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Anons Rd	DRAWING LIST DWG # DRAWING NAME M-1.0 NOTES, DETAILS & SYMBOLS M-2.0 DUST COLLECTION SYSTEM LAYOUT M-3.0 SPECIFICATIONS	SCALE N.T.S. 1/4"=1'-0" N.T.S.	WRIT PREC CON RESF CONI SHAL THE THE	TEN DIMENSIONS SH, CEDENCE OVER SCALED TRACTORS SHALL VERIFY PONSIBLE FOR ALL DIMEN DITIONS OF THE JOB AND THI L BE INFORMED OF ANY VARI, DIMENSIONS AND CONDITION DRAWING.	ALL HAVE DIMENSIONS. AND BE NSIONS AND E DESIGNERS ATIONS FROM S SHOWN ON
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s x 133" x 3.38) an	SYMBOL SCHEDULE SUPPLY OR OUTDOOR AIR DUCT I SUPPLY OR OUTDOOR AIR DUCT I SUPPLY OR OUTDOOR AIR DUCT I RETURN AIR DUCT UP SE3 RETURN AIR DUCT DOWN SEXHAUST AIR DUCT DOWN SEXHAUST AIR DUCT DOWN SEXHAUST AIR DUCT DOWN COMPARE AIR DUCT OR PIPE CAP-OFF AD ACCESS DOOR TYPE SIZE GFM CFM CFM CFM CFM CFM CFM CFM C	JP DOWN			
CIFICAT OF FILTER BAC AL FILTER ARE RESSED AIR RE R SUPPLY ROL ER MOTOR ER MOTOR LOAD RATING CONSIDERED E CONSIDERED E ND SNOW LOAD DARD COLOR OXIMATE WEIGH	IONS FOR MODEL UMA 250 GS 244 SQ FT (22.7 sq m) EQUIRED NONE				
			3	ISSUED FOR TENDER	2024-02-20 2024-01-22
NOTES: 1.DO NOT IN READ AND INSTALLAT MANUAL, (2.COLLECTOR 3.THIS DOCU PURPOSES	NSTALL OR OPERATE THIS EQUIPMENT UNTIL YOU F UNDERSTOOD THE INSTRUCTIONS AND WARNINGS IN ION AND OPERATION MANUAL. FOR A REPLACEMENT CONTACT DONALDSON COMPANY, INC. (800 - 365 - R GROUNDED. JMENT IS NOT CERTIFIED FOR CONSTRUCTION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.	HAVE THE 1331).	1 Issue Engined	ISSUED FOR COORDINATION Description er's seal:	2024-01-05 Date
			Project W W DL RE 802 Wh	HISTLER PUBLIC ORKS YARD JST COLLECTO PLACEMENT 20 Nesters Road histler BC	C DR
			NC EG Drawn	DTES, DETAILS & S UIPMENT SCHED By: CAV Check	YMBOL ULES Ked By: YM
			Date: Scale: Drawing	2024-02-20 g:	
				IVIT.U	





— 5"Ø DOWN TO SYMMETRICAL WYE. INSTALL BLAST GATE ON 4"Ø & 3"Ø BRANCH DUCTS TO (2) × CONNECTION PORTS. PROVIDE A REMOTE ON/OFF SWITCH FOR TABLE SAW ON CONTROL PANEL. REFER TO ELECTRICAL DWGS.

