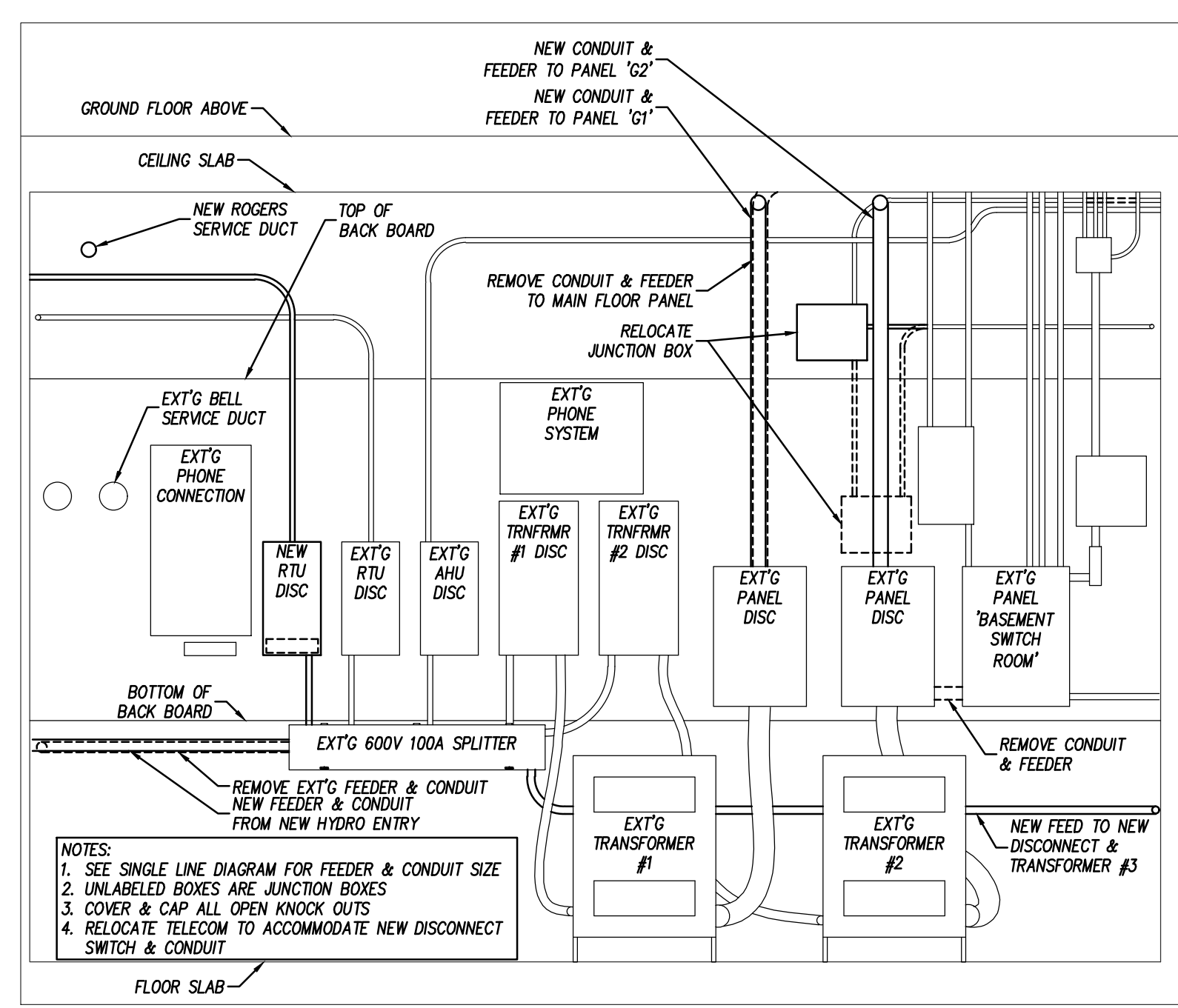
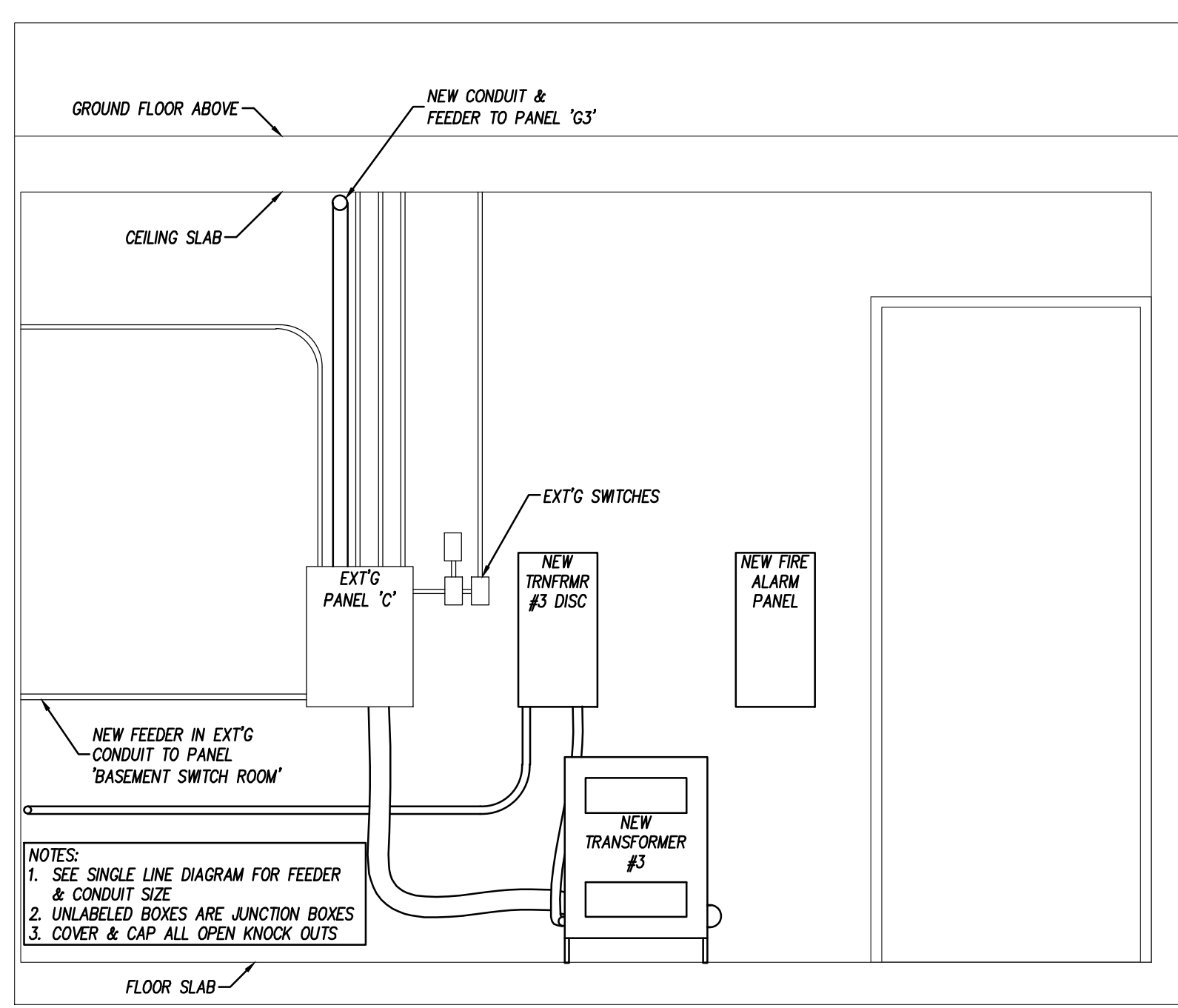


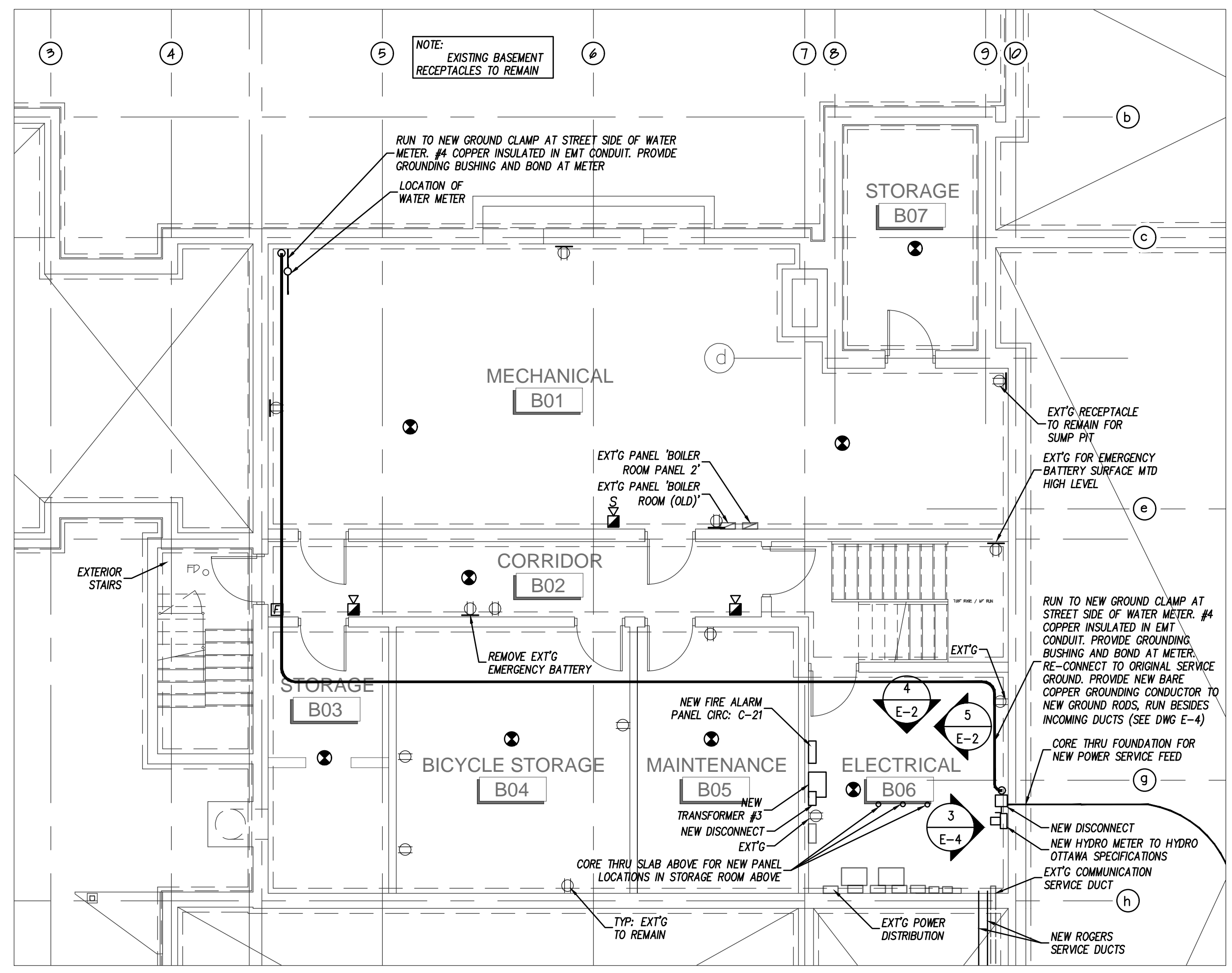
3 PROPOSED BASEMENT LIGHTING PART PLAN
E-2 SCALE: 1:75



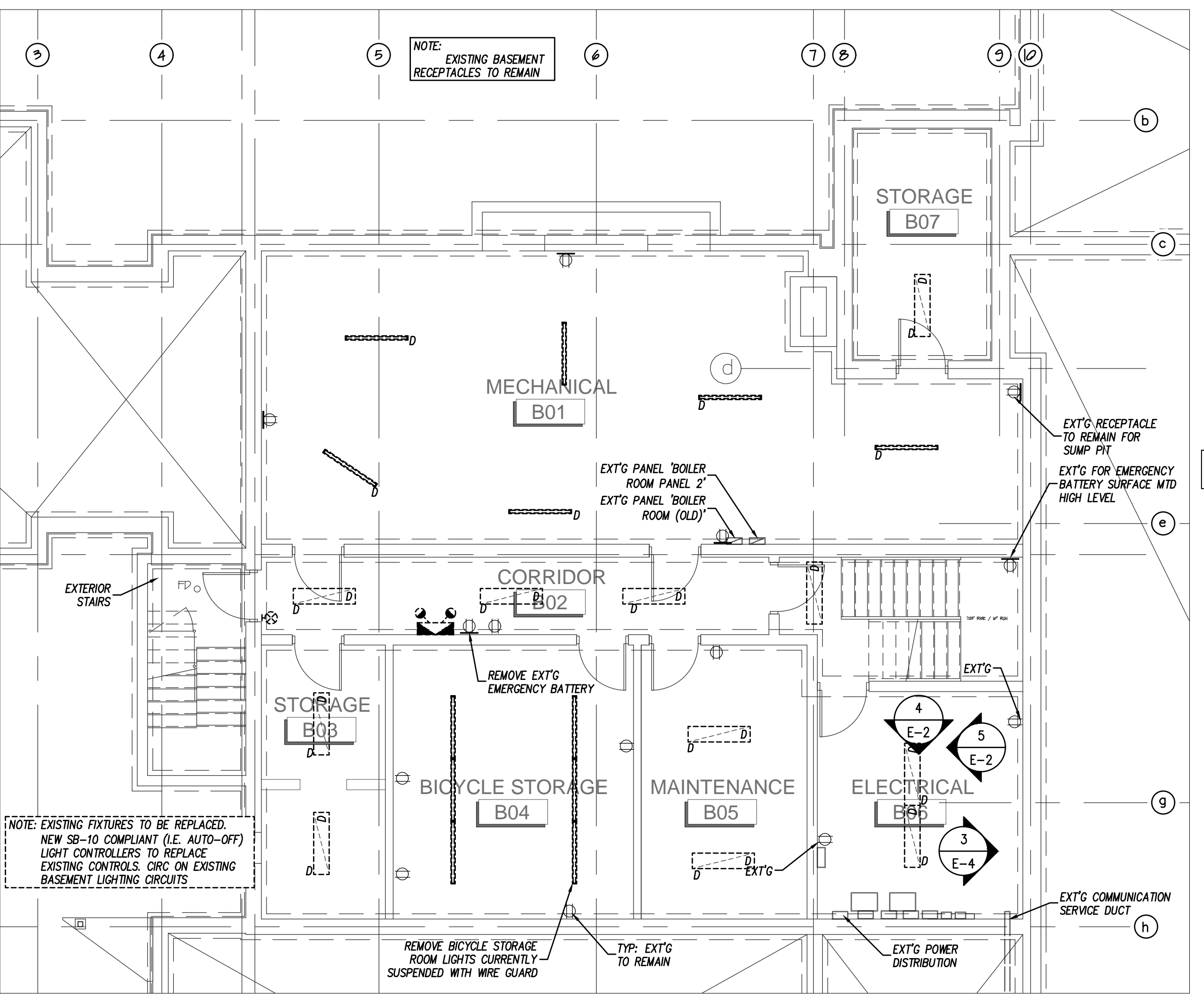
4 ELECTRICAL ROOM ELEVATION-1
E-2 SCALE: 1:20



