Green Mark Process

Phase 1: Computer Simulations & Enhancing Future Building Performance (Airflow/Solar / Thermal)

Phase 2: Review Building Features To Perform Accordance To Green Mark Award Criteria

Phase 3: Review Base Design Total Energy Consumption (Energy Modelling Requirement)

3a: Propose Recommendation For Further Improvement (if any) With Financial Analysis To Justify Energy Conservation Opportunities (ROI, IRR & NPV)

3b: To Prepare For Approved New Design Technical Data and Additional System For Consultant To Issue Tender.

Phase 4: To Prepare For Energy Modelling For Submission (Only for Goldplus and Platinum Award)

Phase 5: To Prepare Presentation And Submission To BCA Green Mark Committee

Phase 6: To Perform Technical Evaluation On Tender Submittals

Phase 7: and To Perform Testing And Commissioning To Ensure Able To Meet Declare Energy Saving Chillers System Performance (Before Project Handover)

Phase 8: To Continue Monitor Energy Consumption And Chillers Plantroon System Efficiency for a Year Upon Receive Of Temporary Occupancy Permit (TOP)

FORM 1

CERTIFICATION COURSE FOR GREEN MARK MANAGER (GMM)

INTAKE –
DATE –

GROUP PRESENTATION

Team 1- e.g. Façade Efficiency

	Name	
1.		
2.		
3.		
4.		
5.		
6.		

CRITERIA	WGT	SCORE
Presentation **(Presentation skill, ease of understanding)**	**15%**	_____
Speciality Presentation **(Presentation skill, ease of understanding)**	**15%**	_____
Solutions **(Feasibility, ease of implementation and acceptable to most end user)**	**20%**	_____
Return on Investment **(Good Cost Saving)**	**20%**	_____
Investment **(Low cost to implement and owner's willingness to invest)**	**20%**	_____
Impact to Environment **(Reduction of CO2 and helps on Global Issue)**	**10%**	_____
TOTAL	**100%**	======

Assessor 1: _____ **Assessor 2:** _____

Assessor 3: _____

Certification Course on Green Mark Manager – Group Project

For the group project, the class will be grouped into multi-disciplinary teams of 5 to 10 members each. The teams will assume the role of Green Mark Managers in a sustainable development project.

For the next 10 days, the teams are expected to meet regularly to discuss on the case project to explore green strategies and solutions within the allocated budget as given in the table below:

S/N	Specific Area	Budget Allocated
1	Air-conditioning System	$ 2.5 mil
2	Lighting System	$ 1.5 mil
3	Greenery & Water Conservation	$ 2.0 mil
4	Façade	$ 1.5 mil
5	Recycled Material & Sustainable Construction	$1.5 mil

Each team will be given 20 minutes to present their case to the panel of assessors.

Note
Each team will nominate a team leader to liaise with the Course Coordinator on all matters pertaining to this project.

GREEN MARK ASSESSMENT

Date :

Name :

Given Conditions

Budget is only S$ _____million. Please achieve highest Green Mark!!

No.	Criteria	Present Condition	Target Options	Investment (S$)	Payback (yr)	Saving (S$)
1. Energy Efficiency						
1	ETTV	50 W/m2	a) 45W/m2	500K	-	-
			b) 40W/m2	1mil	-	-
2	Air Conditioning System	Conventional	a)refer to the attached			
			b)CO2 sensor	10K		
3	Artificial Lighting	Conventional	a) T5 lighting	50K	2	25K
			b) Conventional			
4	Ventilation for Carparks	80% above ground / 20% basement	a) CO sensor	20K	-	-
			b) Nil			
5	Lifts and Escalators	VVVF motor, Sleep mode, motion sensor	-			
6	Energy Efficient Features	Heat recovery for Hot water	-			
7	Renewable Energy	Nil	a) solar panel	13K/kW	-	-
			b) wind farm	?		
2. Water Efficiency						
1	Water Efficient fittings	Conventional	fitting : good	60K		
			fitting : very good	100K		
			fitting : excellent	200K		
2	Water Usage / Leak detection	sub meter provided	-			
3	Irrigation and Landscaping	Nil	-			
4	Water-Efficient Cooling Tower	Nil	a) Redesign Cooling Tower water treatment	10K		
			b) Nil			
3. Environmental Protection						
1	Sustainable construction	Nil	a) Use of recycled materials (Carpets)	50K		
			b) Nil			
2	Greenary Provision	GA = 1.0	a)No room for any Greenary			
			b)Recycled horticulture waste	6K		
3	Env. Mgt practice	All provided	-			
4	Public Transport Accessibility	Nearby MRT	a)Bicycle parking lots	5k		
5	Refrigerants	R134a provided	a)Leak detector	20K		

TENDER DOCUMENT
FOR
AIR CONDITIONING & MECHANICAL VENTILATION INSTALLATION
FOR

PROPOSED MIXED-USE DEVELOPMENT OF ONE (1) BLOCK 30 – STOREY COMMERCIAL BUILDING CONSISTING OF:

A) 1 NO. LEVEL OF RETAIL/COMMERCIAL (LEVEL 1)
B) 5 NOS. LEVELS OF CAR PARKING (LEVELS 2-6)
C) 2 NOS. LEVELS OF RECREATION/FUNCTION SPACE (LEVELS 7+7A)
D) 4 NOS. LEVELS OF HOTEL SERVICE APARTMENTS (LEVELS 8-11)
E) 2 NOS. LEVEL OF OFFICES (LEVELS 12-13)
F) 14 NOS. LEVELS OF DUPLEX SERVICE APARTMENTS (LEVELS 14-27)
G) 1 NO. LEVEL OF PENTHOUSE OFFICE (LEVEL 28) INCLUDING MEZZANINE OFFICE LEVEL (LEVEL 28A)
H) 1 NO. LOWER GROUND LEVEL OF FOOD SQUARE (LEVEL LG)
I) 2 NOS. BASEMENT CAR PARKING (LEVEL B1 AND B2)

INCLUDING ALL MECHANICAL AND ELECTRICAL UTILITY LEVELS AND SPACES ON LOT 162, SEK 63, JALAN TUN RAZAK, KUALA LUMPUR UNTUK TETUAN GOLDIS TOWER SDN BHD (FORMERLY KNOWN AS LA RESIDENCE SDN BHD)

Architect:

BEP AKITEK SDN BHD
7th Floor, Bangunan 3M,
6A, Persiaran Tropicana,
Tropicana Golf & Country Resort,
47410 Petaling Jaya,
Selangor Darul Ehsan

in association with:

THE ARCHITECTURAL NETWORK
27C, 3rd Floor, Jalan 52/1,
46200 Petaling Jaya,
Selangor Darul Ehsan

Quantity Surveyor:

PERUNDING KOS T & K SDN BHD
Suite E-11-05 & E-11-06, Wisma Sunrise
Plaza Mont' Kiara,
No.2, Jalan Kiara, Mont' Kiara
50480 Kuala Lumpur.

