REQUEST FOR PROPOSAL

PROPOSAL:	**Wastewater Treatment Plant Lab Room Upgrades**
DATE:	March 31, 2021
INITIATOR:	Reg Bennett, Technical Services Manager

DATE PROPOSAL REQUIRED:

YEAR:	MONTH:	DAY:	TIME:
2021	**April**	**27**	**2:00 PM Local Time**

Submit Proposal in a clearly marked and sealed envelope to the attention of:

Procurement Department:
Town of Drumheller
224 Centre Street
Drumheller, Alberta T0J0Y4

"RFP - Wastewater Treatment Plant Lab Room Upgrades"

This Request for Proposal document is comprised of:

- RFP General Instructions
- Schedule A – Evaluation Criteria
- Schedule B – Mandatory Site Visit
- Schedule C – Technical Specifications

If you do not have all of these components the RFP package is incomplete - please contact the Initiator. **Note:** A Mandatory Site Visit will be held on April 16, 2021 at 10:30 am local time at 2490 South Railway Avenue.

The Town of Drumheller will NOT accept electronic submissions.

Your firm is invited to submit a Proposal, pursuant to the general conditions for the scope of work as described. This Proposal shall not be considered authorization to proceed with work herein described. All Procurement processes must comply with Town of Drumheller Purchasing Policy C-09-20.

SECTION #1 - SCOPE OF WORK:

The Town of Drumheller invites Proposals for the Wastewater Treatment Plant Lab Room Upgrades.

1. Wastewater Treatment Plant - Mechanical Control Centre Room Upgrade

   Currently, the Mechanical Control Centre Room is seeing challenges with having to replace their equipment at a very high frequency. This is thought to be due to the existing gases in the space by nature of the processes and substances in the building.

   We are looking to replace the existing fan with a Model: SQ-130-VG Direct Drive Centrifugal Inline Fan. Along with this fan should be installed a stand-alone pressure controller with sensors in the Mechanical Control Centre Room and the adjacent corridor. A motorized damper should also be installed on the relief damper to aid in pressure maintenance.

2. Wastewater Treatment Plant - Lab Room Upgrade

   Currently installed in the lab area is an FC2.1 energy recovery ventilator (ERV) which does not presently operate, and parts required to fix it are no longer available on the market. At this time, there is no ventilation to the space and therefore does not meet minimum code for this occupied space.

   We are looking to remove the existing fan coil unit and install an energy recovery ventilator (ERV) that will provide outdoor air and condition it with use of electric heat and exchange of corridor area air which will be exhausted outdoors. We require a NU0305 ERV installed.

   The Mechanical and Electrical specifications are attached and should be adhered to. All renovations, ductwork, installation, and commissioning should be included in your Proposal.

The supplier is required to complete all necessary sections of this Request for Proposal. Alternative methodologies or equipment will only be evaluated if submitted by the successful Proposer, no other work alternatives will be reviewed.

Note: A Mandatory Site Visit will be held on April 16, 2021 at 10:30 am local time at 2490 South Railway Avenue.

SECTION #2 - PROPOSAL AMOUNT:

All Proposals must be in Canadian Funds, excluding GST.

Total Cost $_____

Proposal submission price in effect for _____ days from date of acceptance from the Town of Drumheller.

SECTION #3 - SUBMISSION REQUIREMENTS:

The Town of Drumheller requires that all submissions shall include the following:

1. All pages of this Request for Proposal;
2. All issued Addendums;
3. Certificate of Recognition (COR) or Small Employer Certificate of Recognition (SECOR);
4. List of applicable Safe Work Procedures (SWP),
5. Table of Contents of the Corporate Safety Manual;
6. Workers Compensation Board (WCB) Coverage Letter;
7. Proof of Commercial Liability Insurance;
8. Town of Drumheller Business License;

SECTION #4 - INELIGIBILITY:

The Town of Drumheller shall deem a submission to be ineligible under the following situations:

a) Submissions that are unsigned, incomplete, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations or irregularities of any kind shall be considered ineligible.
b) Submissions that do not include the items listed in Section #3 Submission Requirements, and;
c) Submissions that are not received prior to the closing date and time, as determined by the time keeping of the Town of Drumheller computer system.

SECTION #5 - INSURANCE AND BONDING:

Insurance

The Town of Drumheller requires that all Proposals include proof of $5,000,000.00 Commercial Liability Insurance.

Bid Bond

a) Each submission must include a *Consent of Surety* and *Bid Bond* in the amount of 50% of the project cost, or in a form containing equivalent obligations on the part of the surety company and the submitter, executed under seal by a surety company satisfactory to *The Town* and authorized by the laws of Alberta to issue bonds in Alberta. In lieu of a *Consent of Surety* or *Bid Bond*, *The Town* may, in its sole discretion, accept from a financial institution acceptable to *The Town,* one of the following:
    i. a bank draft, certified cheque, irrevocable letter of credit, or guarantee, along with any additional documentation *The Town* may require; or
b) a letter that a bank draft, certified cheque, irrevocable letter of credit, or guarantee, will be provided upon the request of *The Town.*

b) Failure to include in the submission the required documentation will result in *The Town*, in its sole discretion, electing to discontinue consideration of the submission.

Performance Security

a) No later than five *Days* following execution of the *Agreement*, the *Contractor* must deliver to *The Town Performance Security* as specified in the *Agreement*. The *Performance Security* must be in the form required by *The Town* or in a form that is acceptable to *The Town,* and must be enforceable in the Province of Alberta.

b) If the *Agreement* is amended or a *Change Order* is issued that increases the *Project Price*, the *Contractor* must also increase the *Performance Security* provided under the *Agreement* to an amount not less than 50% of

the increased *Project Price* by obtaining and providing additional *Performance Security*, or a satisfactory rider or extension to the existing *Performance Security*, from the surety company. If the surety company declines consent or coverage for any amendment to the *Agreement* or for a *Change Order*, the *Contractor* must obtain and provide *The Town* with valid *Performance Security*, satisfactory to *The Town*, covering the *Work* specified in the amendment to the *Agreement* or in the *Change Order*. The *Contractor* will be compensated for the additional cost of such *Performance Security*.

c) If there is a *Labour and Material Payment Bond* required by *The Town*, the *Contractor* must ensure that all *Subcontractors* have notice of the *Labour and Material Payment Bond.* The *Contractor* must post and maintain in a conspicuous location or locations on the *Project Site*, a copy of the *Labour and Material Payment Bond*. The agenda for the meetings held by the *Contractor* will include notice of the *Labour and Material Payment Bond*.

SECTION #6 - EVALUATION CRITERIA:

The lowest, or any evaluated Proposal, may not necessarily be accepted. The Town of Drumheller reserves the right to reject any or all Proposals or to accept the Proposal evaluated to be in the best interest of the Town of Drumheller.

The Town's evaluator shall score each submission on the basis stated in Schedule A: Evaluation Criteria. The Town of Drumheller will have the sole and unfettered discretion to award up to the maximum number of points for each criterion listed in Schedule A: Evaluation Criteria.

By submitting a Proposal, you acknowledge and agree to waive any right to contest through legal proceedings. The decision to award points in respect to the criteria noted below will be at the sole discretion of the Town of Drumheller.

By submitting a Proposal, you acknowledge that you have reviewed the Ineligibility Criteria contained herein and you confirm that your Proposal meets all requirements of *the Town*.

SECTION #7 – REFERENCES:

Reference #1

Company Name: _____

Contact Name: _____

Contact Title: _____

Contact Phone Number: _____

Contact Email: _____

Reference #2

Company Name: _____

Contact Name: _____

Contact Title: _____

Contact Phone Number: _____

Contact Email: _____

Reference #3

Company Name: _____

Contact Name: _____

Contact Title: _____

Contact Phone Number: _____

Contact Email: _____

SECTION #8 - INTENT:

The undersigned contractor hereby provides a Proposal to supply the services as described herein in its entirety for the cost as described in Section 2.

COMPANY: _____

Print name of authorized personnel: _____

Signature: _____Corporate Seal:_____

Email Address: _____

Telephone number: _____

TOWN OF DRUMHELLER:

Print name of authorized personnel: _____

Signature: _____

DATE: YEAR 2021 MONTH _____ DAY _____

Upon completion of signatures above, this document will represent a contract agreement between the contractor and the Town of Drumheller.

SCHEDULE A – EVALUATION CRITERIA

Section A.1 – Evaluation Criteria Breakdown:

EVALUATION BASED ON:	100%
Cost	50%
References	10%
Safety	15%
Qualifications	15%
Specification	10%

Section A.2 – Evaluation Criteria Definitions:

Cost:
Full scoring for cost shall be given to the lowest Total Project Cost value submission. A score of zero (0) shall be given to the highest Total Project Cost value submission. All other submissions shall be awarded a pro-rated value between these two amounts.

References:
The scoring for references shall be based on number of references and quality of references. Scoring shall be assigned as follows:

- 0 references – 0% of score;
- 1 reference – 15% of the score;
- 2 references – 20% of the score, and;
- 3 or more references – 50% of the score.

The remaining 50% of the score shall be based on the quality of the reference as determined by the evaluator(s).

Safety:
Submissions including Certificate of Recognition (COR) or Small Employer Certificate of Recognition (SECOR) issued by Alberta Government shall receive the 50% of the score. Submissions that do not include either a COR or SECOR will be deemed ineligible as per Section #5 – Ineligibility. The evaluator shall award the remaining 50% of the score for this category based on review of the supplied list of applicable Safe Work Procedures, and Table of Contents of the Corporate Safety Manual.

Qualifications:
The Town of Drumheller will evaluate submissions on the basis of proof to provide the work to expected industry standard levels of performance. The Town evaluator(s) shall review all submissions for qualification on the basis of:

1. Past work performance with the Town;
2. Proof of task and scope of work appropriate worker qualifications (tradespersons tickets, proof of certification from manufacturer, etc.), and;
3. Proof of work procedures and quality control and assurance programs.

Specifications:
The Town of Drumheller shall evaluate the submission to confirm that the Proposal represents a clear understanding of the performance and technical requirements.

SCHEDULE B – MANDATORY SITE VISIT

MANDATORY SITE TOUR ATTENDANCE

.1 A site tour will be held at the time and place specified on the cover of this RFP.

.2 Purpose is to provide Contractor's an opportunity to familiarize themselves with the required services under the Contract and with existing conditions. Town Representative's representative(s) will be present.

.3 Attendance at the time and place specified is a mandatory prequalification requirement.

.4 Each Contractor shall submit, with its prequalification submission, a copy of the attached Confirmation of Mandatory Site Tour Attendance. This form, when signed by the Town Representative's representative at the site tour, will attest to the attendance of the Contractor's representative. If this form is not submitted with the prequalification documents or is submitted improperly signed, and the Town Representative cannot otherwise verify a Contractor's attendance at the site visit, that Contractor will not be prequalified.

