City of Ottawa
Supply Branch
100 Constellation Drive
4th Floor, West Tower
Ottawa, Ontario K2G 6J8
Fax: (613) 560-2126
Telephone: (613) 580-2424

Ville d'Ottawa
Gestion de l'approvisionnement
100, promenade Constellation
4e étage, tour Ouest
Ottawa, Ontario K2G 6J8
Fax: (613) 560-2126
Téléphone: (613) 580-2424

ADDENDUM #1

24414-90922-T08
Constance and Bucham's Bay Community Centre Addition

30 September 2014

Please note the following changes and /or clarifications to the above noted Request for Tender document:

1) Please add the following statement: **Where there are Specified Brand Names, Products or Manufacturers listed in the document "Approved Equivalent" applies.**

2) Delete Section 01 21 00 Allowances item 1.7.4 Work Pertaining to the Designated Substance Report. See revised Section 00 40 00 Form of Tender, Item 6 Stipulated Price (attached).

3) Section 00 40 00 Form of Tender Item 1.1. :
- Revise bullet 1 to read Section 00 72 00 – Amendments to the CCDC2 2008 Agreement (attached).
- Revise bullet 3 to read Section 00 73 00 – Supplementary Conditions (attached). See revised Section 00 40 00 (attached).

4) Closing date being extended **Thursday, October 9, 2014 at 3:00 p.m., local time**.

5) Security and telecommunication wiring is to be done by City of Ottawa.

6) See attached Addendum # 1 (67 pages) as prepared by Norr Ltd.

7) See attached Question and Answers Matrix (1 page) as prepared by Norr Ltd.

8) Add the following to Instructions to Tenderers Section 00 20 00, item 26:

Vendor Performance Management – (VPM):

Beginning in 2015, the City of Ottawa will record the performance of Contractors and Consultants on the delivery of construction related contracts for design, construction and contract administration services in the City's Vendor Performance Management (VPM) System
Any contract resulting from this Request for Tender will be subject to a performance evaluation conducted by the City's Project Manager and recorded in the City's VPM System.

The City reserves the right to consider the Contractor's performance on City contracts, as recorded in the VPM System, in the award of future contracts.

All other terms and conditions remain the same.

This addendum forms part of the Request for Tender. Please acknowledge in your Tender submission receipt thereof. Failure to do so may result in rejection of the Tender submission.

For further questions, please contact Lisa Treurniet, Purchasing Officer, Supply Branch at (613) 580-2424 extension 25110.

End of Addendum No.1

Tender by: _____

Name of Tenderer

_____

Address of Tenderer

_____

Telephone Number *Fax Number* *Email Address*

hereinafter called the "Tenderer".

1 Contract Documents

.1 The Contract Documents for **Tender Number 24414-90922-T08** are:

- Document 00 72 00 – AMENDMENTS TO THE CCDC2 2008 AGREEMENT
- The Agreement between City and Contractor, including the definitions and all Addenda
- Document 00 73 00 - SUPPLEMENTARY CONDITIONS CCDC 2 – 2008
- Document 00 82 50 – AMENDMENTS TO THE CCDC41 – 2008 INSURANCE REQUIREMENTS
- Document 00 40 00 - FORM OF TENDER
- GENERAL CONDITIONS, CCDC 2 - Stipulated Price Contract 2008
- SPECIFICATIONS DIVISION 00 as listed in Section 00 01 10 - Table of Contents
- SPECIFICATIONS DIVISION 01 as listed in Section 00 01 10 - Table of Contents
- SPECIFICATIONS DIVISIONS 2 to 33 as listed in Section 00 01 10 -Table of Contents
- Material and Finishing Schedule
- DRAWINGS as listed Section 00 01 50 - List of Drawings.
- CCDC 40 Rules for Mediation
- CCDC 41 Insurance Requirements

2 Tenderer's Declarations

.1 The Tenderer declares that it has obtained and read the Contract Documents.

.2 The Tenderer declares that it understands and agrees to be bound by the Contract Documents.

.3 Without limiting the generality of Item 2.2 of this Tender Form, the Tenderer declares that it has, at the time of tendering, fulfilled all of those obligations under the Contract, which are required to be fulfilled by the time of tendering.

.4 The Tenderer declares that all information, which it has provided or will provide to the City, is true.

.5 The Tenderer declares that this tender is made without knowledge, comparison of figures or arrangement with any other company, firm or person submitting a Tender for the same Work.

.6 The Tenderer declares that no member of the City of Ottawa Council or any officer of the Corporation of the City of Ottawa is, or will become, interested directly or indirectly as a contracting party, partner, surety or otherwise or in the performance of the Contract, or in the supplies, Work or business to which it relates or in any portion of profits thereof, or of any such supplies to be used therein, or in any of the moneys to be derived therefrom.

.7 The Tenderer agrees to provide, within **24 hours** after notice by the City, a **complete list** of all Subcontractors and manufacturers that will be retained for the duration of the Contract. The tender shall provide **Subcontractors listed in Section 5** of this Tender Form that will be

retained for the duration of the Contract **as part of this Tender**. Failure to provide requested Subcontractors will disqualify bid.

.8 The Tenderer agrees that, within seven consecutive calendar days after the issuance of an official commence work order; the Tenderer will commence the work, assembling all necessary labour forces and equipment on the site and will continue the work with the utmost diligence until completion.

.9 The Successful Tender shall complete the Work on or before the City's Date of Completion as set out in the article "Time for Completion of Contract / Work" in Document 00 20 00 "Instructions to Tenderers".

.10 **The successful Tenderer shall submit a letter** undertaking to achieve the completion dates as stipulated in Section 00 20 00 "Instructions To Tenderers",,subsection 22 "(Time for Completion of Contract / Work)". All tenderers must submit this undertaking at the same time as submitting the Total Stipulated Price, otherwise the submitted tender shall be disqualified. This undertaking shall be signed and sealed with the Company seal.

3 Tenderer's Offer

.1 The Tenderer offers to do the Work in accordance with the Contract Documents.

.2 The Tenderer offers to do the Work and to accept payment at the stipulated price specified in this Tender Form, in accordance with the Contract Documents.

4 Addenda

.1 The Tenderer acknowledges that it has received, reviewed and provided in its Tender Price for all work and costs associated with the following addenda:

Addendum No. _____ dated _____

Addendum No. _____ dated _____

Addendum No. _____ dated _____

Addendum No. _____ dated _____

Addendum No. _____ dated _____

5 List of Sub-Contractors and Manufacturers

.1 Herein is the list of Sub-Contractors required to be submitted as part of this Tender Form referred to in Item 2.7 of the Tender Form.

.2 I/WE agree that this list will not be revised or substituted except as negotiated with the City in accordance with the General Conditions and relevant Supplementary Conditions of the Contract. We have ascertained that these subcontractors are capable of executing the Work to the kind and quality specified and within the time and other limitations required.

.3 Where the specifications call for minimum experience or other qualifications for the installer and/or the Manufacturer of a product, we confirm that we have verified that those listed below meet this qualification.

Heating & Ventilation Subcontractor
Division 23 _____

Electrical Subcontractor
Division 26 _____

6 Stipulated Price

Stipulated Price shall be separated into two components as follows:

Security Requirements	$32,000.00
Telecommunications Requirements (Voice/Data)	$ 3,000.00
Signage	$ 5,000.00

.1 TOTAL CASH ALLOWANCE FROM SECTION 01 21 00: (exclusive of HST) **$40,000.00.**

.2 TOTAL STIPULATED PRICE *(price for all work to be done, **including** Total Cash Allowances noted above under item 6.1, exclusive of HST):*

$_____

Repeat TOTAL STIPULATED PRICE in writing:

_____
Canadian Dollars

This offer is made this _____ day of _____, 20_____.

CONTRACTOR (TENDERER)	WITNESS
_____	_____
Signature	*Signature*
_____	_____
Name and title of person signing	*Name and title of person signing*
_____	_____
Signature	*Signature*
_____	_____
Name and title of person signing	*Name and title of person signing*

6 Basis of Award

The City intends to award a contract to the bidder who submits "the lowest responsive bid" (as defined In the City of Ottawa Purchasing By-Law No. 50 of 2000, as amended) by Total Stipulated Price (Excluding HST). Upon formal notification of award the bidder shall thereafter be known as the Contractor.

END OF SECTION

1 Form of Contract

.1 The form of contract is the agreement as defined by the Canadian Construction Documents Committee, CCDC 2 - Stipulated Price Contract 2008 and as amended by Section 00 72 00, Section 00 73 00 and Section 00 82 50.

2 Article A-3 - Contract Documents

.1 ***DELETE*** *paragraph 3.1 and* ***SUBSTITUTE*** *the following:*

"3.1 The following are the Contract Documents referred to in Article A-1 of the Agreement - THE WORK.
- Section 00 72 00 - AMENDMENTS TO THE CCDC2 2008 AGREEMENT
- The Agreement between the City and Contractor, including the definitions and all Addenda
- Section 00 73 00 - SUPPLEMENTARY CONDITIONS CCDC2 2008
- Section 00 82 50 - AMENDMENTS TO THE CCDC41 2008 INSURANCE REQUIREMENTS
- Section 00 40 00 - FORM OF TENDER
- GENERAL CONDITIONS, CCDC 2 - Stipulated Price Contract 2008
- SPECIFICATION DIVISION 1, as listed in Section 00 01 00 – Table of Contents
- SPECIFICATIONS DIVISIONS 2 to 33 listed in Section 00 01 00 - Table of Contents
- DRAWINGS as listed Section 00 01 50 - List of Drawings.
- CCDC 40 Rules for Mediation
- CCDC 41 Insurance Requirements."

3 Article A-5 - Payment

.1 *In paragraph A-5.3.1 (1),* ***DELETE*** "2% per annum" *and* ***REPLACE*** *with* "0% per annum".

.2 *In paragraph A-5.3.1 (1),* ***DELETE*** "4% per annum" *and* ***REPLACE*** *with* "0% per annum".

.2 *In paragraph A-5.3.2:*
In the first line, ***DELETE*** *"*and in the manner prescribe by paragraph 5.3.1 of this article*",*
And ***REPLACE*** *with "*of Prime plus 1% for*".*

4 Article A-7 – Language of Contract

. 1 *In paragraph A-7.1: At the end of the first line,* ***DELETE*** *"*French**#**".

5 Definitions

.1 *Paragraph 9, Contractor:*
ADD *after the last sentence* "The Contractor shall be the constructor as defined within the Occupational Health and Safety Act, R.S.O. 1990, c.O.1, as amended, ("the Act") subject to sub-clause GC 3.2.1 – Construction by Owner or other Contract."

.2 *Paragraph 24, Value Added Taxes:*
In the first and second lines, ***DELETE*** "or any Provincial".
In the third line ***DELETE*** "the Quebec Sales Tax".

END OF SECTION

1 GC 1.1 Contract Documents

.1 ***DELETE*** *paragraph 1.1.7.1 and* ***SUBSTITUTE*** *the following:*

"1.1.7.1 If there is a conflict within Contract Documents:

.1 The order of priority of documents, from highest to lowest, shall be

- Section 00 72 00 - AMENDMENTS TO CCDC 2 2008 AGREEMENT
- The Agreement between the City and Contractor, including the definitions and all Addenda
- Section 00 73 00 - SUPPLEMENTARY CONDITIONS CCDC 2 2008
- Section 00 82 50 - AMENDMENTS TO THE CCDC41 2008 INSURANCE REQUIREMENTS
- Section 00 40 00 - FORM OF TENDER
- GENERAL CONDITIONS CCDC 2 - 2008 - Stipulated Price Contract
- SPECIFICATIONS DIVISION 1 as listed in Section 00 01 00 - Table of Contents
- SPECIFICATIONS DIVISION 2 to 33 listed in Section 00 01 00 - Table of Contents
- Material and Finishing Schedules
- DRAWINGS as listed in Section 00 01 50 - List of Drawings
- CCDC 40 Rules for Mediation
- CCDC 41 Insurance Requirements."

.2 ***DELETE*** *paragraph 1.1.8 and* ***SUBSTITUTE*** *the following:*

"1.1.8 The City shall provide the Contractor up to twenty-five (25) copies of the Contract Documents to perform the Work. Should the Contractor require additional sets, the contract documents will be made available to the contractor at their own expense."

2 GC 2.2 Role of the Consultant

.1 *In paragraph 2.2.3,* ***AMEND*** *the second sentence by adding the following phrase to the end of the sentence:*
"... upon the request of the Contractor.".

.2 *At paragraphs 2.2.7;* ***DELETE*** *the words:* "Except with respect to GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER…" *appearing in the first line of 2.2.7."*

3 GC 3.2 Construction by Owner or Other Contractors

.1 *At paragraphs 3.2.2 and 3.2.3;* ***DELETE*** *the words:* "When separate contracts are awarded for other parts of the Project, or…" *and between the words "…performed by…"* ***ADD*** "…on Site…"

.2 *At paragraphs 3.2.2.2;* ***ADD*** *the words to the end of the sentence:* "…upon notifying the contractor in writing accordingly."

4 GC 3.5 Construction Schedule

.1 ***ADD*** *to end of 3.5.2* "…and the owner reserves the right to request more frequent schedule updates of the project, where the project does not appear to be capable of being completed within the defined time frames of the contract."

5 GC 3.6 Supervision

.1 ***ADD*** *to end of 3.6.1* "…and the owner shall be notified in writing for consideration by the Consultant prior to changing the Supervisor".

6 GC 3.9 Document on Site

.1 *At GC 3.9,* ***ADD*** *the following subsections:*
".3.9.2 Record drawings:
.1 The Contractor shall be required to produce and demonstrate to the Architect on a monthly basis that Contractor has kept the records of the adjustments of the work on a set of As-Built drawings kept on site.
.2 The contractor shall on a monthly basis issue a certificate with their monthly progress draw that the As-Built drawings are complete and up to date as reflected in the work certified to date.
.3 As part of the project breakdown, the contractor will identify a schedule of values associated with the monthly As-Built drawing update with a value of a 0.5% of the project and billed on a monthly basis.
.4 When the contractor requests for substantial performance, the contractor shall submit the mark-up As-Built drawings.
.5The Contractor will submit operation and maintenance instruction manuals updated and revised to show construction revisions."

7 GC 5.1 Financing Information Required of the Owner

.2 ***DELETE*** *paragraph 5.1.1.*

8 GC 5.2 Applications For Progress Payment

.1 ***ADD*** *5.2.8 as follows*: "The Contractor shall include an updated work schedule with each progress billing submission as required in Section 01 00 50, General Instructions otherwise payment of progress billing shall be held back until the updated schedule is submitted."

.2 ***ADD*** *5.2.9 as follows*: "The Contractor shall include an original signed Statutory Declaration and valid WSIB Certificate of Clearance with all progress payments (note: a statutory declaration is not required on the 1st Progress Draw)."

9 GC 5.3 Progress Payment

.2 *In paragraph 5.3.3.* ***DELETE*** "20 days" *in the second line of paragraph 5.3.3 and* ***SUBSTITUTE*** "30 calendar days".

.2 *In paragraph 5.3.3.* ***DELETE*** last bullet "- the last day….for payment is made."

10 GC 5.5 Payment of Holdback Upon Substantial Performance of The Work

.2 ***DELETE*** *paragraph 5.5.3 in its entirety.*

.3 *In paragraph 5.5.4;* ***DELETE*** *the first sentence in paragraph 5.5.4 and* ***SUBSTITUTE*** *the following:*
" In a common law jurisdiction, the holdback amount authorized by the certificate for payment of the holdback amount is due and payable ten (10) days following the expiration of the holdback period stipulated in the lien legislation applicable to the Place of Work."

.3 ***DELETE*** *paragraph 5.5.5 in its entirety.*

11 GC 5.6 Progressive Release of Holdback

.1 ***DELETE*** *the third and fourth lines in paragraph 5.6.1 and* ***SUBSTITUTE*** *the following:*
"the City may pay the Contractor the holdback amount retained for such subcontract work, or the Products supplied by such Supplier, ten (10) days following the expiration of the holdback period for such work"

.2 ***DELETE*** *paragraph 5.6.2 in its entirety*

12 GC 5.7 Final Payment

.1 ***DELETE*** *in the second line of paragraph 5.7.4* "5 days" *and* ***SUBSTITUTE*** "30 days".

13 GC 6.2 Change Order and GC 6.3 Change Directive

.1 ***ADD*** *the following paragraph:*

"6.2.3 All Quotations submitted for Changes to the Contract must include all associated cost impacts on time and shall not be qualified"

"6.2.4 All approved change orders must account for revisions to added or credited time to the Contract Schedule. Change Orders approved without the indication of a Change in time period of Contract cannot be contested at a later date. Additional or credit of time to contract must be represented with financial credit/extra associated with extension/reduction of contract time or overtime hours worked".

