

OUTLINE SPECIFICATIONS

Material Specifications:

Air Barrier: Henry Blueskin VP160 self-adhered water resistive air barrier membrane on manufacturer recommended self-adhered membrane primer.

Asphalt: If required: aggregate sub-base and base courses: To OPSS.MUNI 1010, as follows:
 -Sub-Base Course: Granular B
 -Base Course: Granular A
 Lay aggregate sub-base and base courses to compacted thickness required, compacted to OPSS.MUNI 501, minimum 98% SPmdd.

Perform field inspection and testing as specified in Section 01 40 00. Conduct tests and analysis of fill material to ASTM D698.

Asphalt Pavements: Ready mixed, hot laid asphaltic concrete, to OPSS.MUNI 1150, as follows:
 -Binder course: HL8 (if required)
 -Surface Course: HL3
 Lay asphalt paving to OPSS.MUNI 310, rolled to firm compaction; to compacted thicknesses as indicated on Drawings.

Perform field inspection and testing as specified in Section 01 40 00. Conduct tests and analysis of asphalt pavements to ASTM D698.

Prefinished Metal Flashing: 0.61 mm (24 gauge minimum thickness) prefinished metal flashing. Colour to match adjacent material.

Sealants: General Purpose & Acoustical Sealant: To CAN/CGSB-19.17-M; one-part, siliconized acrylic latex, mildew-resistant, accommodating joint movement of plus or minus 12-1/2 percent; colours as selected by Consultant; Tremflex 834 by Tremco or similar by Dow, General Electric or Master Builders Solutions Canada, Inc.

Install joint sealants to ASTM C1193.

Exterior Sealants: To ASTM C920, Type S, Grade NS, Class 35, Use NT, M, A and O; one-part moisture curing, low modulus polyurethane sealant; accommodating joint movement of plus or minus 35 percent, with a 30 to 90 minute skin time; eg. Dymonic FC by Tremco, colours as selected by Consultant.

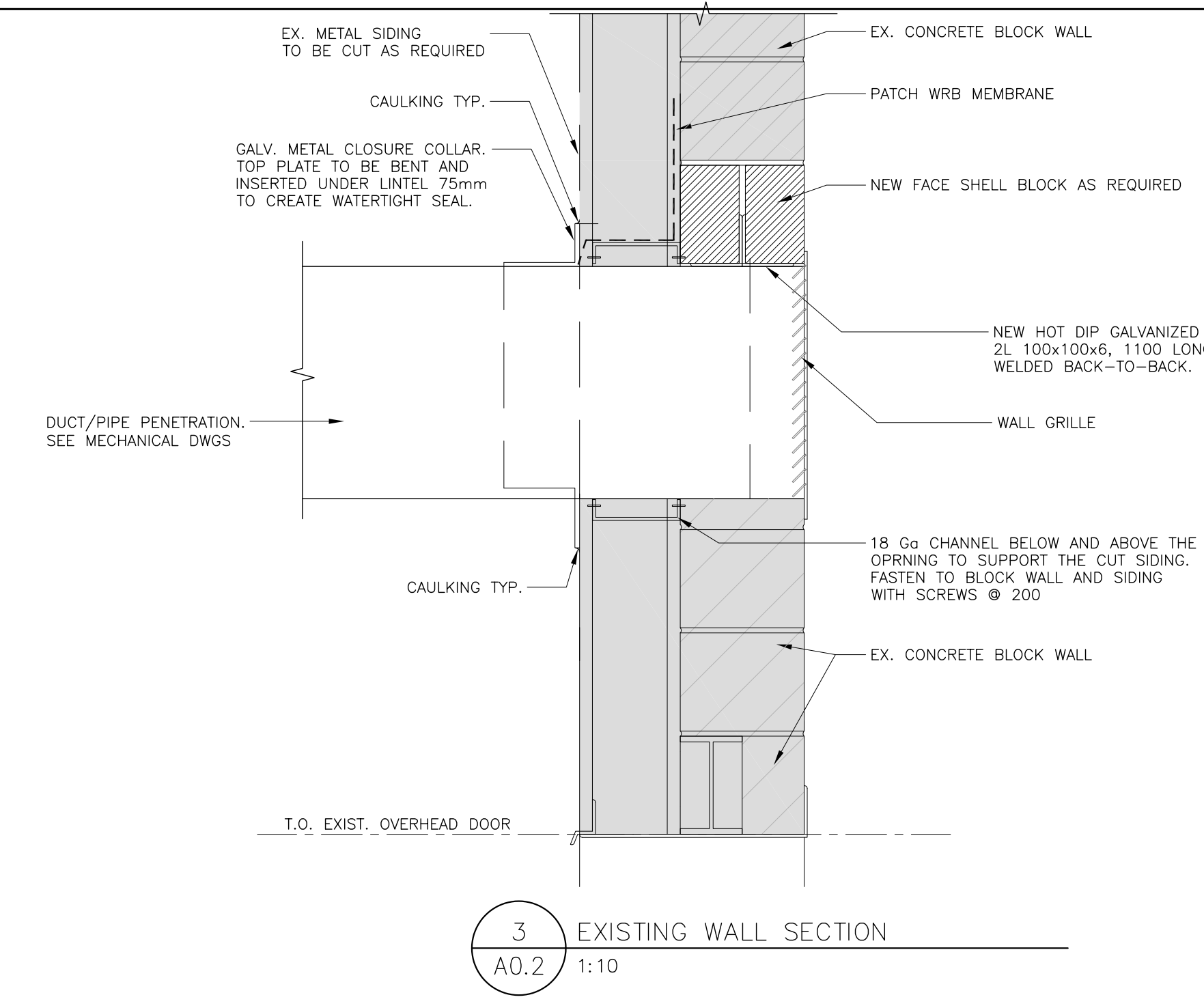
Glazing Sealant: To CAN/CGSB-19.13-M, Type MG2-25-A-L; one-part, moisture curing, acetoxy silicone sealant; eg. Proglaze by Tremco, Clear colour.

Inspect completed sealant joints for adhesion and cohesion to ASTM C1521.

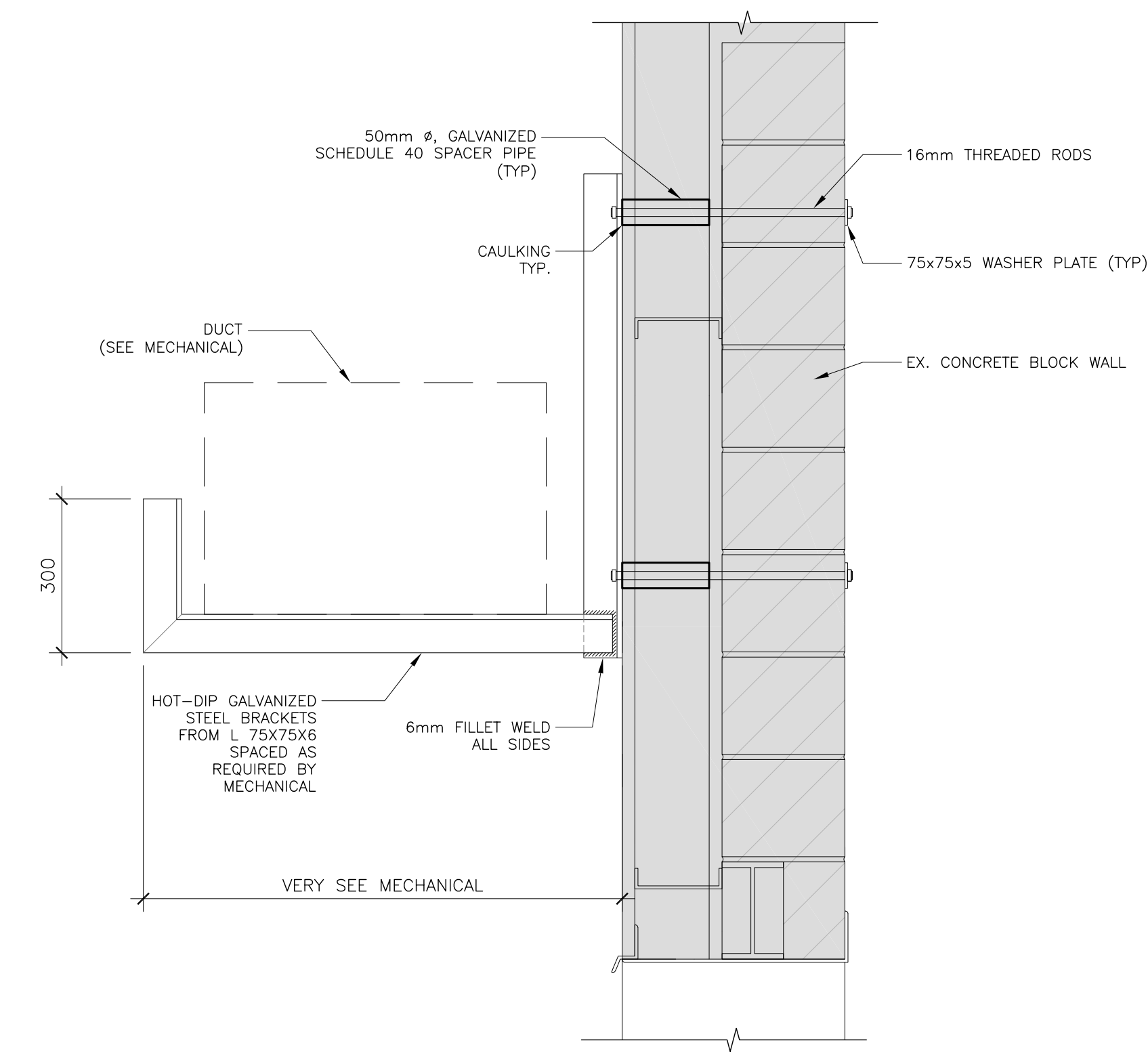
Steel Lintels: For brick veneer: L90x90x6
 For 140mm block wall: 2-L64x64x6 back-to-back angles
 For 190mm block wall: 2-L90x90x6
 For 240mm block wall: 2-L100x100x6

FIRM NAME: CGS CURRAN GACESA SLOTE ARCHITECTS INC. 118 JAMES ST. N., SUITE 301, HAMILTON, ONTARIO, L8R 2K7 TEL: (905) 297-0863 FAX: (905) 297-0864		NAME OF PROJECT: Dust Collector Replacements to HWDSB Waterdown Secondary School	
LOCATION: 211 Parkside Drive, Waterdown, ON			
ONTARIO BUILDING CODE DATA MATRIX - PART 11 - RENOVATION OF EXISTING BUILDING			
11.1	EXISTING BUILDING CLASSIFICATION	DESCRIBE EXISTING USE: SECONDARY SCHOOL CONSTRUCTION INDEX: - HAZARD INDEX: - ■ NOT APPLICABLE (NO CHANGE OF MAJOR OCCUPANCY)	11.2.1 F 11.2.1.1A F 11.2.1.1J
11.2	ALTERATION TO EXISTING BUILDING IS:	BASIC RENOVATION ■ EXTENSIVE RENOVATION □	11.3.3.1 11.3.3.2
11.3	REDUCTION IN PERFORMANCE LEVEL	BY INCREASE IN OCCUPANT LOAD: □ YES ■ NO BY CHANGE IN MAJOR OCCUPANCY: □ YES ■ NO PLUMBING: □ YES ■ NO SEWERAGE -SYSTEM: □ YES ■ NO	11.4.2 11.4.2.1 11.4.2.2 11.4.2.3 11.4.2.4 11.4.2.5
11.4	COMPENSATING CONSTRUCTION	STRUCTURAL: ■ NO □ YES (EXPLAIN) INCREASE IN OCCUPANT LOAD: ■ NO □ YES (EXPLAIN) CHANGE OF MAJOR OCCUPANCY: ■ NO □ YES (EXPLAIN) PLUMBING: ■ NO □ YES (EXPLAIN) SEWERAGE -SYSTEM: ■ NO □ YES (EXPLAIN)	11.4.3 11.4.3.2 11.4.3.3 11.4.3.4 11.4.3.5 11.4.3.6
11.5	COMPLIANCE ALTERNATIVES PROPOSED	■ NO □ YES (GIVE NUMBERS)	11.5.1
11.6	ALTERNATIVE MEASURES PROPOSED	■ NO □ YES (EXPLAIN)	11.5.2
ONTARIO BUILDING CODE DATA MATRIX - PART 3, RELEVANT ITEMS			
Item	Ontario's 2012 Building Code Data Matrix Part 3 or 9	OBC Reference References are to Division B unless noted [A] for Division A or [C] for Division C	
1	Building Area (m ²) Existing: 208,834.59 New: 0 Total: 337,834.59 Area of Work: 211	1.4.1.2. [A] & 3.2.1.1	1.4.1.2. [A]
2	Number of Storeys Above grade 2 Below grade 0	1.4.1.2. [A] & 3.2.1.1	1.4.1.2[A] & 9.10.4
3	Number of Streets/Fire Fighter Access 2	3.2.2.19. & 3.2.5	9.10.20.
4	Sprinkler System Proposed <input type="checkbox"/> entire building <input type="checkbox"/> selected compartments <input type="checkbox"/> selected floor areas <input type="checkbox"/> basement <input type="checkbox"/> in lieu of roof rating <input type="checkbox"/> not required <input checked="" type="checkbox"/> Exist.	3.2.2.20-83 3.2.1.5. 3.2.2.17. INDEX	9.10.8. 2. INDEX INDEX
5	Standpipe required <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Exist.	3.2.9	N/A
6	Fire Alarm required <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Exist.	3.2.4	9.10.18.
7	Water Service/Supply is Adequate <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Exist.	3.2.5.7	N/A
8	High Building <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.2.6	N/A
9	Barrier - Free Design <input type="checkbox"/> Yes <input type="checkbox"/> No (Explain) <input checked="" type="checkbox"/> Exist.	3.8	9.5.2
10	Hazardous Substances <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	3.3.1.2. & 3.3.1.19	9.1.0.1.3.(4)
11	Required Fire Resistance Rating (FRR) Horizontal Assemblies Exist. Corridor 1 HR Exist. Tech. Room 1 HR Roof N/A Listed Design No. or Description (SB-3) ULC U905 ULC U905	3.2.2.20-83 & 3.2.1.4	9.10.8. 9.10.9.
12	Travel Distance: max. 30 m actual: see plan	3.4.2.4	

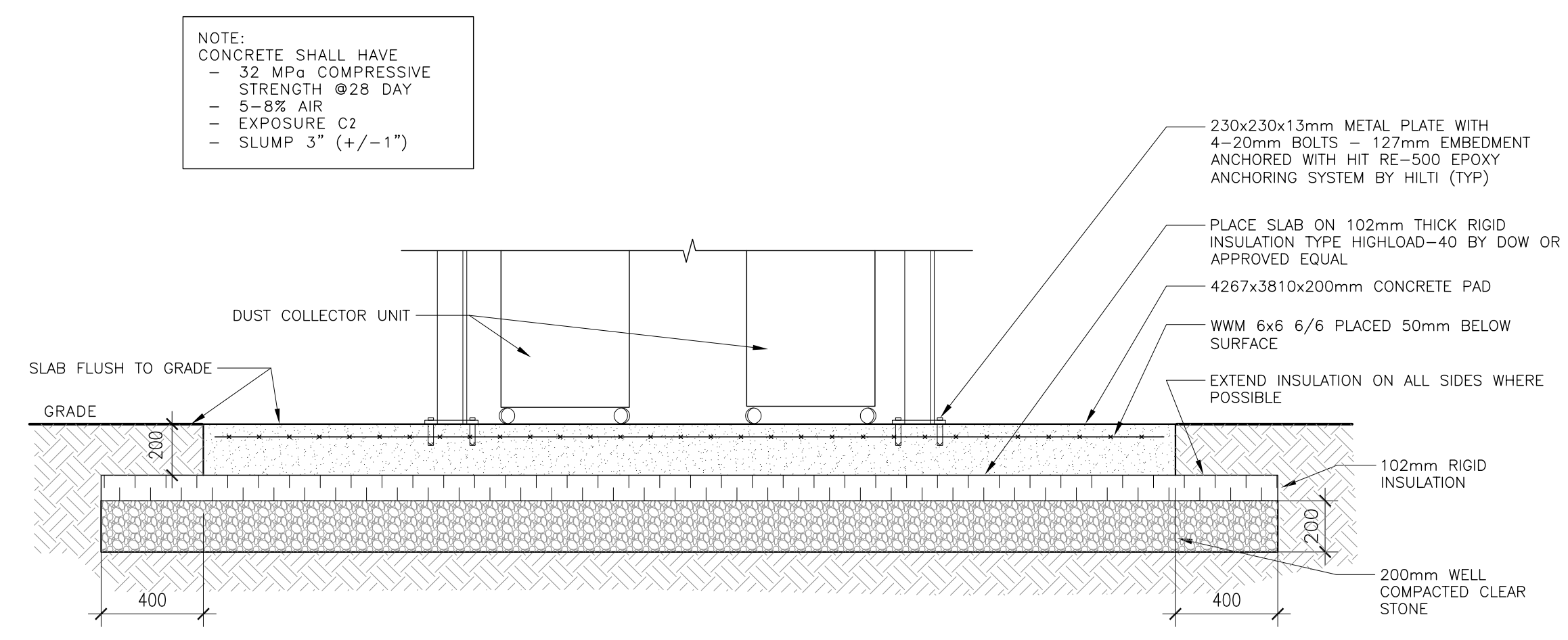
4 OBC MATRIX
A0.2 NTS



3 EXISTING WALL SECTION
A0.2 1:10



2 DUCT SUPPORT BRACKETS
A0.2 1:10



1 SECTION THROUGH CONCRETE PAD
A0.2 1:20

NOTE:
CONCRETE SHALL HAVE
- 32 MPa COMPRESSIVE
- STRENGTH @28 DAY
- 5-8% AIR
- EXPOSURE C2
- SLUMP 3" (+/-1")

CGS CURRAN GACESA SLOTE ARCHITECTS
 118 JAMES ST. NORTH, SUITE 301, HAMILTON, ONTARIO, L8R 2K7
 TEL: (905) 297-0863
 FAX: (905) 297-0864