FROM: _____
(Name of Contractor)

_____
(Address)

TO: Reg Bennett
Technical Services Manager
Town of Drumheller
224 Centre Street
Drumheller, Alberta
T0J 0Y4

Telephone: 1-403-823-1348
e-mail: rbennett@drumheller.ca

RE: Wastewater Treatment Plant
Request for Proposal (RFP)
Lab Upgrade

It is understood that attendance at the site tour is a mandatory prequalification requirement. The undersigned hereby confirm that a representative of the above-named Contractor attended the site tour for the above name RFP, held on:

April 16, 2021

CONTRACTOR'S REPRESENTATIVE:

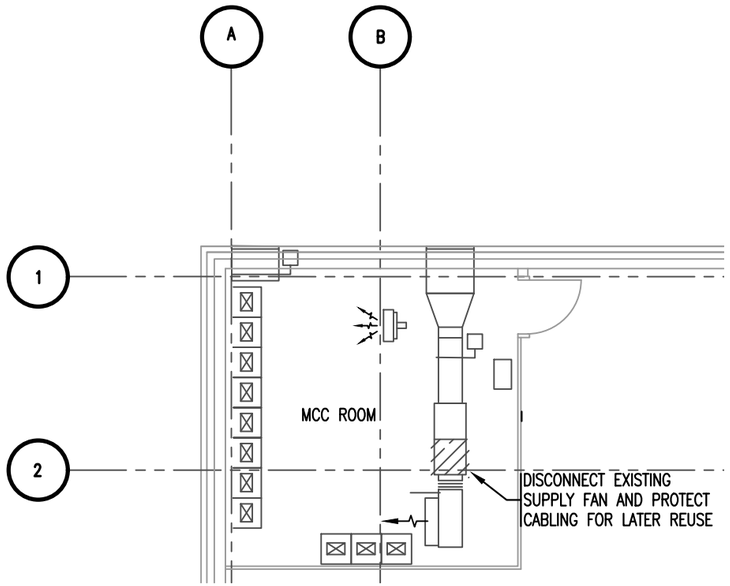
_____
(Signature)

_____
(Please Print Name of person signing)

SIGNATURE/STAMP OF TOWN REPRESENTATIVE

_____

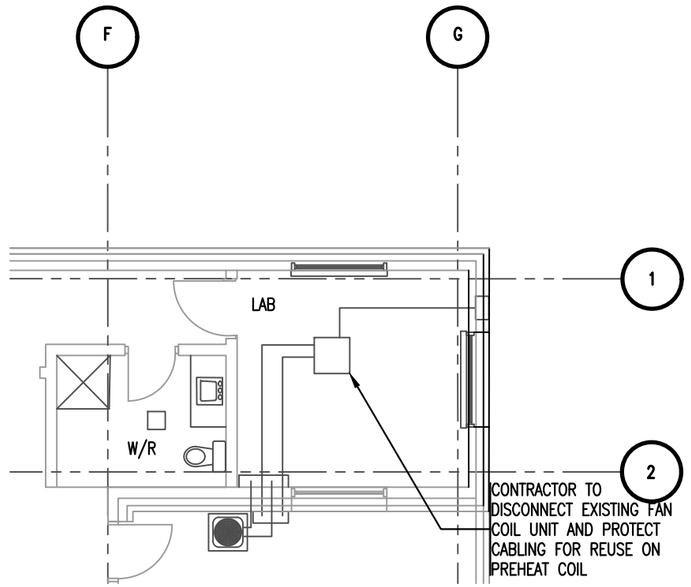
SCHEDULE C – SPECIFICATIONS



N

1 / E-01 MCC ROOM DEMOLITION PLAN

SCALE: 1:100



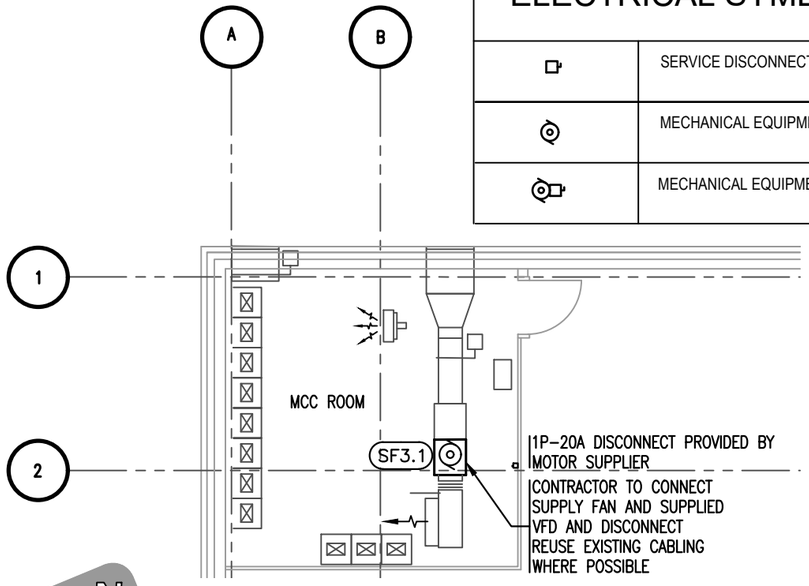
N

2 / E-01 LAB DEMOLITION PLAN

SCALE: 1:100

ELECTRICAL SYMBOL LEGEND

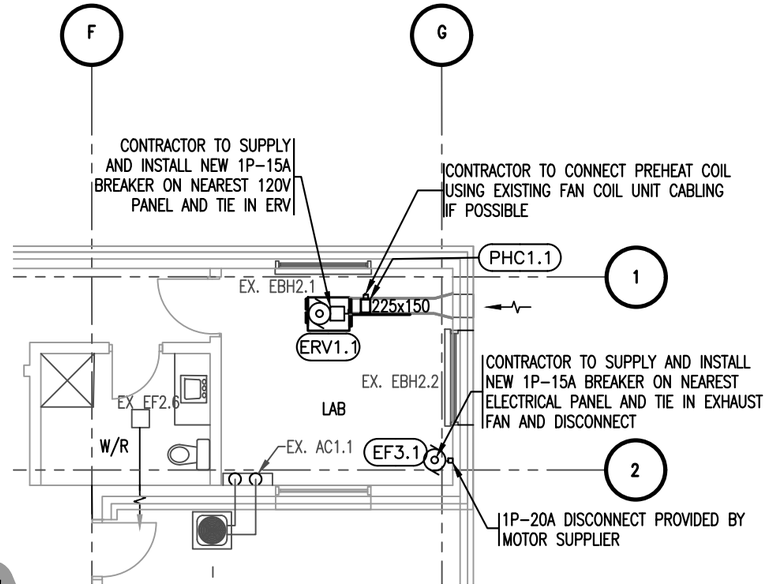
	SERVICE DISCONNECT
	MECHANICAL EQUIPMENT
	MECHANICAL EQUIPMENT DIRECT CONNECTION



N

3 / E-01 MCC ROOM CONSTRUCTION PLAN

SCALE: 1:100



N

4 / E-01 LAB AND WASHROOM CONSTRUCTION PLAN

SCALE: 1:100

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ANDREW M. GRESCHNER ALBERTA

2020-11-09

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

WWTP ELECTRICAL DEMOLITION AND CONSTRUCTION PLANS

PROJECT #	DRAWING NUMBER
C19-2760	**E-01**
DRAWN: AG	
CHECKED: AG	

1. GENERAL

1.1. The Electrical Contractor is to supply all labour and materials necessary to provide complete and operating electrical systems as specified or indicated on the Drawings, any work, even if not shown or specified, which is reasonably implied or obviously necessary to complete the work, is to be done as if it were both shown and specified.

1.2. The responsibility as to which sub-trade provides required articles or materials rests solely with the Prime Contractor. Extras will not be considered based on grounds of difference in interpretation of Drawings or notes as to which trade involved is to provide certain specialties or materials.

1.3. The Drawings of the division are performance Drawings and indicate the general arrangement of work. They are diagrammatic and do not show all the existing structural and construction details. Any information involving accurate measurements and existing conditions shall be verified on site. All necessary adjustments, changes, and additions to carry out the design intent are to be made without additional charge.

2. CODES, PERMITS AND INSPECTION

2.1. The installation is to comply with the requirements of the latest edition of the Canadian Electrical Code (CSA Safety Standard for Electrical Installations C22, 1-2015, Twenty Third Edition, Part I), the regulations of the Electrical Inspection Department and the Governing Authorities having jurisdiction. These documents are not intended to reiterate any codes or regulations: all Contractors and their respective trades people are to be licensed and qualified to perform this type of work. No allowances will be made for the failure of the Contractor to provide suitable grounding, access panels, wiring methods, etc. to the satisfaction of the applicable codes and intent of these documents.

2.2. The Electrical Contractor is to obtain all Permits and pay all Fees required for the completion of the project. Provide for the supply of Drawings to the Local Inspection Authority as required. Submit a copy of the Electrical Permit to the Engineer for record purposes.

3. STANDARDS OF MATERIAL AND WORKMANSHIP

3.1. All materials are to be new, unless otherwise indicated, of minimum quality specified and are to conform to the requirements of the Canadian Standards Association (CSA) for the intended application. Where equipment or material is specified by technical description only, it is to be of the best commercial quality obtainable for the purpose.

4. ALTERNATES

4.1. Alterations entailing additional work or deletions are to be carried out only upon the written request of the Prime Consultant.

4.2. Any prices submitted by the Electrical Contractor for additional work or alterations are to include a price breakdown for all labour and materials. Where required, pricing for labour and materials will be checked by invoices, time sheets, etc. No extras will be allowed without prior written authorization.

4.3. The Electrical Contractor is to carry all necessary costs for the appropriate review and approval process for any alternate product, component or method of installation the Contractor wishes to incorporate in this project. The cost for review by the Engineer of any product, component, or method of installation can be obtained through the Engineer.

5. SHOP DRAWINGS, APPROVALS AND MAINTENANCE MANUALS

5.1. The Electrical Contractor is to submit to the Engineer, for approval, a complete list of all equipment proposed to be used on the project, identifying name of manufacturer, rating, technical description and catalogue number. All submissions are to be made electronically. Shop drawings will not be reviewed until both the Electrical Contractor and General (Prime) Contractor have reviewed, stamped and signed off the respective drawings.

5.2. During the construction stage of this project the Electrical Contractor is to assemble all of the approved shop drawings into three (3) separate, three ring binders. Within each of the respective binders, provide separations for different shop drawings from the various systems.

5.3. Prior to the completion of this project, turn over the completely assembled binders complete with all of the respective shop drawings, to the Engineer.

5.4. Secure and assemble all necessary literature describing the operation and maintenance of all electrical equipment provided and including all shop drawings and operating and maintenance data.

5.5. Maintenance Manuals are to be bound in 8.5 inch x 11 inch capacity 3 ring catalogue binders. Cover imprint is to be as specified by Owner.

5.6. Manuals are to be submitted before substantial completion of project can be granted.

5.7. Submit manuals to Engineer for review. Electronic submittal for content review prior to printing is acceptable but does not substitute for final manual review.

5.8. Final index for binder will be as approved by Owner. Partial index listing is as follows:

1.0 – Suppliers
1.1 – Motor Control
1.2 – Distribution Equipment
1.3 – Luminaries
1.4 – Wiring Devices
1.5 – Miscellaneous Equipment
1.6 – Warranties and Guarantees
1.7 – Certification
1.8 – Fire Alarm System Verification Report and Certificate
1.9 – Test Results
1.10 – Panel Directories
1.11 – Field Record Drawings
1.12 – Systems Operations

6. SETTING OUT OF WORK

6.1. The Electrical Contractor is to thoroughly examine the Site and Drawings and report any discrepancies, errors or omissions to the Engineer. The Electrical Contractor is to give the work personal supervision, layout the work, do all necessary leveling and measuring, or employ competent Engineer to do so. Figures, full size and detailed drawings, are to take precedence over scale measurements of the drawings. Contractor to confirm that existing cabling and overcurrent protection is suitable for reuse.

