

| -    | -        | -                          | -   | -    |
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| 0    | 22/05/02 | ISSUED FOR PERMIT & TENDER | PGB | -    |
| Rev. | Date     | Description                | Ву  | App. |

# BERTHELOT ENGINEERING LTD

2193 Lynhaven Rd., Peterborough, ON. K9K 1W8

Tel: (705) 775-1517



N. T. ST. JEAN P. BERTHELOT PGB/TMS AS NOTED



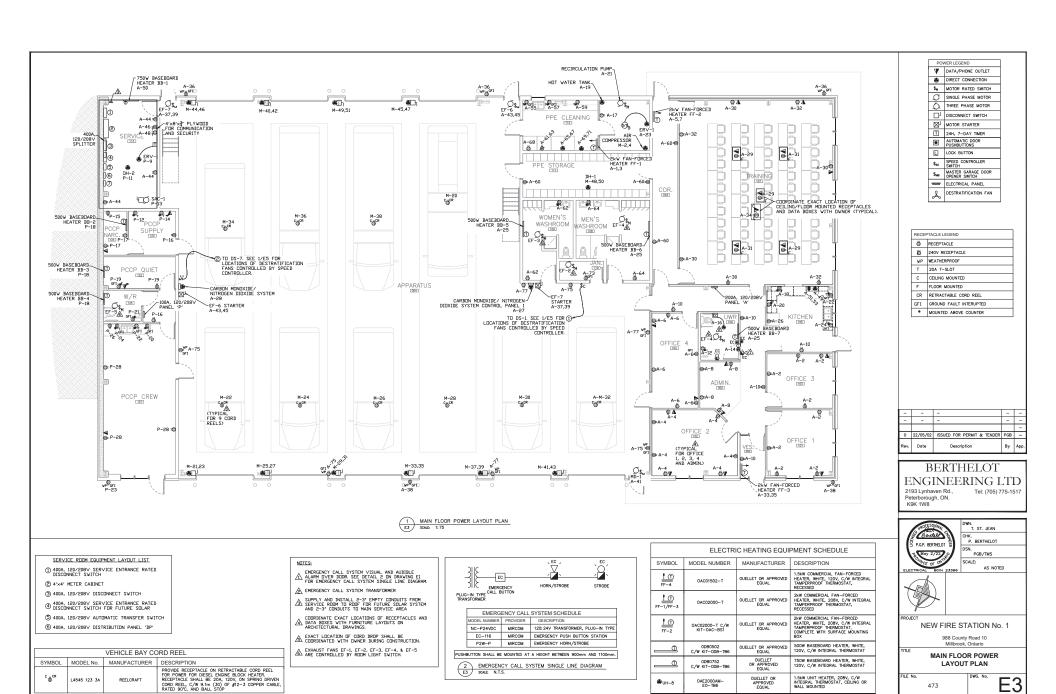
NEW FIRE STATION No. 1

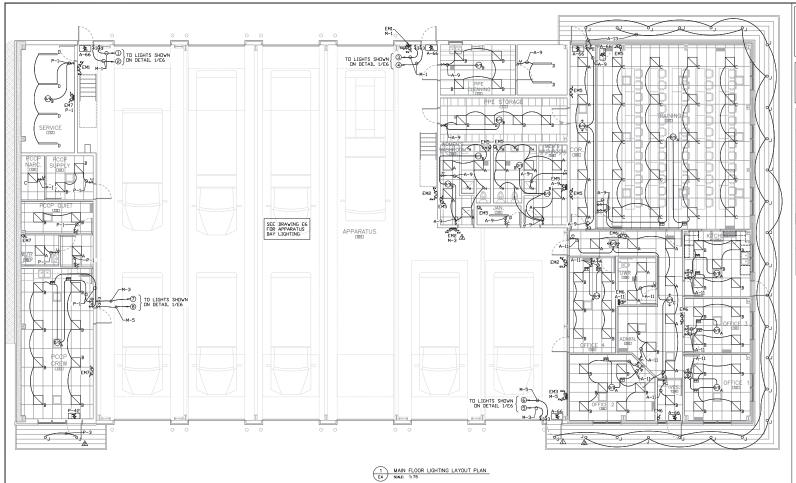
Millbrook, Ontario

SITE LIGHTING DETAILS

FILE No

473





|                        |  | LIGHTING SCH                       | IEDULE  |
|------------------------|--|------------------------------------|---|
| SYMBOL                 | MODEL NUMBER   | MANUFACTURER                       | DESCRIPTION   |
| $\square_{\mathtt{A}}$ | 22FP2140C  | EATON-METALUX OR<br>APPROVED EQUAL | 2'x2' LED FLAT PANEL, 2494 LUMENS (20.7W), 4000K, 120V  |
| В                      | 22FP3240C  | EATON-METALUX OR<br>APPROVED EQUAL | 2'x2' LED FLAT PANEL, 3560 LUMENS (30W), 4000K, 120V  |
| Cc                     | 22FP4240C  | EATON-METALUX OR<br>APPROVED EQUAL | 2'x2' LED FLAT PANEL, 4465 LUMENS (38.3W), 4000K, 120V  |
| D                      | 4SNLED-LD5-56SL-LN-<br>UNV-L840-CD1-U                                      | EATON-METALUX OR<br>APPROVED EQUAL | 4' SURFACE MOUNTED STRIP LIGHT, SEMI-FROST LENS,<br>5708 LUMENS (46W), 120V, 4000K, 0-10V DIMMING<br>DRIVER   |
| F                      | 4SNLED-LD5-64SL-LN-<br>UNV-L840-CD1-U                                      | EATON-METALUX OR<br>APPROVED EQUAL | 4' SURFACE MOUNTED STRIP LIGHT, SEMI-FROST LENS,<br>6435 LUMENS (55W), 120V, 4000K, 0-10V DIMMING<br>DRIVER   |
| G                      | 4ILED-LD5-14-W-FL-<br>UNV-LB40-CD2-U<br>C/W CHAIN SET (SEE<br>DESCRIPTION) | EATON-METALUX OR<br>APPROVED EQUAL | 4' INDUSTRIAL LED LINEAR BAY FIXTURE, MIDE<br>DISTRIBUTION, FROSTED ACRYLIC LENS AND FRAME,<br>~14000 LUMENS, 98W, 120V, 4000K C/W CHAIN SET<br>TO MOUNT LIGHTS AT ~20' A.F.F. IN A SLOPED<br>CEILING |
| Он                     | SLD405840WH C/W 4*<br>COMPATIBLE HOUSING                                   | EATON-HALO OR<br>APPROVED EQUAL    | 4" SURFACE LED DOWNLIGHT, 80CRI, 120V, WHITE, 4000K,<br>800 LUMENS (12.2W), WET LOCATION LISTED   |
| OJ                     | SMD4R69SWH-<br>SMD4RTRMxx C/W 4"<br>COMPATIBLE HOUSING                     | EATON-HALO OR<br>APPROVED EQUAL    | 4" SURFACE LED DOWNLIGHT, 90CRI, 120V, WHITE, 4000K, 600 LUMENS (9W), WET LOCATION LISTED   |

