

METRIC	LINEAR DIMENSIONS	No.	Revision	Drawn by	Checked by	Appr. by	Date	Std. No.
	IN MILLIMETRES	2	UPDATED 3.6	P.D.	A.I.	A.F.	03/2025	(1 of 3) 37-2010

**1. GENERAL**

This section covers the typical arrangement, installation and construction of Concrete Encased Duct Banks

All standards in this section are shown with minimum acceptable dimensions and materials. Underground system should be designed and constructed to provide adequate reliability and safety. Supply systems shall have ampacity adequate to operate under normal and emergency conditions without posing a risk to nearby facilities.

**CONCRETE ENCASED DUCT BANK SYSTEM**

Concrete encased duct bank installation provides mechanical protection to the underground cables from external forces. The external mechanical forces, that may damage the insulation of the cable, may consist of, but are not limited to water, insects/animals, and tree roots or mechanical "dig in" incidents. Such damages may lead to ground faults, outages, and other undesirable system conditions.

Duct banks are also installed to allow for less costly and easier conductor replacement. It is possible to replace a damaged, aged, or substandard cable in a duct bank with considerably less excavation. Alectra's requirements for installing conductors in conduits or ducts, depend on a number of project factors which may include:

- Where conductors are located in a high-traffic area.
- Where conductors are installed in an area that is likely to have future excavations taking place.
- Where the conductor is crossing a roadway, highway or a railway.
- Where the conductor is of high significance (i.e. primary egress from a transformer station, key customer etc.).

**2. Design Criteria**

2.1 Deviations on a duct run shall be accomplished by a gradual sweep. All 90-degree changes in horizontal and vertical directions shall be made of 1500 mm (60") radius elbows. The number of 90 degree bends shall be determined by pulling calculations.

2.2 The duct banks shall have a minimum cover of 900 mm (36") throughout the top of the concrete shell and have a minimum slope of 1% away from the building. If the slope cannot be accomplished as described, please contact Alectra Utilities' Design Department to discuss alternatives (i.e. drain pit).

2.3 The duct bank shall be terminated below future soft landscaped area free of trees, bushes, or shrubs, at the location given by Alectra Utilities and be 1.0 m away from the property line or easement line. The area within 1.5 m from the face of the duct bank on either side shall be free of any foreign objects (i.e. cables, pipes, shoring etc.) within a property line. There shall be no object or structures on top or below of the duct bank within the easement area. This area shall be reserved for Alectra Utilities' trenching, installation of cables and/or cable splices. The ductbank termination at property or easement line shall have maximum cover of 1.2 m.

alectra utilities	Construction Standard Certificate of Approval	ORIGINAL	CONCRETE ENCASED DUCTBANK GENERAL REQUIREMENTS
	The Construction Standard meets the safety requirements of Section 4 of Regulation 23/04 Richard Bassindale, 03/2025 Name Date Approved by: A.F. Richard Bassindale, P. Eng., MBA Signature & Professional Designation Date: Sept-2022	Drawn by: S.B. Checked by: A.I. Approved by: A.F. Date: Sept-2022	

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**3. Duct Bank Construction**

3.1 The ducts shall be 100 mm (4") diameter, PVC type DB2/ES2 (Solid Wall) and be CSA approved.

3.2 All ducts at the face of the duct bank, at property or easement line locations, shall be terminated with bell ends, capped with plastic plugs and to protrude 150 mm (6") from concrete encasement for Alectra Utilities' continuation (confirm with Alectra Utilities' Inspector).

3.3 All ducts at hydro equipment foundations and vault trenches shall be terminated with flush mounted bell ends.

3.4 All ducts at junction box and switchboard's wireway shall be terminated with bell ends. The bell ends shall have 1/2" spacing over concrete shell.

3.5 To avoid differential settlement of ducts terminating or passing through a building or structure, the customer shall provide Alectra an engineered design, signed by a P.Eng., showing how to mitigate differential settlement between building and duct structure.

3.6 In a situation where the duct bank is not poured in one continuous run (i.e. driveway length, half & half), the reinforcing bars shall be made continuous from one duct bank to the other (with a minimum 1.0 m overlap or a minimum of 300 mm if using epoxy in the connection point).

3.7 All ducts shall be mandrelled, be cleaned after installation, and be equipped with polypropylene rope - minimum 3/8" diameter for service size up to 3000 AMP. In some installations, subject to the discretion of Alectra Utilities Inspector, it may require 3/4" mule tape with a minimum tensile strength of 2500 lbs.

3.8 All duct ends that require immediate covers shall be marked with a 2" x 4" x 6" stake at property line for later identification by Alectra Utilities.

3.9 Pouring the concrete is not permitted if the dry air temperature is less than minus five degrees Celsius (-5") or more than thirty degrees Celsius (30") unless otherwise instructed by an Alectra representative.

3.10 Concrete curing shall be as per CSA-A23.1. If the concrete will be poured during the winter season, the contractor shall submit for approval a proposal to keep the concrete temperature, during curing time, to be above ten degrees Celsius (10") for the first 72 hours of concrete pouring.

3.11 If the vertical distance between the concrete shot and the bottom of the duct bank exceeds 1.5 m; it is recommended to use a concrete pump to avoid any concrete segregation unless otherwise instructed by an Alectra representative.

3.12 Due to possible presence of groundwater, the contractor may require the use of construction methods to maintain the hole dry during excavation and setting of the concrete which may include, but not limited to, casing the hole, drilling fluids, and/or dewatering.

3.13 Use a concrete vibrator during concrete pouring as per concrete vibrator manufacturer's recommendations.

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	IN MILLIMETRES	2	UPDATED 3.6	P.D.	A.I.	A.F.	03/2025	(3 of 3) 37-2010

3.14 The PVC pipe shall be joined together with an approved coupling, to provide a sound and watertight joint. The joints in adjacent ducts shall be staggered by at least 200mm.

3.15 The Contractor shall supply and maintain approved ducts to permit the installation of the cables by Alectra Utilities Corporation.

3.16 Ducts located in the primary duct bank, required to provide electrical service to the customer, that are constructed, owned and maintained by the customer, are exclusive for the provision of distribution services for Alectra Only.

3.17 Ducts to be supported with Alectra Utilities approved spacers. The spacers shall be installed within 600mm on both sides where couplings are used.

3.18 A rebar located in the upper zone of duct bank might be required due to the following factors or conditions and would be typically designed by an engineer:

- Soft soils, loose soils or soils that could be subjected to movement.
- In special cases where the duct bank is located too close to the finished grade where adequate cover is not provided or difficult to achieve.
- Under heavy vehicle traffic (industrial plants, rail yards etc.) top reinforcement and shear reinforcement may be required.
- Crossing of existing underground facilities.

**4. Customer Obligations**

4.1 Customer's duct bank installation shall be subjected to Alectra Utilities inspection and acceptance prior to pouring of concrete. The Customer shall arrange the necessary inspection as per Alectra Utilities policies and procedures.

4.2 The Customer shall follow directions given by the Alectra Utilities Inspector or Project Design Technologist for any situation not covered in this specification.

4.3 All ducts must be probed prior to cable installation. The cables shall not be installed in ducts which do not allow passage of a mandrel sized to 95% of the diameter of the PVC Type DB2 / ES2.

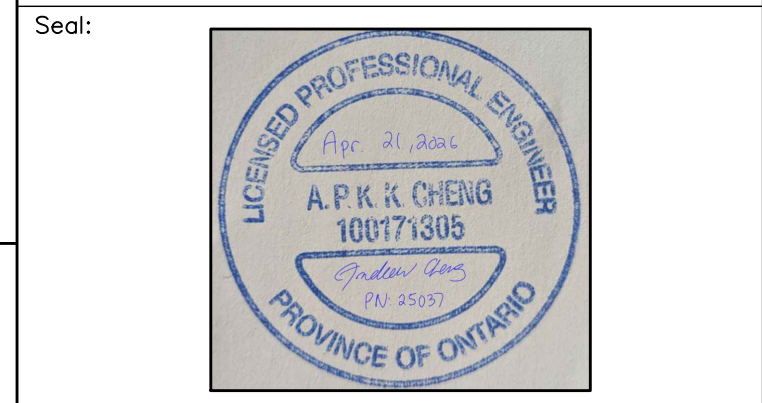
4.4 Landscaping, paving and curbs installation/restoration shall not be completed until Alectra Utilities cable installation is complete. Otherwise, the Customer at their expense shall do all restorations.

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	The Construction Standard meets the safety requirements of Section 4 of Regulation 23/04 Richard Bassindale, 03/2025 Name Date Approved by: A.F. Richard Bassindale, P. Eng., MBA Signature & Professional Designation Date: Sept-2022	Drawn by: S.B. Checked by: A.I. Approved by: A.F. Date: Sept-2022	


C. ISSUED FOR PERMIT	26.04.21
B. ISSUED FOR TENDER	26.04.16
A. ISSUED TO ALECTRA UTILITIES	25.09.19
No. ISSUE	DATE

**REVISIONS**

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DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES. ANY PARTY USING THIS DRAWING FOR SUCH ACTIVITIES WITHOUT THE EXPLICIT AUTHORIZATION OF CK ENGINEERING SHALL BEAR ALL RESPONSIBILITIES AND LIABILITIES



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ALL DIMENSIONS TO BE CHECKED AND VERIFIED ON THE JOB. ALL DRAWINGS REMAIN THE PROPERTY OF ENGINEERS. DRAWINGS SHOULD NOT BE READ IN ISOLATION.



PROJECT:  
**1 HAMILTON STREET  
SOUTH, WATERDOWN  
SERVICE UPGRADE**

DRAWING TITLE:  
**ALECTRA UTILITIES  
STANDARD DETAILS  
SHEET 3 OF 3**

DRAWN BY: U.S SCALE: N.T.S.

CHECKED BY: A.P.C DATE: 2026.04.16

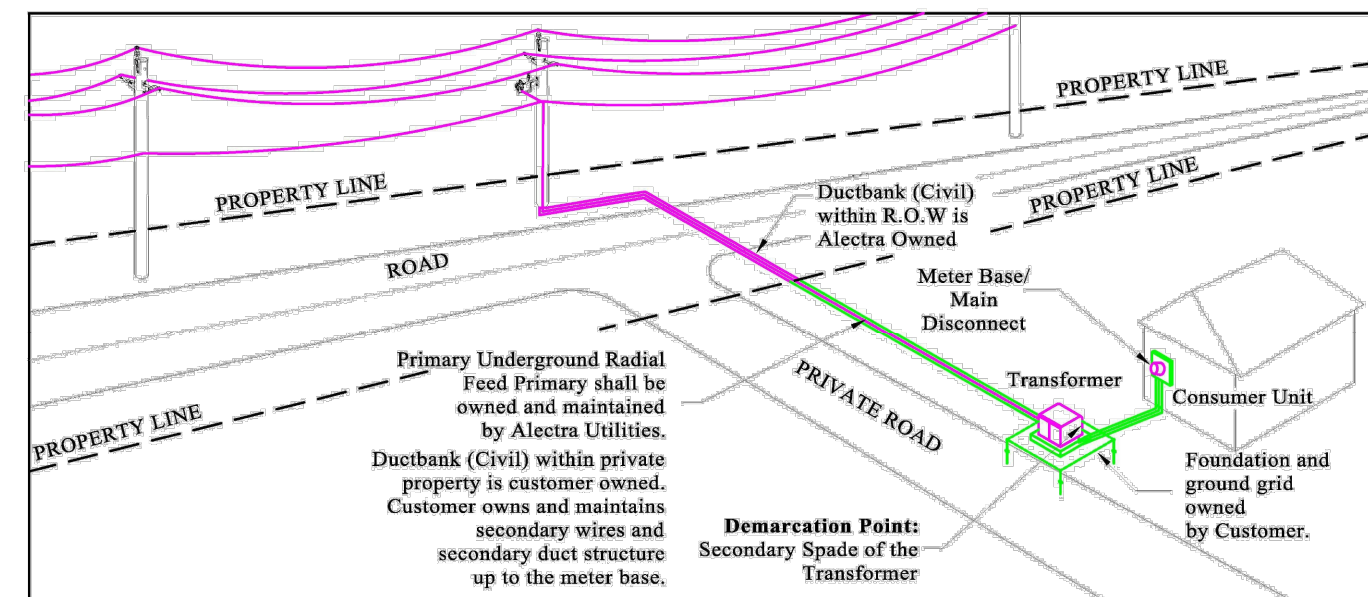
PROJECT No.: 25037

DRAWING No.:

**E1.04**

METRIC	LINEAR DIMENSIONS	No.	Revision	Drawn by	Checked by	Appr. by	Date	Std. No.
	IN MILLIMETER	R1	ISSUED FOR ALECTRA	AC	SI	AF	09/2022	(1 of 1) 4-0040

**ILLUSTRATION 4.0**

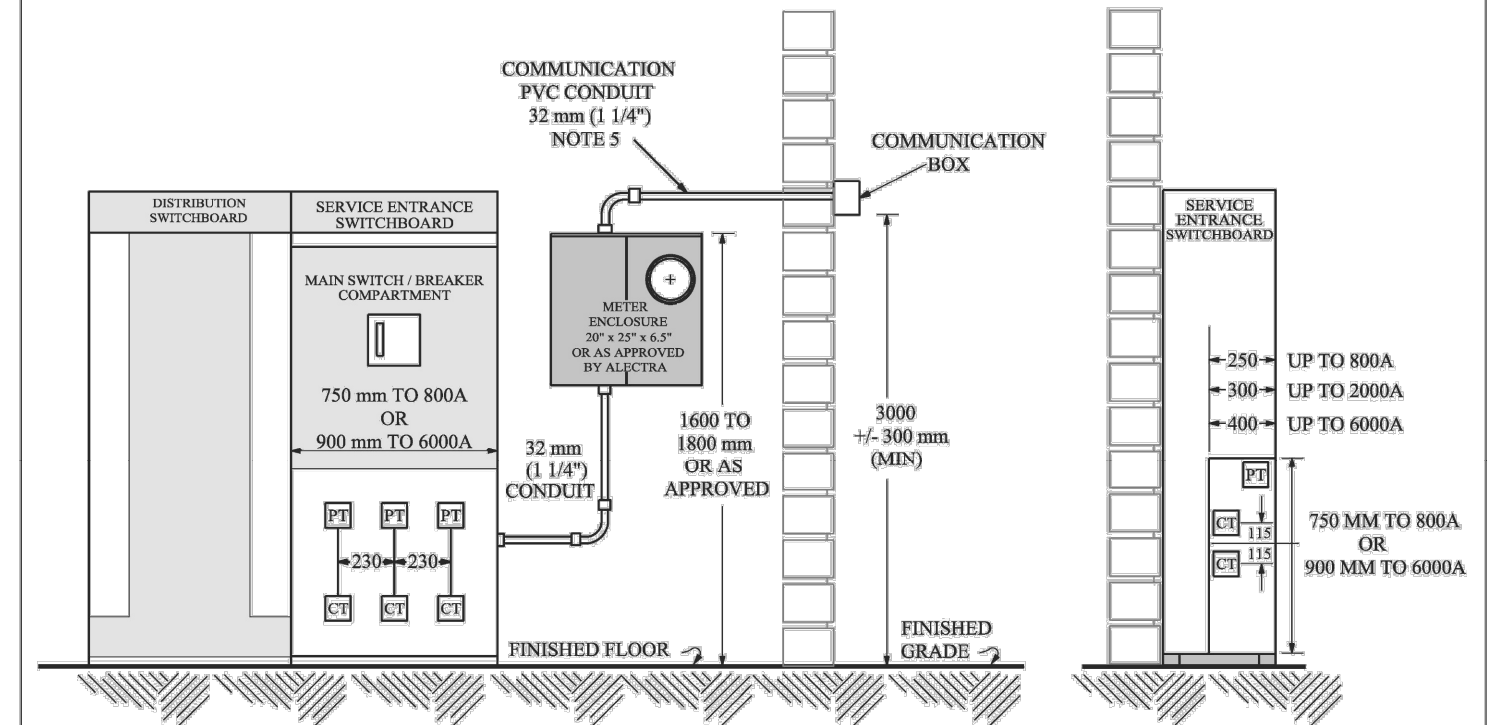


Alectra Utilities shall own and maintain the primary radial feed and the distribution transformer installed beyond the property limits. The demarcation point shall be at the secondary spade of the distribution transformer. All secondary cables shall be owned and maintained by the customer. Duct bank within private property is customer owned.