6.2. The Electrical Contractor is to be responsible for correcting all work completed contrary to the intent of the drawings and is to bear all costs of same. Where the intent of drawings is not clear, obtain clarification from the Engineer before proceeding with the work.

6.3. It is the intent of these drawings to provide for an electrical installation, complete and in operating condition, and the Electrical Contractor is to be responsible for the supply and installation of all materials necessary to accomplish this.

6.4. The Electrical Contractor is to be responsible for any damage caused by the improper location or carrying out of this work. No additional costs will be granted for damage to cabling or conduits caused by insufficient mechanical protection during demolition.

6.5. The Electrical Contractor, in setting out of the work, is to make reference to the Electrical, Mechanical, Structural and Architectural drawings. Consult with the respective trades in setting out locations for all outlets, conduit runs, luminaries, panel assemblies, etc. so that conflicts are avoided and symmetrical even spacing is maintained.

6.6. Conduit is to be laid out, following building lines; to avoid interference with other trades and to maintain maximum headroom with the minimum number of crossovers.

6.7. The Electrical Contractor is to refer to Mechanical Drawings for location of thermostats, equipment, etc. Outlets are to be adjusted in these areas to coordinate with the Mechanical equipment.

6.8. Where switches, receptacles, etc. are shown in the same general locations, these outlets are to be lined up vertically.

7. NAME TAGS

7.1. Name tags are to be supplied and installed where called for on the Drawings and in these specifications. All motor starters, motor protection switches and manual control stations are to be provided with name tags. At all distribution centres, etc. name tags are to be provided for all breakers, switches, etc. Each distribution centre, panel board and terminal cabinet is to be provided with name tags giving the centre and panel designation name or letter and voltage or type of terminal panel. Letters on name tags are not to be less than 3/8 inches high.

7.2. Name tags are to be three layer laminated plastic black / white / black with etched letters to give white letters on black background. Edges are to be beveled. Embossed adhesive backed Dymo name tags are not to be used.

7.3. Provide thin thermoplastic, clear with black lettering, permanently affixed, identification for each device and/or outlet. Identify the circuit or appropriate switch leg information . Dymo type name tags will not be permitted. Submit a sample to the Engineer prior to installation of identification tags.

EQUIPMENT CONTROL SCHEDULE

MOTOR NUMBER	DESCRIPTION	LOCATION	HP	FLA	VOLT	PH	FED FROM	OVERCURRENT PROTECTION	FEEDER	DISCONNECT AT MOTOR REQUIRED	STARTER TYPE	REMARKS
PHC1.1	Preheat Coil	LAB		14.5	208	1	CONTRACTOR TO CONFIRM	2P-20A	3#10-21mmC			
ERV1.1	Minivent-450-VG	LAB		7.1	120	1	CONTRACTOR TO CONFIRM	1P-15A	3#12-21mmC		MAG	
SF2.2	Supply Fan	ELEC ROOM	3/4		600	3	CONTRACTOR TO CONFIRM	3P-15A	4#12-21mmC	BY MECH	VFD	Disconnect supplied by Mechanical/Install by Electrical
EF3.1	Exhaust Fan	LAB	1/10		120	1	CONTRACTOR TO CONFIRM	1P-15A	3#12-16mmC	BY MECH	MAG	Disconnect supplied by Mechanical/Install by Electrical

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT
PROFESSIONAL ENGINEER ALBERTA ANDREW M. GRESCHNER
2020-11-09

PROJECT TITLE
DRUMHELLER WTP AND WWTP HVAC UPGRADES
CITY OF DRUMHELLER

DRAWING TITLE
MOTOR CONTROL SCHEDULE AND SPECIFICATIONS

PROJECT # C19-2760
DRAWN AG
CHECKED AG
DRAWING NUMBER E-02

8. TESTING

8.1. All portions of the Electrical work are to be tested and checked for satisfactory operation.

8.2. Upon completion of the work and immediately prior to final inspection and takeover, the Electrical Contractor is to check the load balance on all feeder, distribution centres, panels, etc. Tests are to be carried out by turning on all possible loads in the project and checking the load current balance. If load unbalance exceeds 15 percent, reconnect the circuits to balance the load. Submit test results in tabular form and insert in Maintenance Manuals.

8.3. Revise and Type Panel Directories with the new circuiting. Insert copy in Maintenance Manuals. Revise identification tags.

9. CONDUIT

9.1. Provide steel galvanized conduit (EMT) in ceiling and service spaces. All exposed conduit is to be painted to match surface colours.

9.2. Support multiple runs of conduit on galvanized channel with galvanized rod hangers.

9.3. Install CSA approved expansion fitting complete with grounding jumper where conduits cross building expansion joints in slabs.

9.4. Provide bend or offset in conduit adjacent to building expansion joint where conduit is installed above suspended ceilings, and in straight runs of conduit 100' or longer.

9.5. Size conduits to the minimum code requirements and provide larger sizes where noted.

9.6. All conduits are to be tested for clear bore.

9.7. Install a continuous nylon cord and identification in each end of cord and conduit left empty.

10. OUTLET BOXES

10.1. Outlet boxes are to be 4 inch square type 52–171 (for conductor fill), no other box types will be accepted without Engineer's approval. Boxes used with surface mounted EMT are to be standard sheet metal type. Provide the appropriate device rings for all outlet boxes.

10.2. Outlet boxes in sound attenuating partitions are to be offset to avoid undue transmission of sound between the partition elements.

10.3. Allow for relocation of all outlets 10 feet without additional cost, if new position is given prior to original rough–in location is undertaken.

10.4. Confirm location of all outlets on site prior to rough–in.

10.5. All splices are to be done inside junction boxes.

11. WIRE AND CABLE

11.1. Materials

11.1.1. Building Wiring: 98% conductivity copper, 600 volt insulation, RW–90 X–Link.

11.1.2. Branch Circuit Wiring: Conductors smaller than #14 AWG not permitted. Use #12 X–Link for home runs and on circuits protected by 20 amp breakers. Contractor to size conductors to comply with CEC 8–102 for voltage drop. Reference conductor length schedule.

Conductor	Maximum Length of Run 120V
#12	20 m
#10	35 m
#8	55 m
#6	95 m

11.2. Installation

11.2.1. All ground conductors shall be green in colour.

11.2.2. Existing wiring serving existing light fixtures which are being replaced shall be changed to R–90 X–Link to meet CEC requirements.

11.2.3. Flexible metallic cable (BX) is to be utilized only for connections to lighting from ceiling mounted junction box (Max 6 foot length).

11.3. Colour Coding

11.3.1. All equipment and components, field wired or factory assembled shall be identified.

11.3.2. All conductors shall be identifiable by coloured insulation and permanent markers at every terminal and accessible point throughout its entire run as follows:

11.3.2.1. 120/208 volt, 3 phase, 4 wire – red, black and blue

11.3.2.2. 277/480 volt or 347/600 volt 3 phase, 4 wire – orange, brown and yellow

11.3.2.3. Neutral conductor – white

11.3.2.4. Ground conductor – green

12. ACCESS PANELS AND DOORS

12.1. Provide access panels or doors to allow ready access to all concealed electrical junction boxes and/or products requiring adjustments, maintenance and/or inspection.

13. POWER PANELS

13.1. Panels are to have branch circuits, etc. of size and type as noted on Drawings. Breakers are to be bolted type and are to be rated for switching purposes.

14. WIRING DEVICES

14.1. Switches: Quiet, slow make, slow break design, toggle handle, with totally enclosed case rated at 15 amp. 120 volt, AC type with wide face body and full gang matching type. Switch and pilot light, push action type with red handle, integral long–life pilot light, rated as specified above or called for on the Drawings. Colour, provide Ivory switches in all areas, or as directed by the Prime Consultant.

14.2. Receptacles: full gang size, U–grounding type, rated at 15 amp. 120 volt with parallel slots, slots having double or triple wire jaws, complete with saddle mounting strip around back of body, abuse–resistant high impact nylon top face. Special Receptacles. (See Drawings for special receptacle sizes.) Colour; provide Ivory receptacles in all areas, or as directed by the Prime Consultant, or shown on the plans.

14.3. All receptacles to have circuit number and supplying panel board number marked on the outlet visible with the cover plate on.

14.4. All exterior mounted receptacles to be mounted on a 45° down angle with weatherproof covers.

15. COVER PLATES

15.1. A full complement of smooth finish. Ivory in colour coverplates, or as shown on the plans, (no pre–punched style blank coverplates) are to be provided for all switches, receptacles, telephone outlets, low tension outlets, etc. Plates for all flush mounting devices are to be unbreakable of high–impact nylon equal to Bryant nylon wall plates series.

15.2. Provide blank coverplates on outlets such as telephone, computer, and television that will not be in service.

15.3. Outlets being put into service for telephone, computer, security and television to have cover plates and devices supplied by this Electrical Contractor.

16. WIRING FOR MECHANICAL TRADE

16.1. Electrical Contractor to see Mechanical Specifications and Drawings for any additional related and required work by this Electrical Contractor.

17. WIRING FOR OWNER EQUIPMENT

17.1. This Contractor is to confirm the exact method for final connection of all Owner's equipment, such as kitchen equipment, hoists, built–in units and appliances. This Contractor will be responsible for providing the required connection methods or devices for each piece of equipment

18. FIRESTOPPING

18.1. Supply and install all fire stopping material and ensure that all fire penetrations are protected as required by the Alberta Building Code and the local authorities.

18.2. All Municipal bylaws and NFPA Standards governing the installation shall be strictly adhered to.

18.3. Guarantee that the installation method meets the requirements of this specification.

18.4. The contractor shall be responsible to produce all documentation as required by the Authority having Jurisdiction.

18.5. The following documents must be submitted to the Engineer prior to issuance of a C2 Schedule and occupancy.

18.5.1. Certificate of installation (submitted by the electrical contractor).

19. INSPECTION

19.1. The Electrical Contractor is to request the Engineer to perform inspections of the installation as required by Code. Call for a minimum of rough–in, semi–final and final inspections as generally required within the industry.

19.2. Notification of a required inspection is to be at least Seventy Two (72) hours prior to actual inspection time.

19.3. The Electrical Contractor is to ensure that all components of the installation are accessible or furnish accessibility as required by the Engineer.

19.4. Should re–inspection be necessary as a result of inferior or incomplete work, additional inspections will be charged back to the Electrical Contractor. Scheduling of the required inspections/meetings is a responsibility of the Contractor involved.

20. LOCAL INSPECTION AUTHORITIES INSPECTION REPORTS

20.1. Submit all copies of the Inspection Reports to the Engineer for review. Photocopies are acceptable.

20.2. Insert copies of Reports in Maintenance Manuals.

21. FIELD RECORD DRAWINGS

21.1. The Electrical Contractor is to provide the Owner with three (3) complete sets of blue–line prints marked FIELD RECORD DRAWINGS indicating all changes made during construction. The Electrical Contractor is to maintain, at all times, on the site, a complete set of clean Electrical Drawings recording the actual progress of the Electrical installation indicating all variations from the Tender Drawings.

