

Royal University of Bhutan

Issued only for the proposed construction
of remodeling of service center Building,
Changzambok Industrial Estate.



Royal University of Bhutan

By the Authority of the University Council

Tashi Dorji

Student Number 05150212

Has been awarded

Diploma in Electrical Engineering

Offered at Jigme Namgyel Engineering College, Dewathang

On this Thirtieth Day of June Two Thousand and Seventeen

Registrar



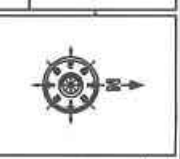
Vice Chancellor

DRAWING LIST

| SI.No. | DESCRIPTION OF DRAWING | SHEET NO. | UNIT FLOOR |
|--------|--|-----------|--------------|
| 01 | List of Drawings | 01 | |
| 02 | Electrical Legend | 02 | |
| 03 | Specification For Electrical / Telephone & LAN Works | 03 | |
| 04 | Light point layout | 04 | |
| 05 | Light point conduit layout | 05 | GROUND FLOOR |
| 06 | Power point conduit layout | 06 | GROUND FLOOR |
| 07 | Light point layout | 07 | |
| 08 | Light point conduit layout | 08 | FIRST FLOOR |
| 09 | Power point conduit layout | 09 | FIRST FLOOR |
| 10 | Light point layout | 10 | |
| 11 | Light point conduit layout | 11 | |
| 12 | Power point conduit layout | 12 | SECOND FLOOR |
| 13 | Telephone point conduit layout | 13 | SECOND FLOOR |
| 14 | LAN point conduit layout | 14 | SECOND FLOOR |
| 15 | Single line diagram for Sub Distributions Boards | 15 | |
| 16 | Single line diagram for Sub Distributions Boards | 16 | GROUND FLOOR |
| 17 | Single line diagram for Sub Distributions Boards | 17 | GROUND FLOOR |
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| 19 | Single line diagram for Sub Distributions Boards | 19 | GROUND FLOOR |
| 20 | Single line diagram for Sub Distributions Boards | 20 | GROUND FLOOR |
| 21 | Single line diagram for Sub Distributions Boards | 21 | FIRST FLOOR |
| 22 | Single line diagram for Sub Distributions Boards | 22 | FIRST FLOOR |
| 23 | Single line diagram for Sub Distributions Boards | 23 | FIRST FLOOR |
| 24 | Single line diagram for Sub Distributions Boards | 24 | SECOND FLOOR |
| 25 | Single line diagram for Sub Distributions Boards | 25 | SECOND FLOOR |
| 26 | Single line diagram for Main Control Panel Board | 26 | SECOND FLOOR |
| 27 | Load Details. | 27 | |
| 28 | Layout For Main Incoming Lines | 28 | |
| 29 | Earthing drawing | 29 | |

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|--|------------|-----------------------------|----------|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NIS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | List of Electrical Drawings | 01 |

| | | |
|----------------------------------|--------------------|--------------------|
| Design & Drawn By: | Checked By: | G.M(DPS) |
| <i>Toshi Dorji</i> Electrical | <i>Kekang Udon</i> | <i>[Signature]</i> |



NOTES:

- All dimensions are in millimeters
- Do not measure from the drawing.
- Report any discrepancies to the Engineer.
- Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

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LEGENDS

| SI.NO. | DESCRIPTION | SYMBOL | WATTAGE |
|--------|--|--------|---------------|
| 1. | Surface Mounted Round Shaped LED Downlighter | | [1x18Watts] |
| 2. | Surface Mounted Round Shaped LED Downlighter | | [1x12 watts] |
| 3. | Recess Mounted Round Shaped LED Downlighter | | [1x18Watts] |
| 4. | Recess Mounted Round Shaped LED Downlighter | | [1x12 watts] |
| 5. | LED UP-DOWN light | | [1x10 watts] |
| 6. | Exhaust Fan Point | | [1x80 watts] |
| 7. | Industrial Exhaust Fan Point 450mm sweep, 1400 rpm | | [1x750 watts] |
| 8. | 3 pins, 16A socket outlet with one 16A switch | | [2000 watts] |
| 9. | 1 Way switch, 6A | | |
| 10. | 2 Way switch, 6A | | |
| 11. | Switch Board (SB) | | |
| 12. | Sub Distribution Board | | |
| 13. | Telephone Socket outlet | | |
| 14. | Telephone terminal cabinet [TPTC] | | |
| 15. | LAN socket outlet | | |
| 16. | D-Link Port | | |
| 17. | Single phase Energy Meter [EM-1φ] | | |
| 18. | Three phase Energy Meter [EM-3φ] | | |
| 19. | Main Control Panel Board [MCPB] | | |
| 20. | Industrial Socket, 4P, 63 A | | [24000 watts] |
| 21. | Control Board | | |
| 22. | Industrial LED- ILIOSBAY PLUS HIGHBAY - IP65 | | [1x50 watts] |

PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|----------------|--------------------|
| SCALE: | NIS | DRAWING TITLE: | Electrical Legends |
| DATE: | MARCH-2022 | DWG. NO. | 02 |

| | | |
|--------------------------|-------------|-----------|
| Design & Drawn By: | Checked By: | G.M.(DPS) |
| Electrical Toshi Doji | Keteng Udon | |



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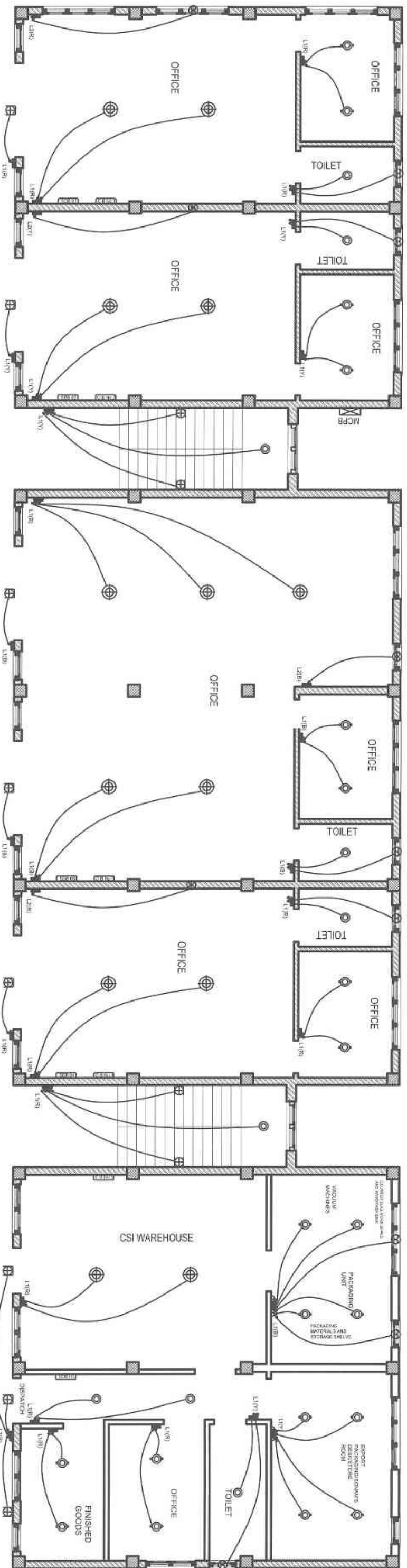
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| Sl.No. | A: Description of Electrical Works | Sl.No. | B: On Completion of the Installation, The following test result shall be Satisfied. |
|--------|---|-------------------------------|---|
| 1. | All Light Point Wiring Shall Be Of 1.5 sq. mm PVC Insulated copper conductor 1.1 kVVG | 1. | Polarity Test : All Switches Must Be on the Live Conductor |
| 2. | All Light Circuit Wiring Shall Be Of 2.5 sq. mm PVC Insulated copper conductor 1.1 kVVG | 2. | Insulation Test : Minimum Test Result Should Not Be Less Than One Mega Ohm |
| 3. | All Power Point Wiring Shall Be Of 4 sq. mm PVC Insulated copper conductor 1.1 kVVG | 3. | Earth Continuity Test : Low Voltage Test Lamp Should Satisfy the Installation |
| 4. | All The Light Switch Board Shall Be At 1.4 m From Finished Level | 4. | Earthing Test : Test Result Should Be Within Five Ohms |
| 5. | All Power Point Shall be At 0.4 m From Finished Floor Level Except For Kitchen and Toilet | C: Telephone Networks | |
| 6. | All Power Point Shall Be At 1.6 m From Finished Floor Level For Kitchen And Toilet | | |
| 7. | All Wall Fixtures Shall be At 2.1-2.5 m From Finished Floor Level | 1. | Telephone cable conduit shall be of 25 mm dia. Casing Caping |
| 8. | No Phase Difference Is Permitted In The Same Conduit | 2. | Telephone cable duct/conduit must be separated by 0.5 m away from electrical conduits |
| 9. | All 16 A (3 Pin) & 6 A (5/6 Pin) Socket Outlet At 0.4 m From Finished Floor Level | 3. | Telephone distribution box at 0.5 m above Ground floor level |
| 10. | Main Control Panel Board at 0.4 -1.00 m From Finished Floor Level/As Per The Site Condition | 4. | Telephone socket outlet at 0.4 m above finished floor level |
| 11. | Lighting Circuit With 25 mm Dia. Surface MS Conduit and Casing Caping | D: Television Networks | |
| 12. | Power Point Circuit With 25 mm Dia. Surface MS Conduit and Casing Caping | | |
| 13. | Some Assumptions Are As Follows | 1. | TV cable conduit/duct shall be of 25 mm dia. Casing Caping |
| | i. Power Factor = 0.8 | 2. | TV Distribution box shall be placed 0.5 m above ground floor level |
| | ii. Load Factor = 0.6 | 3. | TV socket outlet at 0.4 m above finished floor level |
| 14. | No power points shall be looped. | 1. | Telephone, TV & LAN network in consultation with respective service providers. |
| 15. | Sub Distribution Board Shall Be Place at the Height of 2.1-2.3 m From Finished Floor Level | | |
| 16. | The conducting shall be in Surface MS conduit and Casing Caping. | | |
| 17. | All switch board should be 0.23 mtrs away from the door & edge of the walls. | | |

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|---|---|--|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: NTS | DRAWING TITLE: Specification for Electrical / Telephone & LAN work | DWG. NO. 03 | |
| DATE: MAR/CH-2022 | Design & Drawn By:  Toshii Doji | Checked By:  Kelzang Udon | G.M(DPS)  |
|  | | NOTES: | |
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GROUND FLOOR PLAN

| | |
|--|--|
| PROJECT: DCSI SERVICE CENTER REMODELING | |
| SCALE: NTS | DRAWING TITLE: Light point layout - Ground Floor |
| DATE: MARCH-2022 | DWG. NO.: 04 |

Design & Drawn By: *Toshi Dorji*
 Electrical
 Toshi Dorji

Checked By: *WU*
 Katzong Udon

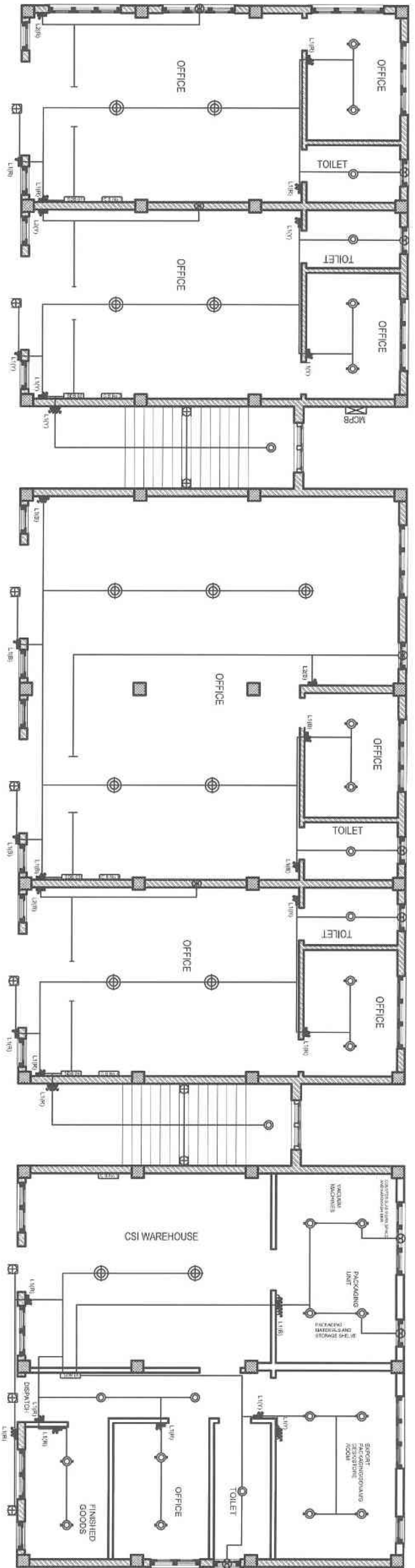
G.M.(DPS)



- NOTES:
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 Fax: 31203 Website: www.nhdc.lk



GROUND FLOOR PLAN

| | | | |
|--|------------|----------------|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NIS | DRAWING TITLE: | Light point conduit layout - Ground Floor |
| DATE: | MARCH-2022 | DWG. NO.: | 05 |

