DESCRIPTION	DR	CH	DATE	APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS



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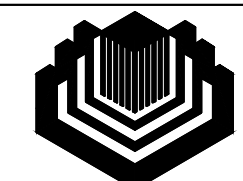
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CLIENT:

UBC PROPERTIES TRUST

SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8

604 731 3103



PROJECT:

PACIFIC RESIDENCES

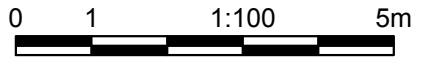
STUDENT UNION BOULEVARD AND WESBROOK MALL



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TITLE:	
ROAD SECTIONS WALTER GAGE ROAD	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:250
UBC PROPERTIES TRUST DRAWING No.	VERT. 1:50
-	18-5038B1-C15



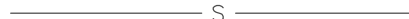









DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 15 OF 23	REV. 01

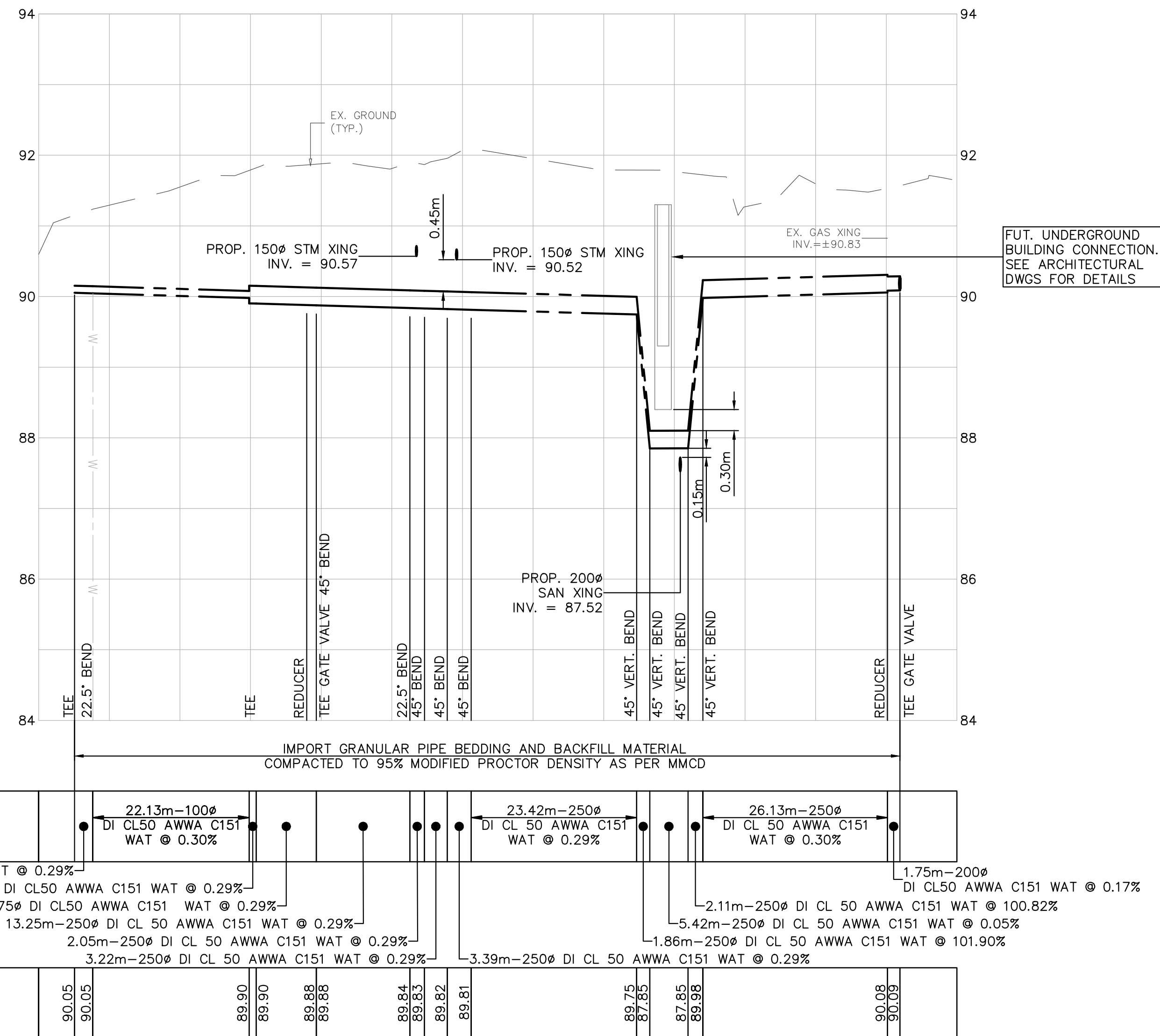


A. GENERAL NOTES

- A. WATERWORKS NOTES:

- ### LEGEND

	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	EX. WAT TO BE REMOVED/ABANDONED
	PROP. WAT
	CROSSING LOCATION
	FUT. WAT

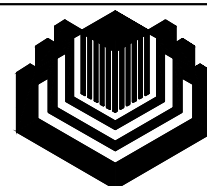


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TITLE: WATERWORKS ROW		DESIGN: KAP	CHECK: DRS
		DRAWN: KAP	APPR: DRS
		A. & M. FILE: 18-5038B	
UBC PROPERTIES TRUST PROJECT No. -		DRAWING DATE: MAY, 2019	
SCALE: HORIZ. 1:500 VERT. N/A			
UBC PROPERTIES TRUST DRAWING No. -	A&M DRAWING No. 18-5038B1-C16	SHEET No. 16 OF 23	REV. 01

LEGAL DESCRIPTION						
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD						
REV. NO.	DESCRIPTION	DR	CH	DATE	APP	
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS	

CLIENT:	UBC PROPERTIES TRUST SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8 604 731 3103
PROJECT:	PACIFIC RESIDENCES STUDENT UNION BOULEVARD AND WESBROOK MALL



The location of existing underground utilities are shown in an approximate way only & have not been independently verified by the owner & its representative. The contractor shall determine the exact location of all existing utilities before commencing work, and agrees to be fully responsible for any and all damages which might be occasioned by the contractor's failure to exactly locate and preserve any and all underground utilities.

ENGINEERING DRAWING NOTES

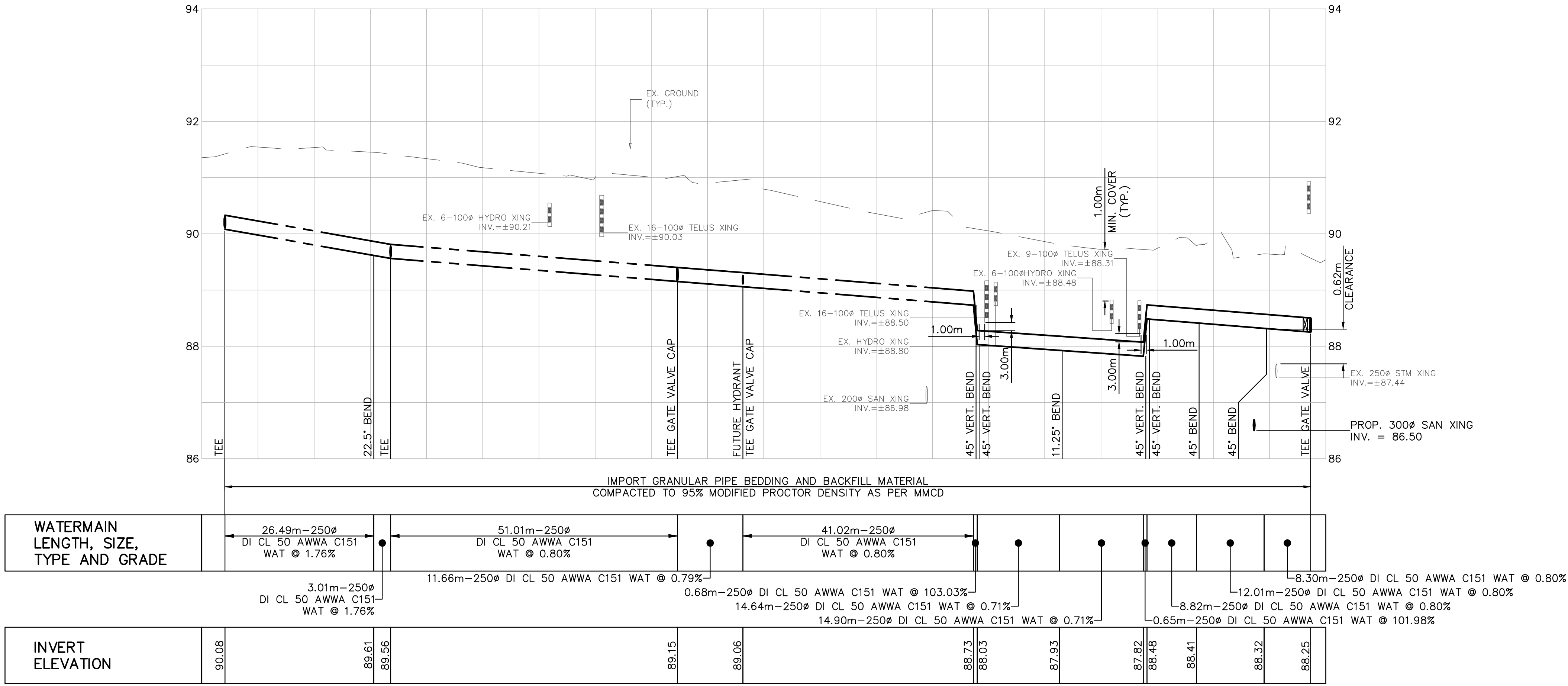
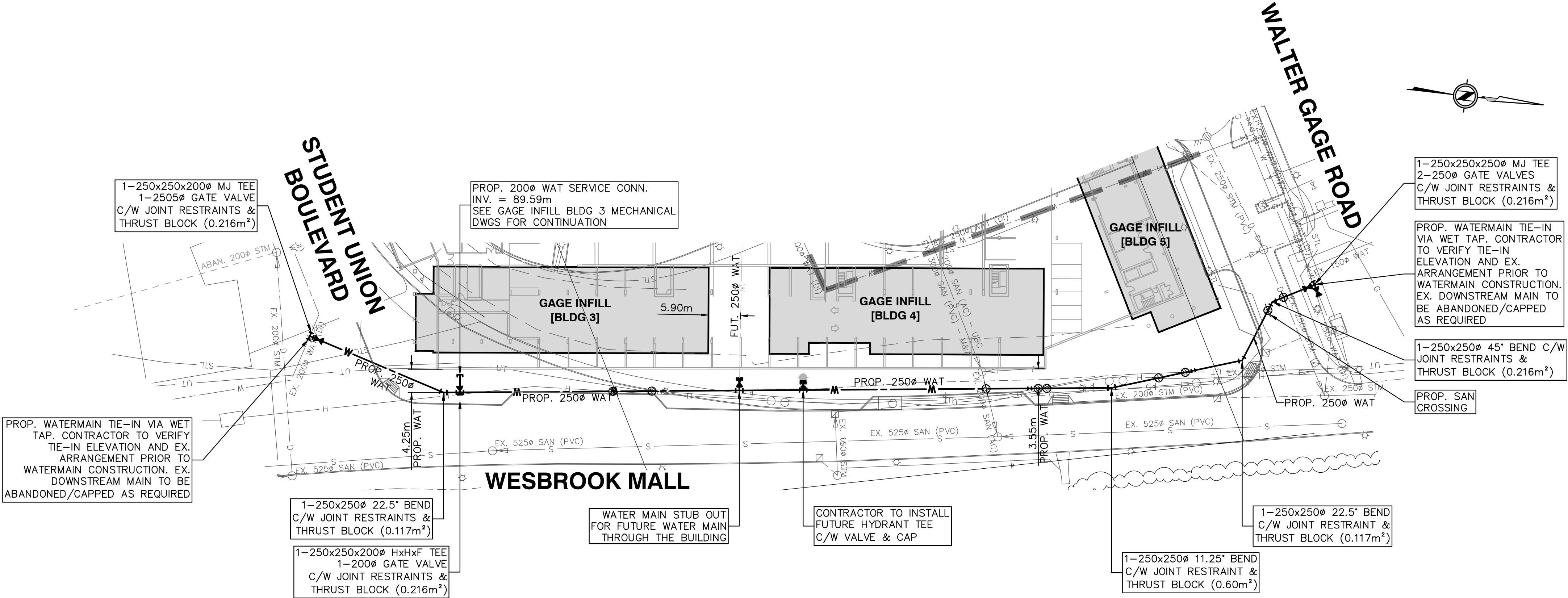
A. GENERAL NOTES

1. CALL BC ONE-CALL 24 HOURS PRIOR TO CONSTRUCTION.
2. PROPOSED UTILITY WORKS TO BE IN ACCORDANCE WITH MMCD STD DWG G4.
3. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DISCIPLINE'S DRAWINGS.
4. ALL EXISTING UTILITIES TO BE ABANDONED ARE TO BE CAPPED AT BOTH ENDS UNLESS REMOVED ENTIRELY.