"6.2.5 This does not prevent the contractor from addressing a claim for cumulative time impact associated with multiple changes.

.1 Should it be demonstrated that the cumulative impact of multiple individual Change Orders and should the claim be supported with demonstrated documentation of the variation on the approved schedule, then the Contractor is entitled to submit costs to the Architect within 15 days of notifying the Owner of the change to the schedule."

"6.2.6 The adjustment in the Contract Price for a change carried out by way of a Change Order or a Change Directive as provided in GC 6.2 CHANGE ORDER and CG 6.3 CHANGE DIRECTIVE, shall be in accordance with the rates and conditions stipulated in this Supplementary Condition.

.1 All labour, equipment, rental of equipment or tools, materials, subcontracts and outside services to be charged as a result of changes to the scope of the Work will be subject to prior authorization by the City.

.2 For the determination of the costs associated with Change Orders and Change Directive, the following provisions will apply:

2.1 The City will reimburse the contractor for "Field Labour Costs" as the actual direct

wages or salaries of the workers, up to and including working foremen, plus actual payroll burdens, but not including additional cost for full time site superintendent unless it is clearly demonstrated that additional time above and beyond the extent of the "Time for Completion of Contract / Work".

(i) "Payroll Burden" means the payments in respect of workers compensation, vacation pay, unemployment insurance, public liability, and property damage insurance, sickness and accident insurance, pension fund and such other welfare and benefit payments as form part of the Contractor's normal labour costs and will include any applicable cost or expense which has been incurred by the Contractor for food, lodging and similar items.

(ii) The Contractor will provide the City with the information required to calculate Field labour rates within 14 days of the date of Contract Award.

(iii) Field Labour rates for premium portion overtime will be fixed and remain firm for the duration of this Contract and will not be subject to escalation unless prior written approval is obtained from the City, and such approval will not be unreasonably withheld.

(iv) Only labour personnel up to and including working foremen will be chargeable on additional work and then only to the extent such personnel are directly engaged on the additional work. The City will not pay for supervision beyond the working foreman level, nor will it pay for administration or management time spent on additional work.

2.2 The City will pay the Contractor for the actual cost of materials installed or used directly in connection with the Work (excepting materials supplied by the City) will be the actual cost to the Contractor delivered at the site. Copies of invoices from delivery companies or transporters' must accompany the Contractor's billing.

2.3 The City will pay for the cost of rentals for Contractor's owned equipment already on site will be based on the actual time such equipment is used beyond the period the equipment was expected to be on site, exclusive of operators time, and on the following basis:

(i) At established hourly, daily, weekly or monthly rental rates.

(ii) The stipulated rental rates will apply when the number of hours the equipment is operated does not exceed 175 hours in any one month, or does not exceed 40 hours in any one week, or does not exceed 8 hours in any one day.

(iii) For rental rates quoted, no differentiation will be made between equipment owned by Contractor or rented by Contractor from third parties.

(iv) For equipment not already on site, rental agreements and copies of invoices from equipment Rental Company must accompany the Contractor's billing.

.3 Where the Contractor arranged for Work to be carried out by a Subcontractor or its own forces and has received prior approval from the City prior to the commencement of the Work, the City will pay the Contractor the approved cost of the Subcontractor's work, plus a 10% mark-up to the Contractor for all administration, supervision, bonding premiums, record documentation, overheads and profits.

i) The Subcontractor's claim for Work shall be in accordance with the rates and conditions stipulated in Section 6.2.6(ii) of this of this Document.

ii) Multiple mark-up on extra work or credits shall not exceed as follows:

a) Up to $10,000.00 value, maximum 25%
b) Between $10,000.00 and $50,000.00 value, maximum 20%
c) Above $50,000.00 value, maximum 15%

.4 The City will reimburse the Subcontractor via the contractor or the contractor's own forces for actual Field Labour, material and equipment costs of work performed plus 15% a mark-up to cover the cost of small tools, expendables and consumables, field overhead, supervision above working foreman level and all other indirect labour and materials costs not defined as reimbursable. Expendables and consumables includes all items which are consumed in the performance of the Work whether or not such materials are incorporated in the permanent works.

.2 ***ADD*** *the following paragraphs:*

6.3.9.1 The Contractor must keep daily work records prepared by the Contractor and reporting the labour and equipment employed and the material used on any specific portion of the Work, to be reconciled with and signed by the Consultant each day, whenever, in the opinion of the Consultant, such records are required.

6.3.9.2 The Contractor will submit to the City, at the end of each Working Day a detailed report showing the names, occupations and hours worked of all personnel employed that performed work on a time and material basis, the material supplied and the description and hours of use for equipment and tools employed.

6.3.9.3 The City, its Consultant or their agents may inspect and audit the books, payrolls, accounts and records of the Contractor at any time during the period of the Contract and at any time thereafter as deemed necessary, and the Contractor will supply payrolls and any other records required whenever requested by the City.

14 GC 6.5 Delays

.1 ***ADD*** *the following paragraph:*

"6.5.6 The costs which the Contractor may, from time to time, be entitled to pursuant to the provisions of paragraphs 6.5.1, 6.5.2 or 6.5.3 shall not include loss of profit~~s~~ or consequential damages and "reasonable costs" shall be specifically defined as documented, itemized costs directly attributable to delay and categorized as follows:

- extended job supervision
- extended site office overhead
- extended use of construction equipment
- wage and material cost escalation
- extended head office overhead and profit for the work at a reasonable rate demonstrated by the Contractor.

.2 ***ADD*** *the following paragraph:*

"6.5.7 Upon notice of Delay, the contractor shall demonstrate the impact of the delay clearly identified on each subsequent schedule update."

15 GC 6.6 Claims for Change in Contract Price

.1 ***CHANGE*** *the following paragraph:*

"6.6.1 ***ADD*** *to the first sentence after the first word claim* "…other than covered by GC 6.5 Delays…".

16 GC 7.1 Default Notice

.1 *At paragraphs 7.1.2, **ADD** the following subsections:*

".1 If, in the opinion of the Owner or Owner's Agent, the Contractor fails to satisfactorily carry out the obligations and duties of an employer and/or constructor as required under the Occupational Health and Safety Act, the Owner reserves the right to immediately notify the contractor in writing of the alleged default.

.2 Upon issuance, the notice of alleged default shall be signed off by both the Contractor and the Owner or Owner's Agent."

.2. *At paragraphs 7.1.3, **ADD** the following subsections*

".4 In the case of an alleged default under GC 7.1.2.1, upon receipt of written notice, the Contractor shall take action forthwith to correct the default to the satisfaction of the Owner, or Owner's Agent."

.3 *At paragraphs 7.1.4.2, **ADD** the following subsections:*

".3 In the case of an alleged default under GC 7.1.2.1, and should the Contractor disagree with the alleged default, the Owner or the Owner's Agent reserves the right to terminate all or part of the work and immediately contact the Ontario Ministry of Labour to render a decision.

.4 In the case of an alleged default under GC 7.1.2.1, should it be determined by the Ontario Ministry of Labour that a default did not occur, the Owner will reimburse all expenses to the Contractor for the termination of all or part of the work."

17 GC 7.2 Contractor's Right to Stop the Work or Terminate the Contract

.1 ***DELETE** paragraph 7.2.3.1 in its entirety.*

.2 *In paragraph 7.2.3.4 **DELETE** in the first and second lines the words* "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".

18 GC 8.3 Retention of Rights

.1 ***DELETE** paragraph 8.3.1 and **SUBSTITUTE** the following:*
"8.3.1 It is agreed that no act by either party shall be construed as a renunciation or waiver of any rights or recourses."

19 GC 9.1 Protection of Work and Property

.1 ***ADD** the following sentence at the end of paragraph 9.1.2*:
"In addition, the Contractor is responsible to call all Utilities for service locates prior to commencing the work. Should the Contractor fail to call the necessary Utilities for locates, the Contractor will be responsible for all costs associated with the remedial measures to reinstate the existing service."

20 GC 9.2 Toxic and Hazardous Substances and Materials

.1 ***DELETE** paragraph 9.2.1 in its entirety.*
.2 ***DELETE** paragraph 9.2.3 in its entirety.*

.3 ***ADD** the following paragraph:*
"9.2.5.5 The reporting requirements of this provision do not relieve the Contractor from its legal

responsibilities pursuant to any municipal, provincial or federal legislation."

.4 ***DELETE*** *paragraph 9.2.8 in its entirety.*

.5 ***DELETE*** *paragraph 9.2.9 in its entirety.*

.6 ***ADD*** *the following sentence to the end of paragraph 9.2.6:*
"The costs which the Contractor may, from time to time, be entitled to shall not include loss of profit or consequential damages."

21 GC 10.2 Laws, Notices, Permits and Fees

.1 ***ADD*** *the following to the end of the first sentence in paragraph 10.2.3:*
"…which were in force at the date of bid closing."

22 GC 13 Changes in the Work

.1 ***ADD*** *the following General Condition:*

"GC 13 CHANGES IN THE WORK

13.1 The Contractor shall inform the Surety Company or Companies who have issued Performance Bonds or Labour and Material Payment Bonds for this Contract, if any change to the Contract requires adjustments of the bonds, the Contractor shall initiate and pay for such adjustments.

13.2 The Contractor shall advise the Consultant if the schedule is affected by any change and obtain authorizations from the Consultant before proceeding with related work which may affect contemplated changes. The Contractor shall advise the Consultant of the effect on the overall schedule, if any, due to changes required by a Change Directive"."

23 GC 15 Municipal Freedom of Information and Protection of Privacy

.1 ***ADD*** *the following:*

"GC 15 MUNICIPAL FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY

15.1 The Contract, including all Contract Documents, shall become public information, unless the Contractor specifically requests that certain parts of the Form of Tender remain confidential subject to the Municipal Freedom of Information and Protection of Privacy Act"."

25 GC 16 Retail Sales Tax-Non-Resident Contractors

.1 ***ADD*** *the following General Condition:*

"GC 16 RETAIL SALES TAX - NON-RESIDENT CONTRACTORS

16.1 If the Contractor is a non-resident Contractor, as defined in the Retail Sales Tax Act, R.S.O. 1990, c.R.31 as amended, it will obtain and provide the City with a duplicate copy of a valid certificate issued by the Minister of Revenue indicating that the Contractor has fulfilled its obligation to deposit

funds or a guarantee bond with the Treasurer of Ontario to secure payment of the tax payable in respect of tangible personal property consumed or used pursuant to or in the carrying out of the Contract.

16.2 The non-resident Contractor will provide the certificate within seven (7) Working Days of the date the City requests it. If the non-resident Contractor fails to provide the appropriate certificate within the time limit specified by this condition, the City may, in addition to any other remedies which it might have, withhold from payment to the non-resident Contractor, an administration fee, to be determined by the City, to cover costs incurred by the City to comply with the requirements of the Retail Sales Tax Act."

END OF DOCUMENT

The bid requirements, contract requirements, specifications, schedules and drawings for

Constance Bay Community Centre Addition

are amended as follows:

SPECIFICATIONS

A1.1 **REVISED SPECIFICATIONS**

.1 The following revised specifications issued with this addendum supersede previously issued specifications of the same title and number

.1 Section No. 00 01 10_R1, Table of Contents

.2 Section No. 00 01 30_R1, List of Materials

.3 Section No. 01 25 13_R1, Product Substitution Procedures

.4 Section No. 07 21 00_R1, Building Insulation

.5 Section No. 08 71 10_R1, Schedule of Finishing Hardware

.6 Section No. 09 21 16_R1, Gypsum Board Assemblies

.7 Section No. 23 74 13_R1, Packaged Rooftop Air Conditioning Units

.8 Section No. 25 35 00_R1, Building Automation Instrumentation & Terminal Devices for Mechanical

DRAWINGS

A1.2 **REVISED DRAWINGS**

.1 The following drawings are revised and re-issued with this addendum:

.1 Drawing no. S01-05 - Typical Details

.1 Clarify sump pit typical detail TDF-11 as dimensions were overtop each other.

.2 Drawing no. S20-00 - Foundation/Ground Floor Framing Plan Second floor framing plan

.1 Add 600x600 sump pit along with a note indicating to refer to typical detail TDF-11 and Mechanical drawings.

.3 Drawing no. S30-02 Moment Frame Elevations

.1 Revise size of second floor beam of MF-2 from W410x39 to W360x39

.4 Drawing no. S50-01 - Sections and Details

.1 Revise detail 2/S50-01 to reflect the W200 beam at low parapet level.

.2 The following drawings are revised by reference, or as indicated on sketches attached with this addendum, but not re-issued:

.1 Drawing no. A03-01 - Window Schedule & Interior Glazing schedule

.1 Revise 3/A03-01 to include 50mm wide decal strips to sidelights, mounted at 1350-1500mm from FFL.

.2 Drawing no. A20-00 - Ground Floor and Second Floor Plan

.1 Add 600x600 sump pit in location per Mechanical sketch SKM-1

.3 Drawing no. A42-01 - Stair Details

.1 Revise detail 6/A42-01 truncated dome detail to include tile format tactile surface indicator as per revised List of materials.

.4 Drawing no. A50-04 - Plan Details – Expansion Joints

.1 Revise details 5 & 6/A50-04 to include tag EJ7 as per revised List of materials for the metal wall to wall expansion joint cover.

.5 Drawing no. M1-02 - Second Floor HVAC Layout

.1 Detail 2/M1-02 Humidifier Installation, delete note: “Install acoustic insulation in drain pan.”

.6 Drawing no. M2-01 - Ground Floor Plumbing and Drainage Layout

.1 Sump pit and sump pump relocated. Discharge piping and vent relocated as shown on sketch SKM-1.

.2 Pit to be 600x600 wide. Bottom of pit shall be 600mm below weeping tile inlet to pit.

.7 Drawing no. M2-02 - Second Floor Plumbing and Drainage Layout

.1 Sump pit discharge connection to second floor RWL deleted as shown on sketch SKM-2.

.8 Drawing no. E10-01 - Electrical Ground Floor Plan, Power, Fire Alarm, Comm and Legend

.1 Relocate sump pump SP-1 to grid line 1/C in accordance with mechanical revision.

End of Addendum No.1

NORR Limited
175 Bloor Street East
North Tower, 15th floor,
Toronto, Ontario
M4W 3R8

Project Manual
For
Constance Bay Community Centre Addition

SPECIFICATIONS

End of Table of Contents

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
		DIVISION 03 – CONCRETE	
PNL-1	Cast-in-Situ concrete knee wall	150mm thk cast in situ concrete with architectural finish and associated pattern details –see A30-00 & A30-01	Exterior Wall Finish
AS-1	Tactile Anti-Slip Inserts	Manufacturer: KINESIK Engineered Products Incorporated Product: Elan Tile Tactile Indicators Type: Tactile Attention Indicator **Truncated Domes** Size: 22 mm outside diameter	Tactile Walking Surface Indicators (Truncated Domes) Exit stair landings
AS-2	Anti-Slip Inserts	Manufacturer: KN Crowder Product: Stair Nosing Type: CT-20/3 Size: 760mm D x 6.35mm H Color: Extruded Aluminum	Exit stair treads
		DIVISION 06 – WOOD, PLASTICS AND COMPOSITES	
PLAM1	Plastic Laminate	Manufacturer: Formica Product: 8845-58 Color: Bleached Legno Finish: Matte finish	Millwork
PLAM2	Plastic Laminate	Manufacturer: Formica Product: White Xabia Color: P-311 CA Finish: Matte finish	Counter tops for multi-use room and kitchenette in staff area.
WD-1	Solid Wood	Material: maple Finish: stained	Window sill

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
		DIVISION 07 – THERMAL & MOISTURE PROTECTION	
INS-1	Insulation	152mm Polyiso Insulation	Insulation- Roof (min R-40)
INS-2	Insulation	91mm Extruded polystyrene foam insulation (Dow cavity mate ultra or similar)	Insulation- Exterior Walls (min R-20)
INS-3	Insulation	75mm Rigid extruded polystyrene foam insulation 50mm Rigid extruded polystyrene foam insulation	Insulation – below slab on grade for distance of 600mm from perimeter foundation walls (min R-15) Insulation – below grade at perimeter foundation walls from u/s of slab to top of footing (min R-10)
INS-4	Insulation	250mm mineral wool insulation (Roxul or similar)	Insulation – above ceiling in existing building connection (min. R-40)
R-1	SBS Modified Roofing	Cap Sheet on Base Sheet on Tapered insulation to roof drains 2nd Layer Insulation INS-1 1st Layer Insulation INS-1 Vapour Barrier 13mm sheathing Structural steel deck	
R-2	SBS Modified Roofing + Precast Pavers	R-1 + Precast Concrete Pavers 600mm x 600mm on Adjustable Pedestals	
PNL-2	Glass Fibre Reinforced Concrete Panel	Manufacturer: James Hardie Product: Hardie Panel Smooth Color: Arctic White Size: 8mm x 1219mm x 2438mm Fasteners: Exposed, Pre-finished to match PNL-2 Accessories: Fry Reglet fibre cement trim accessories or similar	Exterior Wall Finish

