

Appendix 4

Sewerage Impact Assessment

Prepared by

Ramboll Hong Kong Limited

**THE PROPOSED HOTEL AT NO. 118 WAI YIP STREET, KWUN
TONG, KOWLOON**

SEWERAGE IMPACT ASSESSMENT

Date **August 2026**

Prepared by **Miko Wan**
Environmental Consultant



Signed

Approved by **Calvin Chiu**
Technical Director



Signed

Project Reference **KTAWYSKTEI00**

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1. INTRODUCTION

1.1 Background

- 1.1.1 The Application Site at 118 Wai Yip Street. The project proponent is proposing to convert the existing development to hotel development.
- 1.1.2 Ramboll Hong Kong Limited is commissioned to prepare this Sewerage Impact Assessment (SIA) for the Proposed Development at the Application Site. This SIA report has been prepared with respect to the proposed scheme to assess the likely sewerage flows from the proposed development, and recommend measures and upgrading proposal where necessary.
- 1.1.3 The design of the proposed scheme and other technical information on the Proposed Development are provided by the project proponent.

1.2 Project Location

- 1.2.1 The Application Site is located in urbanised area in Kwun Tong. It is bounded by Kwun Kee Tailor Industrial Centre and China-Trade Centre to the southeast, MG Tower to the southwest, Union Industrial Building and C-Bons International Centre to the northwest and Wai Yip Street to the northeast.

1.3 Existing Development

- 1.3.1 The Application Site is occupied by the existing office development. There are 9 storeys with total GFA of 3520.75m².

1.4 Proposed Development

- 1.4.1 The Proposed Development involves alterations to the existing building block including the addition of one storey resulting in a total 10 storeys. Therefore, the development will comprise one tower, consistent with the existing development.
- 1.4.2 The existing building will be converted into 99 guest rooms. In addition, an F&B area with GFA of approximately 45 m² will be provided after the conversion. The Master Layout Plan (MLP) of the Proposed Development is included in **Appendix 1**.
- 1.4.3 The completion year is 2028 tentatively.

2. SEWERAGE IMPACT ASSESSMENT

2.1 Scope of Work

- 2.1.1 The aim of this study is to assess whether the existing sewerage facilities serving the Application Site are sufficient to cope with the sewage flow from the Proposed Development and, if appropriate, to identify necessary improvement works and/or alternative disposal options.

2.2 Assessment Criteria and Methodology

- 2.2.1 Environmental Protection Department's (EPD's) Guidelines for Estimating Sewage Flows for Sewage Infrastructure Planning, Version 1 (GESF) has been referred to for the purposes of estimating the quantity of the sewage generated from the Proposed Development and the existing catchment area. Sewage flow parameters and peaking factors in this document have been adopted for this SIA.
- 2.2.2 Based on the building types in the area, the following unit flow factors are used in the SIA calculation:
- Residents: 0.27 m³/person/day (R2)
 - F&B employee: 1.58 m³/day (J10 – Restaurants & Hotels)
 - Office employee: 0.08 m³/day (J6 – Finance, Insurance, Real Estate & Business Services)
 - Manufacturing employee: 0.53 m³/day (J1 – Manufacturing + East Kowloon)
- 2.2.3 Catchment Inflow Factor (P_{CIF}) of East Kowloon (1.10) has been applied in the assessment.

2.3 Existing Sewerage System

- 2.3.1 Reference has been made to Geoinfo Map, which cover the vicinity of the site. **Figure 2** shows the existing sewerage system.
- 2.3.2 According to existing drainage plan (**Appendix 3**), the terminal manhole of the existing development at the Subject Site is currently located on the southwestern side. Sewage generated from the Application Site is discharged to the existing government manhole no. FMH4042808 (S1), which is connected to a 150mm diameter pipe. Downstream of it, the pipe is enlarged to 225mm diameter and subsequently connects to a 2-cell box culvert (2300mm x 800mm and 2300mm x 3000mm).
- 2.3.3 The existing terminal manhole and 150mm diameter sewerage pipe will be retained and maintained by Applicant.

2.4 Wastewater generated by the Proposed Development

- 2.4.1 Sewage flows generated from the Proposed Development will be primarily contributed by the employees among hotel and F&B areas.
- 2.4.2 Detailed calculations for the Proposed Development are given in Table 1 below and **Appendix 2**.

Table 1 Future Sewage Flow arising from the Application Site

Development Parameters	Proposed Development	
	Hotel	F&B Area
Assumed Area (m ²)	3,476	45
Number of Population	111	2
Design Flow (m ³ /person/day)	1.58 ⁽¹⁾	1.58 ⁽¹⁾
Flow Rate (m³/day)	175.4	3.2
Total Flow Rate with P_{CHF} (m³/day)	196.4	
Peak Flow (L/s)	18.2	

(1) Refer to Table T-1 of GESF – J10 Restaurants & Hotels

2.4.3 The discharge arrangement will be the same as the existing condition without alternation.

2.5 Discussion

2.5.1 The sewage generated from the Application Site will be discharged to the existing government manhole no. FMH4028808 (S1).

2.5.2 The potential sewerage impact arising from the Proposed Development has been quantitatively assessed. The sewage generation rate from the Proposed Development is estimated to be 196.4 m³/day (i.e. peak flow of 18.2 litre/sec).

2.5.3 According to Table 4a of **Appendix 1**, which summarises the sewage generation rate from the Proposed Development and surrounding catchment areas (**Figure 3**), the existing sewerage system has adequate capacity to accommodate the flow.

2.5.4 Based on the hydraulic calculations and estimated flow, no adverse sewerage impact on the public sewerage network is anticipated as a result of the Proposed Development.

3. CONCLUSION

- 3.1.1 A hotel development is proposed at 118 Wai Yip Street through the conversion of the existing building.
- 3.1.2 Based on the findings of the sewerage impact assessment, the existing sewerage system serving the area is considered to have sufficient capacity to accommodate the sewage generated from the Proposed Development and the nearby catchment areas.
- 3.1.3 As the existing sewage discharge arrangement will remain unchanged, no adverse sewerage impact is anticipated.

