GENERAL INSTRUCTIONS

CONDITIONS OF CONTRACT

1. THE OWNERS INSTRUCTIONS TO BIDDERS AND THE GENERAL CONDITIONS OF THE DESIGNERS SPECIFICATIONS ARE AN INTEGRAL PART OF THIS CONTRACT AND SHALL BE READ IN CONJUNCTION HEREWITH. THESE INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND HIS SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE DESIGNER, ENGINEER AND OWNER.
2. THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALTIES OR MATERIALS.
3. IT IS A CONDITION OF THIS CONTRACT, THAT THE CONTRACTOR WILL, IN THE PERFORMANCE OF THE SERVICES FOR THE OWNER AS DESCRIBED IN THIS CONTRACT, PERFORM WORK IN ACCORDANCE WITH ONTARIO BUILDING CODE LATEST EDITION, THE ONTARIO HYDRO ELECTRICAL SAFETY CODE, THE SEWAGE SYSTEMS ENVIRONMENTAL PROTECTION ACT ONTARIO, WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS), O.REG 644/88, THE ONTARIO GAS UTILIZATION CODE, AND ANY OTHER CODE OF PROVINCIAL OR LOCAL APPLICATION, INCLUDING HOURS OF WORK, RATES OF PAY, JOB SAFETY AND ALL OTHER MATTERS IN WHICH THE MUNICIPAL OR FEDERAL AUTHORITIES HAVE JURISDICTION, PROVIDED THAT IN ANY CASE OF CONFLICT OR DISCREPANCY, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
4. COMPLY WITH STANDARD FOR BUILDING CONSTRUCTION OPERATIONS, ISSUED BY THE ONTARIO FIRE MARSHALL'S OFFICE AND ALL APPLICABLE FIRE SAFETY CODES, LAWS, AND REGULATIONS.
5. IT IS INCUMBENT UPON THE CONTRACTOR TO INFORM ITSELF OF ANY SUCH LEGISLATION AND THE CONTRACTOR AGREES THAT IN THE EVENT OF NON-COMPLIANCE WITH THIS LEGISLATION, IT WILL INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY COSTS AND DAMAGES RESULTING FROM SUCH NON-COMPLIANCE.
6. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARDS OF GOOD PRACTICE SUCH AS, BUT NOT LIMITED TO, SMACNA AND ASHRAE, MEET OR EXCEED REQUIREMENTS OF CONTRACT DOCUMENTS, SPECIFIED STANDARDS, CODES AND REFERENCED DOCUMENTS DESCRIBED IN THESE INSTRUCTIONS.

EXAMINATION OF WORK

1. THIS PROJECT INVOLVES RENOVATIONS TO EXISTING BUILDING, THEREFORE EXAMINE THE SITE AND LOCAL CONDITIONS TO DETERMINE THE DIFFICULTIES IN CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING FINAL PRICE.

INTENT

1. IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY OPERATING SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES. THESE DOCUMENTS MAY NOT SHOW OR DESCRIBE EACH AND EVERY ITEM REQUIRED FOR THE COMPLETE INSTALLATION;THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOUR, MATERIAL AND EQUIPMENT DEEMED NECESSARY TO COMPLETE THE WORK INDICATED OR REASONABLY IMPLIED ON ALL DRAWINGS.

LIABILITY

1. THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT HIS WORK AND FOR ANY DAMAGE OR EXTRA COSTS CAUSED TO THE OWNER OR OTHER CONTRACTORS BY IMPROPER LOCATION OR CARRYING OUT OF HIS WORK. CARRY ALL NECESSARY INSURANCE COVERAGE.

PERMITS, CERTIFICATES, FEES, ETC.

1. GIVE ALL NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES SO THAT THE WORK SPECIFIED HEREIN MAY BE CARRIED OUT, EXCEPT FOR OCCUPANCY PERMIT WHICH WILL BE OBTAINED BY THE OWNER. AT THE ENGINEER'S REQUEST, FURNISH ANY CERTIFICATES AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.

GUARANTEE

1. THE CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GIVE THE OWNER A WRITTEN GUARANTEE WARRANTING ALL APPARATUS FURNISHED UNDER THE CONTRACT TO REMAIN IN PERFECT SERVICEABLE CONDITION FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE OF HIS WORK AS ESTABLISHED BY THE PROJECT MANAGER AND ENGINEER.

DOCUMENTS REQUIRED

1. MAINTAIN AT JOB SITE ONE COPY OF EACH OF THE FOLLOWING DOCUMENTS:
   - .1 DRAWINGS.
   - .2 SPECIFICATIONS.
   - .3 ADDENDA.
   - .4 CHANGE ORDERS. .
   - .5 OTHER MODIFICATIONS TO CONTRACT.
   - .6 FIELD TEST REPORTS. .
   - .7 MANUFACTURERS' INSTALLATION AND APPLICATION INSTRUCTIONS.

EXTRA WORK

1. NO EXTRA WORK IS TO BE CARRIED OUT WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
2. CONTRACTOR SHALL PROVIDE QUOTATIONS FOR EXTRA WORK AS DIRECTED UNDER CONTEMPLATED CHANGE NOTICES (CCN'S) ISSUED IN WRITING BY THE ENGINEER OR THE OWNER'S REPRESENTATIVE.
3. CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR BOTH MATERIAL AND LABOUR FOR ALL CONTEMPLATED CHANGE NOTICES. CONTRACTOR WILL USE THE CCN FORMS PROVIDED WITH THE TENDER DOCUMENTS. ALL COLUMNS TO BE USED WHERE APPLICABLE AND EXTENSIONS MADE.
4. AT THE START OF THE PROJECT THE CONTRACTOR SHALL SUBMIT FOR REVIEW THE HOURLY LABOUR RATE THAT IS PROPOSED FOR PRICING ON ALL EXTRA WORK THAT MAY ARISE ON THE PROJECT.
5. LABOUR RATE TO INCLUDE ONLY:
   - .1 PAY AND VACATION PAY.
   - .2 WELFARE AS PER UNION COLLECTIVE AGREEMENT (ACCEPTED ONLY IF CONTRACTOR IS A UNION CONTRACTOR).
   - .3 E.I. OR C.P.P. AS PER FEDERAL GOVERNMENT REQUIREMENTS.
   - .4 W.C.B. PAYMENTS AS PER ONTARIO REGULATIONS.
   - .5 INSURANCE AS PER REQUIREMENTS OR REGULATING BODY.
6. MATERIAL WILL BE PRICES AT THE CONTRACTOR'S COST. COPIES OF SUPPLIER'S INVOICES MAY BE REQUIRED TO SUBSTANTIATE MATERIAL COSTS WHEN REQUESTED.
7. THE AMOUNT OF MARK-UP ALLOWED FOR PROFIT AND OVERHEAD WILL BE IN ACCORDANCE WITH THOSE IN THE CONTRACT DOCUMENTS WITH THE TENDER. TO BE MODIFIED TO REFLECT THE ALLOWED PROFIT AND OVERHEAD STATED IN THE CONTRACT DOCUMENTS.
8. THE MARK-UPS APPLY TO THE NET WHERE A CHANGE INCLUDES BOTH EXTRAS AND CREDITS.
9. COST OF WORK BY A SUB-TRADE TO THE DIVISION 26 CONTRACTOR WILL BE DETERMINED BY THE SUB-TRADE USING THE SAME ITEMIZED BREAKDOWN FORMAT AND THE SAME CCN FORM.
10. A MARK-UP OF 5% WILL BE PERMITTED BY THE DIVISION 26 CONTRACTOR FOR SUB-TRADE WORK.

PROGRESS BILLING

1. CONTRACTOR TO SUBMIT ITEMIZED BREAKDOWN FOR THE PROJECT BASED ON THE CONTRACT PRICE AGREED TO FOR THIS PROJECT. CONTEMPLATED CHANGE NOTICES ONCE AUTHORIZED BY THE OWNER WILL BE ADDED TO THE MONTHLY PROGRESS CLAIM.
2. CLAIMS FOR PAYMENT SHALL BE SUBMITTED FOR REVIEW PRIOR TO THE END OF THE PAY PERIOD TO ALLOW FOR A TIMELY REVIEW BY THE ENGINEER.
3. CONTRACTOR SHALL SUBMIT PROGRESS CLAIMS FOR REVIEW AND PAYMENT AUTHORIZATION IN ACCORDANCE WITH THE TERMS OF THE CONTRACT.

AS-BUILT AND RECORD DRAWINGS

1. OWNERS REPRESENTATIVE WILL PROVIDE TWO(2) SETS OF DRAWINGS AT THE START OF CONSTRUCTION TO ALLOW THE CONTRACTOR TO KEEP AND MAINTAIN ACCURATE AS-BUILT DRAWINGS.
2. ONE SET SHALL BE KEPT ON SITE TO RECORD THE INFORMATION REFLECTING CHANGES AND INSTALLATION ON A DAILY BASIS DURING CONSTRUCTION. AT THE END OF THE PROJECT ALL INFORMATION FROM THE CONSTRUCTION SET SHALL BE TRANSFERRED ONTO THE CLEAN SET AND SENT TO THE ENGINEER FOR THE FINAL REVIEW.
3. FAILURE TO KEEP UP TO DATE AS-BUILT DRAWING MAY JEOPARDIZE MONTHLY PROGRESS PAYMENTS. AS-BUILT DRAWING WILL BE REVIEWED AT THE SAME TIME AS MONTLY PROGRESS PAYMENT INSPECTIONS ARE CONDUCTED.

SHOP DRAWINGS

1. BEFORE FABRICATION OR DELIVERY OF ANY MATERIALS OR EQUIPMENT, SUBMIT ELECTRONIC COPIES AND A MINIMUM OF FOUR (4) COMPLETE SETS OF SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT FURNISHED AND INTENDED FOR INSTALLATION UNDER THIS CONTRACT FOR APPROVAL BY THE ENGINEER.

TEMPORARY AND TRIAL USAGE

1. TEMPORARY OR TRIAL USAGE BY THE OWNER OF ANY MACHINERY, APPARATUS, EQUIPMENT OR ANY OTHER WORK OR MATERIALS SUPPLIED UNDER THE CONTRACT BEFORE FINAL WRITTEN ACCEPTANCE BY THE ENGINEER IS NOT TO BE CONSTRUED AS EVIDENCE OF THE ACCEPTANCE OF SAME BY THE OWNER. THE OWNER SHALL HAVE THE PRIVILEGE OF SUCH TEMPORARY AND TRIAL USAGE AS SOON AS THIS CONTRACTOR CLAIMS THAT SAID WORK IS COMPLETED. ANY DAMAGE CAUSED BY DEFECTIVE MATERIAL OR WORKMANSHIP THROUGH TEMPORARY OR TRIAL USAGE BY THE OWNER SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
2. ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR TEMPORARY HEAT OR OTHERWISE WILL BE COMPLETELY REPAIRED, REPLACED, AND CLEANED TO THE FULL SATISFACTION OF THE OWNER.

EXPLOSIVES ACTUATED FASTENING DEVICES

1. DO NOT EMPLOY POWER GUNS USING EXPLOSIVES, UNLESS EXPRESSLY PERMITTED BY THE PROJECT MANAGER; COMPLY WITH REQUIREMENTS OF CSA Z-166 (SAFETY CODE FOR EXPLOSIVE ACTUATED TOOLS).

STORAGE

1. THE SECURITY OF THE CONTRACTOR'S EQUIPMENT AND MATERIALS SHALL BE HIS RESPONSIBILITY. CONTRACTOR SHALL LIAISE WITH THE BUILDING OPERATOR AS NECESSARY.

SIGNS

1. PROVIDE WARNING SIGNS IN LOCATIONS WHERE RENOVATIONS AND ALTERATION WORK IS ADJACENT TO AREAS AFFECTING THE PUBLIC.

EQUIPMENT AND SITE CLEANLINESS

1. DUCTS AND EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS AND OTHER FOREIGN SUBSTANCES. DISCONNECT, CLEAN AND RECONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOCATING AND REMOVING OBSTRUCTIONS. REPAIR WORK DAMAGED IN THE COURSE OF REMOVING OBSTRUCTIONS.
2. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL TO THE SATISFACTION OF THE PROJECT MANAGER. PLACE DUST PROTECTION IN THE FORM OF COVER SHEETS OVER EQUIPMENT AND FURNITURE TO ENSURE NO DUST INFILTRATION. CLEANING TO BE COMPLETED AT THE END OF EACH SHIFT TO THE SATISFACTION OF THE PROJECT MANAGER.

OPERATING AND MAINTENANCE DATA

1. FURNISH THREE (3) SETS OF OPERATING AND MAINTENANCE DATA FOR ALL NEW EQUIPMENT AND SYSTEMS. DATA SHALL BE ASSEMBLED IN BOOKLET FORM WITH HARD COVER AND INDEX. IDENTIFY FRONT COVER WITH NAME AND LOCATION OF THE PROJECT, CONSULTING ENGINEER AND CONTRACTOR. SUBMIT ONE COPY TO THE ENGINEER FOR APPROVAL.

MATERIALS

1. MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT AND OF BEST QUALITY SPECIFIED. USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC APPLICATION. STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR MINIMUM VIBRATION AND LOW OPERATING NOISE LEVEL. REPLACE MATERIAL OR WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF THE ENGINEER.

APPROVALS

1. THE PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, HE MUST QUOTE ON PRODUCTS APPROVED BY THE ENGINEER, IN WRITING, AS AN EQUIVALENT TO THE PRODUCT SPECIFIED. THIS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY ALL OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRAS WILL NOT BE APPROVED TO COVER SUCH WORK.

CUTTING AND PATCHING

1. THE CONTRACTOR IS RESPONSIBLE FOR THIS WORK AND SHALL CO-ORDINATE LOCATIONS FOR ALL HOLES FOR PIPES, DUCTS THROUGH FLOORS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO EXECUTE THE INSTALLATION. X-RAY FLOORS AND STRUCTURAL WALLS BEFORE CUTTING TO LOCATE EXISTING REBAR AND CONDUITS, AND MUST OBTAIN PROJECT MANAGER'S APPROVAL FOR PROPOSED CUTTING BEFORE PROCEEDING. PROVIDE ULC APPROVED FIRE STOPPING SYSTEM FOR ALL PENETRATIONS THROUGH RATED ASSEMBLIES.

SHUTDOWNS

1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT MUST HAVE PRIOR APPROVAL FROM THE PROJECT MANAGER AND ENGINEER. PROVIDE A MINIMUM OF 48 HOURS NOTICE.

