SPECIFICATION

FOR

Security Upgrades

Hillsborough Hospital

Charlottetown, Queens County, PEI

Project 2625-16103

Prepared by:

PEI Department of Transportation, Infrastructure and Energy

May, 2017

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1. GENERAL

   a) All bidders submitting tenders for this work shall first examine the site and all conditions thereon and/or therein. All tenders shall take into consideration all such conditions as may affect the work under this contract, no claims for extras resulting from conditions existing at the time of tender will be accepted by the Owner.

2. SITE VISIT

   a) **There will be a recommended site visit held, Thursday, May 25, 2017 at 9:30am. Contractors are asked to meet outside the main entrance of the building.**

END

Sealed tenders will be received at the Public Works and Planning Division of the Department of Transportation, Infrastructure and Energy, 3rd Floor Jones Building, 11 Kent Street, Charlottetown, PE until **2 PM, Local Time, on Thursday, June 8, 2017.** Tenders are to be clearly marked to indicate the project being tendered on.

Security Upgrades – Hillsborough Hospital
Charlottetown, Queens County, PE

Scope of Work: Various upgrades to the security infrastructure at the Hillsborough Hospital including, but not necessarily limited to:

1. Architectural upgrades, including additional security hardware on a number of selected doors (interior and exterior); upgrade of existing Reception Office to Security Office; upgrade of existing WR in Unit 3 to secure WR type; and miscellaneous related upgrades within the facility.
2. Mechanical upgrades, including new fixtures and related work for enhanced secure Unit 3 WR.
3. Electrical upgrades including the provision for new facility-wide security camera (interior and exterior) and alarm system; upgraded electrical hardware and contacts on selected doors; upgrades to select electrical panels; various related electrical work throughout the facility; running of conduit and wiring in support of the above-noted.

Drawings and Specifications may be obtained from the Department of Transportation, Infrastructure and Energy, 3rd Floor Jones Building, 11 Kent Street, Charlottetown, PE, on a cheque deposit of $100.00 (refundable if documents are returned in good condition within 14 days from date of Tender Closing) made out to Minister of Finance, Province of PEI.

Drawings and Specifications are available for viewing at the Construction Association offices in Charlottetown, Moncton, Saint John, Fredericton and Halifax.

Refer to Instructions to Bidders for Bid Security and Contract Security requirements.

Tenders will be opened at the above advertised time and place and Bidders are invited to be present at the opening. Lowest or any Tender will not necessarily be accepted.

Any additional information can be obtained by contacting **Philip Jefferson**, at 902-368-4999 or fax 902-569-0590.

END

1. GENERAL

   a) The Tender Documents including General conditions of Contract, the Instructions to Tenderers, Specifications, Tender Form and Drawings are all complementary and shall be read together.

   b) Each Tenderer shall examine the Tender Documents as soon as possible after receipt thereof and should he or she discover any errors or omissions therein, he or she shall notify the Department as soon as possible and at least seven (7) days prior to the date set for receiving tenders so that further instructions and/or drawings may be issued to all Tenderers before the date set for receiving tenders.

2. ADDENDA

   a) Tenders may, during the tendering period, be advised by addenda of required additions to, deletions from, or alterations to the requirements of the tender documents. All such changes shall become an integral part of the Tender Documents and shall be allowed for in arriving at the fixed sum tender figure.

3. BID AND CONTRACT SECURITY

   BID SECURITY

   a) Each Tender submitted shall be accompanied by the following security:

      .1 General Contract Tender less than or equal to Three Million ($3,000,000.00) Dollars, including mechanical and electrical subcontract values:

         A Bid Bond equal to at least ten percent (10%) of the Tender amount and a Letter of Surety from a bonding company guaranteeing to supply a Performance Bond in the amount of fifty percent (50%) of the total contract amount.

         OR

         A Security Deposit equal to at least ten percent (10%) of the Tender amount.

      .2 General Contract Tender more than Three Million ($3,000,000.00) Dollars, including mechanical and electrical subcontract values:

         A Bid Bond equal to at least ten percent (10%) of the Tender amount and a Letter of Surety from a bonding company guaranteeing to supply a Performance Bond in the amount of fifty

percent (50%) of the total contract amount and a Labour and Material Payment Bond in the amount of fifty percent (50%) of the total contract amount.

b) .1 All Bonds and Letter of Surety, provided by General Contractors, made payable to the Owner.

.2 Bonds and Letters of Surety supplied by the General Contractor to the Owner shall be from a recognized surety company, satisfactory to, and approved by the Owner.

c) .1 Security Deposits, provided by General Contractors, must be in the form of a Certified Cheque or Bank Draft drawn on a Bank to which the Bank Act applies or a Credit Union, payable to Minister of Finance, Province of Prince Edward Island.

OR

.2 Bond of the Government of Canada, unconditionally guaranteed, as to the principal and interest by the Government of Canada if such Bonds are:

(a) Payable to the bearer, or

(b) Accompanied by a duly executed instrument of transfer to the Owner, in the form prescribed by the Domestic Bonds of Canada Regulations, or

(c) Negotiated as to principal or as to principal and interest in the name of the Owner, pursuant to the Domestic Bonds of Canada Regulations.

d) Security deposits submitted through the Bid Depository shall be accompanied by the Bid Security. The subcontractors shall advise General Contractors what form of bid security is being used and what form of contract security will be used.

CONTRACT SECURITY

a) Upon award of a contract the Contractor is to provide the following contract security:

.1 <u>General Contract Tender less than or equal to Three Million ($3,000,000.00) Dollars, including mechanical and electrical subcontract values:</u>

A Performance Bond in the amount of fifty percent (50%) of the contract amount.

OR

A Security Deposit in an amount equal to at least ten percent (10%) of the contract amount.

.2 General Contract Tender more than Three Million ($3,000,000.00) Dollars, including mechanical and electrical subcontract values:

A Performance Bond and a Labour and Materials Payment Bond, each in the amount of fifty percent (50%) of the contract amount.

b) .1 All bonds, provided by General Contractors, are to be made payable to the Owner.

.2 Bonds shall be from a recognized surety company, satisfactory, and approved by the Owner.

.3 If a Performance Bond is utilized, it shall be maintained in force for a period of not less than twelve (12) months after the issuance of the total Performance Certificate.

c) .1 Security Deposits, provided by General Contractors, must be in the form of a Certified Cheque or Bank Draft drawn on a Bank to which the Bank Act applies or a Credit Union, payable to Minister of Finance, Province of Prince Edward Island.

OR

.2 Bonds of the Government of Canada, unconditionally guaranteed, as to the principal and interest by the Government of Canada if such Bonds are:

(a) Payable to the bearer, or

(b) Accompanied by a duly executed instrument of transfer to the Owner, in the form prescribed by the Domestic Bonds of Canada Regulations, or

(c) Negotiated as to principal or as to principal and interest in the name of the Owner pursuant to the Domestic Bonds of Canada Regulations.

(d) Contract security shall be provided at the expense of the Contractor, bonds shall be provided by an established surety company satisfactory to, and approved by the Owner. Certified Cheques or Bank Drafts shall be drawn on an account with a recognized financial institution.

(e) Contract security submitted by subcontractors, to General Contractors, shall be in a form satisfactory to the General Contractor.

4. CONSTRUCTION SCHEDULE

a) Work cannot begin prior to **June 12, 2017**.

b) The completion date for this project shall be **September 30, 2017**.

c) Contractor to provide a detailed critical path construction schedule, safety policy and proof of insurance prior to starting work.

5. MATERIALS AND EQUALS

a) Materials, plant and equipment are described and named specifically in the Specifications ONLY to describe types and qualities of materials, plant and equipment required.

b) Suppliers or manufacturers wishing to have their material, plant or equipment approved as an equal shall submit complete technical information to the Consultant seven (7) days prior to the receipt of tenders. The Consultant shall review the material submitted and notify all prospective bidders of any materials, plant or equipment that have been accepted as equal.

c) All bidders submitting a tender shall include in their tender amount only materials, plant or equipment as specified or that have been approved as an equal.

