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CITY OF OSHAWA-FIRE STATION NO. 4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ON

DRAWINGS ISSUED FOR TENDER
PROJECT NUMBER : 1024011
JUL 2025

LIST OF DRAWINGS :

MECHANICAL DRAWING LIST

SR NO.	DWG NO.	DESCRIPTION
1	M-100	MECHANICAL SERVICES - LEGEND AND SPECIFICATIONS
2	M-300	MECHANICAL SERVICES - VENTILATION & SANITARY & DOMESTIC SYSTEM
3	M-301	MECHANICAL SERVICES - BUNKER GEAR ROOM VENTILATION - GROUND LEVEL & ROOF
4	M-700	MECHANICAL SERVICES - STANDARD DETAILS

ELECTRICAL DRAWING LIST

SR NO.	DWG NO.	DESCRIPTION
1	E-1	ELECTRICAL SERVICES - LEGEND AND SPECIFICATIONS
2	E-2	ELECTRICAL SERVICES - MECHANICAL EQUIPMENT WIRING SCHEDULE
3	E-3	ELECTRICAL SERVICES - GROUND LEVEL - ELECTRICAL DEMOLITION/NEW WORK
4	E-4	ELECTRICAL SERVICES - ROOF LEVEL - ELECTRICAL DEMOLITION/NEW WORK

STRUCTURAL DRAWING LIST

SR NO.	DWG NO.	DESCRIPTION
1	S-01	STRUCTURAL SERVICES - GENERAL NOTES AND SPECIFICATIONS - KEY PLAN AND DETAILS
2	S-02	STRUCTURAL SERVICES - DOOR SPECIFICATIONS AND DETAILS

GENERAL NOTES

1. SPECIFICATIONS AND STANDARD DRAWINGS OF LOCAL AUTHORITIES HAVING JURISDICTION SHALL BE READ IN CONJUNCTION WITH AND FORM PART OF THIS CONTRACT. MAXIMUM CONDITIONS WILL GOVERN.
2. SPECIFICATIONS ARE INTEGRAL PART OF ACCOMPANYING DRAWINGS. ANY ITEM OMITTED FROM ONE OR OTHER, BUT WHICH IS MENTIONED OR REASONABLY IMPLIED SHALL BE CONSIDERED AS PROPERLY AND SUFFICIENTLY SPECIFIED.
3. PROVIDE ALL WORK AS INDICATED AND SPECIFIED HEREIN. INCLUDE SYSTEM COMPONENTS AND ACCESSORIES NOT INDICATED ON DRAWINGS OR STIPULATED HEREIN BUT REQUIRED TO ENSURE FULLY OPERATIONAL SYSTEMS.
4. ALL WORK AND EQUIPMENT SHALL BE IN CONFORMANCE WITH ASHRAE 90.1.
5. CONFER AND CO-OPERATE WITH ALL TRADES INSTALLING EQUIPMENT WHICH MAY AFFECT THE MECHANICAL WORK AND ARRANGE THE WORK IN PROPER RELATION WITH EQUIPMENT INSTALLED UNDER ALL DIVISIONS OF THE CONTRACT FOR THE SATISFACTORY COMPLETION OF THE JOB. IDENTIFY AND RESOLVE SITE INTERFERENCES PRIOR TO FABRICATION AND INSTALLATION OF EQUIPMENT. CO-ORDINATE INSTALLATION WITH OWNER'S INTERIOR DESIGN PLANS AND REFLECTED CEILING PLANS.
6. "WORK" MEANS ALL PERMITS, EQUIPMENT, MATERIALS, LABOUR, START-UP AND TESTING TO PROVIDE A COMPLETE MECHANICAL INSTALLATION AS REQUIRED.
7. "PROVIDE" MEANS SUPPLY AND INSTALL. WHERE USED IN REFERENCE TO SERVICES SUCH AS TESTING, START-UP AND COMMISSIONING, IT MEANS PROCURE, SUPERVISE, TAKE RESPONSIBILITY AND PAY FOR THESE SERVICES.
8. "SUPPLY" MEANS FURNISH TO SITE IN LOCATION REQUIRED OR DIRECTED COMPLETE WITH ACCESSORY PARTS.
9. "INSTALL" MEANS MOUNT, SECURE IN PLACE AND CONNECT FOR OPERATION AS REQUIRED OR DIRECTED.
10. "CONCEALED" MEANS NOT VISIBLE ON COMPLETION.
11. "EXPOSED" MEANS VISIBLE ON COMPLETION.
12. "AUTHORITIES HAVING JURISDICTION" MEANS ANY AND ALL CURRENT LAWS AND/OR BY-LAWS OF ANY AUTHORIZED AGENCY HAVING OR CLAIMING JURISDICTION OVER SUM TOTAL OR PARTS OF WORK.
13. APPLY FOR, OBTAIN AND PAY FOR ALL PERMITS AND INSPECTIONS REQUIRED. INCLUDE ALL H.S.T.
14. COMPLY WITH ALL GOVERNMENT, MUNICIPAL, PROVINCIAL, FEDERAL AND UNDERWRITER'S REGULATIONS AND LOCAL BY-LAWS. CARRY OUT ALL CHANGES REQUIRED BY INSPECTORS OR AUTHORITIES HAVING JURISDICTION WITHOUT EXTRA EXPENSE TO THE OWNER. PREPARE AND FURNISH ANY ADDITIONAL DRAWINGS, DETAILS OR INFORMATION AS MAY BE REQUIRED. NOTIFY CONSULTANT OF CHANGES REQUIRED PRIOR TO MAKING CHANGES.
15. FURNISH NECESSARY CERTIFICATES AS EVIDENCE THAT WORK INSTALLED CONFORMS WITH LAWS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
16. ALL ELECTRICAL ITEMS SHALL BE CSA APPROVED OR BEAR A STAMP TO INDICATE SPECIAL ELECTRICAL SAFETY AUTHORITY APPROVAL.
17. PRIOR TO TENDER SUBMISSION VISIT AND EXAMINE THE SITE AND PLANS, BECOME FAMILIAR WITH ALL FEATURES WHICH AFFECT THE WORK, VERIFY ALL CONDITIONS AND DIMENSIONS, AND ALLOW FOR ANY RE-ROUTING OF INSTALLED SERVICES AND EQUIPMENT IN TENDER PRICE. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY. NO EXTRAS WILL BE ALLOWED FOR ANY DIFFICULTIES ENCOUNTERED DUE TO ANY FEATURES OF THE BUILDING OR THE SITE OR THE ADJACENT PROPERTIES WHICH EXISTED UP TO THE TIME OF TENDER.
18. REPORT TO THE ENGINEER ALL AMBIGUITIES, DISCREPANCIES, OMISSIONS, ERRORS AND DEPARTURES FROM BUILDING BYLAWS AND/OR FROM GOOD PRACTICE PRIOR TO TENDER CLOSING.
19. IN CASE OF APPARENT CONTRADICTION OR AMBIGUITY IN TENDER DOCUMENTS, OR WHERE THERE ARE APPARENT DISCREPANCIES IN OR OMISSIONS FROM DOCUMENTS, OR IF THERE IS ANY DOUBT AS TO INTENT OF DOCUMENTS, REQUEST AND OBTAIN WRITTEN CLARIFICATION FROM CONSULTANT PRIOR TO SUBMITTING YOUR TENDER. CONSIDERATIONS WILL NOT BE GRANTED FOR MISUNDERSTANDING OF INTENT OF DOCUMENTS OR EXTENT OF WORK TO BE PERFORMED.
20. PROVIDE A COMPLETE BREAKDOWN OF MATERIALS, EQUIPMENT AND LABOUR COSTS WITH EACH SUBMISSION FOR EXTRA OR DELETED WORK. FAILURE TO DO SO WILL RESULT IN BACKCHARGES FOR ADDITIONAL CONSULTING SERVICES TO PROCESS SUCH CLAIMS.
21. PROVIDE PROPER SHOP DRAWINGS OF ALL SPECIFIED PRODUCTS AND SUBMIT FOR REVIEW TO THE ARCHITECT AND ENGINEER. SUBMIT SHOP DRAWINGS IN ELECTRONIC 'PDF' FILE FORMAT. SHOP DRAWINGS ARE TO INDICATE PROJECT SPECIFIC TECHNICAL DATA. CLEARLY MARK ITEMS BEING SUPPLIED, NORMAL AND OPTIONAL ACCESSORIES. DO NO SUBMIT SALES LITERATURE.
22. REVIEW ALL SHOP DRAWINGS PRIOR TO SUBMITTAL AND CLEARLY CERTIFY AS 'CORRECT FOR REVIEW BY CONSULTANT'. SHOW COMPANY NAME, DATE AND SIGN ALL SHOP DRAWINGS.
23. REVIEW OF SHOP DRAWINGS BY THE ENGINEER IS FOR THE SOLE PURPOSE OF ASCERTAINING CONFORMANCE WITH GENERAL DESIGN CONCEPT. REVIEW DOES NOT MEAN THAT CONSULTANT APPROVES DETAIL DESIGN INHERENT IN SHOP DRAWINGS, RESPONSIBILITY FOR WHICH REMAINS WITH THE CONTRACTOR SUBMITTING SAME, AND SUCH REVIEW DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY FOR ERRORS OR OMISSIONS CONTAINED IN SHOP DRAWINGS OR OF THE RESPONSIBILITY FOR MEETING ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS RESPONSIBLE FOR CONFIRMING AND CORRELATING ALL DIMENSIONS AT JOB SITE, FOR INFORMATION PERTAINING SOLELY TO FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION AND INSTALLATION, AND FOR CO-ORDINATION WITH RELATED TRADES.
24. THE MECHANICAL CONTRACTOR IS TO CIRCULATE REVIEWED AND STAMPED SHOP DRAWINGS TO THE ELECTRICAL AND STRUCTURAL ENGINEERS AND CONTRACTORS FOR REVIEW PRIOR TO ORDERING ANY EQUIPMENT. REPORT ANY DISCREPANCIES TO THE ENGINEER.
25. MATERIALS AND EQUIPMENT ARE SPECIFICALLY DESCRIBED FOR PURPOSE OF INDICATING STANDARDS OF QUALITY AND WORKMANSHIP. BASE TENDER PRICE ON MATERIALS AND EQUIPMENT SPECIFIED OR NAMED AS ACCEPTABLE ALTERNATE. IF ACCEPTABLE ALTERNATE PRODUCT IS PROPOSED, INDICATE REASON FOR CHANGE, SHOW SAVINGS AND CLEARLY INDICATE ALL AREAS WHERE ALTERNATE PRODUCT DOES NOT MEET SPECIFIED PRODUCT. IF ACCEPTABLE ALTERNATE MANUFACTURERS ARE NOT LISTED, BASE THE TENDER PRICE ON THE PRODUCT SPECIFIED.
26. DESIGN IS BASED ON DIMENSIONS AND PHYSICAL CONFIGURATION OF MANUFACTURER'S EQUIPMENT SPECIFIED. ASSUME FULL RESPONSIBILITY FOR ENSURING THAT PRODUCTS SUPPLIED BY AN ALTERNATE MANUFACTURER ARE EQUIVALENT IN PERFORMANCE AND OPERATING CHARACTERISTICS TO THE SPECIFIED PRODUCT. ASSUME FULL RESPONSIBILITY FOR ENSURING THAT THE SAME ACCESS AND MAINTENANCE SPACE IS ACHIEVED WHERE ALTERNATE PRODUCT IS PROVIDED.
27. ALTERNATE PRODUCTS/EQUIPMENT MAY BE PROPOSED PRIOR TO PROGRESS OF WORK PROVIDING THE QUALITY AND PERFORMANCE CHARACTERISTICS ARE EQUAL TO THE SPECIFIED PRODUCTS, AND SUBJECT TO THE APPROVAL OF THE PROPERLY SUBMITTED SHOP DRAWINGS TO THE ARCHITECT AND ENGINEER.
28. DURING PROGRESS OF WORK, SUBSTITUTE PRODUCTS/EQUIPMENT WILL ONLY BE CONSIDERED WHEN TENDERED PRODUCTS BECOME UNOBTAINABLE AND WRITTEN PROOF IS SUBMITTED.
29. ASSUME RESPONSIBILITY AND PAY FOR ANY ADDITIONAL INSTALLATION COSTS INCURRED BY ALL DIVISIONS RESULTING FROM THE ALTERNATES AND/OR SUBSTITUTIONS. MAKE REVISIONS TO RECORD DRAWINGS INCORPORATING ALL ALTERNATES AND/OR SUBSTITUTIONS AND ALL RELATED CHANGES.
30. CONTRACTOR WILL PAY TO THE ARCHITECT AND ENGINEERS FOR THEIR TIME SPENT FOR REVIEW OF ALTERNATE EQUIPMENT EVEN IF SUCH EQUIPMENT IS NOT ACCEPTABLE.
31. WHERE MATERIALS AND EQUIPMENT ARE SUPPLIED BY OTHERS FOR INSTALLATION BY THIS CONTRACTOR, RECEIVE, UNLOAD, HANDLE, STORE, AND PROTECT MATERIALS AND EQUIPMENT UNTIL READY FOR ACTUAL INSTALLATION. UPON RECEIPT OF MATERIALS CHECK THE ENTIRE SHIPMENT AND PROMPTLY ADVISE THE CONSULTANT IN WRITING OF ANY DAMAGE AND/OR MISSING COMPONENTS. ANY MATERIAL WHICH IS SUBSEQUENTLY LOST OR DAMAGED DUE TO THIS CONTRACTOR'S NEGLIGENCE IS TO BE PROMPTLY REPLACED OR REPAIRED TO THE CONSULTANT'S SATISFACTION AT NO ADDITIONAL COST. INCLUDE FOR ONE YEAR WARRANTY ON RELATED LABOUR.
32. DRAWINGS INDICATE DESIGN INTENT ONLY AND ARE TO BE CONSIDERED DIAGRAMMATIC INTENDED TO CONVEY SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENT AND APPROXIMATE LOCATIONS OF EQUIPMENT AND ROUTES OF PIPES AND DUCTS. DRAWINGS DO NOT SHOW ARCHITECTURAL AND STRUCTURAL DETAILS.
33. DO NOT SCALE DRAWINGS. OBTAIN INFORMATION INVOLVING ACCURATE MEASUREMENTS OF BUILDING FROM ARCHITECTURAL AND STRUCTURAL DRAWINGS OR AT THE SITE. MAKE NECESSARY CHANGES TO ACCOMMODATE STRUCTURAL CONDITIONS WITHOUT ADDITIONAL CHARGE.
34. CONTRACTOR IS TO PREPARE A SCHEDULE OF VALUES AND SUBMIT TO CONSULTANT TEAM FOR REVIEW AND ADJUSTMENT PRIOR TO FIRST APPLICATION FOR PAYMENT. SCHEDULE OF VALUES MUST INCLUDE, AMONG OTHER ITEMS, VALUE ASSIGNED TO CLOSE-OUT DOCUMENTS (AS-BUILT DRAWINGS, WARRANTIES, MAINTENANCE MANUALS, ETC...). THE AGREED UPON SCHEDULE OF VALUES WILL FORM THE BASIS FOR FACTORING PERCENTAGE OF WORK COMPLETED INTO CERTIFICATES FOR PAYMENT.

GENERAL NOTES

35. PROVIDE THE OWNER WITH A WRITTEN WARRANTY, FOR ALL LABOUR, MATERIALS AND EQUIPMENT IN THIS CONTRACT, FOR A PERIOD OF ONE YEAR COMMENCING AT SUCH TIME THAT THE OWNER, OR HIS REPRESENTATIVE, DEEMS THE WORK ACCEPTABLE.
36. PROVIDE ALL ITEMS, ARTICLES, MATERIALS, OPERATIONS OR METHODS LISTED, MENTIONED OR SCHEDULED ON THE DRAWINGS AND/OR HEREIN SPECIFIED, INCLUDING ALL LABOUR, MATERIALS, EQUIPMENT, AND INCIDENTALS NECESSARY AND REQUIRED FOR THEIR COMPLETION (CURBS, MOUNTINGS, SUPPORTS, ETC.).
37. UNLESS NOTED OTHERWISE, PROVIDE NEW MATERIALS AND EQUIPMENT MANUFACTURED TO REFERENCE STANDARDS AND AS SCHEDULED.
38. EXISTING SERVICES SHALL BE FIELD CHECKED BEFORE WORK COMMENCEMENT INCLUDING LOCATION, SIZE AND ELEVATION OF RELEVANT PIPING, VALVES, MANHOLES, ETC. ALSO PROPOSED ELEVATIONS SHALL BE VERIFIED FOR FLOOR DRAINS, CATCH BASINS, GRADE AND MANHOLES TOP ELEVATIONS.
39. CONSERVE HEADROOM AND MAINTAIN SERVICE SPACE AROUND SERVICEABLE EQUIPMENT AS PER MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.
40. BEAR THE COST OF CLEAN-UP, (FLOORS, WALLS, CEILINGS ETC.), CUTTING, PATCHING AND FLASHING OF BUILDING STRUCTURE AND ROOF. EMPLOY THE OWNER'S GENERAL CONTRACTOR TO DO THE WORK. INFORM THE ENGINEER PRIOR TO PROCEEDING.
41. ENSURE THAT THE LABOUR UNION AFFILIATION IS COMPATIBLE WITH THAT OF THE OWNER'S GENERAL CONTRACTOR.
42. ALL ELECTRICAL DISCONNECT SWITCHES AND ALL MANUAL OR AUTOMATIC STARTERS FOR MECHANICAL EQUIPMENT SHALL BE PROVIDED BY THE MECHANICAL CONTRACTOR.
43. ALL LINE SIDE POWER WIRING SHALL BE BY THE ELECTRICAL CONTRACTOR AND SHALL BE TERMINATED AT A JUNCTION BOX ADJACENT TO THE EQUIPMENT OR AT THE STARTER OR AT THE DISCONNECT SWITCH OR AT THE PACKAGED EQUIPMENT CONTROL PANEL, AS INDICATED ON MECHANICAL AND/OR ELECTRICAL DRAWINGS. WHEN A JUNCTION BOX IS PROVIDED BY DIV-16 (REFER TO ELECTRICAL DRAWINGS), DIV-15 SHALL PROVIDE CONNECTION BETWEEN EQUIPMENT AND JUNCTION BOX. ALL LOAD SIDE AND CONTROLS WIRING SHALL BE BY THE MECHANICAL CONTRACTOR.
44. PROVIDE WHERE SHOWN AND/OR REQUIRED BY SITE CONDITIONS, ALL ACCESS DOORS COMPATIBLE WITH CEILING/WALL TYPES AND FINISHES. MARK IN AN APPROVED MANNER, T-BAR CEILING TILES WHICH ARE USED FOR ACCESS. PROVIDE MILCOR, LEHAGE OR APPROVED EQUAL, ACCESS DOORS. PROVIDE MINIMUM SIZE OF CEILING ACCESS OF A 4 SQUARE FEET.
45. THIS CONTRACTOR SHALL COMPLY WITH LANDLORD'S GENERAL REQUIREMENTS FOR WORK TO BASE BUILDING SYSTEMS.
46. INCLUDE FOR PREMIUM TIME FOR WORK REQUIRED OUTSIDE OF NORMAL BUSINESS HOURS.
47. PROVIDE FIRE STOP FOR ALL PENETRATIONS THROUGH RATED PARTIONS AND SLABS. FIRE STOP MATERIAL SHALL BE ULC APPROVED AND CONFORM TO BASE BUILDING STANDARDS.
48. THIS CONTRACTOR SHALL PROVIDE THE LANDLORD WRITTEN NOTICE 48 HOURS PRIOR TO REQUIRED ACCESS TO RESTRICTED AREAS OR OTHER TENANT SPACES.
49. CHANGE NOTICE QUOTATIONS SHALL BE SUBMITTED COMPLETE WITH COST BREAKDOWN OF LABOR AND MATERIALS. FAILURE TO PROVIDE WILL RESULT IN REJECTION. ALL MECHANICAL CHANGE NOTICES SHALL BE PRICED IN ACCORDANCE WITH "MECHANICAL CONTRACTORS ASSOCIATION" (MCA). LABOR UNITS STRICTLY FOR LABOR AND FOR MATERIAL COST USE "ALL PRICER" LESS DISCOUNT, TYPICALLY 20% - 30%.
50. PROTECT ALL MECHANICAL WORK FROM DAMAGE INCLUDING THAT CAUSED BY WEATHER. KEEP ALL EQUIPMENT DRY AND CLEAN AT ALL TIMES. COVER OPENINGS IN EQUIPMENT, PIPES AND DUCTS WITH CAPS OR HEAVY GAUGE PLASTIC SHEETING UNTIL FINAL CONNECTIONS ARE MADE. REPAIR ANY DAMAGE CAUSED BY IMPROPER STORAGE, HANDLING OR INSTALLATION OF EQUIPMENT AND MATERIALS.
51. TEMPORARY FILTERS 25MM (1 IN.) SHALL BE PROVIDED AT ALL BASE BUILDING RETURN AIR OPENINGS WHICH REMAIN OPERATIONAL DURING CONSTRUCTION. FILTERS TO BE REPLACED WEEKLY. REMOVE UPON CONSTRUCTION COMPLETION.
52. BASE BUILDING HVAC COMPONENTS REMOVED I.E. LIGHT TROFFERS, DIFFUSERS VAV BOXES ETC. SHALL BE TURNED OVER TO THE LANDLORD/OWNER AT THEIR DIRECTIONS.
53. COMPLY WITH THE GENERAL CONTRACTORS CONSTRUCTION SCHEDULE.
54. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING, COORDINATING AND MAINTAINING ALL TEMPORARY SERVICES INCLUDING GAS, WATER, SPACE HEATING AND ELECTRICITY AS REQUIRED TO COMPLETE THE MECHANICAL CONSTRUCTION/INSTALLATION. DO NOT USE PERMANENT PLUMBING, HEATING, AIR CONDITIONING OR VENTILATION SYSTEMS FOR TEMPORARY SERVICES DURING CONSTRUCTION UNLESS WRITTEN PERMISSION IS PROVIDED BY THE ENGINEER.
55. STRUCTURAL REINFORCING: MECHANICAL CONTRACTOR SHALL PROVIDE ALL STRUCTURAL REINFORCING TO BUILDING STRUCTURE AS PER LOCAL BUILDING CODE. IT IS THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO HIRE A LICENSED PROFESSIONAL ENGINEER TO DESIGN ALL STRUCTURAL REINFORCING REQUIRED FOR NEW MECHANICAL EQUIPMENT ON ROOF OR SUSPENDED FROM BUILDING STRUCTURE. A BUILDING PERMIT MUST BE OBTAINED. SUBMIT FOR APPROVAL TO PROJECT COORDINATOR, LANDLORD AND MECHANICAL ENGINEER PRIOR TO CONSTRUCTION. STRUCTURAL REINFORCING DESIGN SHALL BEAR THE SEAL OF A PROFESSIONAL ENGINEER. UPON COMPLETION THE ENGINEER SHALL ISSUE A CERTIFICATION LETTER INDICATING THAT SUCH INSTALLATION IS CONSTRUCTED IN COMPLIANCE WITH LOCAL BUILDING CODE, AND ALL APPLICABLE REGULATIONS.
56. FOLLOWING COMPLETION OF ALL INSTALLATION WORK, BALANCING, TESTING AND COMMISSIONING THE MECHANICAL CONTRACTOR IS TO FULLY INSTRUCT THE OCCUPANT OR OWNER IN ALL ASPECTS OF THE OPERATION OF THE MECHANICAL SYSTEMS AND EQUIPMENT. THIS INCLUDES BUT NOT LIMITED TO THERMOSTAT PROGRAMMING, SUMP PUMP CONTROLS, TIME-CLOCKS ETC...
57. OFFSHORE MANUFACTURED PRODUCTS ARE NOT ACCEPTABLE UNLESS WRITTEN PERMISSION IS PROVIDED BY ENGINEER. THIS INCLUDES ALL PIPING, FITTINGS, VALVES, SHEET METAL, HANGERS, AND FASTENERS.