21.2. The Electrical Contractor is to use the P.C. Sum to professionally update the original Electrical drawings to reflect all variations from the Tender drawings and prepare for the Owner's record the necessary sets of FIELD RECORD DRAWINGS.

22. P.C. SUMS

22.1. The Electrical Contractor is to include in the Tender Price, the following allowances:

22.1.1. Field Record Drawings (As–built)

(Engineers cost only) $ 1000.00

23. TENDER SUBMITTAL

23.1. Electrical Contractor to submit tender as per Drawings and Specifications. Alternate products to those specified will NOT be accepted without prior written approval

24. GUARANTEE

24.1. The Electrical Contractor is to guarantee the satisfactory operation of all work and apparatus installed under this contract and is to replace, at his own expense, any part which may fail or prove defective within a period of twelve (12) months after final acceptance of the complete contract, always provided that such failure is not caused by improper usage or ordinary wear and tear. The period of this guarantee specified above is to in no way supplant any other guarantee of a longer period but is to be binding on all work not otherwise covered.

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

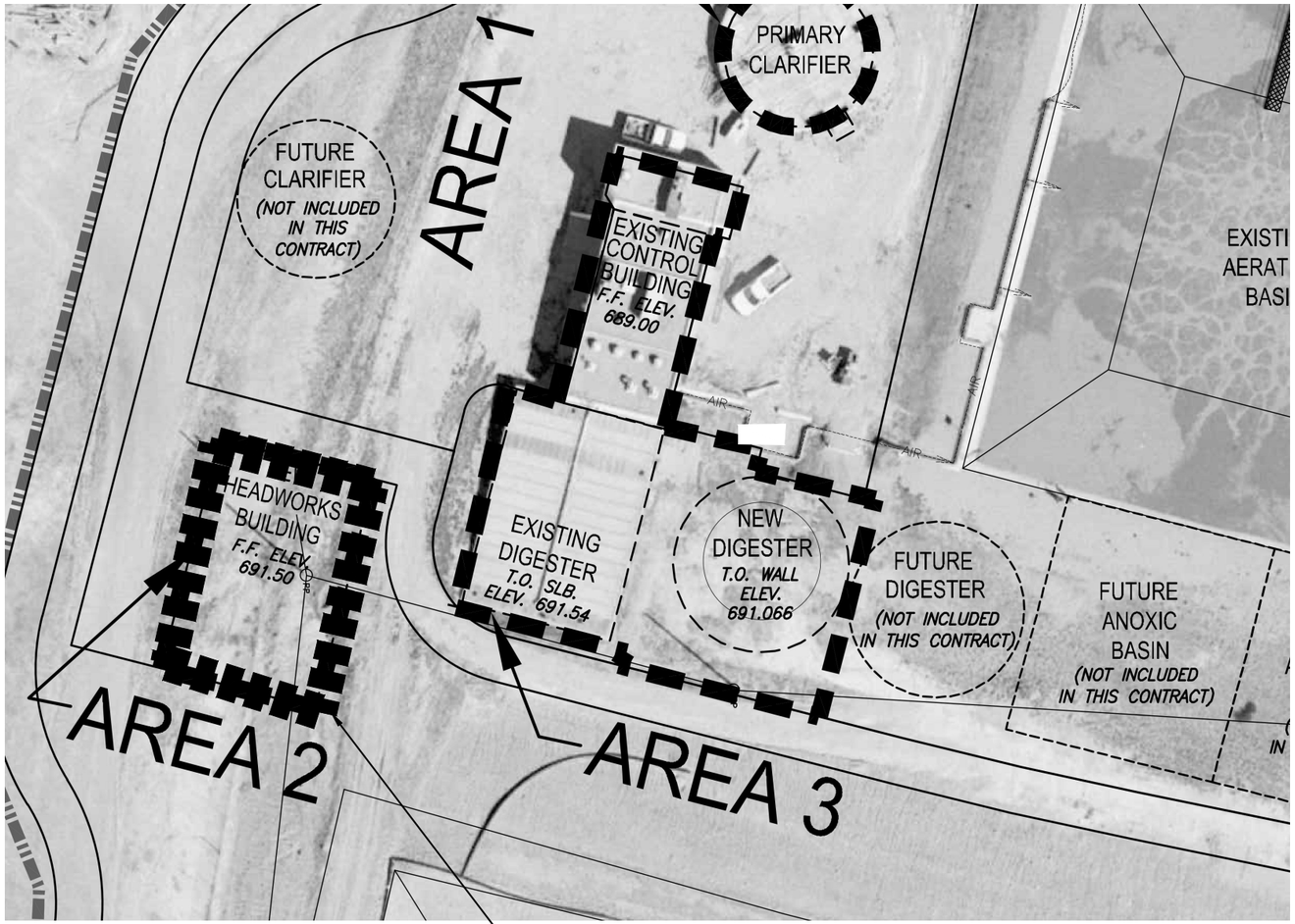
#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT
PROFESSIONAL ENGINEER ALBERTA ANDREW M. GRESCHNER
2020-11-09

PROJECT TITLE
DRUMHELLER WTP AND WWTP HVAC UPGRADES
CITY OF DRUMHELLER

DRAWING TITLE
ELECTRICAL SPECIFICATIONS

PROJECT # C19-2760
DRAWN AG
CHECKED AG
DRAWING NUMBER **E-03**



N

1 / M-01 EXISTING SITE PLAN

SCALE: NTS

SHEET LIST

MECHANICAL LEGEND

- SUPPLY DUCTWORK (UP/DOWN)
- OUTSIDE AIR DUCTWORK (UP/DOWN)
- RETURN DUCTWORK (UP/DOWN)
- EXHAUST DUCTWORK (UP/DOWN)
- ACOUSTICALLY LINED DUCTWORK
- DIFFUSER (SQUARE CONE)
- RETURN GRILLE
- M — MOTORIZED DAMPER
- BALANCING DAMPER
- EXISTING EQUIPMENT TO BE DEMOLISHED (SHOWN ON "DEMOLITION" PLAN)
- EXISTING EQUIPMENT TO REMAIN (SHOWN ON "NEW" PLAN)
- PS — PRESSURE SENSOR
- T — THERMOSTAT
- $ — SWITCH
- # / MX.X — DETAIL REFERENCE / DRAWING REFERENCE
- TYPE / SIZE / FLOW — DIFFUSER TYPE / SIZE (mm) / FLOW (L/s)
- XXX–X (EQUIP. ABBREV. – EQUIP. NUMBER) — EQUIPMENT TAG
- YEAR.MN.DY — NUMERICAL DATE FORMAT

ABBREVIATIONS

AC	AIR CONDITIONING UNIT	FC	FAN COIL UNIT
CP	CONTROL PANEL	MCC	MOTOR CONTROL CENTER
CU	CONDENSING UNIT	NTS	NOT TO SCALE
ERV	ENERGY RECOVERY UNIT	SF	SUPPLY FAN
EX	EXISTING	PHC	PREHEAT COIL
EBH	ELECTRIC BASEBOARD HEATER	PS	PRESSURE SENSOR
EF	EXHAUST FAN	TS	TEMPERATURE SENSOR

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA — CHRISTOPHER MCMENAMON
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

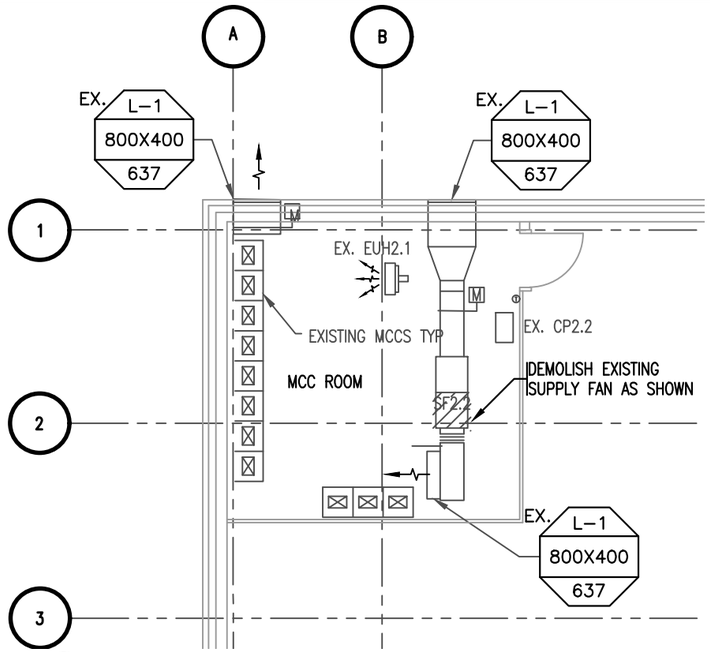
DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

