



**ST. CLAIR CATHOLIC**  
DISTRICT SCHOOL BOARD

*Lighting the Way ~ Rejoicing in Our Journey*

**Addendum #001**

**Request for Tender: 645-CP2006**

**Gym Roof Top Unit**

**St. Philip Catholic School**

**420 Queen Street, Petrolia, ON N0N 1R0**

**REVISED Submission Deadline and Location:**

**Wednesday, April 8, 2020**

**2:00:00 PM Local Time**

**Catholic Education Centre, Reception Desk**

**420 Creek Street, Wallaceburg**

**ISSUED: March 17, 2020**

## ADDENDUM #001

### 1. SECTION 2.1 RFT SCHEDULE

The schedule has been revised to:

For the purposes of this RFT, the Board has established the following timing deadlines for the completion of the RFT process.

Event	Date & Time
<b>Issue Date:</b>	Monday, March 2, 2020
<b>Mandatory Site Visit:</b>	Tuesday, March 10, 2020 @ 10:00 AM
<b>REVISED Last day to submit questions:</b>	Monday, March 30, 2020 @ 12:00 PM
<b>REVISED Responses to Questions Received:</b>	Wednesday, April 1, 2020
<b>REVISED Closing Date and Time:</b>	Wednesday April 8, 2020 @ 2:00:00 PM

### 2. SECTION 2.6 EXAMINATION OF SITE AND SITE VISIT

A Mandatory Site Meeting was held at St. Philip Catholic School on March 10, 2020 at 10:00 AM. At the beginning of the meeting it was emphasized that the site visit was mandatory. The Board therefore, will only accept bids from the contractors listed below.

Company	Name of Representative	Email
Postma Heating & Cooling	George Postma	<a href="mailto:george@postma.ca">george@postma.ca</a>
Ainsworth Technical	Randy Little / Scott Tupholme	<a href="mailto:randy.little@ainsworth.com">randy.little@ainsworth.com</a> / <a href="mailto:scott.tupholme@ainsworth.com">scott.tupholme@ainsworth.com</a>
Bill Hoekstra General Contracting	Andrew Clark	<a href="mailto:info@bh-gc.com">info@bh-gc.com</a>
QPS Mechanical	Chad Ewing	<a href="mailto:chad@qpsmec.com">chad@qpsmec.com</a>
Duane Vanderlinde	Linde Mechanical	<a href="mailto:duane@lindecehanical.com">duane@lindecehanical.com</a>

### 3. APPENDIX A: BIDDER'S RESPONSE GUIDE

Insert the following:

Required Bonding **must** be included in your bid submission.

### 4. APPENDIX B: BID FORM

Section B3. Cash Allowances

1. Include Stipulated Sum of Thirty Six Thousand Dollars (\$36,000.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.
  - a. Provisional Cash Allowance: \$25,000
  - b. Roofing work to complete the installation for the new RTU along with the decommission of one exhaust fan unit by the owner's vendor: \$6,000
  - c. Building systems control commissioning: \$5,000

**Revised to:**

1. Include Stipulated Sum of Thirty Six Thousand One Hundred Six Dollars (\$36,106.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.
  - a. Provisional Cash Allowance: \$25,000
  - b. Roofing work to complete the installation for the new RTU along with the decommissioning of one exhaust fan unit by the owner's vendor: \$6,106
  - c. Building systems control commissioning: \$5,000

A Revised Bid Form has been included as part of this addendum.

6. **APPENDIX C: SCOPE OF WORK AND SPECIFICATIONS**

Please refer to attached addendum issued by Chorley + Bisset Ltd. [15 Pages]

**REVISED APPENDIX B: Bid Form**

Submitted By: \_\_\_\_\_

To:

St. Clair Catholic District School Board  
645-CP2006 Gym Roof Top Unit Replacement  
St. Philip Catholic School, Petrolia

**B1. Base Bid Price**

The Drawings, Specifications and other Contract Documents for this Project have been examined, as well as the premises and job site conditions affecting the work. The undersigned hereby offers to complete the work in accordance with the Contract Documents for the following bid price, except as defined below for HST:

\_\_\_\_\_  
\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

in Canadian funds EXCLUDING HST. HST will be added to the bid price.

In submitting this Bid, the undersigned recognizes and accepts the right of the Owner to accept any Bid, which is deemed the most advantageous to the Owner, (or any part thereof), at the price submitted, or to reject any or all Bids. Acceptance of the Bid and/or award of the contract is subject to the approval of the Board. In the event that a discrepancy arises between the written bid price and the associated numerical price, the written bid price will be deemed to be correct.

