1. <u>REQUIREMENTS INCLUDED</u>

- A. THE GENERAL REOUIREMENTS, DIVISION 01 AND ANY SUPPLEMENTARY GENERAL CONDITIONS OF THE CONTRACT SHALL FORM A PART OF THIS SPECIFIFICATION. THE
- REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS OF THIS SPECIFICATION. B. THE DRAWINGS AND SPECIFICATIONS COMPLIMENT EACH OTHER AND TOGETHER STIPULATE THE CONTRACT REQUIREMENTS. THE MORE RESTRICTIVE CONDITIONS APPLY
- WHEN INTERPRETING DISCREPANCIES BETWEEN THE DRAWINGS AND SPECIFICATIONS. C. FULLY UNDERSTAND THE INTENT AND FUNCTION OF THE SYSTEMS DESCRIBED IN THIS SPECIFICATION. ALL ELECTRICAL SYSTEMS COVERED UNDER DIVISION 16 SHALL BE FULL' COMPLETE, TESTED, OPERABLE AND READY FOR OWNER'S USE. USE THE INFORMATION CONTAINED IN THE RELEVANT DRAWINGS AND/OR SPECIFICATION SECTIONS SUPPLEMENTED WITH DATE CONTAINED WITHIN OTHER SPECIFICATION SECTIONS OR PROVIDED BY EQUIPMENT SUPPLIERS OR OTHER SUB-CONTRACTORS. NO EXTRA WILL BE ALLOWED IN ORDER TO COMPLETE SYSTEMS INADEQUATELY INSTALLED OR NOT FULLY

A. PROVIDE ALL LABOUR, MATERIAL, EQUIPMENT, TOOLS AND TRANSPORTATION FOR THE SUPPLY AND INSTALLATION OF COMPLETE ELECTRICAL SYSTEMS AS SHOWN ON THE DRAWINGS, SPECIFIED HEREIN OR AS REASONABLY INFERABLE FROM EITHER.

3. <u>REFERENCES</u>

- A. PROVIDE MATERIAL CONFORMING TO THE MOST UP-TO-DATE CSA AND/OR ULC REQUIREMENTS.
- B. REGULATORY AGENCIES: a. ELECTRICAL SAFETY AUTHORITY

4. <u>WORKMANSHIP</u>

- A. ONLY FIRST-CLASS WORKMANSHIP PERFORMED BY QUALIFIED TRADE-PERSONS WILL BE ACCEPTED. NOT ONLY WITH REGARDS TO SAFETY AND DURABILITY BUT ALSO IN TERMS OF ACCESSIBILITY AND NEATNESS OF DETAIL. UNSATISFACTORY WORKMANSHIP SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE.
- B. EMPLOY SPECIALIZED LABOUR AS REQUIRED FOR THE INSTALLATION, TESTING AND/OR COMMISSIONING OF SPECIFIC SYSTEMS TO ENSURE PROPER OPERATION.
- C. THE CONTRACTOR IS RESPONSIBLE FOR ALL DAMAGES RESULTING FROM THE EXECUTION OF THIS WORK.

- A. THE DRAWINGS ARE INTENDED TO BE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF EQUIPMENT ONLY. NOT ALL BUILDING ELEMENTS ARE SHOWN. DO NOT
- SCALE THE DRAWINGS OR USE FOR FABRICATION PURPOSES. B. MAKE USE OF ALL AVAILABLE DOCUMENTATION, PRIOR TO TENDER, IN ORDER TO DETERMINE THE SCOPE OF WORK, NO CONCESSION SHALL BE MADE FOR FAILURE TO MAKE USE OF THE COMPLETE PACKAGE OF DRAWINGS AND SPECIFICATIONS MADE AVAILABLE
- C. MAKE ALLOWANCES FOR SITE CONDITIONS AND CO-ORDINATION WITH OTHER TRADES.

6. <u>RECORD DRAWINGS</u>

DURING THE TENDER PERIOD

A. ONE SET OF PRINTS SHALL BE MAINTAINED IN GOOD CONDITION ON THE JOB-SITE AND BE MARKED WITH RED INK TO INDICATE DEVIATIONS MADE FROM THE ORIGINAL, TENDERED DRAWINGS. THESE DRAWINGS SHALL BE LABELLED "AS BUILT" AND SUBMITTED TO THE ENGINEER PRIOR TO FINAL INSPECTION.

- A. SUBMIT SHOP DRAWINGS FOR EQUIPMENT AS INDICATED IN THE INDIVIDUAL SPECIFICATION SECTIONS. DO NOT ORDER EQUIPMENT PRIOR TO RECEIPT OF APPROVED
- B. SHOP DRAWINGS SHALL CONTAIN THE FOLLOWING INFORMATION:
- a. EQUIPMENT DESIGNATION FROM DRAWINGS (E.G. POWER PANEL 'A', LIGHT FIXTURE
- b. GENERAL CONTRACTOR AND ELECTRICAL SUBCONTRACTOR'S REVIEW STAMP.
- c. MANUFACTURER AND CATALOGUE OR MODEL NUMBER
- d. EQUIPMENT RATINGS, DIMENSIONS AND WEIGHT e. THE ENGINEER'S REVIEW OF SHOP DRAWINGS IS TO ENSURE GENERAL CONFORMITY
- WITH THE INTERNET OF THE DESIGN. THE ELECTRICAL SUB-CONTRACTOR BEARS FULL RESPONSIBILITY FOR ACTUAL EQUIPMENT DESIGN, QUALITY, FUNCTION, CODE COMPLIANCE AND INSTALLATION.

8. PERMITS AND FEES

- A. OBTAIN AND PAY FOR ALL PERMITS REQUIRED FOR THE EXECUTION OF THE WORK GOVERNED BY THIS SPECIFICATION
- B. CHARGES OR FEES TO LOCAL UTILITIES IN CONJUNCTION WITH THEIR WORK ASSOCIATED WITH THE PROJECT WILL BE PAID DIRECTLY BY THE OWNER. PROVIDE TO THE UTILITIES ANY INFORMATION THEY REQUIRE IN ORDER TO DETERMINE THEIR SCOPE OF WORK. C. UPON COMPLETION OF THE WORK PROVIDE AN UNCONDITIONAL CERTIFICATE OF

ACCEPTANCE FROM ONTARIO ELECTRICAL SAFETY AUTHORITY.

- A. ENSURE THAT THE INSTALLATION CONFORMS TO ALL REQUIREMENTS OF THE MOST CURRENT ONTARIO ELECTRICAL SAFETY CODE AND BULLETINS, ONTARIO BUILDING CODE, CSA STANDARDS, ONTARIO FIRE CODE AND/OR ANY OTHER APPLICABLE MUNICIPAL OR
- B. THE DRAWINGS SHOW THE MINIMUM STANDARD ACCEPTABLE REGARDLESS OF ANY LESSER STANDARD SET BY APPLICABLE CODE OR REGULATION.

- 10. INSPECTION A. THE WORK SHALL BE AVAILABLE FOR INSPECTION BY THE ENGINEER AT ANY TIME.
- B. IF WORK IS DETERMINED TO BE UNACCEPTABLE IN TERMS OF THESE SPECIFICATIONS, THE CONTRACTOR SHALL TAKE IMMEDIATE MEASURES TO CORRECT THE DEFICIENCY C INFORM THE FNGINFFR WHEN THE WORK IS READY FOR FINAL INSPECTION, DEFECTS SHALL BE MADE GOOD BEFORE FINAL PAYMENT IS AUTHORIZED

11. ABBREVIATIONS AND DEFINITIONS

- A. WHEREVER WORDS SUCH AS "APPROVED", "SATISFACTORY", "DIRECTED", "PERMITTED", "REQUIRED" OR SIMILAR PHRASES ARE USED IN THIS SPECIFICATION IT SHALL BE IMPLIED THAT THE WORDS "BY (TO) THE ENGINEER" FOLLOWS
- B. WHEREVER THE WORD "PROVIDE" IS USED IT SHALL BE UNDERSTOOD THAT IT IS EOUIVALENT TO "FURNISH AND INSTALL", COMPLETE AND IN PLACE, INCLUDING ACCESSORIES, FINISHES, TESTS AND SERVICES TO RENDER ITEM SO SPECIFIED COMPLETE READY FOR USE
- C. WHEREVER THE WORD "FURNISH" IS USED IT MEANS PROCUREMENT OF FABRICATION OF MATERIALS, EQUIPMENT, OR COMPONENTS, OR PERFORMANCE OF SERVICES TO EXTENT SPECIFIED AND SHOWN. WHERE USED WITH RESPECT TO MATERIALS, EQUIPMENT, OR COMPONENTS, THE TERM INCLUDES CRATING AND DELIVERY TO PROJECT SITE BUT IS NOT INTENDED TO INCLUDE INSTALLATION OF ITEM, EITHER TEMPORARY OR FINAL.
- D. WHEREVER THE WORD "INSTALL" IS USED IT MEANS PLACEMENT OF MATERIALS, OR COMPONENTS, INCLUDING RECEIVING, UNLOADING, TRANSPORTING, STORAGE, UNCRATING AND INSTALLING AND PERFORMANCE OF SUCH TESTING AND FINISH WORK AS IS
- \bullet ABBREVIATIONS COMMONLY USED ON THE DRAWINGS ARE LISTED BELOW: 1/2/3P SINGLE, DOUBLE OR THREE POLE

COMPATIBLE WITH THE DEGREE OF INSTALLATION SPECIFIED.

- AMPS/AMPERAG
- B/F BARRIER FREE CONDUIT
- CANADIAN STANDARDS ASSOCIATION DISTRIBUTION PAN
- ELECTRICAL SAFETY AUTHORIT
- FHP FRACTIONAL HOSE POWER
- NBC NATIONAL BUILDING CODE
- OBC ONTARIO BUILDING CODE
- OESC ONTARIO ELECTRICAL SAFETY CODE
- SN SOLID NEUTRA
- SWBRD SWITCHBOARD ULC UNDERWRITER'S LABORITORIES OF CANADA
- W WATTS/WATTAGE
- WP WEATHERPROO WM WALL MOUNTED
- VOLTS/VOLTAGE XFRMR TRANSFORME

CITY OF WOODSTOCK

ENGINEERING BLDG

944 JAMES ST

PART 2: PRODUCTS

- MATERIALS AND EQUIPMENT
- A. MATERIALS TO BE NEW AND CSA/ULC APPROVED.
- B. MATERIALS AND EQUIPMENT SPECIFIED BY TECHNICAL DESCRIPTION ONLY SHALL BE OF THE BEST QUALITY ATTAINABLE FOR APPLICATION.
- C. USE THE SAME MANUFACTURER, TYPE AND STYLE OF EQUIPMENT FOR PARTICULAR
- GROUPINGS, CLASS OR TYPE OF EQUIPMENT USED ON THE PROJECT. D. REQUESTS FOR CHANGES TO THE PROJECT SCHEDULE, EQUIPMENT OR CONTRACT

- A. REQUESTS FOR APPROVAL OF ALTERNATIVE EQUIPMENT SHALL BE SUBMITTED COMPLETE WITH ALL PHYSICAL AND PERFORMANCE SPECIFICATIONS AND SHALL NOT DELAY THE PROJECT SCHEDULE. ALTERNATE EQUIPMENT INSTALLED WITHOUT WRITTEN APPROVAL MAY BE REPLACED, AT NO COST TO THE OWNER, WITH THE SPECIFIED EOUIPMENT
- B. MAKE ALLOWANCE FOR THE WORK OF THE GENERAL CONTRACTOR OTHER SUB-CONTRACTORS AFFECTED BY THE USE OF THE ALTERNATE EQUIPMENT QUOTATIONS SUBMITTED WITH RESPECT TO THE USE OF THE SUBSTITUTE SHALL INCLUDE THE COSTS INCURRED BY ANY OTHER TRADES AFFECTED BY THE USE OF THE PROPOSED EQUIPMENT.

- A. MINIMUM GAUGE FOR CONDUCTORS USED FOR POWER CIRCUITS IS #12 AWG COPPER. THE SIZE TO BE ADJUSTED FOR DE-RATING DUE TO CONDUIT FILL, AMBIENT TEMPERATURE AND TO LIMIT VOLTAGE DROP TO NO MORE THAN 2% ON ANY FEEDER OR BRANCH CIRCUIT.
- B. INSULATION TO BE RATED AT 600 VOLT EQUAL TO CSA RATED T90 (NYLON) OR R/RW/RWU90 (CROSS-LINKED POLYETHYLENE) AND WHERE A SPECIFIC TYPE OF INSULATION IS SHOWN THAT TYPE SHALL BE USED.
- C. ALL CONDUCTORS SHALL BE COLOUR CODED AT TERMINATIONS TO PANEL(S) AND EOUIPMENT, FOR CONDUCTORS #10 AWG AND SMALLER THE COLOUR SHALL BE THE INSULATION OF THE CONDUCTOR, LARGER CONDUCTORS MAY BE PROVIDED WITH A 2" (50MM) BAND OF APPROPRIATELY COLOURED TAPE ADJACENT TO THE
- D. INSULATION COLOUR CODING TO BE AS FOLLOWS:
- PHASE "A" RED PHASE "B" BLACK PHASE "C" BLUE
- NEUTRAL WHITE GROUND

- A. PROVIDE RACEWAYS AS INDICATED ON THE DRAWINGS. WHERE SIZE IS NOT
- SPECIFIED PROVIDE IN ACCORDANCE WITH THE REQUIREMENTS ON THE OESC B. THE FOLLOWING CONDUIT TYPES ARE APPROVED FOR USE ON THIS PROJECT:
- C. ELECTRICAL METALLIC TUBING (EMT) FOR GENERAL USE. D. RIGID ALUMINUM CONDUIT (RAC) WHERE SUSCEPTIBLE TO MECHANICAL DAMAGE.
- E. RIGID POLYVINYL CHLORIDE (PVC) CONDUIT BELOW GRADE OR IN POURED CONCRETE STRUCTURES.
- F. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT FOR FINAL CONNECTIONS TO
- G. UTILIZE STEEL, SETCREW CONNECTIONS AND COUPLINGS FOR EMT CONDUIT. DIE-CAST OR PRESSURE-CAST CONNECTORS AND COUPLINGS ARE NOT ACCEPTABLE LIQUID TIGHT FITTINGS ARE TO BE USED OUTDOORS OR WHERE CONDUIT IS

5. <u>STANDARD OUTLET BOXES</u>

DIRECTLY EXPOSED TO MOISTURE.