SITE PLAN

PROJECT #	DRAWING NUMBER
C19-2760	**M-01**
DRAWN: MS	
CHECKED: KM	

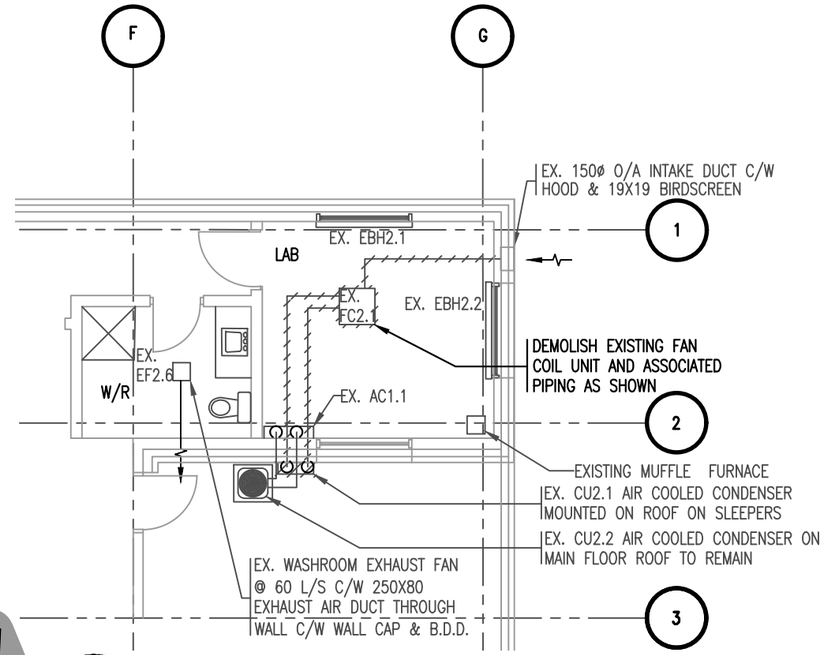


N

1 / M-02

MCC ROOM DEMOLITION PLAN

SCALE: 1:100

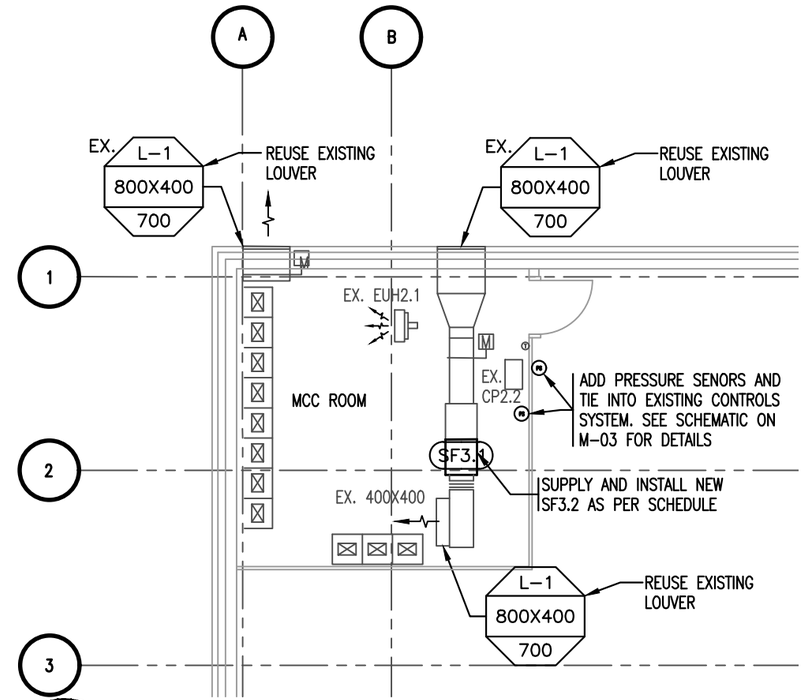


N

2 / M-02

LAB DEMOLITION PLAN

SCALE: 1;100

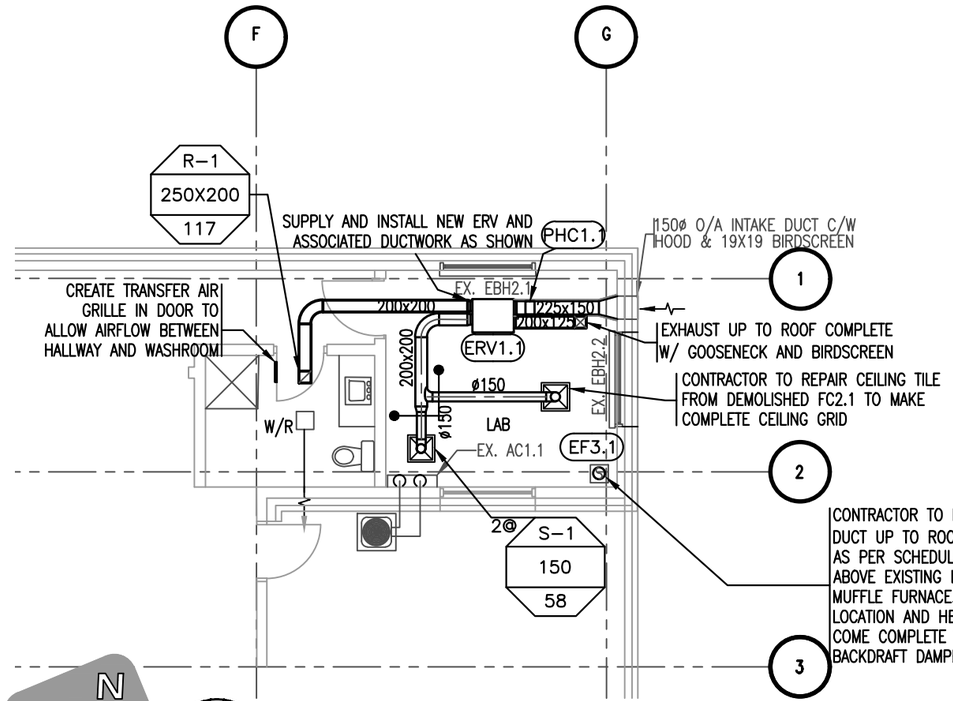


N

3 / M-02

MCC ROOM CONSTRUCTION PLAN

SCALE: 1:100



N

4 / M-02

LAB AND WASHROOM CONSTRUCTION PLAN

SCALE: 1:100

VITAL engineering

Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA
CHRISTOPHER MCMENAMIN
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

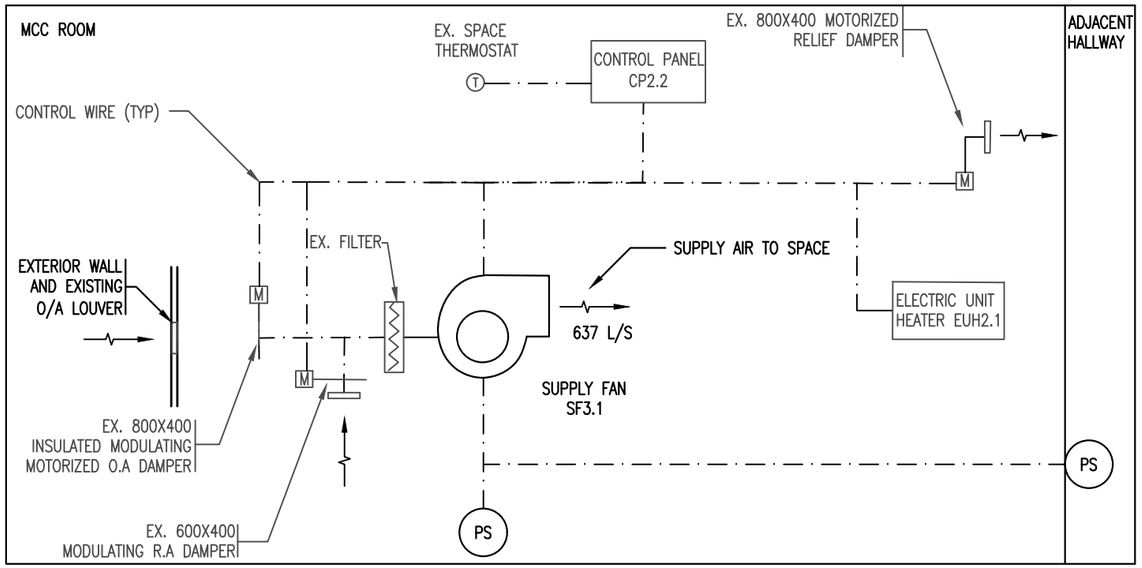
DRAWING TITLE

DEMOLITION AND CONSTRUCTION PLANS

PROJECT # C19-2760
DRAWN MS
CHECKED KM

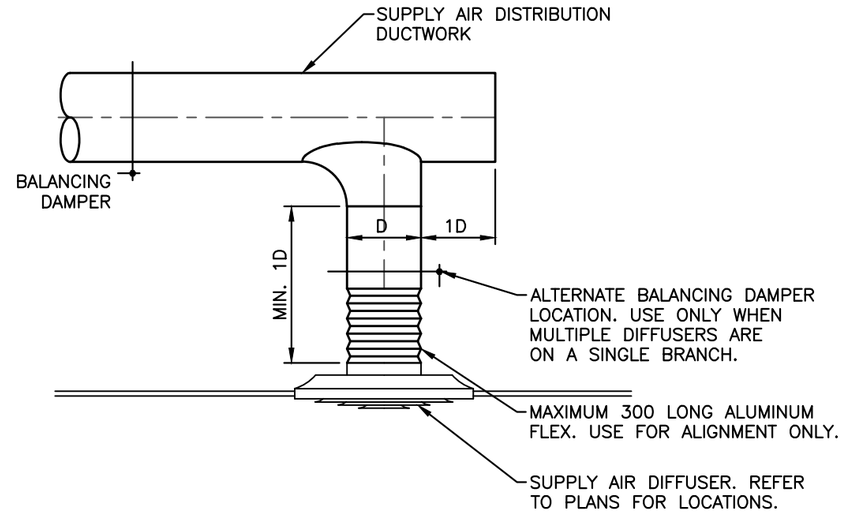
DRAWING NUMBER

M-02



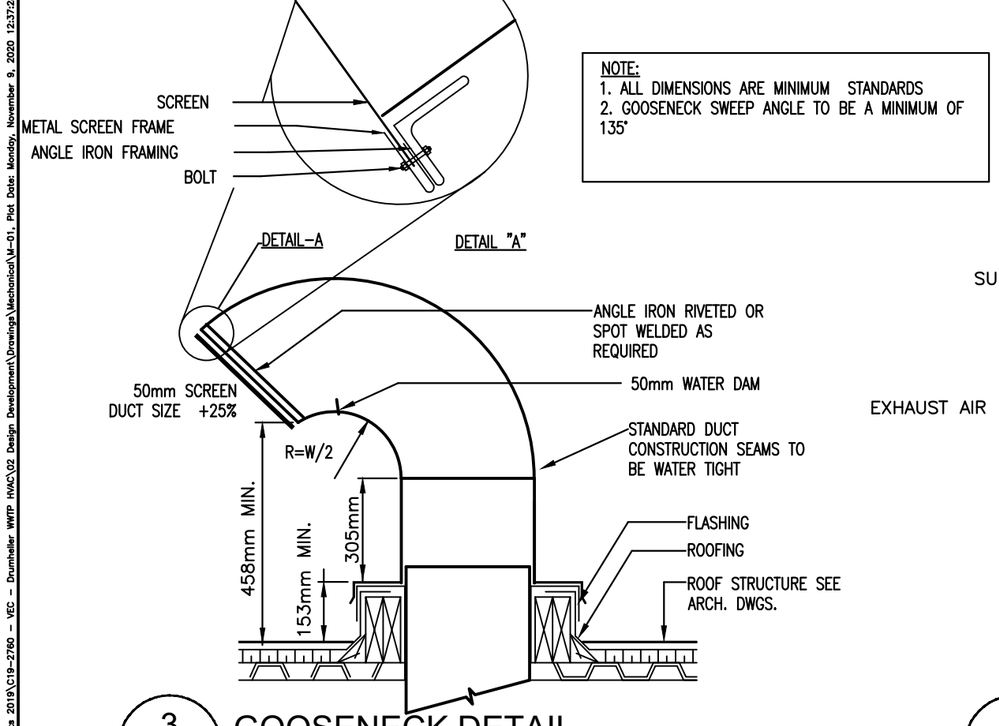
1 M-03 **MCC ROOM AIR CONTROL SCHEMATIC**

SCALE: N.T.S.