Figure



Figure: 1
Title: Location of the Application Site and its Environs

Project: The Proposed Hotel at 118 Wai Yip Street, Kwun Tong, Kowloon

RAMBOLL	
Drawn by:	MW
Checked by:	CC
Rev.:	1.0
Date:	Aug 2026

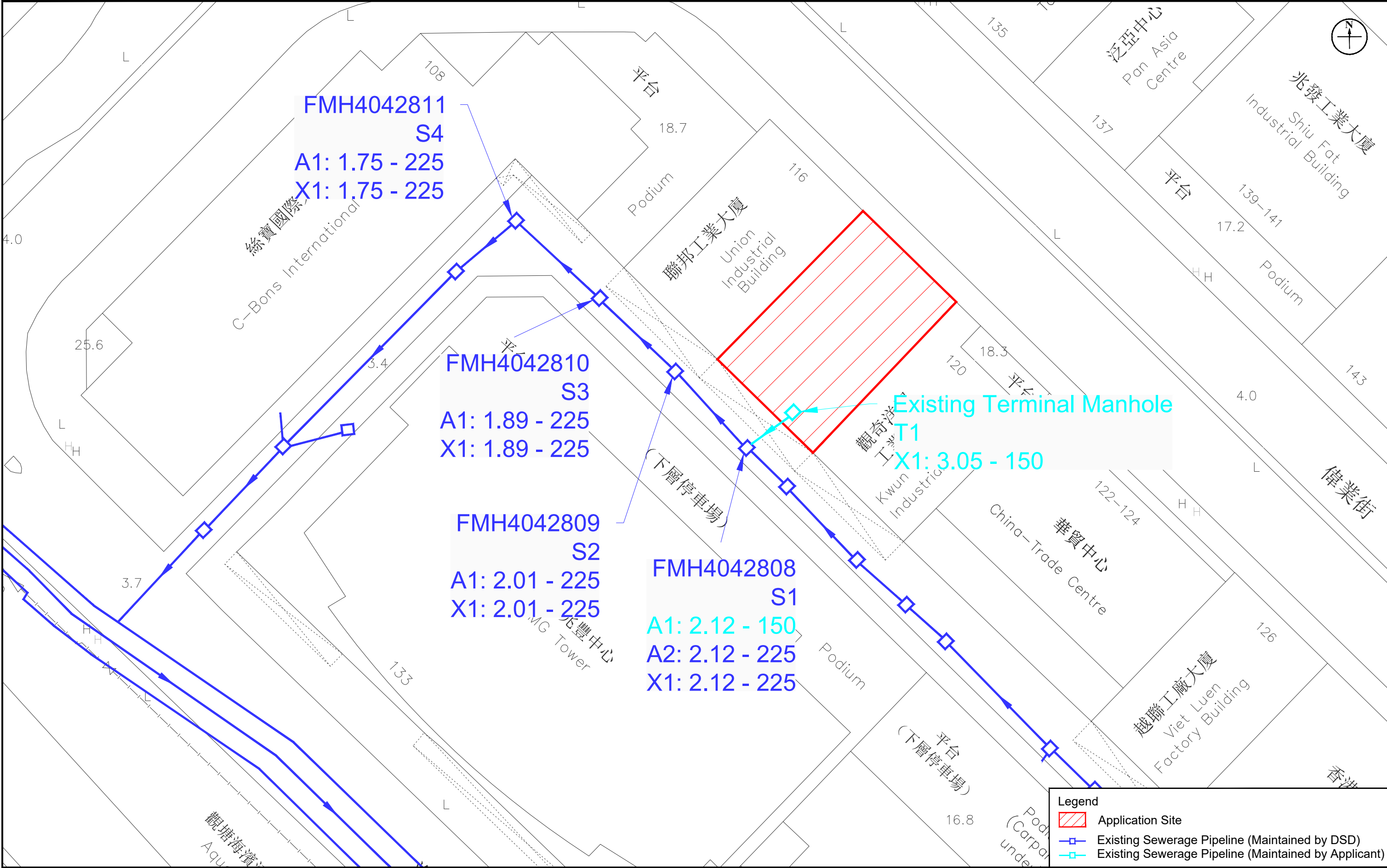
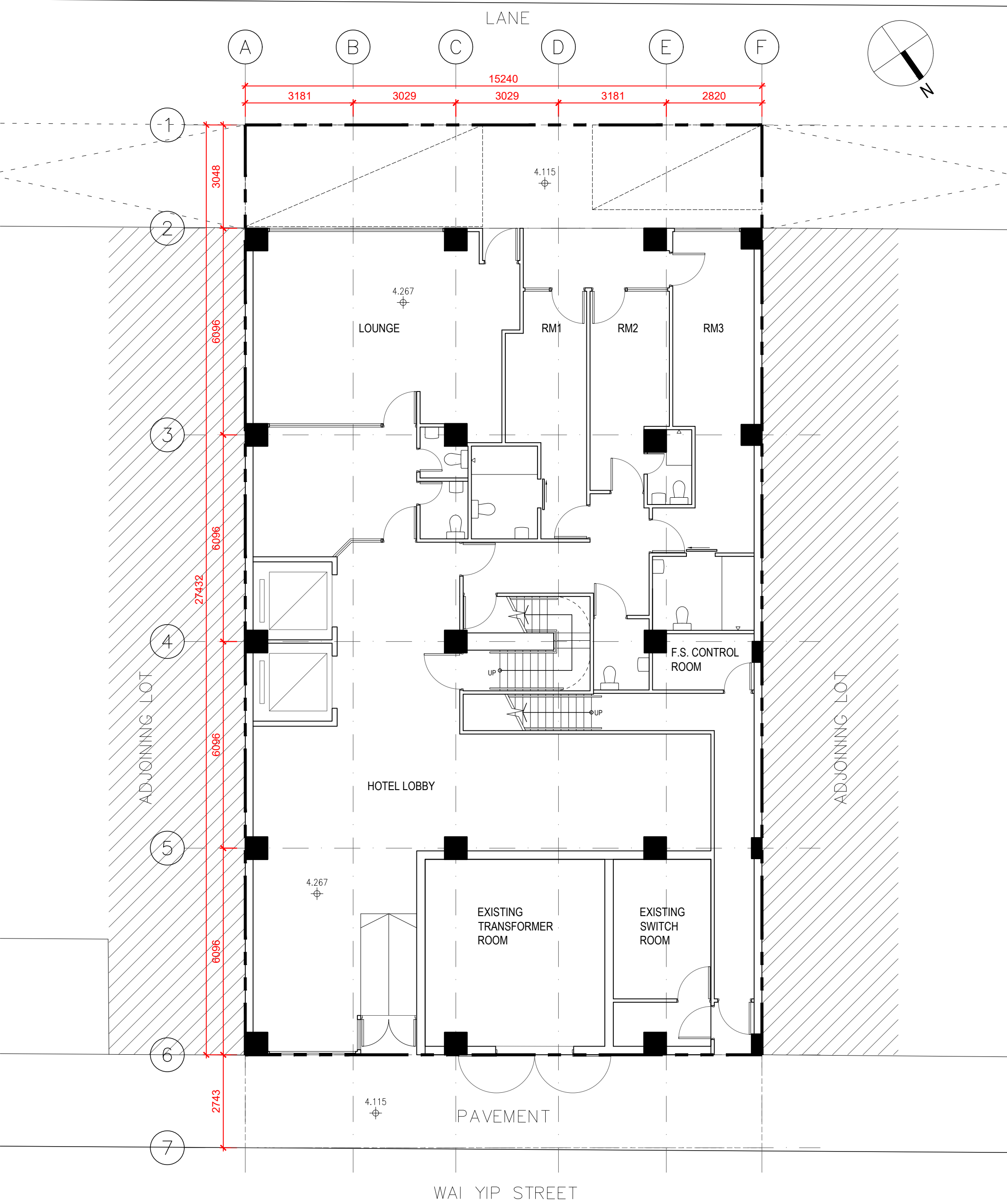