**B2. Harmonized Sales Tax (HST)**

The bidder shall not include the applicable HST in the bid price. The successful contractor will indicate on each application for payment as a separate amount the appropriate HST the Owner is obliged to pay.

HST Registration # \_\_\_\_\_

**B3. Cash Allowances**

2. Include Stipulated Sum of Thirty Six Thousand One Hundred Six Dollars (\$36,106.00) to cover over the following items from which the Consultant shall direct payment for services, labour, and material.
  - a. Provisional Cash Allowance: \$25,000
  - b. Roofing work to complete the installation for the new RTU along with the decommissioning of one exhaust fan unit by the owner's vendor: \$6,106
  - c. Building systems control commissioning: \$5,000

Time and Materials rates to be applied against Cash Allowance work. Final reconciliation will adjust the cash allowance as credit to the SCCDSB for unexpended amounts and extra to the contractor for over

expenditure. The contractor shall mark-up sub-trade time and materials billing for this portion of work at 10% only.

**B4. Itemized Prices**

The following prices have been included in the Base Bid amount. The following prices, if accepted by the owner, shall include all labour, material, tools, equipment, overhead and profit, but exclude H.S.T. No other cost consideration shall be added to the contract for the scope of this work if accepted by the owner. The owner retains the right to cancel any or all of the sites for any reason.

Itemized Price #1: None at this time.

**B5. Alternate Prices**

It is accepted that the intent of alternate prices is to allow the Owner to select an alternative scope of work at a price which is declared below, and solely at the owner's discretion. All prices submitted take into consideration and allow for changes and adjustments in other work as may be necessary to provide a finished functional result, unless specifically indicated otherwise.

The following alternate prices are for work which is not included in the stipulated bid price listed on the bid form but which may be substituted by the Owner for work which is included (no price listed shall mean no change in cost) and the Owner has the right to accept or reject any or all of the prices quoted. The following prices, if accepted by the owner, shall include all labour, material, tools, equipment, overhead and profit, but exclude H.S.T. No other cost consideration shall be added to the contract for the scope of this work if accepted by the owner.

Alternate Price #1: None at this time.

**B6. Separate Prices**

It is accepted that the intent of separate prices is to allow the Owner to select a separate scope of work at a price which is declared below, and solely at the owner's discretion.

The following price has not been included in the Base Bid amount. The following prices, if accepted by the owner, shall include all labour, material, tools, equipment, overhead and profit, but exclude H.S.T. No other cost consideration shall be added to the contract for the scope of this work if accepted by the owner.

Separate Price #1: None at this time.

**B7. List of Subcontractors**

Trade: Roofing Contractor: Bullock Roofing

Trade: \_\_\_\_\_ Contractor: \_\_\_\_\_

Trade: \_\_\_\_\_ Contractor: \_\_\_\_\_

**B8. Project Superintendent / Supervisor**

The Owner requires the Contractor provide a full time site supervisor for the duration of the project. A minimum of 5 years supervisory experience is required. List proposed personnel and their experience in the table below. Supervisory experience with firms other than the Bidder is acceptable to include on the list. The Contractor shall indicate the person chosen in writing to the Owner within 5 days of contract award.

Name	Firm/Position	Qualifications/ Experience

**B9. Conflict of Interest**

I /We confirm that: (please check one)

\_\_\_\_\_ There is not nor was there any actual or perceived Conflict of Interest or any other type of unfair advantage in our submitting this Proposal or performing or observing the contractual obligations of the Contractor in the Agreement.

OR

\_\_\_\_\_ Complete with this bid submission is a declaration on company letterhead of situations which may be a Conflict of Interest or an instance of unfair advantage or appears as potentially a Conflict of Interest or unfair advantage in our company submitting this Proposal or the contractual obligations of the Contractor under the Agreement.

*Please note that the Board has the right to waive an actual or perceived conflict of interest as described in section 2.54 CONFLICT OF INTEREST.*

**B10. Agreement of Terms**

I/We hereby acknowledge and agree that I/we have read, accepted, and completed all Contract Terms and Conditions and Appendices.

I/We understand it is the SCCDSB's intention that this RFT and the successful proponent(s)'s returned RFT submission will form the basis of the proposed contract. All of the terms and conditions of this RFT must be accepted by the proponent(s) and incorporated into the proponent(s) RFT submission. It is the SCCDSB's intention to use a CCDC 2-2008 Stipulated Price Contract when establishing an Agreement with the successful proponent(s).