2 M-03 **DIFFUSER & GRILLE INSTALLATION DETAIL**

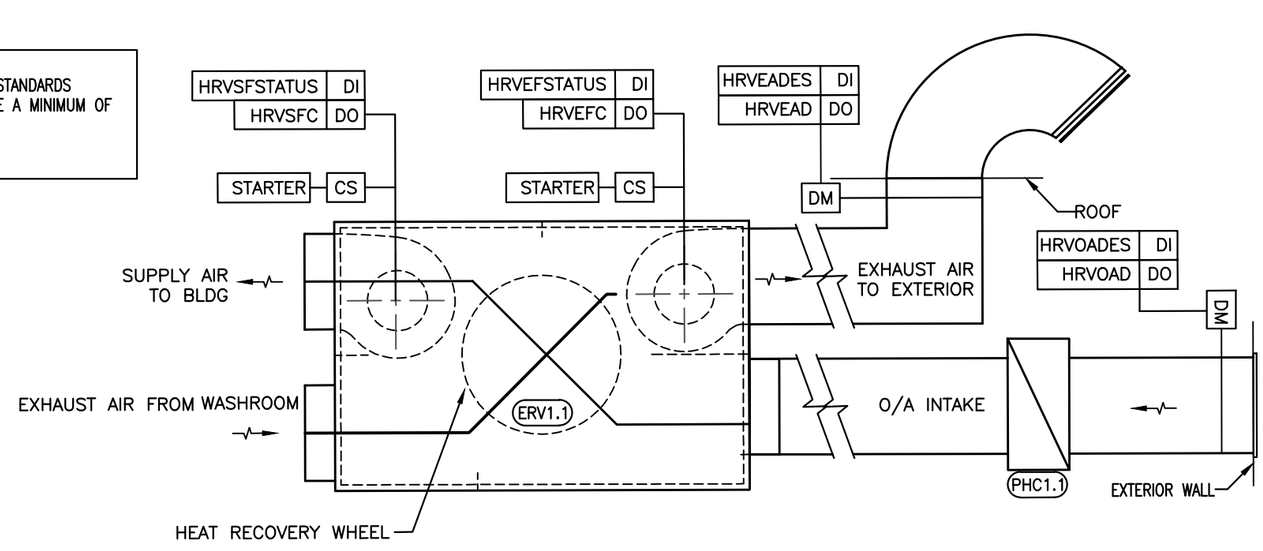
SCALE: N.T.S.



NOTE:
1. ALL DIMENSIONS ARE MINIMUM STANDARDS
2. GOOSENECK SWEEP ANGLE TO BE A MINIMUM OF 135°

3 M-03 **GOOSENECK DETAIL**

SCALE: N.T.S.



4 M-03 **ENERGY RECOVERY VENTILATOR SCHEMATIC**

SCALE: N.T.S.

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA CHRISTOPHER MCMENAMON
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

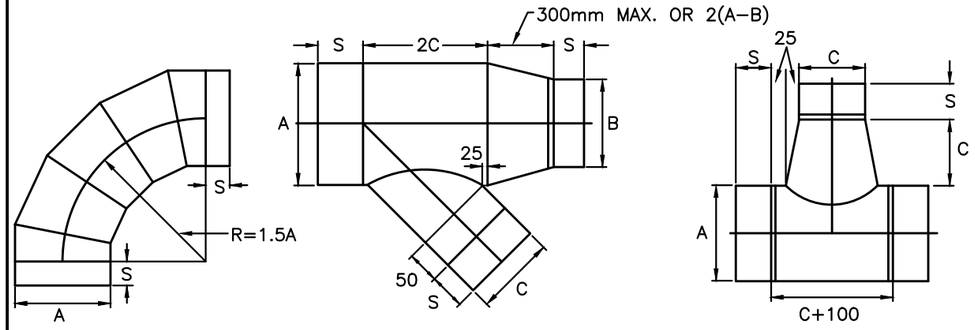
DRUMHELLER WTP AND WWTP HVAC UPGRADES

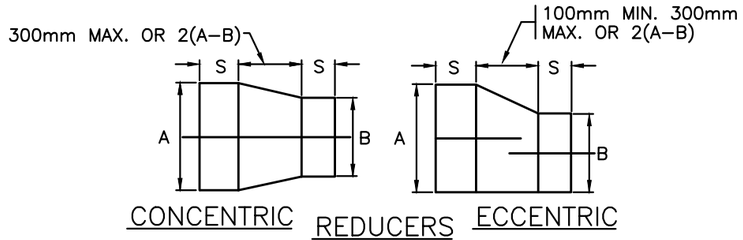
CITY OF DRUMHELLER

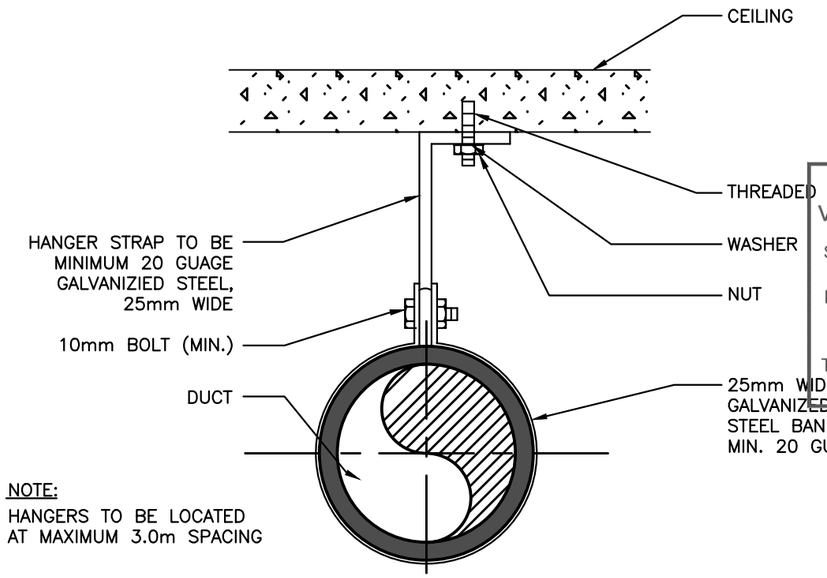
DRAWING TITLE

DETAILS AND SCHEMATICS

PROJECT #	DRAWING NUMBER
C19-2760	**M-03**
DRAWN: MS	
CHECKED: KM	







NOTE:
HANGERS TO BE LOCATED
AT MAXIMUM 3.0m SPACING

2 M-04 DUCT HANGER/ SUPPORT DETAIL

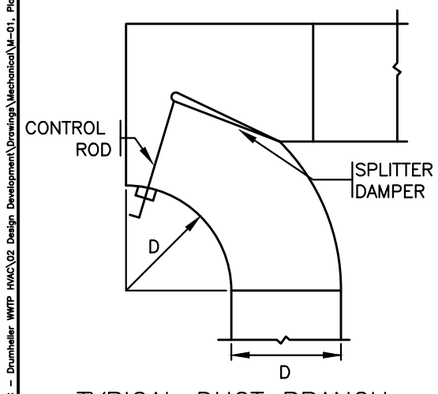
SCALE: N.T.S.

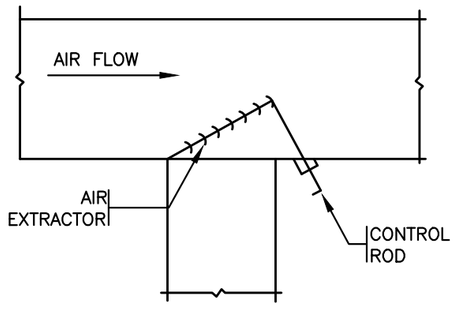
1 M-04 ROUND DUCT FITTINGS

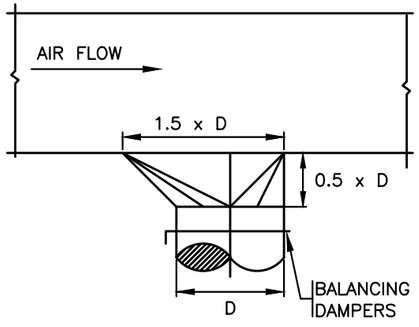
SCALE: N.T.S.

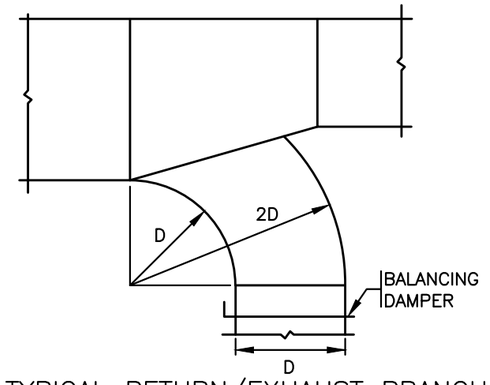
NOTES:

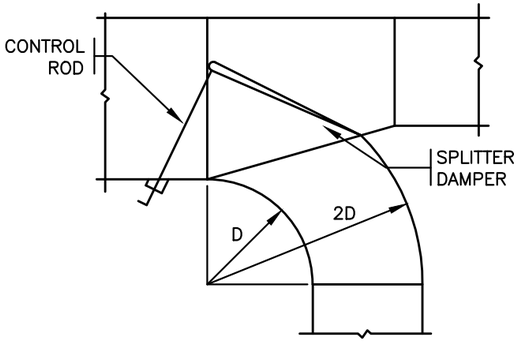
1. PROVIDE BALANCING DAMPER ON ALL TAKE–OFFS TO AIR SUPPLY OUTLETS
2. S=50mm











3 M-04 DUCT TAKE-OFF FITTINGS

SCALE: N.T.S.

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA CHRISTOPHER MCMENAMON
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

DETAILS

PROJECT # C19-2760
DRAWN MS
CHECKED KM
DRAWING NUMBER **M-04**

PREHEAT COIL SCHEDULE

TAG	LOCATION	HEATING ELEMENT		PHYSICAL DIMENSIONS				FLA	AIRFLOW MINIMUM		NOTES
		kW INPUT	V-PH	HEIGHT		WIDTH/DIA.		Amps	CFM	L/S	
				IN.	MM	IN.	MM				
PHC1.1	LAB	3	208-1	8	203	12	305	25	210	445	1

NOTES:
1. DESIGN, PERFORMANCE AND MODEL NUMBERS BASED ON GREENHECK

EXHAUST FAN SCHEDULE

TAG	MODEL	SERVICE	TYPE	MOUNTING	CAPACITY		ESP	DRIVE	MOTOR			NOTES
					CFM	L/s	in		RPM	HP	V-PH	
EF3.1	DQ-70-VG	LAB	DIRECT DRIVE CENTRIFUGAL	INLINE	100	47	0.38	DIRECT	1725	0.10	115/60	1,2,3

NOTES:
1. DESIGN, PERFORMANCE AND MODEL NUMBERS BASED ON GREENHECK
2. TO BE INSTALLED COMPLETE WITH BACKDRAFT DAMPER
3. FAN TO BE PROVIDED WITH LOCAL DISCONNECT

SUPPLY FAN SCHEDULE

TAG	MODEL	SERVICE	TYPE	MOUNTING	CAPACITY		ESP	DRIVE	VFD	MOTOR			NOTES
					CFM	L/s	in			RPM	HP	V-PH	
SF-3.1	SQ-130-VG	MCC ROOM	DIRECT DRIVE CENTRIFUGAL	INLINE	1483	700	1.25	DIRECT	Yes	1725	0.75	600/60	1,2

NOTES:
1. DESIGN, PERFORMANCE AND MODEL NUMBERS BASED ON GREENHECK
2. FAN TO BE PROVIDED WITH DUAL ROOM PRESSURE SENSORS AS PER SCHEMATIC

ENERGY RECOVERY VENTILATOR SCHEDULE

TAG	MODEL	SERVES	SUPPLY FAN			EXHAUST FAN			WHEEL PERFORMANCE - SUMMER			WHEEL PERFORMANCE - WINTER			ELECTRICAL			WEIGHT		NOTES
			TTL CFM	ESP IN. WC	HP	TTL CFM	ESP IN. WC	HP	LAT DB, °F	LAT WB, °F	TTL EFF %	LAT DB, °F	LAT WB, °F	TTL EFF %	V-PH	MOP	MCA	LBS	KG	
ERV-1.1	MINIVENT-450-VG	LAB	250	0.3	0.25	250	0.3	0.25	89.0	65.7	80.8	-27.7	-28.1	76.9	115	15	7.1	160	72	1,2

NOTES:
1. DESIGN, PERFORMANCE AND MODEL NUMBERS BASED ON GREENHECK
2. TO COME COMPLETE WITH DUAL PRESSURE SENSORS AND INTEGRAL CONTROLS

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA CHRISTOPHER MCMENAMON
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

SCHEDULES

PROJECT # C19-2760
DRAWN MS
CHECKED KM

DRAWING NUMBER **M-05**

1. GENERAL

1.1 Intent

.1 The intent of this specification and the drawings is to provide a complete and fully operating mechanical system in complete accord with applicable codes. The Mechanical Contractor shall make provisions for labour, material, and equipment necessary to complete the mechanical work.