|        |   | LIGHTING SCH      | IEDULE  |
|--------|---|-------------------|---|
| SYMBOL | MODEL NUMBER  | MANUFACTURER      | DESCRIPTION   |
| ⊠ĸ     | WDGE2-LED-P1-40K-<br>BOCRI-TFTM-MVOLT-<br>SRM-PIRH1FC3V-<br>DBLXD | LITHONIA LIGHTING | WALL MOUNTED LED FIXTURE, P1 LUMEN PACKAGE (1,133 LUMENS, 11W), BOCRI, FORWARD THROW MEDIUM DISTRIBUTION, 120Y, SUPFACE MOUNT BRACKET, BI-LEVEL MOTION SENSOR FOR 15-30' MOUNTING HEIGHTS WITH PHOTOCELL PRE-PROGRAMMED FOR DUSK TO DAWN OPERATION, BLACK IN COLOUR |
| ď      | WDGE1-LED-P1-40K-<br>80CRI-VF-MVOLT-<br>SRM-PE-DBLXD              | LITHONIA LIGHTING | WALL MOUNTED LED FIXTURE, P1 LUMEN PACKAGE (1,200 LUMENS, 10W), BOCRI, VISUAL COMFORT FORWARD THROW, 1207, SURFACE MOUNT BRACKET, BUTTON TYPE PHOTOCELL, BLACK IN COLOUR  |

| ł |                   | LIGHTING CONTROLS SCHEDULE |                              | S SCHEDULE   |
|---|-------------------|----------------------------|------------------------------|--|
| ł | SYMBOL            | MODEL NUMBER               | MANUFACTURER                 | DESCRIPTION  |
|   | \$ <sub>A</sub>   | LVS-M-1-PL-WH              | HUBBELL.                     | MANUAL ON/OVERRIDE OFF LOW VOLTAGE MOMENTARY SWITCH, WHITE IN COLOUR   |
|   | \$ <sub>B</sub>   | LVS-L-1-PL-WH              | HUBBELL                      | AUTO ON/OVERRIDE OFF LOW VOLTAGE LATCHING SWITCH, WHITE IN COLOUR  |
|   | \$c               | LHMTS1                     | HUBBELL                      | PASSIVE, DUAL TECHNOLOGY WALL SWITCH OCCUPANCY<br>SENSOR, 120V, WHITE IN COLOUR, PROGRAMMED AUTO-ON<br>(WALL PLATE NOT INCLUDED) |
|   | \$т               |                            |                              | TIMER SWITCH COMPATIBLE WITH LED LIGHTING  |
|   | \$\$ <sub>D</sub> | LVSD-ML-4-WH               | HUBBELL OR<br>APPROVED EQUAL | MANUAL ON/OVERRIDE OFF LOW VOLTAGE<br>MOMENTARY/LATCHING DIMMING SWITCH, WHITE IN COLOUR   |
|   | PP                | UVPP/UVPPM/MPSA            | HUBBELL                      | UNIVERSAL VOLTAGE POWER PACK/AUXILIARY PACK  |
|   | <b>№</b>          | OMNIDT2000BP1277           | HUBBELL                      | DUAL TECHNOLOGY, 360° CEILING MOUNTED SENSOR, LINE<br>VOLTAGE, WHITE IN COLOUR   |
|   | ,Ø                | OMNIDT2000                 | HUBBELL                      | DUAL TECHNOLOGY, 360° CEILING MOUNTED SENSOR,<br>LOW VOLTAGE, WHITE IN COLOUR C/W MANUAL ON/OFF<br>POWER PACK                    |
|   | <b>€</b> Ø≯       | PIR1000H                   | HUBBELL                      | PASSIVE INFRARED CEILING HALLWAY SENSOR, 16'x18'<br>LINEAR FEET  |
|   |                   |                            |                              |  |

# NOTES:

 $\underline{\mathbb{A}}$  CANDPY LIGHTING IS CONNECTED TO AND CONTROLLED BY BUILDING MOUNTED PHOTOCELL.

 $\underline{\mathbb{A}}$  EMERGENCY LIGHTS IN APPARATUS BAY SHALL BE MOUNTED AT 9' A.F.F.

CONTRACTOR SHALL CONFIRM LIGHT FIXTURE
COLOURS WITH OWNER/ARCHITECT WHERE COLOURED
FASCIA, SIDING, ETC, EXIST.
COLOURS WILL BE SELECTED FROM STANDARD
COLOUR RANGE.

| \$ TOGGLE SWITCH        | LIGHTING LEGEND |  |  |  |  |  |  |  |
|-------------------------|-----------------|--|--|--|--|--|--|--|
| φ 100002 51111011       | ٦               |  |  |  |  |  |  |  |
| \$3 3-WAY TOGGLE SWITCH |                 |  |  |  |  |  |  |  |

| EMERGENCY LIGHTING & EXIT SCHEDULE |             |                                 |  |  |  |  |  |
|------------------------------------|-------------|---------------------------------|--|--|--|--|--|
| SYMBOL                             | MODEL No.   | MANUFACTURER                    | DESCRIPTION  |  |  |  |  |
| EMI DE S                           | 12ESLxx/xxx | EMERGILITE OR<br>APPROVED EQUAL | EMERGENCY LIGHTING UNIT, BATTERY<br>CAPACITY AS LISTED IN TABLE ON<br>THIS DRAWING, 12VDC, 10 YEAR<br>BATTERY, C/W MR16 LED HEADS AS<br>LISTED AND MOUNTING SHELF      |  |  |  |  |
| 96                                 | EF9DM-LI    | EMERGILITE OR<br>APPROVED EQUAL | DUAL REMOTE HEAD, 12VDC, 5W,<br>MR16 LED   |  |  |  |  |
| ø                                  | EF9M-LI     | EMERGILITE OR<br>APPROVED EQUAL | SINGLE REMOTE HEAD, 12VDC, 5W,<br>MR16 LED   |  |  |  |  |
| e <b>n</b> \$ \$ en                | EF9DM-LJ    | EMERGILITE OR<br>APPROVED EQUAL | DUAL REMOTE HEAD, 12VDC, 6W,<br>MR16 LED   |  |  |  |  |
| Ø 6W                               | EF9M-LJ     | EMERGILITE OR<br>APPROVED EQUAL | SINGLE REMOTE HEAD, 12VDC, 6W,<br>MR16 LED   |  |  |  |  |
| 2                                  | EA1WIDN     | EMERGILITE OR<br>APPROVED EQUAL | SELF POWERED RUNNING EXIT SIGN,<br>SINGLE FACE, WALL OR CEILING<br>MOUNT AS INDICATED, ARROWS AS<br>INDICATED, LED LAMPS FOR 120VAC,<br>CSA-C860-96 LISTED & CERTIFIED |  |  |  |  |
| 72                                 | EA2WIDN     | EMERGILITE OR<br>APPROVED EQUAL | SELF POWERED RUNNING EXIT SIGN,<br>DOUBLE FACE, WALL OR CEILING<br>MOUNT AS INDICATED, ARROWS AS<br>INDICATED, LED LAMPS FOR 120VAC,<br>CSA-C860-96 LISTED & CERTIFIED |  |  |  |  |

|           | EMERGENCY LIGHTING BATTERY PACKS |         |                  |                  |  |  |  |  |  |
|-----------|----------------------------------|---------|------------------|------------------|--|--|--|--|--|
| PACK<br># | SIZE                             | CIRCUIT | # OF 5W<br>HEADS | # OF 6W<br>HEADS |  |  |  |  |  |
| EM1       | 72W                              | H-1     | -                | 2                |  |  |  |  |  |
| EMS       | 72W                              | M-3     | -                | 2                |  |  |  |  |  |
| ЕМЗ       | 36W                              | M-5     | -                | 5                |  |  |  |  |  |
| EM4       | 36W                              | P-3     | 1                | -                |  |  |  |  |  |
| EM5       | 100W                             | A-9     | 5                | -                |  |  |  |  |  |
| EM6       | 72W                              | A-11    | 1                | -                |  |  |  |  |  |
| EM7       | 36W                              | P-1     | 2                | -                |  |  |  |  |  |

| -    | -        | -                          | -   | -    |
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2193 Lynhaven Rd., Peterborough, ON. K9K 1W8