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
PNL-3	Steel cladding Wall Panel	Manufacturer: Vicwest Product: Prefinished AD300 Horizontal Color: TBC Size: 300mm x 40mm Fasteners: Hidden	Exterior Wall Finish
PNL-4	Aluminum Wall Panels	Pre-finished, Colour Anodized to match exterior window frames- black Fasteners: Exposed, Pre-finished to match PNL-4	Exterior Wall Finish
S-1	Glass Fibre Reinforced Concrete Panel	Manufacturer: Certainteed Product: Cedar soffit Color: Cedar Size: 300m/400mm/600mm (to suit soffit size) x 3660mm x 6mm Exposed fixings with cover to match panel Accessories: Fry Reglet fibre cement trim accessories or similar	underside of all roof and canopy overhangs
EJ1	Expansion Joint	Manufacturer: **CS Construction specialties,** Allway Standard Metal Floor Covers Product: RFD100 Finish: Aluminium Size:238mm Joint width: 25mm Min opening:19mm Max opening:51mm	Ground floor – proposed slab on grade connection to existing slab at lobby area. At trafficked areas only. Joint between slab and existing ground floor walls (ie. Non trafficked areas) to be caulked appropriately. Application: Floor to floor

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
EJ2	Expansion Joint	Manufacturer: **CS Construction specialties,** Allway Standard Metal Floor Covers Product: RFD200 Finish: Aluminium Size:238mm Joint width: 51mm Min opening:19mm Max opening:102mm	Second floor – proposed floor slab connection to existing slab at lobby area. At trafficked areas only. Application: Floor to floor Supply and install fire barrier as specified in section 079513
EJ3	Expansion Joint	Manufacturer: **CS Construction specialties,** Allway Standard Metal Floor Covers Product: RFWD200 Finish: Aluminium Size:238mm Joint width: 51mm Min opening:19mm Max opening:102mm	Second floor – proposed floor slab connection to existing second floor walls at lobby area. At non trafficked areas only. Application: Floor to wall Supply and install fire barrier as specified in section 079513
EJ4	Expansion Joint	Manufacturer: Situra Product: Flamline Type: Elastomeric expansion joint Opening: To accommodate +/-50mm	Roof level – proposed roof to existing roof level walls Application: roof to wall
EJ5	Expansion Joint	Manufacturer: Emseal Product: Emseal Seismic Colorseal Finish: Silicone coated Size:60mm Joint width: 60mm Min opening:30mm Max opening:90mm	Ground floor to second level – vertical joint between existing walls and proposed walls Application: wall to wall

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
EJ6	Expansion Joint	Manufacturer: Emseal Product: Emseal Seismic Colorseal Finish: Silicone coated Size:100mm deep Joint width: 100mm Min opening:50mm Max opening:150mm	Second floor to roof level– vertical joint between existing walls and proposed wallsApplication: wall to wall
EJ7	**Expansion Joint**	Manufacturer: **CS Construction specialties,** Allway Standard Metal Floor Covers Product: AFW400 Finish: Aluminium Size:298mm Joint width: 102mm Min opening:25mm Max opening:187mm	Second floor to roof level– vertical joint between interior proposed walls Application: wall to wall

DIVISION 08 – OPENINGS

GL-T	Tempered Glass, Clear	Manufacturer: Elegant Aluminum Canada Product: GP-Premier Line Glass Railing full view 2 channel Color: Black Size: 1070mm high x length to suit plans Fasteners: Exposed	Terrace
GL-W	Interior Fire Rated –Wired Glass	Rating: 45min.	Doors in Rated Walls at stairs See A02-00
GL-L-1	Sidelights	Glass Clean Laminate glass Color: Clear Size: 12 mm glass	Sidelights

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
ROL-1	Steel counter door	Product: FPC Steel Counter Door, rugged 2" flat slats Manufacturer: Service Door industries limited Options: Crank operation Finish: Powder coat finish Color: TBD	

DIVISION 09 – FINISHES

TRM-1	Tile Trim	Manufacture: Schluter Style: QUADEC/-K Finish: Stainless Steel	Finishing edge-protection on outside corners within washrooms and other wall tiled areas.
TRM-2	Floor Trim	Manufacture: Schluter Style: RENO-RAMP/-K Finish: Stainless Steel	Between carpet and concrete floor
CONC	Sealed Concrete	Manufacturer: On-site	Throughout
TRZ1	Terrazzo shower base	Product: Poured Terrazzo Color: to match wall tiles (TBD) Size: 1500mm X 1049mm, Threshold height: Max. 13mm Base splash height: max. 100mm	Poured Terrazzo for shower base. Fit to Ottawa City Guidelines barrier free shower.
CPT1	Carpet Hexagon Tile	Manufacturer: Shaw Contract Style Name: Linear Hexagon Style No: 5T055 Color: Charcoal – 55595 Installation: Random	Library and staff area only – 50% Contact: Deanne Duncan Shaw Industries 3284 Leroy St. Osgoode, ON 613-294-0000 Deanne.duncan@shawinc.com

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
CPT2	Carpet Hexagon Tile	Manufacturer: Shaw Contract Style Name: Linear Shift Hexagon Style No: 5T056 Color: Charcoal Tweed – 56595 Installation: Random	Library and staff area only – 40% Contact: Deanne Duncan Shaw Industries 3284 Leroy St. Osgoode, ON 613-294-0000 Deanne.duncan@shawinc.com
CPT3	Carpet Hexagon Tile	Manufacturer: Shaw Contract Style Name: Plane Hexagon Style No: 5T054 Color: Chartreuse - 54325 Installation: Random	Library area accent – 10% Contact: Deanne Duncan Shaw Industries 3284 Leroy St. Osgoode, ON 613-294-0000 Deanne.duncan@shawinc.com
PAV1	Concrete Paver Tile	Size: 600mm x 600mm x 50mm	Entrance walkway & terrace
GYP	Gypsum Drywall		
POR1	Porcelain Tile	Supplier: Olympia Tile Product: Color and Dimension Collection – Group 1 Color: Warm White Matte Finish: matte Size: 8x20 (200mm x 505mm) Code: QT.CD.WWT.0820.MT	Universal washroom and public washroom. Contact: Sophie Janney Olympia Tile Tel: 613-736-9570 ext. 217 Sophie.olympiatile@bellnet.ca 2480 Don Reid Dr. Ottawa, ON
GRT1	Grout	Product: ARDEX grouts Color: Polar White – 01 Thickness: 3mm	Grout for wall porcelain tile in universal washroom and public washroom.
PT-1	Paint General	Manufacturer: Benjamin Moore Color: White Opulence Code: OC-69 Sheen: eggshell	General wall finish

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
PT-2	Paint Accent	Manufacturer: Benjamin Moore Color: Cape Hatteras Sand Code: AC-34 Sheen: eggshell	Accent paint
PT-3	Paint Door + frame	Manufacturer: Benjamin Moore Color: Ashley Grey Code: HC-87 Sheen: semi-gloss	General door and frame paint
PT-4	Paint Door + Frame	Manufacturer: Benjamin Moore Color: Chelsea Grey Code: HC-168 Sheen: semi-gloss	Door and Frame paint in Library - Staff area
PT-5	Painted exposed steel deck/beams/ mech equip	Manufacturer: Benjamin Moore Color: White Opulence Code: OC-69 Sheen: eggshell	All exposed areas without ceilings – lobbies, stairs, Fitness Centre, storage
WB-1	Rubber Base	Manufacturer: Johnsonite Style Name: Rubber base Style No: Tight lock carpet base Color: 68 White Sand Size: 3mm x 100mm	All areas that have Carpet will receive rubber base
WB-2	Porcelain Base	Supplier: Olympia Tile Product: Color and Dimension Collection – Group 1 Color: Warm White Matte Finish: matte Size: 8x20 (200mm x 505mm) Code: QT.CD.WWT.0820.MT	Universal washroom and public washroom. Contact: Sophie Janney Olympia Tile Tel: 613-736-9570 ext. 217 Sophie.olympiatile@bellnet.ca 2480 Don Reid Dr. Ottawa, ON

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
C-1	Acoustical Ceiling Tile	Manufacturer: Armstrong Product: Cortega Lay-in 769 Color: White Edge Detail: Square Lay in Size: 610mm x 1220mm x 15.8mm Grid: Prelude ML 15/16" Exposed Tee NRC: 0.55	Library and Multi-purpose room Contact: Roger Richer rpricher@armstrong.com 613-852-2791
C-2	Suspended Gypsum Drywall		Washrooms, Vestibule
AH1	Access Hatches	Manufacturer: Cendrex Product: CTR Type: Access Door with Hidden Flange Size: 355mm x 355mm	Access hatches –Drywall Installation.

DIVISION 10 – SPECIALTIES

PTN1	Washroom Partitions	Manufacturer: Bobrick Product: High Pressure Laminate Classic Series 1541 Mounting: floor anchored Finish: laminate - Formica Colour: Bleached Legno 8845-58	Toilet Compartments
PTN2	Urinal Partitions	Manufacturer: Bobrick Product: High Pressure Laminate Classic Series 1545 Mounting: Wall hung Finish: Laminate - Formica Colour: Bleached Legno 8845-58	Urinals

NOTE: The application / location for the materials indicated is not limited to the list below and is to be used in conjunction with and may be supplemented by, the Specifications, Schedules and Drawings. Refer to Specifications, Schedules and Drawings for full extent of material application and additional material types.

CODE	ITEM	DESCRIPTION	APPLICATION / LOCATION
		DIVISION 12 – FURNISHING	
FAB-1	Roller Blinds	Manufacturer: Sun Glow Series: Manual NEO Chainless Safety Shade Fabric: SG Sunscreen CS-103 3% openness in White OR Manufacturer: Solarfective Products Limited Operation: Easy lift (chain operated) Style: Balance Fabric: 2B03 3% openness in White/Bone (P04)	Fitness Centre
FAB-2	Roller Blinds	Manufacturer: Sun Glow Series: Manual Neo Chainless Safety Shade Fabric: SG Sunscreen CS-103 3% openness in white OR Manufacturer: Solarfective Products Limited Operation: Easy lift (chain operated) Style: Balance Fabric: 2B03 3% openness in White/Bone (P04)	Multipurpose room, lobbies, library
MAT	Entrance Mat	Manufacturer: 3M Product: Nomad 8150 Backed Scraper Matting (Heavy Traffic) Finish: Grey Size: 1220mm x 1828mm	At vestibule

END OF DOCUMENT

1 **SUBSTITUTIONS**

1.1 Whenever Products are specified exclusively by trade name, manufacturer's name or by catalogue reference, use only those items, unless written approval for substitution is obtained from Consultant.

1.2 No substitutions will be permitted without prior written approval of the Consultant.

1.3 Substitutions submitted on shop drawings without following requirements of this Section prior to submission of the shop drawings will cause the shop drawings to be rejected at any time. Consultant's review of shop drawings shall not be construed as approval of substitutions.

1.4 Requests for substitutions submitted after award of Contract must include statements of:

.1 Description of proposed substitution.

.2 Respective costs of items originally specified and the proposed substitution.

.3 Compliance with the Building Codes and requirements of authorities having jurisdiction.

.4 Affect concerning compatibility and interface with adjacent building materials and components.

.5 Compliance with the intent of the Contract Documents.

.6 Reason for the request.

1.5 Proposed substitutions will be considered only under the following conditions:

.1 If the materials and products specified are not available; or

.2 If substitute materials and products to those specified, which are brought to the attention of and considered by the Consultant as equivalent to those specified, will not change the Contract Price and Contract Time; or

.3 If substitute materials and products to those specified, which are brought to the attention of and considered by the Consultant as superior to those specified, will not change the Contract Price and Contract Time; or

.4 If a material or product is specified together with a requirement for performance and, in the opinion of the Contractor, the specified material or product will not produce the required results.

1.6 There is no obligation on the part of the Consultant, or Owner to accept proposed substitutions. Acceptance of proposed substitutions by Owner does not relieve the Subcontractor's responsibility under the Contract.

1.7 Should proposed substitution be accepted either in part or in whole, bear full responsibility and costs when substitution affects other work on the project. Pay for design and contract document changes required as result of the substitution.

1.8 Amounts of all credits arising from acceptance of substitutions will be determined by the Consultant and the Contract Price adjusted accordingly.

1.9 Wherein the expression "other acceptable equivalents" or similar expressions in specification Sections, submissions under the expression shall be as specified in this Section.

End of Section

NORR
ARCHITECTS ENGINEERS PLANNERS

SUBSTITUTION REQUEST FORM

Substitution Request No: _____ **Date:** _____

Project: _____ **Project No:** _____

Contractor: _____

Specified Product Specification Reference

Section Number	Section Title	Paragraph Number
_____	_____	_____

Proposed Substitution

Manufacturer and Product Trade Name _____

Address _____ **Phone Number** _____

Contact Name _____ **Model Number** _____

History of Product New Product ____ 2-5 years old ___ 5-10 years old __ More than 10 years old_____

Similar Installation Project Name & Address _____

_____

Consultant _____ Owner _____

Proposed Substitution Affects Other Parts of Work No ____ Yes, explain: _____

_____

_____

Differences Between Proposed Substitution and Specified Product _____

_____

_____

_____

Reason For Not Providing Specified Product _____

_____

_____

_____

Changes to Contract Price Add/Deduct $ _____

Changes to Contract Time Add/Deduct _____ days

NORR
ARCHITECTS ENGINEERS PLANNERS

SUBSTITUTION REQUEST FORM

Contractor's Declaration

The Contractor Declares that:

- Proposed substitution has been fully investigated and determined to be equivalent or superior in all respects to specified product, and complies with requirements of authorities having jurisdiction.
- Same warranty will be furnished for proposed substitution as for specified product.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Proposed substitution is compatible with adjacent materials and assemblies.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Signed By: _____ Date: _____

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Reports ☐ Other _____

Consultant's Review

☐ Substitution Accepted – Provide submittals in accordance with Specification requirement.

☐ Substitution Accepted as Noted – Provide submittals in accordance with Specification requirement.

☐ Substitution Not Accepted – Use specified product.

Signed By: _____ Date: _____

Owner's Acceptance

Signed By: _____ Date: _____

Additional Comments:

☐ Consultant _____

_____

_____

☐ Contractor _____

_____

_____

☐ Owner _____

_____

_____

1 GENERAL

1.1 SUMMARY

.1 Section Includes:

.1 Labour, Products, equipment and services necessary to complete the work of this Section.

1.2 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials to Site in their original wrappings with labels intact and store in areas directed by Consultant.

.2 Store insulation on raised platforms and protect with waterproof covers. Prevent exposure of insulation to UV exposure.

.3 Store materials inside buildings for 24 hours prior to installation.

2 PRODUCTS

2.1 MATERIALS

.1 Wall or Perimeter Insulation: Extruded polystyrene foam insulation, CAN/ULC S701 Type 4, minimum RSI (R) value of 0.87 per 25 mm, compressive strength 210 kPa, thickness as indicated on Drawings. Boards shall have ship-lap edges.

.2 Insulation Under Concrete Slab: Extruded, expanded polystyrene, CAN/ULC S-701 Type 4, minimum RSI (R) value of 0.87 per 25 mm, compressive strength of 210 kPa, thickness as indicated on Drawings.

.3 Exterior Wall Insulation: Extruded polystyrene foam insulation, CAN/ULC S701 Type 3, specifically designed for use in wet cavity wall environments, thickness as indicated on Drawings, Styrofoam Brand Cavitymate Ultra by The Dow Chemical Company.

.4 Ceiling Insulation: Preformed glass fibre or rockwool batt or roll insulation, conforming to CAN/ULC-S701, of thickness indicated on drawings; Fibreglass Pink by Owens Corning, Roxul Plus Batts by Roxul Inc., or acceptable equivalent.

.5 Adhesive: As recommended by manufacturer of insulating materials.

.1 Type B: CGSB 71-GP-24M, suitable for bead application.

.2 Type C: Vapour barrier type, medium trowel consistency, or 260-08 by Bakor Inc., suitable for trowel application.

.3 Cement Mortar Mix for perimeter insulation:

.1 1 part Portland cement, 6 part masonry sand, 1 part hydrated lime, potable water to produce a workable mix.

OR

.2 Cement Mortar Mix: 1 part Portland cement, 3 parts sand, 1/2 part Sealbond by Canada Brick Co. or equivalent additive by Dow Chemicals Ltd.

.6 Mechanical Fasteners: for additional fastening in addition to adhesive on horizontal or sloping surfaces.

.1 Insulation Clips: Impale type, perforated 50 mm x 50 mm cold rolled steel adhesive back, spindle of length to suit insulation plus 25 mm with speed washers.