6. ALTERNATE PRODUCTS

a) Approval may be given by the Consultant after the award of the Contract, on application in writing from the contractor, for the substitution of a similar material, item or plant or equipment bearing another brand name or of other manufacture, subject to the following:

.1 Any top quality material or item of plant and equipment proposed as a substitute by the Contractor and considered by the Engineer to be of equal quality, value and price to that specified and suitable for the purpose intended, may be accepted as a substitute.

.2 Materials and items of plant and equipment which the Contractor proposes as substitutes and which are considered by the Engineer to be suitable for the purpose intended, but which are in his or her opinion of lesser value, quality and price than those specified will only be accepted as substitutes if reasonable credits are allowed for their use.

.3 Requests for alternates must be made by the Contractor well in advance of the time the item is to be ordered. The request shall be accompanied by sufficient information in the form of manufacturer's literature, samples, and other data to permit proper investigation of the substitutes proposed.

b) Bidders are requested to include information on alternates as an appendix to this tender. The information should indicate the proposed credit or extra, to the tender amount, and include sufficient data to allow the Consultant to evaluate the item proposed as an alternate.

7. SUPERVISION AND COORDINATION

a) The Contractor shall be responsible for supervising and coordinating all aspects of the work.

b) The Contractor shall include in his or her quotation all cost relative to supervising sub-contractors, including those submitting tenders directly to the Owner, which form a portion of the complete project and shall be assigned to the successful General Contractor.

8. RESPONSIBILITY

a) The Contractor shall be responsible to be fully familiar with the complete documents and shall include in his or her tender those items which are named, implied, or traditionally a part of the general contract work.

9. DEFINITIONS

In this specification the following terms shall have the definitions noted below:

OWNER:	Government of Prince Edward Island, as represented by the Department of Transportation, Infrastructure & Energy
CONSULTANT:	PEI Dept. of Transportation, Infrastructure and Energy

10. SITE INSPECTOR

a) There will be an Inspector representing the Department of Transportation, Infrastructure and Energy, Province of PEI. No work is to be covered without having received approval from the Inspector. The Inspector will have the authority to cause any part of the work to cease, should, in his or her opinion, there be a cause to do so.

This work shall be examined by the Department and approval granted to resume when a satisfactory solution has been found.

b) The inspector does not have authority to authorize changes to work. He or she shall confer with the Consultant or Engineer who, if necessary will authorize any change.

c) The fact that the inspector does not reject any work shall not remove the responsibility for completing all work as specified; from the Contractor.

11. OWNER'S RIGHT TO TERMINATE CONTRACT

a) The owner reserves the right to remove the contractor from the site if the work is not completed as specified in Paragraph 4. If the contractor is removed, the Owner shall have the work completed and deduct the cost of this work from the amount owing the contractor and his or her bid deposit.

12. SUB-CONTRACTORS

a) The bidder shall include with his or her tender, in the space designated for that purpose, the names of each Sub-Contractor included in his or her tender, reserving however, the right to substitute other Sub-Contractors for any trade in the event that the listed sub-contractor declares bankruptcy after the date of close of the tenders. Any such substitution shall be subject to the approval of the Owner and contingent on evidence of bankruptcy satisfactory to the Owner.

b) "OWN FORCES" is acceptable only where the bidder can demonstrate that he or she has the resources to carry out the work so designated. Bidders are required, if so requested, to provide information relevant to experience and personnel which will demonstrate to the satisfaction of the Owner that a Sub-Contractor is qualified to perform the work of a particular sub-contract.

c) All Sub-Contractors are advised to become familiar with all Specifications and Drawings. The General Contractor shall ensure that all sub-trades understand their entire responsibilities in order to complete the project. Sub-trade work may appear in various sections of Specifications and on various drawings.

13. GUARANTEES

a) The Contractor shall be required to guarantee the work of this Contract for a period of twelve (12) months after the Owner's acceptance of the work, against improper or defective materials and workmanship, and shall repair and make good at his or her own expense any damage to the building and contents through any of the above causes during this period. Any contract omissions and/or deficiencies reported to the Contractor within twelve (12) months after acceptance of the work shall be made good by the Contractor at his or her own expense.

b) Notwithstanding the above, the bidder's attention is directed to the fact that certain individual items on this project may be required to be guaranteed by the manufacturer for periods in excess of twelve (12) months. These specific requirements are to be found in various sections of the Specifications for this project.

14. REJECTION OF TENDERS

a) The Owner reserves the right to reject any and all tenders.

15. CONSULTANT'S INTERPRETATION

a) The Consultant's interpretation of plans and specifications shall be final. Should the Contractor have any doubt as to interpretation, he or she shall refer to the Consultant for clarification before submitting his or her tender. No allowances or extras will be made for misinterpretation of plans and specifications by the Contractor.

16. PERMITS, REGULATIONS AND TAXES

a) All permits and fees required for the proper completion and inspection of the work herein specified will be paid for by the Contractor. All applicable taxes shall be included in the tender price, excluding the Harmonized Sales Tax. The Contractor, as per current Provincial Regulations, shall include on all invoices the Harmonized Sales Tax as an additional line item. This would be in addition to the tender amount which does not include HST.

b) The work shall be completed to the satisfaction of the Consultant and local inspecting authorities.

c) In the absence of any provisions contained herein, the applicable Provincial Codes or the National Building Code shall govern in that order.

d) The latest edition of the Canadian Electrical Code shall govern all Electrical work, whether prewired and/or assembled remote from the site or not.

e) All equipment supplied or installed shall be CSA approved for the intended use.

f) All materials, components and equipment as well as construction methods shall comply with the latest edition of the National Building Code and all other applicable codes or regulations.

g) The latest edition of the PEI Occupational Health and Safety Act and Regulations shall govern safe construction practices.

17. EXISTING CONDITIONS

a) Bidders will be held to have examined the Tender Documents, to have visited the site and to have informed themselves as to existing conditions and limitations.

b) If in the performance of the contract, subsurface or latent conditions at the site are found to be materially different from those indicated by the drawings and specifications, or unknown conditions not usually inherent in work of the character shown and specified, the attention of the Consultant shall be called immediately in writing to such conditions before they are disturbed. Upon such notice, or upon his or her own observation of such conditions, the Consultant shall promptly make such changes in the drawings and specifications as he or she finds necessary to conform to the different conditions and any increase or decrease in the cost shall be adjusted as provided under "Changes in the Work".

18. RECEIPT AND OPENING OF TENDERS

a) Tenders will be opened at the time and place stated in the tender call. The officer whose duty it is to open them will decide when the specified time has arrived. No responsibility will attach to any officer for the premature opening of a bid not properly addressed and identified.

19. AWARD OF CONTRACT

a) If the tender is accepted the Contract will be awarded as promptly after the opening of bids as is possible. The selection of the tender that is accepted shall be at the sole discretion of the Owner.

b) Each bidder shall be prepared, if so requested by the Owner, to present evidence of his or her experience, qualifications and financial ability to carry out the terms of the contract.

20. TENDER SUBMISSION

a) Tenders must be submitted on the form included with this specification. This form must be completely filled out in ink, or be typewritten with the signature in longhand. The completed forms shall be without interlineation, alteration or erasures.

b) The tender, together with the Tender Security described in this section must be addressed and delivered in a sealed envelope marked "Tender" and bearing the name of the Contractor submitting the tender, together with identification indicating the name of the project.

c) Tenders will be received at the place and time indicated in the tender call. Late tenders will not be accepted and will be returned unopened to the tenderer.

d) Amendments to the submitted offer will be permitted if received in writing prior to Tender closing and if endorsed by the same party or parties who signed and sealed the offer.

Amendments submitted by fax will be accepted, if received prior to tender closing. (Fax (902) 569-0590).

e) The receipt of addenda for the project shall be acknowledged by filling in the addendum number and date of issue for each addendum on the appropriate line in the tender form. These lines shall be initialed by the person signing the tender after they have been filled in.

f) Any appendices to the tender form requesting information on suppliers, sub-contractors or alternate prices shall be filled in for the tender to be considered complete.

21. TAXES

a) All tenders submitted shall EXCLUDE the Harmonized Sales Tax.