A. WATERWORKS NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT UBC AND MMCD SPECIFICATIONS.
2. WATERMAIN TO HAVE MIN 1.0m COVER.
3. PIPE BEDDING SHALL BE GRANULAR PIPE BEDDING AND SURROUND MATERIAL CONFORMING TO MMCD CLAUSE 2.7, SECTION 02226.
4. PIPE BACKFILL SHALL BE 100mm PIT RUN GRAVEL MATERIAL CONFORMING TO MMCD CLAUSE 2.3, SECTION 02226..
5. ALL PIPE TO BE CLASS 50 DUCTILE IRON MANUFACTURED TO AWWA C151; CEMENT MORTAR LINED TO AWWA C104 AND COATED 1 MIL. THICK ASPHALT.
6. PRESSURE AND BACTERIOLOGICAL TESTING TO BE DONE BY CONTRACTOR PRIOR TO TIE-IN AND ACCEPTANCE BY UBC UTILITIES. ASSUMED TEST PRESSURE OF 1380 kPa (200 psi).
7. WATER MAIN OR SERVICE PIPE WALLS TO HAVE WRAPPED JOINTS PER LOCAL & MUNICIPAL HEALTH STANDARDS IF CLOSER THAN 0.5m VERTICAL OR 3.0m HORIZONTAL TO SANITARY OR STORM MAIN PIPE WALLS.
8. VALVE, VALVE BOXES COMPONENTS & HYDRANTS TO BE PER UCS TECHNICAL GUIDELINES SECTION 02660, CLAUSE 2.7 AND 2.8. CIRCULAR VALVE BOXES SHALL BE NELSON TYPE.
9. ALL WATER VALVE KNUCKLES TO BE RAISED TO 0.6m BELOW FINAL GRADE.
10. ALL WATER MAIN JOINTS TO BE RESTRAINED WITH THRUST BLOCK.
11. ALL WATER MAIN FITTINGS TO BE INSTALLED WITH JOINT RESTRAINTS & THRUST BLOCK.
12. ALL TESTING TO BE DONE AND APPROVED BEFORE BACKFILLING PIPE.
13. WHERE CONTROLLED DENSITY FILL (CDF) OR CONCRETE IS USED, 6 MIL POLU BARRIER TO BE PLACED BETWEEN CDF/CONCRETE AND WATER MAIN/FITTINGS.

LEGEND	
	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	EX. WAT TO BE REMOVED/ABANDONED
	PROP. WAT
	CROSSING LOCATION



NOTICE TO CONTRACTOR

IT IS THE RESPONSIBILITY OF THE CONTRACTOR'S SURVEYOR TO VERIFY THAT ALL LEGAL SURVEY DIMENSIONS SHOWN ON THE ENGINEERS DRAWINGS AGREE WITH THOSE ON THE REGISTERED LEGAL SURVEY PLAN. SHOULD THERE BE ANY DISCREPANCIES, THEN IMMEDIATELY NOTIFY THE ENGINEER OF RECORD

LEGAL DESCRIPTION .				
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD				
REV. NO.	DESCRIPTION	DR	CH	DATE
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019

APLIN MARTIN
ENGINEERING ARCHITECTURE PLANNING SURVEYING

Aplin & Martin Consultants Ltd.
#1818 - 1177 West Hastings Street Vancouver, B.C. V6E 2K3
Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com

CLIENT:
UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of British Columbia

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TITLE:
WATERWORKS
WESBROOK MALL

UBC PROPERTIES TRUST PROJECT No. -
UBC PROPERTIES TRUST DRAWING No. -

SCALE:
HORZ. 1:500
VERT. N/A
A&M DRAWING No. **18-5038B1-C17**

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 17 OF 23	REV. 01

ENGINEERING DRAWING NOTES

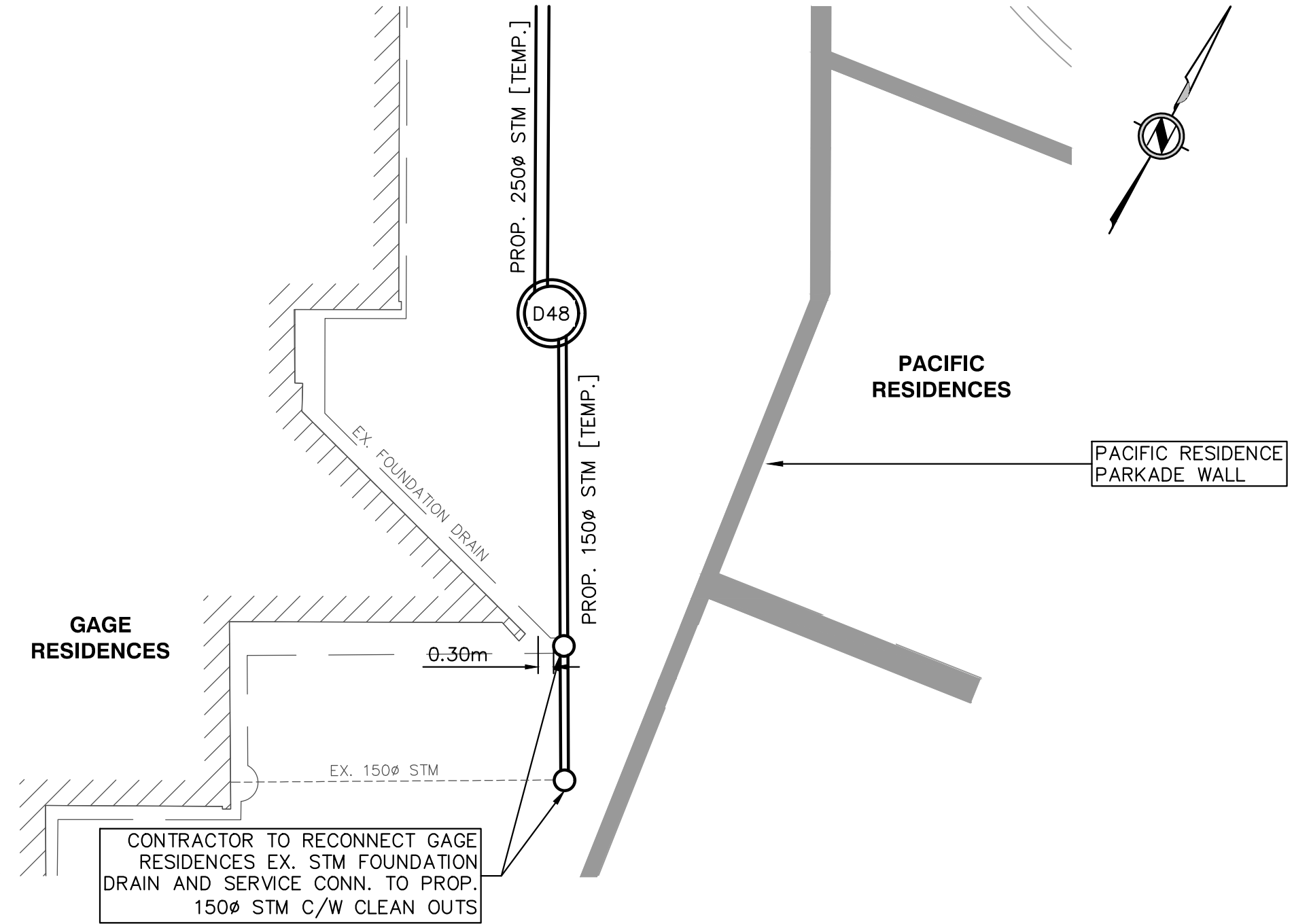
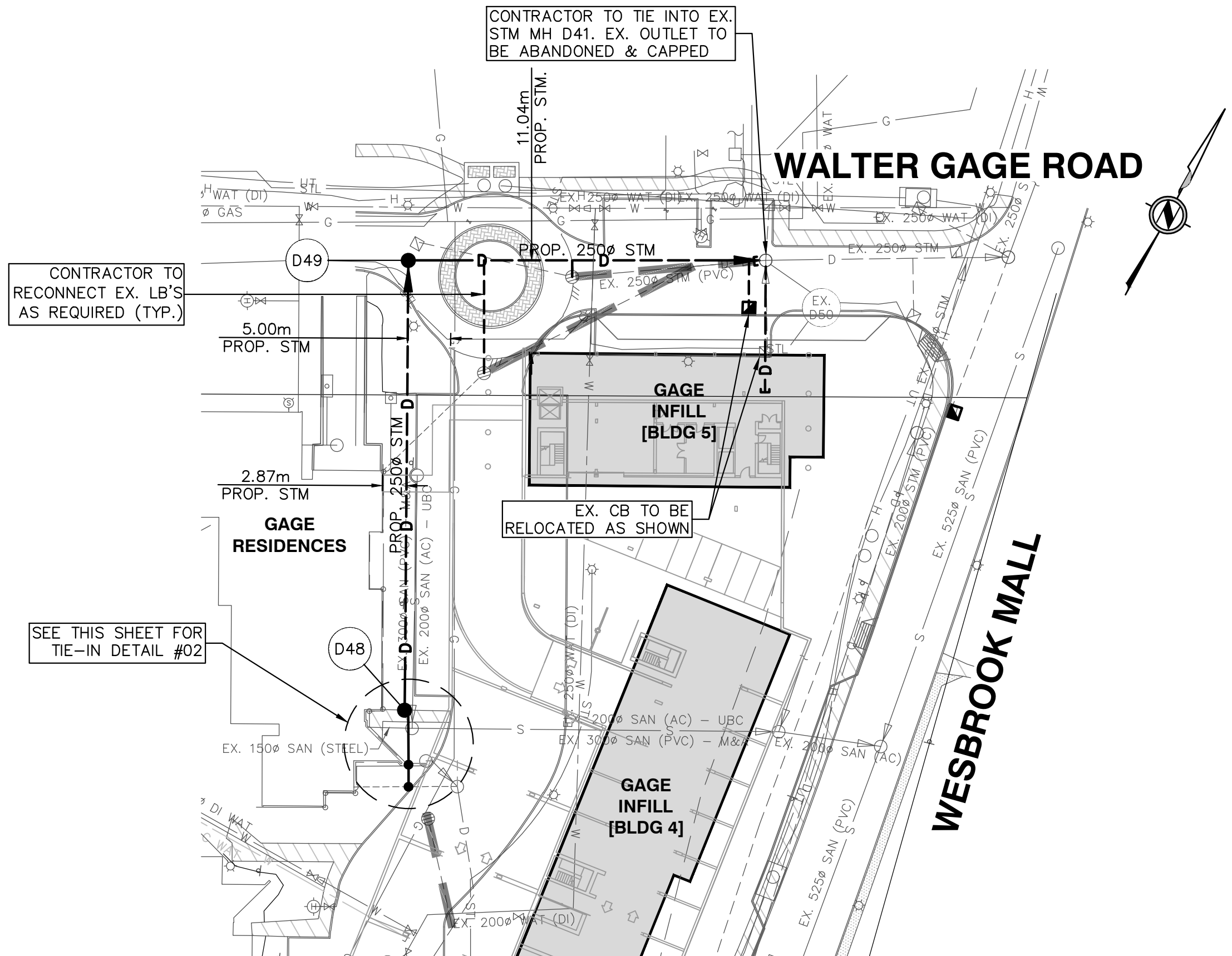
A. GENERAL NOTES

1. CALL BC ONE-CALL 24 HOURS PRIOR TO CONSTRUCTION.
2. PROPOSED UTILITY WORKS TO BE IN ACCORDANCE WITH MMCD STD DWG G4.
3. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DISCIPLINE'S DRAWINGS.
4. ALL EXISTING UTILITIES TO BE ABANDONED ARE TO BE CAPPED AT BOTH ENDS UNLESS REMOVED ENTIRELY.