3 EXECUTION

3.1 PREPARATION

.1 Ensure that surfaces to receive adhesive or insulation are dry, firm, straight, and free from loose material, projections, ice, frost, slick, grease, oil or other matter detrimental to bond of the adhesive or uniform bedding of the insulation.

.2 Maintain surface and ambient temperatures during application and curing of adhesive at a temperature recommended by the manufacturer of the type of adhesive used.

3.2 INSTALLATION - GENERAL

.1 Install insulation to maintain continuity of thermal protection to building elements and spaces as indicated on Drawings.

.2 Fit insulation tight to electrical boxes, plumbing and heating pipes and ducts, around exterior doors and windows and other projections or openings.

.3 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation panels free from ripped backs or chipped or broken edges.

.4 Install materials in accordance with manufacturer's instructions.

.5 Do not cover insulation until it has been reviewed by Consultant.

3.3 INSTALLATION - RIGID INSULATION

.1 Apply Type B adhesive to insulation board at a rate of 0.35 L/m^2, by spot method with daubs, 25 mm to 40 mm diameter x 25 mm high at 200 mm o.c. each way or by bead method with 8 mm diameter beads 350 mm o.c.

.2 Apply Type C adhesive to substrate at 3 mm thick, to achieve a continuous vapour retardant film. Butter edges of board for continuous seal.

.3 Apply mortar mixed adhesive to insulation board by push box method to applied thickness of 6 mm.

.4 Fix insulation clip type fasteners on substrate, 2 per 600 mm x 1200 mm board minimum. Impale insulation board on insulation clips, butting all joints firmly together and secure with washers, cut off spindles 3 mm beyond washer.

.5 Leave insulation board joints unbonded over line of expansion and control joints. Bond a continuous 150 mm wide 6 mil polyethylene strip over joint using compatible adhesive prior to application of insulation.

.6 Provide flexible insulation of equivalent thickness and thermal insulation to fit areas where application of rigid insulation is not possible to provide continuous coverage.

.7 Perimeter Insulation

.1 Install insulation boards on exterior face of perimeter foundation walls extending to top of footing. Apply with adhesive Type B or cement mortar mix. Protect entire face of insulation exposed to back-fill with 6 mm thick pressure treated plywood.

.8 Under Concrete Floor Slab Insulation:

.1 Lay insulation boards on level compacted fill extending a minimum of 600 mm in from perimeter foundation wall.

3.4 INSTALLATION - BATT OR ROLL INSULATION

.1 Fit batt between framing and press firmly into place. Butt tightly at joints, free of gaps.

.2 Insulate behind pipes, ducts, electric conduits and outlets or junction boxes. Cut insulation to fit around and behind obstructions and non-standard spaces.

.3 Place insulation over soffit grid system sealing around metal hangers and at wall on all sides. Carry insulation up wall and fit around steel or in masonry voids and over plaster ceiling.

END OF SECTION

Project#: P000035440

Trillium Architectural Products Ltd.
52 Prince Andrew Place
Toronto, ON, Canada M3C 2H4
416 391 5555 Phone
416 391 5065 Fax
1 888 858 5866 Toll free
www.trilliumarchitectural.com

SCHEDULE OF FINISHING HARDWARE

FOR

CONSTANCE BAY COMMUNITY CENTRE

262 LEN PURCELL DR
OTTAWA, ONTARIO

Project Consultant: Chris Moon cmoon@trilliumarchitectural.com
Hardware Detailer: Steve McRae, AHC SMcRae@trilliumarchitectural.com

Date:	14-Jul-14	
Revised:	23-Sep-14	Issued for Addendum-1
	10-Sep-14	Issued for Tender
	19-Aug-14	Revisions as per security drawings
	21-Jul-14	Issued for Review (R3)
	18-Jul-14	Issued for Review (R2)
	16-Jul-14	Issued for Review

1 PAIR OF DOORS .E01 EXTERIOR - MAIN ENTRANCE RHRA/LHR
2/1016mm x 2150mm x 50mm
DOOR TYPE: CW1
ALUMINUM DOOR / ALUMINUM FRAME

1 EACH	CONTINUOUS HINGE	MCK12- HD 83 CLEAR
1 EACH	ELEC. CONTINUOUS HINGE (INSTALL ELEC.HINGE TO RHR DOOR LEAF)	MCK-12HD ACC-12 X 83 RHR CLEAR
1 EACH	WIRING HARNESS	QC-C012 12IN HARNESS 8PIN/4PIN DBL CONNECTOR
1 EACH	KEY PAD	BY OTHERS
1 EACH	CARD READER	BY OTHERS
1 EACH	REMOVABLE MULLION	L980 X 2438MM LOCKABLE
1 EACH	EXIT DEVICE	31-AD8510J C32D
1 EACH	EXIT DEVICE	31-56-LC-AD8504J LESS PULL C32D
1 EACH	MORTISE CYLINDER (INSTALLED IN MULLION)	BASE BUILDING KEYWAY
1 EACH	MORTISE CYLINDER (INSTALLED IN KEY SWITCH)	BASE BUILDING KEYWAY
1 EACH	RIM CYLINDER (INSTALLED IN EXIT DEVICE)	BASE BUILDING KEYWAY
2 EACH	DOOR PULL CUSTOM	GSH113318 X 1828 O.A. (50MM DR.) #2 C32D
1 EACH	INTERFACE RELAY	CX-12 SWITCHING NETWORK
1 EACH	AUTOMATIC OPERATOR	SW200-OS-99-CL-FWH
2 EACH	PUSH BUTTON	10PBR451
1 EACH	MOUNTING PLATE	351-A EN
1 EACH	DOOR CLOSER (INSTALLED IN OPERATOR HEADER)	351 UO EN
2 EACH	DOOR CONTACT	BY OTHERS
2 EACH	CONCEALED OVERHEAD STOP	699S C26D
1 LOT	PERIMETER SEAL	PERIMETER SEAL BY FRAME SUPPLIER
2 EACH	DOOR SWEEP	W24S X 48in AL
1 EACH	THRESHOLD	CT-45 X 84" AL
1 EACH	TECHNICAL DRAWING	POINT TO POINT ELECTRICAL CONNECTION DRAWING
1 EACH	POWER SUPPLY	BPS-24-1 1 AMP
1 EACH	KEY SWITCH	MKAN

NOTE:

Operator(s) only, supply & installed, All electrical rough-in, including low voltage wire, cable, power supply, conduit, back boxes and blocking, by others.

Sequence of operation:
ENTRY
- By manual key
- By push button, latch retracts, operator powers door open
- Key switch turn outside button ON/OFF

EXIT
- By exit hardware
- By push button, latch retracts, operator powers door open
- free egress at all times

---

1 SGL DOOR .E02 EXTERIOR - STAIR LHR
1016mm x 2150mm x 50mm
DOOR TYPE: CW2
ALUMINUM DOOR / ALUMINUM FRAME

1 EACH	CONTINUOUS HINGE	MCK12- HD 83 CLEAR
1 EACH	EXIT DEVICE	31-LC-AD8513J ETJ C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	DOOR CLOSER	351 UO EN
1 EACH	MOUNTING PLATE	351-A EN
1 EACH	DOOR CONTACT	BY OTHERS
1 EACH	CONCEALED OVERHEAD STOP	699S C26D
1 LOT	PERIMETER SEAL	PERIMETER SEAL BY FRAME SUPPLIER
1 EACH	DOOR SWEEP	W24S X 48in AL
1 EACH	THRESHOLD	CT45 X 48in

---

1 SGL DOOR .E03 EXTERIOR - TERRACE RH
965mm x 2150mm x 50mm
DOOR TYPE: CW3
ALUMINUM DOOR / ALUMINUM FRAME

1 EACH	CONTINUOUS HINGE	MCK12- HD 83 CLEAR
1 EACH	DEAD LATCH	4900-46-201-628
1 EACH	LATCH HANDLE	4560-601 RC130
	* To be installed on terrace side for egress	
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
	* To be installed on room 201 side of door	
1 EACH	DOOR PULL FOR TB	GSH1180-2 TB C32D
	* To be installed on room 201 side of door	
1 EACH	DOOR CLOSER	351 UO EN
1 EACH	MOUNTING PLATE	351-A EN
1 EACH	DOOR CONTACT	BY OTHERS
1 EACH	CONCEALED OVERHEAD STOP	698S C26D
1 LOT	PERIMETER SEAL	PERIMETER SEAL BY FRAME SUPPLIER
1 EACH	DOOR SWEEP	W13S X 48in AL
1 EACH	THRESHOLD	CT10 X 48in AL

---

1 PAIR OF DOORS D100A STAIR LHR/RHR
2/1016mm x 2134mm x 45mm
DOOR TYPE: B / DOOR DETAIL: LONG NARROWLITE
HOLLOW METAL DOOR / HOLLOW METAL FRAME
3/4 HR Fire Label

6 EACH	HINGES	TA786 5 X 4.5 C15
1 EACH	FIRE EXIT DEVICE (CVR)	12-NB-MD8615J X ETL LHR C32D
1 EACH	FIRE EXIT DEVICE (CVR)	12-NB-MD8615J X ETL RHR C32D
2 EACH	DOOR CLOSER	351 UO EN
2 EACH	KICKPLATE	GSH80A 6 X 38.5 C32D TAPE
2 EACH	CONCEALED OVERHEAD STOP	699S C26D
21 FEET	DOOR GASKET	W21 BLACK

---

1 SGL DOOR D100B LIBRARY LHR
1016mm x 2134mm x 45mm
DOOR TYPE: C / DOOR DETAIL: LONG NARROWLITE W/CTN.RAIL
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	HINGES	TA786 5 X 4.5 NRP C15
1 EACH	KEY PAD	BY OTHERS
1 EACH	CARD READER	BY OTHERS
1 EACH	MORTISE CLASSROOM LOCKSET	8237 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	ELECTRIC STRIKE	HES 4500C 630
1 EACH	POWER CONTROLLER	2005: SMART PAC III
1 EACH	INTERFACE RELAY	CX-12 SWITCHING NETWORK
1 EACH	AUTOMATIC OPERATOR	SW200-OS-51-CL
2 EACH	PUSH BUTTON	10PBR451
2 EACH	SURFACE MOUNT BOX	10BOX45RNDSM
1 EACH	DOOR CONTACT	BY OTHERS
1 EACH	KICKPLATE	GSH80A 6 X 38.5 C32D TAPE
1 EACH	CONCEALED OVERHEAD STOP	699S C26D
1 EACH	TECHNICAL DRAWING	POINT TO POINT ELECTRICAL CONNECTION DRAWING
1 EACH	KEY SWITCH	MKAN

NOTE:

Operator(s) only, supply & installed, All electrical rough-in, including low voltage wire, cable, power supply, conduit, back boxes and blocking, by others.

Sequence of operation:
ENTRY
- By manual key
- By push button, unlocks electic strike, operator powers door open
- Key switch turn outside button ON/OFF

EXIT
- By lever hardware
- By push button, operator powers door
- free egress at all times

1 SGL DOOR D100C MULTI-USE ROOM RHR
965mm x 2134mm x 45mm
DOOR TYPE: C / DOOR DETAIL: LONG NARROWLITE W/CTN.RAIL
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	HINGES	TA786 5 X 4.5 NRP C15
1 EACH	MORTISE CLASSROOM LOCKSET	8237 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	DOOR CLOSER	351 PS EN
1 EACH	KICKPLATE	GSH80A 6 X 36.5 C32D TAPE
1 EACH	CONCEALED OVERHEAD STOP	698S C26D

---

1 PAIR OF DOUBLE EGRESS DOORS D100D CORRIDOR LHR/LHR
2/965mm x 2134mm x 45mm
DOOR TYPE: D / DOOR DETAIL: FULL GLASS W/CTN.RAIL
HOLLOW METAL DOOR / HOLLOW METAL FRAME

6 EACH	HINGES	TA786 5 X 4.5 C15
2 EACH	DOOR PULL CUSTOM	GSH113318 X 1828 O.A. (45MM DR.) #2 C32D
2 EACH	DOOR CLOSER	351 UO EN
2 EACH	KICKPLATE	GSH80A 6 X 36.5 C32D TAPE
2 EACH	CONCEALED OVERHEAD STOP	698S C26D
21 FEET	DOOR GASKET	W21 BLACK

---

1 SGL DOOR D101 LIBRARY STAFF AREA LH
965mm x 2134mm x 45mm
DOOR TYPE: B / DOOR DETAIL: LONG NARROWLITE
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	HINGES	TA714 5 X 4 C15
1 EACH	CARD READER	BY OTHERS
1 EACH	MORTISE CLASSROOM LOCKSET	8237 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	ELECTRIC STRIKE	HES 4500C 630
1 EACH	POWER CONTROLLER	2005: SMART PAC III
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	KICKPLATE	GSH80A 6 X 36.5 C32D TAPE
1 EACH	FLOOR STOP	GSH 209 C26D
18 FEET	DOOR GASKET	W21 BLACK

1 PAIR OF DOORS D103A VESTIBULE LHR/RHR
2/1016mm x 2134mm x 45mm
DOOR TYPE: D / DOOR DETAIL: FULL GLASS W/CTN.RAIL
HOLLOW METAL DOOR / HOLLOW METAL FRAME

2 EACH	CONTINUOUS HINGE	MCK12- HD 83 CLEAR
2 SET	DOOR PULL CUSTOM	GSH113318 X 1828 O.A.#5 BTB C32D
1 EACH	AUTOMATIC OPERATOR	SW200-OS-99-CL-FWH
2 EACH	PUSH BUTTON	10PBR451
1 EACH	MOUNTING PLATE	351-A EN
1 EACH	DOOR CLOSER (INSTALLED IN OPERATOR HEADER)	351 UO EN
2 EACH	CONCEALED OVERHEAD STOP	699S C26D
1 EACH	TECHNICAL DRAWING	POINT TO POINT ELECTRICAL CONNECTION DRAWING

NOTE:

Operator(s) only, supply & installed, All electrical rough-in, including low voltage wire, cable, power supply, conduit, back boxes and blocking, by others.

Sequence of operation:
ENTRY
- By door pull
- By push button, operator powers door open
EXIT
- By door pull
- By push button, operator powers door open
- free egress at all times

---

1 PAIR OF DOORS D200A STAIR LHR/RHR
2/1016mm x 2134mm x 45mm
DOOR TYPE: B / DOOR DETAIL: LONG NARROWLITE
HOLLOW METAL DOOR / HOLLOW METAL FRAME
3/4 HR Fire Label

6 EACH	HINGES	TA786 5 X 4.5 C15
1 EACH	FIRE EXIT DEVICE (CVR)	12-NB-MD8615J X ETL LHR C32D
1 EACH	FIRE EXIT DEVICE (CVR)	12-NB-MD8615J X ETL RHR C32D
2 EACH	DOOR CLOSER	351 PS EN
2 EACH	KICKPLATE	GSH80A 6 X 38.5 C32D TAPE
2 EACH	CONCEALED OVERHEAD STOP	699S C26D
21 FEET	DOOR GASKET	W21 BLACK

---

1 SGL DOOR D200B CORRIDOR RHR
1016mm x 2134mm x 45mm
DOOR TYPE: B / DOOR DETAIL: LONG NARROWLITE
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	HINGES	TA714 5 X 4 NRP C15
1 EACH	MORTISE CLASSROOM LOCKSET	8237 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	DOOR CLOSER	1431 PS EN - SURFACE MOUNTED
1 EACH	KICKPLATE	GSH80A 6 X 38.5 C32D TAPE
18 FEET	DOOR GASKET	W21 BLACK

---

1 PAIR OF DOUBLE EGRESS DOORS D200C CORRIDOR LHR/LHR
2/915mm x 2134mm x 45mm
DOOR TYPE: D / DOOR DETAIL: FULL GLASS W/CTN.RAIL
HOLLOW METAL DOOR / HOLLOW METAL FRAME

6 EACH	HINGES	TA786 4.5 X 4.5 C15
2 EACH	DOOR PULL CUSTOM	GSH113318 X 1828 O.A. (45MM DR.) #2 C32D
2 EACH	DOOR CLOSER	351 UO EN
2 EACH	KICKPLATE	GSH80A 6 X 34.5 C32D TAPE
2 EACH	CONCEALED OVERHEAD STOP	698S C26D
20 FEET	DOOR GASKET	W21 BLACK

---

1 PAIR OF DOORS D201 FITNESS RH ACTIVE
2/1016mm x 2134mm x 45mm
DOOR TYPE: C / DOOR DETAIL: LONG NARROWLITE W/CTN.RAIL
HOLLOW METAL DOOR / HOLLOW METAL FRAME

