

GENERAL NOTES:

- 1. GENERAL SCOPE OF WORK
1.1. FURNISH ALL LABOUR, MATERIALS, EQUIPMENT, TOOLS AND SUPPORTS AS WELL AS SUPERVISION TO PROVIDE A COMPLETE INSTALLATION, TESTED AND IN WORKING ORDER, AS SHOWN ON THE DRAWINGS.
1.2. THE CONTRACTOR SHALL PERFORM THE WORK STIPULATED IN THE CONTRACT AND ANY OR ALL CONTRACT CHANGES AND CHANGE DIRECTIVES, AND SHALL FURNISH, UNLESS OTHERWISE PROVIDED IN THE CONTRACT, EVERYTHING NECESSARY FOR THE PROPER PERFORMANCE AND COMPLETION OF THE WORK.
1.3. ALL WORK SHALL BE FULLY TESTED, COMMISSIONED AND IN GOOD WORKING ORDER AT TIME OF HAND-OVER TO OWNER.
1.4. MAKE GOOD ANY DAMAGES TO EXISTING EQUIPMENT AND/OR SYSTEMS, COORDINATE WORK AND WORKING HOURS WITH THE OWNER AND OTHER TRADES TO MINIMIZE DISRUPTION.
2. CODES AND STANDARDS
2.1. ALL WORK SHALL CONFORM TO THE MOST RECENT ISSUES OF:
2.1.1. THE ONTARIO BUILDING CODE
2.1.2. THE ONTARIO ELECTRICAL SAFETY CODE
2.1.3. THE MINISTRY OF THE ENVIRONMENT
2.1.4. THE NATIONAL ELECTRICAL CODE
2.1.5. BYLAWS AND REGULATIONS ISSUED BY THE BUILDING AUTHORITY HAVING JURISDICTION
2.1.6. ASHRAE
2.1.7. ASME
2.1.8. SMACNA
2.1.9. NFPA
2.1.10. TSSA
2.1.11. CSA
2.1.12. CGA
3. SPECIFICATIONS
3.1. COMPLY WITH THE GENERAL SECTIONS AND APPLICABLE SECTIONS OF THE GENERAL CONTRACT SPECIFICATIONS.
4. WARRANTY
4.1. WARRANT ALL LABOUR AND MATERIALS INCLUDED IN THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. ASSUME FULL RESPONSIBILITY FOR LAYOUT OF ALL WORK AND FOR ANY DAMAGE CAUSED TO OWNER OR OTHERS BY IMPROPER CARRYING OUT OF THE WORK.
5. DRAWINGS
5.1. DRAWINGS SHOW GENERAL INTENT OF THE WORK AND PROPOSED ROUTING ONLY.
5.2. DO NOT SCALE DRAWINGS. CONTRACTOR SHALL CONFIRM ALL DIMENSIONS BY FIELD MEASURE BEFORE PROCEEDING WITH THE WORK.
5.3. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING POSSIBLE INTERFERENCES AND INFORMING THE ENGINEER PRIOR TO STARTING ANY WORK.
6. SITE CONDITIONS
7.1. EXAMINE SITE CONDITIONS TO ENSURE THAT WORK CAN BE SATISFACTORILY CARRIED OUT AS SHOWN. IF SITE EXAMINATION REVEALS ANY DIFFICULTIES THAT WILL PREVENT THE WORK FROM BEING CARRIED OUT AS DESIGNED THESE MUST BE INDICATED IN THE TENDER PRICE, AND BROUGHT TO THE ATTENTION OF THE ENGINEER.
7.2. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY ADDITIONAL DIFFICULTIES, INTERFERENCES AND SITE CONSTRAINTS THAT MAY BE IDENTIFIED DURING THE CONSTRUCTION PERIOD.
7.3. COORDINATE SITE ACCESS AND DELIVERIES WITH LANDLORD AND/OR GENERAL CONTRACTOR.
8. OPEN FLAMES AND WELDING
8.1. WELDING SHALL BE UNDERTAKEN BY A COMPANY CERTIFIED BY CANADIAN WELDING BUREAU UNDER REQUIREMENTS OF DIVISION 1 OR DIVISION 2.1 OR W47.1.
8.2. NO OPEN FLAMES OR WELDING IS PERMITTED WITHIN THE BUILDING WITHOUT WRITTEN PERMISSION BY THE OWNER AND THE ENGINEER.
8.3. HOT WORK PERMIT MUST BE VISIBLE AT ALL TIMES.
8.4. ADEQUATE NUMBER OF FIRE EXTINGUISHERS MUST BE PROVIDED DURING THE OPEN FLAME PROCESS.
9. MATERIALS
9.1. USE ONLY NEW CSA AND ULC CERTIFIED EQUIPMENT AND MATERIALS UNLESS OTHERWISE INDICATED.
9.2. ONLY FIRST CLASS WORKMANSHIP WILL BE ACCEPTED WITH RESPECT TO STANDARD PRACTICES, SAFETY, ACCESSIBILITY, DURABILITY AND NEATNESS OF INSTALLATION WORK.
10. SHOP DRAWINGS
10.1. SUBMIT 4 COPIES OF SHOP DRAWINGS, UNLESS OTHERWISE INDICATED, FOR ENGINEER'S REVIEW.
10.2. SUBMIT SHOP DRAWINGS AND PRODUCT DATA FOR ENGINEER'S REVIEW COVERING ALL RELEVANT DETAILS, DIMENSIONS AND PERFORMANCE.
10.3. SHOP DRAWINGS MUST BE REVIEWED, STAMPED AND SIGNED BY THE CONTRACTOR AND THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO CONSULTANT / ENGINEER FOR REVIEW.
11. PENETRATIONS THROUGH FLOORS AND WALLS
11.1. UNLESS OTHERWISE SPECIFIED ON DRAWINGS, GLASS FIBRE FIRE RETARDANT INSULATION AND FIRESTOP CAULKING SHALL BE PACKED AROUND PIPE OPENINGS IN FLOORS AND WALLS AT TIME OF PIPE INSTALLATION. FIRESTOP CAULKING SHALL BE 3M FIRE BARRIER FIRETEMP CAULK OR EQUIVALENT.
11.2. APPLY FIRESTOP SYSTEMS IN ACCORDANCE WITH SMS INSTRUCTIONS. ALL SYSTEMS SHALL MEET CSA F-SYSTEM RATINGS FOR THE PARTICULAR FIRE RATING OF THE PENETRATED SURFACE.
11.3. FIRESTOPPING CONTRACTOR MUST BE A LICENSED 3M CERTIFIED INSTALLER.
11.4. MATERIALS SHALL BE ASBESTOS-FREE ELASTOMERIC MATERIALS, TESTED, LISTED AND LABELED BY ULC IN ACCORDANCE WITH CAN 4-5115-M85, AND CAN/ULC-S101-M FOR INSTALLATION IN ULC DESIGNATED FIRE STOPPING AND SMOKE SEAL SYSTEMS, TO PROVIDE A POSITIVE FIRE, WATER AND SMOKE SEAL AND A FIRE RESISTANCE RATING (FLAME, HOSE STREAM AND TEMPERATURE) NOT LESS THAN THE FIRE RATING FOR SURROUNDING CONSTRUCTION. MATERIALS SHALL BE COMPATIBLE WITH ABUTTING DISSIMILAR MATERIALS AND FINISHES.
12. DIELECTRIC ISOLATION
12.1. PROVIDE ISOLATION WHEN USING DISSIMILAR MATERIALS, TO PREVENT GALVANIC ACTION.
13. VIBRATION ISOLATION
13.1. PROVIDE AND INSTALL MINIMUM 3/4" THICK MSN ELASTOMERIC PADS W/MOUNTS UNDER FLOOR MOUNTED HVAC EQUIPMENT AS PER MANUFACTURER RECOMMENDATIONS.
14. ELECTRICAL
14.1. ALL LOW VOLTAGE CONTROL WIRING (<50V) SHALL BE BY THIS DIVISION, TO ELECTRICAL DIVISION STANDARDS.
15. PRESSURE TESTING
15.1. ALL PIPING SYSTEMS SHALL BE PRESSURE TESTED TO 860 kPa OR 1.5 TIMES SYSTEM OPERATING PRESSURE FOR A DURATION OF 24 HRS UNLESS OTHERWISE INDICATED.
16. AS BUILT DRAWINGS
16.1. MAINTAIN A RECORD OF ALL REVISIONS. PREPARE RECORD DRAWINGS IN A NEAT MANNER SHOWING ALL DEVIATIONS IN WORK. ON COMPLETION OF WORK, SUBMIT TO THE ENGINEER ONE HARD COPY OF AS BUILT DRAWINGS AND ELECTRONIC FORMAT DRAWINGS (IN AUTOCAD).
17. OPERATION AND MAINTENANCE MANUALS
17.1. SUBMIT 5 COPIES OF O&M MANUALS TO ENGINEER FOR REVIEW. ALSO INCLUDE 1 COPY IN PDF FORMAT CONTRACTOR RED LINES AND O&M MANUAL. MANUALS SHALL INCLUDE SHOP DRAWINGS OF ALL NEW EQUIPMENT, TEST AND BALANCING REPORTS, COMMISSIONING REPORTS, WARRANTIES, AND OPERATION, MAINTENANCE PROCEDURES AND AS BUILT DRAWINGS.
18. TESTING, ADJUSTING AND BALANCING (T.A.B.)
18.1. INCLUDE ALL TESTING, ADJUSTING AND BALANCING FOR AIR SYSTEMS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING: ALL NEW RTU AND EF UNITS
18.2. REPORT TO INCLUDE FLOWS, PRESSURES, VELOCITIES AND OTHER PERTINENT PERFORMANCE DATA FOR AIR AND HYDRONICS. REPORT SHALL ALSO INCLUDE POWER, AMPS, VOLTAGES, PERFORMANCE CURVES, SETTINGS OF ALL SETPOINTS AND SAFETIES, AND ALL OTHER INFORMATION THAT MAY BE REQUESTED BY THE O&M START-UP FORMS, THE ENGINEER OR THE COMMISSIONING AGENT.
18.3. INCLUDE REPORT IN THE OPERATION AND MAINTENANCE MANUALS
18.4. NOTIFY ENGINEER OF ANY DISCREPANCIES GREATER THAN +/-5% OF DESIGN VALUES PRIOR OF SUBMISSION OF REPORT.
18.5. BALANCING SHALL BE PERFORMED BY AN AABC OR NEBB CERTIFIED BALANCER
19. DUCT FLEXIBLE CONNECTIONS MUST BE INSTALLED AT INLETS AND OUTLETS OF SUPPLY AND EXHAUST AIR UNITS.
20. MATERIALS AND WORK WHICH FAILS TO MEET SPECIFIED REQUIREMENTS WILL BE REJECTED BY THE ENGINEER WHENEVER FOUND AT ANY TIME PRIOR TO FINAL ACCEPTANCE AND REGARDLESS OF PREVIOUS INSPECTIONS. WHEN REJECTED, DEFECTIVE MATERIALS OR WORK SHALL BE PROMPTLY REMOVED, REPLACED OR REPAIRED TO THE SATISFACTION OF THE ENGINEER AT NO EXPENSE TO THE OWNER.

HVAC:

- 1. DUCTWORK
1.1. DUCTWORK SHALL BE CONSTRUCTED TO ASHRAE/SMACNA STANDARDS.
1.2. DUCT SIZES ARE LISTED ON DRAWINGS. ALL DUCT SIZES SHOWN ARE CLEAR INSIDE DIMENSIONS.
1.3. ALL FLEXIBLE DUCTWORK TO DIFFUSERS SHALL BE ALUMINUM SPIRAL, MAXIMUM LENGTH 10FT.
1.4. SEAL ALL NEW LOW PRESSURE DUCTS (<2IN.WC.) AND LOW PRESSURE DUCT MODIFICATIONS TO SMACNA SEAL CLASS 'C' USING SEALANT OR ALUMINUM TAPE; OR A COMBINATION THEREOF.
1.5. HIGH PRESSURE DUCTS (>2IN.WC.) SHALL BE CONSTRUCTED OF FACTORY FABRICATED, SPIRAL WOUND, GALVANIZED STEEL WITH MATCHING FITTINGS AND SPECIALS TO SMACNA. USE SPLIT TYPE JOINTS WITH SEALANT FOR DUCTS UP TO 36IN.
1.6. SEAL ALL NEW HIGH PRESSURE DUCTS (>2IN.WC.) AND HIGH PRESSURE DUCT MODIFICATIONS TO SMACNA SEAL CLASS 'A' USING SEALANT.
2. ELBOWS
2.1. FOR LOW PRESSURE SYSTEM: ELBOWS SHALL HAVE RADIUS OF NOT LESS THAN DUCT WIDTH. BARBER-COLEMAN 'AIRTURNS', HART & COOLEY 'DUCTURNS' TURNING VANES OR DUCTMATE TURNING VANES SHALL BE PROVIDED IN ELBOWS OF LESSER RADIUS IN ALL DUCTWORK.
2.2. FOR HIGH PRESSURE SYSTEM: SMOOTH RADIUS AND/OR 5-PIECE (FOR 90°) 3-PIECE (FOR 45°) WITH CENTRELINE RADIUS AT 1.5 X DIAMETER. USE 45° CONICAL TRANSITIONS FOR BRANCH CONNECTIONS.
3. BALANCING
3.1. SHEET METAL CONTRACTOR SHALL EMPLOY THE SERVICES OF A LICENSED INDEPENDENT BALANCING COMPANY TO BALANCE THE AIR SYSTEMS TO ACHIEVE THE AIRFLOW SHOWN. THE BALANCING COMPANY SHALL SUBMIT A COMPLETE REPORT. ACCEPTANCE OF BALANCING AND REPORT WILL BE SUBJECT TO ON SITE MEASUREMENT AND/OR VERIFICATION OF THE REPORT BY THE MECHANICAL ENGINEER.
4. VIBRATION ISOLATION
4.1. PROVIDE AND INSTALL MINIMUM 3/4" THICK MSN ELASTOMERIC PADS W/ MOUNTS UNDER FLOOR MOUNTED HVAC EQUIPMENT AS PER MANUFACTURER RECOMMENDATIONS.
4.2. PROVIDE AND INSTALL SPRING W/ ELASTOMERIC ELEMENT HANGERS FOR CEILING SUSPENDED EQUIPMENT, DUCTWORK AND ACCESSORIES.
5. BALANCING DAMPERS
5.1. BALANCING DAMPERS SHALL BE MANUALLY OPERATED OPPOSED BLADE OR SPLITTER TYPE. SPLITTER DAMPERS SHALL BE COMPLETE WITH CONTROL ROD, PIVOT BRACKET AND BALL JOINT FITTING WITH LOCKING SETSCREW.
5.2. SPLITTER DAMPERS SHALL BE INSTALLED ON ALL BRANCH DUCT CONNECTIONS (OR TAKE-OFFS) FROM DUCTS.
5.3. OPPOSED BLADE DAMPERS SHALL BE USED FOR ALL DIFFUSER/GRILLE BALANCING DAMPERS (WHERE INDICATED).
6. FIRE RATED DAMPERS (FRD)
6.1. FIRE DAMPER (FRD) SHALL BE CURTAIN TYPE WITH 135° F FUSIBLE LINK SUITABLE FOR HORIZONTAL OR VERTICAL INSTALLATION, ULC RATED (AS PER ENCLOSURE FIRE RESISTANCE RATING).
6.2. FRD SHALL BE RUSKIN MODEL DIBD2 STYLE B (OR EQUAL FOR DUCT HEIGHTS NOT EXCEEDING 12", AND DIBD2 STYLE A (OR EQUAL) FOR DUCT HEIGHTS EXCEEDING 12".
6.3. PROVIDE ACCESS DOORS AT EACH FRD UNLESS FRONTAL ACCESS TO FRD IS AVAILABLE.
7. DIFFUSER/GRILLES/REGISTERS
7.1. TYPE A - EH PRICE, MODEL ROUND RCD DIFFUSER, 8"Ø COLLAR.
7.2. TYPE B - EH PRICE, MODEL SCD, 24"x24" DOUBLE DEFLECTION SUPPLY GRILL, CONNECTED TO SUPPLY DUCT.
7.3. TYPE C - EH PRICE, MODEL SDS/SOR - LINEAR SLOT DIFFUSERS WITH MOUNTING BRACKET (AND ALL CORRESPONDING ACCESSORIES) FOR DRYWALL MOUNT.
7.4. TYPE D - EH PRICE, 24"x24", 1/2" BLADE SPACING, RETURN GRILL.
7.5. THE BLADES SHALL RUN PARALLEL TO THE LONG DIMENSION OF THE GRILLE.
7.6. ALL DIFFUSER/GRILLE/REGISTER COLOURS SHALL BE CONFIRMED AT THE SHOP DRAWING STAGE BY THE INTERIOR DESIGNER.
8. THERMAL INSULATION FOR DUCTS
8.1. BLANKET OR RIGID THERMAL INSULATION ON INDOOR DUCTS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS UNLESS OTHERWISE INDICATED:
8.1.1. INSULATE FULL LENGTH OF FRESH AIR SUPPLY DUCTS.
8.1.2. INSULATE FIRST 10FT OF EXHAUST DUCTS FROM EXTERIOR WALL OR ROOF.
8.1.3. INSULATE FULL LENGTH OF SUPPLY AND RETURN DUCTS THAT ARE ROUTED THROUGH A NON-CONDITIONED SPACE.