Tel: (705) 775-1517



| DWN.<br>T. ST. JEAN  |
|----------------------|
| CHK.<br>P. BERTHELOT |
| DSN.<br>PGB/TMS      |
| SCALE:               |
| AS NOTED             |

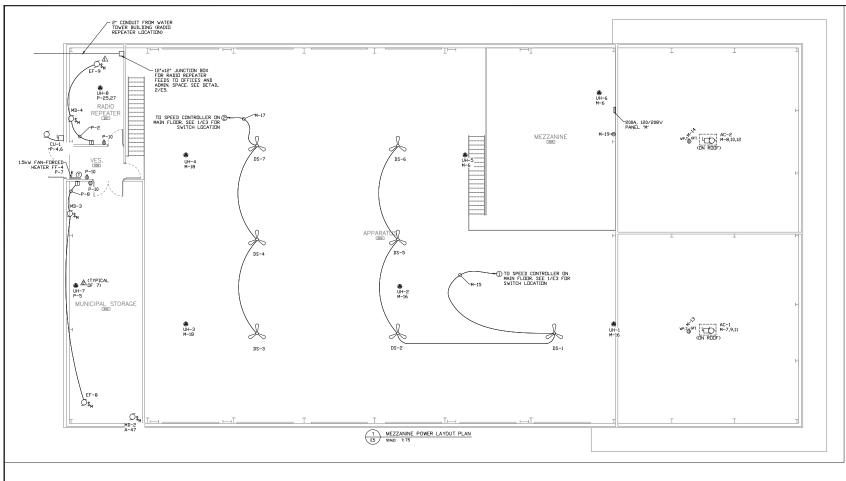


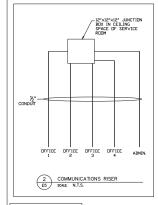
NEW FIRE STATION No. 1

988 County Road 10 Millbrook, Ontario

MAIN FLOOR LIGHTING LAYOUT PLAN

473





| PO               | WER LEGEND                          |      |                        |
|------------------|-------------------------------------|------|------------------------|
| 1                | DATA/PHONE OUTLET                   | RECE | PTACLE LEGEND          |
|                  | DIRECT CONNECTION                   | Φ_   | RECEPTACLE             |
| \$ <sub>M</sub>  | MOTOR RATED SWITCH                  | Ö    | 240V RECEPTACLE        |
| $\circ$          | SINGLE PHASE MOTOR                  | VP   | WEATHERPROOF           |
| 7                | THREE PHASE MOTOR                   | T    | 20A T-SLOT             |
| $\frac{}{\Box}$  | DISCONNECT SWITCH                   | С    | CEILING MOUNTED        |
| 찌                | MOTOR STARTER                       | CR   | RETRACTABLE CORD REEL  |
| _                | AUTOMATIC DOOR                      | GFI  | GROUND FAULT INTERUPTE |
| •                | PUSHBUTTONS                         |      | MOUNTED ABOVE COUNTER  |
| L                | LOCK BUTTON                         |      |                        |
| \$ <sub>SC</sub> | SPEED CONTROLLER<br>SWITCH          | ]    |                        |
| \$ <sub>MB</sub> | MASTER GARAGE DOOR<br>OPENER SWITCH |      |                        |
| 400000           | ELECTRICAL PANEL                    |      |                        |
| 1                | DESTRATIFICATION FAN                |      |                        |

| -    | -        | -                          | -   | -    |
|------|----------|----------------------------|-----|------|
| -    | -        | -                          | -   | -    |
|      |          |                            |     | -    |
| 0    | 22/05/02 | ISSUED FOR PERMIT & TENDER | PGB | -    |
| Rev. | Date     | Description                | Ву  | App. |