Civil & Structural Engineer:

TY LIN INTERNATIONAL SDN BHD
No. 61-2, Jalan SS23/15
47400 Petaling Jaya
Selangor Darul Ehsan

Mechanical & Electrical Engineer:

JURUTERA PERUNDING VALDUN SDN. BHD.
611, Block E,
Phileo Damansara 1,
No. 9, Jalan 16/11,
Off Jalan Damansara, 46350 Petaling Jaya
Selangor Darul Ehsan

JOB NO. : JPV 466

DATE : JANUARY 2007



GOLDIS TOWER

G-Energy Global Pte Ltd

GREEN MARK

Schedule of Chillers

Unit No.	Total Cooling Capacity	Cooler			Condenser			Power Input					Type of Chiller	Function	Power Source	Remarks
	(kW)	Ent. °C	Lvg. °C	Flow (L/S)	Ent. °C	Lvg. °C	Flow (L/S)	kW	Volt	Ph.	Hz.	R.P.M				
CH-1	1,671	13.3	6.7	60	36.1	30.6	90	309	415	3	50		Screw Compressor	Duty	MCC-AC-L6-1	
CH-2	1,671	13.3	6.7	60	36.1	30.6	90	309	415	3	50		Screw Compressor	Duty	MCC-AC-L6-1	
CH-3	1,671	13.3	6.7	60	36.1	30.6	90	309	415	3	50		Screw Compressor	Duty	MCC-AC-L6-1	
CH-4	1,671	13.3	6.7	60	36.1	30.6	90	309	415	3	50		Screw Compressor	Duty	MCC-AC-L6-2	
CH-5	1,671	13.3	6.7	60	36.1	30.6	90	309	415	3	50		Screw Compressor	Duty	MCC-AC-L6-2	
CH-6	1,671	13.3	6.7	60	36.1	30.6	90	309	415	3	50		Screw Compressor	Future Standby Unit	MCC-AC-L6-2	

Schedule of Cooling Towers

Unit No.	Heat Rejection Capacity (kW)	Flow (L/S)	Ent. / Lvg. Water °C db	Ambient	Power Input					Type of Starter	Type of Cooling Tower	Function	Power Source	Remarks
					kW	Volt	Ph.	Hz.	R.P.M					
CT-1	2,088	90	36.1 / 30.6	27.8	22	415	3	50	720	A/T	Cross Flow	Duty	SPAC-CT-RL	
CT-2	2,088	90	36.1 / 30.6	27.8	22	415	3	50	720	A/T	Cross Flow	Duty	SPAC-CT-RL	
CT-3	2,088	90	36.1 / 30.6	27.8	22	415	3	50	720	A/T	Cross Flow	Duty	SPAC-CT-RL	
CT-4	2,088	90	36.1 / 30.6	27.8	22	415	3	50	720	A/T	Cross Flow	Duty	SPAC-CT-RL	
CT-5	2,088	90	36.1 / 30.6	27.8	22	415	3	50	720	A/T	Cross Flow	Duty	SPAC-CT-RL	
CT-6	2,088	90	36.1 / 30.6	27.8	22	415	3	50	720	A/T	Cross Flow	Future Standby Unit	SPAC-CT-RL	

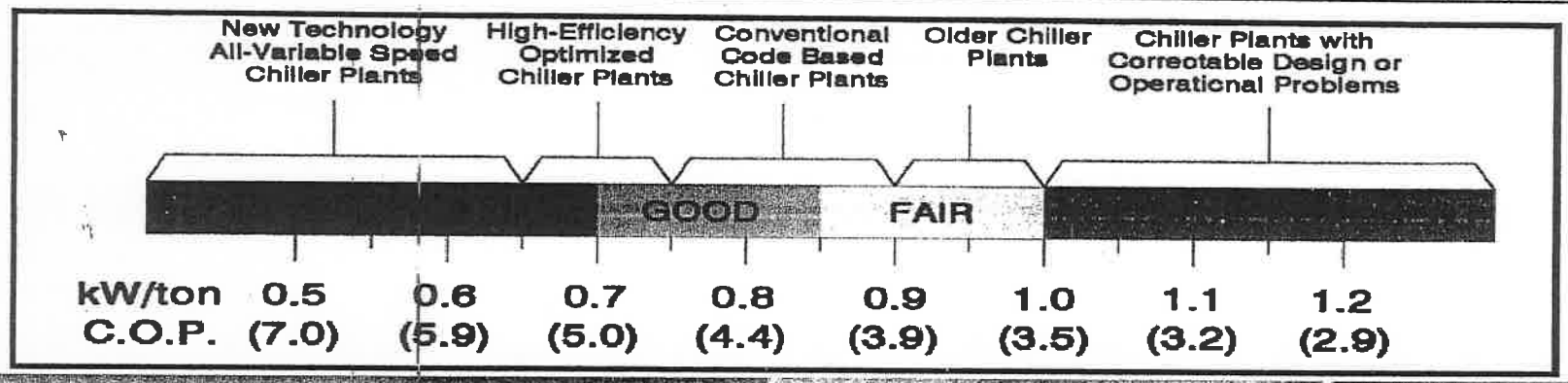
Schedule of Pumps

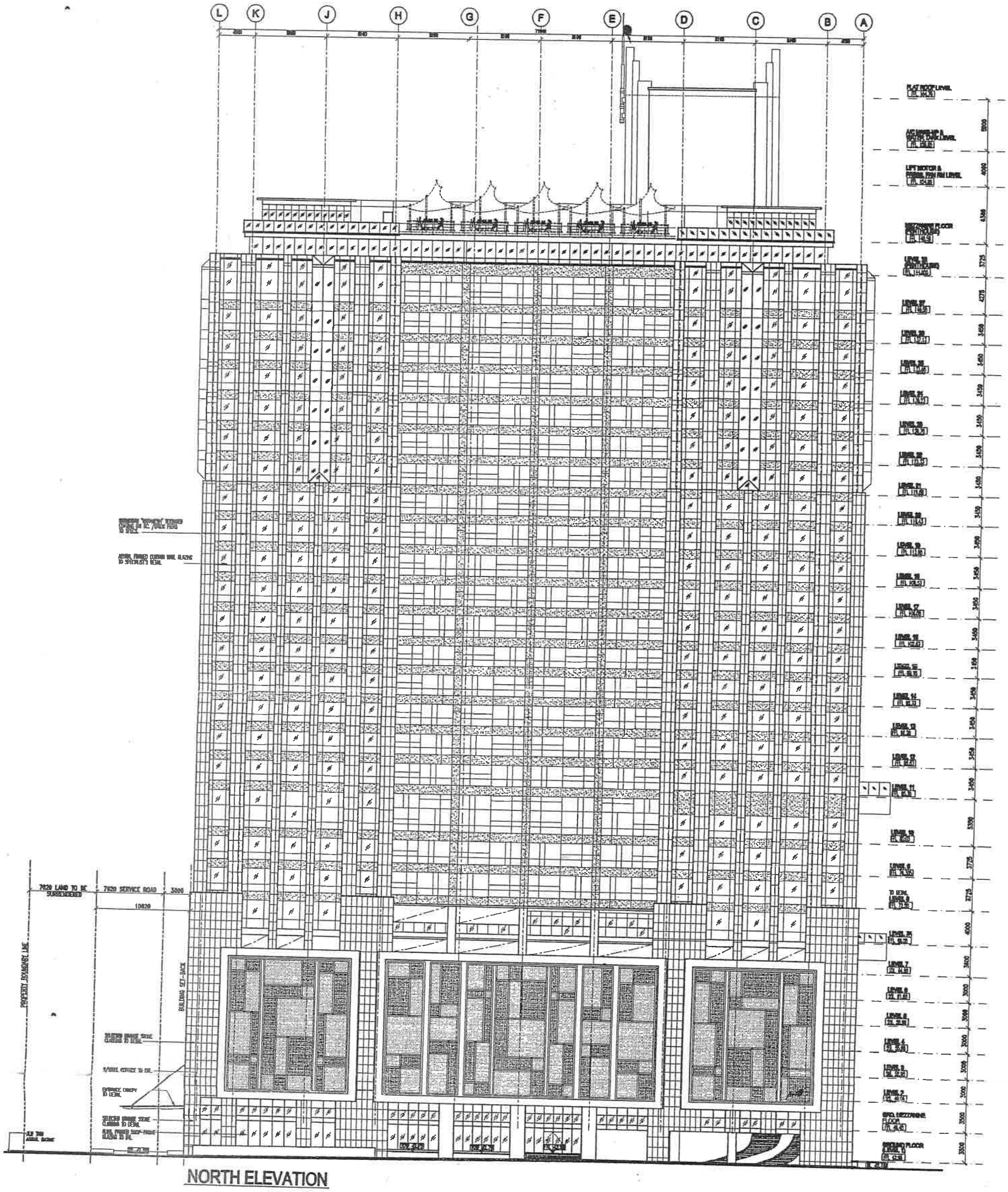
Unit No.	Flow (L/S)	Total Head (m)	Type of Pump	Vibration Isolator	Power Input					Type of Starter	Function	Power Source	Remarks
					kW	Volt	Ph.	Hz.	R.P.M				
CWP-1	90	47	End-Suction Vertical Discharge	Springs on Inertia Blocks	75	415	3	50	1450	A/T	Duty	MCC-AC-L6-3	
CWP-2	90	47	End-Suction Vertical Discharge	Springs on Inertia Blocks	75	415	3	50	1450	A/T	Duty	MCC-AC-L6-3	
CWP-3	90	47	End-Suction Vertical Discharge	Springs on Inertia Blocks	75	415	3	50	1450	A/T	Duty	MCC-AC-L6-3	
CWP-4	90	47	End-Suction Vertical Discharge	Springs on Inertia Blocks	75	415	3	50	1450	A/T	Duty	MCC-AC-L6-3	
CWP-5	90	47	End-Suction Vertical Discharge	Springs on Inertia Blocks	75	415	3	50	1450	A/T	Duty	MCC-AC-L6-3	
CWP-6	90	47	End-Suction Vertical Discharge	Springs on Inertia Blocks	75	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	
PCHWP-1	60	30	End-Suction Vertical Discharge	Springs on Inertia Blocks	30	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	
PCHWP-2	60	30	End-Suction Vertical Discharge	Springs on Inertia Blocks	30	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	
PCHWP-3	60	30	End-Suction Vertical Discharge	Springs on Inertia Blocks	30	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	
PCHWP-4	60	30	End-Suction Vertical Discharge	Springs on Inertia Blocks	30	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	
PCHWP-5	60	30	End-Suction Vertical Discharge	Springs on Inertia Blocks	30	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	
PCHWP-6	60	30	End-Suction Vertical Discharge	Springs on Inertia Blocks	30	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L6-3	