RECORD DRAWINGS

RECORD DRAWINGS

1. SUITABLY STORE AND PROTECT DRAWINGS ON SITE. IN A NEAT MANNER, MARK WITH RED PEN ALL REVISIONS TO DESIGN DRAWINGS AND MAKE AVAILABLE AT ALL TIMES FOR INSPECTION. TRANSFER ALL MODIFICATIONS FROM ORIGINAL DESIGN TO DIGITAL COPY USING AutoCAD SOFTWARE. UPON COMPLETION OF WORK SUBMIT A COMPLETE SET OF RECORD DRAWING PRINTS AND DIGITAL COPY OF RECORD DRAWINGS IN PDF AND DWG FORMAT TO ENGINEER AND BUILDING OWNER.
2. SHOW LOCATIONS OF ACCESS DOORS AND PANELS AND IDENTIFY THE EQUIPMENT AND COMPONENTS THAT THEY SERVE.

OPERATING AND MAINTENANCE MANUALS

1. SUBMIT ONE COPY FOR REVIEW AT LEAST TWO WEEKS BEFORE INSTRUCTIONS TO OWNER ARE COMMENCED.
2. SUBMIT 2(TWO) COPIES OF FINAL MANUALS TO THE ENGINEER.
3. ENSURE THAT THE TERMINOLOGY USED IN VARIOUS SECTIONS OF THE MANUAL IS CONSISTENT.
4. EACH MANUAL SHALL CONTAIN THE FOLLOWING INFORMATION:
5. DESCRIPTION OF EACH SYSTEM WITH DESCRIPTION OF EACH MAJOR COMPONENT OF SYSTEM
6. - COMPLETE SETS OF PAGE SIZE EQUIPMENT SHOP DRAWINGS
7. - EQUIPMENT MANUFACTURER'S INSTALLATION, STARTUP AND OPERATION MANUALS
8. - EQUIPMENT MANUFACTURER'S RECOMMENDED SPARE PARTS LISTS
9. - EQUIPMENT IDENTIFICATION LIST WITH SERIAL NUMBERS

10 - FINAL BALANCING REPORTS

11 - WARRANTY DOCUMENTATION

12 OPERATING AND MAINTENANCE MANUALS SHALL BE SUBMITTED AS A COMPLETE SINGLE PACKAGE IN A THREE RING BINDER AND PREPARED IN A PROFESSIONAL MANNER INCLUDING THE FOLLOWING:

13 - TABLE OF CONTENTS.

14 - NUMBERED SECTION TABS.

15 - PAGE NUMBERS.

16 - FRONT COVER WITH PROJECT DETAILS SUCH AS CLIENT NAME, PROJECT LOCATION AND
CONTRACTOR CONTACT INFORMATION.

17 - INTRODUCTION SHEET.

18 - COPY OF EACH REVIEWED SHOP DRAWING.

19 - EQUIPMENT OPERATING AND MAINTENANCE MANUALS AS DESCRIBED ABOVE.

20 - START-UP AND VERIFICATION TEST REPORTS.

21 - AS-BUILT DRAWINGS AS DESCRIBED ABOVE.

22 - AIR AND WATER BALANCING REPORTS.

23 - WARRANTY DOCUMENTATION.

HVAC SYSTEM

1. FABRICATE DUCTWORK FROM GALVANIZED SHEET METAL UNLESS OTHER MATERIALS ARE SPECIFICALLY NAMED. CONFORM TO FABRICATION AND INSTALLATION STANDARDS DESCRIBED IN THE LATEST EDITION OF ASHRAE AND SMACNA RECOMMENDATIONS.
2. A. DUCTWORK SHALL BE SMOOTH ON THE INSIDE AND FREE FROM OBSTRUCTIONS, VIBRATIONS AND RATTLE.
   B. DAMPERS SHALL BE FREE TO MOVE IN EITHER DIRECTION WITHOUT BINDING AND SHALL NOT RATTLE. DAMPERS SHALL BE CONSTRUCTED FROM 18GA GALVANIZED SHEET METAL. USE MANUAL QUADRANTS ON SMALL DUCTS. ON DAMPERS LONGER THAN 15" USE PUSH RODS WITH DURODYNE MODEL SRP BALL JOINTS. USE TWO PUSH RODS ON DUCTS WIDER THAN 24".
   C. DUCT TRANSFORMATIONS SHALL BE MADE WITH EXPANSION FITTINGS HAVING SLOPES NOT EXCEEDING 1 TO 7 AND CONTRACTION FITTINGS HAVING SLOPES NOT EXCEEDING 1 TO 4.
   D. SEAL ALL JOINTS IN SUPPLY AIR AND EXHAUST AIR DUCTWORK WITH 3M EC-800, OR DURODYNE S-3 DUCT SEALER.
   E. PACK AROUND ALL DUCT OPENINGS IN ROOF AND WALLS WITH FIBERGLASS INSULATION.
   F. PROVIDE FULL RADIUS TEES, BENDS, AND ELBOWS FOR CHANGES IN DIRECTION EXCEPT WHERE SQUARE ELBOWS ARE REQUIRED DUE TO SPACE RESTRICTIONS. PROVIDE DURODYNE DOUBLE THICKNESS 24 GAUGE TURNING VANES ASSEMBLED IN TOP AND BOTTOM RAILS IN SQUARE ELBOWS.
3. PROVIDE FLEXIBLE CONNECTIONS BETWEEN ALL FANS AND ADJACENT DUCTWORK CONSISTING OF A PREASSEMBLED UNIT WITH 75MM (3") LONG GALVANIZED DUCT CONNECTOR AND 150 MM (6") WIDE HEAVY GLASS FIBRE FABRIC WITH ELASTOMER COATING EQUAL TO DURO DYNE 'DUROLON'.
4. NOTE THAT DUCT DIMENSIONS ON DRAWINGS ARE CLEAR INSIDE DIMENSIONS. WHERE ACOUSTIC INSULATION IS INSTALLED, INCREASE DIMENSIONS ACCORDINGLY.
5. DUCTWORK INSULATION (PER ASHRAE 90.1)
   A. PROVIDE 25 MM (1") THICK ACOUSTIC DUCT LINER WHERE SHOWN ON DRAWINGS. ACOUSTIC LINER SHALL BE JOHNS MANVILLE PERMACOTE LINACOUSTIC RECTANGULAR DUCT LINER MEETING ASTMC 1071 WITH AIR SURFACE COATED WITH ACRLIC COATING TREATED WITH EPA REGISTERED ANTI-MICROBIAL AGENT PROVEN TO RESIST MICROBIAL GROWTH AS DETERMINED BY ASTM G21 AND G22.
   B. INSULATE SUPPLY AND RIGID DUCTWORK WITHIN UNCONDITIONED SPACE WITH THERMAL FIBERGLASS REINFORCED FOIL-FACED RIGID VAPOR SEAL DUCT INSULATION HAVING AN R-VALUE OF 3.3 HR FTý øF/BTU.
6. FLEXIBLE DUCT SHALL BE EQUAL TO FLEXMASTER TRIPLE LOCK ALUMINUM AIR DUCT AND SHALL BE THE SAME SIZE AS THE DIFFUSER NECK TO WHICH IT CONNECTS TO UNLESS OTHERWISE SHOWN. SUPPORT FLEXIBLE DUCT AT MAXIMUM 5'-0" SPACING.
7. USE GEAR CLAMPS FOR SECURING FLEXIBLE DUCTS TO RIGID DUCT CONNECTIONS SUCH AS SPIN-ON FITTINGS, ETC. AND NECKS OF DIFFUSERS AND SEAL AIR TIGHT WITH DUCT TAPE. ROUND FLEXIBLE DUCTS SHALL BE MAXIMUM 3.0M (10') LONG AND REMAINDER SHALL BE ROUND RIGID DUCT OF THE SAME DIAMETER.
8. PROVIDE BALANCING DAMPERS IN ALL BRANCHES OFF THE MAIN DUCTWORK WITH SUITABLE MEANS OF CEILING ACCESS FOR BALANCING, AND VOLUME DAMPERS FOR ALL SUPPLY AIR DIFFUSERS AND REGISTERS.
9. PROVIDE GRILLES, DIFFUSERS, REGISTERS AND DOOR GRILLES OF SIZE AND TYPE CALLED FOR ON THE DRAWINGS. HAND OVER DOOR GRILLES TO THE GENERAL CONTRACTOR FOR INSTALLATION IN THE DOORS.
10. PROVIDE ALL CONTROLS, WIRING AND APPURTENANCES NECESSARY FOR COMPLETE AND OPERATING SYSTEMS. CONNECT ALL ROOM THERMOSTATS, DAMPERS, BASEBOARD HEATERS AND OTHER CONTROL DEVICES AS NECESSARY.
11. INSTALL AIR TERMINALS IN STRICT ACCORDANCE WITH FINAL REFLECTED ARCHITECTURAL CEILING PLANS.
12. PROVIDE ROOF CURBS FOR ROOF MOUNTED EQUIPMENT, DUCT AND PIPE PENETRATIONS. PRE-MANUFACTURED CURBS ARE TO BE PROVIDED FOR MECHANICAL EQUIPMENT MOUNTED ON ROOF AND TO BE SUPPLIED BY EQUIPMENT MANUFACTURER. ROOF CURB IS TO BE AT LEAST 14" ABOVE FINISHED ROOF. MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING INSTALLATION OF ROOF CURB WITH ROOFING CONTRACTORS.
13. BALANCING

    TEST, BALANCE AND ADJUST ALL AIR, HYDRONIC AND PLUMBING SYSTEMS ENTIRELY TO OBTAIN THE DESIGN FLOW QUANTITIES. MARK THE FINAL BALANCE POSITION ON ALL BALANCING DAMPERS AND ADJUSTABLE AIR TURNING DEVICES AND BALANCE FITTINGS. SUBMIT AIR AND WATER SYSTEMS TEST AND BALANCE REPORT TO THE ENGINEER AND PROJECT CO-ORDINATOR. INDICATE ALL TEST RESULTS CLOSEST AND FURTHEST OUTLET SUPPLY AIR TEMPERATURES AND ROOM TEMPERATURES FOR ALL AIR SYSTEMS. INCLUDE FOR REPLACEMENT OF DRIVE KITS. INCLUDE ADDITIONAL BALANCING AS PART OF SCOPE AT LEAST ONE (1) MONTH FOLLOWING OCCUPANCY. THIS WORK SHALL BE PERFORMED BY AN AGENCY CURRENTLY A MEMBER OF AND IN GOOD STANDING WITH EITHER THE ASSOCIATED AIR BALANCE COUNCIL OR NATIONAL ENVIRONMENTAL BALANCING BUREAU. TESTING AND BALANCING CONTRACTOR SHALL BE APPROVED BY THE LANDLORD AND HIRED AT THE EXPENSE OF DIVISION 15.
14. CONTROLS
    A. THE MECHANICAL CONTRACTOR IS TO PROVIDE ALL CONTROL WIRING REGARDLESS OF VOLTAGE. THIS INCLUDES ALL INTERLOCKS BETWEEN MAKE-UP AIR UNITS AND EXHAUST FANS; MOTORIZED DAMPERS AND FANS AND ALL OTHER INTERLOCKS BETWEEN MECHANICAL EQUIPMENT.
    B. CONTROL WIRING BELOW 50 VOLTS RELATED TO CONTROL SYSTEMS SHALL BE PROVIDED IN ACCORDANCE WITH LATEST EDITION OF CSA C22.1, NATIONAL ELECTRICAL SAFETY CODE AND REQUIREMENTS OF ELECTRICAL SAFETY AUTHORITY.
    G. MOUNTING HEIGHT OF OCCUPANT ADJUSTABLE THERMOSTATS SHALL BE 1200MM [3 FT. 11 IN.] FROM FINISHED FLOOR. MOUNTING HEIGHT OF NON-ADJUSTABLE THERMOSTATS SHALL BE 1500 MM [5 FT. 0 IN.] FROM FINISHED FLOOR. COORDINATE LOCATION WITH ARCHITECT/DESIGNER. DO NOT INSTALL IN VICINITY OF ELECTRICAL LIGHTING DIMMERS.
    H. CLEAN AND RECALIBRATE EXISTING THERMOSTATS UPON COMPLETION OF CONSTRUCTION. SUBMIT REPORT THAT THIS WORK WAS COMPLETED.
    I. INSTALL ALL EXPOSED WIRING WITHIN EMT CONDUIT, C/W ALL NECESSARY FITTINGS AND SUPPORTS FOR A COMPLETE AND OPERATING CONTROL SYSTEM. HARD WIRE ALL ELECTRICAL CONTROL DEVICES INTO THE ASSOCIATED SYSTEM MAGNETIC STARTER. PROVIDE POWER TO CONTROL PANEL FROM THE NEAREST NORMAL POWER ELECTRICAL DISTRIBUTION PANEL.

PIPE IDENTIFICATION

PIPES IDENTIFICATION:-

1. PROVIDE SMS WRAP-MARK ON ALL PIPE COVERING, USING WRAP-MARK PIPE MARKERS WITH FLOW ARROW AND ALTERNATING WORDING. FOR OUTSIDE DIAMETERS UP TO {150MM} [6"], ALLOW MARKER TO COMPLETELY WRAP PIPE. FOR LARGER OUTSIDE DIAMETERS, SECURE MARKERS WITH STAINLESS STEEL SPRINGS. SECURE MARKERS ON VERTICAL PIPING AND ELSEWHERE MARKERS COULD BE INADVERTENTLY MOVED. PIPING MARKERS AS PER ANSI STANDARDS.
2. LOCATE IDENTIFICATION AND FLOW ARROWS SO THEY CAN BE SEEN CLEARLY FROM FLOOR AND SERVICE PLATFORMS
   .1 AT EACH BRANCH CLOSE TO CONNECTION POINT TO MAIN PIPING
   .2 AT NOT GREATER THAN INTERVALS OF {15 METER} [50FT] ON STRAIGHT RUNS OF EXPOSED PIPING
   .3 BOTH SIDES WHERE PIPING PASSES THROUGH WALLS
   .4 ON VERTICAL PIPES APPROXIMATELY {1800MM}[6FT] ABOVE FLOOR

PIPE MARKING SHALL BE AS FOLLOWS:-

1. (DCW) [DOMESTIC COLD WATER] - GREEN WITH WHITE LETTERING.
7. (V) [PLUMBING VENT] - GREEN WITH WHITE LETTERING.
10. (G) [GAS PIPING] - YELLOW WITH BLACK LETTERING.

PLUMBING SYSTEMS

1. PROVIDE PLUMBING SYSTEMS AS PER SPECIFICATIONS, DRAWINGS, THE ONTARIO PLUMBING CODE, THE O.B.C. AND LOCAL BY-LAWS. PROVIDE ALL NECESSARY ACCESSORIES AND FITTING REQUIRED FOR COMPLETE AND OPERATIONAL SYSTEMS.
2. MAKE ALL WATER, WASTE AND VENT PIPING CONNECTIONS AS REQUIRED. PROVIDE VENTING, TRAPPING AND PRIMING AS PER THE APPLICABLE REGULATIONS.
3. PROVIDE ALL CURBS, MOUNTINGS AND SUPPORTS FOR EQUIPMENT, FIXTURES AND PIPING AS REQUIRED AND SPECIFIED.
4. ALL EXPOSED FITTINGS CONNECTED TO FIXTURES SHALL BE CHROME-PLATED BRASS. ALL EXPOSED FITTINGS AND TRIM SHALL BE CHROME PLATED. PROVIDE ESCUTCHEONS PLATES ON ALL PIPING THROUGH PARTITIONS.
5. INDOOR UNDERGROUND STORM AND SANITARY PIPES SHALL BE CSA CLASS 4000 CAST IRON SOIL PIPE AND FITTINGS WITH MECHANICAL JOINTS. MATERIALS, FITTINGS, CONSTRUCTION AND INSTALLATION METHODS SHALL CONFORM TO THE CURRENT STANDARDS OR LOCAL AUTHORITIES HAVING JURISDICTION.
6. ALL MECHANICAL JOINTS (MJ) INSTALLED BELOW GRADE, AT THE BASE OF ALL SANITARY STACKS, ON SANITARY DRAINS 4"(100mm) AND LARGER, ON ALL STORM DRAINAGE PIPING, AND AS NOTED WITHIN THE PLUMBING FIXTURE SCHEDULE, SHALL BE EQUIVALENT TO MISSION HEAVY WEIGHT COUPLINGS C/W MULTIPLE BANDS ATTACHED TO HEAVY DUTY CORRUGATED 304 STAINLESS STEEL SHIELD OVER A MOLDED ONE-PIECE ELASTOMER SEALING SLEEVE, SEALING RINGS ON FLANGED NEOPRENE RUBBER GASKET SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM C 564, AXIALLY SLOTTED HEAVY DUTY WORM DRIVE CLAMPS CAPABLE OF TIGHTENING TO 80 IN/LBS OF TORQUE AND FM 1680 COMPLIANT.
7. ALL WALL AND FLOOR OPENINGS SHALL BE PACKED WITH AN APPROVED FIRE BARRIER MINERAL WOOL TO 25MM (1") FROM END SIDE OF OPENING ON BOTH SIDES OF FLOOR OR WALL. REMAINING PORTION SHALL BE SEALED WITH AN APPROVED AND LISTED FIRE BARRIER SILICONE.
8. FINAL LOCATION OF ALL PLUMBING FIXTURES SHALL BE CO-ORDINATED ON SITE WITH ALL TRADES. REFER TO ARCHITECTURAL & SPECIALTY EQUIPMENT CONSULTANT LAYOUT DRAWINGS AND DETAILS FOR EXACT LOCATION OF FIXTURES.
9. PROVIDE NEW PLUMBING FIXTURES WHERE INDICATED ON PLANS, OF MAKE AND MODEL AS SPECIFIED ON MECHANICAL DRAWINGS. ALL FIXTURES SHALL BE OF FIRST QUALITY, CLEANED AND IN PERFECT CONDITION FOR THE TENANT OWNER TAKEOVER. FIXTURES SHALL BE PIPED COMPLETE IN A FIRST CLASS MANNER WITH ALL NECESSARY APPURTENANCES FOR A COMPLETE FIXTURE IN EVERY RESPECT. INSTALL ALL COMPONENTS IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
10. PROVIDE ISOLATING VALVES ON MAIN AND/OR BRANCH LINES AND FOR ALL EQUIPMENT SERVED WITH HOT AND COLD WATER LINES. ALL VALVES SHALL BE SUITABLE FOR THE OPERATING PRESSURE OF THE SYSTEM IN WHICH THEY ARE INSTALLED.
11. PROVIDE ACCESS DOORS TO ALL PLUMBING EQUIPMENT WHERE INDICATED AND/OR REQUIRED OF SIZE TO SUIT CONVENIENT MAINTENANCE REQUIREMENTS.
12. PIPING INSULATION
    A. PIPE INSULATION TO BE A MIN. OF R-4 PER INCH.
    B. REFER TO PIPING INSULATION SCHEDULE
13. PROVIDE TRAP SEAL PRIMER TO ALL HUB DRAINS, FLOOR DRAINS, FUNNEL FLOOR DRAINS IN ACCORDANCE WITH CODES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LOCATE ADEQUATE COLD WATER SUPPLY. PROVIDE ALL NECESSARY PIPING TO SUPPLY TRAP SEAL PRIMER. NO EXTRAS SHALL BE ACCEPTED FOR PROVIDING TRAP SEAL PRIMER.
14. CLEANING, FLUSHING AND DISINFECTING OF WATER PIPING
    A. BE RESPONSIBLE FOR CARE AND CLEANING OF THE PIPING SYSTEM DURING AND AFTER CONSTRUCTION. PLUG ALL OPEN ENDS DURING CONSTRUCTION TO PREVENT THE ENTRANCE OF FOREIGN MATERIALS.
    B. FLUSH ALL SYSTEMS WITH CLEAN, POTABLE WATER TO REMOVE SCALE AND SEDIMENT IMMEDIATELY UPON FILLING.
    C. STERILIZE ALL NEW POTABLE WATER LINES TO MEET LOCAL MUNICIPAL REQUIREMENTS. UPON REQUEST BY ENGINEER OR OWNER CONTRACTOR SHALL PROVIDE CERTIFICATION THAT STERILIZATION HAS BEEN COMPLETED.
15. HORIZONTAL PIPING SHALL BE SUPPORTED AT INTERVALS AS PER LATEST EDITION OF SECTION 7.3.4 "SUPPORT OF PIPING" OF THE O.B.C.2012.
16. VERTICAL PIPING SHALL BE SUPPORTED AT THE FLOOR AND/OR WITH INTERMEDIATE WALL SUPPORTS AT 10FT. INTERVALS FOR PIPING 2" AND OVER AND 6FT INTERVALS FOR SMALLER PIPING. MORE FREQUENT SUPPORTS SHALL BE PROVIDED WHERE NECESSARY TO PREVENT MOVEMENT. PIPING SHALL BE SUPPORTED AS PER LATEST EDITION OF SECTION 7.3.4 "SUPPORT OF PIPING" OF THE O.B.C.2012.
17. POTABLE WATER VALVES
    A. NEW GATE VALVES 2-1/2"Ø AND LARGER SHALL BE MANUFACTURED BY WATTS (OR EQUAL). VALVES SHALL BE SUITABLE FOR USE IN POTABLE WATER SYSTEMS. VALVES SHALL BE PRESSURE RATED TO 200psi CWP AND HAVE FLANGED ENDS. VALVES SHALL HAVE NON-RISING STEM AND FULL PORT FLOW AND EPOXY COATED.
    B. NEW GATE VALVES 2"Ø AND SMALLER SHALL BE MANUFACTURED BY WATTS (OR EQUAL). VALVES SHALL BE SUITABLE FOR USE IN POTABLE WATER SYSTEMS. VALVES SHALL BE MANUFACTURED OUT OF BRONZE AND BE PRESSURE TESTED TO 125psi WSP, 200psI WOG NON-SHOCK. VALVES SHALL HAVE NON-RISING STEM AND FULL PORT FLOW.
    C. FOR 2" AND SMALLER, BALL VALVES MAY BE PROVIDED AS SUBSTITUTE FOR GATE VALVES. PROVIDE BALL VALVES WITH BRASS OR BRONZE BOBY, CHROME PLATED SOLID BALL, PTFE SEAT AND SEALS AND FULL PORT.
    D. STANDARD CHECK VALVES
    2"Ø AND SMALLER - SOLDERED 300 psi WOG
    2-1/2" AND LARGER - FLANGED 200 psi WOG.
18. ABOVE GROUND SANITARY DRAIN PIPING MATERIAL AND FITTINGS SHALL BE:
    A. PIPE SIZE 2-1/2" AND LESS: TYPE P-1 OR P-2.
    B. PIPE SIZE 3" AND GREATER: TYPE P-2 OR P-4.
19. UNDERGROUND SANITARY DRAIN PIPING MATERIAL AND FITTINGS SHALL BE:
    A. PIPE SIZE 2-1/2" AND LESS: TYPE P-3 OR P-4.
    B. PIPE SIZE 3" AND GREATER: TYPE P-4. P-5, OR P-7.
20. ABOVE GROUND VENT PIPING MATERIAL AND FITTINGS SHALL BE:
    A. PIPE SIZE 2-1/2" AND LESS: TYPE P-1 OR P-2.
    B. PIPE SIZE 3" AND GREATER: TYPE P-2 OR P-4.
21. UNDERGROUND VENT PIPING MATERIAL AND FITTINGS SHALL BE:
    A. PIPE SIZE 2-1/2" AND LESS: TYPE P-4, P-5 OR P-6.
    B. PIPE SIZE 3" AND GREATER: TYPE P-4. P-5, OR P-7.
22. ABOVE GROUND DOMESTIC HOT, COLD AND RECIRCULATION PIPING MATERIAL AND FITTINGS SHALL BE:

0. A. PIPE SIZE 2-1/2" AND LESS: TYPE P-6.

0. B. PIPE SIZE 3" AND GREATER: TYPE P-6.

23. PIPING MATERIAL AND FITTINGS

0. P-1: DWV COPPER PIPE WITH DRAINAGE FITTINGS AND 95/5 TIN/ANTIMONY SOLDER JOINTS

P-2: IPEX SYSTEM XFR 15-50 DWV PIPE AND FITTINGS WHICH SHALL BE CERTIFIED TO CSA B181.2 AND SHALL BE TESTED IN ACCORDANCE WITH CAN/ULC S102.2 AND SHALL BE CLEARLY MARKED WITH THE CERTIFICATION LOGO INDICATING A FLAME-SPREAD RATING OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED CLASSIFICATION NOT EXCEEDING 50.