22. CONFIDENTIALITY AND FREEDOM OF INFORMATION (Effective November 1, 2002)

a) By submitting your bid, you agree to disclosure of the information supplied, subject to the provisions of the Freedom of Information and Protection of Privacy (FOIPP) Act.

b) Anything submitted in your bid that you consider to be "confidential information" because of its proprietary nature should be marked as "CONFIDENTIAL", and will be subject to appropriate consideration under the Freedom of Information and Protection of Privacy Act.

c) During the delivery and installation of goods and/or services, you may have access to confidential or personal information. Should this occur, you must ensure that such information is not released to any third party or unauthorized individual.

d) Any information provided on this contract may be subject to release under the Freedom of Information and Protection of Privacy Act. You will be consulted prior to the release of any information.

END

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1. DEFINITIONS

a) The Contract Documents shall include instructions to Tenderers, General conditions, Supplementary General conditions, Specifications, Drawings, Tender Form and the signed agreement.

b) The Owner, the Contractor and the Consultant are those names as such in the Agreement and Specifications.

c) The term 'Subcontractor' includes only a person, firm or corporation having a contract for the execution of a part or parts of the work included in the Contract, and a person, firm or corporation furnishing material called for in the Contract and worked to a special design according to the Drawings or Specifications, but does not include one who merely furnishes material not so worked.

d) The term 'work' includes all labour, materials and services required, as shown or described in the contract, documents, supplied and installed or erected complete at the place of building.

e) The term 'Other Contractor' means any person, firm or corporation employed by or having a contract directly or indirectly with the Owner otherwise than through the Contractor.

f) The place of building is the designated site or location of the completed work.

g) The law of the place of building shall govern the work.

h) For the purpose of contract signing authority, the Director is the Director of the Public Works and Planning Division of the PEI Department of Transportation, Infrastructure and Energy.

2. DOCUMENTS

a) The contract documents shall be signed in duplicate by the Owner and Contractor. The Contract documents are complementary and what is called for by any one shall be as binding as if call for by all. The intention of the documents is to include all labour and materials reasonably necessary for the proper execution of the work. It is not intended however, that materials or work not covered by or properly inferable from any heading, section or trade in the specifications shall be supplied unless shown on the drawings. Descriptions of materials or work in words which so applied have well known technical or trade meanings shall be held to refer to such recognized standards. Should the specification conflict with the drawings, the specifications shall govern. In the case of discrepancies between drawings, those of larger scale, or if the scales are the same, those of later date shall govern.

All drawings and specifications shall be interpreted in conformity with the agreement and these general conditions which shall govern.

3. DETAIL DRAWINGS & INSTRUCTIONS

a) The Consultant shall furnish as necessary for the execution of the work, additional instructions, by means of drawings or otherwise. All such additional instructions shall be consistent with the contract documents. The work shall be executed in conformity therewith and the Contractor shall do no work without such additional instructions. In giving such additional instructions, the Consultant shall have authority to make minor changes in the work, not inconsistent with the Contract.

If either the Contractor or the consultant so request, they shall jointly prepare a schedule, subject to change from time to time in accordance with the progress of the work fixing the dates at which the various detail drawings will be required and the consultant shall furnish them in accordance with this schedule, and on like request, a schedule shall be prepared, fixing the dates for the submission of shop drawings, for the beginning of manufacture and installation of materials and for the completion of the various parts of the work.

4. COPIES FURNISHED

a) The Consultant shall furnish to the Contractor, without charge, as many copies of all Drawings and Specifications as are reasonably necessary for the proper execution of the work.

5. SHOP DRAWINGS

a) The Contractor shall furnish to the Consultant, at proper times, all shop and setting drawings or diagrams which the Consultant may deem necessary in order to clarify the details of the work. The Contractor shall make any changes in such drawings or diagrams which the Consultant may require consistent with the Contract, and shall submit sufficient copies of the revised prints to the Consultant for approval – all but one of which shall be returned to the Contractor if approved by the Consultant. When submitting such shop and setting drawings, the Contractor shall notify the Consultant in writing of changes made therein from the Consultant's Drawings or Specification. The Consultant's approval of such drawings or of the revised drawings shall not relieve the Contractor from responsibility for errors made by the Contractor therein or for changes made from the Consultant's Drawings or Specifications not covered by the Contractor's written notification to the Consultant.

6. DRAWINGS AND SPECIFICATIONS ON THE WORK

a) The Contractor shall keep one copy of all Drawings, Specifications and approved shop drawing on the work, in good order, available to the Consultant and to his or her representatives.

7. OWNERSHIP OF DRAWINGS AND MODELS

   a) All drawings, specifications and copies thereof and all models furnished by the Consultant are his or her property. They are not to be used on other work and, with the exception of the signed contract set of the Drawings and Specifications, are to be returned to him or her on request on the completion of the work. Any models furnished by the Contractor or the Owner are the property of the Owner.

8. SAMPLES

   a) The contractor shall furnish for the Consultant's approval such samples as he or she may reasonably require. The work shall be in accordance with approved samples.

9. MATERIAL TESTS AND MIX DESIGNS

   a) The contractor shall furnish for the Consultant's approval such material tests and mix designs as he or she may reasonable require. The cost of providing the foregoing beyond the extent called for in the specification shall be charged to the Owner. The work shall be in accordance with approved material tests and mix designs.

10. CONSULTANT AND CONTRACTOR

    a) The Consultant is, in the first instance, the interpreter of the Contract and the judge of its performance; he or she shall use his or her powers under the Contract to enforce its faithful performance by both parties hereto. The Contractor shall, however, have complete control, subject to Article 12, of his or her organization. In case of the termination of the employment of the Consultant, the Owner shall appoint any Consultant whose status under the Contract shall be that of the former Consultant.

11. THE CONSULTANT'S DECISION

    a) The Consultant shall decide on questions arising under the contract documents, whether as to the performance of the work or the interpretation of the Specifications and drawings, but should the contractor hold such decisions to be at variance with the contract documents or to involve changes in the work already built, fixed, ordered or in hand in excess of the contract, or to be given in error, he or she shall notify the Consultant before proceeding to carry them out. In the even t of the Consultant and the Contractor failing to agree as to such excess or error and the consultant deciding to carry out such disputed work, the contractor shall act according to such decision. Any question of excess of cost due to the aforesaid cause may be decided in the manner hereinafter provided in Article 43.

12. SUPERINTENDENCE

a) The Contractor shall keep on the work, during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Consultant. The superintendent shall not be changed except with the consent of the consultant, unless the superintendent proves to be unsatisfactory to the Contractor or ceases to be in his or her employ. The superintendent shall represent the Contractor in his or her absence and directions on minor matters given to him or her shall be held to be given to the contractor. Important directions shall be given in writing to the Contractor. The Contractor shall give efficient supervision to the work using his or her best skill and attention.

13. MATERIALS, APPLIANCES, EMPLOYEES

a) Unless otherwise stipulated, the contractor shall provide and pay for all materials, labour, water, tools, equipment, light and power necessary for the execution of the work. Unless otherwise specified all materials shall be new. Both workmanship and materials shall be of the quality specified. The contractor shall not employ on the work any unfit person or anyone not skilled in the work assigned to him or her.

14. INSPECTION OF WORK

a) The Owner, or the Consultant on his or her behalf, and their representatives shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and for inspection. If the specifications, the consultant's instructions, the laws, or the ordinances of any public authority require any work to be specially tested or approved, the Contractor shall give the consultant timely notice of its readiness for inspection, and if the inspection is by an authority other than the consultant, of the date and time fixed for such inspection. Inspections by the Consultant shall be promptly made. If any such work should be covered up without approval or consent of the consultant, it must, if required by the Consultant, be uncovered for examination and made good at the Contractor's expense. Re-examination of questioned work may be ordered by the consultant. If such work be found in accordance with the Contract, the Owner shall pay the cost of re-examination and replacement. If such work be found not in accordance with the contract, through the fault of the contractor, the Contractor shall pay such cost.