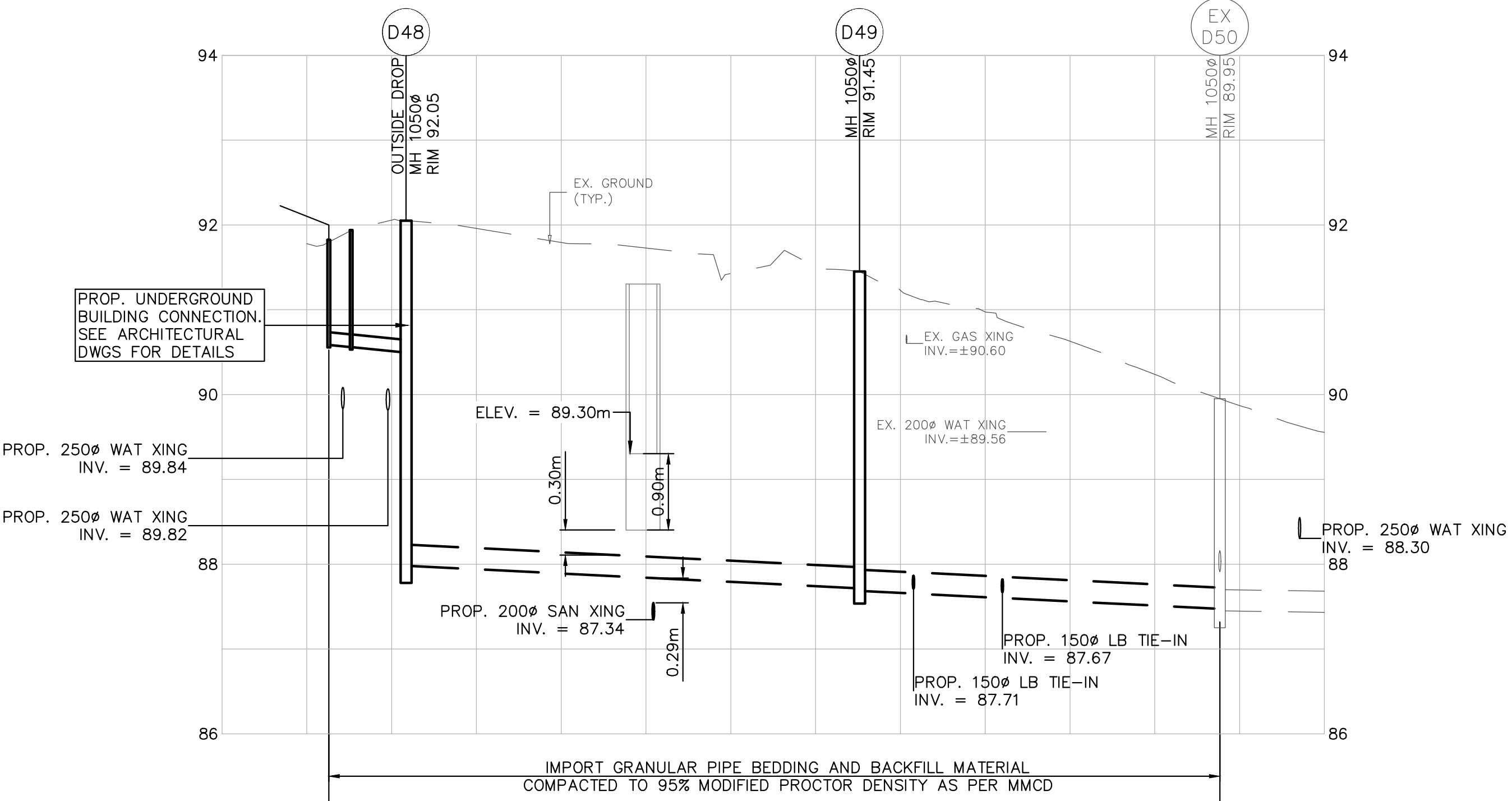
B. STORM & SANITARY SEWER NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT UBC AND MMCD SPECIFICATIONS.
2. PIPE BEDDING SHALL BE GRANULAR PIPE BEDDING AND SURROUND MATERIAL CONFORMING TO MMCD CLAUSE 2.7, SECTION 02226.
3. PIPE BACKFILL SHALL BE 100mm PIT RUN GRAVEL MATERIAL CONFORMING TO MMCD CLAUSE 2.3, SECTION 02226..
4. ALL PIPES UP TO AND INCLUDING 600mmØ PVC PIPE TO UBC SPECIFICATIONS AS FOLLOWS (UNLESS OTHERWISE NOTED):
- 150mmØ & SMALLER SDR28
 - 200mmØ TO 600mm SDR35 TO ASTM 03034 SPECS.
5. ALL PIPES SHALL HAVE CLOSED JOINTS.
6. PIPE TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS FOR PIPE DEPTH AND SLOPE PER SOIL CONDITIONS.
7. ALL STORM & SANITARY SEWER MANHOLES TO BE 150mmØ WITH MARKINGS PER UBC REQUIREMENTS UNLESS OTHERWISE NOTED.
8. ALL CATCH BASIN LEADS TO TIE-IN TO PROPOSED MAINS.
9. ALL MANHOLES TO BE BENCHED UNLESS NOTES OTHERWISE.
10. CONTRACTOR TO CONFORM ANY FOUNDATION STABILIZATION REQUIREMENTS OF EXISTING STRUCTURES IN TRENCHING AREA WITH GEOTECHNICAL ENGINEER.
11. EXISTING SANITARY AND STORM SERVICE STUBS ARE TO BE CCTV INSPECTED AFTER SHORING. SUBMIT THE CCTV INSPECTION REPORTS AND VIDEOS TO UTILITIES TO ENSURE NO CONSTRUCTION DAMAGE ON EXISTING SERVICES STUBS.

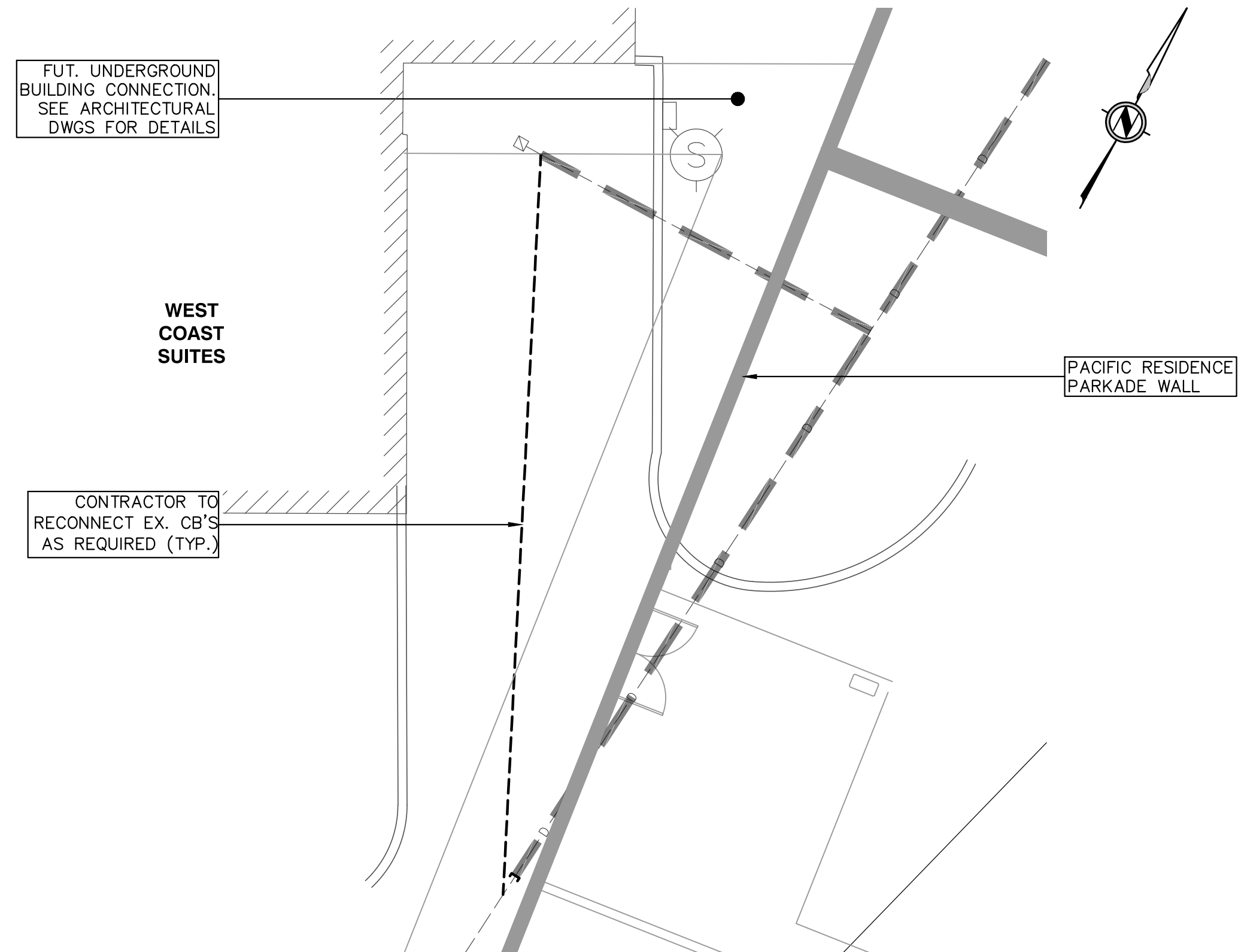
LEGEND	
	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	EX. STM TO BE REMOVED/ABANDONED
	PROP. STM
	PROP. STM MH
	CROSSING LOCATION



STORM SEWER TIE-IN DETAIL #02
N.T.S.



STORM LENGTH, SIZE, TYPE AND GRADE	2.63m-150Ø PVC SDR 35 STM @ -1.00%	6.47m-150Ø PVC SDR 35 STM @ 1.00%	53.48m-250Ø PVC SDR 35 STM @ 0.50%	42.48m-250Ø PVC SDR 35 STM @ 0.50%
INVERT ELEVATION	90.58 SW 90.58 NW 90.58 NE 90.63 W 90.63 SW 90.56 NW 90.56 SE	87.72 SE 87.69 NE	87.91 SW 87.45 NE 87.47 SW	



STORM SEWER TIE-IN DETAIL #02
N.T.S.

NOTICE TO CONTRACTOR

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LEGAL DESCRIPTION .				
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD				
REV. NO.	DESCRIPTION	DR	CH	DATE
01	REVISED PKG-1 SCOPE	KAP	DRS	12/12/2018
02	ISSUED FOR TENDER	KAP	DRS	29/01/2019
03	RE-ISSUED FOR TENDER	KAP	DRS	01/05/2019
04	ISSUED FOR PERMIT	KAP	DRS	22/05/2019

APLIN MARTIN
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Aplin & Martin Consultants Ltd.
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Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com

CLIENT: **UBC PROPERTIES TRUST**
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT: **STUDENT UNION BOULEVARD UTILITY DESIGN - PACKAGE 2**
STUDENT UNION BOULEVARD BETWEEN WESBROOK MALL AND EAST MALL

University of
British Columbia

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TITLE:		DESIGN: ABG		CHECK: DRS
STORM WORKS ROW & WALTER GAGE ROAD		DRAWN: ABG		APPR: DRS
		A & M FILE: 18-5038		
UBC PROPERTIES TRUST PROJECT No.		DRAWING DATE:		
-		JUNE, 2018		
UBC PROPERTIES TRUST DRAWING No.		SHEET No.		REV.
-		18-5038-C18		06 OF 10
				04