The undersigned acknowledges receipt of Addenda Numbers \_\_\_\_\_ through \_\_\_\_\_ inclusive, and that the price, or adjustment thereof, for all work required therein is included in this submission.



**This page must be signed below and returned with your submission for your bid to be accepted.**

I/We the undersigned are duly authorized to execute this Bid Submission on behalf of:

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_

*Please refer to Appendix A: Bidder's Response Guide to ensure you include all necessary documentation with your bid submission*

**This concludes Addendum #001.**

**Gym Rooftop Unit  
St. Philip Catholic School  
Sr. Clair Catholic District School Board  
Petrolia, Ontario**

**Chorley + Bisset Ltd.  
Consulting Engineers  
London, Ontario**

**13 March 2020**

**Page 1 of 3**

**Plus Structural Bulletin  
1, Section 16700,  
Section 16705, Section  
16710**

## **ADDENDUM NO. 1**

Make the following amendments and additions to the Drawings and Specifications, and include this cost in the Contract Price.

### **1. STRUCTURAL DRAWINGS**

1. Refer to structural bulletin 1, attached.

### **2. MECHANICAL SPECIFICATIONS**

#### **1. Section 15900 - Controls**

1. Insert Clause 3.9 (and revise subsequent numbering to suit):

#### **3.9 EXISTING ROOFTOP AIR HANDLING UNITS (TYPICAL OF 3)**

##### **3.9.1 General**

3.9.1.1 This system is a constant volume recirculating type unit which provides heating, cooling and ventilation. The unit will be off during scheduled unoccupied hours, except as required for unoccupied heating and cooling.

3.9.1.2 Provide a dedicated unitary controller for the rooftop unit. Connect to a terminal strip provided within the unit.

##### **3.9.2 Control Devices**

3.9.2.1 Provide unitary controller for rooftop unit. Provide all temperature sensors and devices required to provide control functions described below using provided interface. Connect to terminal strip within unit.

3.9.2.2 Terminals include G, W1/W2, Y1, C, R. Connect to and operate or monitor all listed terminals.



- 3.9.2.3 Provide a discharge air temperature sensor in the supply air duct. Provide return air and mixed air temperature sensors. Provide a new space temperature sensor.
- 3.9.2.4 Provide start/stop for supply and exhaust fans. Provide current sensors and monitor each fan status. Schedule ON/OFF operation of unit.
- 3.9.2.5 Connect to terminal in rooftop unit and provide analog output for cooling. Provide current sensors and monitor compressor status.
- 3.9.2.6 Connect to terminal in rooftop unit and provide analog output for heating.
- 3.9.2.7 Provide relays and other devices as required to suit operational sequences below.
- 3.9.3 **Schedule and Startup**
  - 3.9.3.1 Schedule occupied/unoccupied operation of unit and enable/disable through the terminal on the rooftop unit controller.
  - 3.9.3.2 Provide adjustable heating and cooling occupied and unoccupied temperature setpoints. Provide minimum 5F deadband between heating and cooling operation.
  - 3.9.3.3 Operate the unit continuously during occupied hours, for provision of ventilation air.
  - 3.9.3.4 During unoccupied hours, cycle the unit as required to maintain space unoccupied heating temperature setpoint.
  - 3.9.3.5 Provide adaptive optimum start/stop sequence for unit.
- 3.9.4 **Occupied Mode**
  - 3.9.4.1 Operate supply fan continuously. Modulate heating and cooling as required to maintain supply air temperature setpoint. Reset supply air temperature setpoint with space temperature as required to maintain space temperature setpoint. Minimum supply air temperature is 13C (55F). Unit will operate economizer from internal economizer control board.
- 3.9.5 Unoccupied Mode: Cycle unit with outside and exhaust air dampers closed in order to meet unoccupied heating space temperature setpoint. Mechanical cooling to be locked out during unoccupied and holiday hours.
- 3.9.6 **Safeties and Miscellaneous Controls**
  - 3.9.6.1 Shut down unit and alarm to BCS if supply air discharge temperature drops below 5°C (40°F) (adjustable) or rises above 60°C (140°F) (adjustable) .
  - 3.9.7 Graphic Display: Provide graphic display of fans and equipment internal components such as supply fans, exhaust fan, heating and cooling stages, etc. Display must include unit off/on command status, occupied/unoccupied status, supply fans status, exhaust fan status, supply air temperature, return

air temperature, outside air temperature, space temperature(s), space temperature setpoints (heating and cooling, occupied and unoccupied), stages of heating or cooling commanded on, unit general alarm status, filter change indicator status (where applicable). Display must also include a unit specific summary of how unit is controlled.