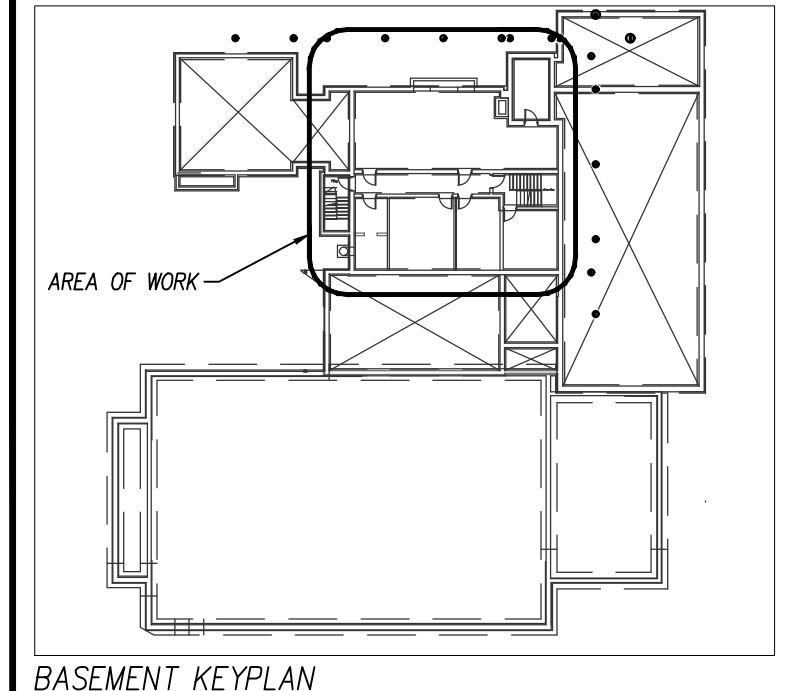
5 ELECTRICAL ROOM ELEVATION-2
E-2 SCALE: 1:20



2 PROPOSED BASEMENT POWER & SYSTEMS PART PLAN
E-2 SCALE: 1:75

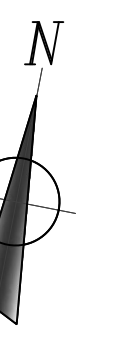


1 BASEMENT POWER & LIGHTING DEMOLITION PART PLAN
E-2 SCALE: 1:75



BASEMENT KEYPLAN

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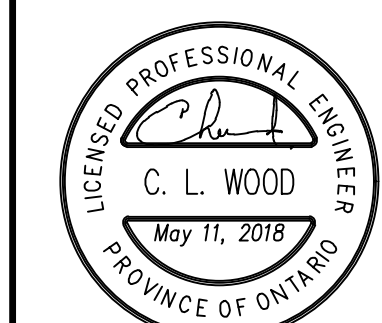
NO.	REVISIONS	DATE
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5.	ISSUED FOR LIGHTING SUBSIDY	2018-01-25
4.	ISSUED FOR PRICING	2017-12-22
3.	ISSUED FOR BUILDING PERMIT (PHASE 2)	2017-10-26
2.	ISSUED FOR BUILDING PERMIT (PHASE 1)	2017-10-10
1.	ISSUED FOR REVIEW/COORDINATION	2017-10-05

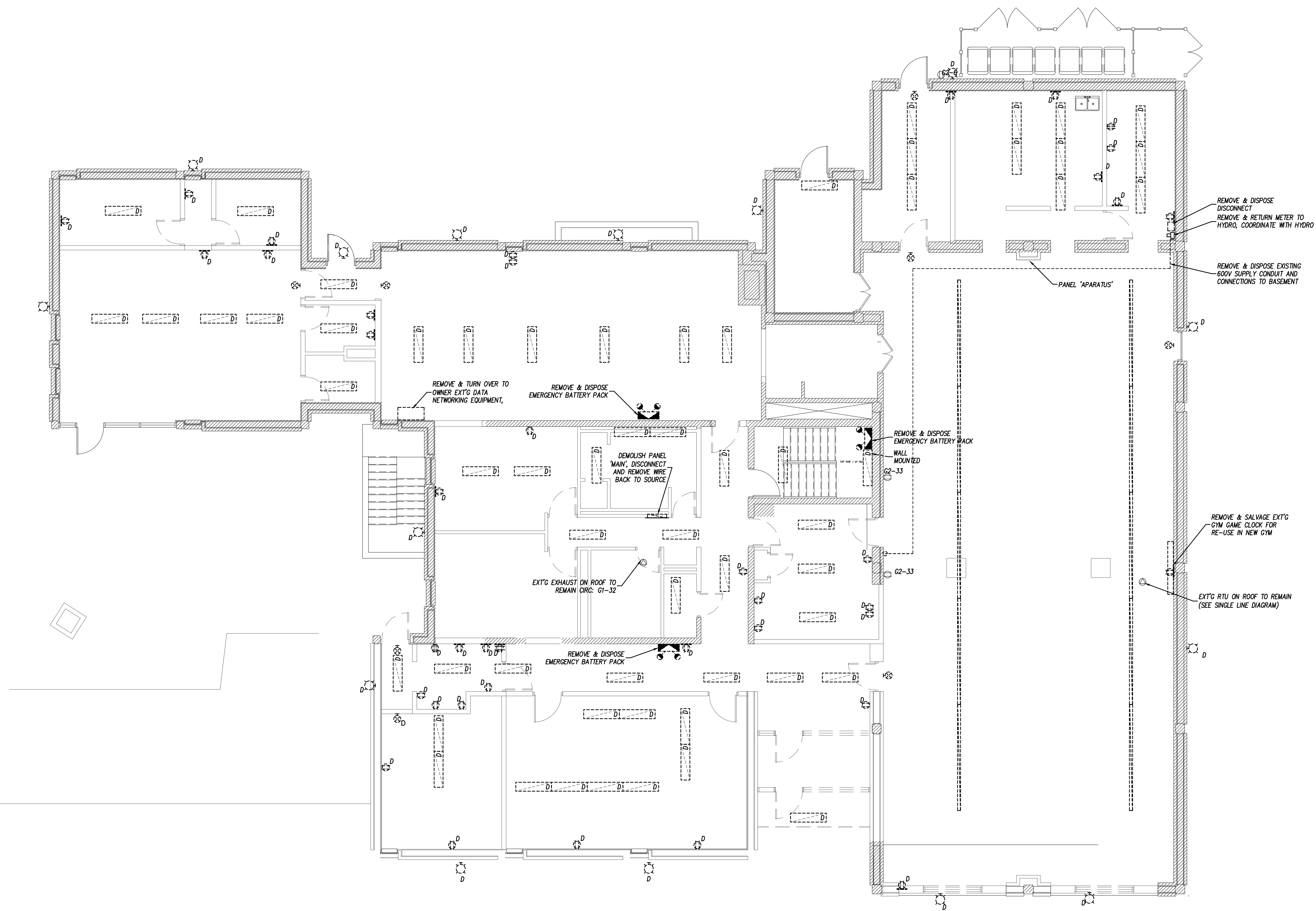
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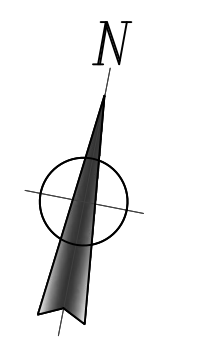
PROJECT: Boys & Girls Club Renovation
Price of Wales Clubhouse
DRAWING: BASEMENT PART PLANS, DEMOLITION & NEW POWER & LIGHTING

DATE	SCALE
11-May-18	AS NOTED
DRAWN BY: MAG	DESIGNED BY: CLW
JOB NO.: 2017-017	CHECKED BY: CLW
DRAWING NO.:	





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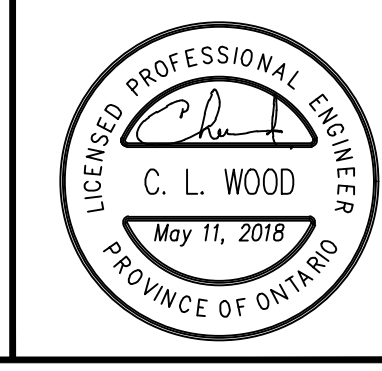
BEKOLAY & Associates Ltd.
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 TEL: 613-723-0474 FAX: 613-723-0884
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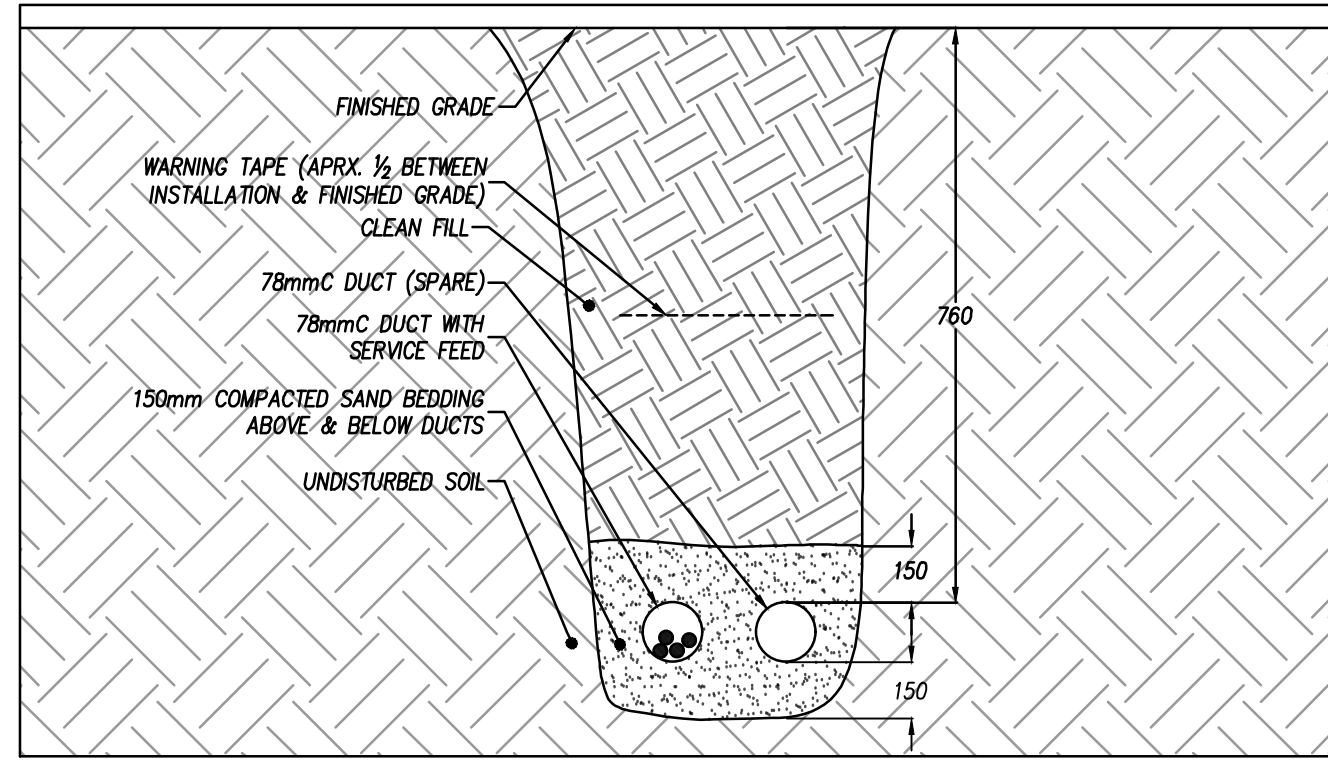
NOTE: GROUND FLOOR DEMOLITION WORK COVERED WITH PHASE 1 (RENOVATION). PLANS PROVIDED WITH PHASE 2 (ADDITION) TO PROVIDE INFORMATION FOR DEMOLITION OF DEVICES ON SOUTH WALL (WALLS BEING REMOVED)

1 GROUND FLOOR POWER & LIGHTING DEMOLITION PLAN
 E-3 1:75

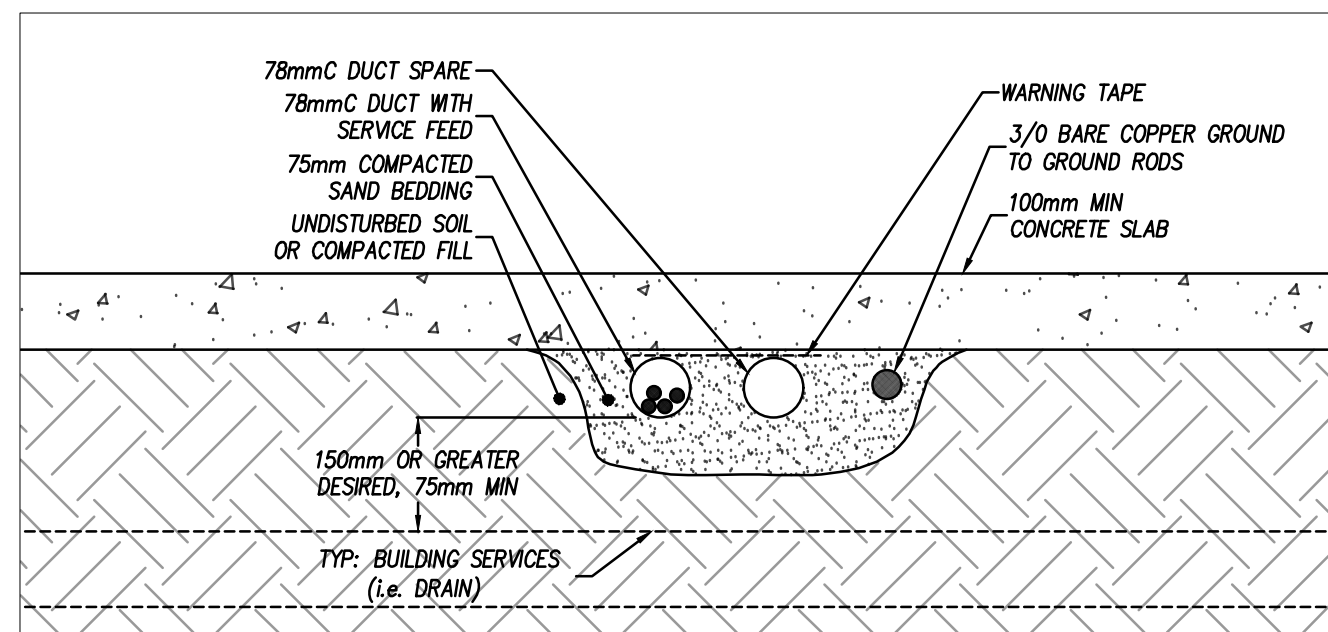
PROJECT: Boys & Girls Club Renovation Prince of Wales Club House
 DRAWING: Ground Floor Power & Lighting Demolition Plan

DATE	SCALE
11-May-18	AS NOTED
DRAWN BY: MAG	DESIGNED BY: CLW
JOB NO.: 2017-17	CHECKED BY: CLW
DRAWING NO.	

