



REA Briefing Sessions 2016

Part 3 – Common Non-compliance Item in Statutory Submission

21 Dec 2016
4 Jan 2017
11 Jan 2017

Part 3 – Common Non-compliance Item in Statutory Submission

1. Technical Submissions
2. Public Enquiry
3. Submission Packaging & Change of Building Use

Part 3 – Common Non-compliance Item in Statutory Submission

1. Learn from others' mistakes
2. Know more about BEC & BEEO
3. Close-off the expectations
4. Professional Submission

Part 3 – Common Non-compliance Item in Statutory Submission

1. Technical Submissions

Form EE-EL Submission



Part 3 – Motor Worksheet

direct to Part 4)

Equipment / Motor Reference No.	Installed motor			Comparison with allowed rated efficiency (%) at in BEC Table (please tick the appropriate condition below)
	Rated output power (kW)	2 or 4 poles	Rated efficiency (%) at full load	
(Please insert additional row if necessary)				
Lift no. 01	47.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 02	47.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 03	47.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 04	47.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 05	47.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 06	47.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 07	28.00	4	92.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 08	28.00	4	92.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 09	28.00	4	92.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 10	28.00	4	92.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 11	28.00	4	92.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 12	28.00	4	92.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 13	17.00	4	90.60%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 14	17.00	4	90.60%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 15	44.00	4	93.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
Lift no. 16	9.00	4	88.70%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b)
			0.00%	<input type="checkbox"/> (a) <input type="checkbox"/> (b)
			0.00%	<input type="checkbox"/> (a) <input type="checkbox"/> (b)

FL Motor Efficiency N/A to Lift and Escalator Installation
BEC 7.5.3

Form EE-EL Submission



installation of three-phase single-speed totally enclosed induction motor involved (If no, please proceed to Part 4)

No. / Motor	Installed motor			Rated efficiency (%) at full load in BEC Table 7.5.1 (please tick the applicable condition below*)	Output power or installed motor anticipated system load (BEC Clause 7.5.2) (please tick the applicable condition below*)						
	Rated output power (kW)	2 or 4 poles	Rated efficiency (%) at full load		(a)	(b)	(c)	(d)	(e)	(f)	(g)
(Please insert additional row if necessary)											
	5.50	4	89.20%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 RAF	4.00	4	88.30%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 RAF	3.00	4	87.40%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 RAF	3.00	4	87.40%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 RAF	3.00	4	87.40%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 RAF	3.00	4	87.40%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6 SAF	15.00	4	91.50%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 RAF	4.00	4	86.30%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7 SAF	15.00	4	91.50%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 RAF	4.00	4	86.30%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9 SAF	22.00	4	92.80%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 RAF	18.50	4	92.20%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 SAF	7.50	4	90.10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 RAF	2.20	4	88.40%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8 SAF	15.00	4	91.50%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 RAF	4.00	4	90.00%	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(applicable to Part 5) :-
 Condition (a) – Motor rated efficiency is not lower than the min allowed efficiency specified in BEC Table 7.5.1
 Condition (b) – Motor is not governed by BEC Table 7.5.1, given it being integrated into a machine such that it

25 Worksheets, ~ 430 No. of Motors, all 4 poles ??

- 25 Worksheets submitted;
- Over 400 no. of motors
- All reported as 4-Poles
- Submission content not properly checked.

Form EE-EL Submission



REA to thoroughly check the whole set of worksheet content in the resubmission

installation of three-phase single-speed totally enclosed induction motor involved (If no, please proceed to Part 4)

25 Worksheets, ~ 430 No. of Motors, all 4 poles ??

Item / Motor No.	Installed motor			Rated efficiency (%) at full load in BEC Table 7.5.1 (please tick the applicable condition below*)	Output power or installed motor anticipated system load (BEC Clause 7.5.2)
	Rated output power (kW)	2 or 4 poles	Rated efficiency (%) at full load		
(Please insert additional row if necessary)					
SAF	11.00	4	89.20%	<input checked="" type="checkbox"/> (a)	
RAF	4.00	4	88.30%	<input type="checkbox"/> (a)	
SAF	11.00	4	91.00%	<input checked="" type="checkbox"/> (a)	
RAF	3.00	4	87.40%	<input type="checkbox"/> (a)	
SAF	11.00	4	91.00%	<input checked="" type="checkbox"/> (a)	
RAF	3.00	4	87.40%	<input type="checkbox"/> (a)	
B 6 04 RAF	18.50	4	92.20%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
B 6 05 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
B 6 05 RAF	4.00	4	88.30%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
B 6 06 SAF	11.00	4	91.00%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
B 6 06 RAF	5.50	4	89.20%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
B 6 07	15.00	4	91.50%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
B 6 08	4.00	4	88.30%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
SAF	22.00	4	92.80%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
RAF	18.50	4	92.20%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
SAF	7.50	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
RAF	2.20	4	88.40%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
SAF	15.00	4	91.50%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
RAF	4.00	4	90.00%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
AHU/B 6 12 RAF	4.00	4	88.30%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
AHU/B 6 11	15.00	4	91.50%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
AHU/B 6 14 SAF	15.00	4	91.50%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
AHU/B 6 14 RAF	11.00	4	91.00%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
AHU/B 6 02 SAF	4.00	4	88.30%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
EAF/B 6 08	1.73	4	88.40%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
EAF/B 6 02	3.00	4	87.40%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input checked="" type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	
AHU/B 6 04 SAF	30.00	4	93.20%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c) <input type="checkbox"/> (d) <input type="checkbox"/> (e)	

Installed motors 2 poles from AHU schedule by vendor

2 poles motor shown in AHU schedule by vendor

(applicable to Part 3) :-
 Condition (a) – Motor rated efficiency is not lower than the min allowed efficiency specified in BEC Table 7.5.1.
 Condition (b) – Motor is not governed by BEC Table 7.5.1, given it being integrated into a machine which cannot be tested separately (BEC Clause 7.5.1).

* Remarks (applicable to Part 3) :-
 Condition (a) – Motor rated efficiency is not lower than the min allowed efficiency specified in BEC Table 7.5.1.
 Condition (b) – Motor is not governed by BEC Table 7.5.1, given it being integrated into a machine which cannot be tested separately (BEC Clause 7.5.1).

Form EE-EL Submission

Motor	Rated output power (kW)	2 or 4 poles	Rated efficiency (%) at full load	allowed rated motor efficiency (%) at full load in BEC Table 7.5.1 (please tick the applicable condition below*)
(Please insert additional row if necessary)				
	11.00	4	91.00%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	7.50	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.44	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.60	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.27	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	7.53	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	6.80	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	7.53	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	7.54	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.50	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.50	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.50	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.50	4	83.60%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	8.63	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	7.50	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	4.80	4	86.30%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	2.46	4	88.40%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.73	4	85.00%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	1.96	4	85.00%	<input type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	6.32	4	90.10%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)
	5.50	4	89.20%	<input checked="" type="checkbox"/> (a) <input type="checkbox"/> (b) <input type="checkbox"/> (c)

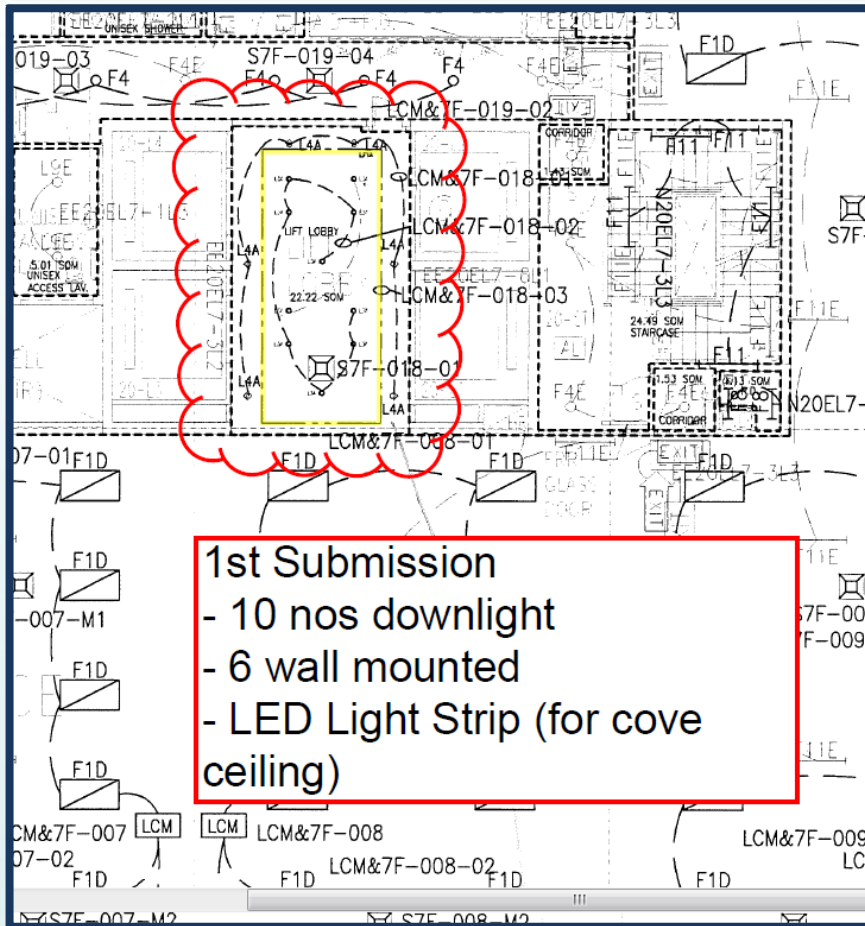
Motor Efficiency

Every motor < 5 kW
Not properly checked!

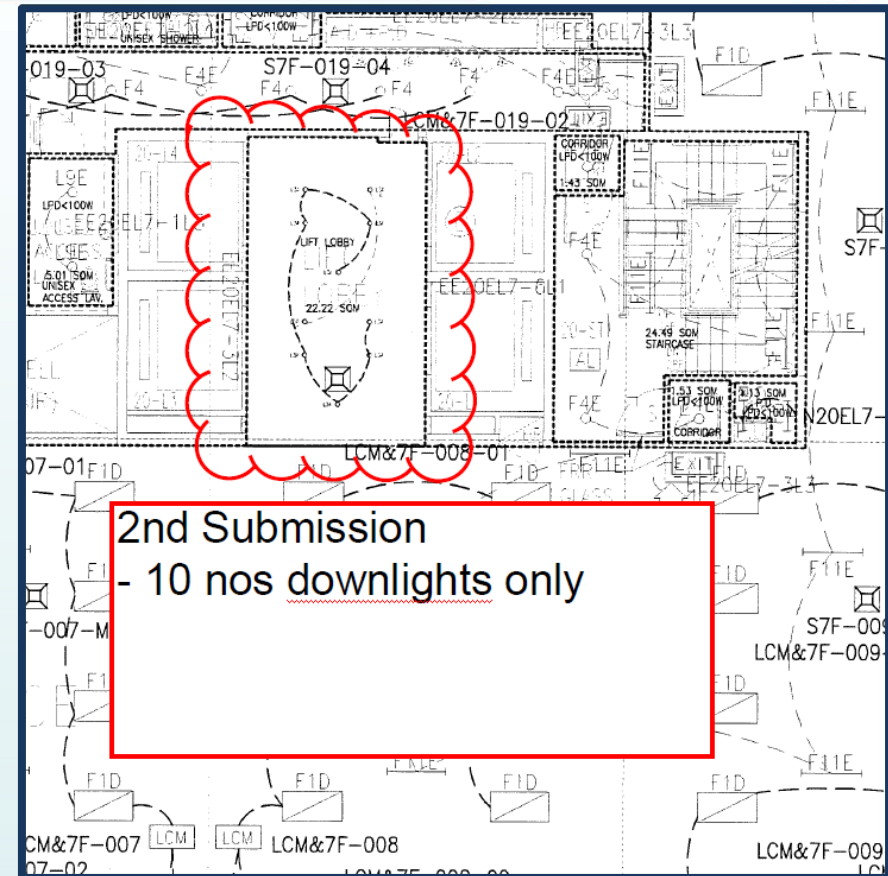
- Mis-understanding ?
- Motor type not governed?
Not explained in the submission