1 EACH	ELECTRIC HINGE	TA786 5 X 4.5 C15 QC4 NRP
5 EACH	HINGES	TA786 5 X 4.5 C15
1 EACH	WIRING HARNESS METAL DOOR	QC-C400 50IN HARNESS 8PIN/4PIN DBL CONNECTOR
1 EACH	CARD READER	BY OTHERS
2 EACH	FLUSH BOLT	GSH 401 C26D
1 EACH	MORTISE CLASSROOM LOCKSET	8237 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	ELECTRIC STRIKE	HES 4500C 630
1 EACH	POWER CONTROLLER	2005: SMART PAC III
2 EACH	DOOR CLOSER	351 UO EN
2 EACH	KICKPLATE	GSH80A 6 X 38.5 C32D TAPE
2 EACH	FLOOR STOP	GSH 209 C26D
20 FEET	DOOR GASKET	W21 BLACK
1 EACH	ASTRAGAL	BY DOOR SUPPLIER

---

1 SGL DOOR D202 WASHROOM - FEMALE LH
915mm x 2134mm x 45mm
DOOR TYPE: A
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
1 EACH	DOOR PULL	GSH4012 TB C32D
1 EACH	PUSHPLATE	5in X 20in TAPE C32D
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	KICKPLATE	GSH80A 6 X 34.5 C32D TAPE
1 EACH	FLOOR STOP	GSH 209 C26D
	SINAGE BY OTHERS	

---

1 SGL DOOR D203 WASHROOM - MALE RH
915mm x 2134mm x 45mm
DOOR TYPE: A
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	CONCEALED BEARING HINGE	TA714 4.5 X 4 C15
1 EACH	DOOR PULL	GSH4012 TB C32D
1 EACH	PUSHPLATE	5in X 20in TAPE C32D
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	KICKPLATE	GSH80A 6 X 34.5 C32D TAPE
1 EACH	FLOOR STOP	GSH 209 C26D
	SINAGE BY OTHERS	

1 SGL DOOR D204 WASHROOM - UNIVERSAL RH
1065mm x 2134mm x 45mm
DOOR TYPE: A
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	HINGES	TA714 5 X 4 C15
1 EACH	MORTISE STOREROOM LOCKSET	8204 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	ELECTRIC STRIKE	HES 4500C 630
1 EACH	AUTO OPERATOR	SW100 LE INSWING
2 EACH	PUSH BUTTON	10PBR451
1 EACH	DOOR CONTACT	BY OTHERS
1 EACH	RELAY CONTROL KIT	CX-WC1 W/INDICATOR & PUSH TO LOCK
1 EACH	KICKPLATE	GSH80A 6 X 40.5 C32D TAPE
1 EACH	FLOOR STOP	GSH 209 C26D
1 EACH	TECHNICAL DRAWING	POINT TO POINT ELECTRICAL CONNECTION DRAWING
1 EACH	CALL STATION	NHR-7A
1 EACH	STROBE/CHIME	CHSW

NOTE:

Operator(s) only, supply & installed, All electrical rough-in, including low voltage wire, cable, power supply, conduit, back boxes and blocking, by others.

Sequence of operation:
ENTRY
- By push button, unlocks strike, operator powers open
- Enter facility, push (Push To Lock) button, de-activates o/s button

EXIT
- By lever
- By push button, unlocks strike, operator powers open
- System resets
- free egress at all times

1 SGL DOOR D205 STORAGE LH
1016mm x 2134mm x 45mm
DOOR TYPE: A
HOLLOW METAL DOOR / HOLLOW METAL FRAME

3 EACH	HINGES	TA714 5 X 4 C15
1 EACH	MORTISE CLASSROOM LOCKSET	8237 LNL C32D
1 EACH	MORTISE CYLINDER	BASE BUILDING KEYWAY
1 EACH	DOOR CLOSER	1431 UO EN - SURFACE MOUNTED
1 EACH	KICKPLATE	GSH80A 6 X 38.5 C32D TAPE
1 EACH	FLOOR STOP	GSH 209 C26D
18 FEET	DOOR GASKET	W21 BLACK

Z-MISL

1 LOT	KEY BLANKS	2 KEY BLANKS PER CYLINDER TO BE HANDED OVER

END OF SCHEDULE

1 GENERAL

1.1 SUMMARY

.1 Section Includes: Labour, Products, equipment and services necessary to complete the work of this Section.

1.2 ACTION SUBMITTALS

.1 Product Data: Submit product data for each type of product.

.2 Samples: For the following products:

.1 Trim Accessories: Full size sample in 300 mm 12-inch long length for each trim accessory indicated.

1.3 QUALITY ASSURANCE

.1 Install work level to tolerance of 3 mm in 3000 mm.

.2 Select studs with maximum deflection of L/360 at lateral force of 240 Pa for maximum heights indicated.

.3 Fire test response characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

.4 Sound transmission characteristics: For gypsum board assemblies with STC ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by a qualified independent testing agency.

1.4 ENVIRONMENTAL REQUIREMENTS

.1 Install work only in areas closed and protected against weather, and maintained between 10 degree C and 21 degree C. In cold weather ensure that heat is introduced in sufficient time, before work commences, to bring surrounding materials up to these temperatures; and maintained until materials installed by this Section have cured.

.2 Do not install work in any area unless satisfied that work in place has dried out, and that no further installation of damp materials is contemplated.

.3 Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.

.1 Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

.2 Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

.2 Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

2 PRODUCTS

2.1 MATERIALS

.1 Gypsum board: ASTM C1396/C1396M, paper faced, regular and fire rated Type X core, 1200 mm wide x maximum practical length, ends square cut, square edged base layer and taper edged face layer, thickness as indicated.

.2 Tile backer board: ASTM C1178/C1178M, 12 mm thick, 1200 mm wide x maximum practical lengths, ends square cut, square edges, glass mat both sides, specially treated gypsum core, reinforced with glass fibers, face side treated with heat-cured copolymer water and vapour resistant coating, Dens-Shield by G-P Gypsum Corporation or other acceptable equivalents.

.3 Water resistant gypsum board: ASTM C630/C630M, water resistant and fire rated, 1200 mm wide x maximum practical length, ends square cut, edges squared and tapered.

.4 Steel studs: ASTM C645, minimum 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed, widths as indicated, with knock-out holes for mechanical and electrical services. Use 20 gauge studs for cement board and fiber reinforced panels.

.5 Floor and ceiling tracks: ASTM C645, minimum 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed, width to suit studs.

.6 Furring runners and channels: ASTM C645, minimum 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed.

.7 Resilient steel furring channels: ASTM C645, 12.7 mm x 65 mm, 0.46 mm base metal thickness, hot-dipped galvanized to ASTM A653/A653M G60 (Z180) zinc coating, roll formed; Hat shaped resilient furring channel for direct wall furring where resilient channels are indicated.

.8 Channel bridging: 1.37 mm bare steel thickness, 38 mm deep with minimum 12.7 mm wide flange.

.9 Backing plate: Galvanized steel sheet for blocking and bracing in length and width indicated, minimum base metal 0.45 mm 0.7 mm 0.8 mm thick.

.10 Attachment clips: Sized to suit acoustical ceiling grid members, complete with screws and other fastening system, Revoe Clips by Revoe Manufacturing Ltd.

.11 Hangers, tie wires, inserts, anchors: Manufacturer's standard.

.12 Insulating strip: Rubberized, moisture resistant 3 mm thick foam strip, 12 mm wide, with self sticking adhesive on one face, lengths as required.

.13 Casing beads, corner beads: 0.48 mm hot dipped galvanized steel, perforated flanges, designed to be concealed with joint compound; one piece length per location.

.14 Reveal trims: Extruded 6063-T5 aluminum, designed to be concealed with joint compound, maximum lengths, reveal width and depth as indicated, Final Forms I 500 Series by Gordon Inc. or other approved equivalents.

.15 Acoustical sealant: Acoustical sealant by Tremco Ltd.

.16 Joint and laminating compounds: As recommended by gypsum board and cement board manufacturer, high bond, low shrinkage and asbestos-free.

.17 Joint tape: 50 mm wide reinforced tape.

.18 Acoustical insulation: AFB by Roxul Inc., or SAFB by Fibrex, or QuietZone Acoustic Batt Insulation by Owens Corning Canada LP, or other approved equivalent; width to match stud spacing.

.19 Light Lens and Support: Injection moulded 100% white translucent acrylic louvres, 12 mm x 12 mm x 12 mm cell dimension, complete with prefinished extruded aluminum support trim 25 mm exposed face, white.

.20 Access Hatches: refer to List of Materials, Section 00 01 30.

3 EXECUTION

3.1 EXAMINATION

.1 Examine areas and substrates including welded hollow-metal frames and framing for compliance with requirements and other conditions affecting performance.

.2 Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

.3 Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION - GENERAL

.1 Comply with ASTM C840, Standard Specification for Application and Finishing of Gypsum Board.

3.3 INSTALLATION - PARTITION AND WALL FRAMING

.1 Align partition top and bottom tracks and secure by screws at 600 mm o.c. maximum.

.2 Place studs vertically at 400 mm oc, unless otherwise noted, and not more than 50 mm from abutting walls, and at each side of openings and corners. Position studs in top and bottom tracks.

.3 Screw attach end studs to top and bottom tracks. Screw attach intermediate studs to bottom tracks. Secure intermediate studs to top tracks by crimping or by other means of fastening acceptable to Consultant.

.4 Continuously cross brace steel studs at 1500 mm on center to provide rigid installation to manufacturer's instructions.

.5 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs.

.6 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using clips or other approved means of fastening placed alongside frame anchor clips.

.7 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.

.8 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.

.9 Provide stud, furring channel, and backing plates secured between studs for attachment of fixtures, electrical boxes, grab bars, washroom accessories, and other items. Comply with details indicated and with stud and gypsum board manufacturers' written recommendations.

.10 Terminate partitions at ceiling height except where indicated otherwise.

.11 Install continuous insulating strips to isolate studs from exterior window framing.

.12 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

.13 Apply two continuous beads of acoustical sealant at junctions of metal framing and structure, including bottom and top tracks, where partitions abut fixed building components. Fill junction completely and continuously from floor to ceiling, or to structure for full height partitions.

.14 Frame for gypsum board faced vertical bulkheads within and at termination of ceilings.

.15 Secure security mesh to each stud with #8 pan head type self tapping screws with minimum through penetration of 6 mm at maximum 200 mm o.c. and within 50 mm of mesh edge or secure mesh with 3 mm x 13 mm long fillet welds at maximum 200 mm o.c. and within 50 mm of mesh edge. Overlap joints by minimum 50 mm.

.16 Secure light lens support trims to substrate at 300 mm centers. Loose lay light lens on support trims.

.17 Mechanically fasten resilient channels perpendicular to wall framing starting at 50 mm up from floor and end with 150 mm to the underside of structure at no more than 610 mm o.c. Install where indicated.

3.4 **INSTALLATION – ATTACHMENT CLIPS**

.1 Place attachment clips over acoustic ceiling main/cross tee from top. Line up pre-drilled hole on clip with hole on main/cross tee and screw clip to main/cross tee with 1/2" wafer screw.

.2 Screw through pre-drilled holes in attachment clip into top track of stud partition. Do not screw through ceiling grid.

.3 Do not damage ceiling grid system during installation of these clips.

3.5 **INSTALLATION - WALL FURRING**

.1 Space wall furring runners vertically at 600 mm o.c., and secure through alternate flanges of runners. Shim runners as required to present a true, plumb line for application of gypsum board.

.2 Locate furrings not more than 50 mm away from all openings, interior corners, intersections, frames, jambs, control joints and the like.

.3 At windows, doors or similar openings having returns, and around corners, install lengths of mitred and bent pieces of furring horizontally spaced approximately 600 mm o.c. Form mitres by cutting the flanges and bending the web. Do not cut web to form corners.

.4 Mechanically fasten resilient channel perpendicular to wall framing starting at 50 mm up from floor and end within 150 mm to the underside of structure, at no more than 600 mm o.c. Install where indicated.

3.6 **INSTALLATION - SUSPENDED CEILING FRAMING**

.1 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.

.2 Provide additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of light fixtures and diffusers.

.3 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.4 Seismic Bracing: Sway-brace suspension systems with hangers used for support Insert project specific requirements.

3.7 **SEMI-EXPOSED LOCATIONS GYPSUM BOARD CEILINGS (SOFFITS)**

.1 Provide suspension ceiling as specified for suspended ceilings using all galvanized material. Apply soffit boards horizontally with end joint occurring over supports. Allow 2 mm to 3 mm space between butted ends. Fasten board at 300 mm oc. Finish joints and fasteners as specified using compounds recommended by manufacturer of board.

.2 Cut board to fit within 6 mm of fixtures and other vertical surfaces. Apply galvanized casing bead.

.3 Provide control joints at 9000 mm oc maximum.

3.8 **INSTALLATION - GYPSUM PANELS**

.1 Do not apply gypsum panels until bucks, anchors, blocking, electrical and mechanical work are approved.

.2 Apply gypsum panels to furring or framing using screw fasteners, at 300 mm oc., and at closer spacings as required for fire resistance rated assemblies. Space fasteners in tile baker boards a maximum of 200 mm o.c.

.3 Install ceiling board panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in the central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

.4 Install gypsum panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1.6 mm of open space between panels. Do not force into place.

.5 Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

.6 Attach gypsum panels to framing provided at openings and cutouts.

.7 Control Joints

.1 Prior to installation review exact locations of control joints with the Consultant. Install purpose made control joint metal trim at following locations:

.1 Where partition, wall, or ceiling traverses a construction joint (expansion, seismic, or building control element) in the base building structure.

.2 Furring or partition abuts a structural element or dissimilar wall or ceiling.

.3 Ceiling abuts a structural element, column or dissimilar wall, partition, or other vertical penetration.

.4 Construction changes within a partition or ceiling.

.5 Partition or furring runs exceeding 9100 mm 30 ft and total area between control joints exceeding 84 m2 900 sq.ft..

.6 Partition and ceiling runs on column lines or at joints in ceiling runs.

.7 In interior ceilings without perimeter relief exceeding 9100 mm 30 ft in either direction and total area between control joints exceeding 84 m2 900 sq.ft.

.8 In interior ceilings with perimeter relief exceeding 15000 mm 50 ft and total area between control joints exceeding 230 m2 2500 sq.ft..

.9 In exterior ceilings or soffits exceeding 9100 mm 30 ft in either direction and total area between control joints exceeding 84 m2 900 sq.ft..

.2 Install control joints full height floor to ceiling or door header to ceiling in partitions and furring runs.

.3 Install control joints from wall to wall in ceiling areas.

.8 Cover both faces of steel stud partition framing with gypsum panels in concealed spaces.

.1 Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 0.7 sq.m. in area.

.2 Fit gypsum panels around ducts, pipes, and conduits.

.3 Where partitions intersect open joists and other structural members projecting below underside of slabs and decks, cut gypsum panels to fit profile formed by joists and other structural members; allow 6 mm to 10 mm wide joints to install sealant.

.9 Gypsum board single layer application:

.1 On ceilings, apply gypsum panels before wall/partition board application to the greatest extent possible and at right angles to framing, unless otherwise indicated.

.2 On partitions and walls, apply gypsum panels parallel to framing, unless otherwise indicated or required by fire resistance rated assembly, and minimize end joints.

.3 Stagger abutting end joints not less than one framing member in alternate courses of board.

.10 Gypsum board multilayer application - ceilings: Apply gypsum board indicated for base layers before applying base layers on partitions and walls; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face layer joints one framing member, 400 mm minimum, from parallel base layer joints, unless otherwise indicated or required by fire resistance rated assembly.

.11 Gypsum board multilayer application – partitions and walls: Apply gypsum board indicated for base layers and face layers parallel to framing with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

.1 Furring members: Apply base layer parallel to framing and face layer either vertically parallel or perpendicular to framing with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.

.12 Single layer fastening method: Fasten gypsum panels to supports with steel drill screws.

.13 Multilayer fastening method: Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners, unless otherwise indicated or required by fire resistance rated assembly.

.14 Laminating to substrate: Where gypsum panels are indicated as directly adhered to a substrate, comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.

.15 Tile backer board: Apply tile backer board where ceramic tile finish is scheduled. Comply with manufacturer's written installation instructions. Maintain 6 mm gap where panels abut other construction or penetrations.

3.9 **INSTALLATION - ACOUSTICAL INSULATION**

.1 Install acoustical insulation to partitions indicated. Provide continuous coverage between studs and run continuously from floor to ceiling, or to structure for full height partitions, over door frames and openings and around corners.

.2 Pack acoustical insulation around cut openings in gypsum board, behind outlet boxes around plumbing, heating or structural items passing through the system and at abutting walls.

.3 Secure acoustical insulation to one interior face of gypsum board with adhesive or mechanical fasteners or by other approved means.

.4 For partitions receiving acoustical insulation, seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919, Standard Practice for Use of Sealants in Acoustical Applications, and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings

3.10 **INSTALLATION - FIRE RATED ASSEMBLIES**

.1 Construct fire rated assemblies where indicated, to requirements of authorities having jurisdiction.