ENGINEERING DRAWING NOTES

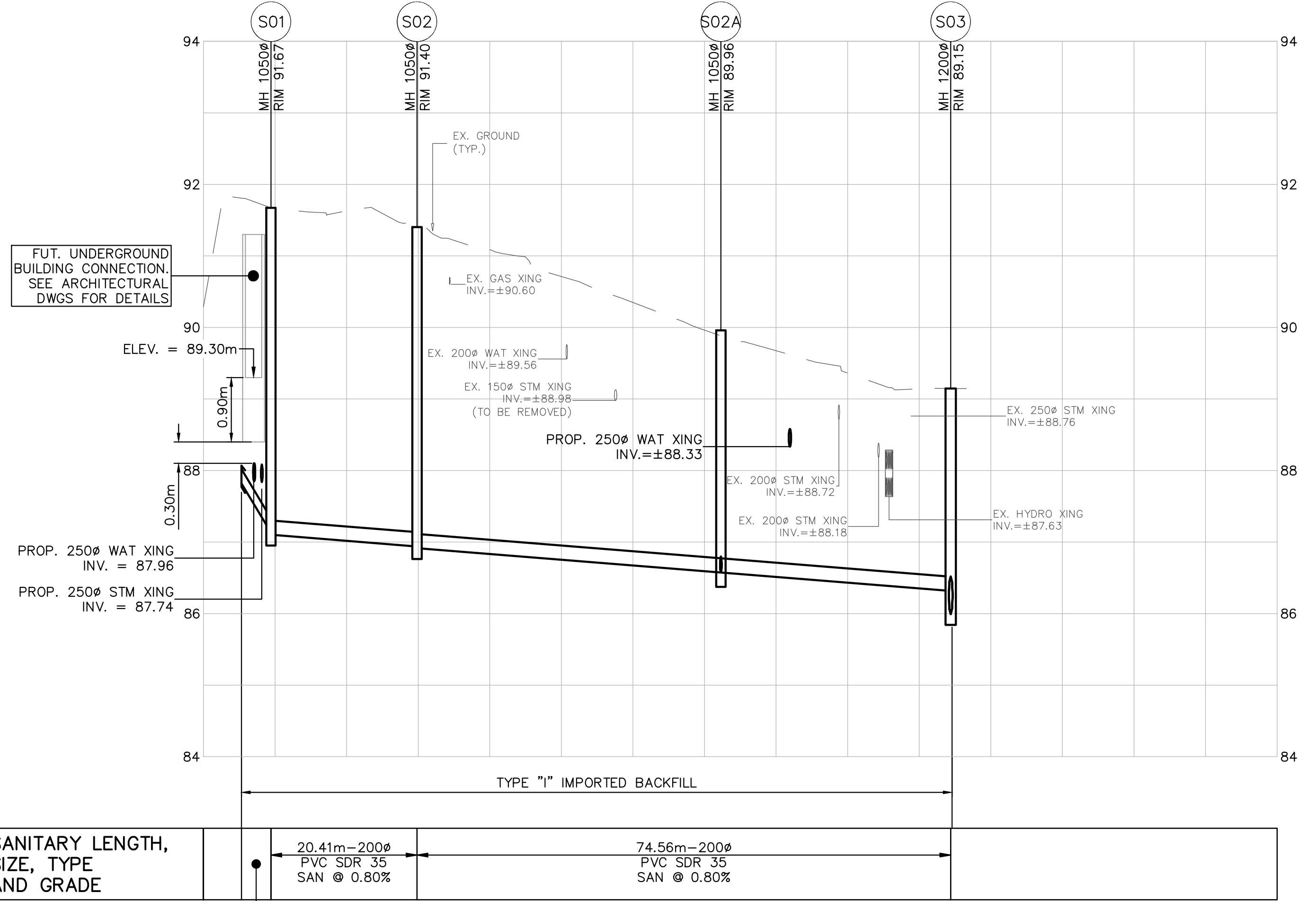
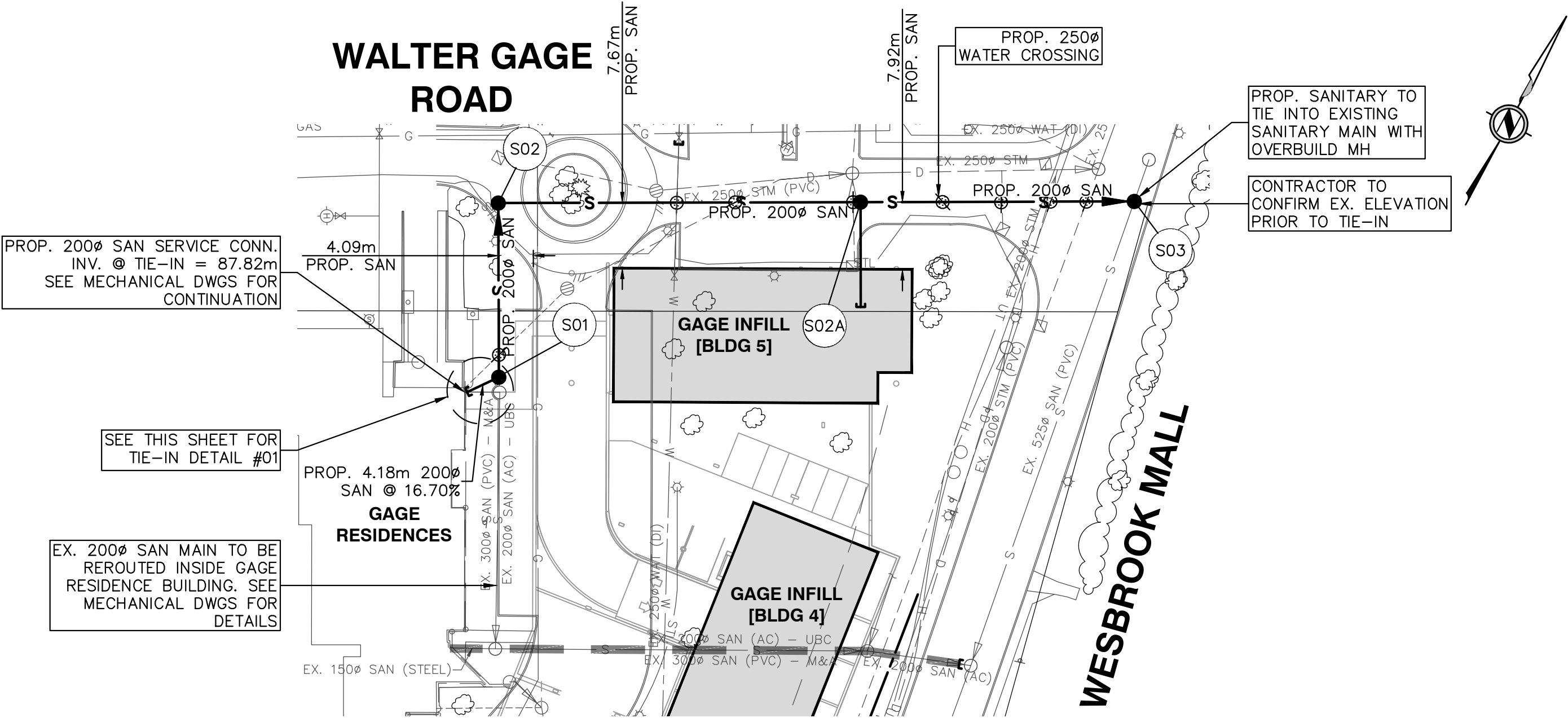
A. GENERAL NOTES

1. CALL BC ONE-CALL 24 HOURS PRIOR TO CONSTRUCTION.
2. PROPOSED UTILITY WORKS TO BE IN ACCORDANCE WITH MMCD STD DWG G4.
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B. STORM & SANITARY SEWER NOTES:

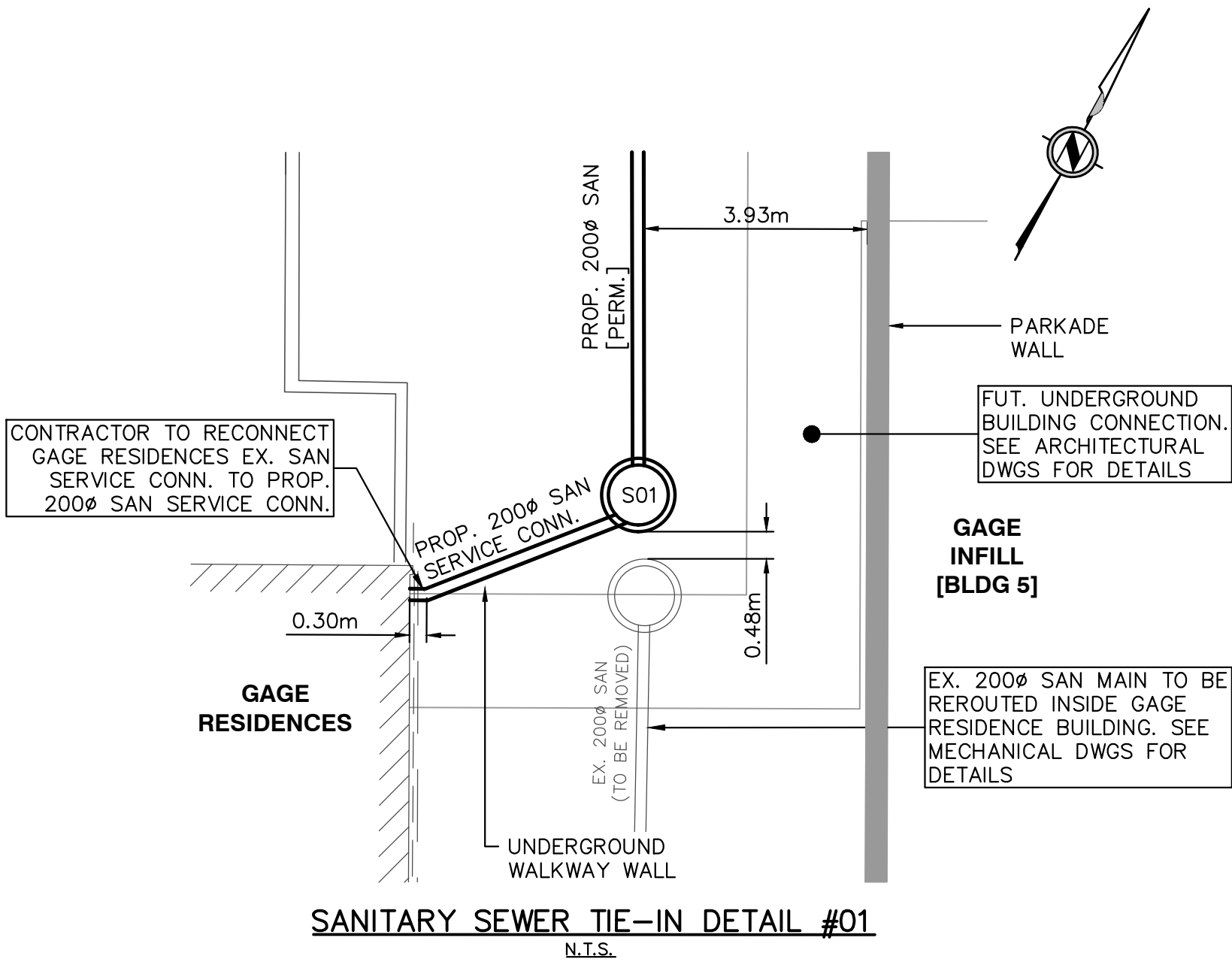
1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT UBC AND MMCD SPECIFICATIONS.
2. PIPE BEDDING SHALL BE GRANULAR PIPE BEDDING AND SURROUND MATERIAL CONFORMING TO MMCD CLAUSE 2.7, SECTION 02226.
3. PIPE BACKFILL SHALL BE 100mm PIT RUN GRAVEL MATERIAL CONFORMING TO MMCD CLAUSE 2.3, SECTION 02226..
4. ALL PIPES UP TO AND INCLUDING 600mmØ PVC PIPE TO UBC SPECIFICATIONS AS FOLLOWS (UNLESS OTHERWISE NOTED):
-150mmØ & SMALLER SDR28
-200mmØ TO 600mm SDR35 TO ASTM 03034 SPECS.
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LEGEND	
	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	EX. SAN TO BE REMOVED/ABANDONED
	PROP. SAN
	PROP. SAN MH
	CROSSING LOCATION



SANITARY LENGTH, SIZE, TYPE AND GRADE		20.41m-200Ø PVC SDR 35 SAN @ 0.80%		74.56m-200Ø PVC SDR 35 SAN @ 0.80%	

INVERT ELEVATION		87.82 NE		86.94 SE		86.57 SW		86.32 SW	
		87.13 SW	87.10 NW	86.91 NE		86.60 SE	86.57 NE	85.99 S	85.99 N



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LEGAL DESCRIPTION .				
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD				
REV. NO.	DESCRIPTION	DR	CH	DATE
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019

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CLIENT:
UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103

PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL



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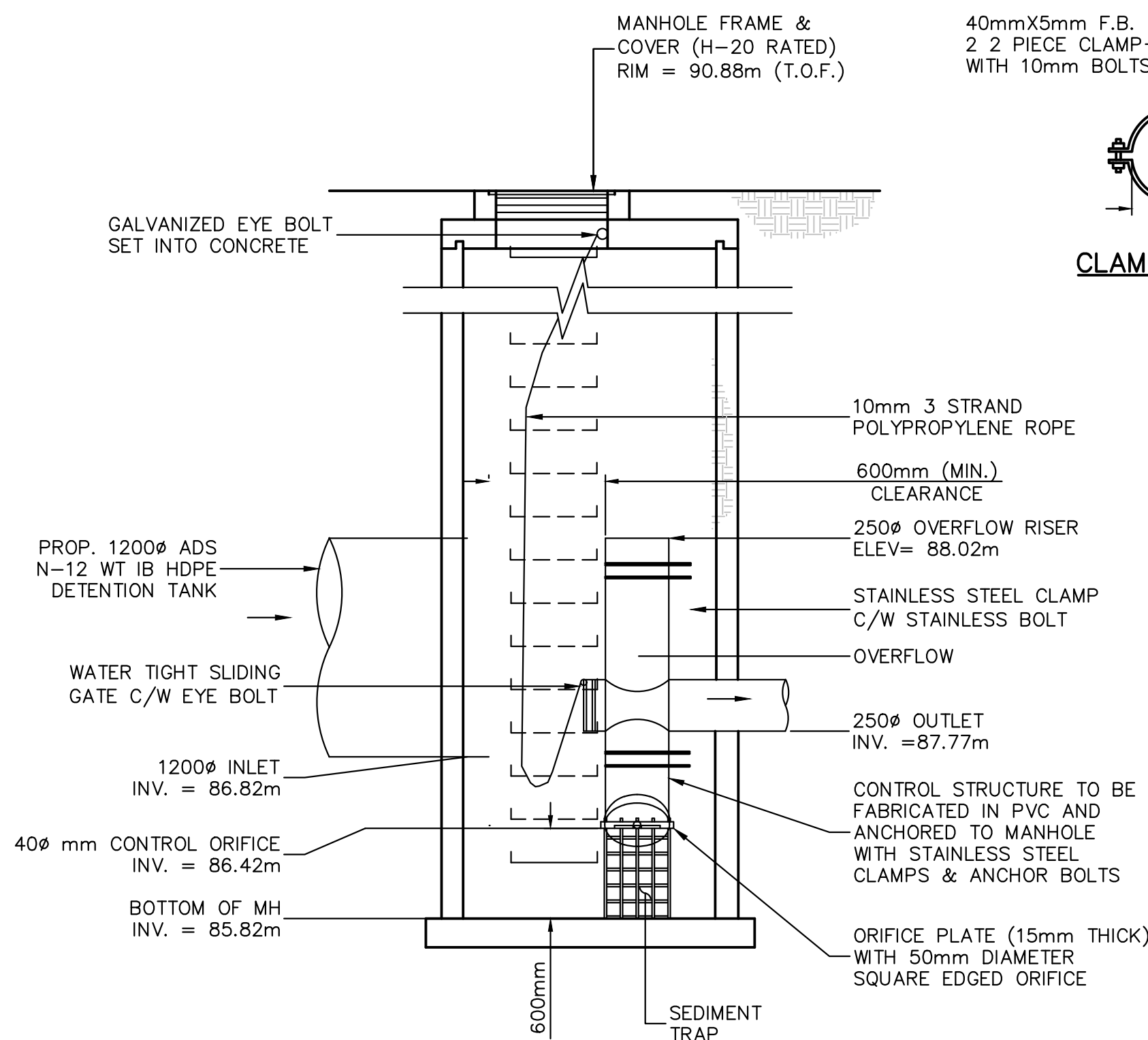
TITLE:	
SANITARY WORKS ROW & WALTER GAGE ROAD	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:500
UBC PROPERTIES TRUST DRAWING No.	VERT. N/A
-	18-5038B1-C19