- A. SIZE AND SELECT INDIVIDUAL BOXES IN ACCORDANCE WITH THE OESC BASED ON THE INSTALLED DEVICE(S) AND THE NUMBER AND GAUGE OF CONDUCTORS
- CONTAINED WITHIN AND FOR THE INSTALLED LOCATION B. WHEREVER MULTIPLE DEVICES ARE SHOWN IN A GROUP PROVIDE GANGED BOXES
- COMPLETE WITH A SUITABLE PLASTER-RING AND INTERNAL BARRIERS WHERE OUTLETS FOR MORE THAN ONE SYSTEM ARE GROUPED.
- C. CAST ALUMINUM BOXES SHALL BE USED IN SURFACE MOUNT OUTDOOR APPLICATIONS.
- D. PVC BOXES SHALL BE USED IN CONCRETE STRUCTURES. E. OUTLET BOXES FOR COMMUNICATION AND DATA SYSTEMS ARE TO
- BE 4" (100MM) SQUARE COMPLETE WITH A SUITABLE PLASTER-RING.

6. ACCESS PANELS AND DOORS

- A. ACCESS PANELS AND DOORS TO HAVE A FIRE RATING SUITABLE FOR THE INSTALLED
- B. ACCESS PANELS AND DOORS TO BE PRIMED AND PAINTED, MINIMUM 12 GAUGE, FLUSH MOUNTED WITH CONCEALED HINGES, ANCHOR STRAP, LOCK AND TRIM TO SUIT THE MATERIAL OF THE SURROUNDING SURFACE.
- C. MINIMUM SIZE TO BE 6" X 6" (150MM X 150MM) FOR HAND ACCESS AND 24" X 18" (600MM X 450MM) FOR PERSON ACCESS.

7. IN-FLOOR OUTLET BOXES

- A. IN-FLOOR BOXES TO BE RECESSED, CONCRETE TIGHT, GALVANIZED STEEL BASE, PVC HOUSING WITH LEVELING LEGS, AN ADJUSTABLE FINISHING RING TO SUIT FLOOR FINISH AND FILISH LID CAPABLE OF ACCEPTING A FLOORING MATERIAL INSERT B. THERE SHALL BE A SUITABLE NUMBER AND SIZE OF KNOCKOUTS TO FACILITATE
- WIRING OF THE DEVICES AS INDICATED ON THE DRAWINGS.
- A. WELDED SHEET METAL ENCLOSURE MADE FROM CODE GAUGE STEEL, PRIMED, COMPLETE WITH SCREW-ON OR HINGED COVER FOR SURFACE MOUNTING.
- B. ENCLOSURE TO BE EEMAC RATED FOR INSTALLED LOCATION.
- C. INTERNAL WIRE LUGS TO MATCH SIZE REQUIREMENTS OF FEEDER AND CIRCUIT
- D. PROVIDE A MINIMUM OF THREE (3) SPARE CIRCUIT WIRE POSITIONS ON EACH SET OF LUGS FOR SPLITTERS RATED 600 AMP OR LESS.
- E. LENGTH OF SPLITTER TO BE 12" (300MM) LONGER THAN MINIMUM NECESSARY TO MOUNT EQUIPMENT REQUIRED FOR THE PROJECT UNLESS NOTED OTHERWISE.

JUNCTION AND PULL BOXES

A. SIZE AND SELECT BOXES IN ACCORDANCE WITH THE OESC FOR THE NUMBER AND GAUGE OF CONDUCTORS CONTAINED WITHIN AND FOR THE INSTALLED LOCATION. B. WELDED SHEET METAL ENCLOSURE MADE FROM CODE GAUGE STEEL, PRIMED AND PAINTED AND RATED FOR THE INSTALLED LOCATION COMPLETE WITH SCREW-ON

OR HINGED COVER FOR SURFACE MOUNTING. MINIMUM SIZE TO BE 6" X 6" (150MM

- C. ENCLOSURE TO BE EEMAC RATED FOR INSTALLED LOCATION.
- D. FLUSH MOUNTED BOXES TO BE SIMILAR TO ABOVE AND TO BE COMPLETE WITH
- A 1" (25MM) TRIM TO CONCEAL WALL OR CEILING OPENING. E. PVC BOXES TO BE USED IN CONCRETE STRUCTURES.
- F. CONFIRM SIZE AND SPACING REQUIREMENTS FOR COMMUNICATIONS SYSTEMS' BOXES WITH APPROPRIATE AUTHORITIES AND/OR SUPPLIERS PRIOR TO INSTALLATION

10. CABINETS

- A. SIZE AND SELECT CABINETS IN ACCORDANCE WITH THE OESC FOR THE ENCLOSED B. CABINETS AND EQUIPMENT ENCLOSURES ARE TO BE MANUFACTURED FROM CODE
- GAUGE STEEL, PRIMED AND PAINTED COMPLETE WITH LOCKING DOOR, CONCEALED HINGES AND A REMOVABLE EQUIPMENT-MOUNTING PANEL C. ENCLOSURE TO BE EEMAC RATED FOR INSTALLED LOCATION.
- D. FLUSH MOUNTED CABINETS TO BE PROVIDED WITH APPROPRIATE TRIM AND HARDWARE.

11. SWITCHES

A. SWITCHES SHALL BE TOGGLE STYLE, SPECIFICATION GRADE, SILENT OPERATION, SLOW-MAKE, SLOW BREAK RATED FOR THE AMPACITY AND VOLTAGE OF THE CONNECTED CIRCUIT. B. SINGLE POLE UNLESS SHOWN AS KEY-OPERATED, 3-WAY OR 4-WAY ON THE

12. <u>LED LIGHTING</u>

ADDITION

RENOVATION

DRAWINGS.

A. AS SPECIFIED IN LIGHTING SCHEDULE

13. <u>RECEPTACLES</u>

VALUE DUE TO LATE ORDERING OF EQUIPMENT WILL NOT BE CONSIDERED.

B. GROUND FAULT RECEPTACLES:

A. GENERAL PURPOSE RECEPTACLES:

• DUPLEX, GROUND FAULT RECEPTACLES TO BE 15 AMP, 125 VOLT, U-GROUND, CSA #5-15R CONFIGURATION, CLASS A, TRIP LEVEL OF 4-6MA WITH TEST AND RESET PUSHBUTTONS.

• DUPLEX RECEPTACLES TO BE 15 AMP, 125 VOLT, U-GROUND, CSA #5-15R

• EQUIPMENT RECEPTACLES TO BE RATED AS SHOWN ON THE DRAWINGS COMPLETE WITH OUTLET BOX, MOUNTING/COVERPLATE AND ALL REQUIRED INSTALLATION ACCESSORIES.

14. COVER PLATES

a. GENERAL AREAS - SMOOTH STAINLESS STEEL b. SERVICE AREAS - GALVANIZED STEEL c. WET LOCATIONS - HINGED, GASKETED, GRAY LEXAN

A. COVER PLATES SHALL BE PROVIDED FOR ALL OUTLET BOXES AS FOLLOWS:

- 15. <u>DISTRIBUTION PANELS</u>
- A. LOCATION AND RATINGS AN INDICATED ON DRAWINGS. B. THE PANEL ENCLOSURE SHALL BE CODE GAUGE STEEL, BAKED GRAY ASA61 ENAMEL
- FINISH WITH A REMOVABLE FRONT COVER AND BE EEMAC RATED FOR THE INSTALLED LOCATION. C. MAIN BUS MAY BE ALUMINUM OR COPPER FOR BOLT-ON CIRCUIT BREAKERS.
- D. DIRECTORY CARD IN METAL FRAME WITH PLASTIC COVER E. THE SHORT CIRCUIT RATING OF THE PANEL SHALL FULLY MATCH THE LOWEST RATED BRANCH OR MAIN CIRCUIT BREAKER.

B. ENCLOSURE TO BE CODE GAUGE STEEL, BAKED GRAY ASA61 ENAMEL FINISH,

16. PANEL BOARDS

A. LOCATION AND RATINGS AS INDICATED ON DRAWINGS.

D. DIRECTORY CARD IN METAL FRAME WITH PLASTIC COVER

RATED BRANCH OR MAIN CIRCUIT BREAKER.

- REMOVABLE FRONT COVER, LOCKING DOOR COMPLETE WITH FLUSH MOUNTED LOCK, TWO KEYS AND TRIM FOR SURFACE OR RECESSED MOUNTING AND TO BE EEMAC RATED FOR THE INSTALLED LOCATION C. MAIN BUS MAY BE ALUMINUM OR COPPER FOR BOLT-ON CIRCUIT BREAKERS.
- E. COMBINATION PANELS TO HAVE FACTORY INSTALLED MAIN BREAKER IN SEPARATE COMPARTMENT AND BE RATED FOR SERVICE ENTRANCE DUTY. F. THE SHORT CIRCUIT RATING OF THE PANEL SHALL FULLY MATCH THE LOWEST

- 17. <u>DISCONNECT SWITCHES GENERAL</u> A. ALL EQUIPMENT OF SIMILAR TYPE SHALL BE BY ONE MANUFACTURER.
- B. ENCLOSURE TO BE EEMAC RATED FOR INSTALLED LOCATION. C. RATINGS TO BE MINIMUM REQUIRED MATCHING THE CONNECTED EQUIPMENT LOAD UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS.

18. MOTOR DISCONNECT SWITCHES

- A. FOR MOTORS RATED UP TO 1/6HP AND 120V USE SPECIFICATION GRADE 1P B. FOR MOTORS RATED UP TO 1/4HP TO 1HP AND 250V USE HOSE-POWER
- RATED, SIGNLE-THROW, OUICK-MAKE/OUICK-BREAK TOGGLE SWITCHES IN FACTORY ENCLOSURES WITH PROVISIONS TO BE LOCKED IN THE "OFF" POSITION. C. FOR MOTORS RATED GREATER THAN 1HP AND/OR 250V USE MANUFACTURED HORSEPOWER RATED SAFETY SWITCHES COMPLETE WITH LOCKABLE, INTEGRA OPERATING HANDLE AND QUICK-MAKE/QUICK BREAK, SILVER PLATED CONTACTS.

COVER TO BE MECHANICALLY INTER-LOCKED WITH HANDLE TO PREVENT OPENING

WHEN IN THE "ON" POSITION" D. WHERE DISCONNECTS ARE REQUIRED TO BE FUSIBLE PROVIDE FUSE HOLDERS SUITABLE FOR THE TYPE AND VOLTAGE OF THE FUSE INSTALLED WITH SPRING

19. <u>CIRCUIT DISCONNECT SWITCHES</u>

REINFORCED FUSE CLIPS AS NECESSARY

A. FUSIBLE SWITCHES TO HAVE FUSE HOLDERS SUITABLE FOR THE TYPE AND VOLTAGE OF THE FUSE INSTALLED WITH SPRING REINFORCED FUSE CLIPS AS NECESSARY.

21. CIRCUIT BREAKERS - GENERAL

A. ALL EQUIPMENT OF SIMILAR TYPE SHALL BE BY ONE MANUFACTURER. B. EQUIPMENT TO BE EEMAC RATED FOR INSTALLED LOCATION.

A. ALL CIRCUIT BREAKERS FOR THIS PROJECT SHALL BE BY ONE MAUFACTURER

- B. OUICK-MAKE, OUICK-BREAK WITH ARC-OUENCHING DEVICE, TRIP-FREE HANDLE, THERMAL OVERLOAD AND INSTANTANEOUS MAGNETIC TRIP, AMBIENT TEMPERATURE COMPENSATING TYPE.
- C. MINIMUM INTERRUPTING CAPACITIES AS FOLLOWS: a. DISTRIBUTION PANELS - 22,000 AMPERES ASYMMETRICAL
- b. PANEL BOARDS (240V) 10,000 AMPERES ASYMMETRICAL c. PANEL BOARDS (600V) - 14,000 AMPERES ASYMMETRICAL d. BREAKERS SHALL BE MOUNTED TO THE BUS AS FOLLOWS:

• DISTRIBUTION PANELS - BOLT-ON DESIGN

PANEL BOARDS - BOLT-ON DESIGN • MULTI-POLE BREAKERS TO HAVE A COMMON/TRIP HANDLE.

- 22. <u>FUSES</u>
- A. FUSES SHALL BE BY ONE MANUFACTURER THROUGHOUT THE PROJECT.
- B. FEEDER FUSES UP TO 600V AND OVER 600A SHALL BE CSA CLASS HRC-L. C. FEEDER FUSES UP TO 600V AND 600 A SHALL BE CSA CLASS HRC-J. D. GENERAL PURPOSE CIRCUIT PROTECTION FUSES SHALL BE CSA CLASS H.
- E. MOTOR AND TRANSFORMER CIRCUITS SHALL BE DUAL-ELEMENT, TIME DELAY, CSA CLASS HRC-D.

- 23. LIGHT FIXTURES A. LIGHTING FIXTURES ARE TO BE COMPLETE WITH LAMPS, BALLASTS AND ALL
- MOUNTING OR INSTALLATION ACCESSORIES FOR THE LUMINARIES INDICATED IN THE LIGHTING FIXTURE SCHEDULE AND/OR ON THE DRAWINGS. B. REFER TO THE ARCHITECTURAL DRAWINGS FOR DETAILS RELATING TO CEILING AND/OR WALL ORIENTATION AND CONSTRUCTION IN ORDER TO ESTABLISH THE

PROPER REQUIREMENTS FOR HANGERS, BRACKETS, PENDANTS, BALL-JOINT SWIVEL

BASES, THREADED RODS AND OTHER SIMILAR INSTALLATION ACCESSORIES.

24. <u>LAMPS</u>

25. BALLASTS

26. <u>EMERGENCY LIGHTING- GENERAL</u>

- A. PROVIDE BALLASTS AS REQUIRED BY THE FIXTURE SPECIFICATION AND THE LAMP OPERATING PARAMETERS INCLUDING SPECIALIZED BALLAST AS REQUIRED FOR
- DESIGNATED APPLICATIONS B. ALL BALLASTS ARE TO BE COMPLETELY COMPATABLE WITH THE FIXTURE/LAMP COMBINATION SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE AND LIGHTING MANUFACTURER'S RECOMMENDATIONS.