Note: BEC governs the efficiency of 3-ph induction motor of 5 kW or below

Form EE-LG Submission – Office Building xxE

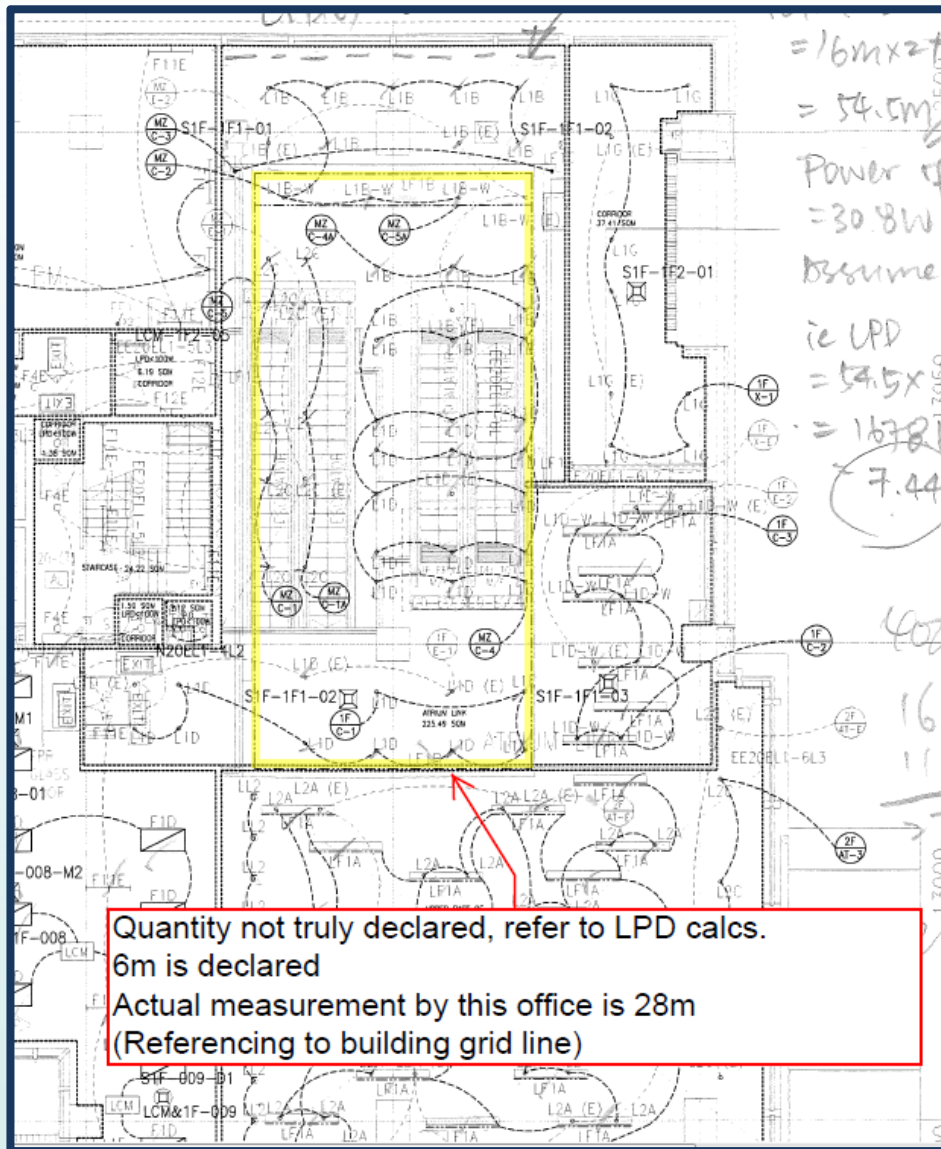


Lift Lobby LPD calculation:
 10 no. of downlight only, other light fitting excluded.
 Part 3, Form EE-LG, LED light strip not filled in



Lift Lobby LPD calculation (Re-submission):
 Omits lighting on plan to in line with the calculation.
 Light strip still ~~missing~~

Form EE-LG Submission – Office Building xxE



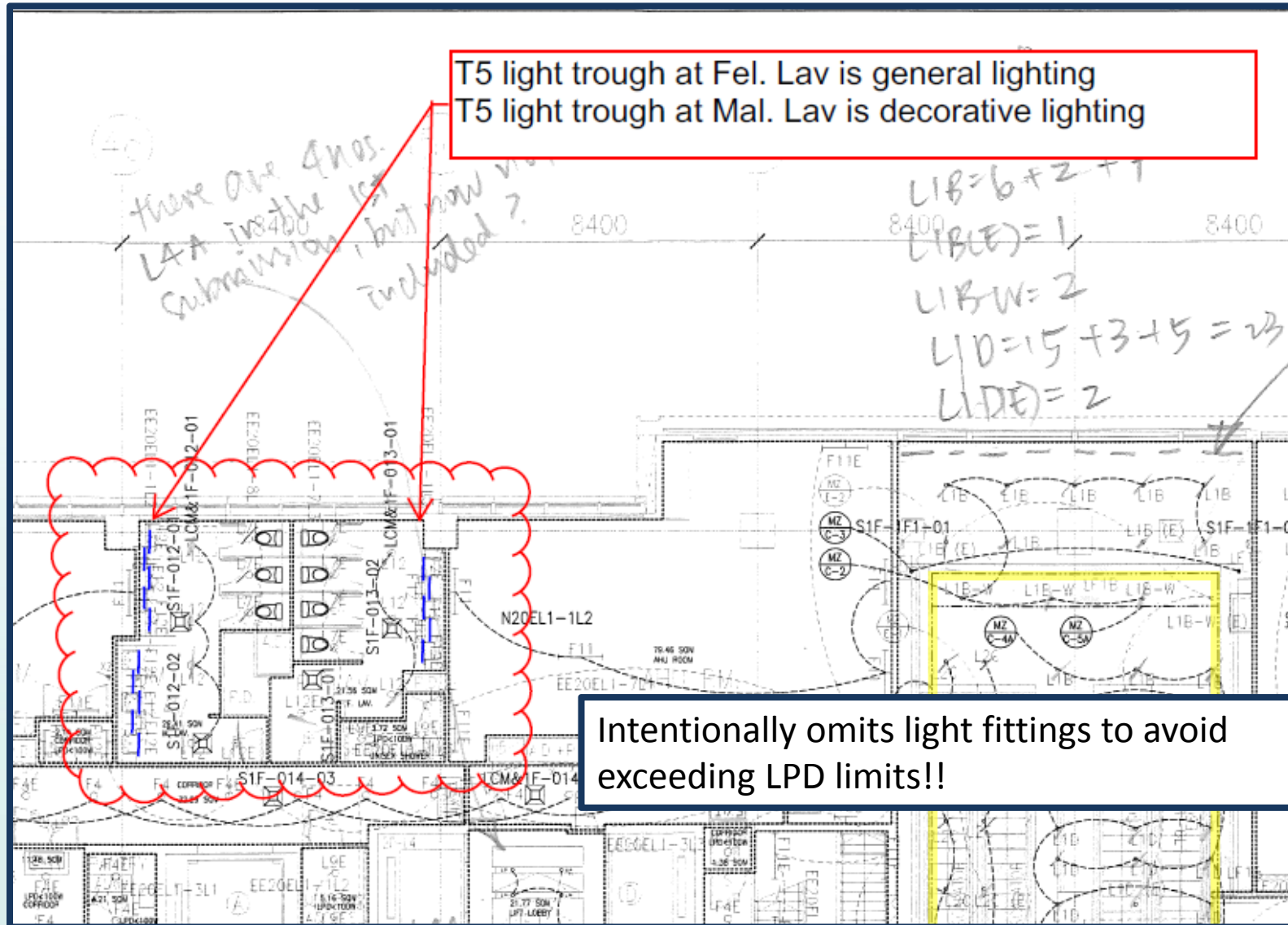
Grid Line

Grid Line

Obvious Measurement Error

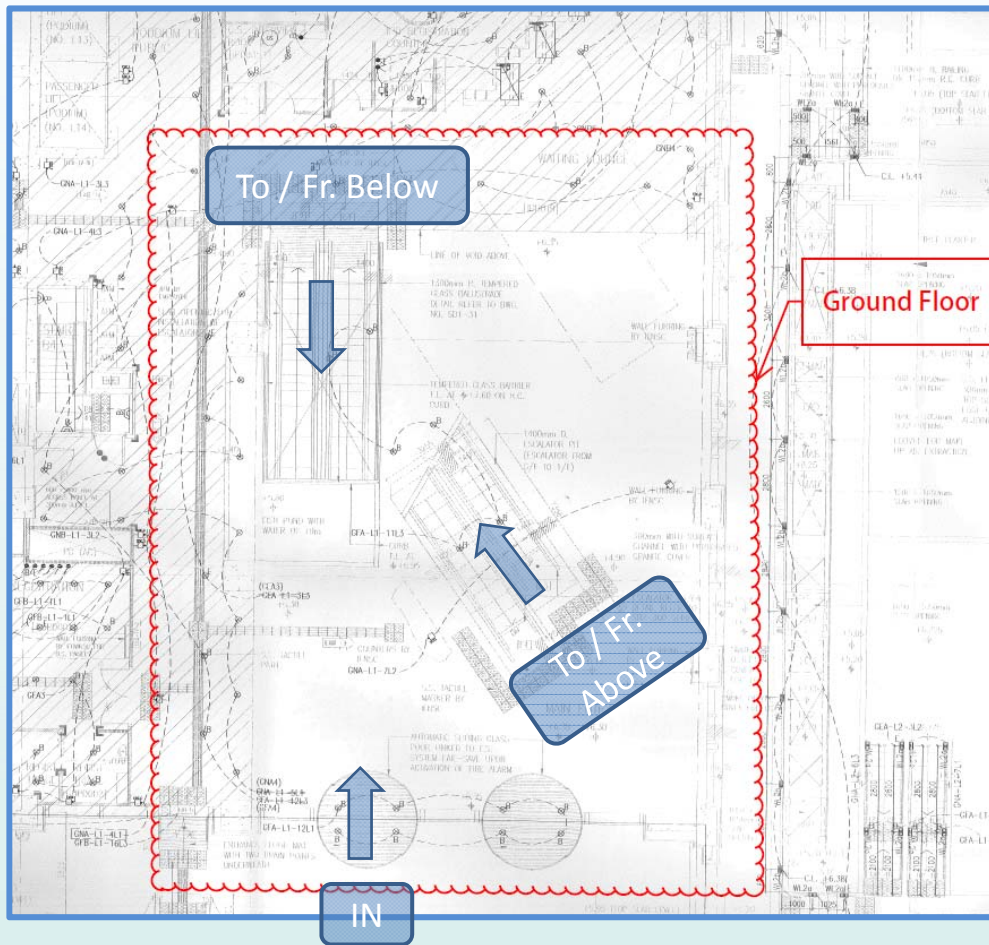
Quantity not truly declared, refer to LPD calcs.
6m is declared
Actual measurement by this office is 28m
(Referencing to building grid line)

Form EE-LG Submission – Office Building xxE

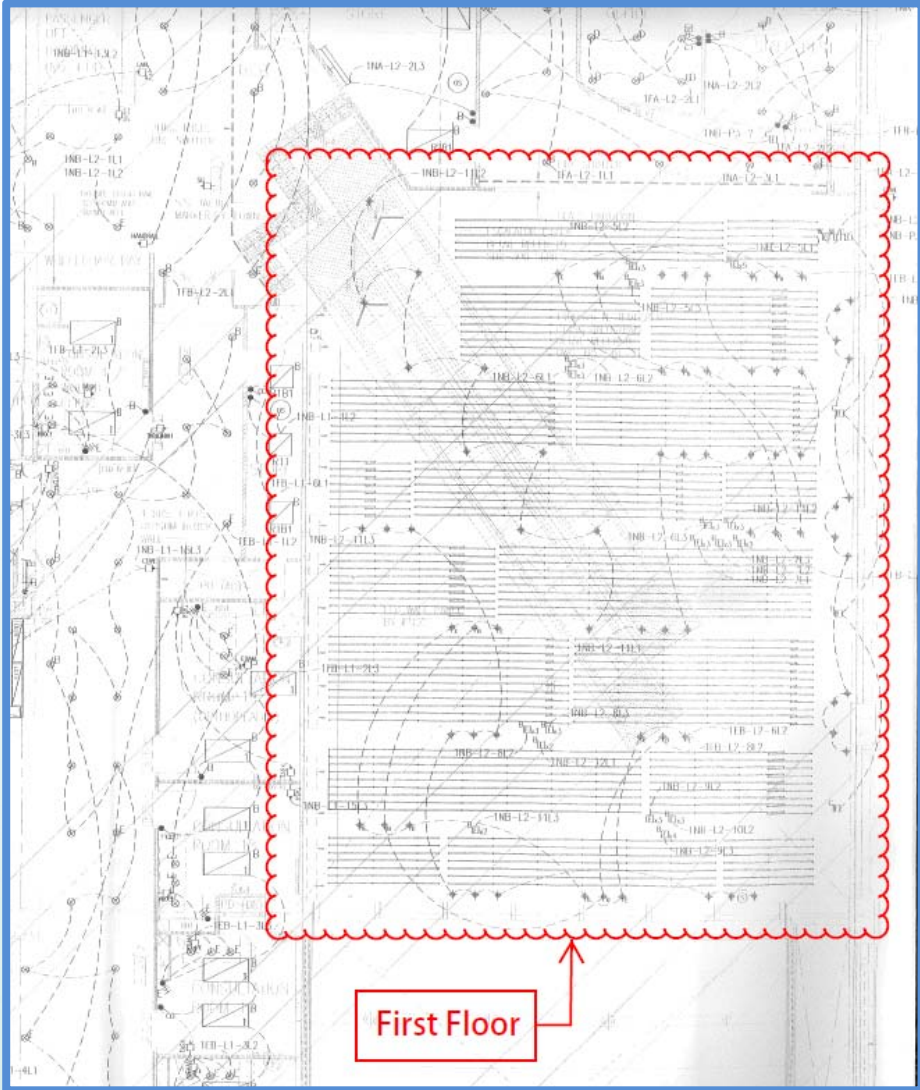


Form EE-LG Submission – Building H

- Stage 2 submission
- Main Entrance
- Floor area: 280 m²
- Height: ~ 8 m
- Connection to 1/F & B1/F