.2 Drawings and specifications are complementary to each other and what is called for in one is binding as if called for by both. Should any discrepancy appear between drawings and specifications which leaves doubt as to the true intent and meaning, obtain a ruling from the Consultant ten (10) days before submitting tender. Failing this, allow for most expensive alternative.

.3 Contract documents are diagrammatic only. They are to establish scope, material and quality. They are not detailed installation drawings. Minor details usually not shown or specified and any incidental accessories required for proper installation of the system are to be included in the work.

.4 Contractor is to ensure that all intended equipment will fit within given spaces. Make reference to the electrical, mechanical, architectural and structural drawings, when setting out work and before ordering equipment.

.5 The Contractor shall visit the site prior to tender and verify existing conditions. New piping, ductwork and insulation standards shall at least match the existing installation or be higher if specified herein.

.6 Consultant is defined as the Vital Engineering Corporation Representative administering the project.

1.2 Code Compliance

.1 All work shall conform to current edition of National, Provincial and Municipal Codes, Standards and Acts; and will meet the requirements of authorities having jurisdiction.

1.3 Liability

.1 Assume responsibility for layout of work; and for any damage caused to the Owner or other Tenants by improper execution of work.

.2 Protect finished and unfinished work from damage.

.3 Take responsibility for condition of materials and equipment supplied, and protect until work is completed and accepted. Coordinate deliveries with the general contractor.

1.4 Certificates

.1 Give notices, obtain permits and approvals, and pay fees so work specified may be carried out. Furnish certificates if requested, as evidence that work conforms with laws and regulations of the authorities having jurisdiction.

1.5 Cutting and Patching

.1 All work shall be coordinated with other trades especially that related to cutting and patching of required openings; and locations and installation of sleeves, inserts, support, curbs, frames and access doors.

.2 Obtain approval from structural and electrical engineers before drilling and coring of existing structure.

1.6 Compliance with Energy By-law

.1 All equipment installed on this project shall comply with the performance recommendations of ASHRAE Standard 90.1 (latest edition) and the Model National Energy Code of Canada for Buildings, (latest edition)

1.7 Alternative Materials and Equipment

.1 Contract price shall be based on materials and equipment specified. Approval by Consultant of equipment submitted by the mechanical trade as equal to that specified does not relieve the mechanical trade of any responsibility.

.2 Revisions required to adapt accepted equals and alternatives shall be included in the contract price. No increase in the contract price will be considered to accommodate the use of equipment other than that specified.

.3 Certain items of equipment and items of work (such as balancing, water treatment) may not have an approved equal due to the need to have a consistent type or source of maintenance. Refer to specific clauses in this specification.

1.8 Shop Drawings

.1 Submit shop drawings to Consultant for all equipment specified in the specification or drawings for review. Do not order equipment or materials until Consultant has reviewed the shop drawings. Until submission has been reviewed, work involving relevant products may not proceed.

.2 Shop drawings are to come complete with the following information. Submissions that do not comply will not be reviewed.

- .1 Dimensional data for roughing-in and installation;
- .2 Technical data sufficient to ensure that equipment meets the requirements laid out in the Contract Documents;
- .3 Wiring, piping, and service connection data;
- .4 Motor sizes complete with voltage ratings; and
- .5 Schedules as required.

.3 Clearly mark all submittal material by flags, arrows, underlined text, or circling data that is relevant to the project. Cross out non-applicable materials and options. Specifically note specified features such as specialized tank linings, pump seals, material, or finishes.

.4 Shop drawings submitted for review shall be certified by the manufacturer and checked by the trade involved. Trade is to note all revisions required.

.5 Where Electrical connections are required, electrical trade is to review shop drawings prior to submittal. Trade is to note all revisions required.

.6 Drawings submitted for review shall bear the approval stamps and signatures of the trades involved.

.7 Contractor is to accept responsibility for any equipment ordered where the proper procedure noted above has not been followed. No additional charges for cancellation, handling, restocking, etc. will be accepted.

.8 A complete file containing all approved shop drawings is to be maintained and kept on site at all times. No shop drawings shall be used that do not bear the reviewed stamp of the consultant.

.9 The submission of any shop drawing infers that it meets all specifications and drawings requirements. Discrepancies are to be noted on the submission for review by the Consultant. Failure to note these discrepancies and variations will not in any way relieve the Contractor from responsibility to correct the installation to the intent of the specification and the drawings.

1.9 Guarantee

.1 Provide the Owner with a written guarantee that the equipment installed and work performed shall remain in serviceable condition for a period of one (1) year from the date of final acceptance by the Owner. The warranty shall cover material as well as labour.

1.10 Standard of Materials and Workmanship

.1 Make and quality of materials used are subject to approval by the Consultant. Remove unacceptable materials and install suitable materials in their place.

.2 Materials shall be new and of uniform pattern throughout, unless noted otherwise.

.3 Employ only tradesmen properly licensed to perform the specific work. The Consultant may perform spot checks for trade tickets and accreditation.

1.11 Owner's Stock

.1 The following items of mechanical equipment are available from the Owner's stock. Prior to submitting the tender price, review these items to ensure their usability for the project. The tender price shall include the cost of cleaning, servicing, moving in place, and installing to make these items completely operational.

.2 Where equipment is removed and not re-used it shall be handed over to the Owner, or disposed of if directed by the Owner. Contractor to include all costs for disposal of all materials to be demolished and removed as indicated in these documents.

1.12 Temporary Heating

.1 Contractor is to provide method for providing temporary heat as required by the project. The permanent systems of the building are not to be used for temporary heating purposes without the express written permission of the Consultant.

.2 The use of permanent systems for temporary heat will not modify the terms of the warranty.

.3 Where permanent systems are used, the Contractor is to provide adequate supervision to ensure that the heating system is operating in such a way as to cause no temporary or permanent damage. Closed systems are to be operated with proper treatment, filter changes, safety devices, and controls that are fully operational.

.4 Where permanent systems are used, the Contractor is to provide an alarm indicating system failure.

.5 Contractor is to replace all mechanical seals in pumps used for temporary heating purposes. New mechanical seals are to be provided regardless of the condition of the existing seals.

.6 Where air systems are used during temporary heating, the Contractor is to provide filter media on all return and exhaust air inlets. The Contractor is to clean any ductwork that has become dirty during use.

1.13 Progress Claims

.1 Prior to or with the first progress claim files, the Contractor is to submit a breakdown of the contract amount in a manner that is acceptable to the Consultant.

.2 For each item requested, the labour, material, and equipment are to be listed separately.

.3 Contractor is to ensure that the following items are included in each progress claim: contract item, breakdown, previous claim, present claim, claim to date, percentage complete.

.4 The Contractor is to ensure that the claim provided is broken out into the following items:

- .1 Job startup and Administration Charges;
- .2 Heating and Cooling;
- .3 Sheet Metal;
- .4 Insulation;
- .5 Controls;
- .6 Startup and Commissioning; and
- .7 Documentation and Balancing.

AIR INLET AND OUTLET SCHEDULE

TAG	DESCRIPTION	MOUNTING	NECK	BASIS OF DESIGN			NOTES
				MFR	MODEL	MATERIAL	
S-1	Square Plaque Diffuser	Ceiling	150	PRICE	SPD	Aluminum	1
R-1	Perforated Return Grille	Ceiling	N/A	PRICE	10A	Aluminum	1

NOTES:

1 SIZE AS INDICATED ON DRAWINGS.

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA CHRISTOPHER MCMENAMIN
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

SCHEDULES AND SPECIFICATIONS

PROJECT #	DRAWING NUMBER
C19-2760	M-06
DRAWN: MS	
CHECKED: KM	

1.14 Record Drawings

.1 Keep on site an extra set of white prints and specifications, recording changes and deviations daily. These drawings shall be made available on a weekly basis for review by the Consultant.

.2 Upon completion of work, submit final record drawings to the Consultant. These must be submitted within two (2) weeks after acceptance of work. Failure to submit drawings may result in the work being done by the Owner and the cost deducted from the final payment.

.3 The contractor is to allow for the cost of updating AutoCAD drawing files. Contractor shall use current version of AutoCAD as used on the project drawings. If Contractor wishes to use Vital Engineering for this work, he should acquire separate quotation and enter into a separate contract with Vital Engineering.

1.15 Substantial Performance Inspection

.1 Advise Consultant five (5) days prior to the date inspection is desired. All systems to be fully operational and any deficiencies should be noted to the Consultant.

.2 All deficiencies shall be corrected within two (2) weeks after substantial performance and letter submitted to Consultant within that time advising that the work is complete. Failure to complete work may result in work being done by the Owner and the costs deducted from final payment.

.3 Excessive deficiencies will not be tolerated. Should an excessive number of the items outlined below not be completed due to Contractor delay, additional charges for the Consultant's time required to review the deficiencies may be levied against the Contractor.

.4 The following shall be an outline checklist of the minimum requirements to be met by the contractor prior to the Consultants' Substantial Performance by the contractor.

Inspection:

- ☐ Complete Balancing Reports
- ☐ Complete Commissioning Checklists
- ☐ Controls Commissioning, Checklist and 15 day trend logs for all major equipment
- ☐ Major equipment - suppliers start-up test sheets and letters certifying start up. (boilers, chillers, packaged equipment)
- ☐ Final As-Built Drawings ready for review
- ☐ Maintenance and operation manuals, ready for review

1.16 Examination of Work

.1 This project involves renovations to existing building, therefore, examine the site and local conditions to determine the difficulties in carrying out the work indicated and specified prior to submitting final price. Extras will not be considered based on the grounds of differences on site.

1.17 Coordination with Electrical Division

.1 Contractor shall review all equipment requiring electrical hook-up with Electrical Contractor and electrical drawings prior to ordering equipment. Ensure proper electrical characteristics are determined for all affected and related work. This is part of the contractors shop drawing review and no extras will be considered for Division 15/16 power mismatches.

1.18 Coordination of Services

.1 Coordinate with proper utilities for services such as water, sewer, natural gas, and assume all charges.

.2 Coordinate with the owner to shutdown, disconnect, reroute, or make connection to existing services. Provide 24-hour written notice for all service shutdowns.

1.19 Performance Tests

.1 Operate each mechanical system after mechanical and electrical work has been completed, to demonstrate that each system fulfils the requirements of the contract and operates satisfactorily. These are performance tests and must be completed before work can be finally accepted. Coordinate with packaged equipment suppliers and the commissioning agent.

1.20 Operation and Maintenance Manuals

.1 Provide four (4) copies of manuals prepared by qualified and experienced personnel for use by Owner. Manuals form part of the contract and must be delivered to the Consultant before work will be considered complete. Each manual shall provide the following:

.1 Layman's description of all mechanical systems including operating maintenance and lubrication instructions.