HVAC (CONT'D):

- 8.1.4. THERMAL INSULATION IS NOT REQUIRED ON SUPPLY AND RETURN DUCTS CONFINED WITHIN A CONDITIONED SPACE (INCLUDING RETURN PLENUM CEILING).
8.1.5. ACCIDENTALLY LINED INTERIOR DUCTS NEED NOT TO BE THERMALLY INSULATED.
8.1.6. USE RIGID INSULATION AND DRYWALL TYPE CORNER BEADS IN AREAS WHERE INSULATION IS EASILY SUSCEPTIBLE TO DAMAGE.
8.2. INSULATION SHALL BE FOIL FACED HAVING FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.
8.3. THERMAL INSULATION SHALL BE 1-1/2" THICK BLANKET MINERAL FIBER OR 1" THICK RIGID MINERAL FIBERBOARD FOR WARM AIR DUCTS AND DUCTS BETWEEN OUTSIDE WALLS AND MIXING PLENUMS.
8.4. THERMAL INSULATION FOR COLD AIR DUCTS SHALL BE 1-1/2" THICK RIGID INSULATION, OR 2" THICK BLANKET MINERAL FIBRE.
8.5. VAPOUR-RETARDER MEMBRANE SHALL BE INSTALLED WITH INSULATION ON COLD, DUAL-TEMP AND FRESH AIR AIR SUPPLY DUCTS.
8.6. ACCEPTABLE BLANKET MINERAL FIBER SHALL BE JOHNS MANVILLE MICROLITE DUCT WRAP TYPE 100 OR EQUIVALENT.
8.7. ACCEPTABLE RIGID MINERAL FIBERBOARD SHALL BE JOHNS MANVILLE 800 SERIES SPIN-GLASS TYPE OR EQUIVALENT.
8.8. SEAL ALL JOINTS WITH ULC LISTED SELF-ADHESIVE INSULATION TAPE FOR INDOOR DUCTS AND INSULATION.
8.9. USE RIGID INSULATION AND DRYWALL TYPE CORNER BEADS IN AREAS WHERE INSULATION IS EASILY SUSCEPTIBLE TO DAMAGE.
8.10. EXTERIOR DUCTWORK INSULATION SHALL BE COVERED BY A .04" THICK ALUMINUM JACKET (FORMING THE DOUBLE SKIN). ALL LONGITUDINAL SEAMS SHALL BE FORMED ALONG THE BOTTOM. ENSURE THAT ALUMINUM JACKET IS FASTENED WITH SECURE, WATERTIGHT MECHANICAL CONNECTIONS. APPLY EXTERIOR GRADE SEALANT AT ALL SEAMS.
9. ACOUSTIC INSULATION
9.1. ACOUSTIC INSULATION SHALL BE PROVIDED WHERE INDICATED ON DRAWINGS AND IN ALL RETURN AIR TRANSFER DUCTS.
9.2. ACOUSTIC INSULATION SHALL BE 1/2" THICK INTERNAL LINING, C/W FACTORY APPLIED BLACK ACRYLIC POLYMER COATING, HAVING FLAME SPREAD RATING OF 25 OR LESS AND SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.
9.3. DUCT SIZES SHOWN ON DRAWINGS INDICATE CLEAR INSIDE DIMENSIONS.
9.4. ACCEPTABLE ACOUSTIC DUCT LINER SHALL BE JOHNS MANVILLE PERMACOTE LINACOUSTIC STANDARD/HP OR EQUIVALENT.
9.5. APPLY BLACK ACRYLIC POLYMER COATING TO ALL FIELD CUT EDGES AS PER SMACNA STANDARDS.
9.6. ACCEPTABLE COATING SHALL BE JOHNS MANVILLE SUPERSEAL OR EQUIVALENT.
10. CONTROLS
10.1. CONTROLS CONTRACTOR SCOPE OF WORK SHALL INCLUDE SUPPLY AND INSTALL OF: THERMOSTATS, DIFFERENTIAL PRESSURE CONTROLS, WIRING/TUBING, AND AUTOMATION SYSTEM TIE-INS (AS REQUIRED).
10.2. PROVIDE ASSISTANCE TO GENERAL/MECHANICAL CONTRACTOR AS INDICATED IN THE TENDER DOCUMENT.

DOMESTIC WATER PIPING AND ACCESSORIES:

- 1. GENERAL
1.1. MATERIAL AS INDICATED ON DRAWINGS. IF MATERIALS HAVE NOT BEEN INDICATED ON DRAWINGS, THEN INSTALLATION SHALL ADHERE TO THIS SECTION.
1.2. CONTRACTOR SHALL BE RESPONSIBLE FOR CONFIRMING EXACT LOCATIONS OF EXISTING PIPING, APPROXIMATE DISTANCES ARE INDICATED ON DRAWINGS AS REQUIRED.
1.3. PROVIDE MATERIALS IN ACCORDANCE WITH THIS SECTION UNLESS OTHERWISE SPECIFIED.
1.4. PROVIDE ALL MATERIALS AS REQUIRED INCLUDING PIPING, VALVES, FITTINGS, TRAPS, HANGERS, SUPPORTS AND THERMAL INSULATION FOR COMPLETE SYSTEM INSTALLATION AND OPERATION.
1.5. ALL PIPING SHALL BE PROPERLY LABELED.
1.6. PROVIDE MINIMUM PIPE INSULATION THICKNESSES IN ACCORDANCE WITH LATEST EDITION OF ASHRAE STANDARD 90.1 UNLESS OTHERWISE INDICATED.
1.7. PROVIDE ALL PLUMBING SYSTEMS, FIXTURES AND ACCESSORIES IN ACCORDANCE WITH OBC AND LOCAL AUTHORITIES HAVING JURISDICTION.
2. THERMAL INSULATION
2.1. MINIMUM PIPE INSULATION SHALL BE 1" FOR ALL DOMESTIC HOT AND COLD WATER PIPES AND RAIN WATER LEADERS UNLESS OTHERWISE INDICATED.
2.2. DOMESTIC HOT WATER PIPE GREATER THAN 2" SHALL HAVE 1-1/2" THICK INSULATION.
2.3. PROVIDE AND INSTALL PVC JACKET AND VAPOUR RETARDER FOR INDOOR INSULATED PIPE APPLICATIONS. JACKETING SHALL BE JOHNS MANVILLE ZESTON 300 SERIES OR EQUIVALENT.
2.4. INSTALL ALL INSULATION AND JACKETS AS PER MANUFACTURER RECOMMENDATIONS.
2.5. MAINTAIN UNINTERRUPTED CONTINUITY AND INTEGRITY OF VAPOUR RETARDER AND FINISHES. HANGERS AND SUPPORTS TO BE OUTSIDE VAPOUR OF RETARDER.
2.6. APPLY HIGH COMPRESSIVE STRENGTH INSULATION, SUITABLE FOR SERVICE, AT OVERSIZED SADDLES AND SHOES WHERE INSULATION SADDLES HAVE NOT BEEN PROVIDED.
2.7. INSULATION SHALL BE FOIL FACED.
2.8. INSULATION SHALL HAVE A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DEVELOPMENT CLASSIFICATION OF 50 OR LESS.
3. PIPE HANGERS AND SUPPORTS
3.1. PIPING HANGERS AND SUPPORTS SHALL BE SPACED IN ACCORDANCE WITH APPLICABLE CODES AND AUTHORITIES HAVING JURISDICTION.
4. PRESSURE TESTING
4.1. ALL PIPING SYSTEMS SHALL BE HYDROSTATICALLY PRESSURE TESTED TO A MINIMUM OF 860 kPa OR 1-1/2 TIMES SYSTEM OPERATING PRESSURE (WHICHEVER IS GREATER) FOR A PERIOD OF 24 HOURS UNLESS OTHERWISE INDICATED.
5. DRAINAGE WASTE AND VENT PIPING
5.1. BURIED SANITARY, STORM AND VENT SHALL BE MINIMUM 3" PVC OR ABS PIPE AND FITTINGS TO CSA CAN 3-B181.1-M85 (ABS), CAN 3-B181.2-M85 (PVC) B182.1-M1983, B182.2-M1983 (LARGE DIAMETER PSM PVC), B182.3-M1983 (LARGE DIAMETER IPS PVC).
5.2. PROVIDE TRAP PRIMERS WHERE REQUIRED.
5.3. ABOVE GROUND SANITARY AND VENT LINES SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE ONTARIO BUILDING CODE FOR SOIL AND WASTE. PIPING SHALL NOT HAVE A FLAME-SPREAD RATING GREATER THAN 25, AND HAVE A SMOKE DEVELOPED CLASSIFICATION NOT MORE THAN 50. ALL MATERIALS SHALL BE NON-COMBUSTIBLE.
6. DOMESTIC COLD AND HOT WATER PIPE
6.1. PROVIDE ISOLATION VALVES FOR EACH NEW FIXTURE. VALVES SHALL BE BY PASS BALL VALVES WITH THREADED/SOLDERED ENDS, RATED FOR 400 CWP.
6.2. TYPE K COPPER PIPE TO ASTM B88W SHALL BE USED FOR BURIED DCW PIPE.
7. FLOOR DRAINS
7.1. ABS, PVC OR CAST IRON SIZE AS INDICATED ON DRAWING.
7.2. ACCEPTABLE MATERIAL: J.R. SMITH OR EQUAL:
7.2.1. FINISHED AREAS MODEL 2005
7.2.2. UNFINISHED AREA MODEL 2320
7.2.3. FLOOR FUNNEL DRAINS SAME AS ABOVE C/W 3591 FUNNEL
7.3. PROVIDE PRIMING AT EACH FLOOR DRAIN FROM NEAREST LAVATORY OR WATER CLOSET.
8. TRENCH DRAIN
8" WIDE, 40' LONG, PRE-SLOPED (0.5%) OR NEUTRAL FILCOTEN TRENCH DRAIN SYSTEM. BODY TO BE MANUFACTURED FROM A FIBRE-REINFORCED CONCRETE BASED MATERIAL. BODIES MUST HAVE INTERLOCKING ENDS, A RADUSED BOTTOM FOR EFFICIENT LIQUID DRAINAGE AND MULTIPLE ANCHORING RIBS TO SECURELY HOLD THE BODY INTO THE CONCRETE FOUNDATION. EACH BODY TO BE MANUFACTURED WITH AN INTEGRAL 4MM THICK, EXTRA HEAVY DUTY, GALVANIZED STEEL RAIL. END AND BOTTOM OUTLETS TO BE AVAILABLE IN 4" NO HUB OUTLET CONNECTIONS. THE GRATES TO BE EXTRA HEAVY DUTY DUCTILE IRON (LARGE CLASS E), GRATES MUST BE SECURED TO THE BODY WITH A FOUR POINT SELF-LOCKING SYSTEM. END CAPS AND CATCH BASINS TO BE INSTALLED.
9. CLEAN-OUTS AND VENTING
9.1. PROVIDE IN ACCORDANCE WITH OBC CHAPTER 7 AND AS INDICATED ON DRAWINGS.
9.2. ACCEPTABLE MATERIAL: J.R. SMITH OR EQUAL:
9.2.1. UNFINISHED FLOOR CLEANOUTS MODEL 4240
9.2.2. FINISHED FLOOR CLEANOUTS MODEL 4100
9.2.3. PIPE CLEANOUTS MODEL 4510
10.3. PROVIDE FIXTURES AS INDICATED BELOW:
10.3.1. WC-1
10.3.1.1. STANDARD WALL MOUNTED C/W FLUSH VALVE, ELONGATED BOWL AND SEAT. C/W CARRIER.
10.3.2. MAXIMUM 6.0 L/FLUSH
10.3.2. KITCHEN SINK (KS-1)
10.3.2.1. SINK AND FAUCET SHALL BE SPECIFIED BY CLIENT.
10.3.2.2. MAXIMUM 8.35 L/MIN.
10.3.2. LAVATORY L-1
10.3.2.1. NEW LAVATORY TO BE APPROVED BY THE CLIENT.
10.3.3. EFFICIENCY AND WATER FLOW STANDARD TO MEET N.B.C. PART 7.
10.3.3. DISHWASHER-DW-1
10.3.3.1. NEW DISHWASHER TO BE APPROVED BY THE CLIENT.
10.3.3.2. EFFICIENCY AND WATER FLOW STANDARD TO MEET N.B.C. PART 7.