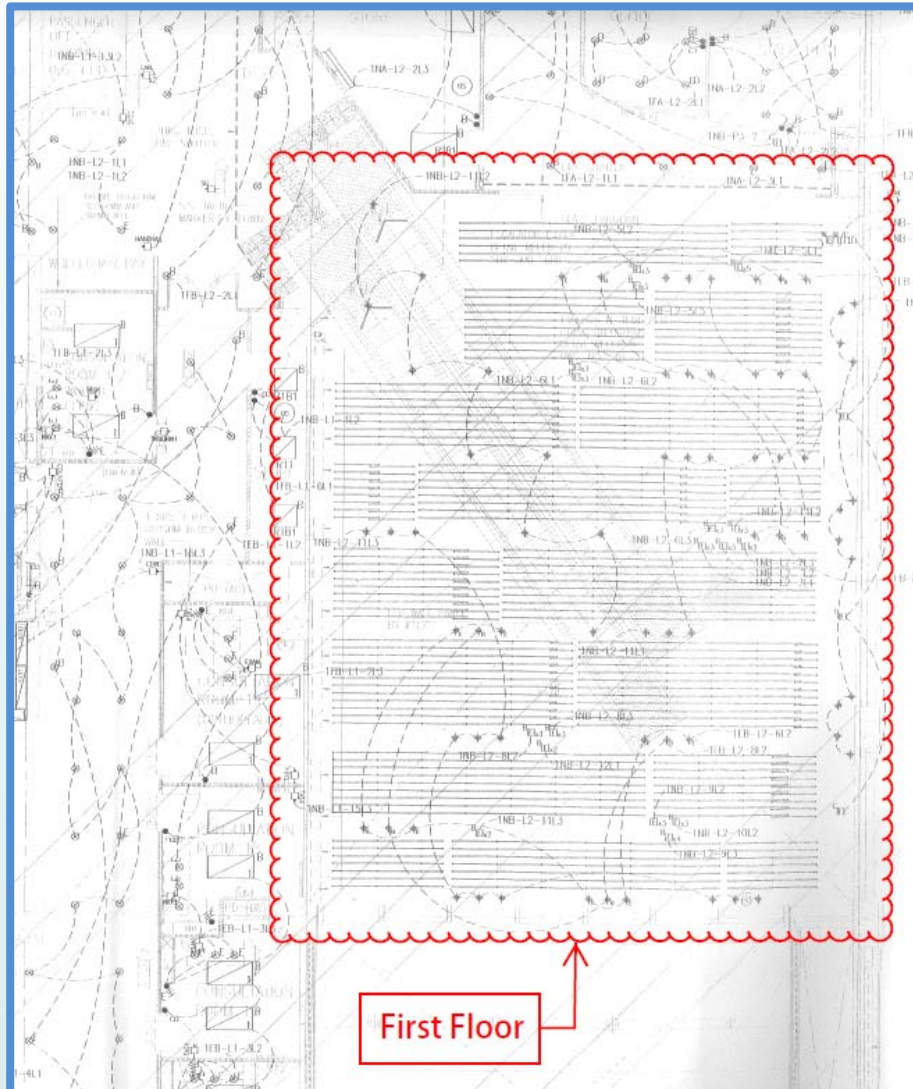
Form EE-LG Submission – Building H



Similar Example:
Panel type ceiling light

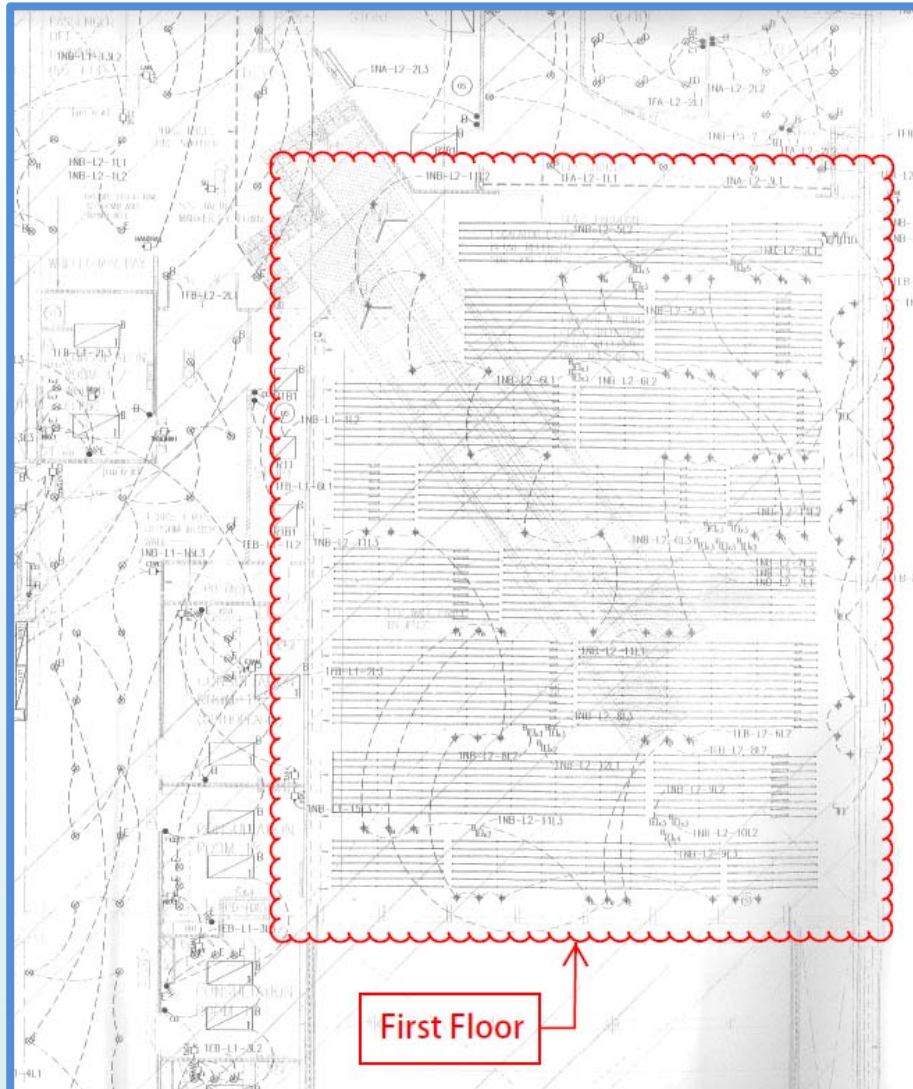


Form EE-LG Submission – Building H



- Stage 2 submission
- Submitted only lighting layout
- REA/Design Architect regards the penal type ceiling light for decoration only
- LPD calculation NOT submitted
- Present the calculation after being requested

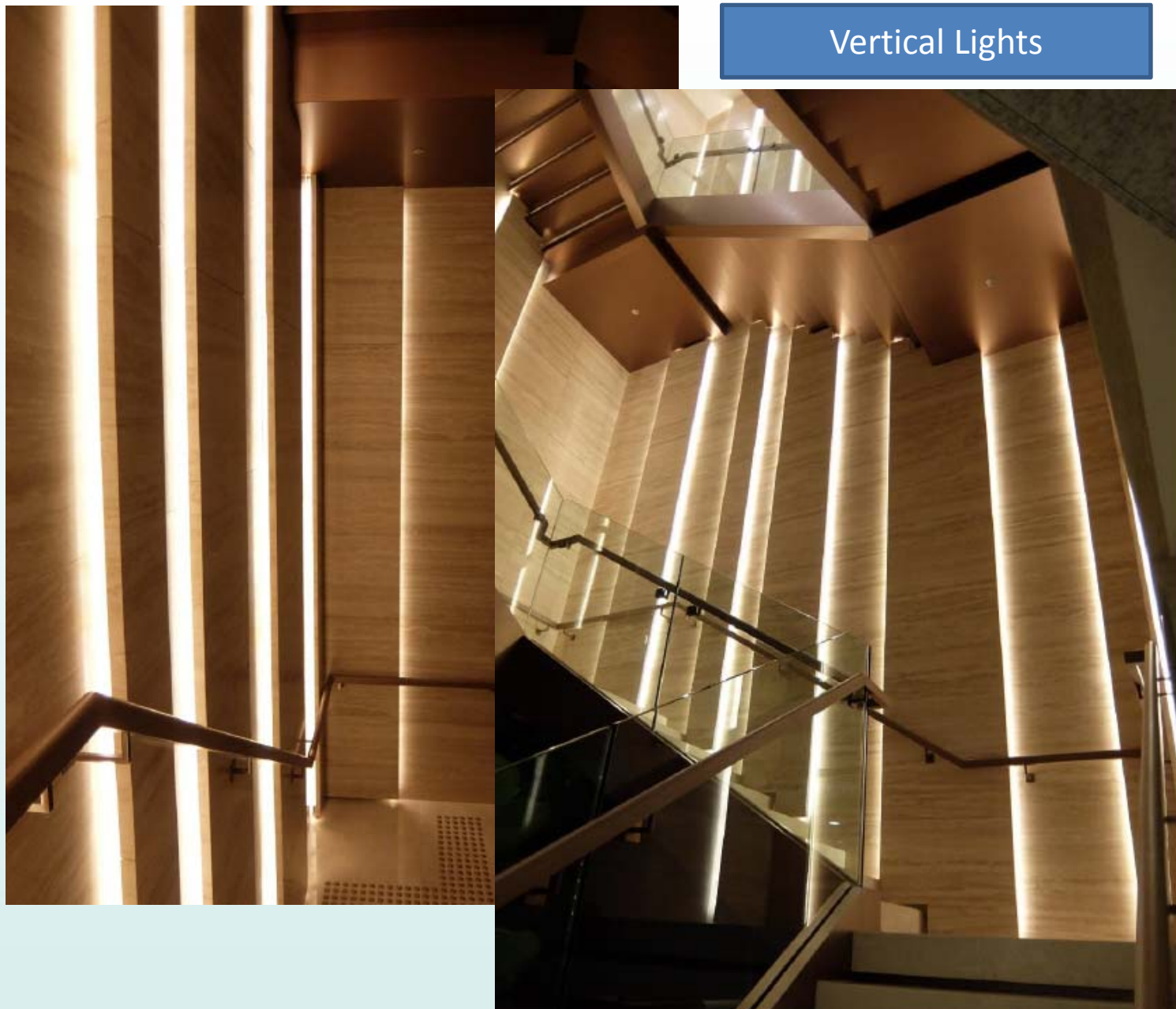
Form EE-LG Submission – Building H



Downlights + Barrisol Stretch Ceiling (BSC)

- Downlights:
 - ~ 80 No. x 40W Downlights
 - Avg. ~ 220 lx @ 0.85m AFFL
 - LPD: 12.6 W/m²
- BSC:
 - 85 No. 2ft LED Tubes (10 W each)
 - 850 No. 4ft LED Tubes (18 W each)
- Downlights + BSC:
 - Avg. ~ 1150 lx @ 0.85m AFFL
 - LPD: 70 W/m²
- Any more lighting NOT shown? Vertical surface, u/n escalator.

Vertical Lights

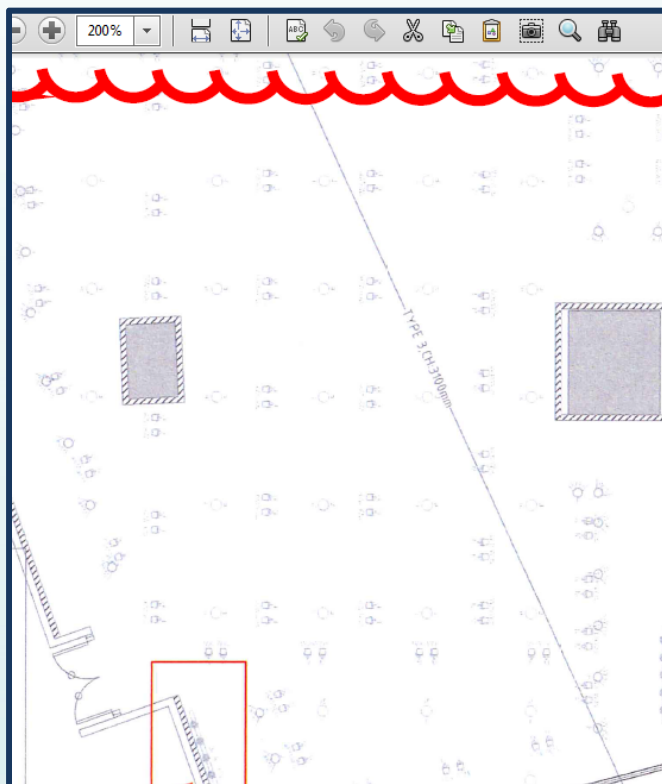


Vertical Lights

- Wall Panels with LED Strip Light (~120m) throughout the access stair
- LED Strip Light contribute substantially uniform level of illumination throughout → LPD limit applicable
- REA/Owner's arguments:
 - Presence of downlight, strip light solely for decorative; ❌
 - Use dimmer to "Tune Down" strip light power to suit LPD limit ❌
- Change the power/m to suit.

- Lighting on vertical surface is also part of the lighting installation
- Submit elevation as necessary
- Lighting solely for decorative use shall also be shown on drawing.
- Highlight on plans
- Justify with site photos showing lighting effect or submit photomontage
- Part 3 (EE-LG) fill in with LPD of decorative light
- Initiate early discussion for case in doubt, especially small lighting space such as passenger lift lobby, FOH toilets, corridor etc.