A. PROVIDE EMERGENCY BATTERY UNITS AS INDICATED ON THE DRAWINGS.

C. POWER SUPPLY VOLTAGE TO BE 347VAC. EMERGENCY SYSTEM VOLTAGE TO BE 24

B. PROVIDE LIGHTING FIXTURES WHERE INDICATED ON THE DRAWINGS.

- 27. EMERGENCY BATTERY UNIT A. UNIT TO HAVE LONG LIFE (10 YEAR LIFE EXPECTANCE), SEALED LEAD/ACID, LOW MAINTENANCE BATTERIES CAPABLE OF MAINTAINING THE CONNECTED LOAD PLUS
- 25% RESERVE CAPACITY FOR A MINIMUM DURATION OF 30 MINUTES AND BE PROVIDED WITH THE FOLLOWING FEATURES: B. CHARGER: 100% SOLID STATE, TEMPERATURE COMPENSATING, REVERSE POLARITY
- PROTECTED, AUTO-EQUALIZER CAPABLE OF RE-CHARCHING BATTERIES TO FULL CAPACITY WITHIN 12 HOURS ABD 2 FUSED OUTPUTS.
- C. TRANSFER UNIT: 100% SOLID STATE, CAPABLE OF INSTANTANEOUS TRANSFER OF
- ENTIRE CONNECTED LOAD ON NORMAL POWER FAILURE OR CONNECTIONS. D. CABINET: MINIMUM 18 GAUGE ENAMEL PAINTED STEEL ENCLOSURE WITH 1 METER
- POWER CODE AND MOUNTING SHELF AS REQUIRED E. FEATURES: "PUSH-TO-TEST" BUTTON, AC POWER "ON" LAMP, HIGH CHARGE INDICATOR AND BATTERY CONDITION INDICATOR.

28. EMERGENCY LIGHT FIXTURE

- A. SURFACE MOUNTED FIXTURES TO SINGLE OR DUAL, INJECTION MOLDED, HIGH IMPACT PLASTIC, DECORATIVE DESIGN WITH 7WATT OR GREATER, HIGH INTENSITY
- B. RECESSED FIXTURES TO BE WHITE BAKED ENAMEL, ADJUSTABLE GIMBAL RING TYPE WITH 7WATT OR BETTER, PAR36, HIGH INTENSITY LED LAMP.

- A. ALL EQUIPMENT SHALL BE BY ONE MANUFACTURER THROUGHOUT THE PROJECT.
- B. NORMAL POWER SUPPLY VOLTAGE TO BE 120 VOLT-AC. EMERGENCY SYSTEM VOLTAGE TO BE 24 VOLT-AC. C. EXIT LIGHTING FIXTURE TO BE EXTRUDED ALUMINUM CONSTRUCTION, UNIVERSAL MOUNTING, SINGLE OR DOUBLE FACE AS REQUIRED, PICTOGRAM FILMS WITH
- a. INDIRECT LED ILLUMINATION OF FACEPLATE. b. SELF-CONTAINED ELECTRONIC COMPONENTS TO DIRECTLY ACCEPT AC AND DC POWER INPUTS.

DIRECTION INDICATION AS REQUIRED AND THE FOLLOWING FEATURES:

c. POWER CONSUMPTION SHALL BE 5W OR LESS.

30. <u>COMMUNICATIONS- GENERAL</u> A. PROVIDE ALL RACEWAYS, WIRING, EQUIPMENT AND ACCESSORIES RELATING TO THE POWER SUPPLY WIRING AS GOVERNED BY OTHER SECTIONS OF THE SPECIFICATION. ALL ELECTRICAL MATERIAL TO BE AS RECOMMENDED BY THE

EQUIPMENT/SYSTEM SUPPLIER UNLESS SPECIFIED OTHERWISE ON THE DRAWINGS

- 30. <u>TELEPHONE/DATA RACEWAYS</u> A. CONDUITS TO TELEPHONE AND DATA OUTLET BOXES INSTALLED IN WALLS TO BE 1/2" (12MM) UNLESS SPECIFICALLY NOTED OTHERWISE.
- B. BOXES FOR TELEPHONE AND DATA OUTLETS SHALL BE 2"X4" (50MM X 100MM) UNLESS SPECIFICALLY NOTED OTHERWISE. C. CONFIRM ALL REQUIREMENTS WITH APPROPRIATE AUTHORITIES PRIOR TO

32. RACEWAYS THERMOSTATS

A. CONDUITS TO THERMOSTATS OUTLET BOXES INSTALLED IN WALLS TO BE 1/2" (12MM) UNLESS SPECIFICALLY NOTED OTHERWISE. B. BOXES SHALL BE 2"X4" (50MM X 100MM) MOUNTED HORIZONTALLY AS REQUIRED TO

C. CONFIRM ALL REQUIREMENTS WITH CONTROLS CONTRACTOR PRIOR TO ROUGH-IN.

A. ALLOW FOR THE TRANSPORTATION OF EQUIPMENT THROUGH THE CONSTRUCTION

SITE AND BUILDING. REPAIR ALL SURFACES AFFECTED BY THE MOVEMENT OF

PART 3: EXECUTION

SUIT THERMOSTAT OR SENSOR UNLESS SPECIFICALLY NOTED OTHERWISE.

2. STORAGE OF MATERIALS

- B. CLEAN ALL EQUIPMENT IMMEDIATELY PRIOR TO FINAL INSPECTION.
- A. PROVIDE A SUITABLE, ON-SITE OFFICE SPACE AND A DRY, PROTECTED STORAGE AREA FOR MATERIAL AND EQUIPMENT TO MAINTAIN FACTORY FINISH. B. KEEP THE SITE FREE OF DEBRIS AND SURPLUS MATERIAL.

C. UPON COMPLETION OF WORK REMOVE ALL TOOLS AND SURPLUS MATERIAL FROM

- 3. <u>SLEEVING, CUTTING AND PATCHING</u> A. ALLOW FOR ALL SLEEVING, CUTTING, PATCHING AND PAINTING REQUIRED FOR THIS
- WORK. USE ONLY SKILLED CRAFTSMAN FOR EACH TYPE OF WORK. B. ALL HOLES THROUGH THE EXTERIOR MEMBRANE OF THE BUILDING ARE TO BE MADE WATERPROOF, UTILIZE ACCEPTABLE METHODS OF FLASHING, CAULKING, ETC. C. ALL HOLES IN CONCRETE AND OTHER STRUCTURAL MEMBERS ARE TO BE APPROVED

BY THE STRUCTURAL ENGINEER PRIOR TO CUTTING. THE WORK IS TO BE CARRIED

OUT UNDER THE SUPERVISION OF THE GENERAL CONTRACTOR.

- 4. GROUNDING AND TESTING A. PROVIDE A COMPLETE GROUNDING SYSTEM; THERE IS NO ATTEMPT TO INDICATE ALL OF THE GROUNDING REQUIREMENTS ON THE DRAWINGS
- B. BALANCE PHASE CURRENT SO THAT THE CURRENT ON ANY PHASE IS WITHIN 10% OF THE MEAN VALUE. C. TEST BONDING CONTINUITY OF METALLIC RACEWAYS.
- D. TEST THE INSULATION GROUND FAULT RESISTANCE AND MERGER FEEDERS PRIOR TO ENERGIZING.
- E. TEST FOR PROPER EQUIPMENT OPERATION. F. PROVIDE THE FOLLOWING TEST AND INCLUDE DATA IN OPERATING AND MAGNA
- a. <u>VOLTAGE READING AT THE FOLLOWING LOCATIONS:</u>
- DISTRIBUTION PANEL MAINS. POWER AND/OR LIGHTING PANEL MAINS. EQUIPMENT CONNECTIONS.
- THE RECEPTACLE FURTHEST FROM THE MAIN ELECTRICAL SERVICE EQUIPMENT. b. AMPERAGE READING AT THE FOLLOWING LOCATIONS: DISTRIBUTION PANEL FEEDERS.

POWER AND/OR LIGHTING PANEL FEEDERS.

EQUIPMENT FEEDERS.

SECTIONS.

SPH ENGINEERING INC.

FAX: 519-539-5775

REAL WORLD ENGINEERING SOLUTIONS

TEL: 519-539-5700

- CORROSION, PROTECTION AND TOUCH-UP A. PRIME AND PAINT ALL FERROUS METAL SUPPORTS, BRACKETS, ETC. B. PROTECT ALL MATERIAL AND EQUIPMENT FROM ABUSE AND DAMAGE. REPAIR ANY
- a. LABELS TO BE 1/8" (3MM) THICK WHITE BACKGROUND WITH 1/4" (6MM) BLACK LETTERING. B. LABELS TO CONFIRM TO WORDING SPECIFIED IN INDIVIDUAL SPECIFICATION
- MARKINGS SHALL BE REMOVED PRIOR TO FINAL INSPECTION E. JUNCTION BOXES TO BE EXTERNALLY LABELED WITH INDELIBLE MARKER INDICATING CIRCUITS CONTAINED INSIDE.

7. <u>ELECTRICAL/MECHANICAL INTERFACE</u>

- A. ALL LINE VOLTAGE POWER SUPPLIES INCLUDING OVER-CURRENT PROTECTION, OVER-LOAD PROTECTION, MOTOR STARTERS AND CONTROLLERS, LINE VOLTAGE WIRING AND DISCONNECT MEANS SHALL BE PROVIDED UNDER THIS SECTION,
- STARTERS/CONTROLLERS FORM PART OF AN ITEM OF PACKED EQUIPMENT. B. ALL PRESSURE SWITCHES, THERMOSTATS, SOLENOID VALVES, DAMPER MOTORS AND SIMILAR EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY MECHANICAL

EXCEPT IN THE CASE OF UNITIZED EQUIPMENT WHERE THE MOTOR

- SUN-CONTRACTOR FOR WIRING BY DIVISION 16 C. OBTAIN THE ELECTRICAL RATINGS AND DATA FOR MECHANICAL EQUIPMENT, FROM THE MECHANICAL SUB-CONTRACTOR, PRIOR TO ROUGH-IN WIRING AND
- CONNECTION OF THE EQUIPMENT. REPORT ANY DISCREPANCIES BETWEEN THE SUPPLIED EQUIPMENT AND THE RATINGS SHOWN ON THE ELECTRICAL DRAWINGS TO THE ENGINEER WITHOUT DELAY. D. THE MECHANICAL AND ELECTRICAL CONTRACTORS SHALL BIND THEMSELVES TO

THE ACCURACY AND COMPLETENESS OF THIS WORK, AND MUTUALLY WARRANT THE

8. <u>MOUNTING</u>

A. PROVIDE ALL SUPPORTS REQUIRED FOR THIS WORK. EVERY CONDUIT TO HAVE AT LEAST ONE SUPPORT AND ALL BOXES, FIXTURES, PANELS AND EQUIPMENT ARE TO

WORK INTERFACED UNDER THESE REQUIREMENTS.

- BE SUPPORTED INDEPENDENTLY OF CONNECTING CONDUITS. B. INSTALL SWITCHES, RECEPTACLES AND OTHER OUTLETS ON A COMMON
- CENTRELINE WHEN SHOWN TOGETHER. C. MOUNT DEVICES/EQUIPMENT AT THE FOLLOWING HEIGHTS ABOVE FINISHED FLOOR
- TO CENTERLINE OF DEVICE. D. MOUNTING HEIGHT OF EMERGENCY LIGHT IS A MINIMUM; CONFIRM MOUNTING HEIGHTS, PRIOR TO ROUGH-IN, IN AREAS WITHOUT CEILINGS OR WHEN CEILING IS
- HIGHER THAN 96" (2400MM E. REFER TO THE ARCHITECTURAL DRAWINGS FOR AREAS OF THE BUILDING

ITEM	STANDARD HEIGHT	BARRIER FREE HEIGHT
OFFICE RECEPTACLES	18" (460mm)	
DATA OUTLET	18" (460 mm)	
TELEPHONE (WM)	63" (1600 mm)	
LIGHT SWITCH	52" (1320 mm)	36" - 43" (915mm - 1093MM)
EMERGENCY LIGHT (WALL MOUNTED)	90" (2280 mm)	
B/F DOOR PUSH BUTTON		36" (915mm)

DESIGNATED AS BARRIER-FREE.

- H. INSTALL CONDUCTORS IN RACEWAYS AND TERMINATE AT EQUIPMENT OR SPLICES I. CONDUCTORS FOR FEEDERS TO BE IDENTICAL IN TERMS OF CHARACTERISTICS AND

LENGTH AND FREE OF SPLICES J. USE ONLY SOLDER LESS CONDUCTORS IN APPROVED BOXES FOR SPLICES/JOINTS IN

BRANCH CIRCUIT WIRING.

STRUCTURAL ENGINEER PRIOR TO INSTALLATION.

G. PROVIDE CONDUIT SEALS WHERE REQUIRED BY THE OESC.

ACHIEVE DESIRED AMPERE RATING OF THE CONDUCTORS.

- A. INSTALL CONDUITS COMPLETE WITH ALL CONNECTORS, COUPLING, STRAPS, PULL AND JUNCTION BOXES TO FORM A CONTINUOUS RACEWAY FOR THE INSTALLATION OF CONDUCTORS AT A LATER TIME B. RACEWAYS ARE TO BE CONCEALED IN ALL FINISHED AREAS. IN SERVICE AND UTILITY AREAS CONDUITS MAY BE EXPOSED AND SHALL BE GROUPED AND INSTALLED PARALLEL TO BUILDING LINES. WHERE THE CONDUITS CANNOT B INSTALLED ON BUILDING SURFACES PROVIDE CHANNELS SURFACE MOUNTED OR
- SUSPENDED FROM STRUCTURAL COMPONENTS OF THE BUILDING WITH THREADED
- C. MAINTAIN REQUIRED CLEARANCES FROM STEAM OR HOT WATER LINES AND HEATING OR OTHER SIMILAR EQUIPMENT. D. OPENINGS FOR RACEWAYS PASSING THROUGH STRUCTURAL MEMBERS OR LARGER

THAN 1 1/4" (32MM) IN CONCRETE SLAB MUST BE REVIEWED AND APPROVED BY THE

F. PROVIDE FULL BOXES IN COMMUNICATIONS CONDUIT SYSTEMS AS DIRECTED BY THE COMMUNICATIONS CABLE INSTALLER.

11. CABLES

A. CABLES ARE TO BE INSTALLED AS PER MANUFACTURER'S RECOMMENDATIONS TO

E. EMPTY CONDUITS AND RACEWAY SYSTEM CONDUITS SHALL BE PROVIDED

COMPLETE WITH BOXES, COVER PLATES, BUSHINGS, CAPS AND PULL-CORDS.

C. SINGLE CONDUCTOR CABLES ARE TO BE SECURED WITH NON-FERROUS STRAPS OR CLIPS AT INTERVALS REQUIRED BY THE OESC TO A FLAT BUILDING SURFACE OR

D. SECURE MULTIPLE CONDUCTOR CABLES TO STRUCTURAL COMPONENTS OF THE

BUILDING USING APPROVED METHODS. TIE-WIRE NOT ACCEPTABLE

F. MULTIPLE CONDUCTOR, ARMORED CABLES MAY BE USED FOR FINAL CONNECTIONS TO LIGHTING FIXTURES OR EQUIPMENT AND FOR BRANCH CIRCUIT WIRING CONCEALED MAXIMUM EXPOSED LENGTH SHALL BE 10'-0" (3000MM).