0. P-3: TYPE L COPPER WITH 95/5 TIN/ANTIMONY SOLDER JOINTS.

0. P-4: CSA CLASS 4000 CAST IRON SOIL PIPE AND FITTINGS, WITH MECHANICAL JOINTS.

0. P-5: IPEX RING-TITE PVC SDR 35 SEWER PIPE AND SHALL BE IN COMPLIANCE WITH ASTM D3040 OR ASTM F1760 AND THIRD PARTY CERTIFIED TO CSA B182.2 OR CSA B182.7. SEWER LATERALS WILL BE PVC SRD 28 SEWER PIPE AND SHALL BE THIRD PARTY CERTIFIED BY CSA AS ABOVE. SEALING GASKETS AT JOINTS MUST MEET THE REQUIREMENTS OF ASTM D3034 OR ASTM 1760, CSA B182.2 OR CSA B182.7 AND MUST BE ABLE TO WITHSTAND A MINIMUM HYDROSTATIC PRESSURE OF 345 kPa (50 psi) WITHOUT LEAKAGE. PIPE STIFFNESS AND FITTINGS SHALL ALSO MEET THE APPROPRIATE ASTM AND CSA STANDARDS.

0. P-6: TYPE L HARD COPPER PIPE WITH WROUGHT COPPER FITTINGS AND 95/5 TIN/ANTIMONY SOLDER JOINTS.

0. P-7: ROYAL PIPE SYSTEMS ABS-DWV PIPE SCHEDULE 40. CERTIFIED TO CSA B181.1. ABS COMPOUND MEETING CELL CLASSIFICATION REQUIREMENTS OF 42221 AS DEFINED BY ASTM D 3965. ABS PIPING, TUBING AND ASSOCIATED ADHESIVES ARE PERMITTED TO BE USED IN A BUILDING REQUIRED TO BE OF NONCOMBUSTIBLE CONSTRUCTION PROVIDED THEY ARE CONCEALED IN A WALL OR CONCRETE FLOOR SLAB. ABS PIPING SHALL NOT BE USED IN A RETURN PLENUM APPLICATION.

GAS PIPING SYSTEM

1. PROVIDE AND INSTALL NATURAL GAS PIPING IN COMPLIANCE WITH ALL REQUIREMENTS OF APPLICABLE SECTIONS OF CSA CODE B149 SPECIFICATION, THE LATEST AMENDMENTS, THE C.G.A. UTILIZATION CODE, AND OBTAIN APPROVAL FROM THE LOCAL GAS UTILITY'S AUTHORITY PRIOR TO THE INSTALLATION OF GAS PIPING.
2. CONTRACTOR TO SUPPLY AND INSTALL ISOLATION LUBRICATED GAS COCKS AT EACH PIECE OF EQUIPMENT AND AT EACH CAPPED CONNECTION.
3. GAS PIPING ON ROOF SHALL BE MOUNTED ON ROOF TOP BLOX MODEL RTB-01. THE SUPPORT BLOCKS MUST BE DESIGNED TO ELIMINATE ROOF PENETRATIONS, FLASHINGS OR DAMAGE TO ROOFING MEMBRANE. BODY SHALL BE RECYCLED UV-RESISTANT POLYPROPYLENE COPOLYMER. BASE PLATFORM SHALL BE 1" THICK, TYPE 4 CLOSED CELL STRUCTURAL FOAM. THE TOP SURFACE SHALL HAVE MOLDED IN PIPE ORGANIZING SADDLES AND STRUT MOUNTING CRADLE. THE TOP SURFACE SHALL ALSO HAVE SCREW GUIDE INDENTS AND ENGINEERED INTERNAL SCREW THREAD GRIPPING FEATURE. BLOCK MUST ACCEPT 3/8" AND 1/2" THREADED ROD USING SIDE ENTRY NUT SLOTS TO ALLOW FAST TOP SIDE ASSEMBLY AND PIPING HEIGHT ADJUSTMENTS. INSTALL PIPING AT NO LESS THAN 6'-0" CLEARANCE FROM THE ROOF EDGE IN ORDER TO COMPLY WITH B.149.1 CODE. REMOVE ALL LOOSE AGGREGATE FROM UNDER SUPPORT BASE ON GRAVEL COVERED ROOF TOPS.
4. PROVIDE AND INSTALL FOR NATURAL GAS PIPING STANDARD WEIGHT BLACK STEEL PIPE (SCHEDULE - 40) WITH EITHER STANDARD WEIGHT MALLEABLE IRON SCREWED FITTINGS OR WELDED FITTINGS ACCORDING TO PIPE SIZE AND LOCATION. WELD ALL CONCEALED PIPES AND VENT LINES. VENT AND PROTECT IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL GAS UTILITY. PROVIDE APPROVED TYPE LUBRICATED PLUG COCKS WITH QUARTER STOPS.
5. INDOOR GAS PIPING IS TO BE INSTALLED AT HIGH LEVEL IN JOIST SPACE. IF OBSTRUCTED, OFFSET GAS PIPING AND IMMEDIATELY RETURN TO HIGH LEVEL. GAS PIPING PENETRATION THROUGH ROOF TO BE WITH PURPOSE MADE SLEEVES AND CONES.
6. CONNECT TO EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
7. SLOPE PIPING DOWN IN DIRECTION OF FLOW TO LOW POINTS.
8. PROVIDE CLEARANCES FOR MAINTENANCE OF EQUIPMENTS, VALVES AND FITTINGS.
9. PURGE AFTER PRESSURE TEST IN ACCORDANCE WITH CANI-B149 (1-M86).
10. TEST SYSTEM IN ACCORDANCE WITH CANI-B149 (1-M86).

SPACING OF SUPPORTS FOR PIPING

NPS	MAXIMUM SPACING OF SUPPORT FT (M)
1/2" OR LESS HORIZONTAL	6 (2)
3/4" - 1" HORIZONTAL	8 (2.5)
1-1/4" - 2-1/2" HORIZONTAL	10 (3)
ALL SIZES VERTICAL	EVERY FLOOR BUT NOT MORE THAN 125% OF HORIZONTAL SPACING
TUBING ALL SIZES - VERTICAL AND HORIZONTAL	6 (2)

11. GAS PIPING OR TUBING SHALL BE IDENTIFIED BY ONE OF THE FOLLOWING:

A) THE ENTIRE PIPING OR TUBING SYSTEM SHALL BE PAINTED YELLOW;

MECHANICAL LEGEND

SYMBOL	DESCRIPTION
	EXISTING DUCTWORK TO REMAIN
	EXISTING DUCTWORK / EQUIPMENT / PIPING TO BE REMOVED
	NEW DUCTWORK
	EXISTING FLEXIBLE DUCTWORK TO REMAIN
	EXISTING FLEXIBLE DUCTWORK / CONTROL WIRING TO BE REMOVED
	NEW FLEXIBLE DUCTWORK
	EXISTING CONTROL WIRING TO REMAIN
	NEW CONTROL WIRING
	EXISTING S/A DUCTWORK DOWN (OR INTO PAGE) TO REMAIN
	EXISTING R/A DUCTWORK DOWN (OR INTO PAGE) TO REMAIN
	NEW S/A DUCTWORK DOWN (OR INTO PAGE)
	NEW R/A DUCTWORK DOWN (OR INTO PAGE)
	EXISTING S/A DUCTWORK UP (OR OUT OF PAGE) TO REMAIN
	EXISTING R/A DUCTWORK UP (OR OUT OF PAGE) TO REMAIN
	EXISTING RETURN AIR GRILLE TO REMAIN
	EXISTING RETURN AIR GRILLE TO BE REMOVED
	NEW RETURN AIR GRILLE
	EXISTING SUPPLY AIR DIFFUSER TO REMAIN
	EXISTING SUPPLY AIR DIFFUSER TO REMOVED
	NEW SUPPLY AIR VAV DIFFUSER
XXX-1	EQUIPMENT TAG
(T)	THERMOSTAT
	SPIN-ON BALANCING DAMPER
G	EXISTING GAS PIPING TO REMAIN
	BALANCING VALVE
	ISOLATION VALVE
	PIPE/DUCTWORK DOWN
SAN	EXISTING UNDERGROUND SANITARY DRAIN PIPING TO REMAIN
SAN	NEW UNDERGROUND SANITARY DRAIN PIPING
STMS	NEW STEAM SUPPLY PIPING
STMC	NEW STEAM CONDENSATE RETURN PIPING
	EXISTING DOMESTIC HOT WATER PIPING TO REMAIN
	NEW DOMESTIC HOT WATER PIPING
	EXISTING DOMESTIC COLD WATER PIPING TO REMAIN
	NEW DOMESTIC COLD WATER PIPING
CO	CLEAN OUT
FD, FFD	NEW FLOOR DRAIN OR FUNNEL FLOOR DRAIN
B/D	BALANCING DAMPER
S/A	SUPPLY AIR
R/A	RETURN AIR
O/A	OUTDOOR AIR
E/A	EXHAUST AIR
RTU	ROOFTOP UNIT
SAN	SANITARY
TSP	TRAP SEAL PRIMING DEVICE
BFP	BACKFLOW PREVENTION DEVICE
A / B / C	DIFFUSER, GRILLE, OR TERMINAL UNIT 'A' - INDICATES TYPE 'B' - INDICATES SIZE (INCH) 'C' - INDICATES CAPACITY (CFM)

SUMMERY OF SCOPE OF WORK

1.	RELOCATE EXISTIND RESIDENTIAL WASHER
2.	RELOCATE EXISTING EXHAUST DUCT WORK IN THE HOSE TOWER
3.	VENTILATION UPGRADE FOR THE BUNKER GEAR (CLOTH DUTY) ROOM

REV.	DATE	DESCRIPTION
3	2025-JUL-21	ISSUED FOR TENDER
2	2025-JUN-23	RE-ISSUED FOR REVIEW
1	2024-APR-12	RE-ISSUED FOR REVIEW
0	2024-MAR-06	ISSUED FOR REVIEW

Key Plan

True North

Engineer Logo

Spectra Engineering
250 SHEPPARD AVE EAST, SUITE#306, TORONTO, ONTARIO, M2N 6M9
TEL. (647) 478-5156
FAX (647) 478-5917

Client

Oshawa®

Drawing Overall Scale

AS SHOWN

Project Name & Address

City of Oshawa-Fire Station No.4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

MECHANICAL SERVICES
LEGEND AND SPECIFICATIONS

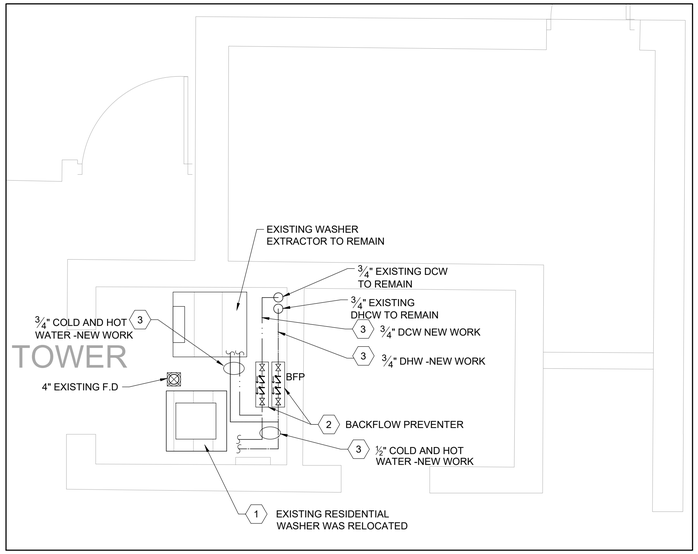
DATE: 2024-FEB-20
DESIGNED BY: R.A
DRAWN BY: R.A
APPROVED BY: M.A
PROJECT NO.: 1024011

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
M.AKHAVANBAZAZ
100088319
2025-JUL-21
PROVINCE OF ONTARIO

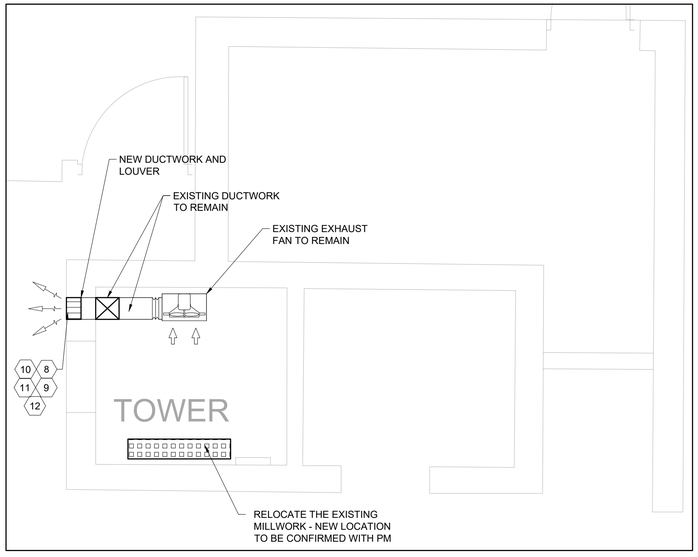
Drawing No.

M-100



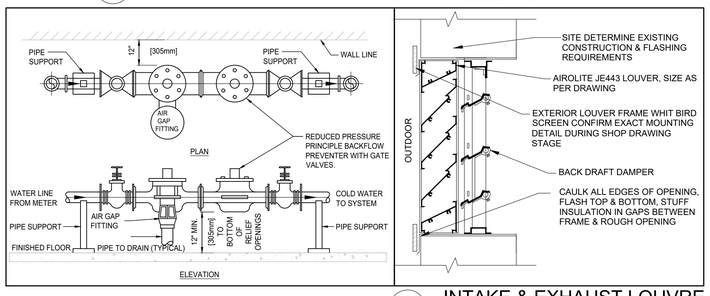
1 VENTILATION SYSTEM-FIRST FLOOR

Scale: 3/8" = 1'-0"



2 VENTILATION SYSTEM-FIRST FLOOR

Scale: 3/8" = 1'-0"



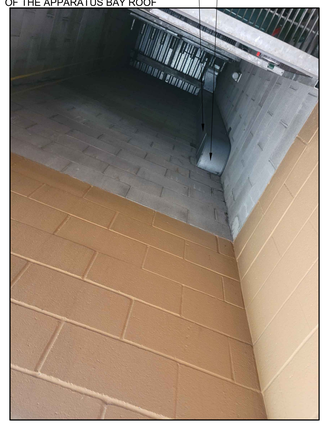
5 INTAKE & EXHAUST LOUVRE DETAIL

N.T.S

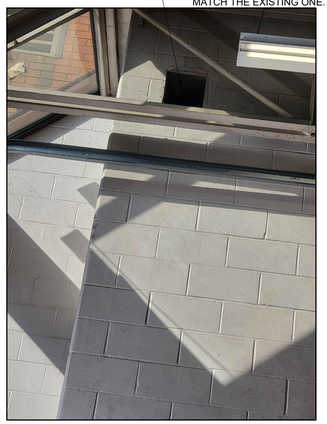
4 REDUCED PRES. BACKFLOW PREVENTER WITH GATE VALVES

Scale: N.T.S

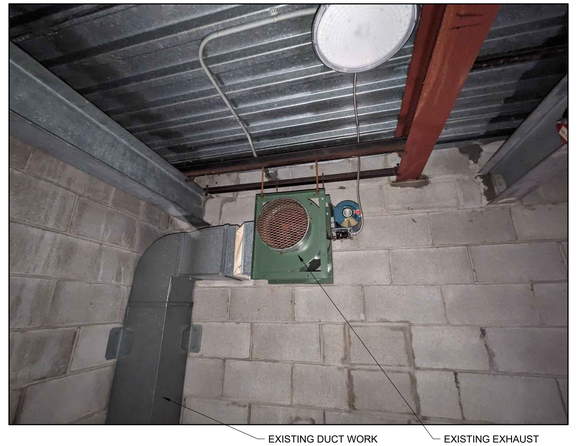
REMOVE THE EXISTING DUCTWORK UP TO THE 5 FT TOP OF THE APPARATUS BAY ROOF (7)



EXISTING DUCT WORK WILL BE DEMOLISHED (6)

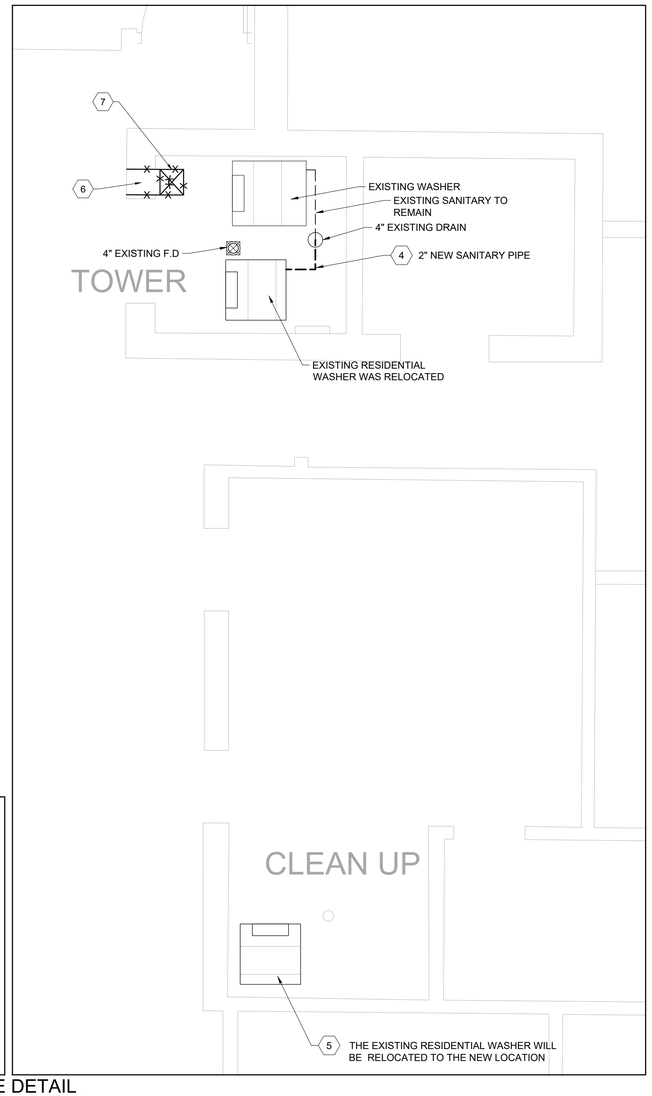


THE WALL IS TO BE FILLED AND REPAIRED ON BOTH SIDES TO MATCH THE EXISTING ONE. (6)



EXISTING DUCT WORK TO REMAIN

EXISTING EXHAUST FAN TO REMAIN



3 VENTILATION SYSTEM-ROOF

Scale: 3/8" = 1'-0"

GENERAL NOTES:

- ALL EXISTING SERVICES SHOWN HAS BEEN EXTRACTED FROM AVAILABLE BASE BUILDING DRAWINGS AND RANDOM SITE SURVEYS. NOT ALL EXISTING SERVICES/SITE INFORMATION HAS BEEN SHOWN NOR CAN THE INFORMATION SHOWN BE GUARANTEED FOR PRECISE ACCURACY. CONTRACTOR SHALL THEREFORE VISIT THE SITE PRIOR TO SUBMITTING A BID TO SATISFY THEMSELVES THAT ALL WORK SHOWN AND/OR SPECIFIED CAN BE CARRIED OUT IN ACCORDANCE WITH THE CONTRACT DOCUMENT.
- ALL EXISTING EQUIPMENT TAG NOS. USED ON THIS DRAWING ARE BASED ON EXISTING BASE BUILDING STANDARDS.
- ALL CUTTING/PATCHING/CORING OF WALLS AND FLOORS REQUIRED TO ACCOMMODATE NEW MECHANICAL WORK IS TO BE ARRANGED AND PAID FOR BY MECHANICAL CONTRACTOR. X-RAY FLOORS/CONCRETE WALLS PRIOR TO CORING/CUTTING.
- THE MECHANICAL DRAWINGS DO NOT SHOW ALL THE ARCHITECTURAL AND STRUCTURAL DETAILS. ANY SPECIFIC INFORMATION INVOLVING ACCURATE MEASURING OF THE BUILDING SHALL BE TAKEN FROM THE BUILDING DRAWINGS OR AT THE BUILDING. MAKE WITHOUT ADDITIONAL CHARGE, ANY NECESSARY CHANGES OR ADDITIONS TO THE RUNS OF DUCTS AND PIPES TO ACCOMMODATE THE ABOVE CONDITIONS.
- COORDINATE WITH ALL OTHER TRADES AND SITE SUPERINTENDENT ON ALL WORK.
- ALL ABANDONED PIPING WHICH ARE NO LONGER BEING USED SHALL BE REMOVED FROM THE SITE. CONTRACTOR SHALL ENSURE PRIOR TO REMOVAL OF ANY PIPING THAT THE SYSTEM IS COMPLETELY ISOLATED AND IS NOT ALIVE.
- WORK SHALL INCLUDE STARTUP OF ALL SYSTEMS, FURNISHING OF OPERATING AND MAINTENANCE INSTRUCTIONS, AND ONE (1) YEAR GUARANTEE, COMMENCING ON THE DATE OF ACCEPTANCE BY THE TENANT.
- CONNECTIONS BETWEEN EQUIPMENTS (SINK AND WASHER EXTRACTOR) AND PIPES SHALL BE MADE WHIT FLEXIBLE CONNECTOR.
- SUPPORT ALL NEW DUCTS AND PIPES FROM THE CEILING STRUCTURE.
- ACCORDING TO THE MECHANICAL DRAWING, WASHER EXTRACTOR IS TO BE MOUNTED ON NEW HOUSEKEEPING PADS REEFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- CONTRACTOR TO INCLUDE REMOVAL OF WALL/ T-BAR OR DRY WALL CEILINGS AND REINSTALLING & PAINTING TO MATCH EXISTING WHERE REQUIRED FOR REMOVAL OF EXISTING PIPING AND INSTALLATION OF NEW PIPING.
- THE CONTRACTOR IS ALLOWED TO MAKE ANY CHANGES TO THE PIPING AND DUCTWORK SYSTEM BASED ON THE FINAL SHOP DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR UPDATING THE DRAWINGS.
- ALL DIMENSIONS SHALL BE CHECKED BEFORE CONSTRUCTION BY CONTRACTOR.
- CONTRACTOR SHALL VISIT THE SITE TO DETERMINE THE EXTENT OF THE ALL EXISTING CONDITIONS PRIOR TO SUBMITTING ANY QUOTATION.
- ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS AND/OR EXISTING CONDITIONS ARE TO BE REFERRED TO CONSULTANT FOR INSTRUCTIONS BEFORE ANY WORK IS BEGUN.
- COORDINATE ALL CORE DRILLING AS REQUIRED. PROVIDE SLAB XRAY AND /OR SCANNING AS REQUIRED TO CONFIRM THE FLOOR OR WALL OPENING.
- COORDINATE WITH ALL OTHER TRADES AND SITE SUPERINTENDENT ON ALL WORK.
- THE CONTRACTOR IS TO PROVIDE YEARLY SCHEDULE TAG ON ALL OF THE VALVES.
- WHILE EVERY EFFORT HAS BEEN MADE TO SHOW THE FULL EXTENT OF THE MODIFICATIONS, PIPING OFFSETS AND INTERFERENCES WITH OTHER SERVICES HAVE NOT BEEN SHOWN. THE CONTRACTOR IS REQUIRED TO INSPECT THE SITE TO CONFIRM THE MODIFICATIONS CAN BE CARRIED OUT AND TO MEET THE DESIGN INTENT AND ALLOW FOR RE-ROUTING OR RELOCATION / REMOVAL & REINSTALLATION OF EXISTING SERVICES.
- CONTRACTOR SHALL ALLOW FOR RELOCATION/REMOVAL AND RE-INSTALLATION OF WIRING, CONDUITS, LIGHTING WHERE THE NEW PIPING AND DUCTWORK WILL BE INSTALLED.