### **3. ELECTRICAL SPECIFICATIONS**

#### **1. Section 16001 - Electrical General Provisions**

1. Add the following clause:

2.5.4.2 125 volt 20 amp white U-ground Duplex Receptacle (CSA 5-20R)  
Hubbell Catalogue No. HBL-5352-W

#### **2. Section 16700 - Communications Raceways**

1. Add Section 16700 attached in its entirety.

#### **3. Section 16705 - Security and Access Control System**

1. Add Section 16705 attached in its entirety.

#### **4. Section 16710 - Voice Data Structured Cabling**

1. Add Section 16710 attached in its entirety.

### **4. ELECTRICAL DRAWINGS**

#### **1. Drawing E1 - Electrical Keyplan**

1. Add Existing Data Rack to North wall of IT RM 104A.
2. Add Existing Security System Control Panel to North wall of IT RM 104A.

**END OF ADDENDUM NO. 1**

## **Shapton Engineering Ltd**

9 Shawna Road,  
London, ON N5X 3G6

### **GYM ROOFTOP UNIT** **ST. PHILIP CATHOLIC SCHOOL,** **PETROLIA, ON**

**SE File # 19-125**

**March 12, 2020**

## **STRUCTURAL BULLETIN NO. 1**

### **Structural Drawings:**

- .1 Fill in the existing roof opening left by the removal of the gym exhaust fan with new 10 gauge plate. Provide a new C200X17 at midspan of roof opening to support new 10 gauge plate. Field weld new C200 to existing steel roof opening frame. Fasten new 10 gauge plate to existing roof deck and new channel with metal screws at 200 centers.
- .2 All new steel to be finished painted to match existing. This includes the new steel supporting the new rooftop mechanical unit, new lintels, and all field welds.

**END OF STRUCTURAL BULLETIN No. 1**

1 General

## 1.1 GENERAL REQUIREMENTS

1.1.1 The requirements of the Instructions to Bidders, the Contract Forms, the General Conditions as amended, and the Supplementary General Conditions as hereinbefore written will form a part of the following Specifications and the Contractor will consult them in detail for instructions governing the work.

1.1.2 Conform to the requirements of Section 16001, "Electrical General Provisions".

## 1.2 REFERENCES

ANSI/EIA/TIA-569B -Commercial Building Standard for Telecommunications Pathways and Spaces

## 1.3 DESCRIPTION OF SYSTEMS

1.3.1 **Data Communication System:** Provide a system of empty conduits and boxes, outlets and wiring, as indicated on Drawings. All conduits are to be complete with nylon fishwire. Refer to Section 16710 for cabling details.

1.3.2 **Security System:** Provide a system of empty conduits and boxes, outlets and wiring, as indicated on Drawings. All conduits are to be complete with nylon fishwire. Refer to Section 16705 for cabling details.

2 Products

## 2.1 MATERIALS

2.1.1 Use materials specified herein or approved equal.

## 2.2 COMMUNICATION/SECURITY/ACCESS CONTROL SYSTEM CONDUIT

2.2.1 Cables shall generally be installed in communication trays or conduit. All new conduit shall be thin wall EMT, sized for the cables required plus an additional 50% for future cables. Minimum conduit size shall be 3/4".

2.2.2 In general, the following table shall be used for communication conduit fill:

Conduit Size	3/4" 21mm	1" 27mm	1-1/4" 35mm	1-1/2" 41mm	2" 53mm	2-1/2" 63mm	3" 78mm
<b>Max UTP</b>	2	3	6	7	14	17	20
<b>Max Coax</b>	2	4	6	9	17	26	38

2.2.3 Cables shall NOT be attached to pipe or conduit or ductwork, etc.

2.2.4 Conduit ends shall be provided with non-metallic bushings to provide a round edge, which will not abrade the cable jacket.

2.2.5 **Telephone/Data:** Provide single gang device wall boxes, complete with 21 mm

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(3/4") conduit **up to the cable tray or J hook system**. Provide pull boxes and splice boxes as indicated, for every 30 m (100') of conduit, and more than two 90° bends or equivalent.

2.2.5.1 Stainless Steel faceplates specified in Section 16710 do not fit in all device boxes. Confirm compatibility with Data contractor prior to rough-in.