MATERIALS REMOVED

1. ALL MATERIALS REMOVED DURING DEMOLITION SHALL BECOME THE PROPERTY OF THE OWNER AND STOCKPILED AS DIRECTED ON SITE. MATERIAL REJECTED BY THE OWNER SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.

ELECTRICAL SPECIFICATIONS

MINIMUM STANDARDS

1. ELECTRICAL INSTALLATION: TO CSA C22.1-LATEST EDITION
2. LIGHTING FIXTURES: TO CSA C22.2 No. 9-LATEST EDITION
3. FIXTURE BALLAST: TO CSA C22.2 No. 74-LATEST EDITION
4. ONTARIO BUILDING CODE-LATEST EDITION
5. ONTARIO ELECTRICAL SAFETY CODE-2015/26TH EDITION.

MOUNTING HEIGHTS

1. INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:
   - .1 LOCAL SWITCHES: 1200mm
   - .2 WALL RECEPTACLES:
     - .1 GENERAL: 400mm
     - .2 ABOVE COUNTERS: 175mm
   - .3 PANEL BOARDS: 1800mm FROM TOP
   - .4 TELECOMMUNICATION OUTLETS: 400mm

DEMOLITION

1. CONTRACTOR TO CO-ORDINATE WITH OTHER TRADES TO ENSURE THAT ELECTRICAL EQUIPMENT AND FEEDERS ASSOCIATED WITH MECHANICAL EQUIPMENT AND/OR IS LOCATED IN WALLS BEING DEMOLISHED IS ALSO BEING REMOVED.
2. EXISTING EQUIPMENT SHOWN AS RELOCATED TO BE CLEANED AND MADE OPERATIONAL BY THIS CONTRACTOR PRIOR TO ITS RELOCATION.
3. CONTRACTOR TO REPLACE BROKEN AND DISCOLOURED LIGHT FIXTURE ACRYLIC LENSES AS INDICATED BY THE ENGINEER.

EQUIPMENT SHUT-DOWN

1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT, MUST HAVE PRIOR APPROVAL FROM THE ENGINEER.

IDENTIFICATION

1. IDENTIFY WITH LAMACOID NAMEPLATES ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND/OR MENTIONED IN THE SPECIFICATION SUCH AS MOTORS, SWITCHES, STARTERS, PANEL BOARDS, TRANSFORMERS, CONTROLS, AND SPECIAL RECEPTACLES, REGARDLESS OF WHETHER OR NOT THE ELECTRICAL EQUIPMENT WAS FURNISHED UNDER THIS SECTION OF THE SPECIFICATION. IDENTIFICATION REVIEWED BY ENGINEER.
2. UNLESS OTHERWISE SPECIFIED, NAMEPLATES SHALL BE RIGID LAMACOID, MINIMUM 1.5mm THICK WITH BLACK LETTERS ENGRAVED ON A WHITE BACKGROUND. NAMEPLATES TO BE NEATLY PLACED, AND SQUARE TO SURROUNDING BUILDING OR EQUIPMENT LINES, AND FASTENED IN PLACE WITH MECHANICAL FASTENERS (SCREWS OR POP RIVETS) AS REVIEWED BY ENGINEER.
3. PROVIDE NEATLY TYPED UPDATED CIRCUIT DIRECTORIES IN A PLASTIC HOLDER ON THE INSIDE DOOR OF NEW PANEL BOARDS, WITH COPY IN MANUAL.
4. IDENTIFY ALL PULL AND JUNCTION BOXES, WITH P-TOUCH LABEL IDENTIFICATION, INDICATING SOURCE PANEL AND CIRCUIT NUMBERS.
5. IDENTIFY ALL RECEPTACLES AND SWITCHES WITH P-TOUCH LABELS, BLACK LETTERING ON TRANSPARENT TAPE, INDICATING SOURCE PANEL AND CIRCUIT NUMBER. LABELS TO BE LOCATED ON FRONT OF COVERPLATE.

LOCATION OF OUTLETS

1. LOCATE OUTLETS AS SHOWN ON DRAWINGS. REFER TO INTERIOR DESIGNER DRAWINGS FOR LOCATION OF OUTLETS WHICH ARE DIMENSIONED OR OTHERWISE LOCATED.
2. DO NOT INSTALL OUTLETS BACK-TO-BACK IN WALL; ALLOW MINIMUM 150mm HORIZONTAL CLEARANCE BETWEEN BOXES, AND LOCATE IN SEPARATE STUD CAVITIES WHEREVER POSSIBLE.
3. CHANGE LOCATION OF OUTLETS AT NO EXTRA COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3 METERS AND INFORMATION IS GIVEN BEFORE INSTALLATION.

WIRING

1. ALL WIRING TO BE COPPER, R90 XLPE, STRANDED WITH 'BRADY LABEL' MAKING SLEEVES AT EACH END, UNLESS OTHERWISE NOTED ON DRAWINGS. WIRING TO BE COLOUR CODED AS PER CODE. MINIMUM WIRE SIZE TO BE No.12 AWG FOR POWER AND LIGHTING.
2. LEAVE ADEQUATE LENGTHS OF WIRE IN JUNCTION BOXES FOR CONNECTIONS TO EQUIPMENT.
3. 'Bx' WIRING IN WALLS ONLY.
4. RUN A GREEN INSULATED GROUND WIRE SIZED AS PER CODE IN ALL CONDUIT RUNS. DO NOT RELY ON CONDUIT AS GROUND.

CONDUITS

1. EACH LENGTH OF CONDUIT TO BE NEW AND BEAR CSA STAMP OF APPROVAL.
2. ALL CONDUITS RUN ABOVE THE SUSPENDED CEILING TO BE 'EMT'.
3. PROVIDE NYLON PULLROPES IN ALL EMPTY CONDUIT RUNS.
4. MODULAR TO MATCH EXISTING: NOCOM MODULAR WIRING CABLES SYSTEM FOR CONNECTION OF FLUORESCENT TROFFER LIGHT FIXTURES, CONSISTENT WITH BASE BUILDING
5. SMART-CONNECT CABLES: START, JOINER, DROP, SWITCH DROP CABLES AS REQUIRED.
6. CONNECTORS: MOULDED PVC RECEPTACLES AND ADAPTERS.
7. REMOVE AND RECONNECT AS REQUIRED TO OBTAIN LIGHTING CIRCUITS INDICATED AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
8. TERMINATE STARTER AND DROP CABLES AT LIGHT SWITCHES AND LIGHT FIXTURES NOT OUTFITTED WITH NOCOM RECEPTACLES.
9. TURN OVER UNUSED CABLES TO BUILDING OWNER.

OUTLET BOXES

1. ELECTRO-GALVANIZED STEEL, COATING EQUAL TO THAT TO THE CONDUIT.
2. MINIMUM 37 mm DEEP 100 mm SQUARE OR OCTAGONAL AS REQUIRED.
3. EQUIP WITH PLASTER RINGS DEEP ENOUGH FOR WALL FINISH MATERIAL TO FIT OVER THE BOX AND WITHIN 6 mm OF THE COVER OPENING.

PULL BOXES

1. PROVIDE PULLBOXES WHERE RUNS EXCEED 30 METERS IN LENGTH AND HAVE MORE THAN 2-90° BENDS.

WIRING DEVICES

1. RECEPTACLES:
   - .1 DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A 'U' GROUND WITH FOLLOWING WITH THE FOLLOWING FEATURES:
   - .2 RECEPTACLES OF SPECIFICATION GRADE.
   - .3 RECEPTACLES OF ONE MANUFACTURER THROUGHOUT PROJECT.
   - .4 IUNBREAKABLE NYLON FACE
   - .5 SUITABLE FOR No. 10 AWG FOR BACK AND SIDE WIRING. SIDE WIRING.
   - .6 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
   - .7 EIGHT (8) BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
   - .8 DOUBLE WIPE CONTACTS AND RIVETED GROUNDING CONTACTS.
   - .9 COLOUR: REFER TO ARCHITECTURAL FINISHES
2. SWITCHES:
   - .1 TO CSA C22.2 NO. 111-M1986 (R1992)
   - .2 15A, 347 VOLT SINGLE POLE, 3 WAY SWITCHES, AS INDICATED.
   - .3 MANUALLY OPERATED GENERAL PURPOSE AC SWITCHES WITH THE FOLLOWING FEATURES:
     - .1 TERMINAL HOLES APPROVED FOR NO. 10 AWG WIRE.
     - .2 SILVER ALLOY CONTACTS.
     - .3 UREA OR MELAMINE MOULDING FOR PARTS SUBJECT TO CARBON TRACKING
     - .4 SUITABLE FOR BACK AND SIDE WIRING.
     - .5 IVORY TOGGLE.
   - .4 TOGGLE OPERATED LOCKING FULLY RATED FOR TUNGSTEN FILAMENT AND FLUORESCENT LAMPS, AND UP TO 80% OF RATED CAPACITY OF MOTOR LOADS.
   - .5 SWITCHES OF ONE MANUFACTURER THROUGH OUT.
3. ISOLATED GROUND RECEPTACLES:
   - .1 DUPLEX RECEPTACLES, CSA TYPE 5-15R 125 VOLT, 15A, ISOLATED GROUND, WITH THE FOLLOWING FEATURES:
     - .1 ORANGE UREA MOULDED HOUSING.
     - .2 SUITABLE FOR No. 10 AWG FOR BACK AND SIDE WIRING.
     - .3 BREAK-OFF LINKS FOR USE AS SPLIT RECEPTACLES.
     - .4 EIGHT BACK WIRED ENTRANCES, FOUR(4) SIDE WIRING SCREWS.
     - .5 DOUBLE WIPE CONTACTS AND RIVETTED GROUNDING CONTACTS.
   - .2 RECEPTACLES OF SPECIFICATION GRADE.
   - .3 RUN ADDITIONAL GREEN ISOLATED GROUND WIRE PER CIRCUIT FROM PANEL TO EACH WIRING

PANEL BOARDS

1. TO CSA C22.2 No. 29-MLATEST EDITION
2. TO CSA C22.2 No. 5.1-M91
3. 225AMP, 120/208 VOLT, 3 PHASE, 4 WIRE PANEL BOARD RATED 10,000A (SYMMETRICAL) INTERRUPTING CAPACITY.
4. COPPER BUS WITH COPPER NEUTRAL OF SAME AMPERE RATING AS MAINS.
5. MAINS: SUITABLE FOR BOLT ON BREAKERS
6. TRIM AND DOOR FINISH: BAKED GREY ENAMEL WITH TWO(2) KEYS FOR DOOR LOCK
7. PANEL BOARD MAINS, NUMBER OF CIRCUITS AND NUMBER OF BRANCH BREAKERS AS INDICATED.

CIRCUIT BREAKERS

1. PROVIDE CIRCUIT BREAKERS IN PANEL BOARD AS INDICATED.
2. BRANCH CIRCUIT BREAKERS QUICK MAKE, QUICK BREAK, AMBIENT COMPENSATED, COMMON TRIP ON ALL MULTIPOLE BREAKERS, TRIP INDICATING CLEARLY SHOWN BY BREAKER HANDLE TAKING POSITION MIDWAY BETWEEN ON AND OFF.
3. BREAKER INTERRUPTING CAPACITY:
   - .1 250V PANELBOARDS AND CDP PANELBOARDS: 18Ka SYMMETRICAL
   - .2 600V CDP PANELBOARDS: 50Ka SYMMETRICAL

TELEPHONE, DATA AND CABLEVISION

1. COMPLETE EMPTY RACEWAYS SYSTEM CONSISTS OF OUTLET BOXES, CONDUITS, FISH WIRES.
2. CONDUITS:
   - .1 21mm 'EMT' RISERS BETWEEN DOUBLE GANGED DEVICES BOXES AND CEILING PLENUM BY DIVISION 26. EXACT LOCATION TO BE DETERMINED ON SITE.
3. FISH WIRE: POLYPROPYLENE TYPE.
4. COVERPLATES INSTALLED BY OTHERS.

COVERPLATES

1. POLISHED STAINLESS STEEL COVER PLATES, THICKNESS 1.0mm FOR WIRING DEVICES MOUNTED IN A FLUSH MOUNTED BOX.

COVERPLATES (CONTINUED)

2. INSTALL COVER PLATES ONLY AFTER PAINTING AND OTHER WORK IS FINISHED.
3. INSTALL SUITABLE COMMON COVER PLATES WHERE WIRING DEVICES ARE GROUPED.
4. COVER PLATES FOR WIRING DEVICES. COMMUNICATION OUTLET COVERLETS PROVIDED BY SYSTEM CONTRACTOR.
5. COVER PLATES FROM ONE MANUFACTURER THROUGHOUT PROJECT.

DISCONNECT SWITCH

1. DISCONNECT SWITCH TO BE RATED HORSEPOWER AND BE EQUIPPED WITH PROVISIONS FOR THREE(3) LOCKING DEVICES AND TO BE CEMA 1 UNLESS OTHERWISE INDICATED, AMPERAGE AS INDICATED ON DRAWINGS AND MOUNTED 1500mm ABOVE FINISHED FLOOR TO CENTRELINE OF HANDLE.

FUSES

1. FUSE TYPE REFERENCE J1, HAS BEEN ADOPTED FOR USE IN THIS SPECIFICATION.
2. FUSES: PRODUCT OF ONE MANUFACTURER.
3. HRCI-J FUSES.
4. TYPE J1, TIME DELAY, CAPABLE OF CARRYING 500% OF ITS RATED CURRENT FOR 10 SECOND MINIMUM.
5. INSTALL FUSES IN MOUNTING DEVICES IMMEDIATELY BEFORE ENERGIZING CIRCUIT.

TRANSFORMERS

1. ELECTRICAL CHARACTERISTICS:
   - .1 3 PHASE, 600 VOLT INPUT, 120/208 VOLT OUTPUT, 60Hz, kVA RATINGS AS INDICATED ON SINGLE LINE DIAGRAM.
   - .2 VOLTAGE TAPS: STANDARD.
   - .3 CAPABILITY TO DELIVER FULL NAMEPLATE kVA TO LOADS OF K- FACTOR UP TO: 20.
   - .4 NEUTRAL CONNECTION SHALL BE RATED AT TWICE THE CAPACITY OF THE SECONDARY PHASE CURRENT.
2. GENERAL CHARACTERISTICS:
   - .1 THREE PHASE COMMON CORE CONSTRUCTION.
   - .2 CONVECTION AIR COOLED, EEMAC 2R SPRINKLER-PROOF ENCLOSURE, REMOVABLE FRONT COVER.
   - .3 COPPER WINDINGS.
   - .4 INSULATION: CLASS 'H', 150°C TEMPERATURE RISE.
   - .5 BASIC IMPULSE LEVEL (BIL): 10kV.
   - .6 TYPE ANN.
   - .7 SOUND LEVEL: MAX. 45db AT 5 FEET.
   - .8 VOLTAGE CLASS: 1.2kV.
   - .9 ANTI-VIBRATION PADS SHALL BE USED BETWEEN CORE AND ENCLOSURE.
   - .10 FULL LOAD EFFICIENCY AT 170°C: 97%.
   - .11 MAGNETIZING INRUSH CURRENT: MAXIMUM 10 TIMES FULL LOAD RATING.
   - .12 TRANSFORMER TO BE WALL MOUNTED.