CONTRACTOR IS TO CHECK AND VERIFY ALL DIMENSIONS AND CONDITIONS ON THE PROJECT AND TO REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
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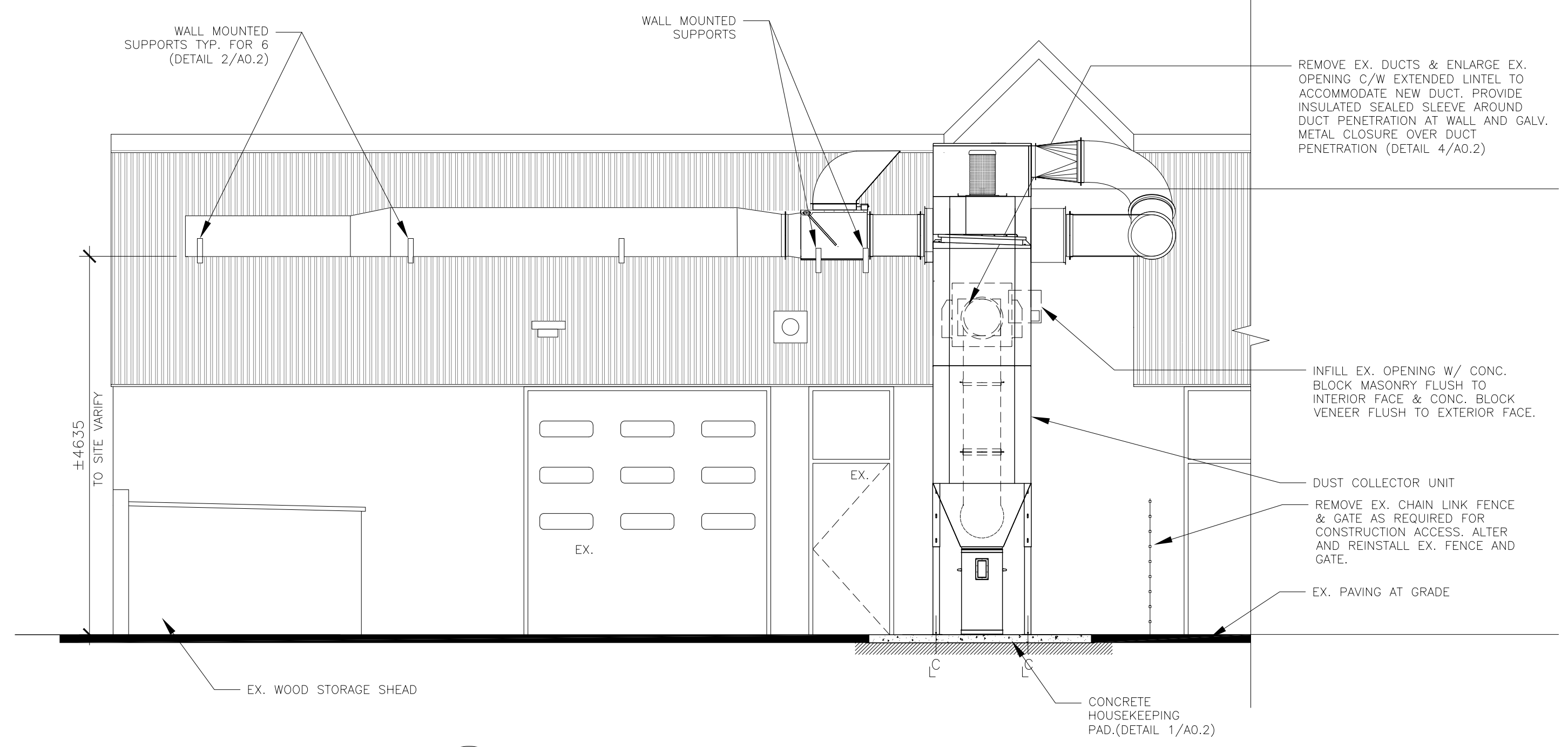
No.	Date	Remarks
02	2026-03-17	Issued for Tender
02	2025-12-10	Issued for Building Permit
01	2025-09-04	Issued for Coordination

HWDSB Dust Collector Replacement at
Waterdown District High School
 215 Parkside Drive, Waterdown,
 ON, L8B 1B9

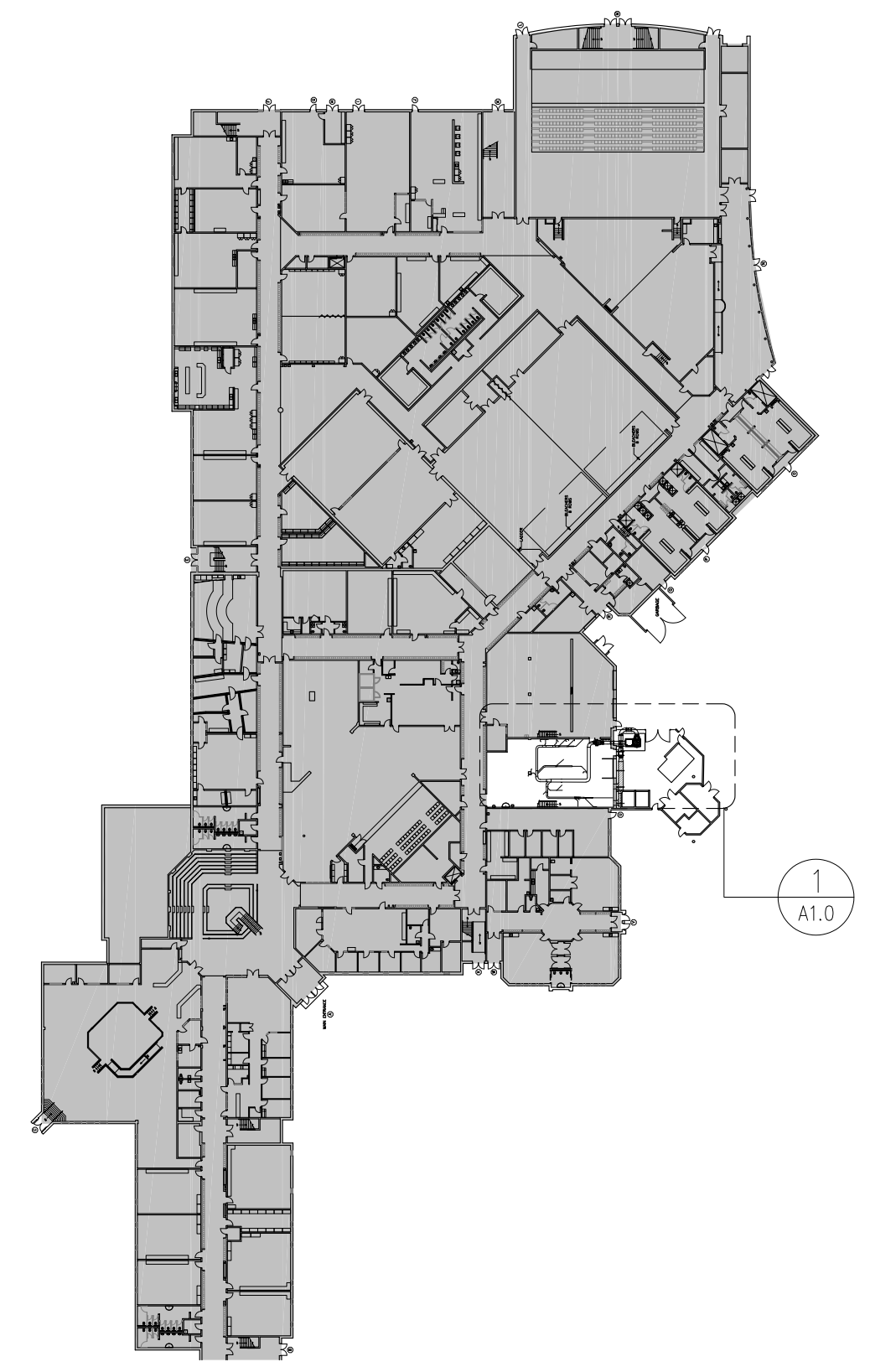
Dwg. Title:
**Specification,
 Details & OBC
 Matrix**

Drawn:	Chkd:	SG
Proj. No.:	25019	
Scale:	As noted	
Date:	2025.08.20	

Drawing No.:
A0.2



3 PARTIAL ELEVATION
A1.0 1:50



2 KEY PLAN
A1.0 1:1000

PLAN KEYNOTES

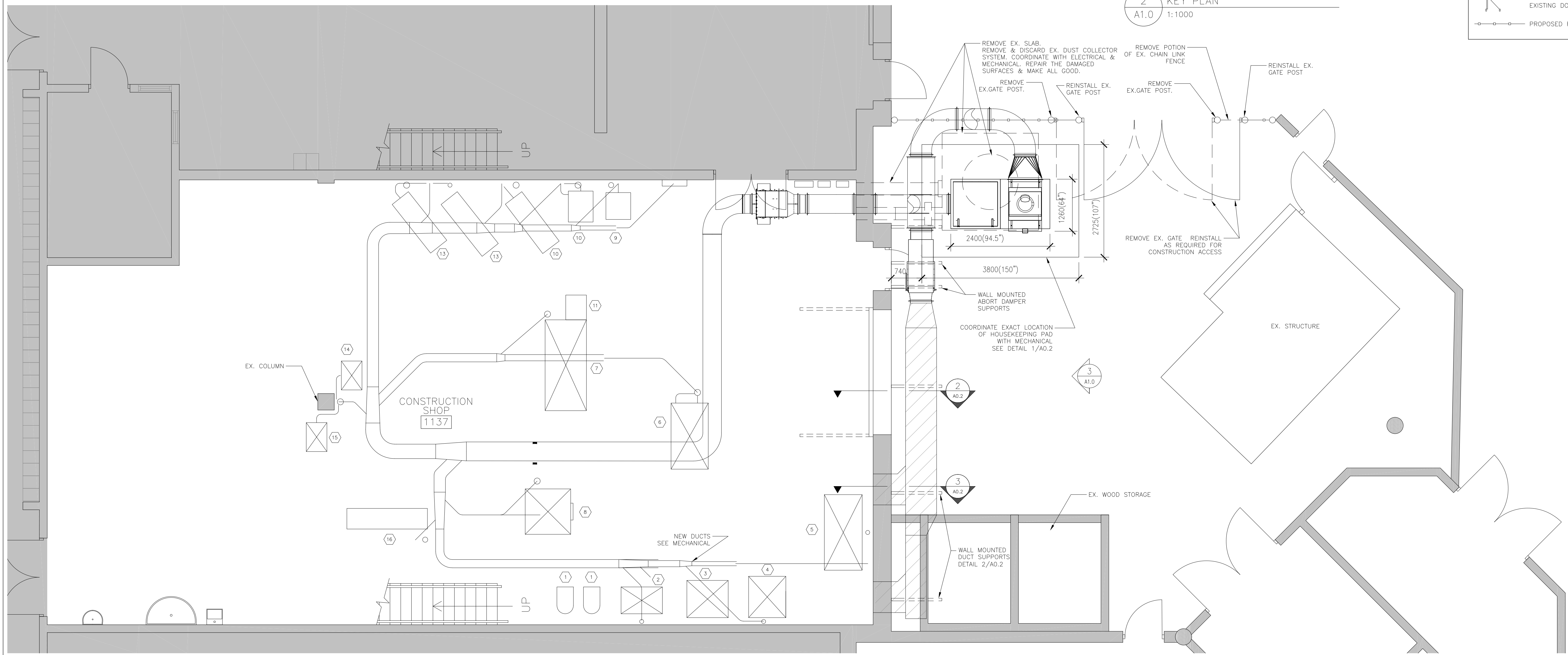
- 1 EX. DRILL PRESS
- 2 EX. ROUTER
- 3 EX. CNC MACHINE
- 4 EX. ROUTER TABLE
- 5 EX. RADIAL ARM SAW
- 6 EX. TABLE SAW
- 7 EX. PLANER
- 8 EX. PLANER
- 9 EX. SPINDLE SANDER
- 10 EX. BELT/DISC SANDER
- 11 EX. PLUNGE ROUTER
- 12 EX. PLUNGE ROUTER
- 13 EX. SPINDLE SANDER
- 14 EX. BAND SAW
- 15 EX. BAND SAW
- 16 EX. JOINTER WITH SPIRAL CUTTER HEAD

PLAN NOTES

1. ROOM HEIGHT FROM F.F.L. TO UNDERSIDE OF CEILING STRUCTURE: ±3660
2. REMOVE AND PRESENT EXISTING PORTABLE DUST COLLECTORS TO OWNER FOR STORAGE.
3. FENCE ENCLOSURE AND CONCRETE HOUSEKEEPING PAD TO COORDINATE WITH DUST COLLECTOR CONFIGURATION.

PLAN LEGEND

- EXISTING TO REMAIN
- DEMOLITION
- EXISTING EQUIPMENT
- EXISTING DOOR TO REMAIN
- PROPOSED FENCE



1 PLAN - CONSTRUCTION SHOP 1137
A1.0 1:50

CURRAN | GACESA | SLOTE
ARCHITECTS
118 JAMES ST. NORTH, SUITE 301, HAMILTON, ONTARIO L8R 2K7
TEL: 905-272-2883

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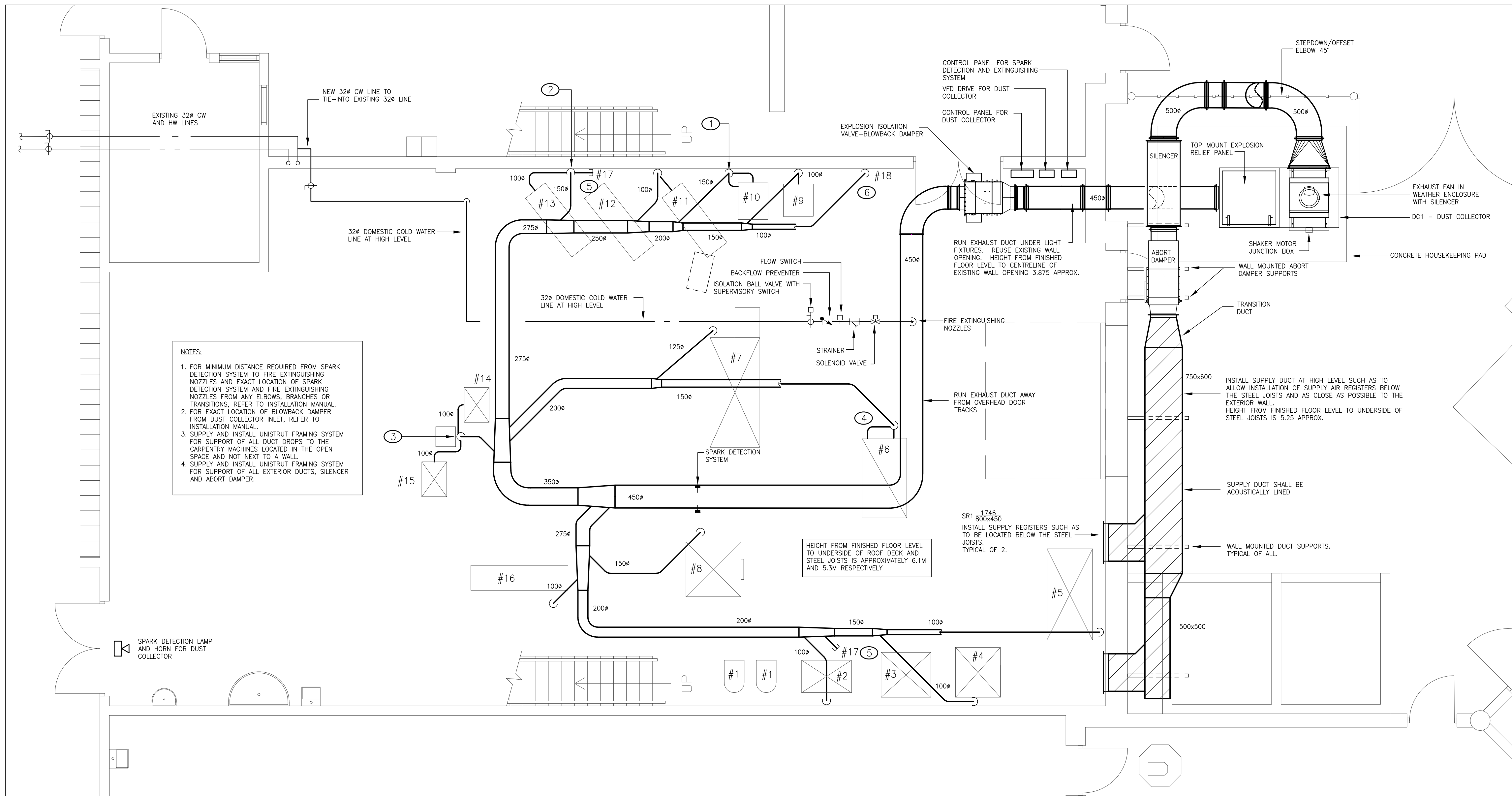
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**HWDSB Dust Collector Replacement at
Waterdown District High School**
215 Parkside Drive, Waterdown,
ON, L8B 1B9

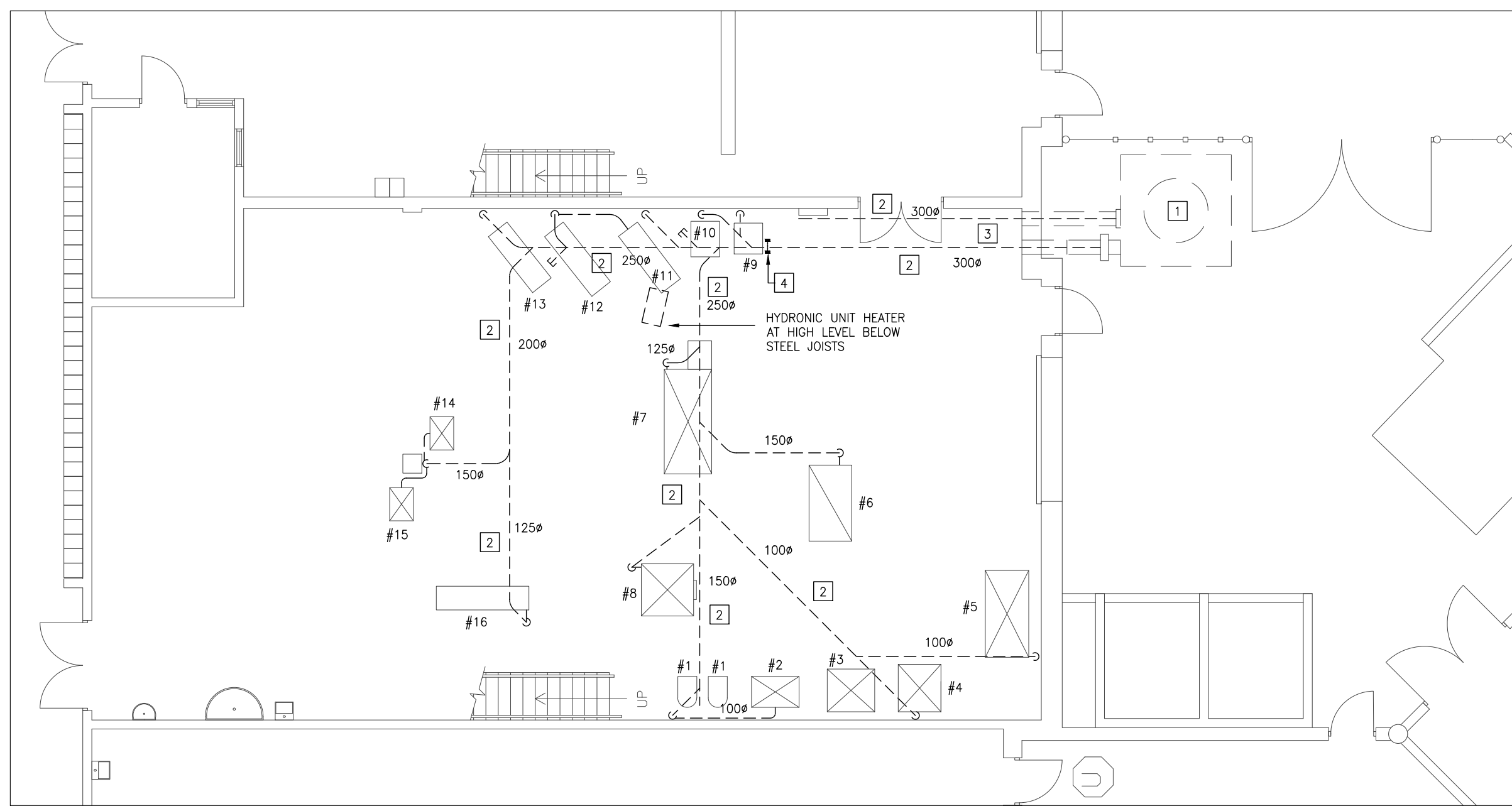
Dwg. Title:
**Partial Floor
Plan & Elevation**