OF VERTICAL ORIENTATION

FABRICATED SUPPORT ASSEMBLY.

12. STANDARD OUTLET BOXES A. ALL BOXES ARE TO BE FLUSH MOUNTED EXCEPT IN SERVICE AND UTILITY AREAS.

B. GANG BOXES WHEREVER DEVICES ARE SHOWN TOGETHER. WHEN ADJACENT BOXES

CANNOT BE GANGED INSTALL ON COMMON CENTERLINE IN EITHER A HORIZONTAL

C. SECURE OUTLET BOXES INDEPENDENTLY FROM CONNECTING CONDUITS. D. CONFIRM MILLWORK, FURNITURE AND DOOR SWINGS FROM ARCHITECTURAL DRAWINGS PRIOR TO ROUGH-IN.

E. FILL UN-USED KNOCKOUT OPENINGS WITH PURPOSE-MADE FILLERS. F. INSTALL BLANK COVER PLATES ON ALL UNUSED OUTLET BOXES.

A. PROVIDE BACKBOARDS FOR THE MOUNTING OF MAIN ELECTRICAL SERVICE

EQUIPMENT, TELEPHONE SERVICE EQUIPMENT AND WHERE SHOWN ELSEWHERE ON

B. PROVIDE SELF SUPPORTING FRAMEWORK WHERE THERE IS INSUFFICIENT WALL SPACE TO MOUNT THE EQUIPMENT OR THE ADJACENT STRUCTURE IS NOT CAPABLE

15. <u>IN-FLOOR OUTLET BOXES</u>

ISSUED FOR

□ PRELIMINARY

BACKBOARDS

OF SUPPORTING THE WEIGHT OF THE EQUIPMENT. 14. ACCESS PANELS AND DOORS A. PROVIDE ACCESS PANELS OR DOORS WHERE REQUIRED FOR ACCESS TO ELECTRICAL

EQUIPMENT INSTALLED AS PART OF THIS WORK OR FOR EXISTING EQUIPMENT

B. PROVIDE ALL PANELS, DOORS AND FRAMES TO THE APPROPRIATE DIVISION FOR

THE INSTALLATION AT THE COST IF THIS DIVISION C. PAINTING OF THE DOORS SHALL BE BY OTHERS.

CONCEALED AS PART OF THE WORK OF OTHER TRADES.

INSERT AFTER INSTALLATION OF WIRING AND DEVICES.

A. SECURELY MOUNT BOXES ON LEVELING LEGS SO THAT THE TRIM WILL BE FLUSH WITH THE FINISHED FLOOR. B. CONNECT CONDUITS, SECURE MUD-CAP AND POUR CONCRETE.

C. REMOVE MUD CAP AND INSTALL FINISHING TRIM, LID COMPLETE WITH FLOORING

- A. FURNISH AND INSTALL SPLITTERS IN A NEAT, LOGICAL ARRANGEMENT SQUARE TO
- BUILDING LINES ON BACKBOARDS OR METALLIC STRUCT/CHANNELS. B. CONNECT TO POWER SUPPLY FEEDER. THE FEEDER WIRING IS TO BE IDENTIFIED
- (BY PHASE) AND TERMINATED AT THE LUGS WITH NO EXCESS LENGTH. C. PREPARE THE SPLITTER FOR THE INSTALLATION OF CIRCUIT DISCONNECT SWITCHES, COMBINATION STARTERS, ETC.

17. JUNCTION AND PULL BOXES

CONTAINED INSIDE.

- A. SUPPLY AND INSTALL PULL AND JUNCTION BOXES IN RACEWAY SYSTEMS AS REQUIRED TO INSTALL THE CONDUCTORS. B. INSTALL BOXES IN INCONSPICUOUS BUT ACCESSIBLE LOCATIONS, USUALLY IN
- DRYWALL ACCESS PANELS AS REQUIRED. C. SECURE BOXES INDEPENDENT OF CONNECTING CONDUITS. D. JUNCTION BOXES TO BE LABELED WITH PERMANENT MARKER INDICATING CIRCUITS

SPECIFICATION OR FOR THE FUTURE INSTALLATION OF EQUIPMENT BY OTHERS.

C. PRIME FLUSH MOUNTED CABINETS IN FINISHED AREAS FOR FINISHED PAINTING BY

D. BOXES TO BE LABELED WITH DATA INDICATING EQUIPMENT CONTAINED INSIDE.

A. INSTALL ELECTRICAL DEVICES IN OUTLET BOXES CONNECT TO POWER SUPPLY

B. REFER TO THE ARCHITECTURAL DRAWINGS TO DETERMINE THE BARRIER-FREE

C. REFER TO ARCHITECTURAL MILLWORK DRAWINGS TO DETERMINE THE EXACT

D. INSTALL SWITCHES AND RECEPTACLES OR OTHER OUTLETS WITH DIFFERENT

E. DO NOT MOUNT DEVICES BACK TO BACK.

NEUTRAL OPENINGS ARE ABOVE GROUND PRONG

ARE SHOWN IN ONE LOCATION

INSTALLED ON A PAINTED SURFACE.

BY PAINT CONSTRUCTION.

THE UP POSITION.

22. <u>COVER PLATES</u>

23. <u>DISTRIBUTION PANELS</u>

IDENTIFICATION.

24. <u>DISCONNECT SWITCHES</u>

FXCESS LENGTH.

NO EXCESS LENGTH.

26. <u>CIRCUIT BREAKERS</u>

APPLICATION.

27. FUSES

STAMP

OF EQUIPMENT ENCLOSURE

SINGLE LINE DIAGRAMS

25. CONTROLS

MOUNTING HEIGHTS ON AN COMMON CENTERLINE WHEN SHOWN TOGETHER.

F. REPLACE ANY DEVICES OR COVER PLATES THAT HAVE BEEN DAMAGED OR MARKED

A. INSTALL SINGLE POLE SWITCHES SO THAT SWITCH IS CLOSED WITH THE TOGGLE IN

B. GROUP SWITCHES TOGETHER IN A COMMON OUTLET BOX WITH A MATCHING

MULTIPLE GANG COVER PLATE WHERE TWO OR MORE ARE SHOWN IN ONE

A. IN GENERAL, RECEPTACLES SHALL BE INSTALLED VERTICALLY SO THAT LINE AND

B. GANG RECEPTACLES TOGETHER IN COMMON OUTLET BOX WHERE TWO OR MORE

C. INSTALL RECEPTACLES HORIZONTALLY WHERE REQUIRED TO CLEAR MILLWORK OR

D. INSTALL OUTDOOR, WEATHERPROOF RECEPTACLES HORIZONTALLY.

A. MOUNT COVER PLATES FLUSH TO WALL FOR RECESSED DEVICES.

B. PROVIDE BLANK COVER PLATES ON ALL UNUSED DEVICE OUTLET BOXES.

C. INSTALL COVER PLATES AFTER PAINTING IS COMPLETED, WHERE IT IS TO BE

A. INSTALL PANEL ON A FIRE-RATED BACKBOARD AND/OR A SELF-SUPPORTING

(BY PHASE) AND TERMINATED AT THE LUGS WITH NO EXCESS LENGTH.

A. FURNISH AND INSTALL DISCONNECT SWITCHES COMPLETE WITH FUSES AND

CONNECT TO POWER SUPPLY WIRING TO THE CONNECTED LOAD

SUPPORTING THE WEIGHT OF THE DISCONNECT(S).

LINES (E.G. "HVAC-1, *208/3*, MAX FUSE 20A).

WIRING TO ACHIEVE THE CONTROL DESIRED.

C. COMPLETE A TYPE WRITTEN PANEL DIRECTORY AND INSTALL IN FRAME.

FEEDER AMPERES, VOLTAGE, PHASE AND WIRES ON A LINE

FRAMEWORK WHERE THERE IS INSUFFICIENT WALL SPACE TO MOUNT THE PANEL

OR THE STRUCTURE IS NOT CAPABLE OF SUPPORTING THE WEIGHT OF THE

B. CONNECT TO POWER SUPPLY FEEDER. THE FEEDER WIRING IS TO BE IDENTIFIED

D. PROVIDE LABEL ON THE PANEL COVER INDICATING PANEL NAME ON ONE LINE WITH

BELOW (E.G. "DP-1, 400A, 347/600V, 3PH, 4W"). REFER TO DRAWINGS FOR PANEL

B. MOUNT ALL EOUIPMENT IN NEAT, LOGICAL ARRANGEMENT, WIRING TO BE LABELED

AND TERMINATED AT RIGHT ANGLES TO THE DEVICE OR EQUIPMENT WITH NO

C. PROVIDE A SELF-SUPPORTING FRAMEWORK WHERE THERE IS INSUFFICIENT WALL

D. PROVIDE LAMACOID LABELS ON CIRCUIT DISCONNECTS INDICATING CONNECTED

LOADS, VOLTAGE RATING AND MAXIMUM FUSE SIZE ON THREE (3) SEPARATE

A. FURNISH AND INSTALL CONTROL ACCESSORIES AS INDICATED ON THE DRAWINGS

C. PROVIDE WIRING DIAGRAMS FOR CONTROL CIRCUITS AND MOUNT INSIDE COVER

D. TEST ALL CONTROL SEQUENCES AND CONFIRM PROPER OPERATION PRIOR TO FINAL

A. PROVIDE CIRCUIT BREAKERS AS INDICATED ON THE PANEL SCHEDULES AND/OR

B. ENSURE THAT ALL BREAKERS HAVE AN INTERRUPTING CAPACITY SUITABLE FOR THE

B. FUSES FOR MOTOR AND TRANSFORMER CIRCUITS TO BE BASED ON THE NAMEPLATE

B. MOUNT ALL EQUIPMENT IN A NEAT, LOGICAL ARRANGEMENT, WIRING TO BE

AND REQUIRED BY THIS SPECIFICATION. CONNECT TO POWER SUPPLY AND CIRCUIT

LABELED AND TERMINATED AT RIGHT ANGLES TO THE DEVICE OR EQUIPMENT WITH

SPACE TO MOUNT THE EQUIPMENT OR ADJACENT STRUCTURE IS NOT CAPABLE OF

AND/OR CONTROL WIRING AND AFFIX COVER PLATE OVER DEVICE AND OUTLET BOX.

AREAS OF THE BUILDING AND POSITION THE DEVICES AT THE MOUNTING HEIGHT

CONSTRUCTION DETAILS OF THE MILLWORK PRIOR TO ROUGH-IN. POSITION THE

OR REQUIRE THE COVER PLATES TO BE FIELD MODIFIED TO ALLOW THEM TO BE

DEVICES IN SUCH A MANNER SO THAT THEY ARE NOT BLOCKED BEHIND THE UNITS

THAT IS APPROPRIATE FOR THE DESIGNATION OF THE INSTALLED LOCATION.

ACCESSIBLE CEILING SPACES OR IN SERVICE AND UTILITY AREAS. PROVIDE

A. FURNISH AND INSTALL CABINETS FOR THE INSTALLATION OF ELECTRICAL

B. MOUNT BACKBOARDS OR METALLIC STRUCT/CHANNELS.

COMPONENTS INCLUDED IN THIS WORK OR COVERED BY A DIFFERENT

- A. FURNISH AND INSTALL BATTERY LIGHTING UNITS AND REMOTE FIXTURES
- COMPLETE WITH ALL REQUIRED ACCESSORIES AND MOUNTING HARDWARE FOR A COMPLETE AND FUNCTIONAL INSTALLATION.
 - METHODS AND SIZE CONDUCTORS FOR VOLTAGE DROP AS ALLOWED BY THE OESC.
 - D. UTILIZE WIRING METHODS AND SIZE CONDUCTORS FOR VOLTAGE DROP AS

F. PROVIDE DUPLEX RECEPTACLES ON LOCAL LIGHTING CIRCUIT ADJACENT TO

- B. FURNISH AND INSTALL ALL FIXTURES COMPLETE WITH ALL LAMPS, TRIM AND
- D. CONNECT LINE AND LOW VOLTAGE POWER SUPPLIES. UTILIZE WIRING METHODS AND SIZE CONDUCTORS FOR VOLTAGE DROP AS ALLOWED BY OESC.

E. TEST OPERATION OF ALL EQUIPMENT PRIOR TO FINAL INSPECTION.

- 31. MECHANICAL EQUIPMENT A. INSTALL POWER SUPPLY WIRING AND CONNECT TO MECHANICAL EQUIPMENT B. ALL LINE VOLTAGE POWER SUPPLIES INCLUDING OVER-CURRENT PROTECTION.
- EXCEPT IN THE CASE OF UNITIZED EQUIPMENT WHERE THE MOTOR STARTERS/CONTROLLERS FORM PART OF THE PACKED EQUIPMENT C. OBTAIN THE ELECTRICAL RATINGS AND DATA FOR MECHANICAL EQUIPMENT, FROM THE MECHANICAL CONTRACTOR, PRIOR TO ROUGH-IN AND CONNECTION OF THE

AND LOCAL DISCONNECTING MEANS SHALL BE PROVIDED UNDER THIS SECTION,

D. THE MECHANICAL AND ELECTRICAL CONTRACTORS SHALL BIND THEMSELVES TO THE ACCURACY AND COMPLETENESS OF THIS WORK, AND MUTUALLY WARRANT THE WORK INTERFACED UNDER THESE REQUIREMENTS.

B. ALL CONDUITS/WIRING TO BE CONCEALED IN WALL AND HEAD/FRAME OF DOOR.

34. TELEPHONE/DATA RACEWAY SYSTEMS

33. MOTORIZED OVERHEAD DOORS

INSTALLATION WITH APPROPRIATE AUTHORITIES

A. PROVIDE A 1/8" (3MM) NYLON PULL-CORD IN ALL EMPTY CONDUITS. B. PROVIDE PULL BOXES IN DATA COMMUNICATIONS CONDUIT SYSTEMS.