GAS PIPING AND ACCESSORIES:

- 1. PIPE
1.1. STEEL PIPE: TO ASTM A53, GRADE B, SCHEDULE 40, SEAMLESS AS FOLLOWS:
1.1.1. NPS 1/2 TO 2, SCREWED.
1.1.2. NPS 2 1/2 AND OVER, PLAIN END.
1.1.3. COPPER TUBE: TO ASTM B75M.
1.2. JOINING MATERIAL
1.2.1. SCREWED FITTINGS: PULVERIZED LEAD PASTE.
1.2.2. WELDED FITTINGS: TO CSA W47.1.
1.2.3. FLANGE GASKETS: NONMETALLIC FLAT.
1.2.4. SOLDERED: TO ASTM B32, TIN ANTIMONY 5/5.
9. FITTINGS
9.1. STEEL PIPE FITTINGS, SCREWED, FLANGED OR WELDED:
9.1.1. MALLEABLE IRON: SCREWED, BANDED, CLASS 150.
9.1.2. STEEL PIPE FLANGES AND FLANGED FITTINGS: TO ANSI/ASME B16.5.
9.1.3. WELDING: BUTT-WELDING FITTINGS.
9.1.4. UNIONS: MALLEABLE IRON, BRASS TO IRON, GROUND SEAT, TO ASTM A47M.
9.1.5. BOLTS AND NUTS: TO ANSI B18.2.1
9.1.6. NIPPLES: SCHEDULE 40, TO ASTM A53.
9.2. COPPER PIPE FITTINGS, SCREWED, FLANGED OR SOLDERED:
9.2.1. CAST COPPER FITTINGS: TO ANSI B16.18.
9.2.2. WROUGHT COPPER FITTINGS: TO ANSI/ASME B16.22.
10. VALVES
10.1. PROVINCIAL CODE APPROVED, LUBRICATED PLUG TYPE.
11. INSTALLATION
11.1. INSTALL IN ACCORDANCE WITH APPLICABLE PROVINCIAL CODES.
11.2. INSTALL IN ACCORDANCE WITH CAN/CGA B149.1.
11.3. ASSEMBLE PIPING USING FITTINGS MANUFACTURED TO ANSI STANDARDS.
11.4. CONNECT TO EQUIPMENT IN ACCORDANCE WITH MANUFACTURERS INSTRUCTION UNLESS OTHERWISE INDICATED.
11.5. SLOPE PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS.
11.6. INSTALL DRIP POINTS:
11.6.1. AT LOW POINTS IN PIPING SYSTEM.
11.6.2. AT EACH CONNECTION TO EQUIPMENT.
11.7. USE ECCENTRIC REDUCERS AT PIPE SIZE CHANGE INSTALLED TO PROVIDE POSITIVE DRAINAGE.
11.8. PROVIDE CLEARANCE FOR ACCESS AND FOR MAINTENANCE.

- 11.9. REAM PIPES, CLEAN SCALE AND DIRT, INSIDE AND OUT.
11.10. INSTALL PIPING TO MINIMIZE PIPE DISMANTLING FOR EQUIPMENT REMOVAL.
11.11. INSTALL VALVES WITH STEMS UPRIGHT OR HORIZONTAL UNLESS OTHERWISE APPROVED BY ENGINEER.
11.12. INSTALL VALVES AT BRANCH TAKE-OFFS TO ISOLATE EACH PIECE OF EQUIPMENT, AND AS INDICATED.
12. TESTING
12.1. TEST SYSTEM IN ACCORDANCE WITH CAN/CGA B149.1 AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
12.2. PURGE AFTER PRESSURE TEST IN ACCORDANCE WITH CAN/CGA B149.1.

SPRINKLER SYSTEM:

- 1. REFERENCES
1.1. NFPA 13, INSTALLATION OF SPRINKLER SYSTEMS.
2. SHOP DRAWINGS AND PRODUCT DATA
2.1. SUBMIT SHOP DRAWINGS AND PRODUCT DATA IN ACCORDANCE WITH NFPA 13.
2.2. SUBMIT DETAILED DESIGN AND EQUIPMENT DATA COMPLETE WITH SPRINKLER HEADS, PIPING AND SIZING DATA.
2.3. SHOP DRAWING SHALL BE STAMPED BY AN ENGINEER (P.ENG) AND APPROVED BY THE AUTHORITIES HAVING JURISDICTION BEFORE COMMENCING AND INSTALLATION.
3. ENGINEERING DESIGN CRITERIA
3.1. DESIGN AND INSTALL FIRE PROTECTION (SPRINKLER) SYSTEM TO ONTARIO BUILDING CODE, NFPA 13 LIGHT HAZARD AND SPECIFICATIONS.
3.2. ALL COMPONENTS TO BE ULC LISTED AND FM APPROVED.
3.3. ACCOMPANYING CONTRACT DRAWINGS INDICATES AREAS PROTECTED BY SPRINKLER AND GENERALLY INSTALLED SYSTEM AND NOT LIMITED TO THE EXACT NUMBER OF HEADS REQUIRED TO GIVE NECESSARY PROTECTION TO APPROVAL OF AUTHORITIES HAVING JURISDICTION AND INSURANCE UNDERWRITER.
3.4. REFERENCED CODES AND STANDARDS REPRESENT MINIMUM REQUIREMENTS. DO NOT REDUCE REQUIREMENTS OF MATERIALS, EQUIPMENTS AND DESIGN CRITERIA STANDARDS ESTABLISHED BY CONTRACT DOCUMENTS.
4. PIPE SIZE AND LAYOUT:
4.1. ALL SPRINKLER PIPES SHALL BE HYDRAULICALLY CALCULATED AND SIZED BY THE SPRINKLE CONTRACTOR.
4.2. THE PIPING LAYOUT INDICATED ON THE DRAWING IS FOR THE REFERENCE ONLY. CONTRACTOR TO COORDINATE WITH OTHER TRADES AND ENSURE NO INTERFERENCE WITH OTHER EQUIPMENT.
4.3. SPRINKLER HEAD LAYOUT: TO NFPA 13 AND AS DIRECTED BY AUTHORITIES HAVING JURISDICTION.
4.4. WATER SUPPLY: TIE INTO EXISTING SPRINKLER WATER MAINS WHERE INDICATED.
5. ZONING
5.1. STANDARD WET PIPE.
6. PIPES, FITTINGS AND VALVES
6.1. PIPE FERROUS: TO NFPA 13, BLACK STEEL.
6.2. FITTING AND JOINTS TO NFPA 13 FERROUS: SCREWED, WELDED, FLANGED OR ROLL GROOVED TO BASE BUILDING STANDARD.
7. VALVES
7.1. ULC LISTED AND FM APPROVED FOR FIRE PROTECTION SERVICE.
7.2. UP TO NPS 2": BRONZE, SCREWED ENDS, OS&Y GATE.
7.3. NPS 2 1/2" AND OVER: CAST IRON, FLANGE [OR ROLL GROOVED] ENDS, INDICATING BUTTERFLY VALVE
8. PIPE HANGERS:
8.1. ULC LISTED AND FM APPROVED FOR FIRE PROTECTION SERVICES.
8.2. GRINNELL ADJUSTABLE CLEVIS.
9. SPRINKLER HEADS
9.1. NEW HEADS TO BE 165°F. PENDENT OR CONCEALED AS INDICATED.
9.1.1. INSTALL CONCEALED HEADS IN ALL DRYWALL/GYPSUM CEILINGS OR AS INDICATED ON DRAWING.
9.1.2. INSTALL PENDENT HEADS IN ALL OTHER T-BAR CEILING AREAS.
9.1.3. INSTALL UPRIGHT SPRINKLER HEADS IN ALL OPEN CEILING AREAS.
9.1.4. INSTALL SIDE WALL SPRINKLERS WHERE INDICATED.
9.2. CONCEALED HEAD PLATES COLOUR SHALL BE COORDINATED WITH THE ARCHITECT.
10. INSTALLATION
10.1. INSTALL, INSPECT, AND TEST FOR ACCEPTANCE IN ACCORDANCE WITH NFPA 13.
10.2. TESTING TO BE WITNESSED AND APPROVED BY AUTHORITY HAVING JURISDICTION.
10.3. INSTALLATION TO COMPLY WITH CAN/ULC S524-M91 AND TO BE VERIFIED IN ACCORDANCE WITH CAN/ULC S537-97.

DRAWING LIST table with columns DWG NO. and DESCRIPTION. Rows include M-1.1 GENERAL NOTES & SPECIFICATIONS, M-1.2 DETAILS, LEGEND AND SCHEDULE, M-2.1 FLOOR PLAN - PLUMBING, M-3.1 FLOOR PLAN - HVAC, M-4.1 FLOOR PLAN - SPRINKLERS EXISTING, M-4.2 FLOOR PLAN - SPRINKLERS PROPOSED, E-1 ELECTRICAL SPECIFICATIONS, E-2 FLOOR PLAN - LIFE SAFETY SYSTEM.

LEGEND table with columns SYMBOL and DESCRIPTION. Symbols include lines for NEW WORK, EXISTING TO REMAIN, EXISTING TO BE DEMOLISHED, wavy lines for FLEX DUCT, dashed lines for CONTROL WIRE, and various symbols for CAP, THERMOSTAT, CARBON MONOXIDE SENSOR, CARBON DIOXIDE SENSOR, OCCUPANCY SENSOR, AIR FLOW ARROW, SUPPLY DUCT - UP, SUPPLY DUCT - DOWN, RETURN DUCT - UP, RETURN DUCT - DOWN, DUCT REDUCER, BALANCING DAMPER, BACK DRAFT DAMPER, FIRE DAMPER, and AIR TERMINAL TAG.

NOTE before commencing work:

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Table with columns No., Issued For, Date. Row 1: ISSUED FOR PERMIT, JUL 30, 2024.



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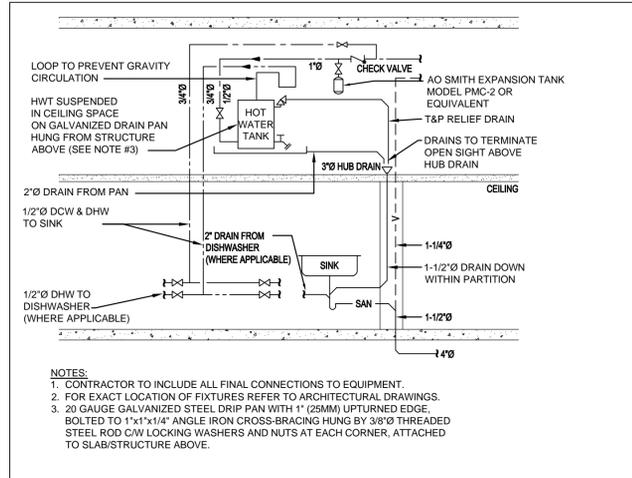
All work to conform to all governing codes and By-laws.



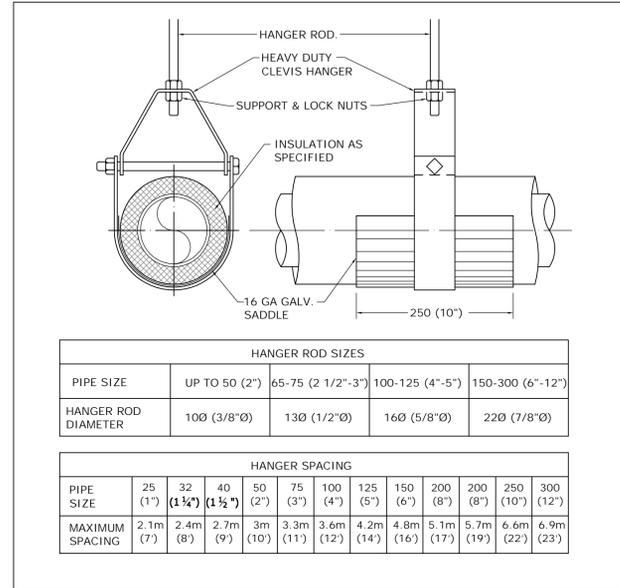
Project: DAY CARE PHASE 1
Location: 230 THE ESPLANADE TORONTO ON M5A 4J6
Project No: 24032

Drawing: GENERAL NOTES & SPECIFICATIONS

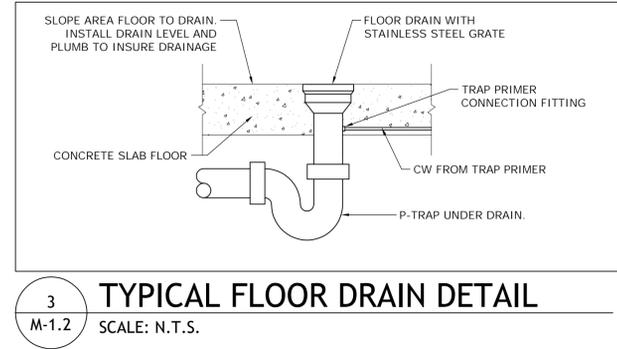
Table with columns Scale, Date, Drawing by, Checked by, Approved by, CAD FILE NAME. Includes drawing number M-1.1.



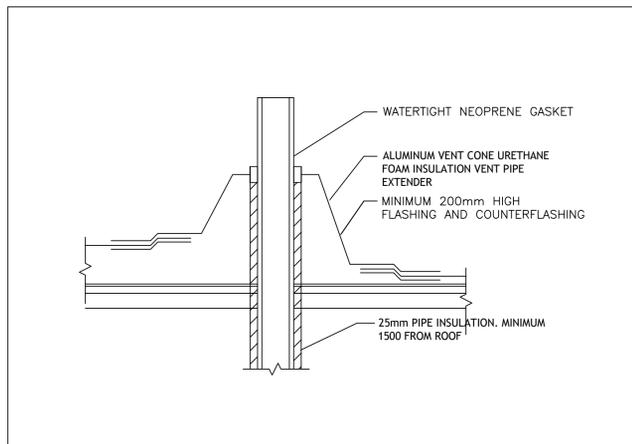
1 HOT WATER HEATER IN CEILING SPACE
M-1.2 SCALE: N.T.S.