Unit No.	Flow (L/S)	Total Head (m)	Type of Pump	Vibration Isolator	Power Input					Type of Starter	Function	Power Source	Remarks
					kW	Volt	Ph.	Hz.	R.P.M				
CTTP-1	9.0	150	End-Suction Vertical Discharge	Springs on Inertia Blocks	35	415	3	50	2900	A/T	Duty	SPAC-CTTP-GF	
CTTP-2	9.0	150	End-Suction Vertical Discharge	Springs on Inertia Blocks	35	415	3	50	2900	A/T	Standby Unit	SPAC-CTTP-GF	
SCHWP-1	60	42	End-Suction Vertical Discharge	Springs on Inertia Blocks	37	415	3	50	1450	A/T	Duty	MCC-AC-L3	Variable Speed
SCHWP-2	60	42	End-Suction Vertical Discharge	Springs on Inertia Blocks	37	415	3	50	1450	A/T	Duty	MCC-AC-L3	Variable Speed
SCHWP-3	60	42	End-Suction Vertical Discharge	Springs on Inertia Blocks	37	415	3	50	1450	A/T	Duty	MCC-AC-L3	Variable Speed
SCHWP-4	60	42	End-Suction Vertical Discharge	Springs on Inertia Blocks	37	415	3	50	1450	A/T	Duty	MCC-AC-L3	Variable Speed
SCHWP-5	60	42	End-Suction Vertical Discharge	Springs on Inertia Blocks	37	415	3	50	1450	A/T	Duty	MCC-AC-L3	Variable Speed
SCHWP-6	60	42	End-Suction Vertical Discharge	Springs on Inertia Blocks	37	415	3	50	1450	A/T	Future Standby Unit	MCC-AC-L3	Variable Speed

Saving and Cash Flow Evaluation

	Chiller Configuration	Refrigerant	Peak Hours	Off-Peak Hours	Expected Additional Annual Saving	Investment	ROI (years)	Peak Load Redundancy (1900RT)	Off-Peak Load Redundancy (600RT)	Flexibility in Tonnage	System Efficiency (kW/Ton)	NPV @ 4% using 15 years life cycle	IRR using 15 years life cycle
Current	5 x 475RT	R134a	4 x 475RT	2 x 475RT	-	-	-	(1900) Good	Good	Good	0.9 Fair		
Proposal 1	5 x 475RT	R134a	4 x 475RT	2 x 475RT	$ 500,000	$ 700,000	1.4	(1900) Good	Good	Good	0.75 Fair	$4,859,193.72	71.4%
Proposal 2	3 x 800RT + 1 x 350RT	R134a	3 x 800RT	1 x 800RT	$ 650,000	$ 1,600,000	2.5	(1950RT) Good	Good	Good	0.7 Good	$5,626,951.83	40.4%
Proposal 3	3 x 800RT + 1 x 350RT	R123 + R134a	3 x 800RT	1 x 800RT	$ 800,000	$ 1,750,000	2.2	(1950RT) Good	Good	Good	0.65 Very Good	$7,144,709.95	45.6%
Proposal 4	4 x 650RT	R134a	3 x 650RT	1 x 650RT	$ 650,000	$ 1,600,000	2.5	(1950RT) Very Good	Good	Good	0.7 Good	$5,626,951.83	40.4%
Proposal 5	4 x 650RT	R123	3 x 650RT	1 x 650RT	$ 800,000	$ 1,800,000	2.3	(1950RT) Very Good	Good	Good	0.65 Very Good	$7,094,709.95	44.3%
Proposal 6	3 x 600RT + 2 x 350RT	R134a	3 x 600RT + 1 x 350RT	1 x 600RT	$ 650,000	$ 1,600,000	2.5	(1900) Good	Good	Good	0.7 Good	$5,626,951.83	40.4%
Proposal 7	3 x 600RT + 2 x 350RT	R123 + R134a	3 x 600RT + 1 x 350RT	1 x 600RT	$ 800,000	$ 1,700,000	2.1	(1900) Good	Good	Good	0.65 Good	$7,194,709.95	46.9%