Drwn:	Chkd:	SG
Proj. No.:	25019	
Scale:	As noted	
Date:	2025.08.20	

Drawing No.:
A1.0

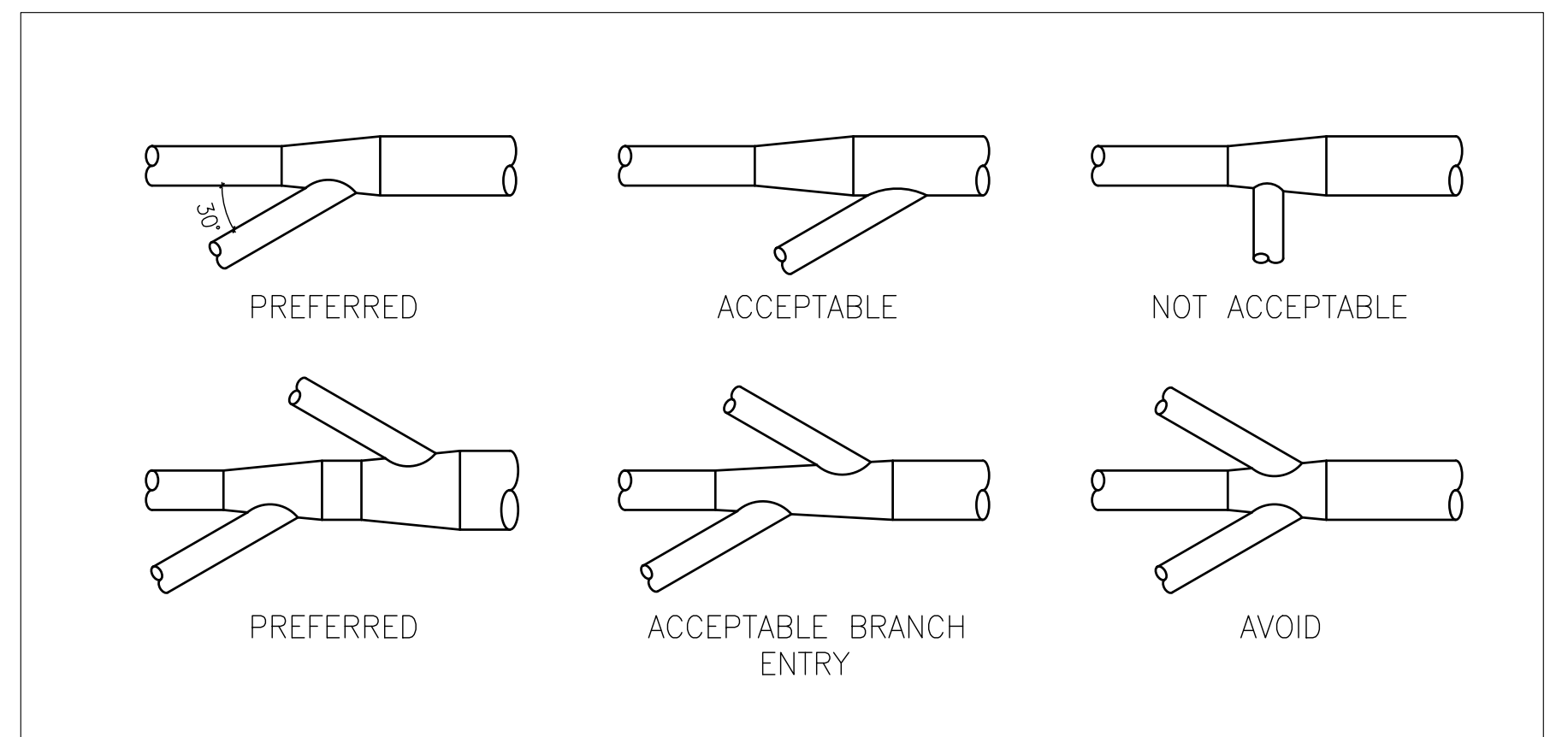


2 WOOD SHOP 1137 - REPLACEMENT LAYOUT
M1-1 1:50



1 WOOD SHOP 1137 - DEMOLITION LAYOUT
M1-1 1:100

- DEMOLITION NOTES** #
- 1 REMOVE DUST COLLECTOR.
 - 2 REMOVE AND DISPOSE OF THE ENTIRE DUST COLLECTION SYSTEM EXHAUST DUCT.
 - 3 REMOVE FIRE EXTINGUISHING SYSTEM. CUTBACK COLD WATER LINE AND CAP.
 - 4 REMOVE SPARK DETECTION SYSTEM.

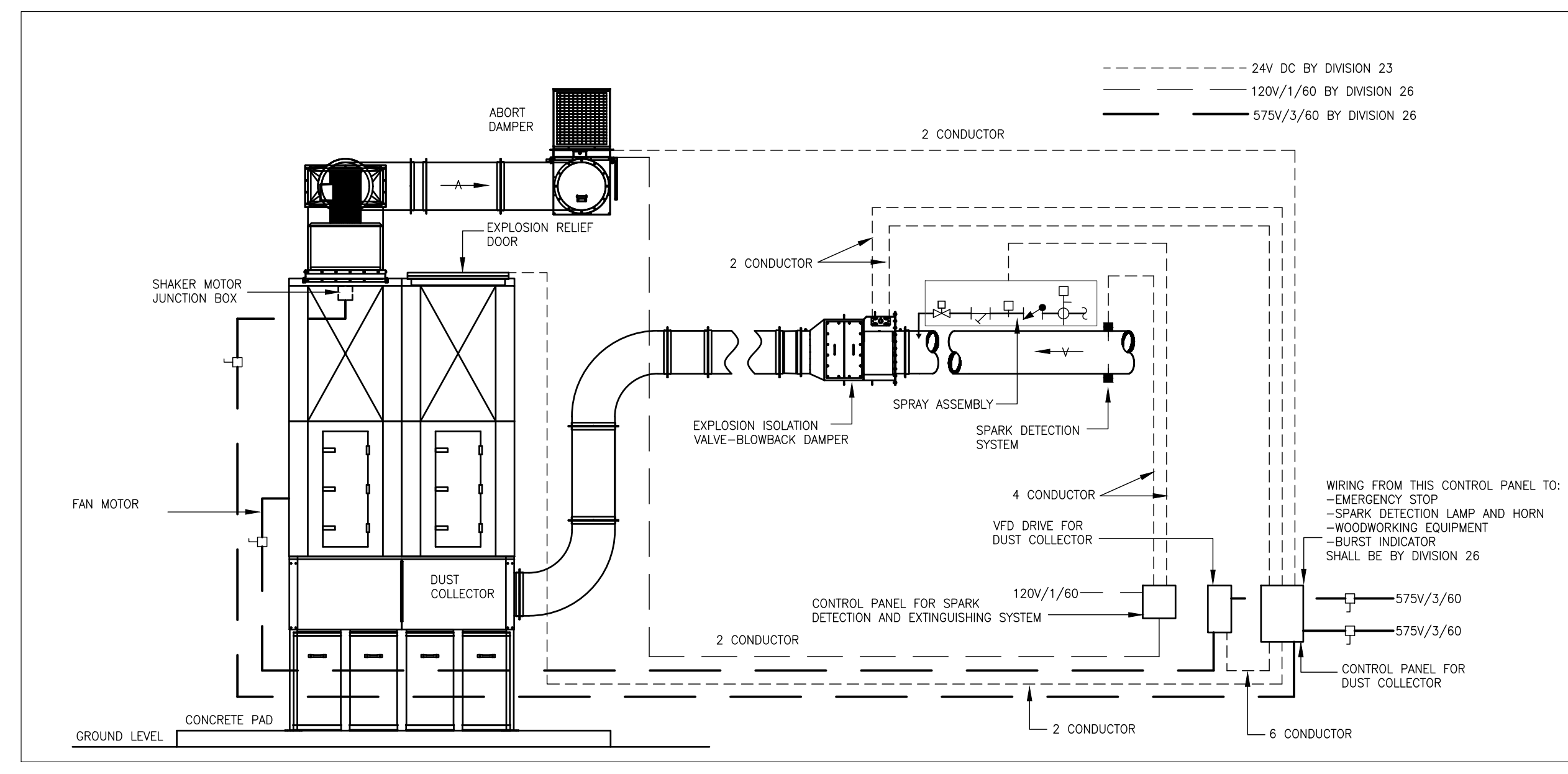


3 DUCT CONSTRUCTION DETAILS
M1-1 N.T.S.

WOODWORKING MACHINES AIRFLOW CAPACITIES & CONNECTIONS				
REF. #	MACHINE	EXHAUST CFM	CONNECTION PORT	REMARKS
1	DRILL PRESS	-	-	DOES NOT REQUIRE EXHAUST
2	ROUTER	350	4"	
3	CNC MACHINE	-	-	DOES NOT REQUIRE EXHAUST
4	ROUTER TABLE	350	4"	
5	RADIAL ARM SAW	350	4"	
6	TABLE SAW	750	2x4"	
7	PLANER	550	4"	
8	PLANER	750	6"	
9	SPINDLE SANDER	350	4"	
10	BELT/DISC SANDER	750	2x4"	
11	BELT SANDER	550	4"	
12	LATHE MACHINE	-	-	DOES NOT REQUIRE EXHAUST
13	SPINDLE SANDER	350	4"	
14	BAND SAW	350	3"	
15	BAND SAW	350	3"	
16	JOINTER	550	4"	
17	SPARE	350	4"	CAPPED DUCT FOR FUTURE CONNECTION
18	SANDING TABLE	350	4"	CAPPED DUCT FOR FUTURE CONNECTION
	TOTAL AIRFLOW	7400		

- GENERAL INSTALLATION NOTES**
- 1 DUCTWORK IN THE CLASSROOM SHALL BE INSTALLED AS HIGH AS POSSIBLE. DUCTWORK DISTRIBUTION SHALL BE COORDINATED WITH LIGHT FIXTURES.
 - 2 DUCT BRANCHES SHOULD ENTER AT GRADUAL EXPANSIONS AND AT AN ANGLE OF 30° OR LESS (PREFERRED) TO 45° IF NECESSARY. EXPANSION SHOULD BE 15" MAXIMUM.
 - 3 FOR SPARE DUCTS INTENDED FOR CONNECTION OF FUTURE CARPENTRY MACHINES, INSTALL BRANCH DUCT WITH MANUAL BLAST GATE AND DUCT CAP.
 - 4 PROVIDE MANUAL BLAST GATES, DUCT TRANSITIONS AND FLEXIBLE HOSE TO BE CONNECTED TO THE CARPENTRY MACHINES. FLEXIBLE HOSE SHALL BE LIMITED TO 5 FT. MAXIMUM. COORDINATE WITH MECHANICAL ENGINEER WHERE LONGER LENGTHS WILL HAVE TO BE INSTALLED DUE TO SITE CONDITIONS.
 - 5 INSTALL ACCESS DOORS ALONG THE ENTIRE MAIN DUCTWORK, SPACING SHALL BE EVERY 10 FT. INSTALL ACCESS DOORS AT SPARK DETECTION ASSEMBLY AND FIRE EXTINGUISHING NOZZLE ASSEMBLY.
 - 6 USE LONG RADIUS ELBOW R/D=1.5 OR GREATER.

- EXHAUST SYSTEM INSTALLATION NOTES**
- 1 150Ø BRANCH DUCT, SHALL TERMINATE WITH WYE (Y) FITTING WITH 2x100Ø BRANCHES TO FACILITATE CONNECTION TO MACHINE #10 WITH 2 PORTS.
 - 2 150Ø BRANCH DUCT SHALL DROP AND TERMINATE ABOVE FLOOR LEVEL WITH WYE (Y) DUCT FITTING WITH 2x100Ø BRANCHES. ONE BRANCH SHALL CONNECT TO THE MACHINE #13 PORT AND THE OTHER BRANCH SHALL BE CAPPED FOR FUTURE USE.
 - 3 150Ø BRANCH DUCT SHALL DROP AND TERMINATE ABOVE FLOOR LEVEL WITH WYE (Y) DUCT FITTING WITH 2x100Ø BRANCHES. ONE BRANCH SHALL BE CONNECTED TO MACHINE #14 AND THE OTHER BRANCH TO MACHINE #15 PORT.
 - 4 150Ø BRANCH DUCT DROP, TERMINATE WITH WYE (Y) DUCT FITTING WITH 2x100Ø BRANCHES TO FACILITATE CONNECTION TO MACHINE #6 WITH 2 PORTS.
 - 5 SPARE DUCT FITTING 100MM DIAMETER AND CAPPED.
 - 6 100Ø BRANCH DUCT DROP. CAPPED FOR FUTURE SANDING TABLE.



4 DUST COLLECTOR SYSTEM - WIRING SCHEMATIC
M1-1 N.T.S.

3	MAR.17/26	ISSUED FOR TENDER
2	DEC.12/25	ISSUED FOR PERMIT
1	OCT.22/25	PROGRESS AND COORDINATION
NO.	DATE	REVISION

DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED BY CONTRACTOR DURING THE COURSE OF WORK.

CoPa ENGINEERING LTD.

LICENSED PROFESSIONAL ENGINEER
C.T. PASHARTIS
90327800
MAR.17/26
PROVINCE OF ONTARIO

29 ROLLING ACRES DR.
KITCHENER, ONTARIO
N2A 3W5
TEL. (519) 894-0022

PROJECT
HWDSB Dust Collector Replacement
Waterdown District High School

211 PARKSIDE DRIVE
WATERDOWN ONTARIO

DRAWING
PROPOSED DUST COLLECTION
SYSTEM LAYOUT

DRAWN BY: C. P. SCALE: AS NOTED
CHECKED BY: C. PASHARTIS DATE: OCTOBER 22, 2025
PROJECT NO. 25CP059 DRAWING NO. M1-1

GENERAL NOTES:

1. ANY COMBUSTIBLE MATERIALS INSTALLED IN THE CEILING SPACE USED AS A RETURN AIR PLENUM, SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25 AND A MAXIMUM SMOKE DEVELOPED RATING OF 50. PLUMBING AND HVAC CONTRACTORS SHALL COORDINATE WITH ALL OTHER TRADES.
2. WHERE CEILING SPACE IS TO BE USED AS A RETURN AIR PLENUM, ALL WIRING FOR CONTROL, TELEPHONE, DATA, SECURITY, SPEAKER WIRE ETC., SHALL BE FT6, CMP, MPP OR PLENUM VENTED.
3. THE SPECIFIED MANUFACTURERS MEANS THAT THE ITEM NAMED AND SPECIFIED, FORMS PART OF SPECIFICATION AND SETS STANDARD REGARDING PERFORMANCE, QUALITY OF MATERIAL AND WORKMANSHIP. ALTERNATE MANUFACTURERS WILL BE CONSIDERED AND ACCEPTED AS EQUAL PROVIDED THEY MEET THE STANDARD SPECIFIED.