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ty			
I)	FINAL CFM		
500	400		
200	210		
200	210		
200	210		
200	210		
200	210		
200	210		
200	210		
200	370		
200	90		
	2,330		
200	205		
200	205		
200	365		
200	365		
	1,140		

- GENERAL NOTES:
- 1. FINAL LOCATION OF DUCTWORK MAY VARY SLIGHTLY FROM DRAWINGS. MAKE ADJUSTMENTS TO DUCTWORK TO ACCOMMODATE EXISTING CONDITIONS AT NO EXTRA COST. 2. ALL DUCTS ASSOCIATED WITH DUST COLLECTION SYSTEM MUST BE COMPLETED WITH SMACNA CLASS 3 DUCTWORK, 16 GA FLANGED OR CONTINUOUSLY WELDED.
- NONCONDUCTIVE DUCTS SUCH AS PVC PIPES SHALL NOT
- BE PERMITTED. BRANCHES SHALL CONNECT TO MAIN DUCTS AT AN ANGLE NOT EXCEEDING 45 DEGREE.
- 3. DUCTWORK TO BE CONNECTED WITH EXTERNAL MECHANICAL CLAMPS, NO RIVETS OR SCREWS SHALL BE ALLOWED.
- 4. CONNECT DUCTWORK TO WOODWORKING MACHINES AS PER CODES, STANDARDS AND MANUFACTURER'S
- RECOMMENDATIONS. 2. INDIVIDUAL EQUIPMENT DUCT BRANCH AND CFM NOTED IN THE EQUIPMENT LIST. INSTALL AND BALANCE AIR SYSTEM
- AS INDICATED IN THE EQUIPMENT LIST. 3. FLEXIBLE DUCTING SHALL BE PERMITTED FOR FINAL MACHINE CONNECTION IN A LENGTH NOT EXCEEDING
- MINIMUM REQUIRED FOR MACHINE OPERATION.
- 4. DUCTWORK SHALL BE BONDED AND GROUNDED. PROVIDE PERMANENT GROUNDING AND BONDING OF PRODUCTION
- EQUIPMENT. REFER TO THE DETAILS (TYPICAL). 5. ELECTRICAL EQUIPMENT USED IN OPERATIONS THAT GENERATE DUSTS SHALL BE INTERLOCKED WITH THE DUST COLLECTION FAN SO THAT THE EQUIPMENT CANNOT BE OPERATED UNLESS THE FAN IS IN OPERATION. MOTORS FOR FANS USED TO CONVEY DUSTS SHALL BE LOCATED OUTSIDE THE DUCT OR SHALL BE PROTECTED WITH APPROVED SHIELDS AND DUST-PROOFING. MOTORS AND FANS SHALL BE ACCESSIBLE FOR SERVICING AND
- MAINTENANCE 6. ACCUMULATION OF DUST SHALL BE KEPT AT A MINIMUM IN THE INTERIOR OF BUILDINGS. ACCUMULATED DUST ON FLOORS AND OTHER SURFACES SHALL BE COLLECTED BY VACUUM CLEANING. FORCED-AIR OR SIMILAR DEVICES SHALL NOT BE USED TO REMOVE DUST FROM SURFACES.
- 7. SMOKING, CARRYING MATCHES, USE OF HEATING OR OTHER DEVICES EMPLOYING AN OPEN FLAME, AND USE OF SPARK PRODUCING EQUIPMENT SHALL BE PROHIBITED IN AREAS CONTAINING DUST-PRODUCING OR DUST-AGITATING OPERATIONS.
- 8. DUCTS CONVEYING EXPLOSIVE DUSTS SHALL HAVE A CLEARANCE FROM COMBUSTIBLES OF NOT LESS THAN 18". ACCESSIBLE CLEANOUTS SHALL BE PROVIDED AT 10'-0" INTERVALS, AT CHANGES IN DIRECTION AND AT SPRINKLER HEADS AND AS PER NEPA 664 REQUIREMENTS.