DOMESTIC WATER NOTES:

- CONTRACTOR TO VERIFY EXACT LOCATION OF PIPING AND EXACT LOCATION OF CONNECTIONS ON SITE TO ACCOMMODATE WITH CONSULTANT REQUIREMENTS.
- CONTRACTOR TO INCLUDE FOR CUTTING / PATCHING / PAINTING WALLS IF REQUIRED FOR INSTALLATION OF NEW SERVICES. CONTRACTOR TO SEAL ALL REDUNDANT & NEW OPENINGS WITH FIRE RATED MATERIAL. THE EXACT LOCATION FOR PENETRATING THE WALL SHALL BE VERIFIED ON SITE.

1. RELOCATE AND INSTALL EXISTING RESIDENTIAL WASHER MACHINE C/W ASSOCIATED EQUIPMENTS ACCORDING TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
2. PROVIDE AND INSTALL BACKFLOW PREVENTER VALVE SERIES 4000B OR EQUAL FOR EXISTING DCW AND DHW PLUMBING C/W ASSOCIATED EQUIPMENT IN PIPES CONNECTED TO EXISTING RESIDENTIAL WASHER AND AN EXTRACTOR UNIT. THE CONTRACTOR WILL VERIFY THE EXACT LOCATION AND SIZE ON SITE. REFER TO THE PLUMBING SPECIFICATION FOR FIXTURE AND FAUCET REQUIREMENTS.
3. CONTRACTOR TO PROVIDE AND INSTALL Ø 3/4" DOMESTIC HOT AND COLD WATER COPPER PIPE INSIDE OF TOWER ROOM. EXACT LOCATION AND ROUTING SHALL BE DETERMINED BY CONTRACTOR ON SITE BASED ON SITE CONDITIONS. THE PIPE INSULATION SHALL BE MATCHED WITH THE PLUMBING SPECIFICATIONS.

SANITARY NOTES:

4. PROVIDE AND INSTALL Ø 50mm SANITARY PIPING TO SERVE THE RESIDENTIAL WASHER. RUN NEW SANITARY PIPING EXPOSED OVER THE FLOOR AT A MINIMUM SLOPE OF 1%. CONNECT TO THE EXISTING CLOSEST SANITARY ROUTE IN ACCORDANCE WITH OBC—THE CONTRACTOR WILL VERIFY THE INVERT POINTS OF SANITARY PIPING AT THE SITE. PROVIDE AND INSTALL A VENT PIPE FOR THE WASHER EXTRACTOR IN ACCORDANCE WITH OBC.
5. THE EXISTING RESIDENTIAL WASHER WILL BE RELOCATED TO A NEW LOCATION, AND EXISTING DOMESTIC HOT AND COLD WATER AND SANITARY PIPES WILL BE CAPPED AND SEALED.

DUCTWORK DEMOLITION NOTES:

6. REMOVE EXISTING EXHAUST/SUPPLY DUCT WORK INSIDE THE WALL.THE WALL IS TO BE FILLED AND REPAIRED ON BOTH SIDES TO MATCH THE EXISTING ONE.
7. THE CONTRACTOR WILL REMOVE THE EXISTING DUCTWORK UP TO THE 5 FT TOP OF THE APPARATUS BAY ROOF AND REPAIR THE WALL TO MATCH THE EXISTING ONE. (THE EXHAUST FAN TO REMAIN)

DUCTWORK NOTES:

8. CONTRACTOR TO PROVIDE AND INSTALL NEW EXHAUST AIR DUCT WORK, C/W ALL ASSOCIATED NEW FLEXIBLE OR METAL DUCT, DIFFUSERS, BALANCING DAMPERS, GRILLS SUPPORTS AS PER DRAWINGS. EXACT DUCT LAYOUT SHALL BE VERIFIED ON SITE.
9. PROVIDE AND INSTALL 350x350 BACKDRAFT DAMPER AT THIS APPROXIMATE LOCATION AS SHOWN. PROPER HOLE WILL BE IMPLEMENTED FOR THE DUCT AND LOUVER THAT SHOULD SEAL THE GAP BETWEEN THE DUCT AND THE WALL.
10. PROVIDE AND INSTALL A NEW LOUVER AS PER THE SCHEDULE TABLE AND COMPLETE WHIT A 1/2" BY 1/2" HEAVY-GAUGE WELDED GALVANIZED BIRD SCREEN ATTACHED TO LOUVER WITH EASILY REMOVABLE FASTENERS. THE WALL OPENING SHOULD BE SUPPORTED BY ANGLE BAR.
11. CONTRACTOR TO PROVIDE AND INSTALL SUITABLE AND ADEQUATE SUPPORTING FOR THE EQUIPMENT AND DUCTING SYSTEM AND PROVIDE SHOP DRAWINGS BEFORE ANY EXECUTIVE OPERATION.
12. CONTRACTOR TO ALLOW FOR CHANGE AND REPAIR WORKS AT ROOF/WALL/CEILING FOR INSTALLING MECHANICAL SERVICES. FIREPROOFING, PAINTING AND REPAIRING THE FACADE/WALL/ROOF TO MATCH THE EXISTING.

IMPORTANT NOTES:

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO BRING THE EQUIPMENTS (RESIDENTIAL WASHING MACHINE) INTO THE PROPOSED LOCATION. INCLUDE ALL COSTS ASSOCIATED WITH TRANSFERRING THE EQUIPMENTS TO THE PROPOSED LOCATION.
- SEAL ALL REDUNDANT & NEW OPENINGS WITH FIRE RATED MATERIAL. PATCH / FIX / PAINT WALLS OR DOORS TO MATCH EXISTING.
- CONTRACTOR TO REVIEW CONDITION OF THE EXISTING SPACE AND INCLUDE FOR RELOCATION /REMOVAL AND RE-INSTALLATION OF EXISTING PIPES, EQUIPMENTS, CONDUITS, WIRING, LIGHTING, CEILING, ETC IF REQUIRED TO ALLOW INSTALLATION OF NEW PIPES AND CHIMNEYS.
- ACCORDING TO THE MECHANICAL DRAWING, ALL NEW EQUIPMENT IS TO BE MOUNTED ON NEW HOUSEKEEPING PADS REEFER TO STRUCTURAL DRAWINGS.
- THE CONTRACTOR IS ALLOWED TO MAKE ANY CHANGES TO THE PIPING SYSTEM BASED ON THE FINAL SHOP DRAWINGS. THE CONTRACTOR IS RESPONSIBLE FOR UPDATING THE DRAWINGS.
- PROVIDE AND INSTALL NEW EQUIPMENTS AT LOCATION SHOWN AS PER EQUIPMENT SCHEDULE AND IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTION. CONTRACTOR TO COORDINATE EXACT LOCATION ON SITE DEPENDING ON SITE CONDITIONS. COMMISSION THE NEW EQUIPMENTS AND SUBMIT THE REPORT FOR ENGINEERS REVIEW.
- CONTRACTOR TO ALLOW FOR ALL COSTS ASSOCIATED WITH HIRING FIRE WATCH PERSONNEL TO SUPERVISE THE FIRE HAZARD WHERE WELDING IS REQUIRED FOR CONSTRUCTION / INSTALLATION OF SUPPORTS, DUCTWORK, ETC.
- REFER TO STRUCTURAL DRAWINGS FOR LINTEL DETAIL. PATCH AND WATER SEAL ALL WALL PENETRATIONS.
- HAVE THE WORK INSPECTED AND CERTIFIED BY THE TSSA. AT THE END OF THE WORK, THE NEW PLANT SHALL BE FULLY TSSA-CERTIFIED.
- CONTROL CONTRACTOR TO MODIFY EXISTING PANELS AS REQUIRED.
- THE CONTRACTOR IS RESPONSIBLE FOR UPDATING THE DRAWINGS.
- ALL PIPING MUST BE SUPPORTED FROM ROOF/CEILING STRUCTURE, THE INSTALLATION DETAILS MUST BE SUBMITTED TO THE CONSULTANT FOR REVIEW.
- ALL DIMENSIONS SHALL BE CHECKED BEFORE CONSTRUCTION BY CONTRACTOR.
- CONTRACTOR SHALL ALLOW FOR RELOCATION/REMOVAL AND RE-INSTALLATION OF WIRING, CONDUITS, LIGHTING WHERE THE NEW PIPING AND CHIMNEYS WILL BE INSTALLED.
- INCLUDE FOR CUTTING / PATCHING / PAINTING WALLS, ROOF, FENCE AND DOOR IF REQUIRED FOR INSTALLATION OF NEW SERVICES.
- MECHANICAL CONTRACTOR SHALL CONNECT ALL NEW PIPING AND EQUIPMENT TO THE BUILDING GROUNDING SYSTEM.
- MECHANICAL CONTRACTOR SHALL ALL PIPING ON THE FLOOR REPRESENTS A TRIPPING HAZARD, PROVIDE CHECKERED ALUMINUM RAMP COVERS.

AIR TERMINAL SCHEDULE

TAG	DESCRIPTION	MANUFACTURER	MODEL	MATERIAL	MOUNTING	COMMENTS
A	EXHAUST	GREENHECK OR AN APPROVED EQUAL	ESJ-202	ALUMINUM	WALL	14"x14" SQUARE LOUVER-2" DEPTH-EXTRUDED ALUMINUM-HORIZONTAL RAIN-WIND DRIVEN RAIN WHIT BIRD SCREEN
A	BACKDRAFT DAMPER	GREENHECK OR AN APPROVED EQUAL	WD-320	GALVANIZED STEEL	WALL	14"x14" SQUARE -VERTICAL MOUNT

REV.	DATE	DESCRIPTION
3	2025-JUL-21	ISSUED FOR TENDER
2	2025-JUN-23	RE-ISSUED FOR REVIEW
1	2024-APR-12	RE-ISSUED FOR REVIEW
0	2024-MAR-20	ISSUED FOR REVIEW

Key Plan

True North

Engineer Logo
Spectra Engineering
250 SHEPPARD AVE EAST, SUITE#306, TORONTO, ONTARIO, M2N 6M9
TEL. (647) 478-5156
FAX.(647) 478-5917

Client

Oshawa

Drawing Overall Scale

AS SHOWN

Project Name & Address

City of Oshawa-Fire Station No.4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

MECHANICAL SERVICES
SANITARY & DOMESTIC AND VENTILATION SYSTEM LAYOUT
FLOOR PLAN

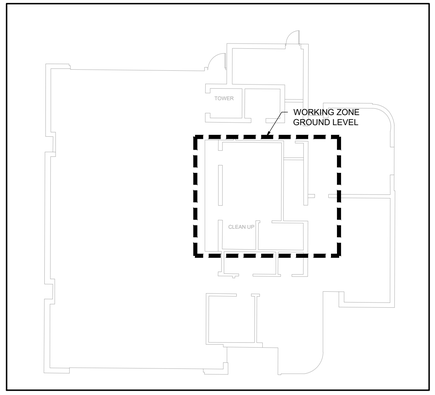
DATE:	2024-FEB-20
DESIGNED BY:	R.A
DRAWN BY:	R.A
APPROVED BY:	M.A
PROJECT NO.:	1024011

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
M.AKHAVANBAZAZ
100088319
2025-JUL-21
PROVINCE OF ONTARIO

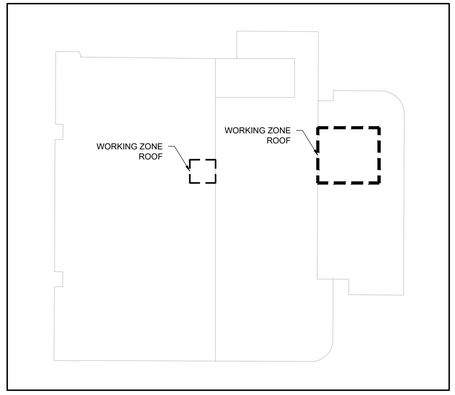
Drawing No.

M-300



1 KEY PLAN - GROUND LEVEL

Scale: 1/16" = 1'-0"



2 KEY PLAN - ROOF LEVEL

Scale: 1/16" = 1'-0"

MAKE UP AIR UNIT

TAG	QTY.	LOCATION	MANUFACTURER	MODEL	KW	BTU/H	MAX CFM @ 0.2" STATIC	TEMP RISE °F	ELECTRICAL (V/Ph/Hz)	MOTOR	MOTOR FLA	DUCT COLLAR	REMARKS
MUA-1	1	BUNKER GEAR ROOM	THERMOLEC OR APPROVED EQUAL	FER-8-6-240/1	6	20,472	300	60	240/1/60	⅓₆ HP	0.4	8"	

NOTE:

EXHAUST FAN SCHEDULE

TAG	QTY.	SERVICES	LOCATION	MAKE	MODEL	DRIVE TYPE	AIR FLOW (CFM)	PERFORMANCE DATA		MOTOR		DIMENSIONS (WxDxH)(INCH)	OPENING (INCH)	WEIGHTS (LBS)	REMARKS
								EXTERNAL SP	FAN (RPM)	HP	V/PH/Ø				
EF-2	1	BUNKER GEAR ROOM	ROOF	GREENHECK	GB-100	BELT DRIVE	500	0.5 IN.WG	1,593	½₀	115/1/60	17 x 22 x 27	17 x 17	41	1,2,3,4

NOTES: 1. MIN. HEIGHT OF ROOF CURB TO BE 18". 2. UNIT TO BE EQUIPPED WITH BACK DRAFT DAMPER 3. UNIT TO BE EQUIPPED WITH CURB ADAPTER. 4. UNIT TO BE EQUIPPED WITH BIRD SCREEN AND ORIFICE PLATE.

GRILLE AND DIFFUSER SCHEDULE

TAG	TYPE	LOCATION	MAKE	MODEL	QTY.	AC (FT SQR.)	SIZE (INCH)	REMARK
A	SUPPLY GRILL	BUNKER GEAR ROOM	EH PRICE OR APPROVED EQUAL	600 LOUVERED GRILL	1	0.39	8 X 8	1,2
B	RETURN GRILL	BUNKER GEAR ROOM	EH PRICE OR APPROVED EQUAL	RCD	1	-	8 X 8	1,2

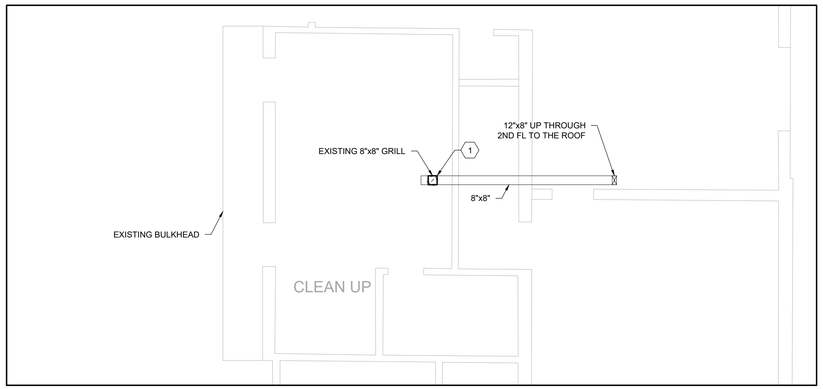
NOTES:
1. TO BE EQUIPPED WITH BALANCING DAMPER. 2. WHITE FINISH

8 EQUIPMENT SCHEDULE

Scale: N.T.S

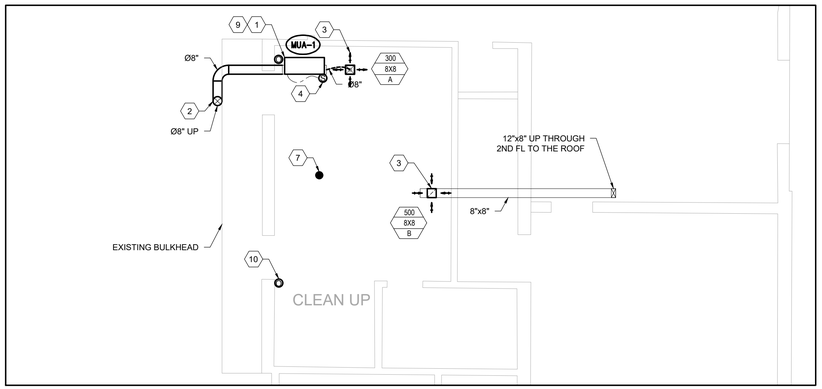
GENERAL NOTES:

1. ALL EXISTING SERVICES SHOWN HAS BEEN EXTRACTED FROM AVAILABLE BASE BUILDING DRAWINGS AND RANDOM SITE SURVEYS. NOT ALL EXISTING SERVICES/SITE INFORMATION HAS BEEN SHOWN NOR CAN THE INFORMATION SHOWN BE GUARANTEED FOR PRECISE ACCURACY. CONTRACTOR SHALL THEREFORE VISIT THE SITE PRIOR TO SUBMITTING A BID TO SATISFY THEMSELVES THAT ALL WORK SHOWN AND/OR SPECIFIED CAN BE CARRIED OUT IN ACCORDANCE WITH THE CONTRACT DOCUMENT.
2. ALL EXISTING EQUIPMENT TAG NOS. USED ON THIS DRAWING ARE BASED ON EXISTING BASE BUILDING STANDARDS.
3. ALL CUTTING/PATCHING/CORING OF WALLS AND FLOORS REQUIRED TO ACCOMMODATE NEW MECHANICAL WORK IS TO BE ARRANGED AND PAID FOR BY MECHANICAL CONTRACTOR. X-RAY FLOORS/CONCRETE WALLS PRIOR TO CORING/CUTTING.
4. THE MECHANICAL DRAWINGS DO NOT SHOW ALL THE ARCHITECTURAL AND STRUCTURAL DETAILS. ANY SPECIFIC INFORMATION INVOLVING ACCURATE MEASURING OF THE BUILDING SHALL BE TAKEN FROM THE BUILDING DRAWINGS OR AT THE BUILDING. MAKE WITHOUT ADDITIONAL CHARGE, ANY NECESSARY CHANGES OR ADDITIONS TO THE RUNS OF DUCTS AND PIPES TO ACCOMMODATE THE ABOVE CONDITIONS.
5. COORDINATE WITH ALL OTHER TRADES AND SITE SUPERINTENDENT ON ALL WORK.
6. ALL ABANDONED PIPING WHICH ARE NO LONGER BEING USED SHALL BE REMOVED FROM THE SITE. CONTRACTOR SHALL ENSURE PRIOR TO REMOVAL OF ANY PIPING THAT THE SYSTEM IS COMPLETELY ISOLATED AND IS NOT ALIVE.
7. WORK SHALL INCLUDE STARTUP OF ALL SYSTEMS, FURNISHING OF OPERATING AND MAINTENANCE INSTRUCTIONS, AND ONE (1) YEAR GUARANTEE, COMMENCING ON THE DATE OF ACCEPTANCE BY THE TENANT.
8. CONNECTIONS BETWEEN DUCTS AND FANS/AHUs SHALL BE MADE WITH 6" LONG FLEXIBLE NEOPRENE.
9. SUPPORT ALL NEW DUCTS AND PIPES FROM THE CEILING/ROOF STRUCTURE.
10. ALL ROOFING AND PENETRATIONS SHALL BE DONE IN STRICT ACCORDANCE WITH TDSB STANDARD DETAILS AND ONLY BY TDSB APPROVED ROOFING TRADES. IF THE ROOF IS UNDER WARRANTY, ONLY THE WARRANTY HOLDER SHALL BE RETAINED TO PERFORM THE WORK.
11. REMOVE ALL EXISTING PNEUMATIC CONTROL DEVICES. NEW CONTROL SYSTEM TO BE DDC AS PER TDSB STANDARD.
12. ALL REDUNDANT WALL / ROOF OPENINGS SHALL BE SEALED AND FIRE-STOPPED AS REQUIRED.



3 HVAC DEMOLITION PLAN - BUNKER GEAR ROOM - GROUND LEVEL

Scale: 3/16" = 1'-0"

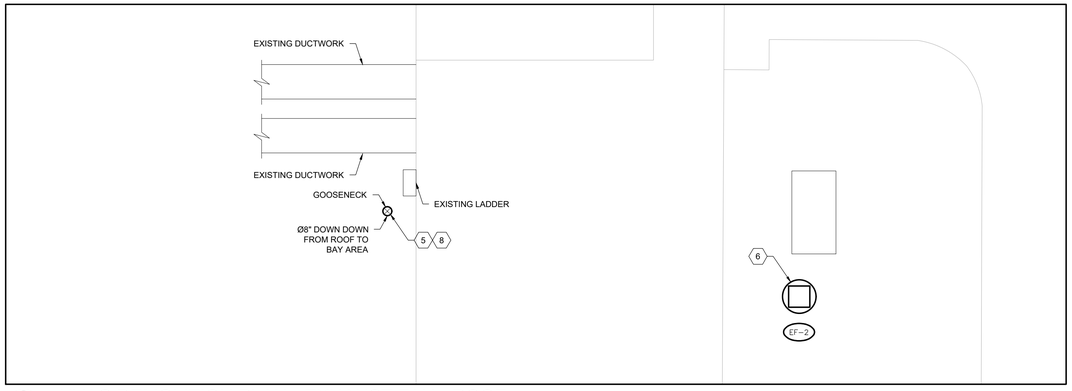


5 HVAC DEMOLITION PLAN - BUNKER GEAR ROOM - GROUND LEVEL

Scale: 3/16" = 1'-0"

4 HVAC DEMOLITION PLAN - EXHAUST FAN - ROOF

Scale: 3/16" = 1'-0"



6 HVAC DEMOLITION PLAN - EXHAUST FAN - ROOF

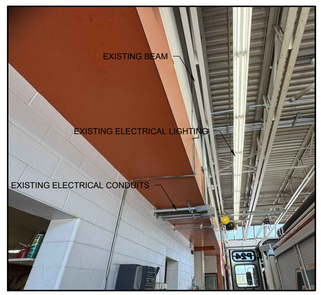
Scale: 3/16" = 1'-0"

DEMOLITION NOTES:

1. DEMOLISH THE EXISTING EXHAUST GRILL C/W ASSOCIATE CONNECTION.
2. DISCONNECT THE EXISTING BUNKER GEAR ROOM EXHAUST FAN, INCLUDING ALL ASSOCIATED CONNECTIONS, WIRING, AND CONTROLS. THE CONTRACTOR SHALL COORDINATE WITH THE CLIENT TO DETERMINE WHETHER THE EXHAUST FAN IS TO BE DEMOLISHED OR HANDED OVER TO THE CLIENT.
3. CONTRACTOR TO ALLOW FOR MODIFICATION OF THE EXISTING CURB TO SUIT THE NEW EQUIPMENT. REFER TO STRUCTURAL DRAWINGS FOR MORE DETAIL.
4. EXISTING ROOFTOP UNIT, DUCTWORK TO REMAIN.