Design & Drawn By:
Abdullah
 Electrical
 Toshi Doji

Checked By:
WJ
 Kelang Udon

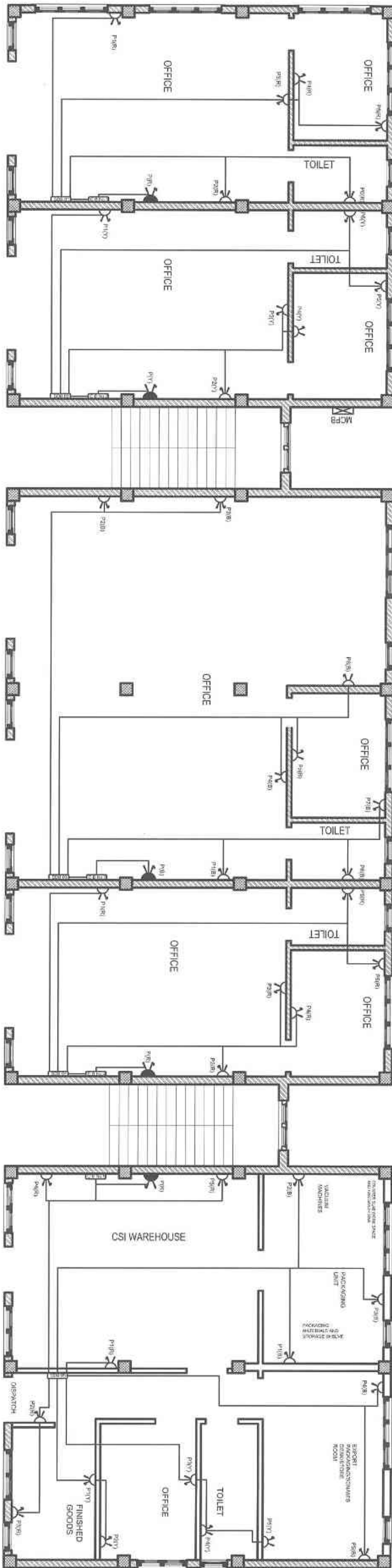
GM(DPS)
[Signature]



- NOTES:
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 3. Report any discrepancies to the Engineer.
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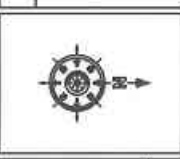
GROUND FLOOR PLAN

| | | | |
|--|------------|----------------|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NIS | DRAWING TITLE: | Power point conduit layout - Ground Floor |
| DATE: | MARCH-2022 | DWG. NO.: | 06 |

Design & Drawn By:
Shawn V. Smith
 Electrical
 Tosh Doji

Checked By:
W. Udon
 Kezang Udon

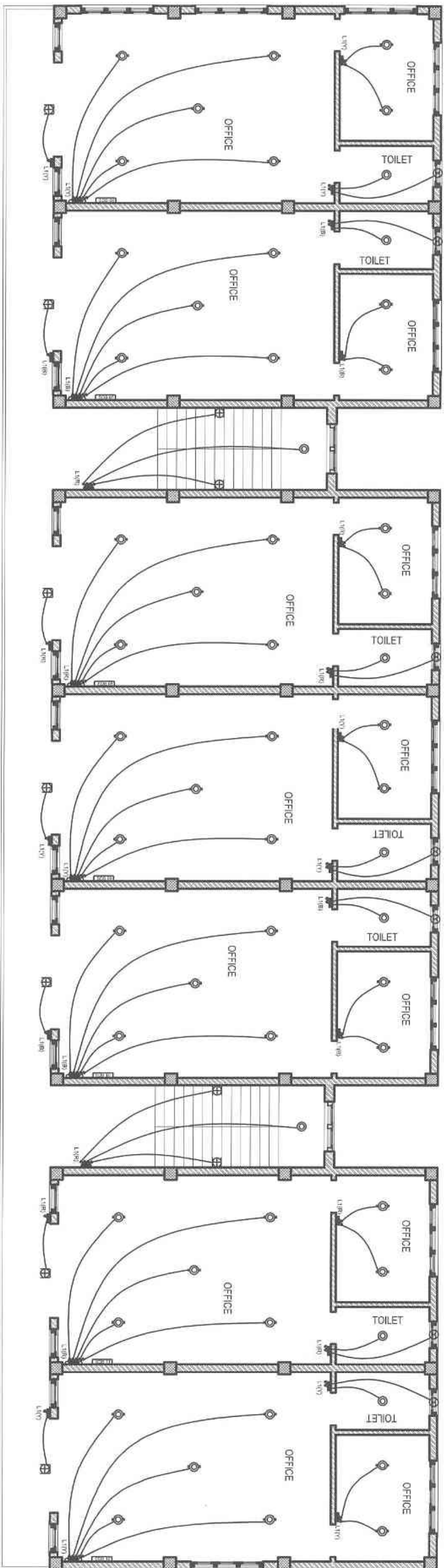
GM(DPS)
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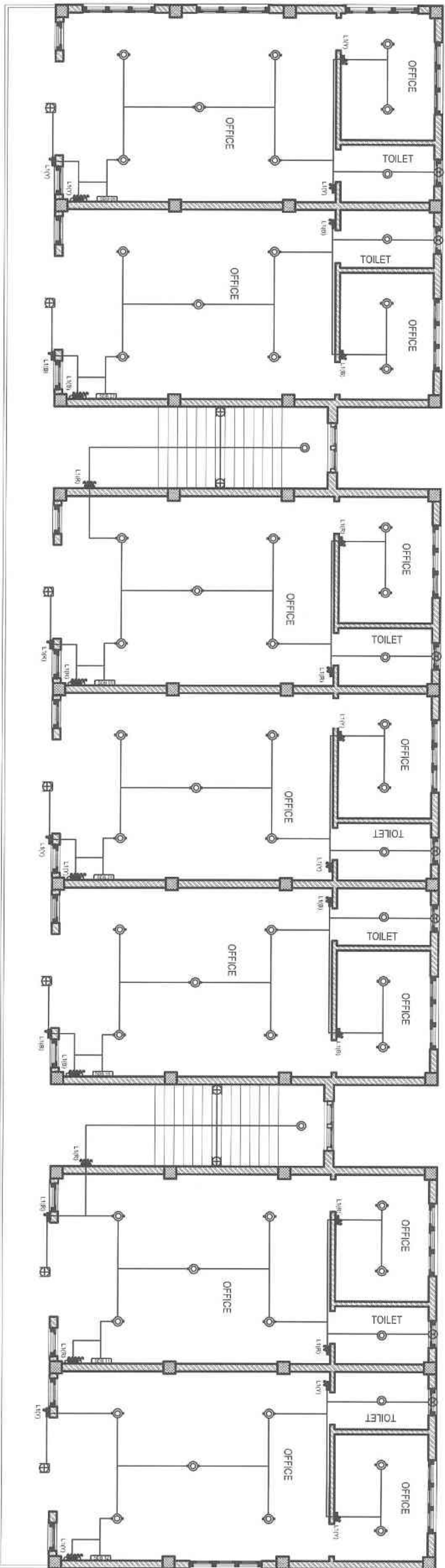
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FIRST FLOOR PLAN

| | | | |
|---|------------|--|-----------|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NTS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Light point layout - First Floor | 07 |
| Design & Drawn By: | | Checked By: | |
|  Toshi Dorji Electrical | |  Kelzang Udon | |
| GMD/DPJ | |  GMD/DPJ | |
|  | | | |
| NOTES: | | | |
| 1. All dimensions are in millimeters. 2. Do not measure from the drawing. 3. Report any discrepancies to the Engineer. 4. Conflicts or site engineers to verify all dimensions on drawings and on site before commencing any work. | | | |
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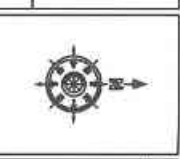
FIRST FLOOR PLAN

| | |
|--|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | |
| SCALE: NTS | DRAWING TITLE: Light point conduit layout - First Floor |
| DATE: MARCH-2022 | DWG. NO: 08 |

Design & Drawn By: *[Signature]*
 Electrical
 Toshi Doji

Checked By: *[Signature]*
 Kelzang Udon

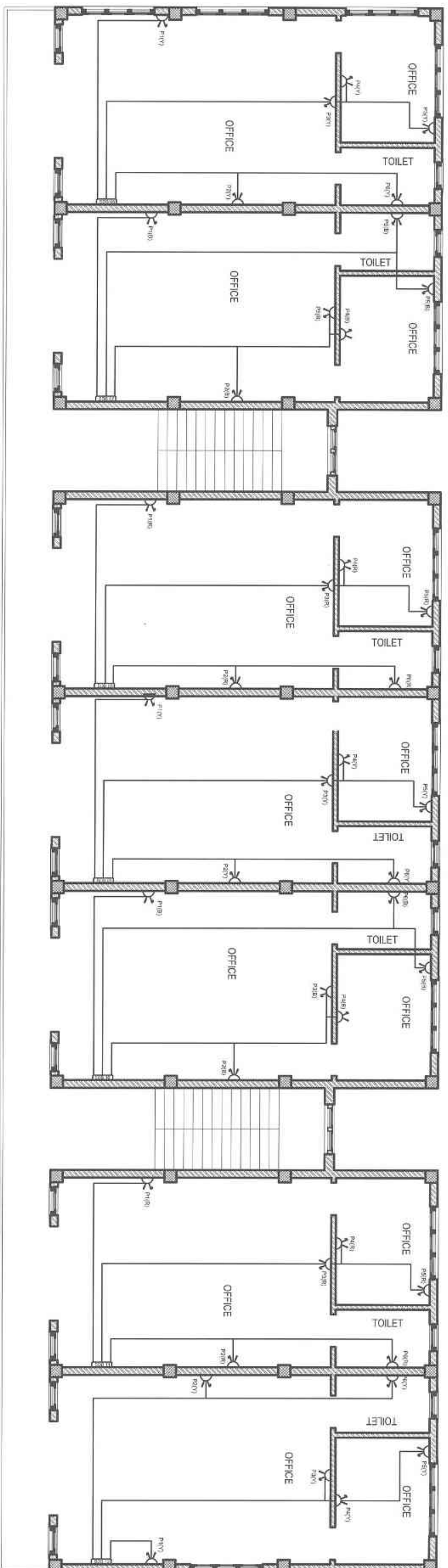
[Signature]
 GM(DPS)



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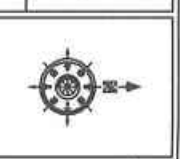
FIRST FLOOR PLAN

| | | | |
|--|------------|----------------|--|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NIS | DRAWING TITLE: | Power point conduit layout - First Floor |
| DATE: | MARCH-2022 | DWG. NO.: | 09 |

Design & Drawn By:
Toshi Dorji
 Electrical
 Toshi Dorji

Checked By:
W.L.
 Kelzang Udon

G.M.(DPS)
[Signature]

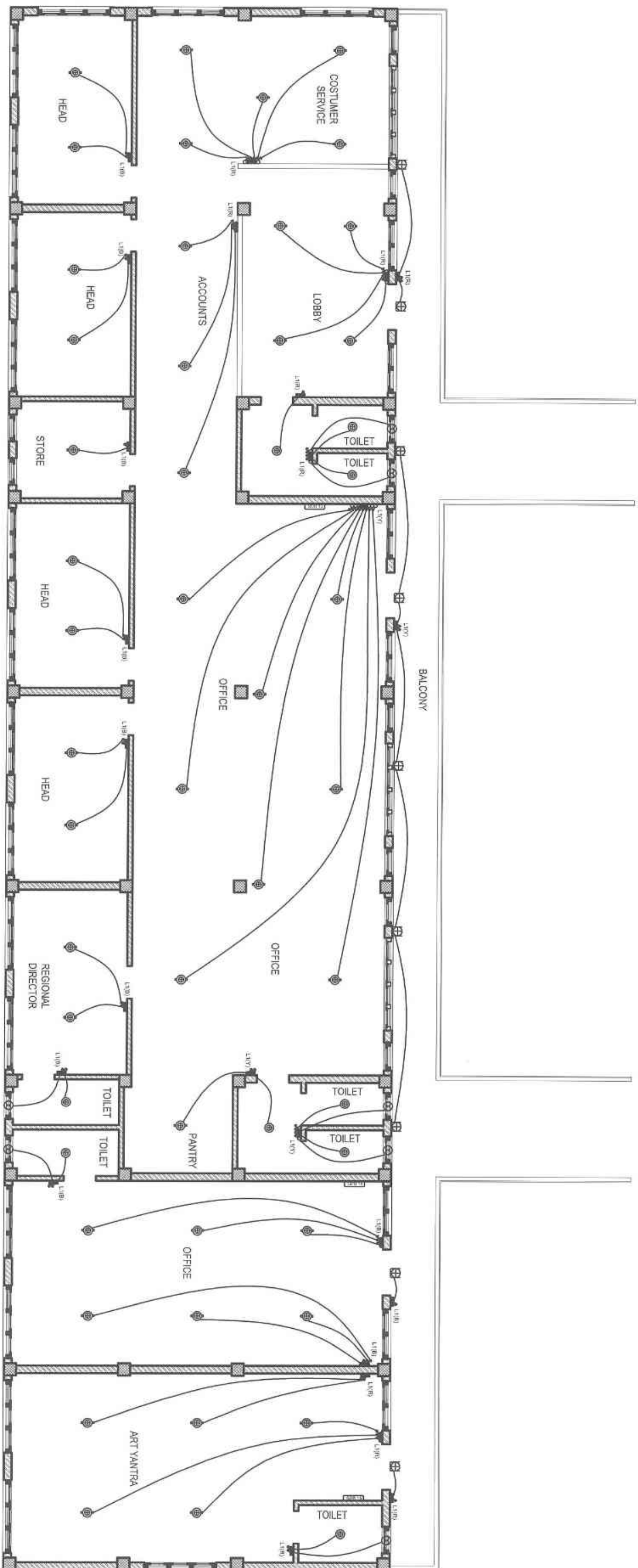


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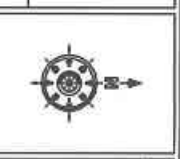
SECOND FLOOR PLAN

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|--|------------|----------------|-----------------------------------|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | N1S | DRAWING TITLE: | Light point layout - Second Floor |
| DATE: | MARCH-2022 | DWG. NO.: | 10 |