NOTE:  
The purpose of Section 4.0 Demarcation Point Standards is to illustrate the ownership of assets by the Customer and Alectra as per the requirements of Appendix 5.1 of Alectra Condition of Service. It is therefore not meant to reflect the actual installation requirements and material details. For this, please refer to the applicable standards in other sections of the Standards Manual for further details.

alectra utilities	Certificate of Approval	ORIGINAL	Title: <b>ALECTRA OWNED RADIALLY FED PADMOUNT TX ON CUSTOMER'S PROPERTY</b> 4.16/2.4 kV TO 27.6kV - PRIMARY
	The installation work covered by this standard meets the safety requirements of Section 4 of Regulation 23/04 Shereez Ali, 09/2022 Name Date Approved by: S.I. S.I., P. Eng., PMP Signature & Professional Designation Date: Jul-2020	Drawn by: J.R. Checked by: S.I. Approved by: A.F. Date: Jul-2020	

METRIC	LINEAR DIMENSIONS	No.	Revision	Drawn by	Checked by	Appr. by	Date	Std. No.
	IN MILLIMETER	R1	AMPS RANGE REVISED TO 6000A	J.L.	A.F.	S.A.L.	09/2024	(1 of 1) 20-0310



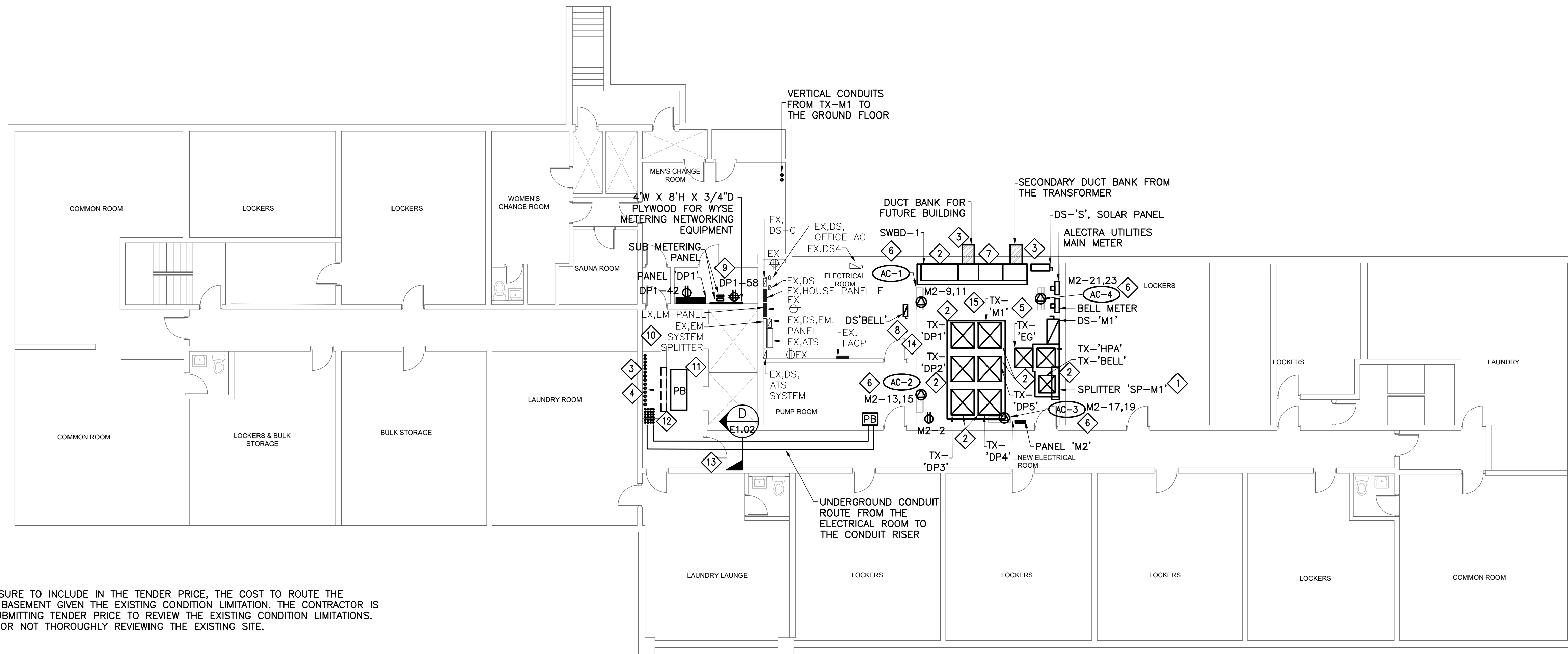
**LEFT-SIDE SECTION**

- NOTES:**
- METER ENCLOSURE SUPPLIED BY ALECTRA UTILITIES AND INSTALLED BY THE CUSTOMER, AND OF A TYPE APPROVED BY ALECTRA UTILITIES, FOR COMPLETE LIST REFER TO STD. 20-0801.
  - THE LOCATION OF THE METER ENCLOSURE SHALL BE APPROVED BY ALECTRA UTILITIES.
  - THE TOTAL CONDUIT (C/W PULL STRING) LENGTH FROM THE INSTRUMENT TRANSFORMER ENCLOSURE TO THE METER ENCLOSURE SHALL NOT EXCEED 900mm, UNLESS APPROVED BY ALECTRA UTILITIES.
  - THE CUSTOMER SHALL SUBMIT SINGLE LINE DIAGRAM & SWITCHBOARD DRAWINGS PRIOR TO MANUFACTURE FOR APPROVAL OF METERING ARRANGEMENT AND SPECIFICATION OF INSTRUMENT TRANSFORMERS BY ALECTRA UTILITIES.
  - CUSTOMER SHALL INSTALL 32mm COMMUNICATION CONDUIT C/W PULL STRING WHICH WILL TERMINATE IN THE BACK OF A 100 x 100 x 100 NEMA 3R PVC BOX ON OUTSIDE WALL. IF CONDUIT WILL BE LONGER THAN 30M, CONTACT ALECTRA FOR FURTHER REQUIREMENTS.
  - THE INSTRUMENT TRANSFORMER ENCLOSURE SHALL BE EQUIPPED WITH:
    - HINGED DOORS FULL HEIGHT OF COMPARTMENT
    - PROVISION FOR PADLOCKS AND SEAL
    - PHASE AND NEUTRAL BUS BARS TAPPED FOR CONNECTION OF 12 GAUGE WIRE
    - GROUND BAR
  - THE MAIN SERVICE SWITCH AND INDIVIDUAL DISCONNECT SWITCHES OR BREAKERS AHEAD OF EACH METER SHALL BE LOCKABLE.
  - THE CUSTOMER SHALL PROVIDE UNRESTRICTED ACCESS TO THE METERING, WHICH MAY INCLUDE AN ALECTRA APPROVED LOCKING DEVICE OR LOCK BOX.
  - FOR UNDERGROUND SERVICE ROUTE AND SUPPLIED FROM ALECTRA-OWNED PAD-MOUNTED TRANSFORMER, THE DEMARCATION POINT SHALL BE AT THE SECONDARY SPADE TERMINAL OF THE TRANSFORMER AND SHALL BE INSTALLED AS PER STD. 25-210 (Legacy BH), STD. 25U-120 (FIG. 4) (Legacy BEM), STD. 25U-2040 (FIG. 4) (Legacy HUC), STD. 17-108 (Legacy PS), STANDARD PRACTICE AT (Legacy GR) AND STD. 25-2052 (ALECTRA).

alectra utilities	Construction Standard Certificate of Approval	ORIGINAL	Title: <b>3-PHASE SERVICE WITH SWITCHBOARD</b>
	The Construction Standard meets the safety requirements of Section 4 of Regulation 23/04 Syed Ali Irfan, 09/2024 Name Date Approved by: A.F. Syed Ali Irfan, P. Eng. Signature & Professional Designation Date: Jun-2024	Drawn by: J.L. Checked by: S.I. Approved by: A.F. Date: Jun-2024	







**GENERAL DRAWING NOTES:**

1. ELECTRICAL CONTRACTOR TO ENSURE TO INCLUDE IN THE TENDER PRICE, THE COST TO ROUTE THE ELECTRICAL EQUIPMENT TO THE BASEMENT GIVEN THE EXISTING CONDITION LIMITATION. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO SUBMITTING TENDER PRICE TO REVIEW THE EXISTING CONDITION LIMITATIONS. NO EXTRAS WILL BE ALLOWED FOR NOT THOROUGHLY REVIEWING THE EXISTING SITE.

**DRAWING KEYNOTES:**

1. INSTALL SPLITTER 'SP-M1' AT HIGH WALL LEVEL ABOVE TX-'BELL'.
2. PROVIDE 4" DEPTH HOUSEKEEPING CONCRETE PAD FOR ALL EQUIPMENT ON THE FLOOR.
3. ELECTRICAL CONTRACTOR TO COORDINATE WITH STRUCTURAL CONTRACTOR PRIOR TO ANY PENETRATIONS OF THE WALLS/FLOOR/CEILING/CONCRETE. ELECTRICAL CONTRACTOR TO HIRE A SCANNER TO ENSURE PRIOR TO STARTING ANY WORK TO CONFIRM LOCATION DOES NOT INTERFERE WITH ANY OTHER SERVICES HIDDEN IN THE WALL/FLOOR/CEILING/CONCRETE. IF THERE ARE INTERFERING CONDUITS, ELECTRICAL CONTRACTOR TO TRACE THE CONDUITS AND REFEED AND REROUTE THE CONDUITS TO SURFACE MOUNTED ON THE CEILING.
4. LOCATION OF ELECTRICAL CONDUITS PENETRATING THROUGH THE BASEMENT CEILING TO SERVE NEW ELECTRICAL DISTRIBUTION PANELS IN THE ELECTRICAL CLOSETS ON THE SUITE FLOORS INCLUDING ROUTING OF CABLES FROM DP-1 TO GROUND AND SECOND FLOOR SUITES. STRUCTURAL CONTRACTOR TO PROVIDE SUPPORT FOR THE ELECTRICAL CONDUITS RISERS IF REQUIRED BY STRUCTURAL ENGINEER. COORDINATE WITH STRUCTURAL CONTRACTOR PRIOR TO STARTING ANY WORK. REFER TO SINGLE LINE DIAGRAM ON DRAWING E5.02 FOR MORE DETAILS.
5. 75KVA TX-'EG' TO BE STACKED ABOVE TX-'HPA' WHERE THE FRONTS ALIGN TO MEET THE OESC FOR WORKSPACE CLEARANCE. MAINTAIN A MINIMUM OF 6 INCHES BETWEEN THE TOP OF THE UPPER TRANSFORMER AND THE CEILING, AND 12 INCHES BETWEEN THE TOP OF THE LOWER TRANSFORMER AND THE BOTTOM OF THE UPPER TRANSFORMER.
6. PROVIDE DEDICATED POWER SUPPLIES TO ALL AC INDOOR AND OUTDOOR UNITS. INDOOR UNITS AC-1 AND AC-2 SHALL BE CONNECTED TO OUTDOOR UNIT CU-3. INDOOR UNITS AC-3 AND AC-4 SHALL BE CONNECTED TO OUTDOOR UNIT CU-4. COORDINATE ALL CONNECTIONS AND REQUIREMENTS WITH THE MANUFACTURER AND MECHANICAL CONTRACTOR PRIOR TO COMMENCING WORK. REFER TO DRAWING E1.07 FOR OUTDOOR AC UNIT LOCATIONS.
7. ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL MAIN SWITCHBOARD 'SWBD-1' OR ANY ALTERNATE/EQUIVALENT SWITCHBOARD. CONTRACTOR SHALL VERIFY THAT THE SWITCHBOARD CAN BE INSTALLED WITH A MINIMUM WORKING CLEARANCE OF 1.5 m IN FRONT OF THE EQUIPMENT IN ACCORDANCE WITH THE OESC. CONTRACTOR SHALL ALSO CONFIRM THAT THE SWITCHBOARD DIMENSIONS ALLOW THE UNIT TO BE BROUGHT INTO THE ELECTRICAL ROOM AND MANOEUVRED INTO FINAL POSITION.
8. PROVIDE A SEPARATE PRICE FOR NEW BELL DISCONNECT SWITCH INSTALLED AT THE LOCATION OF THE EXISTING BELL METER TO BE DEMOLISHED. REFER TO IMAGE 6 ON THIS DRAWING FOR MORE DETAILS.
9. THE OWNER IS RESPONSIBLE TO DEMOLISH THE EXISTING WASHROOM AND ARRANGE TO BUILD THE NEW ELECTRICAL CLOSET. ELECTRICAL CLOSET WALL AND DOOR TO BE PROVIDED BY OTHERS (ARCHITECT).
10. ELECTRICAL SHAFT WALL TO BE PROVIDED BY OTHERS (ARCHITECT).
11. ELECTRICAL CONTRACTOR TO PROVIDE 5'x2'x2.5' (WxDxH) PULL BOX FOR TRANSITION FROM RIGID PVC TO EMT FOR THE RISERS.
12. GENERAL CONTRACTOR TO SUPPLY AND INSTALL 5'Wx3'H BOLT ON ACCESS PANEL IF FUTURE ACCESS TO JUNCTION BOX AS REQUIRED. ELECTRICAL CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR PRIOR TO STARTING ANY WORK.
13. UNDERGROUND CONDUIT ROUTING FROM THE ELECTRICAL ROOM TO THE VERTICAL ELECTRICAL RISER FOR CONDUITS ORIGINATING FROM TX-'DP2', TX-'DP3', TX-'DP4', AND TX-'DP5'. REFER TO SECTION 'D' ON DRAWING E1.02 FOR ADDITIONAL DETAILS.
14. REFER TO IMAGE 6 ON THIS DRAWING FOR PROPOSED CONDUIT PENETRATIONS FOR TX-'DP1'. ALTERNATIVE LOCATIONS ARE ACCEPTABLE.
15. ELECTRICAL CONTRACTOR TO PROVIDE SEPARATE PRICE FOR ROUTING CONDUITS FOR TX-'M1' UNDERGROUND TO THE CABLE TRAY.

**POWER AND SYSTEMS NEW PLAN AT BASEMENT**  
SCALE 1/8" = 1'-0"

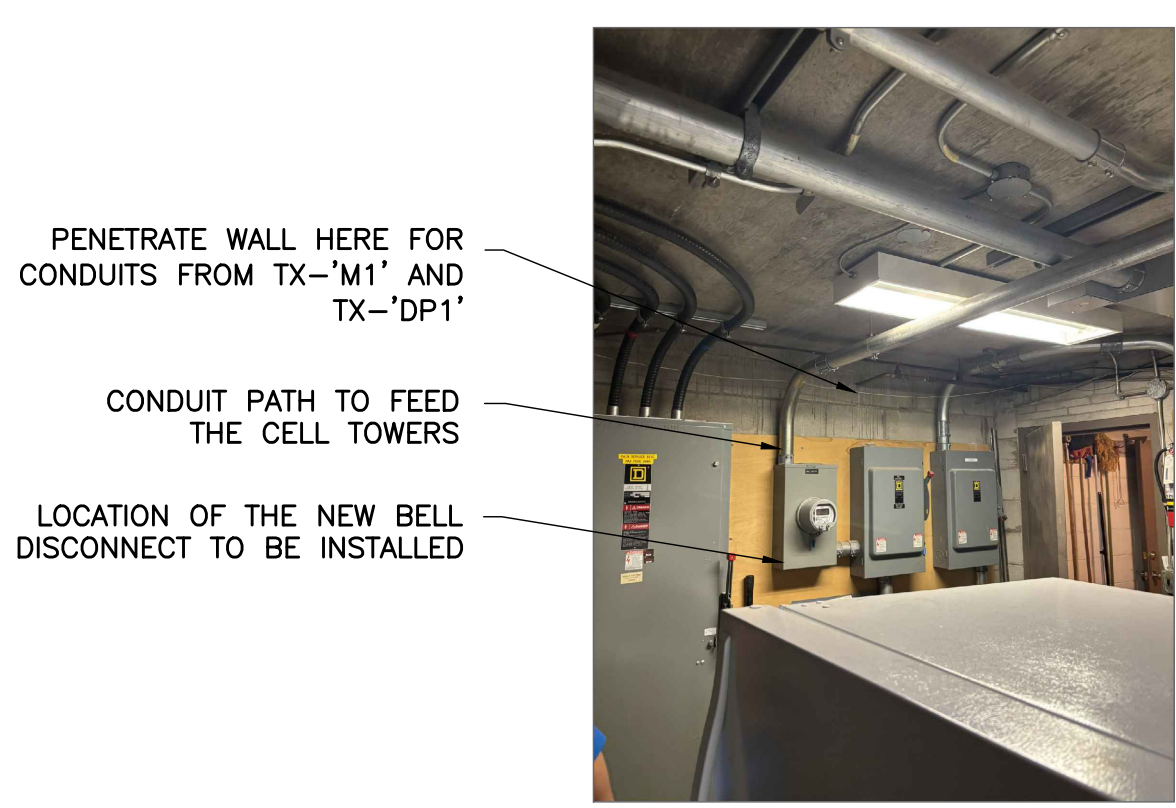
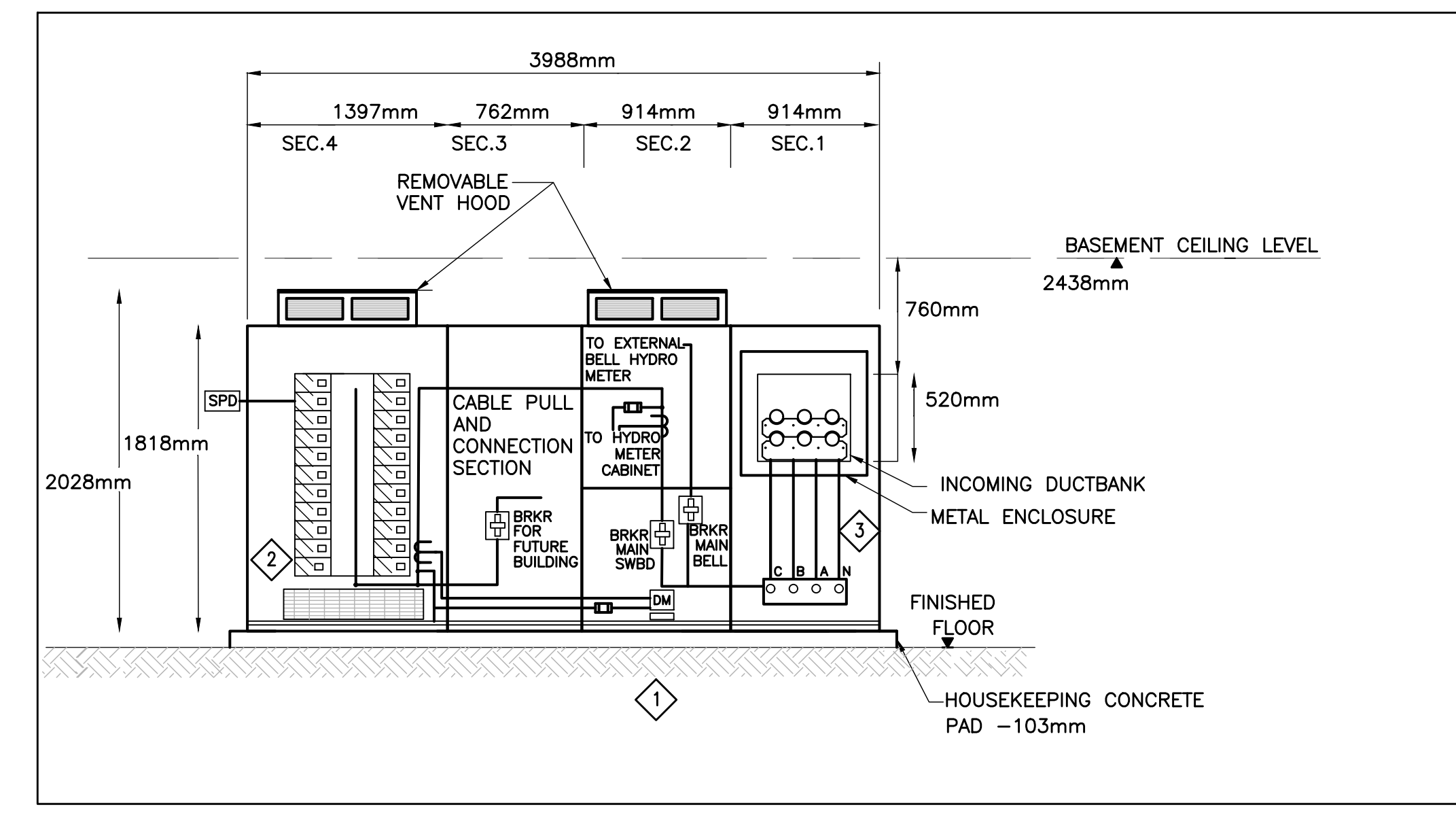