2.2.6 **Security/Access Control System:** Provide single gang device wall boxes, complete with 16 mm (3/4") conduit **up to the cable tray or J hook system**. Provide pull boxes and splice boxes as indicated, for every 30 m (100') of conduit, and more than two 90° bends or equivalent. All conduits to have pull strings from device wall boxes to cable tray.

2.2.7 PVC conduit is not allowed inside and will be removed at the contractor's expense.

3 Execution

### 3.1 COMMUNICATION/SECURITY/ACCESS CONTROL SYSTEM CONDUIT

3.1.1 Provide 20 mm (3/4") conduit except as noted, from each wall outlet to accessible ceiling space. **Ensure end of conduit is fully accessible for cabling installers.**

3.1.2 Provide all conduits, outlet boxes and wiring for a complete system. Minimum size conduit to be 21 mm (3/4"), except where noted.

3.1.3 Where possible, run all conduit in the ceiling space and conceal all conduit within ceiling spaces, walls or partitions. Mount outlets at the same elevation above finished floor level as duplex receptacles or as noted on the floor plans.

3.1.4 Rigidly install all conduits, adequately supported and properly reamed at both ends. Join sections of conduits by approved couplings and conduit terminations at boxes, pull boxes, etc. using approved fittings.

3.1.5 The inside radius of bends not to be less than: Six times the internal diameter of conduits 50mm (2") and smaller.

3.1.6 Install conduits and boxes as per TIA/EIA-569-A.

3.1.7 Minimum size of pull boxes and splice boxes to be sized as per conduits and Tables 5, 2-2 and 5, 2-3 in TIA/EIA-569-A.

3.1.8 Conduits shall be grounded minimum at one end.

3.1.9 Conduit fill capacity shall not exceed 35%.

3.1.10 Cables and raceway shall maintain minimum 150mm (6") separation from sources of heat such as steam or hot water pipes, vessels and fittings, which are insulated, and minimum 610mm (24") from the same, which are uninsulated.

3.1.11 Pull wires must be provided in all conduits.

**END OF SECTION**

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- 1 General
- 1.1 **GENERAL REQUIREMENTS**
- 1.1.1 Conform to the requirements of Section 16001, "Electrical General Provisions".
- 1.1.2 Products will comply with the latest edition of the following Standards:
- CAN/ULC-S302-M91, Installation and Classification of Burglar Alarm Systems for Financial and Commercial Premises, Safes and Vaults  
CAN/ULC-S303-M91, Local Burglar Alarm Units and Systems  
CAN/ULC-S306-03, Intrusion Detection Units  
CAN/ULC-S319-05, Electronic Access Control Systems  
CAN/ULC-S525-99, Audible Signal Appliances
- 1.2 **DESCRIPTION OF SYSTEMS**
- 1.2.1 **Security System**
- 1.2.1.1 Supply and install all equipment and accessories to extend the existing security system by Damar as described herein and as shown on plans.
- 1.3 **SUBMITTALS**
- 1.3.1 Submit Shop Drawings in accordance with the General Conditions of the Contract and as specified in this Section.
- 1.3.2 Provide a written description of the proposed system configuration augmented with block diagrams identifying the location of all system components and associated cable routings.
- 1.3.3 Provide lists of all off-the-shelf and custom equipment, including equipment quantities.
- 1.3.4 Provide the mechanical, electrical and environmental specifications for all listed equipment and cable.
- 1.3.5 Provide an overview of any equipment installation techniques which may deviate from the standards contained in this Section. Expose all such installation techniques for prior approval by the Consultant.
- 1.4 **SPRINKLER SHIELDS**
- 1.4.1 This building will be fully sprinklered. All surface mounted panels and enclosures will include sprinkler shields. Ensure all conduit and fittings in sprinklered areas meet the requirements outlined in 16001 clause "Sprinkler Proof Equipment"
- 2 Products
- 2.1 **MATERIALS**
- 2.1.1 Use materials specified herein or approved equal.
- 2.1.2 Conductors in inaccessible ceiling spaces and partitions are to be installed in

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electrical metallic tubing in accordance with Specification Section 16700.

2.1.3 Conceal all wiring above finished suspended ceilings, except where otherwise noted.

2.1.4 Outlet boxes are to be code gauge, galvanized steel, of a depth necessary to accommodate the number of wires and the device contained therein.