15. REJECTED WORK

a) The Contractor shall promptly remove from the premises any defective work, whether the result of poor workmanship, use of defective materials, damage through carelessness or other act of the Contractor, which has been condemned by the Consultant as failing to conform to the contract documents, whether incorporated in the work or not. The contractor shall

promptly replace and re-execute his or her own work in accordance with the contract and without expense to the Owner and shall bear the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement. If the Contractor does not remove such condemned material or work within the time fixed by written notice, the Owner may remove them and may store such materials at the expense of the Contractor. If the contractor does not pay the expense of such removal within Five (5) days thereafter, the Owner may, upon Ten (10) das written notice, sell such materials at auction or at private sale and shall account for the net proceeds thereof, after deducting all the costs and expenses that should have been borne by the Contractor.

16. DEDUCTIONS FOR UNCORRECTED WORK

a) If, in the opinion of the consultant, it is not expedient to correct defective work or work not done in accordance with the contract documents, the Owner may deduct from the contract price the difference in value between the work as done and that called for by the contract, the amount of which shall be determined in the final instance by the Consultant.

17. CORRECTION AFTER COMPLETION

a) Subject to any special provisions in the contract documents, the contractor shall remedy any defects due to faulty materials or workmanship appearing within a period of one year from the date of substantial completion of the work and shall pay for any damage to other work resulting therefrom which appears within such period and neither the final certificate nor payment thereunder shall relieve the Contractor from responsibility hereunder. The Owner shall give notice of observed defects promptly. Questions arising under this Article may be decided as provided in Article 43.

18. EMERGENCIES

a) The Consultant has authority in an emergency to stop the progress of the work whenever, in his or her opinion, such stoppage may be necessary to ensure the safety of life, or of the structure, or neighbouring property. This includes authority to make such changes and to order, access and award the cost of such work extra to the Contract or otherwise as may in his or her opinion be necessary.

19. PROTECTION OF WORK AND PROPERTY

a) The Contractor shall maintain continuously adequate protection of all his or her work from damage and shall take reasonable precautions to protect the Owner’s property from all injury arising in connection with this Contract. He or she shall make good any damage or injury to his or her work and shall make good any damage or injury to the property of the Owner resulting from the lack of reasonable protective precautions. He or she shall not be responsible,

however, for any damage or injury to his or her work and to the property of the Owner which may be directly due to errors in the contract documents or caused by the Owner, his or her agents, or employees, or from any work or risk which the Owner has agreed to insure, provided the Contractor has taken reasonable protective precautions. He or she shall adequately protect adjacent property as required by law and the contract documents.

20. CONTRACTORS' INSURANCE

a) INDEMNITY/HOLD HARMLESS

.1 The Contractor shall be liable for all injuries to persons and for damage to property caused by his or her operations, and those of his or her sub-contractors, and his or her and their employees, engaged on all operations in connection with the contract both on and off the site, and he or she shall indemnify and save harmless the Owner from all suits, claims, expenses, costs, demands, losses, and damages to which the Owner may be put by reason of injury, including death, to persons, and damage to property of the Owner and others, resulting from; negligence, carelessness and any other cause whatsoever in the performance of the work.

.2 The Contractor shall, until the date of issue of the final Certificate of Approval of the work by the Consultant, Indemnify and Save Harmless the Owner, and protect his or her own interests against:

(a) Theft, burglary or robbery of, and loss or damage to, all materials and equipment brought to the site for use in the work, whether or not such materials and equipment are incorporated in the work at the time that any such theft, burglary, robbery, loss or damage occurs.

(b) Theft or burglary of, and loss or damage to, any of his or her own plant and equipment being used on the Project and/or stored on the site.

b) BUILDERS RISK, ALL RISK PROPERTY INSURANCE

.1 The contractor shall, without limiting its obligations or liabilities herein and at its own expense, provide and maintain the following insurances with Insurers and in forms and amounts acceptable to Government:

(a) The Contractor shall have Commercial General Liability coverage in an amount not less than Two Million ($2,000,000.00) dollars inclusive per occurrence against bodily injury and property damage. The government of Prince Edward Island is to be added as an additional insured under this policy. Such insurance shall include, but not be limited to:

i) Blanket Written Contractual Liability;
ii) Personal Injury Liability;
iii) Non-owned Automobile Liability;
iv) Cross Liability;
v) Operation of Attached Machinery

Commercial General Liability insurance shall be endorsed to provide the Owner with thirty (30) day advance written notice of cancellation or material change and fifteen (15) days notice in the event of non-payment.

(b) Automotive liability coverage (Standard Automobile Policy) on all vehicles, the subject of this Agreement, owned, leased, operated or licensed in the name of the Contractor, in an amount not less than Two Million ($2,000,000.00) dollars

(c) If the work involves new construction or reconstruction of a property being repaired or maintained, the contractor shall provide and maintain All Risk Course of Construction (Builder's Risk) to the full value of the work in the amount of the Contract Price. The policy will permit partial or complete use or occupancy by the Owner during the term of this insurance.

All the foregoing insurance shall be primary and not require the sharing of any loss by any insurer of the Government nor by any other form of recovery available such as the Provincial Self Insurance and Risk management Fund.

.2 Proof of Insurance

A Certificate(s) of Insurance and any renewals thereof, shall be furnished to the Government prior to commencement of work by the Contractor and must be updated as required during the Term.

The policies required by this Agreement shall be in a form and with insurers satisfactory to the Government. Default of deliver or receipt by the government shall not be construed as acknowledgement or concurrence that there has been compliance with the terms of this Agreement.

.3 Indemnification

The Contractor shall indemnify and hold harmless the Government, its agents, representatives and employees from and against all claims, demands, losses, costs, damages, actions, suits or proceedings of every nature and kind whatsoever arising out of or resulting from the performance of work (herein called the "claims"), provided that any such claim is caused in whole or in part of any act, error or omission, including but not

limited to those of negligence of the Contractor, or anyone directly or indirectly employed by the Contractor anyone for whom the Contractor may be liable.

21. PERFORMANCE BOND

a) The Owner shall have the right to require the Contractor to furnish a bond covering the faithful performance of the Contract – including the corrections after completion provided for in Article 17 – and the payment of all obligations arising under the contract, in such form as the Consultant may prescribe and with such sureties as he or she may approve. If such bond is required by written instructions given previous to the receipt of bids, the premium shall be paid by the contractor, if subsequent thereto, it shall be paid by the Owner.

22. CASH ALLOWANCES

a) The Contractor shall include in the contract sum all cash allowances mentioned in the Specifications, which allowances shall be expended in whole or in part as the consultant shall direct and the amount of the contract sum being adjusted in conformity therewith. The Contract sum includes such sums for expenses and profit on account of such cash allowances as the Contractor required excepting those allowances included for contingency purposes.

23. SUBSURFACE CONDITIONS

a) In the event that during the execution of the work, subsurface conditions at the site are found to differ materially from those indicated in the contract documents and soil reports, or otherwise represented by the Owner or Consultant to the contractor, then the contractor shall promptly notify the Consultant in writing of such conditions, the Consultant shall promptly investigate such conditions and if he or she finds that they differ materially and will result in an increase or decrease in the cost of, or time required for, the performance of this Contact, an equitable adjustment shall be made between the parties and the contract modified in writing accordingly. If the parties fail to agree upon the adjustment to be made, the dispute may be determined as provided for in Article 43.

24. CHANGES IN THE WORK

a) The Owner or the Consultant, without invalidating the contract, may make changes by altering, adding to, or deducting from the work, the contracts sum being adjusted accordingly. All such work shall be executed under the conditions of the Contract except that any claim for extension or reduction of time caused thereby shall be adjusted at the time of ordering such change. Except as provided in Article 18, no change shall be made unless in pursuance of a written order from the consultant and no claim for an addition to or deduction from the contract um shall be valid unless so ordered and at the same time valued, r agreed to be valued, as provided in Article 25.

25. VALUATION OF CHANGES

a) Change Orders calling for normal changes or additions to the work will be priced in detail giving actual material trade prices (not list prices) and actual labour costs (including Employment Insurance, Worker's Compensation, holiday pay) and actual equipment rental. To these prices the Contractor will add:

.1 For work less than $2,500 involving the General Contractor only, the General contractor adds 20% to his or her costs.

.2 For work over $2,500 involving the General Contractor only, the General Contractor adds 15% to his or her costs.

.3 For work less than $2.500 involving a Sub-Contractor only, the Sub-Contractor adds 20% to his or her costs, submits this price to the General Contractor who adds 10%.