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 19 OF 23	REV. 01

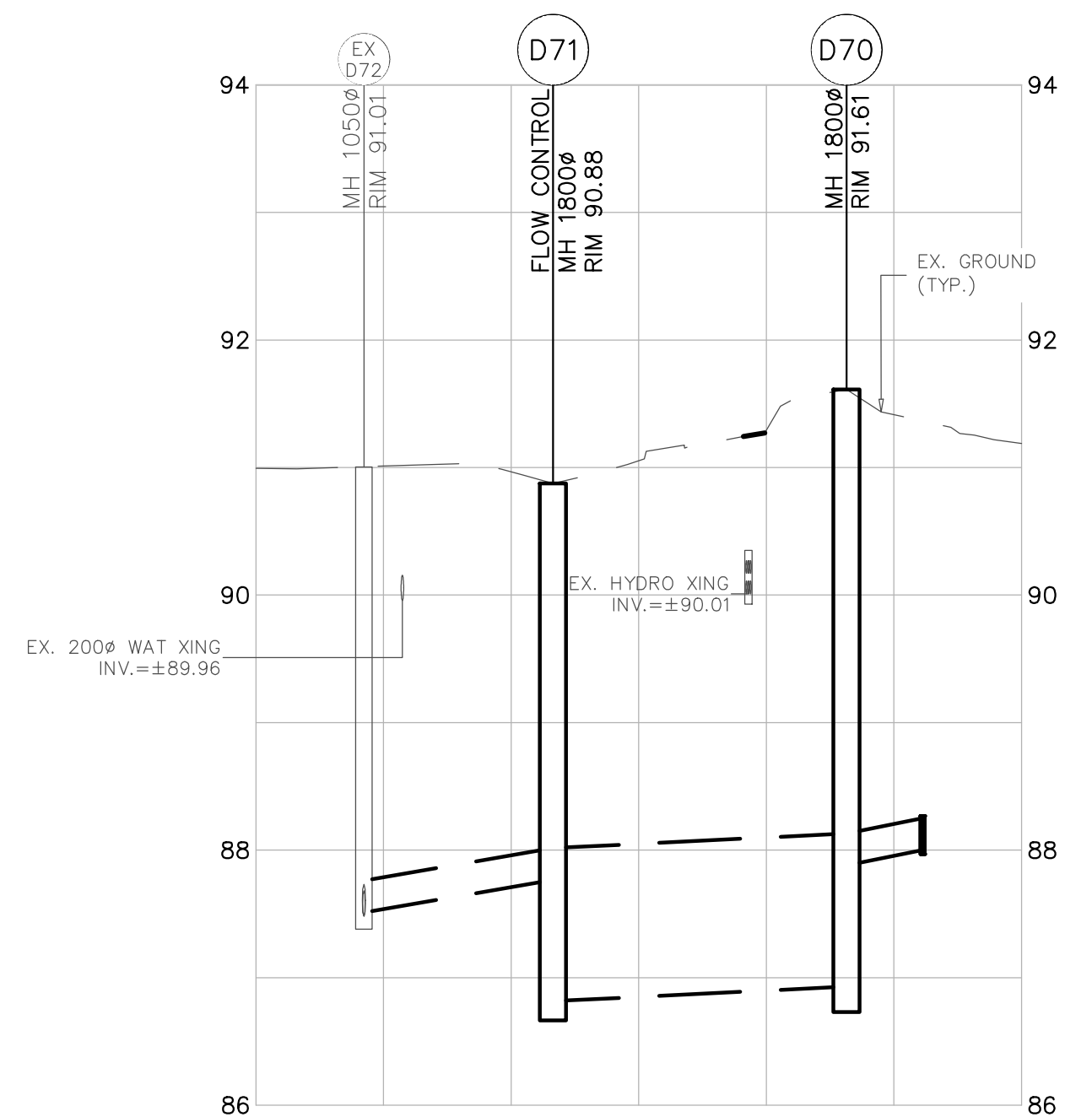
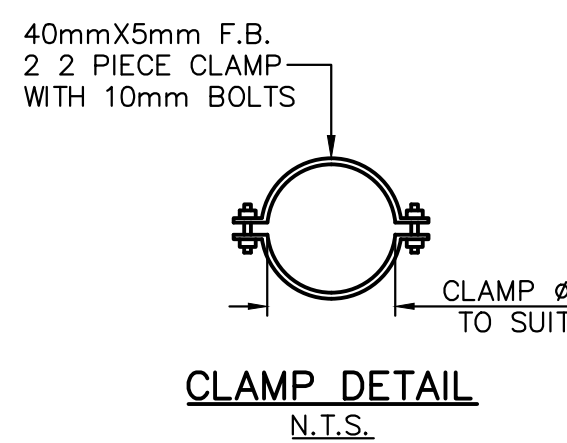
A. GENERAL NOTES

1. ALL BUILDINGS, ROADS & CONNECTIONS ARE TO BE LOCATED BY CO-ORDINATES AS CALCULATED BY A B.C. LAND SURVEYOR.
2. CONSULT GAS DRAWINGS FOR GAS DISTRIBUTION WITHIN THE SITE.
3. THE CONTRACTOR MUST CONTACT THE ENGINEER PRIOR TO CONSTRUCTION TO SCHEDULE AN ON-SITE PRE-CONSTRUCTION MEETING DURING WHICH CONSTRUCTION METHODS, TIMING, AND INSPECTION WILL BE DISCUSSED.

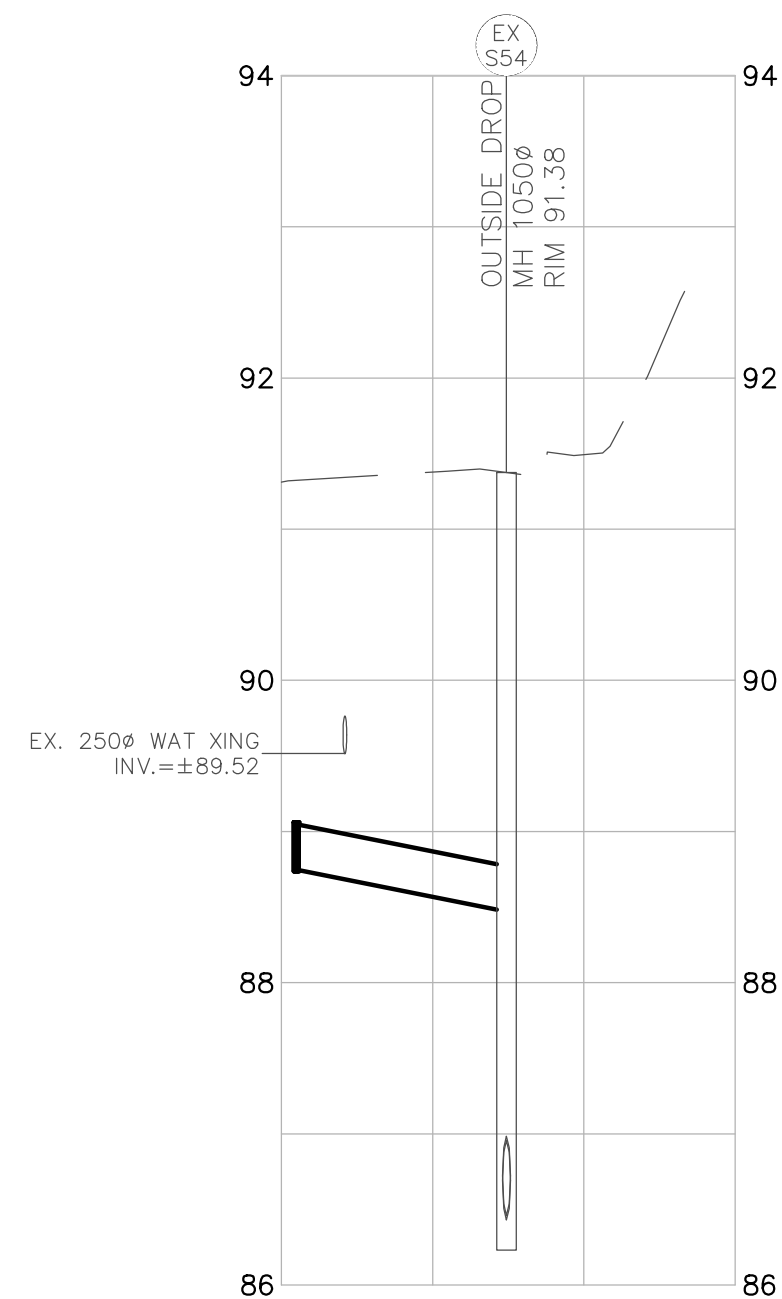
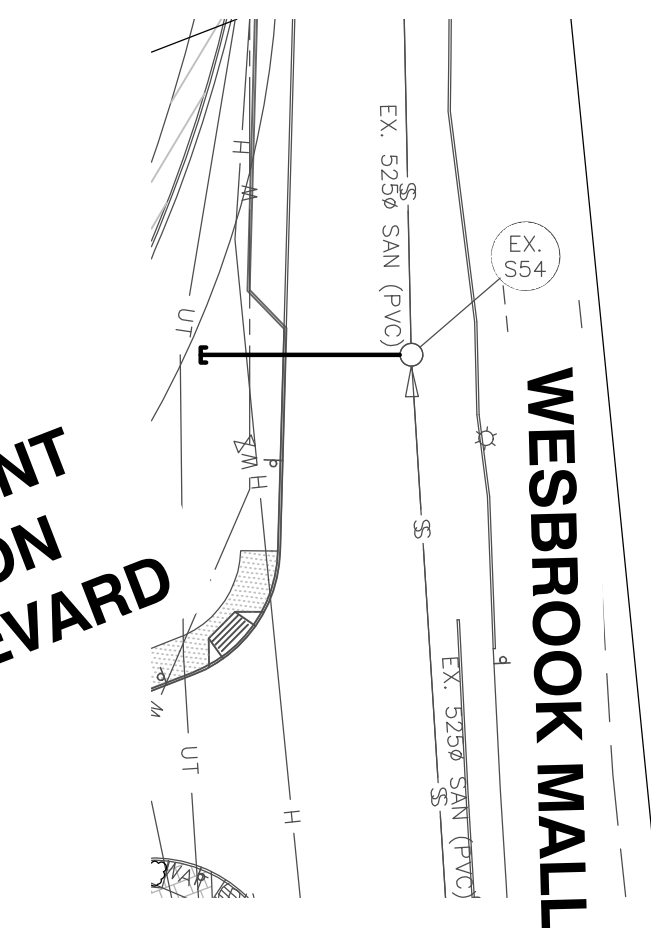
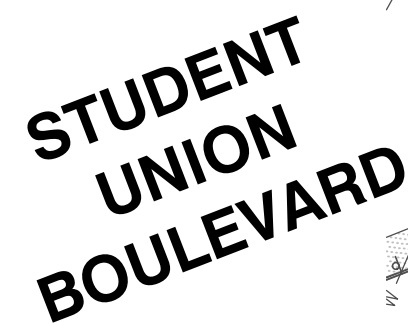
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2. PIPE BEDDING SHALL BE GRANULAR PIPE BEDDING AND SURROUND MATERIAL CONFORMING TO MMCD CLAUSE 2.7, SECTION 02226.
4. PIPE BACKFILL SHALL BE 100mm PIT RUN GRAVEL MATERIAL CONFORMING TO MMCD CLAUSE 2.3, SECTION 0226..
5. ALL PIPES UP TO AND INCLUDING 600mmØ PVC PIPE TO UBC SPECIFICATIONS AS FOLLOWS (UNLESS OTHERWISE NOTED):
-150mmØ & SMALLER SDR28
-200mmØ TO 600mm SDR35 TO ASTM 03034 SPECS.
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7. PIPE TO BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS FOR PIPE DEPTH AND SLOPE PER SOIL CONDITIONS.
8. ALL STORM & SANITARY SEWER MANHOLES TO BE 150mmØ WITH MARKINGS PER UBC REQUIREMENTS UNLESS OTHERWISE NOTED.
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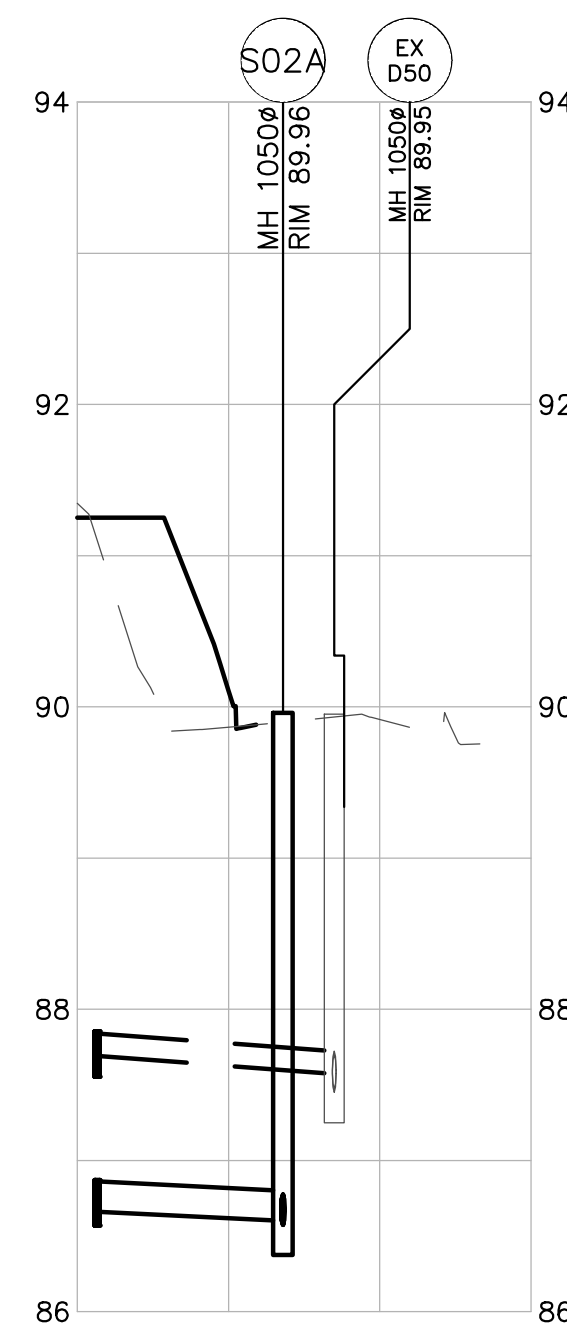
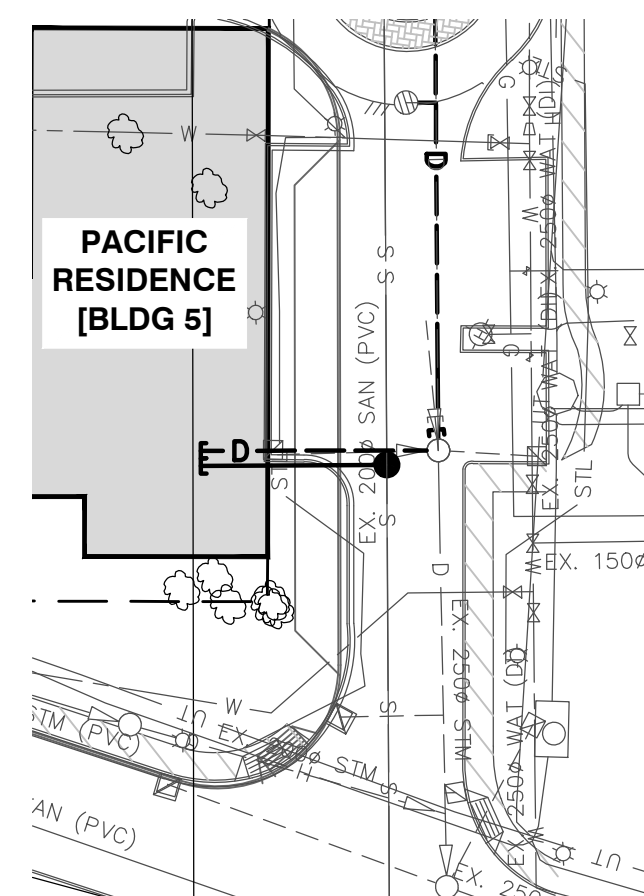
1800Ø STORM FLOW CONTROL MANHOLE
(D71) SECTION VIEW
N.T.S.