IMPORTANT NOTES:

- MAKE GOOD ALL DAMAGES TO CEILINGS, WALLS, EXISTING EQUIPMENT AND/OR SYSTEM.



7 BAY AREA

Scale: 1/16" = 1'-0"

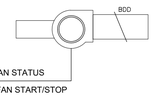
DESIGN NOTES:

1. PROVIDE AND INSTALL A NEW PACKAGED ELECTRIC MAKE-UP AIR UNIT COMPLETE WITH ALL ASSOCIATED CONNECTIONS, WIRING, SUPPORTS, CONTROLS, AND ACCESSORIES. INSTALL UNIT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND ALL APPLICABLE CODES AND STANDARDS.
2. PROVIDE AND INSTALL A NEW INSULATED DUCTWORK AS SHOWN ON THE DRAWING C/W ALL CONNECTION AND SUPPORTS. THE EXACT PATH MUST BE VERIFIED ON SITE. CONTRACTOR TO ALLOW FOR ADJUSTMENT OF THE DUCTWORK DUE TO EXISTING SITE CONDITION AND EXISTING BEAM ON THE CEILING.
3. PROVIDE AND INSTALL NEW SUPPLY AND RETURN DIFFUSERS/GRILLES COMPLETE WITH ASSOCIATED BALANCING DAMPERS AS PER THE SCHEDULE. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. OBTAIN AIR BALANCING REPORT AND SUBMIT TO THE CONSULTANT FOR REVIEW.
4. PROVIDE AND INSTALL A NEW TEMPERATURE SENSOR ON THE DISCHARGE OF THE MUA AND CONNECT TO THE NEW MAKE-UP AIR UNIT.
5. CONTRACTOR TO RUN NEW DUCTWORK FROM THE BUNKER GEAR (DUTY CLOTHES) ROOM THROUGH THE BAY AREA AND TERMINATE AT ROOF LEVEL WITH A GOOSENECK, INSTALLED A MINIMUM OF 18" ABOVE THE ROOF SURFACE. THE EXACT DUCT ROUTING SHALL BE VERIFIED ON SITE. CONTRACTOR SHALL ALLOW FOR ANY REQUIRED MODIFICATIONS OR ADDITIONS TO THE SHOWN DUCTWORK TO AVOID INTERFERENCE WITH EXISTING STRUCTURAL AND ELECTRICAL SYSTEMS.
6. PROVIDE AND INSTALL A NEW EXHAUST FAN COMPLETE WITH ALL ASSOCIATED CURB ADAPTERS, BACK DRAFT DAMPER, WIRING, CONNECTIONS, AND SUPPORTS. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND ALL APPLICABLE CODES.
7. CONTRACTOR TO ALLOW FOR PARTIAL MODIFICATION OF THE EXISTING PLASTER/DRYWALL CEILING/WALL FOR INSTALLATION OF THE NEW DUCTWORK. MAKE GOOD OF ALL DAMAGES TO THE CEILING. PATCH AND PAINT TO MATCH THE EXISTING.
8. CONTRACTOR TO ALLOW FOR MODIFICATION AND ADDITION OF THE DUCT WORK. GOOSENECK MUST NOT BE TERMINATE WITHIN 10FT OF THE EXHAUST, VENT OPENING.
9. PROVIDE AND INSTALL A NEW 36"X36" FIRE-RATED, CEILING-MOUNTED ACCESS PANEL FOR MAINTENANCE PURPOSES. INSTALLATION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. EXACT SIZE & LOCATION TO BE VERIFIED ON SITE BY THE CONTRACTOR BASED ON ACCESSIBILITY TO THE UNIT.
10. CONTRACTOR TO PROVIDE AND INSTALL SUFFICIENT AMOUNT OCCUPANCY SENSOR. SENSORS SHOULD BE WALL MOUNTED TYPE AND INSTALLED AT ELEVATION OF 8 FEET ABOVE FINISHED FLOOR AND ANGLED DOWN. THE NUMBER OF THE SENSORS MUST BE DETERMINED BY THE CONTROL CONTRACTOR. INTERLOCK THE NEW SENSORS TO THE NEW MUA AND EXHAUST FAN.

IMPORTANT NOTES:

- MAKE GOOD ALL DAMAGES TO CEILINGS, WALLS, EXISTING EQUIPMENT AND/OR SYSTEM.
- CONTRACTOR TO PROVIDE FIRE STOP FOR ALL PENETRATION.

EXHAUST FANS



CONTROL SEQUENCE – EXHAUST FANS

NON INTERLOCKED EXHAUST FANS

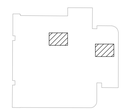
1. UNOCCUPIED MODE
   - EXHAUST FANS SHALL BE OFF.
2. OCCUPIED MODE
   - EXHAUST FANS SHALL BE ON.
   - EXHAUST FAN MUST BE INTERLOCKED WITH WITH MUA-1. EXHAUST FAN TO SHALL BE ON WHEN MUA-1 IS ON.

8 EXHAUST FAN CONTORL SCHEMATIC

Scale: N.T.S

REV.	DATE	DESCRIPTION
1	2025-JUL-21	ISSUED FOR TENDER
0	2025-JUN-23	RE-ISSUED FOR REVIEW

Key Plan



True North

Engineer Logo

Spectra Engineering

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TEL. (647) 478-5156
FAX (647) 478-5917

Client

Oshawa®

Drawing Overall Scale

AS SHOWN

Project Name & Address

City of Oshawa-Fire Station No.4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

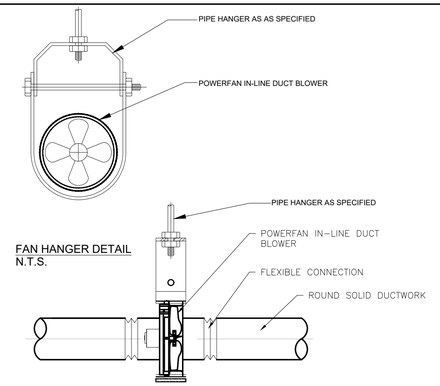
MECHANICAL SERVICES
BUNKER GEAR ROOM VENTILATION
GROUND LEVEL & ROOF

DATE:	28-MAY-2025
DESIGNED BY:	S.Z
DRAWN BY:	S.Z
APPROVED BY:	M.A
PROJECT NO.:	1025053

Engineer / Architect Stamp

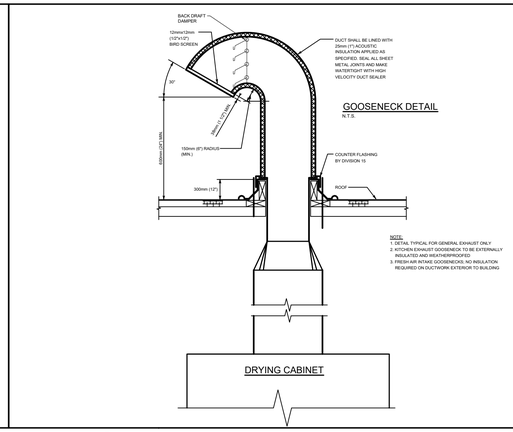
Drawing No.

M-301

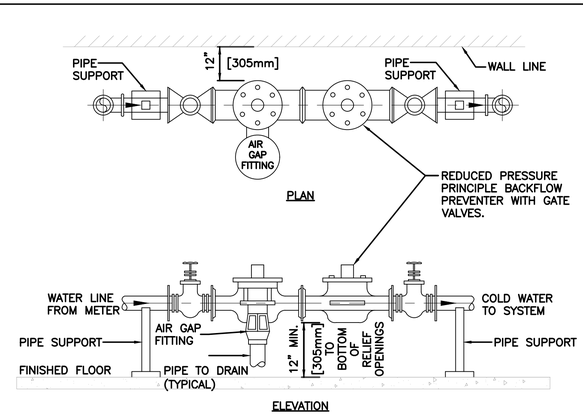


- REFER TO STRUCTURAL DRAWING S-01 FOR FAN HANGER DETAIL

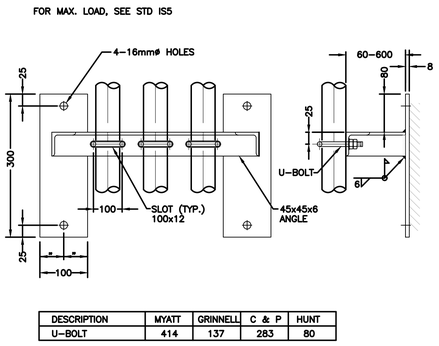
1 ROOF EXHAUST FAN DETAIL
Scale: N.T.S



2 GOOSENECK DETAIL
Scale: N.T.S

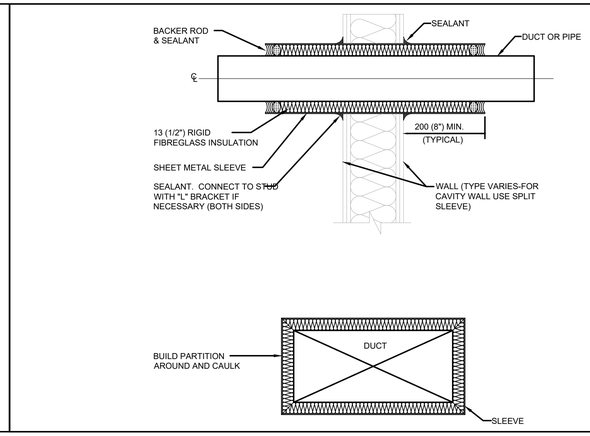


3 REDUCED PRESSURE BACKFLOW PREVENTER WITH GATE VALVES
Scale: N.T.S

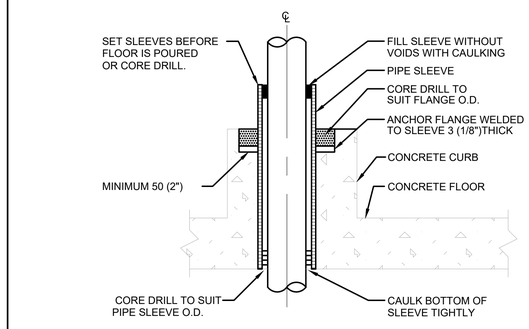


DESCRIPTION	MYATT	GRINNELL	C & P	HUNT
U-BOLT	414	137	283	80

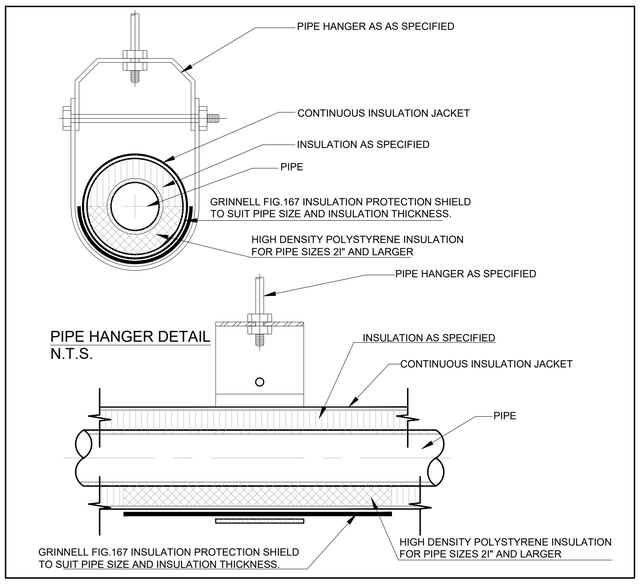
4 PS3-09 WALL MOUNTED MULTIPLE PIPE SUPPORT
Scale: N.T.S



5 CONCEPT FOR SEALING DUCT PENETRATION THROUGH WALLS
Scale: N.T.S



6 WATERPROOF PIPE SLEEVE THROUGH CONCRETE FLOOR
Scale: N.T.S



7 PIPE HANGER DETAIL
Scale: N.T.S

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Project Name & Address

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BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

MECHANICAL SERVICES
STANDARD DETAILS

DATE:	28-MAY-2025
DESIGNED BY:	S.Z
DRAWN BY:	S.Z
APPROVED BY:	M.A
PROJECT NO.:	1025053

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
M.AKHAVANBAZAZ
100088319
2025-JUL-21
PROVINCE OF ONTARIO

Drawing No.

M-700

GENERAL NOTES

1. THESE GENERAL NOTES APPLY TO ALL DRAWINGS.

2. WHERE USED, INDIVIDUAL WORDINGS SUCH AS 'SUPPLY', 'INSTALL', OR 'PROVIDE' SHALL MEAN TO INCLUDE ALL LABOR, MATERIAL AND SERVICES NECESSARY TO SUPPLY, INSTALL AND CONNECT THE PRODUCTS AND SERVICES SPECIFIED, UNLESS NOTED OTHERWISE.

3. IT IS MANDATORY FOR THE ELECTRICAL CONTRACTOR TO VISIT THE SITE PRIOR TO BIDDING AND REVIEW EXISTING CONDITIONS AND DEMOLITION SCOPE OF WORK TO SUIT EXISTING ARCHITECTURAL, STRUCTURAL AND MECHANICAL SITE CONDITIONS, DRAWINGS, SPECIFICATIONS AND ALL CONTRACT DOCUMENTS. NO EXTRA WILL SUBSEQUENTLY BE ALLOWED TO COVER ANY SUCH ERROR, OMISSION AND/OR OVERSIGHT FOR NOT HAVING MADE A THOROUGH INSPECTION OF THE GROUNDS. EXISTING CONDITIONS, DRAWINGS, SPECIFICATION AND DESIGN INTENT. THE ELECTRICAL CONTRACTOR SHALL NOTE THAT THE EXISTING BUILDING WILL REMAIN IN OPERATION THROUGHOUT DEMOLITION/CONSTRUCTION. ALLOW FOR ANY WORK REQUIRED TO BE DONE WHICH MAY AFFECT POWER SUPPLY AND OPERATION OF THE BUILDING TO BE CARRIED OUT AFTER HOURS OR AT A TIME CONVENIENT TO THE BUILDING MANAGEMENT. PROVIDE TEMPORARY SERVICES AS REQUIRED TO ENSURE CONTINUED OPERATION AT ALL TIMES.

4. CAREFULLY EXAMINE OTHER EXISTING UTILITY LINES SUCH AS GAS, WATER ETC. PRIOR TO START THE ELECTRICAL CONSTRUCTION WORKS AND COORDINATE WITH OTHER TRADES AND REPORT OF ANY DISCREPANCY PRIOR TO PROCEEDING.

5. ALL EXISTING SERVICES THAT ARE NOT SHOWN ON THE DRAWINGS AND ARE EXPOSED DURING DEMOLITION/CONSTRUCTION SHALL BE VERIFIED BY THE CONTRACTOR AS TO THE SOURCE AND ROUTING AND SHALL BE REPORTED TO THE CONSULTANT WITH PROPOSED RESOLUTIONS.

6. THESE DRAWINGS SHALL BE READ & PRICED IN CONJUNCTION WITH ARCHITECTURAL, MECHANICAL. AND STRUCTURAL DRAWINGS AND SPECIFICATIONS AS WELL AS ALL OTHER DOCUMENTS FORMING THIS BID. INCLUDE FOR THE SUPPLY AND INSTALLATION OF POWER, SYSTEMS, AND LIGHTING AS PER THE COMPLETE CONSTRUCTION DOCUMENTS. NO EXTRA COST WILL BE ACCEPTED IN FAILURE TO OBTAINING AND/OR REVIEW OF SUCH DOCUMENTS. REFER TO ARCHITECTURAL, ELECTRICAL, STRUCTURAL AND MECHANICAL LAYOUTS IN CONJUNCTION FOR EXACT LOCATION OF ALL EQUIPMENT. REPORT ANY DISCREPANCIES TO THE ELECTRICAL ENGINEER PRIOR TO COMMENCING WORK. NO EXTRA WILL BE PROVIDED AS A RESULT OF A FAILURE TO DO SO.

7. IT IS MANDATORY THAT ELECTRICAL WORK CONFORM TO ALL APPLICABLE CODES (INCLUDING THE ONTARIO BUILDING, FIRE, AND ONTARIO ELECTRICAL SAFETY CODE), BASE BUILDING (BOARD) STANDARDS, AND THE STANDARDS SET BY ANY AND ALL LOCAL AUTHORITIES HAVING JURISDICTION.

8. LOCATIONS OF ALL NEW DISCONNECT SWITCHES AND STARTERS SHALL BE CONFIRMED WITH DIVISION 15 PRIOR TO INSTALLATION. STARTERS FOR EXHAUST FANS SHALL BE SUPPLIED AND INSTALLED BY DIV. 16.

9. ALL ELECTRICAL WORK SHALL BE INSPECTED BY THE ELECTRICAL SAFETY AUTHORITY (ESA). ARRANGE AND PAY FOR ALL INSPECTIONS REQUIRED FOR THE DURATION OF THE PROJECT.

10. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR HIRING A FIRE WATCH AS REQUIRED BY CODE. LOCAL AUTHORITIES HAVING JURISDICTION. AND DURING ANY ALTERATION OR DOWNTIME OF THE ARE ALARM SYSTEM. FIRE WATCH SHALL BE PRESENT THROUGHOUT THE DOWNTIME DURATION.

11. DURING CONSTRUCTION, IT IS CRITICAL THAT THE ELECTRICAL CONTRACTOR COORDINATES ITS WORK WITH ALL OTHER TRADES. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR REVIEWING THE SCOPE OF WORK OF OTHER TRADES (INCLUDING, BUT NOT LIMITED TO. ARCHITECTURAL. MECHANICAL, STRUCTURAL. MILLWORK. ETC.) IN CONJUNCTION WITH THE PROPOSED ELECTRICAL SCOPE OF WORK. THE ELECTRICAL CONTRACTOR SHALL ESPECIALLY REVIEW MECHANICAL CONVECTOR AND NEW MILLWORK LOCATIONS AND IDENTIFY ANY POSSIBLE INTERFERENCES WITH THE PROPOSED ELECTRICAL WORK PRIOR TO ROUGH-IN (I.E. RECEPTACLE LOCATIONS SHALL BE SHIFTED FROM THE PROPOSED LOCATION TO ANOTHER LOCATION SHOULD THE CONTRACTOR FIND OUT DURING COORDINATION THAT MECHANICAL CONVECTORS ARE BEING INSTALLED IN A CERTAIN LOCATION. SIMILARLY. RECEPTACLE HEIGHTS SHALL BE ADJUSTED IN THE EVENT THAT NEW. PROPOSED MILLWORK MIGHT BLOCK PROPOSED RECEPTACLES. NO EXTRA WILL BE PERMITTED OF AN ERROR RELATED TO A LACK OF COORDINATION ON SITE.

12. THE ELECTRICAL CONTRACTOR SHALL LABEL ALL NEW AND EXISTING LIGHT SWITCHES. RECEPTACLES AND JUNCTION BOXES COVERPLATES WITH THE PANEL NAME AND BREAKER IT IS FED FROM. ALL LABELING OF ELECTRICAL DEVICES SHALL BE DONE SO WITH A LABELMAKER ONLY. NO HAND WRITTEN LABELS WILL BE PERMITTED.

13. WHERE NEW PARTITIONS ARE BEING CONSTRUCTED. ALL WRING AND RACEWAYS SHALL BE EMBEDDED IN THE CONSTRUCTION OF THE NEW WALLS AND ALL BACK BOXES SHALL BE RECESSED. WHERE NEW DEVICES/SYSTEMS ARE PROPOSED ON EXISTING BLOCK WALLS, UTILIZE WIREMOLD 500/700 SERIES AS RACEWAY FOR ALL NEW PROVIDE WIREMOLD BACKBOXES FOR SURFACE MOUNTED, INTERIOR APPLICATIONS. THE USE OF SHEET METAL BOXES WILL NOT BE PERMITTED. WHENEVER POSSIBLE, ALL CONDUIT INSTALLATION AT FRONT OF HOUSE (FOH: OFFICES, CORRIDORS, STAIRCASE, GYMNASIUM, CLASSROOMS, ETC.) TO BE CONCEALED IN FALSE CEILINGS AND WALLS. ALL EXPOSED CONDUITS AT FOH TO BE PAINTED SAME COLOUR AS ARCHITECTURAL FINISH TO BLEND IN. BACK OF HOUSE (BOH: ELECTRICAL / MECHANICAL / FAN ROOMS, ETC.) CONDUIT INSTALLATION TO RUN EXPOSED WITHOUT PAINT.

14. IN THE EVENT OF ANY DISCREPANCY BETWEEN THE ELECTRICAL DRAWINGS AND SPECIFICATIONS, ALLOW FOR THE HIGHEST-PRICED OPTION IN THE TENDER PRICE.

15. ALL WIRING USED ON THIS PROJECT SHALL BE RUN IN RACEWAYS. NO USE OF ARMOURED (BX) CABLE WILL BE PERMITTED WITH THE EXCEPTION OF RUNS NOT TO EXCEED 5' BETWEEN A LIGHT FIXTURE AND THE RESPECTIVE JUNCTION BOX.

16. COORDINATE DISRUPTION OF ELECTRICAL SERVICES (FIRE ALARM, POWER, ETC.) WITH THE PROJECT SUPERVISOR WITH AT MINIMUM 5 DAYS ADVANCED NOTICE. SEEK APPROVAL PRIOR TO EXECUTION.

17. SEAL AND FIRESTOP ALL WALL, FLOOR, AND ROOF PENETRATIONS THROUGH FIRE RATED ASSEMBLIES.

18. MAKE GOOD ALL SURFACES, INCLUDING CORE HOLES FROM DEMOLISHED OR RELOCATED EQUIPMENT/DEVICES, AFTER COMPLETION OF WORK.

19. ALL MODIFICATIONS TO THE FIRE ALARM SYSTEM SHALL BE COMPLETED BY THE BASE BUILDING FIRE ALARM CONTRACTOR/VENDOR/MANUFACTURER. NEW FIRE ALARM DEVICES SHALL MATCH EXISTING. CONNECT NEW FIRE ALARM DEVICES TO EXISTING CIRCUITS WITH SPARE CAPACITY. PROVIDE NEW FIRE ALARM CIRCUITS AS REQUIRED. ALLOW FOR ALL ASSOCIATED COSTS AND ADDITIONAL COMPONENTS INCLUDING, BUT NOT LIMITED TO; ASSOCIATED EQUIPMENT, DEVICES, PROGRAMMING, TESTING, AND VERIFICATION TO MAKE SYSTEM OPERATIONAL AND CODE COMPLIANT. FIRE ALARM SYSTEM SHALL BE INSTALLED AS PER LATEST EDITION OF CAN/ULC-S524. FIRE ALARM VERIFICATION SHALL BE COMPLETED AS PER LATEST EDITION OF CAN/ULC-S537.