IMAGE 6: LOCATION OF THE NEW BELL DISCONNECT TO BE INSTALLED AND LOCATION OF WALL PENETRATION FOR CONDUITS FROM TX-'DP1' AND TX-'M1'



IMAGE 7: VERTICAL ELECTRICAL CABLE TRAY FOR PANEL M1



**MAIN ELECTRICAL ROOM - MAIN SWITCHBOARD ELEVATION**  
N.T.S. A E1.07

**NOTES:**

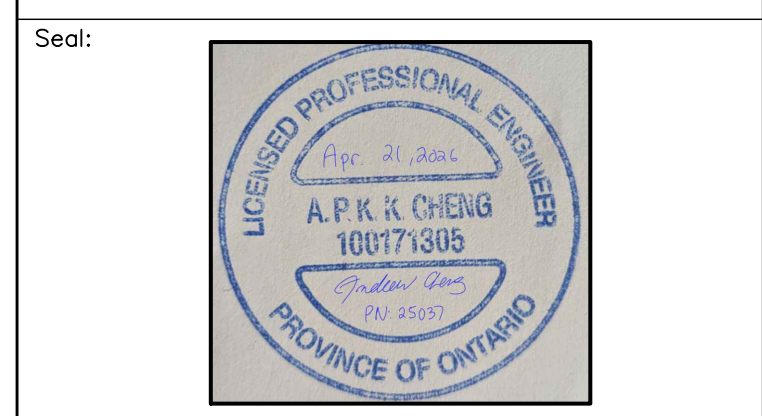
1. ELECTRICAL CONTRACTOR TO PROVIDE SWITCHBOARD WITH THE DIMENSIONS AS SHOWN ON THIS ELEVATION DETAIL. THIS IS DUE TO THE HEIGHT RESTRICTION OF THE BASEMENT CORRIDOR AND THE DOOR HEIGHT. THESE DIMENSIONS ARE BASED OFF KRKA POWER CUSTOM BUILT DISTRIBUTION DESIGN SOLUTION. FOR ADDITIONAL INFORMATION, PLEASE REACH OUT TO THE CONTACT BELOW.
2. ELECTRICAL CONTRACTOR TO PUT THE CIRCUIT BREAKER FOR THE SOLAR SYSTEM AT THE FURTHERS POINT ON THE DISTRIBUTION SECTION FROM THE MAIN BREAKER TO MINIMIZE THE OPPORTUNITY FOR ANY BACKFEED TO THE HYDRO SYSTEM.
3. ELECTRICAL CONTRACTOR TO ALLOW FOR 1.2m OF CABLE LENGTH FROM WITHIN THE WIREWAY SECTIONS PRIOR TO THE CABLE TERMINATION TO ALLOW FOR OESC TABLE 2 AMPACITY TO APPLY.

CONTACT: GREGORY RODRIGUEZ  
PHONE NUMBER: 289-795-6017  
COMPANY: KRKA POWER INC.

No.	ISSUE	DATE
C.	ISSUED FOR PERMIT	26.04.21
B.	ISSUED FOR TENDER	26.04.16
A.	ISSUED TO ALECTRA UTILITIES	25.09.19

**REVISIONS**

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**CK ENGINEERING INC**  
MECHANICAL | ELECTRICAL  
2400 INDUSTRIAL STREET  
BURLINGTON, ON, L7P 1A5  
www.ckengs.com | info@ckengs.net | 905.631.1115

PROJECT:  
**1 HAMILTON STREET SOUTH, WATERDOWN SERVICE UPGRADE**

DRAWING TITLE:  
**BASEMENT POWER AND SYSTEMS NEW PLAN**

DRAWN BY: U.S	SCALE: AS NOTED
CHECKED BY: A.P.C	DATE: 2026.04.16

PROJECT No.:  
25037

DRAWING No.:  
**E1.07**

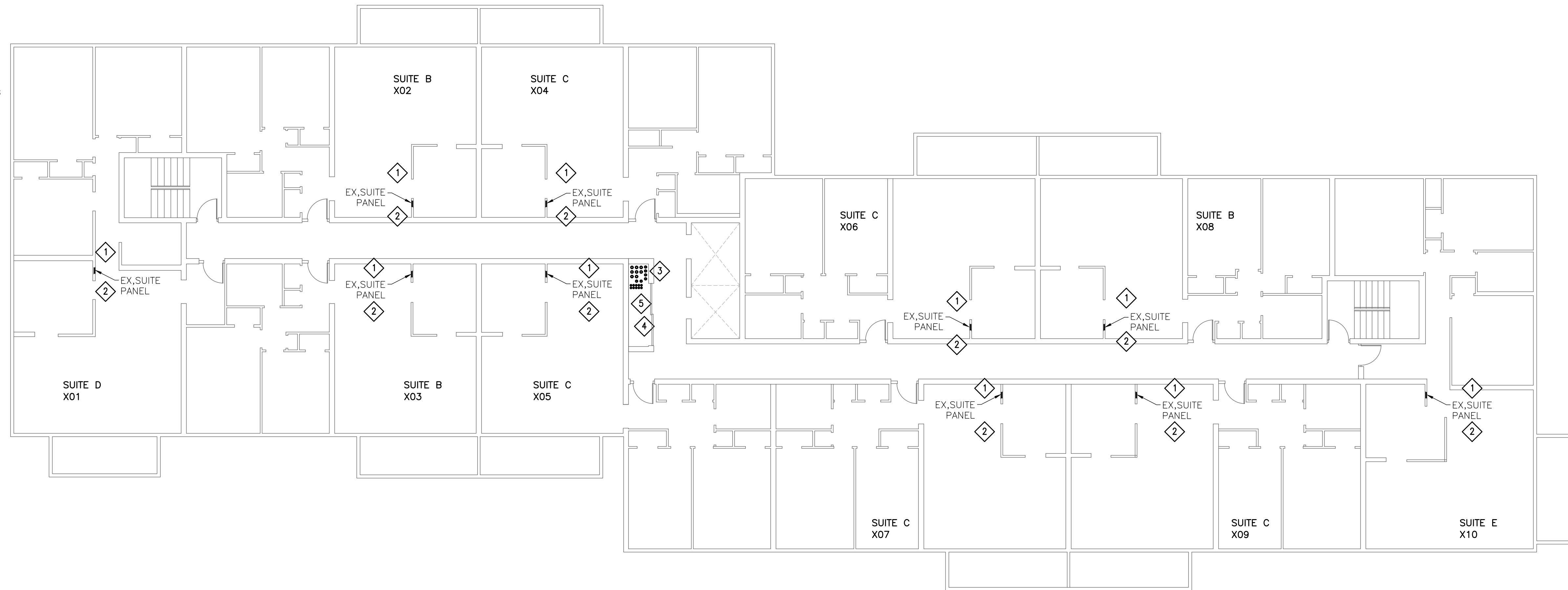


**GENERAL DRAWING NOTES:**

1. ELECTRICAL CONTRACTOR TO ENSURE MINIMAL DOWNTIME BY ARRANGING, SCHEDULING AND PERFORMING ACCORDINGLY.

**DRAWING KEYNOTES:**

1. ELECTRICAL CONTRACTOR TO DEMOLISH THE EXISTING FEED TO THE SUITES BACK TO THE SOURCE. ALL DEMOLITIONS WITHIN THE SUITE TO OCCUR AFTER AS MUCH NEW INFRASTRUCTURE HAS BEEN INSTALLED TO MINIMIZE DOWNTIME FOR THE SUITE OWNER. COORDINATE WITH LANDLORD PRIOR TO STARTING ANY WORK. SUPPLY AND INSTALL NEW FEED FROM THE ELECTRICAL CLOSETS ITS FED FROM. REFER TO PANEL SCHEDULE ON DRAWING E5.03 AND E5.04 FOR MORE DETAILS. ELECTRICAL CONTRACTOR TO ALLOW FOR AN ADDITIONAL 50' OF CABLE TO EACH SUITE FOR PRICING. ELECTRICAL CONTRACTOR TO ROUTE THE CONDUITS NEATLY AND WELL SUPPORTED ON THE EXPOSED CEILING.
2. ELECTRICAL CONTRACTOR TO PROVIDE A SEPARATE PRICE TO REPLACE THE EXISTING SUITE PANEL. EXISTING SUITE PANELS ARE 100A, 120/240V, 1PH, ALLOW FOR FOURTEEN (14) 15A-1P, ONE (1) 40A-2P, AND THREE (3) 20A-1P BREAKERS.
3. VERTICAL ELECTRICAL CONDUITS STACKS FROM THE BASEMENT SERVING NEW ELECTRICAL DISTRIBUTION PANELS IN THE NEW ELECTRICAL CLOSETS ON THE SUITE FLOORS. STRUCTURAL CONTRACTOR TO PROVIDE SUPPORT FOR THE ELECTRICAL CONDUITS RISERS IF REQUIRED BY STRUCTURAL ENGINEER. COORDINATE WITH STRUCTURAL CONTRACTOR PRIOR TO STARTING ANY WORK.
4. ELECTRICAL CLOSET WALL AND SLIDING DOORS TO BE PROVIDED BY OTHERS (ARCHITECT).
5. ELECTRICAL CONTRACTOR TO COORDINATE WITH STRUCTURAL CONTRACTOR PRIOR TO ANY PENETRATIONS OF THE WALLS/FLOOR/CEILING/CONCRETE. ELECTRICAL CONTRACTOR TO HIRE A SCANNER TO ENSURE PRIOR TO STARTING ANY WORK TO CONFIRM LOCATION DOES NOT INTERFERE WITH ANY OTHER SERVICES HIDDEN IN THE WALL/FLOOR/CEILING/CONCRETE. IF THERE ARE INTERFERING CONDUITS, ELECTRICAL CONTRACTOR TO TRACE THE CONDUITS AND REFEED AND REROUTE THE CONDUITS TO SURFACE MOUNTED ON THE CEILING.



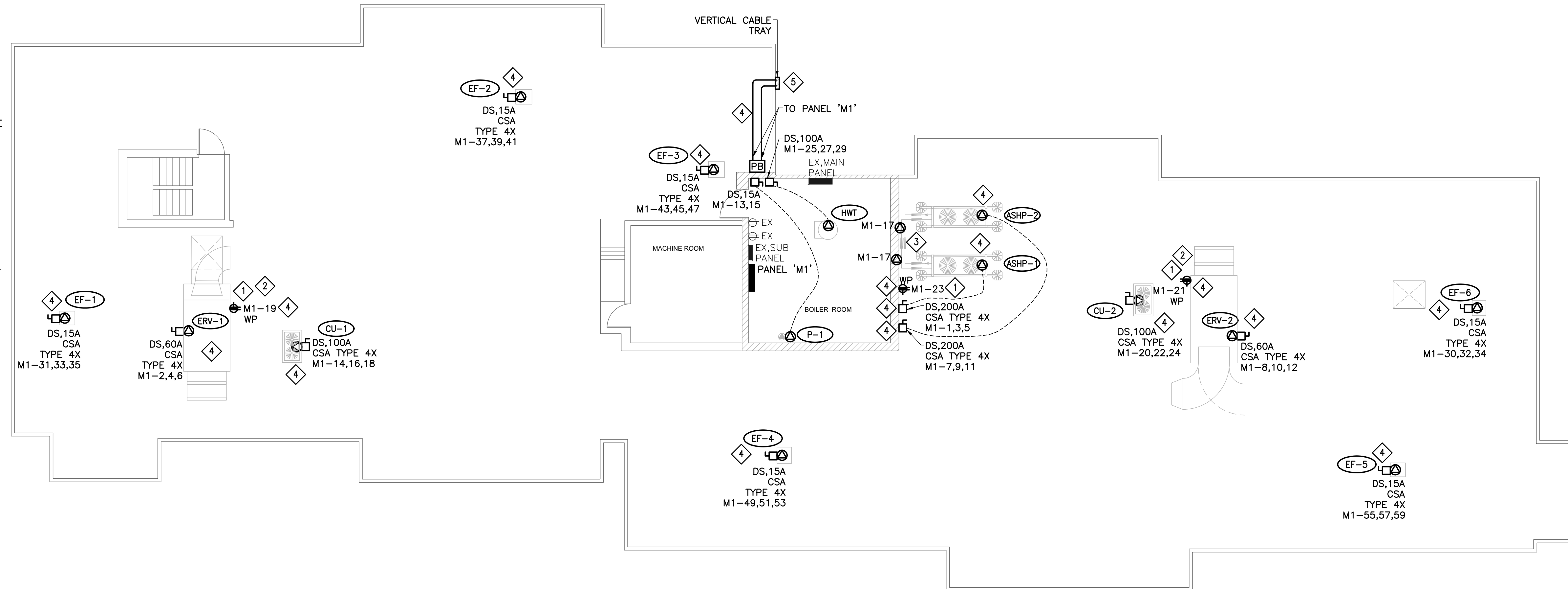
**POWER AND SYSTEMS NEW PLAN AT SECOND, FOURTH, SIXTH, EIGHTH AND TENTH FLOORS**  
SCALE 1/8" = 1'-0"

**GENERAL DRAWING NOTES:**

1. ELECTRICAL CONTRACTOR TO ENSURE MINIMAL DOWNTIME BY ARRANGING, SCHEDULING AND PERFORMING ACCORDINGLY.

**DRAWING KEYNOTES:**

1. RECEPTACLE FOR MAINTENANCE SHALL BE LOCATED WITHIN 7.5m OF THE NEW MECHANICAL EQUIPMENT AND MOUNTED NOT LESS THAN 750mm ABOVE FINISHED ROOF PER 26-710 OF OESC LATEST CODE (29th EDITION). RECEPTACLE SHALL BE PROVIDED WITH COVER PLATES FOR WET LOCATION AND MARKED "EXTRA DUTY" PER 26-708 OF OESC. CONNECT NEW 20A ROOFTOP MAINTENANCE GFCI RECEPTACLE TO 20A BREAKER IN PANEL-M1.
2. RECEPTACLE TO BE MOUNTED ON THE ERV. ELECTRICAL CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR/MANUFACTURER FOR EXACT LOCATION.
3. DOMESTIC COLD WATER LINE (REFER MECHANICAL DRAWINGS FOR SIZE MATERIAL AND INSULATION TYPE). ELECTRICAL CONTRACTOR TO DESIGN, SUPPLY AND INSTALL FREEZE PROTECTION HEAT TRACE SYSTEM. TOTAL ESTIMATED LENGTH OF 58ft TO BE HEAT TRACED. PROVIDE SELF-REGULATING HEAT TRACE CABLE (120V) AND MAINTAIN TEMPERATURE OF 4 DEGREE CELSIUS COMPLETE WITH AMBIENT SENSING CONTROLLER, AND ALL ACCESSORIES REQUIRED FOR COMPLETE INSTALLATION. EXTENDED HEAT TRACING 305mm (1ft) INSIDE HEATED SPACE.
4. CABLES ROUTED FROM PANEL M1, LOCATED IN THE ROOF MECHANICAL ROOM TO THE EQUIPMENT AND MAINTENANCE RECEPTACLES SHALL BE INSTALLED WITH PROPER SUPPORT. THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ROOF-MOUNTED SUPPORT STANDS TO ENSURE SECURE CABLE ROUTING AND INSTALLATION.
5. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL CABLES/CONDUITS IN ALUMINUM VENTILATED SOLID TROUGH TYPE CABLE TRAY C/W VENTILATED TRAY COVER FOR MECHANICAL PROTECTION. TRAY TO BE VERTICALLY MOUNTED ON STRUCTURAL SUPPORT WITH 5' SPACING OF ALUMINUM UNISTRUT SUPPORT FROM 6" ABOVE GRADE TO THE ROOF LEVEL. PROVIDE DISSIMILAR TAPE AS REQUIRED BETWEEN THE STRUCTURAL SUPPORT AND UNISTRUT. PROVIDE 2" WIDE x 1/4" THICK NEOPRENE RUBBER STRIP BETWEEN CABLE AND TRAY TO PREVENT CORROSION. STRUCTURAL ENGINEER TO PROVIDE STRUCTURAL SUPPORT FOR THE UNISTRUT FOR THE VERTICAL CABLE TRAY.