MECHANICAL GENERAL REQUIREMENTS

1. DESCRIPTION OF WORK
1. THE MECHANICAL CONTRACTOR SHALL FURNISH ALL LABOUR, MATERIAL, TOOLS, EQUIPMENT, SUPERVISION AND OTHER SERVICES AS MAY BE REQUIRED TO EXECUTE THE WORK DESCRIBED IN THE CONTRACT DOCUMENTS.
2. SITE EXAMINATION
1. BEFORE SUBMITTING TENDERS, CAREFULLY EXAMINE THE ARCHITECTURAL, STRUCTURAL, ELECTRICAL AND MECHANICAL DRAWINGS HAVING A BEARING ON THE WORK. IT IS RECOMMENDED TO VISIT THE SITE OF THE EXISTING BUILDING PRIOR TO SUBMITTING A BID AND THOROUGHLY ASCERTAIN THE EXTENT AND NATURE OF ALL CONDITIONS AFFECTING THE PERFORMANCE OF WORK. VISIT DURING THE SITE WALKTHROUGH. NO UNAUTHORIZED VISITS ARE PERMITTED.
3. CODES AND STANDARDS
1. THE INSTALLATION SHALL COMPLY WITH THE LATEST EDITIONS AND ALL AMENDMENTS OF THE FOLLOWING CODES AND STANDARDS. WHERE CONFLICTS IN REQUIREMENTS OCCUR, THE HIGHER STANDARDS WILL APPLY: ONTARIO BUILDING CODE, ONTARIO FIRE CODE, N.F.P.A., ASHRAE, NATURAL GAS INSTALLATION STANDARD CSA-B149.1 AND LOCAL CODES, STANDARDS AND BY-LAWS.
4. REGULATIONS, PERMITS, FEES, CONNECTION CHARGES AND CERTIFICATES
1. ALL MATERIALS AND WORKMANSHIP SHALL MEET ALL PROVINCIAL, BUILDING, MUNICIPAL, N.F.P.A., AND FIRE MARSHAL REGULATIONS, CODES AND BYLAWS IN FORCE IN THE AREA OF THE PROJECT.
2. EACH CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND PAY FOR ALL FEES AND CONNECTION CHARGES FOR ALL SERVICES PROVIDED BY THIS DIVISION.
5. COOPERATION OF TRADES
1. READ SPECIFICATIONS AND DRAWINGS OF OTHER TRADES AND CONFORM WITH THEIR REQUIREMENTS BEFORE PROCEEDING WITH ANY WORK SPECIFIED IN THIS DIVISION RELATED TO OTHER TRADES.
6. DRAWINGS
1. CONTRACT DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT OF THE MECHANICAL SYSTEMS AND WORK INCLUDED IN THE CONTRACT.
2. WHERE THE EXACT LOCATIONS OF FIXTURES AND EQUIPMENT ARE NOT DEFINITELY ESTABLISHED, THE CONTRACTOR SHALL OBTAIN THIS INFORMATION FROM THE OWNER AND ENGINEER.
7. REMOVAL OF EXISTING EQUIPMENT
1. EXAMINE THE EXISTING BUILDING AND INCLUDE IN TENDER PRICE ALL NECESSARY ALLOWANCES TO REMOVE EXISTING EQUIPMENT AS DETAILED ON DRAWINGS AND AS DIRECTED BY THE GENERAL CONTRACTOR.
2. MATERIALS REMOVED BY THIS DIVISION SHALL BECOME CONTRACTOR'S PROPERTY AND BE REMOVED FROM WORK SITE, PROVIDED:
 1. THE ITEMS HAVE BEEN INSPECTED BY THE OWNER AND GENERAL CONTRACTOR AND RELEASED FOR REMOVAL.
 2. ITEMS HAVE NOT BEEN DESIGNATED FOR REUSE IN OTHER SECTIONS OF SPECIFICATIONS OR DRAWINGS.
8. ALTERATION TO EXISTING
1. PRIOR TO REMOVAL AND ALTERATION OF THE EXISTING SYSTEMS, THE CONTRACTOR SHALL IDENTIFY TO THE ENGINEER AT WHICH SECTIONS OF THE EXISTING MECHANICAL EQUIPMENT, PIPING AND DUCTWORK SHALL BE CUT BACK AND REMOVED.
2. RELOCATE EXISTING MECHANICAL EQUIPMENT AND APPURTENANCES AS SPECIFICALLY INDICATED ON DRAWINGS OR SPECIFIED AND AS REQUIRED TO SUIT ALTERATION WORK. CLEAN RELOCATED EQUIPMENT AND INSTALL IN NEW LOCATION IN A NEAT ORDERLY MANNER WITH SAME ATTENTION AS GIVEN TO NEW EQUIPMENT. WHERE EXISTING MATERIAL OR EQUIPMENT IS NO LONGER REQUIRED, SHALL BE CUT BACK AND MAKE GOOD TO SATISFACTION OF THE ENGINEER. WHEN EXISTING MATERIAL OR EQUIPMENT IS DISCONNECTED OR DISASSEMBLED TO FACILITATE RELOCATION, REINSTALL AS ORIGINAL, INCLUDING AUXILIARY WORK, INSULATION, ELECTRICAL WORK ETC.
3. WHERE EXISTING MATERIAL OR EQUIPMENT IS DAMAGED, MAKE GOOD TO THE SATISFACTION OF ENGINEER. IF IT IS FOUND IN AN UNSUITABLE CONDITION, NOTIFY ENGINEER FOR INSTRUCTIONS.
4. OBTAIN WRITTEN AUTHORIZATION FROM ENGINEER FOR ALTERATION WORK THAT IS NOT SPECIFICALLY CALLED FOR OR CLEARLY INDICATED ON DRAWINGS.
9. PROTECTION OF OPENINGS
1. PROTECT EQUIPMENT AND SYSTEMS OPENINGS FROM DIRT, DUST, AND OTHER FOREIGN MATERIALS.
2. THIS CONTRACTOR SHALL PROTECT FINISHED WORK AND EQUIPMENT OF HIS OWN AND OTHER SUBCONTRACTORS FROM DAMAGE DUE TO CARRYING OUT HIS WORK. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE CONDITION OF ALL MATERIALS AND EQUIPMENT SUPPLIED UNDER THIS CONTRACT OR REMOVED FROM EXISTING BUILDING FOR REUSE AND SHALL PROVIDE ALL NECESSARY PROTECTION FOR SAME. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF THE WORK OF THIS SECTION, UNTIL THE BUILDING HAS BEEN COMPLETED AND PATCHED.
10. CUTTING AND PATCHING
1. RESPONSIBILITY FOR CUTTING, PATCHING AND FINISHING OF OPENINGS TO WALLS, FLOORS, ROOF AND ANY OTHER SURFACES IN THE STRUCTURE SHALL BE COORDINATED WITH GENERAL CONTRACTOR. WORK SHALL BE PERFORMED BY THE EXPERT TRADE WHO SPECIALIZE IN THEIR WORK. IN THE EVENT THE GENERAL CONTRACTOR WILL NOT BE RESPONSIBLE FOR THIS WORK, THIS SCOPE OF WORK SHALL BE INCLUDED UNDER THE MECHANICAL CONTRACTOR.
2. BEFORE CUTTING OF OPENINGS IN THE STRUCTURE, THE CONTRACTOR SHALL IDENTIFY TO THE STRUCTURAL ENGINEER AND THE OWNER'S REPRESENTATIVE AT WHICH SECTIONS OF THE BUILDING STRUCTURE ARE TO BE CUT BACK. THE CUTTING, PATCHING AND FINISHING OF THE ASSEMBLIES RESTRICTED BY THE WORK OF THIS DIVISION SHALL BE PERFORMED BY THE AFFECTED/EXPERT TRADE.
3. UNDER NO CIRCUMSTANCES SHALL ANY CUTTING OR BURNING OF THE BUILDING BE UNDERTAKEN WITHOUT THE WRITTEN AUTHORITY OF THE ENGINEER.
11. EQUIPMENT INSTALLATION
1. ALL EQUIPMENT, FIXTURES, PIPES, INSULATION AND ASSOCIATED APPURTENANCES SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2. SPACE FOR SERVICING, DISASSEMBLY AND REMOVAL OF EQUIPMENT AND COMPONENTS: PROVIDE AS RECOMMENDED BY MANUFACTURER OR AS INDICATED.
3. CONTROL PANELS, ELECTRICAL PANELS AND WIRING TERMINATION POINTS PROVIDE MINIMUM 40" CLEARANCE.
4. EQUIPMENT DRAIN: PIPE TO FLOOR DRAINS.
12. ROOF CONES AND FLASHING
1. ROOF CONES FOR PIPES AND ROUND DUCTS PENETRATING ROOF SHALL BE SUPPLIED AND INSTALLED BY MECHANICAL CONTRACTOR.
2. IT IS THE MECHANICAL CONTRACTOR'S RESPONSIBILITY TO SEE THAT ACCEPTABLE FLASHING ARE INSTALLED WHERE NECESSARY FOR THE WORK OF HIS TRADE. COUNTER FLASHING IS BY ROOFING CONTRACTOR AT THE EXPENSE OF THE MECHANICAL CONTRACTOR.
13. SLEEVES
1. THIS CONTRACTOR SHALL SUPPLY AND INSTALL SUITABLE SLEEVES FOR PIPING AND DUCTWORK PENETRATIONS TO THE BUILDING STRUCTURE.
2. PIPE SLEEVES: INSTALL AT POINTS WHERE PIPES PASS THROUGH MASONRY, CONCRETE OR U.L.C. FIRE RATED ASSEMBLIES AND AS INDICATED.
3. SCHEDULE 40 STEEL PIPE.
4. SLEEVES WITH ANNULAR FIN CONTINUOUSLY WELDED AT MIDPOINT.
5. SIZES: 1/4" CLEARANCE ALL AROUND, BETWEEN SLEEVE AND NON-INSULATED PIPE OR BETWEEN SLEEVE AND INSULATION.
6. TERMINAL SLEEVES FLUSH WITH SURFACE OF CONCRETE AND MASONRY WALLS AND CONCRETE FLOORS ON GRADE IN FINISHED AREAS.
7. FILL VOIDS AROUND PIPES:
 1. WHERE SLEEVES PASS THROUGH WALLS, PROVIDE SPACE FOR FIRE STOPPING. WHERE PIPES PASS THROUGH FIRE RATED WALLS AND PARTITIONS, MAINTAIN FIRE RATING INTEGRITY.
 2. ENSURE NO CONTACT BETWEEN COPPER TUBE OR PIPE AND FERROUS SLEEVES.
 3. FILL FUTURE-USE SLEEVES WITH LIME PLASTER OR OTHER EASILY REMOVABLE FILLER.
 4. GROUT EXPOSED EXTERIOR SURFACES OF FERROUS SLEEVES WITH HEAVY APPLICATION OF ZINC RICH PASTE
14. PREPARATION FOR FIRE STOPPING
1. FIRE STOPPING MATERIALS AND INSTALLATION UNDER ANNULAR SPACE BETWEEN PIPES, DUCTS, INSULATION AND ADJACENT FIRE SEPARATION: TO THE APPROVAL OF THE ENGINEER.
2. UNINSULATED UNHEATED PIPES NOT SUBJECT TO MOVEMENT: NO SPECIAL PREPARATION.
3. UNINSULATED HEATED PIPES SUBJECT TO MOVEMENT: WRAP WITH NON-COMBUSTIBLE SMOOTH MATERIAL TO PERMIT PIPE TO MOVE WITHOUT DAMAGING FIRE STOPPING.
4. INSULATED PIPES AND DUCTS: ENSURE INTEGRITY OF INSULATION AND VAPOUR BARRIER AT FIRE SEPARATION.
15. SCOUTING/CHIMNEY
1. PROVIDE ON EXPOSED PIPES PASSING THROUGH WALLS, PARTITIONS, FLOORS AND CEILINGS ON FINISHED AREAS.
2. CHROME OR NICKEL PLATED BRASS OR TYPE 302 STAINLESS STEEL, SPLIT PIECE TYPE WITH SET SCREWS.
3. OUTSIDE DIAMETER TO COVER OPENING OR SLEEVE.
4. INSIDE DIAMETER TO FIT AROUND FINISHED PIPE.
5. SECURE TO PIPE OR FINISHED SURFACE BUT NOT INSULATION.
16. TESTS
1. INSULATE OR CONCEAL WORK ONLY AFTER TESTING AND APPROVAL BY ENGINEER.
2. BEAR ALL COSTS IN CONNECTION WITH ALL TESTS INCLUDING REPAIRING LEAKS, RETESTING AND MAKING GOOD.
3. PRIOR TO TESTS, ISOLATE ALL EQUIPMENT AND OTHER PARTS WHICH ARE NOT DESIGNED TO WITHSTAND TEST PRESSURES OR TEST MEDIUM.
4. PROVIDE CERTIFICATES INDICATING RESULTS OF ALL TESTS INCLUDING TEST LOGS.
5. PIPING:
 1. PLUMBING LINES SHALL BE TESTED IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.
17. PIPE FLUSHING AND CLEANING
1. AFTER PRESSURE TESTS ARE COMPLETED AND APPROVED, PRIOR TO START-UP AND PLACING INTO OPERATION, FLUSH AND CLEAN OUT ALL PIPING SYSTEMS.
2. FOR DOMESTIC WATER SYSTEM, CLEAN AS PER ONTARIO BUILDING CODE AND LOCAL REQUIREMENTS.
18. ACCESS DOORS
1. SUPPLY ACCESS DOORS TO CONCEALED MECHANICAL EQUIPMENT FOR OPERATING, INSPECTING, ADJUSTING AND SERVICING.
2. ACCESS DOORS REQUIRED IN LISTED FIRE SEPARATION SHALL BEAR A ULC LABEL TO MATCH WALL CLASSIFICATION.
19. DIELECTRIC COUPLINGS
1. PROVIDE WHERE PIPES OF DISSIMILAR METALS ARE JOINED. SHALL BE COMPATIBLE WITH AND TO SUIT PRESSURE RATING OF PIPING SYSTEM.
2. PIPES NPS 2 AND UNDER SHALL BE WITH ISOLATING UNIONS. PIPES NPS 2 1/2 AND OVER SHALL BE ISOLATING FLANGES.
3. PROVIDE FELT OR RUBBER GASKET TO PREVENT DISSIMILAR METALS CONTACT.
20. DRAIN VALVES
1. LOCATE AT LOW POINTS AND AT SECTION ISOLATING VALVES UNLESS OTHERWISE SPECIFIED.
2. MINIMUM NPS 3/4 UNLESS OTHERWISE SPECIFIED: BRONZE, WITH HOSE END MALE THREAD.
21. EQUIPMENT SUPPORTS
1. EQUIPMENT SUPPORTS NOT SUPPLIED BY EQUIPMENT MANUFACTURER SHALL BE FABRICATED FROM STRUCTURAL GRADE STEEL.
2. RESPONSIBILITY FOR ROOFING AND REINFORCING OF ROOF STRUCTURE FOR MECHANICAL EQUIPMENT SUPPORT SHALL BE COORDINATED WITH GENERAL CONTRACTOR. IN THE EVENT THE GENERAL CONTRACTOR WILL NOT BE RESPONSIBLE FOR THIS WORK, THIS SCOPE OF WORK SHALL BE INCLUDED UNDER THE MECHANICAL CONTRACTOR.
22. PIPE HANGERS AND SUPPORTS
1. PROVIDE UPPER ATTACHMENTS, MIDDLE ATTACHMENT ROD, PIPE ATTACHMENT, RISER CLAMPS, SADDLES, SHIELDS AND OTHER DEVICES. RIGID, SWING OR ANY OTHER HANGER SYSTEM SHALL BE SUITABLE FOR THE APPLICATION AND TAKE INTO ACCOUNT ATTACHMENT IN AREAS MADE OF CONCRETE, SLAB, STEEL BEAM, WOOD JOISTS AND SUPPORTS FOR EXPANSION OF PIPING.
2. HANGER SPACING AND MIDDLE ATTACHMENT (ROD) DIAMETER AS PER REGULATORY AUTHORITIES AND MANUFACTURER'S RECOMMENDATIONS.
3. INSTALL HANGER SO THAT ROD IS VERTICAL UNDER OPERATING CONDITIONS. ADJUST HANGERS TO EQUALIZE LOAD.
4. WHERE THERE ARE NO INSERTS ARE NOT IN SUITABLE LOCATIONS, PROVIDE SUPPLEMENTARY STRUCTURAL STEEL MEMBERS.
4. WHERE SUPPORTING COPPER PIPE, IT SHALL BE ISOLATED FROM ANY NON-COPPER HANGER WITH ELECTROLYTIC ACTION TAPE OR EQUIVALENT.
23. PAINTING
1. APPLY AT LEAST ONE COAT OF CORROSION RESISTANT PRIMER PAINT TO FERROUS SUPPORTS AND SITE FABRICATED WORK.
2. PRIME AND TOUCH UP MARKED FINISHED PAINT WORK TO MATCH ORIGINAL.
3. RESTORE TO NEW CONDITION, FINISHES WHICH HAVE BEEN DAMAGED TO EXTENSIVELY TO BE MERELY PRIMED AND TOUCHED UP.
4. AT AREAS WHERE CUTTING AND PATCHING HAS TAKEN PLACE, PAINTING OF THESE AREAS SHALL BE UNDERTAKEN BY THE AFFECTED (EXPERT) TRADE AT THE EXPENSE OF THE MECHANICAL CONTRACTOR.
24. IDENTIFICATION
1. IDENTIFY AND LABEL EQUIPMENT AND PIPEWORK SERVICES ON COMPLETION OF THE PROJECT.
2. DOMESTIC WATER LINES SHALL SHOW SERVICE AND DIRECTION OF FLOW.
3. EQUIPMENT, PANELS AND CABINETS, SYSTEM NAMEPLATES SHALL BE 1/8" THICK LAMINATED PLASTIC WITH LETTERS AND NUMBERS MACHINE ENGRAVED INTO CORE.
- ELECTRICAL WORK
1. ALL WIRING AND CONDUIT FOR POWER AND CONTROL SHALL BE BY ELECTRICAL DIVISION, EXCEPT FOR WIRING, CONDUIT AND CONNECTIONS BELOW 50V WHICH ARE RELATED TO AUTOMATIC CONTROL SYSTEMS SHALL BE BY MECHANICAL CONTRACTOR.
26. CLEANING
1. UPON COMPLETION AND IN PREPARATION FOR FINAL ACCEPTANCE, CONTRACTOR SHALL REMOVE PROTECTIVE COVERINGS, CLEAN AND REFURBISH ALL EQUIPMENT, FREE ALL OBSTRUCTIONS, REPLACE FILTERS, CLEAN STRAINERS AND LEAVE IN OPERATING CONDITION. ALL SURPLUS AND WASTE MATERIAL SHALL BE PROMPTLY REMOVED FROM THE PREMISES.
27. TRAIL USAGE
1. OBTAIN WRITTEN PERMISSION FROM ENGINEER TO START AND TEST PERMANENT EQUIPMENT AND SYSTEMS TO ACCEPTANCE BY OWNER.
2. ENGINEER AND OWNER MAY USE EQUIPMENT AND SYSTEMS FOR TEST PURPOSES PRIOR TO ACCEPTANCE. SUPPLY LABOUR, MATERIAL AND INSTRUMENTS REQUIRED FOR TESTING.
28. DEMONSTRATION, OPERATION AND MAINTENANCE INSTRUCTIONS
1. SUPPLY TOOLS, EQUIPMENT AND PERSONNEL TO DEMONSTRATE AND INSTRUCT CLIENT'S REPRESENTATIVE DURING REGULAR WORK HOURS AND PRIOR TO ACCEPTANCE IN OPERATING, CONTROLLING, AND ADJUSTING OF ALL SYSTEMS AND EQUIPMENT.
29. TESTING, ADJUSTING AND BALANCING (TAB)
1. THIS OPERATION SHALL BE UNDERTAKEN BY A CONTRACTOR WHOSE PRINCIPAL BUSINESS IS THAT OF TESTING, ADJUSTING AND BALANCING. THIS CONTRACTOR IS TO CONDUCT ACCEPTANCE TESTS TO DEMONSTRATE THAT THE EQUIPMENT AND SYSTEMS ACTUALLY MEET THE SPECIFIED REQUIREMENTS. TESTS MAY BE CONDUCTED AS SOON AS CONDITIONS PERMIT. SUBMIT TAB REPORT TO ENGINEER FOR REVIEW.
2. THE BALANCING CONTRACTOR SHALL BE AFFILIATED WITH ASBC OR NEBB.
3. THIS CONTRACTOR SHALL COORDINATE LOCATION AND INSTALLATION OF ALL "TAB" DEVICES, EQUIPMENT, ACCESSORIES, MEASUREMENT PORT AND FITTINGS. ALL NECESSARY TEST PORTS SHALL BE PROVIDED TO THE MECHANICAL CONTRACTOR FOR INSTALLATION. OPERATE SYSTEMS FOR LENGTH OF TIME REQUIRED FOR TAB. SUBMIT "TAB" REPORT TO ENGINEER FOR VERIFICATION. "TAB" SHALL BE CARRIED OUT FOR THE FOLLOWING SYSTEMS:
 1. ALL AIRFLOWS WHEREVER INDICATED.
30. OPERATION AND MAINTENANCE MANUAL
1. PROVIDE OPERATION AND MAINTENANCE DATA FOR INCORPORATION INTO MANUAL.
2. OPERATION AND MAINTENANCE MANUAL TO BE APPROVED BY AND FINAL COPIES DEPOSITED WITH ENGINEER BEFORE FINAL INSPECTION.
31. RECORD DRAWINGS
1. SITE RECORDS:
 1. ON ONE SET OF AUTOCAD MECHANICAL DRAWINGS, MARK ALL CHANGES AS WORK PROGRESSES AND AS CHANGES OCCUR.
 2. MAKE AVAILABLE FOR REFERENCE PURPOSES AND INSPECTION AT ALL TIMES.
2. AS-BUILT DRAWINGS:
 1. IDENTIFY EACH DRAWING IN LOWER RIGHT HAND CORNER IN LETTERS AT LEAST 1/2" HIGH AS FOLLOWS: "AS BUILT DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (SIGNATURE OF CONTRACTOR) (DATE).
 2. SUBMIT TO ENGINEER FOR APPROVAL AND MAKE CORRECTIONS AS DIRECTED.
 3. SUBMIT COMPLETED REPRODUCIBLE AS-BUILT DRAWINGS WITH OPERATING AND MAINTENANCE MANUALS.
32. GUARANTEE
1. PROVIDE A WRITTEN GUARANTEE TO COVER ALL MATERIALS AND INSTALLATION OF THE COMPLETE MECHANICAL SYSTEMS. THIS GUARANTEE SHALL EXTEND FOR A PERIOD OF ONE YEAR FROM THE DATE OF THE CERTIFICATE OF SUBSTANTIAL COMPLETION.
2. SPECIFIC GUARANTEE OF MANUFACTURERS WHOSE WARRANTY NORMALLY EXTENDS OVER LONGER OR SHORTER PERIODS THAN ONE YEAR, SHALL IN NO WAY LIMIT THE GUARANTEE OF THE MECHANICAL WORK.
3. ANY DEFECTS OCCURRING WITHIN THE GUARANTEE PERIOD SHALL BE REPAIRED/REPLACED AT NO COST TO THE OWNER.
4. WHERE PERMANENT EQUIPMENT IS USED TO PROVIDE TEMPORARY SERVICES, THE WARRANTY SHALL BE EXTENDED SO THAT THE WARRANTY PERIOD DOES NOT COMMENCE UNTIL THE CERTIFICATE OF SUBSTANTIAL COMPLETION IS ISSUED.