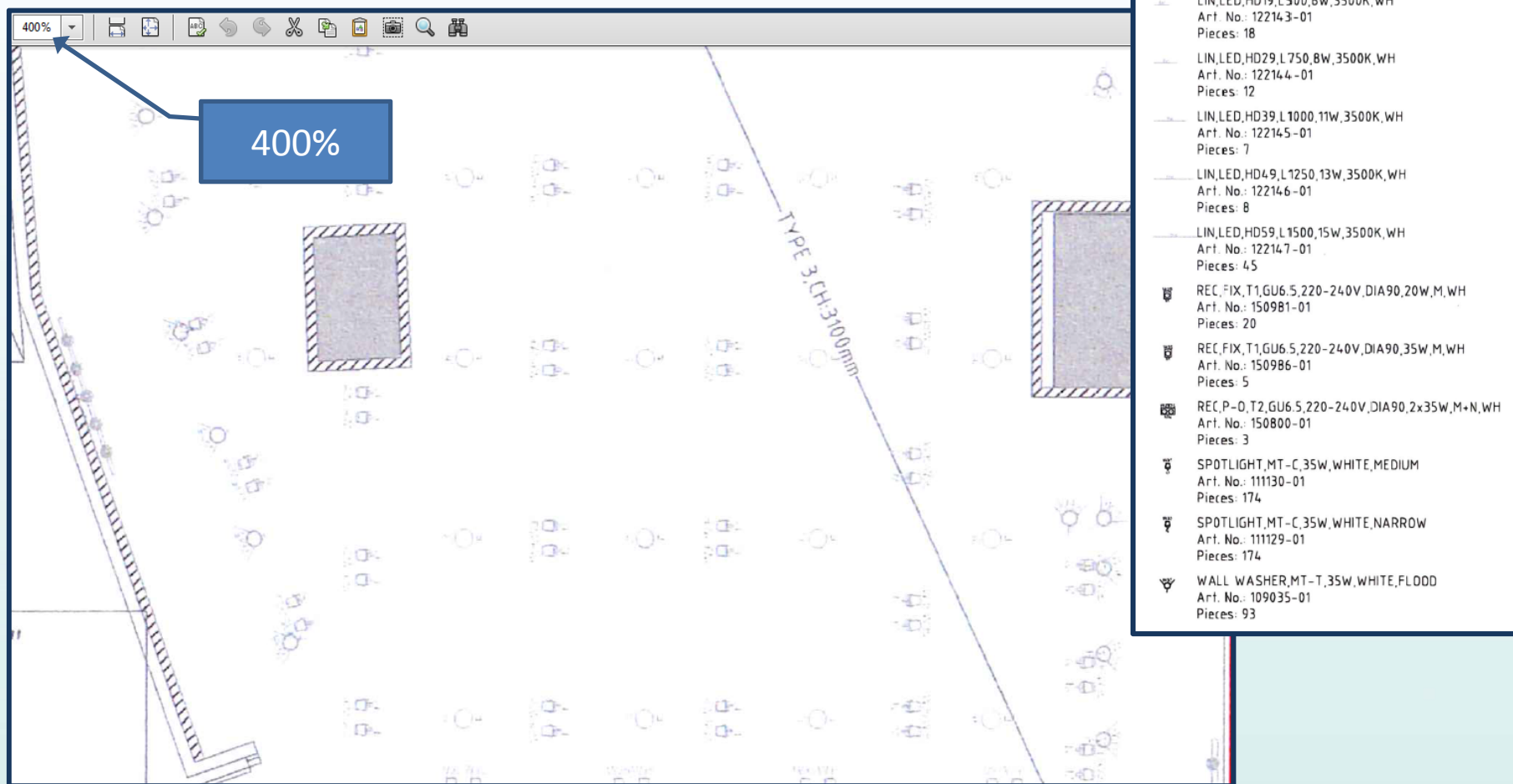
Form EE-LG Submission Poor Submission Drawing Quality



☉	Downlight,MT,35W,colourless,flood Art. No.: 102087-01 Pieces: 105
—	LIN,LED,HD19,L500,6W,3500K,WH Art. No.: 122143-01 Pieces: 18
—	LIN,LED,HD29,L750,8W,3500K,WH Art. No.: 122144-01 Pieces: 12
—	LIN,LED,HD39,L1000,11W,3500K,WH Art. No.: 122145-01 Pieces: 7
—	LIN,LED,HD49,L1250,13W,3500K,WH Art. No.: 122146-01 Pieces: 8
—	LIN,LED,HD59,L1500,15W,3500K,WH Art. No.: 122147-01 Pieces: 45
☼	REC, FIX, T1, GU6.5, 220-240V, DIA90, 20W, M, WH Art. No.: 150981-01 Pieces: 20
☼	REC, FIX, T1, GU6.5, 220-240V, DIA90, 35W, M, WH Art. No.: 150986-01 Pieces: 5
☼	REC, P-0, T2, GU6.5, 220-240V, DIA90, 2x35W, M+N, WH Art. No.: 150800-01 Pieces: 3
☼	SPOTLIGHT, MT-C, 35W, WHITE, MEDIUM Art. No.: 111130-01 Pieces: 174
☼	SPOTLIGHT, MT-C, 35W, WHITE, NARROW Art. No.: 111129-01 Pieces: 174
☼	WALL WASHER, MT-T, 35W, WHITE, FLOOD Art. No.: 109035-01 Pieces: 93

Extract of Lighting Layout
Only legend is readable

Form EE-LG Submission Poor Submission Drawing Quality

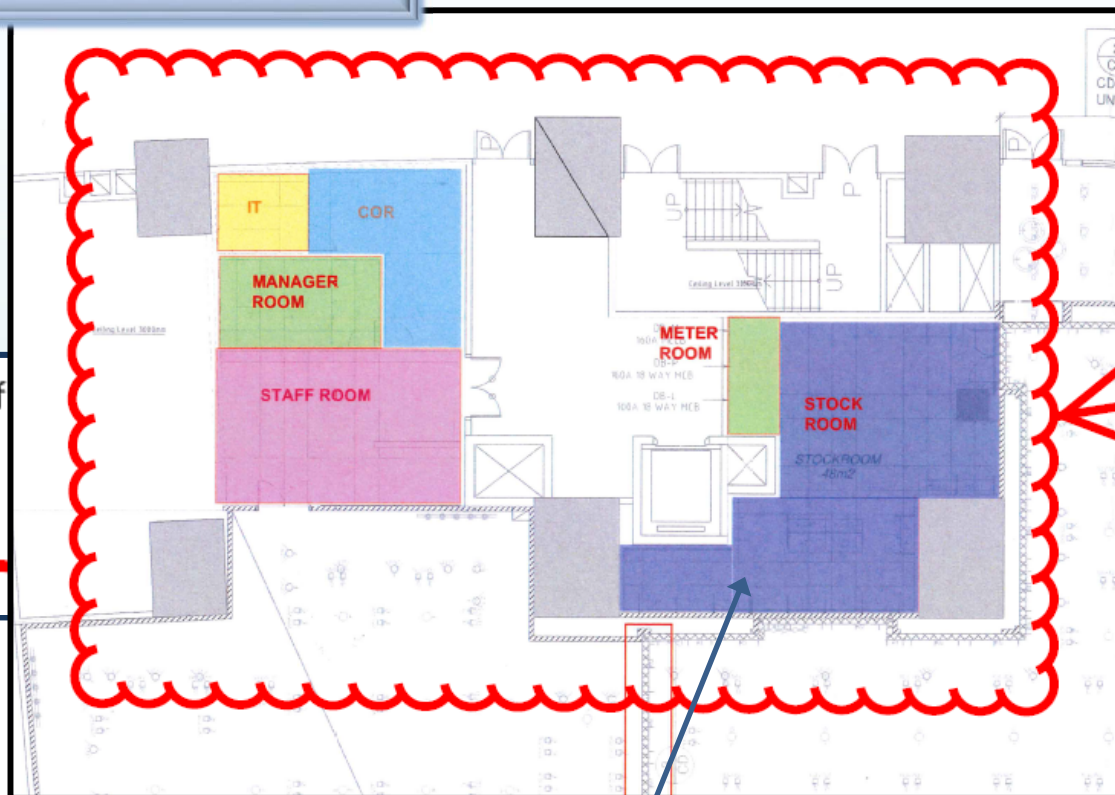


The screenshot shows a lighting layout software interface. The top toolbar includes a zoom dropdown menu set to 400%. A blue callout box with an arrow points to this menu, containing the text "400%". The drawing area displays a grid of lighting fixtures, with a diagonal line labeled "TYPE 3.CH.3100mm". A legend on the right side lists the following fixtures:

- Downlight, MT, 35W, colourless, flood
Art. No.: 102087-01
Pieces: 105
- LIN, LED, HD19, L500, 6W, 3500K, WH
Art. No.: 122143-01
Pieces: 18
- LIN, LED, HD29, L750, 8W, 3500K, WH
Art. No.: 122144-01
Pieces: 12
- LIN, LED, HD39, L1000, 11W, 3500K, WH
Art. No.: 122145-01
Pieces: 7
- LIN, LED, HD49, L1250, 13W, 3500K, WH
Art. No.: 122146-01
Pieces: 8
- LIN, LED, HD59, L1500, 15W, 3500K, WH
Art. No.: 122147-01
Pieces: 45
- REC, FIX, T1, GU6.5, 220-240V, DIA90, 20W, M, WH
Art. No.: 150981-01
Pieces: 20
- REC, FIX, T1, GU6.5, 220-240V, DIA90, 35W, M, WH
Art. No.: 150986-01
Pieces: 5
- REC, P-0, T2, GU6.5, 220-240V, DIA90, 2x35W, M+N, WH
Art. No.: 150800-01
Pieces: 3
- SPOTLIGHT, MT-C, 35W, WHITE, MEDIUM
Art. No.: 111130-01
Pieces: 174
- SPOTLIGHT, MT-C, 35W, WHITE, NARROW
Art. No.: 111129-01
Pieces: 174
- WALL WASHER, MT-T, 35W, WHITE, FLOOD
Art. No.: 109035-01
Pieces: 93

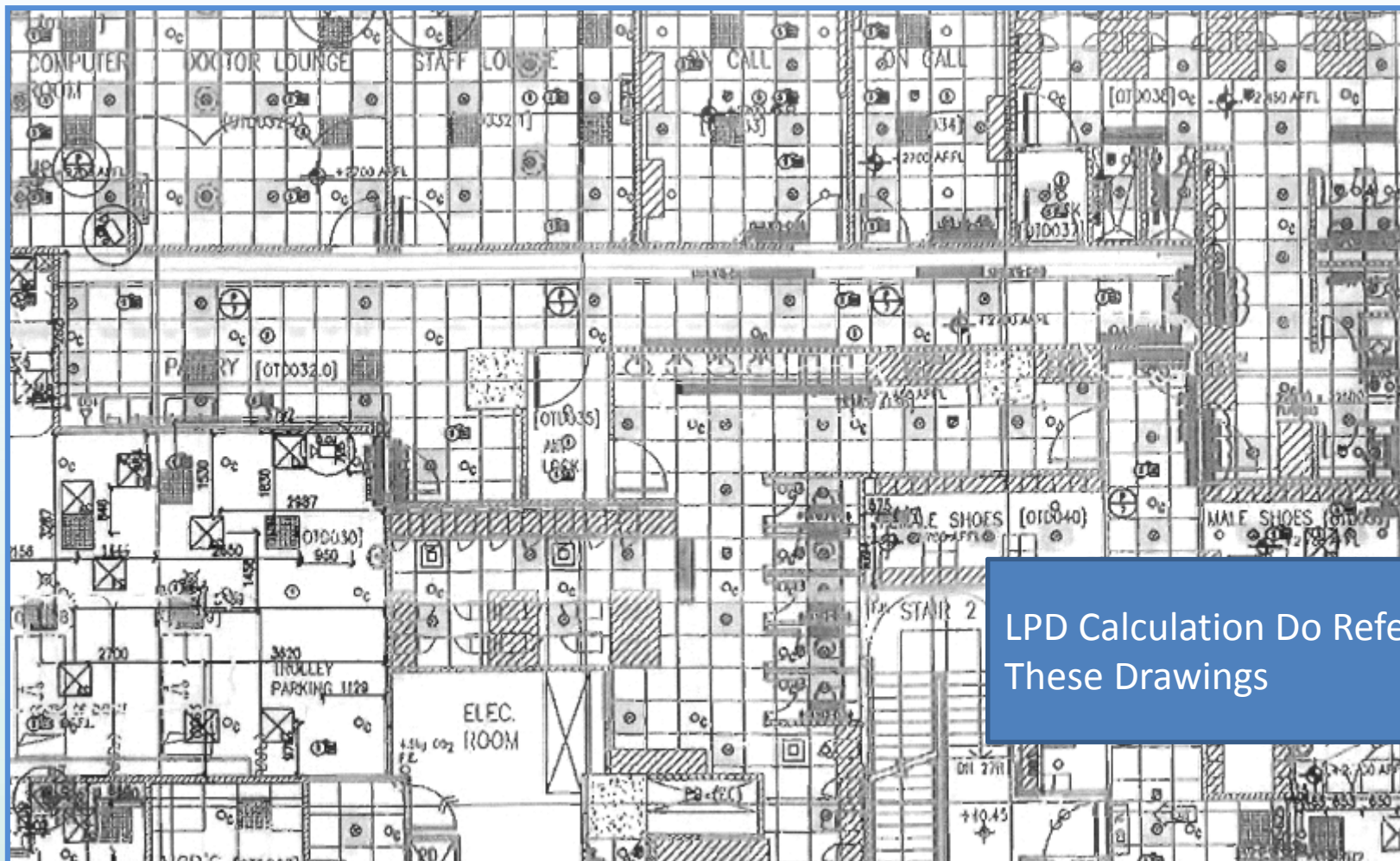
Form EE-LG Submission Poor Submission Drawing Quality

ing	Name of space / Space Ref. No. *1	Area of space (m ²)
	STAFF ROOM	
	COR	
	IT	
	STOCK ROOM	8.17
	SALE AREA	15.88
	MANAGER OFFICE	8.86