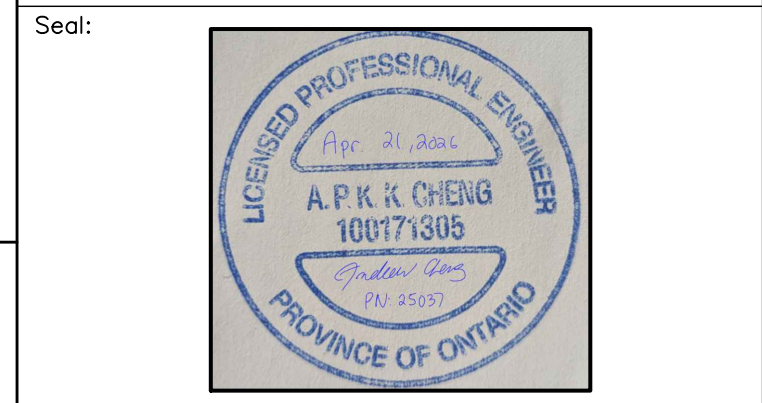


**POWER AND SYSTEMS NEW PLAN AT ROOF**  
SCALE 1/8" = 1'-0"

No.	ISSUE	DATE
B.	ISSUED FOR PERMIT	26.04.21
A.	ISSUED FOR TENDER	26.04.16

**REVISIONS**

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**PROJECT:**  
1 HAMILTON STREET  
SOUTH, WATERDOWN  
SERVICE UPGRADE

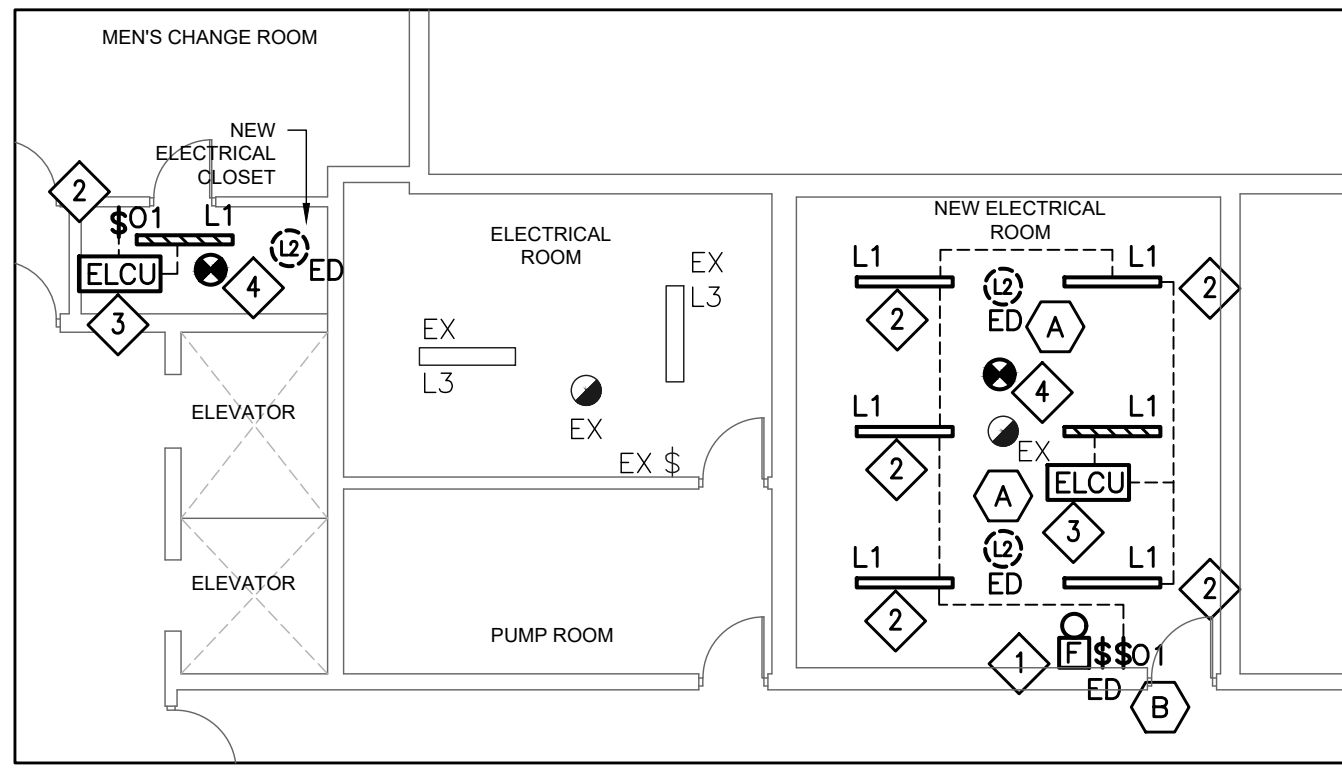
**DRAWING TITLE:**  
2ND, 4TH, 6TH, 8TH,  
10TH FLOORS AND  
ROOF POWER AND  
SYSTEMS NEW PLAN

**DRAWN BY:** U.S **SCALE:** 1/8" = 1'-0"

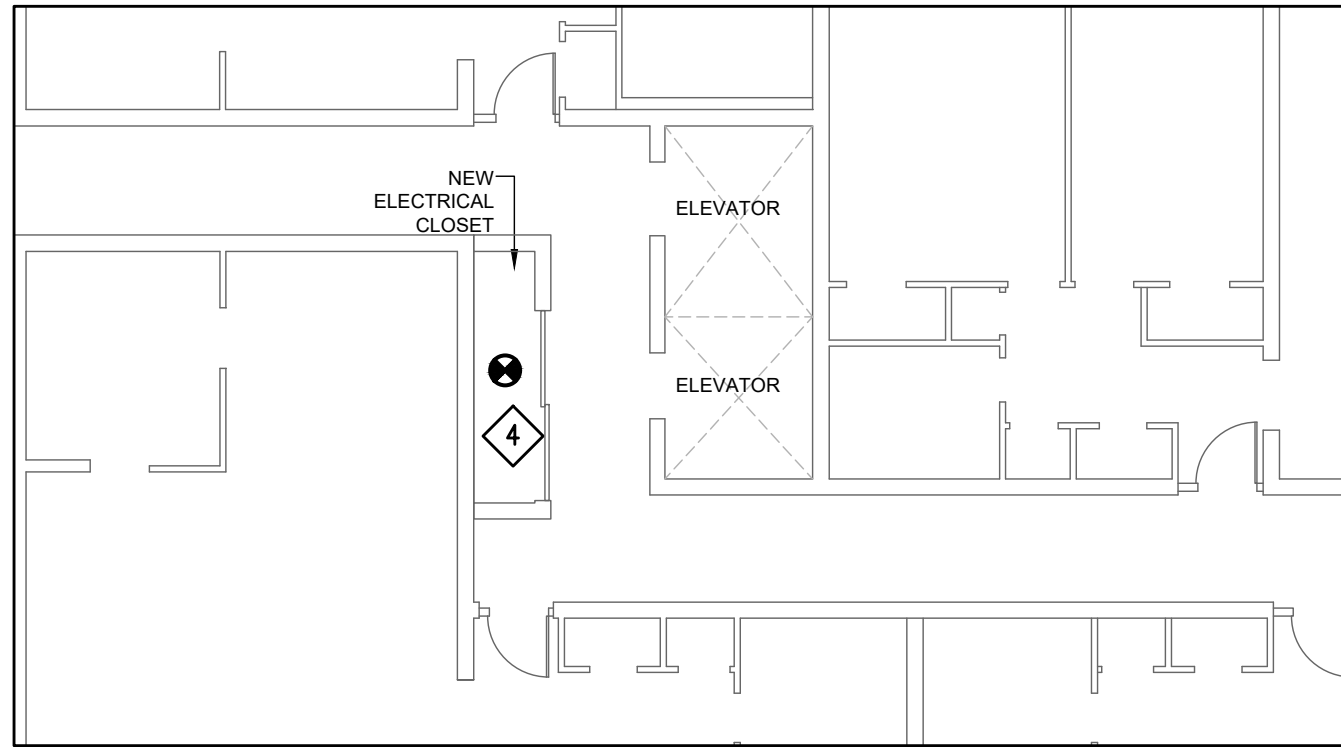
**CHECKED BY:** A.P.C **DATE:** 2026.04.16

**PROJECT No.:** 25037

**DRAWING No.:** E1.09



**BASEMENT LIGHTING AND FIRE ALARM SYSTEM NEW PLAN AND LIGHTING DEMOLITION PLAN (ELECTRICAL ROOMS)**  
SCALE 1/8" : 1'-0"



**LIGHTING AND FIRE ALARM SYSTEM NEW PLAN THIRD, FIFTH, SEVENTH AND NINTH FLOOR (ELECTRICAL CLOSET)**  
SCALE 1/8" : 1'-0"

**GENERAL DEMOLITION NOTES:**

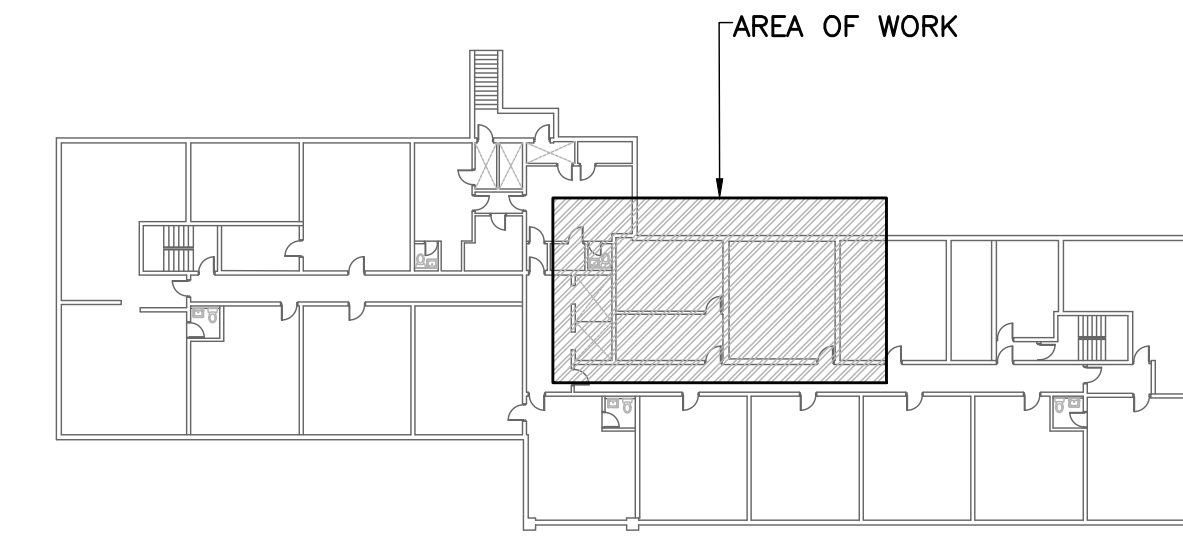
1. THE ELECTRICAL CONTRACTOR IS FULLY RESPONSIBLE FOR VERIFYING ALL ELECTRICAL ITEMS ON SITE PRIOR TO COMMENCING WORK. IF THERE ARE ERRORS OR OMISSIONS ON THE DRAWINGS, THE CONTRACTOR WILL MODIFY THE DRAWINGS AND NOTIFY THE CONSULTANT OF ANY MAJOR DISCREPANCIES BETWEEN THE DRAWINGS AND SITE CONDITIONS.
2. THE ELECTRICAL CONTRACTOR IS FULLY RESPONSIBLE FOR REMOVING/RELOCATING ALL ELECTRICAL DEVICES / CABLES / CONDUITS ETC. IN AREAS BEING DEMOLISHED AS SHOWN ON ELECTRICAL DRAWINGS. NO ATTEMPT HAS BEEN MADE TO IDENTIFY EVERY SINGLE EXISTING ELECTRICAL SERVICE ON EXISTING DRAWINGS. THE CONTRACTOR IS TO VISIT THE SITE PRIOR TO SUBMITTING TENDER PRICE TO REVIEW WHAT IS REQUIRED WITH RESPECT TO DEMOLITION. NO EXTRAS WILL BE ALLOWED FOR NOT THOROUGHLY REVIEWING THE EXISTING SITE.
3. ELECTRICAL CONTRACTOR TO RE-ARRANGE AND RE-SUPPORT ALL EXISTING BOXES, CONDUITS AND WIRING ABOVE EXISTING CEILING TILES. USE NEW BOX, CONDUITS AND WIRING AS REQUIRED TO MAKE SAFE AND CLEAN INSTALLATION TO MEET CURRENT CODE AND ESA REQUIREMENTS.
4. UNUSED CONDUITS AND WIRING IN EXISTING CEILING SPACE TO BE REMOVED. PROVIDE THE REQUIRED TESTS TO ENSURE SAFE REMOVAL AS REQUIRED.
5. FOR EXISTING PULL BOXES AND JUNCTION BOXES WITH NO COVER PLATES ABOVE EXISTING CEILINGS, THE ELECTRICAL CONTRACTOR TO PROVIDE AND INSTALL NEW COVERS TO MAKE SAFE AS REQUIRED.
6. FOR INDICATED DEVICES SHOWN TO BE DEMOLISHED, THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL WIRING AND CONDUITS BACK TO SOURCE AND REWORK OR PROVIDE NEW WIRING/CONDUIT TO DEVICES THAT MAY BE FED ON THE SAME CIRCUIT AS THE DEVICE TO BE DEMOLISHED.
7. ELECTRICAL CONTRACTOR SHALL COORDINATE AND VERIFY WITH THE OWNER ALL DEVICES TO BE SALVAGED, MOVED & STORED PRIOR TO DEMOLITION.

**DEMOLITION KEYNOTES:**

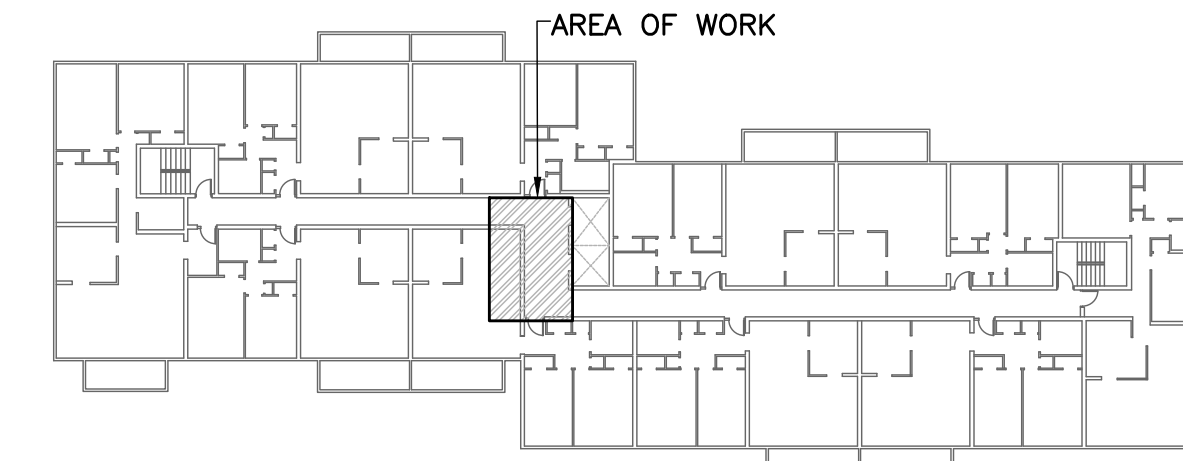
- (A) ELECTRICAL CONTRACTOR TO DEMOLISH THE EXISTING LIGHT FIXTURE. REFER TO IMAGE 9 FOR MORE DETAILS.
- (B) ELECTRICAL CONTRACTOR TO DEMOLISH THE EXISTING LIGHT SWITCH.