PLUMBING GENERAL NOTES FOR INSTALLATION

1. DOMESTIC WATER LINES WITHIN THE BUILDING:
 1. ABOVE GROUND SHALL BE SEAMLESS COPPER WATER TUBE, TYPE L WITH SOLDERED JOINTS.
 2. BURIED PIPING SHALL BE SOFT ANNEALED COPPER TYPE K WITH NO JOINTS.
2. FOR ALL PIPE PENETRATIONS, VOIDS AROUND PIPES SHALL BE SEALED AND CAULKED TO KEEP REQUIRED INTEGRITY.
3. ALL DOMESTIC WATER LINES SHALL BE INSULATED WITH PREFORMED SECTIONAL FIBREGLASS PIPE INSULATION WITH VAPOUR BARRIER JACKET, OR EXPANDED CLOSED-CELL STRUCTURE INSULATION. SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25 AND A MAXIMUM SMOKE DEVELOPED RATING OF 50. INSULATION THERMAL CONDUCTIVITY RANGE SHALL BE 0.24-0.28 BTU/IN.(H.F.T.2") AT 100°F MEAN TEMPERATURE. INSULATION THICKNESS FOR HOT WATER SUPPLY AND HOT WATER RECIRCULATION LINES SHALL BE 1" THICKNESS. FOR COLD WATER LINE, INSULATION THICKNESS SHALL BE 1/2".
4. WHERE SUPPORTING COPPER PIPE, IT SHALL BE ISOLATED FROM ANY NON-COPPER HANGER WITH ELECTROLYTIC ACTION TAPE OR EQUIVALENT.
5. INSTALL VALVED SUPPLIES AT ALL PLUMBING FIXTURES AND EQUIPMENT.
6. INSTALL BACK FLOW PREVENTERS WHERE THERE IS A HEALTH HAZARD POTENTIAL FOR POTABLE WATER SYSTEM AND AS REQUIRED BY THE LOCAL BUILDING DEPARTMENT.

DUST COLLECTION SYSTEM GENERAL NOTES FOR INSTALLATION

1. DUCT CONSTRUCTION:
 1. UNLESS OTHERWISE NOTED ALL DUCTWORK AND DUCTWORK ACCESSORIES SHALL BE GALVANIZED STEEL.
 2. DUCTWORK CONSTRUCTION AND INSTALLATION SHALL BE AS PER THE REQUIREMENTS OF SMACNA FOR HIGH VELOCITY APPLICATION.
 3. SUPPLY DUCTS AND FITTINGS AS PER "NORDFAB" QUICK-FIT CLAMP-TOGETHER DUCTING SUITABLE FOR DUST EXTRACTION PROCESS. INSTALL AS PER MANUFACTURER'S RECOMMENDATIONS.
 4. DUCTWORK BETWEEN BLOWBACK DAMPER AND THE DUST COLLECTOR SHALL BE 12 GAUGE AND WELDED.
2. SUPPLY AND INSTALL SUITABLE FLEXIBLE HOSE TO CONNECT DUCT DROPS TO THE CARPENTRY MACHINES. SHALL BE SIMILAR TO NORDFAB, THERMOPLASTIC FLEXIBLE BLACK RUBBER HOSE, REINFORCED WITH SPRING STEEL WIRE HELIX. INSTALL WITH HOSE DAMPER AND HOSE CLAMPS.
3. ALL DUCTWORK TRANSVERSE JOINTS AND CONNECTIONS SHALL BE SEALED WITH A SUITABLE SEALANT FOR THE APPLICATION AND HIGH VELOCITY DUCTWORK.
 1. DUCTWORK EXPOSED TO THE EXTERIOR SHALL BE WATER TIGHT.
 2. DUCTWORK SHALL BE INSULATED AS FOLLOWS: ALL INSULATION SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25 AND A MAXIMUM SMOKE DEVELOPED RATING OF 50.
4. EXHAUST DUCT 4 FT. FROM INSIDE OF EXTERIOR WALL AND UP TO THE DUST COLLECTOR SHALL BE INSULATED WITH 2 IN. THICKNESS OF FIBREGLASS FLEXIBLE DUCT INSULATION WITH REINFORCED FOIL/KRAFT VAPOUR RETARDER FACING, DENSITY 0.75 PCF AND NOMINAL R-VALUE OF 6.7 H.F.T.2"/BTU.
5. THERMALLY INSULATED SUPPLY AND EXHAUST DUCTS LOCATED EXPOSED TO OUTDOOR CONDITIONS, SHALL BE INSTALLED WITH A STUCCO-EMBEDDED ALUMINUM JACKET (LADGINS) SYSTEM OF 0.02" THICKNESS. SHALL BE FLEXIBLE SELF-ADHERING WEATHERPROOFING SYSTEM WITH PEEL OFF RELEASE PAPER AND PRESS MEMBRANE INTO PLACE. SHALL BE SUITABLE FOR EXTERIOR USE, WEATHER RESISTANT, UV STABLE FOR EXTERIOR. SHALL EXCEED 25/50 FLAME/SMOKE RATING AND RESIST VAPOUR TRANSMISSION.
 1. SELF-ADHESIVE ALUMINUM TAPE ULC LABELLED.
 2. LAP SEAL ADHESIVE, QUICK SETTING FOR JOINTS AND LAP SEALING OF VAPOUR BARRIERS.
 3. CONTACT ADHESIVE QUICK SETTING.
6. WHERE INDICATED ON THE DRAWINGS AND AS SPECIFIED BELOW, ACOUSTIC LINER FOR DUCTWORK SHALL BE 1" THICKNESS RIGID FIBREGLASS OF DENSITY 2.0 PCF. INSULATION SHALL HAVE A MAXIMUM FLAME SPREAD RATING OF 25 AND A MAXIMUM SMOKE DEVELOPED RATING OF 50. DUCT SIZE DIMENSION INDICATED ON DRAWING IS THE INTERNAL DIMENSION OF THE ASSEMBLED DUCT WITH ACOUSTIC LINER.
 1. ENTIRE EXTERIOR AND INTERIOR LOCATION OF RECTANGULAR SUPPLY DUCT FROM ABORT DAMPER.
7. WHERE DUCTS CROSS A FIRE SEPARATION, INSTALL FIRE DAMPERS TO SUIT APPLICATION. FIRE DAMPERS SHALL BE OF THE DYNAMIC CLOSURE TYPE WITH BLADE OUT OF AIRSTREAM, ULC LISTED AND FUSIBLE LINK WITH TEMPERATURE RATING TO SUIT APPLICATION. SHALL BE INSTALLED AS PER NFPA 804 WITH BREAKAWAY JOINTS, RETAINING ANGLES AND ACCESS DOOR ADJACENT TO FIRE DAMPER.
8. FOR DUCT PENETRATIONS AT WALL, VOIDS AROUND DUCT SHALL BE SEALED AND CAULKED TO MAINTAIN REQUIRED INTEGRITY.

DUST COLLECTOR EQUIPMENT SCHEDULE

DUST COLLECTOR HAS BEEN PURCHASED BY HWSDB. DUST COLLECTOR SUPPLIER WILL DELIVER THE DUST COLLECTOR TO THE SITE. MECHANICAL CONTRACTOR SHALL BE UNLOAD AND INSTALL ON EQUIPMENT CONCRETE PAD WITHIN THE FENCED ENCLOSURE. FOR DUST COLLECTOR AND SPARK DETECTION SYSTEM, THE START-UP, TESTING, ADJUSTMENT, COMMISSIONING AND CERTIFICATION, SHALL BE BY MANUFACTURER'S PERSONNEL OR MANUFACTURER'S APPROVED CONTRACTOR

DC1 DUST COLLECTOR SHAKER TYPE, NEEDMAN NFP23000-2HE, 7400 CFM AT EXTERNAL STATIC PRESSURE (E.S.P.) OF 11.0" W.G. AND TOTAL STATIC PRESSURE (T.S.P.) OF 16.0" W.G., TOP MOUNTED INTEGRATED EXHAUST FAN, AMCA B SPARK PROOF, MOTOR 25 HP DIRECT DRIVE, TEFC HIGH EFFICIENCY, VFD COMPATIBLE. SHAKER MOTOR OF 0.14 HP.

- HOPPER DESIGN WITH 4 STEEL CANISTERS (DRUM) OF 42 GAL. EACH, DOLLIES AND SOLID DRUM CONNECTORS.
- FILTERS OF INVERTED V" SHARPED POCKETS. FILTER AREA 900 FT². AIR TO CLOTH RATIO 8:22:1. FILTER EFFICIENCY AT 3 MICRON IS 99%.
- ENCLOSURE FOR EXHAUST FAN BLOWER AND MOTOR, FOR WEATHER PROTECTION AND NOISE REDUCTION.
- DUST COLLECTOR CONTROL PANEL NEMA 12 ENCLOSURE, PROGRAMMABLE LOGIC CONTROLLER (PLC), SHALL INCLUDE A FUSED DISCONNECT, STEP-DOWN CONTROL TRANSFORMER, CIRCUIT BREAKERS, FUSES, OVERLOAD PROTECTION, EMERGENCY STOP, PILOT LIGHTS. PANEL SHALL BE ETC APPROVED AND SHALL MONITOR ALL COMPONENTS IN THE SYSTEM, SUCH AS THE VFD, EXHAUSTION VENT BURST INDICATOR, NON-RETURN VALVE, SYSTEM PRESSURE, FILTER DIFFERENTIAL, BUILDING FIRE ALARM, SPARK DETECTION SYSTEM, ETC.
- VFD CONTROL PANEL TO MAINTAIN CONSTANT DUCT AIRFLOW AND AIR VELOCITY. SHALL BE COMPLETE WITH HARMONIC FILTERS.
- DIFFERENTIAL PRESSURE TRANSMITTER AND MAGNETIC GAUGE INSTALLED ON THE DUST COLLECTOR TO CONTROL THE VFD AND SYSTEM CAPACITY.
- DISCHARGE FAN SILENCER STRAIGHT CONFIGURATION. TO REDUCE NOISE DOWN TO 80 DBA AT 3 FEET IN FRONT OF SILENCER.
- ABORT DAMPER, BLOWBACK DAMPER, EXPLOSION RELIEF PANEL ON TOP OF UNIT. EXHAUST (DIRTY AIR FLOW) DUCT SIZE 18" DIAMETER.
 - SPARK DETECTION AND FIRE EXTINGUISHING SYSTEM TO COMPRISE OF:
 - CONTROL PANEL SINGLE ZONE HANSENTEK MOD. AX104, WITH VISUAL DISPLAY
 - ALARM HORN WITH LAMP AND BATTERY BACK UP
 - INFRARED DIRECT OPTIC SPARK DETECTORS COMPLETE WITH QUICK RELEASE BRACKETS, ADDRESSABLE ELECTRONICS AND BUILT-IN SENSITIVITY TESTING WITH TEST LIGHTS FOR EACH DETECTOR. NEMA 4 RATED.
 - WATER SPRAY ASSEMBLY COMPRISED OF A 1" SHUT-OFF BALL VALVE WITH SUPERVISORY SWITCH, FLOW SWITCH, STRAINER, SOLENOID VALVE AND NOZZLE
 - SUPPLY VOLTAGE TO CONTROL PANEL 120V/1/60
 - SPRINKLER PORTS (CAPPED) ON CLEAN AND DIRTY SIDE OF DUST COLLECTOR HOUSING
 - SUPPLY VOLTAGE FOR FAN MOTOR: 575V/3/60, 25 HP, 3550 RPM, FLC 27A, FUSE SIZE 25A, DISCONNECT 60A.
 - SUPPLY VOLTAGE FOR MAIN CONTROL PANEL: 575V/3/60, FLC 2A, FUSE SIZE 3A, DISCONNECT 30A.
 - SUPPLY VOLTAGE FOR SHAKER MOTOR: 575V/3/60, 0.14 HP, FLC 0.9A, DISCONNECT 30A.
 - SUPPLY VOLTAGE FOR VFD DRIVE: LINE VOLTAGE 575V/3/60, CONTROL VOLTAGE 24V, DRIVE CURRENT 27A, FUSE SPECIFICATION 30A.

SUPPLY REGISTERS BY E.H. PRICE. COLOUR TO BE FINALIZED ON SITE WITH ARCHITECT REF. SR1: LOUVERED FACE SUPPLY, 302Z/F/L/A, DOUBLE DEFLECTION WITH VOLUME DAMPER.

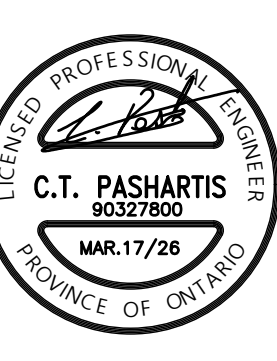
PLUMBING LEGEND	
SYMBOL	DESCRIPTION
---	NEW LINES
---	EXISTING LINES (THIN LINE)
X * X *	EQUIPMENT TO BE REMOVED
RL	EQUIPMENT TO BE RELOCATED
RV	EQUIPMENT TO BE REMOVED
~	CAPPED LINE
o	PIPE RISE
o	PIPE DROP
S	SANITARY LINE ABOVE GRADE
ST	STORM LINE BELOW GRADE
ST	STORM LINE ABOVE GRADE
---	COLD WATER CW
---	HOT WATER HW
---	HOT WATER RECIRCULATION HWR
T	TEMPERED HOT WATER
---	CONDENSATE LINE
FD	FLOOR DRAIN
HD	HUB DRAIN
o	FLOOR CLEANOUT
o	LINE CLEANOUT
o	GATE VALVE
o	BALL VALVE

HVAC LEGEND	
SYMBOL	DESCRIPTION
---	NEW EQUIPMENT
---	EQUIPMENT TO REMAIN
X * X *	EQUIPMENT TO BE REMOVED
RL	EQUIPMENT TO BE RELOCATED
RV	EQUIPMENT TO BE REMOVED
~	DUCTING TO BE CAPPED
o	SUPPLY DUCT
o	EXHAUST/RETURN DUCT
o	SUPPLY DIFFUSER
o	SUPPLY DIFFUSER WITH BLANK SIDE
o	SUPPLY REGISTER (WALL/SIDE DUCT MOUNTED)
o	CEILING/FLOOR SUPPLY REGISTER
o	ROUND DIFFUSER
o	EXHAUST/RETURN GRILLE
A 2 1/2	DIFFUSER/GRILLE DATA: A-REF, 2-1/S, 3-MM
o	FLEXIBLE DUCT
o	VOLUME CONTROL DAMPER
o	SPLITTER DAMPER
o	FIRE DAMPER
o	SMOKE FIRE DAMPER
o	EXHAUST FAN
o	THERMOSTAT
o	THERMOSTAT COVER
o	THERMOSTAT REVERSE ACTING 120V/1/60
o	REMOTE CONTROL PANEL
o	VARIABLE SPEED CONTROLLER
o	SENSOR
o	ELECTRICAL ON/OFF SWITCH
o	OPPOSED BLADE MOTORIZED DAMPER
o	ACOUSTIC LINING
o	FLEXIBLE CONNECTION
o	TRANSFER AIR ELBOW ACOUSTICALLY LINED

3	MAR.17/26	ISSUED FOR TENDER
2	DEC.12/25	ISSUED FOR PERMIT
1	OCT.22/25	PROGRESS AND COORDINATION
NO.	DATE	REVISION

DO NOT SCALE DRAWINGS. ALL DIMENSIONS SHALL BE VERIFIED BY CONTRACTOR DURING THE COURSE OF WORK.

CoPa ENGINEERING LTD.