3.11 **INSTALLATION - ACCESSORIES**

.1 Erect casing beads, corner beads straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured by screw fasteners. Fit corners accurately, free from rough edges.

.2 Provide corner beads at external corners of gypsum board partitions and where indicated.

.3 Provide casing beads at gypsum board terminations, at gypsum board wall/ceiling junctions, where gypsum board butts against surfaces having no trim concealing junction and where indicated.

.4 Construct control joints of two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint. Provide continuous polyethylene dust barrier behind and across control joints.

3.12 **INSTALLATION - ACCESS DOORS AND HATCHES**

.1 Install access doors and hatches to electrical and mechanical fixtures specified in respective Sections.

.2 Rigidly secure frames to furring or framing systems.

3.13 **INSTALLATION - TAPING AND FILLING**

.1 Fill joints, casing beads, corner beads, screwholes and depressions on gypsum board surfaces exposed to view to provide smooth seamless surfaces and square neat corners.

.2 Apply joint compounds and reinforcing tapes in accordance with manufacturer's specifications.

.3 Fill joints and apply joint compounds by three-coat method. Apply cover coat 175 mm wide, level coat 250 mm wide, and skim coat 300 mm wide.

.4 Embed reinforcing tape in a cover coat of joint compound. Apply level coat of joint compound when cover coat has dried. Apply skim coat of compound when level coat has dried.

.5 Feather edges of compounds into surfaces of gypsum boards. After skim coat has dried for at least 24 hours sand to leave smooth for decoration. Do not sand paper face of gypsum board.

.6 At internal corners: First fill gaps between boards with joint compound. Imbed creased reinforcing tape into a thin coat of joint compound applied 50 mm wide at each side of corner. Apply cover coat. Apply skim coat to one side of joint, and when dry apply skim coat to other side.

.7 At external corners: Fill to nose of corner bead with joint compound and sand smooth.

.8 At screwheads and nailheads: Fill holes and depressions with a two coat application of joint compound and sand smooth.

.9 Finish gypsum board joints above finished ceiling with tape and first coat of joint compound.

END OF SECTION

1 GENERAL

1.1 SUMMARY

.1 Section includes:

.1 Labour, products, equipment and services necessary to complete the work of this Section.

1.2 SUBMITTALS

.1 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00.

2 PRODUCTS

2.1 ELECTRIC COOL/GAS HEAT ROOFTOP UNIT RTU-1

.1 General

.1 Roof mounted self-contained constant volume unit with complete DX refrigeration system and gas burner.

.2 Factory assembled, piped, wired, tested and shipped to site in one piece. Units specifically designed for outdoor application.

.3 Ship units fully charged with refrigerant R410 A.

.4 Packaged air-cooled condenser units shall be certified in accordance with ANSI/AHRI Standard 340/360 performance rating of commercial and industrial unitary air-conditioning and heat pump equipment.

.5 Unit shall be certified in accordance with UL Standard 1995/CSA C22.2 No. 236, Safety Standard for Heating and Cooling Equipment.

.6 Unit and refrigeration system shall comply with ASHRAE 15, Safety Standard for Mechanical Refrigeration.

.7 Unit shall be certified in accordance with ANSI Z21.47b/CSA 2.3b and ANSI Z83.8/CSA 2.6, Safety Standard Gas-Fired Furnaces.

.8 Unit Energy Efficiency Ratio (EER) shall be equal to or greater that prescribed by ASHRAE 90.1, Energy Efficient Design of New Buildings except Low-Rise Residential Buildings.

.9 Unit shall be certified by ETL and ETL Canada listed. Unit nameplate shall include the ETL/ETL Canada label. The nameplate, safety labels and warnings will be in English and French.

.2 General Description

.1 Packaged rooftop unit shall include compressors, evaporator coils, filters, supply fans, dampers, air-cooled condenser coils, condenser fans, gas heaters, and unit controls.

.2 Unit shall be factory assembled and tested including leak testing of the DX coils, pressure testing of the refrigeration circuit, and run testing of the completed unit. Run test report shall be supplied with the unit in the service compartment's literature pocket.

.3 Unit shall have decals and tags to indicate lifting and rigging, service areas and caution areas for safety and to assist service personnel.

.4 Unit components shall be labeled, including refrigeration system components and electrical and controls components.

.5 Estimated sound power levels (dB) shall be shown on the unit ratings sheet.

.6 Installation, Operation, and Maintenance manual shall be supplied within the unit.

.7 Laminated color-coded wiring diagram shall match factory installed wiring and shall be affixed to the interior of the control compartment's hinged access door.

.8 Unit nameplate shall be provided in two locations on the unit, affixed to the exterior of the unit and affixed to the interior of the control compartment's hinged access door.

.3 Construction

.1 All cabinet walls, access doors, and roof shall be fabricated of double wall, impact resistant, rigid polyurethane foam panels.

.2 Unit insulation shall have a minimum thermal resistance R-value of 13. Foam insulation shall have a minimum density of 2 pounds/cubic foot and shall be tested in accordance with ASTM D1929-11 for a minimum flash ignition temperature of 610°F.

.3 Unit construction shall be double wall with G90 galvanized steel on both sides and a thermal break. Double wall construction with a thermal break prevents moisture accumulation on the insulation, provides a cleanable interior, prevents heat transfer through the panel, and prevents exterior condensation on the panel.

.4 Unit shall be designed to reduce air leakage and infiltration through the cabinet. Cabinet leakage shall not exceed 1% of total airflow when tested at 3 times the minimum external static pressure provided in AHRI Standard 340/360. Panel deflection shall not exceed L/240 ratio at 125% of design static pressure, at a maximum 8 inches of positive or negative static pressure, to reduce air leakage. Deflection shall be measured at the midpoint of the panel height and width. Continuous sealing shall be included between panels and between access doors and openings to reduce air leakage. Piping and electrical conduit through cabinet panels shall include sealing to reduce air leakage.

.5 Roof of the air tunnel shall be sloped to provide complete drainage. Cabinet shall have rain break overhangs above access doors.

.6 Access to filters, dampers, cooling coils, heaters, compressors, and electrical and controls components shall be through hinged access doors with quarter turn, zinc cast, lockable handles. Full length stainless steel piano hinges shall be included on the doors.

.7 Exterior paint finish shall be capable of withstanding at least 2,500 hours, with no visible corrosive effects, when tested in a salt spray and fog atmosphere in accordance with ASTM B 117-95 test procedure.

.8 Units with cooling coils shall include double sloped 304 stainless steel drain pans.

.9 Unit shall be provided with base discharge and return air openings. All openings through the base pan of the unit shall have upturned flanges of at least 1/2 inch in height around the opening.

.10 Unit shall include lifting lugs on the top of the unit.

.4 Electrical

.1 Unit shall be provided with factory installed and factory wired, non-fused disconnect switch.

.2 Unit shall be provided with phase and brown out protection which shuts down all motors in the unit if the electrical phases are more than 10% out of balance on voltage, the voltage is more than 10% under design voltage or on phase reversal.

.5 Supply Fans

.1 Unit shall include direct drive, unhoused, backward curved, plenum supply fans.

.2 Blowers and motors shall be dynamically balance and mounted on rubber isolators.

.3 Motors shall be premium efficiency ODP with ball bearings rated for 200,000 hours service with external lubrication points.

.4 Variable frequency drives shall be factory wired and mounted in the unit. Fan motors shall be premium efficiency.

.6 Cooling Coils

.1 Evaporator Coils shall be designed for use with R-410A refrigerant and constructed of copper tubes with aluminum fins mechanically bonded to the tubes and galvanized steel end casings. Fin design shall be sine wave rippled.

.2 Coils shall have interlaced circuitry and shall be standard capacity.

.3 Coils shall be hydrogen or helium leak tested.

.4 Coils shall be furnished with factory installed thermostatic expansion valves.

.7 Refrigeration System

.1 Unit shall be factory charged with R-410A refrigerant.

.2 Compressors shall be scroll type with thermal overload protection, independently circuited and carry a 5 year non-prorated warranty, from the date of original equipment shipment from the factory.

.3 Compressors shall be mounted in an isolated service compartment which can be accessed without affecting unit operation. Lockable hinged compressor access doors shall be fabricated of double wall, rigid polyurethane foam injected panels to prevent the transmission of noise outside the cabinet.

.4 Compressors shall be isolated from the base pan with the compressor manufacturer's recommended rubber vibration isolators, to reduce any transmission of noise from the compressors into the building area.

.5 Each refrigeration circuit shall be equipped with thermostatic expansion valve type refrigerant flow control.

.6 Each refrigeration circuit shall be equipped with automatic reset low pressure and manual reset high pressure refrigerant safety controls, Schrader type service fittings on both the high pressure and low pressure sides and a factory installed replaceable core liquid line filter driers.

.7 Unit shall include a variable capacity scroll compressor on the lead refrigeration circuit which shall be capable of modulation from 10-100% of its capacity.

.8 Condensers

.1 Air-Cooled Condenser fans shall be a vertical discharge, axial flow, direct drive fans.

.2 Coils shall be designed for use with R-410A refrigerant. Coils shall be multi-pass and fabricated from aluminum microchannel tubes or coils shall be constructed of copper tubes with aluminum (copper) fins mechanically bonded to the tubes and aluminum end casings. Fin design of copper tube coils shall be sine wave rippled.

.3 Coils shall be designed for a minimum of 10°F of refrigerant sub-cooling.

.4 Coils shall be hydrogen or helium leak tested.

.9 Gas Heating

.1 Stainless steel heat exchanger furnace shall carry a 25 year non-prorated warranty, from the date of original equipment shipment from the factory.

.2 Gas furnace shall consist of stainless steel heat exchangers with multiple concavities, an induced draft blower and an electronic pressure switch to lockout the gas valve until the combustion chamber is purged and combustion airflow is established.

.3 Furnace shall include a gas ignition system consisting of an electronic igniter to a pilot system, which will be continuous when the heater is operating, but will shut off the pilot when heating is not required.

.4 Unit shall include a single gas connection and have gas supply piping entrances in the unit base for through-the-curb gas piping and in the outside cabinet wall for across the roof gas piping.

.5 Natural gas furnace shall be equipped with modulating gas valves, adjustable speed combustion blowers, stainless steel tubular heat exchangers, and electronic controller. Combustion blowers and gas valves shall be capable of modulation. Electronic controller includes a factory wired, field installed supply air temperature sensor. Sensor shall be field installed in the supply air ductwork. Supply air temperature setpoint shall be adjustable on the electronic controller within the controls compartment. Gas heating assemblies shall be capable of operating at any firing rate between 100% and 30% of their rated capacity.

.10 Filters

.1 Unit shall include 4 inch thick, pleated panel filters with an ASHRAE efficiency of 30% and MERV rating of 8, upstream of the cooling coil.

.2 Unit shall include a clogged filter switch.

.11 Outside Air/Economizer

.1 Unit shall include 0-100% economizer consisting of a motor operated outside air damper and return air damper assembly constructed of extruded aluminum, hollow core, airfoil blades with rubber edge seals and aluminum end seals. Damper blades shall be gear driven and designed to have no more than 15 cfm of leakage per sq. ft. of damper area when subjected to 2 inches w.g. air pressure differential across the damper. Damper assembly shall be controlled by spring return sensible temperature activated fully modulating actuator. Unit shall include outside air opening bird screen, outside air hood, and barometric relief dampers.

.12 Controls

.1 Factory Installed and Factory Provided Unit controller shall be capable of controlling all features and options of the unit. Controller shall be factory installed in the unit controls compartment and factory tested. Controller shall be capable of stand alone operation with unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling available without dependence on a building management system.

.2 Controller shall have an onboard clock and calendar functions that allow for occupancy scheduling.

.3 Controller shall include non-volatile memory to retain all programmed values without the use of a battery, in the event of a power failure.

.4 Multi Zone VAV Controlled Unit shall utilize a variable capacity compressor system and a variable speed fan system to modulate the cooling and airflow as required in meeting the space temperature needs and to save unit operating energy. Unit fan speed shall modulate based on supply air static pressure.

.5 Units ordered with modulating gas, shall be capable of modulating fan speed in both the heating and cooling mode.

.6 Unit shall be provided with supply air temperature control. Mixing boxes and bypass ducts shall not be required for operation as a single zone VAV system.

.7 Unit configuration, setpoint adjustment, sensor status viewing, unit alarm viewing, and occupancy scheduling shall be accomplished with connection to interface module with LCD screen and input keypad, interface module with touch screen, or with connection to PC with free configuration software. Controller shall be capable of connection with other factory installed and factory provided unit controllers with individual unit configuration, setpoint adjustment, sensor status viewing, and occupancy scheduling available from a single unit. Connection between unit controllers shall be with a modular cable.

.13 Accessories

.1 Unit shall be provided with a safety shutdown terminal block for field installation of a smoke detector which shuts off the unit's control circuit.

2.2 CURBS

.1 Curbs shall to be fully gasketed between the curb top and unit bottom with the curb providing full perimeter support, cross structure support and air seal for the unit. Curb gasket shall be furnished within the control compartment of the rooftop unit to be mounted on the curb immediately before mounting of the rooftop unit.

.2 Curbs shall be furnished for field assembly.

.3 Curbs will be seismically designed for the application. Job specific drawings stamped and signed by a professional engineer will be included as part of the submittal package.

3 EXECUTION

3.1 INSTALLATION

.1 Install rooftop units as per manufacturer's instructions on roof curbs provided by the manufacturer.

.2 Manufacturer to certify installation, supervise start-up and commission units.

.3 Install and wire all accessories shipped lose with units for fully operating systems.

3.2 **CONTROLS**

.1 Controls -Controller Sequence of Operation – (Variable Air Volume Application)

.2 Occupied Operation

.1 The owner shall select the ways to initiate the Occupied mode of operation for the CONTROLLER:

.2 Internal week schedule

.3 Remote Forced Occupied contact closure switch to be wall mounted within the entrance vestibule complete with lockable cover.

.4 Pushbutton Override button on a Space Sensor (Override length is user adjustable)

.3 Scheduling

.1 Has an internal 7 day schedule with 2 start/stops per day.

.2 Allows scheduling of up to 14 holiday periods per year.

.4 Unoccupied Operation

.1 Unoccupied calls will be generated from VAV Box local zone thermostats.

.2 Outdoor air damper will be closed except if unit is in unoccupied economizer free cooling mode.

.3 If there is no call for heating or cooling the unit will be off.

.5 HVAC Modes of Operation

.6 HVAC Modes of Operation shall be in response to poling space (zone) temperature sensors (thermostats) average condition.

.1 Supply Air Temperature Cooling

.2 Supply Air Tempering Heating

.3 Heating (Night Setback Heating)

.4 Pre-Occupied Early Morning Warm-Up

.5 Cooling (Night Setup Cooling)

.6 Pre-Occupied Early Morning Cool-Down

.7 Off

.7 Cooling Mode with Digital Scroll Compressor and a Single Fixed Capacity Scroll Compressor:

.1 In the cooling mode, as the Supply Air Temperature (SAT) rises above the Active Supply Air Cooling Setpoint (see Supply Air Temperature Setpoint Reset section for explanation), the Digital Compressor will stage on and modulate to control to the Active Supply Air Cooling Setpoint.

.2 If additional cooling is required, fixed compressor stages will be staged on while the Digital Compressor continues to modulate.

.3 To stage up the extra compressor, the SAT needs to be above the Active Supply Air Cooling Setpoint and the Digital Compressor needs to be at 100% for a period of time equal to the Stage Up Delay. Once a fixed compressor is enabled the digital compressor signal will go to 10% and modulate up as needed. This will repeat as additional fixed compressors are staged up.

.4 For compressors to stage on, Minimum Off Times (adj.) must be satisfied as well as Stage Up Delays (adj.).

.5 To stage down the extra compressor, the SAT needs to be below the Active Supply Air Cooling Setpoint minus the Cooling Stage Control Window and the Digital Compressor needs to be at 0% for a period of time equal to the Stage Down Delay. Once a fixed compressor stages off the digital compressor will go to 100% and modulate down as needed. This will repeat as additional fixed compressors stage off.

.6 For compressors to stage down, Minimum Run Times (adj.) must be satisfied as well as Stage Down Delays (adj.). The digital compressor is always the last compressor to be deactivated.

.7 If the economizer is enabled it will function as the first stage of cooling (see Economizer section).

.8 Supply Air Tempering Heating

.1 In this configuration, unit heat will operate when the following conditions are met:

.1 The Outdoor Air Temperature must fall below the Low Ambient Protection Setpoint (which must be below the Compressor Lockout Setpoint)

.2 The economizer must be at its minimum position.

.3 The supply fan VFD must be operating above the Heating Minimum VFD Setpoint.

.2 When these conditions are met unit heat will activate and operate to maintain the SAT at the special 2º offset Heating Setpoint.