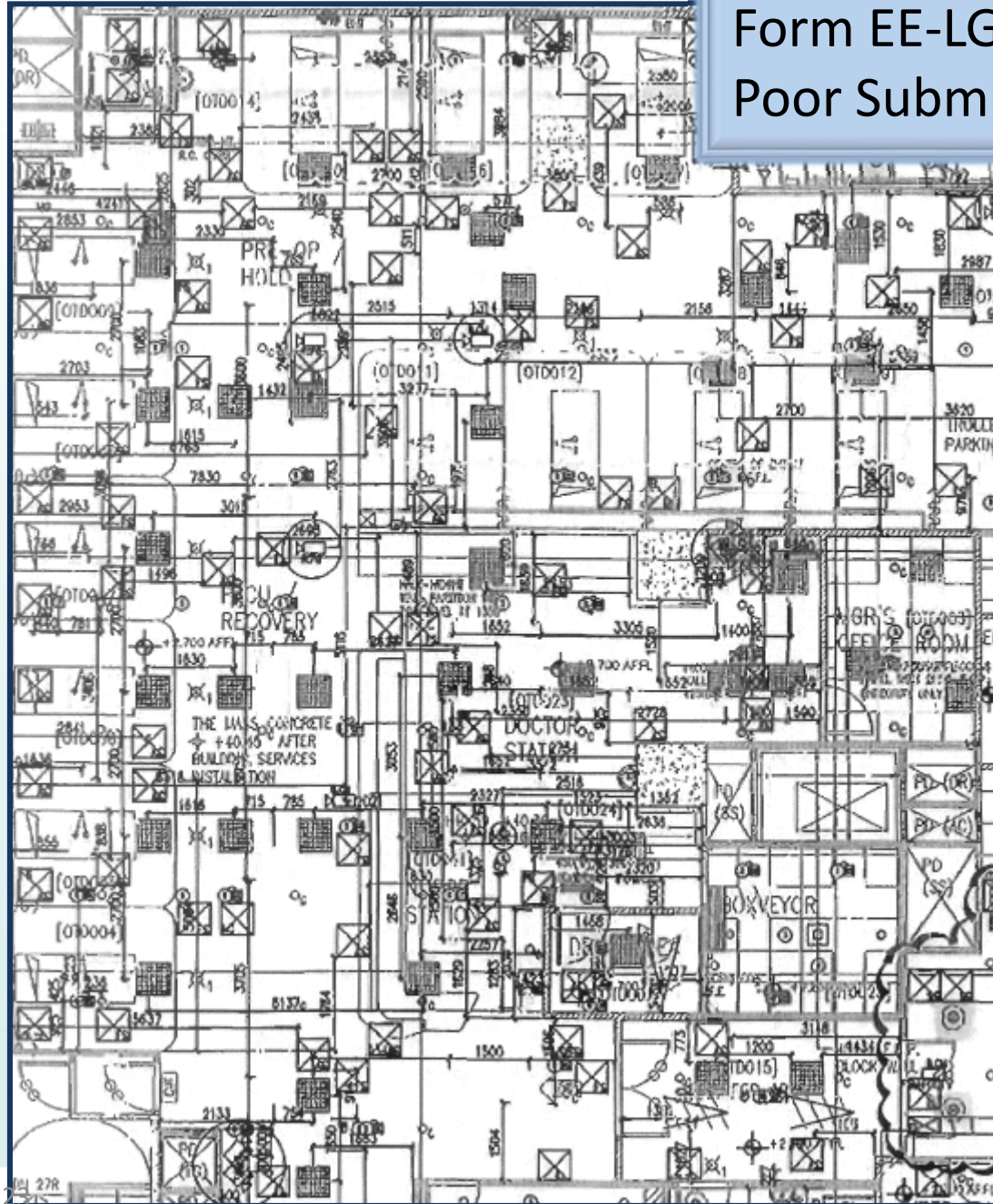
Lighting layout shows
NO light fittings

Form EE-LG Submission Poor Submission Drawing Quality



LPD Calculation Do Refer
These Drawings

Form EE-LG Submission Poor Submission Drawing Quality



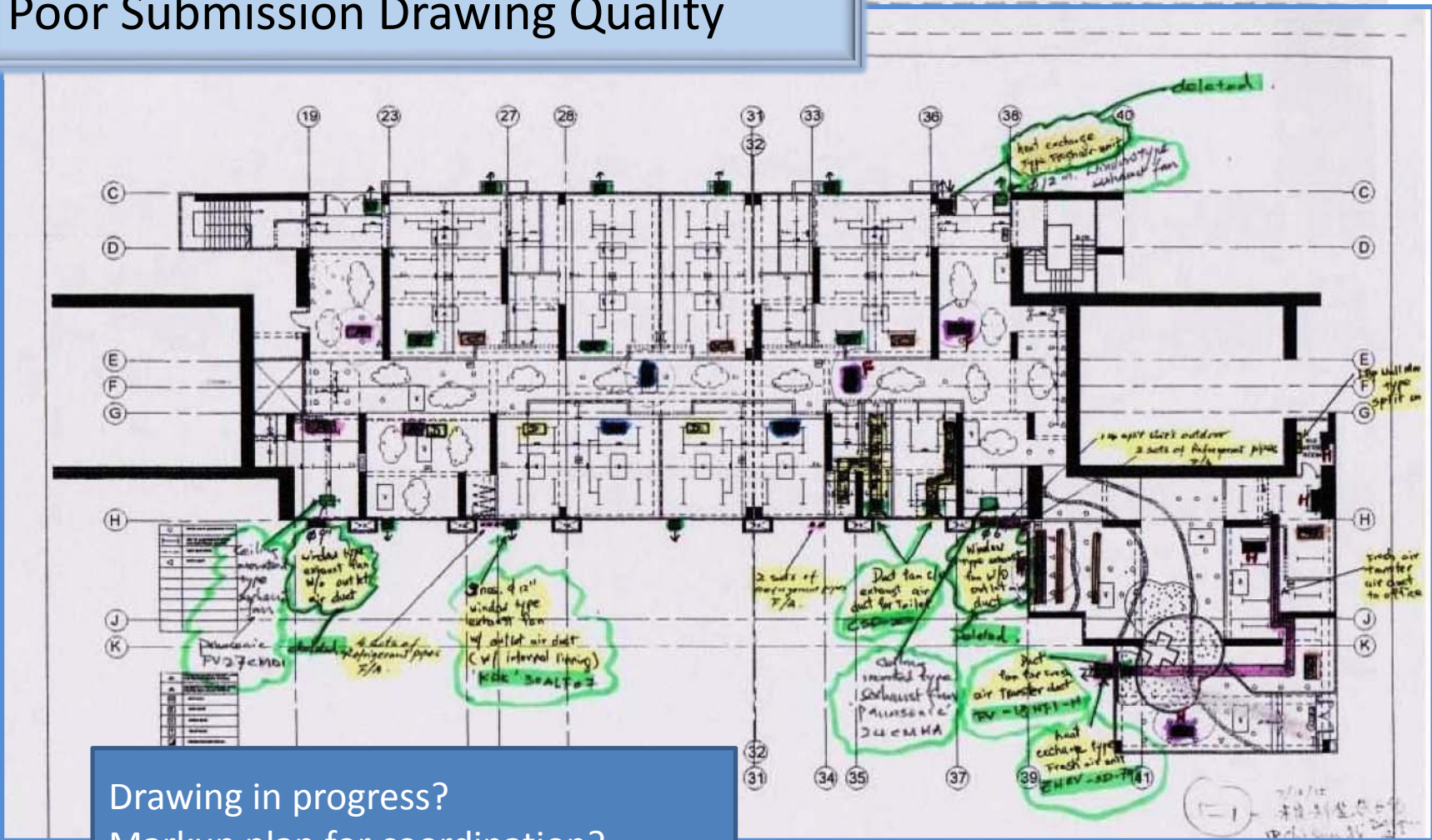
- Twisting Lighting Points
- Additional Lighting Points
- Relocation Lighting Points

Coloured legend but submit B&W drawing??

New Building
As-fit drawings shows "Existing",
"Additional" and "Relocated" Lighting
Point??

**Compliance data must come from
traceable information**

Form EE-LG Submission Poor Submission Drawing Quality



Drawing in progress?
Markup plan for coordination?
Proper as-fitted drawing expected

Form EE-LG
Submission
LPD Calculation

空間名稱 / 空間 參考編號 *1	空間 面積 (平方米)	已安裝的 照明功率 密度 *2 (瓦/平方米)	已安裝的 照明控制 點數目 *3	《守則》表5.4所列照明功率密度	
				適用空間類別 *4	最高許可 瓦/平方米
G/F CORRIDOR	36.00	10.11	NA	公眾通道	13.00
G/F STORE E05	24.50	6.29	NA	士多房	9.00
1/F CORRIDOR	69.49	9.35	NA	公眾通道	13.00
1/F OFFICE 100	21.00	11.05	2	辦公室	13.00

1st Submission

G/F CORRIDOR	36.00	6.22	N/A	走廊	8.00
G/F STORE E05	24.50	6.29	N/A	士多房	9.00
1/F CORRIDOR	69.49	5.76	N/A	走廊	8.00
1/F OFFICE 100	21.00	6.00	2	辦公室	13.00

1/F OFFICE 110	21.40	6.10	4	辦公室	13.00
2/F CORRIDOR	76.55	9.25	NA	公眾通道	13.00
2/F OFFICE 200	13.50	6.22	2	辦公室	13.00

1/F OFFICE 110	21.40	3.99	4	辦公室	13.00
2/F CORRIDOR	76.55	5.64	N/A	走廊	8.00
2/F OFFICE 200	13.50	7.11	2	辦公室	13.00

0/F OFFICE 002	22.15	11.00	2	辦公室	13.00
6/F CORRIDOR	30.38	11.98	NA	公眾通道	13.00
7/F ROOM 701	17.43	6.62	N/A	貯物室	0.00

0/F OFFICE 002	22.15	6.42	2	辦公室	13.00
6/F CORRIDOR	30.38	7.37	N/A	走廊	8.00
7/F ROOM 701	17.43	6.62	N/A	貯物室	0.00

2nd Submission

Form EE-LG
Submission
LPD Calculation

空間名稱 / 空間 參考編號 *1	空間 面積 (平方米)	已安裝的 照明功率 密度 *2 (瓦/平方米)	已安裝的 照明控制 點數目 *3	《守則》表5.4所列照明功率密度	
				適用空間類別*4	最高許可 瓦/平方米
G/F CORRIDOR	36.00	10.11	N/A	公眾通道	13.00
G/F STORE E05	24.50	6.29	N/A	士多房	9.00
1/F CORRIDOR	69.49	9.35	N/A	公眾通道	13.00
1/F OFFICE 100	21.00	11.05	2	辦公室	13.00

G/F CORRIDOR	36.00	6.22	N/A	走廊	8.00
G/F STORE E05	24.50	6.29	N/A	士多房	9.00
1/F CORRIDOR	69.49	5.76	N/A	走廊	8.00

1/F OFFICE 110	21.40	9.10	4	辦公室	13.00
2/F CORRIDOR	76.55	9.25	N/A	公眾通道	13.00
2/F OFFICE 200	13.50	7.27	2	辦公室	13.00

1/F OFFICE 110	21.40	5.82	4	辦公室	13.00
2/F CORRIDOR	76.55	5.64	N/A	走廊	8.00
2/F OFFICE 200	13.50	7.77	2	辦公室	13.00

6/F OFFICE 602	22.15	11.00	2	辦公室	13.00
6/F CORRIDOR	30.38	11.98	N/A	公眾通道	13.00
7/F ROOM 701	17.43	6.82	N/A	貯物室	0.00

6/F OFFICE 602	22.15	7.26	2	辦公室	13.00
6/F CORRIDOR	30.38	7.37	N/A	走廊	8.00
7/F ROOM 701	17.43	6.82	N/A	貯物室	0.00

The REA replied comment by
conducting simple mathematic
calculation!!!!!!