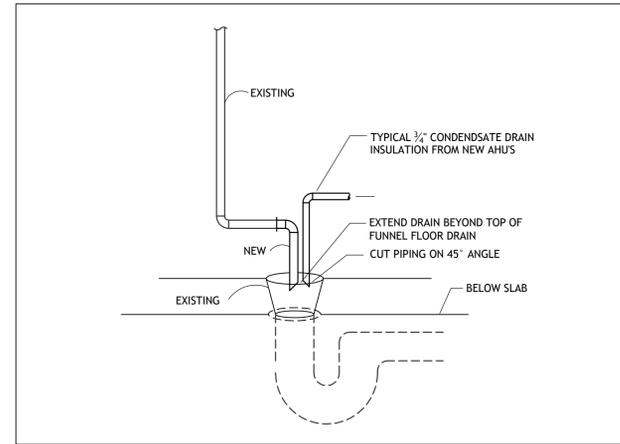
2 PIPE HANGER DETAIL
M-1.2 SCALE: N.T.S.



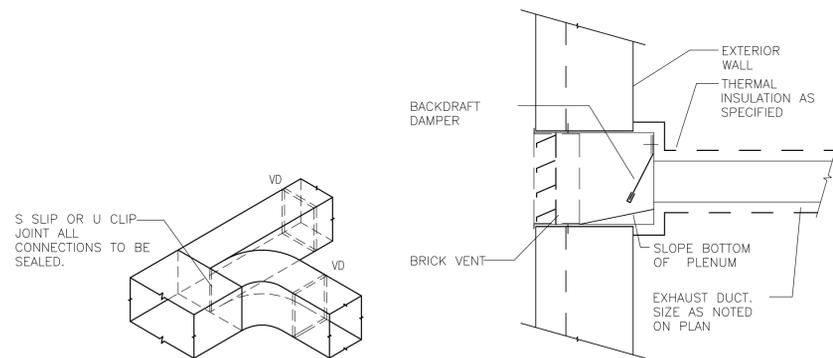
3 TYPICAL FLOOR DRAIN DETAIL
M-1.2 SCALE: N.T.S.



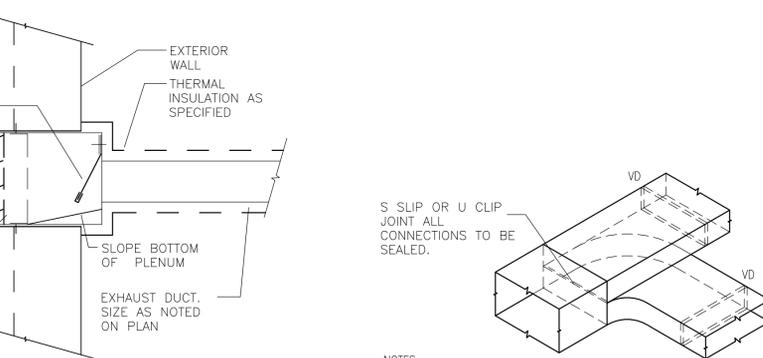
4 TYPICAL VENT DETAIL
M-1.2 SCALE: N.T.S.



5 FUNNEL FLOOR DRAIN
M-1.2 SCALE: N.T.S.



DETAILS OF AIR FLOW BRANCHES
N.T.S.



BRICK VENT DETAIL
N.T.S.

NOTES
VOLUME CONTROL SHOULD BE BY BRANCH DAMPERS.
ALL TURNING RADIUS TO CONFORM TO SMACNA DUCT CONSTRUCTION STANDARDS.

NOTE before commencing work:
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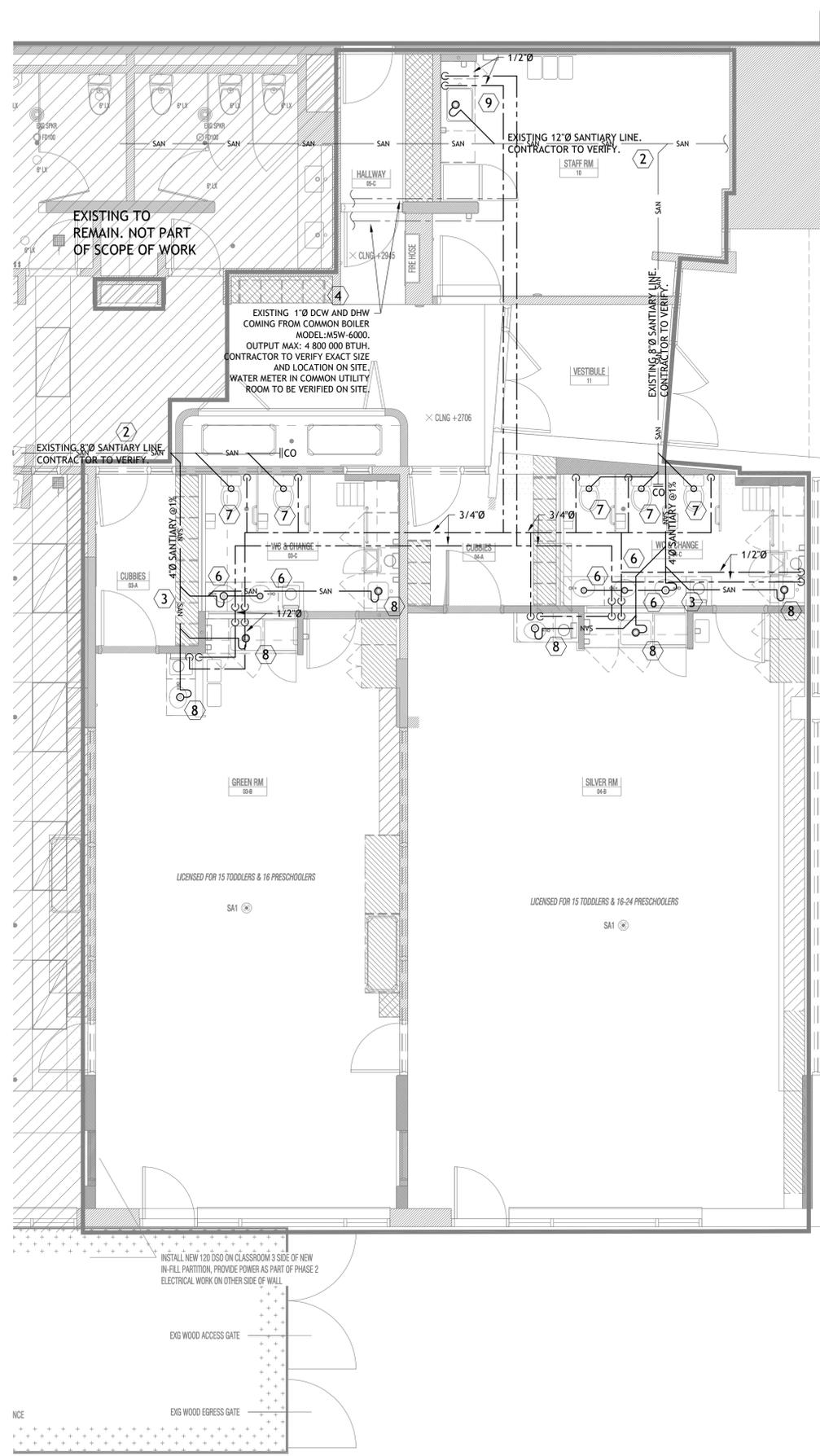
All work to conform to all governing codes and By-laws.



Project **DAY CARE PHASE 1**
Location 230 THE ESPLANADE TORONTO ON M5A 4J6
Project No **24032**

Drawing **GENERAL NOTES & SPECIFICATIONS**

Scale	N.T.S.	Date	JULY 2024
Drawing by	HK	Drawing No.	M-1.2
Checked by	SH		
Approved by	SH OF		
CAD FILE NAME: 24032-M.DWG			



ALL EXISTING SANITARY AND PLUMBING SERVICES TO REMAIN. CONTRACTOR TO VERIFY ALL EXISTING ON SITE. PROVIDE NEW AS SHOWN IN THE DRAWINGS

CONTRACTOR TO PROVIDE HEAT TRACING AND INSULATION FOR THE SANITARY PIPES BELOW LEVEL TO MATCH EXISTING.

REFER TO THE ARCHITECTURAL DRAWINGS FOR DETAILED SCHEDULE OF THE PLUMBING FIXTURES. CONTRACTOR SHALL PROVIDE ALL REQUIRING ACCESSORIES FOR A FULLY FUNCTIONAL SYSTEM.

ITEM NO.	EQUIPMENT DESCRIPTION	QTY	PLUMBING			
			HOT	COLD	DRAIN	VENT
1	HAND SINK	6	3/2"	1/2"	1-1/2"	1-1/2"
2	LAVATORY	5	1/2"	1/2"	1-1/2"	1-1/2"
3	WATER CLOSET	5	-	3/4"	3"	1-1/2"
4	KITCHEN SINK	1	1/2"	1/2"	2"	1-1/2"

- GENERAL NOTES:**
- CONTRACTOR TO CLEAN ALL DEBRIS AND RUBBISH GENERATED FROM THIS WORK.
 - CONTRACTOR TO REPAIR ANY DAMAGE CAUSED BY THIS WORK AND MAKE GOOD TO MATCH EXISTING.
 - ALL PENETRATIONS THROUGH FIRE RATED DEMISING WALLS AND FLOOR SHALL BE FIRE STOPPED AND SEALED.
 - COORDINATE WITH ALL TRADES FOR NEW PLUMBING FIXTURE AND PIPING INSTALLATION.
 - PROVIDE X-RAY SCANNING FLOOR BEFORE DRILL HOLES ON FLOOR.
 - PROVIDE ALL NEW FIXTURES AS INDICATED.
 - PROVIDE ISOLATION VALVE AND FLEXIBLE HOSE CONNECTIONS FOR EACH FIXTURE. SIZE TO MATCH FIXTURE.
 - PROVIDE ISOLATION VALVE ON DCW AND DHW BRANCH PIPES, VALVE SIZE TO MATCH PIPE SIZE.
 - ALL DCW AND DHW PIPE SHALL BE INSULATED AS PER SPECIFICATION.
 - ALL PLUMBING VENT PIPING SHALL BE INSIDE WALLS AND INSTALLED IN ACCORDANCE WITH THE OBC.
 - CONTRACTOR SHALL SEAL UNUSED OPENINGS AND REPAIR FLOOR/CEILING TO MATCH EXISTING.

- KEYNOTES:**
- CONTRACTOR TO PROVIDE VENTING AS REQUIRED BY OBC SECTION 7.5.8.
 - CONTRACTOR TO VERIFY THE SIZE AND LOCATION OF THE EXISTING SANITARY STACK ON SITE. PLUMBER TO PROVIDE FLOOR XRAY BEFORE STARTING TO CORE.
 - PROVIDE SANITARY LINES AS INDICATED AND CONNECT TO NEAREST SANITARY STACK. A SLOPE MUST BE MAINTAINED AS REQUIRED BY OBC SECTION 7.4.10.8. PROVIDE CLEAN OUTS AS REQUIRED.
 - CONTRACTOR TO VERIFY EXISTING WATER METER, SHUT OFF VALVE AND ON DCW MAIN SUPPLY TO THE FACILITY. VERIFY SIZE AND LOCATE EXISTING INCOMING DCW LINE.
 - PROVIDE NEW 3" FLOOR DRAIN (WATTS FD-75-C-A) WITH 3" TRAP WITH Z1022-XL PRIMER. CONNECT TO NEAREST SANITARY MAIN LINE.
 - 1/2" HOT AND COLD WATER LINES TO SUPPLY EACH LAVATORY, 1 1/2" SANITARY DRAIN DOWN AND CONNECT TO 3" LINE. 1 1/2" SANITARY VENT UP TO CEILING VENT SYSTEM.
 - 1/2" COLD WATER SUPPLY TO EACH WATER CLOSET, 3" CLOSET FLANGE DRAIN DOWN AND CONNECT TO DRAIN. 1 1/2" SANITARY VENT, FROM EACH UP TO CEILING VENT SYSTEM.
 - 1/2" HOT AND COLD WATER LINES TO SUPPLY EACH HAND SINK, 1 1/2" SANITARY DRAIN DOWN AND CONNECT TO 3" LINE. 1 1/2" SANITARY VENT UP TO CEILING VENT SYSTEM.
 - 1/2" COLD WATER SUPPLY TO EACH KITCHEN, 2" SANITARY DRAIN DOWN AND CONNECT TO MAIN SANITARY LINE. 1 1/2" SANITARY VENT, FROM EACH UP TO CEILING VENT SYSTEM.
 - 3/4" COLD WATER LINE DOWN TO SERVE HOT WATER HEATER (HWT-1). 3/4" HOT WATER FROM WATER HEATERS TO SERVE PLUMBING FIXTURES. PRESSURE RELIEF TO FLOOR DRAIN AS PRESCRIBED BY THE MANUFACTURER. SEE M-1.2 FOR DETAILS.

NOTE before commencing work:
The contractor shall check and verify location of all pipes, ducts, diffusers, light fixtures and equipment and coordinate with other trades on site to prevent interference. The contractor is responsible for any changes to the drawings without the written approval of MSH Engineers.