DRAWING NOTES:

- NEW DUST COLLECTOR, C/W VENT VENT DEFLECTOR AND NEW CONCRETE PAD TO SUPPORT THE UNIT. PROVIDE REQUIRED SERVICE CLEARANCES. INSTALL AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS (TYP. 2).
- ISOLATION FLAP VALVE DAMPER, C/W INSPECTION ACCESS DOOR AND A LOCKING DETECTION SENSOR TO INDICATE THE FLAP PLATE IS FULLY CLOSED. PROVIDE MIN 18" CLEARANCES ABOVE AND FRONT SIDE OF DAMPER. MINIMUM 13'-6" OF STRAIGHT DUCTWORK BETWEEN DUST COLLECTOR AND ISOLATION DAMPER (TYP. 2).
- PROVIDE PORTABLE FIRE EXTINGUISHER. CONFIRM THE QUANTITY AND LOCATION REQUIREMENTS AS PER NFPA
 10. COORDINATE EXACT LOCATIONS ON SITE (TYPICAL). (4) INSTALL MOTORIZED DAMPER ACTUATOR, FAIL-SAFE IN EXISTING DAMPER. INTERLOCK WITH DC-1. DAMPER SHALL OPEN WHEN DC-1 IS ACTIVATED.

GENERAL NOTES: THIS DRAWING, AS AN INSTRUMENT OF SERVICE S THE PROPERTY OF THE DESIGNERS AND MAY NOT BE REPRODUCED WITHOUT THEIR PERMISSION AND UNLESS THE REPRODUCTION
CARRIES THEIR NAME. ALL DESIGNS AND OTHER NFORMATION SHOWN ON THIS DRAWING ARE OR THE USE OF THE SPECIFIED PROJECT ONLY AND SHALL NOT BE USED OTHERWISE WITHOUT THE WRITTEN PERMISSION OF THE DESIGNERS.
PRECEDENCE OVER SCALED DIMENSIONS. CONTRACTORS SHALL VERIFY AND BE RESPONSIBLE FOR ALL DIMENSIONS AND CONDITIONS OF THE JOB AND THE DESIGNERS SHALL BE INFORMED OF ANY VARIATIONS FROM THE DIMENSIONS AND CONDITIONS SHOWN ON THE DRAWING.
HENA CONSULTING INC
MECHANICAL ENGINEERING T: 1.778.970.1772 E: Info@HenaConsulting.ca Permit to Practice # 1001609
Project#: HC23BC059

3	ISSUED FOR TENDER	2024-02-20
2	ISSUED FOR COORDINATION R1	2024-01-22
1	ISSUED FOR COORDINATION	2024-01-05
Issue	Description	Date
Enginee	r's seal:	

Project:
WHISTLER PUBLIC WORKS YARD DUST COLLECTOR REPLACEMENT
8020 Nesters Road Whistler BC
Drawing Title:

DUST COLLECTION SYSTEM LAYOUT

Drawn By: CAV Checked By: YM 2024-02-20

M2.0



15010 <u>General Mechanical Provisions</u>

- 1.1 <u>Conformance</u> Conform to terms and conditions of the General Contract Document. 1.2 <u>Scope</u>
- .1 Provide complete, fully tested and operational mechanical systems to meet the requirements described herein and in complete accordance with applicable codes and ordinances.
- .2 Contract documents of this division and drawings are diagrammatic and approximately to scale unless detailed otherwise. They establish scope, material and installation quality and are not detailed installation instructions.
- .3 Follow manufacturer's recommended installation details and procedures for equipment, supplemented by requirements of contract documents.
- .4 Install equipment generally in locations and routes shown close to building structure with minimum interference with other services or free space. Remove and replace improperly installed equipment to satisfaction of the consultant at no extra cost.
- .5 The drawings indicate the general location and route to be followed by the piping and ductwork. Where details are not shown on the drawings or only shown diagrammatically, the pipes and ductwork shall be installed in such a way as to conserve head room and interfere as little as possible with the free use of space through which they pass. Service lines shall run parallel to building lines. All duct and pipes at ceiling shall be kept as tight as possible to beams or other limiting members at high end. All pipes and ducts shall be coordinated in elevation to ensure that they are concealed in the ceiling space provided unless detailed and dimensioned otherwise on drawings and permitted otherwise by the consultant.
- .6 Connect to equipment specified in other sections and to equipment supplied and installed by other contractors or by the owner. Uncrate equipment, move in place and install complete; start-up and .7 Connect into existing systems with minimum disruption to the existing systems.
- .8 Provide seismic restraints for all equipment, piping and ductwork when required by code.
- .9 Field verify all building and site dimensions prior to any fabrication and installation of equipment or materials. No additional charge shall be entertained for failure to verify these dimensions on site.
- .10 Identify all opening and holes required for the passage of mechanical services through structures and dividing walls to the general contractor. Such identification shall be via marked up drawings showing opening locations, sizes, and levels. If required, the contractor is to clearly mark on site the intended openings for review by the structural engineer.
- .11 The work shall include but not limit to the following: Complete dust collection system installation. Complete automatic control and related wiring installation. .3 Commissioning and balancing.