L
K
J
H
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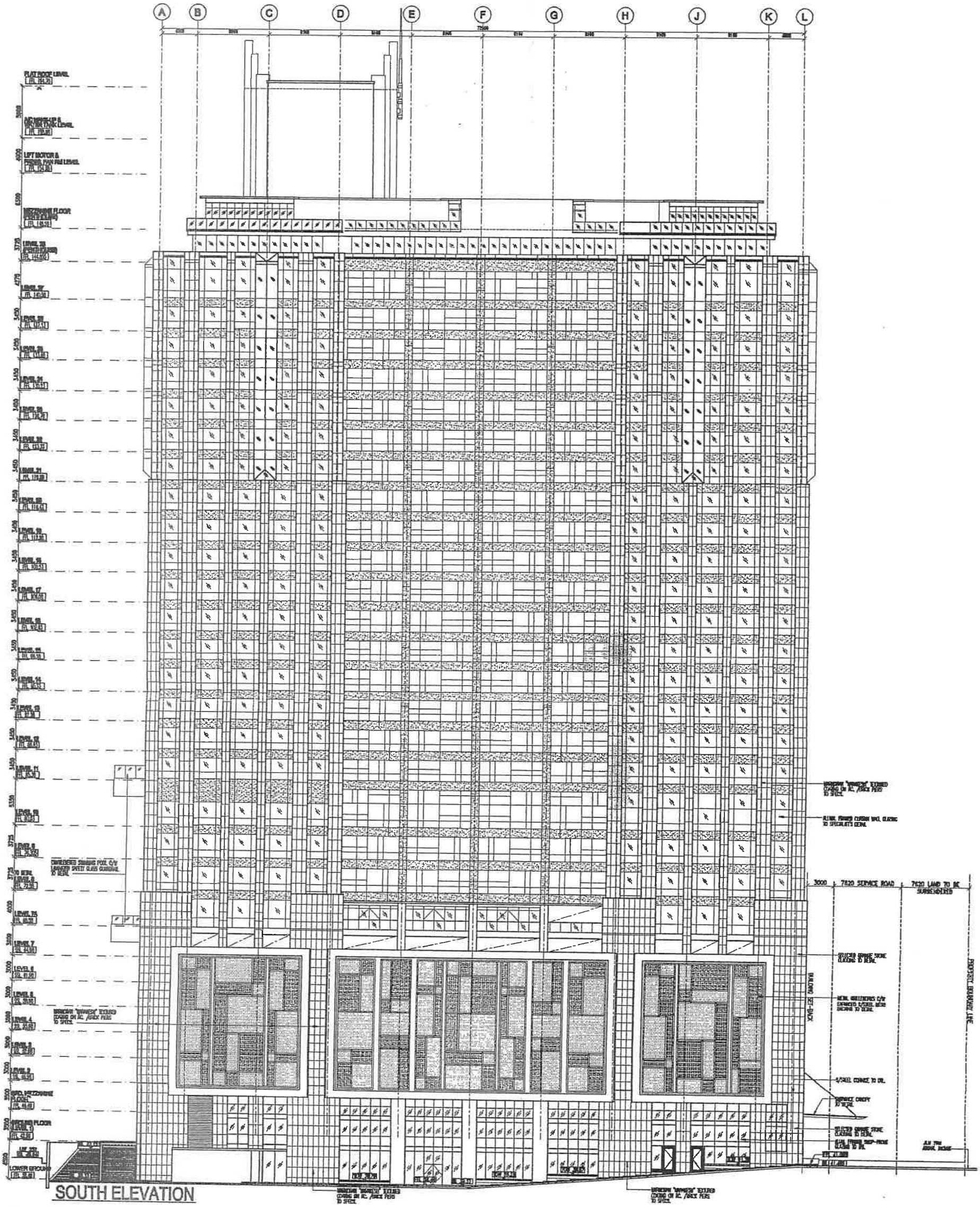
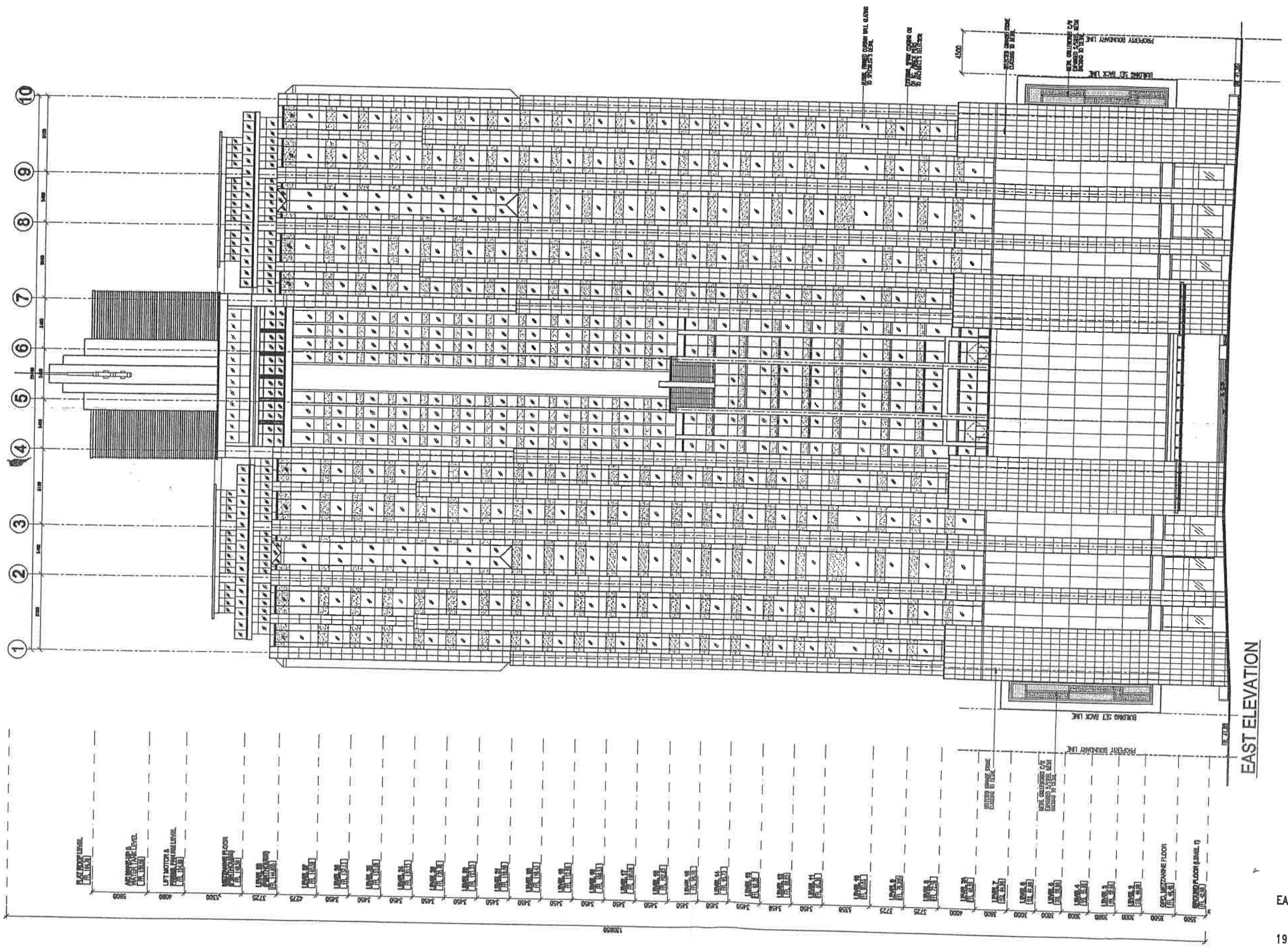
A
7820 LAND TO BE SURRENDERED
7820 SERVICE ROAD
3000
19620
PROPOSED 30M TOWNSHIP ROAD
BUILDING SET-BACK
FLAT ROOF LEVEL
LIFT MOTOR & PUMPING ROOM FLOOR LEVEL
LIFT MOTOR & PUMPING ROOM FLOOR LEVEL
3500
4000
6300
3725
4275
3450
3450
3450



NORTH ELEVATION (SIDE)