## 2.2 SECURITY SYSTEM

2.2.1 Existing Security System Control Panel is by Damar.

2.2.2 Consult with security system manufacturer to determine accessories and wiring diagrams required to extend the existing security system. Extras will not be granted for failure to consult with security system manufacturer.

### 2.2.3 Wiring

2.2.3.1 All wiring to be a minimum 22 gauge four conductor, CMP rated, as per manufacturer's recommendations.

2.2.4 The following manufacturers of the above equipment will be considered equal subject to requirements of Clause "Material and Equipment":

Damar

## 3 Execution

### 3.1 GENERAL INSTALLATION

3.1.1 Provide all necessary wiring, conduits, outlet boxes and devices for a complete system. Conceal all wiring.

3.1.2 Install all wiring to manufacturer's recommendations. Conceal all conduit within ceiling spaces, walls or partitions, where possible.

3.1.3 Submit complete detailed wiring diagrams with description of system upon completion as per Section 16100. Provide all required instructional support to permit correct use of system by staff members.

3.1.4 Included in Base Bid for manufacturers representative to spend four hours on site for training Owner's Staff on the operations, maintenance and setup of the access control system. Notify Consultant seven days in advance of scheduled training.

### 3.1.5 Operation

#### 3.1.5.1 Building Automation System Integration

3.1.5.1.1 Interface security system with building automation system. Security contractor to program new zones to match existing BAS zones and confirm naming and quantity with Owner prior to commissioning. Controls Contractor to provide contact closures at the security panel for each alarm point.

3.1.5.1.2 Provide independent alarm points for the following:

- 
- Loop Pump
  - Tower Temp
  - Low Space
  - Low Header
  - Phase Loss

### 3.2 VERIFICATION AND COMMISSIONING

- 3.2.1 Verify system and all connected components operation, and provide written Certificate of Verification.
- 3.2.2 Notify Owner and Consultant minimum seven days in advance of scheduled verification.
- 3.2.3 Provide all necessary tools, ladders and equipment.
- 3.2.4 Ensure appropriate subcontractors, and manufacturer's representatives and security specialists are present for verification.
- 3.2.5 Visual verification: Objective is to assess quality of installation and assembly and overall appearance to ensure compliance with Contract Documents. Visual inspection to include:
  - 3.2.5.1 Sturdiness of equipment fastening.
  - 3.2.5.2 Non-existence of installation related damages.
  - 3.2.5.3 Compliance of device locations with drawings and reviewed shop drawings.
  - 3.2.5.4 Compatibility of equipment installation with physical environment.
  - 3.2.5.5 Inclusion of all accessories.
  - 3.2.5.6 Device and cabling identification.
  - 3.2.5.7 Application and location of ULC approval decals.
- 3.2.6 Technical verification: Purpose to ensure that all systems and devices are properly installed and free of defects and damage. Technical verification includes:
  - 3.2.6.1 Measurements of coverage patterns
  - 3.2.6.2 Connecting joints and equipment fastening.
  - 3.2.6.3 Compliance with manufacturer's specification, product literature and installation instructions.
- 3.2.7 Operational verification: Purpose to ensure that devices and systems' performance meet or exceed established functional requirements. Operational verification includes:
  - 3.2.7.1 Operation of each device individually and within its environment.
  - 3.2.7.2 Operation of each device in relation with programmable schedule and or/specific



functions.

### 3.3 ACCESSORIES

- 3.3.1 Turn accessories (reference cards, proximity cards, etc.) over to Owner at end of construction. Provide signed letter from Owner listing items and quantities of accessories confirming receipt, and include in electrical manuals.