LIGHTING

1. AS PER LIGHTING SCHEDULE.

EXIT LIGHTS

1. FACE AND BACK PLATES: SATIN ALUMINIUM OR GREY PAINTED STEEL.
2. LED TYPE, INPUT VOLTAGE 347 VOLTS. WITH SECONDARY DC VOLTAGE REQUIRED.
3. LIFE EXPECTANCY OF THE LEDS TO BE 25 YEARS.
4. FACE PLATE TO REMAIN CAPTIVE FOR RELAMPING.
5. UNIVERSAL MOUNTING.
6. ARROW RIGHT, LEFT, BOTH DIRECTIONS AS SHOWN ON DRAWINGS.
7. IMPACT RESISTANT PROTECTIVE PANEL WITH EXTRUDED ALUMINIUM ENCLOSURE.
8. CEILING OR WALL MOUNTING CANOPY AND MOUNTING PLATE FOR INSTALLATION ON 100mm OCTAGONAL JUNCTION BOX.
9. INSTALL EXIT LIGHTS AS INDICATED, TO REQUIREMENTS OF OBC-2012.
10. CONNECT FIXTURES TO EXISTING EXIT LIGHT CIRCUITS AS INDICATED.

TESTING

1. PRIOR TO ENERGIZING THE VARIOUS PORTIONS OF THE ELECTRICAL SYSTEMS, PERFORM MEGGER TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. ALSO PERFORM RESISTANCE-TO GROUND OHM TESTS FOR GROUNDING CONDUCTORS IN ELECTRICAL ROOMS AFFECTED BY THIS RENOVATION. RESULTS SHALL COMPLY WITH THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE (2009) AND THE LOCAL INSPECTION AUTHORITY. SUBMIT RESULTS TO THE PROJECT MANAGER.
2. UPON COMPLETION OF THE PROJECT AND IMMEDIATELY PRIOR TO FINAL INSPECTION, CHECK THE LOAD BALANCE OF ALL AFFECTED PANELS, ETC. THESE TESTS SHALL BE CARRIED OUT BY TURNING ON ALL POSSIBLE LOADS DERIVED FROM PANEL(S) AND CHECKING LOAD CURRENT BALANCE. IF LOAD UNBALANCE EXCEEDS 15%, RECONNECT CIRCUITS TO BALANCE THE LOAD. SUBMIT FINAL READINGS TO PROJECT MANAGER.

SEISMIC RESTRAINT SYSTEM (SRS)

1. PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION AND NFPA13. THE INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS DIESEL GENERATORS, FIRE PROTECTION, CONDUIT, COMMUNICATIONS, ELECTRICAL EQUIPMENT AND SYSTEMS, BOTH VIBRATION ISOLATED AND STATICALLY SUPPORTED.
2. DESIGN TO BE BY PROFESSIONAL ENGINEER SPECIALIZING IN DESIGN OF SRS AND REGISTERED IN THE PROVINCE OF ONTARIO. ELECTRICAL CONTRACTOR TO INCLUDE COSTS ASSOCIATED WITH THIS WORK AS IT RELATES TO ELECTRICAL CONTRACTOR INSTALLATIONS. SUBMIT DESIGN SKETCHES/DRAWINGS PRIOR TO START OF INSTALLATIONS, C/W INSTALLATION REQUIREMENTS.
3. PROVIDE LETTER FROM SEISMIC ENGINEER STATING ALL ELECTRICAL INSTALLATIONS HAVE BEEN INSTALLED IN CONFORMANCE WITH SEISMIC RESTRAINT REQUIREMENTS AS PER ONTARIO BUILDING CODE.

GENERAL NOTES:

1. ALL ELECTRICAL EQUIPMENT SHOWN IN THIN SOLID LINES IS EXISTING TO REMAIN.
2. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK SOLID LINES IS NEW TO BE PROVIDED UNDER THIS CONTRACT, TOGETHER WITH ALL ASSOCIATED CONDUITS AND WIRING.
3. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'R' IS EXISTING TO BE RELOCATED AS SHOWN. EXTEND ALL CONDUITS AND WIRING TO SUIT.
4. ALL ELECTRICAL EQUIPMENT SHOWN IN THICK DASHED LINES WITH LETTER 'X' IS EXISTING TO BE REMOVED C/W ALL CONDUIT, WIRING AND ASSOCIATED HARDWARE BACK TO NEAREST J/B.
5. FOR ANY REQUIRED SHUT DOWN, CONTRACTOR TO COORDINATE WITH SITE MANAGER AND OBTAIN APPROVAL BEFORE SHUT DOWN CAN BE PERFORMED.
6. FIRE ALARM SYSTEM TO REMAIN OPERATIONAL FOR DURATION OF THIS PROJECT, PROVIDE DUST PROTECTION. PROVIDE FIRE WATCH IF REQUIRED.
7. ALL EXISTING AND NEW CONDUITS AND WIRING PASSING THRU FLOOR AND FIRE RATED WALLS TO BE FIRE STOP USING 3M FIRE RETARDANT MASTIC SEALANT NO EQUIVALENT.
8. ALL WIRING TO BE R/RW90, MINIMUM SIZE #12AWG COPPER, IN EMT CONDUIT UNLESS OTHERWISE NOTED.
9. ALL ELECTRICAL CIRCUITS ARE SHOWN FOR GROUPING PURPOSES ONLY, CONTRACTOR TO USE AVAILABLE CIRCUITS IN EXISTING ELECTRICAL PANELS. REUSE EXISTING AND/OR PROVIDE NEW ELECTRICAL BREAKERS AS REQUIRED.
10. REGROUP CIRCUITS AS REQUIRED.
11. COORDINATE ALL WORK WITH ARCHITECTURAL AND MECHANICAL CONTRACTORS.
12. THIS DRAWING WAS BASED ON PARTIAL SITE REVIEW ONLY, ALL EQUIPMENT, ACCESSORIES, SIZES, LOCATIONS AND DETAILS OF INSTALLATIONS TO BE CONFIRMED ON SITE.
13. SEISMIC RESTRAINT SYSTEM (SRS) - PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ONTARIO BUILDING CODE LATEST EDITION. THIS INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS, DIESEL GENERATORS, FIRE PROTECTION, CONDUIT, COMMUNICATIONS, ELECTRICAL EQUIPMENT AND SYSTEMS, BOTH VIBRATION ISOLATED AND STATICALLY SUPPORTED.

ELECTRICAL LEGEND

ITEM	DESCRIPTION
	EMERGENCY BATTERY PACK
	EXIT LIGHT CEILING AND WALL MOUNTED
	SINGLE POLE TOGGLE SWITCH
	ELECTRICAL PANEL
J	JUNCTION BOX
	RECEPTACLE TYPE AS INDICATED
	FIRE ALARM PULL STATION
	FIRE ALARM HEAT DETECTOR CEILING MOUNTED
	FIRE ALARM SMOKE DETECTOR CEILING MOUNTED
	FIRE ALARM BELL
	DUPLEX RECEPTACLE WALL MOUNTED
GFI	15 AMP. 125 VOLT GFI DUPLEX RECEPTACLE
	DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER
	RECEPTACLE - TYPE AS INDICATED
	DATA/TELEPHONE OUTLET WALL MOUNTED
	THREE PHASE MOTOR
	SINGLE PHASE MOTOR
	DIRECT CONNECTION
	DISCONNECT SWITCH

NOT ALL SYMBOLS SHOWN IN LEGEND SET ARE NECESSARILY USED IN DRAWING SET.

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Professional Engineers
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REVISIONS

client:
MCROBIE ARCHITECTS AND INTERIOR DESIGNERS
SUITE 100 - 66 QUEEN STREET
OTTAWA, ON K1P 5C6

project:
CFIA OTTAWA LABORATORY A WING WASHROOMS REFURBISHMENT
3851 FALLOWFIELD ROAD
OTTAWA, ON

drawing title:
ELECTRICAL GENERAL NOTES, LEGEND & SPECIFICATIONS

scale:	AS SHOWN	drawn by:	L.M.K.
designed by:	L.M.K.	reviewed by:	M.M.K.
approved by:	M.M.K.	date:	JUNE 2017

project no.: 405-18C
revision: 0
drawing no.: E1
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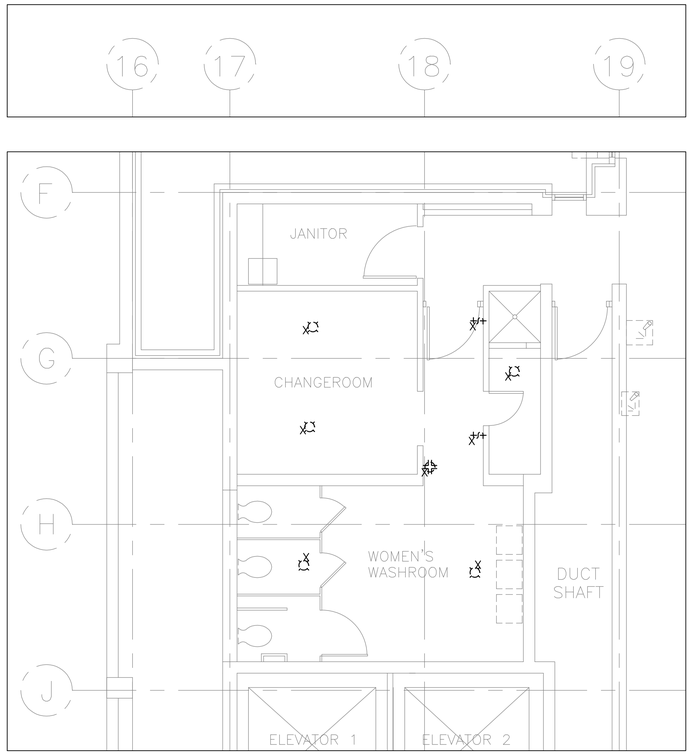
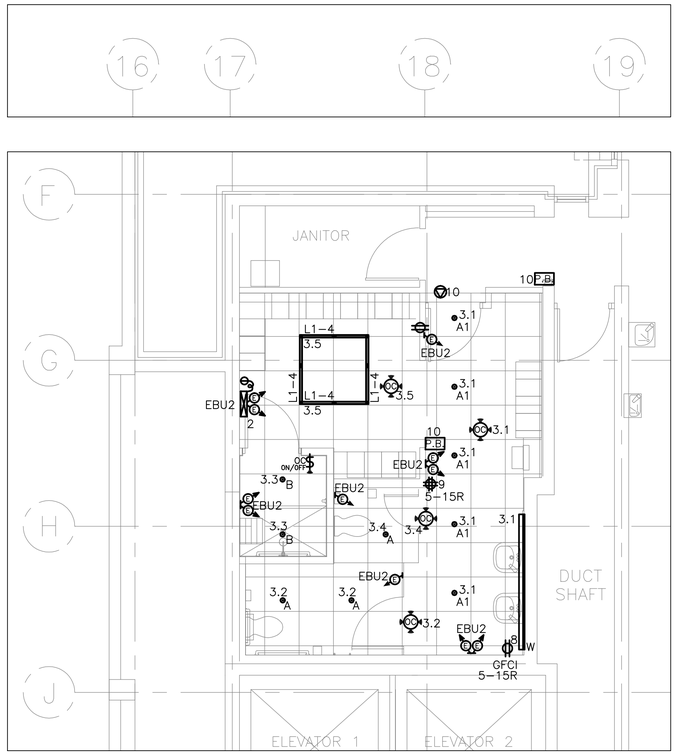


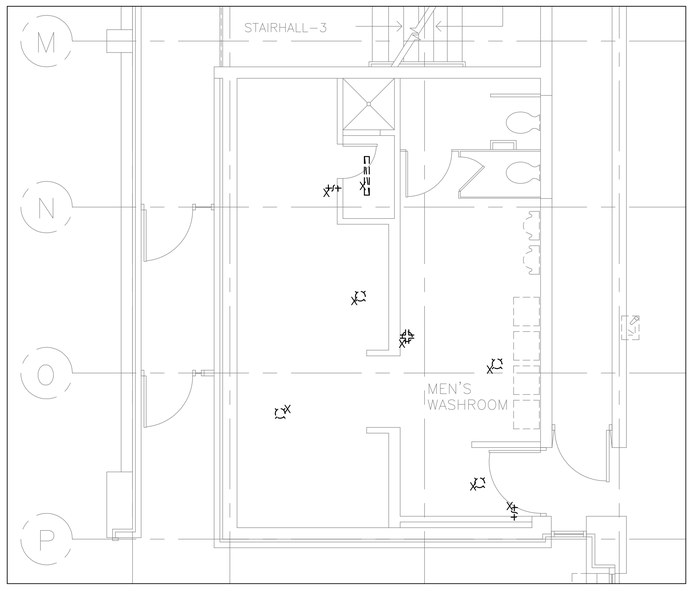
01 E2 FIRST FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



03 E2 FIRST FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



02 E2 FIRST FLOOR MEN'S WASHROOM – EXISTING AND DEMOLITION

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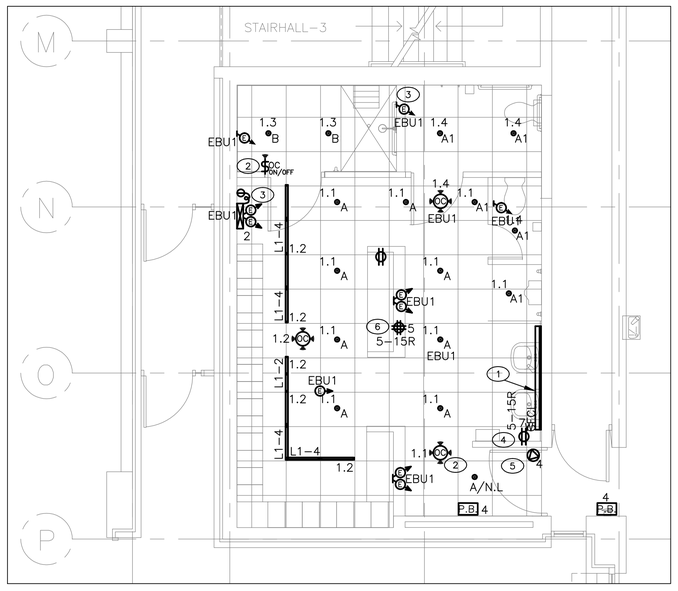