# BERTHELOT ENGINEERING LTD 2193 Lynhaven Rd., Tel: (705) 775-1517

2193 Lynhaven Rd., Peterborough, ON. K9K 1W8

P.G.P. BERTHELOT

DWN.
T. ST. JEAN
CHK.
P. BERTHELOT
DSN.
PGB/TMS
SCALE:
AS NOTED



NEW FIRE STATION No. 1

988 County Road 10 Millbrook, Ontario

MEZZANINE POWER LAYOUT PLAN

FILE No. 473

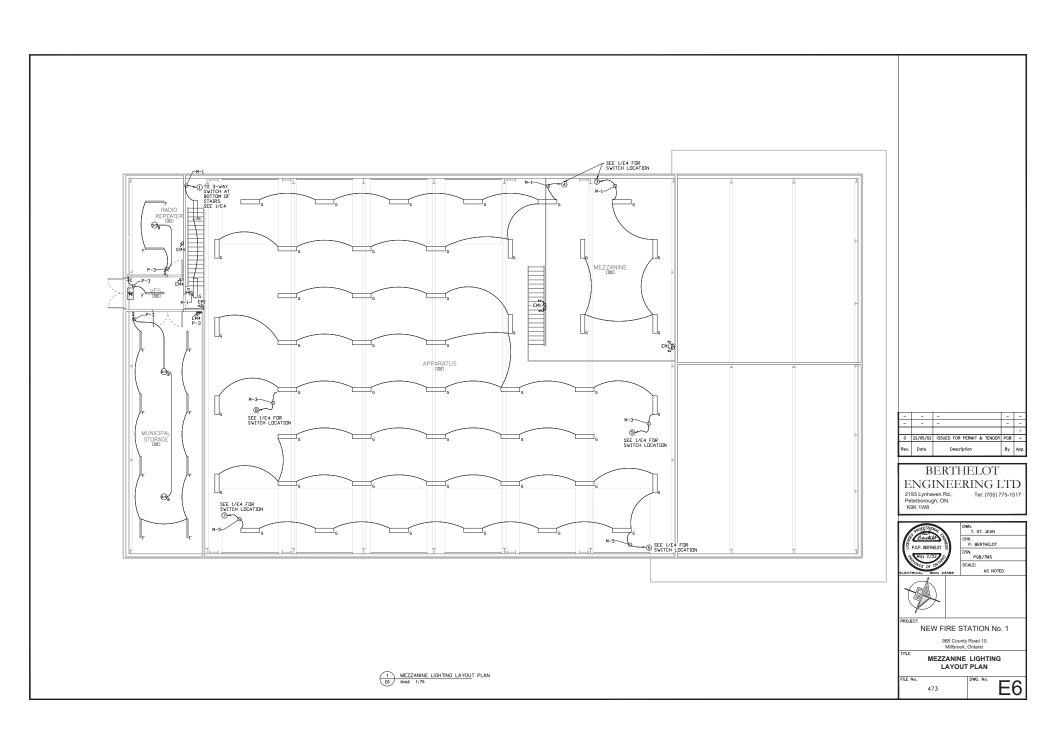
E5

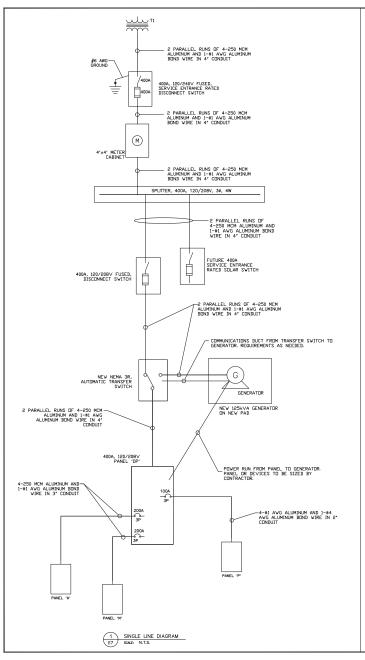
M UH-8 IS SUPPLIED AND INSTALLED BY ELECTRICAL.

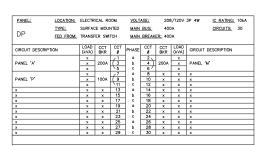
UH-1, UH-2, UH-3, UH-4, UH-5, UH-6, 8, UH-7 ARE

SUPPLIED AND INSTALLED BY MECHANICAL, WIRED BY ELECTRICAL.

NOTES:



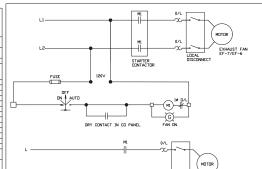




| PANEL:         | LOCATION:   | ELECTR        | ICAL R | MOC  | VOLT  | AGE:     | 208     | 3/120V        | 3P 4W IC RATING: 10kA  |
|----------------|-------------|---------------|--------|------|-------|----------|---------|---------------|------------------------|
|                | TYPE:       | SURFAC        | E MOU  | NTED | MAIN  | BUS:     | 225     | iΑ            | CIRCUITS: 42           |
| P FED FROM:    |             | T1            |        |      | MAIN  | BREAK    | ER: 200 | )A            |                        |
| CIRCUIT DESCRI | PTION       | LOAD<br>(kVA) | CCT    | CCT  | PHASE | CCT<br># | CCT     | LOAD<br>(kVA) | CIRCUIT DESCRIPTION    |
| PARAMEDICS LIC | SHTING      | x             | 15A    | 1    | 0     | 2        | 15A     | ×             | EF-9 + MD-4            |
| 2ND FLOOR/PC   | CP LIGHTING | ×             | 15A    | 3    | 1 ь 1 | 4 \      | 20A     | ×             | CU-1                   |
| UH-7           |             | ×             | 15A    | 5    | 1 。   | 6        | 20A     | ×             | 1 00-1                 |
| FF-4           |             | ×             | 20A    | 7    | 0     | 8        | 15A     | ×             | EF-8 + MD-3            |
| ERV-1          |             | ×             | 15A    | 9    | ь     | 10       | 15A     | ×             | 2ND FLOOR RECEPTACLE   |
| DH-2           |             | ×             | 15A    | 11   | 0     | 12       | 20A     | ×             | PCCP SUPPLY T-SLOT     |
| SAC-1          |             | ×             | 15A    | 13   | 0     | 14       | 20A     | ×             | PCCP SUPPLY T-SLOT     |
| PCCP NARC ME   | DS FRIDGE   | ×             | 15A    | 15   | ь     | 16       | 15A     | ×             | PCCP SUPPLY RECEPTACLE |
| PCCP NARC RE   | CEPTACLE    | ×             | 15A    | 17   | 0     | 18       | 20A     | ×             | BB-2/3/4               |
| PCCP QUIET RE  | CEPTACLE    | ×             | 15A    | 19   | 0     | 20       | 20A     | ×             | PCCP CREW T-SLOT REC   |
| WIR GFCI RECEP | TACLE       | ×             | 15A    | 21   | ь     | 22       | 20A     | ×             | PCCP CREW T-SLOT REC   |
| OUTSIDE RECEPT | TACLE       | ×             | 15A    | 23   | 0     | 24       | 20A     | ×             | PCCP CREW T-SLOT REC   |
| UH-7           |             | ×             | 15A    | £25  | 0     | 26       | 15A     | ×             | PCCP CREW FRIDGE REC   |
| UN-7           |             | ×             | IJA    | 27   | ь     | 28       | 15A     | ×             | PCCP CREW REC          |
| SPARE          |             | ×             | 15A    | 29   | 0     | 30       | ×       | ×             | ×                      |
| SPARE          |             | ×             | 15A    | 31   | 0     | 32       | ×       | ×             | ×                      |
| SPARE          |             | ×             | 15A    | 33   | ь     | 34       | ×       | ×             | ×                      |
| SPARE          |             | ×             | 20A    | 35   | 0     | 36       | ×       | ×             | ×                      |
| SPARE          |             | ×             | 20A    | 37   | 0     | 38       | ×       | ×             | ×                      |
| ×              |             | ×             | ×      | 39   | ь     | 40       | ×       | ×             | ×                      |
| ×              |             | ×             | ×      | 41   | ] c   | 42       | 15A     | ×             | EXIT SIGNS [1]         |