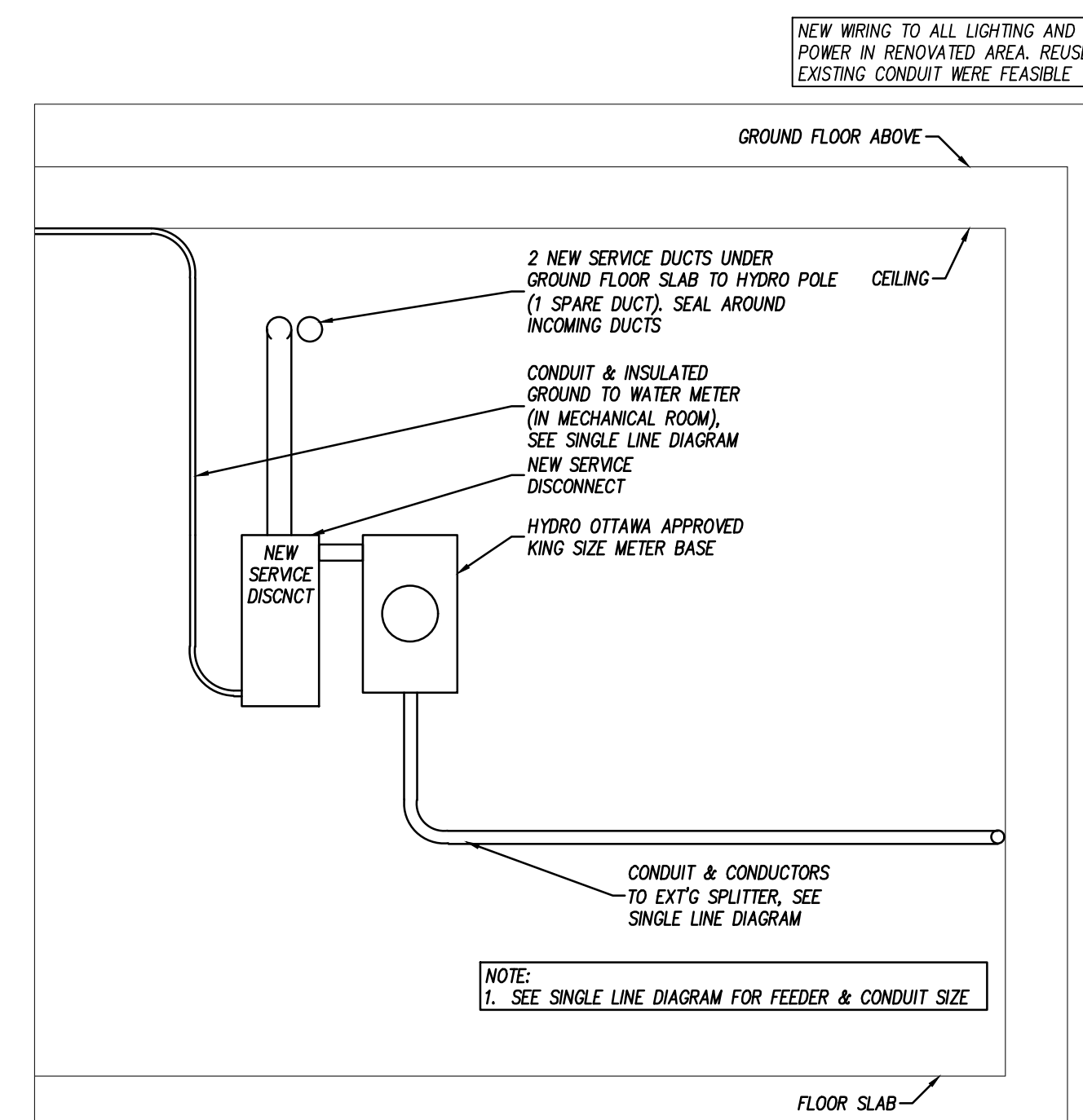




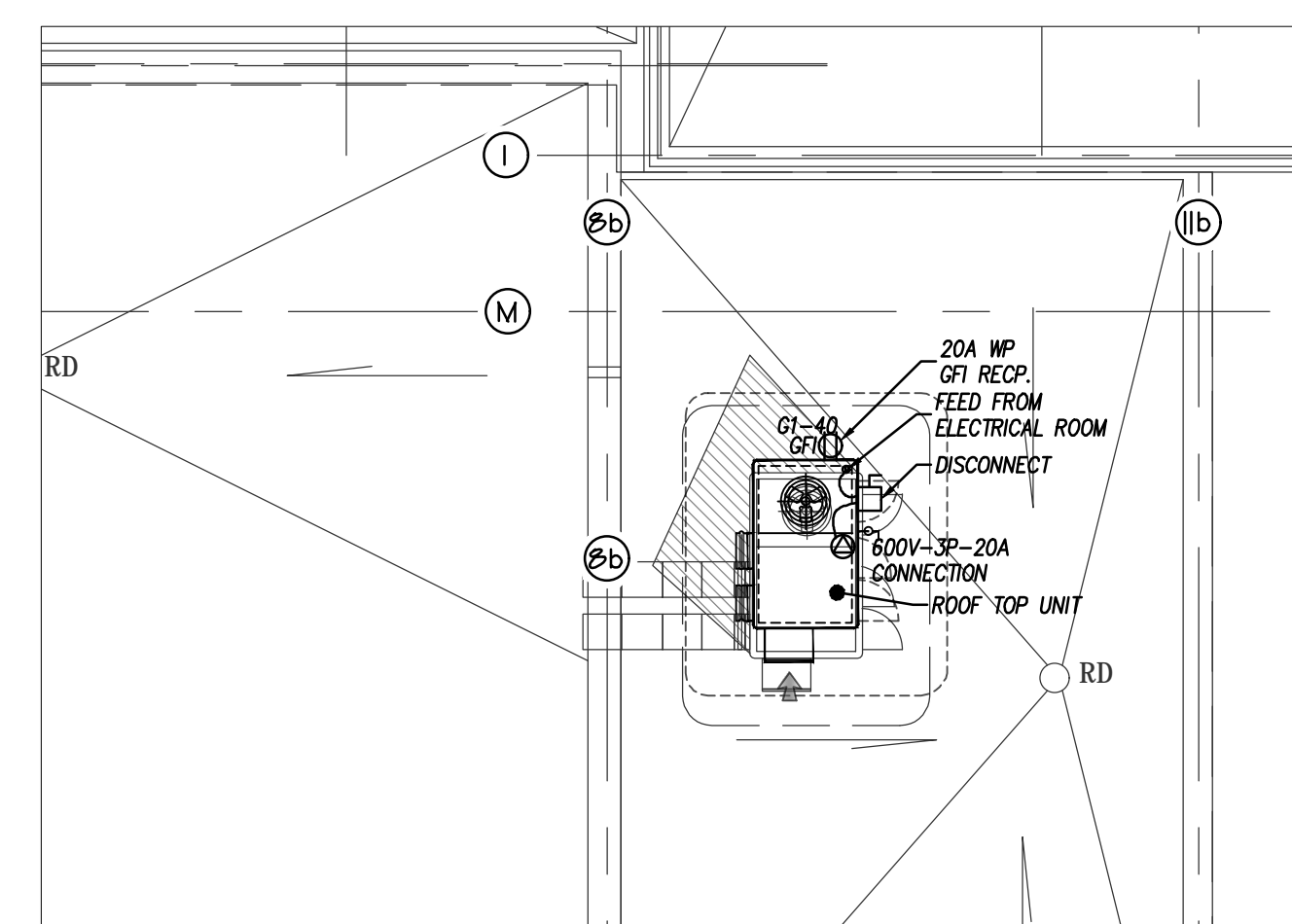
5 BELOW GRADE SERVICE FEED
1:10



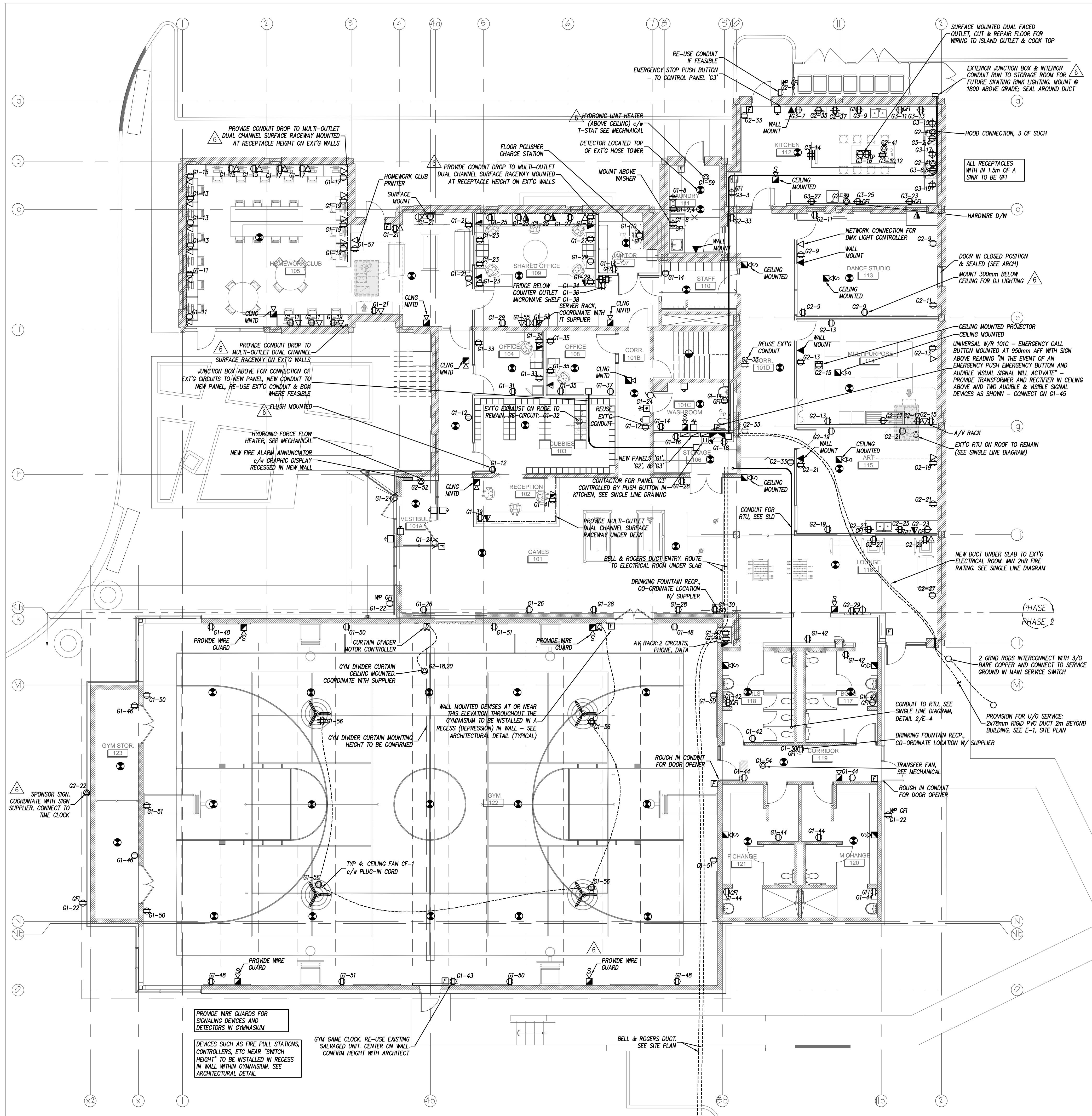
4 UNDER FLOOR SLAB SERVICE FEED
1:10



3 ELECTRICAL ROOM ELEVATION-3
1:20

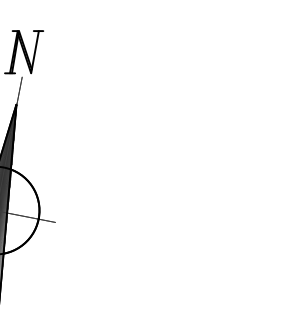


2 GYM RTU OVER CHANGE ROOMS
1:10



1 GROUND FLOOR POWER & SYSTEMS PLAN
1:10

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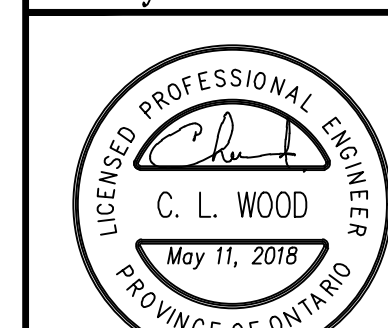
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3.	ISSUED FOR BLDG PERMIT REVISION	2017-12-20
2.	ISSUED FOR BUILDING PERMIT (PHASE 2)	2017-10-26
1.	ISSUED FOR REVIEW/COORDINATION	2017-10-05