1.3 <u>Materials</u>

- .1 Materials and equipment installed shall be new, full weight and of quality specified. Use same brand or manufacturer for each specified application. .2 Each major component of equipment shall bear manufacturer's name, address, catalog and serial
- 1.5 <u>Shop Drawings</u> .1 Provide shop drawings as indicated in accordance with the MCA-BC standards for shop drawings.
- .2 Identify materials and equipment by manufacturer, trade name and model number. Include copies of applicable brochure or catalog material.
- .3 Clearly mark submittal material using arrows, underlining or circling to show differences from specified, eq. Ratings, capabilities and options being proposed. Cross out non-applicable material. Specifically note on the submittal specified features such as special tank linings, pumps, seals, material, or painting.
- .4 Include dimensional and technical data sufficient to check if equipment meets requirements. Include wiring, piping, and service connection data and motor sizes. .5 Installed materials and equipment shall meet specified requirements regardless of whether or not
- shop drawings are reviewed by the consultant.
- .6 Do not order equipment or material until the consultant has reviewed and returned approved shop 1.24 Substantial performance inspection drawinas.
- .7 Shop drawings shall be endorsed by the General Contractor and Mechanical Sub-contractor indicating that the shop drawings have been reviewed and submitted without qualifications.
- .8 Submit weights of all major equipment for review such that the loads can be reviewed by the appropriate consultant.
- .9 Submit list of all electrical motors and power requirements to Electrical Consultant and Contractor. .10 Contractor to provide complete list of all motors, voltage and phase required for mechanical
- equipment to the electrical contractor for coordination. .11 Shop drawings submitted via email (scanned copy) are also acceptable providing that they have been reviewed and endorsed by the General Contractor and Mechanical Sub-contractor. If this has not
- been completed the shop drawings will not be reviewed. 1.6 Standards of Materials, Equipment and Installation
- .1 Requests for changes to the specification in standards, materials, equipment or installation techniaues shall be submitted for review seven (7) working days prior to close of tenders, and if applicable will be incorporated in an addendum to the specification.
- .2 Equipment used shall not exceed space limitations in any dimension. Replace any equipment or apparatus which does not meet this specification at no cost. Assume full responsibility for the expense of redesign and adjustment to other parts of the building when proposing the use of approved equal or alternate equipment.
- .3 Submit samples, in addition to drawings, of all items which in the consultant's judgment, can be better examined for capacity, quality, finish or detail by sample rather than by drawings. Samples
- shall be submitted before equipment is ordered. .4 Provide equipment from the specified manufacturers. All mechanical equipment shall have the
- approved manufacturers name permanently affixed to it. .5 Equipment on alternate & approved manufacturers list must be equal in quality and performance to
- the model specified. Equipment which is not equal will be replaced with the specified equipment at no cost to the owner.
- .6 If shop drawings are rejected technically after 3 submissions. The contractor, at no additional expense to the owner, shall revert to the specified product and manufacturer for this project. .7 The equipment manufacturer shall ensure that the strength and anchorage of the internal
- components of the equipment exceeds the force level used to restrain and anchor the unit itself to the supporting structure.
- 1.7 Performance Verification of Installed Equipment
- .1 Installed mechanical equipment whose performance is questioned by the consultant, may be subject to performance verification as specified herein. .2 When performance verification is requested, equipment shall be tested to determine compliance with
- specified performance requirements. .3 The contractor shall allow for 2 sets of extra sheaves, belts and pulleys as well as allow for all
- other materials and labor to install sheaves, belts and pulleys and rebalancing of the system. .4 The consultant will determine by whom testing shall be carried out. When requested, the contractor
- shall arrange for services of an independent testing agency. .5 Testing procedures shall be approved by the consultant.
- .6 Maintain building comfort conditions when equipment is removed from service for testing purposes.
- .7 Promptly provide the consultant with all test reports.
- .8 Should test results reveal that originally installed equipment meets specified performance requirements, owner will pay all costs resulting from performance verification procedure.
- .9 Should test results reveal that equipment does not meet specified performance requirements, equipment will be rejected, and the following shall apply:
- .1 Remove rejected equipment. Replace with equipment which meets requirements of contract documents including specified performance reauirements. .2 Replacement equipment will be subject to performance verification as well, using same testing procedures on originally installed equipment. .3 Contractor shall pay all costs resulting from performance verification procedure. 1.8 Operating and Maintenance Data
- .1 Instruct the building operators in the operation and preventative maintenance of each piece of equipment and system supplied and installed. Complete and turn over documentation prior to substantial performance. .2 Submit 2 sets 0 & M manuals in 3-ring binders, to include the following:

- Name of engineer and mechanical contractor and phone number. Description of operation of all mechanical systems. Shop drawing of all equipmen

- List of tagged valves. Extended warranties. Maintenance and operation instructions.
- List of manufacturers source and trade names. Balance report of air & water systems. Copy of record drawing.
- List of inspection and test certificates. .3 Binders are to be provided with permanent labels affixed to the spine and cover. These labels
- are to have the project name, project date, manual title, owner, architect, and consultant names. 1.9 <u>Record drawings</u>
- .1 Submit record drawings identifying location of all fire dampers, major control lines, access doors, tagged valves and actual room names. .2 The contractor shall be responsible for and keep one set of white prints, including revision drawings,
- in job site office. Backfilling will not be allowed until underground service dimensions are marked on plans. Set of white prints shall be maintained in constant up-to-date condition by each trade as-built conditions marked in red pencil). The 1 white set of prints will be provided to the contractor by the consultant at the contractor's cost.
- .3 The "record drawings" shall include, but not be limited to, the following changes and shall be recorded daily. .4 The as-built daily marked-up prints shall conform to the standards of the contract drawings and
- shall include all details from revision drawings, supplementary drawings, change orders, addenda and site revisions, etc. .5 At the end of construction, all of the above changes shall be transferred by the consultant, at the
- contractors cost, to a set of "AutoCad" disks. The cadd files shall be used to produce 1- set of original "AS-BUILTS" that will be turned over to the owner. The contractor shall allow \$400.00 / drawing.
- 1.13<u>Connection and interruption to existing systems</u> .1 Coordinate interruption of existing building systems with the owner. .2 Include premium time for connection to existing system so that normal use of the existing system will not be affected.
- 1.17<u>Access of equipment</u> .1 Make all arrangements to ensure that adequate access is available for all mechanical equipment. Do
- all hoisting and rigging into place of all specified equipment and be responsible for any damages incurred therefrom. .2 Contractor to demonstrate reasonable access to all equipment service locations.
- 1.18<u>Liability</u> .1 Assume full responsibility for laying out the work and for any damage caused to the owner or other trades by improper location, or carrying out of the work.
- .2 Be responsible for prompt installation of his work in advance of concrete pouring or similar work. Provide and set sleeves where required. Should any cutting or repairing of either unfinished or finished work be required, this contractor shall direct the particular sub-contractor whose work is involved to do such cutting and repairing without expense to the owner. Before being undertaken,
- such work shall be laid out for the consultant's review. .3 Examine the site and the local conditions affecting work under this contract. Examine carefully the mechanical, electrical, structural and architectural drawings and confirm that the work under this
- contract can be satisfactorily carried out without changes to the building as shown on these plans. Before commencing the work, examine the work of the other trades and report at once any defect of interference affecting the work of this section, of the guarantee of same. No extras will be subsequently allowed to cover any such error, omission or oversight on the thorough inspection of the grounds, building, conditions, etc.
- .4 Arrange work in co-operation with other trades in the building in such a manner as not to interfere