Figure: 2			
Title: Existing Sewerage System in Vicinity of Application Site		Drawn by: MW	
		Checked by: CC	
Project: The Proposed Hotel at 118 Wai Yip Street, Kwun Tong, Kowloon		Rev.: 1.0	
		Date: Aug 2026	



Figure: 3			
Title:	Catchment Areas in Vicinity of Application Site	Drawn by:	MW
		Checked by:	CC
Project:	The Proposed Hotel at 118 Wai Yip Street, Kwun Tong, Kowloon	Rev.:	1.0
		Date:	Aug 2026

Appendix 1 Master Layout Plan (MLP)



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JOB:
118 WAI YIP STREET

DWG. TITLE:
G/F PLAN

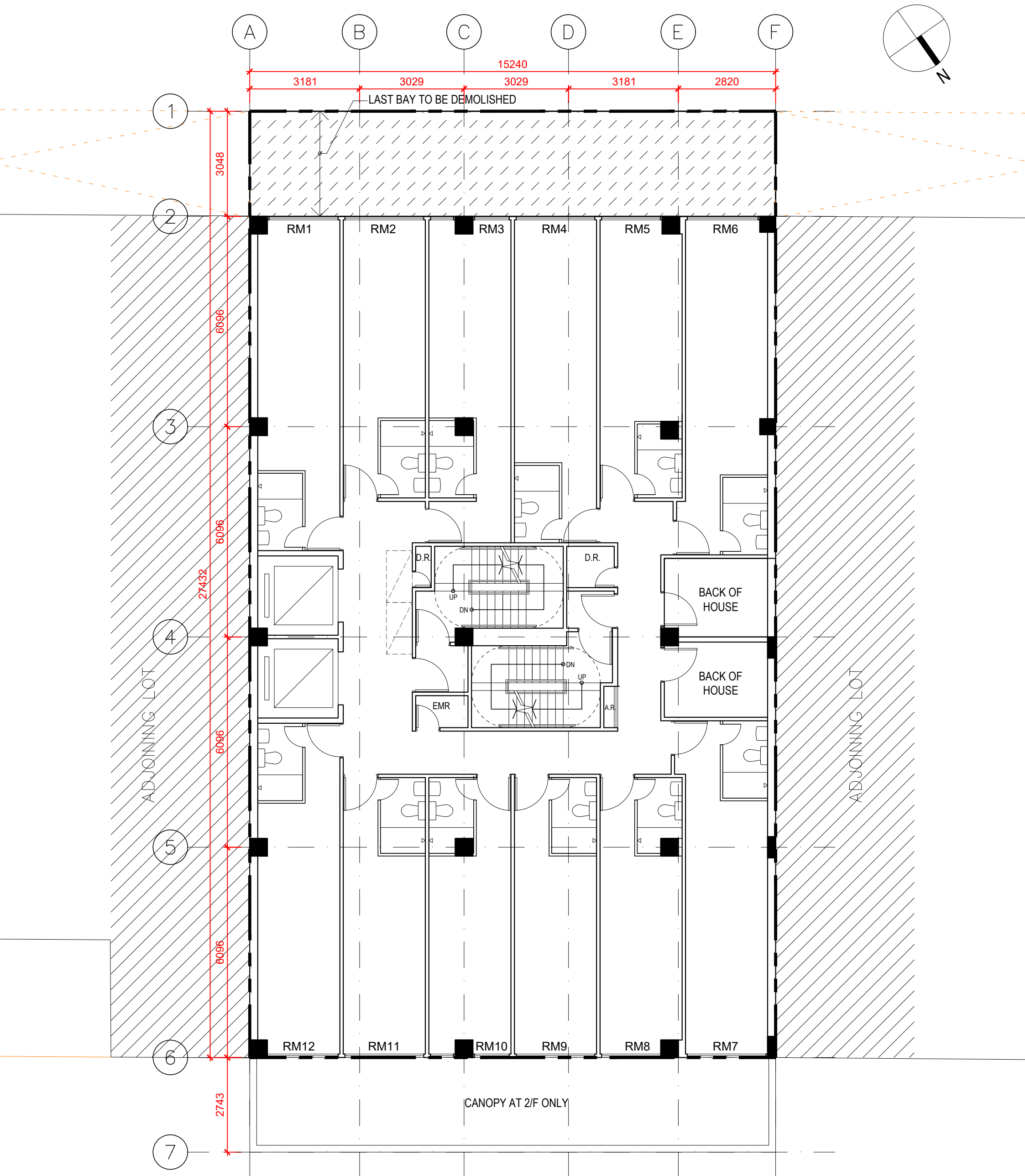
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JOB:
118 WAI YIP STREET