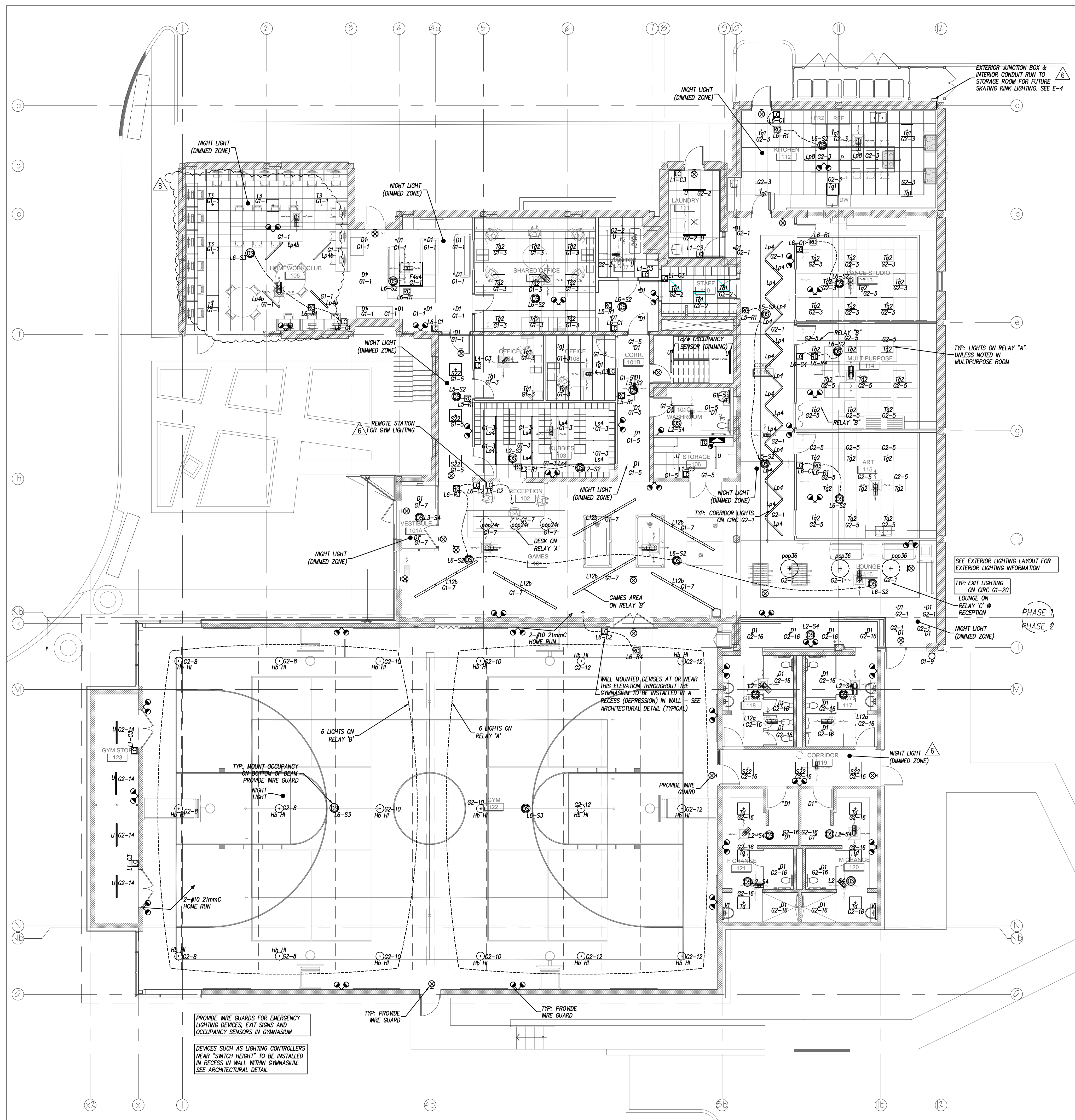
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PROJECT: Boys and Girls Club
Prince of Wales Clubhouse
DRAWING: Proposed Ground Floor Power & Systems Plan

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NEW WIRING TO ALL LIGHTING AND POWER IN RENOVATED AREA. REUSE EXISTING CONDUIT WHERE FEASIBLE.

SIZE EMERGENCY LIGHTING CONDUCTORS IN ACCORDANCE WITH ONTARIO ELECTRICAL CODE TABLE D4

PROVIDE WIRE GUARDS FOR EMERGENCY LIGHTING DEVICES, EXIT SIGNS AND OCCUPANCY SENSORS IN GYMNASIUM

DEVICES SUCH AS LIGHTING CONTROLLERS NEAR "SWITCH HEIGHT" TO BE INSTALLED IN RECESS IN WALL WITHIN GYMNASIUM. SEE ARCHITECTURAL DETAIL

EXTERIOR JUNCTION BOX & INTERIOR CONDUIT RUN TO STORAGE ROOM FOR FUTURE SKATING RINK LIGHTING. SEE E-4

TYP: LIGHTS ON RELAY "A" UNLESS NOTED IN MULTIPURPOSE ROOM

SEE EXTERIOR LIGHTING LAYOUT FOR EXTERIOR LIGHTING INFORMATION

TYP: EXIT LIGHTING ON CIRC G2-20

LOUNGE ON RELAY "C" RECEPTION

NIGHT LIGHT (DIMMED ZONE)

PHASE 1

PHASE 2

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

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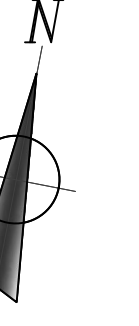
NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

NIGHT LIGHT (DIMMED ZONE)

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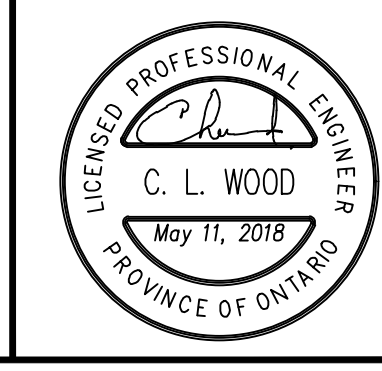
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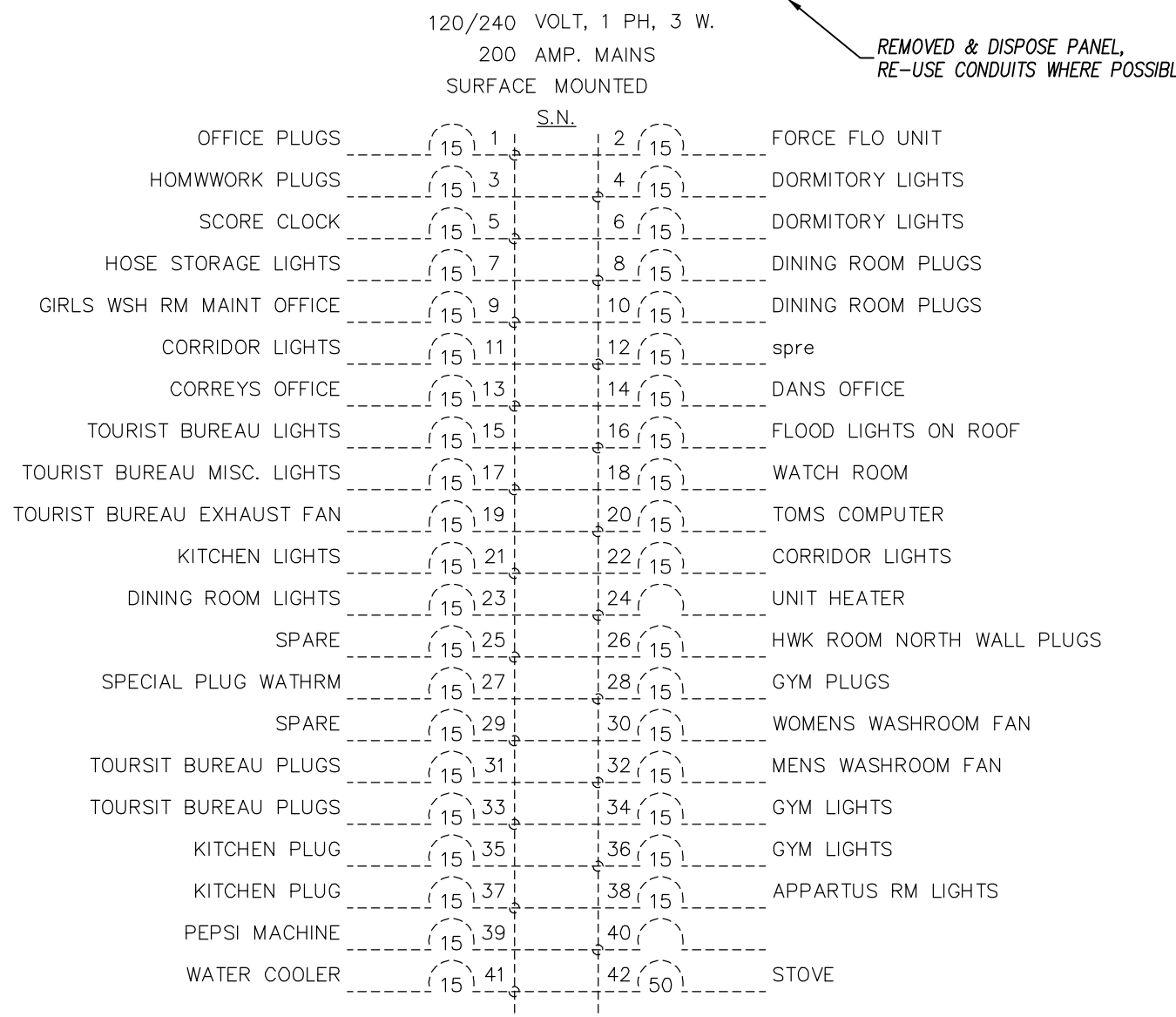
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PROJECT: Boys & Girls Club Renovation
 Prince of Wales Clubhouse
 DRAWING: Proposed Ground Floor Lighting Plan

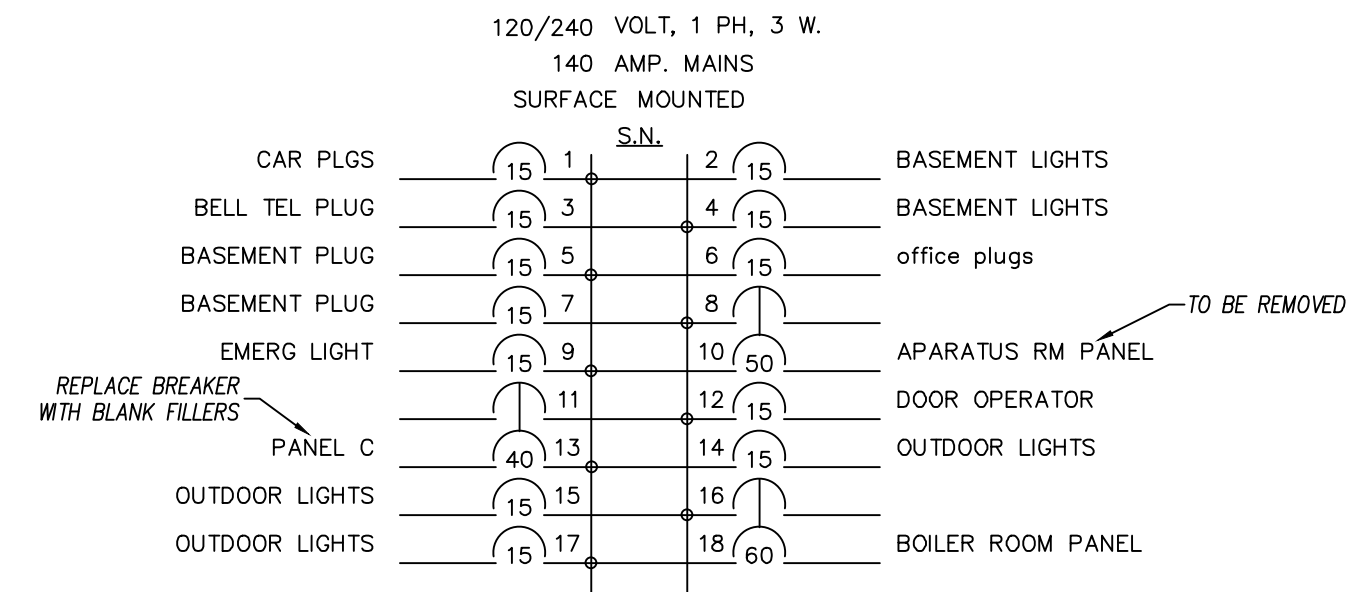
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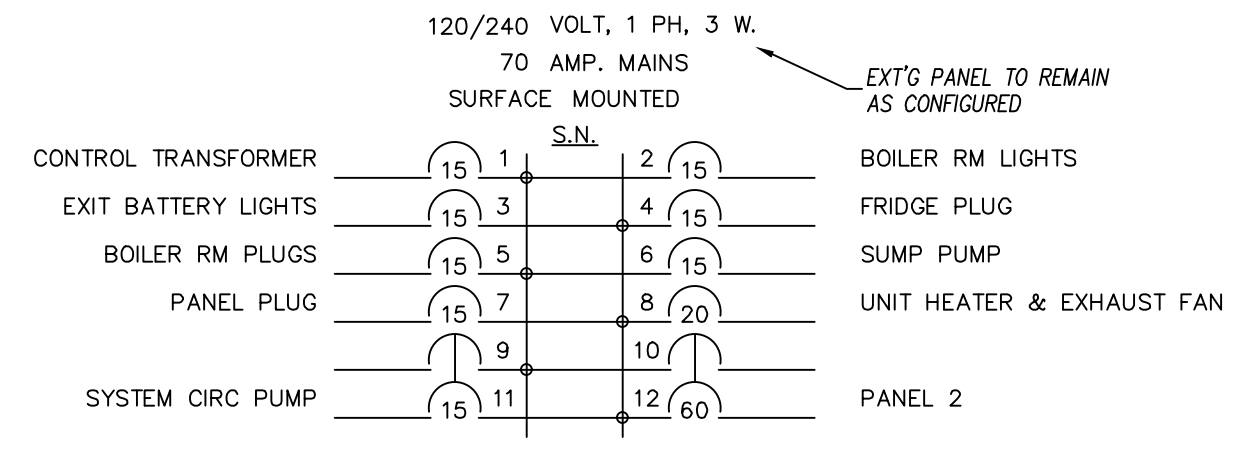
PANEL MAIN FLOOR PANEL