**DRAWING KEYNOTES:**

- ① ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL MIRCOM BL-6B / BL-10B FIRE ALARM BELL. MATCH EXISTING SIZE. CONNECT TO THE EXISTING FIRE ALARM PANEL (FACP) IN THE EXISTING ELECTRICAL ROOM. REFER TO IMAGE 8 ON THIS DRAWING FOR THE FACP LOCATION.
- ② ELECTRICAL CONTRACTOR TO CONNECT THE NEW LIGHT FIXTURE TO THE EXISTING LIGHTING CIRCUIT THAT PREVIOUSLY SERVED THE DEMOLISHED LIGHT FIXTURES IN THIS ROOM.
- ③ ELECTRICAL CONTRACTOR TO SUPPLY, INSTALL, AND WIRE THE ELUCU-200 EMERGENCY LIGHTING CONTROL UNIT IN ACCORDANCE WITH THE WIRING DIAGRAM PROVIDED ON DRAWING E0.03.
- ④ ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL MIRCOM SERIES SD-100 PHOTO SMOKE DETECTOR AND CONNECT TO THE EXISTING FIRE ALARM CONTROL PANEL (FACP) IN THE EXISTING ELECTRICAL ROOM IN BASEMENT.
- ⑤ ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL WEATHER PROOF ENCLOSURE, ADDRESSABLE MIRCOM D4120A DUCT SMOKE DETECTOR AND ENCLOSURE STRIP HEATER.
  - a. WIRE ADDRESSABLE DUCT SMOKE DETECTOR TO MAIN FIRE ALARM RELAY MODULE TO SHUTDOWN THIS AIR MOVING UNIT UPON ACTIVATION OF THE DUCT SMOKE DETECTOR. ELECTRICAL CONTRACTOR TO ALSO WIRE FROM THE FIRE ALARM PANEL TO THE ERV STATUS CONTACT FOR MONITORING. INSTALL AS PER MANUFACTURERS INSTRUCTIONS.
  - b. 50W ENCLOSURE STRIP HEATER. TOUCH SAFE HEATER MODEL NO CSF06001, INSTALL AS PER MANUFACTURERS INSTRUCTIONS.
- ⑥ PROVIDE FIRE ALARM INTERLOCK FOR THE SHUT DOWN OF MECHANICAL EQUIPMENT AS INDICATED. PROVIDE A SEPARATE FIRE ALARM ZONE FOR THIS EQUIPMENT.
- ⑦ CABLES ROUTED FROM PANEL M1, LOCATED IN THE ROOF MECHANICAL ROOM TO THE JUNCTION BOX SHALL BE INSTALLED WITH PROPER SUPPORT. THE ELECTRICAL CONTRACTOR SHALL SUPPLY AND INSTALL ROOF-MOUNTED SUPPORT STANDS TO ENSURE SECURE CABLE ROUTING AND INSTALLATION.



**BASEMENT KEY PLAN**  
SCALE 1/32" : 1'-0"

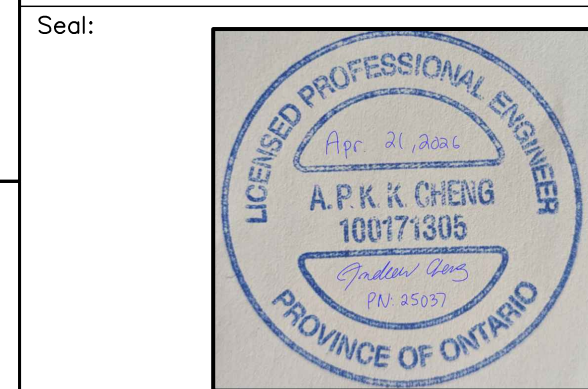


**SECOND, THIRD, FIFTH, SEVENTH AND NINTH FLOOR KEY PLAN**  
SCALE 1/32" : 1'-0"

No.	ISSUE	DATE
B.	ISSUED FOR PERMIT	26.04.21
A.	ISSUED FOR TENDER	26.04.16

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**PROJECT:**  
**1 HAMILTON STREET SOUTH, WATERDOWN SERVICE UPGRADE**

**DRAWING TITLE:**  
**LIGHTING AND FIRE ALARM SYSTEM NEW PLAN AND LIGHTING DEMOLITION PLAN**

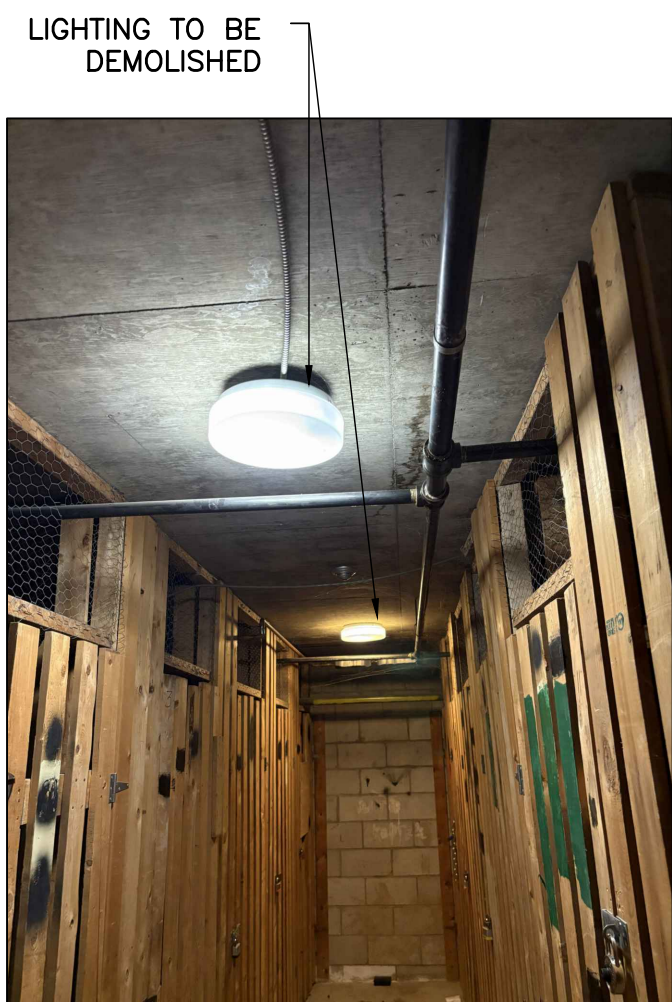
<b>DRAWN BY:</b> U.S	<b>SCALE:</b> AS NOTED
<b>CHECKED BY:</b> A.P.C	<b>DATE:</b> 2026.04.16

**PROJECT No.:**  
25037

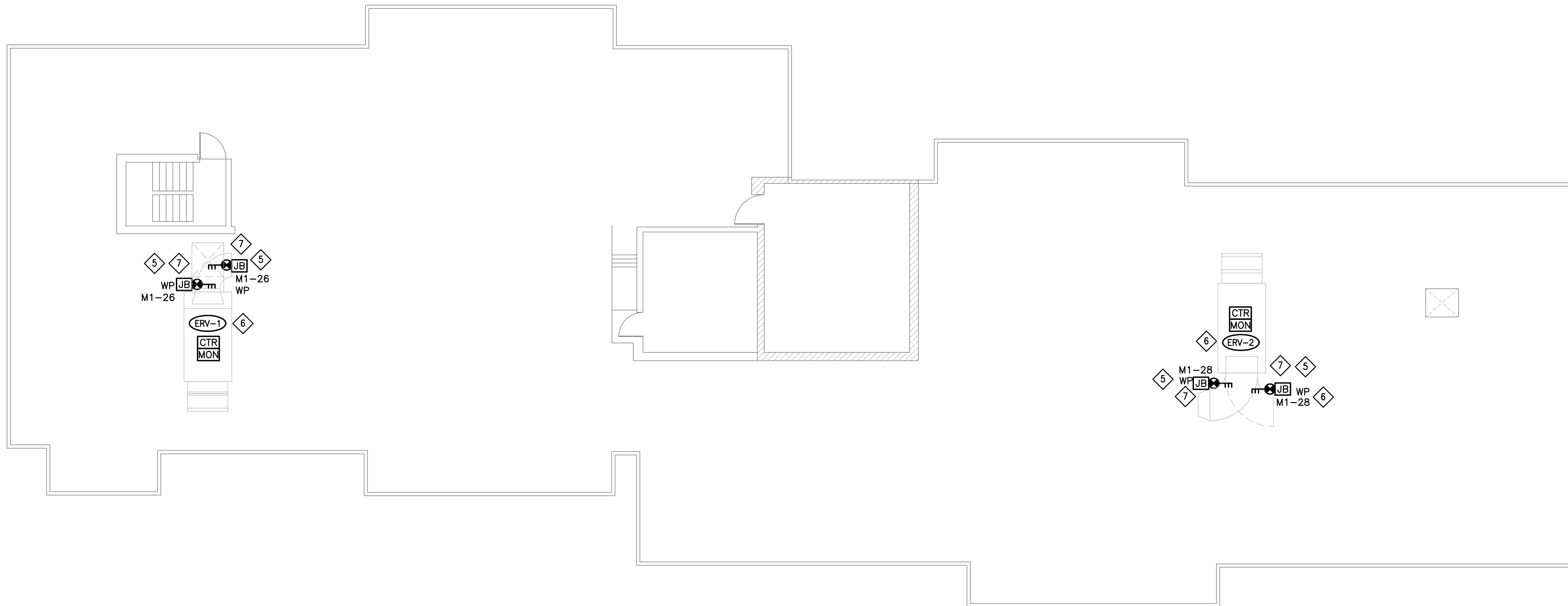
**DRAWING No.:**  
**E1.10**



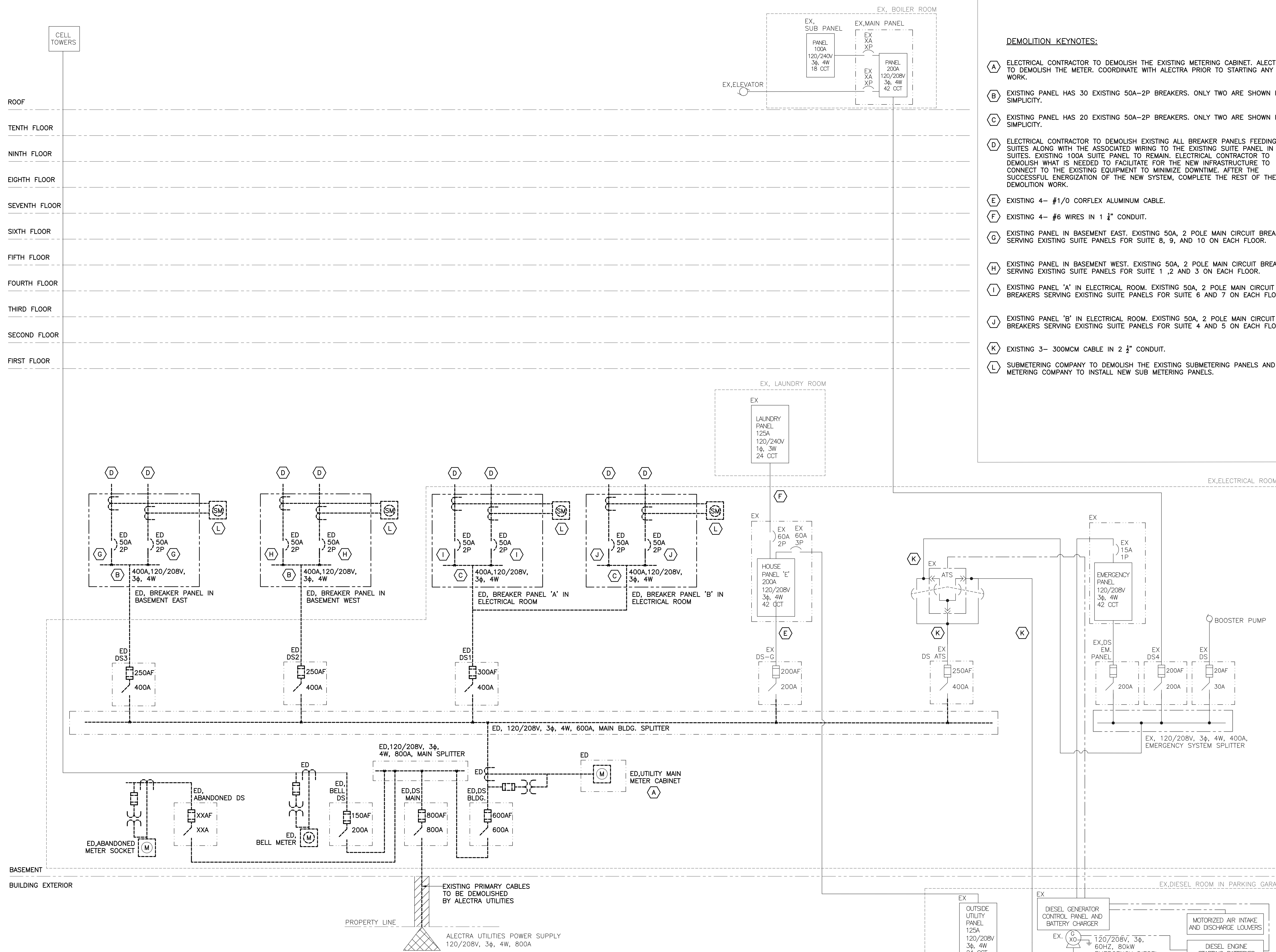
**IMAGE 8 : EXISTING FIRE ALARM CONTROL PANEL(FACP)**



**IMAGE 9 : LIGHTS TO BE DEMOLISHED IN NEW ELECTRICAL ROOM**



**ROOF FIRE ALARM SYSTEM NEW PLAN**  
SCALE 1/8" : 1'-0"

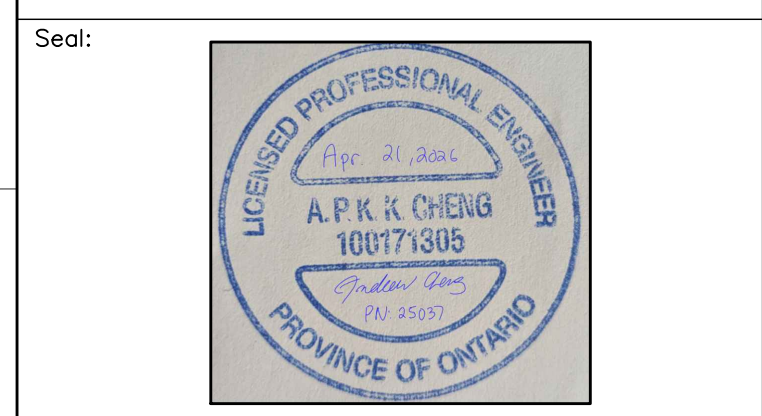


- DEMOLITION KEYNOTES:**
- (A) ELECTRICAL CONTRACTOR TO DEMOLISH THE EXISTING METERING CABINET. ALECTRA TO DEMOLISH THE METER. COORDINATE WITH ALECTRA PRIOR TO STARTING ANY WORK.
  - (B) EXISTING PANEL HAS 30 EXISTING 50A-2P BREAKERS. ONLY TWO ARE SHOWN FOR SIMPLICITY.
  - (C) EXISTING PANEL HAS 20 EXISTING 50A-2P BREAKERS. ONLY TWO ARE SHOWN FOR SIMPLICITY.
  - (D) ELECTRICAL CONTRACTOR TO DEMOLISH EXISTING ALL BREAKER PANELS FEEDING THE SUITES ALONG WITH THE ASSOCIATED WIRING TO THE EXISTING SUITE PANEL IN THE SUITES. EXISTING 100A SUITE PANEL TO REMAIN. ELECTRICAL CONTRACTOR TO DEMOLISH WHAT IS NEEDED TO FACILITATE FOR THE NEW INFRASTRUCTURE TO CONNECT TO THE EXISTING EQUIPMENT TO MINIMIZE DOWNTIME. AFTER THE SUCCESSFUL ENERGIZATION OF THE NEW SYSTEM, COMPLETE THE REST OF THE DEMOLITION WORK.
  - (E) EXISTING 4- #1/0 CORFLEX ALUMINUM CABLE.
  - (F) EXISTING 4- #6 WIRES IN 1 1/4" CONDUIT.
  - (G) EXISTING PANEL IN BASEMENT EAST. EXISTING 50A, 2 POLE MAIN CIRCUIT BREAKERS SERVING EXISTING SUITE PANELS FOR SUITE 8, 9, AND 10 ON EACH FLOOR.
  - (H) EXISTING PANEL IN BASEMENT WEST. EXISTING 50A, 2 POLE MAIN CIRCUIT BREAKERS SERVING EXISTING SUITE PANELS FOR SUITE 1, 2 AND 3 ON EACH FLOOR.
  - (I) EXISTING PANEL 'A' IN ELECTRICAL ROOM. EXISTING 50A, 2 POLE MAIN CIRCUIT BREAKERS SERVING EXISTING SUITE PANELS FOR SUITE 6 AND 7 ON EACH FLOOR.
  - (J) EXISTING PANEL 'B' IN ELECTRICAL ROOM. EXISTING 50A, 2 POLE MAIN CIRCUIT BREAKERS SERVING EXISTING SUITE PANELS FOR SUITE 4 AND 5 ON EACH FLOOR.
  - (K) EXISTING 3- 300MCM CABLE IN 2 1/2" CONDUIT.
  - (L) SUBMETERING COMPANY TO DEMOLISH THE EXISTING SUBMETERING PANELS AND METERING COMPANY TO INSTALL NEW SUB METERING PANELS.