Design & Drawn By:
Shanley Heston
 Electrical
 Toshi Doji

Checked By:
WJ
 Kelzong Udon

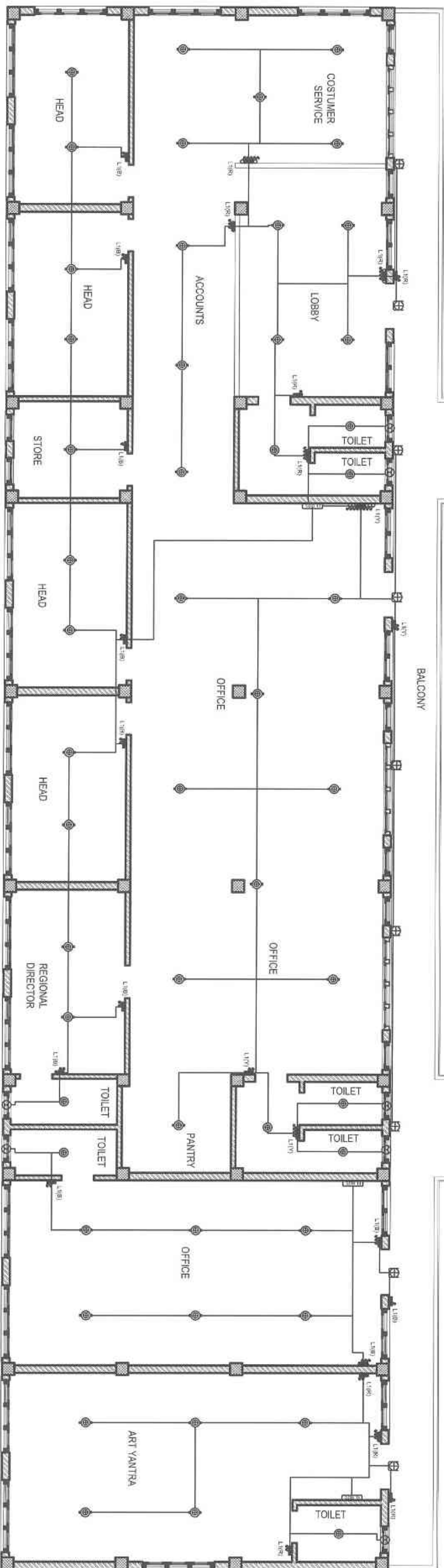
Shanley Heston
 GM(DPS)



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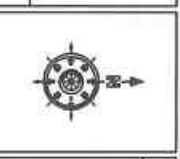
SECOND FLOOR PLAN

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| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | N.T.S. | DRAWING TITLE: | Light point conduit layout - Second floor |
| DATE: | MARCH-2022 | DWG. NO.: | 11 |

Design & Drawn By:
[Signature]
 Electrical
 Tosh Dorji

Checked By:
[Signature]
 Kelzang Udon

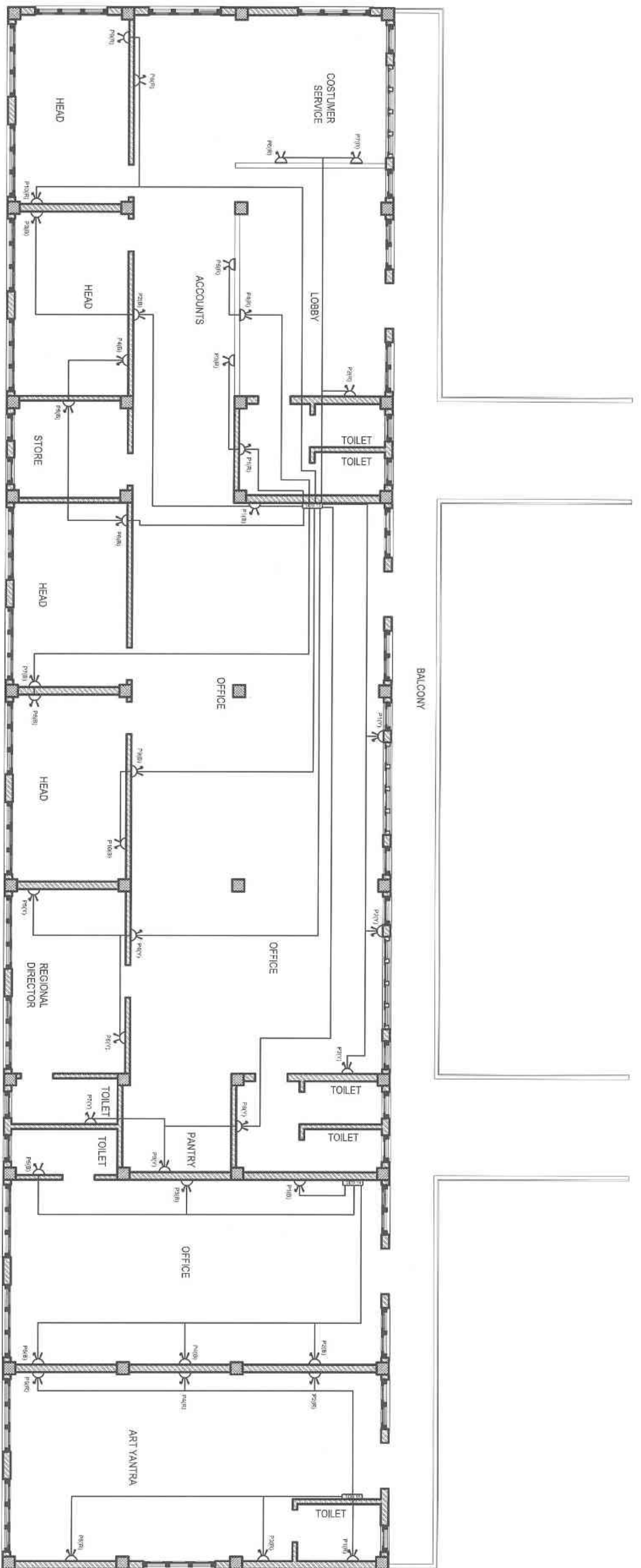
GM(DPS)
[Signature]



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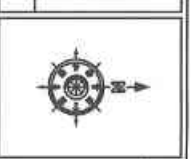
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SECOND FLOOR PLAN

| | | | |
|--|------------|----------------|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NTS | DRAWING TITLE: | Power point conduit layout - Second Floor |
| DATE: | MARCH-2022 | DWG. NO.: | 12 |

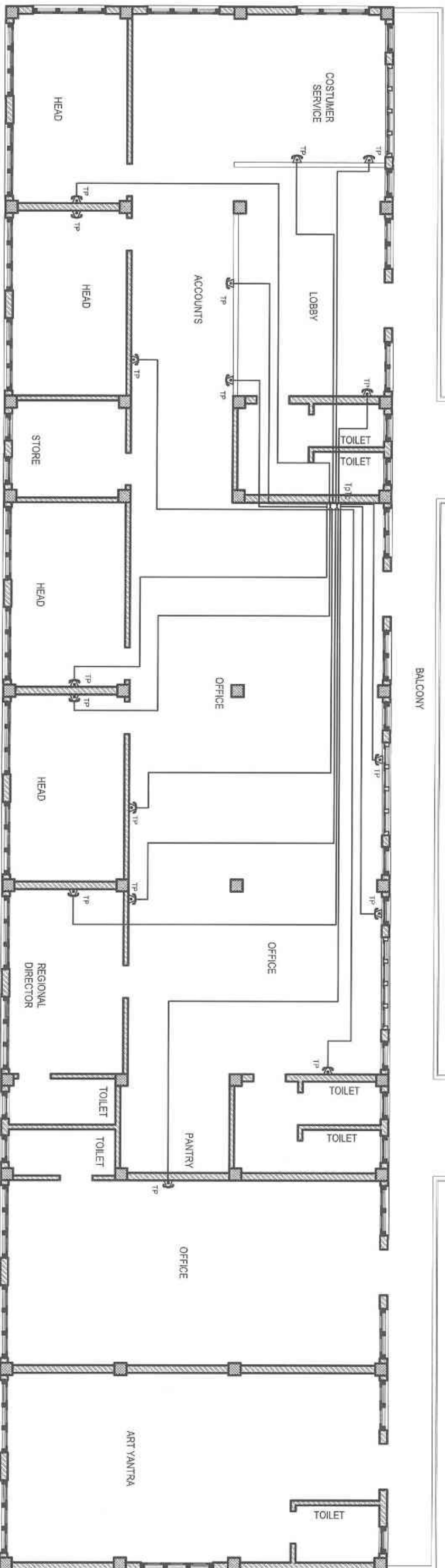
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|--------------------|---------------------|-------------|---------------------|
| Design & Drawn By: | <i>Shubir Singh</i> | Checked By: | <i>WLL</i> |
| Electrical | Toshi Dorji | | Kelzang Udon |
| | | | <i>Shubir Singh</i> |
| | | | GM(DPS) |



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SECOND FLOOR PLAN

PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|----------------|---|
| SCALE: | NIS | DRAWING TITLE: | Telephone point consult layout - Second floor |
| DATE: | MARCH-2022 | DWG. NO. | 13 |

Design & Drawn By: *[Signature]*
 Electrical
 Toshi Doji

Checked By: *[Signature]*
 Kelang Udou

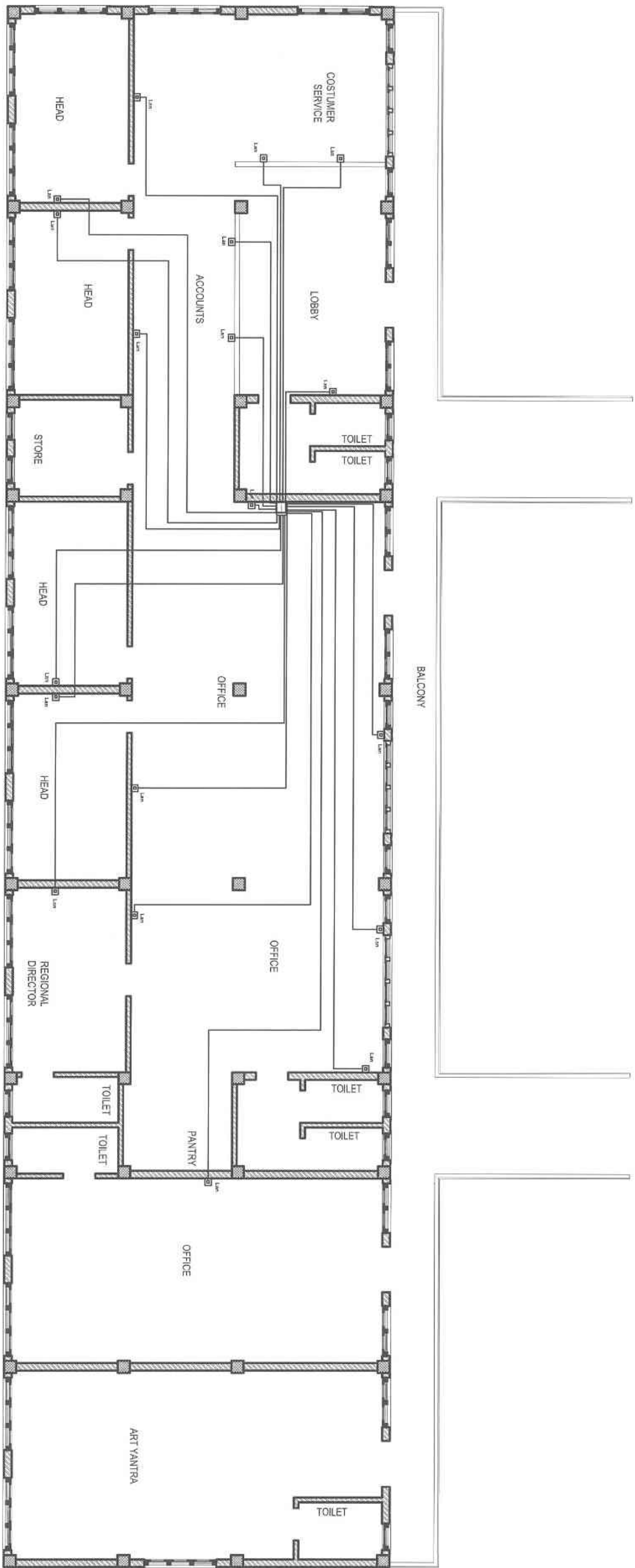
GM(DPS) *[Signature]*



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SECOND FLOOR PLAN

| | | | |
|--|------------|----------------|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NTS | DRAWING TITLE: | LAN point conduit layout - Second Floor |
| DATE: | MARCH-2022 | DWG. NO.: | 14 |

Design & Drawn By:
Chhimek Dorji
 Electrical
 Tashi Dorji

Checked By:
WLL
 Keizong Udon

G.M/D.P.S.
Robbers



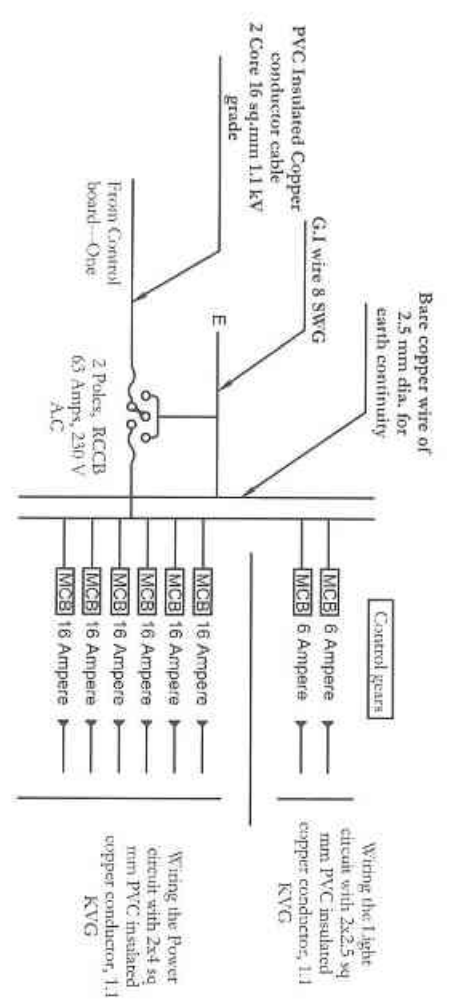
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SPN DB GROUND FLOOR 01 - 12 Ways with Out Going
 Out Going --- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 02 nos.