.4 For work over $2.500 involving a Sub-Contractor only, the Sub-Contractor adds 15% to his or her cost, submits this price to the General Contractor who adds 5%.

.5

(a) For work less than $2,500 involving the General Contractor and Sub-Contractor, the Sub-Contractor adds 20% to his or her costs, submits his or her price to the General Contractor who adds 10%; to this amount the General Contractor adds the cost of his or her own work plus 20% of the cost of his or her own work only.

(b) The General Contractor does not add a further 10% to the cost of his or her own work.

.6

(a) For work over $2,500 involving the General Contractor and a Sub-Contractor, the Sub-Contractor adds 15% to his or her cost, submits this price to the General Contractor who adds 5%; to this amount the General Contractor adds the cost of his or her own work plus 15% of the cost of his or her own work only.

(b) The General Contractor does not add a further 5% to the cost of his or her own work.

.7 Deletions to Contract: A mark-up shall **not** be charged nor credited on a credit portion of a Change Order.

.8 Supervision related to Change Orders shall be considered as included in the allowable mark-up and shall **not** be included in the labour charges for a Change Order.

26. APPLICATION FOR PAYMENTS

a) The Contractor shall – before the first application for payment – submit to the Consultant a schedule of values of the various parts of the work aggregating to the total sum of the contract, divided so as to facilitate payments, made out in such form, and supported by such evidence as to its correctness as the Consultant may direct. This schedule, when approved by the Consultant, shall be used as a basis for applications of payment, unless it can be found to be in error.

b) The Contractor, as per current Provincial regulation, shall include on all invoices the Goods and Services Tax as an additional line item. This amount would be in addition to the tender amount which does not include HST. See article 28 of this Section.

27. CERTIFICATES AND PAYMENTS

a) Partial payments will be made monthly and within thirty (30) days after approval by the Owner and on the basis of a duly certified and approved estimate of work performed during the preceding period. In preparing estimates, the material delivered on the site and preparatory work done shall be taken into consideration.

b) In making such partial payments, there shall be retained a hold back in the amount of fifteen percent (15%) of the estimated amount on each partial payment estimate, less any holdback release which may have been made to specific sub-contractors under any progressive release of holdback provisions in Provincial Legislation.

c) All materials and work covered by partial payments made shall thereupon become the sole property of the Owner, but this shall not be construed as relieving the Contractor from the sole responsibility for the safety and preservation of all materials and work upon which payments have been made and restoration of any damaged work or as a waiver of the right of the Owner to require the fulfillment of all the terms of the contract. Nor shall Consultant's Certification of Partial Payment for any work be construed as his or her final or irrevocable acceptance of that work.

d) Document of Completion: Upon completion and acceptance of all work whatsoever required and the release of all claims against the Owner as specified, the Consultant shall file a written document with the Owner and with the Contractor as to the entire amount of work performed and compensation earned by the contractor – including the extra work and compensation therefore.

e) Final Payment: Within sixty (60) days after the filing of such document of completion and minimum one (1) day after the lien period, and upon receipt from the General contractor of declarations signed by each of his sub-contractors that the sub-contractor has been paid up to,

and including the past previous partial payment, the Owner will pay the Contractor the amount stated therein less all deductions authorized by the terms of this contract and previous payments and advances whatsoever to or for the account of the Contractor. All previous estimates and payments, including those relating to extra work, shall be subject to correction at the time of this payment which is, throughout this contact, called Final Payment. Final Payment shall be subject to inspection and acceptance by the Owner or duly authorized representatives of the Owner and by representatives of all agencies having direct interest in the project.

Submittals to include:

- Certificate or letter of clearance from the Provincial Worker's Compensation Board
- Certificate or letter of clearance from the Provincial Treasury

f) With the second and all subsequent applications for payment, the Contractor shall include a statutory declaration form CCDC 9B, or other similar acceptable form to the Owner, declaring that all labour and materials entering into the work, including Sub-Contractors, covered by the previous application, have been paid. With application for release of lien holdback, the Contractor shall include a statutory declaration form CCDC 9A, or other similar form acceptable to the Owner.

g) With application for release of lien holdback, the Contractor shall include certificates issued by the Worker's Compensation Board, indicating that Worker's Compensation premiums in relation to the project have been paid in full.

28. TAXES

a) Unless otherwise provided herein, the contractor shall pay all government sales or excise taxes in force at the date of the Agreement, provided that any increase or decrease in such taxes shall increase or decrease the contract sum accordingly.

29. PERMITS, NOTICES, LAWS AND RULES

a) The Contractor shall apply and pay for all necessary permits or licenses required for the execution of the work (but this shall not include the obtaining of the Building Permit or permanent easement or right of servitude). The Contractor shall give all necessary notices and pay all fees required by law and comply with all laws, ordinances, rules and regulations relating to the work and to the preservation of the public's health. The Contractor shall be responsible for the safety of all workmen and equipment on the project in accordance with all applicable safety legislation passed by federal, provincial and local authorities governing construction safety.

If the contract documents are at variance therewith, any resulting additional expense incurred by the Contractor shall constitute an addition to the contract price.

30. PATENT FEES

a) The Contractor shall pay all royalties and license fees and shall save the Owner harmless from loss on account of suits or claims for infringement of patents in the doing of the work.

31. USE OF PREMISES

a) The Contractor shall confine his or her apparatus, the storage of materials and the operations of his or her workmen to limits indicated by laws, ordinances, permits or by direction of the Consultant and shall not unreasonable encumber the premises with his or her materials. The Contractor shall not load – or permit to be loaded – any part of the work with a weight that will endanger its safety. The Contractor shall enforce the Consultant's instructions regarding signs, advertisements, fires and smoking.

32. CLEANING UP

a) The Contractor shall at all times keep the premises free from accumulations of waste material or rubbish caused by his or her employees or work and, at the completion of the work, he or she shall remove all his or her rubbish and all tolls, equipment and surplus materials from and about the work and shall leave the work "broom clean" or its equivalent, unless more exactly specified. In case of dispute, the Owner may remove the rubbish and charge the cost as the Consultant shall determine to be just.

33. CUTTING, PATCHING AND DIGGING

a) The Contractor shall do all cutting, fitting or patching of his or her work that may be required to make its several parts come together properly and fit it to receive or be received by work of Other Contractors shown upon, or reasonable implied by, the contract documents.

Any cost caused by ill-times work shall be borne by the party responsible therefore.

The Contractor shall not endanger any existing work by cutting, digging or otherwise and shall not cut or alter the work of any other contractor save with the consent of the Consultant.

34. DELAYS

a) If the Contractor is delayed in the completion of the work by any act or neglect of the Owner, Consultant or any Other Contractor or any employee of any one of them or by changes ordered in the work, then the time of completion shall be extended for such reasonable time as the

Consultant may decide. If the Contractor is delayed in completion of the work by labour disputes, strikes, lock-outs (including lock-outs decreed or recommended by a recognized contractors' association for its members of which the Contractor is a member), fire, unusual delay by common carriers or unavoidable casualties or without limit to any of the foregoing by any cause of any kind whatsoever beyond the Contractor's control, then the time of completion shall be extended for a period of time equal to the time lost due to such delays. I addition and without limit to the foregoing, the time of completion shall be extended because of any cause whatsoever within the Contractor's control which the Consultant shall decide as justifying a delay for such reasonable time as the Consultant may decide.

No such extension shall be made for delay unless written notice of claim is given to the Consultant within seven (7) days of its commencement provided, however, that in the case of a continuing cause of delay only one claim shall be necessary.

If no schedule is made under Article 3, no claim for delay shall be allowed on account of failure to furnish drawings until two (2) weeks after demand for such drawings and not then unless such claim be reasonable.

The Consultant shall not, except by written notice to the Contractor, or as provided in Article 18, stop or delay any part of the work pending decisions or proposed changes either by him or herself or by the Owner.

35. OWNER'S RIGHT TO DO WORK

a) If the Contractor should neglect to execute the work properly or fail to perform any provision of this Contract, the Owner, after five (5) days written notice to the Contractor, may without prejudice to any other right or remedy he or she may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor; provided however, that the Consultant shall approve both such actions and the amount charged to the Contractor.