No.	ISSUE	DATE
C.	ISSUED FOR PERMIT	26.04.21
B.	ISSUED FOR TENDER	26.04.16
A.	ISSUED TO ALECTRA UTILITIES	25.09.19

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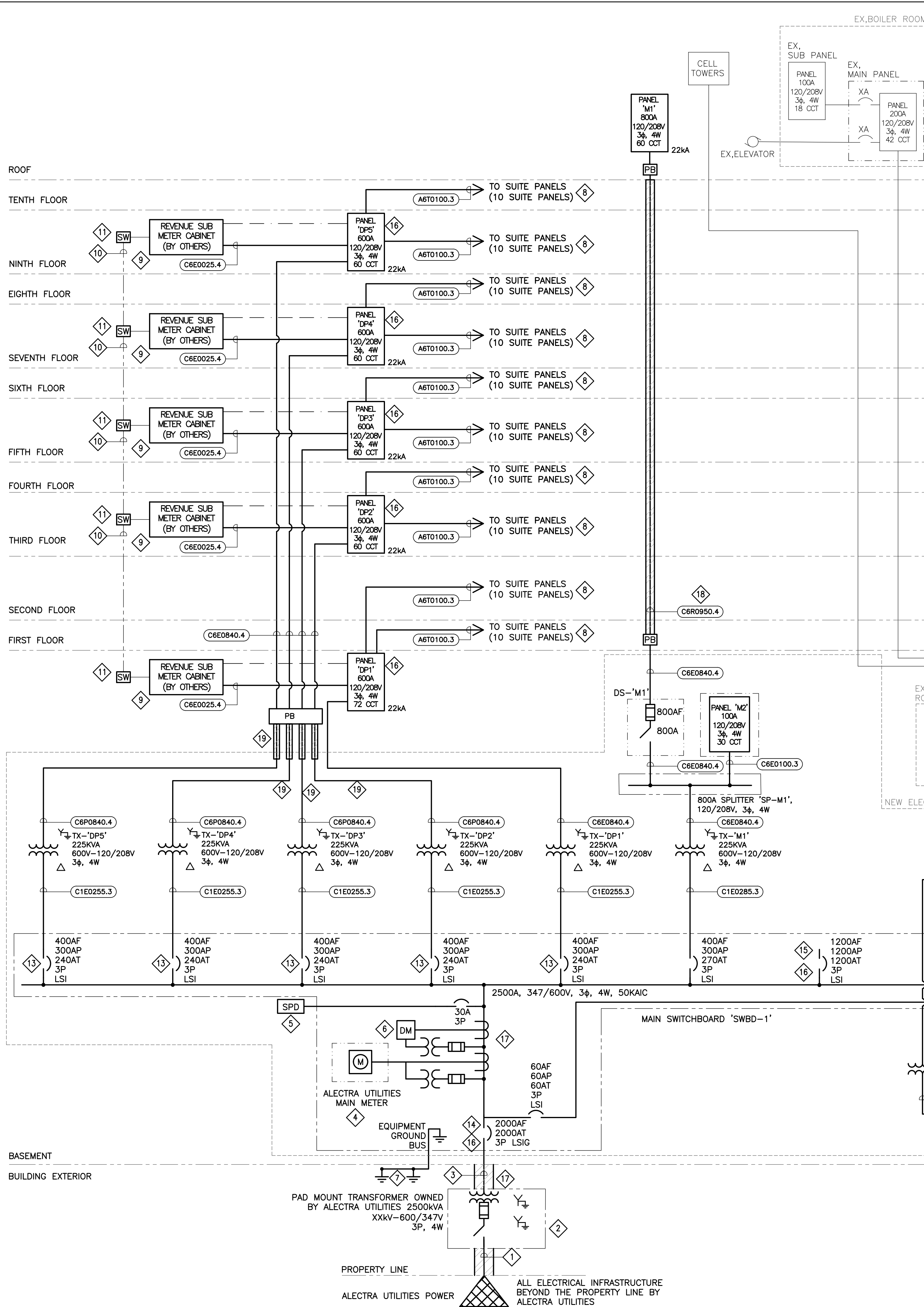
**PROJECT:**  
**1 HAMILTON STREET SOUTH, WATERDOWN SERVICE UPGRADE**

**DRAWING TITLE:**  
**SINGLE LINE DIAGRAM DEMOLITION**

**DRAWN BY:** U.S      **SCALE:** N.T.S.  
**CHECKED BY:** A.P.C      **DATE:** 2026.04.16

**PROJECT No.:** 25037

**DRAWING No.:** **E5.01**



**TABLE 'A6' 600V ALUMINUM RW90XLPE UNJACKETED WIRE & CONDUIT SIZE (PER TABLES 4, 6A, 9E, 9G IN OESC (2024) AMPACITY BASED ON 75°C COLUMN)**

FEEDER NO.	CONDUCTOR + BOND SIZE (AWG OR KCMIL) PER RUN	MAXIMUM FEEDER AMPACITY	NO. OF RUNS	MINIMUM CONDUIT SIZE PER RUN mm (inch.)		
				2 WIRE + BOND	3 WIRE + BOND	4 WIRE + BOND
A6T0100.X	#1AWG	100	1	NA	NA	NA
A6E0155.X	#3/0 + #4AWG	155	1	41 (1½)	53 (2)	53 (2)
A6E0205.X	250kcmil + #2AWG	205	1	53 (2)	53 (2)	63 (2½)
A6E0270.X	400kcmil + #2AWG	270	1	63 (2½)	63 (2½)	78 (3)

**TABLE 'A1' 1000V ALUMINUM RW90XLPE UNJACKETED WIRE & CONDUIT SIZE (PER TABLES 4, 6B, 9E, 9G IN OESC (2024) AMPACITY BASED ON 75°C COLUMN)**

FEEDER NO.	CONDUCTOR + BOND SIZE (AWG OR KCMIL) PER RUN	MAXIMUM FEEDER AMPACITY	NO. OF RUNS	MINIMUM CONDUIT SIZE PER RUN mm (inch.)		
				2 WIRE + BOND	3 WIRE + BOND	4 WIRE + BOND
A1E0065.X	#4AWG + #6AWG	65	1	35 (1½)	35 (1½)	35 (1½)
A1E0075.X	#3AWG + #6AWG	75	1	35 (1½)	35 (1½)	35 (1½)
A1E0090.X	#2AWG + #6AWG	90	1	35 (1½)	35 (1½)	41 (1½)
A1E0410.X	250kcmil + #2AWG	410	2	63 (2½)	63 (2½)	63 (2½)

**TABLE 'C6' 600V COPPER RW90XLPE UNJACKETED WIRE & CONDUIT SIZE (PER TABLES 2, 6A, 9E, 9G IN OESC (2024) AMPACITY BASED ON 75°C COLUMN)**

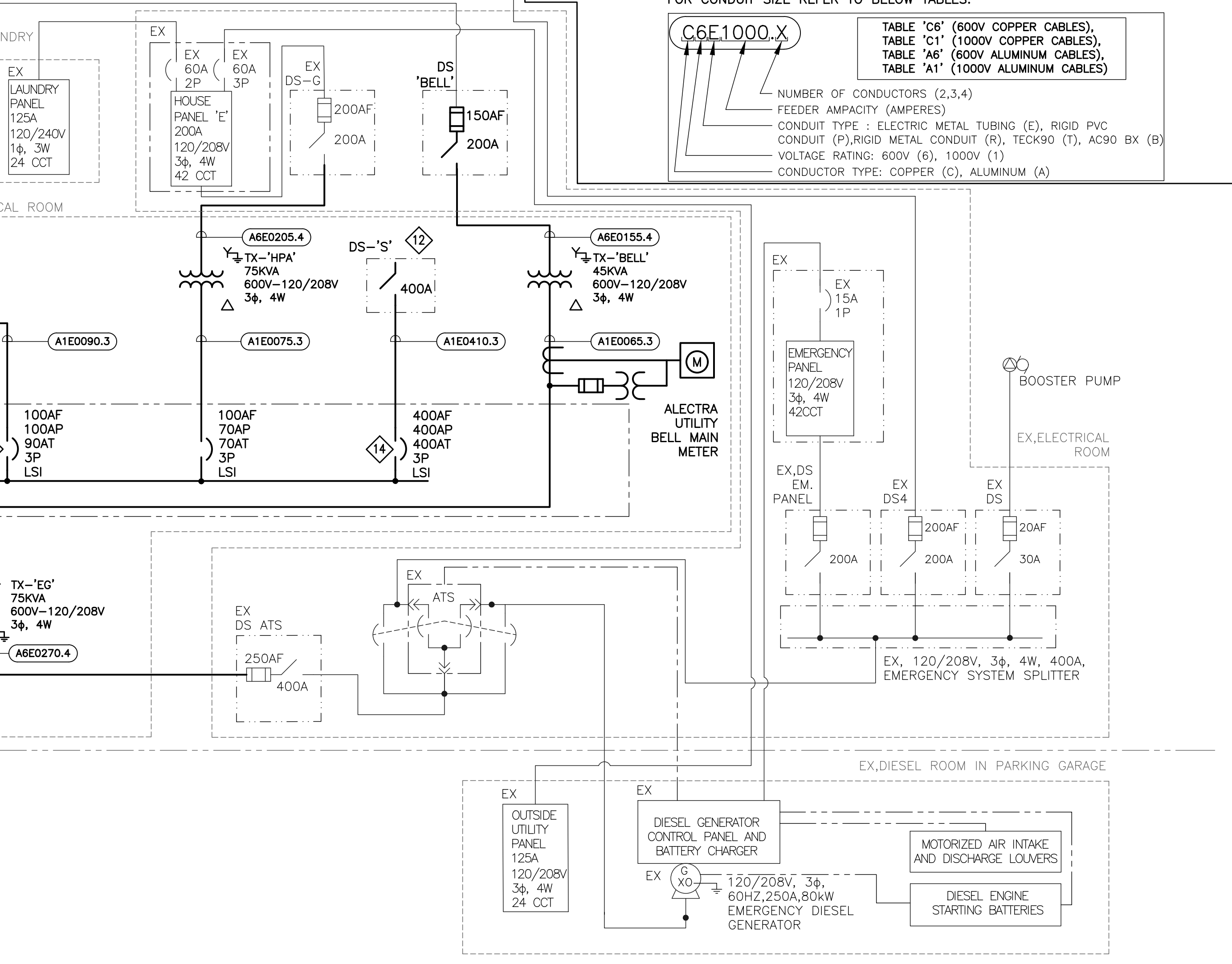
FEEDER NO.	CONDUCTOR + BOND SIZE (AWG OR KCMIL) PER RUN	MAXIMUM FEEDER AMPACITY	NO. OF RUNS	MINIMUM CONDUIT SIZE PER RUN mm (inch.)		
				2 WIRE + BOND	3 WIRE + BOND	4 WIRE + BOND
C6E0025.X	#12AWG + #12AWG	25	1	16 (¾)	16 (¾)	16 (¾)
C6E0100.X	#3AWG + #6AWG	100	1	27 (1)	35 (1½)	35 (1½)
C6E0760.X	500kcmil + #3AWG	760	2	63 (2½)	63 (2½)	78 (3)
C6E0840.X	600kcmil + #2AWG	840	2	78 (3)	78 (3)	91 (3½)
C6R0950.X	750kcmil + #2AWG	950	2	78 (3)	78 (3)	91 (3½)

**TABLE 'C1' 1000V COPPER RW90XLPE UNJACKETED WIRE & CONDUIT SIZE (PER TABLES 2, 6B, 9E, 9G IN OESC (2024) AMPACITY BASED ON 75°C COLUMN)**

FEEDER NO.	CONDUCTOR + BOND SIZE (AWG OR KCMIL) PER RUN	MAXIMUM FEEDER AMPACITY	NO. OF RUNS	MINIMUM CONDUIT SIZE PER RUN mm (inch.)		
				2 WIRE + BOND	3 WIRE + BOND	4 WIRE + BOND
C1E0255.X	250kcmil + #4AWG	255	1	53 (2)	63 (2½)	63 (2½)
C1E0285.X	300kcmil + #4AWG	285	1	63 (2½)	63 (2½)	63 (2½)

- DRAWING KEYNOTES:**
- HYDRO TO SUPPLY AND INSTALL PRIMARY HIGH VOLTAGE CABLES. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL CONCRETE ENCASED DUCTBANK.
  - HYDRO TO SUPPLY AND INSTALL TRANSFORMER AND PRIMARY TERMINATIONS. ELECTRICAL CONTRACTOR TO COMPLETE THE SECONDARY TERMINATIONS AND TO SUPPLY AND INSTALL CONCRETE VAULT, GROUND GRID, GROUND ELECTRODES AND BOLLARDS FOR TRANSFORMER. COORDINATE WITH HYDRO PRIOR TO STARTING ANY WORK.
  - ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL CONCRETE ENCASED SECONDARY DUCTBANK AS SHOWN ON THE SITE PLAN. SUPPLY AND INSTALL SIX (6) PARALLEL RUNS OF 4-1/C #750 MCM CU RW90 + GND RATED CABLE AMPACITY BASED ON OESC TABLE D11A AT 75°C, 374 X 6 = 2244A.
  - HYDRO TO SUPPLY 20"W X 25"H X 6.5"D METER ENCLOSURE, CURRENT TRANSFORMERS (CT) AND POTENTIAL TRANSFORMERS (PT). ELECTRICAL CONTRACTOR TO INSTALL EQUIPMENT. THE REVENUE/BULK METER TO BE SUPPLIED AND INSTALLED BY ALECTRA UTILITIES. REFER TO ALECTRA UTILITIES STANDARD DETAILS 20-0310 ON DRAWING E1.04 FOR DETAILS. ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL 1.25" EMT CONDUIT FROM THE METER ENCLOSURE TO THE MAIN SWITCHBOARD HYDRO METERING CELL. COORDINATE WITH HYDRO PRIOR TO STARTING ON ANY WORK.
  - PROVIDE A 240 kA SURGE PROTECTIVE DEVICE (SPD) COMPLETE WITH SURGE COUNTER. THE SPD SHALL BE OF EXTERNAL TYPE. BREAKER SIZE IS BASED OFF KRKA POWER CUSTOM-BUILT DISTRIBUTION DESIGN SOLUTION'S RECOMMENDATIONS AND DESIGN. SPD TO BE MOUNTED CLOSE TO ITS BREAKER WITH MINIMAL CABLE BENDS. SPD SHALL NOT BE LOCATED OPPOSITE SIDE OR AS FAR AS POSSIBLE FROM THE BREAKER.
  - SUPPLY AND INSTALL FLUSH MOUNTED POWER METER SQUARE-D PM8000 OR EATON POWER XPRT 4000 SERIES C/W COLOR TOUCH DISPLAY FOR POWER, AMPS, VOLTAGE, FREQUENCY, HARMONICS, POWER FACTOR. METER TO HAVE IN BUILT WEB BASED SOFTWARE FOR REMOTE MONITORING AND HAVE ETHERNET PORT FOR CONNECTION TO CLIENT NETWORK.
  - SUPPLY AND INSTALL TWO GROUNDING ELECTRODES SPACED MINIMUM 3m. SUPPLY AND INSTALL #6AWG CU GROUNDING CONDUCTOR WITH ALL REQUIRED ACCESSORIES TO CONNECT MAIN SWITCHBOARD 'SWBD-1' AND GROUND ELECTRODES.
  - REFER TO PANEL SCHEDULES ON DRAWING E5.03 AND E5.04 FOR SUITE PANEL FEED DETAILS.
  - NEW METERING PANEL, NEW CT'S AND NEW WIRING TO BE SUPPLIED AND INSTALLED BY OWNER'S METERING CONTRACTOR.
  - SUPPLY AND INSTALL CAT5E CABLE IN 21mm EMT CONDUIT. LEAVE A LOOP OF 1000mm IN EACH CLOSET.
  - NEW/RELOCATED ETHERNET SWITCH TO BE SUPPLIED AND INSTALLED BY SUBMETERING COMPANY INSIDE TYPICAL ELECTRICAL CLOSET FOR ELECTRICAL SUBMETERING.
  - FOR FUTURE PV SYSTEM. FEED FROM DISCONNECT TO SOLAR EQUIPMENT BY OTHERS (SOLAR ENGINEER).
  - ELECTRICAL CONTRACTOR TO PROVE LABEL TO IDENTIFY MAXIMIZE FUSE SIZE/CIRCUIT PROTECTION.
  - BREAKER TO BE BIDIRECTIONAL RATED. BREAKER TO BE c/w 120V SHUNT.
  - FOR FUTURE NEW BUILDING. FEED TO THE FUTURE BUILDING BY OTHERS.
  - PROVIDE A 100% RATED MAIN BREAKER.
  - ELECTRICAL CONTRACTOR TO ALLOW FOR 1.2m OF CABLE LENGTH FROM WITHIN THE WIREWAY SECTIONS PRIOR TO THE CABLE TERMINATION TO ALLOW FOR OESC TABLE 2 AMPACITY TO APPLY.
  - CABLE AMPACITY BASED ON TABLE 2, 75°C AND TABLE 5A, 40°C AMBIENT 475 X 2 X 0.88 = 836A.
  - TWO PARALLEL RUNS OF 4-1/C 600 MCM + GND BURIED IN 91 mm RIGID SCHEDULE 40 PVC TO THE PULLBOX. UNDERGROUND RATED AMPACITY @ 75°C PER NEHER MCGRATH (IEEE 835) USING ETAP SOFTWARE UNIFORM AMPACITY CALCULATION 314A x 2 = 628A. CALCULATIONS ARE BASED OFF 15 DEGREE C SOIL TEMPERATURE AND FILL RHO OF 120.