D. PROVIDE 1/2" (12MM) CONDUIT FROM EACH OUTLET TO AN ACCESSIBLE CEILING

DATE

24×36

SHEET SIZE

- 35. RACEWAYS FOR THERMOSTATS A. PROVIDE AN OUTLET BOX FOR EACH THERMOSTAT WHERE INDICATED ON THE

B. PROVIDE 1/2" (12MM) CONDUIT WITH A 1/8" (3MM) NYLON PULL-CORD FROM EACH BOX TO AN ACCESSIBLE CEILING SPACE.

ELECTRICAL

SPECIFICATIONS

F. FUSES 30A OR LESS MAY BE PLUG STYLE.

- A. FURNISH LAMPS AS REQUIRED BY THE LIGHTING FIXTURE SCHEDULE AND THE FIXTURE SPECIFICATION.
- DAMAGED SURFACE TO MATCH FACTORY FINISH 6. <u>EQUIPMENT IDENTIFICATION</u> A. PROVIDE LAMACOID LABELS ON ALL DISTRIBUTION AND CONTROL EQUIPMENTS
- C. MECHANICALLY FASTEN LAMACOID LABELS TO THE EQUIPMENT WITH SELF TAPING SCREWS IN PRE-DRILLED HOLES. D. TEMPORARY EQUIPMENT MARKINGS SHALL BE MADE IN INCONSPICUOUS LOCATIONS PREFERABLY ON THE INSIDE OF THE PANEL OR ENCLOSURE. ALL TEMPORARY

WOODSTOCK, ONTARIO

☐ SITE PLAN APPROVAL ☐ BUILDING PERMIT TENDER □ CONSTRUCTION DATE 2024-07-24

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☐ 90% CLIENT TENDER REVIEW

A. REVIEW ALL AVAILABLE DRAWINGS AND EXISTING SITE CONDITIONS (AS APPLICABLE) TO ENSURE THAT THE FIXTURE IS COMPLETE WITH ALL OF THE REQUIRED MOUNTING HARDWARE AND ACCESSORIES.

B. INSTALL LIGHTING FIXTURES COMPLETE WITH ALL LAMPS, TRIM AND MOUNTING HARDWARE AND CONNECT TO POWER SUPPLY AND CONTROL WIRING AS INDICATED ON THE DRAWINGS FOR A COMPLETE AND FINISHED UNIT(S).

- C. INSTALL LIGHTING FIXTURES IN MECHANICAL AND OTHER SERVICE ROOMS AFTER THE MECHANICAL AND ELECTRICAL EQUIPMENT IS IN PLACE. LOCATE LUMINARIES TO CLEAR ALL OBSTRUCTIONS. PROVIDE ADDITIONAL SUPPORT TO HANG FIXTURES
- D. ENSURE FIXTURES ARE INSTALLED IN SUCH A MANNER AS TO FACILITATE THE

LIGHTING FIXTURES. SUPPORTS SHALL BE CONCEALED BEHIND WALLS OR ABOVE

F. LIGHTING FIXTURES INSTALLED IN ACOUSTIC TILE CEILINGS ARE TO BE SUPPORTED

INDEPENDENTLY FROM THE CEILING GRID IN A MINIMUM OF TWO LOCATIONS BY

- REPLACEMENT OF LAMPS E. PROVIDE ALL SUPPORT BLOCKING AS NECESSARY FOR THE INSTALLATION OF
- CHAIN CONNECTED TO THE BUILDING STRUCTURE.
- 29. <u>EMERGENCY LIGHTING</u>
- B. CONNECT TO LINE AND/OR LOW VOLTAGE POWER SUPPLIES. UTILIZE WIRING
- C. ENSURE FIXTURES ARE INSTALLED IN SUCH A MANNER AS TO FACILITATE REPLACEMENT OF LAMPS. AIM FIXTURES TO PROVIDE OPTIMUM COVERAGE OF
- ALLOWED BY OESC. E. TEST OPERATION OF ALL EQUIPMENT PRIOR TO FINAL INSPECTION.

BATTERY UNIT UNLESS DETAILED OTHERWISE ON THE DRAWINGS.

- 30. EXIT LIGHTING A. PROVIDE FIXTURES WHERE INDICATED ON THE DRAWINGS.
- MOUNTING HARDWARE FOR A COMPLETE AND FINISHED APPEARANCE. C. PROVIDE ALL SUPPORT BLOCKING AS NECESSARY FOR THE INSTALLATION OF

F. WHERE AN EXIT LIGHT FIXTURE IS SHOWN AT A DOOR ON THE DRAWINGS MOUNT FIXTURE ON WALL 6" (150MM) ABOVE THE DOOR AND ON THE CENTERLINE OF THE

- OVER-LOAD PROTECTION, MOTOR STARTERS/CONTROLLERS, LINE VOLTAGE WIRING
- EQUIPMENT. REPORT ANY DISCREPANCIES BETWEEN THE SUPPLIED EQUIPMENT AND THE RATINGS SHOWN ON THE ELECTRICAL DRAWINGS TO THE ENGINEER
- 32. MOTORIZED ENTRY DOORS A. INSTALL POWER SUPPLY WIRING AND CONNECT TO MOTORIZED DOOR OPERATOR.
- A. INSTALL POWER SUPPLY WIRING AND CONNECT TO MOTORIZED DOOR OPERATOR.
- C. CONFIRM PROJECT SCHEDULE AND ARRANGE FOR CABLE AND SERVICE
- E. PROVIDE BLANK COVER PLATES ON ALL UNUSED TELEPHONE/DATA OUTLET BOXES. COVER PLATE STYLE TO MATCH ELECTRICAL DEVICES SPECIFIED ELSEWHERE.

INSPECTION.

C. TERMINATE BRANCH CIRCUIT WIRING IN THE BREAKER LUG. WIRING TO BE LABELED AT RIGHT ANGLES TO THE CIRCUIT BREAKER WITH NO EXCESS LENGTH.

A. FUSES FOR FEEDERS TO BE AS INDICATED ON THE DRAWINGS.

RATING OF THE EQUIPMENT. C. ENSURE THAT ALL FUSES ARE CORRECTLY RATED FOR THE APPLICATION. D. SHIP FUSES IN THEIR ORIGINAL CONTAINERS AND INSTALL IN DISCONNECT SWITCHES AND/OR SWITCHBOARDS IMMEDIATELY PRIOR TO ENERGIZING CIRCUIT.

E. PROVIDE THREE (3) SPARE FUSES OF EACH SIZE AND TYPE RATED 200A OR

F. PROVIDE SIX (6) SPARE FUSES OF EACH SIZE AND TYPE RATED LESS THAN 200A. G. HAND OVER SPARE FUSES (IN ORIGINAL CONTAINERS) TO THE OWNER UPON COMPLETION OF THE PROJECT.

NORTH ARROW

REV. BY DESCRIPTION DRAWN CHECKED PROJECT NUMBER RO 21367 JT

PRELIMINARY FILE NAME 2024-05-31 AS NOTED 21367MainE7

	LIGHTING FIXTURE SCHEDULE													
INDEX	MANUFACTURER	DESCRIPTION	PART NUMBER	LUMENS	VOLTAGE	LOAD	QUANTITY	MOUNTING AND HEIGHT	DESCRIPTION					
1	LITHONIA LIGHTING	CPX 2'x4' LED PANEL	CPX 2X4 4000LM 80CRI 40K SWL MIN10 MVOLT	4936	120-277V	36.7W	33	CEILING MOUNT						
2	LITHONIA LIGHTING	CPX 2'x2' LED PANEL	CPX 2X2 3200LM 80CRI 40K SWL MIN10 MVOLT	3734	120-277V	30.1W	6	CEILING MOUNT	ORDER ONE FIXTURE WITH DGA22 DRYWALL GRID ADAPTER.					
3	LITHONIA LIGHTING	CLX LED LINEAR	CLX L48 4000LM SEF RDL MVOLT GZ10 40K 80CRI WH	4000	120-277V	27W	12	CEILING MOUNT						
4	LITHONIA LIGHTING	CPX 2'x2' LED PANEL WITH OCCUPANCY SENSOR	CPX 2X2 3200LM 80CRI 40K SWL MIN10 MVOLT PIR	3734	120-277V	30.1W	22	CEILING MOUNT						
5	LITHONIA LIGHTING	CLX LED LINEAR	CLX L24 2000LM SEF RDL MVOLT GZ10 35K 80CRI WH	2000	120-277V	18.4W	4	CEILING MOUNT						
6	LITHONIA LIGHTING	TCC COMMERCIAL STEEL RUNNING MAN COMBO	TCC RM 750L HO	350	120-347V	5W	10	SURFACE MOUNT						
7	LITHONIA LIGHTING	6" WAFER LED RECESSED DOWNLIGHT	WF6 LED 30K MW	800	120V	12.6W	5	RECESSSED						
8	LITHONIA LIGHTING	SQUARE DUAL HEAD ERE LED REMOTE	ERE W T SQ	750	3.6-12VDC	2W	8		TO BE POWERED FROM FIXTURE #6					

	WATER HEATER SCHEDULE													
UNIT#	DESCRIPTION	MAKE	MODEL #	CAPACITY	TYPE	VOLTAGE	INPUT (kW)	MCA	МОСР	HEIGHT	DIAMETER	SHIPPING WEIGHT	WEIGHT W/ WATER	REMARKS
HWT-1	ELECTRIC WATER HEATER	A.O.SMITH	DEN-80	80 USG	ELECTRIC	208/1/60	3 kW	14.4	20	59-3/8"	24"	211lbs	~667 lbs	NON SIMULTANEOUS OPERATION. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.
NOTE: A	TE: ALTERNATE EQUIPMENT OF EQUIVALENT PERFORMANCE IS ACCEPTABLE.													

	EXHAUST FAN SCHEDULE													
FAN #	DESCRIPTION	MAKE	MODEL	AIR FLOW (CFM)	FAN MOTOR kW (HP)	STATIC PRESSURE	FAN RPM	<u>VOLTAGE</u>	MCA (AMPS)	MOCP (AMPS)	UNIT WEIGHT kg(lbs)	REMARKS		
<u>EF-1</u>	LUNCH ROOM CEILING EXHAUST FAN	GREENHECK	SP-A250	250	-	0.25 in wc	1000	115/60/1	-	15	10.9(24)	INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.		
<u>EF-2</u>	NEW WASHROOMS INLINE EXHAUST FAN	GREENHECK	SQ-95	420	0.0497 (0.0667)	0.31 in wc	1,300	115/60/1	-	15	24.0(53)	CONTROLLED BY TIMER. SET TO RUN DURING OCCUPIED HOURS. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.		
<u>EF-3</u>	NEW SHOWER INLINE EXHAUST FAN	GREENHECK	SQ-90	280	0.0298 (0.04)	0.33 in wc	1,300	115/60/1	-	15	22.7(50)	INTERLOCK w/ SHOWER LIGHTS. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.		
REMARKS:	ALTERNATE EQUIPMENT OF EQUIV	VALENT PERFORMAI	NCE IS ACCEPTAE	BLE.	•	•	•	•	•	•				

						HVAC	EQUIPMENT	SCHEDULE					
TAG ID	DESCRIPTION	MAKE	MODEL	AIR FLOW (CFM)	OUTDOOR AIR (CFM)	HEATING INPUT (MBH)	HEATING OUTPUT (MBH)	COOLING CAPACITY (MBH)	VOLTAGE	MCA (AMPS)	MOCP (AMPS)	UNIT WEIGHT kg (lbs)	<u>REMARKS</u>
RTU-1	NEW 4 TON PACKAGED UNIT	CARRIER	48FCEA05E2A1-0B0F0	1900	367	110	88	49.55	575/60/3	9	15	~292.1 (644)	DOWNFLOW, c/w NON-FUSED DISCONNECT, ELECTROMECHANICAL CONTROLS, ECONOMIZER, CO2 SENSOR, AND 18" HIGH ROOF CURB. INSTALL PER MANUFACTURERS INSTALLATION INSTRUCTIONS.
<u>SS-1.0</u>	NEW 1 TON DUCTLESS SPLIT SYSTEM - OUTDOOR UNIT	MITSUBISHI	SUZ-KA12NAH2	-	-	-	-	-	120/1/60	9	20	36.7 (81)	INSTALL PER MANUFACTURER INSTALLATION INSTRUCTIONS.
<u>SS-1.1</u>	NEW 1 TON DUCTED SPLIT SYSTEM -INDOOR UNIT	MITSUBISHI	SEZ-KD12NA4R1	222-388	-	-	15.0	12.0	-	1.0	15	22.7 (50)	POWERED BY <u>SS-1.0</u> . INSTALL PER MANUFACTURER INSTALLATION INSTRUCTIONS.
HRV-1	HEAT RECOVERY VENTILATOR	LIFEBREATH	METRO 120D	120	120	-	-	-	208/1/60	1.4	15	16.8 (36)	INTERLOCK OPERATION WITH <u>SS-1.1</u> . INSTALL PER MANUFACTURER INSTALLATION INSTRUCTIONS.
REMARKS: AL	TERNATE EQUIPMENT OF EQUAL PERFOR	MANCE IS ACCE	PTABLE.	•						,	,		

	ELECTRIC HEATER SCHEDULE											
UNIT#	NIT# DESCRIPTION MAKE MODEL# TYPE HEATING OUTPUT VOLTAGE MCA MOCP WEIGHT Kg (lbs) REMARKS											
EFF-1	ELECTRIC FAN FORCED HEATER	OUELLET	ODSR02008	ELECTRIC	2000 WATTS	208/60/1	9.6A	15A		RECESSED IN CEILING, c/w BUILT IN TAMPERPROOF THERMOSTAT, BUILT IN SWITCH. INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.		
NOTE: A	LTERNATE EQUIPMENT OF EQUIVA	ALENT PERFORMAN	CE IS ACCEPTABLE.	•		•	•	•	•			

	WATER SOFTENER SCHEDULE												
TAG ID	AG ID DESCRIPTION MAKE MODEL RATED SERVICE FLOW RATE (GPM) VOLTAGE MCA (AMPS) MOCP (AMPS) RESIN VOLUME UNIT WEIGHT kg (lbs) REMARKS												
<u>WS-1</u>	NEW WATER SOFTENER	RHEEM	RH42	9.9	120/1/60	-	15	1.2	-	INSTALL AS PER MANUFACTURER'S INSTRUCTIONS.			
NOTE: ALTE	OTE: ALTERNATE EQUIPMENT OF EQUIVALENT PERFORMANCE IS ACCEPTABLE.												