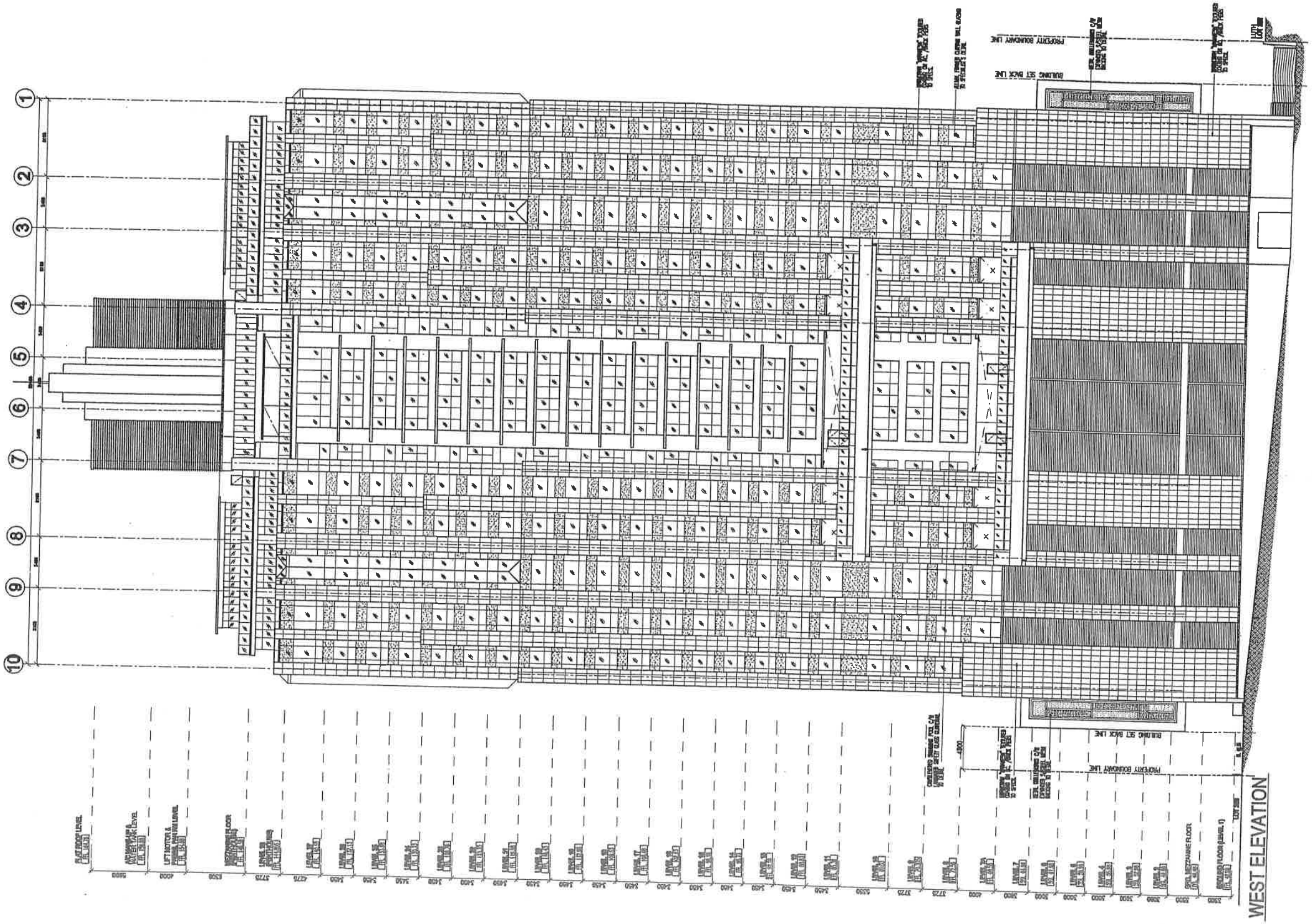
1949/1(KE)303

A



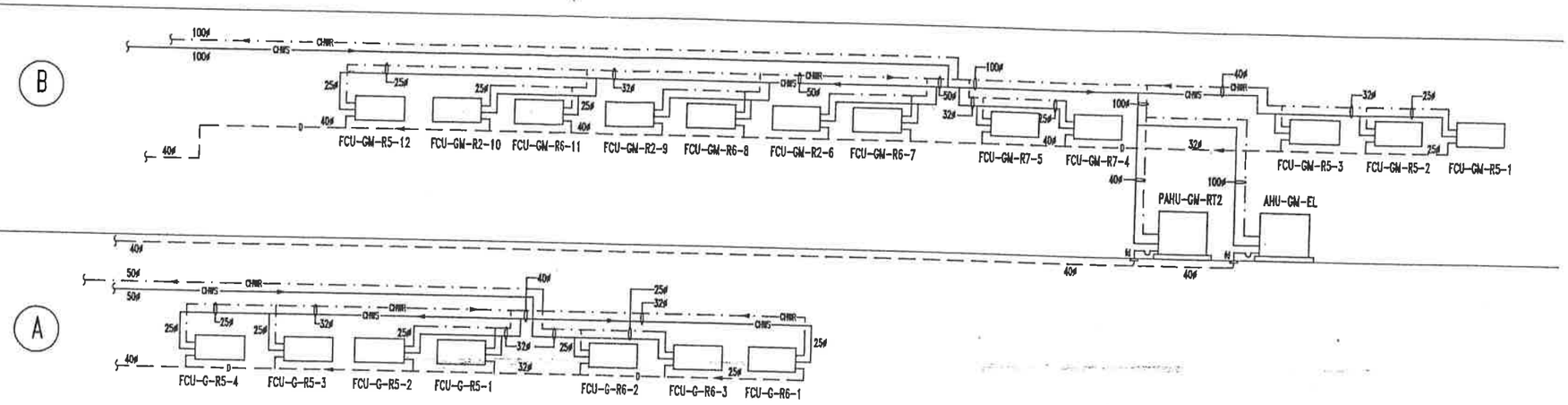
EAST ELEVATION (FRONT)