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PROJECT
**HWDSB Dust Collector Replacement
Waterdown District High School**

211 PARKSIDE DRIVE
WATERDOWN ONTARIO

DRAWING
**MECHANICAL INSTALLATION NOTES
AND EQUIPMENT SCHEDULES**

DRAWN BY: C. P. SCALE: AS NOTED

CHECKED BY: C. PASHARTIS DATE: OCTOBER 22, 2025

PROJECT NO. 25CP059 DRAWING NO. M2-1

ELECTRICAL SPECIFICATION

GENERAL CONDITIONS

- THE CANADIAN STANDARD FORM OF CONSTRUCTION CONTRACT AND GENERAL CONDITIONS GOVERNING THE SAME CCDC PARTS 1 TO 12 INCLUSIVE ARE HEREBY MADE PART OF THIS SPECIFICATION.
- ALL WORK SHALL BE IN FULL ACCORDANCE WITH THE REQUIREMENTS OF THE 2021 ONTARIO ELECTRICAL SAFETY CODE, ELECTRICAL SAFETY AUTHORITY (ESA), AND THE LOCAL BUILDING INSPECTION DEPARTMENT REQUIREMENTS.
- ELECTRICAL CONTRACTOR SHALL INCLUDE FOR ESA INSPECTION FEES.
- THIS CONTRACTOR SHALL MAINTAIN LIABILITY INSURANCE AS REQUIRED.
- ALL WORKMANSHIP SHALL BE EXECUTED TO A STANDARD DETERMINED BY GOOD PRACTICE. THE ELECTRICAL CONTRACTOR SHALL GUARANTEE THE EQUIPMENT & INSTALLATION FOR ONE YEAR FROM SUBSTANTIAL COMPLETION.
- THE ELECTRICAL CONTRACTOR SHALL SUBMIT ONE SET OF ELECTRONIC PDF SHOP DRAWINGS TO THE ARCHITECT FOR REVIEW. SHOP DRAWINGS TO INCLUDE ALL ELECTRICAL EQUIPMENT, DEVICES & ULC LISTED FIRE STOPPING DETAILS. MATERIALS **SHALL NOT BE ORDERED** UNTIL REVIEW HAS BEEN COMPLETED. APPROVAL IS FOR GENERAL DESIGN COMPLIANCE ONLY.
- THE OWNERS RESERVE THE RIGHT TO ALTER THE LOCATION OF ANY ITEM UP TO TEN FEET (3m) WITHOUT INCURRING EXTRA COSTS, PROVIDED THE REQUEST IS MADE PRIOR TO INSTALLATION.
- ALL MATERIAL AND EQUIPMENT USED ON THIS PROJECT SHALL BE C.S.A. APPROVED, ESA FIELD EVALUATED, OR MUST BEAR AN ESA RECOGNIZED CERTIFICATION MARK.
- CUTTING AND PATCHING FOR ELECTRICAL WORK SHALL BE DONE BY THE GENERAL CONTRACTOR AT THE ELECTRICAL CONTRACTOR'S EXPENSE.
- THE CONTRACTOR SHALL VISIT THE SITE AND EXAMINE THE EXISTING CONDITIONS AND THEN MAKE NECESSARY ALLOWANCES IN THEIR TENDER PRICE FOR REMOVAL, RELOCATION, REROUTING AND/OR RECONNECTION OF EXISTING ELECTRICAL EQUIPMENT AND WIRING, AS MAY BE NECESSARY FOR THE EXECUTION AND COMPLETION OF THIS PROJECT. EXTRA CHARGES FOR PREMIUM TIME LABOUR SHALL BE INCLUDED IN THE TENDER PRICE, ALLOWING FOR AFTER HOURS, WEEKEND AND HOLIDAY LABOUR REQUIREMENTS.
- THE DRAWINGS AND SPECIFICATIONS SHALL BE READ IN CONJUNCTION WITH THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND SPECIFICATIONS. ANY DISCREPANCIES OR CONTRADICTIONS SHALL BE BROUGHT TO THE CONSULTANT'S ATTENTION.
- THE ELECTRICAL REQUIREMENTS OF ALL MECHANICAL EQUIPMENT IS TO BE CONFIRMED WITH MECHANICAL DRAWINGS & SCHEDULES PRIOR TO RELATED WORK.
- ALL TEMPORARY LIGHTING AND POWER DURING CONSTRUCTION SHALL BE BY THE GENERAL CONTRACTOR AFTER AGREEMENT WITH THE ELECTRICAL CONTRACTOR. POWER SHALL BE PROVIDED FROM PANELS WITH REQUIRED SUPPLY AND CAPACITY.
- TENDER SHALL BE BASED UPON THE SPECIFIED EQUIPMENT AND MATERIAL. REQUESTS FOR CONSIDERATION OF ALTERNATES SHALL BE SUBMITTED VIA THE BIDDING SYSTEM ONE WEEK PRIOR TO TENDER CLOSING AND SHALL INCLUDE MANUFACTURER, MODEL, AND COST MODIFICATION. COSTS OF ANY CHANGE REQUIRED TO OTHER TRADES AS A RESULT OF USING ALTERNATE EQUIPMENT ARE TO BE INCURRED BY THE ELECTRICAL CONTRACTOR.
- ALL CLAIMS FOR EXTRA WORK NOT COVERED IN THE CONTRACT TO BE SUBMITTED WITH A COMPLETE BREAKDOWN OF MATERIALS AND LABOUR.
- DRAWINGS ARE NOT TO BE SCALED. ALL DIMENSIONS ARE TO BE TAKEN FROM THE ARCHITECTURAL DRAWINGS AND CONFIRMED ON SITE.
- PROVIDE FIRE STOPPING PROTECTION FOR OPENINGS THROUGH ALL FIRE RATED ASSEMBLIES. ULC LISTED ASSEMBLY NUMBERS ARE TO BE USED.
- LOW VOLTAGE CABLES (IE NETWORK, SECURITY, CONTROL, ETC...) ROUTED WITHIN PLENUM SPACES SHALL BE FT6, CMP OR PLENUM RATED WHEN ROUTING THROUGH MECHANICAL CEILING PLENUMS.

ELECTRICAL EQUIPMENT, DEVICES & MATERIAL

- ALL EQUIPMENT, DEVICES & MATERIAL TO BE INSTALLED AS PER MANUFACTURERS INSTRUCTIONS.
- ALL BRANCH CIRCUIT WIRING SHALL BE RUN IN ELECTRICAL METALLIC TUBING (E.M.T.) OR FLEXIBLE ARMOURED CABLE (AC90) RECESSED IN WALLS OR CEILINGS EXCEPT WHERE SPECIFICALLY NOTED ON THE PLANS. ALL WIRING TO BE COPPER AND MINIMUM #12 AWG UNLESS STATED OTHERWISE.
- ALL SURFACE WIRING SHALL BE 190/RW90 COPPER IN EMT CONDUIT WHERE WIRING AND CONDUIT CANNOT BE RECESSED.
- ALL DEVICES MOUNTED ON CORE SLAB SHALL BE FED WITH WIRING CONCEALED WITHIN THE CORES. UNFINISHED AREAS SUCH AS UTILITY OR STORAGE ROOMS MAY BE SURFACE EMT.
- ALL BELOW GRADE WIRING SHALL BE RW90 COPPER IN RIGID PVC CONDUIT UNLESS OTHERWISE NOTED.
- ALL ELECTRICAL DEVICES AND LIGHTING CONTROLS, TO HAVE **TYPED CIRCUIT LABEL** ON DEVICE COVER PLATE. LABEL TO BE BLACK LETTERING ON CLEAR BACKING.
- ELECTRICAL PANELS TO HAVE BOLT ON CIRCUIT BREAKERS. ALL PANELS TO HAVE HINGED LOCKABLE PANEL COVERS. PANELS SHALL HAVE TYPED DIRECTIONS.
- ALL NON-RESIDENTIAL EQUIPMENT (PANELS, SWITCHBOARDS, SPLITTERS, TRANSFORMERS, ETC...) TO HAVE LAMACOID LABEL INDICATING: EQUIPMENT ID, VOLTAGE, PHASE/WIRE, AND "SUPPLIED FROM: EQUIPMENT ID".
- ALL JUNCTION AND PULL BOXES ARE TO BE ACCESSIBLE AND BE PROVIDED WITH SCREWED PLATES COLOUR MATCHED TO ADJACENT WALL OR CEILING FINISHES.
- PULL BOXES SHALL BE PROVIDED EVERY 30m AND EVERY THREE 90° BENDS.
- ALL WIRING SHALL BE PARALLEL WITH ARCHITECTURAL LINES AND DESIGN.
- PROVIDE A NYLON PULL STRING IN ALL EMPTY CONDUIT.
- ALL NEW SWITCH AND RECEPTACLE DEVICES & PLATES SHALL BE WHITE NYLON. ALL DEVICES TO BE COMMERCIAL GRADE DECORA SERIES OR EQUAL UNLESS OTHERWISE STATED.
- DO NOT MOUNT WALL OUTLETS BACK TO BACK IN WALLS, STAGGER TO PREVENT SOUND TRANSFER.
- WIRING TO FIXTURES IN SUSPENDED CEILINGS IS TO CONSIST OF AC90 'DROPS' WITH A MAXIMUM LENGTH OF 4.5m (15 FT) AND T90 WIRING IN EMT CONDUIT BACK TO SOURCE PANEL.
- ALL CONDUITS TO BE SECURELY FASTENED WITH APPROVED CLIPS AND SCREWS. NAILS OR THE WIRES ARE NOT ACCEPTABLE.
- ALL ELECTRICAL EQUIPMENT, DEVICES, AND WIRING ARE TO BE INDEPENDENTLY SUPPORTED. KEEP CLEAR OF MECHANICAL PIPING WHERE POSSIBLE.
- WIRING FOR MECHANICAL EQUIPMENT SHALL BE AS DETAILED ON THE PLANS.
- PROVIDE 21mm (3/4") CONDUIT RACEWAY BETWEEN MECHANICAL EQUIPMENT AND CONTROLS AS PER MECHANICAL AND ELECTRICAL PLANS.
- PROVIDE EQUIPOTENTIAL BONDING OF NON-ELECTRICAL EQUIPMENT AS PER OESC 10-700, AND WIRE MESH/REBAR SUPPORTING ELECTRICAL RADIANT HEATING CABLES. REFER TO MECHANICAL AND ARCHITECTURAL PLANS.

FIRE ALARM

- GENERAL:
- FIRE ALARM WIRING SHALL BE MINIMUM #18 AWG 300V FAS CABLE (WIRING TO BE SIZED BY FIRE ALARM VENDOR FOR VOLTAGE DROP) RUN AS FOLLOWS:
 - EXPOSED WALL: SURFACE WALL WIRING SHALL BE FAS WIRING IN SURFACE METAL WIREMOLD PAINTED TO MATCH WALL WHERE WIRING AND CONDUIT CANNOT BE RECESSED.
 - ACCESSIBLE CEILING SPACES, CONCEALED SPACES, FINAL DEVICE CONNECTIONS: ARMOURED FAS CABLE
 - EXPOSED CEILING, RISER CLOSETS, SERVICE ROOMS: FAS WIRING IN EMT CONDUIT.
 - BELOW GRADE: FAS WIRING IN CONCRETE ENCASED PVC CONDUIT.
 - OUTDOOR & BELOW GRADE: ARMOURED UNSHIELDED MULTICONDUCTOR CABLE, AS PER CSA C22.2 NO. 208, TYPE FAS105, 300V, 16AWG COPPER, FLAME & UV RESISTANT PVC OUTER JACKET, LOW-TEMPERATURE (-40C) DECA CABLES OR EQUAL. WHEN RUN OVERHEAD, LASHED TO MESSENGER SUPPORT CABLE.
 - COMMISSIONING OF LIFE SAFETY SYSTEMS **SHALL BE INCLUDED** IN ELECTRICAL CONTRACTORS PRICE.
 - FIRE ALARM SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH CAN/ULC-5524:2019, "INSTALLATION OF FIRE ALARM SYSTEMS".
 - FIRE ALARM SYSTEM SHALL BE VERIFIED IN CONFORMANCE WITH CAN/ULC-5537:2019, "VERIFICATION OF FIRE ALARM SYSTEMS" BY A THIRD PARTY (ARMS LENGTH).
 - ANNUNCIATOR PANEL TO BE UPDATED WITH NEW ZONES LABELS. PASSIVE GRAPHIC BESIDE ANNUNCIATOR PANEL TO BE REPLACED WITH NEW PASSIVE GRAPHIC SHOWING NEW/UPDATED ZONES.
 - IF A FIRE ALARM OR VOICE COMMUNICATION SYSTEM OR ANY PART THEREOF IS SHUT DOWN:
 - THE **FIRE DEPARTMENT AND BUILDING OCCUPANTS** SHALL BE NOTIFIED, AND
 - IF APPLICABLE THE SUPERVISORY STAFF SHALL BE NOTIFIED, AND
 - POST NOTICES ON ALL FLOORS BY ELEVATORS AND AT ENTRANCES, STATING THE SCOPE OF WORK AND WHEN IT IS EXPECTED TO BE COMPLETED.
 - HAVE STAFF OR OTHER RELIABLE PERSON(S) PATROL THE AFFECTED AREA(S) AT LEAST ONCE EVERY HOUR. REFER TO CAN/ULC-5537:2019(18) APPENDIX B - ALTERNATE MEASURES FOR OCCUPANT FIRE SAFETY.
 - WHERE EXISTING, UNLESS NOTED OTHERWISE, FIRE ALARM TO BE KEPT. THE ELECTRICAL CONTRACTOR TO INCLUDE ALL COSTS ASSOCIATED WITH RELOCATION OF ANY DEVICES OR EQUIPMENT.
 - NEW LIFE SAFETY DEVICES SHALL BE COMPATIBLE WITH THE EXISTING SYSTEM. WHERE EXISTING ZONE CIRCUITS ARE USED TO FEED NEW DEVICES, CONTRACTOR TO CONFIRM EXISTING INITIATING AND ANNUNCIATING ZONE WIRING IS COMPLETE WITH A BOND WIRE PRIOR TO RELATED WORK.
 - FIRE ALARM PANEL SHALL PROVIDE EMERGENCY BATTERY BACKUP TO SUPPLY SUPERVISORY POWER FOR NOT LESS THAN 24H AND IMMEDIATELY FOLLOWING FULL LOAD FOR NOT LESS THAN: 30MIN, 5MIN (NO ANNUNCIATOR).
 - PROVIDE MONITORING SUPPLYING THE FIRE ALARM SYSTEM SHALL BE CLEARLY LABELLED, COLOURED RED, AND BE LOCKABLE IN THE ON POSITION.
 - DWELLING UNIT PANEL SIGNAL SILENCE:
 - CANNOT OCCUR WITHIN THE FIRST 60s OF OPERATION OR WITHIN THE ZONE OF INITIATION
 - A SUBSEQUENT ALARM ELSEWHERE IN THE BUILDING WILL REACTUATE THE SILENCED AUDIBLE SIGNAL DEVICES WITHIN DWELLING UNITS,
 - AFTER A PERIOD OF NOT MORE THAN 10MIN, THE SILENCED AUDIBLE SIGNAL DEVICES WILL BE RESTORED TO CONTINUOUS AUDIBLE SIGNAL IF THE ALARM IS NOT ACKNOWLEDGED.
 - PROVIDE MONITORING NOTIFICATION SIGNALS TO A CENTRAL STATION CONFORMING TO CAN/ULC-5561-19 "INSTALLATION AND SERVICES FOR FIRE SIGNAL RECEIVING CENTRES AND SYSTEMS" OR TO THE MUNICIPAL FIRE ALARM SYSTEM. OR PROVIDE 'LEGIBLE NOTICE' THAT IS NOT EASILY REMOVED, AFFIXED TO THE WALL NEAR EACH MANUAL PULL STATION, "IN EVENT OF FIRE DIAL 911".

EXISTING CONDITIONS

- ELECTRICAL WORK AFFECTING OTHER TENANTS SHALL BE PERFORMED AFTER BUSINESS HOURS (EVENINGS AND WEEKENDS). COORDINATE WITH LANDLORD.
- SERVICE AND DISTRIBUTION SYSTEM POWER INTERRUPTIONS SHALL BE KEPT TO A MINIMUM. POWER INTERRUPTIONS MUST BE COORDINATED WITH THE OWNER AND ALL OTHER TRADES BY THIS CONTRACTOR. WRITTEN APPROVAL FOR ELECTRICAL INTERRUPTIONS MUST BE RECEIVED FROM THE OWNER INDICATING THE DATE, TIME AND ESTIMATED DURATION OF THE INTERRUPTION. APPLICATION FOR APPROVAL OF THE POWER INTERRUPTIONS MUST BE SUBMITTED TO THE OWNERS AND/OR ARCHITECTS AT LEAST TWO WEEKS PRIOR TO THE REQUESTED SHUTDOWN DATE.
- EXISTING ELECTRICAL EQUIPMENT, REMOVED AND INDICATED FOR REUSE, SHALL BE CLEANED BEFORE RE-INSTALLATION.
- WIRING LOCATED IN AREAS BEING ALTERED OR DEMOLISHED, BUT FEEDING OUTLETS OR EQUIPMENT REQUIRED TO REMAIN IN SERVICE, MUST BE REWORKED IN ORDER TO MAINTAIN THE CONTINUITY OF THE EXISTING WIRING.
- REPAIRS TO EXISTING WALLS, FLOORS, AND CEILINGS ARE TO BE PERFORMED BY THE GENERAL CONTRACTOR TO MEET THE EXISTING CONDITIONS.
- SEQUENCE OF REMOVAL AND RELOCATION OF EXISTING EQUIPMENT AND WIRING SHALL BE COORDINATED WITH THE OTHER TRADES AND SHALL CONFORM TO THE REQUIREMENTS AND CONDITIONS OUTLINED.
- THE CONTRACTOR SHALL PROVIDE ADEQUATE PROTECTION TO EXISTING WIRING AND EQUIPMENT THROUGHOUT THE PROJECT, PARTICULARLY WHERE WIRING AND ELECTRICAL EQUIPMENT HAVE BECOME EXPOSED TO MECHANICAL DAMAGE OR MOISTURE IN THE COURSE OF ALTERATIONS OR NEW CONSTRUCTION.
- NEW OUTLETS AND EQUIPMENT SHOWN IN THE SAME LOCATION AS EXISTING OUTLETS MAY BE FED THROUGH THE EXISTING CONDUITS/WIRING, PROVIDED THAT THEY ARE IN GOOD CONDITION AND ARE ACCEPTABLE TO THE ESA INSPECTION DEPARTMENT.

DEMOLITION

- ALL EXISTING ELECTRICAL EQUIPMENT, WIRING, AND ROUGH-IN DEVICES ARE TO BE REMOVED COMPLETE TO SUIT THE DEMOLITION AND RENOVATION OF THE SPACES. ALL EXISTING ELECTRICAL EQUIPMENT, NOT BEING REUSED, SHALL BECOME THE PROPERTY OF THE OWNER. ELECTRICAL CONTRACTOR SHALL PROPERLY DISPOSE OF EQUIPMENT NOT DESIRED BY OWNER.
- ALL DEVICES & EQUIPMENT MADE OBSOLETE SHALL BE REMOVED FROM THE CONSTRUCTION SITE.

GENERAL CLOSE OUT PROCEDURES

- DOCUMENTS:** ELECTRICAL CONTRACTOR TO SUBMIT:
 - FIRE ALARM SYSTEM ULC-5537:2019 VERIFICATION REPORT (INCLUDING DEVICE & AUDIBILITY REPORT).
 - ESA CERTIFICATE OF INSPECTIONS.
 - SIGN-OFF & DOCUMENTATION - FORMAL SIGN-OFF LETTER AND TEST REPORT TO THE ENGINEER & OWNER CONFIRMING THAT THE EQUIPOTENTIAL BONDING IS COMPLETE. THE DOCUMENTATION MUST INCLUDE: INSTRUMENT MAKE & MODEL; AND CONFIRMATION OF CONTINUITY (PASS/FAIL) AT EACH LOCATION AND TESTED JOINT.
- TRAINING:** ELECTRICAL CONTRACTOR SHALL PROVIDE TRAINING SESSIONS TO THE OWNER ON ALL MAJOR ELECTRICAL SYSTEMS.
- COMMISSIONING:** ALL MAJOR SYSTEMS ARE TO BE COMMISSIONED BY THE MANUFACTURERS REPRESENTATIVE INCLUDING FIRE ALARM, LIGHTING CONTROL SYSTEMS.
- RECORD DRAWINGS:** ELECTRICAL CONTRACTOR SHALL PROVIDE RECORD DRAWINGS OF ACTUAL INSTALLATION TO OWNERS WITHIN 30 DAYS OF SYSTEM ACCEPTANCE. DRAWINGS ARE TO INCLUDE SINGLE LINE DIAGRAM OF DISTRIBUTION SYSTEM; FLOOR PLANS SHOWING THE LOCATION OF DISTRIBUTION EQUIPMENT AND THE AREAS SERVED BY THAT EQUIPMENT; CHANGES TO LIGHTING, LIGHTING CONTROLS & CIRCUITING.