**END OF SECTION**

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- 1 General
- 1.1 **CERTIFIED SYSTEM VENDOR**
- 1.1.1 Data Communications work as specified will be the responsibility of the Contractor and equipment Vendor to:
- 1.1.1.1 Provide a minimum 15 year complete system performance warranty.
- 1.1.1.2 Provide a certified CAT 6 compliant wiring system compliant wiring system for based on contract documents.
- 1.1.1.3 Perform the pulling of all voice and data system cables.
- 1.1.1.4 **ONLY** qualified technicians directly employed by the Contractor and Vendor trained technicians will terminate all cables (at both ends), test and perform cross-connects.
- 1.1.1.5 After completion, provide testing as per ANSI/EIA/TIA-568A Addendum 5 on all cable runs, and documentation of test results.
- 1.1.1.6 Provide and install equipment as specified herein.
- 1.1.1.7 Provide documentation of the installation.
- 1.1.1.8 Provide System Vendor Letter of Certification/Warranty upon completion of job, which will include the notification of a CAT 6 compliant performance level, the Certification/Warranty Number, the identification of the installation by the location and installation date.
- 1.1.2 Approved Certified System Vendors are required to provide a complete voice/data system including all cables, fibre optic cables, patch cable, outlet jacks, patch panels, fibre patch panels which meet compliance requirements.
- 1.1.3 The Contractor's technicians are to have extensive training by the Certified System Vendor on the installation, terminations, testing and verification of the Vendors complete CAT6 system.
- 1.1.4 The following manufacturers are considered as equal, subject to the requirements of Clause "Material and Equipment":
- CAT 6: Hubbell or AMP
- 1.2 **PREAPPROVED CONTRACTORS**
- 1.2.1 AMP or Hubbell Certified System Vendors
- 1.3 **SUBMITTALS**
- 1.3.1 **Shop Drawings**
- 1.3.1.1 Supply Shop Drawings in accordance with Section 16001 "Electrical General provisions". Do work in accordance with reviewed Shop Drawings.
- 1.3.1.2 Submit complete cabling system layout for voice and data, cable routing summary

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and cable outlet designations.

- 1.3.1.3 All cabling to be CMP rated.
- 1.3.1.4 Submit detailed layout drawings for termination racks.
- 1.3.1.5 Manufacturer's data on all devices, cables, patch panel, etc.
- 1.3.1.6 Detail exact location of equipment indicating wiring raceways, pull, junction and terminal boxes.

## 2 Products

### 2.1 HORIZONTAL DISTRIBUTION SYSTEM

- 2.1.1 The Horizontal Distribution System delivers connectivity from the Patch panel in the LAN Room to the work area. Four pair CAT6 UTP CMP rated cables will be used for this purpose.
- 2.1.2 Horizontal cabling will be terminated within the LAN Room and at the Telecommunications outlet, using the products specified herein. Quantities must be determined by the cable system installer after review of the Drawings.
- 2.1.3 Horizontal cabling for phones located in the school will be terminated on a dedicated patch panel in each LAN room.
- 2.1.4 Provide horizontal cabling for analog phone outlets as shown on the drawings. Terminate on 110 punch down block located in LAN Rooms.

### 2.2 RACEWAY

- 2.2.1 Refer to Section 16700 for raceway details.

### 2.3 SYSTEM COMPONENTS

- 2.3.1 **Jacks:** Provide suitable Cat 6 components to form an installed system.

#### 2.3.1.1 Jack Colours

**DATA:** White

**Smart Board Link:** Orange

**Phone:** Black

- 2.3.1.2 Provide stainless steel flush mounted plates with label designations. Semtron FM-0E-AMP-LAB Series.

- 2.3.2 **Voice and Data Cable:** Provide cable solution to meet certification.

#### 2.3.3 Patch Panels

- 2.3.3.1 ALL Patch Panels used must be of the same brand as the Cable and Modular Jack used. Patch panels must be installed in a specified location in a wall mounted rack or a wall bracket as required.

2.3.3.2 Patch panels must provide 24 or 48 ports, according to need and be wired to T568A. Patch panels must be augmented with horizontal management panels (front) and rear cable support, to properly dress, terminate and manage the installed cables and provided patch cords. **All cabling is to be terminated in numerical order according to the School's room number system. (Example: 100, 101, 101A, 101B, 102-1, 102-2, 103...).** The front of each module must be capable of accepting 9 mm to 12 mm labels. Patch panels must be UL Listed and CSA certified.

2.3.4 Provide minimum 25% spare capacity on all new patch panels.

2.3.5 Provide dedicated patch panels for VOIP telephone outlets.

### 2.3.6 **Patch Cables**

2.3.6.1 All patch cables supplied must be of the same brand as the terminations and horizontal cable used. Patch Cords used at the telecommunication rack and at the workstation must be prefabricated stranded Cat 6, 24 AWG, 4 pair assemblies.

2.3.6.2 In the wiring closet, 6' patch cords must be provided to cross-connect between the patch panels and network equipment. One patch cord per terminated outlet is to be provided. Six foot patch cords are to be labelled with Brady style numbers on both ends corresponding to the patch panel port number for which the cable is intended. As well, each workspace outlet to include one 10' Cat 6 patch cord.

3 Execution

## 3.1 **INSTALLATION**

3.1.1 The Contractor will supply, install, test, document and certify the cable system according to this specification and must comply with able plant installation and termination procedures as specified in the CSA T529-95 Standard for horizontal and backbone copper and fibre-optic cabling systems as well as the manufacturer's CSV cable installation practices.