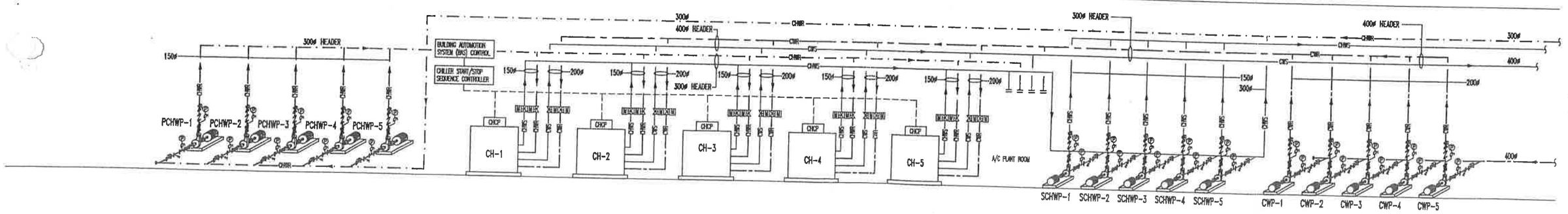
1949/L(KE)301 A

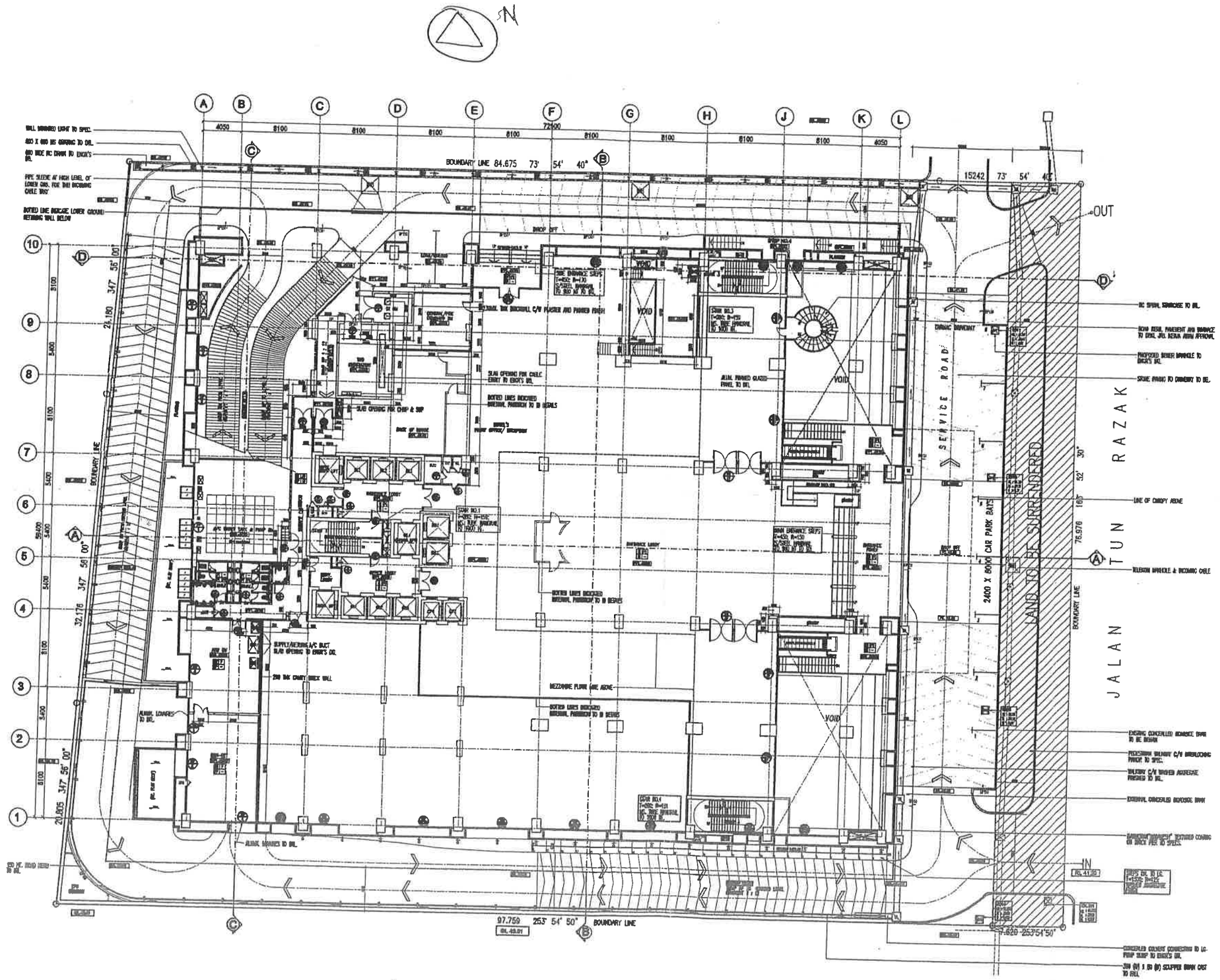


WEST ELEVATION (REAR)

1949/L(KE)302 A


B
100ø
CHWS
CHWR
FCU-GM-R5-12
FCU-GM-R2-10
FCU-GM-R6-11
FCU-GM-R2-9
FCU-GM-R6-8
FCU-GM-R2-6
FCU-GM-R6-7
FCU-GM-R7-5
FCU-GM-R7-4
PAHU-GM-RT2
AHU-GM-EL
FCU-GM-R5-3
FCU-GM-R5-2
FCU-GM-R5-1
A
FCU-G-R5-4
FCU-G-R5-3
FCU-G-R5-2
FCU-G-R5-1
FCU-G-R6-2
FCU-G-R6-3
FCU-G-R6-1


300ø HEADER
400ø HEADER
BUILDING AUTOMATION SYSTEM (BAS) CONTROL
CHILLER START/STOP SEQUENCE CONTROLLER
PCHWP-1
PCHWP-2
PCHWP-3
PCHWP-4
PCHWP-5
CH-1
CH-2
CH-3
CH-4
CH-5
A/C PLANT ROOM
SCHWP-1
SCHWP-2
SCHWP-3
SCHWP-4
SCHWP-5
CWP-1
CWP-2
CWP-3
CWP-4
CWP-5
X



DATE	DESCRIPTION OF AMENDMENT / REVISION
12 JULY 2006	REVISED ROAD LEVEL AT PERIMETER ACCESS ROAD.
05 AUG. 2006	PROPOSED RAMP DISCHARGE POINTS TO NEAREST SUMPS.
25 SEP 2006	REVISED STAIRCASE NO 2 & SHEAR WALL ADJUSTMENT ON STAIRCASE 3 & 4.
26 SEP 2006	UNDER FEATURE TO GF SLAB & REVISED SPIRAL STAIRCASE LOCATION.
24 JAN 2007	REVISED WIDE DOORS LOCATION AND FRONT ENTRANCE STEPS.
05 MAR 2007	AMENDMENT ON SETTING OUT OF RAMP NO. 1
09 MAR 2007	UNDER FEATURE AT GF SLAB TO BE OMITTED.
09 MAR 2007	REVISED TOILET LAYOUT.
10 APR 2007	REVISED LOCATION FOR SEEP NO.1
10 APR 2007	PROPOSED DRAINWATER & SPIRAL STAIRCASE RELOCATION.
11 JUNE 2007	REVISED CAR PARK LIFT OPENING & LOCATION OF CENTRAL COMMAND FAN.