04 E2 FIRST FLOOR MEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50

DRAWING NOTES:

1. TYPICAL: PROVIDE NEW GENERAL LIGHTING FIXTURES AS INDICATED. REFEED FROM EXISTING CIRCUITS AND CONTROL VIA OCCUPANCY SENSOR. REFER TO DETAILS, LIGHTING SCHEDULE FOR FIXTURES SPECIFICATIONS. PROVIDE AS INDICATED OR APPROVED EQUIVALENT. SUBMIT EQUIVALENT FIXTURES 7 DAYS PRIOR TO TENDER CLOSE c/w FIXTURE CUT SHEETS AND DETAILED PHOTOMETRIC DRAWINGS SHOWING EXACT LUX LEVEL IN EACH SPACE FOR APPROVAL BY ENGINEER.
2. TYPICAL: PROVIDE OCCUPANCY SENSOR c/w MULTI TECHNOLOGY PIR/ULTRASONIC ELECTRONICS. PROVIDE EXACT LOCATIONS AS RECOMMENDED BY MANUFACTURER. USE LEVITON PROVOLT O2W AND O2C SERIES AS RECOMMENDED BY MANUFACTURER. PROVIDE AS INDICATED OR APPROVED EQUIVALENT. SUBMIT EQUIVALENT FIXTURES 7 DAYS PRIOR TO TENDER CLOSE c/w FIXTURE CUT SHEETS AND DETAILED PHOTOMETRIC DRAWINGS SHOWING EXACT LUX LEVEL IN EACH SPACE FOR APPROVAL BY ENGINEER.
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4. PROVIDE NEW 5–15R DUPLEX RECEPTACLE (GFCI WHERE INDICATED) c/w ALL ASSOCIATED CONDUIT, WIRING, BOXES, FASTENERS, FITTINGS, DEVICES AND COVER PLATES AS REQUIRED. WIRE BACK TO EXISTING PANEL LOCATION. PROVIDE NEW BREAKER IN PANEL TO SUIT EXISTING PANEL MANUFACTURERS REQUIREMENTS. UPDATE PANEL SCHEDULES ACCORDINGLY.
5. PROVIDE NEW DOOR OPERATOR EQUIPMENT c/w ALL ASSOCIATED CONDUIT, WIRING, BOXES, FASTENERS, FITTINGS, DEVICES AND COVER PLATES AS REQUIRED. WIRE BACK TO EXISTING PANEL LOCATION. PROVIDE NEW BREAKER IN PANEL TO SUIT EXISTING PANEL MANUFACTURERS REQUIREMENTS. UPDATE PANEL SCHEDULES ACCORDINGLY.
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9 Holgate Court, Ottawa, ON, K2K 1B4
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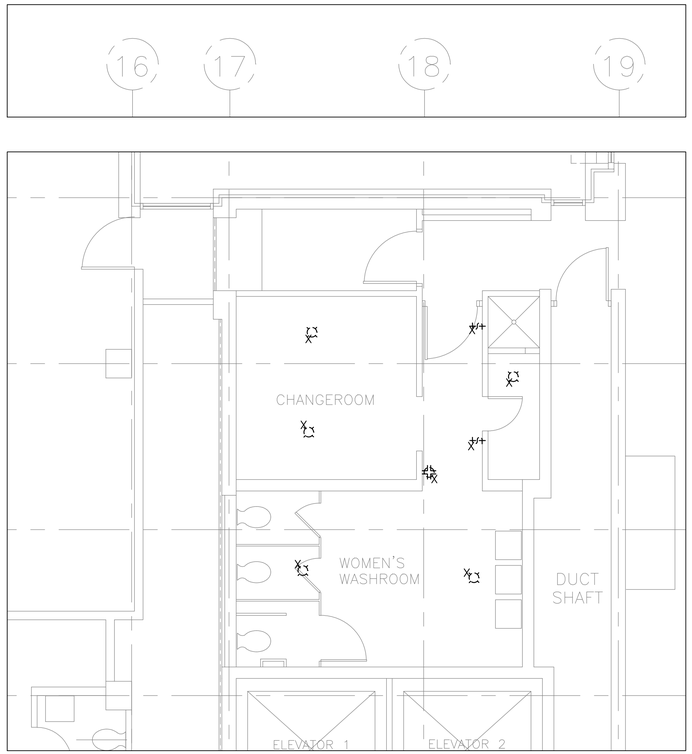
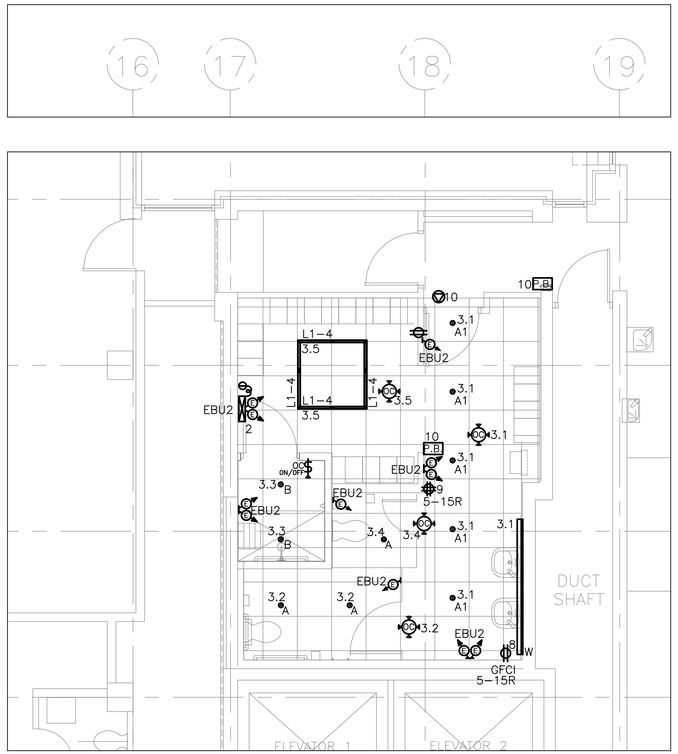
revision: 0



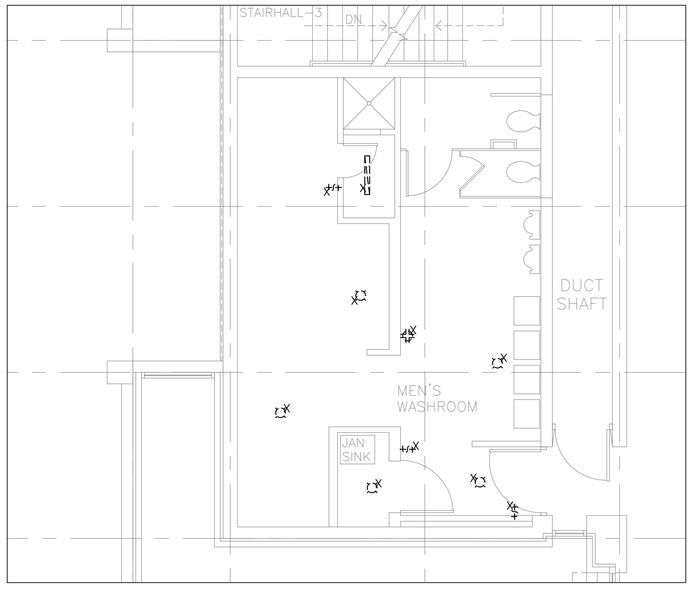
01 E3 SECOND FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



03 E3 SECOND FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



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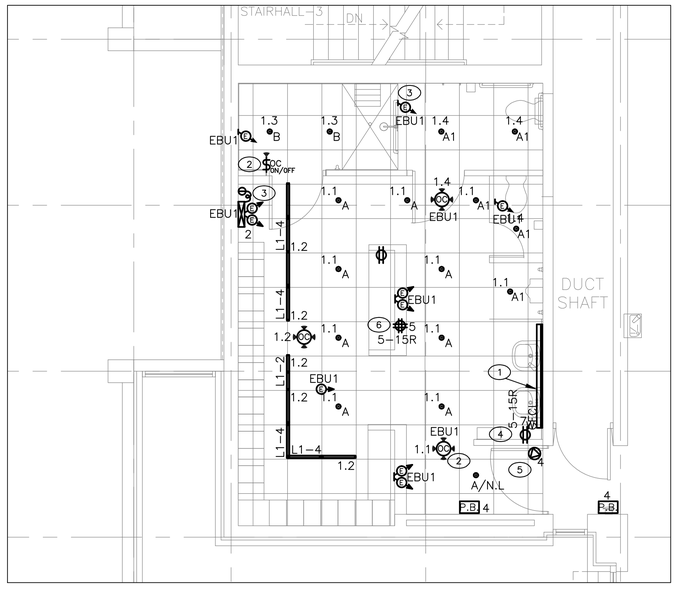

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DRAWING NOTES:

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drawing title:
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EXISTING AND NEW

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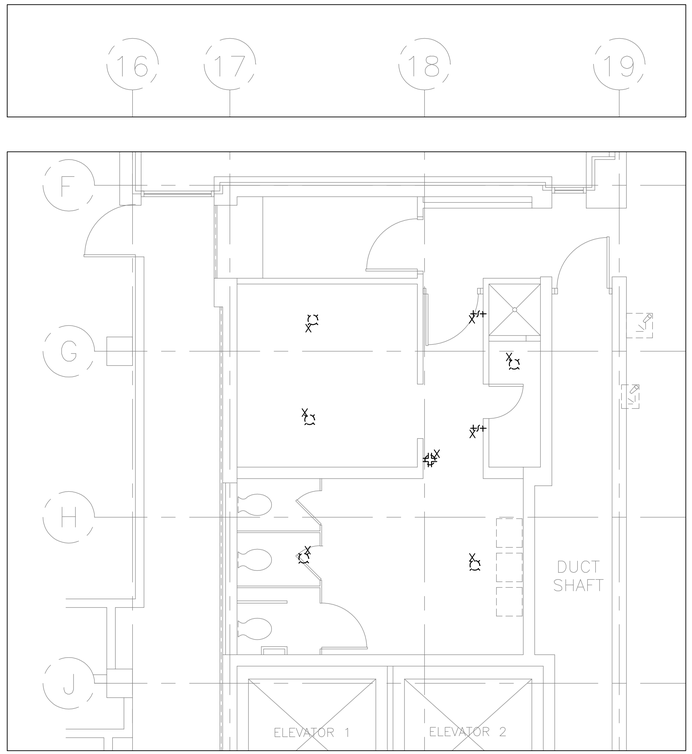
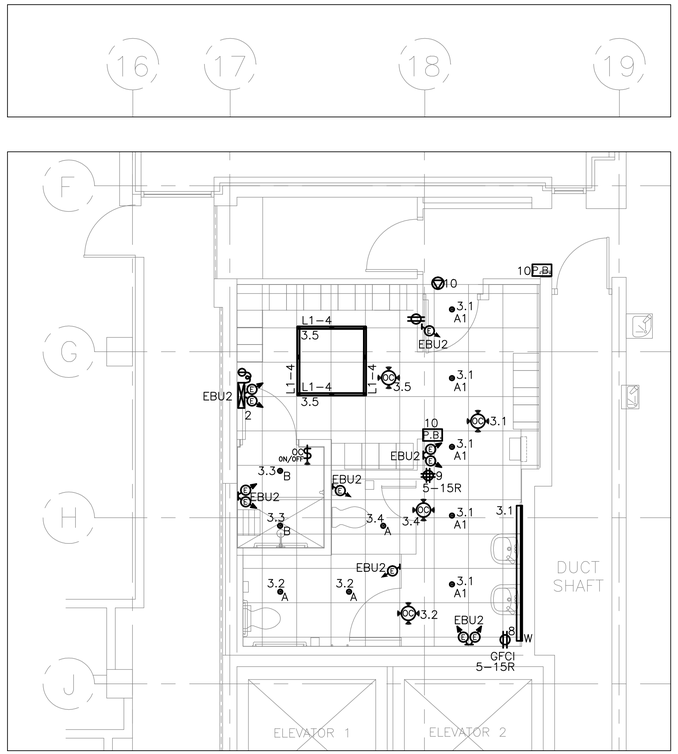


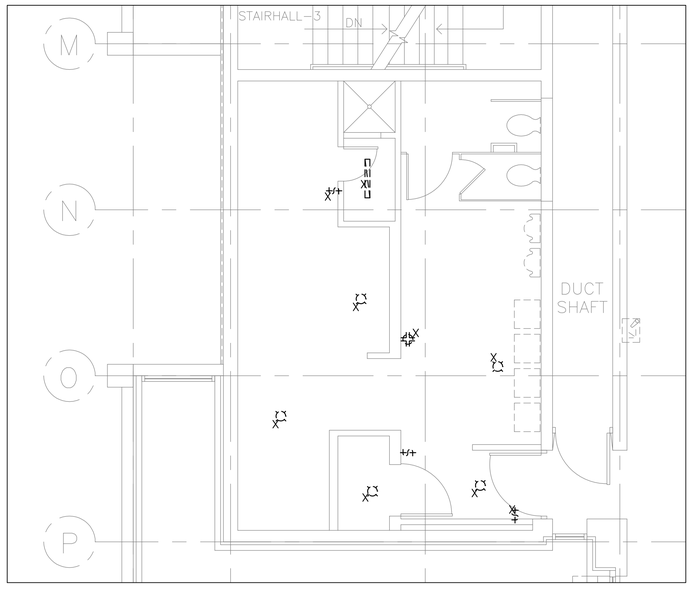
01 E4 THIRD FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