STORM LENGTH, SIZE, TYPE AND GRADE		14.82m-250ø PVC SDR 35 STM @ 1.72%	23.00m-1200ø CONC C76 CL IV STM @ 0.50%		5.96m-250ø PVC SDR 35 STM @ 2.00%
INVERT ELEVATION	87.51 NW 87.48 NE 87.45 SW	86.82 NE 87.77 SE	87.88 N 86.93 SW		88.00 S



SANITARY LENGTH, SIZE, TYPE AND GRADE	13.92m=300'± PVC SDR 35 SAN @ 2.00%	
INVERT ELEVATION	88.75 88.47 W 86.46 S 86.43 N	



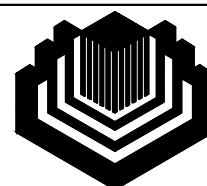
STORM LENGTH, SIZE, TYPE AND GRADE		15.69m-150Ø PVC SDR 28 STM @ 0.75%	
INVERT ELEVATION	87.69 NW	87.57 SW 87.45 SE 87.47 SW	
SANITARY LENGTH, SIZE, TYPE AND GRADE		●	12.29m-200Ø PVC SDR 35 SAN @ 0.50%
INVERT ELEVATION	86.66 NW	86.57 SW 86.60 SE 86.57 NE	

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LEGAL DESCRIPTION .						
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LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY						
REV. NO.	DESCRIPTION	DR	CH	DATE	APP	
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS	



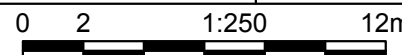
CLIENT:	UBC PROPERTIES TRUST SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8 604 731 3103
PROJECT:	PACIFIC RESIDENCES STUDENT UNION BOULEVARD AND WESBROOK MALL



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TITLE:		STORM & SANITARY SERVICE CONNECTIONS	
UBC PROPERTIES TRUST PROJECT No.		SCALE:	
-		HORIZ.	1: 500
		VERT.	1: 50
UBC PROPERTIES TRUST DRAWING No.		A&M DRAWING No.	
-		18-5038B1-C20	

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 20 OF 23	REV. 01














ENGINEERING DRAWING NOTES

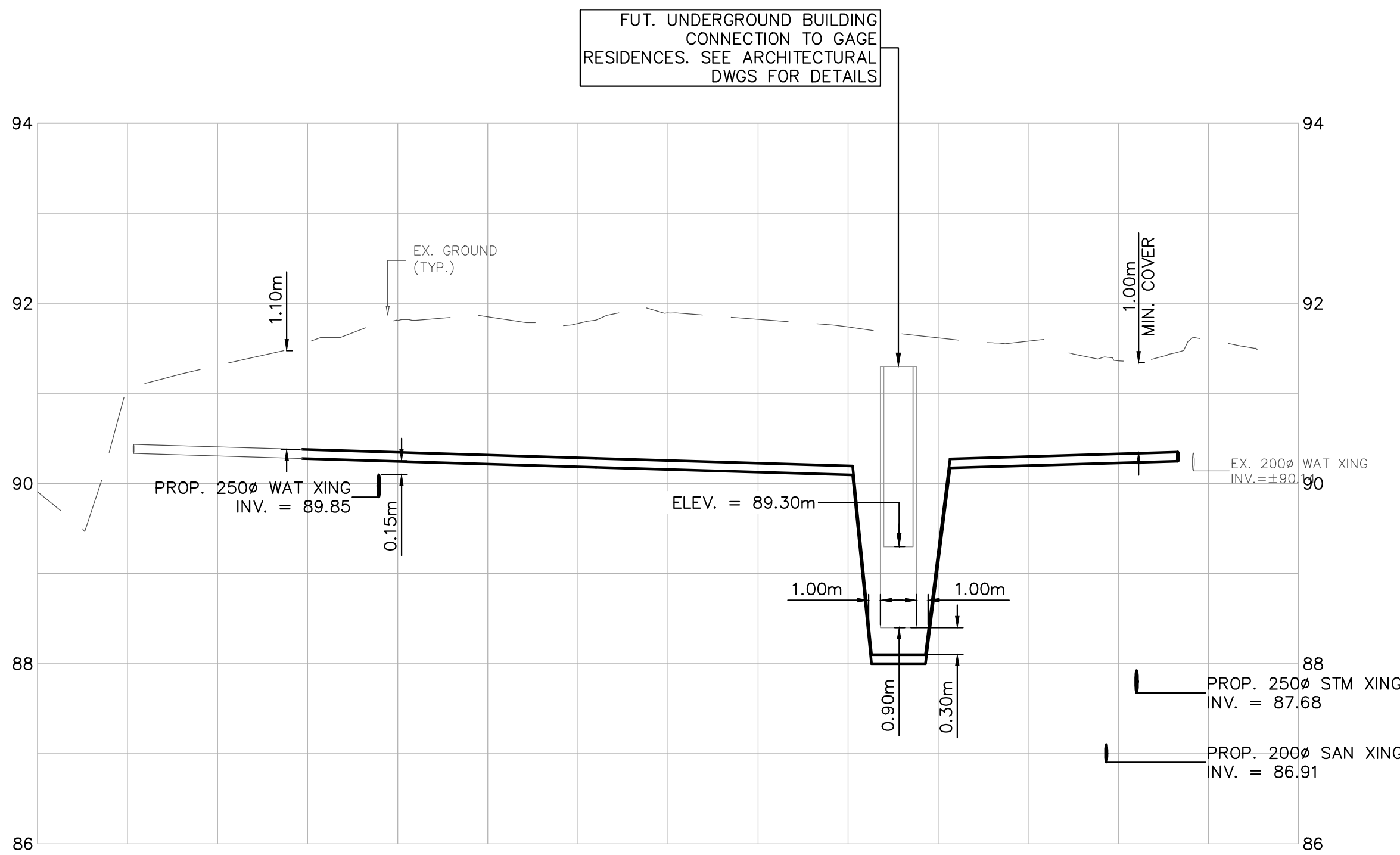
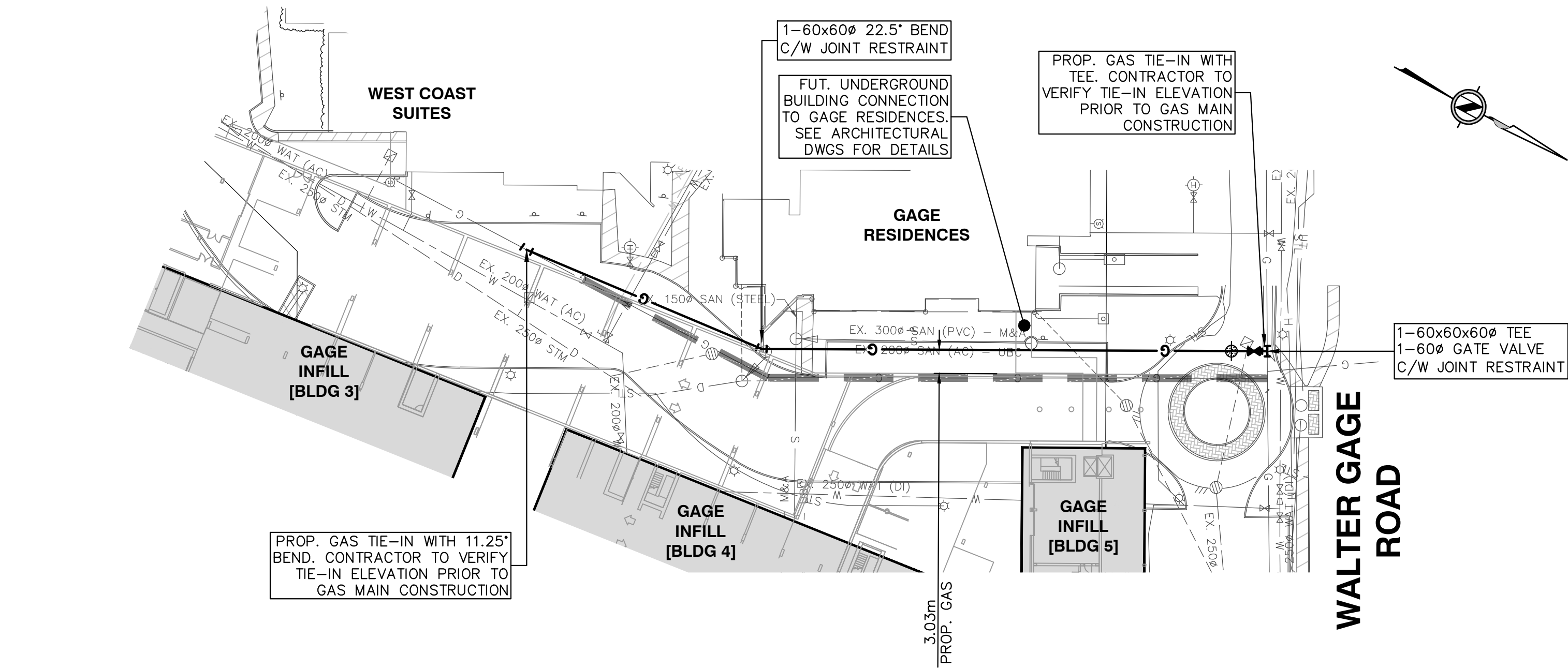
A. GENERAL NOTES

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2. PROPOSED UTILITY WORKS TO BE IN ACCORDANCE WITH MMCD STD DWG G4.
3. THESE DRAWINGS TO BE READ IN CONJUNCTION WITH OTHER DISCIPLINE'S DRAWINGS.
4. ALL EXISTING UTILITIES TO BE ABANDONED ARE TO BE CAPPED AT BOTH ENDS UNLESS REMOVED ENTIRELY.