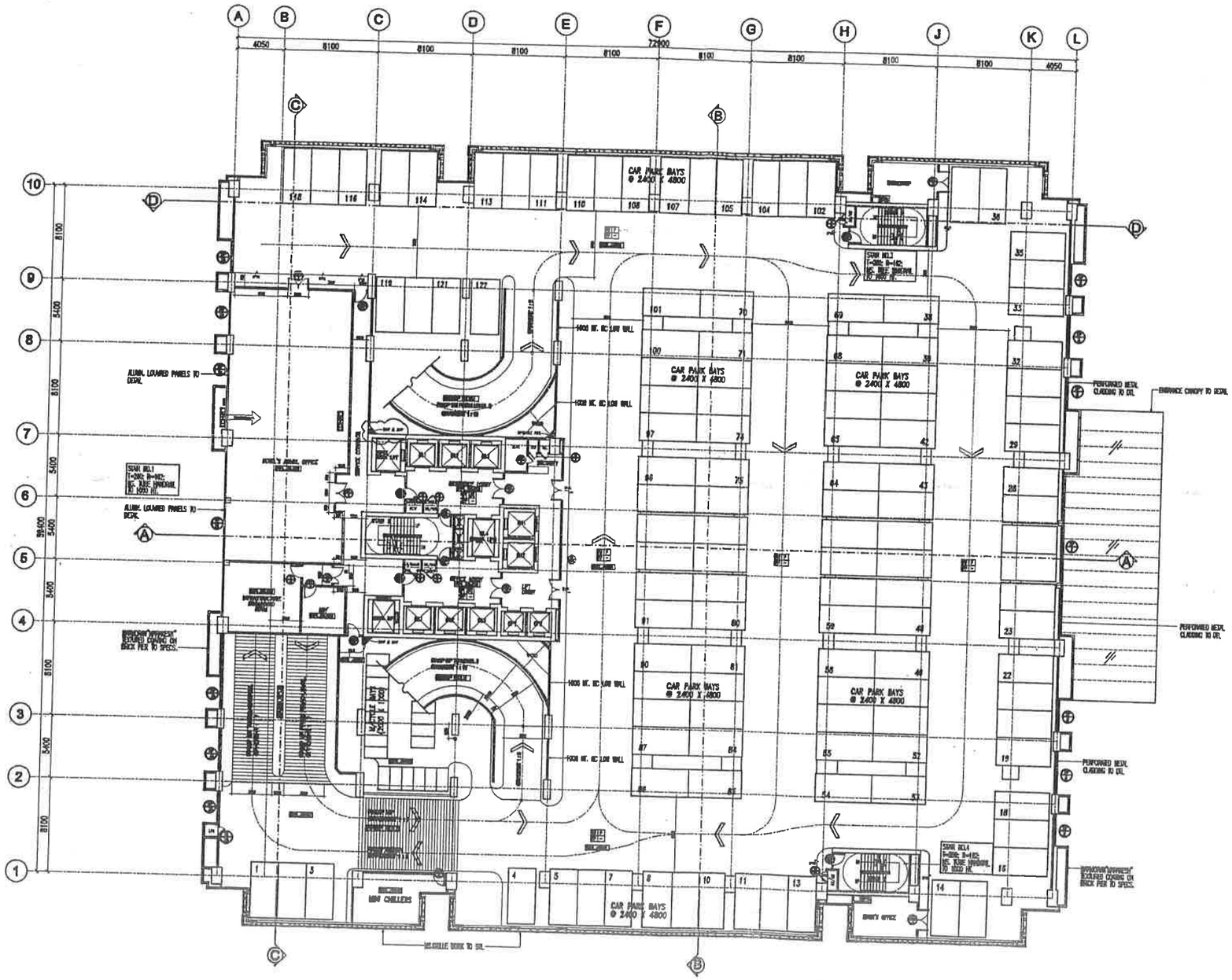
GROUND FLOOR PLAN

1949/L(KP)104

K

P13

DATE	DESCRIPTION OF AMENDMENT / REVISION
28 MAR 2007	PREVIOUS CHILLER ROOM CHANGE TO NOTE BACK OF HOUSE.
28 MAR 2007	REVISION ON BRICKWALL POSITION BETWEEN MOTORCYCLE BAY AND RAMP NO. 6.



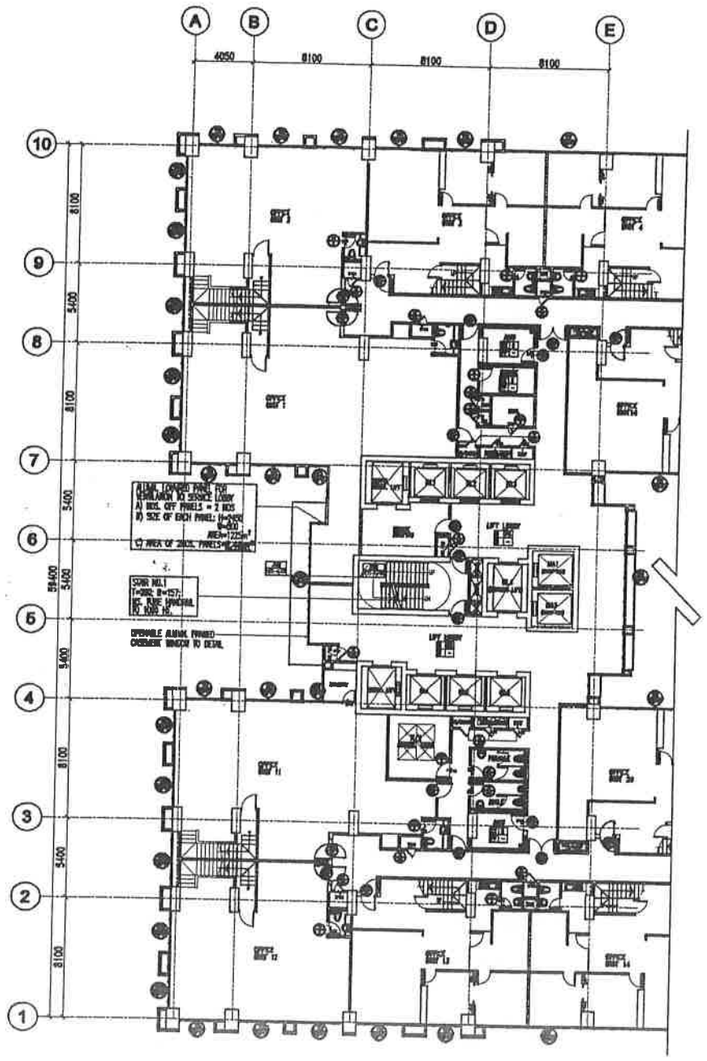
LEVEL 2 CARPARK (122 CPS)

1949/L(KP)105

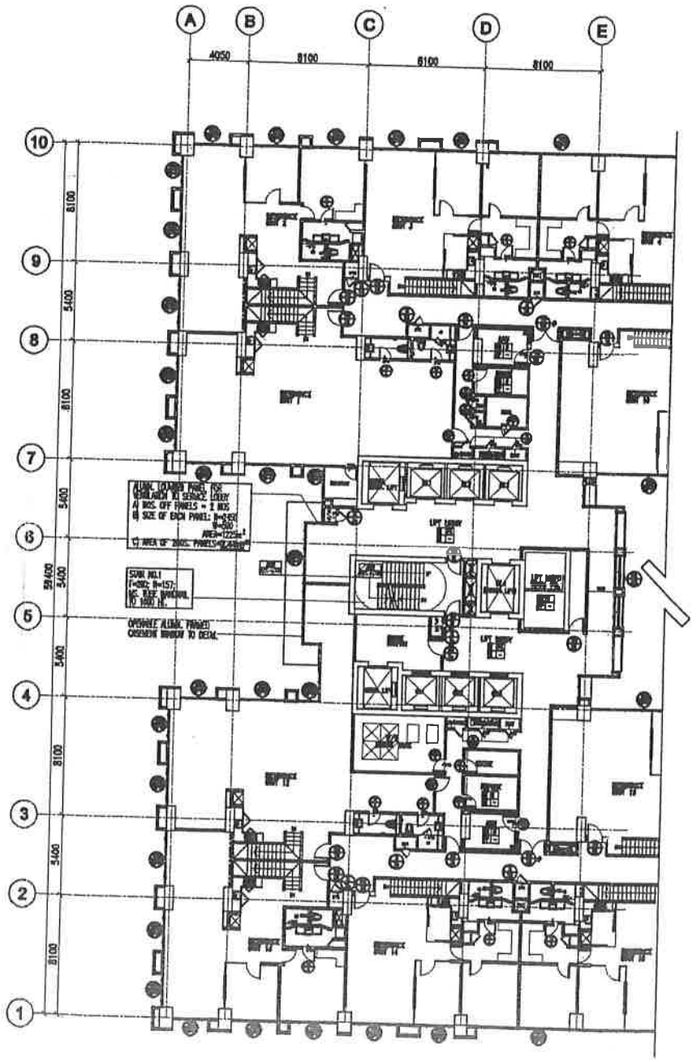
C

P14

DATE	DESCRIPTION OF AMENDMENT / REVISION



PART OF LEVEL 14 FLOOR PLAN
(LOWER DUPLEX FLOOR)