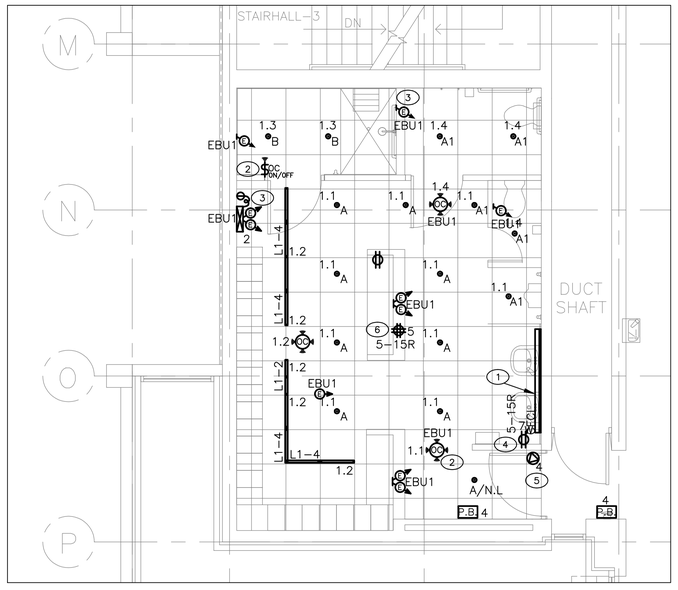
03 E4 THIRD FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



02 E4 THIRD FLOOR MEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



04 E4 THIRD FLOOR MEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50

DRAWING NOTES:

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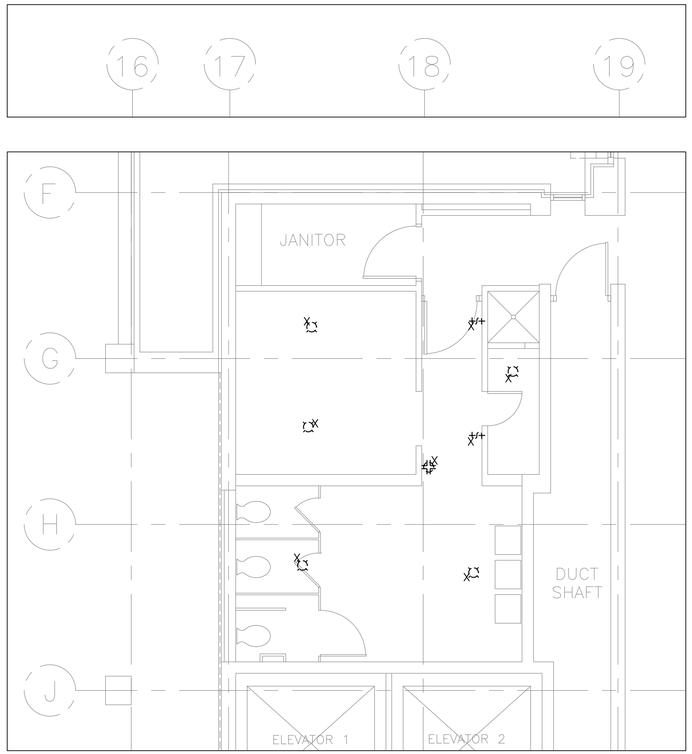
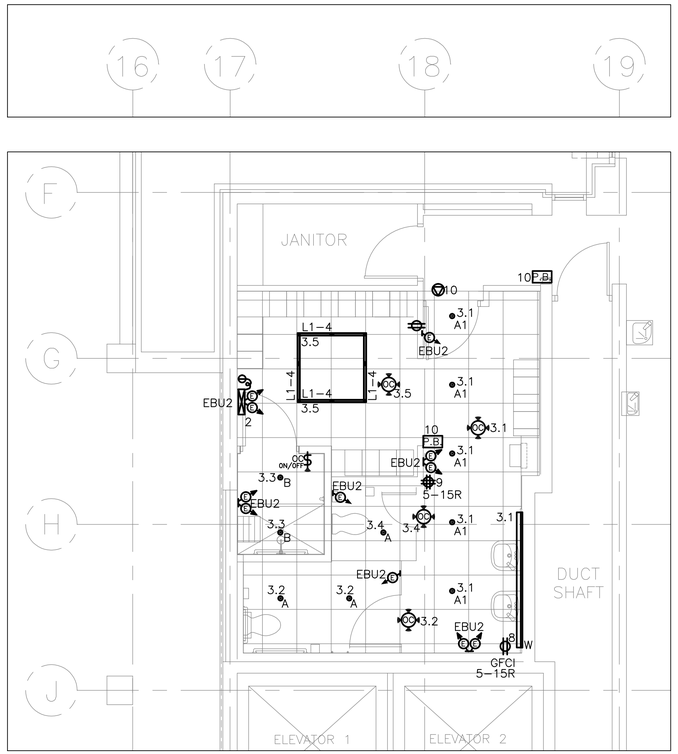


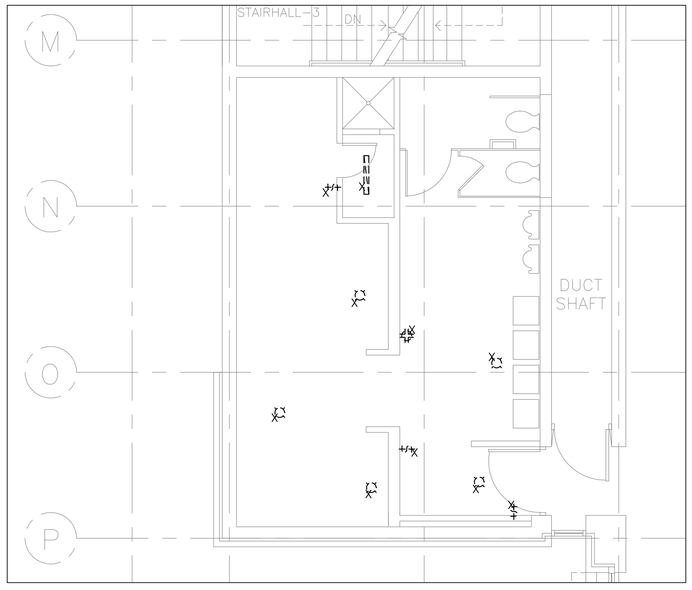
01 E5 FOURTH FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



03 E5 FOURTH FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



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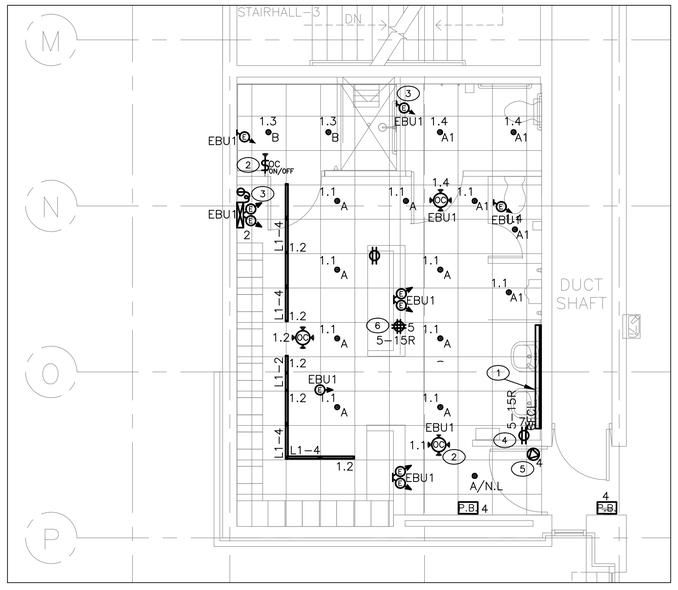
SCALE – 1:50



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DRAWING NOTES:

1. TYPICAL: PROVIDE NEW GENERAL LIGHTING FIXTURES AS INDICATED. REFEED FROM EXISTING CIRCUITS AND CONTROL VIA OCCUPANCY SENSOR. REFER TO DETAILS, LIGHTING SCHEDULE FOR FIXTURES SPECIFICATIONS. PROVIDE AS INDICATED OR APPROVED EQUIVALENT. SUBMIT EQUIVALENT FIXTURES 7 DAYS PRIOR TO TENDER CLOSE c/w FIXTURE CUT SHEETS AND DETAILED PHOTOMETRIC DRAWINGS SHOWING EXACT LUX LEVEL IN EACH SPACE FOR APPROVAL BY ENGINEER.
2. TYPICAL: PROVIDE OCCUPANCY SENSOR c/w MULTI TECHNOLOGY PIR/ULTRASONIC ELECTRONICS. PROVIDE EXACT LOCATIONS AS RECOMMENDED BY MANUFACTURER. USE LEVITON PROVOLT 0DW AND 0DC SERIES AS RECOMMENDED BY MANUFACTURER. PROVIDE AS INDICATED OR APPROVED EQUIVALENT. SUBMIT EQUIVALENT FIXTURES 7 DAYS PRIOR TO TENDER CLOSE c/w FIXTURE CUT SHEETS AND DETAILED PHOTOMETRIC DRAWINGS SHOWING EXACT LUX LEVEL IN EACH SPACE FOR APPROVAL BY ENGINEER.
3. TYPICAL: PROVIDE EMERGENCY LIGHTING BATTERY UNIT AS INDICATED. USE STANDPRO SLA SERIES c/w LED HEADS WRING OUT TO REMOTE HEADS, AND ALL REMOTE HEADS TO BE STANDPRO SLA SERIES LED. PROVIDE AS INDICATED OR APPROVED EQUIVALENT. SUBMIT EQUIVALENT FIXTURES 7 DAYS PRIOR TO TENDER CLOSE c/w FIXTURE CUT SHEETS AND DETAILED PHOTOMETRIC DRAWINGS SHOWING EXACT LUX LEVEL IN EACH SPACE FOR APPROVAL BY ENGINEER.
4. PROVIDE NEW 5–15R DUPLEX RECEPTACLE (GFCI WHERE INDICATED) c/w ALL ASSOCIATED CONDUIT, WIRING, BOXES, FASTENERS, FITTINGS, DEVICES AND COVER PLATES AS REQUIRED. WIRE BACK TO EXISTING PANEL LOCATION. PROVIDE NEW BREAKER IN PANEL TO SUIT EXISTING PANEL MANUFACTURERS REQUIREMENTS. UPDATE PANEL SCHEDULES ACCORDINGLY.
5. PROVIDE NEW DOOR OPERATOR EQUIPMENT c/w ALL ASSOCIATED CONDUIT, WIRING, BOXES, FASTENERS, FITTINGS, DEVICES AND COVER PLATES AS REQUIRED. WIRE BACK TO EXISTING PANEL LOCATION. PROVIDE NEW BREAKER IN PANEL TO SUIT EXISTING PANEL MANUFACTURERS REQUIREMENTS. UPDATE PANEL SCHEDULES ACCORDINGLY.
6. PROVIDE NEW 5–15R QUADRAPLEX RECEPTACLE c/w ALL ASSOCIATED CONDUIT, WIRING, BOXES, FASTENERS, FITTINGS, DEVICES AND COVER PLATES AS REQUIRED. WIRE BACK TO EXISTING PANEL LOCATION. PROVIDE NEW BREAKER IN PANEL TO SUIT EXISTING PANEL MANUFACTURERS REQUIREMENTS. UPDATE PANEL SCHEDULES ACCORDINGLY.

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Professional Engineers

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3	ISSUED FOR TENDER	SEPT. 29 2017
2	ISSUED FOR 99 REVIEW	SEPT. 26 2017
1	ISSUED FOR COORDINATION	SEPT. 22 2017
0	ISSUED FOR 66% REVIEW	AUG. 03 2017

REVISIONS

client:
MCROBIE ARCHITECTS AND INTERIOR DESIGNERS

SUITE 100 – 66 QUEEN STREET
OTTAWA, ON K1P 5C6

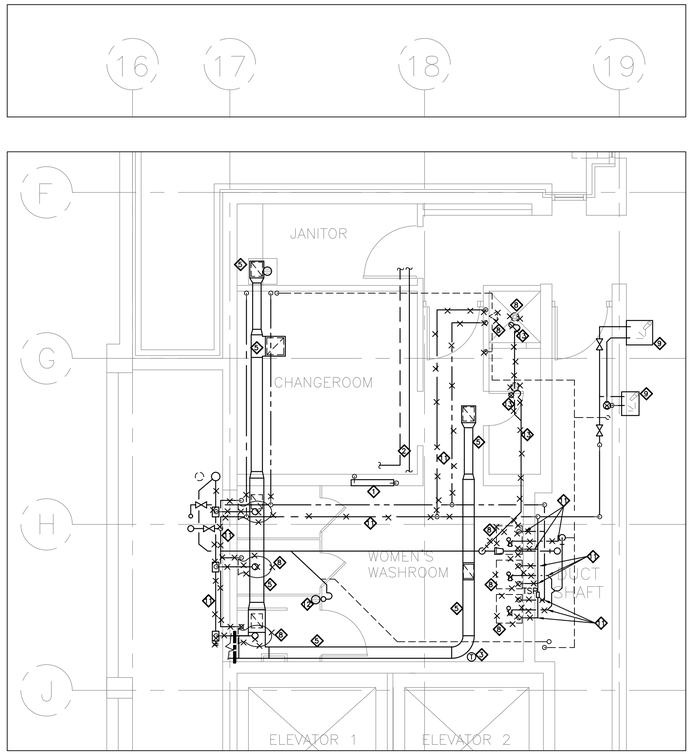
project:
CFIA OTTAWA LABORATORY
A WING WASHROOMS REFURBISHMENT