Form EE-LG Submission - LPD Calculation

Name of space / Space Ref. No. ^{*1}	Area of space (m ²)	Installed LPD ^{*2} (W/m ²)	no. of lighting control points ^{*3}	LPD in BEC Table 5.4	
				Applicable type of space ^{*4}	Max allowed W/m ²
(Please insert additional row if necessary)					
Kitchen Dry Store	46.40	6.23	1	Store Rm	11 ✓
Kitchen Manager Office	15.74	16.26	1	Office	15 ✓
Kitchen Office (GEN003)	55.72	11.48	1	Office	15 ✓

Reports Installed LPD Exceeding Limits

STAFF REST	9.80	13.08	N/A	Dormitory	10
NURSE OFFICE	9.24	13.90	1	Office	15
MRG OFFICE	9.13	14.02	1	Office	15
FAN ROOM 1	16.30	14.97	N/A	DATA PROCESSING ROOM	16
SWITCH ROOM	102.38	8.34	N/A	Plant Rm	12
ELECT. ROOM	24.57	14.90	N/A	DATA PROCESSING ROOM	16

Create Space Type

Create the LPD Limit

Form EE-LG Submission - LPD Calculation

Name of space / Space Ref. No. ^{*1}	Area of space (m ²)	Installed LPD ^{*2} (W/m ²)	Installed no. of lighting control points ^{*3}	LPD in BEC Table 5.4		Min allow lighting co in BEC T.
				Applicable tybe of space ^{*4}	Max allowed W/m ²	
(Please insert additional row if necessary)						
CALORIFIER ROOM	327.06	12.87	N/A	SWITCH ROOM	13	
ELECT. ROOM	28.17	12.99	N/A	SWITCH ROOM	13	
FAN ROOM 3	188.29	5.51	N/A	SWITCH ROOM	13	

Plant Room LPD Limit = 12

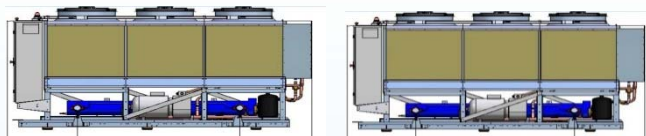
Lifting up the LPD limit to demonstrate compliance????

Form EE-LG Submission - LPD Calculation

No.	Name of space / Space Ref. No. ^{*1}	Area of space (m ²)	Installed LPD ^{*2} (W/m ²)	no. of lighting control points ^{*3}	LPD in BEC Table 5.4		Min allowed lighting co in BEC T
					Applicable type of space ^{*4}	Max allowed W/m ²	
(Please insert additional row if necessary)							
	CORRIDOR	26.37	6.09	N/A	Corridor	10	
	CARPARK	2630.37	2.59	N/A	CARPARK	6	
	FAN ROOM 1	21.28	11.47	N/A	SWITCH ROOM	13	12
	STAIRCASE PRESSURIZATION FAN ROOM	30.41	12.04	N/A	SWITCH ROOM	13	
	PUMP ROOM	120.17	11.17	N/A	SWITCH ROOM	13	
	STAIRCASE & FIREMAN'S LIFT LOBBY PRESSURIZATION FAN ROOM	39.23	6.22	N/A	SWITCH ROOM	13	
	PABX ROOM	42.67	14.30	N/A	DATA PROCESSING ROOM	16	
	WATER METER ROOM	26.92	11.32	N/A	SWITCH ROOM	13	
	F.S. & SPRINKLER TRANSFER PUMP ROOM	27.01	11.30	N/A	SWITCH ROOM	13	
	TBE ROOM	19.33	15.78	N/A	DATA PROCESSING ROOM	16	
	ELEC. ROOM	20.90	11.67	N/A	SWITCH ROOM	13	
	A.H.U. ROOM	86.53	7.75	N/A	SWITCH ROOM	13	
	SMOKE EXTRACTION ROOM	54.49	10.08	N/A	SWITCH ROOM	13	
	FAN ROOM	47.55	12.83	N/A	SWITCH ROOM	13	
	FAN ROOM 2	27.72	11	N/A	SWITCH ROOM	13	12

- pts 2 & 3) Plant room LPD exceeding limits but demonstrate compliance by
- Creating New Space Type and LPD limit in repeat
 - Uplifting the LPD limits

MRWs: Addition of Chillers (CBSI Main Component)



Newly Constructed Floors

Existing
Hotel Building



New Air cooled screw chillers:

2 x 200 Tons (i.e. ~ 700kW each)
serving the newly constructed
floors

Water cooled chiller plant for
the existing hotel floors

MRWs: Addition of Chillers (CBSI Main Component)

Performance Specification

Capacity (kW)	Volts/Ph/Hz	Refrigerant
703.2	380-415/3/50	R134a
Performance Data		
COP		2.49
NPLV		3.61
Minimum Unit Capacity		10 %
Physical Data		
	3	4
Operating Condition Electrical Data		
Compressor kW		250.4
Total Fan kW		31.8
Total kW		282.2

$703 / 282 = 2.49 \text{ (COP)}$

BEC Specifies 2.9

??

ent	Cooling Capacity (kW)
	3.02
	3.85
	4.6
	5.9
	4.6
	85.11
	42.67
	38.74
	21.01
	59.49
	59.49
Total:	606.87

Cooling Load Calculation

$\% \text{ of loading} = 606.87 / 703.2 \times 100\%$
 $= 86.3\%$

??

Chiller sees only 86.3% of full load only

Complies the BEC !!

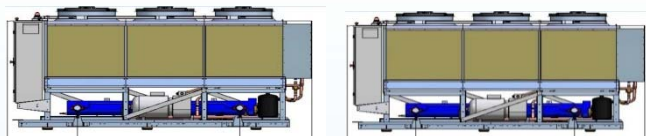
Part Load Rating Data				
Load %	Ambient (°C)	Capacity (kW)	Compressor kW	Unit Efficiency
100.0	35.0	703.2	2.49	2.49
75.0	26.7		3.23	3.23
50.0	18.3		3.81	3.81
25.0	12.8		4.32	4.32

86.3% →

Conducts Projection

← 2.9

MRWs: Addition of Chillers (CBSI Main Component)



Newly Constructed Floors

Existing
Hotel Building



Chiller each @ 90% Load (i.e. 630kW)

COP figure = 2.9 at 90%-load

REA/Chiller supplier report compliance
with the BEC 2012

Chiller no need to run beyond the
90%-load

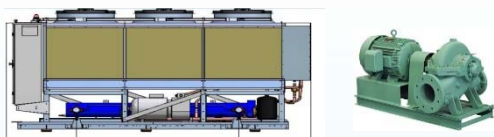
→ Chiller “see” the 90%-load as the
ultimate condition i.e. full load



BEC requires COP @ **Full Load**
i.e. the COP at 700kW

Water cooled chiller plant for
the existing hotel floors

MRWs: Replacement of Chillers



Existing
Hotel Building

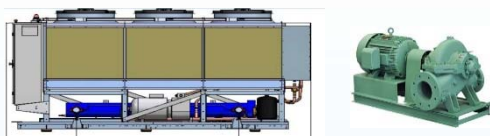


R/F Chiller Plant: 4 No. ~ 200 Tons ACCs

- Replacement works during off-peak season
- R/F ACC Plant & B/F WCC Plant refurbished **in sequence** to maintain a/c service
 - 2013: R/F ACC Plant commencement
 - June 2015: B1/F WCC Plant commencement
 - Early 2017: Overall Completion

B1/F Chiller Plant: 4 No. ~ 200 Tons WCCs

MRWs: Replacement of Chillers



Existing
Hotel Building



R/F Chiller Plant: 4 No. ~ 200 Tons ACCs

Early Aug 2016:

- BS Consultant (REA) submit FOC – BEC 2012 Rev. 1 compliance;
- Pump motors (5 No.) to IE2
- Reported completion of MRWs on R/F Plant

Another letter in Aug 2016:

- BS Consultant (REA) applied for exemption from complying BEC 2015:
- Pump motors to IE2
- Justification: Works commenced before BEC 2015's gazette date.

B1/F Chiller Plant: 4 No. ~ 200 Tons WCCs

MRWs: Replacement of Chillers

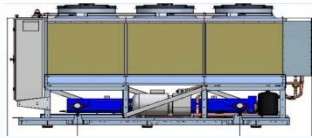


Hotel Building



- R/F ACC Plant + B1/F WCC works as a single A/C installation
- MRW is planned & processed as intended → regarded as a single works
- Entire MRW to comply with **BEC 2015**
- One FOC to cover the MRW
- Application for exemption on certain BEC 2015 clause only

MRWs: Replacement of Chillers



Existing
Hotel Building



- REA withdraw the FOC
- B1/F WCC Plant exemption not processed
- Apply for exemption on those motors (IE2) installed serving the R/F ACC Plant
- Justifications: Delivery Note; Plant operation record
- Will cover the entire MRW by a FOC after the works completion in early 2017

Part 3 – Common Non-compliance Item in Statutory Submission

2. Public Enquiry

General Enquiry Vs Building/Submission Specific Enquiry

Building/Project/ Submission Specific Enquiry:

- state building name & address & building type;
- If submission of any sort be made previously;
- For complicated issue, come along with drawing, master plan etc.
- Reply to be specific, consistent and ensure proper record.

General Enquiry:

- Clarification or elaboration on BEC or TG
- Interpretation on BEEO's requirement
- Reply is generic

Transferring reply is UNWISE !!!!

Public Enquiry

“L” called one of the EEO case officers,
follow up with written enquiry:

EMSD,

A declared monuments, is BEEO applicable to

1. CBSI inside?
2. Spaces involving change of use?
3. New ancillary block nearby?

Enquirer L

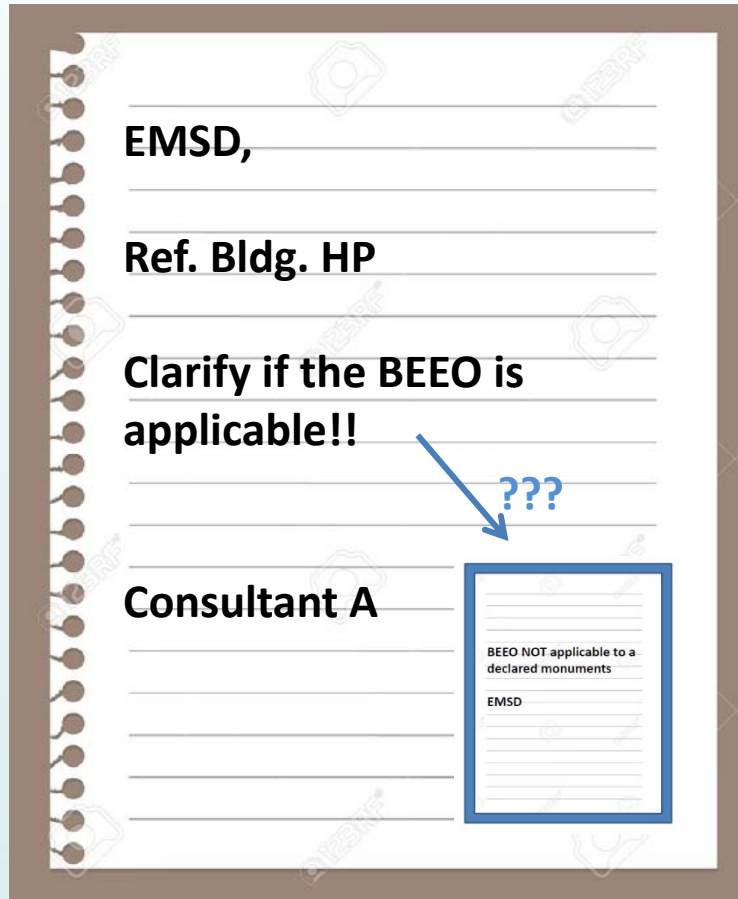
BEEO NOT applicable to a declared monuments

EMSD

Two weeks later.....

Public Enquiry

Consultant A:
Requesting for clarification (Bldg. HP)



EMSD,

Ref. Bldg. HP

Clarify if the BEEO is applicable!!

Consultant A

BEEO NOT applicable to a declared monuments

EMSD

???

“Consultant A” received EMSD’s reply to “L” as the comment on Bldg. HP

Consultant A:

- Bldg. HP is Grade I Historic Building
- Made BEEO submission before
- File established, dialogue commenced
- Surprised by EMSD’s comment

In appropriate transferral of information
→ mis-understanding

Declared Monuments Vs Graded Historic Buildings

Grading System of Historic Buildings	Monument Declaration System
Administrative	Statutory
Antiquities Advisory Board	Antiquities and Monuments Ordinance (Cap 53)
Grade 1; Grade 2; Grade 3	Declared monument; Proposed monument
Objective basis for determining the heritage value	Statutory Protection
BEEO Applicability → Schedule 1	BEEO NOT Applicable

Case: Building HP

Ancillary Block (New)

Building HP
(Grade I Historic Bldg.)