DWG. TITLE:
1-7/F PLAN

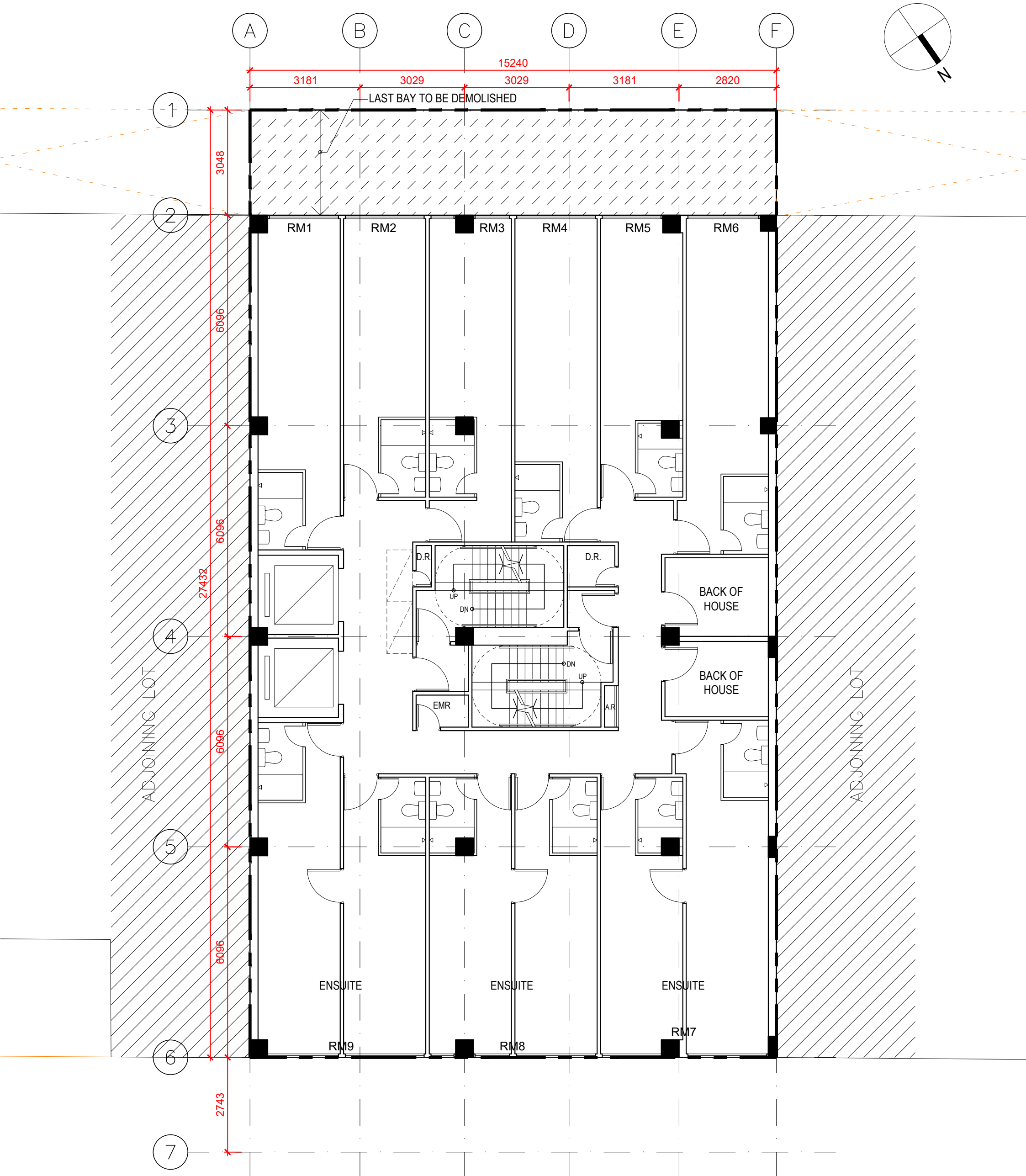
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JOB:
118 WAI YIP STREET

DWG. TITLE:
8/F PLAN

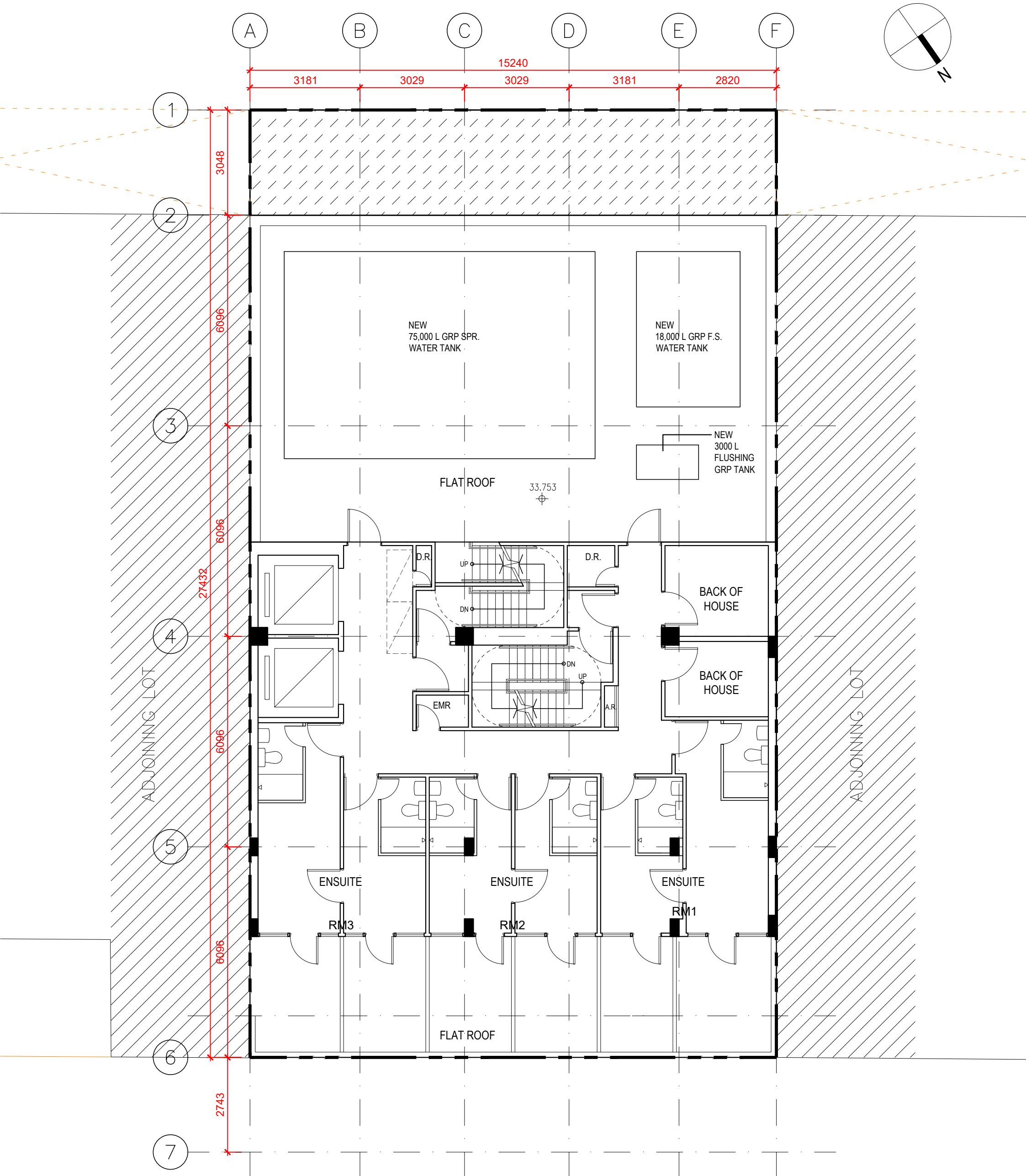
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31-7-2026