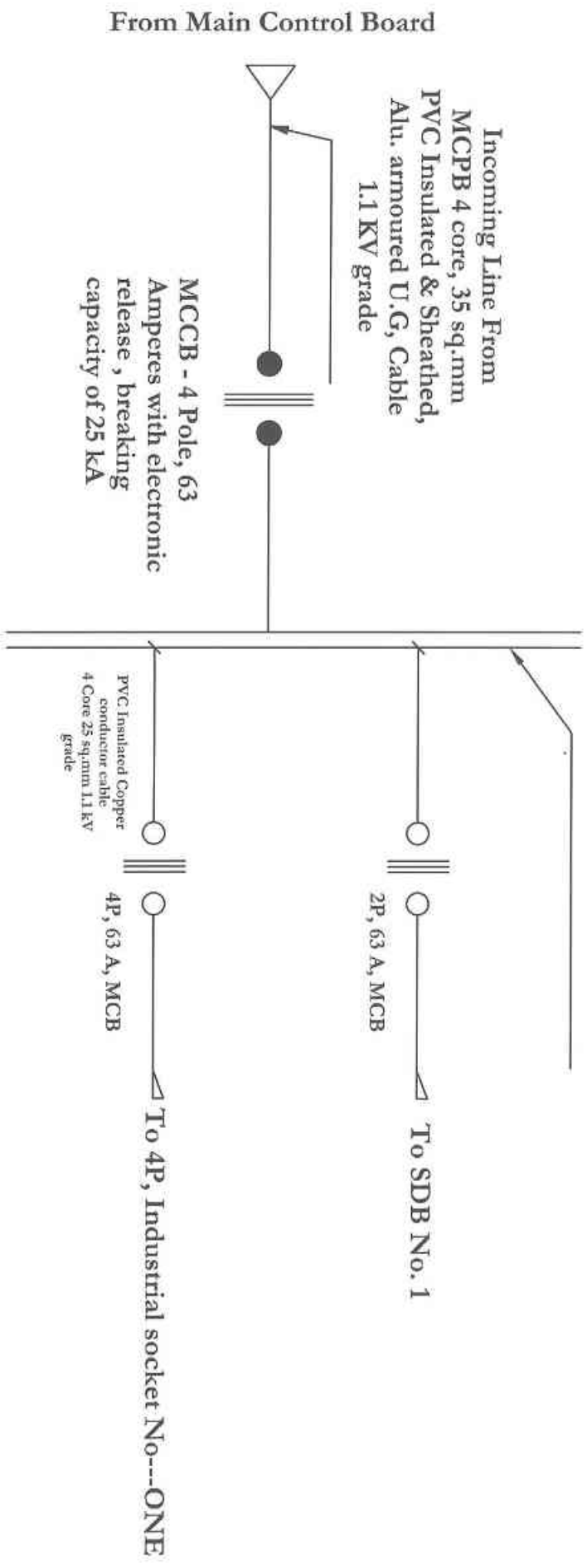


Note:
 Considered Load factor 60% of the total connected loads

| Phase | SDB-01 distribution | Ground Floor |
|-------|---------------------|---------------|
| Red | | 238 |
| L1 | | 760 |
| L2 | | |
| P1 | 2000 | |
| P2 | 2000 | |
| P3 | 2000 | |
| P4 | 2000 | |
| P5 | 2000 | |
| P6 | 2000 | |
| | | 12,988 |

Control Board No-----ONE

Bus Bar Copper 4
 Strips 200 Amp, 300
 mm length



PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|---|----------|
| SCALE: | NIS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Single line diagram for sub-distribution board (1) - Ground floor | 15 |

Design & Drawn By: *Toshi Doji*
 Electrical
 Checked By: *Kelkang Udou*
 (GMDPS)

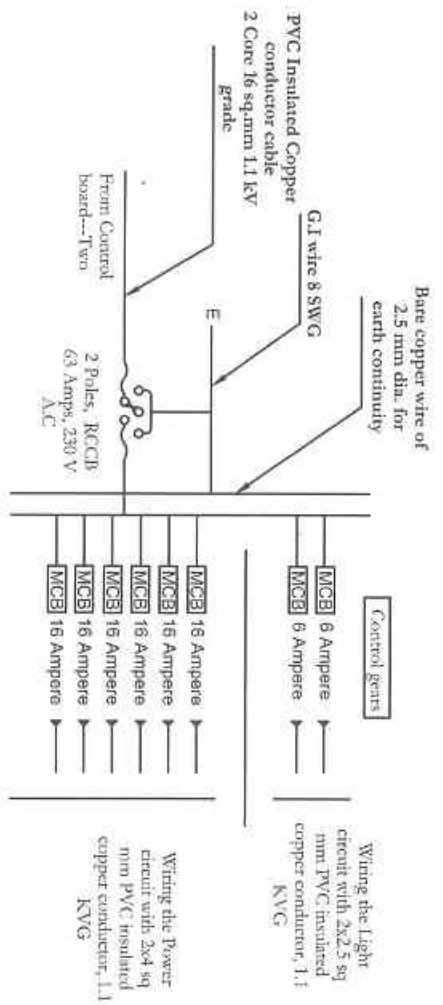
- NOTES:
- All dimensions are in millimeters
 - Do not measure from the drawing.
 - Report any discrepancies to the Engineer.
 - Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

| REVISION | DATE | REMARKS |
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SPN DB GROUND FLOOR 02 - 12 Ways with Out Going

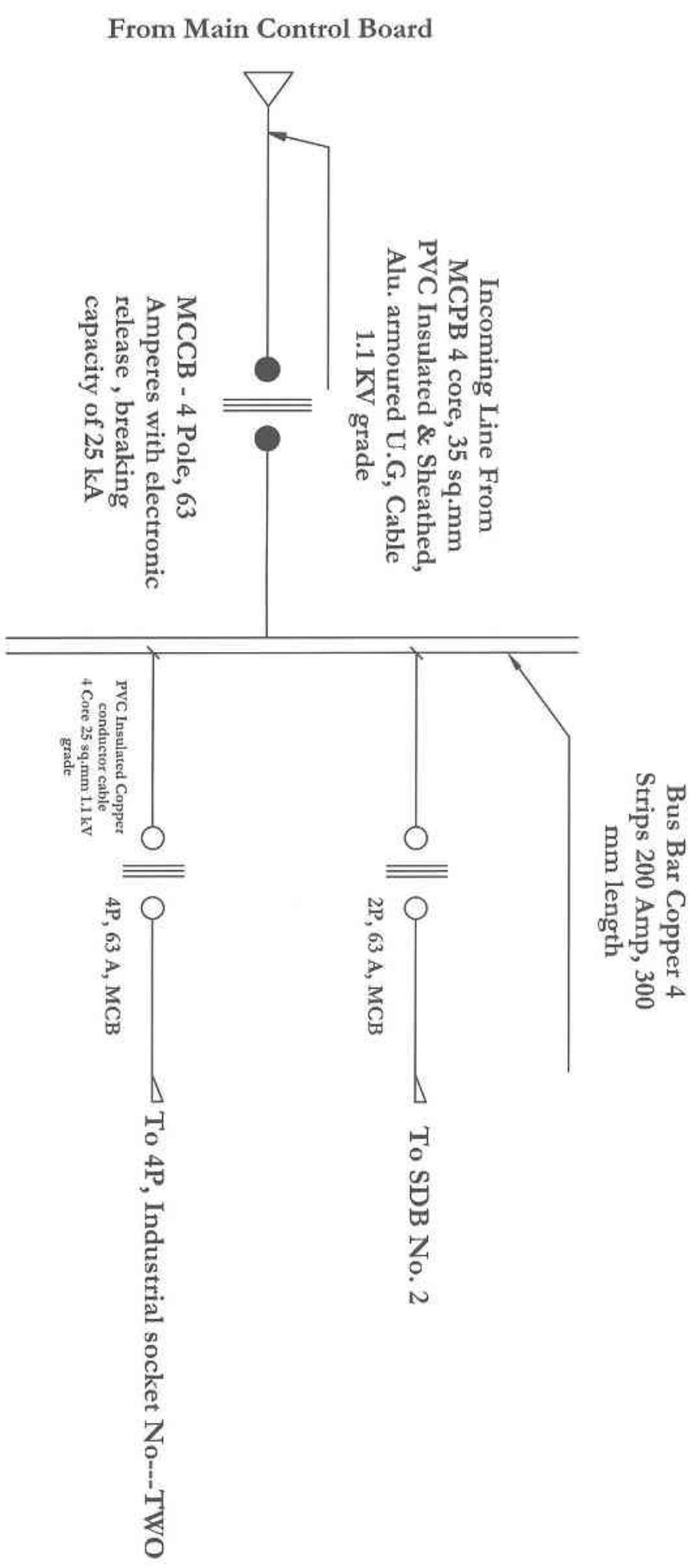
Out Going ---- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 02 nos.



| Phase distribution | SDB 02 Ground Floor |
|--------------------|---------------------|
| Yellow | 270 |
| L1 | 750 |
| L2 | |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| | 13,020 |

Note:
 Considered Load factor 60% of the total connected loads

Control Board No-----TWO



PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|--|----------|
| SCALE: | NTS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Single line diagram for sub distribution board 02 - Ground floor | 16 |

Design & Drawn By: *Toshi Doji*
 Electrical
 Toshi Doji

Checked By: *Kelkang Udou*

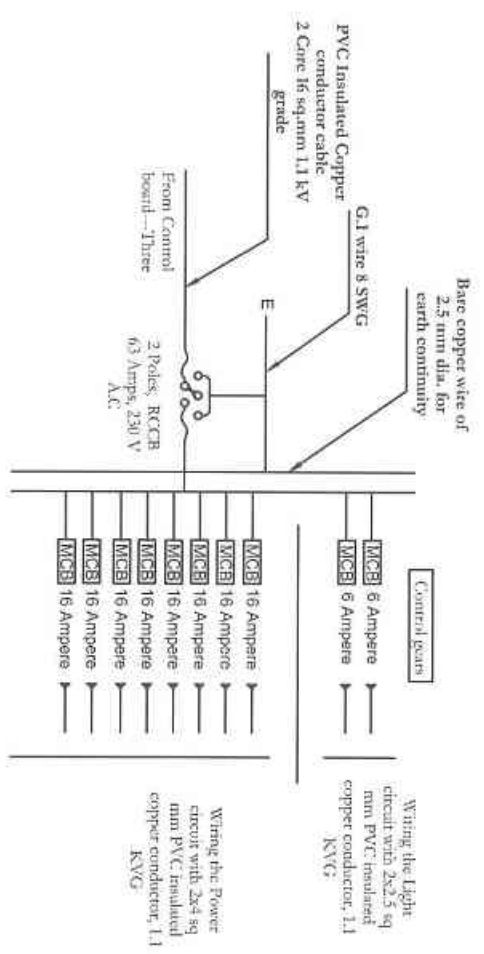
GMI(DPS)

- NOTES:
- All dimensions are in millimeters
 - Do not measure from the drawing.
 - Report any discrepancies to the Engineer.
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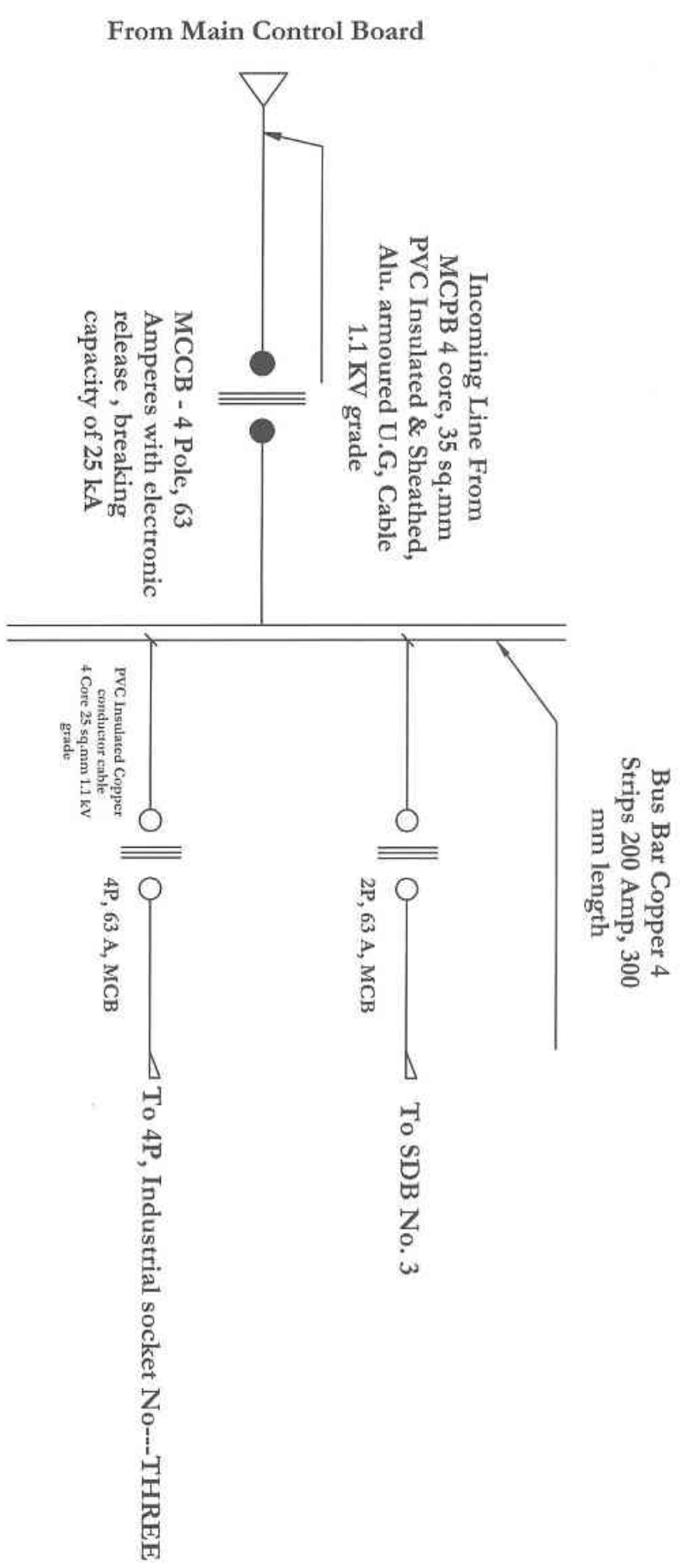
SPN DB GROUND FLOOR 03 - 12 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 08 nos.
 SPMCB 6 Amps = 02 nos.