- Enhancement of safety
- Enhancement of accessibility
- BEEO Applicability follows schedule 1
- **Stage 1 / Stage2** Declaration

- Undergo revitalisation
- Before: 4 Storeys residential building – single owned (before)
- After: Educational Bldg (applied for change of bldg. use from Town Planning Board)
- BEEO applicable for MRWs inside the building.
- **FOC**
- Involved BSI to latest BEC edition

Public Enquiry

EMSD,

.....Our case... several office buildings.....several link bridges

1. BEEO applicable to LB?
2. a separated submission ? or follow the building?
3. LB connects 2 bldgs completed in different time (from late 90s to now) A&A submission or new BEC submission?
4.type of space....? Corridor or public circulation area? LB connects to entrance lobby at 1/F

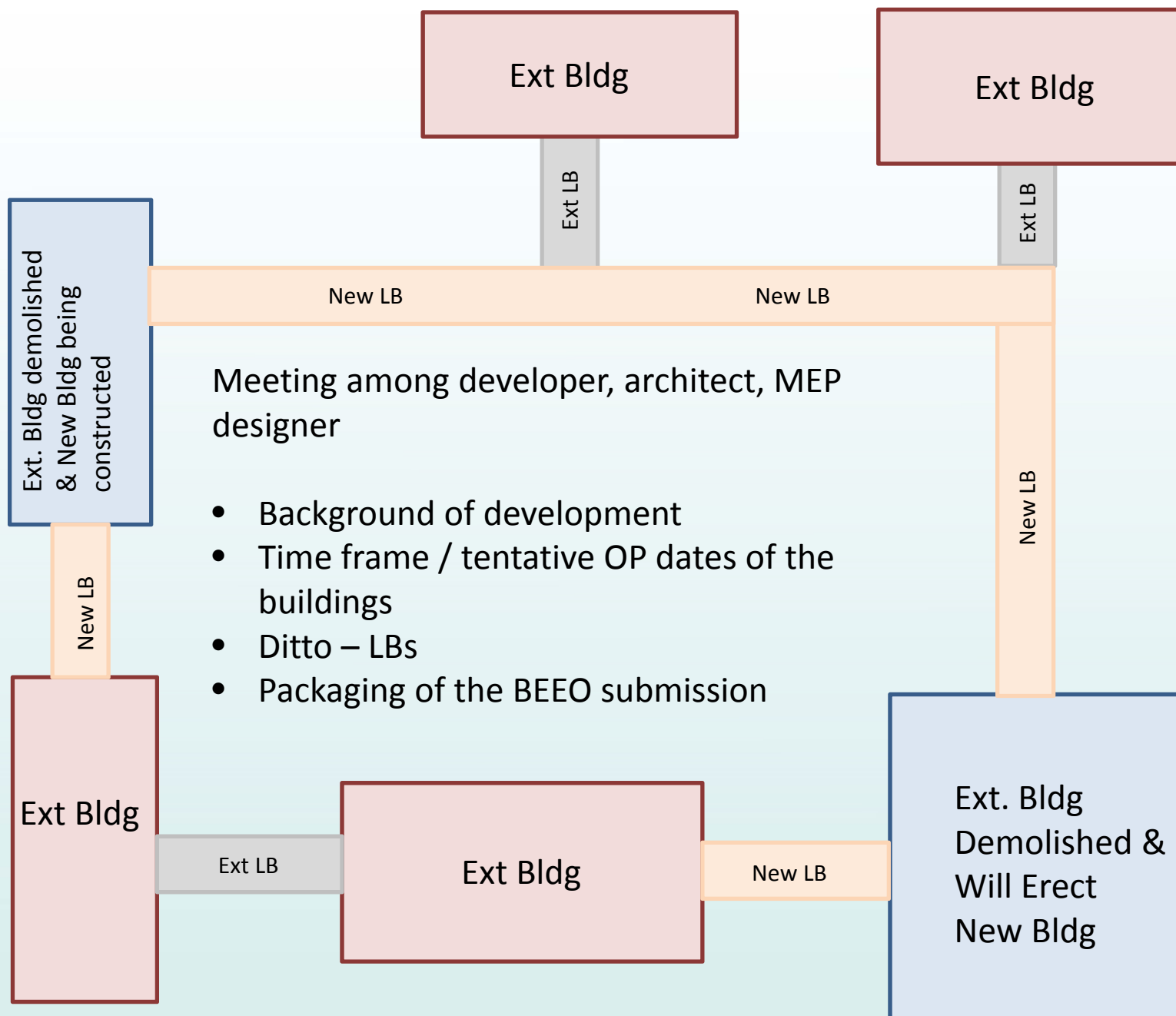
Enquirer

Complicated message
cannot rely on words

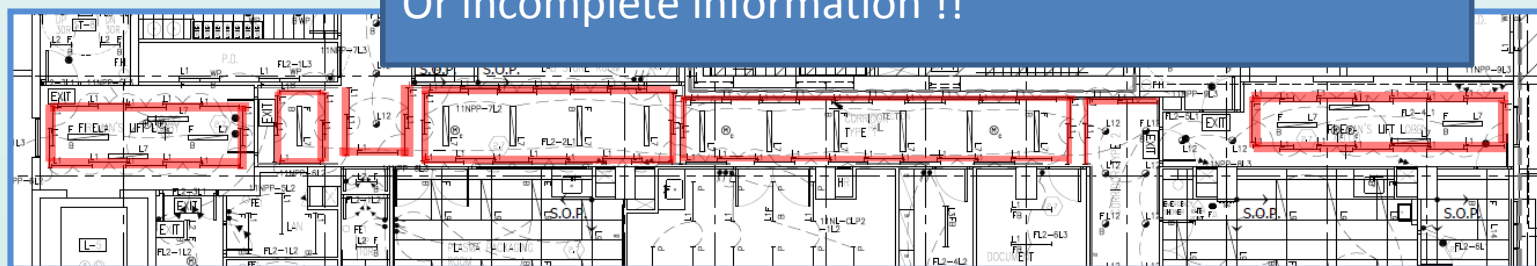
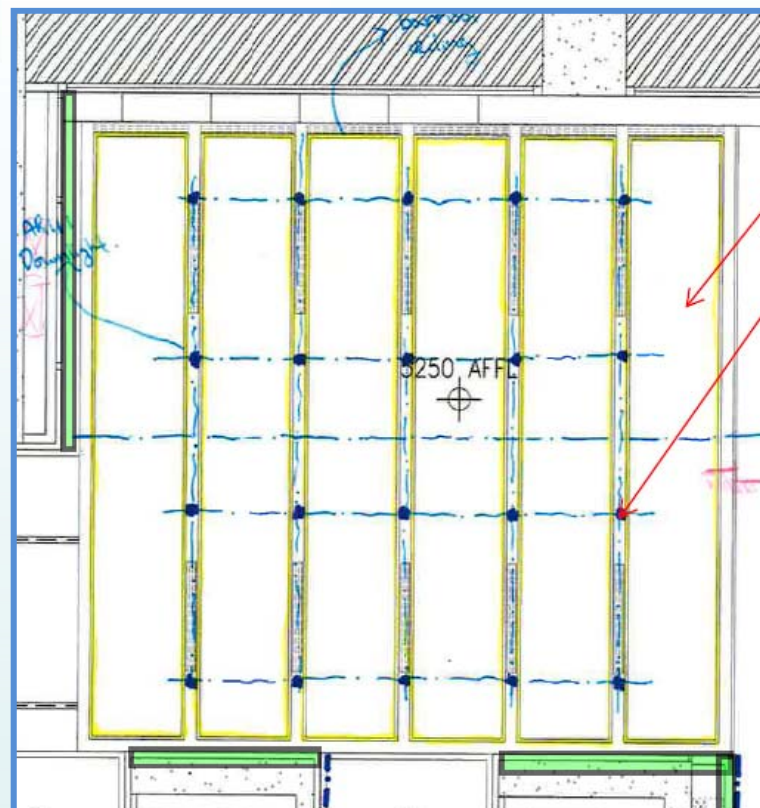
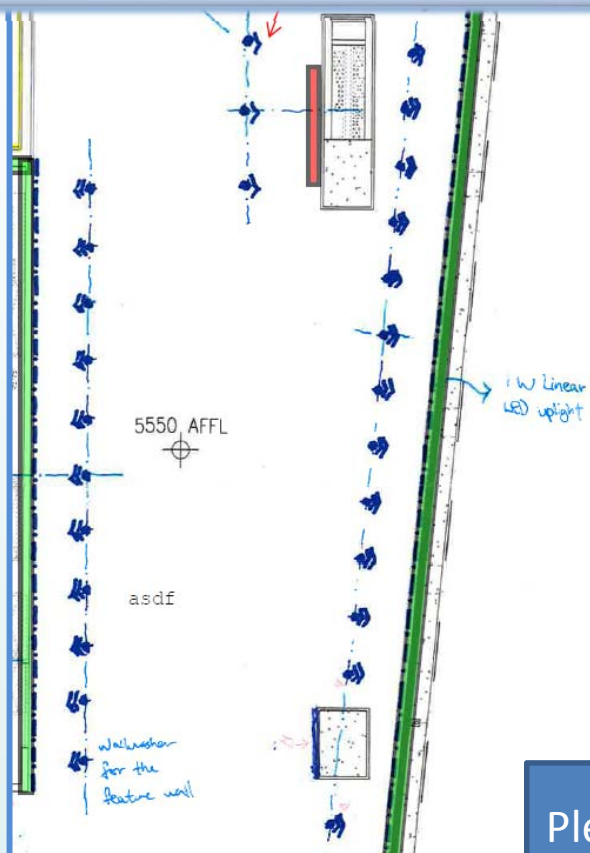
Unclear question

→ General/standard replies

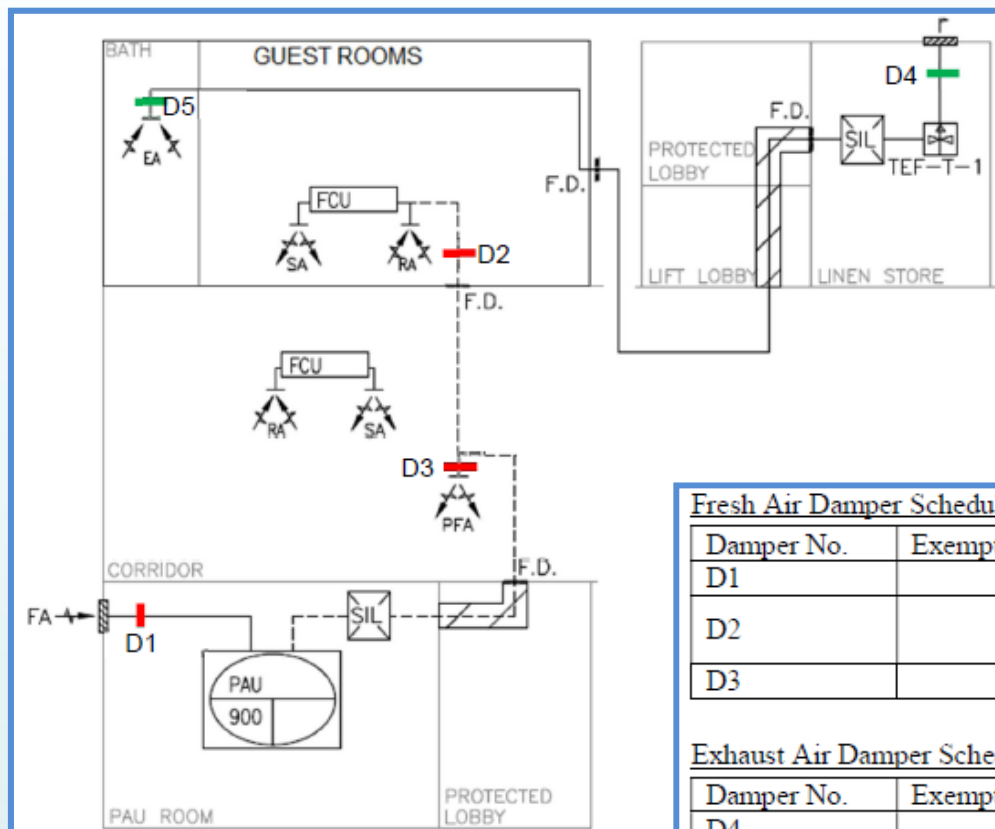
→ Not offering any help



Public Enquiry



Public Enquiry



Fresh Air Damper Schedule ■

Damper No.	Exemption can be approved? (Y/N)	Remarks
D1		
D2		Represent multiple guestrooms
D3		Corridor operate 24/7

Exhaust Air Damper Schedule ■

Damper No.	Exemption can be approved? (Y/N)	Remarks
D4		TEF operates 24/7
D5		Represent multiple guestrooms

Please don't ask for design input !!

Public Enquiry



A2					
	A	B	C	D	E
1	Clarification of Lighting installation exclude in the LPD Calculation				
2					
3	G/F Lobby Lighting Schedule				
4					Input by EMSD
5	Item	Light fitting	Purpose	Examples stated in Table 5.1.2 of Technical Guideline	Excluded in the LPD Calculation (Yes / No)
6	1	Barrisol Ceiling ⁽¹⁾	Illuminating future artwork display	Example (j)	
7	2	Downlights	General lighting illumination	N/A	
8	3	LED Uplights ⁽¹⁾	Outling the feature wall	Example (l) or (m)	
9	4	Wall Washers ⁽¹⁾	Illuminating future artwork display	Example (j)	
10	5	Downlights ⁽¹⁾	For Building Signage	Example (h)	
11	6	Downlights	General lighting illumination	N/A	

Please don't ask for design input !!

Public Enquiry



Office Space Scenario 1

Number of AHU	Fan Motor Power (kW)	Clause 6.7.5a	Clause 6.7.5b	Overall
1	0.9	Total fan motor power = 2.7 kW	N/A	
1	0.9		N/A	
1	0.9		N/A	
Applicable to clause 6.7.1 and 6.7.2?		Yes	N/A	N/A

Office Space Scenario 2

Number of AHU	Fan Motor Power (kW)	Clause 6.7.5a	Clause 6.7.5b	Overall
1	0.5	Total fan motor power = 2.4 kW	N/A	
1	0.5		N/A	
1	1.4		Applicable	
Applicable to clause 6.7.1 and 6.7.2?		Yes	Applicable to the AHU with 1.4 kW only	N/A

Offer input if exception criteria met under different scenario ????