20. REWORK AND EXTEND EXISTING FEEDERS, CONDUITS AND JUNCTION BOXES AS REQUIRED TO ACCOMMODATE NEW INSTALLATIONS.

21. ALLOW FOR SCANNING, X-RAY, AND CORING AS REQUIRED.

22. THE CONTRACTOR SHALL REPLACE OR REPAIR ANY ITEMS WHICH ARE DAMAGED DUE TO THIS WORK AT NO EXTRA COST TO THE BUILDING OWNER.

23. CONFIRM EXACT POWER REQUIREMENTS AND RECEPTACLE TYPES FOR SPECIAL EQUIPMENT WITH MANUFACTURER PRIOR TO INSTALL. PROVIDE HARDWIRE CONNECTION IN LIEU OF RECEPTACLES OR VICE VERSA, AS REQUIRED.

24. ALL CONDUIT INSTALLATION AT ROOF LEVEL TO BE RIGID METTALIC CONDUIT. ALL INDOOR CONDUITS TO BE EMT. CONDUIT INSTALLATION AT ROOFTOP TO BE SUPPORTED WITH UNISTRUTS MOUNTED ON POLYCARBONATE BASE ROOFTOP SUPPORT SYSTEM THAT DOES NOT REQUIRE ROOFTOP MEMBRANE PENETRATION.

25. ALL FINAL CONNECTIONS TO MECHANICAL EQUIPMENT SHALL BE IN LIQUID TIGHT FLEXIBLE.

26. PROVIDE UPDATED, TYPE-WRITTEN PANEL DIRECTORIES AFTER COMPLETION OF WORK OF AFFECTED PANELS.

27. PROVIDE LAMACOID NAME PLATES WITH ENGRAVED LETTERS 0.4" (10 MM) HIGH, FOR ELECTRICAL EQUIPMENT BUT NOT LIMITED TO PANELS, SWITCHBOARDS, TRANSFORMERS, DISCONNECT SWITCHES, BREAKERS, CONTACTORS, RELAY PANELS, STARTERS, TVSS AND MISCELLANEOUS PANELS.
    27.1. NAME OF THE EQUIPMENT / NAME OF THE SUPPLY SOURCE
    27.2. RATED LOAD AMP (A) OR HORSEPOWER (HP) – VOLTAGE (V) – NUMBER OF PHASE (Ø) – NUMBER OF WIRE (W) – FREQUENCY (HZ).

28. UPON COMPLETION OF CONTRACT WORK, PRIOR TO SUBSTANTIAL PERFORMANCE INSPECTION, CONTRACTOR SHALL SUBMIT AS-BUILT DRAWINGS TO THE CONSULTANT/ENGINEER FOR REVIEW AND APPROVAL. CONTRACTOR SHALL SUBMIT HARD COPY AND CAD FORMAT 2004 VERSION UPDATED AS-BUILT DRAWINGS AS PART OF CLOSEOUT DOCUMENT.

29. PROVIDE CLOSEOUT DOCUMENTS WHICH INCLUDE 3 CDS OF ELECTRONIC COPY AND 1 3-RING BINDER HARD COPY OF CLOSEOUT DOCUMENTS WHICH SHALL INCLUDE BUT NOT LIMITED TO FOLLOWING:- ESA FINAL INSPECTION CERTIFICATE, STAMPED APPROVED SHOP DRAWINGS, WARRANTY LETTER, TEST REPORT/CERTIFICATE FROM THE MANUFACTURER, FIRE ALARM VERIFICATION REPORT, O & M MANUAL OF EQUIPMENT (IF ANY) AND AS-BUILT DRAWINGS (AUTOCAD 2004 AND PDF FORMAT)

30. WHERE EMT CONDUIT IS REQUIRED, PROVIDE COMPRESSION TYPE COUPLINGS (CAST FITTING AND SET-SCREW NOT ACCEPTABLE) AND WATERTIGHT GLAND CONNECTOR WITH FACTORY INSULATED THROATS AND TO BE FORGED STEEL.

31. THE CONTRACTOR SHALL REVIEW CONDITION OF EXISTING CEILING TILE(S) AND DRYWALL CEILING OF AFFECTED AREAS AND THEN REPORT FINDINGS E.G DAMAGED/QUESTIONED CEILING TILE(S) AND DRYWALL ETC. TO THE PROJECT SUPERVISOR/ENGINEER IN 2 WEEK ONCE TENDER AWARDED, OTHERWISE REPLACEMENT OF DAMAGED/QUESTIONED DRYWALL CEILING AND/OR CEILING TILE(S) SHALL BE DONE BY THE CONTRACTOR AFTER COMPLETION OF SYSTEM INSTALLATION. NO EXTRAS TO THE SCHOOL IS PERMITTED.

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	GENERAL
E, EX	Existing to Remain
ER	Existing to be demolished/removed
RR	Existing to be removed and reconnected
N	New material/equipment/services
REL	Material/equipment/services to be relocated.
REP	Existing in Relocated Position
WG	Wire Guard
U/F	Under Raised Floor
WP	Weather Proof/Water proof
NIC	Not In Contract
GFCI, GFI	Ground Fault Circuit Interrupter
VFD	Variable Frequency Drive
	LIGHTING FIXTURES Refer to Lighting Fixture Schedule for exact fixture specifications.
	Denotes new fluorescent luminaire.
	As above, connected to night light circuit.
	Luminaires ceiling or wall mounted respectively.
	As above, connected to night light circuit.
	Square aperture pot light.
	Fluorescent strip light
	Fluorescent strip light
	As above, connected to night light circuit.
NL	Connected to light light circuit.
	EMERGENCY LIGHTING
	Ceiling or wall mounted illuminated exit sign. Shaded area indicates illuminated face. Provide directional arrows as indicated on plans.
	Ceiling or wall mounted illuminated exit sign combo unit c/w emergency heads. Shaded area indicates illuminated face. Provide directional arrows as indicated on plans.
	Combination emergency lighting & battery unit. BU-X indicates battery unit # for remote heads to be connected to.
BU-X	Emergency lighting battery unit. BU-X indicates battery unit # for remote heads to be connected to.
	One and two head wall mounted emergency lighting remote units.
	One and two head ceiling mounted emergency lighting remote units.
EM	Denotes "EMERGENCY"
	POWER EQUIPMENT
	1-phase direct connection point/outlet as noted.
	3-phase direct connection point/outlet as noted.
	Single phase motor, HP (kW) as noted.
	Three phase motor, HP (kW) as noted.
	DISTRIBUTION EQUIPMENT
	Surface mounted distribution panelboard.
	Surface mounted distribution panelboard.
	Flush mounted distribution panelboard.
	Transformer
	Unfused disconnect switch, size as noted.
	Fused disconnect switch, size and fusing as noted.
	Manual motor starter.
	Contactor or starter.
	Magnetic motor starter.
	Combination motor starter.
	FIRE ALARM / FIRE DETECTION
	Manually operated fire alarm pull station.
B	Fire alarm bell, ceiling mounted
	Fire alarm bell, wall mounted.
	Surface mounted fire alarm speaker in garage
H	Fire alarm horn
	Fire alarm horn
H	Fire alarm mini-horn
SL	Fire alarm strobe.
	Combination horn/strobe
S	Fire alarm ceiling mounted speaker
S	Fire alarm ceiling mounted speaker
S	Fire alarm wall mounted speaker
	Heat detector.
	Heat detector, 94 degree C fixed temp.
	Heat detector, 58 degree C fixed temp & rate or rise.
	Photoelectric smoke detector.
	Ionization smoke detector.
m	Duct smoke detector.
	Relay Module

This legend is generic. All symbols listed may not be applicable for this project. Refer to floor plans to determine used devices and equipment.

	LIGHTING CONTROLS
	Single pole, single throw toggle switch c/w coverplate.
	Single pole, single throw toggle switch with two gang coverplate
	Single pole, single throw toggle switch with three gang coverplate
	Three-way switch.
	Four-way switch.
	Dimmer switch. 1500W rated. Provide dimming ballast for fluorescent fixtures.
	LV Master Switch
P U	Wall mounted occupancy sensor. P denotes Passive Infrared, U denotes Ultrasonic, PU denotes dual technology.
	Ceiling mounted occupancy sensor. P denotes Passive Infrared, U denotes Ultrasonic, D denotes Dual Passive Infrared/Ultrasonic.
	OTHER CONTROLS
	Fan switch
	Key Switch
	Switch c/w Pilot Light
	POWER RECEPTACLES AND BOXES
	120V U-ground duplex receptacle.
	120V U-ground quad receptacle.
	120V U-ground duplex Separate Circuit receptacle
	120V U-ground Isolated Ground (IG) Circuit duplex receptacle.
	120V Duplex receptacle w/ GFI
	120V U-ground duplex dedicated receptacle c/w separate neutral run from each panel to each receptacle.
	20A-1P, NEMA 5-20A duplex receptacle
	Special Receptacle. Verify outlet requirements prior to rough-in.
	120V U-ground duplex split receptacle mounted above counter top as instructed by Designer on site.
	3-Pole Receptacle as indicated.
	Clock receptacle
	120V U-ground duplex receptacle mounted above counter top or as instructed on site.
	120V U-ground duplex receptacle on floor.
	120V U-ground duplex receptacle mounted on rear of rack in hot aisle mounted at typical wall mounted receptacle height.
	Floor monument.
JB PB	Junction box. Pull box.
	COMMUNICATION DEVICES AND ROUGH-INS
	Wall mounted data or telephone outlet.
	Wall mounted telephone outlet.
	Wall mounted data outlet.
	Any of the above devices mounted above counter top or as instructed on site.
	Wall mounted television outlet.
	SECURITY LEGENDS
CR	CARD READER
DA	SECURITY ALARM DOOR CONTACTS
ML	MAGNETIC LOCK
ES	ELECTRIC STRIKE
BF	BARRIER FREE DOOR OPERATOR ACTUATOR BUTTON

DRAWING SCHEDULE

REV.	DATE	DESCRIPTION
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2	2025-JUNE-19	ISSUED FOR TENDER
1	2024-APR-12	ISSUED FOR TENDER
0	2024-MAR-06	ISSUED FOR REVIEW

Key Plan

True North

Engineer Logo

Spectra Engineering
250 SHEPPARD AVE EAST, SUITE#306, TORONTO, ONTARIO, M2N 6M9
TEL: (647) 478-5156
FAX (647) 478-5917

Client

Oshawa®

Drawing Overall Scale

AS SHOWN

Project Name & Address

City of Oshawa-Fire Station No.4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

ELECTRICAL SERVICES
LEGEND AND SPECIFICATIONS

DATE:	2024 - FEB - 20
DESIGNED BY:	F.A.
DRAWN BY:	F.A.
APPROVED BY:	J.E.
PROJECT NO.:	1024011

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
O. ELOWE
100143577
2025-07-21
PROVINCE OF ONTARIO

Drawing No.

E-1

MECHANICAL EQUIPMENT WIRING SCHEDULE

EQUIPMENT ID	EQUIPMENT DESCRIPTION	STARTER LOCATION	STARTER TYPE	MCA/HP/KW	VOLTS/PH./FREQ	BREAKER SIZE OR FUSE SIZE	FEEDER SIZE	PANEL AND CCT. NOS.	REMARKS	FIRE ALARM FAN SHUTDOWN [AHU/EF ONLY]	PROVIDE DUCT SMOKE DETECTOR
MUA-1	MAKE UP AIR UNIT	BUNKER GEAR ROOM	DISCONNECT SWITCH	½ HP	240V/1Ø/60	15A-2P	2 #12AWG + G IN 21mmC	F.F. PANEL G CCT#24,26	ELECTRICAL DIVISION SHALL PROVIDE POWER CONNECTION TO THE UNIT. PROVIDE LOCAL DISCONNECT SWITCH.	-	-
EF-2	EXHAUST FAN	ROOF	MAGNETIC STARTER	½ HP	120V/1Ø/60	15A-1P	2 #12AWG + G IN 21mmC	F.F. PANEL B CCT#28	ELECTRICAL DIVISION SHALL PROVIDE POWER CONNECTION TO THE UNIT. PROVIDE LOCAL DISCONNECT SWITCH.	-	-

1. PROVIDE POWER CONNECTION TO ALL MECHANICAL EQUIPMENT LISTED IN THE SCHEDULE FOR A FULLY OPERATIONAL SYSTEM. REFER TO MECHANICAL LAYOUTS AND SCHEDULES FOR EXACT LOCATION OF EQUIPMENT. PROVIDE SEPARATE BREAKER FOR INDIVIDUAL MECHANICAL EQUIPMENT. SIZE AS INDICATED IN THE SCHEDULE.

2. PROVIDE A LOCAL DISCONNECT SWITCH FOR ALL MECHANICAL EQUIPMENT IN THIS SCHEDULE, UNLESS IT IS NOTED THAT THE DISCONNECT SWITCH IS TO BE PROVIDED BY THE EQUIPMENT MANUFACTURER. DISCONNECT SWITCH SHALL BE SEPARATE FROM THE STARTER SERVING THE RESPECTIVE EQUIPMENT. NOTE THAT DISCONNECT SWITCHES ARE NOT ILLUSTRATED ON THE FLOOR PLAN (FOR CLARITY), HOWEVER MUST BE SUPPLIED AND INSTALLED BY DIVISION 26 FOR ALL MECHANICAL EQUIPMENT LISTED IN THE ABOVE SCHEDULE.

3. THE ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE FOR REVIEWING ALL MECHANICAL SHOP DRAWINGS WITH RESPECT TO RELEVANT ELECTRICAL INFORMATION PRIOR TO THE SHOP DRAWINGS BEING SUBMITTED TO THE MECHANICAL AND ELECTRICAL ENGINEER FOR REVIEW. NO EQUIPMENT SHALL BE ORDERED PRIOR TO SUBMITTING SHOP DRAWINGS AND RECEIVING SHOP DRAWINGS BACK APPROVED BY BOTH THE MECHANICAL AND ELECTRICAL ENGINEER. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR WORKING WITH EACH MANUFACTURER OR MECHANICAL EQUIPMENT AND GATHERING THE 'MCA' AND 'MOP' OF ALL EQUIPMENT AND LISTING IT ON THE SHOP DRAWING FOR EACH MECHANICAL EQUIPMENT PRIOR TO SUBMITTING SHOP DRAWINGS FOR REVIEW.

4. THE STARTER LOCATION AND TYPE LISTED ABOVE IS FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR SHALL REFER TO MECHANICAL DRAWINGS FOR EXACT EQUIPMENT LOCATIONS AND MANUFACTURER CUT SHEETS AND EQUIPMENT DATA SHEET FOR STARTER INFORMATION. NO EXTRA WILL BE PERMITTED AS A RESULT OF A FAILURE TO DO SO.

SCHEDULE OF LUMINAIRES

TYPE	SPECIFIED MANUFACTURER AND CATALOGUE NUMBER	PRODUCT DESCRIPTION	LAMP						MOUNTING				ACCEPTABLE MANUFACTURER	COMMENTS
			VOLTAGE	WATTAGE	TYPE	LUMEN OUTPUT	COLOR TEMPERATURE	CRI	RECESSED	SURFACE	SUSPENDED	WALL		
L1	METALUX - WSNLED (4WSNLED-LD4-20SL-F-UNV-L840-CD1-U)	4' LED WRAPAROUND LIGHTING, FROSTED-FINISH ACRYLIC END CAPS WITH FROSTED ACRYLIC LENS, 0-10V DIMMING DRIVER. SEPARATE CEILING MOUNTED WIRE GUARD AVAILABLE (VT2).	UNV	18.3	LED	2000	4000K	80	-	X	-	-	COOPER LIGHTING SOLUTIONS	-
L2	METALUX - BCLED SERIES: (4BCLED-LD4-40SL-F-UNV-L835-CD1-U)	WALL BRACKET LED, FULL FROST LENS FOR IDEAL LED AESTHETICS, 3500K, TYPICAL 85 PLUS CRI, CLASS 2, 24VDC, CONSTANT DRIVER WITH STANDARD 0-10V DIMMING	UNV	35.2	LED	3957	3500K	80	-	-	-	X	COOPER LIGHTING SOLUTIONS	-

NOTE:
1. REFER TO SPECIFICATIONS FOR FURTHER DETAILS AND REQUIREMENTS.
2. REFER TO DRAWING NOTES FOR WIRE GUARD REQUIREMENTS.

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Key Plan

True North

Engineer Logo

Spectra Engineering
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Drawing Overall Scale

AS SHOWN

Project Name & Address

City of Oshawa-Fire Station No.4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

ELECTRICAL SERVICES
MECHANICAL EQUIPMENT WIRING SCHEDULE

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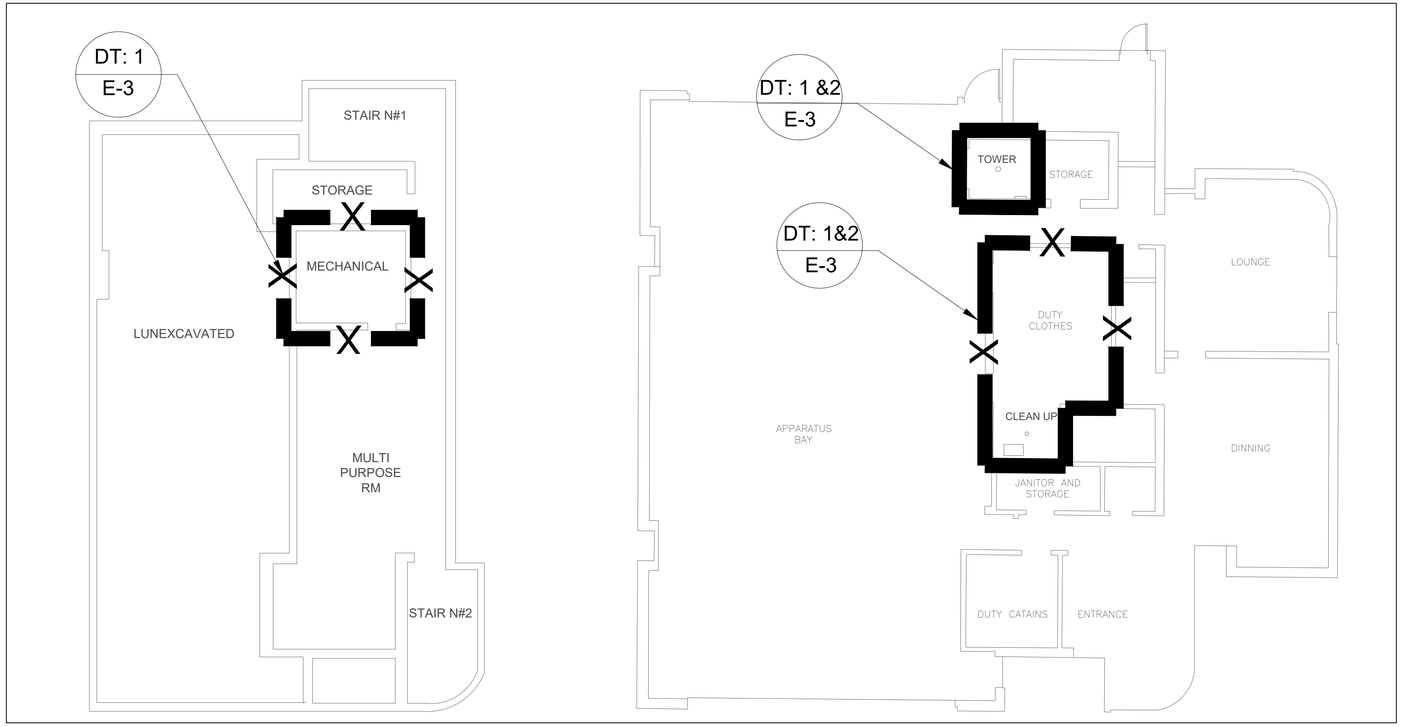
DESIGNED BY:	F.A.
DRAWN BY:	F.A.
APPROVED BY:	J.E.
PROJECT NO.:	1024011

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
O. ELOWE
100143577
2025-07-21
PROVINCE OF ONTARIO

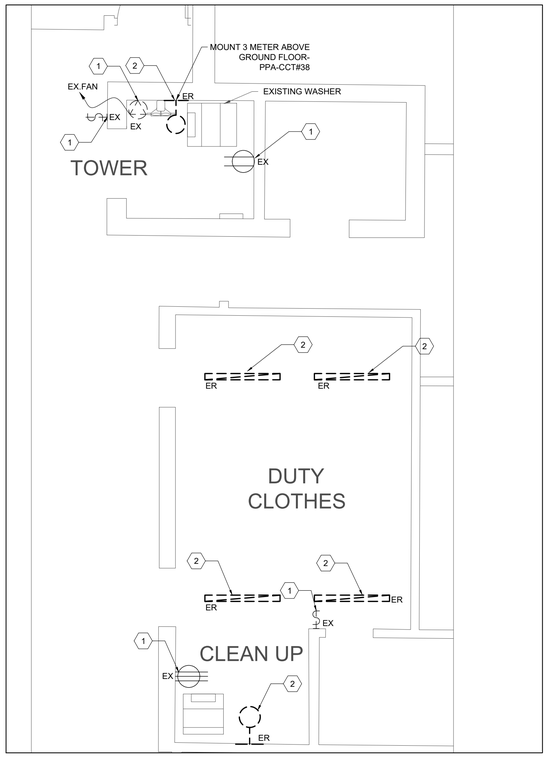
Drawing No.

E-2



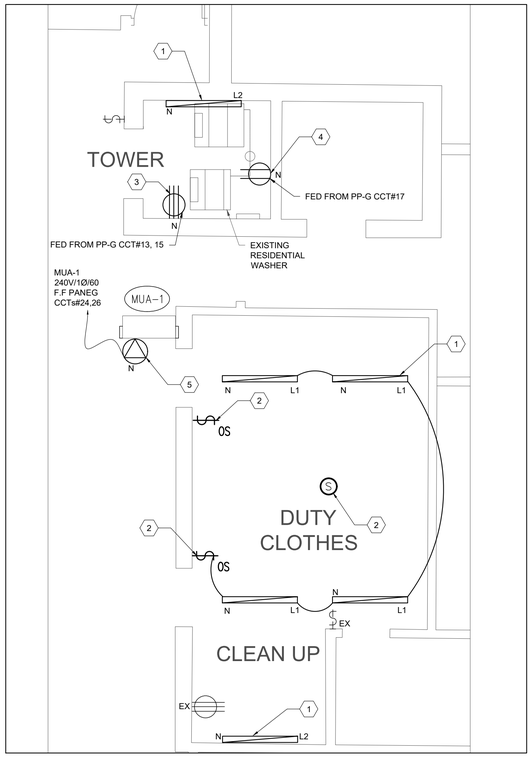
- GROUND LEVEL - KEY PLAN

Scale: Scale: NTS



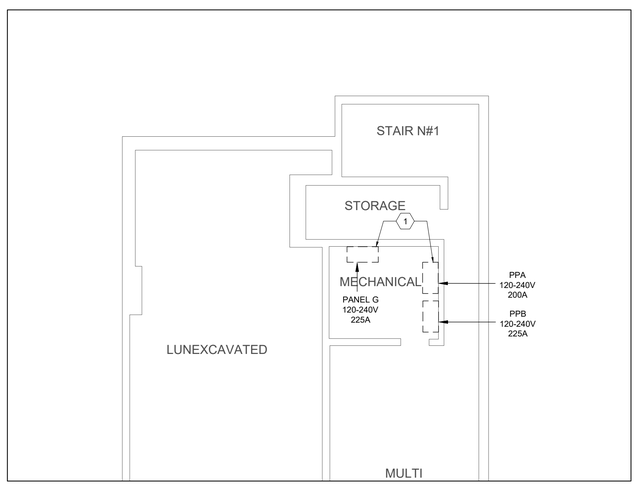
1 GROUND LEVEL - EXIST/DEMO WORK

Scale: 1/4"=1'-0"



2 GROUND LEVEL- NEW WORK

Scale: 1/4"=1'-0"



3 GROUND LEVEL - MECHANICAL ROOM

Scale: 1/4"=1'-0"

DESIGN NOTES (DEMO WORK):

1. NOTED EQUIPMENT TO REMAIN.
2. REMOVE EXISTING LIGHTINGS . EXISTING WIRING AND CONDUIT TO REMAIN.

DESIGN NOTES (NEW WORK) :

1. PROVIDE AND INSTALL NEW LIGHTING FIXTURES. REFER TO LIGHTING LUMINARIES SCHEDULE FOR MAKE, MODEL. CONFIRM EXISTING LOCAL LIGHTING CIRCUIT VOLTAGE PRIOR TO ORDERING LIGHTING FIXTURES. ALLOW TO EXTEND WIRING AND CONDUIT AS REQUIRED.
2. ELECTRICAL CONTRACTOR SHALL PROVIDE OCCUPANCY SENSORS TO CONTROL LOCAL ROOM LIGHTING AS SHOWN. SENSOR TO BE WATTSTOPPER DSW-301-W OR APPROVED EQUIVALENT. PROVIDE OVERRIDE SWITCH. CONFIRM EXISTING LOCAL LIGHTING CIRCUIT VOLTAGE PRIOR TO SHOP DRAWING APPROVAL.
3. PROVIDE AND INSTALL NEW L14-30R DUPLEX RECEPTACLE FOR RELOCATED RESIDENTIAL WASHER .
4. PROVIDE AND INSTALL NEW NEMA 5-20R GFI RECEPTACLE FOR SANITARY.
5. PROVIDE NEW POWER CONNECTION TO MECHANICAL EQUIPMENT PER IDENTIFIED EQUIPMENT TAG. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR FEEDER SIZE AND SOURCE.