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JOB:
118 WAI YIP STREET

DWG. TITLE:
9/F PLAN

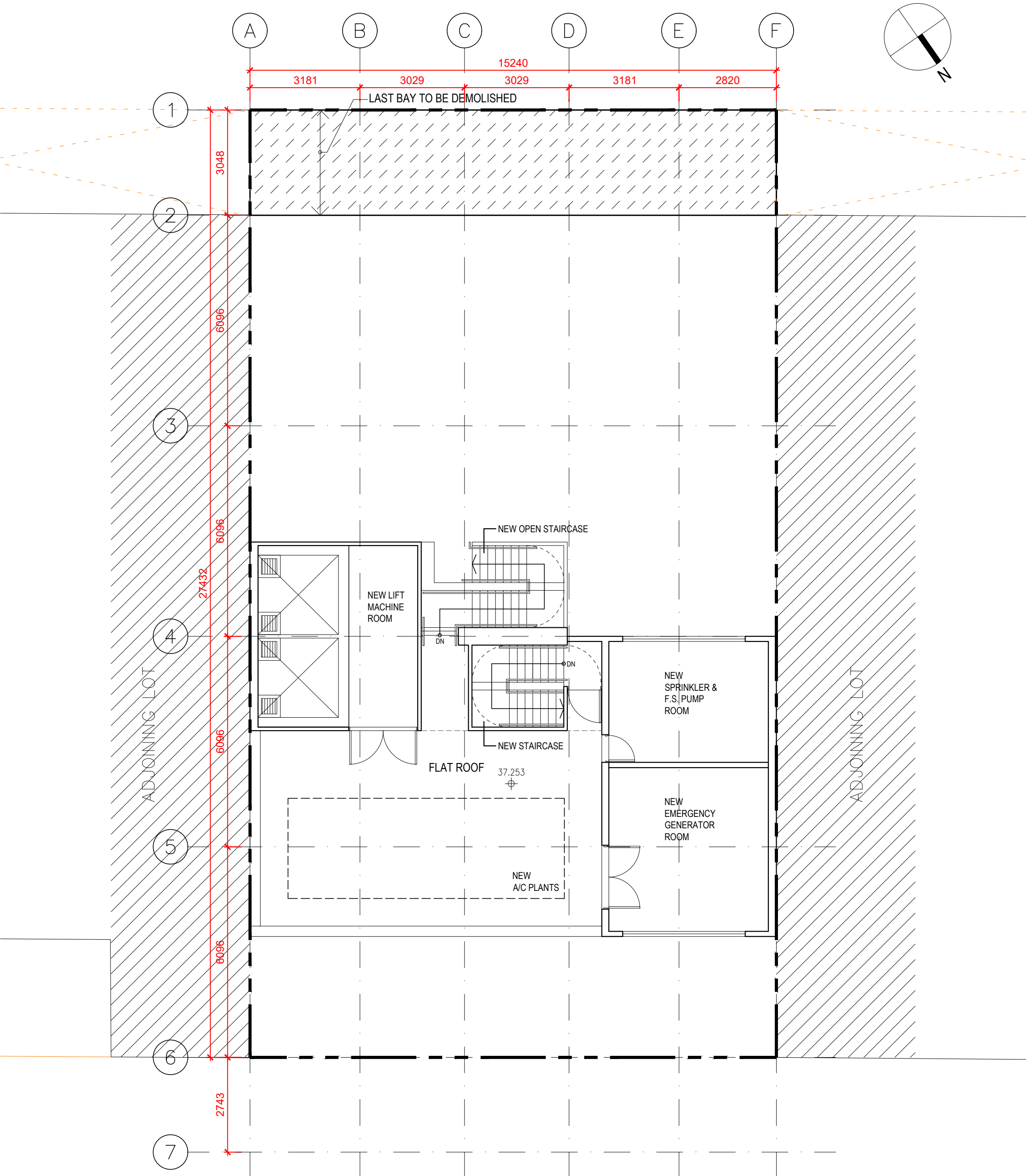
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DATE
31-7-2026

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JOB:
118 WAI YIP STREET

DWG. TITLE:
ROOF PLAN

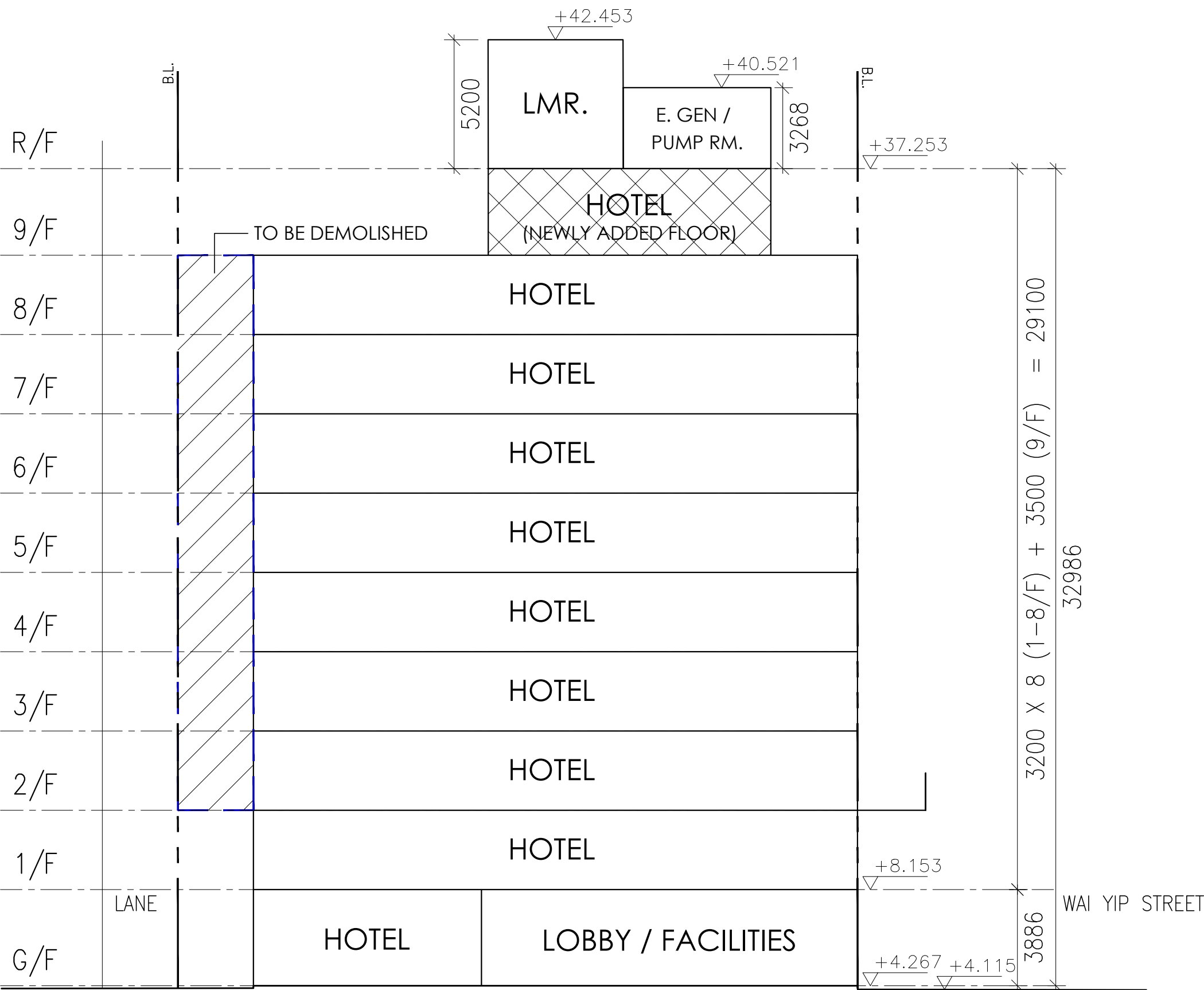
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31-7-2026

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D-05



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呂 鄧 黎 建 築 師 有 限 公 司

JOB:
118 WAI YIP STREET

DWG. TITLE:
SCHEMATIC SECTION

SCALE:
N.T.S.