A. GAS WORKS NOTES:

1. ALL WORKS TO BE CARRIED OUT IN ACCORDANCE WITH CURRENT UBC AND MMCD SPECIFICATIONS.
2. GAS MAIN TO HAVE MIN 0.6m COVER.

LEGEND	
	EX. STM
	EX. STM MH
	EX. SAN
	EX. SAN MH
	EX. WAT
	EX. GAS
	EX. UG POWER
	EX. DES LINES
	EX. GAS TO BE REMOVED/ABANDONED
	PROP. GAS
	CROSSING LOCATION



GAS MAIN LENGTH, SIZE, TYPE AND GRADE		32.61m-60ø DP GAS @ 0.30%	28.48m-60ø DP GAS @ 0.30%	2.09m-60ø DP GAS @ 100.21%	2.72m-60ø DP GAS @ 79.87%	25.30m-60ø DP GAS @ 0.30%
INVERT ELEVATION		90.28	90.18	90.09 88.00	88.00	90.17

NOTICE TO CONTRACTOR

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LEGAL DESCRIPTION .					
B.M. . MONUMENT NO. UBC MONUMENT W-W ELEVATION 93.631 LOCATED ON EAST MALL IN FRONT OF CEME BLDG BETWEEN AGRONOMY RD AND UNIVERSITY BLVD					
REV. NO.	DESCRIPTION	DR	CH	DATE	APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS

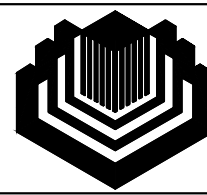


APLIN MARTIN
ENGINEERING ARCHITECTURE PLANNING SURVEYING

Aplin & Martin Consultants Ltd.
#1818 – 1177 West Hastings Street Vancouver, B.C. V6E 2K3
Tel: (604) 678-9434, Fax: (604) 597-9061, Email: general@aplinmartin.com

CLIENT:

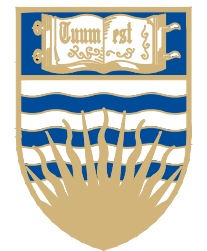
UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103



PROJECT:

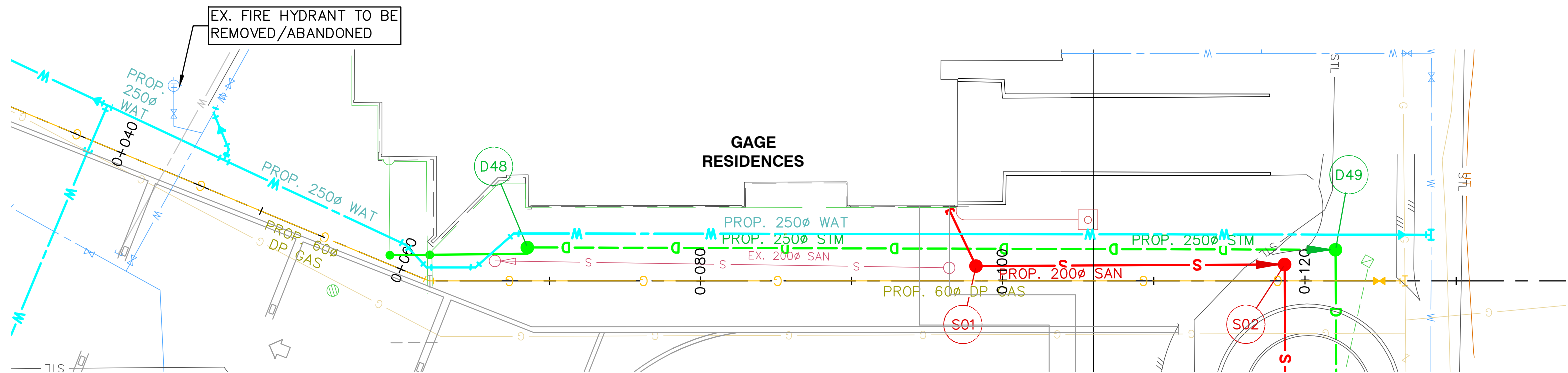
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

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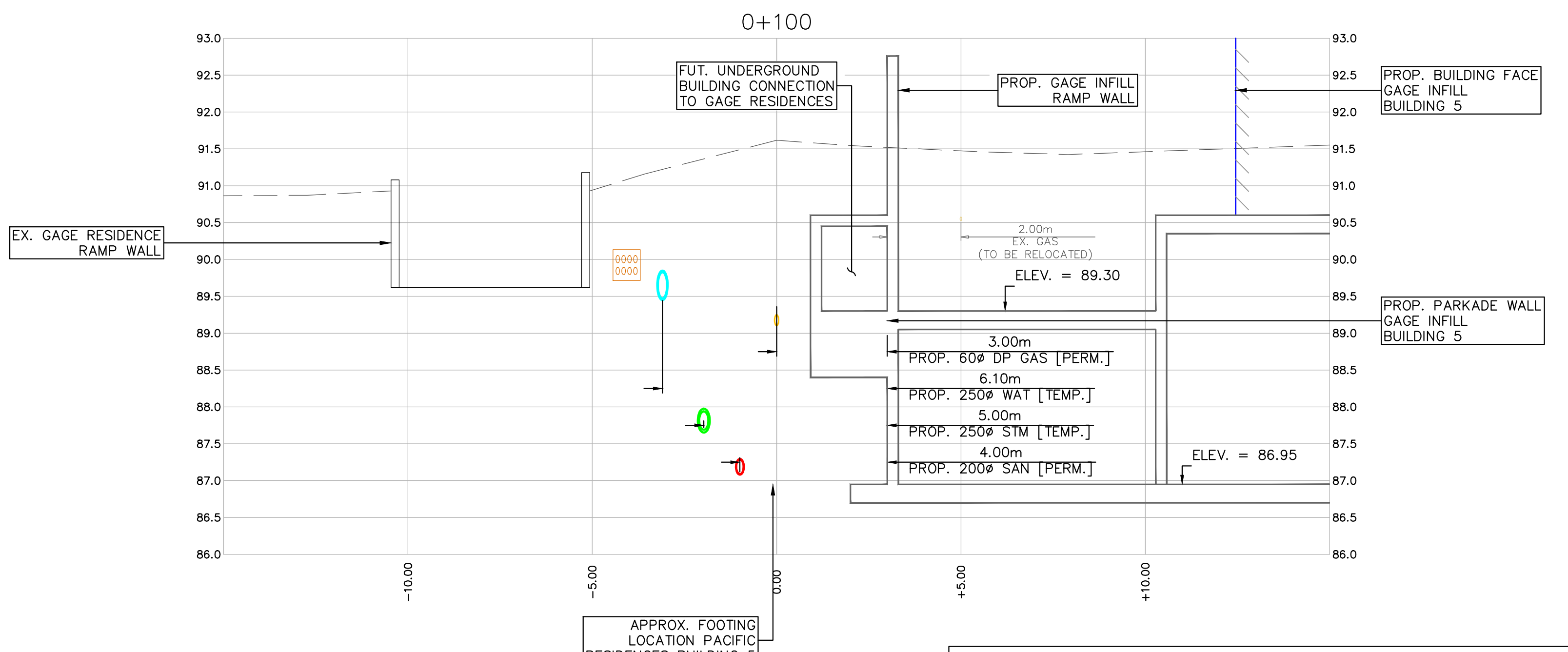
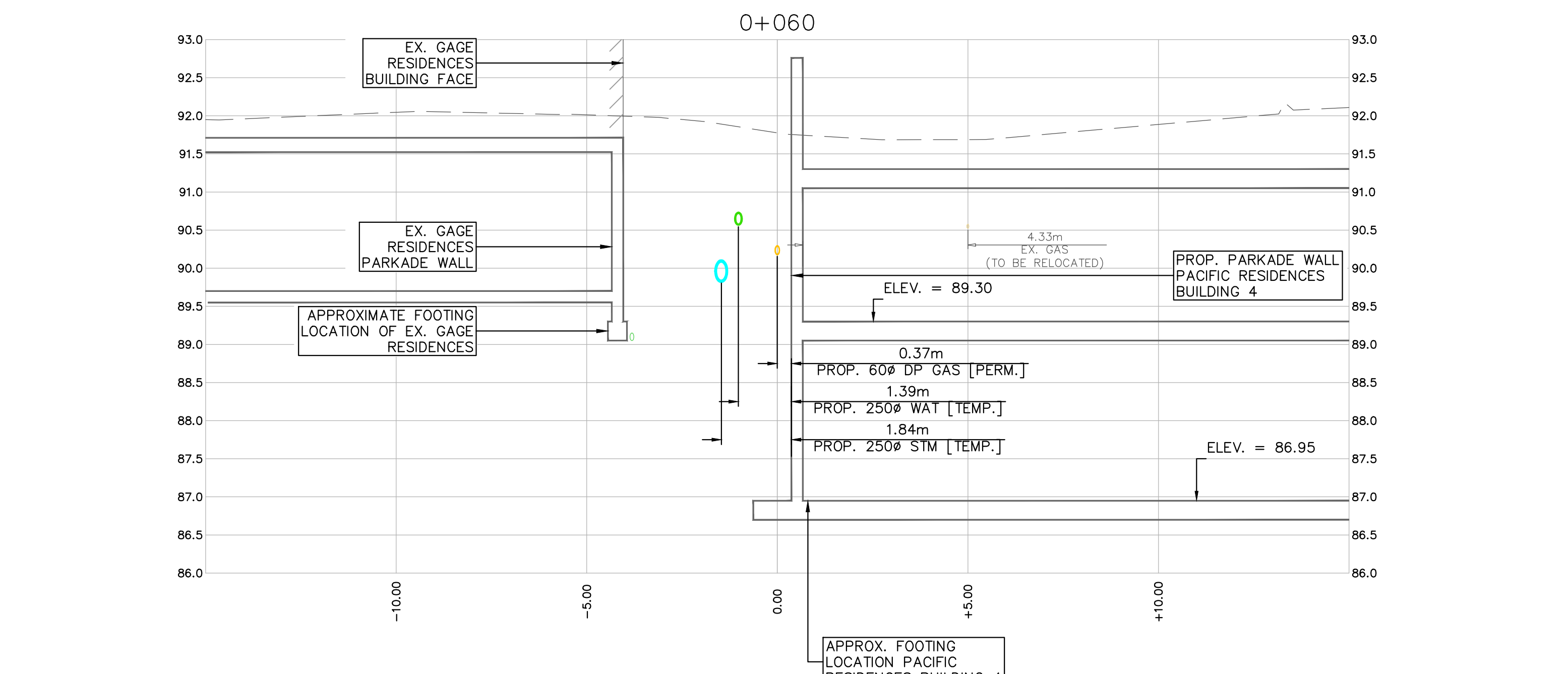
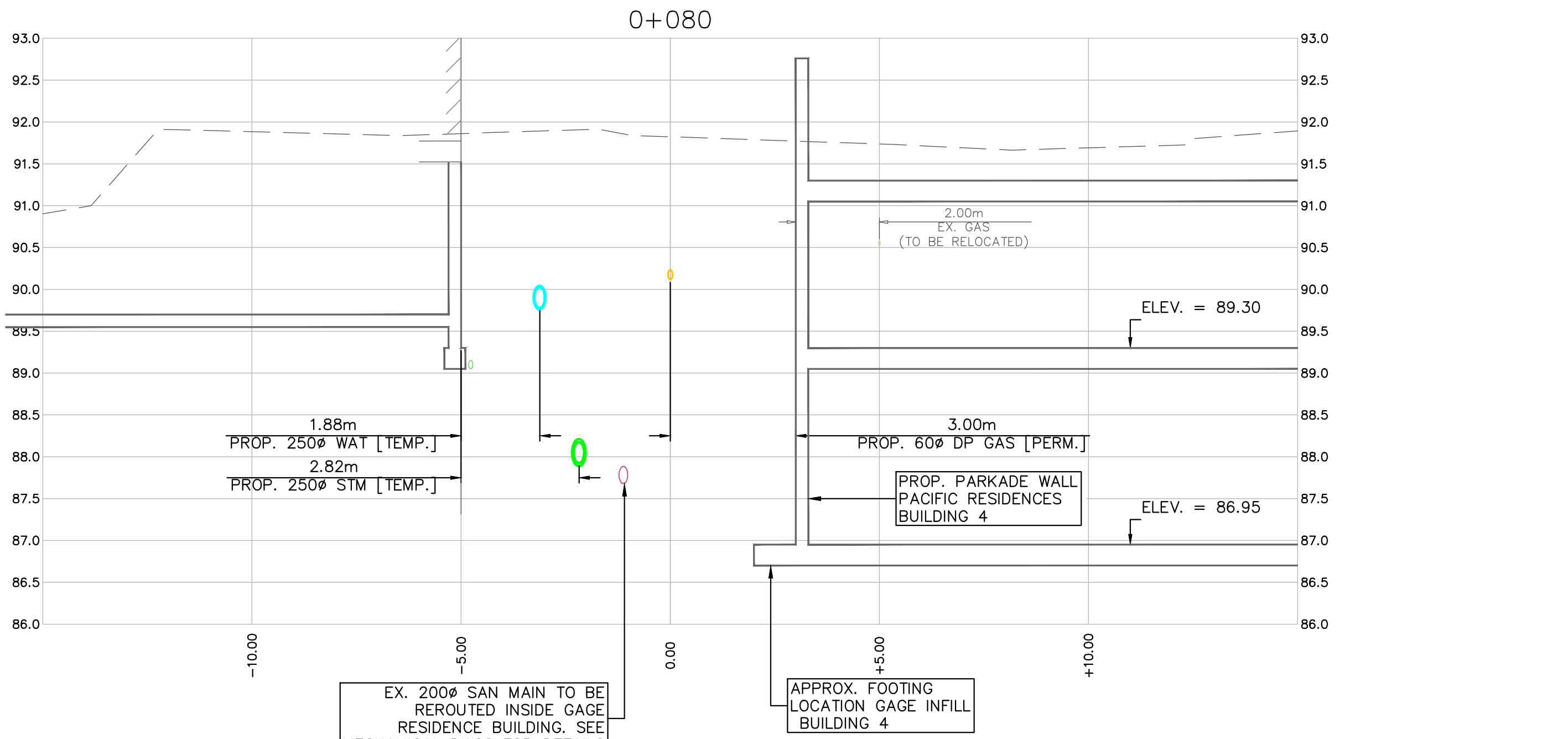
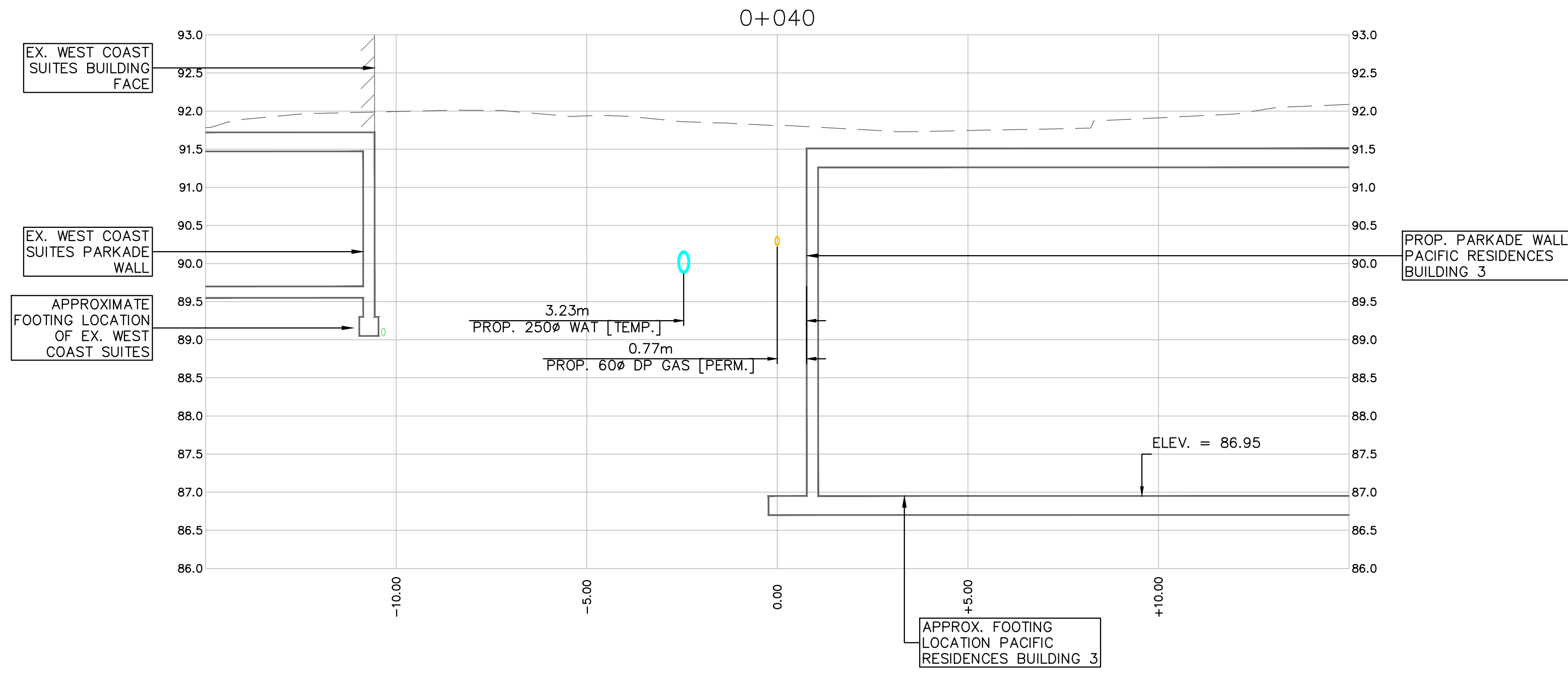