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HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

ELECTRICAL SERVICES
GROUND LEVEL-ELECTRICAL DEMOLITION/NEW WORK

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DRAWN BY:	F.A.
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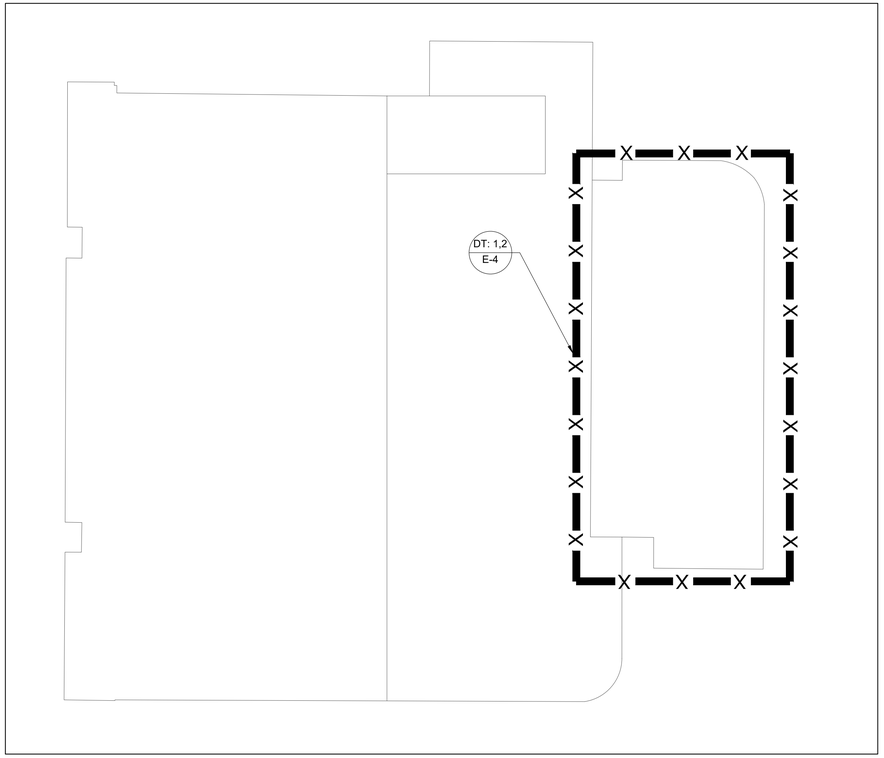
PROJECT NO.:	1024011

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
O. ELOWE
100143577
2025-07-21
PROVINCE OF ONTARIO

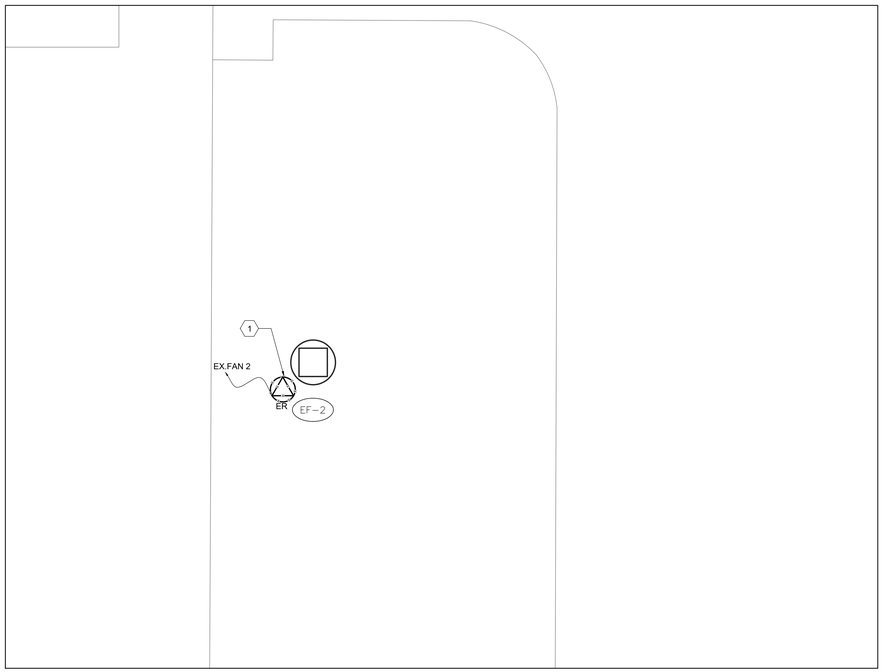
Drawing No.

E-3



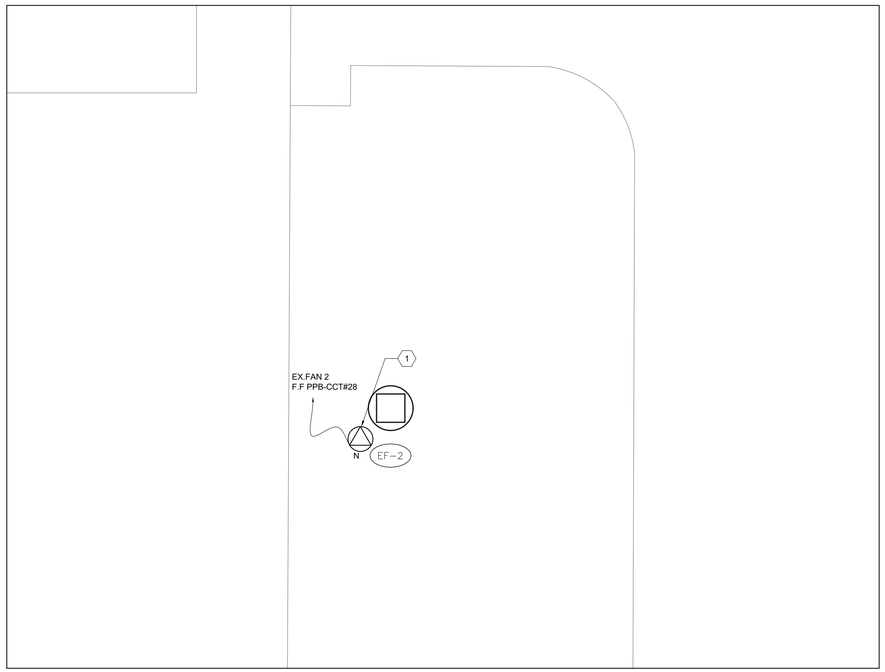
- ROOF LEVEL - KEY PLAN

Scale: NTS



1 ROOF LEVEL - ELECTRICAL DEMOLITION

Scale: 1/4"=1'-0"



2 ROOF LEVEL - ELECTRICAL NEW WORK

Scale: 1/4"=1'-0"

DESIGN NOTES (DEMOLITION WORK):

1 REMOVE EXISTING EQUIPMENT FEEDER, WIRE AND CONDUIT BACK TO SOURCE PANEL AND MAKE SAFE. UPDATE EXISTING SCHEDULE WITH NEW TYPEWRITTEN SCHEDULE. ALLOW TO TRACE CIRCUIT BACK TO SOURCE.

DESIGN NOTES (NEW WORK) :

1 PROVIDE NEW POWER CONNECTION TO MECHANICAL EQUIPMENT PER IDENTIFIED EQUIPMENT TAG. REFER TO MECHANICAL EQUIPMENT WIRING SCHEDULE FOR FEEDER SIZE AND SOURCE.

REV.	DATE	DESCRIPTION
3	2025-JULY-21	RE-ISSUED FOR TENDER
2	2025-JUNE-19	ISSUED FOR TENDER
1	2024-APR-12	ISSUED FOR TENDER
0	2024-MAR-06	ISSUED FOR REVIEW

Key Plan

True North

Engineer Logo

Spectra Engineering
250 SHEPPARD AVE EAST, SUITE#306, TORONTO, ONTARIO, M2N 6M9
TEL: (647) 478-5156
FAX (647) 478-5917

Client

Oshawa

Drawing Overall Scale

AS SHOWN

Project Name & Address

City of Oshawa-Fire Station No.4
BUNK GEAR RETROFIT
HARMONY ROAD NORTH, OSHAWA, ONTARIO

Drawing Title

ELECTRICAL SERVICES
ROOF LEVEL-ELECTRICAL DEMOLITION/NEW WORK

DATE:	2024 - FEB -20
DESIGNED BY:	F.A.
DRAWN BY:	F.A.
APPROVED BY:	J.E.
PROJECT NO.:	1024011

Engineer / Architect Stamp

LICENSED PROFESSIONAL ENGINEER
O. ELOWE
100143577
2025-07-21
PROVINCE OF ONTARIO

Drawing No.

E-4

A. GENERAL NOTES

1. DESIGN CONFORMS TO THE 2012 ONTARIO BUILDING CODE (OBC), ONTARIO REGULATION 88/19 AND AMENDMENTS.
2. THE GENERAL NOTES AND TYPICAL DETAILS ARE APPLICABLE TO ALL PARTS OF THE PROJECT AND SHALL BE READ IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS.
3. USE ONLY THE LATEST ISSUES OF ANY GOVERNMENT CODES, STANDARDS OR REGULATIONS MENTIONED IN THE FOLLOWING NOTES, UNLESS NOTED OTHERWISE.
4. VERIFY ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
5. FOR DETAILS AND DIMENSIONS NOT GIVEN ON STRUCTURAL DRAWINGS REFER TO ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS. VERIFY LOCATIONS AND DIMENSIONS OF ALL OPENINGS, PIPE SLEEVES, ETC. AS REQUIRED WITH THE MECHANICAL AND ELECTRICAL CONTRACTORS.
6. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DIMENSIONS AND FOR COORDINATION OF SUB-TRADES.
7. DO NOT SCALE THE DRAWINGS, USE FIGURE DIMENSIONS ONLY.
8. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SAFEGUARD ALL EXISTING STRUCTURES AFFECTED BY THIS CONSTRUCTION. ON ANY NEW STRUCTURE, DO NOT EXCEED THE DESIGN LOADINGS INDICATED ON THESE DRAWINGS.
9. ALL STRUCTURAL MEMBERS SHOWN ARE NEW UNLESS NOTED OTHERWISE.
10. DRAWINGS AND DETAILS ARE INTENDED TO SHOW THE END RESULT OF DESIGN. MODIFICATIONS TO THE DESIGN NECESSARY TO SUIT SITE DIMENSIONS OR CONDITIONS SHALL BE SUBMITTED TO CONSULTANT FOR APPROVAL BEFORE PROCEEDING.
11. THE SCHEDULING OF ALL WORK, INCLUDING ACCESSIBILITY AND LOGISTICS SHALL BE COORDINATED AND AGREED WITH THE OWNER PRIOR TO COMMENCEMENT.
12. CO-ORDINATE WORK WITH MECHANICAL AND ELECTRICAL TRADES REGARDING ANY EXISTING MECHANICAL AND ELECTRICAL SERVICES ADJACENT TO THE WORK.
13. DO NOT CUT THROUGH, CORE-DRILL OR OTHERWISE ALTER ANY EXISTING OR NEW PART OF THE STRUCTURE UNLESS SHOWN ON THE DRAWINGS, OR UNLESS APPROVED BY THE CONSULTANT. PROVIDE ADDITIONAL REINFORCING OR FRAMING AT OPENINGS AS SHOWN OR DIRECTED, PRIOR TO MAKING ANY OPENINGS.
14. THE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF THE CONSULTANT AND MAY NOT BE REPRODUCED IN ANY FORM WITHOUT WRITTEN AUTHORIZATION.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING EXISTING STRUCTURES ADJACENT TO NEW CONSTRUCTION AND AS OTHERWISE DIRECTED DURING ALL PHASES OF WORK.

B. STRUCTURAL STEEL

1. DESIGN, FABRICATION AND ERECTION SHALL CONFORM TO CAN/CSA-S16 INCL. S16S1 SUPPLEMENT AND CISC CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL.
2. ALL STRUCTURAL STEEL TO CONFORM TO CAN/CSA-G40.20/G2040.21 WITH THE FOLLOWING MIN. GRADES:
   - 350W (50 KSI) CLASS C, FOR HSS SECTIONS
   - 350W (50 KSI), FOR WELDED OR ROLLED W-SECTIONS
   - 300W (44 KSI), FOR CHANNELS, ANGLES AND PLATES
   - 350W (50 KSI), FOR ALL OTHER SECTIONS, UNLESS NOTED OTHERWISE
3. ALL BOLTS TO BE HIGH STRENGTH TYPE TO ASTM A325 REQUIREMENTS. USE BEARING-TYPE CONNECTIONS, MINIMUM TWO M20 (3/4") BOLTS PER CONNECTION UNLESS OTHERWISE NOTED. THREADS MUST BE EXCLUDED FROM THE BOLT SHEAR PLANES.
4. ANCHOR BOLTS: ASTM F1554 GRADE 55 UNLESS OTHERWISE NOTED.
5. WELDING:
   a. WELDING WORK TO BE IN ACCORDANCE WITH CSA-W59.
   b. WELDING TO BE UNDERTAKEN ONLY BY WELDERS CERTIFIED TO CSA-W55.
   c. WELDING ONLY TO BE UNDERTAKEN BY A FABRICATOR CERTIFIED TO CSA-W47.1 FOR DIVISION 1 OR 2.
   d. EXPOSED WELDS SHALL BE CONTINUOUS AND GROUND SMOOTH.
   e. REPAIR DAMAGED OR FIELD CUT AREAS OF GALVANIZED SURFACES WITH TWO COATS OF ZINC RICH PAINT. REFER TO FINISHING PROCESS.
   f. ALL NECESSARY PRECAUTIONS SHALL BE UNDERTAKEN TO PREVENT FIRES CAUSED BY WELDING, INCLUDING BUT NOT LIMITED TO THE PRESENCE OF FIRE WATCHERS, USE OF FIRE SHIELDS, AND REMOVAL OF COMBUSTIBLE MATERIALS. SUITABLE FIRE EXTINGUISHING EQUIPMENT SHALL BE PRESENT AND WITHIN REACH OF THE WELDING CREW.
   g. NEARBY SURFACES SCORCHED OR OTHERWISE AFFECTED BY WELDING SHALL BE RESTORED TO ITS ORIGINAL CONDITION PER THE SATISFACTION OF THE CLIENT, UNLESS OTHERWISE AGREED UPON.
6. PROVIDE ALL REQUIRED GUSSETS, SPACERS, FILLERS AND SHIM PLATES.
7. PROVIDE BUTTER COAT OF NON-SHRINK GROUT BETWEEN SURFACES WHERE CONNECTING STEEL PLATE TO STRUCTURAL CONCRETE OR MASONRY, UNLESS NOTED OTHERWISE.
8. CENTRE BEARING PLATES UNDER BEAMS EXCEPT WHERE NOTED OTHERWISE.
9. CONNECT ALL BEAMS TO END BEARING PLATES WITH A MIN. OF 50 mm (1/2") LENGTH OF 6 mm (1/4") FILLET WELD EACH SIDE OF FLANGE.
10. PROVIDE 4.8 mm (3/16") THICK CAP PLATES WITH ALL-AROUND SEAL WELD ON OPEN ENDS OF HSS MEMBERS UNLESS NOTED OTHERWISE.
11. DO NOT MAKE HOLES IN ANY STRUCTURAL STEEL MEMBER OTHER THAN THOSE SHOWN ON REVIEWED SHOP DRAWINGS WITHOUT THE PRIOR APPROVAL OF THE CONSULTANT.
12. MAKE NO HOLES IN ANY STRUCTURAL STEEL MEMBER OTHER THAN THOSE ON REVIEWED SHOP DRAWINGS WITH PRIOR APPROVAL OF CONSULTANT.
13. STRUCTURAL STEEL EXPOSED TO THE WEATHER (INCLUDING ALL MASONRY LINTELS) SHALL BE HOT-DIPPED GALVANIZED IN ACCORDANCE WITH CSA-G164, WITH A MINIMUM ZINC COATING OF 600 GRAMS PER SQUARE METRE. ALL INTERIOR STEEL TO BE PRIME PAINTED OR GALVANIZED, UNLESS NOTED OTHERWISE.

C. WOOD

1. ALL FRAMING LUMBER TO BE KILN-DRIED D-FIR OR SPF NO.2 OR BETTER.
2. ALL METAL CONNECTORS ARE SIMPSON STRONG-TIE OR APPROVED EQUIVALENT.
3. ALL FRAMING NAILS SHALL BE COMMON NAILS. NO BOX NAILS ALLOWED.

D. MASONRY

1. ALL MASONRY WORK TO BE IN ACCORDANCE WITH THE LATEST VERSIONS OF CSA-A371 AND CSA-A179.
2. STRUCTURAL DRAWINGS SHOW LOAD-BEARING MASONRY WALLS ONLY U.N.O. REFER TO ARCHITECTURAL DRAWINGS FOR ALL NON-LOADBEARING MASONRY WALLS.
3. PROVIDE TYPE H/15/A/M UNITS CONFORMING TO CSA A165 SERIES FOR ALL CONCRETE BLOCK MASONRY.
4. USE TYPE 'S' MORTAR AND 12.5 MPa 28-DAY STRENGTH GROUT FOR ALL MASONRY WALLS, CONFORMING TO CSA-A179.
5. CONSTRUCT WALLS IN RUNNING BOND ONLY. USE FULL MORTAR BEDDING.
6. PROVIDE 100% SOLID OR GROUTED MASONRY AT TOP AND BOTTOM COURSES OF WALLS, TWO COURSES DEEP AND TWO BLOCKS WIDE UNDER ALL BEAMS OR LINTEL BEARINGS, GROUTED CELLS CONTAINING VERTICAL STEEL, BOND BEAMS, KEYWAYS AT EACH SIDE OF CONTROL JOINTS, AND CELLS CONTAINING DOWELS, ANCHOR BOLTS OR OTHER EMBEDDED HARDWARE.
7. PROVIDE CONTINUOUS 8-GA LADDER-TYPE GALVANIZED HORIZONTAL JOINT REINFORCEMENT AT EVERY SECOND COURSE AND AT THE FIRST COURSE AT THE TOP AND BOTTOM OF THE WALL.
8. PROVIDE PREFABRICATED CORNERS AND TEES FOR HORIZONTAL JOINT REINFORCING.
9. PROVIDE VERTICAL WALL REINFORCING IN ALL NEW CONCRETE BLOCK WALLS IN ACCORDANCE WITH TYPICAL WALL REINFORCING DETAILS UNLESS NOTED OTHERWISE. VERTICAL WALL REINFORCING TO BE CONTINUOUS BETWEEN FLOORS AND ROOF. PROVIDE FULL CLASS B TENSION LAP SPLICE. INDICATE LOCATION OF ALL PROPOSED LAP SPLICES ON SHOP DRAWINGS FOR APPROVAL.
10. PROVIDE BULLNOSE BLOCKS AT EXPOSED CORNERS.
11. NEW MASONRY WALLS TO BE TOOTHED INTO EXISTING MASONRY WALLS WHERE SHOWN.
12. BOND BEAMS ARE TO BE CONTINUOUS WHERE INDICATED ON PLANS AND OR SPECIFICATIONS.
13. REFER TO ARCHITECTURAL DRAWINGS FOR CONTROL JOINT (HORIZONTAL MOVEMENT) LOCATIONS.
14. PROVIDE 100% SOLID OR FULLY GROUTED MASONRY AT:
    a. TOP AND BOTTOM COURSE OF WALLS,
    b. TWO COURSES DEEP AND TWO BLOCKS WIDE UNDER ALL BEAMS OR LINTEL BEARINGS,
    c. GROUTED CELLS CONTAINING VERTICAL REINFORCING,
    d. BOND BEAMS,
    e. ALL PIERS BETWEEN ADJACENT OPENINGS LESS THAN 800 mm WIDE, FOR FULL HEIGHT OF PIER,
    f. ALL BELOW GRADE MASONRY,
    g. KEYWAYS AT EACH SIDE OF CONTROL JOINTS, AND
    h. CELLS CONTAINING DOWELS, ANCHOR BOLTS OR OTHER EMBEDDED HARDWARE.
17. SOLID MASONRY MEANS GROUT FILL IN HOLLOW MASONRY, OR 100% SOLID UNITS.
18. CONTRACTOR TO BE RESPONSIBLE FOR THE DESIGN AND PROVISION OF ADEQUATE TEMPORARY BRACING WHEN INSTALLING MASONRY.

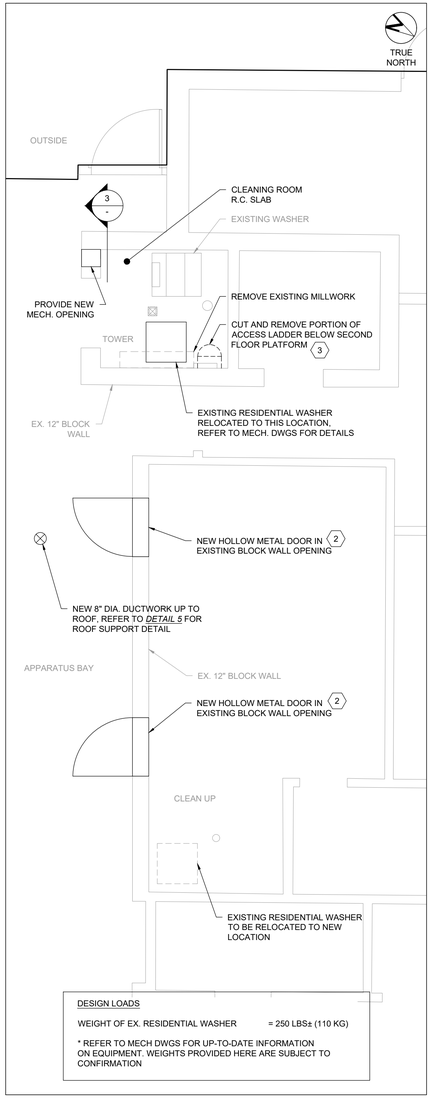
E. SHOP DRAWINGS AND SUBMITTALS

1. SUBMIT SHOP DRAWINGS TO CONSULTANT FOR REVIEW BEFORE COMMENCING FABRICATION. ALLOW 7 DAYS FOR RETURN OF SHOP DRAWINGS.
2. SHOP DRAWINGS FOR CONCRETE REINFORCEMENT AND PLACEMENT SHALL BE SUFFICIENTLY DETAILED AND DIMENSIONED TO PERMIT CORRECT PLACEMENT OF REINFORCEMENT AND ACCESSORIES WITHOUT REFERENCE TO ARCHITECTURAL AND STRUCTURAL DRAWINGS.
3. NOTIFY CONSULTANT IN WRITING AT TIME OF SUBMISSION OF ANY DEVIATIONS IN SHOP DRAWINGS FROM REQUIREMENTS OF CONTRACT DOCUMENTS.
4. CONFIRM CONTRACTOR'S REVIEW OF EACH SHOP DRAWING BY STAMP, DATE AND SIGNATURE OF A RESPONSIBLE PERSON.