.3 If a stage of heat or ModGas at its minimum turndown position overshoots this Heating Setpoint, the outdoor air damper will be allowed to modulate open to bring the SAT back down. There is a Maximum Heat Economizer Setpoint (adj.) that will limit the amount the outdoor air damper can open during this operation.

.4 If, after the Heat Stage Minimum Run Time has been satisfied, the economizer has not been able to bring the SAT down within the Heat Control Staging Window, the controller will stage down/off the heat.

.9 Morning Cool-Down Mode:

.1 The space temperature sensors and VAV Box controllers are to be configured as the Mode Enable Sensor.

.2 This mode occurs when the average space temperature exceeds the high space temperature limit set-point and a pre-set time period in advance of when the unit goes from the Unoccupied to the Occupied Mode and the Return Air Temperature is above the Morning Warm-up Target Setpoint.

.3 In this mode the unit operates in the Cooling Mode as described below.

.4 This mode is in effect until the Return Air Temperature rises above the Morning Cool-Down Target Temperature or until a user adjustable time period elapses.

.5 All VAV boxes are driven maximum air flow position.

.6 The Outdoor Air Damper remains closed during this mode.

.10 Morning Warm-Up Mode:

.1 The space temperature sensors and VAV Box controllers are to be configured as the Mode Enable Sensor.

.2 This mode occurs when the average space temperature is below the low space temperature limit set-point and a pre-set time period in advance of when the unit goes from the Unoccupied to the Occupied Mode and the Return Air Temperature is below the Morning Warm-up Target Setpoint.

.3 In this mode the unit operates in the Heating Mode as described below.

.4 This mode is in effect until the Return Air Temperature rises above the Morning Warm-Up Target Temperature or until a user adjustable time period elapses.

.5 If controlled by this unit controller, all VAV boxes are driven maximum air flow position.

.6 The Outdoor Air Damper remains closed during this mode.

.11 Heating Mode:

.1 For normal VAV applications the Heating Mode shall be initiated during Morning Warm-Up or Night Setback Heating. Heating shall also be used in the special Supply Air Tempering Heating sequence (described above in that section).

.2 Available heating shall be Modulating Gas using MOD GAS II controller.

.3 Once in the Heating Mode the unit will stage or modulate heating to maintain the Supply Air Temperature at the Active Supply Air Heating Setpoint.

.12 Off Mode

.1 Occurs in the Unoccupied Mode when no heating or cooling demands exist.

.2 Supply fan is off and the outside air damper is closed.

.13 Economizer Operation

.1 Available when outdoor air (OA) drybulb or wetbulb temperature is below the Economizer Enable Setpoint by 1° and the OA temperature is at least 5° below the return air temperature.

.2 Economizer operation is disabled when the OA temperature rises 1° above the Economizer Enable Setpoint.

.3 Wetbulb operation requires an Outdoor Humidity Sensor that is to be provided.

.4 Economizer acts as 1st stage of cooling and controls to the Active Supply Air Cooling Setpoint. If the economizer reaches 100% and the supply air temperature is still above setpoint, mechanical cooling is allowed to stage up while the economizer is held at the full open position.

.5 An Economizer Minimum Position is to be programmed into the controller.

.6 Space (Zone) CO2 sensor are to be used to reset the minimum economizer position for IAQ control.

.7 CO2 sensors are to be provided and installed in each VAV zone. Discriminator logic will select the CO2 sensor with the highest level to generate the control signal to the required economizer position.

.8 Closed during Unoccupied Mode, except when Unoccupied free cooling is required.

.14 Space Sensor Operation

.1 Sensor with Override and Setpoint Slide Adjust is to be provided.

.2 Sensors with Setpoint Slide Adjust shall be programmed to allow space setpoint adjustment of up to ± 10° F.

.3 During Unoccupied hours the Override Button can be used to force the unit back into the Occupied Mode (by pressing the button for less than 3 seconds) for a user-defined override duration of up to 8.0 hours. Pressing the button between 3 and 10 seconds cancels the override.

.15 Supply Fan Operation

.1 Occupied Mode – Supply fan will run continuously.

.2 Unoccupied Mode – Supply fan will cycle on a call for heating or cooling.

.3 Anytime the Supply Fan is requested to start, a 1 minute minimum off timer must be satisfied. If the timer is satisfied the Supply Fan relay is activated while all other outputs are held off for a period of 1-2 minutes to purge stagnate air from the ductwork before heating or cooling occurs.

.4 In fan cycle mode or when going unoccupied the supply fan is held on for 2 minutes after the last stage of heating or cooling stages off.

.5 In a VAV application, anytime the Supply Fan is running, the CONTROLLER is controlling the speed of the VFD to maintain the Duct Static Pressure Setpoint.

.16 Supply Air Temperature Setpoint Reset

.1 Various sources can be configured to reset the Supply Air Temperature (SAT) Setpoint. Since the Supply Air Temperature Setpoints are not fixed during reset, we refer to them as “Active Supply Air Temperature Setpoints”.

.2 Cooling Mode: The space temperature sensors and VAV Box controllers are to be poled every 30 minutes and should any zone VAV Boxes be at it’s minimum position and the space temperature be 2°C (adjustable) below set-point, the supply air temperature is to be reset by plus 3°C (adjustable). Should any zone VAV Boxes be at it’s maximum position and the space temperature be 2°C (adjustable) greater than set-point, the supply air temperature is to be reset by minus 3°C (adjustable).

.3 Heating Mode: The space temperature sensors and VAV Box controllers are to be poled every 30 minutes and should any zone VAV Boxes be at it’s minimum position and the space temperature be 2°C (adjustable) above set-point, the supply air temperature is to be reset by minus 3°C (adjustable). Should any zone VAV Boxes be at it’s maximum position and the space temperature be 2°C (adjustable) less than set-point, the supply air temperature is to be reset plus 3°C (adjustable)

.17 Building Pressure Control

.1 To be used to maintain a user adjustable Building Pressure Setpoint requires a Building Pressure Sensor that is to be provided with a 0-10VDC modulating output.

.2 The control shall be Direct Acting, meaning that on an increase in building static pressure, an on/off exhaust fan can be activated or a VFD exhaust fan can be ramped up.

.18 Proof of Flow Interlock

.1 This interlock prevents cooling and heating operation in the event of a fan failure.

.2 A Proof of Flow switch is to be provided that provides a 24 VAC wet contact closure is required.

.19 Dirty Filter Status

.1 A 24 VAC wet contact closure on this input will create a Dirty Filter Alarm.

.2 A compatible differential pressure switch is to be provided.

.20 Emergency Shutdown

.1 A 24 VAC wet contact closure is to be utilized to initiate shutdown of the CONTROLLER and will generate an alarm condition. This contact closure does not produce an instantaneous shutdown.

.2 This contact closure is to be generated from a smoke detector and fire alarm signal.

.3 Should instantaneous shutdown be required, the device initiating the contact closure should also be wired to cut the 24 V common to the CONTROLLER relay outputs.

.21 Duct Static Pressure for VAV Units with VFD

.1 The CONTROLLER Controller will need to be configured for “VFD and Bypass Damper Control” and then will read and control Duct Static Pressure in the duct system anytime the fan is operating.

.2 The Duct Static Pressure Setpoint, Deadband Limits and Controlling Interval are user adjustable.

.3 A modulating output signal is used to control a Supply Fan VFD or a Zoning Bypass Damper.

.4 Provide a duct static pressure sensor for this application.

.22 Zoning Capability (For Heating and Cooling Changeover)

.1 When the Controller is configured for zoning operation (zone voting) with heating and cooling capability, and is used in conjunction with WattMaster’s Orion Controls VAV/Zone Controllers the following features are available:

.1 Broadcasts the Supply Air Temperature to all zones on its loop so they can use that information to determine Heating/Cooling/Vent Mode of operation.

.2 Broadcasts the Occupied/Unoccupied Schedule, Main Fan Status and Heat Status to all zones on the loop.

.3 Can respond to Unoccupied overrides and Unoccupied heating and cooling calls from zone controllers.

.23 Temperature Protection

.1 Activated when the Supply Air Temperature (SAT) rises above the High Cutoff Temperature (immediate) or drops below the Low Cutoff Temperature (for 10 minutes) both of which are user adjustable. This mode shuts off the unit (with a 3 minute fan off delay) until the mode is cancelled.

.2 This mode is cancelled when the SAT drops 5 degrees below the High Cutoff Temperature Setpoint or rises 5 degrees above the Low Temp Cutoff Temperature Setpoint, or when the unit changes back into Occupied Operation.

.24 Outdoor Air Lockouts

.1 Mechanical cooling is disabled when the Outdoor Air Temperature is below the Cooling Lockout Setpoint.

.2 Mechanical heating is disabled when the Outdoor Air Temperature is above the Heating Lockout Setpoint.

.25 Loose Shipped Controls Devices:

.1 All of the listed devises that are integral to the operation and performance of the Roof Top Unit (RTU) are to be provided by or fully compatible with the RTU manufacturer's requirements. The listed devices include but are not limited to the following devices.

.1 Outdoor Humidity Sensor.

.2 CO2 sensors are to be provided and installed in each VAV zone complete with unitary controller that will provide a discriminator logic that will select the CO2 sensor with the highest level to generate the control signal to the required economizer position.

.3 Building Pressure Sensor that is to be provided with a 0-10VDC modulating output.

.4 A Proof of Flow switch is to be provided that provides a 24 VAC wet contact closure.

.5 A 24 VAC wet contact closure on this input Dirty Filter Alarm compatible differential pressure switch.

.6 Provide a duct static pressure sensor to be located 2/3 distance from fan of the total duct run.

.7 VAV box controllers, actuators

END OF SECTION

1 GENERAL

.1 Section includes:

.1 Labour, products, equipment and services necessary to complete the work of this Section.

2 PRODUCTS

2.1 CONTROL AIR DAMPERS

.1 Type

.1 Modulating control dampers

.1 Opposed blades

.2 Two position control dampers

.1 Parallel blades

.2 Construction

.1 Bearings

.1 Thermal plastic resin copolymer, nylon or oil impregnated bronze,

.2 At blade axles, linkage devices, etc.

.2 Damper blades and frames

.1 Extruded aluminum

.2 Maximum blade length: 1.2 m without internal frame support

.3 Maximum blade length: 1.2 m without internal frame support

.4 Blade edge seals: EPDM gaskets

.5 Frame side seals: extruded TPE

.6 Frame style: flanged to duct.

.7 Jack shaft: extendable, combination of aluminum, and zinc/nickel coated steel

.8 Damper leakage: 50 l/s per m² damper face area at 1 kPa (4" w.c.) differential static pressure.

.3 Damper blades for outside air applications

.1 As above

.2 Operating temperature: -40°C to 100°C (-40°F to 212°F)

.3 Thermally broken and insulated blades; expanded polyurethane foam insulation

.4 Damper leakage: 21 l/s per m² damper face area at 1 kPa (4" w.c.) differential static pressure.

.4 Acceptable Manufacturer:

.1 Tamco - Series 1000

.2 Tamco - Series 9000 (outside air applications)

2.2 VALVE AND DAMPER OPERATORS

.1 General:

.1 Provide valves and dampers with metal body operators sized to assure smooth, positive operation over the entire operating range, without chatter or slamming, and to give tight shutoff at end positions against the system pressures to be encountered.

.2 Failure position:

.1 Spring return, normally open or normally closed sequence as required so that systems will "Fail-safe" in case of control air pressure or power failure.

.2 On 2-way butterfly valves, provide double acting or reversible actuators.

.3 Sequencing by spring range will not be approved for valves or dampers.

.4 Furnish valves and dampers with operators and spring ranges designed to match as linearly as possible the full scale operating range of the control valve.

.5 Valves NPS6 and over: manual override to open and close valve and disable control signal.

.6 Adequately size operators and in sufficient quantity to ensure smooth damper operation

.2 Selection:

.1 Indoor

.1 Electric

.2 Electric outside of mechanical rooms

.2 Outdoor

.1 Electric

.3 Ancillary devices

.1 End switches as detailed

.2 Pilot positioner relays

.3 Interconnection piping

.3 Electronic Actuators

.1 General

.1 Low torque, fully modulating or two position as indicated.

.2 Time for full open to full close: two minutes nominal.

.3 Current limiting, digital motor rotation sensing circuits, or adjustable end of travel switches to provide motor protection.

.4 Tandem mounting of actuators for higher torque requirements are acceptable.

.5 Spring return with manual override unless otherwise indicated or specified.

.6 On loss of control signal, valve will fail to the designated normally open or closed position.

.2 Terminal equipment

.1 Non-spring return type.

.3 Power and Communications

.1 Positive positioning at 2-10 VDC or 4-20 mA signal

.2 Visual valve position indicator

.3 Built-in rotation reversing switch

.4 Actuator generated 2-10 VDC electronic feedback signal

.5 Capacity to add auxiliary switches when required

.6 Power: 24 VAC or VDC for proportional control, 24 or 120 VAC for 2 position, maximum 15 VA.

2.3 SWITCHES

.1 Electric Space Thermostats

.1 "On-Off" thermostats for 120 volt service: minimum contact rating of seven amperes.

.2 Thermostats for unit heaters: complete with a manual switching sub-base.

.1 Switching action: "Heat-Off-Fan"

.2 Minimum contact rating: seven amperes at 120 volts A.C.

.3 Modulating electric thermostats: compatible with the equipment they are to control.

.2 Electric Temperature Switches

.1 General application

.1 Minimum contact rating of seven amperes at 120 volts A.C.

.2 Switch setting: adjustable differential.

.3 Switch to switch setting: adjustable differential.

.2 Outside air application

.1 As above

.2 Installed so as not to be affected by sunlight, exhaust air, or reverse warm air flow through air supply units should the supply be off.

.3 Thermowell

.1 Complete with compression fitting for 20 mm (3/4 NPT) well

.2 Mounting length: 100 mm

.3 Immersion wells: type 316 stainless steel

.4 Strap-on pipe: Complete with helical screw stainless steel clamps

.3 High Limit Controls

.1 For ducts under 1.5 sq m of cross sectional area or where the longest dimension is not over 760 mm:

.1 Bi-metal operated control complete with manual reset

.2 Switch contact: normally closed.

.2 Ducts of cross sectional area greater than 1.5 sq m:

.1 Temperature sensitive heads connected to a pressure switch so that, should a high temperature occur, one of the heads will operate to open the pressure switch and stop the respective equipment.

.2 Switch contact: normally closed.

.4 Low Limit Controls

.1 6 m of capillary, wired to stop the equipment should the temperature over any 300 mm length drop below its set point.

.2 Switch contact: normally closed with a manual reset.

.5 Fan Proof-of-Flow

.1 U.L. listed adjustable set point and differential pressure type:

.1 Fan static greater than 250 Pa (1" w.c.): piped to fan discharge

.2 Fan static less than 250 Pa (1" w.c.): piped across the fan

.3 For fractional horsepower and non-ducted fans, use relays or auxiliary contacts.

.2 Pressure ratings

.1 Adjustable set point: 0-2500 Pa (0-10" w.c.)

.2 Adjustable differential: 10-250 Pa (0.03-1" w.c.)

.3 U.L. listed adjustable differential pressure or flow type as specified in the sequence of operation:

.1 Chilled water flow switches: totally sealed vapour tight switch enclosure on 2060 kPa body

.2 Differential pressure switches: valve manifold for servicing

.6 Flow Switches

.1 McDonnell and Miller FS-7 Series for liquids and AF Series for air flow.

2.4 ELECTRICAL RELAYS

.1 Current sensing (switch)

.1 Metering transformer ranged to match load being metered

.1 Plug-in base and shorting shunt to protect current transformer when relay is removed from socket

.2 Current transformer for single or three phase metering into single relay

.3 Adjustable latch level, adjustable delay on latch and minimum differential of 10% of latch setting between latch level and release level

.4 Discrimination between phases in three phase applications to allow worst case selection

.5 Mounted in motor starter cabinet and fed from starter control transformer

.6 Rating: 10 amps at 240 VAC

.2 General relays

.1 Relays for control and status indication

.1 Double voltage DPDT

.2 Relays for implementation of control strategy

.1 Single voltage with appropriate number of contacts

2.5 ELECTRONIC SENSORS

.1 General Requirements

.1 Input/output sensors and devices: closely matched to the requirements of the DCP for accurate, responsive, noise free signal input/output.

.2 Control input response: high sensitivity and matched to the loop gain requirements for precise and responsive control.

.3 In no case shall computer inputs be derived from pneumatic sensors. In no case shall thermocouples or thermistors be used.

.2 Temperature Sensors

.1 Resistance Temperature Detector (RTD) type:

.1 500 ohm balco

.2 or, 100 or 3000 ohm platinum

.3 Factory calibrated

.4 Stem and tip construction: copper or type 304 stainless steel.