C. ISSUED FOR PERMIT	26.04.21
B. ISSUED FOR TENDER	26.04.16
A. ISSUED TO ALECTRA UTILITIES	25.09.19
No. ISSUE	DATE

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**PROJECT:**  
**1 HAMILTON STREET SOUTH, WATERDOWN SERVICE UPGRADE**

**DRAWING TITLE:**  
**SINGLE LINE DIAGRAM NEW**

<b>DRAWN BY:</b> U.S	<b>SCALE:</b> N.T.S.
<b>CHECKED BY:</b> A.P.C	<b>DATE:</b> 2026.04.16
<b>PROJECT No.:</b> 25037	
<b>DRAWING No.:</b> E5.02	

PANEL ID: DP1		MOUNTING: SURFACE										PANEL MAINS: 600 A		
VOLTAGE: 120/208V		LOCATION: BASEMENT ELECTRICAL CLOSET										MAIN BREAKER: 600 A		
PHASE/WIRE: 3PH/4W		FED FROM: 'SWBD-1' & TX-'DP1'										KAIC RATING: 22 KAIC		
DESCRIPTION	BRK SIZE	BRK TYPE	CT (RATIO)	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	CT (RATIO)	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
APARTMENT 001	100A-2P		100:5A	3#1	2950	1	A	2	4450	100:5A	3#1		100A-2P	APARTMENT 201
						3	B	4	4450					
APARTMENT 002	100A-2P		100:5A	3#1	2950	5	C	6	4000	100:5A	3#1		100A-2P	APARTMENT 202
						7	A	8	4000					
APARTMENT 003	100A-2P		100:5A	3#1	2950	9	B	10	4000	100:5A	3#1		100A-2P	APARTMENT 203
						11	C	12	4000					
APARTMENT 004	100A-2P		100:5A	3#1	2950	13	A	14	4000	100:5A	3#1		100A-2P	APARTMENT 204
						15	B	16	4000					
APARTMENT 005	100A-2P		100:5A	3#1	2950	17	C	18	4000	100:5A	3#1		100A-2P	APARTMENT 205
						19	A	20	4000					
APARTMENT 006	100A-2P		100:5A	3#1	2950	21	B	22	4000	100:5A	3#1		100A-2P	APARTMENT 206
						23	C	24	4000					
APARTMENT 007	100A-2P		100:5A	3#1	2950	25	A	26	4000	100:5A	3#1		100A-2P	APARTMENT 207
						27	B	28	4000					
APARTMENT 008	100A-2P		100:5A	3#1	2950	29	C	30	4000	100:5A	3#1		100A-2P	APARTMENT 208
						31	A	32	4000					
APARTMENT 101	100A-2P		100:5A	3#1	4450	33	B	34	4000	100:5A	3#1		100A-2P	APARTMENT 209
						35	C	36	4000					
APARTMENT 102	100A-2P		100:5A	3#1	2950	37	A	38	4450	100:5A	3#1		100A-2P	APARTMENT 210
						39	B	40	4450					
APARTMENT 103	100A-2P		100:5A	3#1	4000	41	C	42	400	-	2#12		15A-1P	ELECTRICAL CLOSET RECEPTACLE
						43	A	44	150					
APARTMENT 104	100A-2P		100:5A	3#1	4000	45	B	46	150	-	4#12		15A-3P	APARTMENTS SUB METER
						47	C	48	150					
APARTMENT 105	100A-2P		100:5A	3#1	4000	49	A	50	150	-	4#12		15A-3P	APARTMENTS SUB METER
						51	B	52	150					
APARTMENT 106	100A-2P		100:5A	3#1	2950	53	C	54	150				15A-1P	SPARE
						55	A	56	400					
APARTMENT 107	100A-2P		100:5A	3#1	4000	57	B	58	600	-	2#12		15A-1P	SUB MET. PANEL RECEPTACLE
						59	C	60						
APARTMENT 108	100A-2P		100:5A	3#1	4450	61	A	62					100A-2P	SPARE
						63	B	64	100					
APARTMENT 109	100A-2P		100:5A	3#1	4450	65	C	66					15A-1P	SPARE
						67	A	68						
APARTMENT 110	100A-2P		100:5A	3#1	4450	69	B	70					15A-1P	SPARE
						71	C	72						
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W): 70100												
** COMBINATION AFCI		LOAD PHASE B (W): 72950										TOTAL LOAD (W): 210800		
*** LOCK ON BREAKER		LOAD PHASE C (W): 67750										TOTAL AMPS (A): 585.1		

PANEL ID: M1		MOUNTING: SURFACE										PANEL MAINS: 800 A				
VOLTAGE: 120/208V		LOCATION: BOILER ROOM-PENTHOUSE										MAIN BREAKER: 800 A				
PHASE/WIRE: 3PH/4W		FED FROM: 'SWBD-1' & TX-'M1'										KAIC RATING: 22 KAIC				
DESCRIPTION	BRK SIZE	BRK TYPE	CT (RATIO)	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	CT (RATIO)	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION		
ASHP-1	200A-3P		100:5A	3#250	17677	1	A	2	3405	3#4	+GND AL TECK90		60A-3P	ERV-1		
						3	B	4	3405							
						5	C	6	3405							
ASHP-2	200A-3P		100:5A	3#250	17677	7	A	8	3405	3#4	+GND AL TECK90		60A-3P	ERV-2		
						9	B	10	3405							
						11	C	12	3405							
P-1	15A-2P	*	2#12	CU	187	13	A	14	6340	3#1	+GND		100A-3P	CU-1		
						15	B	16	6340							
HEAT TRACE	15A-1P		2#12	1200	17	C	18	6340								
REC. ROOF MAINTENANCE. ERV-1	20A-1P		2#12	200	19	A	20	6340								
REC. ROOF MAINTENANCE. ERV-2	20A-1P		2#12	200	21	B	22	6340								
REC. ROOF MAINT. ASHP-1,2	20A-1P		2#12	200	23	C	24	6340								
HWT	90A-3P		3#2	8000	25	A	26	600	2#12				15A-1P	ERV SMOKE DUCT DETECTOR		
					27	B	28	600	2#12				15A-1P	ERV SMOKE DUCT DETECTOR		
					29	C	30	124								
EF-1	15A-3P		3#12	124	31	A	32	124	3#12	CU	TECK 90		15A-3P	EF-6		
					33	B	34	124								
					35	C	36									
EF-2	15A-3P		3#12	248	37	A	38						15A-1P	SPARE		
					39	B	40							15A-1P	SPARE	
					41	C	42							15A-1P	SPARE	
EF-3	15A-3P		3#12	83	43	A	44						20A-1P	SPARE		
					45	B	46							20A-1P	SPARE	
					47	C	48							20A-1P	SPARE	
EF-4	15A-3P		3#12	248	49	A	50							SPACE		
					51	B	52								SPACE	
					53	C	54									SPACE
EF-5	15A-3P		3#12	187	55	A	56							SPACE		
					57	B	58									SPACE
					59	C	60									
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W): 64845														
** COMBINATION AFCI		LOAD PHASE B (W): 64845										TOTAL LOAD (W): 194948				
*** LOCK ON BREAKER		LOAD PHASE C (W): 65258										TOTAL AMPS (A): 541.1				

**DRAWING KEYNOTES:**

- 1 ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL BREAKERS IN THE PANEL TO SERVE THE FUTURE BASEMENT SUITES.

PANEL ID: DP2		MOUNTING: SURFACE										PANEL MAINS: 600 A		
VOLTAGE: 120/208V		LOCATION: THIRD FLOOR ELECTRICAL CLOSET										MAIN BREAKER: 600 A		
PHASE/WIRE: 3PH/4W		FED FROM: 'SWBD-1' & TX-'DP2'										KAIC RATING: 22 KAIC		
DESCRIPTION	BRK SIZE	BRK TYPE	CT (RATIO)	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	CT (RATIO)	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
APARTMENT 301	100A-2P		100:5A	3#1	4700	1	A	2	4250	100:5A	3#1		100A-2P	APARTMENT 406
						3	B	4	4250					
APARTMENT 302	100A-2P		100:5A	3#1	4250	5	C	6	4250	100:5A	3#1		100A-2P	APARTMENT 407
						7	A	8	4250					
APARTMENT 303	100A-2P		100:5A	3#1	4250	9	B	10	4250	100:5A	3#1		100A-2P	APARTMENT 408
						11	C	12	4250					
APARTMENT 304	100A-2P		100:5A	3#1	4250	13	A	14	4250	100:5A	3#1		100A-2P	APARTMENT 409
						15	B	16	4250					
APARTMENT 305	100A-2P		100:5A	3#1	4250	17	C	18	4700	100:5A	3#1		100A-2P	APARTMENT 410
						19	A	20	4700					
APARTMENT 306	100A-2P		100:5A	3#1	4250	21	B	22					100A-2P	SPARE
						23	C	24						
APARTMENT 307	100A-2P		100:5A	3#1	4250	25	A	26	150	-	4#12		15A-3P	APARTMENTS SUB METER
						27	B	28	150					
APARTMENT 308	100A-2P		100:5A	3#1	4250	29	C	30	150					
						31	A	32						
APARTMENT 309	100A-2P		100:5A	3#1	4250	33	B	34					15A-3P	SPARE
						35	C	36						
APARTMENT 310	100A-2P		100:5A	3#1	4700	37	A	38					15A-1P	SPARE
						39	B	40						
APARTMENT 401	100A-2P		100:5A	3#1	4700	41	C	42	400	-	2#12		15A-1P	ELECTRICAL CLOSET RECEPTACLE
						43	A	44						
APARTMENT 402	100A-2P		100:5A	3#1	4250	45	B	46					15A-1P	SPARE
						47	C	48						
APARTMENT 403	100A-2P		100:5A	3#1	4250	49	A	50					20A-1P	SPARE
						51	B	52						
APARTMENT 404	100A-2P		100:5A	3#1	4250	53	C	54						SPACE
						55	A	56						
APARTMENT 405	100A-2P		100:5A	3#1	4250	57	B	58	600	-	2#12		15A-1P	SUB MET. PANEL RECEPTACLE
						59	C	60						
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W): 61450												
** COMBINATION AFCI		LOAD PHASE B (W): 56900										TOTAL LOAD (W): 175050		
*** LOCK ON BREAKER		LOAD PHASE C (W): 56700										TOTAL AMPS (A): 485.9		

PANEL ID: DP3		MOUNTING: SURFACE										PANEL MAINS: 600 A		
VOLTAGE: 120/208V		LOCATION: FIFTH FLOOR ELECTRICAL CLOSET										MAIN BREAKER: 600 A		
PHASE/WIRE: 3PH/4W		FED FROM: 'SWBD-1' & TX-'DP3'										KAIC RATING: 22 KAIC		
DESCRIPTION	BRK SIZE	BRK TYPE	CT (RATIO)	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	CT (RATIO)	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION
APARTMENT 501	100A-2P		100:5A	3#1	4									

PANEL ID: DP4		MOUNTING: SURFACE												PANEL MAINS: 600 A	
VOLTAGE: 120/208V		LOCATION: SEVENTH FLOOR ELECTRICAL CLOSET												MAIN BREAKER: 600 A	
PHASE/WIRE: 3PH/4W		FED FROM: 'SWBD-1' & TX-'DP4'												KAIC RATING: 22 KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	CT (RATIO)	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	CT (RATIO)	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
APARTMENT 701	100A-2P		100:5A	3#1 +GND AL TECK90	4700	1	A	2	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 806	
APARTMENT 702	100A-2P		100:5A	3#1 +GND AL TECK90	4250	5	C	6	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 807	
APARTMENT 703	100A-2P		100:5A	3#1 +GND AL TECK90	4250	9	B	10	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 808	
APARTMENT 704	100A-2P		100:5A	3#1 +GND AL TECK90	4250	13	A	14	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 809	
APARTMENT 705	100A-2P		100:5A	3#1 +GND AL TECK90	4250	17	C	18	4700	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 810	
APARTMENT 706	100A-2P		100:5A	3#1 +GND AL TECK90	4250	21	B	22					100A-2P	SPARE	
APARTMENT 707	100A-2P		100:5A	3#1 +GND AL TECK90	4250	25	A	26	150				15A-3P	APARTMENTS SUB METER	
APARTMENT 708	100A-2P		100:5A	3#1 +GND AL TECK90	4250	29	C	30	150				15A-3P	SPARE	
APARTMENT 709	100A-2P		100:5A	3#1 +GND AL TECK90	4250	33	B	34					15A-1P	SPARE	
APARTMENT 710	100A-2P		100:5A	3#1 +GND AL TECK90	4700	37	A	38					15A-1P	SPARE	
APARTMENT 801	100A-2P		100:5A	3#1 +GND AL TECK90	4700	41	C	42	400				15A-1P	ELECTRICAL CLOSET RECEPTACLE	
APARTMENT 802	100A-2P		100:5A	3#1 +GND AL TECK90	4250	45	B	46					15A-1P	SPARE	
APARTMENT 803	100A-2P		100:5A	3#1 +GND AL TECK90	4250	49	A	50					20A-1P	SPARE	
APARTMENT 804	100A-2P		100:5A	3#1 +GND AL TECK90	4250	53	C	54						SPACE	
APARTMENT 805	100A-2P		100:5A	3#1 +GND AL TECK90	4250	57	B	58	600				15A-1P	SUB MET. PANEL RECEPTACLE	

BRK TYPE: \* GFCI BREAKER      LOAD PHASE A (W): 61450  
 \*\* COMBINATION AFCI      LOAD PHASE B (W): 56900      TOTAL LOAD (W): 175050  
 \*\*\* LOCK ON BREAKER      LOAD PHASE C (W): 56700      TOTAL AMPS (A): 485.9

PANEL ID: DP5		MOUNTING: SURFACE												PANEL MAINS: 600 A	
VOLTAGE: 120/208V		LOCATION: NINTH FLOOR ELECTRICAL CLOSET												MAIN BREAKER: 600 A	
PHASE/WIRE: 3PH/4W		FED FROM: 'SWBD-1' & TX-'DP5'												KAIC RATING: 22 KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	CT (RATIO)	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	CT (RATIO)	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
APARTMENT 901	100A-2P		100:5A	3#1 +GND AL TECK90	4700	1	A	2	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 1006	
APARTMENT 902	100A-2P		100:5A	3#1 +GND AL TECK90	4250	5	C	6	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 1007	
APARTMENT 903	100A-2P		100:5A	3#1 +GND AL TECK90	4250	9	B	10	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 1008	
APARTMENT 904	100A-2P		100:5A	3#1 +GND AL TECK90	4250	13	A	14	4250	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 1009	
APARTMENT 905	100A-2P		100:5A	3#1 +GND AL TECK90	4250	17	C	18	4700	100:5A	3#1 +GND AL TECK90		100A-2P	APARTMENT 1010	
APARTMENT 906	100A-2P		100:5A	3#1 +GND AL TECK90	4250	21	B	22					100A-2P	SPARE	
APARTMENT 907	100A-2P		100:5A	3#1 +GND AL TECK90	4250	25	A	26	150				15A-3P	APARTMENTS SUB METER	
APARTMENT 908	100A-2P		100:5A	3#1 +GND AL TECK90	4250	29	C	30	150				15A-3P	SPARE	
APARTMENT 909	100A-2P		100:5A	3#1 +GND AL TECK90	4250	33	B	34					15A-1P	SPARE	
APARTMENT 910	100A-2P		100:5A	3#1 +GND AL TECK90	4700	37	A	38					15A-1P	SPARE	
APARTMENT 1001	100A-2P		100:5A	3#1 +GND AL TECK90	4700	41	C	42	400				15A-1P	ELECTRICAL CLOSET RECEPTACLE	
APARTMENT 1002	100A-2P		100:5A	3#1 +GND AL TECK90	4250	45	B	46					15A-1P	SPARE	
APARTMENT 1003	100A-2P		100:5A	3#1 +GND AL TECK90	4250	49	A	50					20A-1P	SPARE	
APARTMENT 1004	100A-2P		100:5A	3#1 +GND AL TECK90	4250	53	C	54						SPACE	
APARTMENT 1005	100A-2P		100:5A	3#1 +GND AL TECK90	4250	57	B	58	600				15A-1P	SUB MET. PANEL RECEPTACLE	