1.	ISSUED FOR PERMIT	JUL 30, 2024
No.	Issued For:	Date

Orientation

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Project: DAY CARE PHASE 1
Location: 230 THE ESPLANADE TORONTO ON M5A 4J6
Project No: 24032

For: _____

Drawing: FLOOR PLAN PLUMBING

Scale: 1/4" = 1" Date: JULY 2024

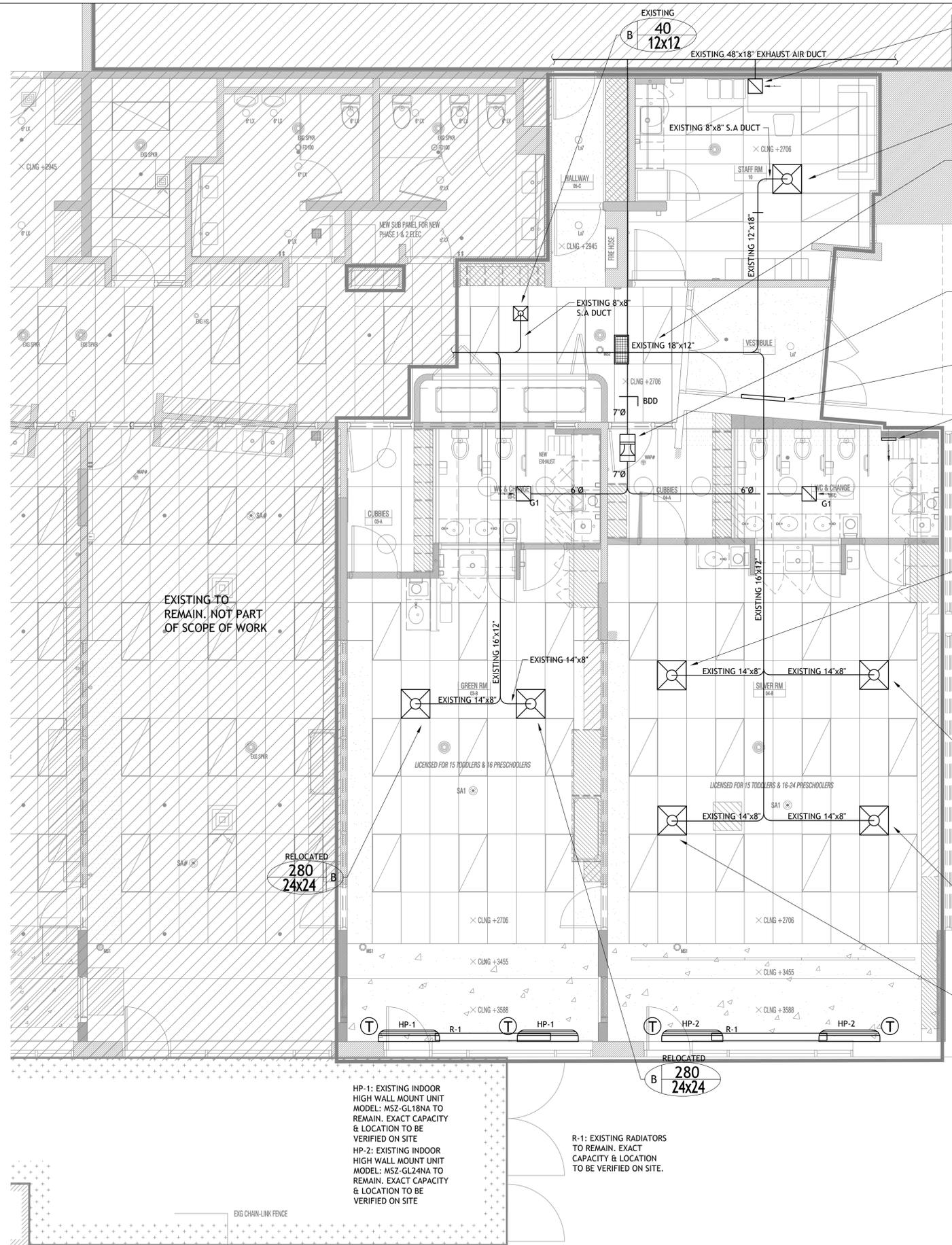
Drawing by: HK Drawing No. _____
Checked by: SH
Approved by: SH OF

CAD FILE NAME: 24032-M.DWG

M-2.1

1 FLOOR PLAN - PLUMBING
M-2.1 SCALE: 1/4" = 1"

24" x 36" (ARCH D)



EXISTING 12"x12" EXHAUST GRILL. 120 CFMS

EXISTING 48"x18" EXHAUST AIR DUCT

EXISTING 8"x8" S.A DUCT

EXISTING 12"x18" S.A DUCT

EXISTING SUPPLY AIR DUCT COMING FROM EXISTING AIR HANDLER TO REMAIN. MODEL: CSA040UAB00. MAX AIRFLOW: 17,500 CFMS. CONTRACTOR TO VERIFY EXACT SIZE, CAPACITY & OPERABILITY OF EXISTING AIR HANDLER ON SITE. CONTRACTOR TO VERIFY EXISTING AIR HANDLER PROVIDING 1500 CFMS TO THE DAY CARE (.700 CFMS FRESH AIR).

EXISTING 8"x8" S.A DUCT

EXISTING 18"x12" S.A DUCT

EXISTING WALL HEATER TO REMAIN. CONTRACTOR TO VERIFY EXACT CAPACITY & MODEL NUM ON SITE.

PROVIDE NEW OULET FAN HEATER MODEL: OVS1250. INPUT: 1.25 KW. 240-1-60. (OR EQUIVALENT)

G1: 12"x12" EXHAUST GRILL

RELOCATED 200 24x24

RELOCATED 200 24x24

EXISTING 200 24x24

EXISTING 200 24x24

RELOCATED 280 24x24

RELOCATED 280 24x24

HP-1: EXISTING INDOOR HIGH WALL MOUNT UNIT MODEL: MSZ-GL18NA TO REMAIN. EXACT CAPACITY & LOCATION TO BE VERIFIED ON SITE

HP-2: EXISTING INDOOR HIGH WALL MOUNT UNIT MODEL: MSZ-GL24NA TO REMAIN. EXACT CAPACITY & LOCATION TO BE VERIFIED ON SITE

R-1: EXISTING RADIATORS TO REMAIN. EXACT CAPACITY & LOCATION TO BE VERIFIED ON SITE.

EXISTING TO REMAIN. NOT PART OF SCOPE OF WORK

- GENERAL NOTES:
- CONTRACTOR TO COORDINATE ALL TRADES TO ENSURE NO INTERFERENCE OF NEW SYSTEMS. (SHEET METAL, PLUMBING, ETC.)
 - CONTRACTOR TO PROVIDE NEW DUCTWORK, DIFFUSERS, GRILLES, BALANCING DAMPERS, FIRE DAMPERS, THERMOSTATS, CONTROL WIRING, AND ACCESSORIES AS INDICATED AND AS REQUIRED TO HAVE A FULLY FUNCTIONAL SYSTEM.
 - CONTRACTOR TO VERIFY ALL EXISTING DUCT SIZES AND DUCT ROUTING.
 - CONTRACTOR TO BALANCE DUCT SYSTEM AS INDICATED.
 - ALL PENETRATION THROUGH FIRE RATED WALLS MUST BE SEALED AND FIRE STOP AS NECESSARY. PROVIDE FIRE DAMPERS AND ACCESS PANEL IN DUCTWORK FOR ALL DUCTS PENETRATING THROUGH FIRE RATED WALLS.
 - PROVIDE 24"x12" AIR TRANSFER GRILLS FOR RETURN AIR BACK TO THE SERVING ROOF TOP ON ALL FULL HEIGHT WALLS PRESENT.

NOTE before commencing work:
The contractor shall check and verify location of all pipes, ducts, diffusers, light fixtures and equipment and coordinate with other trades on site to prevent interference. The contractor is responsible for any changes to the drawings without the written approval of MSH Engineers.

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Project DAY CARE PHASE 1
Location 230 THE ESPLANADE TORONTO ON M5A 4J6
Project No 24032
For

Drawing FLOOR PLAN HVAC

Scale 1/4" = 1" Date JULY 2024
Drawing by HK Drawing No. M-3.1
Checked by SH
Approved by SH OF
CAD FILE NAME: 24032-M.DWG

1 FLOOR PLAN - HVAC
M-3.1 SCALE: 1/4" = 1'

24" x 36" (ARCH D)

LEGEND	
	PROVIDE NEW PENDANT SPRINKLER HEAD AS SHOWN.
	PROVIDE NEW UPRIGHT SPRINKLER HEAD AS SHOWN.
	RELOCATE EXISTING SPRINKLER HEAD AS SHOWN.
	EXISTING UPRIGHT SPRINKLER HEAD.
	EXISTING PENDANT SPRINKLER HEAD.
	DEMOLISH EXISTING SPRINKLER.

- GENERAL NOTES:**
- CONTRACTOR TO VERIFY EXACT LOCATIONS OF EACH SPRINKLER HEAD. REPORT ANY DISCREPANCY TO ENGINEER.
 - CONTRACTOR SHALL PROVIDE FIRE WATCH AT ALL TIMES DURING FIRE PROTECTION SYSTEM MODIFICATION AND UNTIL THE SYSTEM IS FULLY OPERATIONAL.
 - CONTRACTOR TO CARRY BASE BUILDING SPRINKLER CONTRACTOR. ALL SPRINKLER SYSTEM WORK SHALL BE DONE BY BASE BUILDING SPRINKLER CONTRACTOR.
 - PROVIDE NEW PIPING, SPRINKLER HEADS, AND ACCESSORIES TO BASE BUILDING STANDARDS AS REQUIRED AND INDICATED FOR A COMPLETE AND FUNCTIONAL SYSTEM
 - CONTRACTOR TO RELOCATE EXISTING SPRINKLER HEADS TO ACCOMMODATE NEW SPRINKLER LAYOUT. LOCATIONS, TYPE AND NUMBER OF EXISTING SPRINKLER HEADS SHALL BE VERIFIED ON SITE.
 - COORDINATE ALL SPRINKLER SYSTEM WORK WITH FACILITY MANAGEMENT AND OTHER TRADES.
 - COORDINATE DELIVERY OF MATERIALS AND SITE ACCESS WITH FACILITY MANAGEMENT.
 - COMPLETELY REMOVE ALL DEBRIS AND RUBBISH FROM SPACE ONCE WORK IS COMPLETE.
 - VERIFY SPRINKLER PIPE SIZES ON SITE AND ADJUST PIPE SIZE CHANGES TO ACCOMMODATE NUMBER OF SPRINKLERS ON BRANCH IN ACCORDANCE WITH NFPA 13, LIGHT OCCUPANCY FOR HYDRAULICALLY DESIGNED SPRINKLER SYSTEMS.
 - PROVIDE ACCESS PANELS IN DRYWALL CEILINGS WHERE MECHANICAL EQUIPMENT IS LOCATED ABOVE. ACCESS DOORS TO BE SIZE 24X24 IN. PAINTED TO MATCH CEILING FINISH.
 - CONTRACTOR SHALL APPLY FOR A SPRINKLER PERMIT WITH COMPLETE HYDRUALIC LOAD CALCULATIONS, PIPING DETAILS IF THE NEED ARISES.

NOTE before commencing work:
The contractor shall check and verify location of all pipes, ducts, diffusers, light fixtures and equipment and coordinate with other trades on site to prevent interference. The contractor is responsible for any changes to the drawings without the written approval of MSH Engineers.

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1 FLOOR PLAN - SPRINKLERS (EXISTING)
M-4.1 SCALE: 1/4" = 1'

Project: **DAY CARE PHASE 1**
Location: 230 THE ESPLANADE TORONTO ON M5A 4J6
Project No: **24032**

Drawing: **FLOOR PLAN SPRINKLERS**

Scale: 1/4" = 1" Date: JULY 2024

Drawing by: HK
Checked by: SH
Approved by: SH OF

Drawing No. **M-4.1**

CAD FILE NAME: 24032-M.DWG

24" x 36" (ARCH. D)

PROPOSED 1 PENDENT TYPE SPRINKLER HEAD.

EXISTING 22 PENDENT TYPE SPRINKLER HEADS TO REMAIN. RELOCATE EXISTING AS SHOWN IN THE DRAWINGS

EXISTING TO REMAIN. NOT PART OF SCOPE OF WORK



LEGEND	
N.P.	PROVIDE NEW PENDANT SPRINKLER HEAD AS SHOWN.
N.U.	PROVIDE NEW UPRIGHT SPRINKLER HEAD AS SHOWN.
R.	RELOCATE EXISTING SPRINKLER HEAD AS SHOWN.
E.U.	EXISTING UPRIGHT SPRINKLER HEAD.
E.P.	EXISTING PENDANT SPRINKLER HEAD.
E.X.	DEMOLISH EXISTING SPRINKLER.

- GENERAL NOTES:
- CONTRACTOR TO VERIFY EXACT LOCATIONS OF EACH SPRINKLER HEAD. REPORT ANY DISCREPANCY TO ENGINEER.
 - CONTRACTOR SHALL PROVIDE FIRE WATCH AT ALL TIMES DURING FIRE PROTECTION SYSTEM MODIFICATION AND UNTIL THE SYSTEM IS FULLY OPERATIONAL.
 - CONTRACTOR TO CARRY BASE BUILDING SPRINKLER CONTRACTOR. ALL SPRINKLER SYSTEM WORK SHALL BE DONE BY BASE BUILDING SPRINKLER CONTRACTOR.
 - PROVIDE NEW PIPING, SPRINKLER HEADS, AND ACCESSORIES TO BASE BUILDING STANDARDS AS REQUIRED AND INDICATED FOR A COMPLETE AND FUNCTIONAL SYSTEM
 - CONTRACTOR TO RELOCATE EXISTING SPRINKLER HEADS TO ACCOMMODATE NEW SPRINKLER LAYOUT. LOCATIONS, TYPE AND NUMBER OF EXISTING SPRINKLER HEADS SHALL BE VERIFIED ON SITE.
 - COORDINATE ALL SPRINKLER SYSTEM WORK WITH FACILITY MANAGEMENT AND OTHER TRADES.
 - COORDINATE DELIVERY OF MATERIALS AND SITE ACCESS WITH FACILITY MANAGEMENT.
 - COMPLETELY REMOVE ALL DEBRIS AND RUBBISH FROM SPACE ONCE WORK IS COMPLETE.
 - VERIFY SPRINKLER PIPE SIZES ON SITE AND ADJUST PIPE SIZE CHANGES TO ACCOMMODATE NUMBER OF SPRINKLERS ON BRANCH IN ACCORDANCE WITH NFPA 13, LIGHT OCCUPANCY FOR HYDRAULICALLY DESIGNED SPRINKLER SYSTEMS.
 - PROVIDE ACCESS PANELS IN DRYWALL CEILINGS WHERE MECHANICAL EQUIPMENT IS LOCATED ABOVE. ACCESS DOORS TO BE SIZE 24X24 IN. PAINTED TO MATCH CEILING FINISH.
 - CONTRACTOR SHALL APPLY FOR A SPRINKLER PERMIT WITH COMPLETE HYDRAULIC LOAD CALCULATIONS, PIPING DETAILS IF THE NEED ARISES.

NOTE before commencing work:
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Project
DAY CARE PHASE 1

Location
230 THE ESPLANADE
TORONTO ON M5A 4J6

Project No. **24032**

For

Drawing
FLOOR PLAN SPRINKLERS PROPOSED

Scale 1/4" = 1" Date JULY 2024

Drawing by HK Drawing No.