DRAWN BY

JOB NO.
4534

DATE
31-7-2026

DWG.

D-06

Appendix 2 Detailed Sewerage Impact Assessment Calculations

Table 1 Calculation for Sewage Generation Rate of the Proposed Development at the Application Site

Hotel

Assumed Area	=	3476 m ²
Assumed floor area per employee	=	31.25 m ² per worker -- (refer to Table 8 of CIFSUS - Hotels and Boarding Houses)
Total number of employees	=	111 employees
Design flow for commercial activities	=	1.58 m ³ /employee/day -- (refer to Table T-2 of GESF Job Type J10)
Sewage Generation rate	=	175.4 m³/day

Commercial Area (F&B)

Assumed Area	=	45 m ²
Assumed floor area per employee	=	19.61 m ² per worker -- (refer to Table 8 of CIFSUS - Restaurants)
Total number of employees	=	2 employees
Design flow for commercial activities	=	1.58 m ³ /employee/day -- (refer to Table T-2 of GESF - J10)
Sewage Generation rate	=	3.2 m³/day

Total Flow from Proposed Development

Flow Rate (without Catchment Inflow Factor)	=	178.5 m³/day
Catchment Inflow Factor	=	1.1 Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	196.4 m³/day
Contributing Population	=	727 people
Peaking factor	=	8 Refer to Table T-5 of GESF for population < 1,000 excl. stormwater allowance
Peak Flow	=	18.2 litre/sec

Table 2a Hydraulic Capacity of Existing Sewers

Segment	Manhole Reference	Manhole Reference	Pipe Dia.	Pipe Length	Invert Level 1	Invert Level 2	g	k _s	s	v	V	Area	Q	Estimated Capacity
			mm	m	mPD	mPD	m/s ²	m		m ² /s	m/s	m ²	m ³ /s	L/s
T1-S1	-	FMH4042808	150	6.3	3.05	2.12	9.81	0.00060	0.148	0.000001	3.91	0.02	0.07	69
S1-S2	FMH4042808	FMH4042809	225	12.3	2.12	2.01	9.81	0.00060	0.009	0.000001	1.23	0.04	0.05	49
S2-S3	FMH4042809	FMH4042810	225	12.4	2.01	1.89	9.81	0.00060	0.010	0.000001	1.29	0.04	0.05	51
S3-S4	FMH4042810	FMH4042811	225	13.3	1.89	1.75	9.81	0.00060	0.011	0.000001	1.34	0.04	0.05	53

- Remarks: (1) g=gravitational acceleration; k_s=equivalent sand roughness; s=gradient; v=kinematic viscosity of water; V=mean velocity
(2) Table 2: The value of k_s = 0.6mm is used for the calculation of slimed clayware sewer, poor condition (based on Table 5: Recommended roughness values in Sewerage Manual)
(3) Table 2: The value of k_s is interpolated for pipe velocities between 0.75 m/s and 1.2 m/s.
(4) The value of velocity (V) is referred to the Tables for the hydraulic design of pipes, sewers and channels (8th edition)
(5) Equation used:
- $$V = -\sqrt{(8gDs)} \log\left(\frac{k_s}{3.7D} + \frac{2.51v}{D\sqrt{(2gDs)}}\right)$$

Table 3 Calculation for Sewage Generation Rate of the Existing Surrounding Building

Catchment A (S1)

1. Rykadan Capital Tower

Office

Assumed Area	=	23837 m ²
Assumed floor area per employee	=	18.18 m ² per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	1311 employees
Design flow for commercial activities	=	0.08 m ³ /employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	104.9 m³/day

2. Viet Luen Factory Building

Office

Assumed Area	=	9535 m ²
Assumed floor area per employee	=	18.18 m ² per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	524 employees
Design flow for commercial activities	=	0.08 m ³ /employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	42.0 m³/day

3. China Trade Centre

Office

Assumed Area	=	6613 m ²
Assumed floor area per employee	=	18.18 m ² per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	364 employees
Design flow for commercial activities	=	0.08 m ³ /employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	29.1 m³/day

Manufacturing (assumes as 30%)

Assumed Area	=	2834 m ²
Assumed floor area per employee	=	43.48 m ² per worker -- (refer to Table 8 of CIFSUS - Manufacturing)
Total number of employees	=	65 employees
Design flow for commercial activities	=	0.53 m ³ /employee/day -- (refer to Table T-2 of GESF - J1)
Sewage Generation rate	=	34.5 m³/day

4. Kwun Kee Tailor Industrial Centre

Office

Assumed Area	=	4294 m ²
Assumed floor area per employee	=	18.18 m ² per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	236 employees
Design flow for commercial activities	=	0.08 m ³ /employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	18.9 m³/day

Overall Catchment A

Flow Rate (without Catchmnet Inflow Factor)	=	229.4 m ³ /day
Catchment Inflow Factor	=	1.1 Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	252.3 m³/day

Catchment B (S2)

1.Union Industrial Building

Office

Assumed Area	=	2923 m ²
Assumed floor area per employee	=	18.18 m ² per worker -- (refer to Table 8 of CIFSUS - Financial, Insurance, Real Estate & Bunsiness Services)
Total number of employees	=	161 employees
Design flow for commercial activities	=	0.08 m ³ /employee/day -- (refer to Table T-2 of GESF - J6)
Sewage Generation rate	=	12.9 m³/day

Manufacturing (assumes as 40%)

Assumed Area	=	1949 m ²
Assumed floor area per employee	=	43.48 m ² per worker -- (refer to Table 8 of CIFSUS - Manufacturing)
Total number of employees	=	45 employees
Design flow for commercial activities	=	0.53 m ³ /employee/day -- (refer to Table T-2 of GESF - J1)
Sewage Generation rate	=	23.8 m³/day

Overall Catchment B

Flow Rate (without Catchmnet Inflow Factor)	=	36.6 m ³ /day
Catchment Inflow Factor	=	1.1 Catchment Inflow Factor for East Kowloon in Table T-4 of GEFS
Flow Rate (with Catchment Inflow Factor)	=	40.3 m³/day