3851 FALLOWFIELD ROAD
OTTAWA, ON

drawing title:
ELECTRICAL
FOURTH FLOOR WASHROOMS
EXISTING AND NEW

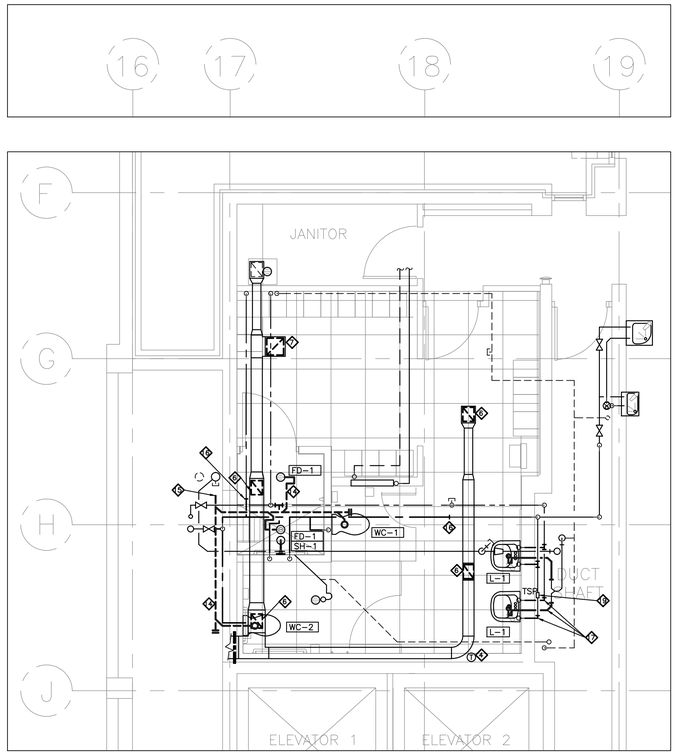
scale:	AS SHOWN	drawn by:	L.M.K.
designed by:	L.M.K.	reviewed by:	M.M.K.
approved by:	M.M.K.	date:	JUNE 2017

project no.: 405–18C
revision: 0
drawing no.: E–5
of 5



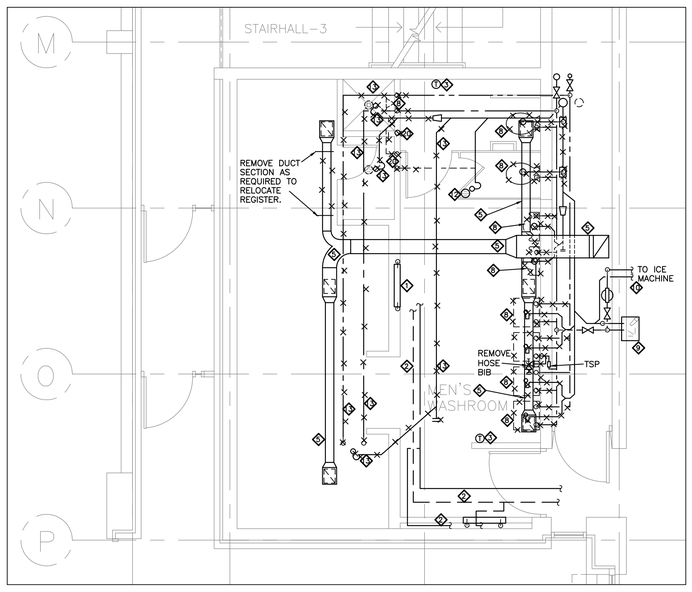
01 M1 FIRST FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



03 M1 FIRST FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



02 M1 FIRST FLOOR MEN'S WASHROOM – EXISTING AND DEMOLITION

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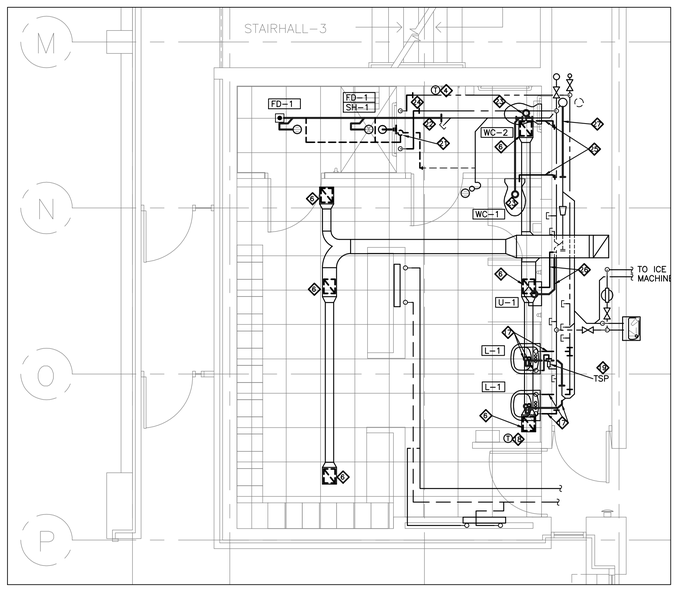

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DRAWING NOTES:

1. TYPICAL: EXISTING HYDRONIC HEATER AND HEATING WATER SUPPLY AND RETURN PIPING LOCATED BELOW THIS FLOOR (NOT SHOWN HERE) TO REMAIN.
2. TYPICAL: EXISTING HEATING WATER SUPPLY AND RETURN PIPING SERVING HEATER IN SECOND FLOOR WASHROOM TO REMAIN.
3. TYPICAL: EXISTING THERMOSTAT TO REMAIN. THERMOSTAT TO BE TEMPORARILY REMOVED AND PROTECTED FOR DURATION OF CONSTRUCTION PERIOD AS REQUIRED.
4. TYPICAL: EXISTING THERMOSTAT TO BE REINSTALLED AND RECONNECTED. VERIFY WIRING AS REQUIRED TO OPERATE REMAINING HYDRONIC HEATER.
5. EXISTING EXHAUST DUCTWORK TO REMAIN. ALL EXISTING EXHAUST GRILLES TO BE REPLACED.
6. TYPICAL: PROVIDE NEW EXHAUST GRILLE EQUAL TO E.H. PRICE, MODEL 80-TB, SIZE 250x200. INSTALL IN PLACE OF REMOVED EXISTING. PROVIDE DUCT FITTINGS AND TRANSITIONS AS REQUIRED TO FIT NEW GRILLE IN NEW T-BAR CEILING.
7. PROVIDE NEW EXHAUST GRILLE EQUAL TO E.H. PRICE, MODEL 80-TB, SIZE 300x300. INSTALL IN PLACE OF REMOVED EXISTING. PROVIDE DUCT FITTINGS AND TRANSITIONS AS REQUIRED TO FIT NEW GRILLE IN NEW T-BAR CEILING.
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10. EXISTING ICE MACHINE WATER AND DRAIN CONNECTIONS TO REMAIN.
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14. TYPICAL: NEW SANITARY DRAIN PIPING LOCATED BELOW FLOOR SLAB.
15. CONNECT TO EXISTING SANITARY STACK AT U/S OF THIS FLOOR.
16. RECONNECT EXISTING PIPE BRANCH TO NEW PIPING.
17. TYPICAL: PROVIDE NEW LAVATORY AS PER PLUMBING FIXTURE SCHEDULE. INSTALL AS INDICATED AND CONNECT TO EXISTING SERVICES. MODIFY ALL D.C.W., D.H.W., DRAIN AND VENT CONNECTIONS AS REQUIRED. PROVIDE ALL ADDITIONAL FITTINGS, PIPING AND ACCESSORIES AS REQUIRED.
18. RELOCATE EXISTING THERMOSTAT AS REQUIRED TO AVOID CONFLICT WITH LOCATION OF NEW HAND DRYER. COORDINATE NEW LOCATION ON SITE. EXTEND EXISTING WIRING AS REQUIRED TO OPERATE EXISTING HEATER.
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21. PROVIDE NEW VENT STACK INSIDE WALL UP TO FOURTH FLOOR CEILING SPACE. CONNECT NEW VENTS SERVING NEW AND EXISTING FLOOR DRAINS AT EACH FLOOR.
22. EXTEND EXISTING 75ø SANITARY AND CONNECT NEW FLOOR DRAINS AS SHOWN. PIPING CONNECTIONS SHOWN HERE AND LOCATED AT HIGH ELEVATION ON THIS LEVEL ARE SERVING FLOOR DRAINS AT FLOOR ABOVE. FLOOR DRAINS AT THIS FLOOR TO BE CONNECTED BELOW THIS FLOOR SLAB.
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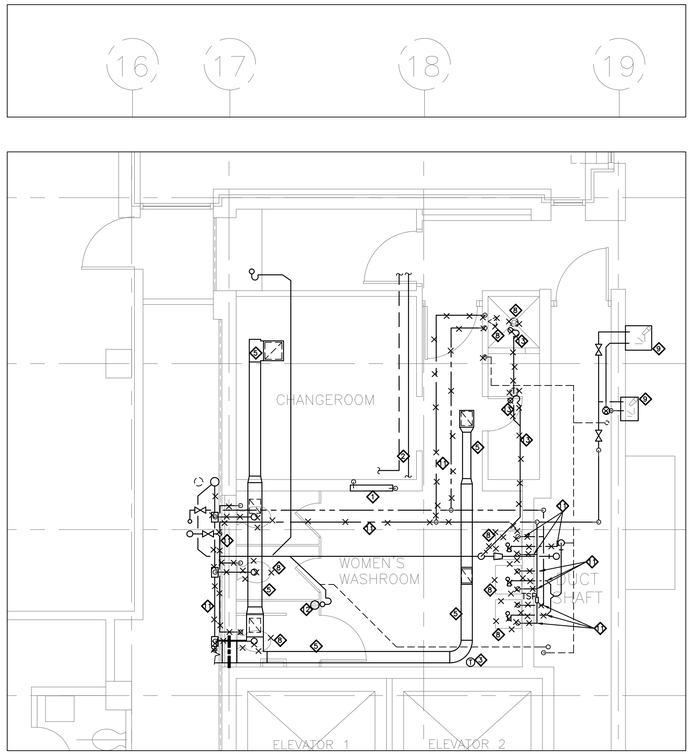
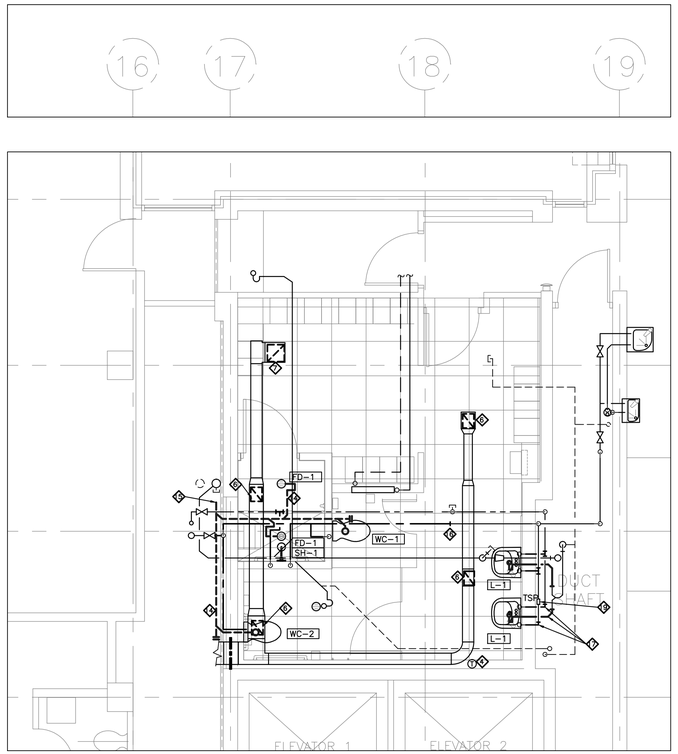
revision: 0	



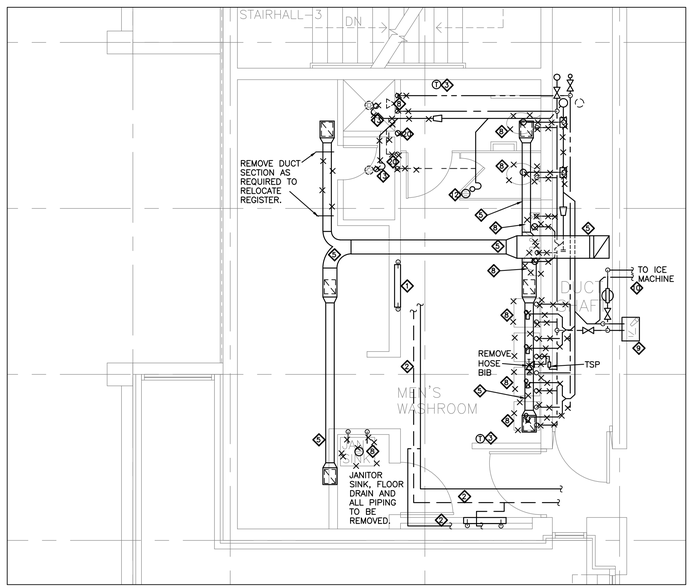
01 M2 SECOND FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



03 M2 SECOND FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



02 M2 SECOND FLOOR MEN'S WASHROOM – EXISTING AND DEMOLITION

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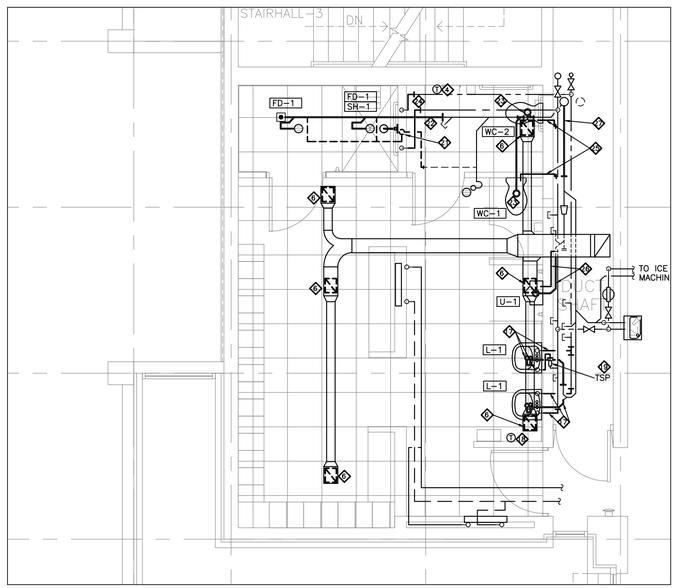