36. OWNER'S RIGHT TO TERMINATE CONTRACT

a) If the Contractor should be adjusted as bankrupt, or if he or she should make a general assignment for the benefit of his or her creditors, or if a receiver should be appointed on account of his or her insolvency or if he or she should – except in case of recited in Article 35 – refuse or fail to supply enough properly skilled workmen or proper materials after having received seven (7) days notice in writing from the Consultant to supply additional workmen or materials, or if he or she should fail to make prompt payment to Sub-Contractors or for material or labour, or persistently disregard laws, ordinances or the instruction of the Consultant, or otherwise be guilty of a substantial violation of the provisions of the Contract, then the Owner, upon the certificate of the Consultant that sufficient cause exists to justify

such action , may, without prejudice to any right or remedy he or she may have, by giving the Contractor written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method he or she may deem expedient, but without undue delay or expense. In such case, the Contractor shall not be entitled to receive the expense of finishing the work, including compensation to the Consultant for his or her additional services; such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, shall be certified by the Consultant.

37. CONTRACTOR'S RIGHT TO SUSPEND WORK OR TERMINATE CONTRACT

a) If the work should be stopped under an order of any court or other public authority through no act or fault of the Contractor or of anyone employed by him or her, or if the Consultant fails to issue a certificate in accordance with Article 27, or if the Owner should fail to pay to the Contractor within seven (7) days of its maturing and presentation, any sum certified by the Consultant or awarded by arbitrators, then the Contractor may, upon five (5) days written notice to the Owner and the Consultant, stop work and/or terminate this Contract without prejudice to any other right or remedy he or she may have and recover from the Owner payment for all work executed and any loss sustained upon the plant or material with reasonable profit and damages.

38. DAMAGES AND MUTUAL RESPONSIBILITY

a) If either party to this Contract should suffer damage in any manner because of any wrongful act or neglect of the other party or of anyone employed by him or her then he or she shall be reimbursed by the other party for such damage. Claims under this paragraph shall be made in writing to the party liable within a reasonable time after the first observance of such damage and not later than the time of final certificate, except as expressly stipulated otherwise in the case of faulty work or materials, and may be adjusted by agreement or in the manner set out in Article 43 and the party reimbursing the other party as aforesaid shall thereupon be subrogated to the rights of the other party in respect of such wrongful act or neglect if it be that of a third party. Should the Contractor cause damage to any other contractor on the work the Contractor agrees – upon due notice – to settle with such other contractor by agreement or arbitration, if he or she will so settle. If such other contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor who shall defend such proceedings at the Owner's expense and if any final order or judgment against the Owner arises therefrom the Contractor shall pay or satisfy it and pay all costs incurred by the Owner provided that if the Contractor becomes liable to pay or satisfy any final order or judgment against the Owner, then the Contractor shall have the right upon undertaking to indemnify the Owner against any and all liability for sots to appeal, in the name of the Owner, such final order or judgment to any and all courts or competent jurisdiction.

39. SEPARATE CONTRACTS WITH OTHER CONTRACTORS

a) The Owner reserves the right to let separate contracts in connection with the undertaking of which the work is a part and the Contractor shall connect properly and coordinate this work with that of other contractors. If any part of the Contractor's work depends – for its proper execution or results – upon the work of any other contractor, the Contractor shall inspect the work prior to proceeding with his or her work as required by the Contract. Should the Contractor fail so to inspect and report, he or she shall have no claim against the Owner by reason of the defective or unfinished work of any other contractor except as to latent defects not reasonable noticeable at the time of the commencement of the contractor's work. In letting separate contracts, the Owner shall be responsible for the coordination of fire and other insurance coverages and shall take all precautions reasonable possible to avoid possible occurrence of a labour dispute or disputes on the work.

40. ASSIGNMENT

a) Neither party to the Contract shall assign the Contract without the written consent of the other.

41. SUB-CONTRACTS

a) The Contractor agrees that the list of names of sub-contractors supplied prior to the signing of the Contract is the list of Sub-Contractors proposed to be used to carry out those parts of the work noted thereon and he or she shall not employ any to whom the Consultant may reasonable object.

   If the change of any name on such list is required by the Consultant and the work has to be awarded to a higher bidder, the contract price shall be increased by the difference between the two bids.

   The Consultant shall, on request, furnish to any Sub-Contractor wherever practicable, evidence of the amounts certified to on his or her account.

   The Contractor shall be held as fully responsible to the Owner for the acts and omissions of his or her sub-contractors and of persons directly or indirectly employed by them, as for the acts and omissions of persons directly employed by him or her. In view of this responsibility, the Contractor shall not be obliged to employ as a sub-contractor or supplier any person or firm to whim he or she may reasonable object.

42. RELATIONS OF CONTRACTOR AND SUB-CONTRACTOR

a) The Contractor agrees to bind every sub-contractor by the terms of the contract documents, as far as applicable to his or her work.

43. ARBITRATION

a) In the case of any dispute arising between the Owner (or the Consultant acting on his or her behalf) and the Contractor as to their respective rights and obligations under the Contract, either party hereto shall be entitled to give to the other notice of such dispute and to request arbitration thereof; and the parties may, with respect to the particular matters then in dispute, agree to submit the same to arbitration in accordance with the applicable law of the place of building.

   Arbitration proceedings shall not take place until after the completion or alleged completion of the work except (a) on a question of certificate for payment, or (b) in a case where either party can show that the matter in dispute is of such nature as to require immediate consideration while evidence is available.

44. OWNER SIGNING AUTHORITY

a) Mr. Alan Maynard, P. Eng. is designated as the Director for the purposes of this agreement. The Director shall represent Government in all matters pertaining to the construction Project being provided pursuant to this agreement, and will administer said agreement, and shall complete necessary approvals of all plans and specifications provided for under this agreement on behalf of Government, provided however, that the Director shall not be authorized to amend the terms of the agreement.

   Government may replace the Director by providing written notice, in accordance with the notice requirements of this agreement.

45. CONFLICT OF INTEREST

a) The Contractor warrants that as at the date of this Agreement, no conflict of interest, or any circumstance that might interfere with independent and objective exercise of judgment, exists or is likely to arise in relation to execution of this Agreement or its subject matter. The Contractor shall immediately notify Government, in writing, if any such actual or potential conflict of interest should arise at any time during the Term. In the event Government discovers or is notified by the Contractor of an actual or potential conflict of interest, Government, in its sole discretion, may either:

   i) allow the Contractor to resolve the actual or potential conflict to the satisfaction of Government; or
   ii) terminate the Agreement in accordance with the Termination section of this Agreement.

END

PROJECT:

1. GENERAL

a) The undersigned tenderer (hereinafter called the "Contractor") hereby offers to the Minister of Transportation, Infrastructure and Energy (hereinafter called the "Owner") to furnish all necessary tools, plant, services, materials and labour to execute and complete in a careful and workmanlike manner the work set out under the **Project # 2625-16103** herein, which is more particularly described in the Plans and Specifications titled **Hillsborough Hospital Security Upgrades** dated **May, 2017** for the lump sum as set out in Clause 3.

The Contractor agrees:

.1 To complete the work by the date indicated on the Instructions to Bidders.

.2 That this Form of Agreement supersedes and cancels all communication, negotiations and agreements relating to the work other than contained in the completed tender.

.3 To use all suppliers and sub-contractors indicated on his or her tender unless prior approval is received from the Engineer to make a change.

2. ADDENDA

a) The following addenda are included in this contract:

_____

_____

_____

_____

3. CONTRACT PRICE

a) The Contract Price (*the lump sum referred to in Clause 1*:) which excludes value added taxes is:

_____

_____

b) Value added (HST)(of _____%) payable by the Owner to the Contractor are:

_____

_____

c) Total amount payable by the Owner to the Contractor for the construction of the work is:

_____

_____

4. CORRESPONDENCE

a) The Owner, Engineer, Consultant, and Contractor may be contacted in writing at the addresses below:

Owner, Engineer, & Consultant

PEI Department of Transportation, Infrastructure and Energy
PO Box 2000
Charlottetown, PE
C1A 7N8

Contractor
_____
_____
_____
_____

5. CONTRACTOR'S ACCEPTANCE

a) Accepted and executed on behalf of the Contractor this _____ day of _____, 20___, in the presence of _____.