SUSPENDED OR GRID - I MOUNT. REFER TO LIGHTING SCHEDULE LIGHTING FIXTURE, DRAWN TO SCALE, SURFACE, RECESSED, SUSPENDED OR PENDANT DOWN LIGHT. REFER TO LIGHTING SCHEDULE LIGHTING FIXTURE, WALL AND COLUMN MOUNTED SCONCE LIGHT. LIGHTING FIXTURE. FLOOD OR SPOT LIGHT. MOUNTED AS INDICATED. REFER TO LIGHTING SCHEDULE LIGHTING FIXTURE. EXTERIOR WALL PACK. COND -o/h -u/g UNDE \$ SWITE \$ 3 - W.	LEG DI CONNECTIONS DUIT OR WIRE RUI HEAD WIRES RGROUND CABLE CH AY SWITCH AY SWITCH ER HEATER ER. (XXX IS THE S
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EXIT SIGN. ARROW DENOTES DIRECTION OF EGRESS. MOUNT AS INDICATED.	GENCY CALL SYST
	ONNECT
REFER TO LIGHTING SCHEDULE FOR MOUNTING AND POLE DETAILS.	D DISCONNECT. X
	LE PHASE MOTOR. ER OF THE MOTOR
LIGHT FIXTURE ANNOTATION : P - PANEL BOARD NAME, POWE	E PHASE MOTOR (ER OF THE MOTOR
SCHEDULE, FIXTURE NUMBER 2 IN THE SCHEDULE AND IS POWERED FROM PANEL LP CIRCUIT 7. IP-72 CIRCUIT 1. P - #, #, # A THE	JIT ANNOTATION. CATES THE CIRCUI REE PHASE MOTOR JIT 2,4 AND 6
C CAME	RA
ABBREVIATIONS	GENCY STOP

	ADDREVIATIONS
А	AMPERE .
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AL	ALUMINIUM
CU	COPPER
AWG	AMERICAN WIRE GAUGE
GFI	GROUND FAULT INTERRUPTER
OS	OCCUPANCY SENSOR
DM	DIMMING
WP	WEATHER PROOF
НР	HORSE POWER
TX	TRANSFORMER -
ETR	EXISTING TO REMAIN
TBR	TO BE REMOVED
PS	PHOTO SENSOR

4	
\$ ₄	4 - WAY SWITCH
	WATER HEATER
H	HEATER. (XXX IS THE SCHEDULE TAG ID, SEE SCHEDULE FOR DETAILS.)
J	JUNCTION BOX
(J)	IN - CEILING JUNCTION BOX
J	IN - FLOOR JUNCTION BOX
РВ	PULL BOX
DO	ELECTRIC DOOR OPERATOR
E	EMERGENCY CALL SYSTEM
	DISCONNECT
Χ	FUSED DISCONNECT. X INDICATE FUSE SIGN.
×	SINGLE PHASE MOTOR. X (IF SHOWN) INDICATES THE HORSE POWER OF THE MOTOR.
X	THREE PHASE MOTOR (IF SHOWN) INDICATES THE HORSE POWER OF THE MOTOR
P - #, #, #	CIRCUIT ANNOTATION. P- PANEL BOARD NAME, # - INDICATES THE CIRCUIT NUMBER. EX Sub A - 2,4,6 IS A THREE PHASE MOTOR POWERED FROM PANEL Sub A CIRCUIT 2,4 AND 6
C	CAMERA
	EMERGENCY STOP
Y	ANTENNA
D)	DETECTOR
	RECEPTACLES / OUTLET
SYMBOLS	DESCRIPTION
1201/	
	SINGLE RECEPTACLE (CAS 5 - 15R)
v V	SINGLE RECEPTACLE (CAS 5 - 15R) DUPLEX RECEPTACLE (CAS 5 - 15R)
v	
	DUPLEX RECEPTACLE (CAS 5 - 15R)
	DUPLEX RECEPTACLE (CAS 5 - 15R) FOURPLEX RECEPTACLE (CAS 5 - 15R)
	DUPLEX RECEPTACLE (CAS 5 - 15R) FOURPLEX RECEPTACLE (CAS 5 - 15R) 120V SPLIT - WIRED DUPLEX RECEPTACLE (CAS5 - 15R) VERTICAL LINE THROUGH PRONGS OF ANY RECEPTACLE
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	DUPLEX RECEPTACLE (CAS 5 - 15R) FOURPLEX RECEPTACLE (CAS 5 - 15R) 120V SPLIT - WIRED DUPLEX RECEPTACLE (CAS5 - 15R) VERTICAL LINE THROUGH PRONGS OF ANY RECEPTACLE INDICATE A 20A (CAS 5 - 20R) RECEPTACLE DIRECT CONNECTION OR SPECIAL OUTLET AS NOTED BOX AROUND ANY RECEPTACLE INDICATES IN-FLOOR
	DUPLEX RECEPTACLE (CAS 5 - 15R) FOURPLEX RECEPTACLE (CAS 5 - 15R) 120V SPLIT - WIRED DUPLEX RECEPTACLE (CAS5 - 15R) VERTICAL LINE THROUGH PRONGS OF ANY RECEPTACLE INDICATE A 20A (CAS 5 - 20R) RECEPTACLE DIRECT CONNECTION OR SPECIAL OUTLET AS NOTED BOX AROUND ANY RECEPTACLE INDICATES IN-FLOOR RECEPTACLE CIRCLE AROUND ANY RECEPTACLE INDICATES IN-CEILING

RECEPTACLE ANNOTATIONS: P - PANEL BOARD NAME, # - BRANCH CIRCUIT, XX - OPTIONAL FEATURE RATING. EX. SYMBOL SHOWN IS POWERED FROM PANEL SUB C CIRCUIT 15 AND IS A GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE.

LEGENDS

CONDUIT OR WIRE RUN AS INDICATED

UNDERGROUND CABLE AND CONDUIT

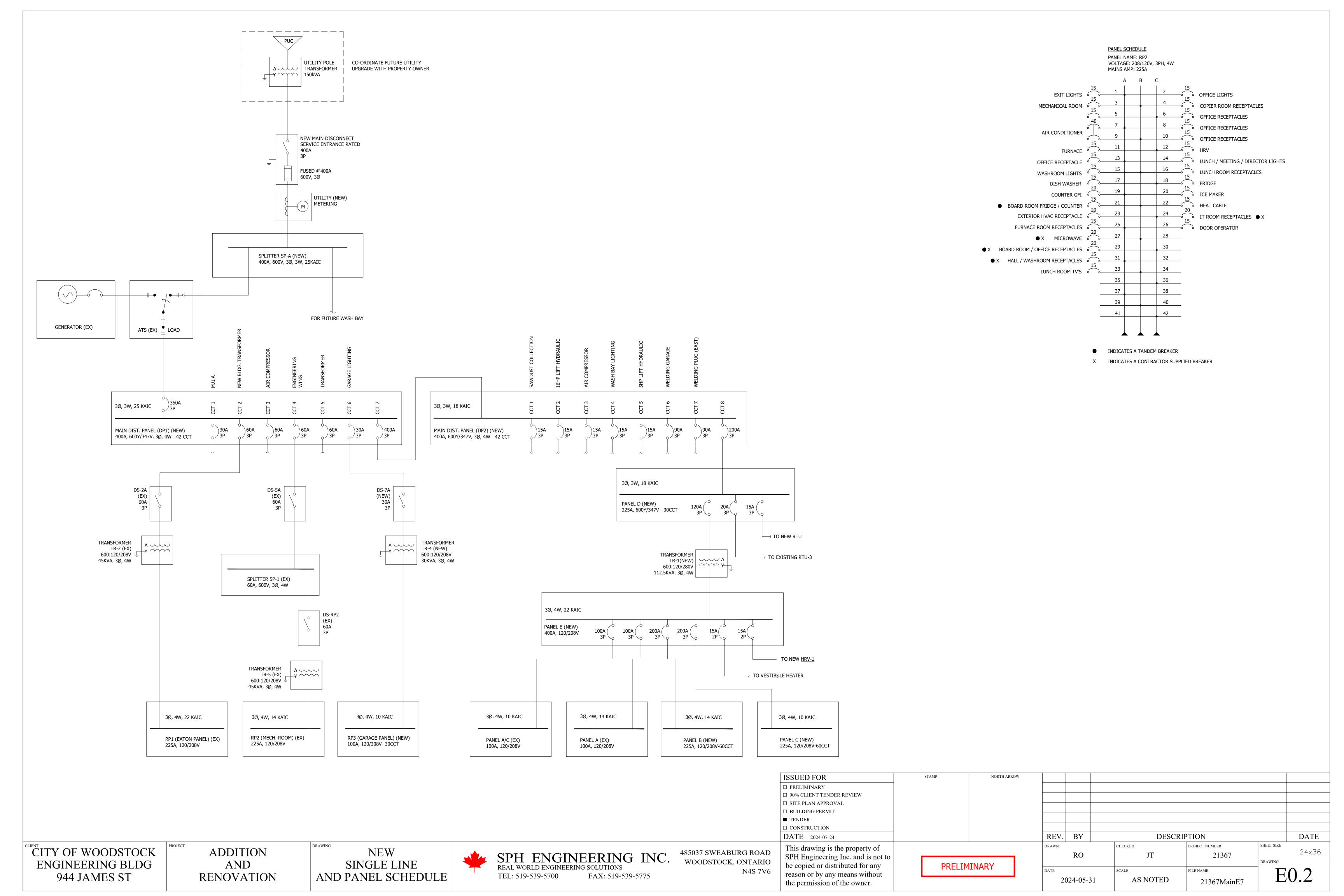
ISSUED FOR	STAMP	NORTH ARROW							
□ PRELIMINARY □ 90% CLIENT TENDER REVIEW									
☐ SITE PLAN APPROVAL									
☐ BUILDING PERMIT									
■ TENDER									
□ CONSTRUCTION									
DATE 2024-07-24			REV.	BY		DESCRI	PTION		DATE
This drawing is the property of SPH Engineering Inc. and is not to	DDELTA.	ATALA DV	DRAWN	RO		CHECKED JT	PROJECT NUMBER 21367	SHEET SIZE DRAWING	24x36
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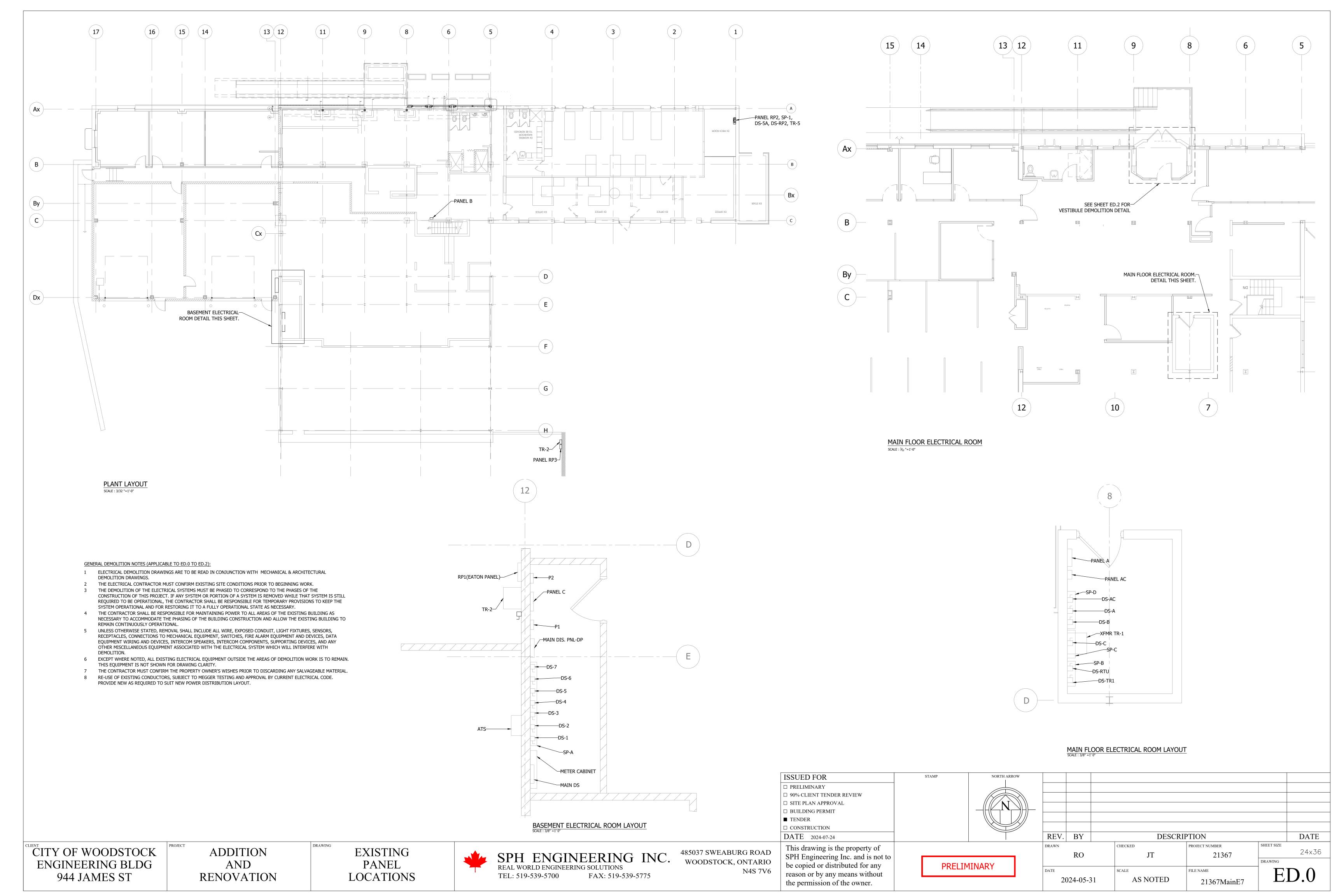
CITY OF WOODSTOCK ENGINEERING BLDG 944 JAMES ST