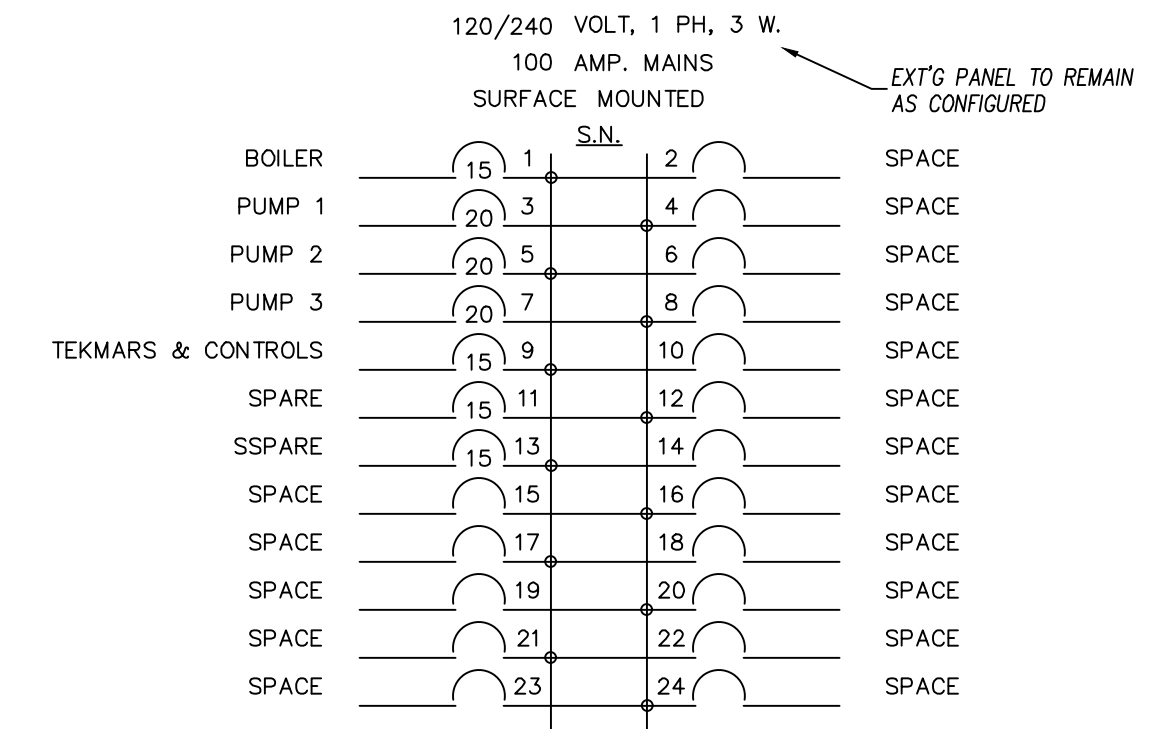
PANEL BASEMENT SWITCH ROOM



PANEL BOILER ROOM (OLD)