.2 Certification of all equipment where required by local codes and authorities.

.3 Shop drawings and maintenance bulletins.

.4 List address and telephone numbers of all equipment suppliers and contractors.

.5 Performance details for all equipment including curves for fans and pumps with actual operating points noted.

1.21 Balancing

.1 Balance terminal boxes, exhaust fans, and air outlets to air quantities indicated on the drawings and in this specification. Where outlet quantities are not indicated, divide box capacity equally among all outlets.

.2 Completely balance the hydronic system including pumps, terminal devices, boilers, heat exchangers, etc.

.3 Submit two (2) copies of the report to Consultant within two (2) weeks after substantial completion. Failure to submit the report within the specified time will result in the work being done by the Owner and the costs deducted from final payment.

.4 Balancing shall be performed to the following accuracies:

Air-Terminal Outlets	±10%
Air-Central Equipment	± 5%

1.22 Cooperate with the Balancing Agency as follows:

.1 Make any corrections as required by Balancing Agency.

.2 Allow Balancing Agency free access to site during construction phase. Inform Balancing Agency of any major changes made to systems during construction and provide a complete set of record drawings and specifications for their use.

.3 Operate automatic control system and verify set points during balancing.

.4 Provide and install balancing valves, dampers, and other materials requested by the Balancing Agency and/or necessary to properly adjust or correct the systems to design flows, without additional cost to Owner.

.5 Provide and install pulleys and sheaves for rotating equipment, as required to properly balance the systems to design flows, without additional cost to Owner.

.6 Allow in the contract price shaving of impellers as required to balance the pumps to design flow at operating condition.

1.23 Painting and Identification

.1 Paint all exposed ducts and pipes with colours to match interior finishes or in colours as directed by the Architect.

.2 Identify piping with labels and flow arrows. Provide identification at 50 ft maximum intervals, before and after pipes passing through walls, at all sides of tees, behind access doors. Use Brady labels for non insulated pipes and for insulated pipes.

.3 Provide 3/4" diameter brass tags, secure to valve stems with key chain. Provide typed valve directories at all mechanical rooms in addition to computer copy as integrated into controls graphics/software.

.4 Identify electric starting switches, thermostats controlling motors and equipment supplied under this division with lamacoid plates having 1/4" minimum letter size.

1.24 Fire-Stopping

.1 Fire-stop all pipe and duct penetrations through floors and walls, designated as fire and/or smoke separations.

.2 Fire-stopping materials to meet ULC CAN 2S115. Acceptable Materials: by "Tremco" or "National Firestopping", or HILTI CP680 Cast-In-Place Fire-Stopping System.

.3 Preparation of surfaces and installation of fire-stopping materials shall be carried out as per manufacturer's instructions.

1.25 Flashing and Roof Curbs

.1 Provide curbs, flashing and counter flashing where mechanical equipment passes through weather or waterproofed walls, floors and roofs. Install roof mounted equipment on factory supplied roof curbs. All roof work and materials must meet and exceed R.C.A.B.C. standards.

1.26 Metric Conversion

.1 All units in this division are expressed in SI units. Soft metric conversions are used throughout.

.2 Equivalent Nominal Diameters of Pipes - Metric and Imperial.

.1 Where pipes are specified with metric dimensions and only Imperial sized pipes are available, provide equivalent nominal Imperial sized pipe as indicated in the table, and provide at no extra cost adapters to ensure compatible connections to all metric sized fittings, equipment and piping.

.2 When CSA approved SI Metric pipes are available and are provided, the contractor shall provide at no extra cost adapters to ensure compatible connections between the SI Metric pipes and all new and existing pipes, fittings and equipment.

EQUIVALENT NOMINAL DIAMETERS OF PIPE

mm	Inches	mm	Inches	mm	Inches
3	1/8	65	2½	375	15
6	1/4	75	3	450	18
10	3/8	100	4	500	20
15	1/2	125	5	600	24
20	3/4	150	6	750	30
25	1	200	8		
30	1¼	250	10		
40	1½	300	12		
50	2				

.3 Metric Duct Sizes

.1 The metric duct sizes are expressed as 25 mm = 1 inch.

2. DUCTWORK AND ACCESSORIES

2.1 General

.1 Fabricate ductwork in accordance with SMACNA Duct Manual and ASHRAE Handbooks. Ductwork shall meet the requirements of NFPA 90A and 90B and conform to applicable codes. Kitchen exhaust ductwork shall conform to NFPA 96.

.2 Prior to fabrication of ductwork, check all ceiling spaces and heights and conflicts with other trades.

.3 Duct sizes indicated are inside clear dimensions. For acoustically lined or internally insulated ducts maintain size inside ducts.

.4 Provide fire dampers where ducts cross fire separations. Fire dampers shall be ULC listed and constructed in accordance with ULC Standard S112 "Fire Dampers". Fusible links shall be constructed to ULC Standard S505.

.5 Provide balancing dampers where indicated on drawings and at points on low pressure supply, return and exhaust ducts where branches are taken from larger ducts.

.6 Provide adequately sized access panels for dampers, equipment, fire dampers, valves, radiation valves, and any other equipment requiring servicing.

.7 Provide return air openings and/or insulated sound traps where indicated.

.8 Provide acoustical seal around ducts and sound traps at penetration through sound baffles.

.9 Modify ceiling system where required to accommodate grilles and diffusers.

.10 Size round ducts, installed in place of rectangular ducts, from ASHRAE table of equivalent rectangular and round ducts. No variation of duct configuration or sizes permitted except by permission from Consultants Engineer.

.11 Exposed round ductwork to be spiral lock seam type only.

.12 Provide duct hangers and supports in accordance with SMACNA manuals.

.13 Identify ductwork as per the base building standards. Confirm these prior to submitting tender.

2.2 Low Velocity Ductwork

.1 Ductwork shall be galvanised steel. The minimum sheet metal thickness for ducts including fittings, access doors, and other accessories shall be as per SMACNA duct manual for Low Velocity Ductwork.

.2 Low velocity insulated flexible ductwork shall be equal to Thermaflex Type M-KC.

.3 Connect diffusers or troffer boots to low pressure ducts with 36" maximum length of stretched flexible duct. Hold in place with caulking compound and strap or clamp. Do not use flexible duct to change directions.

.4 Where low pressure ducts are connected to fan equipment, terminal boxes or any other apparatus, a screwed or bolted flexible gasketted joint shall be provided between the ductwork and the equipment, minimum 2" wide.

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA
CHRISTOPHER MCMENAMON
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

SPECIFICATIONS

PROJECT # C19-2760
DRAWN MS
CHECKED KM
DRAWING NUMBER **M-07**

2.3 Duct Sealing

.1 All supply, return and exhaust duct joints, longitudinal as well as transverse, shall be sealed as follows:

.1 Low Pressure Ductwork:

- Slip Joints: Apply heavy brush-on high pressure duct sealant. Apply second application after the first application has completely dried out. Where metal clearance exceeds 1/16" use heavy mastic type sealant.
- Flanged Joints: Soft elastomer butyl or extruded form of sealant between flanges followed by an application of heavy brush-on high pressure duct sealant.
- Other Joints: Heavy mastic type sealant.

.2 Medium and High Pressure Ductwork: Combination of woven fabrics and sealing compound followed by an application of high pressure duct sealant.

.2 Duct tapes as sealing method are not permitted.

.3 Surfaces to receive sealant should be free from oil, dust, dirt, moisture, rust and other substances that inhibit or prevent bonding.

.4 Do not insulate any section of the ductwork until it has been inspected and approved of duct sealant application, by the Consultant.

3. INSULATION

6.1 Duct And Breeching Insulation

.1 Exposed Rectangular Ducts: Rigid fibrous glass insulation, 'K' value at 75°F maximum 0.24 Btu.in/ft²hr°F with factory applied reinforced aluminum foil vapour barrier.

.2 Round Ducts and Concealed Rectangular Ducts: Flexible fibrous glass insulation, 'K' value 75°F maximum 0.24 Btu.in/ft²hr°F with factory applied reinforced aluminum foil vapour barrier.

.3 Acoustic Lining: Fibrous insulation with 'K' value at 75°F maximum 0.24 Btu in/ft²hr°F absolute roughness of exposed surface not to exceed ***0.023 in*** coated to prevent fibre erosion at air velocities up to 5000 fpm, 1.5 lb/ft³ minimum density for ductwork and 4.7 lb/ft³ for plenums.

.4 Breeching Insulation: Semi-rigid mineral fibre, insulation with glass mat, 'K' value 0.24 Btu in/ft²hr°F maximum at 75°F. Service temperature 150°F to 850°F.

.5 Recovery Jackets: ULC labelled thermocanvas.

.6 Ensure surface and insulation is clean and dry prior to and during installation.

.7 Ensure insulation is continuous through inside partitions.

.8 Finish and seal insulation neatly at hangers, supports, access doors, fire dampers and other protrusions.

.9 Recover all insulation except in ceiling spaces, crawl spaces, and mechanical shafts.

.10 Insulation Installation Thickness Schedule

Duct & Equipment Insulation Thickness

Duct & Equipment	Insulation Thickness (in)
Outside Air Intake, Combustion Air, and Relief Duct	2
Exhaust Ducts within 10 ft of Exterior Walls or Openings	1

4. CONTROLS

4.1 Acceptable Contractors

.1 All controls work is to be done by the base building contractor

4.2 Examination of Existing System

.1 This project involves renovation to an existing control system. The contractor shall inspect the system prior to tender close and include in his bid all control components required to provide a fully operational system including replacement of existing defective components where noted in the project documents.

4.3 Thermostats

.1 Relocate and reconnect existing thermostats as shown the drawings.

.2 Provide new thermostats where indicated of building standard type. Ensure operating characteristics are compatible with control components (i.e., direct/reverse acting).

.3 All thermostats to be wall or column mounted at normal mounting height unless specifically noted otherwise.

.4 All thermostats, existing and new, are to be calibrated prior to air balancing. Contact building owner if an existing thermostat needs replacing.

.5 Contractor to review with owner's maintenance staff thermostat connections to equipment and control air lines.

4.4 Control Components

.1 Control valves and dampers shall be equal to base building standard type unless noted otherwise.

END OF SECTION

VITAL engineering
Suite 160, 2121 Premier Way, Sherwood Park, AB, T8H 0B8
P:(780)416-8336 | E: office@vitaleng.ca
vitalengineering.ca

PERMIT TO PRACTICE
VITAL ENGINEERING CORPORATION
Signature
Date 2020-11-09
PERMIT NUMBER: P 9441
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

#	DATE	REVISION
0	20-11-09	ISSUED FOR TENDER
A	19-11-12	ISSUED FOR REVIEW

SEAL / PERMIT

PROFESSIONAL ENGINEER ALBERTA CHRISTOPHER MCMENAMON
2020-11-09
APEGA PERMIT No. P09441

PROJECT TITLE

DRUMHELLER WTP AND WWTP HVAC UPGRADES

CITY OF DRUMHELLER

DRAWING TITLE

SPECFICATIONS

PROJECT #	DRAWING NUMBER
C19-2760	**M-08**
DRAWN: MS	
CHECKED: KM	