| Phase distribution | SDB-03 Ground Floor |
|--------------------|---------------------|
| Blue | 398 |
| L1 | |
| L2 | 790 |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| P7 | 2000 |
| P8 | 2000 |
| 17,148 | |

Note:
 Considered Load factor 60% of the total connected loads

Control Board No.-----THREE



| | | | |
|--|------------|---|----------|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NIS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Single line diagram for sub-distribution board (SDB) - Ground floor | 17 |

| | | |
|--------------------|--------------------|--------------------|
| Design & Drawn By: | Checked By: | GM(DPS) |
| <i>[Signature]</i> | <i>[Signature]</i> | <i>[Signature]</i> |
| Electrical | Keizang Udon | |
| Toshi Dorji | | |

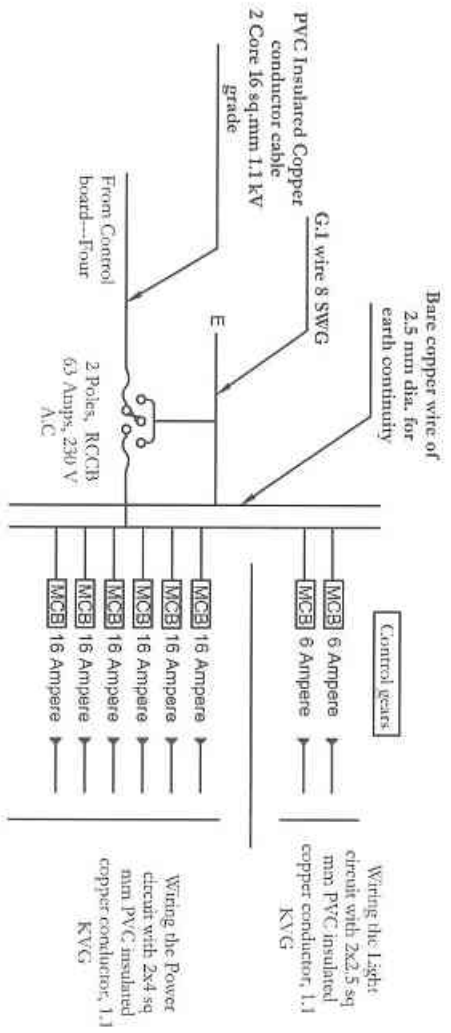
- NOTES:
- All dimensions are in millimeters
 - Do not measure from the drawing.
 - Report any discrepancy to the Engineer.
 - Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

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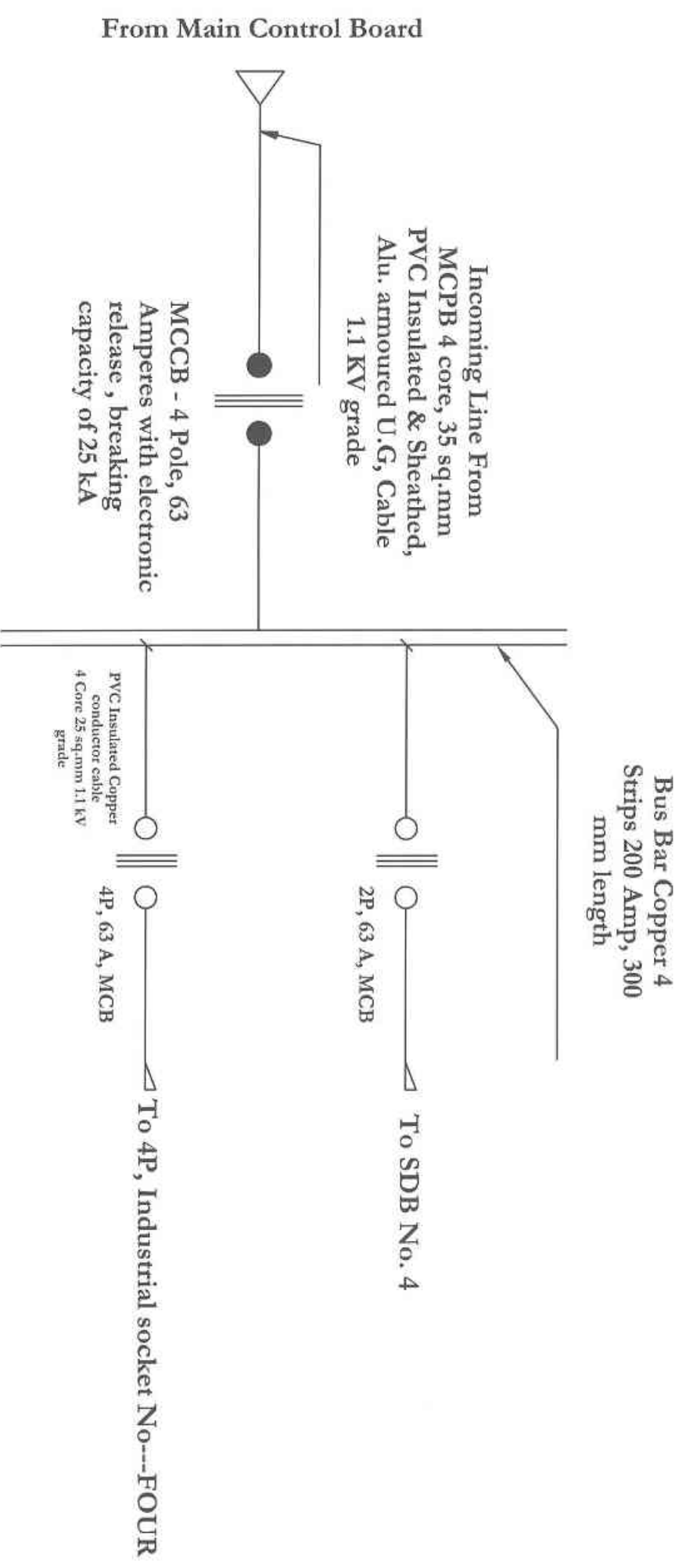
National Housing Development Corporation Ltd.
 Design & Planning Services,
 PO Box 1439
 Thimphu
 Tel: +855(975)2-323147/323274/323275,
 Fax: 323276 Website: www.nhd.lk

SPN DB GROUND FLOOR 04 - 12 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 02 nos.



Note:
 Considered Load factor 60% of the total connected loads

Control Board No.-----FOUR



| | | | |
|--|------------|--------------------|----------|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NTS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Design & Drawn By: | 18 |

Design & Drawn By: *[Signature]*
 Electrical
 Tosh Dorji

Checked by: *[Signature]*
 Kerzang Udon

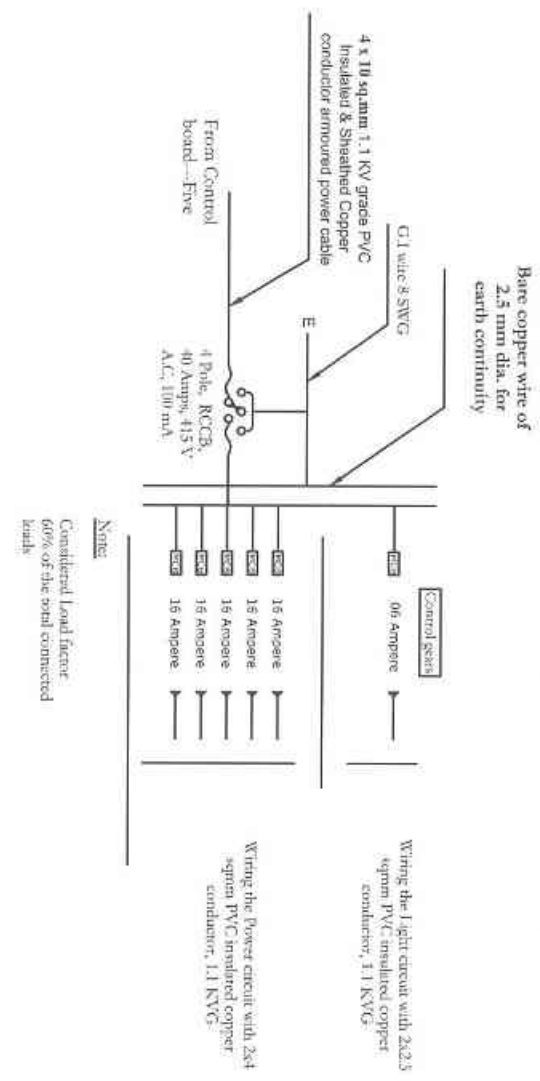
G.M(DPS) *[Signature]*

- NOTES:
1. All dimensions are in millimeters
 2. Do not measure from the drawing.
 3. Report any discrepancy to the Engineer.
 4. Contractors or site engineers to verify all dimensions on drawings are on site before commencing any work.

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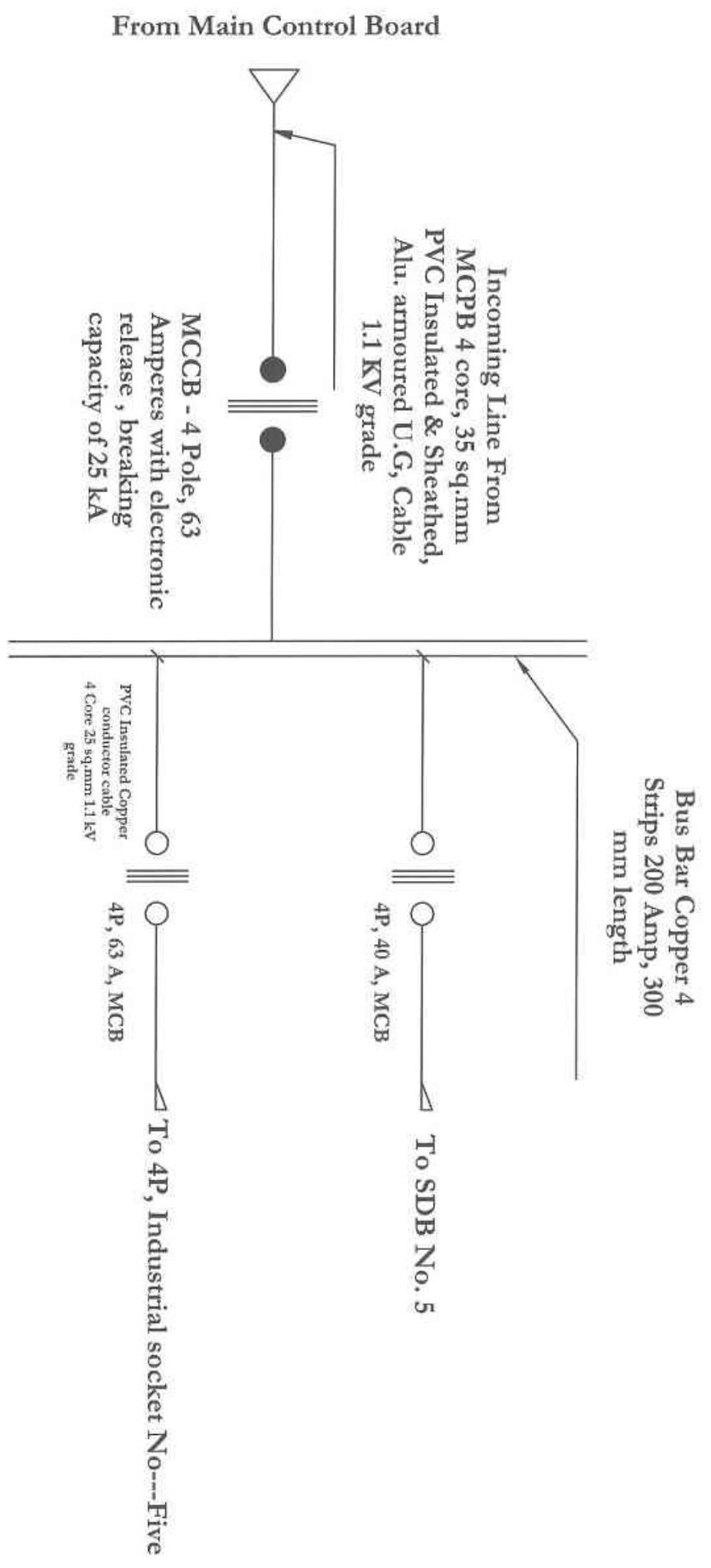
TPN DB GROUND FLOOR---6 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 05 nos.
 SPMCB 10 Amps = 01 no.