- with other work being carried on in the building and places where other pipes and equipment be installed along with the pipes and ducts pertaining to this trade. Co-operate with the other trades to get all the pipes, ducts, conduit, etc., Installed to the best advantage. When open web structural joists are used, must obtain structural shop drawings to ensure space available for installation of pipes and ductwork. .5 Where any pipes, ducts and equipment must be built into the work of other trades such as masonry,
- structural, or plastering, be responsible for supplying the equipment to be built in or measurements to allow the necessary openings to be left. All pipes and ducts which are to be concealed shall be installed neatly and closely to the building structure so that the necessary furring can be kept as small as possible. Any pipes, ducts, or other work which are not, in the opinion of the consultant, installed as they should be, shall be taken out and replaced without cost to the owner. .6 Protect finished and unfinished work from damage due to the carrying out of his work, giving special attention to the protection of building vapour barriers, waterproof membranes, etc. Cover floors and other parts of the building with tarpaulins, etc., And repair all damage to the satisfaction of the owner and the consultant. During freezing weather, protect all his materials in such a manner that
- no harm can be done to the installation already made and/or to materials and equipment on the .7 Be responsible for the condition of all materials and equipment supplied and shall provide all necessary protection for same. .8 Be responsible for the protection and maintenance of the work of this section until the building has
- been completed and accepted by the owner, and be responsible for the sorting of his material inside and out of the way, and to clean up all refuse caused by his work to meet consultant's review. .9 On completion of the work, all tools and surplus and waste materials shall be removed and the work left in a clean and perfect condition.
- .19<u>Liability insurance</u> .1 This contractor shall maintain such insurance as will fully protect both the owner and himself from any and all claims, all as noted within the general conditions and supplementary general conditions. When requested the contractor shall provide and show proof of, at his expense, comprehensive general liability insurance of not less than \$2,000,000.00 Including non-owned car coverage, contractual liability and containing a cross liability clause. Coverage shall include loss or damage the contractor may cause to any work, building, equipment, structural, on the owner's property. The insurance may contain a deductible clause not to exceed \$500.00.
- .2 The contractor shall carry full employee's liability insurance for the whole of the work in accordance with the workers' compensation act. 1.20 <u>Guarantee warranty</u>
- .1 This contractor shall furnish a written warranty stating that all work executed under this division will be free from defects of material and workmanship for a period of one (1) year from the date of substantial performance, which shall include one (1) complete summer and one (1) complete winter of uninterrupted operation. Warranty shall include any part of equipment, units or structures furnished hereunder that show defects in the works under normal operating conditions and/or for the purpose of which they were intended.
- .2 The contractor shall at his own expense promptly investigate any mechanical or control malfunction, and repair or replace all such defective work, and all other damages thereby which becomes defective during the time of the guaranty-warranty. 1.23 <u>Inspection</u>
- .1 The consultant or his representative may choose to inspect all work prior to it being concealed. .2 The contractor shall notify the consultant in writing for the following minimum, but not limited to,
- inspections: (Required to provide a Schedule 'C' for occupancy) .1 Final occupancy inspection and verification of all equipment being fully operational.
- .3 All work shall be approved by any other regulatory body having jurisdiction where required. .4 The contractor is to provide copies of all permits, inspection reports and certificates for insertion into
- the maintenance manual. .5 The contractor is to provide the consultant reasonable notice prior to calling an inspection. .6 After the pre-occupancy inspection for substantial performance all deficiencies shall be completed for
- the final inspection. The contractor will be permitted one additional final inspection to finish all remaining deficiencies. This and any other additional inspection will be at the contractor's cost, at \$500.00 per site visit. This cost will be deducted by the owner from the contractor's holdback and paid by the owner directly to the consultant.
- .1 Prior to the contractor requesting an inspection for substantial performance all the following items must be provided to permit beneficial use by the owner. .1 Comply with requirements in general contract conditions. Maintenance and operating manuals to be submitted.
- .3 As-built drawings submitted. .4 Balancing reports (air and water.) if required.
- .5 All systems shall be certified in writing by the contractor as complete and fully operational. .6 Instructions to the owner's operating personnel shall be provided in accordance with the specifications.
- .7 A complete list of all items which the contractor has not finished, or are deficient shall be provided. If, in the opinion of the consultant, this list indicates the project is excessively incomplete, a substantial completion inspection will not be performed. .8 The contractor shall be fully responsible to accumulate all necessary data from his sub-trades and suppliers and present same in the specified format for the approval by the consultant. .9 All life/safety items such as sprinkler systems, fire stopping, fire dampers, plumbing fixtures and ventilation systems must be operational. 1.25 <u>Laws, Notices, Permits and Fees</u>