BRK TYPE: \* GFCI BREAKER      LOAD PHASE A (W): 61450  
 \*\* COMBINATION AFCI      LOAD PHASE B (W): 56900      TOTAL LOAD (W): 175050  
 \*\*\* LOCK ON BREAKER      LOAD PHASE C (W): 56700      TOTAL AMPS (A): 485.9

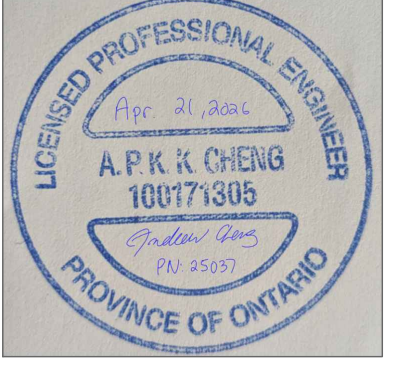

MECHANICAL EQUIPMENT SCHEDULE																	
TAG	EQUIPMENT	LOCATION	MOTOR					STARTER (SUPPLIED BY/INSTALLED BY)		ACCESSORIES (SUPPLIED BY/INSTALLED BY)				FIRE ALARM	COMMENTS		
			VOLTAGE (V)	PHASE	HORSEPOWER (HP)	WATTS (W)	MCA (A)	LOAD FLA (A)	MOCP (A)	PACKAGED STARTER	MANUAL STARTER	COMB. FVNR	VFD			LINE VOLTAGE THERMOSTAT	LOW VOLTAGE THERMOSTAT
ASHP-1,2	HEAT PUMP WATER HEATER	ROOF	208	3			184	200									
HWT	HOT WATER TANK	ROOF	208	3				66.6	90								
P-1	DOMESTIC HOT WATER RECIRC. PUMP	ROOF	208	1	0.5			15									
EF-1	EXHAUST FAN	ROOF	208	3	0.5			15									
EF-2	EXHAUST FAN	ROOF	208	3	1			15									
EF-3	EXHAUST FAN	ROOF	208	3	1/3			15									
EF-4	EXHAUST FAN	ROOF	208	3	1			15									
EF-5	EXHAUST FAN	ROOF	208	3	3/4			15									
EF-6	EXHAUST FAN	ROOF	208	3	1/2			15									
ERV-1,2	ENERGY RECOVERY VENTILATOR	ROOF	208	3			35.44	28.36	60								Y
CU-1,2	CONDENSING UNIT	ROOF	208	3			66	100									
CU-3	SPLIT AC OUTDOOR UNIT	GROUND FLOOR EXTERIOR	208	1				21.9	40								E/E
CU-4	SPLIT AC OUTDOOR UNIT	GROUND FLOOR EXTERIOR	208	1				21.9	40								E/E
AC-1	SPLIT AC INDOOR UNIT	BASEMENT- NEW ELECTRICAL ROOM	208	1			0.63	15									CORRESPONDING OUTDOOR UNIT - 'CU-3'
AC-2	SPLIT AC INDOOR UNIT	BASEMENT- NEW ELECTRICAL ROOM	208	1			0.63	15									CORRESPONDING OUTDOOR UNIT - 'CU-3'
AC-3	SPLIT AC INDOOR UNIT	BASEMENT- NEW ELECTRICAL ROOM	208	1			0.63	15									CORRESPONDING OUTDOOR UNIT - 'CU-4'
AC-4	SPLIT AC INDOOR UNIT	BASEMENT- NEW ELECTRICAL ROOM	208	1			0.63	15									CORRESPONDING OUTDOOR UNIT - 'CU-4'

LEGEND: 'M' DENOTES MECHANICAL CONTRACTOR  
 'E' DENOTES ELECTRICAL CONTRACTOR  
 'G' DENOTES GENERAL CONTRACTOR

PANEL ID: M2		MOUNTING: SURFACE												PANEL MAINS: 100 A	
VOLTAGE: 120/208V		LOCATION: BASEMENT ELECTRICAL ROOM												MAIN BREAKER: 100 A	
PHASE/WIRE: 3PH/4W		FED FROM: TX-'M1' & SPLITTER 'SP-M1'												KAIC RATING: 22 KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION			
CU-3	40A-2P		2#8 +GND	2288	1	A	2	400	2#12		15A-1P	NEW ELEC RM RECEPTACLE			
CU-4	40A-2P		2#8 +GND	2288	5	C	6								
AC-1	15A-2P		2#12 +GND	66	9	B	10								
AC-2	15A-2P		2#12 +GND	66	13	A	14								
AC-3	15A-2P		2#12 +GND	66	15	B	16								
AC-4	15A-2P		2#12 +GND	66	17	C	18								
SPARE	15A-2P			66	19	A	20								
				66	21	B	22								
				66	23	C	24								
				25	A	26									
				27	B	28									
				29	C	30									

BRK TYPE: \* GFCI BREAKER      LOAD PHASE A (W): 5108  
 \*\* COMBINATION AFCI      LOAD PHASE B (W): 2486      TOTAL LOAD (W): 10080  
 \*\*\* LOCK ON BREAKER      LOAD PHASE C (W): 2486      TOTAL AMPS (A): 28.0

GENERAL LIGHTING SCHEDULE												
TYPE	MANUFACTURER	CATALOG NUMBER	DESCRIPTION	VOLTAGE (V)	WATTS (W)	LUMENS	EFFICACY (LUMENS/W)	0-10V DIMMING	COLOUR TEMP(K)	CRI	MOUNTING	COMMENTS
L1	STANPRO	L2STR-48LP40-Q/3C	SURFACE MOUNTED 4' LED LINEAR LIGHT FIXTURE	120	30	4200	140	YES	3500	80	SURFACE	
L2			SURFACE MOUNTED ROUND LIGHT FIXTURE									EXISTING LIGHT FIXTURE
L3			SURFACE MOUNTED 4' LINEAR LIGHT FIXTURE									EXISTING LIGHT FIXTURE

B. ISSUED FOR PERMIT	26.04.21
A. ISSUED FOR TENDER	26.04.16
No. ISSUE	DATE
REVISIONS	
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 <b>CK ENGINEERING INC</b> MECHANICAL   ELECTRICAL 2400 INDUSTRIAL STREET BURLINGTON, ON, L7P 1A5 www.ckengs.com   info@ckengs.net   905.631.1115	
PROJECT: <b>1 HAMILTON STREET SOUTH, WATERDOWN SERVICE UPGRADE</b>	
DRAWING TITLE: <b>SCHEDULES SHEET 2 OF 3</b>	
DRAWN BY: U.S	SCALE: N.T.S.
CHECKED BY: A.P.C	DATE: 2026.04.16
PROJECT No.: 25037	
DRAWING No.:	
<b>E5.04</b>	

EXISTING

PANEL ID: PANEL		MOUNTING: SURFACE										PANEL MAINS: 200 A	
VOLTAGE: 120/208 V		LOCATION: PENTHOUSE – BOILER ROOM										MAIN BREAKER: XXX A	
PHASE/WIRE: 3PH/4W		FED FROM: DISCONNECT SWITCH 4										KAIC RATING: XX KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
SPACE					1	A	2					SPACE	
	60A-2P				3	B	4					20A-1P	
					5	C	6					30A-1P	
					7	A	8					15A-1P	
PUMP #1 – LOWER	30A-3P				9	B	10					15A-1P	
					11	C	12					15A-1P EX8	
					13	A	14					15A-1P EX3, EX4	
PUMP #2 – HIGHER	30A-3P				15	B	16					15A-1P	
					17	C	18					15A-1P EX7	
HEATING	15A-1P				19.1							15A-1P EX2	
BOILER	15A-1P				19.2	A	20					15A-1P	
SPACE					21	B	22					15A-1P EX9	
	15A-1P				23	C	24					15A-1P	
LIGHTING PLUG	20A-1P				25	A	26					15A-1P EX1	
					27	B	28					20A-2P	
BOILER NEW PUMP, WEST BOILER NEW, OLD BOILERS	60A-3P				29	C	30					20A-2P	
					31	A	32						
ELEVATOR	15A-1P				33.1							15A-3P NORTH ROOF UNIT	
	15A-1P				33.2	B	34						
SPACE					35	C	36						
					37	A	38					15A-3P SOUTH ROOF UNIT	
TEKMAR, DHWATER, AST BOILER NEW PUMP, EAST BOILER NEW	100A-3 P				39	B	40						
					41	C	42						
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W):										TOTAL LOAD (W):	
** COMBINATION AFCI		LOAD PHASE B (W):										TOTAL AMPS (A):	
*** LOCK ON BREAKER		LOAD PHASE C (W):										TOTAL AMPS (A):	

EXISTING

PANEL ID: OUTSIDE UTILITY PANEL		MOUNTING: SURFACE										PANEL MAINS: 125 A	
VOLTAGE: 120/208		LOCATION: GENERATOR ROOM										MAIN BREAKER: XXX A	
PHASE/WIRE: 3PH/4W		FED FROM: HOUSE PANEL E										KAIC RATING: XX KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
UNDERGROUND LTG. SOUTH	XA-1P				1	A	2					15A-1P UNDERGROUND LTG. NORTH	
EXT LTG.	XA-1P				3	B	4					15A-1P SOUTH RECEPT.LTG.	
	15A-1P				5	C	6					15A-1P POLE LTG.	
RECEPT.27	15A-1P				7	A	8					15A-1P POLE LTG.	
UNDERGROUND PARKING LTG.	15A-1P				9	B	10					15A-1P DAMPER PANEL	
UNDERGROUND PARKING LTG.	15A-1P				11	C	12					20A-1P HEATER	
SPACE					13	A	14					15A-1P GEN. BLOCK HEATER	
SPACE					15	B	16					15A-2P POOL GFCI	
SPACE					17	C	18						
SPACE					19	A	20					15A-2P	
SPACE					21	B	22						
SPACE					23	C	24					SPACE	
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W):										TOTAL LOAD (W):	
** COMBINATION AFCI		LOAD PHASE B (W):										TOTAL AMPS (A):	
*** LOCK ON BREAKER		LOAD PHASE C (W):										TOTAL AMPS (A):	

EXISTING

PANEL ID: PANEL		MOUNTING: SURFACE										PANEL MAINS: 125 A	
VOLTAGE: 120/240V		LOCATION: LAUNDRY ROOM										MAIN BREAKER: XXX A	
PHASE/WIRE: 1PH/3W		FED FROM: HOUSE PANEL E										KAIC RATING: XX KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
	15A-2P				1	A	2					15A-1P VENTILATION EX. FAN	
					3	B	4					15A-1P	
	15A-2P				5	A	6					15A-1P PLUG	
					7	B	8					15A-1P OLD EXHAUST FAN	
	15A-2P				9	A	10					15A-2P LIGHT	
					11	B	12						
	15A-2P				13	A	14					15A-2P	
					15	B	16						
	20A-1P				17	A	18					20A-1P	
	20A-1P				19	B	20					20A-1P	
SPACE					21	A	22					SPACE	
SPACE					23	B	24					SPACE	
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W):										TOTAL LOAD (W):	
** COMBINATION AFCI		LOAD PHASE B (W):										TOTAL AMPS (A):	
*** LOCK ON BREAKER		LOAD PHASE C (W):										TOTAL AMPS (A):	

EXISTING

PANEL ID: HOUSE PANEL E		MOUNTING: SURFACE										PANEL MAINS: 200 A	
VOLTAGE: 120/208 V		LOCATION: BASEMENT ELECTRICAL ROOM										MAIN BREAKER: XXX A	
PHASE/WIRE: 3PH/4W		FED FROM: DISCONNECT SWITCH G										KAIC RATING: XX KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
LOBBY	15A-1P				1	A	2					15A-1P	
INTERCOM	15A-1P				3	B	4					15A-1P	
	15A-1P				5	C	6					15A-1P	
	15A-1P				7	A	8					15A-1P	
WORKSHOP WASHER	15A-1P				9	B	10					15A-1P	
LOCKER ROOM LIGHTS EAST	15A-1P				11	C	12					15A-1P	
LOCKER ROOM LIGHTS WEST	15A-1P				13	A	14					30A-3P OFFICE AC	
PUMP ROOM AND HALL PLUG	15A-1P				15	B	16					15A-1P	
PLAY ROOMS SOUTH	15A-1P				17	C	18					15A-1P	
CONFERENCE ROOM	15A-1P				19	A	20					60A-3P GENERATOR ROOM PANEL	
OFFICE	15A-1P				21	B	22					15A-1P	
STEAM AND SHOWER ROOMS	15A-1P				23	C	24					60A-2P NEW LAUNDRY ROOM	
PLUG IN ELECTRICAL ROOM	15A-1P				25	A	26					15A-1P	
LOCKER ROOM LIGHTS EAST	15A-1P				27	B	28					40A-2P	
ELECTRICAL ROOM PLUG	15A-1P				29	C	30					15A-1P	
	15A-1P				31	A	32					40A-2P	
					33	B	34						
					35	C	36						
OFFICES	60A-2P				37	A	38					30A-3P WORKSHOP DRYER	
					39	B	40						
CIRCULATING PUMP	15A-3P				41	C	42					SPACE	
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W):										TOTAL LOAD (W):	
** COMBINATION AFCI		LOAD PHASE B (W):										TOTAL AMPS (A):	
*** LOCK ON BREAKER		LOAD PHASE C (W):										TOTAL AMPS (A):	

EXISTING

PANEL ID: EMERGENCY PANEL		MOUNTING: SURFACE										PANEL MAINS: 200 A	
VOLTAGE: 120/208 V		LOCATION: BASEMENT ELECTRICAL ROOM										MAIN BREAKER: XXX A	
PHASE/WIRE: 3PH/4W		FED FROM: DISCONNECT SWITCH G										KAIC RATING: XX KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
GEN. BATTERY	15A-1P				1	A	2					15A-1P BASEMENT HALL LTG, ENTRANCE LTG.	
EMERGENCY LTG. PACK	15A-1P				3	B	4					15A-1P 1ST FLOOR HALL LTG.	
GENERATOR RM. LTG.	15A-1P				5	C	6					15A-1P 2ND FLOOR HALL LTG.	
LOBBY LTG.	15A-1P				7	A	8					15A-1P 3RD FLOOR HALL LTG.	
EAST HALL PLUGS(1-10)	15A-1P				9	B	10					15A-1P 4TH FLOOR HALL LTG.	
WEST HALL PLUGS(1-10)	15A-1P				11	C	12					15A-1P 5TH FLOOR HALL LTG.	
CENTER HALL PLUGS(1-10)	15A-1P				13	A	14					15A-1P 6TH FLOOR HALL LTG.	
EXIT LTS. (EAST)	15A-1P				15	B	16					15A-1P 7TH FLOOR HALL LTG.	
STAIRWAY LTS. (EAST)	15A-1P				17	C	18					15A-1P 8TH FLOOR HALL LTG.	
					19	A	20					15A-1P 9TH FLOOR HALL LTG.	
FIRE PUMP POWER SUPPLY	70A-3P				21	B	22					15A-1P 10TH FLOOR HALL LTG.	
					23	C	24					15A-1P ELEVATOR PIT	
LTG. INFRONT OF ELEVATOR	15A-1P				25	A	26					15A-1P FIRE ALARM PANEL	
EXIT LTG. (WEST)	15A-1P				27	B	28					15A-1P ELECTRICAL ROOM LTG.	
STAIRWAY LTG. (WEST)	15A-1P				29	C	30					15A-1P	
OFFICE LTG./COMP.(APT)	15A-1P				31	A	32					15A-1P KEYCORD MODULE PLUGS	
LTG. INFRONT OF ELEVATOR(B-4)	15A-1P				33	B	34					15A-1P ISO GRD	
ISO. GRD-OFFICE	15A-1P				35	C	36					30A-1P	
ISO. GRD-RECEPTION OFFICE	15A-1P				37	A	38					30A-1P VOLTAGE SURGE SUPPRESSOR	
ISO. GRD-OFFICE	15A-1P				39	B	40					30A-1P	
ISO. GRD-OFFICE	15A-1P				41	C	42					20A-1P DOOR OPERATORS	
BRK TYPE: * GFCI BREAKER		LOAD PHASE A (W):										TOTAL LOAD (W):	
** COMBINATION AFCI		LOAD PHASE B (W):										TOTAL AMPS (A):	
*** LOCK ON BREAKER		LOAD PHASE C (W):										TOTAL AMPS (A):	

EXISTING

PANEL ID: PANEL		MOUNTING: SURFACE										PANEL MAINS: 100 A	
VOLTAGE: 120/208V		LOCATION: PENTHOUSE- BOILER ROOM										MAIN BREAKER: XXX A	
PHASE/WIRE: 3PH/4W		FED FROM: BOILER ROOM PANEL										KAIC RATING: XX KAIC	
DESCRIPTION	BRK SIZE	BRK TYPE	WIRE SIZE	LOAD	CCT	BUS	CCT	LOAD	WIRE SIZE	BRK TYPE	BRK SIZE	DESCRIPTION	
SPACE					1	A	2					20A-1P PANEL PLUG	
					3	B	4					15A-1P TKMR	
TEMP SWING STAGE 1	30A-2P				5	C	6					15A-1P H3	
					7	A	8					20A-1P H2	
TEMP SWING STAGE 2	30A-2P				9	B	10					20A-1P H1	
					11	C	12					20A-1P	
TEMP SWING STAGE 3	30A-2P				13	A	14					20A-1P W2	
					15	B	16					20A-1P W3	