CONNECTED LOAD IN WATTS

| Phase Distribution Ground Floor | SPMCB | Phase Distribution Ground Floor | SPMCB | Phase Distribution Ground Floor | SPMCB |
|---------------------------------|-------|---------------------------------|-------|---------------------------------|-------|
| LR0 | 228 | LY0 | 164 | LB0 | 232 |
| RR01 | 2000 | RY01 | 2000 | LB01 | 2000 |
| RR02 | 2000 | RY02 | 2000 | LB02 | 2000 |
| RR03 | 2000 | RY03 | 2000 | LB03 | 2000 |
| RR04 | 2000 | RY04 | 2000 | LB04 | 2000 |
| RR05 | 2000 | RY05 | 2000 | LB05 | 2000 |
| 10,226 | | 10,164 | | 10,232 | |

Control Board No-----FIVE



PROJECT: DCSI SERVICE CENTER REMODELING

| | | | | | |
|--------|------------|--|--|-----------|----|
| SCALE: | NIS | DRAWING TITLE: | | DWG. NO.: | 19 |
| DATE: | MARCH-2022 | Single line diagram for sub distribution board 55 - Ground Floor | | | |

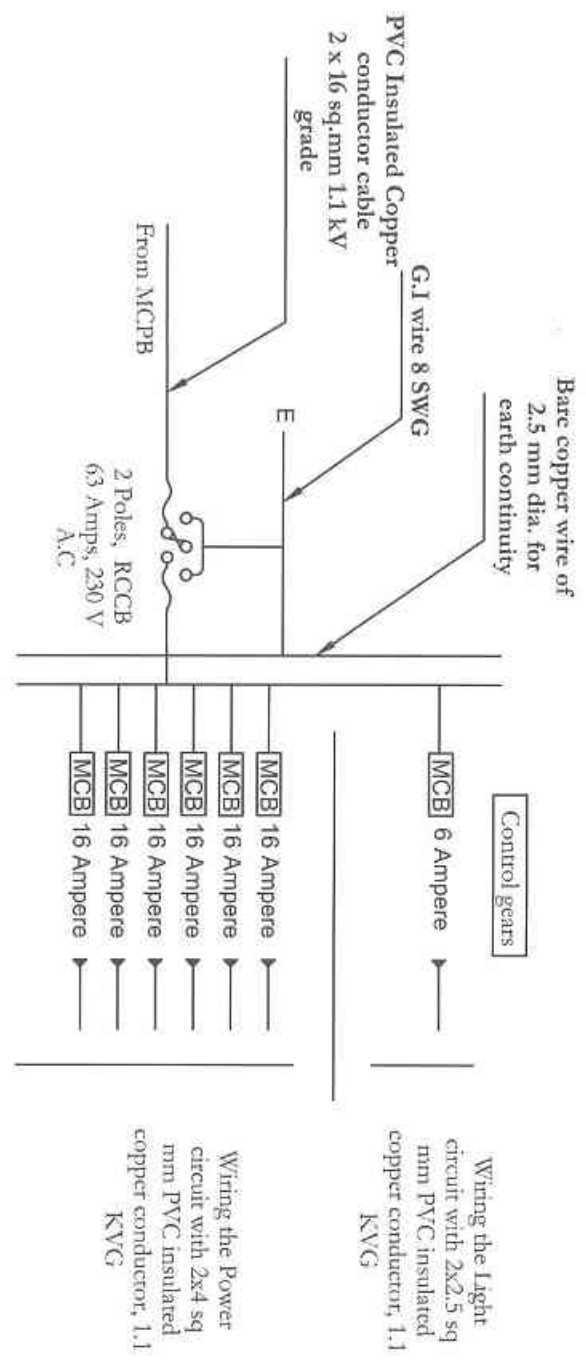
Design & Drawn By: *Toshi Dorji*
 Electrical
 Checked By: *Kezong Udon*
 GM/DPSI

- NOTES:
- All dimensions are in millimeters.
 - Do not measure from the drawing.
 - Report any discrepancies to the Engineer.
 - Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

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 Fax: 531703 Website: www.nhdcltd.lk

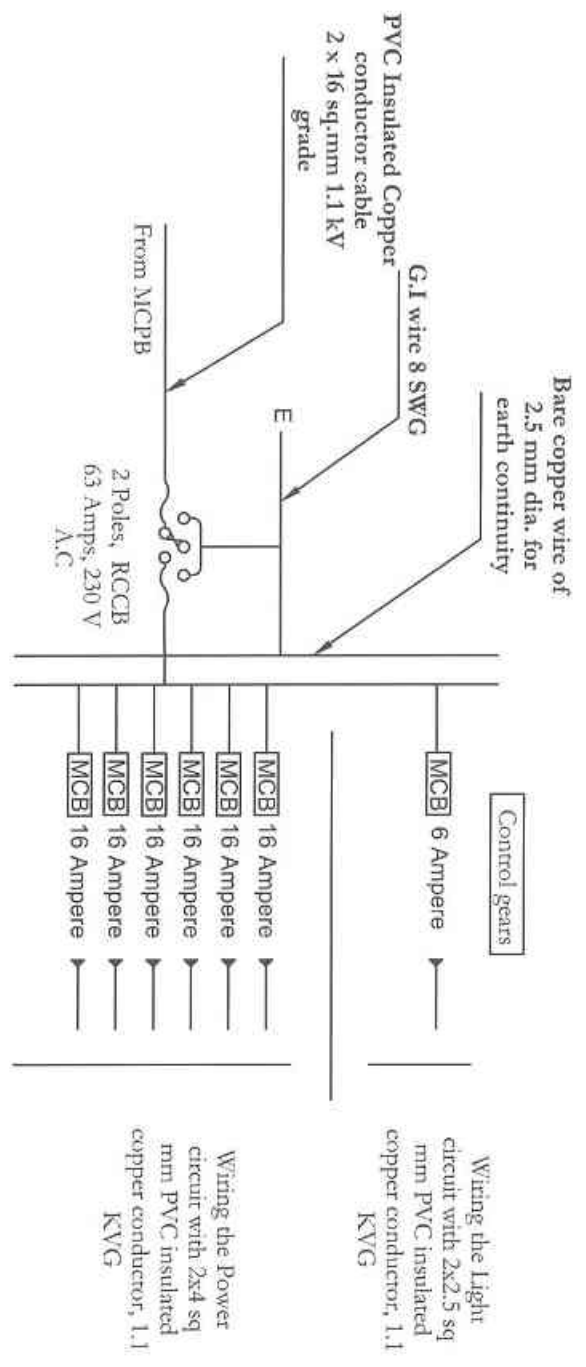
SPN DB FIRST FLOOR 06 -- 08 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 1 no.



| Phase distribution | SDB-06 First Floor |
|--------------------|--------------------|
| Yellow | 228 |
| L1 | |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| <u>12,228</u> | |

Note:
 Considered Load factor 60% of the total connected loads

SPN DB FIRST FLOOR 07 -- 08 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 1 no.



| Phase distribution | SDB-07 First Floor |
|--------------------|--------------------|
| Blue | 228 |
| L1 | |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| <u>12,228</u> | |

Note:
 Considered Load factor 60% of the total connected loads

| | |
|--|---------------------------------------|
| PROJECT: DCSI SERVICE CENTER REMODELING | |
| SCALE: NTS | DWG. NO. 20 |
| DATE: MARCH-2022 | Design & Drawn By: <i>Toshi Dorji</i> |
| | Checked By: <i>Keizong Udon</i> |
| | GM (DPS) |

Single line diagram for sub distribution board I.S. & O' - First floor

Design & Drawn By: *Toshi Dorji*

Checked By: *Keizong Udon*

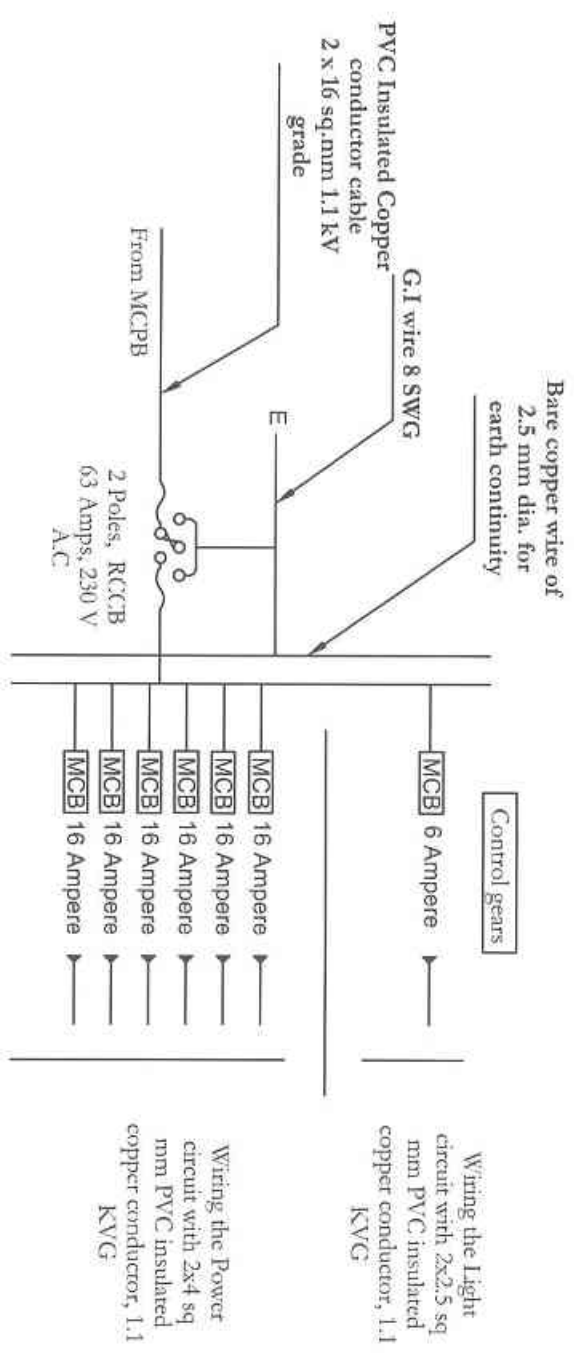
GM (DPS)

- NOTES:
- All dimensions are in millimeters
 - Do not measure from the drawing.
 - Report any discrepancies to the Engineer.
 - Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

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 Fax: 33235 Website: www.nhdclt.lk

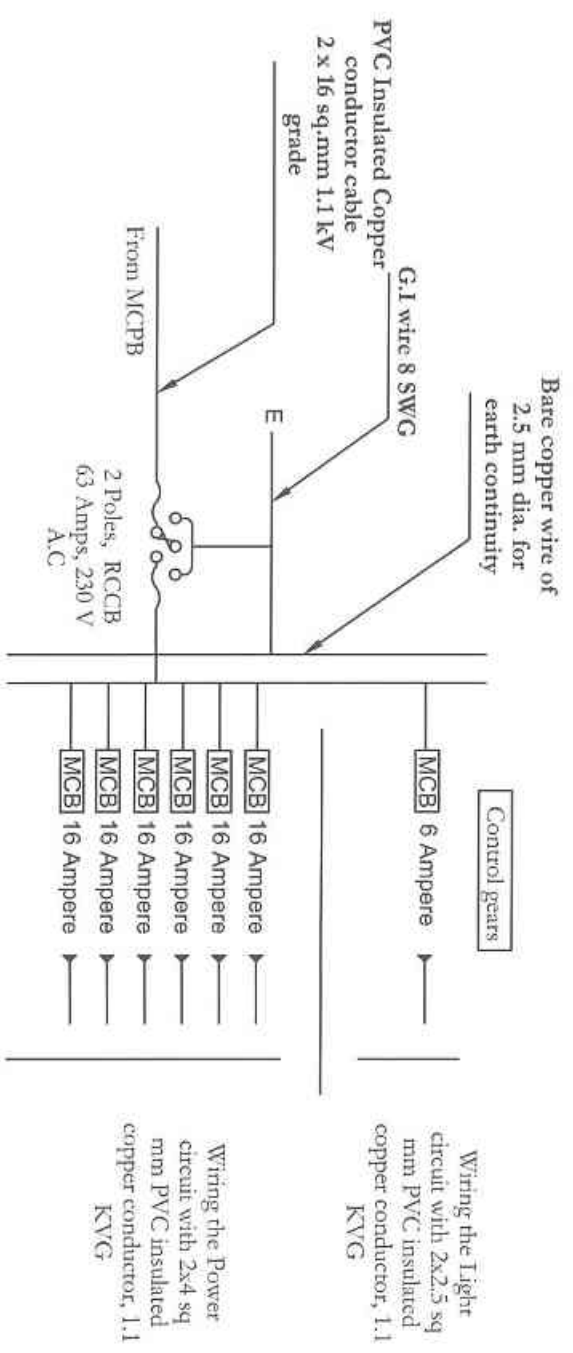
SPN DB FIRST FLOOR 10 -- 08 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 1 no.



| Phase distribution | SDB-10 First Floor |
|--------------------|--------------------|
| Blue L1 | 228 |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| <u>12,228</u> | |

Note:
 Considered Load factor 60% of the total connected loads

SPN DB FIRST FLOOR 11 -- 08 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 06 nos.
 SPMCB 6 Amps = 1 no.



| Phase distribution | SDB-11 First Floor |
|--------------------|--------------------|
| Red L1 | 260 |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| <u>12,260</u> | |

Note:
 Considered Load factor 60% of the total connected loads

| | |
|--|----------------|
| PROJECT: DCSI SERVICE CENTER REMODELING | |
| SCALE: NTS | DRAWING TITLE: |
| DATE: MARCH-2022 | DWG. NO: 22 |

Design & Drawn By: *M. N. Dorji*
 Electrical
 Checked By: *M. Udon*
 Keizong Udon
 GM (DPS)

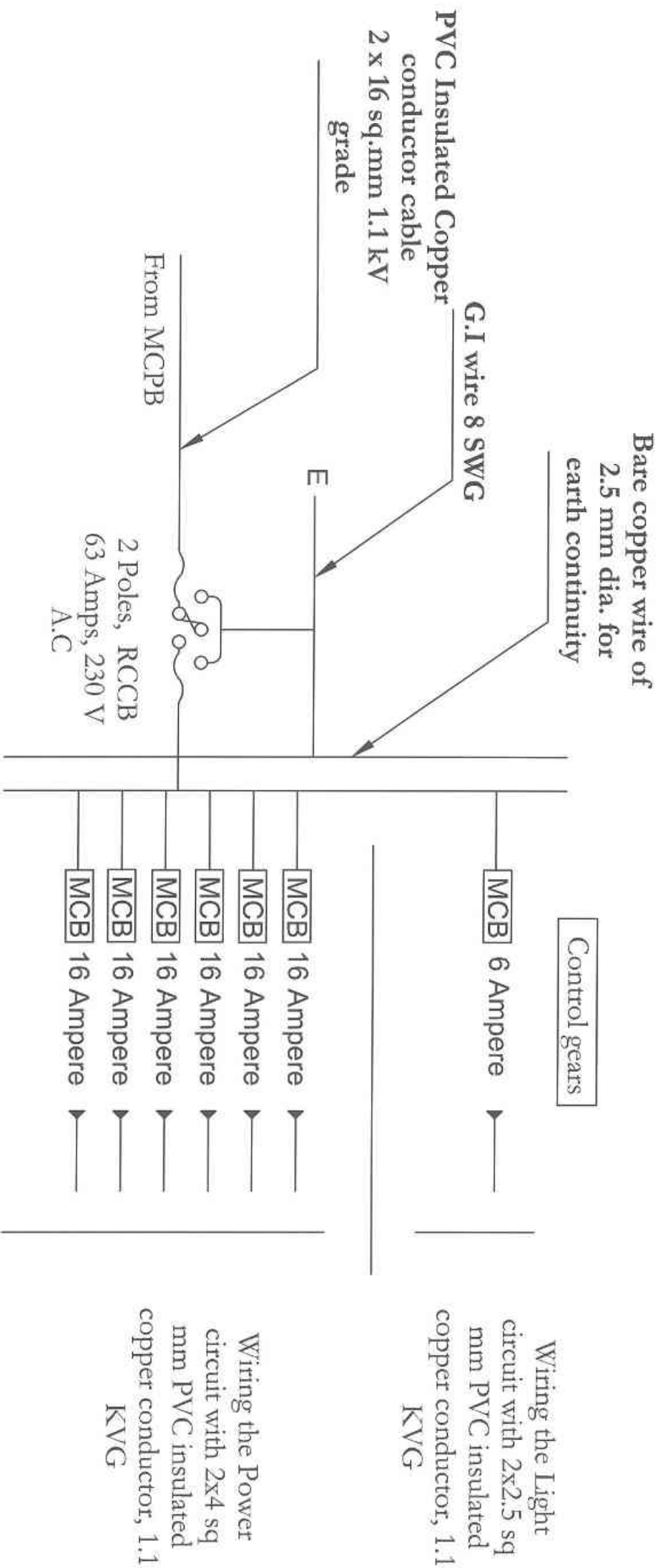


- NOTES:
- All dimensions are in millimeters.
 - Do not measure from the drawing.
 - Report any discrepancies to the Engineer.
 - Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

| REVISION: | DATE: | REMARKS: |
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 Fax: 323203 Website: www.nhdcl.lk

| | | | |
|---|-----------------|---------|--|
| SPN DB FIRST FLOOR 12 -- 08 Ways with Out Going | | | |
| Out Going ----- | SPMCB 16 Amps = | 06 nos. | |
| | SPMCB 6 Amps = | 1 no. | |



| Phase distribution | SDB-12 First Floor |
|--------------------|--------------------|
| Yellow | |
| L1 | 228 |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |

12,228

Note:
Considered Load factor 60% of the total connected loads

| | | | |
|--|------------|----------------|----|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: | NTS | DRAWING TITLE: | |
| DATE: | MARCH-2022 | DWG. NO.: | 23 |

| | | |
|---------------------|--------------|--------------------|
| Design & Drawn by: | Checked by: | GM(DPS) |
| <i>Ashwin Dorji</i> | <i>W</i> | <i>[Signature]</i> |
| Electrical | Kelzong Udon | |

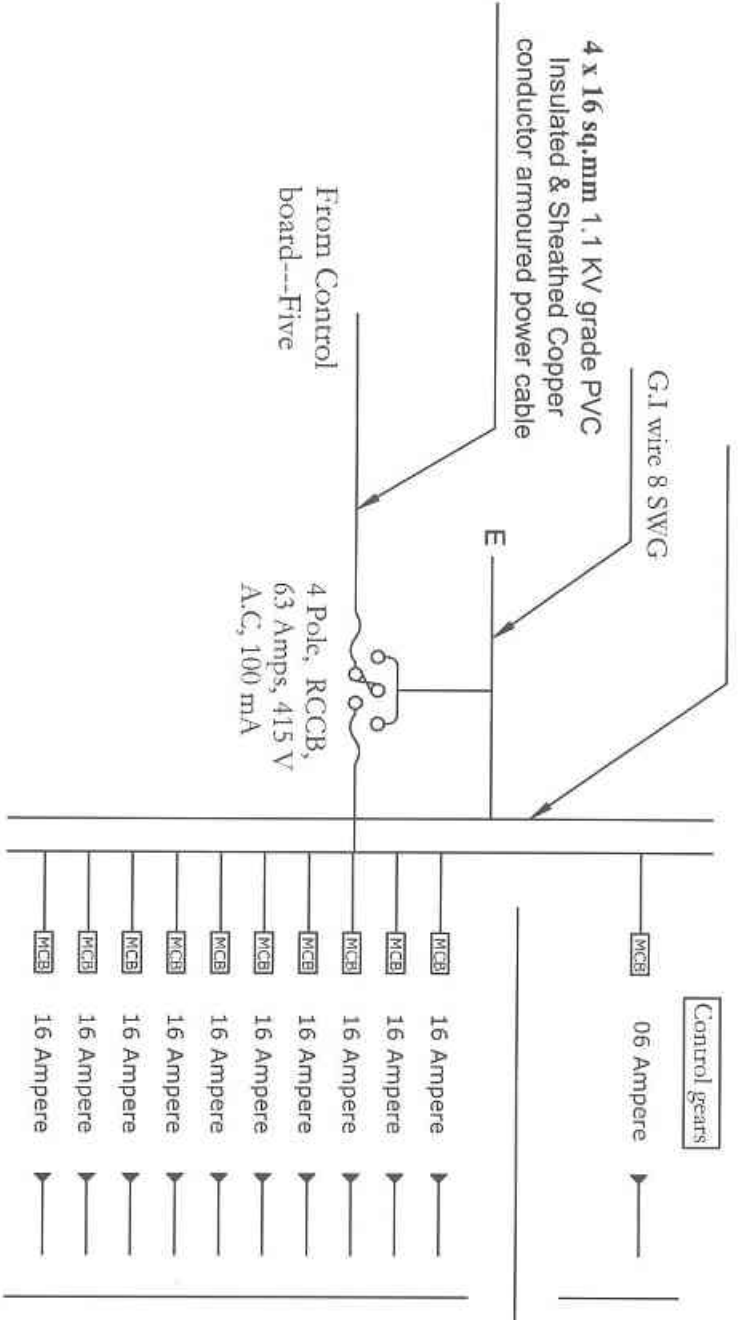
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|---|
| NOTES: |
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| 2. Do not measure from the drawing. |
| 3. Report any discrepancies to the Engineer. |
| 4. Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work. |

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 Fax: 331203, 331204, 331205

TPN DB SECOND FLOOR 13---12 Ways with Out Going
 Out Going ---- SPMCB 16 Amps = 10 nos.
 SPMCB 10 Amps = 01 no.

Bare copper wire of
 2.5 mm dia. for
 earth continuity



Wiring the Light circuit with 2x2.5 sqmm PVC insulated copper conductor, 1.1 KVG

Wiring the Power circuit with 2x4 sqmm PVC insulated copper conductor, 1.1 KVG

| Phase distribution | SDR-13 Second Floor | Phase distribution | SDR-13 Second Floor | Phase distribution | SDR-13 Second Floor |
|--------------------|---------------------|--------------------|---------------------|--------------------|---------------------|
| Red | 432 | Yellow | 408 | Blue | 290 |
| L(R) | | L(Y) | | L(B) | |
| P(R1) | 2000 | P(Y1) | 2000 | P(B1) | 2000 |
| P(R2) | 2000 | P(Y2) | 2000 | P(B2) | 2000 |
| P(R3) | 2000 | P(Y3) | 2000 | P(B3) | 2000 |
| P(R4) | 2000 | P(Y4) | 2000 | P(B4) | 2000 |
| P(R5) | 2000 | P(Y5) | 2000 | P(B5) | 2000 |
| P(R6) | 2000 | P(Y6) | 2000 | P(B6) | 2000 |
| P(R7) | 2000 | P(Y7) | 2000 | P(B7) | 2000 |
| P(R8) | 2000 | P(Y8) | 2000 | P(B8) | 2000 |
| P(R9) | 2000 | P(Y9) | 2000 | P(B9) | 2000 |
| P(R10) | 2000 | P(Y10) | SPARE | P(B10) | 2000 |
| | <u>20,432</u> | | <u>18,408</u> | | <u>20,290</u> |

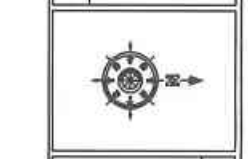
CONNECTED LOAD IN WATTS

Note:
 Considered Load factor
 60% of the total connected loads

PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|--|-----------|
| SCALE: | NIS | DRAWING TITLE: | DWG. NO.: |
| DATE: | MARCH-2022 | Single line diagram for sub distribution board 13 - Second Floor | 24 |

| | |
|-----------------------|---------------|
| Design & Drawn By: | Checked By: |
| Electrical Toshi Dorf | Kaizang Udorn |



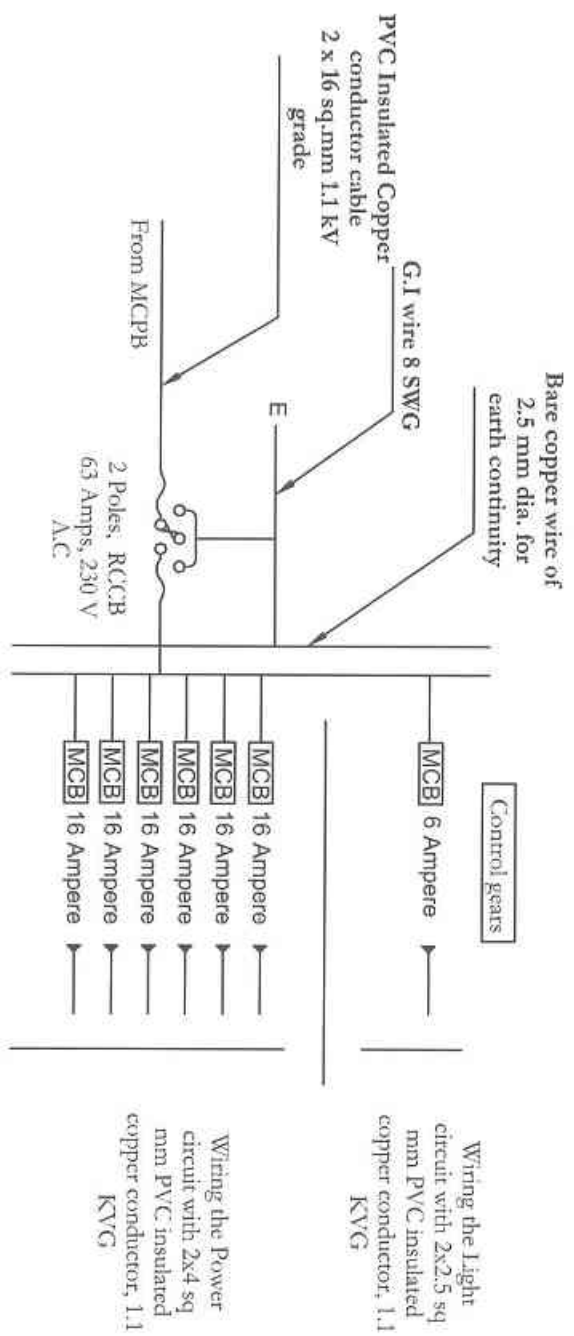
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SPN DB SECOND FLOOR 14 – 08 Ways with Out Going

Out Going ---- SPMCB 16 Amps = 06 nos.
SPMCB 6 Amps = 1 no.

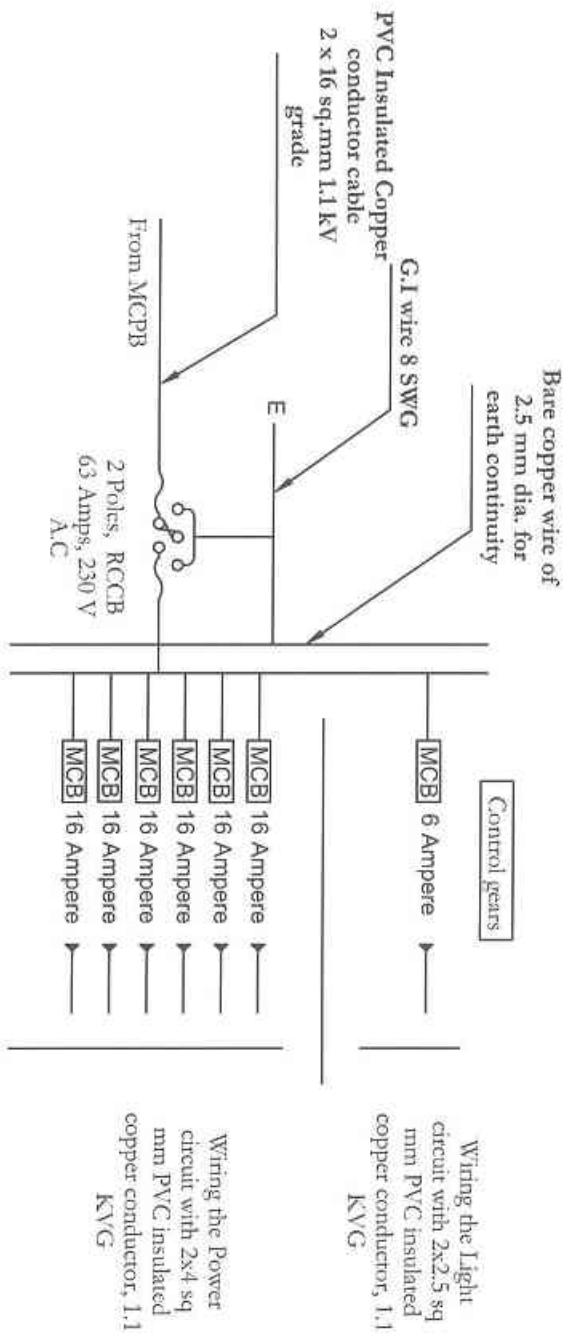


| Phase distribution | SDB-14 Second Floor |
|--------------------|---------------------|
| Blue | 210 |
| L1 | |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| <u>12,210</u> | |

Note:
Considered Load factor 60% of the total connected loads

SPN DB SECOND FLOOR 15 – 08 Ways with Out Going

Out Going ---- SPMCB 16 Amps = 06 nos.
SPMCB 6 Amps = 1 no.



| Phase distribution | SDB-15 Second Floor |
|--------------------|---------------------|
| Red | 192 |
| L1 | |
| P1 | 2000 |
| P2 | 2000 |
| P3 | 2000 |
| P4 | 2000 |
| P5 | 2000 |
| P6 | 2000 |
| <u>12,192</u> | |

Note:
Considered Load factor 60% of the total connected loads

PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|--|----------|
| SCALE: | NTS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Single line diagram for sub distribution board 11.4.13 - Service Floor | 25 |

| | | |
|---------------------------|--------------|----------|
| Design & Drawn By: | Checked By: | G.M(DPS) |
| Electrical Toshi Dorji | Keizong Udon | |

NOTES:

- All dimensions are in millimeters
- Do not measure from the drawing.
- Report any discrepancies to the Engineer.
- Contractors or site engineers to verify all dimensions on drawings and on site before commencing any work.