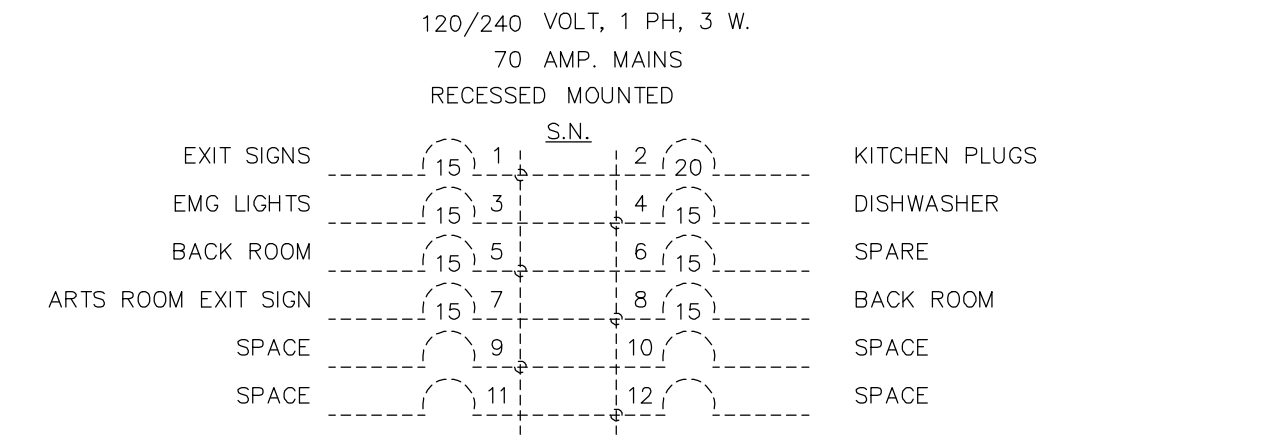


PANEL 2 - BOILER RM

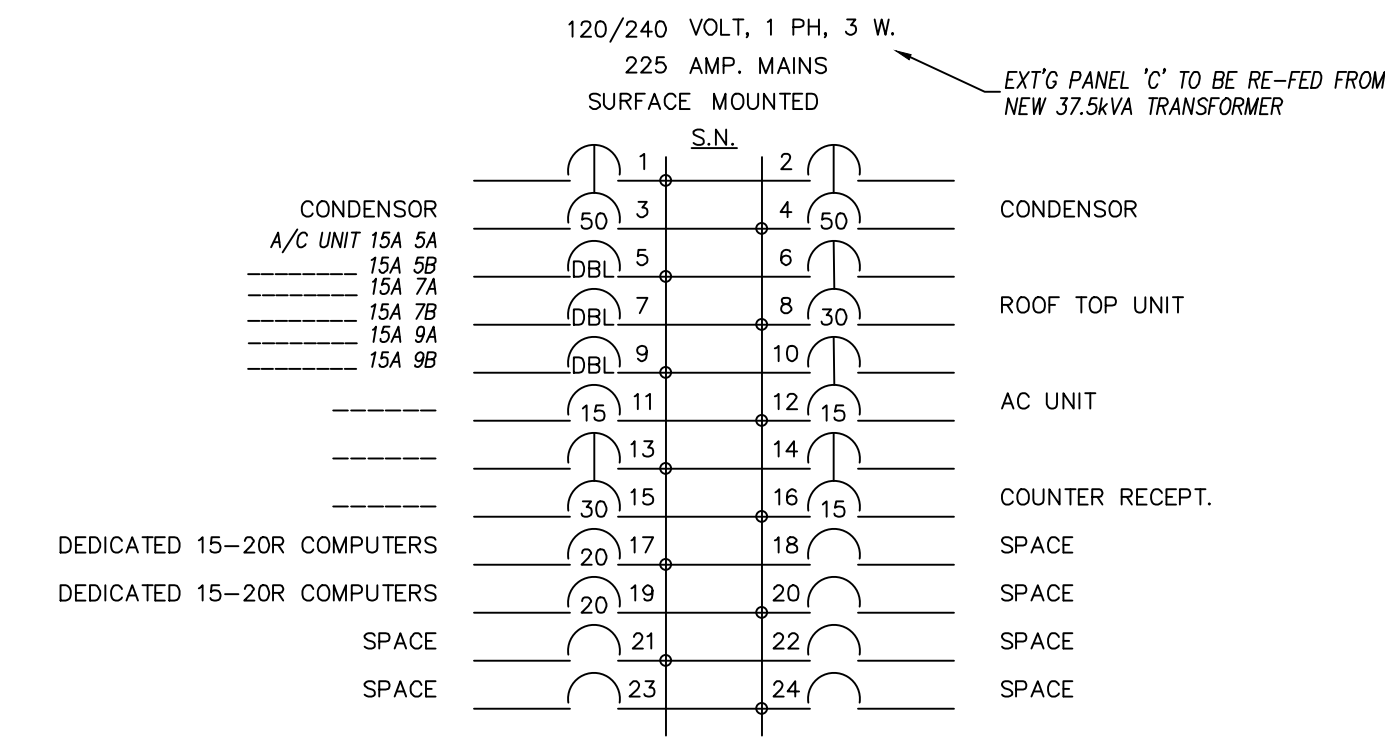


NEW WIRING TO ALL LIGHTING AND POWER IN RENOVATED AREA, REUSE EXISTING CONDUIT WHERE FEASIBLE

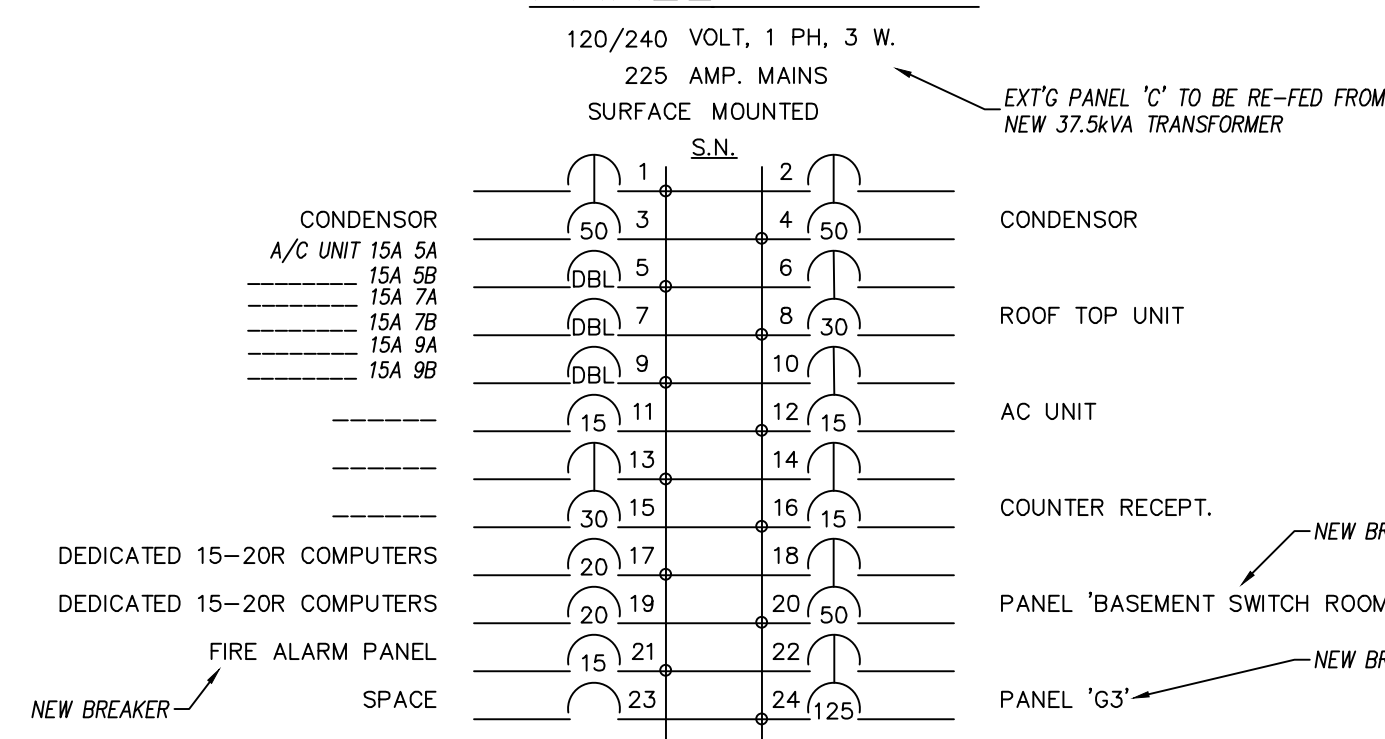
PANEL APARATUS RM



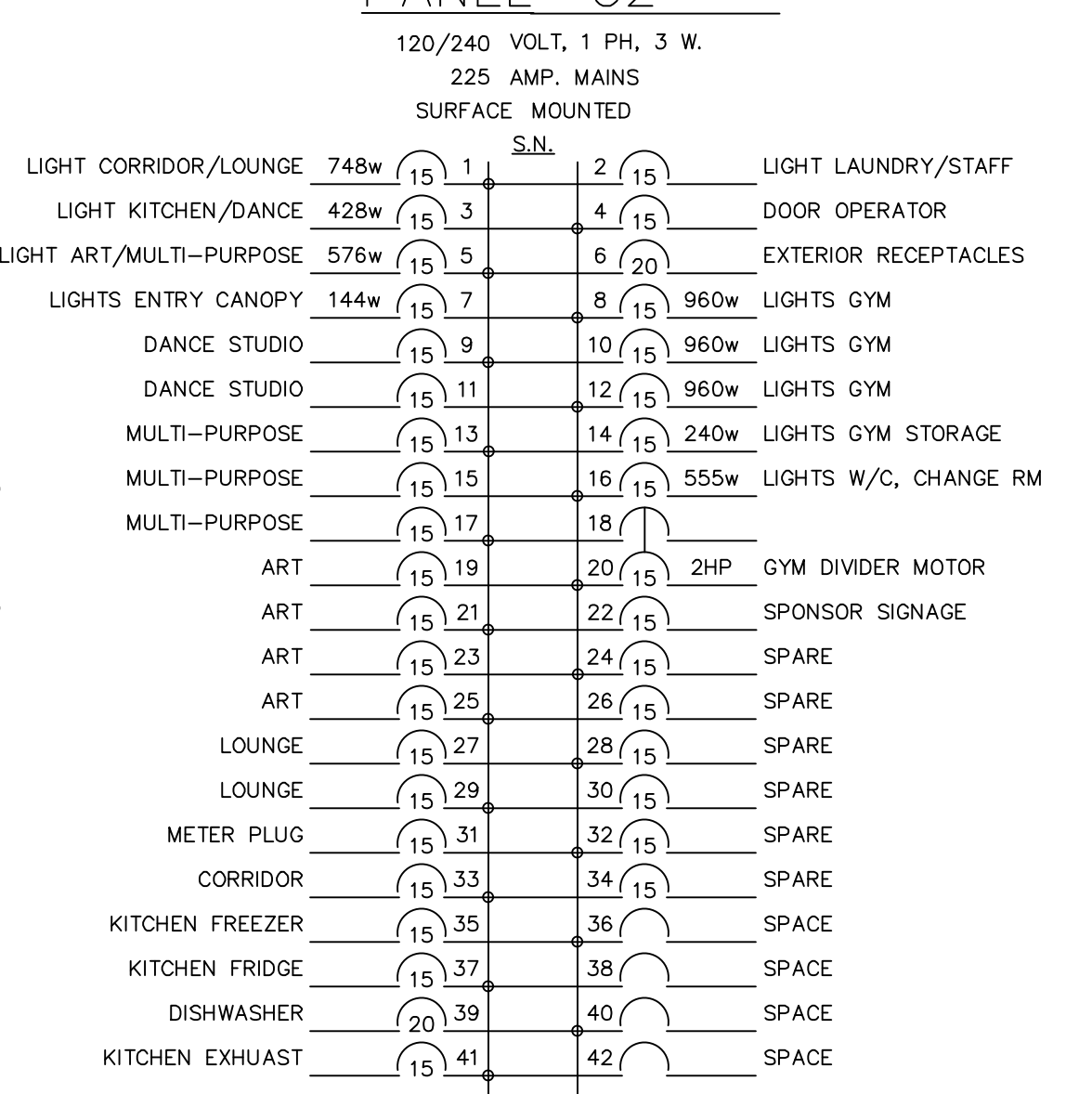
PANEL 'C' EXT'G



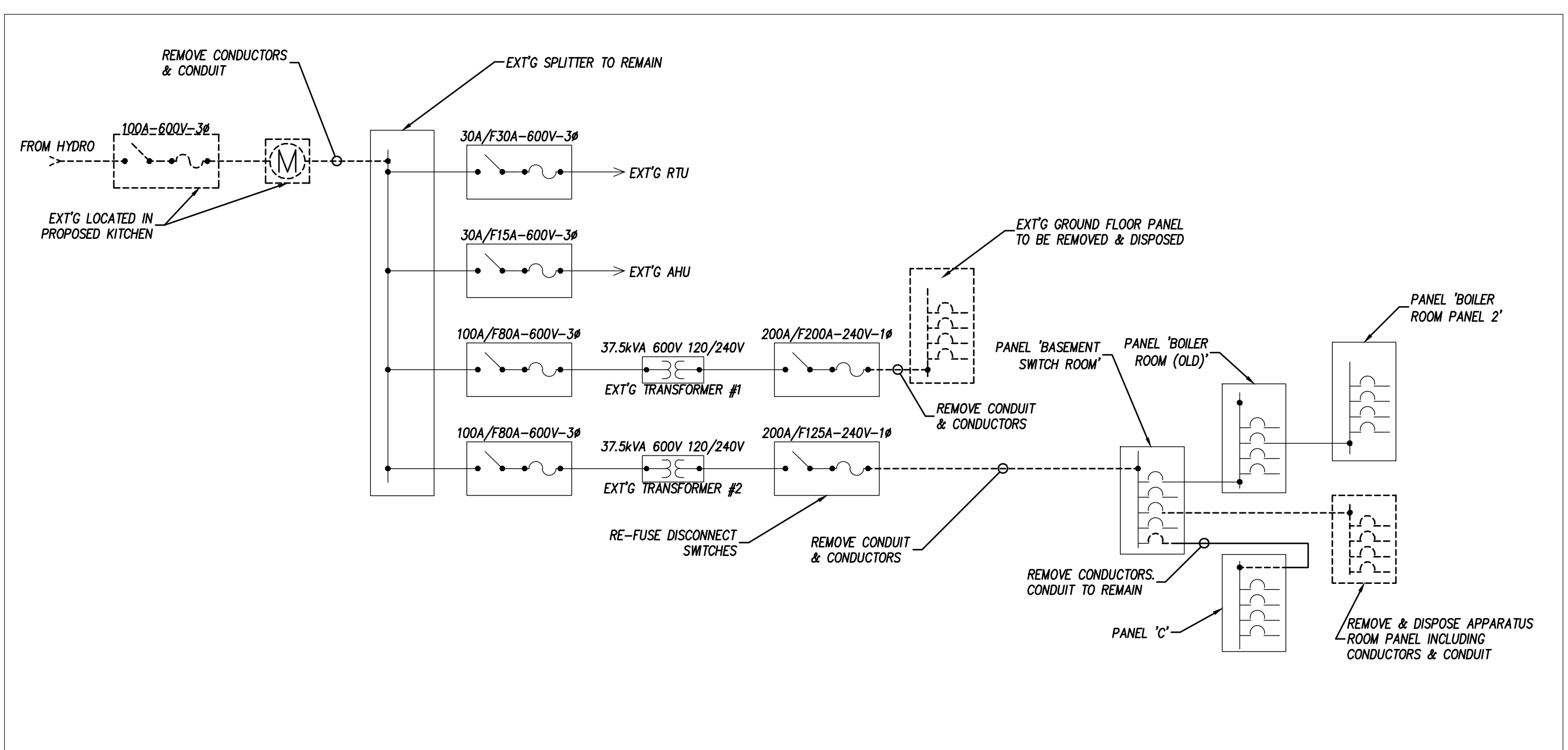
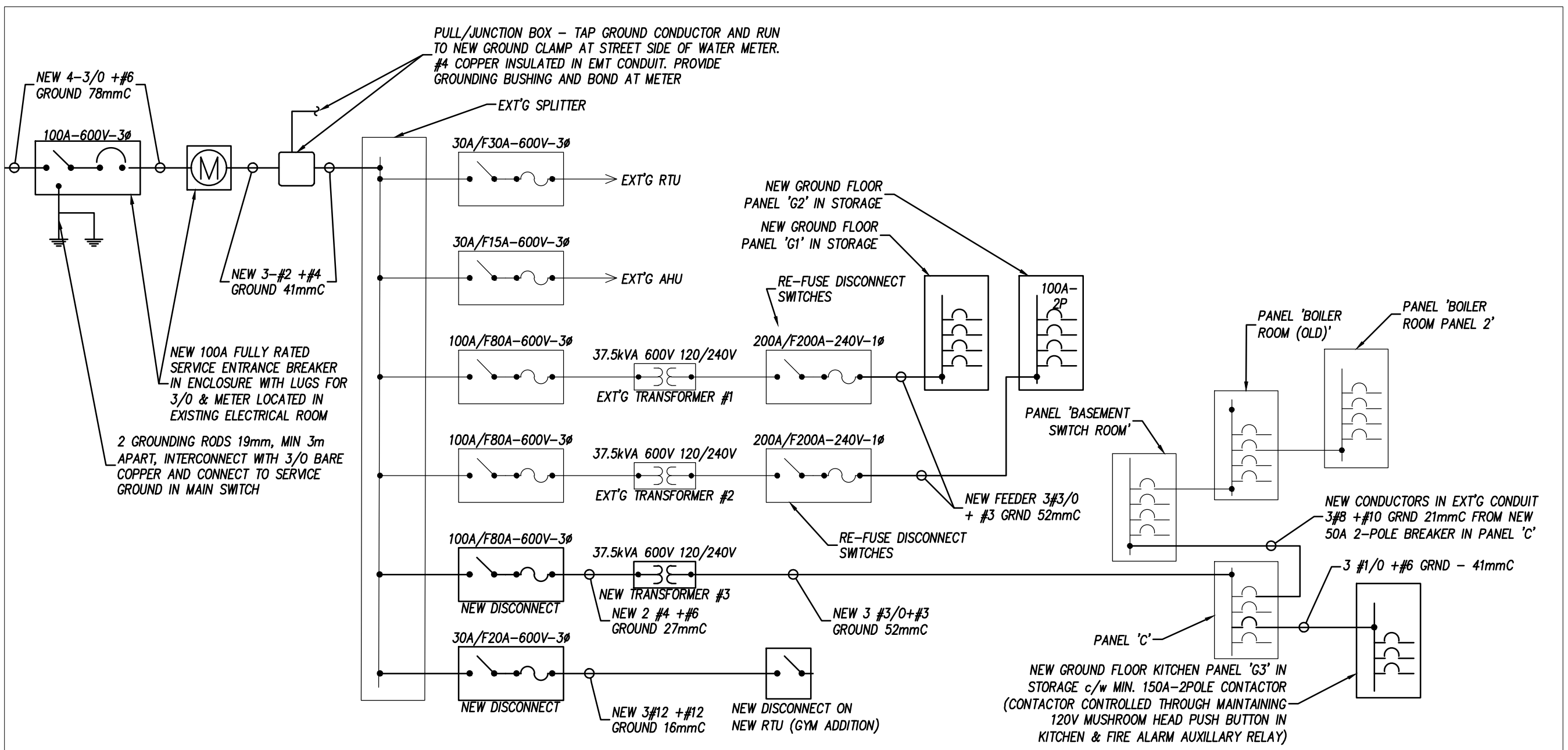
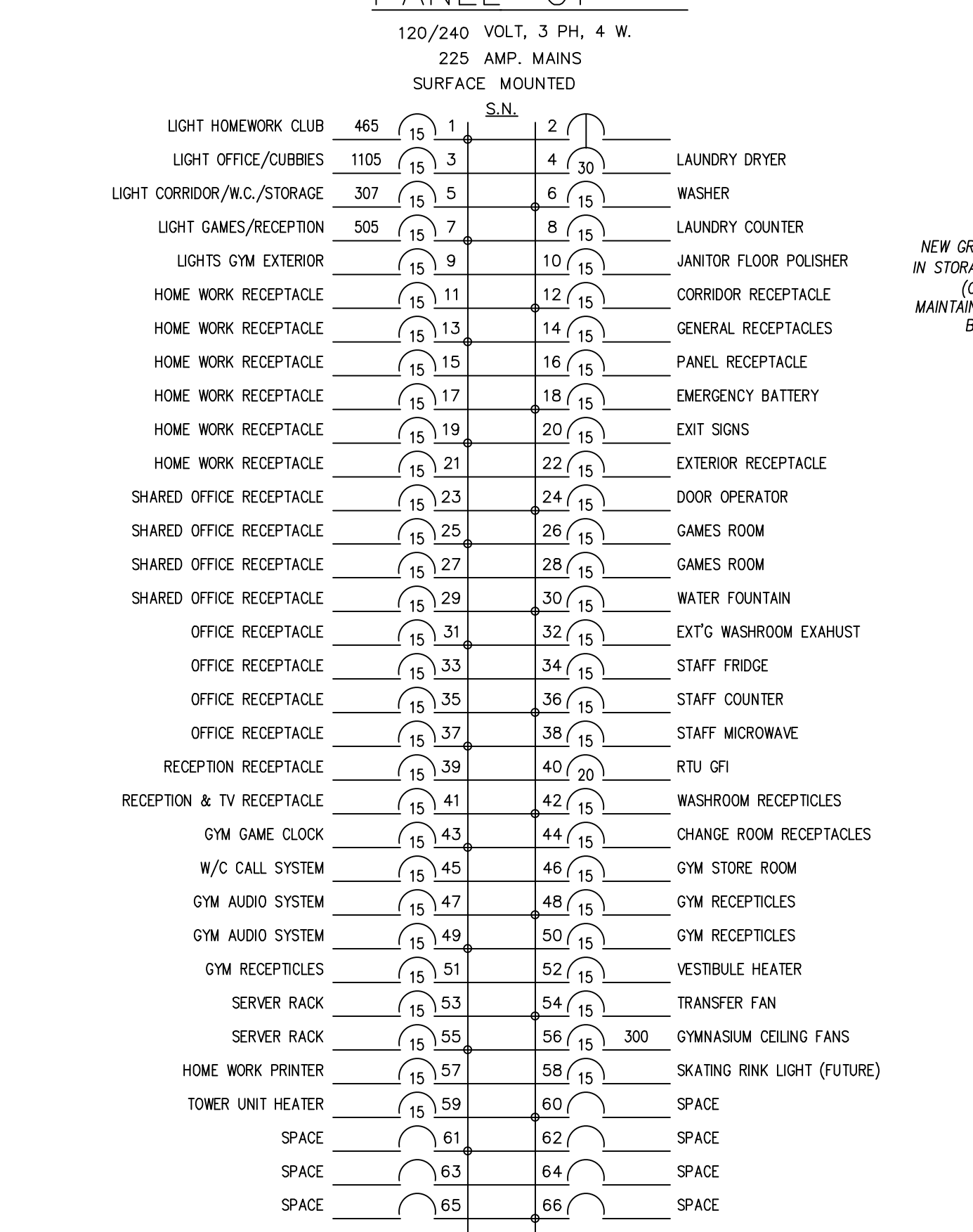
PANEL 'C' REVISED



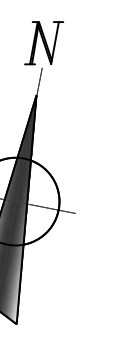
PANEL 'G2'



PANEL 'G1'



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PROJECT: **Boys & Girls Club Renovation Prince of Wales Clubhouse**

DRAWING: **Panel Schedules Single Line Diagram**

DATE: 11-May-18	SCALE: AS NOTED
DRAWN BY: MAG	DESIGNED BY: CLW
JOB NO.: 2017-017	CHECKED BY: CLW
DRAWING NO.: E-6 of 8	



Electrical Specifications Boys & Girls Club
General Instructions:

1. Repair and make good all walls, ceilings, etc. cut under this division.
2. Protect existing work and equipment during construction.
3. Test all system components for proper operation and safety.

General Demolition Notes:

1. Removals include but are not limited to: devices, raceways, outlet boxes, branch wiring and all associated conduit and wire. All associated removals such as wiring, boxes, etc. to be removed back to source.
2. Unless otherwise indicated, all equipment and material removed becomes the property of the contractor and shall be removed from site.
3. Maintain, retain, and make good as required of existing branch wiring, feeders, etc. which pass through the renovation and demolition areas.
4. For abandoned outlets provide suitably size stainless steel blank cover plates.

Specification Notes:

1. Do complete installation in accordance with the following: Ontario Building Code, Ontario electrical code, amendments and applicable local regulations. / Inspection certificates.
2. Prior to tender, confirm site conditions and location of existing services.
3. Review all construction documents and be familiar with general construction methods. Make provisions in the form of general enclosures to maintain all fire separations.
4. Drawings indicate general location, quantity and type of outlets for electrical services only. Do not scale.
5. Review mechanical shop drawings; confirm voltage, current, and connection requirements to be installed.
6. Submit all plans required by the inspection authority for approval. Furnish inspection certificate, prior to final payment, to show installed work conforms with specification and regulations. Pay all fees and permit costs.
7. Submit shop drawings to the engineer for approval. Provide shop drawings of all equipment and devices. Include details descriptions and instructions fully describing the equipment or system including how it is installed and operated.
8. Upon completion of work mark up prints describing as-built conditions and 3 copies of operating and maintenance instruction manuals.
9. Allow relocation of outlets up to 300mm prior to installation at no extra cost. 10. All wiring devices to be specification grade.
11. Install electrical equipment at the following heights unless otherwise indicated or directed otherwise by design drawings.
 - (a) Local switches and dimmer switches: 1200mm
 - (b) General receptacles: 400mm
 - (c) Receptacles above counter: 175mm above backsplash
 - (d) Panelboards: 1900mm from top of panelboard to floor – as detailed
 - (e) Telecom and cable TV outlets: 400mm
12. As required by CBC Division B Article 4.1.18, Elements of Structures, Non-Structural Components and Equipment, include seismic restraints for all electrical equipment and components, installed under this Contract, where not directly and rigidly attached to the structure. Provide suitable pre-engineered systems and where necessary and required by The Authority Having Jurisdiction, retain and pay for the services of a Professional Structural Engineer (registered in Ontario), to design, sign, and seal drawings for Seismic Restraints.