_____ _____
Witness Signature & Corporate Seal

6. OWNER'S ACCEPTANCE

a) Accepted and executed on behalf of the Owner this _____ day of _____, 20___, in the presence of _____.

_____ _____
Witness Signature & Seal

END

TENDER
SUBMITTED BY: _____
ADDRESS: _____
_____
PHONE: _____ FAX: _____
DATE: _____

FOR: Security Upgrades
Hillsborough Hospital
115 Deacon Grove Lane, Charlottetown, PE

TO: Minister of Transportation, Infrastructure and Energy
11 Kent Street
PO Box 2000
Charlottetown, PE
C1A 7N8

HAVING examined the drawings and specifications for this project as well as any addenda issued, we hereby offer to furnish all materials, plant and labour necessary for the full and proper completion of:

"Hillsborough Hospital Security Upgrades"

INCLUDING all prime cost allowances, or other taxes in force at this date and **excluding HST**; but not including any additional or deductible allowance or taxes which may be applicable subsequent to this date, and which shall be payable by or to the Owner, in accordance with the above mentioned documents, for the sum of:
_____ Dollars ($_____)
in lawful money of Canada.

In submitting this tender we recognize the necessity to complete the information requested on any appendices, as well as the right of the Owner to accept any tender at the price submitted on the condition that revised tenders will not be called for if minor changes are made.

In the event of this tender being accepted within thirty (30) days of the time stated for the closing of tenders, and our failing or declining to enter into a contract, then our bid deposit shall be forfeited to the Owner in lieu of any damages which he or she may suffer by reason of our failure or refusal to enter into such contract.
In the event of our tender not being accepted within thirty (30) days of the time stated for the closing of tenders, the bid deposit will be returned to us forthwith unless a satisfactory arrangement is made with us covering its retention for a further stated period.

This tender includes the following addenda:

Addendum #	Date	Initial

If we are notified of the acceptance of this tender within the above specified time we will:

Enter into a formal contract agreement with the Owners.
Furnish a general analysis of the contract sum, the total aggregating the amount of our tender.
Provide a Construction Schedule and complete the entire work on or before the dates stated.

Our tender includes the following sub-contractors and suppliers, (own forces may be used, see Item 12, Section B).

Carpentry _____
Millwork _____
Doors / Hardware (Supply) _____
Doors / Hardware (Install) _____
Glazing _____
Mechanical _____
Electrical _____

_____
Submitted by (Name of Bidder)

_____
Authorized Signature

END

1. REFERENCES

   a) CSA - S269.1 – [1975] Falsework for Construction Purposes.

   b) CAN/CSA - S269.2 – [M87] Access Scaffolding for Construction Purposes.

2. CONSTRUCTION SAFETY MEASURES

   a) Observe construction safety measures of:

      .1 Latest edition of the National Building Code of Canada

      .2 National Fire Code of Canada

      .3 Provincial Government, including but not limited to the:

         (a) Provincial Building Code Act

         (b) Latest edition of the Occupational Health & Safety Act Statutes of Prince Edward Island (including any amendments to and regulations).

         (c) Workers' Compensation Act

         (d) Fire Prevention Act

         (e) Dangerous Goods Transportation Act

         (f) Industrial Best Practices for Equipment Isolation and Lockout Policy

   b) In case of conflict or discrepancy the more stringent requirement shall apply.

   c) Maintain clear emergency exit paths.

   d) Ensure that employees working on this specific project have met training requirements as legislated by the Prince Edward Island Occupational Health and Safety Act and its regulations.

   e) Where reference is made to jurisdictional authorities, it shall mean all authorities who have within their constituted powers the right to enforce the laws of the place of the building and workplace.

3. OVERLOADING

   a) Ensure no part of Work is subjected to loading that will endanger its safety or will cause permanent deformation.

4. FALSEWORK

   a) Design and construct falsework in accordance with CSA s269.2.

5. HOISTS AND CRANES

   a) Operate such equipment only by qualified hoist or crane operators, and maintain current inspection certificate.

6. SCAFFOLDING AND FALL ARREST

   a) Design and Construct Scaffolding in accordance with CSA S269.

   b) Each user of scaffolding shall examine scaffolding for sufficiency before using it. He or she shall make it secure, or shall notify the Contractor in Writing that he or she will not commence work until it is made secure.

   c) Comply with the requirements of the Fall Protection and Scaffolding Regulations, Province of Prince Edward Island 1988.

7. EQUIPMENT AND TOOLS

   a) Each user of equipment or tools shall be appropriately trained and be responsible to examine for sufficiency before use. Make equipment and tools safe if necessary, or notify the Contractor in writing that user will not commence work with such tools until it is made safe.

8. WHMIS

   a) Comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and comply regarding labeling and provision of material safety data sheets.

   b) Have a copy of WHMIS data sheets available at the workplace on delivery of materials.

9. HAZARDOUS MATERIALS

a) Should material resembling hazardous materials [other than those identified with the Contract Documents], including but not limited to spray or trowel applied asbestos, be encountered in course of work; stop work immediately. Do not proceed until written instructions have been received from Consultant.

b) Any material which contains asbestos that is disturbed or removed during construction work (see Asbestos content Report), shall be removed in accordance with the regulations set out by the Occupational Health and Safety Act. All costs for proper cutting, removal and disposal of all asbestos on this contract shall be included in Tender. Refer also to Section 01900.

c) Where work entails use, storage, or disposal of toxic or hazardous materials, chemicals and/or explosives, or otherwise creates a hazard to life, safety, health, or the environment; work shall be in accordance with the Jurisdictional Authority.

10. SITE CLEANING

a) Except where special permission is obtained, maintain clear access on public sidewalks and roads

b) Maintain walks and roads clear of construction materials and debris, including excavated material. Clean walks and roads as frequently as required to ensure that they are cleared of materials, debris and excavated material.

c) Remove snow and ice from public sidewalks.

11. FIRE SAFETY REQUIREMENTS

a) Enforce fire protection methods, good housekeeping and adherence to local and underwriter's fire regulations including, but not limited to, Fore Protection Act and the Provincial Building Code Act. Provide UL approved fire extinguishers, and other fire fighting services and equipment, except where more explicit requirements are specified as the responsibility of individual Sections.

b) Hot Work will not be permitted on or within the building structure, tanks, or confined spaces, except as outline herein. Prior to conducting hot work, a hot work permit shall be prepared and submitted. An example format for a hot work permit shall be included in the Safety document submission. The permit shall describe compliance with the following procedures. After tank or confined space interiors or building areas have been decontaminated, hot work may be conducted only when the tank or confined space is inverted. Hot work shall not be performed

unless monitoring indicates atmospheres within and immediately surrounding are less than eight percent (8%) oxygen inside less than ten percent (10%) of the LFL outside; continuous monitoring shall continue until the hot work is completed. The hot work prohibition includes welding, cutting, grinding, sawing, or other similar operations which could be expected to potentially generate combustion-producing temperatures or sparks, or which could produce potentially hazardous fumes or vapours. An individual at each hot work site shall be designated as a fire watch. This person's sole responsibility shall be to monitor the hot work and have immediate access to at least two (2) twenty (20) pound fire extinguishers located at each hot work site. All extinguishers shall be currently inspection tagged, approved safety pin and tamper resistant seal. A new permit shall be obtained at the start of each work shift during which hot work will be conducted.

c) Smoking permitted in designated exterior areas only. Exercise care in the use of smoking materials. Absolutely no smoking is permitted within the facility.

d) Advise the Fire Chief in the area of Work of any work that would impede fire apparatus response, including but not limited to violation of minimum overhead clearance prescribed by the fire chief, erecting of barricades and digging of trenches.

e) Fire Separations:

.1 Ensure that fire separations are installed to maintain total integrity and that they are not breached by Work following their installation.

.2 Replace fire separations which have suffered a lessening of their required rating during construction.

f) Ensure nothing subverts the integrity of fire protection provided for the building structure.

g) Coordinate work of all sections so that they do not encroach on space required for fire protection and its installation. Ensure that fire protection damaged during construction is totally replaced.