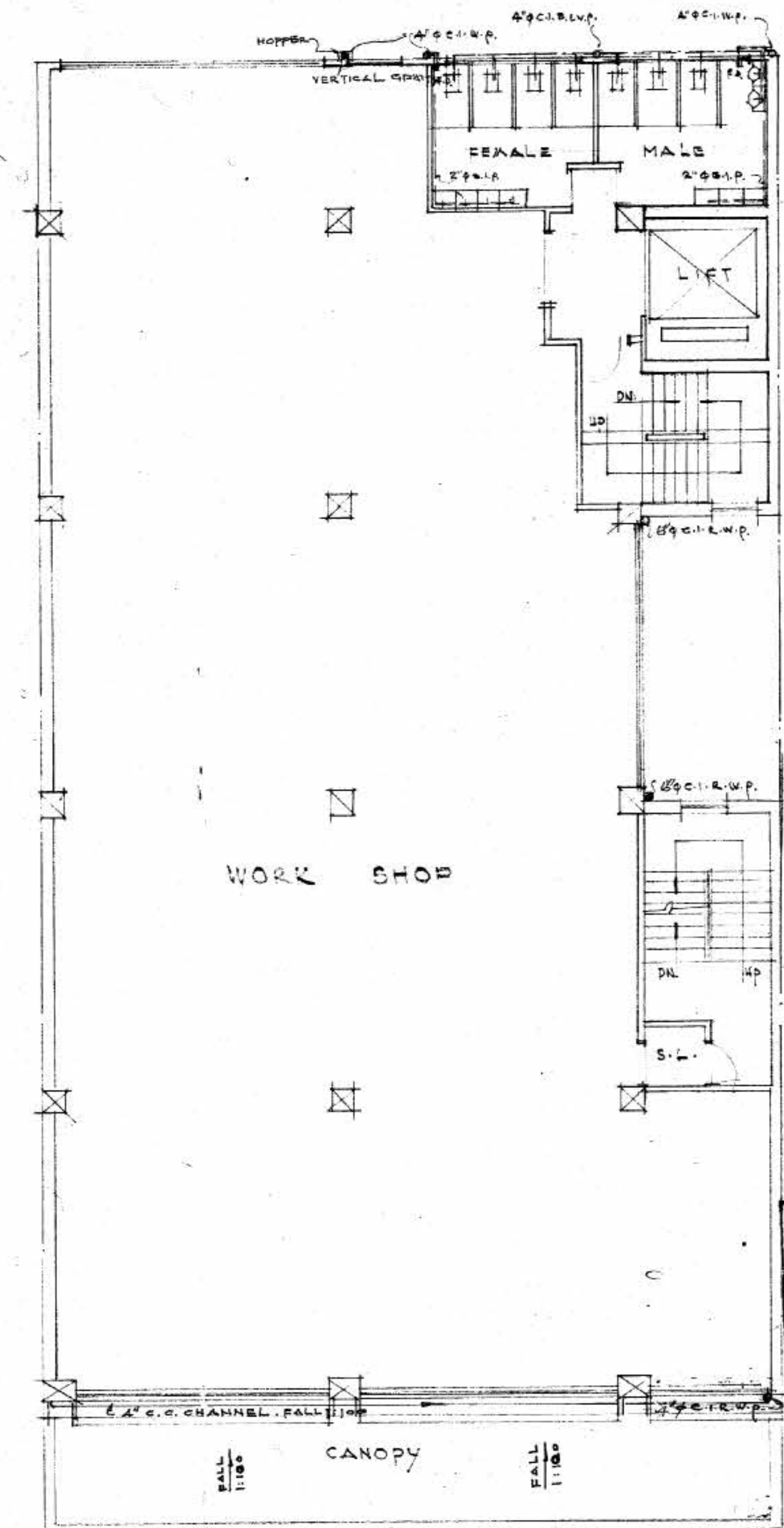
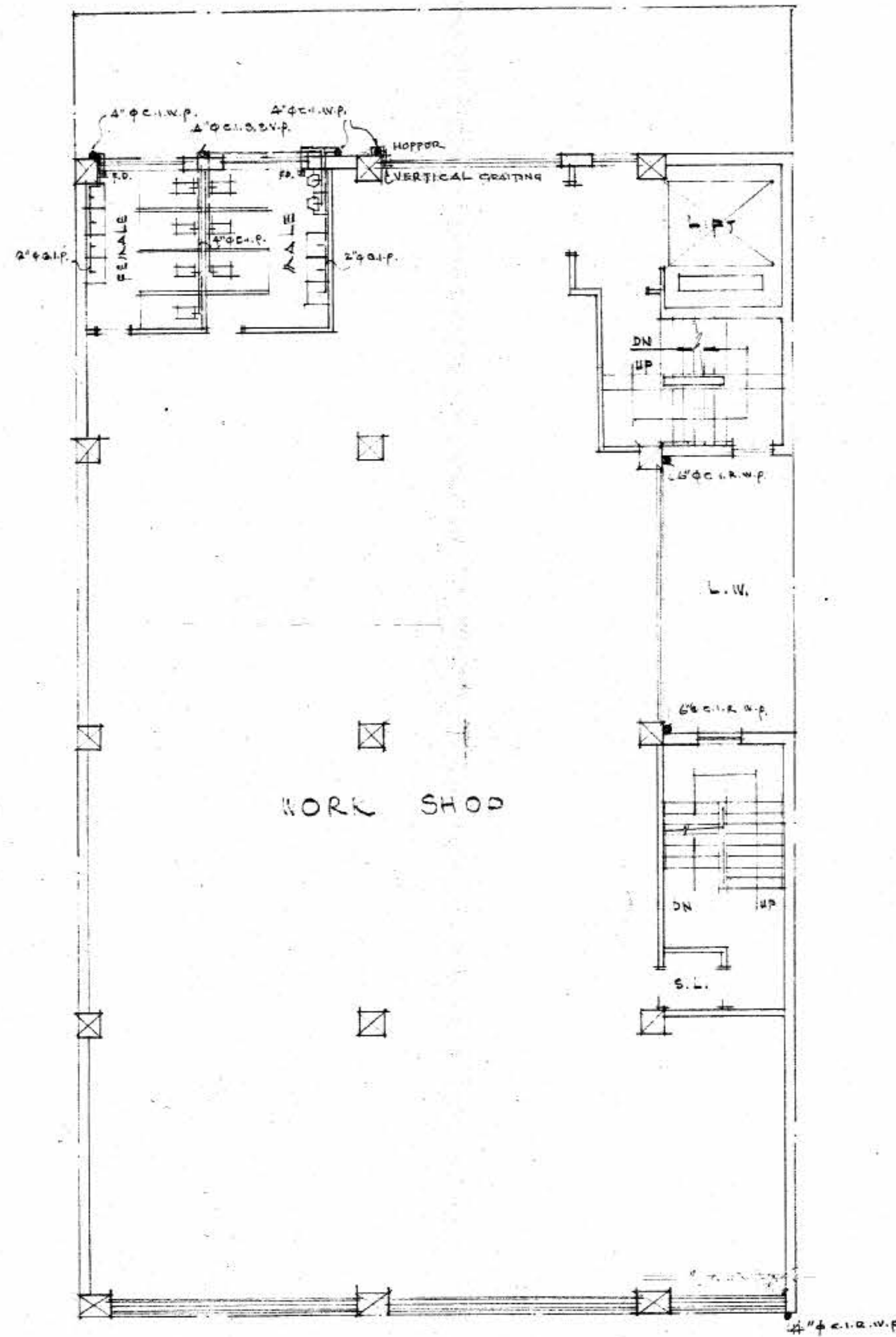
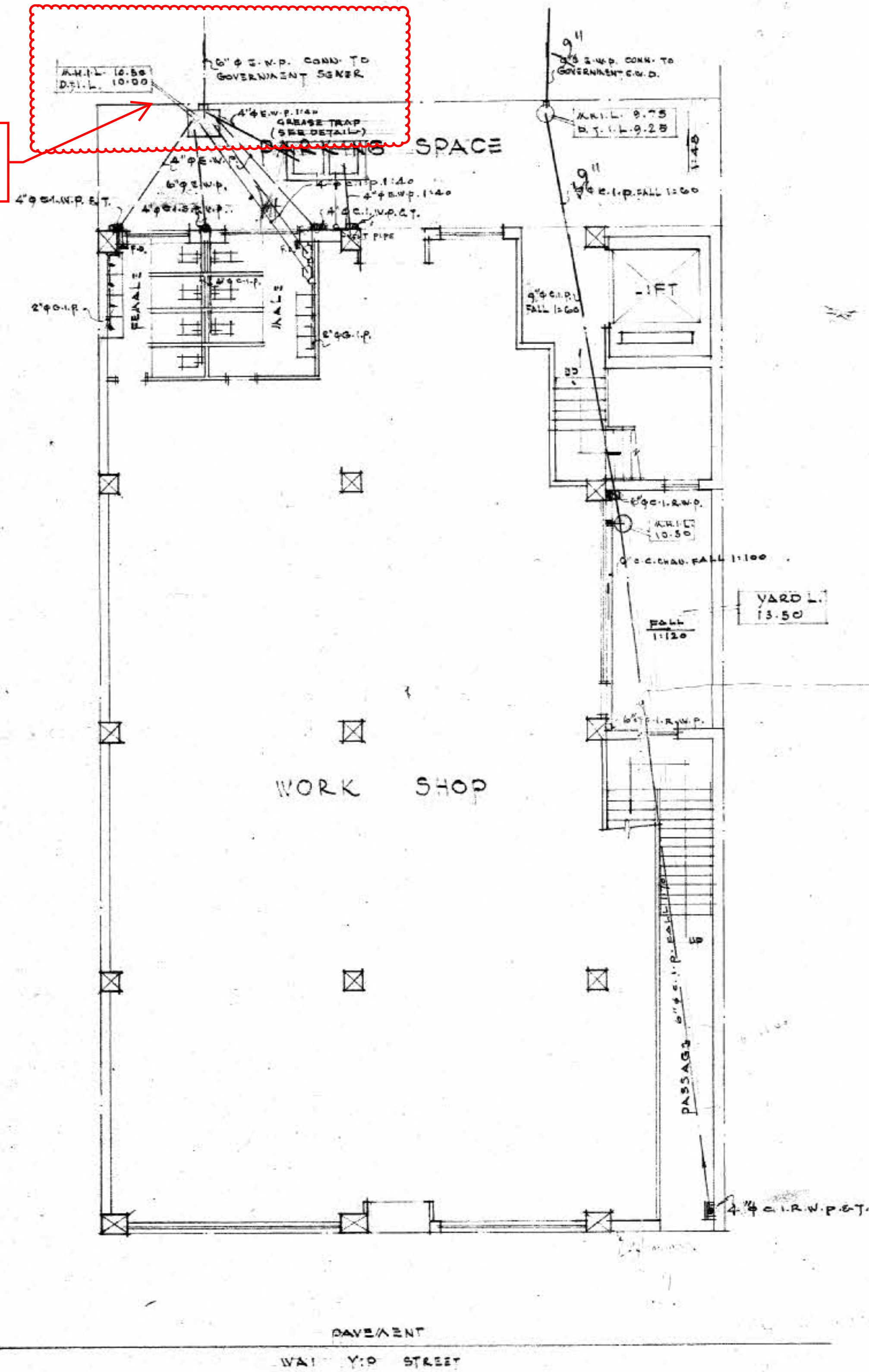
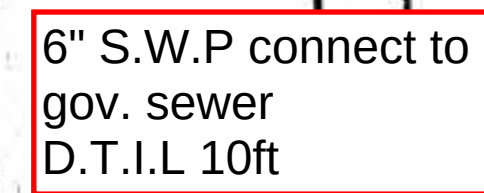
Table 4a Comparison of the Hydraulic Capacity of Existing Sewers for Sewerage generated from the Proposed Development and Surrounding Catchment Areas