F. DEMOLITION AND REWORK

1. ENSURE THAT EXISTING AND NEW STRUCTURE IS AT ALL TIMES MAINTAINED IN A SAFE CONDITION AND THAT THE PUBLIC IS PROTECTED FROM DEMOLITION ACTIVITIES
2. DESIGN AND PROVIDE ALL REQUIRED SHORING OR TEMPORARY FALSEWORK REQUIRED FOR SUPPORT OF EXISTING STRUCTURE DURING DEMOLITION REWORK OR INSTALLATION ACTIVITIES. BEFORE UNDERTAKING WORK, SUBMIT TO CONSULTANT FOR REVIEW DRAWING(S) BEARING THE SEAL OF THE LICENSED PROFESSIONAL ENGINEER RESPONSIBLE FOR DESIGN. CONTRACTOR'S ENGINEER IS THE ENGINEER OF RECORD FOR TEMPORARY SHORING AND FALSEWORK. CONSULTANTS REVIEW OF DRAWING(S) IS ONLY ON THE OWNER'S BEHALF TO ENSURE COMPLIANCE WITH CONTRACT REQUIREMENTS. REFER TO SPECIFICATIONS.

1 GENERAL NOTES AND SPECIFICATIONS



DESIGN LOADS

WEIGHT OF EX. RESIDENTIAL WASHER = 250 LBS± (110 KG)

* REFER TO MECH DWGS FOR UP-TO-DATE INFORMATION ON EQUIPMENT. WEIGHTS PROVIDED HERE ARE SUBJECT TO CONFIRMATION

2 PARTIAL - FIRST FLOOR PLAN

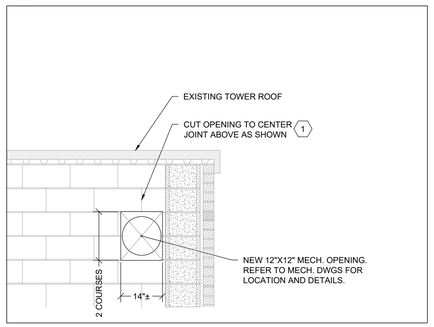
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING POSSIBLE INTERFERENCES. SHOULD ANY DISCREPANCIES APPEAR BETWEEN THE DRAWINGS AND SPECIFICATIONS WHICH LEAVE THE CONTRACTOR IN DOUBT AS TO THE TRUE INTENT AND MEANING OF THE PLANS AND SPECIFICATIONS, THE CONTRACTOR SHALL OBTAIN A RULING FROM THE CONSULTANT IN WRITING BEFORE SUBMITTING A TENDER. IF THIS IS NOT DONE IT WILL BE ASSUMED THAT THE MOST EXPENSIVE ALTERNATIVE HAS BEEN INCLUDED IN THE TENDER PRICE. FOR ANY RULING TO BECOME BINDING, THE CONSULTANT MUST ISSUE THE NEW DIRECTION IN A PUBLISHED FORM.
2. ANY ROOF RELATED WORK (E.G. SLEEPERS, MOUNT PENETRATIONS, OPENINGS, ETC.) HAS TO BE EXECUTED AS PER MANUFACTURERS REQUIREMENTS. ONLY CITY OF OSHAWA APPROVED VENDORS CAN PERFORM ROOFING WORK. ALL PROPOSED ROOFING WORK SHALL BE CLOSELY COORDINATED BETWEEN THE CONTRACTOR, CITY OF OSHAWA, AND MANUFACTURER.

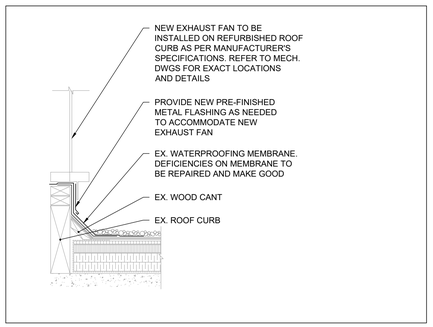
DESIGN NOTES:

1. GROUT LINE OF CONCRETE BLOCK SHOULD BE CENTERED ABOVE THE MID-SPAN OF THE NEW OPENING WITH MAXIMUM OFFSET OF 3" FOR A 12"W X 12"H OPENING. MAXIMUM OPENING SIZE OF 14"X14".
2. INSTALL NEW 3'-4" WIDE X 7'-0" HIGH HOLLOW METAL DOOR WITH PASSAGE FUNCTION IN EXISTING CONC. WALL OPENING IN ACCORDANCE WITH MANUFACTURES SPECIFICATIONS. DOOR FIRE RESISTANCE RATING TO BE MIN. 3/4 HOURS. CONTRACTOR TO COORDINATE DOOR ACCESSORIES AND FINISH PAINT WITH THE CITY OF OSHAWA. REFER TO SHEET S-02 FOR ALL OTHER SPECIFICATIONS.
3. DO NOT CUT AND REMOVE ANCHORAGE OF ACCESS LADDER TO WALL WHICH IS LOCATED JUST AT/ABOVE SECOND FLOOR PLATFORM LEVEL.



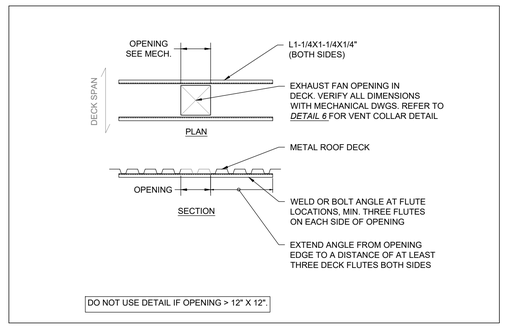
3 WALL OPENING DETAIL

SCALE: 1/2"=1'-0"



4 EXISTING ROOF CURB DETAIL

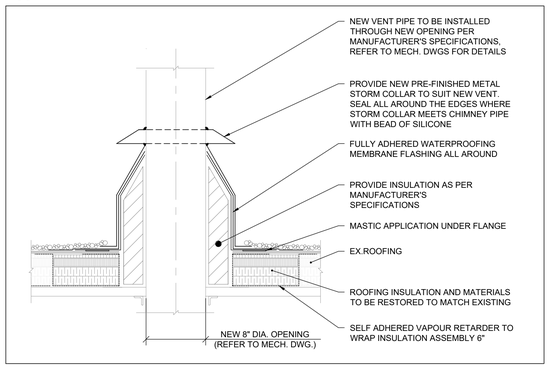
SCALE: 1"=1'-0"



DO NOT USE DETAIL IF OPENING > 12" X 12".

5 ROOF SUPPORT DETAIL

SCALE: 1"=1'-0"

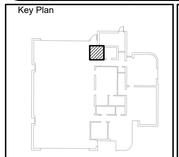


6 VENT COLLAR DETAIL

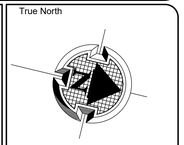
SCALE: 1"=1'-0"

REV.	DATE	DESCRIPTION
3	2025-JUL-18	ISSUED FOR TENDER
2	2025-JUN-19	RE-ISSUED FOR REVIEW
1	2024-APR-12	ISSUED FOR TENDER
0	2024-MAR-25	ISSUED FOR REVIEW

Key Plan



True North



Engineer Logo

Spectra Engineering Ltd.
200 CACHET WOODS COURT, UNIT 120, MARKHAM, ON L6C 0Z8
TEL: (647) 478-5156
FAX: (647) 478-5917

Client

Oshawa®

Drawing Overall Scale

AS SHOWN

Project Name & Address

CITY OF OSHAWA - FIRE STATION NO.4
BUNK GEAR RETROFIT
50 HARMONY RD N, OSHAWA, ON L1G 6K9

Drawing Title

STRUCTURAL SERVICES
GENERAL NOTES AND SPECIFICATIONS
KEY PLAN AND DETAILS

DATE:	2024-FEB-26
DESIGNED BY:	E.FLORES
DRAWN BY:	E.FLORES
APPROVED BY:	D.HUM
PROJECT NO.:	1024011

Engineer / Architect Stamp

Drawing No.

S - 0 1

STEEL DOORS & FRAMES
Section 081100

PART 1 - GENERAL

1.1 Related Sections

.1 Section 013400 - Shop Drawings, Product Data, Samples

.2 Section 087100 - Door Hardware

1.2 References

.1 American Society for Testing and Materials (ASTM).
.1 ASTM A 653M-95, Specification for Steel Sheet, Zinc-Coated or Zinc-Iron Alloy-Coated by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-1.181-92 (latest edition), Ready-Mixed Organic Zinc-Rich Coating.
.2 CGSB 41-GP-19Ma-84 (latest edition), Rigid Vinyl Extrusions for Windows and Doors.
.3 CAN/CGSB-51.20-M87 (latest edition), Thermal Insulation, Polystyrene, Boards and Pipe Covering.
.4 CGSB 51-GP-21M-78 (latest edition), Thermal Insulation, Urethane and Isocyanurate, Unfaced.

.3 Canadian Standards Association (CSA).
.1 CSA A101-M1983 (latest edition), Thermal Insulation, Mineral Fiber, for Buildings.
.2 CAN/CSA-G40.21-M92 (latest edition), Structural Quality Steels.
.3 CSA W59-M1989 (latest edition), Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door and Frame Manufacturers' Association, (CSDFMA).
.1 CSDFMA, Specifications for Commercial Steel Doors and Frames, latest edition
.2 CSDFMA, Recommended Selection and Usage Guide for Commercial Steel Doors, latest edition.

1.3 Design Requirements

.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 ºC to 35 ºC.

.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.

1.4 Shop Drawings

.1 Submit shop drawings in accordance with Specifications requirements.

.2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, glazed, louvered, arrangement of hardware.

.3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings finishes.

.4 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.5 Samples

.1 Submit samples as called for in the specifications.

PART 2 - PRODUCTS

2.1 Materials

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, minimum base steel thickness in accordance with CSDFMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CAN/CSA-G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.2 Door Core Materials

.1 Stiffener: face sheets laminated, insulated core.

.1 Expanded polystyrene: CAN/CGSB-51.20, density 16 to 32 kg/m.
.2 Polyurethane: to CGSB 51-GP-21M rigid, modified poly/isocyanurate, closed cell board. Density 32 kg/m.

.2 Thermal insulation material must:
.1 not require being labeled as poisonous, corrosive, flammable or explosive under the Consumer Chemical and Container Regulations of the Hazardous Products Act;
.2 be manufactured using a process that uses chemical compounds with the minimum ozone depletion potential (ODP) available.

2.3 Adhesives

.1 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

2.4 Primers

.1 Primer shall conform to the requirements of CGSB 1-GP-40C, latest revision.

.2 Apply one coat of baked on rust inhibitive primer to steel doors.

.3 Apply one coat of rust inhibitive primer to steel screens and frames.

.4 Bonderizing of doors and frames will be acceptable. All welds must be primed.

2.5 Paint

.1 Steel doors and frames shall be field painted with two coats of alkyd paint. Weatherstrips shall be protected from paint. Finish shall be free of scratches or other blemishes.

2.6 Accessories

.1 Door silencers: single stud rubber/neoprene type.

.2 Exterior top and bottom caps: steel.

.3 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.4 Door bottom seal.

.5 Metallic paste filler: to manufacturer's standard.

.6 Reserved

.7 Reserved

2.7 Frames Fabrication General

.1 Fabricate frames in accordance with CSDFMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Frames: 16 ga. welded type construction.

.4 Glazing stops shall be min. 18 ga. stainless steel.

.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware. All drilling and tapping shall be performed by the City of Oshawa.

.6 Protect mortised cut outs with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.11 Insulate exterior frame components with polyurethane insulation.

.12 Channel spreader shall be min. 18 ga. hot rolled steel.

.13 Corrugated tee anchors shall be min. 18 ga. steel.

.14 All frames shall have hinge reinforcing made of min. 3/16" plate steel.

.15 Provide two channel or angle spreaders per frame. Spreaders shall be readily removable where frames do not extend below finished floor.

.16 Provide accurately fitted and mitered removable stops secured with oval head countersunk screws at 8" o.c. for all glass areas in screens.

.17 Cut miters accurately and weld continuously on inside of frame profile. Grind welded corners and sand to a smooth uniform finish.

2.8 Frame Anchorage

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

.4 Locate anchors for frames in existing openings not more than 150 mm from top and bottom of each jambs and intermediate at 660 mm o.c. maximum.

2.9 Frames: Welded Type

.1 Welding in accordance with CSA W59.

.2 Accurately miter or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sane to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 Door Fabrication General

.1 Doors: swing type, flush, with provision for glass and/or louver openings as indicated.

.2 Exterior doors: hollow steel insulated construction.

.3 Fabricate doors with longitudinal edges welded. Seams: grind welded joints to a flat plane, fill with metallic paste filler and sand to a uniform smooth finish.

(CONT.)

.4 Glazing stops shall be 18 g. steel.

.5 Blank, reinforce, drill doors and tap for mortised, templated hardware.

.6 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.7 Reinforce doors where required, for surface mounted hardware. Hardware reinforcement shall be min. 10 ga. hot rolled sheet steel stock. Drilling and tapping shall be performed by the City of Oshawa.

.8 Provide flush steel top caps to exterior doors.

.9 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.10 Manufacturer's nameplates on doors are not permitted.

2.11 Hollow Steel Construction

.1 Form each face sheet for exterior doors from 16 ga. sheet steel.

.2 Reinforce doors with vertical stiffeners, securely welded to each face sheet at 150 mm on centre maximum.

.3 Fill voids between stiffeners of exterior doors with polystyrene or polyurethane core.

PART 3 - EXECUTION

3.1 Frame Installation

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Reserved

.4 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.5 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.6 Caulk perimeter of frames between frame and adjacent material.

.7 Maintain continuity of air barrier and vapour retarder.

.8 Reinstall or replace existing security contacts. Make good where affected due to installation of new frame. Include testing of security contacts in contract after completing installation of frames.

3.2 Door Installation

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 087100 - Door Hardware.

.2 Adjust operable parts for correct function.

.3 Install louvers where indicated.

.4 Reinstall or replace existing security contacts on door. Make good where affected due to installation of new doors. Include testing of security contacts in contract after completing installation of doors.

3.3 Finish Repairs

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors and surfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

END OF SECTION

DOOR HARDWARE
Section 087100

PART 1 - GENERAL

1.1 Related Work

.1 Section 013400 - Shop Drawings, Product Data, Samples

.2 Section 081100 - Steel Doors & Frames

1.2 Reference Standards

.1 Standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames prepared by Canadian Steel Door and Frame Manufactures' Association.

.2 CAN/CGSB-69.17- M86 (latest edition) /ANSI/BHMAA156.2-1983, Bored and Preassembled Locks and Latches.

.3 CAN/CGSB-69.18- M90 (latest edition) /ANSI/BHMAA156.1-1981, Butts and Hinges.

.4 CAN/CGSB-69.19- M89 (latest edition) /ANSI/BHMAA156.3-1984, Exit Devices.

.5 CAN/CGSB-69.20- M90 (latest edition) /ANSI/BHMAA156.4-1986, Door Controls , Closers.

.6 CAN/CGSB-69.23- M90 (latest edition) /ANSI/BHMAA156.7-1981, Template Hinge Dimensions.

.7 CAN/CGSB-69.29- M90 (latest edition)/ANSI/BHMAA156.13-1980, Mortise Locks and Latches.

.8 CAN/CGSB-69.31- M89 (latest edition)/ANSI/BHMAA156.15-1981, Closer/Holder Release Device.

.9 CAN/CGSB-69.34- M90 (latest edition)/ANSI/BHMAA156.18-1984, Materials and Finishes.

1.3 Requirements Regulatory Agencies

.1 Hardware for exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.4 Samples

.1 Submit samples in accordance with Specifications requirements.

1.5 Hardware List

.1 Consult with City of Oshawa's regional hardware preferences before proceeding with work.

.2 Submit contract hardware list in accordance with Specifications requirements.

.3 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

PART 2 - PRODUCTS

2.1 Hardware Items

.1 Use one manufacturer's products only for all similar items.

2.2 Door Hardware

.1 Locks and latches:

.1 Bored and preassembled locks and latches: to CAN/CGSB-69.17, series 2000 preassembled lock, grade 1, designed for function and keyed to fire station's master.

.2 Not Used.

.3 Lockset to match base building manufacturer and style.

.4 Normal strikes: box type, lip projection not beyond jamb.

.5 Cylinders: key into keying system of fire station.

.6 Finished to match existing.

.2 Butts and hinges:

.1 Butts and hinges: to CAN/CGSB-69.18, match base building.

.3 Exit devices: where indicated to CAN/CGSB-69.19, push bar Von Duprin/Sargent rim type device with removable cover plates, concealing mechanism and fasteners.

.4 Door Closers and Accessories:

.1 Door closers: to CAN/CGSB-69.20, LCN-4000 series.

.5 Architectural door trim: to CAN/CGSB-69.22.

.1 Door protection plates: stainless steel kick plate Ives 8400 where indicated.
.2 Push plates: stainless steel Ives 8200 where indicated
.3 Push/Pull units: stainless steel Ives 8300 where indicated

2.3 Fastenings

.1 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.2 Exposed fastening devices to match finish of hardware.

.3 Where pull is scheduled on one side of door and push plate on other side, supply fastening devices, and install so pull can be secured through door from reverse side. Install push plate to cover fasteners.

.4 Use fasteners compatible with material through which they pass.

2.4 Keying

.1 Key all locks to master keying system of fire station.

PART 3 - EXECUTION

3.1 Installation Instructions

.1 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.2 Furnish manufacturers' instructions for proper installation of each hardware component.

.3 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames prepared by Canadian Steel Door and Frame Manufacturers' Association.

END OF SECTION

CLOTHES STORAGE ROOM DOOR SCHEDULE

								FRAME			REMARKS
QTY.	WIDTH	HEIGHT	TYPE	MAT'L	CORE	HARDWARE	FINISH	TYPE	MAT'L	FINISH	
2	40"	84"	1	HM	HOLLOW	1	P	A	PS	P	3/4 HR FIRE RESISTANCE RATING. FINISH PAINT TO BE APPLIED AFTER INSTALLATION. PAINT: PREMIUM-GRADE, ALKYD BASED, SATIN SHEEN

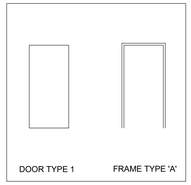
HARDWARE NOTE 1

1 - CONTINUOUS GEAR HINGE
2 - 38" x 10" H STAINLESS STEEL KICK PLATE
2 - LCN 4000 SERIES CLOSERS WITH METAL COVER
1 - SARGENT PASSAGE FUNCTION 10XU15-LL-26D.

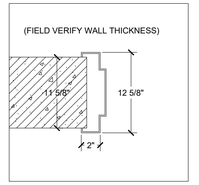
(SUBMIT HARDWARE SCHEDULE AND CUT SHEETS PREPARED BY AN ACCREDITED HARDWARE CONSULTANT FOR APPROVAL)

LEGEND:

BLD	BUILDING
HM	HOLLOW METAL
MATL	MATERIAL
P	PAINT
PS	PRESSED STEEL



1 DOOR & FRAME TYPES
NOT TO SCALE



2 TYPICAL DOOR JAMB/HEAD DETAIL
SCALE

SHOP DRAWINGS, PRODUCT DATA, SAMPLES
Section 013400

1 General
.1 Submit to Architect for review of shop drawings, product data and samples specified.

.2 Until submission is reviewed, work involving relevant product may not proceed.

2 Shop Drawings
.1 Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate Sections.

.2 Identity details by reference to sheet and detail numbers shown on Contract Drawings.

.3 Reproductions for submissions: 6 copies, bond if hardcopies. PDF if electronic submission.

3 Product Data
.1 Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.

.2 Above will only be accepted if they conform to following:
1. Delete information which is not applicable to project.
2. Supplement standard information to provide additional information applicable to project.
3. Show dimensions and clearances required.
4. Show performance characteristics and capacities.
5. Show wiring diagrams when requested and controls.

4 Samples and Mockups
.1 Submit samples in sizes and quantities specified.
.2 Where colour, pattern or texture is criterion, submit full range of samples.

.3 Construct field samples and mockups at locations acceptable to Architect.

.4 Construct each sample or mockup complete, including work of all trades required to finish work.

.5 Review samples or mockups will become standards of workmanship and material against which installed work will be checked on project.

5 Coordination of Submissions
.1 Review shop drawings, product data and samples prior to submission.

.2 Verify field measurements, field construction criteria and catalogue numbers and similar data.

.3 Contractor's responsibility for errors and omissions in submission is not relieved by Architect's review of submittals.

6 Submission Requirements
.1 Schedule submissions at least 14 working days before dates reviewed submissions will be needed.

.2 Submissions shall include:
1. Date and revision dates.
2. Project title and number
3. Name of
.1 Contractor
.2 Subcontractor
.3 Supplier
.4 Manufacturer
.5 Separate detailer when pertinent
4. Identification of product or material
5. Relation to adjacent structure or materials.
6. Field dimensions, clearly identified as such.
7. Specification Section number.
8. Applicable standards, such as CSA or CGSB numbers.
9. Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with contract documents.

7 Distribution of Submittals After Review

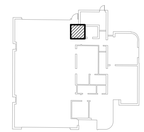
.1 Distribute copies of Shop drawings and product data which carry Consultant's stamp to:
1. Job site file.
2. Record documents file.
3. Other prime contractors,
4. Subcontractors.
5. Supplier.
6. Fabricator.

.2 Distribute samples as directed.

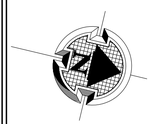
END OF SECTION

REV.	DATE	DESCRIPTION
3	2025-JUL-18	ISSUED FOR TENDER
2	2025-JUN-19	ISSUED FOR REVIEW

Key Plan



True North



Engineer Logo

Spectra Engineering Ltd.
200 CACHET WOODS COURT, UNIT 120, MARKHAM, ON L6C 0Z8
TEL. (647) 478-5156
FAX (647) 478-5917

Client

Oshawa®

Drawing Overall Scale

AS SHOWN

Project Name & Address

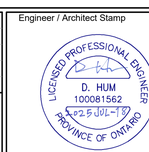
CITY OF OSHAWA - FIRE STATION NO.4
BUNK GEAR RETROFIT
50 HARMONY RD N, OSHAWA, ON L1G 6K9

Drawing Title

STRUCTURAL SERVICES
DOOR SPECIFICATIONS AND DETAILS

DATE:	2024-FEB-26
DESIGNED BY:	E.FLORES
DRAWN BY:	E.FLORES
APPROVED BY:	D.HUM
PROJECT NO.:	1024011

Engineer / Architect Stamp



Drawing No.

S - 0 2