Public Enquiry – ALC Related

Table 5.4 : Lighting Power Density and Automatic Lighting Control for Various Types of Space

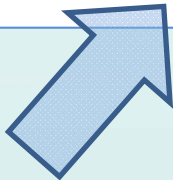
5.6.2.1 A space having one or more side window fenestrations, of or adding up to 5 m² or above, should have one or more portions within the space assigned as a lighting zone or lighting zones. Each lighting zone should be provided with daylight responsive control under a separate control device. The control should be able to shut off or

5.6.2.2 The area of a lighting zone, in fulfilling the requirement under daylight responsive control through fenestrations on exterior wall, should be:

- (a) not less than twice the fenestration area for a discrete fenestration;
- (b) not less than twice the sum of the areas of the fenestrations for a series of

5.6.2.5 The requirement on daylight responsive control as given in clause 5.6.2.1 to clause 5.6.2.4 should not be applicable -

- (a) when the glazing in the fenestration is of non-see-through type;
- (b) when the general lighting completely or partially within a lighting zone does not exceed 150W; or



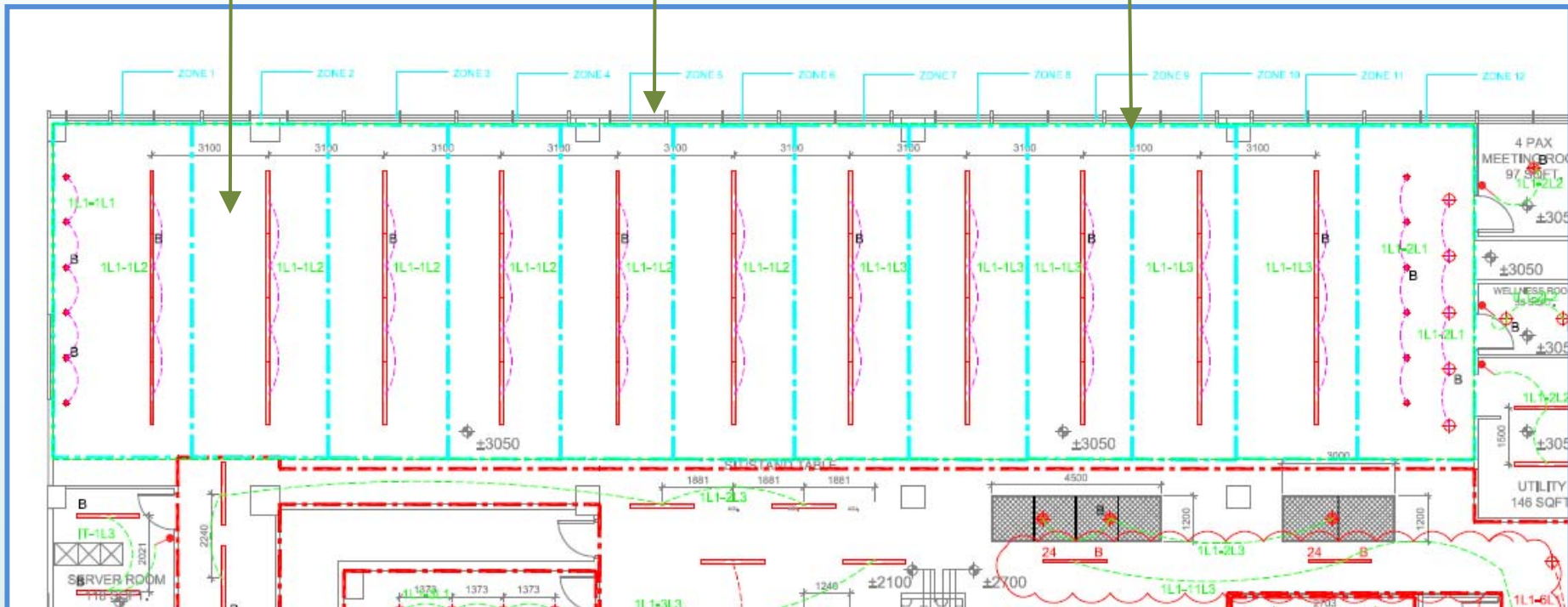
Public Enquiry



Office Space

Window

Lighting Zones



Please go for proper design !!

- Small enough LZ
- < 150W in each zone
- → Daylight responsive control N/A??



Part 3 – Common Non-compliance Item in Statutory Submission

3. Submission Packaging & Change of Building Use

New Comm. Building

Newly Constructed Building
Stage 2 Submission Packaging

Floors Occupied by
Developer/Building Owner

Leased office/commercial/
retail units

Tenant to engage REA for fit-out
works on the occupied floor if of
MRW and cover by FOC.

Developer's submission
arrangement

REA #1:
Base Building BSIs (OP standard)
Stage 2 Submission

REA #2:
Occupied floors' BSIs (Fit-Out)
FOC

REA #3:
B/F BSIs
FOC



Newly Constructed Building Stage 2 Submission Packaging

Section:	9	Declaration at occupation approval stage
----------	---	---

- (2) A stage two declaration must—
- (a) declare that all building services installations provided by the developer in the building at or before the time when the declaration is made have been designed, installed and completed in accordance with the specified standards and requirements;

Proper Submission Arrangement

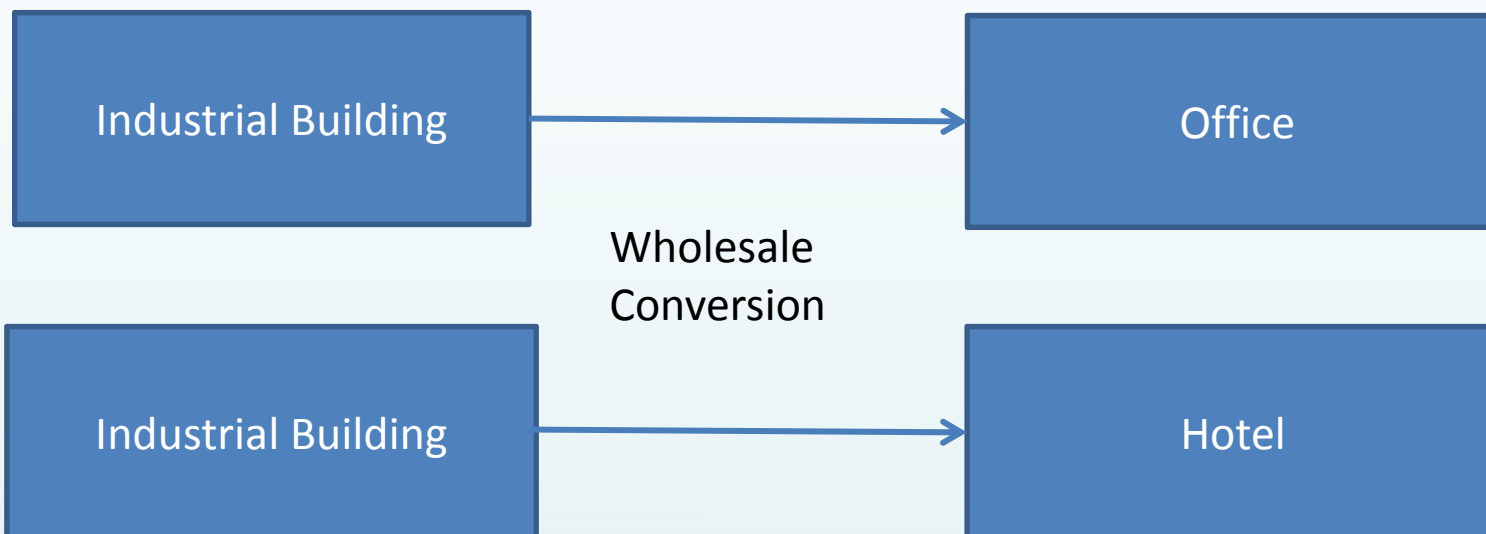
One REA:
Base Building BSIs + Occupied
Floors BSI (Fit-out) + B/F (Fit-out)
Stage 2 Submission
BEC Edition per Stage 1
submission

REA #1:
Base Building BSIs (OP standard)
Stage 2 Submission

REA #2:
Occupied floors' BSIs (Fit-Out)
FOC

REA #3:
B/F BSIs (Fit-out)
FOC

Change of Building Use



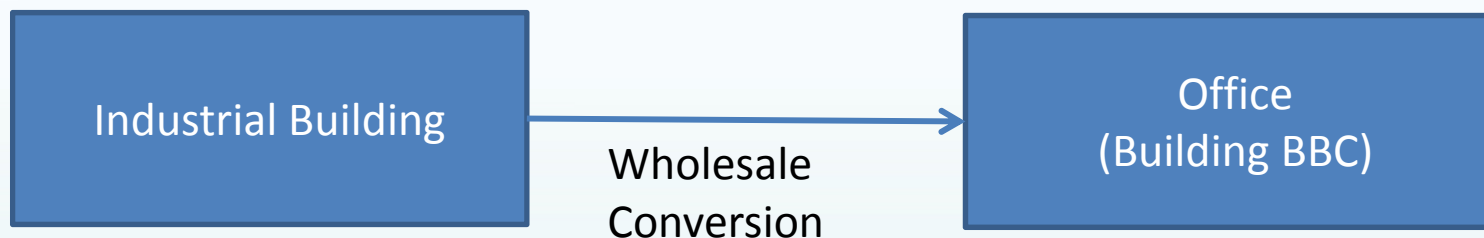
- Typically single-owned building
- Non-prescribed building (w/o common area)

- Bldg. owner apply for conversion
- Redevelopment and Conversion of Industrial Buildings Team, Lands Department

- BEEO applicability
- FOC for MRWs
- May need to carry out Energy Audit
- BEC version (issue date of the FOC)

Change of Building Use

Case: Building BBC in Kowloon.



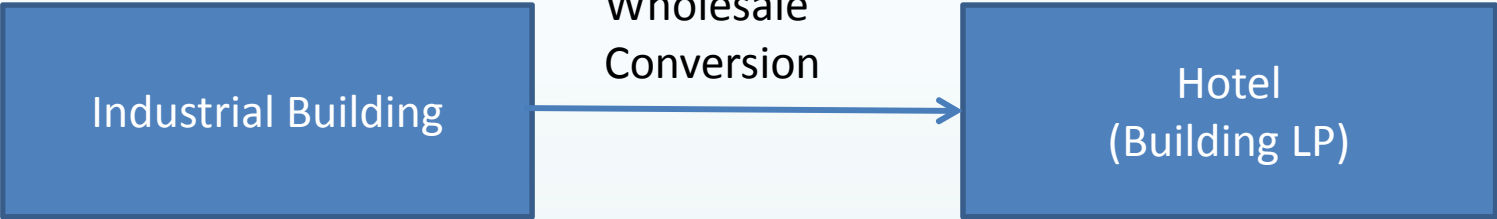
- Construction in 1988 (OP record)
- Godown, Workshops
- 8-storey
- BEEO applicable to the common area only, if any.

After conversion:

- Record GBP: Shops (lower floors), Office units (upper floors).
- BEEO applicable to the whole building (the Commercial Building)
- FOC issued for the MRWs before 11.09.16
- Energy Audit – Applicable
- Timeframe of EA
- To exhibit the EA Form.
- BD issues NO new OP for the converted floors → judge usage based on the record GBP

Case: Building LP in NT.

Change of Building Use



- Single-owned
- Non-prescribed building

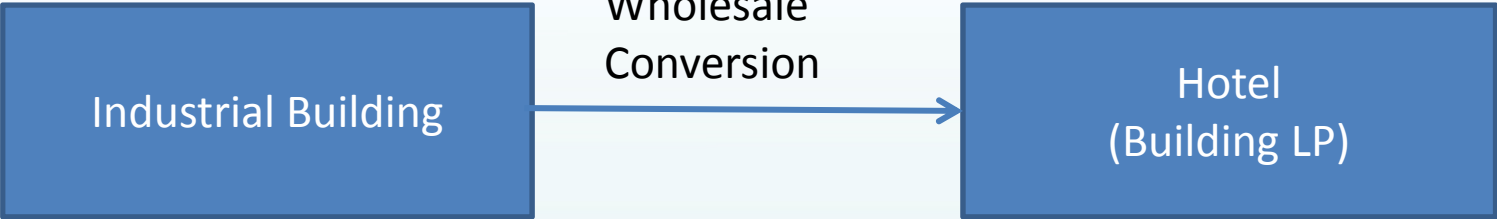
Original Submission :

- FOC submitted before 11.09.2016 (All works to BEC 2012 (Rev. 1))
- FOC covered works completed for OP inspection only.
- Most guestrooms w/ installed lighting power < 100W, exempt from LPD requirement
- Building owner will follow up with other FOCs for final fit-out works on FOH & BOH areas if of MRWs
- Final fit-out works finishes by early 2017



Case: Building LP in NT.

Change of Building Use



- Correct Approach:
- Building owner / REA to withdraw the incorrected FOC
 - All works to BEC 2015 (including the exception criteria)
 - Works to include also FOH & BOH full fit-out areas
 - One FOC to cover the works completed
 - Apply for exemption with justification for any particular item not able to comply with the BEC 2015

Summary

- An REA – Professional under the BEEO
- Submission quality – Professional
- View the drawing/information if readable, check for integrity & accuracy before making the submission
- Properly derive the compliance data
- DO NOT create your own EE standard
- Advice/train your own frontline/junior staff to make proper enquiry
- Change of building use → Prescribed Vs Non-Prescribed Building
- Package BEEO Submission Base on the Ordinance's requirements but not works contract packaging
- Refer BEEO's website for more information