GAS WORKS ROW	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:500
UBC PROPERTIES TRUST DRAWING No.	VERT. N/A
-	A&M DRAWING No.
	18-5038B1-C21

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 21 OF 23	REV. 01



UTILITY PLAN BETWEEN
GAGE RESIDENCE AND PACIFIC RESIDENCE
1:250



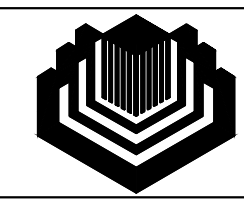
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REV. NO.	DESCRIPTION	DR	CH	DATE	APP
01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS

**APLIN MARTIN**
ENGINEERING ARCHITECTURE PLANNING SURVEYING

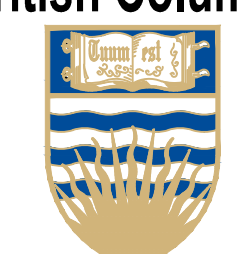
Aplin & Martin Consultants Ltd.
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CLIENT:
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604 731 3103



PROJECT:
PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

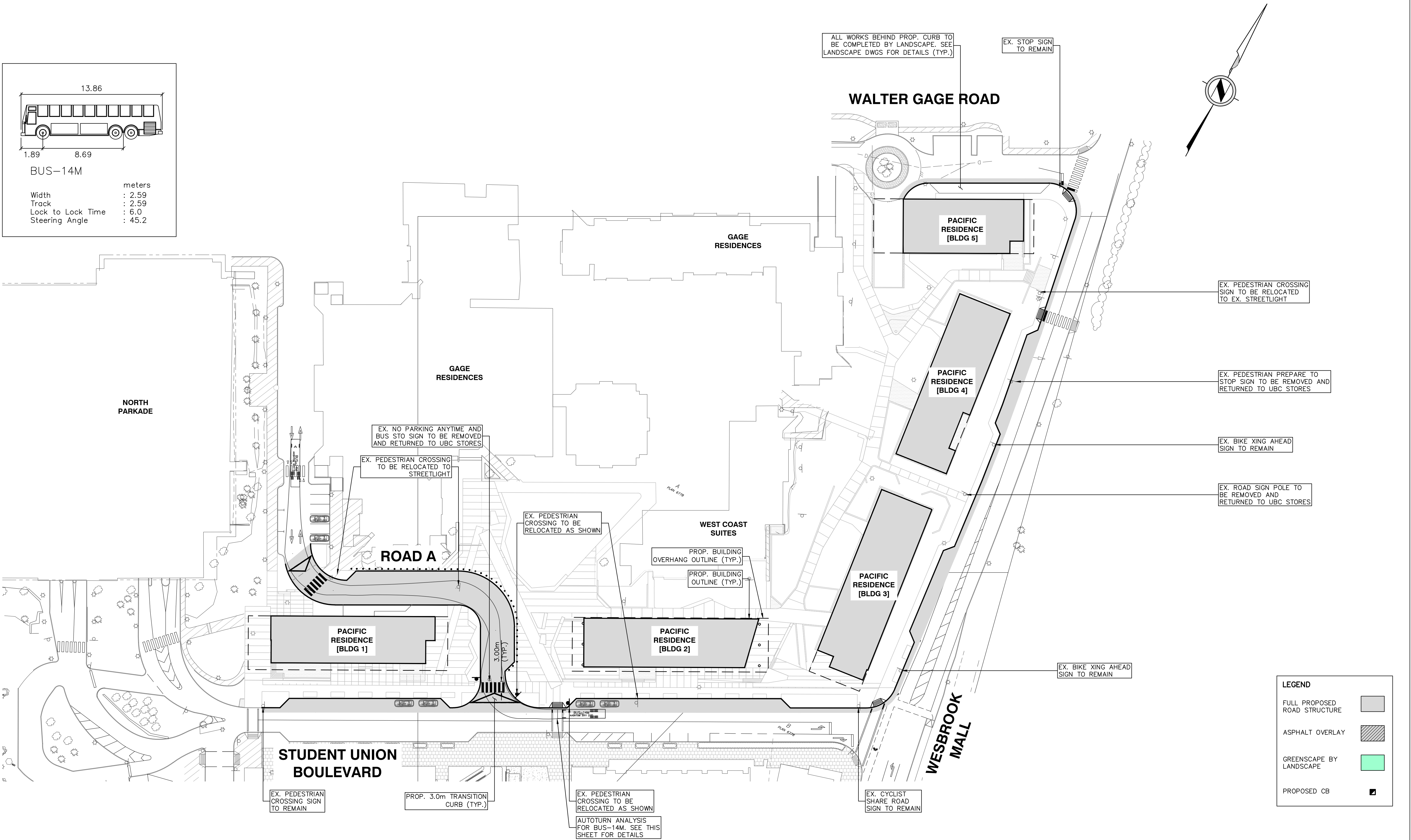
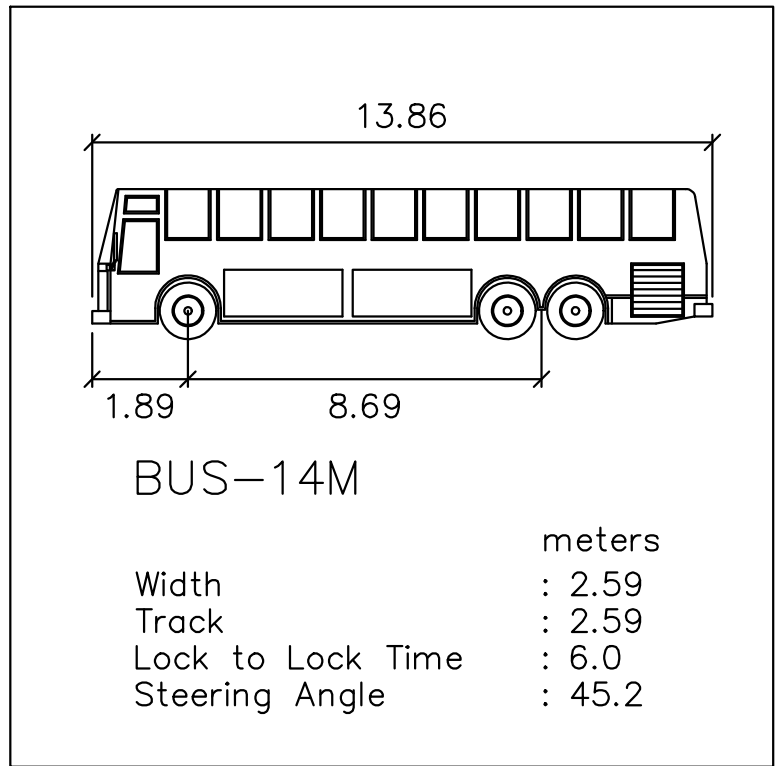
**University of
British Columbia**



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by the contractor's failure to exactly
locate and preserve any and all
underground utilities.

UTILITY SECTIONS ROW	
UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:100
UBC PROPERTIES TRUST DRAWING No.	VERT. 1:50
-	A&M DRAWING No. 18-5038B1-C22

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE: 18-5038B	
DRAWING DATE: MAY, 2019	
SHEET No. 22 OF 23	REV. 01



LEGEND

- FULL PROPOSED ROAD STRUCTURE
- ASPHALT OVERLAY
- GREENSCAPE BY LANDSCAPE
- PROPOSED CB

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01	ISSUED FOR UBC PERMIT REVIEW	KAP	DRS	04/06/2019	DRS

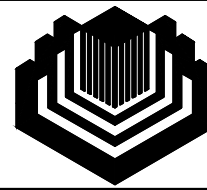


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CLIENT:

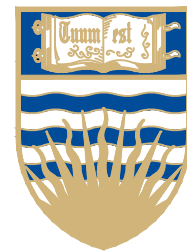
UBC PROPERTIES TRUST
SUITE 200 - 3313 SHRUM LANE, VANCOUVER, BC V6S 0C8
604 731 3103



PROJECT:

PACIFIC RESIDENCES
STUDENT UNION BOULEVARD AND WESBROOK MALL

University of
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TITLE:

PAVEMENT MARKING AND SIGNAGE PLAN

UBC PROPERTIES TRUST PROJECT No.	SCALE:
-	HORZ. 1:500
UBC PROPERTIES TRUST DRAWING No.	VERT. N/A
-	A&M DRAWING No.
	18-5038B1-C23

DESIGN: KAP	CHECK: DRS
DRAWN: KAP	APPR: DRS
A & M FILE:	
18-5038B	
DRAWING DATE:	
MAY, 2019	
SHEET No.	REV.
23 OF 23	01

0 5 1:500 25m