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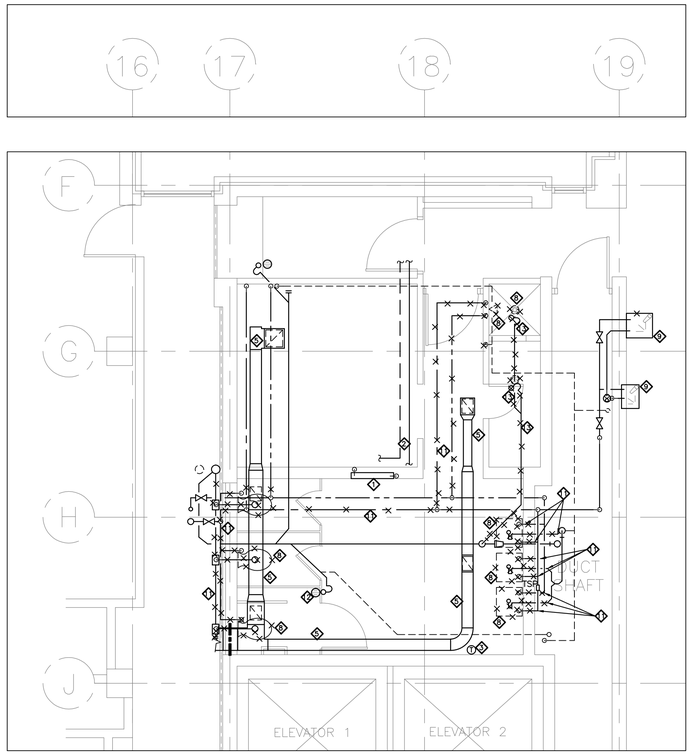
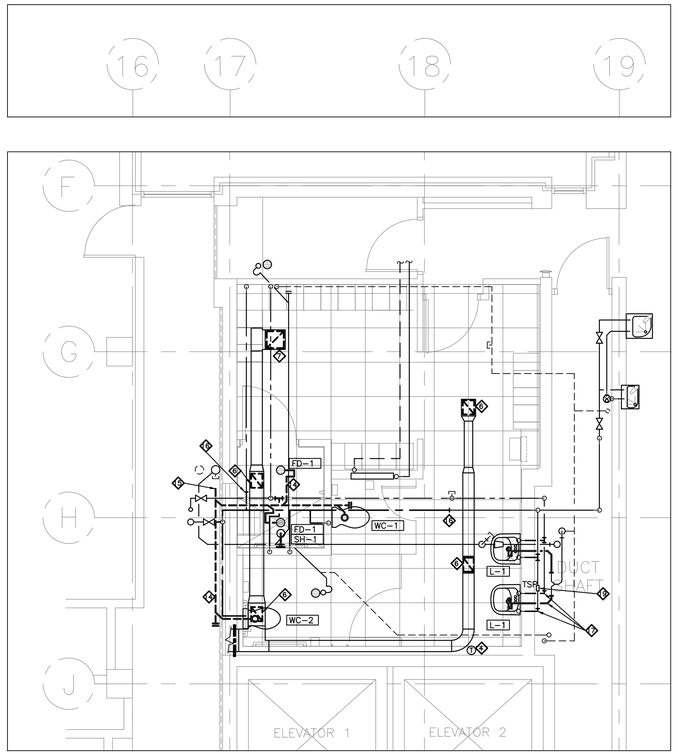


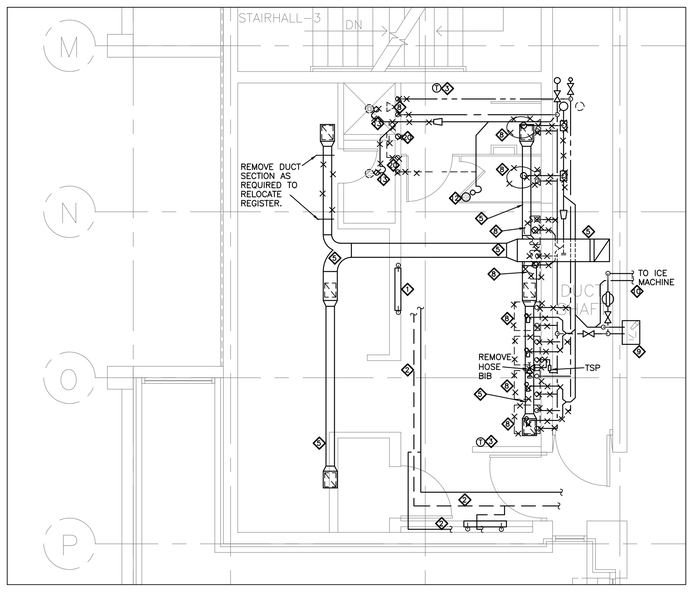
01 M3 THIRD FLOOR WOMEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



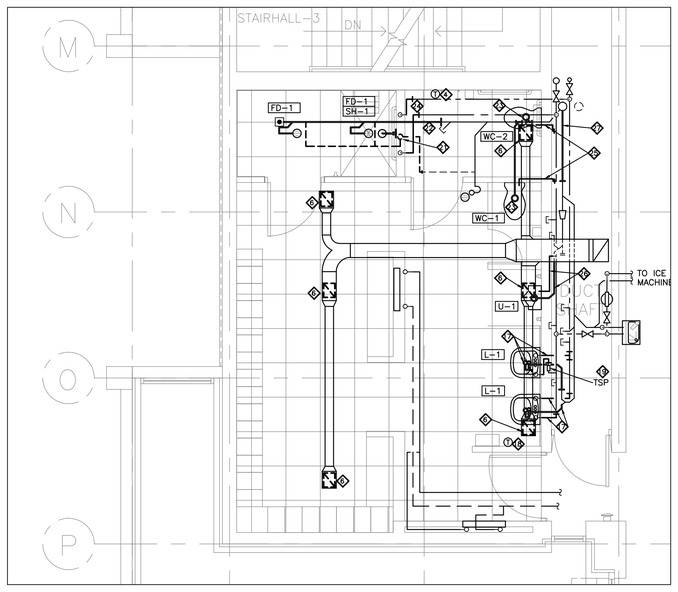
03 M3 THIRD FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS

SCALE – 1:50



02 M3 THIRD FLOOR MEN'S WASHROOM – EXISTING AND DEMOLITION

SCALE – 1:50



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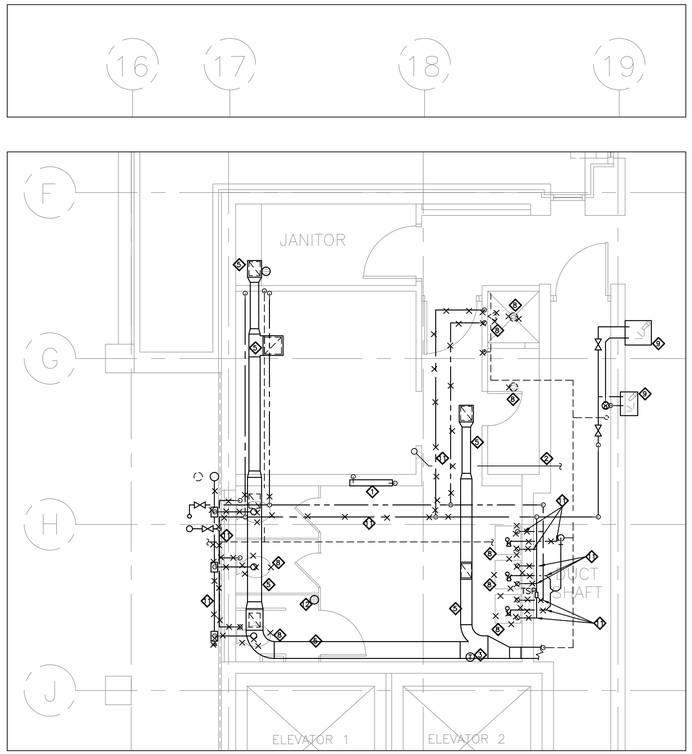

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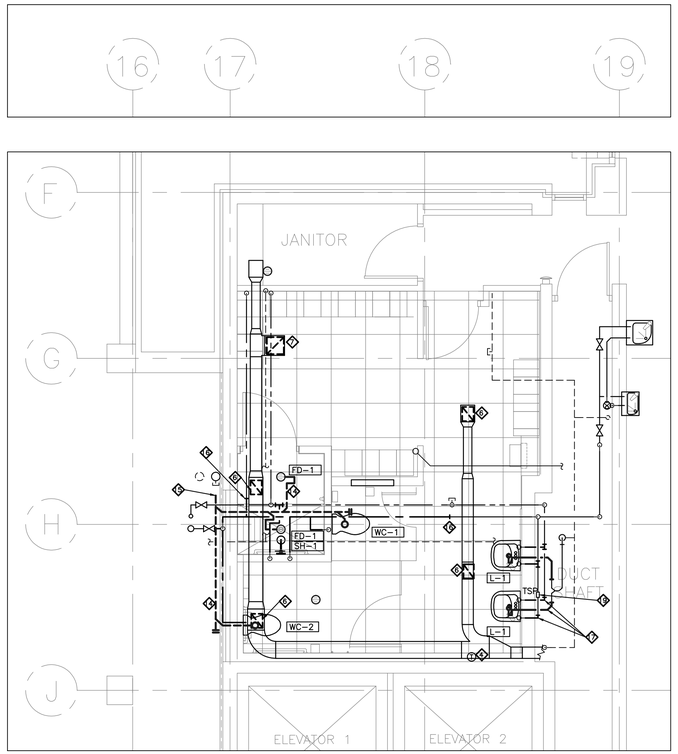
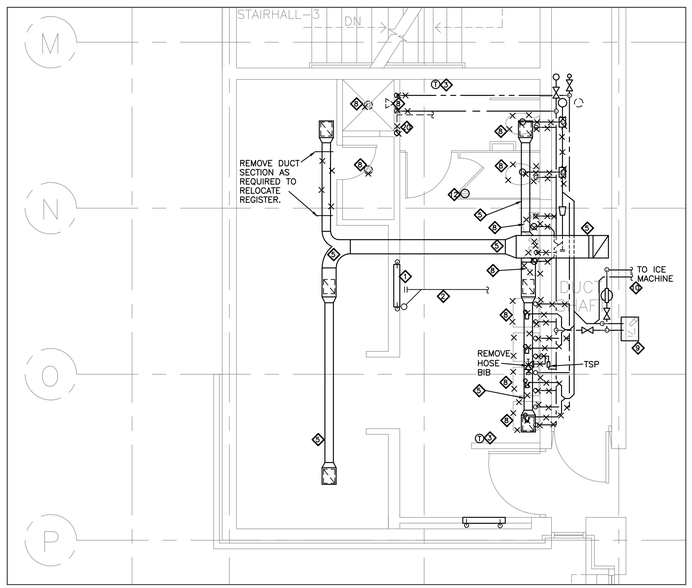
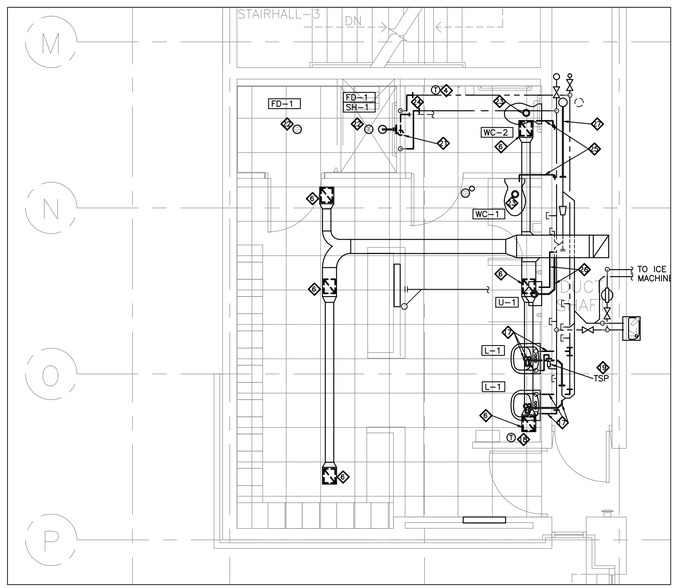
M4 SCALE – 1:50



03 FOURTH FLOOR WOMEN'S WASHROOM – NEW INSTALLATIONS
M4 SCALE – 1:50



02 FOURTH FLOOR MEN'S WASHROOM – EXISTING AND DEMOLITION
M4 SCALE – 1:50



04 FOURTH FLOOR MEN'S WASHROOM – NEW INSTALLATIONS
M4 SCALE – 1:50

DRAWING NOTES:

1. TYPICAL: EXISTING HYDRONIC HEATER AND HEATING WATER SUPPLY AND RETURN PIPING LOCATED BELOW THIS FLOOR (NOT SHOWN HERE) TO REMAIN.
2. EXISTING ROOF DRAIN PIPING LOCATED AT HIGH LEVEL AT U/S OF ROOF ABOVE, TO REMAIN.
3. TYPICAL: EXISTING THERMOSTAT TO REMAIN. THERMOSTAT TO BE TEMPORARILY REMOVED AND PROTECTED FOR DURATION OF CONSTRUCTION PERIOD AS REQUIRED.
4. TYPICAL: EXISTING THERMOSTAT TO BE REINSTALLED AND RECONNECTED. VERIFY WIRING AS REQUIRED TO OPERATE REMAINING HYDRONIC HEATER.
5. EXISTING EXHAUST DUCTWORK TO REMAIN. ALL EXISTING EXHAUST GRILLES TO BE REPLACED.
6. TYPICAL: PROVIDE NEW EXHAUST GRILLE EQUAL TO E.H. PRICE, MODEL 80–TB, SIZE 250x200. INSTALL IN PLACE OF REMOVED EXISTING. PROVIDE DUCT FITTINGS AND TRANSITIONS AS REQUIRED TO FIT NEW GRILLE IN NEW T–BAR CEILING.
7. PROVIDE NEW EXHAUST GRILLE EQUAL TO E.H. PRICE, MODEL 80–TB, SIZE 300x300. INSTALL IN PLACE OF REMOVED EXISTING. PROVIDE DUCT FITTINGS AND TRANSITIONS AS REQUIRED TO FIT NEW GRILLE IN NEW T–BAR CEILING.
8. TYPICAL: EXISTING PLUMBING FIXTURE TO BE DISCONNECTED AND REMOVED.
9. EXISTING DRINKING FOUNTAIN TO REMAIN.
10. EXISTING ICE MACHINE WATER AND DRAIN CONNECTIONS TO REMAIN.
11. TYPICAL: PARTS OF EXISTING PIPING TO BE REMOVED AS INDICATED AND AS REQUIRED TO SUIT NEW ARRANGEMENT AND NEW CONNECTIONS TO NEW PLUMBING FIXTURES.
12. EXISTING FLOOR DRAIN TO REMAIN.
13. TYPICAL: PARTS OF EXISTING PIPING LOCATED AT THIS LEVEL AND SERVING FIXTURES BEING REMOVED AND LOCATED ON FLOOR ABOVE, TO BE REMOVED.
14. TYPICAL: NEW SANITARY DRAIN PIPING LOCATED BELOW FLOOR SLAB.
15. CONNECT TO EXISTING SANITARY STACK AT U/S OF THIS FLOOR.
16. RECONNECT EXISTING PIPE BRANCH TO NEW PIPING.
17. TYPICAL: PROVIDE NEW LAVATORY AS PER PLUMBING FIXTURE SCHEDULE. INSTALL AS INDICATED AND CONNECT TO EXISTING SERVICES. MODIFY ALL D.C.W., D.H.W., DRAIN AND VENT CONNECTIONS AS REQUIRED. PROVIDE ALL ADDITIONAL FITTINGS, PIPING AND ACCESSORIES AS REQUIRED.
18. RELOCATE EXISTING THERMOSTAT AS REQUIRED TO AVOID CONFLICT WITH LOCATION OF NEW HAND DRYER. COORDINATE NEW LOCATION ON SITE. EXTEND EXISTING WIRING AS REQUIRED TO OPERATE EXISTING HEATER.
19. PROVIDE NEW TRAP PRIMING CONNECTIONS FROM EXISTING TSP VALVE TO NEW FLOOR DRAINS.
20. EXISTING VENT PIPING INSIDE WALL TO BE REMOVED.
21. PROVIDE NEW VENT STACK INSIDE WALL UP TO FOURTH FLOOR CEILING SPACE. CONNECT NEW VENT TO EXISTING VENT MAIN.
22. CONNECT NEW FLOOR DRAINS TO EXISTING 75ø SANITARY BELOW FLOOR AS SHOWN ON THIRD FLOOR LAYOUT PLAN.
23. PROVIDE NEW FLOOR DISCHARGE TOILET AS PER SCHEDULE AND CONNECT TO EXISTING SANITARY BELOW FLOOR AS SHOWN ON THIRD FLOOR LAYOUT PLAN.
24. EXTEND EXISTING D.C.W. AND D.H.W. PIPING AND PROVIDE CONNECTIONS TO NEW SHOWER FIXTURE.
25. REROUTE EXISTING D.C.W. PIPING AS REQUIRED AND PROVIDE CONNECTION TO NEW TOILET.
26. REROUTE EXISTING SANITARY AND D.C.W. PIPING AS REQUIRED AND PROVIDE CONNECTION TO NEW URINAL.
27. RECONNECT EXISTING SANITARY PIPING SERVING URINAL AND LAVATORIES TO EXISTING MAIN STACK.