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Fax: 31713 Website: www.nhdcltd.com

Bus Bar Aluminum
Alloy 4 Strips 600
Amp, 1350 mm length





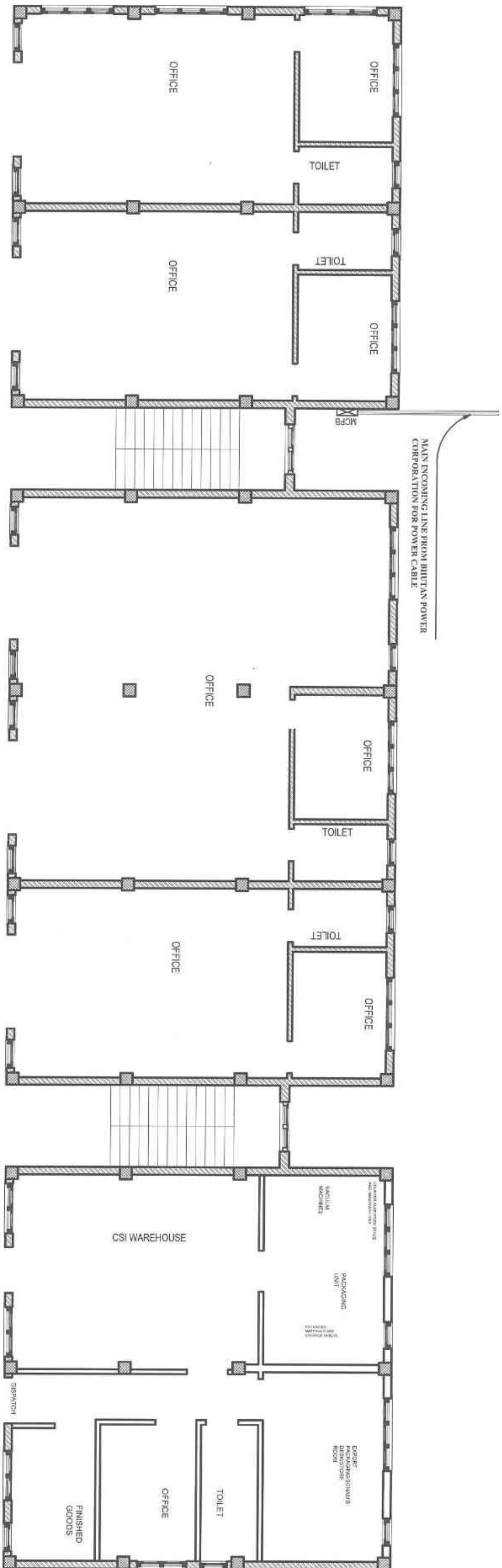
Notes :-
1) Earthing station
2.00 Mtrs. away from
building foundation/footing

| | | | |
|--|---|---|---|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: NTS | DRAWING TITLE: Single line diagram for Main Control Panel Board | DWG. NO. 26 | Design & Drawn By: <i>Shirin Dorji</i> Electrical Toshi Dorji |
| DATE: MARCH-2022 | | Checked By: <i>Kejang Udou</i> | Checked By: <i>Shirin Dorji</i> GM(DPS) |
| NOTES: 1. All dimensions are in millimeter. 2. Do not measure from the drawing. 3. Report any discrepancies to the Engineer. 4. Corrections or site engineers to verify all dimensions on drawings and on site before commencing dry work. | | REVISION: | DATE: |
| REVISION: | | DATE: | REMARKS: |
| | | National Housing Development Corporation Ltd. Design & Planning Services, PO Box 1439 Thimphu Tel: # (9753) 0975-2, 3251/47/33274/33275/ Fax: 331703, Website: www.nhdcltd.com | |

OVERALL LOAD REQUIREMENT DETAILS

| PHASE | RED | YELLOW | BLUE |
|--|------------|--------|--------|
| Connected load (Control panel, W) | 93,346 | 78,276 | 84,336 |
| Water Pump, 5 hp | 3730 | | |
| Total Industrial socket load | 120,000 W | | |
| Total Connected load | 379.688 KW | | |
| Total Demand Load | 227.813 KW | | |
| Load factor considered for internal lighting and power load = 60% | | | |

| | | | |
|--|--|---|-------------------|
| PROJECT: DCSI SERVICE CENTER REMODELING | | | |
| SCALE: NIS | DRAWING TITLE: Load Details | DWG. NO. 27 | |
| DATE: MARCH-2022 | Design & Drawn By: <i>Toshi Dorf</i> Electrical Toshi Dorf | Checked By: <i>W</i> Kelkong Udon | GM(DRS): <i>D</i> |
| | |  | |
| NOTES: 1. All dimensions are in millimeters 2. Do not measure from the drawing. 3. Report any discrepancies to the Engineer. 4. Contractors or the engineers to verify all dimensions on drawings and on site before commencing any work. | | | |
| REVISION: | DATE: | REMARKS: | |
| | | | |
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GROUND FLOOR PLAN

PROJECT: DCSI SERVICE CENTER REMODELING

| | | | |
|--------|------------|----------------|--------------------------------|
| SCALE: | NIS | DRAWING TITLE: | Layout for Main incoming lines |
| DATE: | MARCH-2022 | DWG. NO. | 28 |

Design & Drawn By:
Tashi Dorji
 Electrical
 Tashi Dorji

Checked By:
Kelzang Udon

GM(DPS)
[Signature]

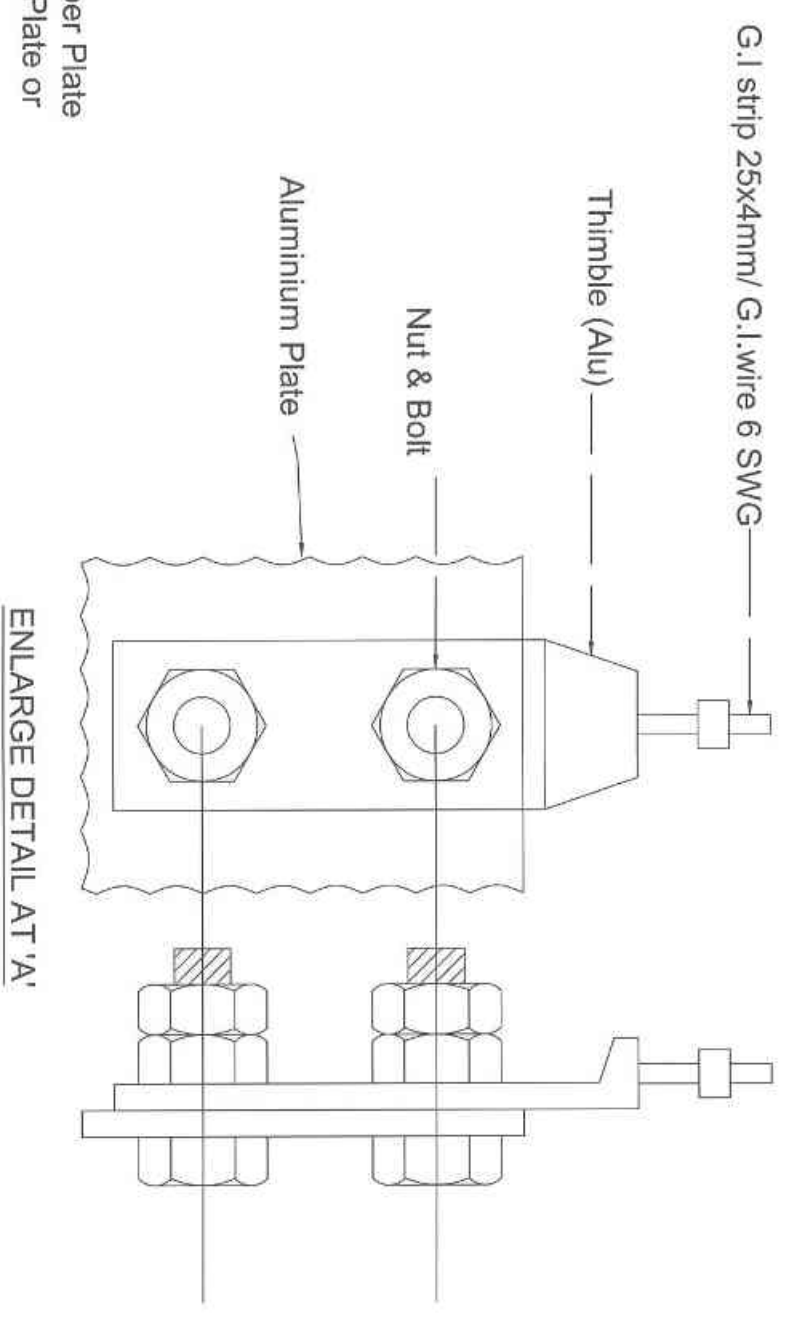
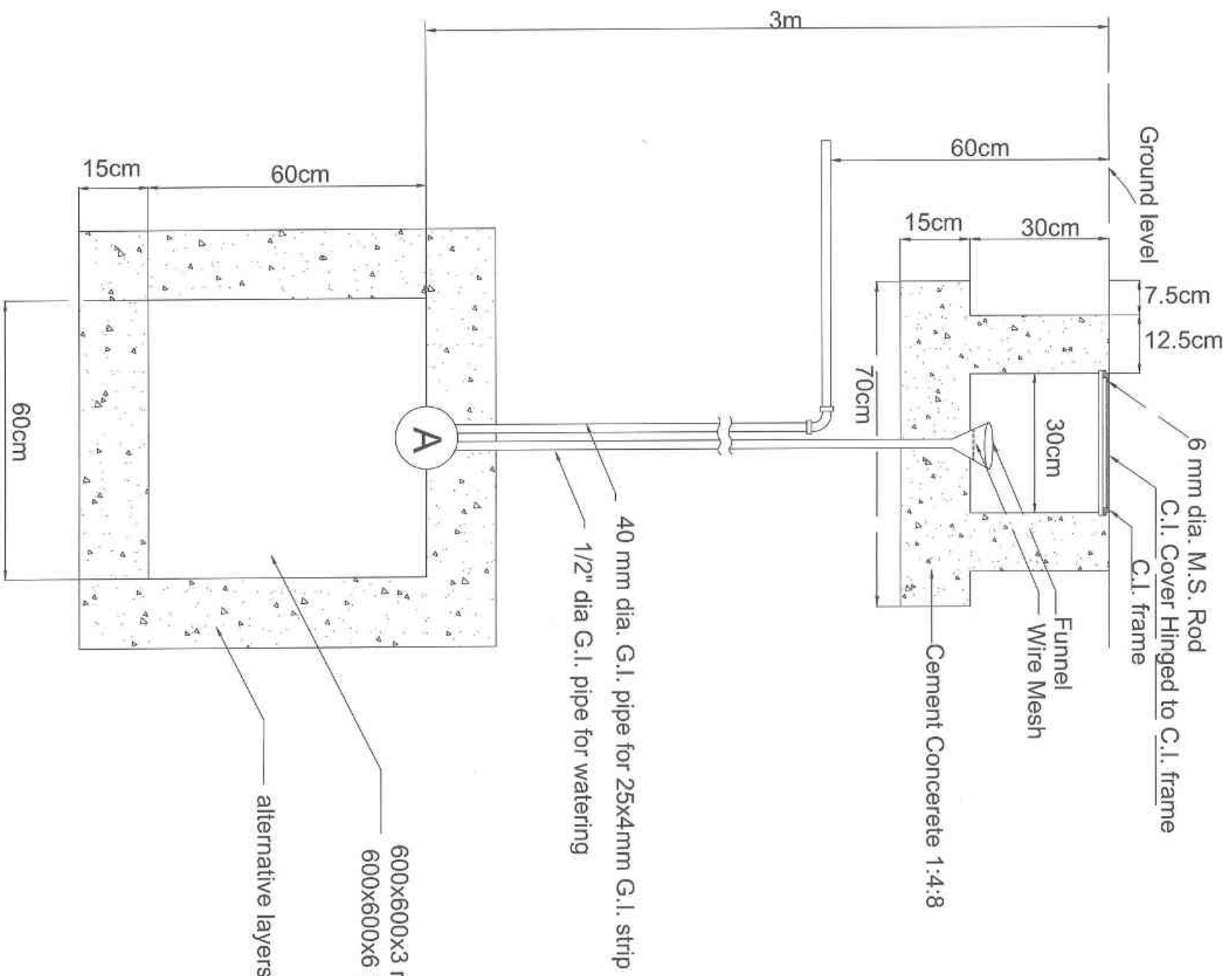


- NOTES:
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 2. Do not measure from the drawing.
 3. Report any discrepancies to the Engineer.
 4. Contractor or site engineers to verify all dimensions on drawings and on site before commencing any work.

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Typical installation of Plate Electrode



NOTE: NUT, BOLT & WASHER TO BE OF G.I.FOR G.I. PLATE & OF TINNED BRASS FOR COPPER PLATE

| | | | |
|--|------------|------------------|----------|
| PROJECT: DCSI SERVICE CENTER REMODELLING | | | |
| SCALE: | NIS | DRAWING TITLE: | DWG. NO. |
| DATE: | MARCH-2022 | Earthing Drawing | 29 |
| Design & Drawn By: | | Checked By: | |
| Tashi Dorji | | Ketzang Udon | |
| GM(DPS) | | GM(DPS) | |
| <p>NOTES:</p> <ol style="list-style-type: none"> All dimensions are in millimeters Do not measure from the drawing. Report any discrepancies to the Engineer. Confirmations of site engineers to verify all dimensions on drawings and on site before commencing any work. | | | |
| REVISION: | DATE: | REMARKS: | |
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| <p>National Housing Development Corporation Ltd. Design & Planning Services, PO Box 1439 Thimphu Tel: # 9748X (00975) 2, 3231, 47, 330294, 332759, Fax: 332703, Website: www.nhdcltd.lk</p> | | | |