Checked by SH

Approved by SH OF

CAD FILE NAME: 24032-M.DWG

M-4.2

1 FLOOR PLAN - SPRINKLERS (PROPOSED)
SCALE: 1/4" = 1'

24" x 36" (ARCH D)

GENERAL NOTES - ELECTRICAL:

1. CODES & STANDARDS
 - 1.1. COMPLETE THE INSTALLATION OF THE WORK IN ACCORDANCE WITH LATEST EDITIONS OF THE ONTARIO BUILDING CODE, ONTARIO ELECTRICAL SAFETY CODE, C.S.A. STANDARDS, U.L.C., N.F.P.A., AND OTHER CODES, AS REQUIRED. ALL ELECTRICAL WORK SHALL BE PERFORMED IN COMPLIANCE WITH BASE BUILDING STANDARDS AND LANDLORD'S REQUIREMENTS.
2. INTENT
 - 2.1. IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS THAT THE CONTRACTOR PROVIDE COMPLETE AND OPERATIONAL SYSTEMS AS REQUIRED.
 - 2.2. WHERE DIFFERENCES OCCUR, BETWEEN DRAWINGS AND SPECIFICATIONS, THE MAXIMUM CONDITION SHALL GOVERN.
 - 2.3. ANY MISCELLANEOUS ITEMS, HARDWARE, DEVICES, WIRING, ETC., NOT SPECIFICALLY DESCRIBED, BUT REQUIRED FOR THE OPERATION OF THE SYSTEM, MUST BE PROVIDED AND INCLUDED AS PART OF THE BID.
3. DEFINITIONS
 - 3.1. WHEREVER THE WORDS "PROVIDE" OR "SUPPLY AND INSTALL", ARE USED, IT SHALL BE UNDERSTOOD TO MEAN "PROVIDE AND INSTALL, INCLUSIVE OF ALL LABOUR, MATERIALS, INSTALLATION, TESTING, AND CONNECTIONS" FOR THE ITEM TO WHICH IT REFERENCES.
4. PERMITS AND FEES
 - 4.1. SUBMIT TO THE LOCAL ELECTRICAL SAFETY AUTHORITY, THE NECESSARY NUMBER OF DOCUMENTS FOR EXAMINATION, SPECIAL INSPECTION AND APPROVAL, PRIOR TO THE COMMENCEMENT OF THE WORK, AND PAY ALL COSTS AND ASSOCIATED FEES.
 - 4.2. PROVIDE CERTIFICATE(S) OF ACCEPTANCE FROM THE ELECTRICAL SAFETY AUTHORITIES, UPON COMPLETION OF WORK.
5. INSURANCE
 - 5.1. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID PROOF OF INSURANCE FOR AN AMOUNT ACCEPTABLE TO THE LANDLORD AND THE TENANT.
6. EXISTING CONDITIONS
 - 6.1. PROVIDE AND MAINTAIN INSURANCE TO PROTECT THE LANDLORD, TENANT AND TRADES FROM ALL POSSIBLE CLAIMS. SUBMIT WITH BID PROOF OF INSURANCE FOR AN AMOUNT ACCEPTABLE TO THE LANDLORD AND THE TENANT.
7. CONTRACT DOCUMENTS
 - 7.1. THE DRAWINGS FOR THE ELECTRICAL WORK ARE DIAGRAMMATIC PERFORMANCE DRAWINGS ONLY, INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE THE GENERAL ARRANGEMENT AND APPROXIMATE LOCATION OF ELECTRICAL EQUIPMENT. THE DRAWINGS DO NOT INTEND TO SHOW ARCHITECTURAL, INTERIOR DESIGN, MECHANICAL, STRUCTURAL OR BASE BUILDING DETAILS. BE RESPONSIBLE FOR A THOROUGH KNOWLEDGE OF SAME BEFORE PROCEEDING WITH THE WORK.
 - 7.2. DO NOT SCALE OR MEASURE DRAWINGS. OBTAIN INFORMATION REGARDING ACCURATE DIMENSIONS FROM DESIGNER/ARCHITECT'S DRAWINGS.
 - 7.3. REPORT ANY DISCREPANCIES BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND EXISTING CONDITIONS OR DESIGNER'S DRAWINGS PRIOR TO INSTALLATION.
 - 7.4. COOPERATE AND COORDINATE WITH OTHER TRADES IN LAYING OUT OF WORK SO AS NOT TO CONFLICT WITH THE WORK OF OTHER TRADES. CARRY OUT WORK PROMPTLY AS PER CONSTRUCTION SCHEDULE AND COORDINATE WITH WORK OF OTHER TRADES.
 - 7.5. MAKE, AT NO ADDITIONAL COST, ANY CHANGES OR ADDITIONS TO MATERIALS AND EQUIPMENT NECESSARY TO ACCOMMODATE STRUCTURAL CONDITIONS (OFFSETS AROUND BEAMS, COLUMN, ETC.)
8. SHOP DRAWINGS
 - 8.1. SUBMIT FOUR (4) COPIES OF SHOP DRAWINGS OF ALL SPECIFIED EQUIPMENT FOR REVIEW AND RECORDS BEFORE COMMENCEMENT OF WORK.
 - 8.2. EACH SHOP DRAWING SHALL BE CHECKED AND STAMPED BY ELECTRICAL AND GENERAL CONTRACTOR PRIOR TO SUBMISSION TO THE ENGINEER FOR REVIEW.
9. IDENTIFICATION
 - 9.1. PROVIDE LAMACOID NAMEPLATES ON ALL PANELS, DISCONNECT SWITCHES, SPLITTERS, ETC., TO MATCH BASE BUILDING. NAMEPLATES SHALL IDENTIFY EQUIPMENT NAME, VOLTAGE, PHASE, CURRENT RATING, AND USE. NAMEPLATES SHALL BE WHITE, WITH 1/4" BLACK LETTERS, MECHANICALLY ATTACHED TO EQUIPMENT.
 - 9.2. PROVIDE TYPEWRITTEN DIRECTORIES FOR NEW AND EXISTING PANELS. CONFIRM EXISTING IDENTIFICATION AND CORRECT WHERE NECESSARY.
 - 9.3. CLEARLY MARK ALL EXPOSED CONDUIT, PULLBOXES, JUNCTION BOXES, ETC., TO INDICATE THE NATURE OF THE SERVICE TO MATCH BASE BUILDING STANDARDS.
10. MATERIALS AND EQUIPMENT
 - 10.1. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, C.S.A. CERTIFIED AND MANUFACTURED TO THE STANDARDS SPECIFIED.
 - 10.2. WHERE THERE IS NO ALTERNATIVE TO SUPPLYING EQUIPMENT WHICH IS NOT C.S.A. CERTIFIED, OBTAIN SPECIAL APPROVAL FROM THE LOCAL ELECTRICAL SAFETY AUTHORITY.
11. LOCATION OF OUTLETS
 - 11.1. REFER TO DESIGNER/ARCHITECT'S DRAWINGS FOR EXACT LOCATIONS OF ALL OUTLETS.
 - 11.2. ALTER LOCATION OF OUTLETS AT NO COST OR CREDIT, PROVIDING DISTANCE DOES NOT EXCEED 3M (10'-0") AND INFORMATION IS GIVEN BEFORE ROUGH-IN.
 - 11.3. ALL OUTLETS TO BE MARKED ON JOB SITE FOR APPROVAL BY CONSULTANT PRIOR TO INSTALLATION.
12. INSERTS, HANGERS AND SLEEVES
 - 12.1. PROVIDE HANGERS, INSERTS, SLEEVES AND SUPPORTS AS REQUIRED.
 - 12.2. INSERTS ARE TO BE OF A LEAD SHIELD TYPE.
 - 12.3. HANGERS MUST NOT BE WELDED TO STRUCTURAL STEEL MEMBERS AND BURNING OF HOLES IN STRUCTURAL STEEL IS PROHIBITED.
 - 12.4. DO NOT USE ANY BASE BUILDING SUPPORTS OR EQUIPMENT, INCLUDING CEILING SUPPORT SYSTEM.
13. CUTTING AND PATCHING
 - 13.1. ALL CUTTING AND PATCHING REQUIRED TO THE EXISTING BUILDING STRUCTURE FOR THE WORK SHALL BE INCLUDED UNDER THIS CONTRACT AND BE ACCEPTABLE TO THE LANDLORD. OBTAIN WRITTEN APPROVAL FROM LANDLORD BEFORE ANY CUTTING IS CARRIED OUT.
 - 13.2. WHERE CONDUITS PASS THROUGH FIRE RATED WALLS OR FLOORS, PROVIDE CSA APPROVED OR ULC LISTED FIRE STOPPING MATERIAL AND MAINTAIN SAME FIRE RATING OF BUILDING ELEMENTS.
14. ACCESS DOORS
 - 14.1. WHEREVER ANY BASE BUILDING EQUIPMENT REQUIRES ACCESSIBILITY, MAINTENANCE OR ADJUSTMENT, PROVIDE ACCESS DOORS APPROVED BY DESIGN CONSULTANT/ARCHITECT AND LANDLORD.
15. CORE DRILLING
 - 15.1. BEFORE CORE DRILLING FLOOR SLAB OR STRUCTURAL WALLS, X-RAY SLAB OR WALLS AND HAVE THE LOCATIONS ACCEPTED BY THE LANDLORD IN WRITING.
 - 15.2. ANY EXISTING BUILDING SERVICE DAMAGED BY CORE DRILLING MUST BE REPAIRED IMMEDIATELY AT NO COST TO LANDLORD OR TENANT.
 - 15.3. FLOOR DRILLING TO BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME ACCEPTABLE TO LANDLORD AND ALLOWANCES FOR THIS WORK SHALL BE INCLUDED IN BID PRICE SUBMITTED.
16. NOISE AND VIBRATION
 - 16.1. ELECTRICAL EQUIPMENT IS TO OPERATE WITHOUT OBJECTIONABLE NOISE OR VIBRATION. IF, IN THE OPINION OF THE CONSULTANT, THE EQUIPMENT OPERATES WITH EXCESSIVE NOISE OR VIBRATION, THEN THE EQUIPMENT MUST BE REPLACED OR NOISE OR VIBRATION ELIMINATED.
 - 16.2. CONNECTIONS TO NOISE-PRODUCING AND VIBRATING EQUIPMENT MUST BE MADE WITH FLEXIBLE CONDUIT. THIS INCLUDES TRANSFORMERS, DIMMING EQUIPMENT RACKS, AND MOTORS. USE A MINIMUM OF 1M (3 FT) OF FLEXIBLE CABLE WITH SLACK AT EACH DEVICE.
 - 16.3. VIBRATION ISOLATORS ARE TO BE PROVIDED WHERE INDICATED OR REQUIRED. TRANSFORMERS TO BE ISOLATED FROM THE STRUCTURE, WITH SPRING AND RUBBER ISOLATORS WHEN WALL MOUNTED OR SUSPENDED AND 12MM (1/2") HIGH DENSITY NEOPRENE SANDWICH PADS (TYPE MWP) WHEN FLOOR MOUNTED.
17. TENANT'S EQUIPMENT
 - 17.1. WHERE SPECIFIED, INSTALL ALL EQUIPMENT PROVIDED BY THE TENANT. RECEIVE, STORE AND INSTALL EQUIPMENT AND ACCEPT FULL RESPONSIBILITY FOR ITS CORRECT OPERATION. PROVIDE CONDUIT, WIRE, BOXES, SWITCHES, OUTLETS, DEVICES, FLEX CONNECTIONS, ETC., AS REQUIRED.
 - 17.2. CONFIRM POWER REQUIREMENTS OF ALL EQUIPMENT SUPPLIED AND ALSO ENSURE THAT ALL ELECTRICAL EQUIPMENT SUPPLIED BY OTHER TRADES IS SUITABLE FOR THE RESPECTIVE VOLTAGE.
18. WORK IN NEW AND RENOVATED AREAS
 - 18.1. WHEN DELETING AND/OR MAKING SAFE EXISTING ELECTRICAL WORK, ENSURE THAT IT INCLUDES REMOVAL OF ALL DISCONNECTED WIRING BACK TO THE ASSOCIATED PANELBOARD.
 - 18.2. DISCONNECT AND REMOVE EXISTING LUMINAIRES, DEVICES, OUTLETS, ETC., WHICH ARE NOT TO BE REUSED. SUCH ITEMS SHALL BE CARTONED AND TURNED OVER TO THE LANDLORD AT A PLACE DESIGNATED BY THE LANDLORD. CUT BACK AND CAP UNUSED RACEWAY AND OUTLETS AND REMOVE UNUSED WIRING BACK TO PANELBOARD IN AN APPROVED MANNER. REMOVE ALL REDUNDANT COMMUNICATIONS CABLES BACK TO HUB ROOMS AND/OR TELEPHONE RISER ROOMS. ENSURE THAT ALL EXISTING EQUIPMENT WHICH IS TO BE REUSED AND/OR RELOCATED IS THOROUGHLY INSPECTED AND REFURBISHED TO ENSURE CORRECT OPERATION WHEN PUT BACK INTO SERVICE AND TO MEET ONTARIO HYDRO APPROVAL.
 - 18.4. ALL EXISTING ELECTRICAL EQUIPMENT WHICH IS NO LONGER REQUIRED SHALL BE REMOVED AND DISPOSED OF, OFF SITE.
 - 18.5. WHERE EXISTING OUTLET BOXES OR CONDUITS ARE REMOVED FROM EXISTING UNDERFLOOR DUCTS, PLUG AND CAP EXISTING HOLES FLUSH WITH FLOOR USING APPROVED FITTINGS.
 - 18.6. BE RESPONSIBLE AND PAY FOR ANY DAMAGE TO THE BASE BUILDING INCURRED BY WORK OF THIS DIVISION, OR REPAIR TO THE SATISFACTION OF

GENERAL NOTES - ELECTRICAL (CONTD):