- .1 Give all necessary notices, obtain all necessary permits and pay all fees in order that the work specified may be carried out, and furnish any certificates necessary as evidence that the work installed conforms with the law and regulations of all authorities having jurisdiction.
- .2 All work shall be in accordance with the regulations of the following authoritative bodies, the codes in effect at the time of tender, and any others having jurisdiction: .1 Fire Marshall Canadian Electrical Code .3 B.C. Building Code 2018 and local building by-laws
- .4 Worker's Compensation Board .5 Canadian Standards Association
- .6 Underwriters' Laboratories of Canada 1.26 <u>Demonstration and Instruction to Owner</u>
- .1 Demonstrate to and instruct the representative designated by the owner on the complete mechanical systems operating and maintenance procedures using the assistance of specialist sub-trades and manufacturer's representatives.
- 15043 <u>Balancing</u>
- .1 Contractor is to provide the services of an approved professional testing & balancing firm. .2 Provide a balance report of all air & water balance points and performance testing & balancing of all equipment as per the Associated Air Balance Council (AABC).
- .3 Calibrate the testing installments as per the AABC requirements and instructions.
- .4 Balance all air quantity to -5% or +10% of the design requirement. .5 Provide all required sheave, belt and impeller changes to achieve the required fan and pump flow
- .6 Measure and balance the following (where applicable): 1 Exhaust fan volumes and speeds. Airflow at each air outlet and branch connection.
- .3 Motor amperage draw on all motors and compare with motor rating. 15200 <u>Seismic requirements</u>
- .1 Scope .1 Seismic restraints for all equipment, ductwork, and piping covered by division 15. Attachment to structural members. .2 Reference standards
- Seismic requirements shall be in accordance with the following: .1 2018 Building Code Division B Part 4
- 2 N.F.P.A. 13. .3 N.F.P.A. 20. .4 SMACNA "Guidelines for seismic restraints of mechanical systems and plumbing piping systems".
- .2 Contractor to provide professional certification and schedules from specialist seismic engineer. Contractor to provide a schedule S-B prior to beginning construction and Schedule S-C prior to report for completion or occupancy inspection, whichever is the earlier. Alternatively, if the seismic engineer determines that seismic restraint is not required, he may issue a sealed letter certifying that seismic restraint is not required. The seismic engineer must be in good standing and licensed to practice in the province where the work is to be carried out. No extras will be entertained for modifications required by the seismic engineer. .3 <u>Seismic requirements</u>
- .1 Provide and install seismic restraints for all equipment, ductwork and piping installed by this division in accordance with all current applicable building codes. .2 The installation of seismic restrains shall not compromise vibration isolation capabilities.
- .3 Prior to construction commencement, contractor shall organize a meeting with the general contractor, mechanical contractor, structural consultants and other appropriate parties. At that meeting, the contractor shall present in general the approaches/details used to provide seismic bracing for equipment, ductwork and piping highlighting attachments to structure and trade coordination.
- .4 Seismic restraints for hot water tanks to be Vibra—sonic Control model VS—100 for tanks larger than 50 gallons (190 L). Small tanks to be provided with steel strap secured to structure. .5 Contractor to provide professional certification for all items installed by this division.
- 1.27 DUST COLLECTION SYSTEM
- 1.1.1. Dust collection units for carpentry shop wood working equipment. 1.1.2. Seismic restraint.
- 1.1.3. Shaker mechanism. 1.1.4. Dust container.
- 2. QUALITY ASSURANCE 1.2.1. Comply with all local, provincial and applicable WorkSafe BC regulations and requirements. Electrical devices shall be CSA approved
- 1.2.2. Equipment shall be manufactured and supplied by a company regularly engaged in such practice, and familiar with above noted regulations. 1.2.3. Initial startup and operational verification of the equipment shall be by an approved and qualified representative of the manufacturer.
- 2. <u>PRODUCTS</u> 1.3.1. <u>GENERAL CONSTRUCTION</u>
- 1.3.2. Dust Collector to be self-contained weatherproof intermittent shaker style unit suitable for outside installation; housing to be minimum 14-gauge angle reinforced all welded construction with factory standard finish.
- 1.3.3. Unit will come with a support stand designed to meet Seismic Zone 4 Rating. 1.3.4. Collector will provide primary separation of heavier particles in the inlet section and secondary filtration of fine particles in the filter section.
- 1.3.5. Filters to be envelope type and manufactured from static conductive polyester material. Filter access is to be by lift off access door secured with heavy duty fasteners designed to prevent the door opening in the event of an explosion in the collector. Fasteners shall allow for tool less access
- by service personnel. Minimum filter area is scheduled. 1.3.6. Waste storage will be in 45-gallon (170 litre) drums with castors. Drums shall be positively and
- reconnection of drums. 1.3.7. The collector shall be supplied with an industrial rated fan, mounted on the clean side of the filter, complete with Hi-Eff TEFC motor. Fan to be shipped mounted to the dust collector. Fan noise level to be less than 75dBA at 10' from the collector. Fan shall have spark resistant