INSPECTIONS BY CONSULTANT

- CONTRACTOR SHALL NOTIFY CONSULTANTS WHEN INSPECTIONS ARE REQUIRED. ALLOW FOR MINIMUM OF THREE BUSINESS DAYS OF NOTICE PRIOR TO INSPECTION.
- INSPECTIONS ARE REQUIRED AT THE FOLLOWING MILESTONES:
 - DEVICE ROUGH-IN (PRIOR TO DRYWALL)
 - FINAL INSPECTION

All Sheet Notes	
#	NOTE
7	

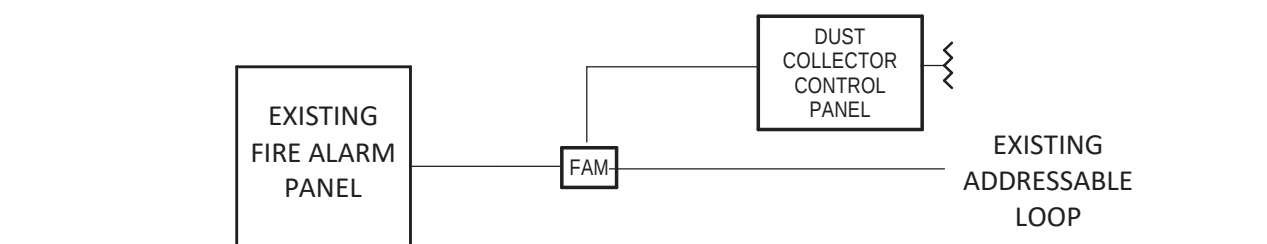
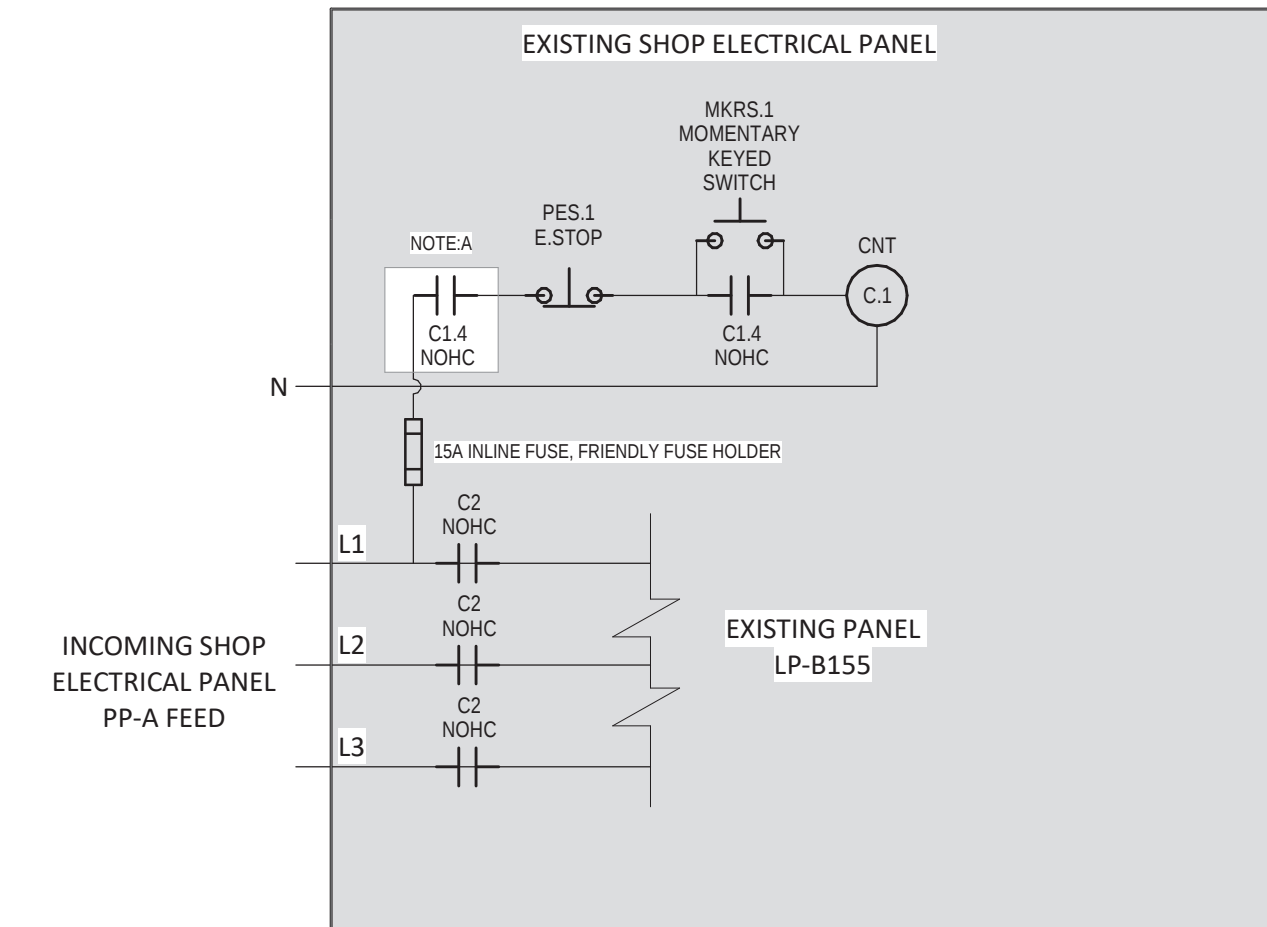
DUST COLLECTOR DUCTWORK EQUIPOTENTIAL BONDING REQUIREMENTS

- BONDING CONDUCTOR:** The equipotential bonding conductor shall be a minimum #6 AWG copper conductor with green or green/yellow striped insulation.
 - Indoor Sections: Standard #6 AWG green or green/yellow striped insulated copper conductor.
 - Exterior Sections: The insulated bonding conductor shall be marked as sunlight-resistant (UV-rated) and be suitable for wet locations.
- Code Requirement Note: Equipotential bonding and grounding of dust collector ductwork is required by Ontario Fire Code Section 5.3.1.5(1), which mandates that electrically conducting parts of conveying systems, dust collectors, and dust-producing machines located in an atmosphere containing combustible dusts shall be electrically bonded and grounded. Conductor sizing and installation methods are applied in accordance with OESC Rules 10-708 and 10-612.
- ROUTING & MECHANICAL PROTECTION:** The bonding conductor shall be routed and adequately secured along the ductwork as permitted by OESC Rule 10-702 1). Where the bonding conductor is exposed to mechanical damage, it shall be suitably protected in accordance with OESC Rule 10-612 6).
- LUG PLACEMENT & ATTACHMENT (NO DUCT PENETRATIONS):** To comply with OESC Rule 12-010 1) and maintain a smooth interior airstream, screws, bolts, or rivets shall NOT penetrate the interior wall of the ductwork.
 - A bonding jumper is mandatory at every flange joint where a non-conductive gasket is present, or where bare metal-to-metal contact cannot be confirmed.
 - Bonding jumpers shall be installed across any flexible, non-metallic, or vibration-isolating connection in the duct system.
 - At all remaining joints, the contractor may rely on bolt continuity, provided it is verified through the resistance testing detailed in the Testing and Verification section below. If any joint fails the resistance test, a bonding jumper shall be retrofitted at that joint. All bonding lugs shall be Approved (e.g., CSA certified).
 - Pricing Note: Assume eight (8) minimum bonding jumper locations for the base bid; additional jumpers shall be provided as required for flexible/isolation connections and to satisfy continuity testing.
- GALVANIC CORROSION PREVENTION:** The bonding connection shall utilize tin-plated copper compression lugs or a listed bonding clamp suitable for galvanized steel to minimize deterioration from dissimilar metals. Stainless steel hardware and a suitable corrosion-inhibiting compound shall be used at the interface. Compound shall be applied around/over the completed connection (after torquing) to seal against moisture; it shall not be applied in a way that reduces bare metal-to-metal contact.
- SURFACE PREPARATION:** Any non-conductive coatings (e.g., paint, enamel, or dirt) must be completely removed at the exact point of electrical contact between the lug/clamp and the ductwork to ensure a clean, bare metal-to-metal connection.
- MAIN SYSTEM BONDING CONNECTION:** The entire equipotential ductwork system shall be tied back to the building's electrical bonding system to establish equipotentiality. A main bonding conductor, sized no smaller than #6 AWG copper, shall be routed from the dust collector frame or the main ductwork branch to the bonding bus/terminal of the panelboard, MCC bucket, starter, or disconnect supplying the dust collector. Note: A local junction box is acceptable only where the bonding path is verified back to the source bonding point and the enclosure provides an Approved termination method for #6 AWG copper.
- TESTING AND VERIFICATION:** Upon completion of the installation, the electrical contractor shall perform resistance testing to ensure adequate dissipation of static electricity. Continuity shall be verified using a calibrated ohmmeter or equivalent test instrument. A confirmed low-resistance connection at each location, with no open circuits detected, shall be acceptable for sign-off.
 - System Bonding Test: Verify continuity between the bonded ductwork and the building's electrical bonding system at the following locations: (1) The furthest duct equipment branch; (2) The middle of the main ductwork branch; (3) At the dust collector frame.
 - Joint Continuity Test: Verify continuity across each individual flange joint where bolt continuity is being relied upon (where a bonding jumper was not installed). If an open circuit or high resistance is detected, a bonding jumper must be retrofitted.
- SIGN-OFF AND DOCUMENTATION:** At the end of the project, the contractor shall provide a formal sign-off letter and test report to the engineer and owner confirming that the equipotential bonding is complete. The documentation must include: instrument make and model; exact measurement locations; and confirmation of continuity (pass/fail) at each location and tested joint.

7 Ductwork Equipotential Bonding Requirements

ELECTRICAL LEGEND

SCHEDULE (x = TYPE)	EXISTING	DEMO	NEW	DESCRIPTION
LIGHTING FIXTURE SCHEDULES				
ELECTRICAL FIXTURE SCHEDULES				
MECHANICAL FIXTURE SCHEDULES				
FIRE ALARM FIXTURE SCHEDULES				
				CONTACTOR
				ELECTRICAL POWER PANEL
				ELECTRICAL DISCONNECT (FUSED OR UNFUSED)
				ELECTRICAL EQUIPMENT - MISCELLANEOUS
				MECHANICAL EQUIPMENT CONTROL
				MECHANICAL EQUIPMENT - HARDWIRE CONNECTION
				MECHANICAL EQUIPMENT & LOCAL DISCONNECT
				MECHANICAL EQUIPMENT - DUPLEX RECEPTACLE 15A
				MECHANICAL EQUIPMENT - DUPLEX RECEPTACLE 20A
				FIRE ALARM ADDRESSABLE RELAY CONTACT
				FIRE ALARM ADDRESSABLE MODULE

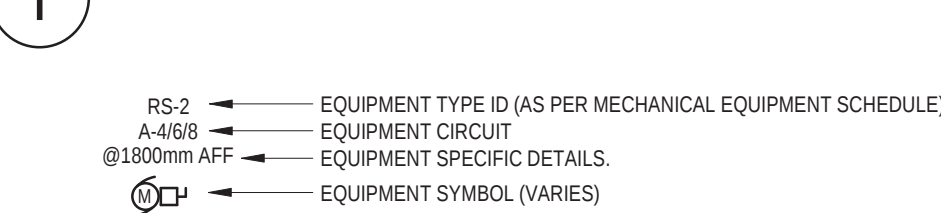


- SEQUENCE OF OPERATIONS
- PROVIDE NEW ADDRESSABLE MODULE FOR NEW CONVENTIONAL ZONE TO DUST COLLECTOR CONTROL PANEL. ON ACTIVATION OF CONTACT WITHIN DUST COLLECTOR PANEL, FIRE ALARM ACTIVATES. PROVIDE NEW ZONE LABEL ON MAIN FIRE ALARM ANNUNCIATOR PANEL "DUST COLLECTOR RM# ...". CONFIRM ROOM DESIGNATION ON SITE.

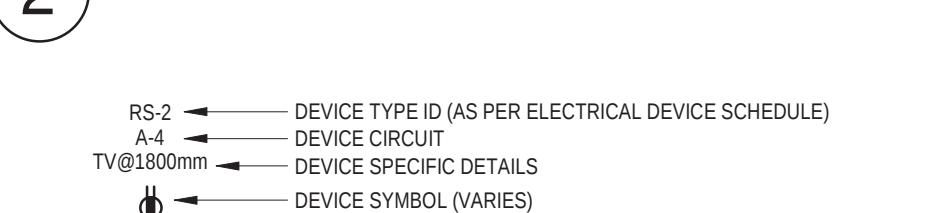
- NOTE:
- ASSUME TYPICAL E-STOP CONTROL SCHEMATIC AS SHOWN.

5 Dust Collector Fire Alarm & Estop Control

1 New, Removed, Existing



2 Tags - Mechanical Equipment



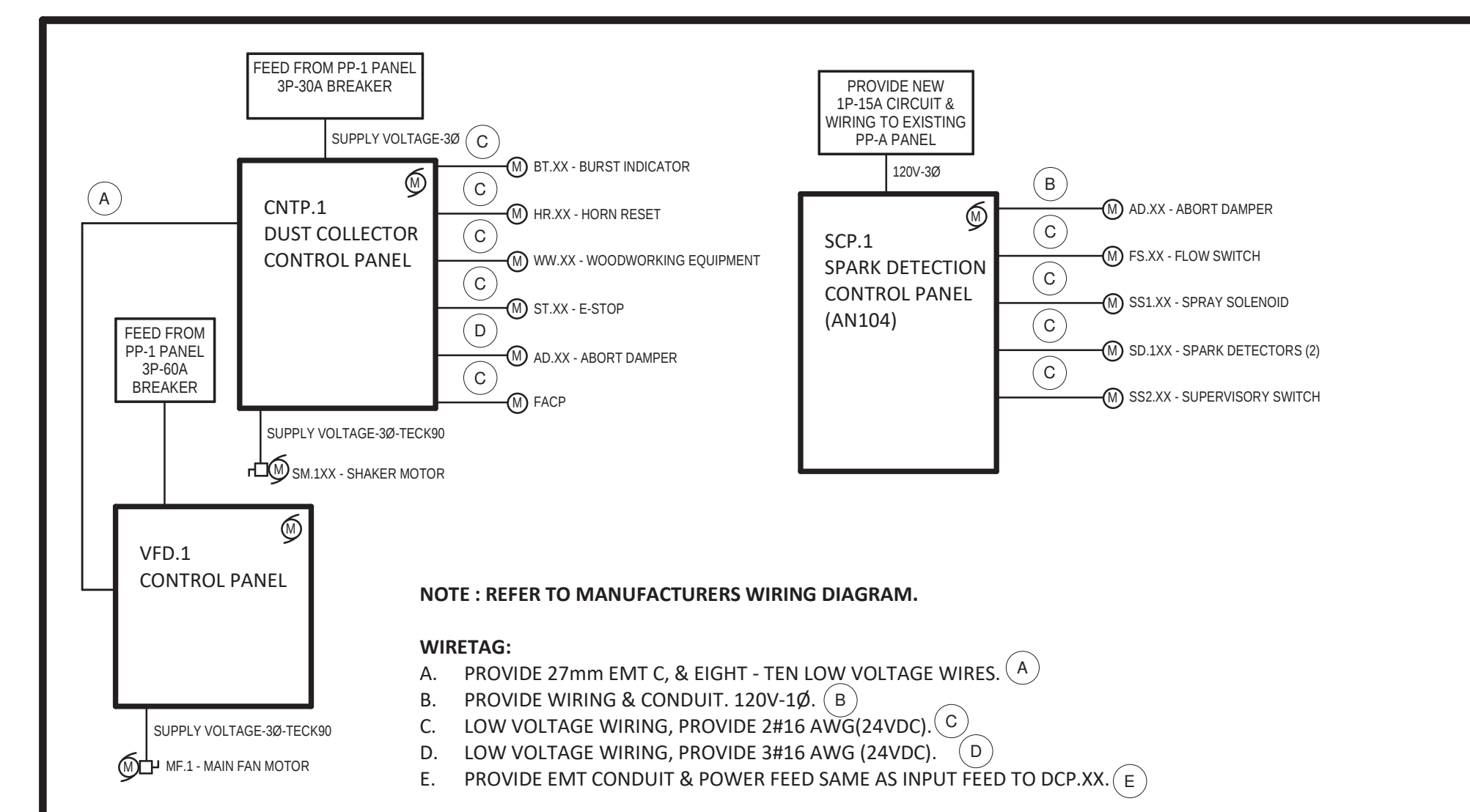
4 Tags - Electrical Devices



DEVICE/EQUIPMENT OPTIONS & TAGS

Symbol	Description
	SHEET NOTE LABEL - REFER TO SHEET NOTES
	CEILING MOUNT
	FLOOR MOUNT
	DEVICE WIRED TO LOAD SIDE OF GFCI RECEPTACLE/BREAKER
	REPLACE EXISTING DEVICE WITH NEW DEVICE IN SAME LOCATION.
	RELOCATED DEVICE/EQUIPMENT. REWORK WIRING AS NEEDED. IF APPLICABLE PROVIDE NEW DEVICE BOX & CONNECTORS.

Electrical Sheet List	
Sheet #	Sheet Name
E1	Electrical Legend & Specification
E2	Electrical Plan
Total:	2



3 Dust Collector - Wiring Diagram

- NOTE: REFER TO MANUFACTURERS WIRING DIAGRAM.
- WIRETAG:
- PROVIDE 27mm EMT C, & EIGHT - TEN LOW VOLTAGE WIRES.
 - PROVIDE WIRING & CONDUIT. 120V-1Ø.
 - LOW VOLTAGE WIRING, PROVIDE 2#16 AWG(24VDC).
 - LOW VOLTAGE WIRING, PROVIDE 3#16 AWG (24VDC).
 - PROVIDE EMT CONDUIT & POWER FEED SAME AS INPUT FEED TO DCP.XX.

THIS DRAWING IS AN INSTRUMENT OF SERVICE & IS THE PROPERTY OF ROOT3 ENGINEERING AND CANNOT BE MODIFIED AND/OR REPRODUCED WITHOUT THE PERMISSION OF ROOT3 ENGINEERING LTD.

THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED.