- 18.7. THE CONSULTANT.
 - 18.7.1. CARRY OUT THE WORK WITH A MINIMUM OF NOISE, DUST AND DISTURBANCE.
 - 18.8. PROVIDE TOOLS AND CLEAN UP EQUIPMENT. OBTAIN THE LANDLORD'S PERMISSION FOR THE USE OF ELECTRICAL, ELEVATOR, PLUMBING OR DRAINAGE OUTLETS.
 - 18.9. PROVIDE DAILY CLEAN UP AND PROPER DISPOSAL OF DEBRIS GENERATED BY DAILY OPERATIONS. ON COMPLETION OF THE WORK, ALL TOOLS, SURPLUS MATERIALS AND WASTE MATERIALS SHALL BE REMOVED AND THE PREMISES LEFT IN A CLEAN AND PERFECT CONDITION.
19. INTERRUPTION OF SERVICES
 - 19.1. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY INTERRUPTIONS OR DISRUPTIONS TO THE EXISTING SERVICES. ALL EXISTING BUILDING SERVICES MUST BE KEPT OPERATIONAL AT ALL TIMES.
 - 19.2. INTERRUPTIONS SHALL BE PERFORMED ONLY AFTER REGULAR OFFICE HOURS. INCLUDE IN THE BID PRICE ALL COST ASSOCIATED WITH THIS WORK.
 - 19.3. ARRANGE WORK SUCH THAT INTERRUPTIONS IN SERVICES OCCUR ONLY AT SCHEDULED TIMES SUITABLE TO THE LANDLORD.
 - 19.4. INTERRUPTIONS SHALL SHALL BE SCHEDULED AT LEAST 48 HOURS IN ADVANCE WITH THE LANDLORD.
 20. VALUATION OF CHANGES
 - 20.1. PROVIDE COMPLETE BREAKDOWN OF MATERIAL, LABOUR, OVERHEAD, PROFIT, ETC., WHEN SUBMITTING QUOTATIONS FOR CHANGE NOTICES ON THIS PROJECT.
 - 20.2. THE HOURLY LABOUR RATE SHALL BE INCLUSIVE OF ALL CHARGES FOR SUPERVISION, VARIABLE LABOUR FACTORS, HAND TOOLS, PAYROLL BURDENS, HEIGHT FACTORS, WARRANTIES, STORAGE, RENTALS, ADDITIONAL BONDING, PARKING, CLEAN-UP, AS-BUILT DRAWINGS, HOISTING, FREIGHT AND DELIVERY, BUT EXCLUSIVE OF OVERHEAD AND PROFIT.
 - 20.3. THE LABOUR HOURS SHALL BE BASED ON THE LATEST ISSUE OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION (NECA) LABOUR UNITS.
 - 20.4. THE MATERIAL PRICES SHALL BE BASED ON THE CURRENT NATIONAL PRICES SYSTEM (NPS) CATALOGUE LESS APPLICABLE TRADE DISCOUNTS.
 21. COMPLETION OF CONTRACT
 - 21.1. ALL EQUIPMENT MUST BE CLEANED AND TESTED BEFORE FINAL ACCEPTANCE BY CONSULTANT.
 - 21.2. PRIOR TO CONTACTING THE CONSULTANT FOR FINAL INSPECTION, THE CONTRACTOR MUST CORRECT ALL DEFICIENCIES AS SPECIFIED ON THE DEFICIENCY LIST.
 - 21.3. AFTER COMPLETION OF WORK PROVIDE A COPY OF FINAL HYDRO INSPECTION CERTIFICATE. FIRE ALARM VERIFICATION CERTIFICATE (AS PER STANDARD ULC 537) MUST BE PROVIDED WHEN THE FIRE ALARM SYSTEM WAS MODIFIED UNDER THE CONTRACT.
 - 21.4. PROVIDE A WRITTEN GUARANTEE FOR ONE YEAR COVERING ALL EQUIPMENT, MATERIALS AND WORKMANSHIP FROM THE DATE OF ACCEPTANCE OF THE INSTALLATION BY THE OWNER. INCLUDE IN THE OPERATIONS AND MAINTENANCE MANUAL.
 - 21.5. WHERE REQUIRED BY MUNICIPAL AUTHORITIES HAVING JURISDICTION PROVIDE EMERGENCY LIGHTING LEVEL TEST RESULTS. SUBMIT TEST REPORT TO CONSULTANT AND AUTHORITIES FOR REVIEW. WHERE BATTERY UNIT SYSTEM IS USED FOR EMERGENCY LIGHTING THE CONTRACTOR SHALL PROVIDE A WRITTEN STATEMENT FROM THE MANUFACTURER INDICATING THAT THE SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS AND THE READINGS OF THE EMERGENCY LIGHTING LEVEL COMPLY WITH THE ONTARIO BUILDING CODE. READING REPORT AND MANUFACTURER STATEMENT AS SHOWN ABOVE SHALL OCCUR PRIOR OCCUPANCY.
 - 21.6. ANY DEFECTS OR DEFICIENCIES WHICH ORIGINATE OR BECOME EVIDENT DURING THE WARRANTY PERIOD MUST BE REPAIRED OR CORRECTED AT NO EXTRA COST TO THE OWNER.
 - 21.7. REPLACE, AT NO COST, ALL INCANDESCENT LAMPS BURNED-OUT DURING A THIRTY (30) DAY PERIOD AND ALL BURNED-OUT FLUORESCENT AND HID LAMPS FOR A PERIOD OF NINETY (90) DAYS AFTER DATE OF ISSUANCE OF CERTIFICATE OF "SUBSTANTIAL PERFORMANCE" FOR THE CONTRACT FOR THE WORK.
 - 21.8. IF, DURING THE WARRANTY PERIOD, TRANSFORMERS, BALLASTS OR OTHER NOISE AND VIBRATION PRODUCING EQUIPMENT ARE CONSIDERED BY THE CONSULTANT TO EXCEED ACCEPTABLE STANDARDS, THEN THESE MUST BE REPLACED WITHOUT DELAY OR ADDITIONAL COST TO THE OWNER. ALL WORK RELATING TO THE REPLACEMENT OF DEFECTIVE ITEMS, MUST BE CARRIED OUT AFTER NORMAL WORKING HOURS AND AT A TIME WHICH IS ACCEPTABLE TO THE TENANT.
 22. AS-BUILT DRAWINGS
 - 22.1. AT THE COMPLETION OF WORK AND BEFORE FINAL ACCEPTANCE, PROVIDE AS-BUILT DRAWINGS OF THE INSTALLATION (HARD COPIES RED LINE FORMAT). CONSULTANT WILL PREPARE THE AUTOCAD AS-BUILTS AS PER IO STANDARDS.
 - 22.2. INCORPORATE ALL CHANGES AND DEVIATIONS FROM TENDER DRAWINGS, UTILIZING NORMAL RECOGNIZED DRAFTING PROCEDURES THAT MATCH THE ORIGINAL DRAFTING METHODOLOGY.
 - 22.3. ALL MAIN BRANCH CONDUIT RUNS, JUNCTION BOX LOCATIONS, CONDUIT RUNS FOR ALL FLOOR OUTLETS, ETC., MUST BE REFLECTED ON THE DRAWINGS.
 - 22.4. REMOVE THE ELECTRICAL ENGINEER'S STAMP AND COMPANY NAME FROM ALL DRAWINGS.
 - 22.5. CLEARLY INDICATE THE WORDS "AS-BUILT" IN THE TITLE BLOCK COLUMN OF THE DRAWINGS AS WELL AS THE ELECTRICAL CONTRACTOR'S NAME AND ADDRESS.
 - 22.6. SUBMIT A PRINT TO CONSULTANT FOR REVIEW. WHEN FOUND ACCEPTABLE BY THE CONSULTANT, SUBMIT THREE (3) SETS OF PRINTS TOGETHER WITH AUTOCAD DISKS FOR PRESENTATION TO LANDLORD AND TENANT.
 23. OPERATION AND MAINTENANCE MANUALS
 - 23.1. PROVIDE 3 (THREE) SETS OF OPERATION AND MAINTENANCE MANUALS. INCLUDE THE FOLLOWING INFORMATION IN THE OPERATIONS AND MAINTENANCE MANUALS:
 - 23.1.1. TECHNICAL DATA, PRODUCT DATA, SUPPLEMENTED BY BULLETINS, COMPONENT ILLUSTRATIONS, EXPLODED VIEWS, TECHNICAL DESCRIPTIONS OF ITEMS, AND PARTS LISTS. ADVERTISING OR SALES LITERATURE IS NOT ACCEPTABLE.
 - 23.1.2. THE CONSULTANT'S REVIEWED SHOP DRAWINGS.
 - 23.1.3. CERTIFICATE(S) OF ACCEPTANCE FROM AUTHORITIES HAVING JURISDICTION
 - 23.1.4. VERIFICATION REPORTS AND CERTIFICATE(S) FOR ANY NEW FIRE ALARM COMPONENTS OR TIE-INS AND ANY BASE BUILDING TIE-INS FOR MISCELLANEOUS SYSTEMS (I.E. SECURITY, LIGHTING CONTROL, DIGITAL METERING).
 - 23.1.5. LOAD BALANCE REPORT
 - 23.1.6. DATA/COMMUNICATION DRAWINGS, TEST REPORTS, AND INSTALLATION DETAILS.
 - 23.1.7. WRITTEN WARRANTY - 2 YEARS FOR LABOUR AND MATERIALS.
 - 23.1.8. AS-BUILT DRAWINGS.
 - 23.2. REVIEW INFORMATION PROVIDED IN THE MAINTENANCE INSTRUCTIONS AND MANUALS WITH THE TENANT'S OPERATING PERSONNEL AND LANDLORD'S OPERATING PERSONNEL WHERE BASE BUILDING SYSTEMS ARE REVISED, TO ENSURE A COMPLETE UNDERSTANDING OF THE ELECTRICAL EQUIPMENT AND SYSTEMS AND THEIR OPERATION.
- FIRE ALARM SYSTEM REQUIREMENTS:
 1. COMPLETE FIRE ALARM DEVICES INSTALLATION AND SYSTEM VERIFICATION REQUIRED UNDER THIS CONTRACT MUST BE HANDLED THROUGH BASE BUILDING FIRE ALARM CONTRACTOR. (DIV. 16 SHALL CARRY A SUBCONTRACT WITH BASE BUILDING F/A CONTRACTOR).
 2. PRIOR TO COMMENCING ANY NEW INSTALLATION AND REVISIONS TO THE BASE BUILDING FIRE ALARM SYSTEM DIV.16 SHALL OBTAIN A WRITTEN APPROVAL BY THE BASE BUILDING ENGINEERS AND/OR PROPERTY MANAGER.
 3. UNLESS OTHERWISE NOTED OR DESIGNATED ON DRAWINGS ALL EXISTING FIRE ALARM DEVICES (PULL STATIONS, BELLS, ETC.) INCLUDING DEVICES NOT SHOWN IN THE COMMON AREAS SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
 4. WHERE EXISTING FIRE ALARM DEVICES TO BE REMOVED, REMAINING OF OTHER EXISTING DEVICES SHALL BE KEPT OPERATIONAL AT ALL TIME.
 5. NEW FIRE ALARM SYSTEM/DEVICES TO BE INSTALLED PER CAN/ULC-5524 AND VERIFIED PER CAN/ULC-5537. A COPY OF THE FIRE ALARM VERIFICATION CERTIFICATE MUST BE SUBMITTED TO THE CONSULTANTS PRIOR TO ISSUING FINAL ACCEPTANCE LETTER TO THE CITY AS PER O.B.C. REQUIREMENTS.
 6. ALLOW IN CONTRACT BID RELOCATION OF ANY EXISTING FIRE ALARM DEVICE TO NEW WALL/CEILING FINISHES TO SUIT NEW TENANT LAYOUT.
 7. PROVIDE "AS-BUILT" DRAWINGS SHOWING LOCATION OF ALL F/A DEVICES).
 8. PROVIDE ON-SITE TRAINING TO OPERATIONS PERSONNEL TO DEMONSTRATE ANY SYSTEM CHANGES.