| PANEL: LC  |          |                 |                        | МОС             | VOLT  | AGE:     | 208        | /120V         | 3P 4W IC RATING: 10kA      |                           |               |            |           |       |      |     |               |                           |  |
|--|----------|-----------------|------------------------|-----------------|-------|----------|------------|---------------|----------------------------|---------------------------|---------------|------------|-----------|-------|------|-----|---------------|---------------------------|--|
| D  | YPE:     | SURFACE MOUNTED |                        |                 | MAIN  | BUS:     | 225        | A             | CIRCUITS: 84               |                           |               |            |           |       |      |     |               |                           |  |
| A E  | ED FROM: | T1              |                        |                 | MAIN  | BREAK    | ER: 200    | A             |                            |                           |               |            |           |       |      |     |               |                           |  |
| CIRCUIT DESCRIPTION  | 1        | LOAD<br>(kVA)   | CCT<br>BKR             | CCT             | PHASE | CCT<br># | CCT<br>BKR | LOAD<br>(kVA) | CIRCUIT DESCRIPTION        | CIRCUIT DESCRIPTION       | LOAD<br>(kVA) | CCT<br>BKR | CCT<br>#  | PHASE |      | CCT | LOAD<br>(kVA) | CIRCUIT DESCRIPTION       |  |
| FF-1   |          | ×               | 15A                    | 1               | 0     | 2        | 15A        | ×             | OFFICE 1 & 3 RECEPTACLES   | FF-6 STARTER              | ×             | 15A        | c43       | 0     | 44   | 15A | ×             | SERVICE ROOM RECEPTACLE   |  |
| 11-1   |          | ×               | ISA                    | 3               | ь     | 4        | 15A        | ×             | OFFICE 2 RECEPTACLES       | EF-0 STARTER              | ×             | ISA        | 45        | ь     | 46   | 15A | ×             | SERV. RM COMM. T-SLOT RE  |  |
| FF-2   |          | ×               | 15A                    | 75              | 0     | - 6      | 15A        | ×             | OFFICE 4 RECEPTACLES       | MD-2                      | ×             | 15A        | 47        | 0     | 48   | 15A | ×             | SERV RM SECURITY T-SLOT F |  |
|  |          | ×               |                        | ٠,7             | 0     | 8        | 15A        | х             | ADMIN. AREA RECEPTACLES    | RANGE HOOD                | x             | 15A        | 49        | 0     | 50   | 15A | ×             | BB-1                      |  |
| TRAINING/PPE/WASHE   |          | ×               | 20A                    | 9               | ь     | 10       | 15A        | ×             | VESTIBULE/CORRIDOR REC.    | STOVE                     | ×             | 50A        | c 51      | ь     | 52   | 20A | ×             | SPARE                     |  |
| OFFICE/KITCHEN/ADM   | AIN LTG  | ×               | 15A                    | 11              | ۰     | 12       | 15A        | ×             | UNIVERSAL WASHRM GFCI REC. |                           | ×             |            | 53        | c     | 54   | 20A | ×             | SPARE                     |  |
| SOFFIT LIGHTING  |          | x               | 15A                    | 13              | 0     | 14       | 15A        | ×             | UNIV. WASHRM DOOR OPS      | PPE CLEANING T-SLOT REC.  | ×             | 20A        | 55        | 0     | 56   | 20A | ×             | SPARE                     |  |
| OUTSIDE LIGHTING   |          | ×               | 15A                    | 15              | ь     | 16       | 15A        | ×             | U.W. EMERG. CALL SYS. TX   | PPE CLEANING T-SLOT REC.  | ×             | 20A        | 57        | ь     | 58   | 15A | ×             | SPARE                     |  |
| PPE CLEANING REC.  |          | ×               | 15A                    | 17              | c     | 18       | 20A        | ×             | KITCHEN T-SLOT RECEPTACLE  | PPE CLEANING T-SLOT REC.  | ×             | 20A        | 59        | c     | 60   | 15A | ×             | PPE STORAGE/CORRIDOR RE   |  |
| HOT WATER TANK   |          | x               | 15A                    | 19              | 0     | 20       | 20A        | ×             | KITCHEN T-SLOT RECEPTACLE  | DRYER RECEPTACLE          | ×             | 30A        | c 61      | 0     | 62   | 15A | ×             | WOMEN'S WASHROOM GFCI R   |  |
| RECIRC. PUMP   |          | ×               | 15A                    | 21              | ь     | 22       | 20A        | ×             | KITCHEN T-SLOT RECEPTACLE  | DRIER RECEPTAGE           | ×             | JUK        | 63        | ь     | 64   | 15A | ×             | MEN'S WASHROOM GFCI REC.  |  |
| ERV-1  |          | ×               | 15A                    | 23              | c     | 24       | 20A        | ×             | KITCHEN T-SLOT RECEPTACLE  | BUNKER GEAR WASHER UNIT   | ×             |            | c 65      | c     | 66   | 15A | ×             | EXIT SIGNS [2]            |  |
| BB-5/BB-6/BB-7   |          | x               | 20A                    | 25              | 0     | 26       | 15A        | ×             | KITCHEN FRIDGE RECEPTACLE  | BOHNER GEAR WASHER ONLY   | ×             | _ ^        | 67        | 0     | 68   | 15A | ×             | WASHING MACHINE REC.      |  |
| CO-NO2 SYSTEM 1  |          | ×               | 15A                    | 27              | ь     | 28       | 15A        | ×             | CO-NO2 SYSTEM 2            | BUNKER GEAR WASHER UNIT   | ×             |            | c 69      | ь     | 70   | 15A | ×             | SPARE                     |  |
| TRAINING RM FLOOR  |          | ×               | 15A                    | 29              | c     | 30       | 15A        | ×             | TRAINING ROOM RECEPTACLES  |                           | ×             | _ ^        | 71        | c     | 72   | 15A | ×             | SPARE                     |  |
| TRAINING RM FLOOR  | BOX REC. | x               | 15A                    | 31              | 0     | 32       | 15A        | ×             | TRAINING ROOM RECEPTACLES  | JANITOR GFCI RECEPTACLE   | ×             | 15A        | 73        | 0     | 74   | 15A | ×             | SPARE                     |  |
| FF-3   |          | ×               | 15A                    | (33<br>35       | ь     | 34       | 15A        | ×             | TRAINING RM PROJECTOR REC. | APPARATUS BAY RECEPTACLES | ×             | 15A        | 75        | ь     | 76   | 15A | ×             | SPARE                     |  |
| 10   |          | ×               | IJA                    |                 | c     | 36       | 15A        | ×             | OUTSIDE GFCI RECEPTACLES   | APPARATUS BAY RECEPTACLES | ×             | 15A        | 77        | c     | 78   | 15A | ×             | SPARE                     |  |
| FF-7 STARTER   |          | ×               | 15A                    | <sub>2</sub> 37 | 0     | 38       | 15A        | ×             | OUTSIDE GFCI RECEPTACLES   | OUTDOOR WALL MOUNTED LTG  | ×             | 15A        | 79        | 0     | 80 \ |     | x             |                           |  |
|  |          | ×               | 39 b 40 x proper power |                 | x     | ×        | ×          | 81            |                            | 82                        | 100A          | ×          | PANEL 'P' |       |      |     |               |                           |  |
| MD-1   |          | ×               | 15A                    | 41              | c     | 42       |            | ×             | DIGI CIT DONA FOREK        | ×                         | ×             | ×          | 83        | c     | 84   |     | ×             |                           |  |
| NOTES.  (1) CORFIRM BREAKER SIZE WITH EQUIPMENT  (2) BREAKER SHALL BE LOCKED AND PAINTED RED |          |                 |                        |                 |       |          |            |               |                            |                           |               |            |           |       |      |     |               |                           |  |