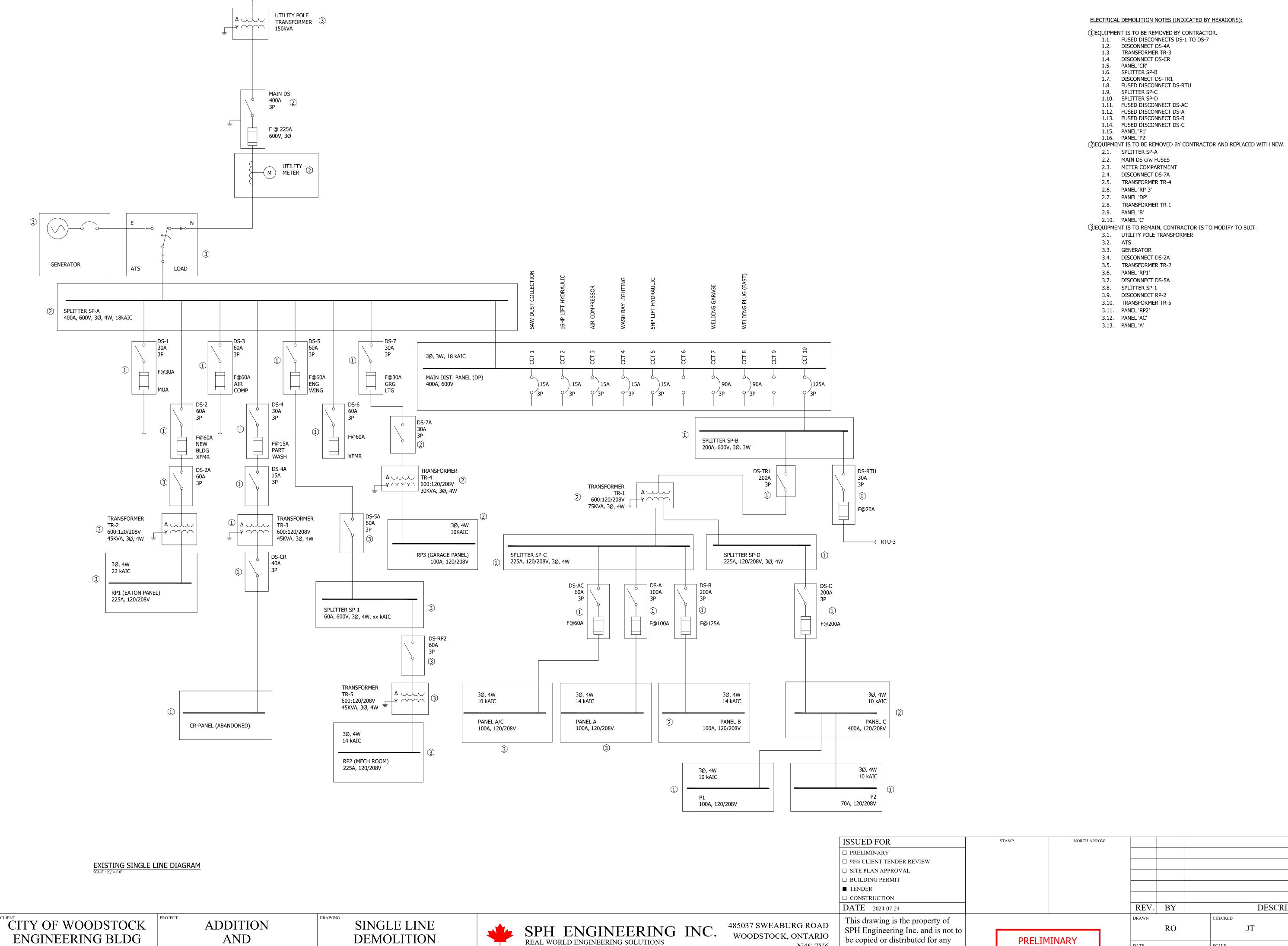
ADDITION AND RENOVATION

LEGENDS & SCHEDULES SPH ENGINEERING INC.
REAL WORLD ENGINEERING SOLUTIONS TEL: 519-539-5700 FAX: 519-539-5775

485037 SWEABURG ROAD WOODSTOCK, ONTARIO







TEL: 519-539-5700

FAX: 519-539-5775

944 JAMES ST

RENOVATION

PLAN

ELECTRICAL DEMOLITION NOTES (INDICATED BY HEXAGONS):

(1) EQUIPMENT IS TO BE REMOVED BY CONTRACTOR.

1.1. FUSED DISCONNECTS DS-1 TO DS-7

1.3. TRANSFORMER TR-3

1.4. DISCONNECT DS-CR

1.9. SPLITTER SP-C

1.10. SPLITTER SP-D

1.12. FUSED DISCONNECT DS-A 1.13. FUSED DISCONNECT DS-B

1.14. FUSED DISCONNECT DS-C

1.16. PANEL 'P2'

2.2. MAIN DS c/w FUSES

2.3. METER COMPARTMENT

2.4. DISCONNECT DS-7A

2.6. PANEL 'RP-3'

2.7. PANEL 'DP'

2.8. TRANSFORMER TR-1

③ EQUIPMENT IS TO REMAIN, CONTRACTOR IS TO MODIFY TO SUIT.

DESCRIPTION

CHECKED

JT

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2024-05-31

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PROJECT NUMBER

21367

21367MainE7

DATE

24x36

ED.1

SHEET SIZE

DRAWING

3.1. UTILITY POLE TRANSFORMER

3.4. DISCONNECT DS-2A

3.5. TRANSFORMER TR-2

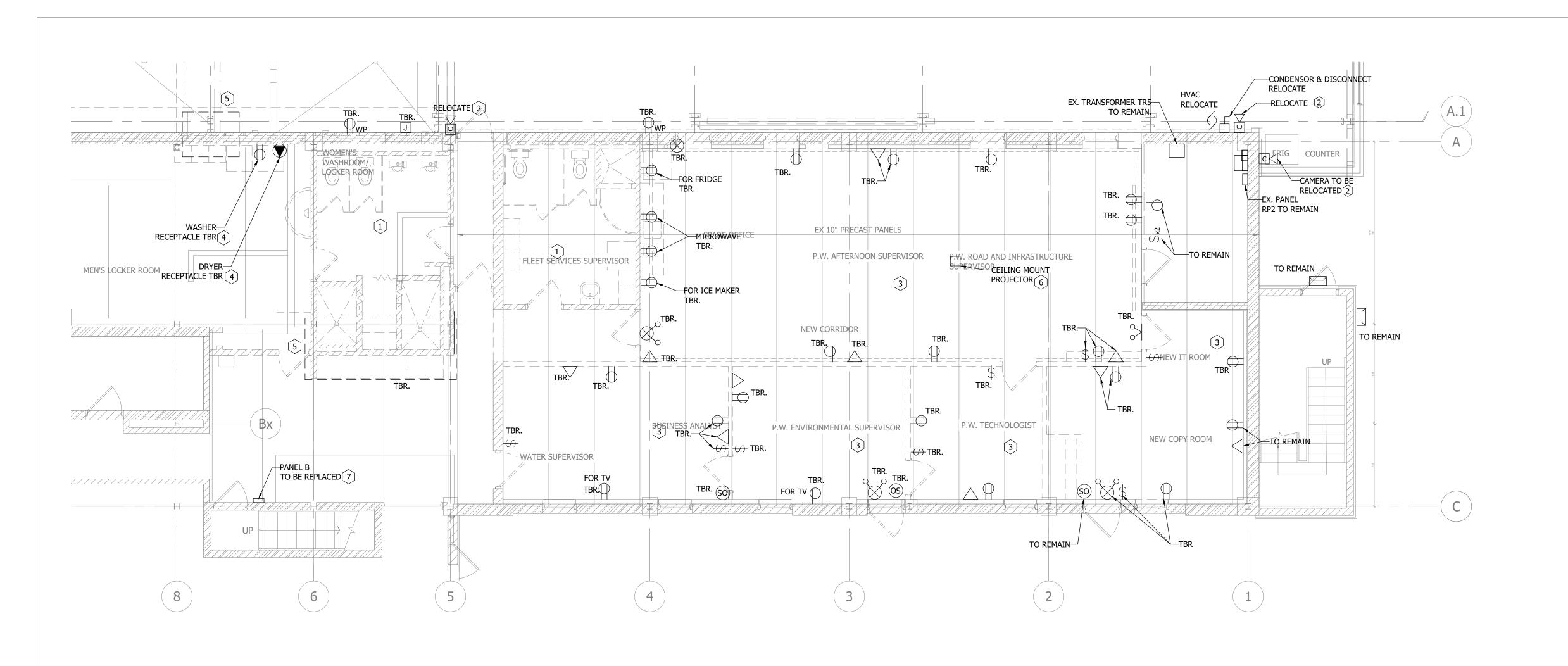
3.6. PANEL 'RP1'

3.8. SPLITTER SP-1

3.9. DISCONNECT RP-2

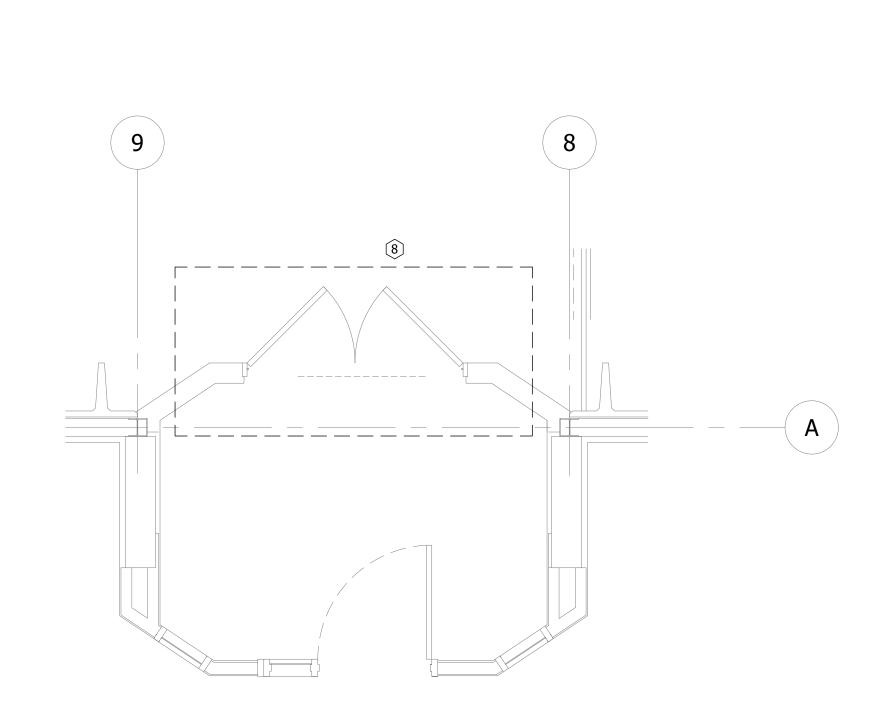
3.10. TRANSFORMER TR-5

3.12. PANEL 'AC'



KEY DEMOLITION NOTES (INDICATED BY HEXAGONS):

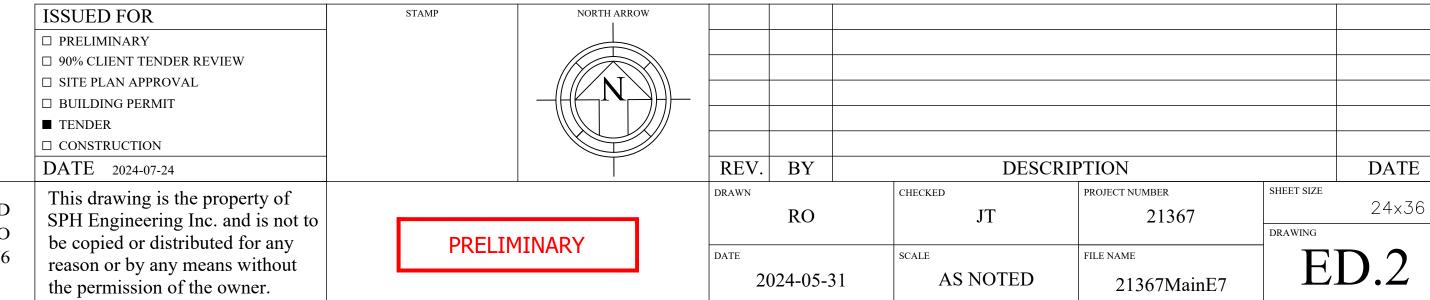
- (1) ALL ELECTRICAL EQUIPMENT, LIGHTS, RECEPTACLES, AND DEVICES WITHIN THE INDICATED WASHROOMS ARE TO BE REMOVED TO ALLOW FOR DEMOLTION. COORDINATE WITH APPROPRIATE SUB-TRADES. CIRCUITS TO BE DETERMINED
- COORDINATE SECURITY CAMERA REMOVAL AND RELOCATION WITH PROPERTY OWNER AND APPROPRIATE SUBTRADES.
- ALL ELECTRICAL EQUIPMENT, LIGHTS AND DEVICES WITHIN THE EXISTING ROOM'S CEILING SPACE ARE TO BE REMOVED TO ALLOW FOR DEMOLTION AND RENOVATION. CIRCUITS TO BE DETERMINED ON-SITE.
- (4) WASHER AND DRYER ARE TO BE REMOVED AND STORED FOR FUTURE RELOCATION. CONTRACTOR IS TO CONFIRM AND NOTE EXISTING CIRCUITS POWERING THE WASHER AND DRYER. CONTRACTOR WILL REWORK ELECTRICAL SO THAT EXISTING CIRCUITS WILL POWER WASHER AND DRYER UPON RELOCATION. CIRCUITS TO BE DETERMINED ON-SITE. SEE SHEET E1.0 FOR WASHER AND DRYER'S NEW LOCATION.
- CONTRACTOR IS TO REMOVE OR REWORK ANY ELECTRICAL AND DATA EQUIPMENT ALONG WALL WHICH IS IN THE AREA OF DEMOLITION. REWORK AS REQUIRED.
- CEILING MOUNT PROJECTOR IS TO BE SAVED AND STORED FOR RELOCATION. PANEL B IS TO BE REMOVED BY CONTRACTOR AND REPLACED WITH NEW.
- ALL ELECTRICAL EQUIPMENT, LIGHTS, DOOR OPERATORS WITHIN THE INDICATED AREA TO BE REMOVED TO ALLOW FOR DEMOLITION. COORDINATE WITH APPROPRIATE SUB-TRADE.
- CONTRACTOR IS TO MAKE SAFE AND DISCONNECT EXISTING EXTERIOR SIGN FROM POWER. EXISTING CONDUIT WILL HAVE TO BE REMOVED WITHIN AREA OF SITE DEMOLITION. CIRCUIT IS TO BE DETERMINED ON-SITE AND IS TO BE RECONNECTED TO SIGN UPON COMPLETION OF CONSTRUCTION.