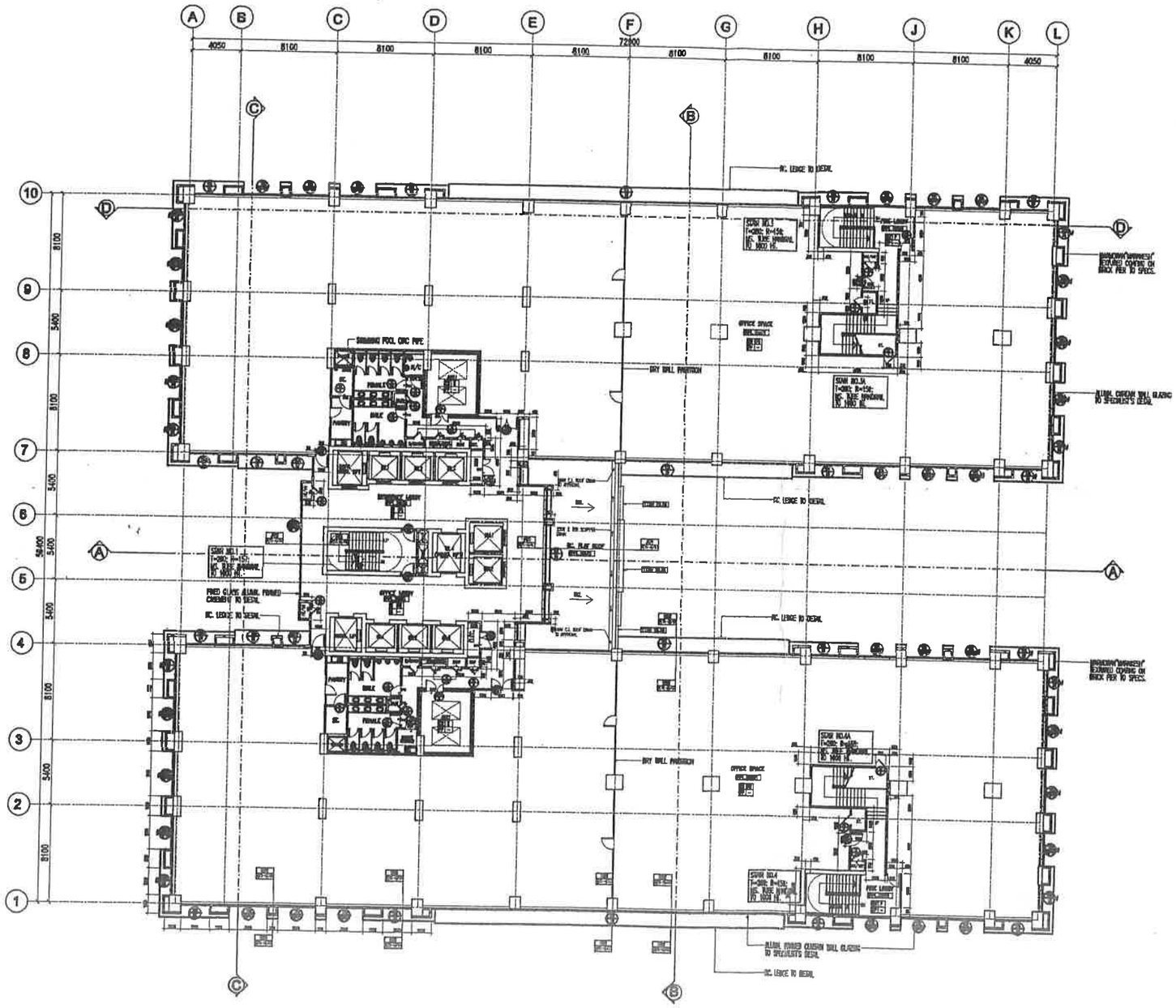


PART OF LEVEL 15 FLOOR PLAN
(UPPER DUPLEX FLOOR)

LEVEL 14&15 FLOOR PLAN – LIFT LOBBY
(UPPER & LOWER DUPLEX)

1949/L(KP)113A B

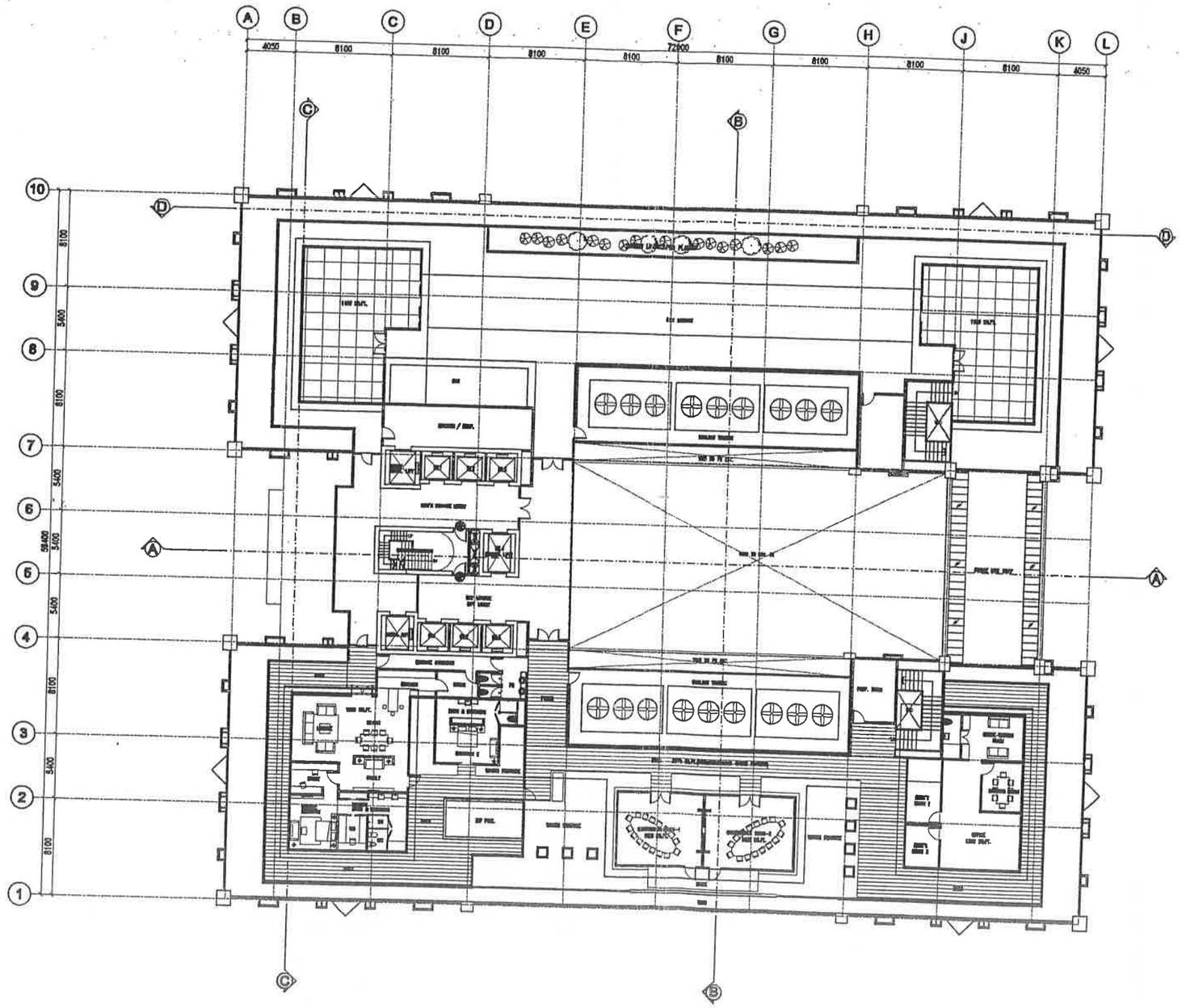
DATE	DESCRIPTION OF AMENDMENT / REVISION
25 JUL 2007	ISSUANCE OF ENVIRO HCV PLAN FOR LEVEL 8



LEVEL 8 OFFICES

1949/L(KP)112A

E



LEVEL 29 SKY LOUNGE & CEO SUITE

1949/L(KP)118 B