Segment	Pipe Dia. (mm)	Pipe Length (m)	Gradient	Estimated Capacity (L/s)	Catchment	ADWF (m ³ /day)	Contributing Population	Peaking Factor	Swimming Pool (L/s)	Peak Flow from the Proposed Development and Catchment Areas (L/s)	Contribution from the Proposed Development and the Surrounding Catchment Areas (%)	Status
T1-S1	150	6.3	0.148	69	S	196.4	727	8	0.0	18.2	26.4%	OK
S1-S2	225	12.3	0.009	49	S, A	448.7	1662	6	0.0	31.2	63.5%	OK
S2-S3	225	12.4	0.010	51	S, A, B	489.0	1811	6	0.0	34.0	66.4%	OK
S3-S4	225	13.3	0.011	53	S, A, B	489.0	1811	6	0.0	34.0	63.7%	OK

Note:

1. The value of peaking factor = 8 is used for population <1,000 incl. stormwater allowance (refers to Table T-5 of GESF)
2. The value of peaking factor = 6 is used for population 1,000-5,000 incl. stormwater allowance (refers to Table T-5 of GESF)

Appendix 3 Existing Drainage Plan



Approved
PRO BUILDING AUTHORITY
- 4 AUG 1964

RECEIVED BY GROUND FLOOR PLAN

19 JUN 1964
BUILDING OWNERSHIP OFFICE
KOWLOON
P. W. D.

RECEIVED BY
18 JUL 1964
BUILDING ORDINANCE OFFICE
KOWLOON
P. W. D.

DRAINAGE PLAN

FIRST FLOOR PLAN

SECOND TO 8TH FLOOR PLAN

PROPOSED WORKSHOP AT WAI YIP STREET ON K. T. L. No. 511

DATE: 16-6-64	NO. <i>78</i>	TYPE YB'
DWG. NO. 1/2	CHARTERED STRUCTURAL ENGINEER AUTHORISED ARCHITECT OFFICE ROOM 501 HING WAH BUILDING QUEEN'S ROAD CENTRAL HONG KONG	DRAWN BY: CHECK BY:
JOB NO. HD.057	TELEPHONE 33069 24759	