VESTIBULE DEMOLITION DETAIL
SCALE: 3/8"=1'-0"



SIGN DETAIL
SCALE: NTS



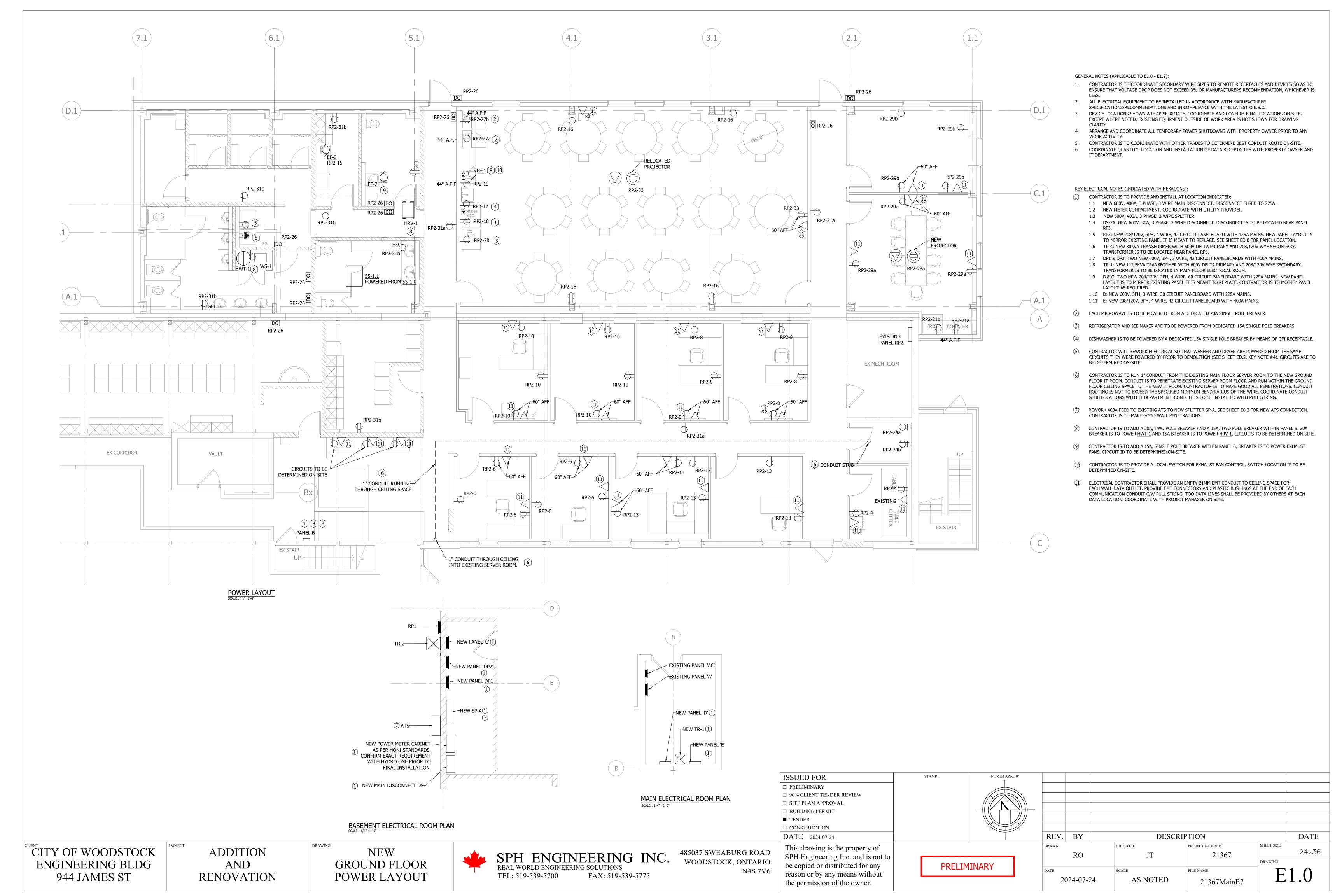
CITY OF WOODSTOCK ENGINEERING BLDG 944 JAMES ST

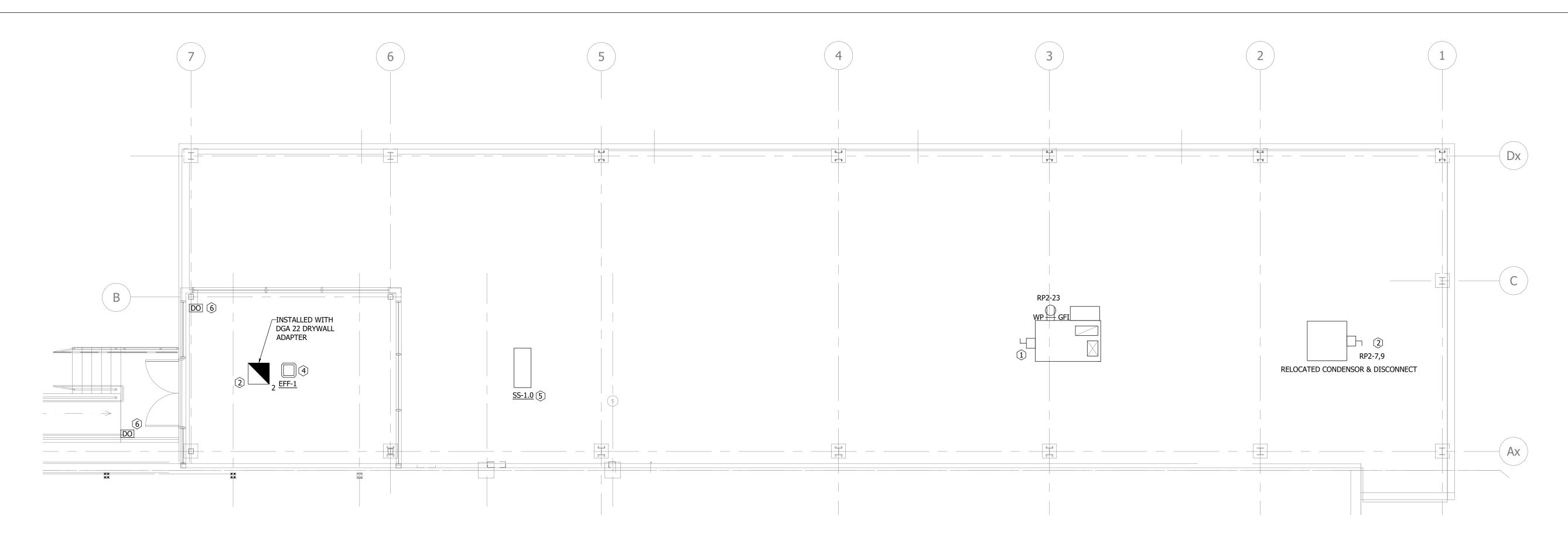
ADDITION AND RENOVATION

GROUND FLOOR & VESTIBULE **DEMOLITION**

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WOODSTOCK, ONTARIO

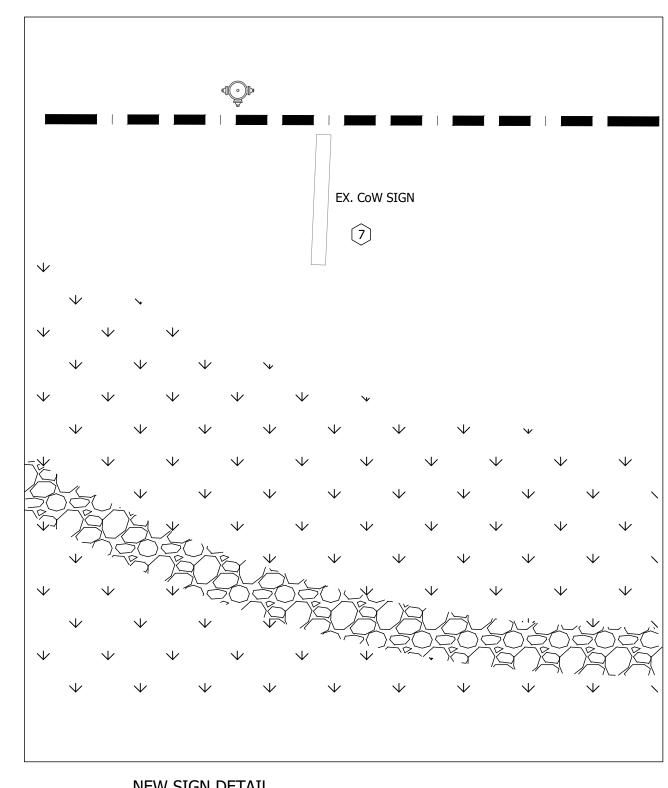




NEW ROOF / VESTIBULE POWER LAYOUT

KEY NOTES (INDICATED WITH HEXAGONS):

- NEW ROOF TOP UNIT IS TO BE POWERED FROM THE 15A, THREE POLE BREAKER WITHIN NEW PANEL D. UNIT IS TO BE POWERED
- THROUGH AN APPROPRIATELY RATED LOCAL DISCONNECT. CONTRACTOR IS TO PROVIDE DISCONNECT IF REQUIRED. RELOCATED CONDENSER IS TO BE POWERED FROM THE 40A, TWO POLE BREAKER WITHIN EXISTNG PANEL RP2. CONDENSOR IS TO BE POWERED THROUGH RELOCATED DISCONNECT. CONTRACTOR IS TO REWORK ELECTRICAL AS REQUIRED.
- CONTRACTOR IS TO REWORK ELECTRICAL TO CONNECT VESTIBULE LIGHT TO EXISTING LIGHTING CIRCUIT. CIRCUIT IS TO BE DETERMINED ON-SITE. FIXTURE IS A SECURITY LIGHT AND IS TO BE ALWAYS ON. LIGHT IS TO BE INSTALLED WITH A DGA22 DRYWALL
- VESTIBULE HEATER IS TO BE POWERED FROM 15A, TWO POLE BREAKER WITHIN NEW PANEL E.
- TO BE POWERED FROM 15A, 2 POLE BREAKER ON NEW PANEL E.
- CONTRACTOR IS TO REWORK ELECTRICAL SO THAT DOOR OPERATORS ARE POWERED FROM AN EXISTING DOOR OPERATOR CIRCUIT. EXTERIOR SIGN IS TO BE POWERED FROM EXISTING SIGN LIGHTING CIRCUIT THAT WAS DETERMINED DURING DEMOLITION. SEE SHEET ED.2 KEY NOTE 9. CONTRACTOR IS TO RUN CABLE AND CONDUIT TO EXTERIOR SIGN. BEST ROUTE FOR CONDUIT IS TO BE DETERMINED ON-SITE. CONTRACTOR IS TO MAKE GOOD ALL EXTERIOR WALL PENETRATIONS.



NEW SIGN DETAIL
SCALE: NTS

ISSUED FOR NORTH ARROW □ PRELIMINARY ☐ 90% CLIENT TENDER REVIEW ☐ SITE PLAN APPROVAL ☐ BUILDING PERMIT ■ TENDER ☐ CONSTRUCTION REV. BY DATE 2024-07-24 **DESCRIPTION** DATE DRAWN This drawing is the property of SPH Engineering Inc. and is not to be copied or distributed for any PROJECT NUMBER SHEET SIZE CHECKED 24x36 RO 21367 JT PRELIMINARY E1.1 reason or by any means without the permission of the owner. 2024-05-31 AS NOTED

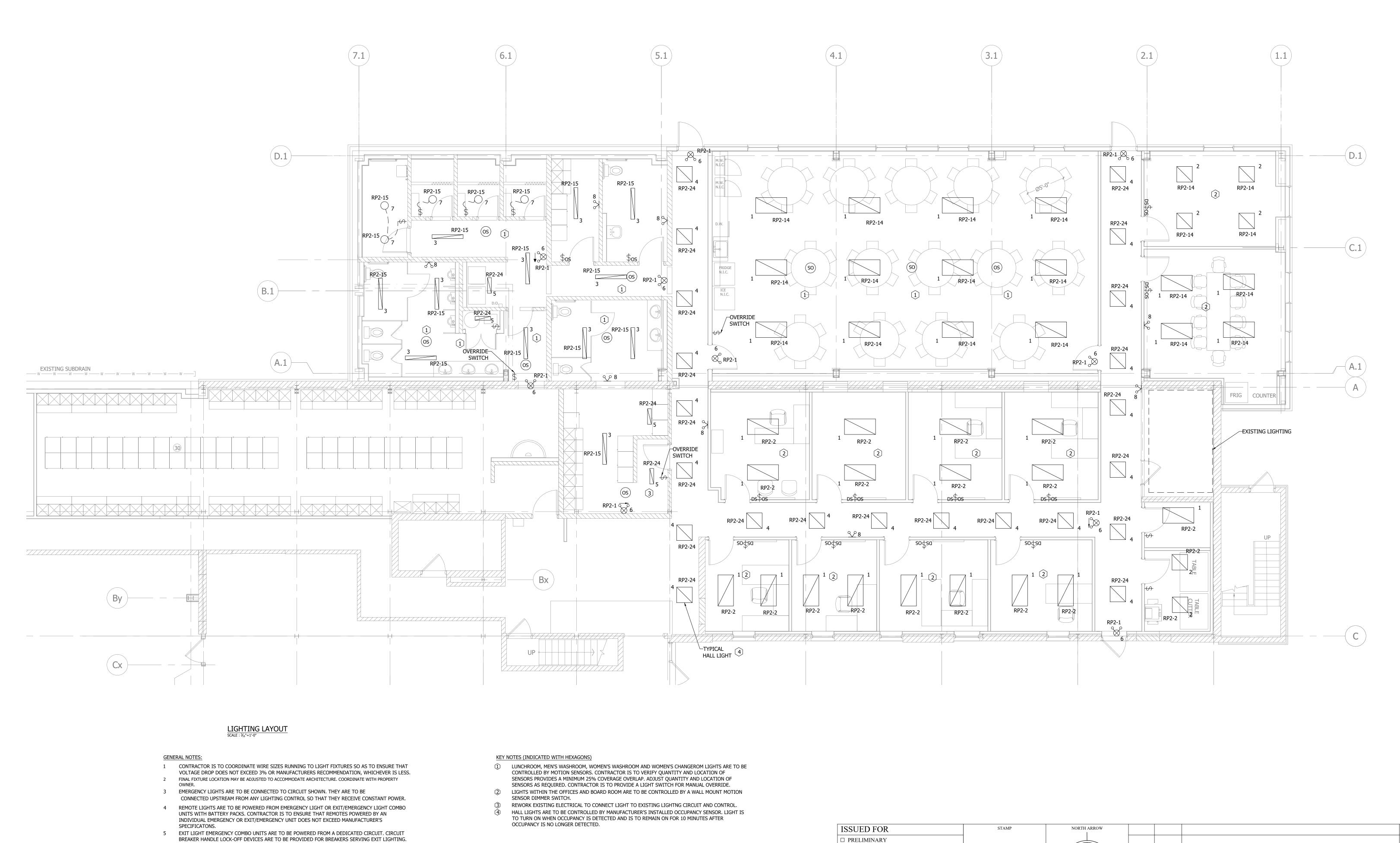
21367MainE7

CITY OF WOODSTOCK ENGINEERING BLDG 944 JAMES ST

ADDITION AND RENOVATION NEW ROOF POWER & VESTIBULE POWER, LIGHTING LAYOUT



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CITY OF WOODSTOCK ENGINEERING BLDG 944 JAMES ST

ADDITION AND RENOVATION

AND ALL LINE VOLTAGE WIRING TO DEVICES.

COORDINATE AND CONFIRM LIGHTING ZONES AND CONTROLS WITH PROPERTY OWNER PRIOR TO

ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL CONTACTORS, SENSORS AND SWITCHES

ALL ELECTRICAL DEVICES ARE TO BE INSTALLED AS PER MANUFACTURER'S SPECIFICATIONS.

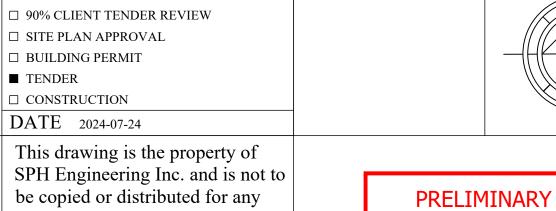
LIGHTING LAYOUT

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