13. EQUIVALENTS AND ALTERNATES:

1. Manufacturer's material in these specifications set the standard for the material and where applicable energy efficiency requirements to comply with SB-10. They are not intended to exclude other manufacturers from bidding with equivalent products.
2. Products not meeting all design requirements are considered alternates and they will be rejected until the specified item or equivalent meeting the requirements acceptable to the engineer are provided.

2. Wiring Method

1. Unless otherwise indicated on the drawings, or in this specification, wiring methods shall be:
 - (a) Conductors in electric metallic tubing where exposed and for home runs to panels; for concealed branch local wiring, multi-conductor armored cable is acceptable.
 - (b) Final connection to motors or other rotating equipment with minimum 1000mm liquid tight flexible conduit.
 - (c) For surface wiring in finished masonry walls run conduit vertically from ceiling accessible junction or pull box to surface outlet or multi-outlet wireway.
 - (d) Conceal all new wiring in new construction except where there is no suspended ceiling.
2. Provide pull strings in all empty conduit.
3. Conductor material:
 - (a) Annoved commercial grade, 98% conductivity, copper.
 - (b) No.14 to No.10 AWG – solid; No.8 and larger – stranded.
 - (c) 600V RW90, unless otherwise noted.
 - (d) Smallest conductor size allowed no.12 AWG over 50 Volts.
 - (e) In finished areas run wiring concealed.
 - (f) Branch circuits longer than 22.8m (75') utilize conductors to next AWG rating.
4. Run insulated grounding conductor in all conduits with current carrying conductors.

3. Outlet Boxes and Conduit Boxes

1. For recessed installation Electro-galvanized steel single and multi gang flush device boxes for flush installation minimum 102MM square with extension and plaster rings as required.
2. 102MM square or octagonal outlet boxes for lighting fixture units.
3. Flush outlet boxes for data and telecommunications to be 102 mm x 102 mm x 78 mm deep with plaster ring to suit.
4. For masonry electrogalvanized steel masonry single and multi gang boxes for devices flush mounted in exposed block walls.
5. Surface mounted installations – For power, data and telecom an existing walls provide cast metal outlet box finished surface applications.

4. Multi-outlet surface wire ways

1. For surface installation above and below work station counters and desks.
2. System to be dual channel with barrier one channel for installation of telephone and data outlets and one channel for 120 volt power outlets.
3. System to be wiremold 4000 or equal.
4. Install with power and telecom/data outlets where indicated.

5. Grounding

1. Grounding equipment to CSA C22.2 No.41. Copper grounding conductors to CSA C22.1, section 10 (latest edition).
2. Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to: Grounding and bonding bushings; protective type clamps; bolted type conductor connectors; thermite welded type conductor connectors; bonding jumpers and straps; pressure wire connectors.
3. Install complete permanent, continuous, system and circuit grounding systems.

6. Identification

1. Identify source, voltage and load on all junction boxes. Use of indelible marker for these where concealed or in unfinished areas is acceptable.
2. All conductors to be colour coded in accordance with CSA 22.1 – section 4.036
3. System type, updated schedules in all panelboards.
4. Provide identical identification labels on all equipment.

7. Dry Type Transformers

1. Low voltage, distribution type ANN Single phase with 600V primary and 120/240V-3wire secondary
2. Primary and secondary windings – copper
3. Standard taps – 2x2- 1/2% above and below normal
4. Insulation – 150C rise
5. 10KV BL
6. Efficiency – The higher of CSA standard C802.2 and ASHRAE 90.1
7. Impedance – Minimum Value 2%
8. Sound level – to CSA standard

8. Panelboards

1. Breaker type panelboard to CSA C22.2 No. 29 with the following features:
 - (a) 250V branch panels; bus and breakers rated for 10,000A RMS symmetrical interrupting capacity.
 - (b) Main breaker, main, number of circuits, and number and size of branch circuit breakers as indicated.
 - (c) Tin-plated copper bus with full size neutral.
 - (d) Equipment ground bus to match neutral bus. Bolted directly to panelboard enclosure.
 - (e) Meets suitable for bolt-on breakers.
 - (f) Finish: trim and door – baked grey enamel.
 - (g) Installation/mounting: flush or surface trim as indicated.
 - (h) Mount panelboards to 1980mm (6'-6") top or as detailed.
 - (i) Connect leads to circuits as indicated.
 - (j) Connect neutral conductors to common neutral bus with respective circuit(s) identified.
2. Standard of acceptance: Eaton, GE, Siemens, Schneider

9. Moulded Case Circuit Breakers

1. Provide moulded case circuit breakers to CSA 22.2 No. 5.1, with the following features:
 - (a) Provide automatic moulded case circuit breakers in panelboards as indicated. Breaker sizes and trips as scheduled, or indicated on the one-line diagram.
 - (b) Use bolt-on moulded case circuit breakers, quick-make, quick-break type for manual and automatic operation with temperature compensation for 40°C (104°F) ambient.
 - (c) Breakers shall be common trips with single handle for multi-pole application.
 - (d) In panelboards, moulded case circuit breakers to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping under overload conditions, and instantaneous magnetic tripping for circuit protection.
 - (e) Magnetic instantaneous trip elements to operate only when the value of current reaches 10 to 12 times the breaker trip setting.
 - (f) Breaker minimum interrupting capacity (symmetrical RMS values) shall be not less than the following: 240V – 10KA.
 - (g) Motor control magnetic starters shall be provided with motor circuit interrupter breakers – 250V, 3 pole, 10KA interrupting capacity, magnetic trip only, adjustable (8 settings), with locking pins.
2. Standard of acceptance: CSA approved for panelboard.

10. Wiring Devices

1. Manually operated general purpose ac switches to CSA C22.2 No. 111. – Decorator style
2. Snap switches to CSA C22.2 No. 55-M1986 (R2003).
3. Receptacles, plugs and similar devices to CSA C22.2 No. 42-99 (R2004).
4. Coverplates to CSA C22.2 No. 42-1-00 (R2004).
5. Switches:
 - (a) 15A, 120V single pole, three-way, four-way specification grade switches as indicated.
 - (b) Toggle operated, fully rated for longest filament and rated loads.
 - (c) Switches of one manufacturer throughout project. Equal to Hubbell 1200 series for 120V.
 - (d) Install single throw switches with handle in the 'UP' position when switch is closed.
 - (e) Install switches in gang type outlet box when more than one switch is required in one location.
6. For light switching with automatic control features forming part of a lighting control system refer to the lighting control specification
7. Receptacles:
 - (a) Duplex receptacles throughout – shall be CSA type 5-15R, 125V, 15A, or 20A with U ground
 - (b) Provide coverplates for all wiring devices.
 - (c) Colour of coverplates to match wiring devices – shall be stainless steel or brushed aluminum – Switchplates to be decorator style to match wall mount occupancy sensors and dimming controls
8. Wiring devices to be white

11. Lighting Fixtures

1. Fixture types:
 - (a) Refer to fixture schedule.
 - (b) LED lamps shall be 4100K or as indicated; efficacy (Lumens/Watt) as indicated for the fixture. Drivers (power supplies) to match LED Type. Rates life (50% failure) for LED and driver systems minimum 50,000 Hours.
 - (c) Ceiling mounted fixtures to be supported from the structure by auxiliary chain hangers.
2. Lighting Control System
 1. Lighting controls for all new lighting to be in accordance with Ontario Building Code SB-10 and the relevant mandatory provisions of ASHRAE 90.1 2013 – Part 9 – Section 9.4
 2. Refer to lighting control legend for system component types and function.
 3. Wall mounted lighting control stations low voltage shall be decorator type. Multiple units shall be ganged together, and installed at the local switch height specified.
 4. In offices and similar spaces requiring 2-level A/B and dimming control, the occupancy sensors shall be low voltage, ceiling mounted, passive infrared, with wall mounted 2-pole with manual control push button and relay for the 2nd (B) level.
 5. Where indicated as required due to obstructions sensors to be dual technology.
 6. Line voltage control systems both single and dual channel shall have minimum 800 Watts load capacity per channel at 120 Volt.
 7. Where indicated provide low voltage DC control systems consisting of a wall mounted station and remote low voltage ceiling or wall mounted occupancy sensor. Each system shall include the necessary junction box mounted devices consisting of a 120V to low voltage DC power supply and auxiliary line and low voltage output relays to achieve the functions and control systems indicated. Provide dimming control capability.
 8. Low voltage control systems shall be single or 2 channel as indicated. Their line voltage control capacity shall be 1600 Watts per channel at 120V.
 9. Low voltage DC systems control wiring shall be carried out utilizing Category 5 Enhanced (Cat5e) FTE rated wiring with terminal connections suited for the devices.
 10. Install low voltage wiring in EMT conduit drops in walls to ceilings where they are accessible, run open in accessible ceilings, neatly supported and securely fastened in inaccessible ceilings install control wiring in complete EMT raceway system between all devices. Provide access door to equipment in ceilings where required.
 11. At least 6 weeks prior to scheduled installation prepare and submit complete and detailed shop drawings for all components, include drawings showing the method of installation for each device. Include detailed wiring diagrams for each type of system to be installed.
 12. Prior to rough in for installation, confer with the manufacturer's qualified technical representative and determine the placement, sensitivity and time out requirements for the devices selected for compliance with these specifications in the areas where they are shown.
 13. Arrange and pay for field programming by the manufacturer's technician.
 14. Following completion of the lighting controls installation, retain and pay for the services of the manufacturer's qualified technical representative who shall test and confirm the correct functional performance for each device. The technical representative shall prepare and submit a report confirming that each device meets the control requirements, include copies in the instruction and maintenance manuals.
 15. Devices shall be Lutron or DLM System by Wattstopper or equivalent.
 16. Time Switch
 - (a) Input voltage 120V
 - (b) Scheduling: 56 ON & OFF set points provide individual programs for each day of the week. Minimum setting is 1 minute.
 - (c) Block Holiday: 9 holiday blocks can be set for individual days or for duration of any number of days.
 - (d) Automatic compensation for Daylight Saving, Leap Year
 - (e) Manual Override: Until the next regularly scheduled ON or OFF, automatic operation then resumes.
 - (f) Clock Format: AM/PM or 24 Hour format.
 - (g) Power Outage Backup: Permanent schedule retention. Supercapacitor provides 7 days of real time backup.
 - (h) Standards: Listed UL816
 - (i) Enhanced Scheduling: Inrush current limiting technology protects relay contacts for switching life with zero loss type switching Standard of acceptance: Fort 0241004
 17. Photocell:
 - (a) Outdoor photocontroller with the following characteristics:
 - (i) Sensitive base to rotate 180° on single axis
 - (ii) Load rating: 1000VA
 - (iii) Operating temp: -40° to 70°C
 - (iv) Standard of acceptance: Sensorswitch SMP

12. Lighting Control System

1. Lighting controls for all new lighting to be in accordance with Ontario Building Code SB-10 and the relevant mandatory provisions of ASHRAE 90.1 2013 – Part 9 – Section 9.4
2. Refer to lighting control legend for system component types and function.
3. Wall mounted lighting control stations low voltage shall be decorator type. Multiple units shall be ganged together, and installed at the local switch height specified.
4. In offices and similar spaces requiring 2-level A/B and dimming control, the occupancy sensors shall be low voltage, ceiling mounted, passive infrared, with wall mounted 2-pole with manual control push button and relay for the 2nd (B) level.
5. Where indicated as required due to obstructions sensors to be dual technology.
6. Line voltage control systems both single and dual channel shall have minimum 800 Watts load capacity per channel at 120 Volt.
7. Where indicated provide low voltage DC control systems consisting of a wall mounted station and remote low voltage ceiling or wall mounted occupancy sensor. Each system shall include the necessary junction box mounted devices consisting of a 120V to low voltage DC power supply and auxiliary line and low voltage output relays to achieve the functions and control systems indicated. Provide dimming control capability.
8. Low voltage control systems shall be single or 2 channel as indicated. Their line voltage control capacity shall be 1600 Watts per channel at 120V.
9. Low voltage DC systems control wiring shall be carried out utilizing Category 5 Enhanced (Cat5e) FTE rated wiring with terminal connections suited for the devices.
10. Install low voltage wiring in EMT conduit drops in walls to ceilings where they are accessible, run open in accessible ceilings, neatly supported and securely fastened in inaccessible ceilings install control wiring in complete EMT raceway system between all devices. Provide access door to equipment in ceilings where required.
11. At least 6 weeks prior to scheduled installation prepare and submit complete and detailed shop drawings for all components, include drawings showing the method of installation for each device. Include detailed wiring diagrams for each type of system to be installed.
12. Prior to rough in for installation, confer with the manufacturer's qualified technical representative and determine the placement, sensitivity and time out requirements for the devices selected for compliance with these specifications in the areas where they are shown.
13. Arrange and pay for field programming by the manufacturer's technician.
14. Following completion of the lighting controls installation, retain and pay for the services of the manufacturer's qualified technical representative who shall test and confirm the correct functional performance for each device. The technical representative shall prepare and submit a report confirming that each device meets the control requirements, include copies in the instruction and maintenance manuals.
15. Devices shall be Lutron or DLM System by Wattstopper or equivalent.
16. Time Switch
 - (a) Input voltage 120V
 - (b) Scheduling: 56 ON & OFF set points provide individual programs for each day of the week. Minimum setting is 1 minute.
 - (c) Block Holiday: 9 holiday blocks can be set for individual days or for duration of any number of days.
 - (d) Automatic compensation for Daylight Saving, Leap Year
 - (e) Manual Override: Until the next regularly scheduled ON or OFF, automatic operation then resumes.
 - (f) Clock Format: AM/PM or 24 Hour format.
 - (g) Power Outage Backup: Permanent schedule retention. Supercapacitor provides 7 days of real time backup.
 - (h) Standards: Listed UL816
 - (i) Enhanced Scheduling: Inrush current limiting technology protects relay contacts for switching life with zero loss type switching Standard of acceptance: Fort 0241004
17. Photocell:
 - (a) Outdoor photocontroller with the following characteristics:
 - (i) Sensitive base to rotate 180° on single axis
 - (ii) Load rating: 1000VA
 - (iii) Operating temp: -40° to 70°C
 - (iv) Standard of acceptance: Sensorswitch SMP

13. Exit Lights

1. Exit signs to OBC 3.4.5.1(2):
 - (a) consist of a green pictogram and white graphic symbol meeting the visibility specifications referred to in ISO 3984-1, Graphical Symbols – Safety Colours and Safety Signs – Part 1: Design Principles for Safety Signs in Workplaces and Public Areas, and conform to the dimensions indicated in ISO 7010, Graphical Symbols – Safety Colours and Safety Signs – Safety Signs and to the dimensions indicated in ISO 7010, Graphical Symbols – Safety Colours and Safety Signs – Part 1: Design Principles for Safety Signs in Workplaces and Public Areas, and
 - (b) (i) E001 emergency exit left
 - (ii) E002 emergency exit right
 - (iii) E005 90-degree directional arrow, and
 - (iv) E006 45-degree directional arrow.
2. Design features:
 - (a) Wall, end-to-wall or ceiling mounting as indicated. Field adaptable, universal mount.
 - (b) Single or double faced as indicated. Facetype to remain coplanar for maintenance.
 - (c) Connections-120V normal; provision for emergency 12 volt DC connection.
 - (d) Housing to be extruded aluminum- white in colour. Optical diffuser for even illumination.
 - (e) Solid-state design. Long life, non-protruding, high brightness LED's. Minimum 25 year life. Maximum of 5 watts per unit (double faced). Acrylic barrier to protect LEDs.