| PANEL:         | LOCATION:  | ELECTR        | ICAL R     | DOM             | VOLT               | AGE:     | 208        | 3/120V        | 3P 4W IC RATING: 10k   |
|----------------|------------|---------------|------------|-----------------|--------------------|----------|------------|---------------|------------------------|
|                | TYPE:      | SURFAC        | E MOU      | NTED            | MAIN BUS:          |          | 225A       |               | CIRCUITS: 66           |
| М              | FED FROM:  | ≟ T1          |            |                 | MAIN BREAKER: 200A |          |            | A             |                        |
| CIRCUIT DESCRI | PTION      | LOAD<br>(kVA) | CCT<br>BKR | CCT             | PHASE              | CCT<br># | CCT<br>BKR | LOAD<br>(kVA) |                        |
| APPARATUS/ME   |            | ×             | 20A        | 1               | ٥                  | 2 \      | 20A        | ×             | AIR COMPRESSOR         |
| APPARATUS LIC  |            | ×             | 20A        | 3               | ь                  | 4        | 20A        | ×             | AIR COMPRESSOR         |
| APPARATUS LIC  | HTING      | ×             | 20A        | 5               | c                  | 6        | 15A        | ×             | UH-5 + UH-6            |
|                |            | ×             |            | 17              | 0                  | 8、       |            | ×             |                        |
| AC-1           |            | ×             | 30A        | ( 9             | ь                  | 10)      | 30A        | ×             | AC-2                   |
|                |            | ×             |            | <b>\11</b>      | c                  | 12/      |            | ×             | l                      |
| AC-1 CONVENIE  | NCE T-SLOT | ×             | 20A        | 13              | 0                  | 14       | 20A        | ×             | AC-2 CONVENIENCE T-SLO |
| DS-1/2/5/6     |            | ×             | 20A        | 15              | ь                  | 16       | 15A        | ×             | UH-1 + UH-2            |
| DS-3/4/7       |            | ×             | 20A        | 17              | _ c                | 18       | 15A        | ×             | UH-3 + UH-4            |
| MEZZANINE REC  | EPTACLE    | ×             | 15A        | 19              | a                  | 20       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | n          | ×             | 20A        | c 21            | ь                  | 22       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | irc        | × 20A         | 20A        | 23              | _ c                | 24       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOG   | n          | ×             | 20A        | r25             | 0                  | 26       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | IK .       | ×             | 2UA        | 27              | ь                  | 28       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | n          | ×             | 20A        | /29             | _ c                | 30       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | HEAD DOOR  |               | 20A        | 31              | a                  | 32       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | n          | ×             | 20A        | <sub>2</sub> 33 | ь                  | 34       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | irc        | ×             | ZUA        | 35              | _ c                | 36       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOO   | D.         | ×             | 20A        | <sub>2</sub> 37 | a                  | 38       | 15A        | ×             | CORD REEL RECEPTACLE   |
| OVERHEAD DOC   | ir.        | x 20A         | 20A        | 39              | ь                  | 40 \     | 20A        | ×             | OVERHEAD DOOR          |
| OVERHEAD DOO   | in.        |               | c 41       | c               | 42                 | 200      | ×          | OVERHEAD DOOR |                        |
| OVERHEAD DOC   | ir.        | ×             | ZUA        | 43              | a                  | 44 \     | 20A        | ×             | OVERHEAD DOOR          |
| OVERHEAD DOC   | iD.        | ×             | 20A        | r45             | ь                  | 46       | 201        | ×             | OVERHEAD DOOR          |
| OVERHEND DOC   | in.        | ×             | 20A        | 47              | c                  | 48 \     | 30A        | ×             | DH-1                   |
| OVERHEAD DOO   | ID.        | ×             | 20A        | <sub>7</sub> 49 | 0                  | 50       |            | ×             |                        |
| O ILIGILAD DOG | "          | ×             | 200        | 51              | ь                  | 52       | 20A        | ×             | SPARE                  |
| ×              |            | ×             | ×          | 53              | c                  | 54       | 20A        | ×             | SPARE                  |
| x              |            | ×             | ×          | 55              | ٥                  | 56       | 20A        | ×             | SPARE                  |
| ×              |            | ×             | ×          | 57              | ь                  | 58       | 15A        | ×             | SPARE                  |
| ×              |            | ×             | ×          | 59              | c                  | 60       | 15A        | ×             | SPARE                  |
| x              |            | ×             | ×          | 61              | ٥                  | 62       | 15A        | ×             | SPARE                  |
| x              |            | ×             | ×          | 63              | ь                  | 64       | 15A        | ×             | SPARE                  |
| ×              |            | ×             | ×          | 65              | c                  | 66       | 15A        | ×             | SPARE                  |



| 1 |    | EF-7/MD-1/CO-NO2 DETECTION 1 & EF | F-6/MD-2/CO-NO2 DETECTION 2 SCHEMATIC |
|---|----|-----------------------------------|---------------------------------------|
| 1 | E6 | SCALE: N.T.S.                     |                                       |

LOCAL DAMPTER
DISCONNECT MD-2/MD-1

| -    | -        | -                          | -   | -    |
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# BERTHELOT ENGINEERING LTD

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|   | DWN.<br>T. ST. JEAN  |
|---|----------------------|
|   | CHK.<br>P. BERTHELOT |
|   | DSN.<br>PGB/TMS      |
|   | SCALE:               |
|   | AS NOTED             |
| A |                      |



NEW FIRE STATION No. 1

988 County Road 10 Millbrook, Ontario

SINGLE LINE DIAGRAM AND PANEL SCHEDULES

E No. 473 E

# Part 1 - General

### 1.1. General

- 1.1.1. This section covers the general requirements for the electrical work. Read all divisions of the contract documents.
- 1.1.2. All equipment shall be CSA approved.
- 1.1.3. All equipment, materials and installation methods shall conform to the best commercial standard practice, and in accordance with the Ontario Electrical Safety Code and all bulletins.

### 1.2. Outline Scope

- 1.2.1. The following major items of work shall be supplied and installed under the electrical contract:
  - 1.2.1.1.Provide all labour, materials, equipment and services to complete the work of the electrical division as further a chrovide main service power to the building as detailed on the drawings.
    b.Supply and install light fixtures as detailed on the

    - wings. upply and install distribution panels as detailed on the
    - Company and install exit, emergency lights, and receptacles as detailed on drawings.

      Supply and linstall generator and transfer switch.

      f.Miscellaneous removals as required.

# 1.3 Contract Drawings

- 1.3.1. Drawings for electrical work are performance drawings, diagrammatic, intended to convey scope of work and indicate general arrangement and approximate location of apparatus, fixtures and wiring. Drawings do not show all conduits. Those shown are diagrammatic only.
- 1.3.2. Additional money over the contract price shall not be pold unless an approved change order is issued by the architect. Claims for extrao shall be submitted with a complete breakdown of material, labour, hourly rates, etc.

- 1.4.1 Submit four reproducible copies of manufacturer's detailed shop drawings, which indicate clearly the materials and/or equipment discovered to the control of the control of the control of the control dismessions, capacity, operating, characteristics and performance for each piece of manufactured equipment and for items listed under each section for review.
- 1.4.2. Shop drawings submitted for approval that are not stamped and signed in accordance with the preceding requirements will be returned
- 1.4.3. Installation of any equipment shall not commence until after shop drawings have been reviewed by the consultant.
- 1.4.4. Bind one set of approved shop drawings in each operating and

# 1.5. Co-Operation with Other Trades

1.5.1. The contractor shall co-operate fully with other trades in such a monner as not to interfere with other work being carried out at the jbb site. Where other work and equipment has to be installed along with work pertaining to this division, arrange with other trades to install this work to best suit the needs for the particular condition.

# 1.6. Warranty

1.6.1. The contractor shall guarantee all work for a period of one year after the data of issue of the final certificate by the engineer and the state of the final certificate by the engineer and within the guarantee periods and replacements to the work shall be made without cost to the owner. The contractor shall pay for making good any other work damaged through defects in the work of this section during both construction and guarantee periods.