3.1.2 The Contractor will correct deficiencies at no cost to the Owner.

3.1.3 Base Wiring includes:

1. Cable
2. Jacks/Patch Panel
3. Distribution and Termination
4. Testing and Labelling
5. Patch Cables

## 3.2 **IMPLEMENTATION**

### 3.2.1 **Horizontal Cabling and Termination**

3.2.1.1 Within the LAN Room, horizontal cable terminations and rack installation will be as per Drawing Details and SCCDSB specifications.

3.2.1.2 **Horizontal cabling** will be terminated on Patch panels, mounted in 19" standard racks within the LAN Room. Provide one dedicated data cable per telecommunications outlet (or as specified on Drawings). Horizontal data cable

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- length to the farthest outlet will not exceed 90 m (295') as specified in CAN/CSA-T529. All Data cabling is to be Category 6 CMP. CMR cable will not be permitted.
- 3.2.1.3 Provide sufficient vertical and horizontal wire managers on the rack for Patch Cord management.
- 3.2.1.4 Unused ports on faceplates will be filled with the appropriate blank insert.
- 3.2.1.5 Each 4 pair cable to be terminated in an eight position module. Data pin/pair assignment must meet T568A Standard.
- 3.2.1.6 All cable runs will be completed without splices.
- 3.2.2 Support cables using cable clamps or wiring harnesses. Utilize cable trays and/or cable hanger to manage cable in orderly fashion.
- 3.2.3 Route all cable in such a way as to ensure maximum separations from sources of EMI as defined in CAN/CSA T529. Do not run cables above light fixtures, motors, speakers, air diffusers or similar locations.
- 3.2.4 Designate all data and voice outlets as per Drawings and Specifications.
- 3.2.5 Place all exposed cabling in a neat and professional manner and route as per Specifications and Drawings. Comb and/or route cabling in such manner as to ensure bundled cabling is neat and parallel to other cables in bundle. Tie-wrap all exposed cable bundles at maximum of every 200 mm (8").
- 3.2.6 Securely mount data and voice outlets at all work area locations using screws as opposed to self adhesive strips.
- 3.3 **LABELLING**
- 3.3.1 Labelling must conform to these following SCCDSB Standards:
- 3.3.1.1 Brady type labelling within 6" of each end of the horizontal cable to be used to indicate room number behind the patch panel. Brady type labelling within 6" of end of the horizontal cable to be used to indicate patch port number inside the receptacle box.
- 3.3.1.2 Labelling on the front coverplate of the outlet must be as follows: the word "DATA" and "PHONE" in capital letters, patch panel port number and closet number if more than one closet exists in the building.
- 3.3.1.3 Labelling on the label area of the patch panel using manufacturer supplied labelling material must indicate the room number and number of the drop within that room, if there is more than one.
- 3.3.1.4 All other labelling is to be done using mechanically printed labels on permanent self adhesive white labels with minimum 3/16" height.

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**3.4 TESTING**

- 3.4.1 All cables will be tested as per ANSI/EIA/TIA-568B. All test records will be completed by the CSV. All test instrumentation, test records, and labour required for the testing will be supplied by the CSV/Contractor.
- 3.4.2 All cable faults will be corrected by the CSV/Contractor at no cost to the Owner. Splicing of cable pairs is not permitted for the repair of any cables. If a cable is found to be defective, it must be replaced.
- 3.4.3 Provide test result documentation within two weeks of completion of cable installation.
- 3.4.4 Inform Consultant 10 working days before testing is carried out so that the Consultant can witness all tests. Rectify wiring deficiencies immediately.
- 3.4.5 Carry out testing only after installation and termination/labelling of communications cabling at; floor tiles, surface-mounted telecommunications outlets, wall-mounted telecommunications outlets after substantial completion.
- 3.4.6 All test results will be verified by SCCDSB IT staff prior to invoicing.
- 3.4.7 The completed installation will be inspected by SCCDSB IT staff prior to invoicing.

**3.5 DOCUMENTATION**

- 3.5.1 Provide complete documentation of the installation and testing.
- 3.5.2 Provide Vendor Certification upon completion of cable installation.
- 3.5.3 Provide records and AutoCAD Drawings complete with all jack locations and numbers (voice and data).
- 3.5.4 All documentation will be verified by SCCDSB IT staff prior to invoicing.

**END OF SECTION**