securely sealed to the collector during operation. Tools shall not be required for removal and

- construction. Fan performance to be rated to site elevation. 1.3.8. Collector shall be provided with a blowback prevention damper (non-return valve) shipped loose for mounting in the inlet duct. Damper shall be ATEX approved for use in dust collection systems handling explosive dust. Damper shall be complete with latch to prevent bounceback, flap position sensor to indicate when latched, and dust level sensor to signal a condition when the operation could be compromised and shut down the fan. Wiring of sensors (24V) to control panel is by contractor, all in conformance with NFPA-69.
- 1.3.9. Dust collector to be provided with an explosion relief vent sized and located for safe discharge in the event of an explosion as required by NFPA-68 guidelines. Explosion vents shall be BOSS Vigispace vent/deflector or approved equal. They shall be located on the side of the dirty air plenum and sized appropriately for the dust collector volume and dust explosivity. Explosion vents shall be equipped with sensors to send a signal to the control panel and shut off the fan in the event of an explosion. Wiring of sensors (24V) to control panel is by others.
- 1.3.10.Location/orientation/rotation of the collector to be as per the drawings. 1.3.11. Provide secure attachment points for seismic restraint.



1.28 DUCTWORK ga flanged or continuously welded. GENERAL NOTES:

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1. All ducts associated with dust collection system must be completed with SMACNA class 3 ductwork, 16 2. Nonconductive ducts such as PVC pipes shall not be permitted. Branches shall connect to main ducts at an angle not exceeding 45 degree.

END OF MECHANICAL SPECIFICATION