.5 End-to-end accuracy: ±0.25°C (±0.5°C) over full range of variable

.6 Transducing output circuit to suit DCP

.2 Thermistor for Terminal Box Control

.1 As above, or 100,000 ohm thermistor

.2 Accuracy: ± 0.5°C

.3 Room Sensors

.1 Room sensors shall be flush mount, tamper resistant design using Type III, 10K thermistor. Sensor accuracy shall be plus or minus 0.4 degrees Fahrenheit. Sensor shall be mounted in an off-white plastic enclosure.

.4 Outside air wall mounted sensors:

.1 RTD type

.2 Provided with a sun shield.

.3 Inert section for passing through wall to unit.

.5 Duct temperature sensors:

.1 Rigid stem or averaging type as specified in the sequence of operation.

.2 Averaging element style for ducts greater than 0.4 m² cross-sectional area.

.3 Differential and Static Pressure Sensors

.1 Air flow and static pressure analog sensors

.1 High accuracy suitable for the low velocity pressures to be encountered:

.2 Selected for approximately 50% over-range

.3 4 to 20 ma output

.4 Adjustments for zero and span

.5 Connect differential pressure sensors to the air flow measuring station with valved lines for testing and calibration.

.2 Space pressure

.1 Flush mounted 10 gauge stainless steel welded casing with No. 4 finish

.2 Shielded space probe unaffected by airflows up to 5 m/s from a 360° radial source

.3 Accuracy: ±1% of actual space pressure

.3 Outdoor air pressure

.1 Exposed 10 gauge anodized aluminum with NPT 2 connection

.2 Shielded space probe unaffected by airflows up to 5 m/s from a 360° radial source

.3 Accuracy: ±2% of actual outdoor air static pressure when subjected to a radial wind velocities up to 35 m/s with approach angles up to 30° from the horizontal

.4 CO2 Sensors

.1 CO2 sensors shall be designed for monitoring CO2 levels and shall have the capability for wall mounting in the required space. Sensors shall use dual beam infrared technology guaranteed to maintain its accuracy for a minimum of 5 years between calibrations. Accuracy to be plus minus 50 PPM at 1000PPM. Annual drift not to exceed 10PPM per year. Repeatability shall be plus minus 20PPM.

2.6 TRANSMITTERS

.1 Temperature Transmitters

.1 Standalone transmitter

.1 Microprocessor based transmitter

.2 Input circuit: 3 lead, 100 ohm at 0°C, platinum RTD type sensor.

.3 Integral multi-line digital display

.4 Combined non-linearity, repeatability, hyseterisis effects: ±0.5% of full scale range.

.5 Integral zero and span adjustments

.6 Outputs: 4-20 mA linear into maximum 500 Ohm load

.7 Power: 24 VAC, or 24 VDC, or 120 VAC

.8 Provide transformer and ac/dc converter for 24 V devices

.2 Pressure (Static and Airflow) Transmitters

.1 Standalone transmitters

.1 Microprocessor based transmitter

.2 Receive flow signals (total and static pressure) from an airflow station or pressure probe and produce dual output linear and scaled signals for air volume, velocity and differential pressure

.3 Integral multi-line digital display

.4 Natural full span: (0-125 Pa) (0-0.5”w.c.)

.5 Accuracy: ±0.25% of natural spans

.6 Outputs

.1 0-5 VDC

.2 0-10VDC

.3 or 4-20 mA linear into maximum 500 Ohm load

.7 Power: 24 VAC, or 24 VDC, or 120 VAC

.8 Provide transformer and ac/dc converter for 24 V devices

.9 Outdoor static pressure reference

2.7 TRANSDUCERS

.1 Kilowatt Transducers

.1 Integrated electronic type with accuracy of .2% of scale.

.1 For balanced (such as motors) three phase loads, provide two current transformers (CT's).

.2 Provide two or three potential transformers (PT's) as recommended by the manufacturer for the application.

.3 Output: 4 to 20 ma.

.4 Provide suitable CT's and PT's unless specifically specified with other equipment.

.2 Current Transducers

.1 Integrated electronic type with accuracy of .2% of scale.

.1 For balanced (such as motors) three phase loads, provide two current transformers (CT's).

.2 Measure line current, with output proportional signal:

.1 4-20 mA

.2 0-1 VDC

.3 0-10 VDC

.4 0-20 VDC

3 EXECUTION

3.1 INSTALLATION

.1 General

.1 Provide instrumentation, control devices, (pneumatic system) and electrical wiring for control and monitoring strategies as detailed in sequences of operation.

.2 Install equipment in accordance with manufacturers instructions.

.3 Make sensors and elements accessible for replacement and servicing

.4 Install transmitters, transducers, receiver-controllers, solenoid air valves and relays in NEMA 12 enclosures with wiring and tubing within panels in trays or individually clipped to back of panel and clearly identified. Install in NEMA 4 enclosures for outdoor installation.

.5 Install outdoor sensors in NEMA 12 enclosure.

.6 Support field mounted transmitters on pipe stands or channel brackets. Pipe pneumatic sensing lines to transmitters, complete with dirt pockets at transmitter.

.7 Support wall mounted devices on plywood back board, supported from wall or floor. Paint plywood one coat of primer and two top coats, light grey colour.

.2 Identification

.1 Identify field devices in accordance with Section 23 05 01.

.3 Testing

.1 Calibrate and test all field devices for accuracy and performance.

.2 Submit report detailing tests performed, results obtained to Consultant for approval. Consultant will verify results at random. Provide all testing equipment and manpower necessary for this verification.

3.2 SENSORS AND SWITCHES

.1 General

.1 Use combination temperature and CO2 sensors only when shown on drawings, otherwise provide separate sensors.

.2 Duct Installation

.1 Do not mount in dead air space.

.2 Thermally isolate elements from brackets and supports so as to respond to air temperature only.

.3 Support sensor element independently from coils and filter racks.

.3 Averaging duct type sensor or switch

.1 Sensor length: not less than 1000 mm for each square meter of duct cross-sectional area.

.2 Wire multiple sensors in parallel for freeze protection applications.

.3 Wire multiple sensors separately for temperature measurement.

.4 Flow Switches

.1 Install flow switches upright in horizontal pipe lines with at least five pipe diameters of straight pipe (without fittings, restrictions etc.) on each side of the flow switch.

.5 Airflow Stations

.1 Locate airflow stations in accordance with manufacturer's guidelines so as to approach ideal laboratory conditions.

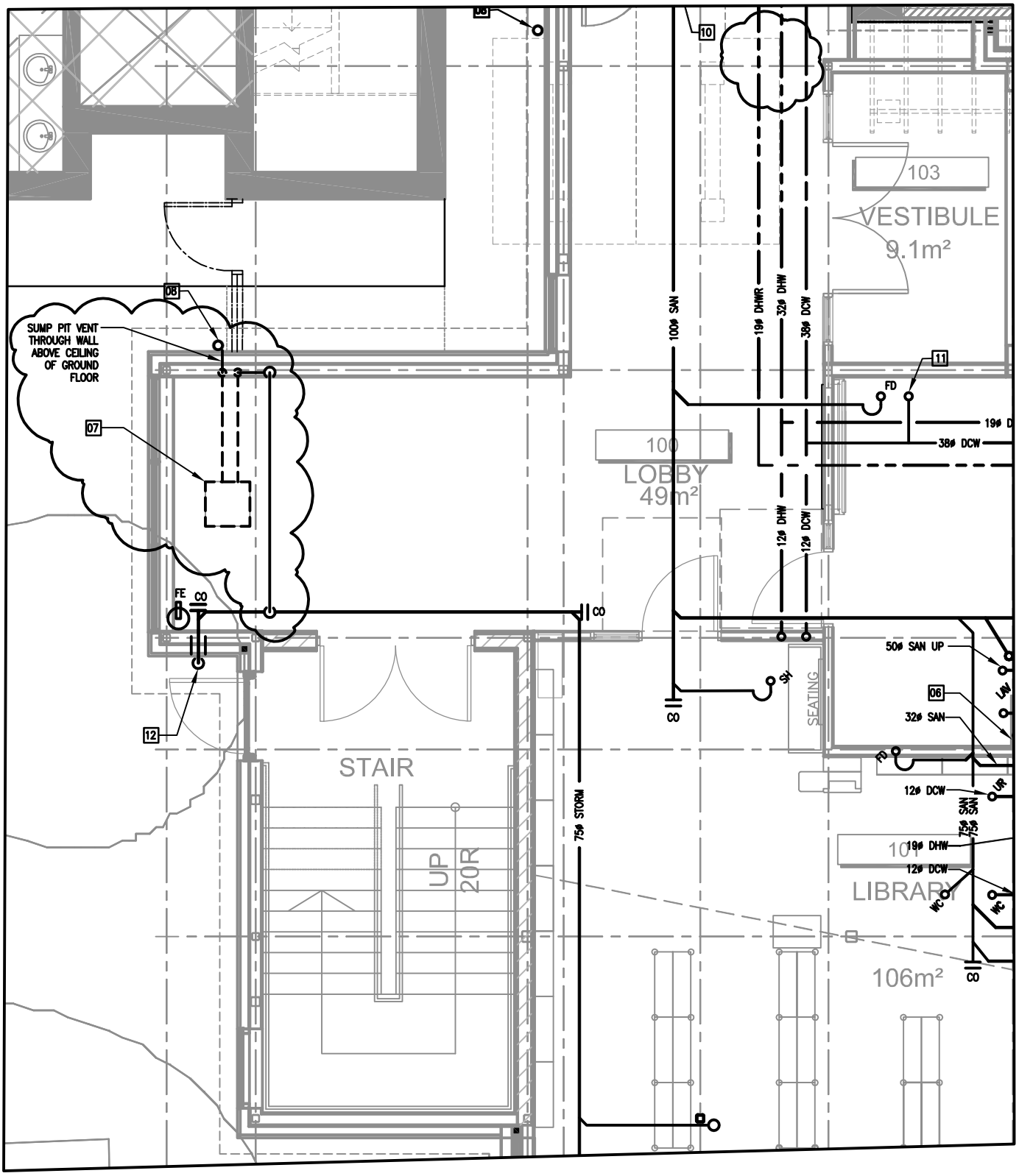
.2 Cap off manifold until cleaning of ducts is complete.

.6 Pressure and Differential Switches

.1 Install isolation valve and snubber between sensor and pressure source.

.2 Protect sensing elements on steam and high temperature greater than 98°C (210°F) with pigtail syphon between valve and sensor.

END OF SECTION



DATE	ISSUED FOR	REV
09/25/2014	ADDENDUM 1	01

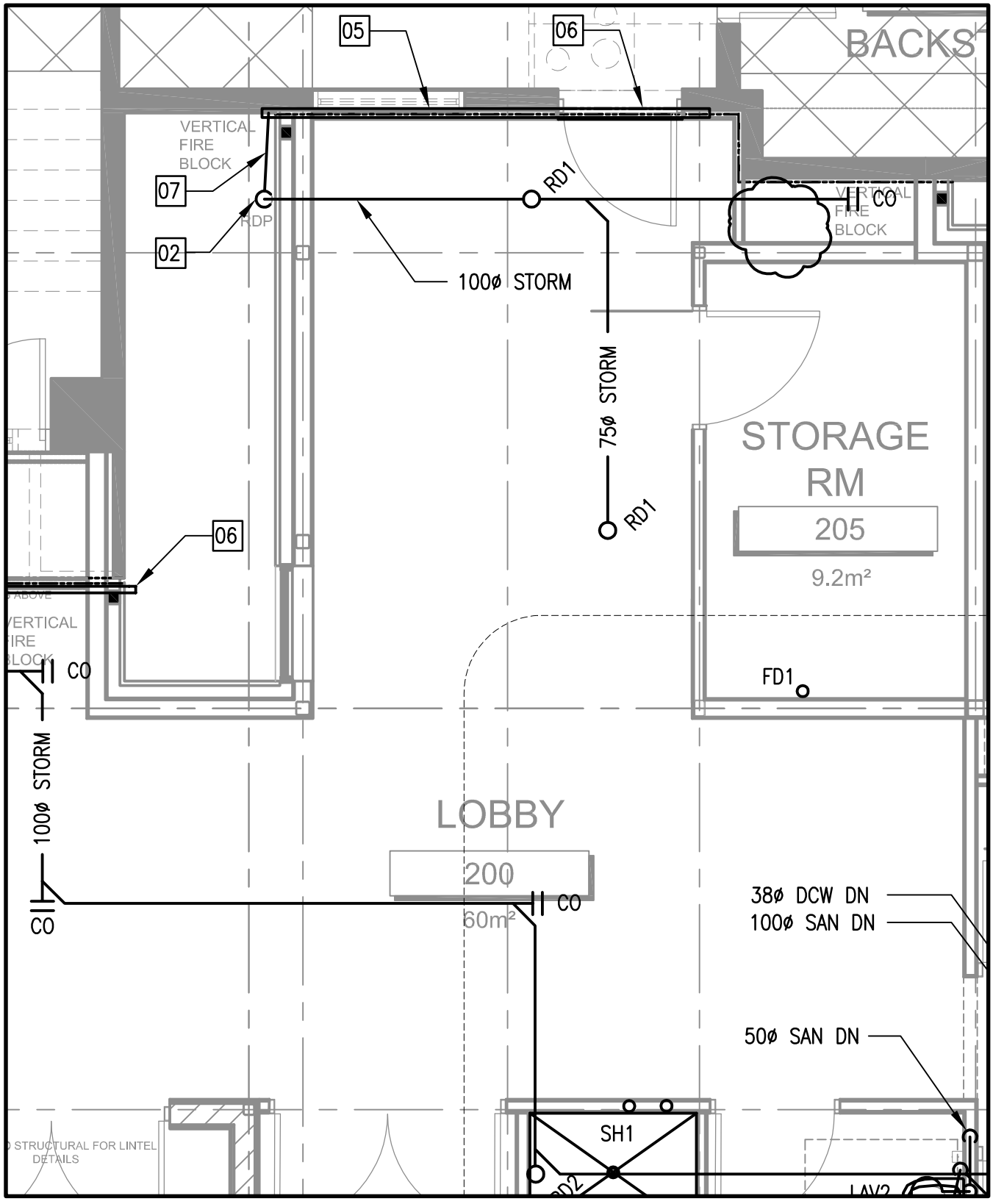
Client
CITY OF OTTAWA

Project
CONSTANCE BAY COMMUNITY CENTRE ADDITION

Drawing Title
SUMP_PIT_LOCATION
SCALE:1:75

Project No.
ECOT13-0068

Drawing No.
SKM-1



This drawing shall not be used for construction purposes until the seal appearing hereon is signed and dated by the Architect or Engineer.

This drawing has been prepared solely for the use of The City of Ottawa and there are no representations of any kind made by NORR Limited to any party with whom NORR Limited has not entered into a contract.

DATE	ISSUED FOR	REV
09/25/2014	ADDENDUM 1	01

Client
CITY OF OTTAWA

Project
CONSTANCE BAY COMMUNITY CENTRE ADDITION

Drawing Title
SUMP_PUMP_DISCHARGE
SCALE:1:50

Project No.
ECOT13-0068

Drawing No.
SKM-2

1 QUESTIONS AND ANSWERS MATRIX

This document is issued to address Requests For Information and/or clarifications received from the bidders.

1.0 Q Is the controls are a stand alone system

A Yes the controls are stand alone

1.1 Q Who wires the VAV boxes and stats?

A Division of responsibility between trades is not dictated by the mechanical drawings or specifications

1.2 Q Acoustic insulation was specified in the humidifier drain pan, Is this needed because the insulation will get wet.

A Humidifier drain pan to be externally insulated only. Please refer to Addendum 1.

1.3 Q On drawing M0-01 on detail 4/M0-01 there is a note that refers to a “150mm Storz Fitting on the outer side of the water chute”. I was told by one of my subcontractors that the fitting should be a 100mm instead of 150mm because of the code. Please Clarify.

A The water storage tank detail was created in accordance with the City of Ottawa Fire Department’s requirements and has been approved by the authority having jurisdiction.

1.4 Q Can I get some information on the existing fire alarm system? Specifications indicate it is a Edwards 6616 FA system? Drawings indicate it is a Mircom 1000 FA system? Can you please provide which fire alarm system it is and how many existing fire alarm zones there are?

A The system is a Mircom 1000 FA system. Fire alarm system modifications, information and system quote to be obtained from Murray Electronics Rick Scrivens 613-526-2810

1.5 Q In regards to Toilet Partitions, the specs are calling for "Overhead Braced" & "Ceiling hung" Model and the elevations are showing Floor Anchored. I did receive a note under section 00 01 30 calling for Bobrick series 1541 "Classic Series" (Floor anchored) - original spec is calling for 1038 - "Ceiling Hung" Trimline series. Can you please confirm what you would like me to base my quote off of.

A The toilet partitions are to be floor anchored, please refer to the list of materials 00 01 30. Specifications will be revised for “Issued for Construction”.