# 1.7. Insurance

1.7.1. The contractor shall maintain all necessary insurance to protect the owner and all trades from all possible claims. 1.8. Liability

- 1.8.1. The contractor shall assume full responsibility for layout of work and for any damage caused by improper location or carrying out of work of these sections. 1.9. Cutting and Patching
- 1.9.1. The contractor shall complete all required cutting and patching to perform the work of the contract. Cuttings shall be kept to a minimum and be performed with cleen cut straight edges. Patching shall be next, cleen and restore to original finish conditions using similar types of materials. Use only trades personnel salled in the note by the contract of t

# 1.10. Record Drawings

1.10.1 The contractor shall maintain accurate records of changes to the ine contractor shall maintain accurate records of changes to the drawings on the job site. These shall include: all changes included in addenda to the tende documents; site instructions; and contract change notices. Upon project completion, the contractor shall forward to the consultant the set of drawings indicating the as-built conditions.

1.11.1. The contractor shall visit and examine the site and become familiar with all existing conditions affecting the work prior to submitting tender. No allowances in cost will be made by the owner for any difficulties encountered in the work arising out of conditions existing at the time of tendering.

# 1.12. Product Delivery, Storage and Handling

1.12.1. Inspect products delivered to the site and before acceptance, ensure that the product is: new; free from defects; is as specifiand is as per reviewed shop drawings, all in accordance with the contract documents. Store materials only in designated areas a protect as necessary to maintain materials in new condition.

# 1.13. Operations and Maintenance Instructions

1.13.1. Three (3) copies of complete operating and maintenance instructions for all electrical equipment and systems, bound in hard covered manuals shall be supplied.

### 1.14. Instructions to Owner

1.14.1. Instruct the owner's representative(s) in all respects of the operation and maintenance of systems and equipment. Obtain the consultant a list of the owner's representative(s) qualified receive instructions.

### 1.15. Clean-Up

1.15.1. At all times keep the premises free from accumulations of waste material or rubbish caused by employees or work. At the completion of the work, remove all rubbish and all tools, equipment and surplus materials from and about the work and leave the work "broom clean" or its equivalent, unless more exactly specified. All lighting fixtures, light switches, and other operable electrical devices shall cleaned at the completion of work.

# 1.16. Codes and Standards

- 16. Colors trul. statistics.

  16. 1. Provide equipment and materials, and do the work, in occordance with the following, and comply with relevant sections as adopted or on. C. Candaline electrical code (Canada)

  1. National Fire Protection Association

  1. C. ANA/LUC Standards

  1. Retained to the standard standards

  1. Retained to the stan

# 1.17. Permit, Fees and Inspection

- 1.17.1 The contractor shall apply for, obtain and pay all permits, licenses, inspections, acominations and fees required. The contractor shall paradiction over the work. On completion of the work, present to the owner the find unconditional certificate of approval by the inspection authorities.
- 1.17.2 Before starting any work, submit the required number of copies of drawings and specifications to the authorities for their approval and comments. Comply with any changes requested as part of the contract, but notify the owner immediately of such changes, for proper processing of these requirements.

### Part 2 - Basic Materials and Methods

### 2.1. Conduits, Conduit Fasteninas and Conduit Fittings

- 2.1.1. Conduit systems shall be electrical metallic tubing, intermediate metal conduit, golvanized rigid steel conduit, or polywhy chloride. Minimum size shall be 1/2". Use BMT boove-grade for index or construction except where rigid conduit is required. Where golvanized rigid steel conduit is required, provide lock-nuts and bushing of
- 2.1.2. Type BX -90 flexible armoured cable may be used only for final connections to lighting fixtures. Use flexible conduit for final connections to motors and sensors. Lengths should not exceed 18\*. Use liquid tight PVC jacketed flexible conduit for connections to equipment outdoors or in damp locations.
- 2.13. Conditis shall be of sufficient size to permit easy removal of the conductors of any time. Use on hole steel stropp to excure surface conduits 2" and smaller, and two hole steel strops for conduits larger than 2". Use beem clamps to secure conduits or conduits user than 2" or conduits of the conduits of the
- ... navus consuits to conserve headroom in exposed locations and couse minimum interference in sposes through which they pass. Conduits shall be run exposed in service areas, but shall be provided in the provided of the provided and perpendicular to wait on dealings. Wherever conduits cross building exponsion joints, approved means, such as conduit expension joints or feibble conduit loops shall be provided an excessory to take care of the movement. Conduit shall not be run horizontally in partitions.
- 2.1.5. All conduits shall be properly supported with spacing not to exceed C.E.C. requirements. Approved electrical hardware, hangers, structushappes, etc. Shall be used. Perforated strap handlers shall not be shapes, etc. Shall be used. Perforated strap handlers shall not be permitted. Where run esposed on concrete or masonry wells, conduits shall be supported using conduit clamps and lead anti-the supported using conduit clamps and lead anti-the supported using conduit clamps shall be been clamps at shall be used. Conduit clamps shall be heard yet galvanized maleable iron. Factory "ells" shall be used shere 90' bends are required for 1" or larger conduits. Make bends and offsets with a hickey or power bender without flattening or denting the conduits. Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter. Connect conduit lengths with only opproved copylings or conduit uniform.
- 2.1.6. Install conduits so that there is no interference with access openings in ceilings or access to equipment in the ceiling space. Install conduit to avoid proximity to water or heating pipes. Do not run within 6" of such pipes. Where crossings are unavoidable, maintain minimum distance of 1" from the pipe covering.
- 2.1.7 Square-cut all conduit ends ream and file to remove all burn before installation and properly clean and cap all empty conduits. Install fish cord in empty conduits.

# 2.2. Wires and Cables

- 2.2.1.All conductors shall be copper unless otherwise noted. Conductors shall be stranded for #BAWC and larger with 1000 histalation of chemically proses-linked themos setting polysthylene. 600 insulation can be used for conductors amalier than #BANC. Base the 600 volt RM 90 conductor emportation on published CCP 90°C Rolling. Cobles shall be loaded for oth more than 1257 (1755 to 80%) of this rating Minhamm #IZANO wifing shall be used.
- 2.2.2.Neutrals of power systems, although connected to a common ground at the source, shall be electrically separated and isolated from each other beyond this point of origination. Feeders to two or more switches or panels and the tapoffs to same shall all be run using the same size conductors throughout.
- 2.2.3.All wires shall be carried full size from source to the load. Neutral wires shall be the same size as phase wires. Equipment Ground wires shall be one size smaller from phase wire, except that the conductor shall not be larger than a 4/0 and shall be no. 10 for 30 amps. insulation and no. 12 for circuits less than 30 amps. Insulation shall be type RM 90. Multi-circuit branch circuits in same conduit require only one equipment ground wire.

### 2.3. Junction and Pullboxes

2.3.1. Junction and pullboxes should be of welded steel construction with screw-on flat covers for surface mounting. Install pullboxes in inconspicuous but accessful locations, Install junction and pullboxes. As junction and pullboxes and pullboxes and pullboxes should be labelled to itentify explanent or circuit numbers.

### 2.4. Outlet, Conduit Boxes and Fittings

2.4.1.Size boxes in accordance with CSA C22.1. 100 mm square or larger outlet boxes as required for special devices. Gnip boxes where withing devices are grouped. Frovide blank cover jaciet for boxes produced to the control of t

# 2.5. Wiring Devices

# Switches

- 2.5.1.Locate light switches as shown on the drawings and on the latch side of doors. Install single throw switches with handle in "up" position when switch closed.
- 2.5.2 Install switches in gang type outlet box when more than one switch is required in one location.
- 2.5.3 Provide 20A, 125V single pole specification grade light switches as shown on the contract drawings. Receptacles
- 2.5.4.Install receptacles in gang type outlet box when more than one receptacle is required in one location. Combination boxes with borriers shall be used where outlets for more than one system are
- 2.5.5 Provide 15A, 120V specification grade duplex convenience outlets as shown on the contract drawings.
- 2.5.6 Do not install outlets back to back in wall. Allow a minimum 150 mm horizontal clearance between boxes. Change location of outlets at no extra cost or credit, providing distance does not exceed 3000 mm and information is given before installation.