NO.	DESCRIPTION	DATE
2	Issued For Tender	Mar 24, 2026
1	Issued For Permit	Dec 12, 2025

REVISION SCHEDULE



PROJECT NAME

HWDSB - Dust Collector Waterdown

215 Parkside Dr., Waterdown City, ON

DRAWING TITLE

Electrical Legend & Specification

SCALE	DRAWING NUMBER
1 : 1	E1
SHEET SIZE	24"x36"
PROJECT NUMBER	25087

4 - Total New/Relocated - Fire Alarm Device Schedule					
CURRENT SCHEDULE PHASE: Tender			SHOWING PHASE ITEMS: Show Previous + New		
QTY	Model	Description	Addressable Module	Type Comments	Phase Added
1		FIRE ALARM AUXILIARY			Tender
Total: 1					

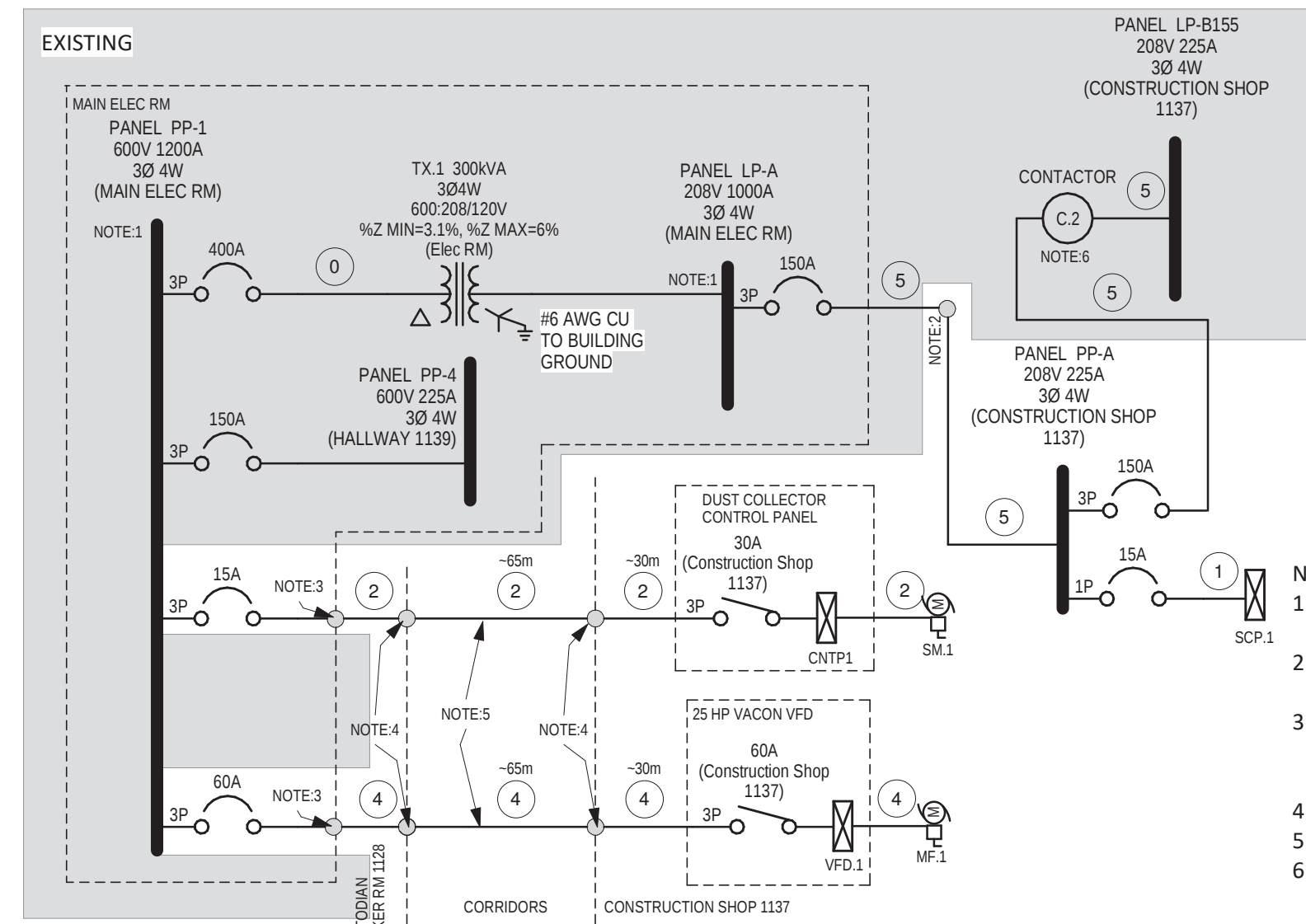
7 - Total New/Relocated - Mechanical Equipment Schedule											
CURRENT SCHEDULE PHASE: Tender					SHOWING PHASE ITEMS: Show Previous + New						
QTY	Type ID	Description	ELECTRICAL			REMOTE ITEMS					
			VOLTAGE	PHASE	Wiring By:	Interlock With	Isolation Switch By	Weather Proof	Wiring By:	Item Comments	Phase Added
1	AD.1	Abort Damper	120 V	1	15 A	15 A			No	120V, 1Ø. Refer to manufacturer's schematic & wiring.	Tender
1	BD.1	Blowback Damper	120 V	1	15 A	15 A			No	120V, 1Ø. Refer to manufacturer's schematic & wiring.	Tender
1	MF.1	Fan	600 V	3	25HP	27 A	60 A	E	Yes	Refer to manufacturer's schematic & wiring.	Tender
1	SM.1	Shaker Motor	600 V	3	.14 HP	0.9 A	30 A	E	Yes	Refer to manufacturer's schematic & wiring.	Tender
Total: 4											

8 - Total New/Relocated - Mechanical Equipment Controls Schedule							
CURRENT SCHEDULE PHASE: Tender			SHOWING PHASE ITEMS: Show Previous + New				
QTY	Type ID	Mfg. (or Equal)	Model	Supplied Control	Description	Type Comments	Phase Added
1	BT.1			No	Burst Indicator	Burst Indicator on explosion relief vent. Provide 2#16 AWG AC90 (24VDC).	Tender
1	FS.1			No	Flow Switch	Provide low voltage wiring 2#16 AWG (24VDC).	Tender
1	HR.1			No	Horn	Provide low voltage wiring 2#16 AWG (24VDC).	Tender
1	HRS.1			No	Remote Alarm Horn, Horn Reset & Panel Reset.	Provide low voltage wiring 5#16 AWG (24VDC). Confirm location on site.	Tender
1	SD.1			No	Spark Detector	Provide wiring from SCP.1, 4#18 AC90 24VDC.	Tender
1	SS.1			No	Supervisory Switch	Provide low voltage wiring 2#16 AWG 24VDC. Confirm location on site.	Tender
1	ST.1			No	E-Stop	E Stop. Provide low voltage wiring: 7#16 AWG (24VDC) in 1/2" C. Confirm location on site.	Tender
1	SV.1			No	Solenoid Valve	Provide low voltage wiring 2#16 AWG (24VDC).	Tender
Total: 8							

2 - Total New/Relocated - Electrical Equipment Schedule						
CURRENT SCHEDULE PHASE: Tender			SHOWING PHASE ITEMS: Show Previous + New			
Qty	Equip ID	Description	Type Comments	Enclosure	Mounting	Phase Added
1	CNTP.1	CNTP	600V, 3Ø, VFD Controlling 20HP Dust Collector Motor & 1HP Shaker Motor. Provide local disconnect.	Type 1	Surface	Tender
1	PP-A	Commercial Electrical Panel.	208/120V 3Ø4W 225A; Bolt On Breakers	Type 1	Surface	Tender
1	SCP.1	SCP	120V, 1Ø, Control panel for spark detection and extinguishing system.	Type 1	Surface	Tender
1	VFD.1	CNTP	600V, 3Ø, VFD Control Panel for Dust Collector. Connect from DCP.AC feed. Provide local disconnect.	Type 1	Surface	Tender
Total: 4						

WIRE SCHEDULE

- ① • 3#500 KCMIL RW90 CU (PHASE)
• 1#3 AWG RW90 CU (BOND)
• IN 75mm EMT C.
- ② • 3#10 AWG RW90 CU (PHASE)
• 1#12 AWG RW90 CU (BOND)
• IN 16mm EMT C.
- ③ • 3#6 AWG ACWU90 AL
- ④ • 3#4 AWG ACWU90 AL
- ⑤ • 3#300 KCMIL RW90 CU (PHASE)
• 1#300 KCMIL RW90 CU (NEUTRAL)
• IN 75mm EMT C.



③ Single Line Diagram

PANEL: PP-A

Location: Construction Shop 1137
 Volts: 208/120 WYE
 Phases: 3
 Wires: 4
 A.I.C. Rating: 10 kAIC
 Mains Type: MLO
 Mains Rating: 100 A
 MCB Rating:

Notes:

CKT	Circuit Description	Trip	Poles	A	B	C	Poles	Trip	Circuit Description	CKT
A-1	Construction Shop 1137 - Rec	15 A	1							A-2
A-3	Construction Shop 1137 Mezzanine - Rec	15 A	1							A-4
A-5	SCP.1 - Spark Detection Control	15 A	1							A-6
A-7										A-8
A-9	LP-B155	150 A	3							A-10
A-11										A-12
A-13										A-14
A-15										A-16
A-17										A-18

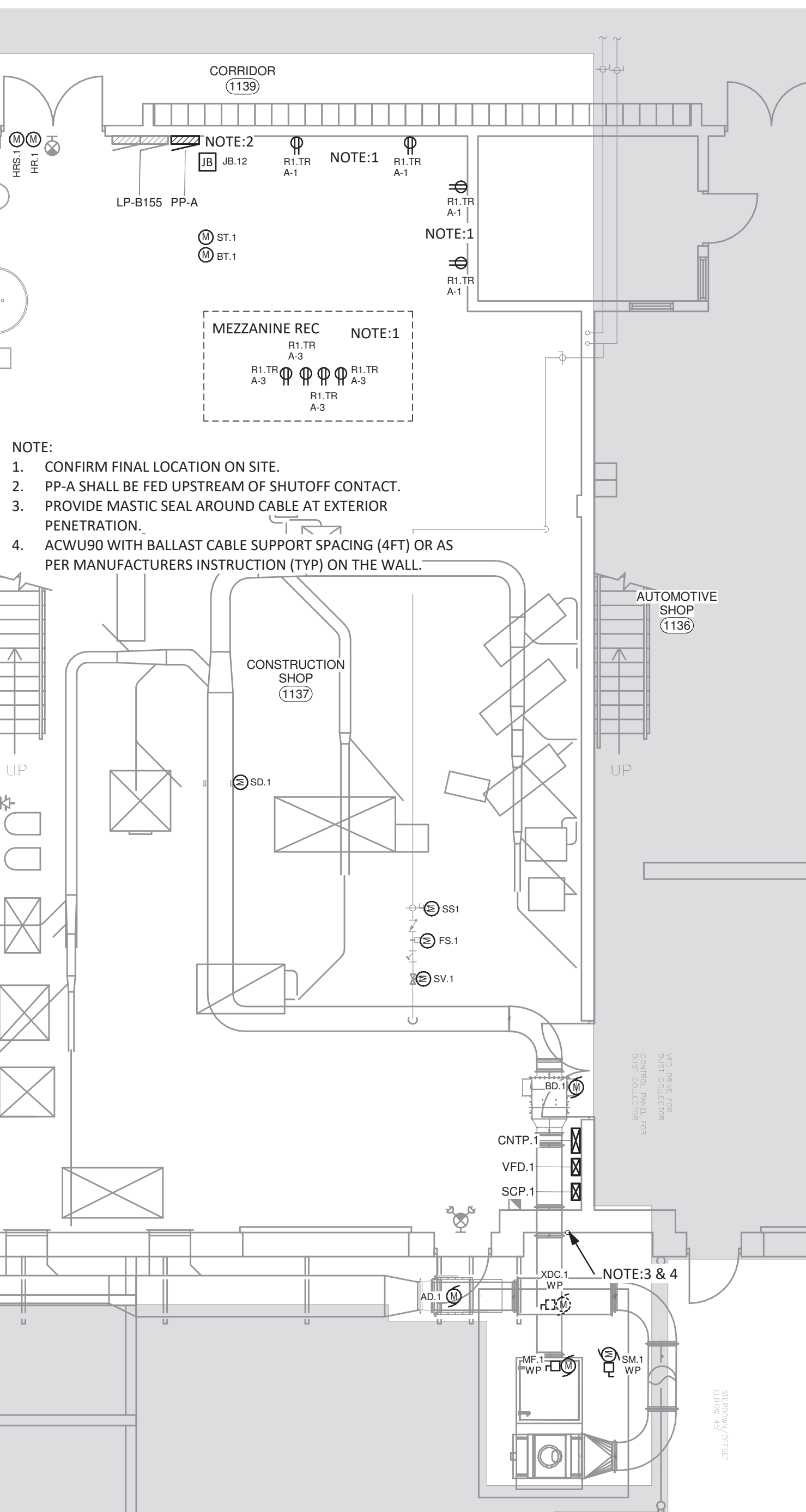
Notes:
 PANEL PP-A SHOULD BE FEED UPSTREAM OF SHUT OFF CONTACT OF EXISTING LPB-155 POWER FEED.

Sheet Notes	
#	NOTE
1	EXISTING WESTING HOUSE SWITCHBOARD. KAIC RATING FOR NEW BREAKERS TO BE CONFIRMED ON SITE.
2	PP-A SHALL BE FED UPSTREAM OF SHUTOFF CONTACT C2. REWORK & EXTEND AS SHOWN.
3	PROVIDE CONDUIT STUB, FOR CABLE PENETRATION INTO ELECTRICAL ROOM. PROVIDE FIRE STOPPING WHERE CABLE PENETRATES CONDUIT STUB. CONDUIT STUB TO BE MORTERED IN PLACE.
4	PROVIDE MASTIC SEAL AROUND CABLE AT PENETRATION.
5	ACWU90 ABOVE CEILING TILES IN CORRIDOR.
6	REWORK C.2 CONTACTOR TO NEW PANEL PP-A AS SHOWN. PROVIDE 3P-150A CIRCUIT BREAKER.

7 - Total Removed - Mechanical Equipment Schedule												
CURRENT SCHEDULE PHASE: Tender					SHOWING PHASE ITEMS: None							
QTY	Type ID	Description	ELECTRICAL			REMOTE ITEMS						
			VOLTAGE	PHASE	Wiring By:	Interlock With	Isolation Switch By	Weather Proof	Wiring By:	Item Comments	Phase Added	
1	XDC.1	Fan	600 V	3	20HP	34 A	60 A	E	Yes	Existing Dust Collector,	EXISTING	Tender
Total: 1												

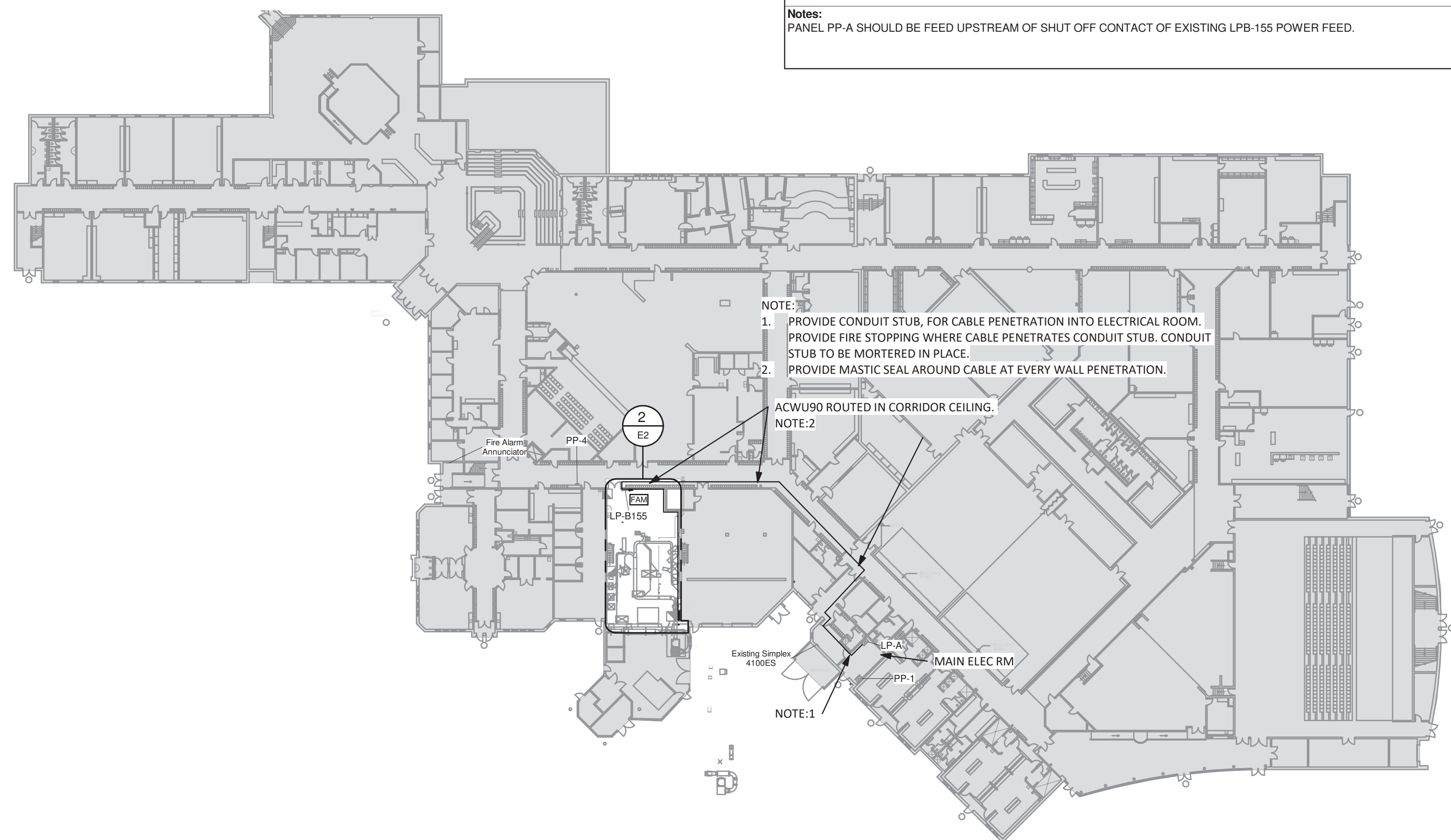
4 - Total Removed - Fire Alarm Device Schedule					
CURRENT SCHEDULE PHASE: Tender			SHOWING PHASE ITEMS: None		
QTY	Model	Description	Addressable Module	Type Comments	Phase Added / Phase Removed
Total: 0					

- ① EXISTING WESTING HOUSE SWITCHBOARD. KAIC RATING FOR NEW BREAKERS TO BE CONFIRMED ON SITE.
- ② PP-A SHALL BE FED UPSTREAM OF SHUTOFF CONTACT C2. REWORK & EXTEND AS SHOWN.
- ③ PROVIDE CONDUIT STUB, FOR CABLE PENETRATION INTO ELECTRICAL ROOM. PROVIDE FIRE STOPPING WHERE CABLE PENETRATES CONDUIT STUB. CONDUIT STUB TO BE MORTERED IN PLACE.
- ④ PROVIDE MASTIC SEAL AROUND CABLE AT PENETRATION.
- ⑤ ACWU90 ABOVE CEILING TILES IN CORRIDOR.
- ⑥ REWORK C.2 CONTACTOR TO NEW PANEL PP-A AS SHOWN. PROVIDE 3P-150A CIRCUIT BREAKER.



② Proposed - Level 1 - Power & Data Plan

1 : 75



① KEYPLAN

1 : 500

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THE CONTRACTOR MUST VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY DISCREPANCIES TO THE ENGINEER, BEFORE PROCEEDING WITH THE WORK.

DRAWINGS ARE NOT TO BE SCALED.



NO.	DESCRIPTION	DATE
2	Issued For Tender	Mar 24, 2026
1	Issued For Permit	Dec 12, 2025



PROJECT NAME
HWDSB - Dust Collector Waterdown
 215 Parkside Dr.,
 Waterdown City, ON

DRAWING TITLE
Electrical Plan

SCALE As indicated	DRAWING NUMBER E2
SHEET SIZE 24"x36"	
PROJECT NUMBER 25087	