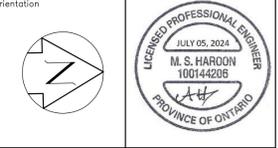
ELECTRICAL MATERIALS AND INSTALLATION

1. CONDUITS AND CONDUIT FITTINGS
 - 1.1. PROVIDE ALL CONDUIT UP TO AND INCLUDING 100MM (4") SIZE, AS EMT THIN WALL WITH STEEL SET SCREW COUPLINGS AND CONNECTORS.
 - 1.2. PROVIDE FLEXIBLE METAL CONDUIT FOR CONNECTION TO MOTORS AND TRANSFORMERS.
 - 1.3. INSTALL CONDUITS TO CONSERVE HEADROOM, PARALLEL AND PERPENDICULAR TO BUILDING LINES. DO NOT CADDIE CLIP CONDUITS TO CEILING HANGERS.
 - 1.4. ALL EMPTY CONDUITS SHALL BE COMPLETE WITH NYLON FISH WIRE.
 - 1.5. ALL DATA/COMMUNICATION CONDUITS SHALL BE INSTALLED COMPLETE WITH PLASTIC BUSHINGS AT EACH END.
 - 1.6. CONDUITS FOR COMMUNICATION SHALL BE EMT, MIN 20MM(3/4").
 - 1.7. NO MORE THAN TWO (2) - 90 DEG. BENDS SHALL BE INSTALLED BETWEEN ANY TWO ADJACENT PULL BOXES. SIZE ALL CONDUITS BASED ON RW 90XLP WIRING ONLY.
 - 1.8. SIZE ALL CONDUITS FOR MAX. 40% FILL, TO INCLUDE DEDICATED INSULATED GROUND WIRE.
2. JUNCTION BOXES AND PULL BOXES
 - 2.1. JUNCTION BOXES AND PULL BOXES SHALL BE SUITABLE FOR SURFACE MOUNTING AND BE OF WELDED STEEL CONSTRUCTION WITH SCREW-ON FLAT COVERS.
 - 2.2. FOR FLUSH-MOUNTED PULL AND JUNCTION BOXES, PROVIDE COVERS WITH 25MM (1") MINIMUM EXTENSION ALL AROUND.
 - 2.3. INSTALL JUNCTION AND PULL BOXES IN INCONSPICUOUS BUT ACCESSIBLE LOCATIONS.
 - 2.4. A MINIMUM OF ONE PULL BOX SHALL BE INSTALLED FOR EVERY 100 FT. (30M) OF CONDUIT. (NOTE: EACH 90 DEG. BEND SHALL EQUATE TO A 30 FT. (9M) LENGTH OF CONDUIT).
3. WIRE AND CABLE
 - 3.1. ALL WIRE AND CABLE SHALL BE COPPER, MINIMUM 12 AWG, WITH RW 90XLP INSULATION. WIRES #12AWG AND #10 SHALL BE SOLID. WIRES #8 AND LARGER SHALL BE STRANDED TYPE.
 - 3.2. SIZE ALL WIRES FOR MAXIMUM 2% VOLTAGE DROP TO CODE REQUIREMENTS.
 - 3.3. ALL HOME RUNS TO BE IN EMT CONDUIT.
 - 3.4. DO NOT RUN CABLES OR CONDUITS HORIZONTALLY IN PARTITION WALLS.
4. SERVICE EQUIPMENT
 - 4.1. INSTALL NEW MOLDED CASE CIRCUIT BREAKERS IN EXISTING PANELBOARD AS INDICATED ON DRAWINGS. MOLDED CASE CIRCUIT BREAKERS TO BE BOLT-ON AND SAME MANUFACTURER AND TYPE AS EXISTING PANEL'S BREAKERS. IF UNABLE TO MATCH BASE BUILDING EQUIPMENT, ONE OF THE FOLLOWING MANUFACTURER'S EQUIPMENT MUST BE PROVIDED:
 - 4.0.1. FPL
 - 4.0.2. CUTTLER-HAMMER
 - 4.0.3. SQUARE D
 - 4.0.4. SIEMENS
5. GROUNDING
 - 5.1. GROUND ALL EQUIPMENT IN ACCORDANCE WITH LATEST EDITION OF THE ELECTRICAL SAFETY CODE. PROVIDE SEPARATE GREEN INSULATED GROUND CONDUCTOR IN EVERY CONDUIT TO ALL FEEDERS (PANELBOARDS, DISCONNECT SWITCHES, EQUIPMENT, ETC.).
6. MECHANICAL TRADES WIRING
 - 6.1. ALL STARTERS AND CONTROL WIRING ARE PROVIDED BY DIVISION 15. DIVISION 16 SHALL RECEIVE ALL STARTERS AND INSTALL ALL STARTERS AND THERMOSTATS SUPPLIED BY MECHANICAL TRADE AND PROVIDE ALL POWER WIRING.
 - 6.2. SUPPLY, INSTALL AND CONNECT ALL REQUIRED DISCONNECT SWITCHES.
 - 6.3. CONFIRM ELECTRICAL REQUIREMENTS AND EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT WITH DIVISION 15 PRIOR TO INSTALLATION. COORDINATE WITH MECHANICAL DRAWINGS, AS REQUIRED.
7. MEGGERING AND BALANCING
 - 7.1. MEGGER ALL POWER CIRCUIT FEEDERS. IF GROUND RESISTANCE ON ANY CIRCUIT IS LESS THAN THAT REQUIRED BY CSA OR OTHER GOVERNING REGULATIONS, SUCH CIRCUITS ARE TO BE CONSIDERED DEFECTIVE AND MUST BE REPLACED.
 - 7.2. MEASURE PHASE CURRENT TO PANELBOARDS WITH NORMAL LOADS OPERATING AT TIME OF ACCEPTANCE. ADJUST BRANCH CIRCUIT CONNECTIONS AS REQUIRED TO OBTAIN BEST BALANCE OF CURRENT BETWEEN PHASES AND SUBMIT A REPORT FOR INSERTION INTO MANUALS.
8. AUTOMATIC CONTROLLERS
 - 8.1. MAGNETIC MOTOR CONTROLLERS: CSA C22.2 NO. 14, AC GENERAL-PURPOSE CLASS A MAGNETIC CONTROLLER FOR INDUCTION MOTORS RATED IN HORSEPOWER.
 - 8.2. REVERSING CONTROLLERS: INCLUDE ELECTRICAL INTERLOCK BETWEEN FORWARD AND REVERSE ROTATION.
 - 8.3. TWO SPEED CONTROLLERS: INCLUDE INTEGRAL TIME DELAY TRANSITION BETWEEN FAST AND SLOW SPEEDS.
 - 8.4. COIL OPERATING VOLTAGE: 120VOLTS, 60 HERTZ
 - 8.5. OVERLOAD RELAY: CSA C22.2 NO. 14; BIMETAL
 - 8.6. ENCLOSURE: CSA TYPE 1 FOR INDOOR, DRY LOCATION; TYPE 4 FOR OUTDOOR LOCATION.
9. PRODUCT OPTIONS AND FEATURES
 - 9.1. AUXILIARY CONTACTS: CSA C22.2 NO. 14, 2 EACH NORMALLY OPEN/CLOSED CONTACTS (NO/NC) IN ADDITION TO SEAL-IN CONTACT.
 - 9.2. COVER MOUNTED PILOT DEVICES: CSA C22.2 NO. 14, OIL-TIGHT.
 - 9.3. PILOT DEVICE CONTACTS: CSA C22.2 NO. 14, FORM Z, RATED A150
 - 9.4. PUSHBUTTONS: RECESSED TYPE.
 - 9.5. INDICATING LIGHTS: LED TYPE.
 - 9.6. SELECTOR SWITCHES: ROTARY TYPE.
 - 9.7. RELAYS: CSA C22.2 NO. 14, AS REQUIRED
 - 9.8. CONTROL POWER TRANSFORMERS: 120VOLT SECONDARY, 250VA MINIMUM, IN EACH MOTOR STARTER. PROVIDE FUSED SECONDARY, AND BOND UNFUSED LEG OF SECONDARY TO ENCLOSURE.
10. DISCONNECTS
 - 10.1. COMBINATION CONTROLLERS: COMBINE MOTOR CONTROLLERS WITH NON-FUSIBLE SWITCH DISCONNECT IN COMMON ENCLOSURE WITH STARTER.
11. INSTALLATION
 - 11.1. INSTALL ENCLOSED CONTROLLERS WHERE INDICATED, TO MANUFACTURER'S INSTRUCTIONS.
 - 11.2. INSTALL ENCLOSED CONTROLLERS PLUMB. PROVIDE FIRE-RATED PLYWOOD BACKBOARD PANEL FOR GROUP-MOUNTING CONTROLLERS OR PROVIDE RIGID STRUCTURAL SUPPORTS FOR MOUNTING MOTOR CONTROLLERS
 - 11.3. HEIGHT: 1.6 M. TO OPERATING HANDLE.
 - 11.4. INSTALL FUSES IN FUSIBLE SWITCHES, WHERE APPLICABLE.
 - 11.5. SELECT AND INSTALL OVERLOAD HEATER ELEMENTS IN MOTOR CONTROLLERS TO MATCH INSTALLED MOTOR CHARACTERISTICS, BASED ON MOTOR NAMEPLATE DATA.
 - 11.6. PROVIDE ENGRAVED PLASTIC NAMEPLATES.
 - 11.7. PROVIDE NEATLY TYPED LABEL INSIDE EACH MOTOR CONTROLLER DOOR IDENTIFYING MOTOR SERVED, NAMEPLATE HORSEPOWER, FULL LOAD AMPERES, CODE LETTER, SERVICE FACTOR, AND VOLTAGE/PHASE RATING.

NOTE before commencing work:

The contractor shall check and verify location of all pipes, ducts, diffusers, light fixtures and equipment and coordinate with other trades on site to prevent interference. The contractor is responsible for any changes to the drawings without the written approval of MSH Engineers.

No.	Issued For:	Date
1.	ISSUED FOR PERMIT	JUL 30, 2024



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Do not scale drawings, dimensions to take precedent over check.

Contractor to check and verify all levels and dimensions on drawings and on site and report any discrepancies to MSH Engineers, and obtain clarification prior to commencing with the work.

The contractor accepts all responsibility for working with drawings, not marked "Issued for Construction" and for any changes to the drawings without the express approval of MSH Engineers.

All work to conform to all governing codes and By-laws.



Project
DAY CARE PHASE 1

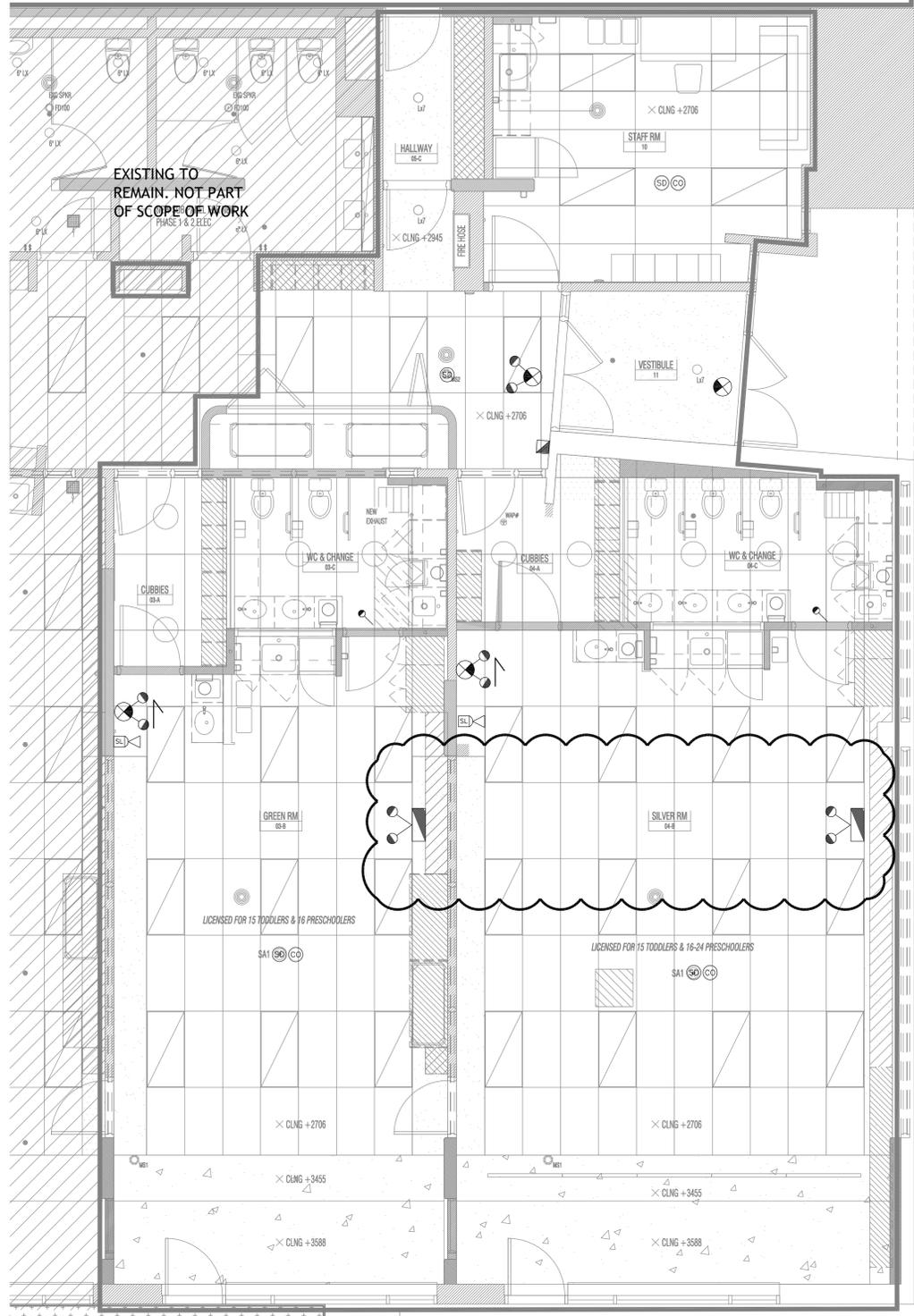
Location
230 THE ESPLANADE
TORONTO ON M5A 4J6

Project No. **24032**

Drawing
ELECTRICAL SPECIFICATIONS

Scale	N.T.S	Date	JULY 2024
Drawing by	HK	Drawing No.	E-1
Checked by	SH		
Approved by	SH	OF	

CAD FILE NAME: 24032-M.DWG



EXISTING TO REMAIN. NOT PART OF SCOPE OF WORK PHASE 1 & 2 ELEC.

REFER TO THE ARCHITECTURAL DRAWINGS FOR LIGHTING OUT AND FIXTURE SCHEDULE

K FFMCF

1
E-2

FLOOR PLAN - LIFE SAFETY SYSTEM

SCALE: 1/4" = 1'

LEGEND			
	4" FIRE ALARM BELL		ELECTRONIC MINIHORN
	FIRE ALARM PULL STATION		
	HEAT DETECTOR		
	DUCT MOUNTED SMOKE DETECTOR		
	SMOKE DETECTOR		
	CARBON MONOXIDE DETECTOR		
	FIRE ALARM COMBINATION MINIHORN AND STROBE LIGHT		
	SINGLE POLE TOGGLE SWITCH WITH ONE, TWO OR THREE GANG COVERPLATE		
	SWITCHES AS ABOVE, NUMBER DENOTES 2, 3, OR 4 WAY.		
	DIMMER SWITCH		MASTER SWITCH

LIGHTING SCHEDULE			
Symbol	Label	Catalog Number	Description
	'Ex1'	'LUMACELL' RG12S200-2MQ12W	200W EMERGENCY BATTERY UNIT AND 2x12W MICRO-HALOGEN HEADS.
	'Ex2'	'LUMACELL' LSC2B-W-2-MQ12	COMBINATION EXIT AND EMERGENCY LIGHTING UNIT
	'Ex3'	'LUMACELL' LS-3-W-U	EXIT SIGN
	'Ex4'	'LUMACELL' MQ-2-12V12W	EMERGENCY LIGHTING REMOTE TWIN HEAD
	'Ex5'	'LUMACELL' MQ-1-12V12W	EMERGENCY LIGHTING REMOTE SINGLE HEAD
	'A'	'LITHONIA' 2GT8	GT8 GENERAL PURPOSE T8 TROFFER 4'x2' LENS 1/3 ELEC. GEB10IS CSA
	'B'	'LITHONIA' 2GT8	GT8 GENERAL PURPOSE T8 TROFFER 2'x2' A12 LENS 1/3 ELEC. GEB10IS CSA
	'C'	6" POT LIGHT	COMMERCIAL POT LIGHT CSA APPROVED
	'D'	'LITHONIA' L-2-32-120-GEB10IS-CSA	4' 2LP T8 SPEC REFL ELEC TWO 32-WATT, T8 LINEAR FLUORESCENT, SURFACE MOUNTED

NOTE before commencing work:
The contractor shall check and verify location of all pipes, ducts, diffusers, light fixtures and equipment and coordinate with other trades on site to prevent interference. The contractor is responsible for any changes to the drawings without the written approval of MSH Engineers.

1.	ISSUED FOR PERMIT	JUL 30, 2024
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Orientation

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Project
DAY CARE PHASE 1
Location
230 THE ESPLANADE
TORONTO ON M5A 4J6
Project No. **24032**

For
Drawing
FLOOR PLAN LIFE SAFETY SYSTEMS & FIRE ALARM
Scale 1/4" = 1'-0"
Date JULY 2024

Drawing by HK
Checked by SH
Approved by SH OF
Drawing No.
E-2
CAD FILE NAME: 24032-M.DWG