3. Standard of acceptance: Beggitt Micro RM series or equal.

14. Emergency Lighting

1. Provide new battery unit – 24V DC.
 - (a) Rated 720 watts for 30 minutes; voltage to be consistent with as indicated. Breaker sizes and trips as scheduled, or indicated in accordance with CSA-141,
 - (b) Certified in accordance with CSA-141,
 - (c) Mount on new wall bracket.
2. Field testable for rate of rise element by application of heated air
 - (a) 24V DC operation, VRLife 6W LED each unless otherwise indicated – verify existing voltage before ordering.
 - (b) Plastic/composite body and plate, adjustable mounting, swing type complete with tungsten composite lamp. Suitable for mounting on surface mounted outdoor box.
3. EMT raceway:
 - (a) EMT raceway: 100mm square recessed outlet boxes with suitable plaster ring to accommodate owners telecom and data connection devices. Provide conduit in partition to ceiling space. For multiple outlet assemblies – provide 3/4" (21mm). Conduit to be EMT set screw connectors at box. Devices, plates and wiring to be by owner's contractor.

16. Surface Mounted Installations

1. For installation of power and data outlets on existing walls provide surface mounted EMT conduit to surface mounted outlet box. Leviton Type 42777 series. Provide matching SS coverplate.

17. Underground Systems

1. Provide underground ducts for power, telecom and communication system
2. Ducts to be type 'DB' approved for direct burial
3. Install ducts in sand bedded founded on undisturbed soil.
4. Provide suitable spacers and fasteners to maintain duct configuration during covering

18. Fire Alarm System Specification:

1. The fire alarm system shall be a fully electrically supervised, zoned, non-coded, single stage Data Communication Link Type. The complete installation shall comply with ULC S524 Standard for Installation of Fire Alarm Systems, and all related reference standards, The Ontario Building Code, and the Ontario Electrical Code including Section 32.
2. Control Panel
 1. The fire alarm control panel shall be microprocessor based – DCLA with minimum, 4 Class B signal circuits. 4 auxiliary output relays with double throw normally open; normally closed contacts rated to 3 Amp minimum; 120V.
 2. Automatic fire detection smoke type detector zones shall be capable of monitoring self-fluorescing alarm type.
 3. Alarm and signal circuits to be class B. Provide end of line resistors adjacent to the control panel.
 4. The control panel shall include a central station connection output.
 5. The control panel shall connect from a 120V single phase power circuit 15 Amp rating. It shall operate at 24V DC. Backup power to support the system shall be with an approved battery system mounted externally or internally to the panel.
3. Audible signals (outputs) configurable for steady, temporal code, California code, and march time (selectable by user following installation).
4. Synchronization capability for signal circuits.
5. Configurable signal signal, one person walk test.
6. Subsequent alarm supervisory and trouble operation.
7. Audible trouble signal.
8. Control Switches:
 - (a) Alarm silence
 - (b) Trouble silence
 - (c) Reset
 - (d) Lamp test
 - (e) Drill
 - (f) Auxiliary relay by-pass
9. Indicators – Visual
 - (a) Power on
 - (b) Power trouble
 - (c) Ground trouble
 - (d) System trouble
 - (e) Remote annunciator trouble
 - (f) Signals silenced
10. Enclosure:
 1. 16 gauge steel, surface mounted, finished in manufacturers.
 2. Conforms to CAN/ULC S527 Standard Control Units for Fire Alarm Systems
 3. Data Fault Isolators
 4. Provide fault isolators in the data communication link at each zone to ensure a short fault in one alarm zone will not prevent normal operation of the data communication link in all other zones.
 5. Remote Annunciator
 1. The remote annunciator will be recessed.
 2. Enclosure fabricated from 16 gauge steel – finished white
 3. Include visual indication of all zones
 4. Include common controls – system reset signal silence, fire drill, buzzer, trouble silence, and lamp test.
 5. Passive Graphic Panel
 1. In glazed frame surface mounted adjacent to the remote annunciator
 2. Include layouts for each floor with all walls and internal details.
 3. Each device indicated with the discrete identifier beside each
 4. Signal devices to indicate circuit number.
 6. System Operation
 1. Alarm – Upon activation of any manual or automatic initiating device the following shall occur:
 - (a) Evacuation alarm devices operate continuously
 - (b) Transmittal alarm signal to central station
 - (c) Alarm device and location to be indicated on the control panel and remote annunciator
 2. Trouble – Upon occurrence of an open or fault on wiring or silenced device the following shall occur:
 - (a) Trouble signal will sound at the control panel and remote annunciator
 - (b) The trouble light will illuminate on the affected zone at the control panel and remote annunciator
 - (c) A subsequent alarm will override and cause the evacuation signal to operate
 - (d) After the alarm condition has been addressed the reset button can be activated, causing the complete system to reset and the trouble signal will sound until the alarm silence switch is returned to normal.
 7. Trouble silence – Operation of the trouble silence switch will cause:
 - (a) The audible trouble alarm signal will be silenced at the control panel and remote annunciator
 - (b) The trouble light will continue to indicate
 - (c) Upon correction of the trouble the audible signals will again sound until the silencing switch is returned to normal
 7. Manual Alarm Initiating Stations
 1. Non-coded, single pole normally open addressable device
 2. Colour: Red
 3. Visible indication of operation
 4. Restoration with proprietary tool or key – identical throughout
 5. Cast aluminum construction

6. Conform to CAN/ULC S528 Standard – Manual Stations for Fire Alarm Systems Including Accessories

1. Automatic Heat Activated Fire Detection Alarm Devices
 1. Combination fixed temperature and rate of rise; addressable device
 2. Rate of rise 80C/Minute, with 150mm head, self-resetting
 3. Fixed temperature upper limit 57°
 4. Field testable for rate of rise element by application of heated air
2. Rate of rise 80C/Minute, with 150mm head, self-resetting
3. Fixed temperature upper limit 57°
4. Field testable for rate of rise element by application of heated air

10. Install combination visual and audible signal devices in the sanctuary at 255mm (8"-6") above finished floor to top of the device

1. Install audible signal devices throughout building at 2400mm above finished floor to top or where necessary where restricted by ceiling height install wall mounted signal devices at 150mm below the ceiling measured to the top edge of the device.
2. Cut and repair wall for cable connection from ceiling space.
3. Install duct mounted smoke detectors at air handling unit where shown in accordance with manufacturers recommendations. Prior to placing order co-ordinate with the HVAC contractor to establish and agree upon location for the detector. Confirm air handling unit control circuit has terminals for low voltage connection. Connect auxiliary output contact into air handling unit fan shutdown circuit.
4. Wiring Methods
 1. All fire alarm initiating circuit DCLA Type, returning to the control panel in separate conduit.
 2. Alarm and signal circuit wiring shall be unshielded cable. Cable assemblies shall consist of FAS Rated 300Volt insulated conductors. Conductors shall be color coded including shield in accordance with manufacturer's recommendations.
 3. Make terminations and bending radii in accordance with the electrical code
 4. Connections between the control panel and annunciator shall be the manufacturers recommended cable assembly installed in EMT
 5. Connection from fire alarm control panel and premises security central station agency panel shall be 5 conductors in EMT exposed in electrical room
 6. 24 Volt wiring to the door hold open units shall be 300 Volt insulated multi-conductor cable in conduit as specified for fire alarm wiring. Where exposed in the electrical rooms install vertically in a straight line. Provide 50 Volt-Amp 120 to 24 Volt transformer and connect from single-pole 15A-120V breaker in panel indicated. Connections between the electrical panel, transformer and fire alarm control panel where exposed shall be 600 Volt insulated conductors in electric metallic tubing. The 24 Volt wiring through contacts of auxiliary relay in control panel. Contacts normally closed; open on alarm.
 7. Fan shutdown wiring shall be 600V insulated conductors in EMT or multi-conductor 600 Volt insulated armored cable. Where exposed final connection unit to be with liquidtight flex from a junction box in ceiling below the roof
5. Concealed wiring in finished areas:
 1. Conceal all wiring in finished areas.
 2. Exceptions are service rooms and storage rooms.
 3. Cut slots and opening neatly; repair surfaces to their original condition.
 4. White finish
 5. Wall mounting
6. Verification Testing
 1. All verification testing to be performed in accordance with the CAN/ULC-S537 standard by individuals with qualifications recognized by the local authority at the time of testing.
 2. All devices to be tested as per the standard and the results recorded on the verification report forms.
 3. All panel and annunciator tests to be performed as per the standard and the results recorded.
 4. During verification, compliance with the approved project plans shall be confirmed.
 5. Following verification arrange for and demonstrate the proper operation and conformance to the ULC/CAN S524 standard to the municipal building official.
 6. A verification certificate, along with the report, shall be issued only upon compliance with the CAN/ULC S537 standard and the project plans.
7. Training
 1. After submission of the verification certificate and report, review the system operating and maintenance manual with owner's facility management staff. Demonstrate and instruct the staff in procedures for all operating modes.

10. Install combination visual and audible signal devices in the sanctuary at 255mm (8"-6") above finished floor to top of the device

1. Install audible signal devices throughout building at 2400mm above finished floor to top or where necessary where restricted by ceiling height install wall mounted signal devices at 150mm below the ceiling measured to the top edge of the device.
2. Cut and repair wall for cable connection from ceiling space.
3. Install duct mounted smoke detectors at air handling unit where shown in accordance with manufacturers recommendations. Prior to placing order co-ordinate with the HVAC contractor to establish and agree upon location for the detector. Confirm air handling unit control circuit has terminals for low voltage connection. Connect auxiliary output contact into air handling unit fan shutdown circuit.
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5. Concealed wiring in finished areas:
 1. Conceal all wiring in finished areas.
 2. Exceptions are service rooms and storage rooms.
 3. Cut slots and opening neatly; repair surfaces to their original condition.
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 5. Wall mounting
6. Verification Testing
 1. All verification testing to be performed in accordance with the CAN/ULC-S537 standard by individuals with qualifications recognized by the local authority at the time of testing.
 2. All devices to be tested as per the standard and the results recorded on the verification report forms.
 3. All panel and annunciator tests to be performed as per the standard and the results recorded.
 4. During verification, compliance with the approved project plans shall be confirmed.
 5. Following verification arrange for and demonstrate the proper operation and conformance to the ULC/CAN S524 standard to the municipal building official.
 6. A verification certificate, along with the report, shall be issued only upon compliance with the CAN/ULC S537 standard and the project plans.
7. Training
 1. After submission of the verification certificate and report, review the system

30 PARKING

EXISTING PRIVATE APPROACH

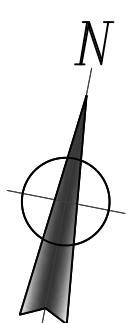
1463 Prince of Wales Drive
 'OTTAWA BOYS AND GIRLS CLUB'
 EXISTING 1 STOREY BRICK BUILDING
 FFL: 82.27

NEW GYMNASIUM
 FFL: 82.27

NEW 1 STOREY ADDITION

Symbol	Qty	Label	Manufacturer	Description	Dimming	No. Lamps	Lum. Watts	LLF
BT	1	BT	LUMINIS	CL843-L3W30-CLP843-120V-BKT	0-10V	N.A.	N.A.	0.900
C	5	C	LUMINIS	S1600-L1W81-120V-BKT-R60	0-10V	1	18.5	0.900
D	111	D	CONTRAST	AKR40-111W40-R-REK4V2	0-10V	1	22.8	0.900
LT	3	LT	ECOSENSE	LSO-E-12-04-40-80-MULT-15x35	ELV	1	4	0.900
L4	14	L4	ECOSENSE	LSO-E-48-04-40-80-MULT-15x35	ELV	N.A.	N.A.	0.900
LS-3ME	1	LS-3ME	OREE	OSQ-A-NM-3ME-B-40K-UL-BK-03/G	0-10V	1	86	0.900
Wp-2S	7	Wp-2S	OREE	SEC-EDG-2S-WM-02-E-UL-BK-700-DIM	0-10V	60	50	0.900
Wp-4M	3	Wp-4M	OREE	SEC-EDG-4M-WM-06-E-UL-BK-700-DIM	0-10V	60	132.1	0.900

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NO.	REVISIONS	DATE
10.		
9.		
8.		
7.		
6.	ISSUED FOR CONSTRUCTION	2018-05-11
5.	ISSUED FOR TENDER	2018-02-06
4.	ISSUED FOR LIGHTING SUBSIDY	2018-01-25
3.	ISSUED FOR PRICING	2017-12-22
2.	ISSUED FOR BUILDING PERMIT (PHASE 2)	2017-10-26
1.	ISSUED FOR REVIEW/COORDINATION	2017-10-05

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PROJECT Prince of Wales Clubhouse
 Boys and Girls Club Renovation

DRAWING Electrical Site Plan

DATE	SCALE
11-May-18	AS NOTED
DRAWN BY MAG	DESIGNED BY CLW
JOB NO. 2017-17	CHECKED BY CLW
DRAWING NO.	

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E-8

EXTERIOR LIGHTING PLAN
 1:100