JRP ENGINEERING
Professional Engineers
9 Holgate Court, Ottawa, ON, K2K 1B4
Tel: 613–627–2462 Email: admin@jrpeng.com

No	DESCRIPTION	DATE
2	ISSUED FOR TENDER	SEP. 29 2017
1	ISSUED FOR 99% REVIEW	SEP. 25 2017
0	ISSUED FOR 66% REVIEW	AUG. 03 2017

REVISIONS

client:
MCROBIE ARCHITECTS AND INTERIOR DESIGNERS
SUITE 100 – 66 QUEEN STREET
OTTAWA, ON K1P 5C6

project:
CFIA OTTAWA LABORATORY
A WING WASHROOMS REFURBISHMENT
3851 FALLOWFIELD ROAD
OTTAWA, ON

drawing title:
MECHANICAL
FOURTH FLOOR WASHROOMS
EXISTING AND NEW

scale:	AS SHOWN	drawn by:	L.M.K.
designed by:	L.M.K.	reviewed by:	M.M.K.
approved by:	M.M.K.	date:	JUNE 2017

project no.: 405–18C
drawing no.: M–4 of 5
revision: 0

GENERAL

Conditions of Contract

The Instructions to Bidders and the General Conditions are an integral part of this Division and shall be read in conjunction herewith. These instructions to Bidders and General Conditions shall be fully binding on the General Contractor and his sub-contractors to the full satisfaction of the Engineer and Owner.

The responsibility and scope of each sub-trade rest solely with the Mechanical Contractor. Extras will not be considered based on the grounds of difference in interpretation of specifications and drawings as to which trade involved shall provide certain specialties or materials.

Examination of Work

Examine the site and local conditions likely to affect work indicated and specified prior to submitting final price.

This project involves changes to the building, which is presently occupied. Therefore examine the site and local conditions to determine the difficulties in carrying out the work indicated and specified prior to submitting final price.

Liability

This contractor shall assume full responsibility for laying out his work and for any damage caused to the Owner and other contractor by improper location or carrying out of this work. Carry all necessary insurance coverage.

This contractor shall protect all finished and unfinished work of his own and other contractors including existing from damage due to the carrying out of his work.

Intent

It is the intent of this specification and drawings to provide for a complete and fully operating system in complete accord with all applicable codes. These specifications may not cover each and every item required for the complete mechanical installation; therefore, the Contractor shall make provisions for all labour, material and equipment deemed necessary to complete the mechanical system.

Certificates, Fees, etc.

Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Furnish inspection certificates as evidence that work conforms with requirements of authority having jurisdiction.

Cutting and Patching

The Mechanical Contractor will confer with the General Contractor in regards to this work and shall give locations for all holes for pipes, ducts through floors and roof, etc., and provide sleeves required to execute the mechanical installation.

Pipe Hangers, Supports and Sleeves

Hangers and supports shall secure pipes in place, prevent vibration, maintain grade by adjustment, provide for expansion and contraction and shall be directly supported from the structure.

Perforated strap hangers are not acceptable.

Testing

Test all equipment and material where required by specifications or authorities having jurisdiction to demonstrate its proper operation to the Owner's representative. Test procedures shall be in accordance with the applicable portions of the ASME, ASHRAE, and other recognized test codes as far as field conditions permit.

Perform the following test and upon completion of the mechanical installation, turn over to the Owner a certification of the test with the detailed data as required by each. Test shall be itemized as to the time performed and personnel responsible for the test. Hydraulic tests shall be carried out for a period of 8 hours and pressure maintained with no appreciable pressure drop. Where leakage occurs, repairs shall be made and the entire system retested. All tests to be made before backfilling and furring.

.1 All low and high velocity duct systems, including supply shall be checked for tightness. All leaks shall be repaired before ducts are furred in to ensure total outlet capacity is within 5% of the quantity being supplied by the air system.

.2 Hydraulically test on hydronic piping systems at 1-1/2 times system operating pressure or minimum 860 kPa, whicherver is greater.

Record "As-Built" Drawings

Keep in the job office an extra set of white prints and specifications on which all changes and deviations shall be recorded daily. At completion of the project, turn over to the Engineer two sets of neat "as-built" record drawings and specifications. These extra sets of white prints and specifications will be provided by the Engineer.

Shop Drawings

Before fabrication of major equipment and materials, submit through the General Contractor a minimum of 6 complete sets of shop drawings and data sheets covering all items of equipment furnished and installed under this Contract for approval by the Engineer.

Temporary and Trial Usage

Any permanent equipment used temporarily for temporary heat or otherwise will be completely repaired or replaced to the full satisfaction of the Owner.

Equipment Clean-up

Ducts and equipment shall be thoroughly cleaned of dirt, cuttings and other foreign substances. Disconnect, clean and reconnect whenever necessary for the purpose of locating and removing obstructions. Repair work damaged in the course of removing obstructions. Ducts shall be power vacuum cleaned before being turned over to the Owner.

Guarantee

The Mechanical Contractor, as a condition precedent to final payment after completion of this work, shall give the Owner a written guarantee warranting all apparatus furnished under the contract to remain in perfect serviceable condition for a period of one year from the date of final acceptance of his work by the Owner and Engineer.

Installation

Install equipment in accordance to manufacturer's instructions.

Operating and Maintenance Data

Furnish three sets of operating and maintenance data for all equipment and systems. Data shall be assembled in booklet form with soft cover and index. Identify front cover with name and location of the project, Consulting Engineer and Contractor. Submit one copy to the Engineer for approval.

Materials

Replace material and workmanship below specified quality and relocate work wrongly placed to the satisfaction of the Engineer.

Materials and equipment installed shall be new, full weight and of best quality specified. Use same brand of manufacturer for each specific application. Statically and dynamically balance rotating equipment for minimum vibration and low operating noise level.

Approvals

The price submitted for this Contract shall be based on the use of materials and equipment as specified. If this contractor wishes to quote on equivalent materials and equipment, he must quote on products approved by the Engineer, "in writing", as an equivalent to the product specified. Manufacturers listed in specifications do not have to request approval but must meet all performance requirements.

This Contractor shall be fully responsible for any additional work or materials required by the mechanical trade or other Contractors to accommodate approved equivalent materials or equipment. Extras will not be approved to cover such work.

PLUMBING

Pipe and Pipe Fittings

Sanitary drainage and vent pipe (above grade):
Up to 62mmø - medium cast iron with bell and spigot or M-J type joints. DWV copper tubing with wrought or cast fittings and no lead solder joints.
75mmø and above - cast iron with bell and spigot or M-J joints.

Domestic hot and cold water piping:

Up to 50mmø - type "L" copper tubing, cast or wrought fittings, 95:5 tin antimony solder joints.

Wherever dissimilar metals are joined or supported, the piping shall have non-conducting type connections or hangers to prevent galvanic corrosion.

Provide vacuum breakers on lines serving equipment or fixtures where contamination of domestic water can occur.

Provide all valves as shown on the drawings or required by authorities having jurisdiction.

Pipe Insulation

Hot water piping: fine fibrous glass insulation with factory applied general purpose jacket, moulded to conform to piping, "K" value at 75°F maximum 0.23 BTU ins/ft2/°F/hr.

Cold water piping: fine fibrous glass insulation with factory applied vapour barrier jacket, moulded to conform to piping, "K" value at 75°F maximum 0.23 BTU ins/ft2/°F/hr.

All fittings and joints covered with vapour barrier.

Piping	Pipe Sizes	Insulation thickness
Domestic cold water piping	All sizes	12mm
Domestic hot water piping	All sizes up to 50mmø	12mm

Provide canvas jacket on exposed piping.

Cleanouts

Provide and set cleanouts at all points required by the code and where indicated on the drawings. All cleanouts shall be made accessible by extending branch connections to finished surfaces and fitting them with a suitable access cover.

Plumbing Fixtures

See drawings for specifications.

VENTILATION AND AIR CONDITIONING

Ductwork

Ductwork shall be of galvanized steel and shall be lock forming quality. All ductwork shall be constructed, braced, connected and jointed as recommended in the latest issue of ASHRAE Guide and the Duct Construction Standards issued by the Sheet Metal National Association Inc. (SMACNA). All ductwork shall be installed to conform to the National Building Code, the CFUA Pamphlets 90A and 91 and in accordance with applicable codes. The minimum sheet metal thickness for ducts shall be as follows:

Rectangular Ducts

Maximum Width	Gauge
Up to 300mm	26 USga
325mm to 750mm	24 USga
775mm to 1350mm	22 USga

Round ductwork shall be suspended by band iron hangers.

Rectangular ductwork shall be supported at maximum 2.4m (8 ft.) spacing.

Sheet Metal screws will be acceptable for ducting.

Flexible duct to be triple lock aluminum, maximum length 3.0m (10 feet).

Seal Classificaiton as follows:

Maximum Pressure (Pa)	SMACNA Seal Class
1000 and over	A
750	B
500	C

Seal Classificaiton

Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.

Class B: longitudinal seams, transverse joints and connections made airtight with sealant, tape or combination thereof.

Class C: transverse joints and conenctions made air tight with gaskets, sealant, tape or combination thereof. Longitudinal seams unsealed.

Volume Dampers

Install at each take-off from main as noted on drawing; single blade with locking quadrant. equal to Duro-Dyne k-9.

Air Outlets and Inlets

All new supply diffusers and return grilles to be as per schedule.

Air System Testing and Balancing

Balance systems for rated air flow, room temperature control and current draw after installation is complete and in full working order. Adjust controls for continuous air circulation and minimum energy consumption. Adjust fan speeds as required to obtain specific performance. Balancing work to be performed by independent balancing contractor. Three (3) copies of report to be issued to engineers for review.

PLUMBING FIXTURE SCHEDULE

No.	FIXTURE TYPE	PLUMBING CONNECTIONS				MAKE/ MODEL	TRIM		ACCESSORIES	REMARKS
		D.H.W.	D.C.W.	TRAP	VENT		MAKE	MODEL		
WC-1	FLOOR MOUNTED WATER CLOSET	-	25ø	INTERNAL	38ø	AMERICAN STANDARD MADERA SYSTEM C/W F.V. 2855.111	AMERICAN STANDARD	MANUAL FLUSH VALVE	OPEN FRONT SEAT LESS COVER	ELONGATED RIM, ULTRA LOW FLUSH, EVERCLEAN.
WC-2	BARRIER FREE FLOOR MOUNTED WATER CLOSET	-	25ø	INTERNAL	38ø	AMERICAN STANDARD MADERA SYSTEM C/W F.V. 2854.111	AMERICAN STANDARD	MANUAL FLUSH VALVE	OPEN FRONT SEAT WITH COVER	ELONGATED RIM, ULTRA LOW FLUSH, EVERCLEAN, HANDICAPPED HEIGHT
U-1	URINAL	-	20ø	INTERNAL	32ø	AMERICAN STANDARD WASHBROOK SYSTEM C/W F.V. 6590.501	AMERICAN STANDARD	MANUAL FLUSH VALVE	WALL HANGERS, ANGLE STOP WITH BACKFLOW, VACUUM BREAKER, TOP SPUD, DOWNTUBE.	- -
L-1	COUNTERTOP LAVATORY	12ø	12ø	32ø	32ø	AMERICAN STANDARD AQUALYN 0476.037	POWERS	MONTERREY 6114.113.002	OFFSET P-TRAP, VALVED SUPPLIES, PIPE INSULATION KIT	-
SH-1	HAND HELD SHOWER	12ø	-	-	-	POWERS	POWERS	141-150	LOW FLOW HAND SHOWER WITH SPIRAL HOSE AND GLIDE RAIL	SHOWER ENCLOSURE BY GENERAL CONTRACTOR PROVIDE FLOOR DRAIN FD-1.
SH-1	SHOWER MIXING VALVE	12ø	12ø	-	-	POWERS HYDROGUARD	POWERS	E-420	CONCEALED THERMOSTATIC WATER MIXING VALVE	
FD-1	ROUND TOP FLOOR DRAIN	-	12ø	75ø	-	ENPOCO, SIZE 3 E-1000-R5-TPT	-	-	-	PROVIDE TRAP PRIMING FROM NEAREST PLUMBING FIXTURE

JRP ENGINEERING
Professional Engineers
9 Holgate Court, Ottawa, ON, K2K 1B4
Tel: 613-627-2462 Email: admin@jrpeng.com

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REVISIONS

client:
MCROBIE ARCHITECTS AND INTERIOR DESIGNERS
SUITE 100 - 66 QUEEN STREET
OTTAWA, ON K1P 5C6

project:
CFIA OTTAWA LABORATORY
A WING WASHROOMS REFURBISHMENT
3851 FALLOWFIELD ROAD
OTTAWA, ON

drawing title:
SPECIFICATIONS

scale:	AS SHOWN	drawn by:	L.M.K.
designed by:	L.M.K.	reviewed by:	M.M.K.
approved by:	M.M.K.	date:	JUNE 2017

project no.: 405-18C
revision: 0
drawing no.: M-5
of 5