# Telephone/Cable T.V./Computer Raceway System. (etc.)

- 2.5.7.Empty conduit systems shall be provided for telephone from outlet box to accessible ceiling space, or as shown on the drawings.
- 2.5.8.Contractor is responsible for providing and/or coordinating the size, type and location of the incoming telephone conduit with the telephone company or the building owner.
- 2.5.9.All interior building raceways shall be EMT
- 2.5.10.2 long radius 90 degree bends shall be the maximum allowed
- 2.5.11. Pole cords shall be provided in each conduit for future pulling of
- 2.5.12. Contractor shall provide necessary boxes and associated cover

# Mounting Heights

- 2.5.13 Mounting heights for wiring devices shall be as follows unless otherwise indicated and shall be from centre line of outlet box to
  - Official and a second of the s 2.5.13.2.Light switches shall be mounted at no less than 900mm and no more than 1100mm above finished floor.
  - 2.5.13.3.Disconnect switches shall be mounted 1200mm above
  - 2.5.13.4.Exit lights shall be mounted 300mm above door trim.
  - 2.5.13.5.Emergency lights shall be mounted 2100mm to 2200mm above finished floor unless atherwise stated

# 2.5.13.6.Panelboards shall be mounted 1200mm above finished floor

2.5.14.Cover plates from one manufacturer shall be used throughout the project and supplied for all wiring devices and any pullboxes.

# Equipment Nameplates

Cover Plates

2.5.15.Nameplates shall be provided for all places of electrical equipment including possibloories, praction boxes, pub boxes, spiritests, control modes, pub boxes, spiritests, control block inclinated rigid placities with 0.25 inch high white engraved latters. Nameplates shall be frastered to equipment in a conspicuous shall be submitted for approval prior to factorication. Nameplates for disconnect switches shall indicate name of equipment being controlled and circuit and preaf from which they are fed.

# Part 3 - Distribution

# 3.1. Disconnect Switches

3.1.1 Disconnect switches shall be horsenower rated quick-make quick Disconnect settches shall be horsepower ritted, quick-moke, quick unless attach is in id-e-energized position. Disconnect Switches shall be fuselble and nonfusible as indicated on the drawings. Switches shall be have duty having value blade construction, positive shall be heave duty having value blade construction, positive shall be made for podicking switch in 'OFF' position. Switches shall have mo-off switch position indicated on switch enclosure cover.

- 3.2.1.Use poselboards of one manufacturer throughout the project. The supplier shall instruct of coult breakers in panelboards before shipment, and the project of the proj
- 3.2.2. Complete circuit directory with typewritten legend showing location and load of each circuit. The directory shall be updated from the contract drawings to include all addends, site instructions, contract change orders and any other circuit changes. Supply two keys for each pareboard and key perselboards allow.
- 3.2.3.Main breaker shall be separately mounted on top or bottom of panel to suit coble entry. When mounted vertically, down position should open breaker, Lock on devices for certain breakers shall be provided for items such as exit, emergency and night light circuits.
- 3.2.4.Locate panelboards as Indicated and mount securely, plumb, true and square to adjoining surfaces. Install surface mounted panelboards on steel angle or channel framing or on fire rated painted piwood backboards.

### Part 4 - Lighting Equipment

4.1. Locate and install luminaires as indicated on contract drawings and

# Locate and install lighting control devices as indicated on the contract drawings, and in accordance with ASHRAE Standard 90.1-2010, Section 9, Lighting.

- 4.3. Contractor shall provide functional testing of the lighting control system as per Section 9.4.4. (Functional Testing), of ASHRAE Standard 90.1—2010.
  - 4.3.1. Lighting control devices and control systems shall be tested to ensure that control hardware and software a calibrated, adjusted, programmed, and in proper workin
  - 4.3.2 When occupent sensors, time switches, programmable minimum, the following procedures shall be performed. a. Confirm that the placement, sensitivity, and time-adjustments for occupancy sensors, yield acceptable and do not turn on unless space is occupied. and the occupancy sensors in the programmable of the occupied of the programmable of the occupied of the occupancy sensors in the programmable of the occupied of the occupied of the occupied of the occupied occupied of the occupied oc
    - off.

      c. Confirm that photosensor controls reduce electric light levels based on the amount of usable daylight in the space as specified.
  - 4.3.3. The party responsible for the functional testing shall not be directly involved in either the design or construction that the installed lighting controls meet or exceeding that the installed lighting controls meet or exceeding documented performance criteria. Certification shall be specific enough to verify conformace.

- 4.4. Install unit equipment and remote mounted fixtures as indicated.
- 4.5. Emergency lighting shall be installed in such a manner that it we automatically actuated upon fallure of the power supply to the normal lighting in the area covered by that unit equipment.
- 4.6. Emergency lighting shall have a supply voltage of 120VAC, and an output voltage of 12VDC, and be able to assume the electrical load automatically for a minimum of 30 minutes.

- 4.7. Install exit signs as per the contract drawings.
- 4.8. Exit signs shall consist of a green pictogram and white graphic symbol meeting the visibility specifications referred to in ISO 3864-1.
- 4.9. Exit signs shall be continuously illuminated.

# Part 7 - Mechanical Equipment

- 7.1. Provide power and connections to all mechanical equipment as detailed on the drawings.
- 7.2. Ensure all equipment is properly protected with disconnect
- Confirm with mechanical trade for exact locations of equipment and connection points. 7.4. Verify all motor connections for proper phase rotation.

# Part 9 - Generator Specification

Supply and Install 100kW, 120/208 Volt, three phase, 4-wire, backup generator. The Generator is to be installed on a pad as shown in location on the drawings.

### 9.3. Generator Requirements:

- a) Generator Size: 100kW b) Voltage: 120/208V, three phase, complete with 400 Amp main line circuit breaker c) Fuel: Natural Gas

- c) Fuel: Natural Gas
   d) Enclosure: Provide Weather protected, Level 2 Aluminum Sound Attenuation enclosure that meets all emissions standards.
   e) Engine system: Provide engine block heater and 10Amp

- e) Engine system: Provide engine block heater and 10/mp bottery chromosome properties of the provided engine block heater and 10/mp bottery chromosome provided engine provided the provided to generator as required. Sport

- Transfer Switch: Automatic type, 120/208V, three phase, 400A oj Enclosure: Type 3R Secure, wall mounted. b) Transfer switch shall be complete with a bypass switch c) Transfer switch base line specs based on ASCO ATC-300 controller and Cuttler Hammer L-frame wall mounted switch
- 9.5. All Equipment shall be CSA approved.
- Install transfer switch and generator in accordance with manufacturer's instructions and in locations as shown on the drawings.
- 9.7. Generator Pad: The concrete pad shall be constructed as per manufacturer's

| -    | -        | -                          | -   | -   |
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