12. <u>REPORTING FIRES</u>

a) Know the location of the nearest fire alarm box and telephone, including the emergency phone number.

b) Report immediately all fire incident to the fire department as follows:

.1 Activate nearest fire alarm box, or

.2 Telephone 911

.3 Where fire alarm box is exterior to building, the person activating the fire alarm box shall remain at the box to direct Fire Department to scene of the fire.

.4 When reporting a fire by telephone, give location of fire, name or number of building and be prepared to verify the location.

13. ENVIRONMENTAL PROTECTION

a) Ensure that pollution and environmental control of construction activities are exercised during the Work to requirements of the federal and provincial environmental acts; including, but not limited to, the Prince Edward Island Environmental Protection Act.

14. SAFETY DOCUMENT SUBMISSION

a) Ensure Safety Document Submission applies to Work of this specific project and site.

b) Submit two copies of Safety Document at the Pre-Construction Meeting. Do not commence Work nor deliver material on-site prior to submission.

c) Included in Safety Document submission specific information detailing the methods and procedures to be implemented ensuring adherence to the acts, regulations, codes and policies specified in this section and to:

.1 Ensure the health and safety of persons at or near the Work; including, but not limited to, the Public.

.2 Ensure the measures and procedures of the regulatory agencies specified are carried out.

.3 Ensure every employee, self-employed person and employer performing Work under this contract complies with the regulatory agencies specified.

.4 Where changes to the methods and procedures in the execution of work change submitted safety methods and procedures, modify submitted Safety Documentation and submit modifications, in writing to the Consultant and Minister prior to implementation.

15. SAFETY DOCUMENT ORGANIZATION

a) Organize information in the form of an instructional manual as follows:

.1 Place in binders of commercial quality, 8-1/2” x 11” x 3” maximum ring size.

.2 Cover: Identify binder with typed or printed title “Project Safety Document” and list the title of the project.

.3 Provide tabbed fly leaf for each separate heading, with typed heading on tab.

.4 Where drawings are within the safety document, provide with reinforced punched binder tab. Bind in with text; fold in larger drawings to size text pages.

.5 Arrange content under Safety Document headings specified herein.

16. SAFETY DOCUMENT HEADINGS

a) Employee Safety Training

.1 Place, under this heading, a statement indicating employees working on this specific project have met specified training requirements.

b) Company Safety Policy

.1 Place, under this heading, information pertaining to the company’s policy and commitment to Occupational Health and Safety, including the responsibilities of management, supervisors and works.

c) Company Safety Rules in General Terms

.1 Place, under this heading, information of a general, global nature, applying to every work environment where the company has staff pertaining to rules directing compliance to policy. For example, state company safety rules with respect to use of hard hats, safety glasses, safety footwear, CSA approval on such items, use of alcohol or non-prescription drugs.

d) Hazard Assessment

.1 Place, under this heading, information identifying possible hazards specific to this project and identify safe methods and procedures for the execution of work to ensure safety in the work place.

.2 Arrange contents of this heading by technical section number on the project manual.

e) Emergency Action Plan

.1 Place, under this heading, information detailing action to be taken in the event of various emergencies.

.2 Arrange content under the following sub-headings:

(a) First Aid

i. Include information concerning establishment of a First Aid Station, related supplies, staff awareness of location and staff training in First Aid Care of Casualties.

(b) Contact Emergency Support Groups

i. Include relative information including phone location for emergency use, the emergency telephone numbers (and their location) for the various organizations which must be contacted in case of an emergency, and staff training in procedures.

(c) Cessation of Work

i. Include relative information how work cessation during emergencies is handled and communicated to persons present on site.

(d) Joint Occupational Health and Safety Committee Representative

i. Place under this heading information detailing membership and terms of reference.

17. SAFETY OFFICER

a) Provide a Safety Officer at the work site to perform safety management, surveillance, inspections, and safety enforcement for the contractor. The Safety Specialist shall be the safety "competent person". The Safety Officer shall be at the work site at all times whenever work or testing is being performed, shall conduct daily safety inspections.

.1 Qualifications

(a) Qualifications of Safety Officer

i. Ability to manage the on-site contractor safety program through appropriate management controls.

ii. Ability to identify hazards and have the capability to expend resources necessary to abate the hazards.

iii. Must have worked on similar types of projects that are equal to or exceed the scope of the project assigned with the same responsibilities.

iv. Shall, as a minimum, have attended a recognized training qualification program including at least 40 hours of classroom instruction.

(b) Qualifications of Qualified Person, Confined Space Entry:

i. The qualified person shall be capable (by educations and specialized training) of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space. This person shall be capable of specifying necessary control and protective action to ensure worker safety.

(c) Qualification of Crane Operators must be submitted to the consultant for approval and must be authorized to operate the crane.

.2 Meetings

(a) Preconstruction Conference

i. The safety officer shall attend the preconstruction conference (see outline attached).

(b) Meeting On Work Procedures

i. Meet with Contracting Officer to discuss work procedures and safety precautions required by the APP. Ensure the participation of the contractor's superintendent, the quality control, and representatives of each subcontractor or trade performing work at the site.

(c) Weekly Safety Meetings

i. Hold weekly at the project site. Attach minutes showing contract title, signatures of attendees and a list of topics discussed.

(d) Work Phase Meetings

i. The appropriate activity hazard analysis shall be reviewed and attendance documented by the Contractor at the preparatory, initial, and follow-up phases of quality control inspection.

(e) New Employee Indoctrination

i. New employees will be informed of specific site hazards before they begin work. Documentation of this orientation shall be kept on file at the project site.

END

PRE-CONSTRUCTION CONTRACTOR SAFETY CHECKLIST

Use this text as a guideline for completing the attached checklist. This checklist is a general, *pre-construction* review of the contractor safety program, as well as an information session to identify what the PEI Department of Transportation, Infrastructure and Energy (TIE) requires of our contractors. Where the item requires a submission, ensure that it is received. If the item does not apply, enter N/A for not applicable.

The following information will assist you in establishing what will be reviewed in each section.

1. **Safety Policy:** Each employer is required by law (in Prince Edward Island) to have a safety policy and program and to implement that policy. TIE will ask for and receive a copy of that program.

2. **Safety Representative:** Each contractor is required to advise TIE who their safety representative is. That representative has duties as described in the Occupational Health and Safety Act.

3. **Emergency Procedure:** Each contractor must have a site specific layout and emergency plan complete with emergency phone numbers.

4. **Employee Orientation:** Each and every person working for a contractor, including sub-contractors will be given an orientation to familiarize them with the site safety program. Unless otherwise specified, each sub-contractor is responsible for the orientation of their workers.

5. **Safe Work Plan:** Most contractors are involved in tasks that subject workers to hazards. In order to ensure that these workers are secured from hazard, the contractor will supply TIE with a written safe work plan which affords protection against the hazards. This plan must be signed by a company representative and communicated to the workers involved in the task.

6. **Personal Protective Equipment Review:** Advise that all workers require CSA Class “b” hard-hat, CSA “Green Patch” (eight inch) footwear, eye, ear, and respiratory protection as required (boots and hat at all times).

7. **Fall Protection:** Fall restraint or fall arrest protection required where a fall of 2.4 meters (8 feet) or more is possible. **NO EXCEPTIONS**

8. **Housekeeping:** Advise of daily, or as needed, clean-up requirements.

9. **Tool Box Talks:** Each contractor is required to conduct weekly safety meetings with their forces and advise TIE they have been done.

10. **Material Handling/Storage:** Advise contractor about storage areas and handling of material so as not to endanger their worker or another worker. Stacked material to be banded, chained, blocked, or otherwise secured.

11. **Landing Platforms:** Advise contractor about movement of material on or off platforms, all material to be secured. Platform gates or chains to be kept closed at all times workers are on platform. If not possible, worker to be tied off with fall restraint system independent of platform.

12. **WHMIS Training:** Receive verification that all contractor workers are trained and that the contractor submits their MSDS.

13. **GFCI:** Advise contractor that all tools are required to have ground fault circuit interrupters (where electricity is supplied by contractor).

14. **Accident Investigations:** Any injury to any of their workers must be investigated and reported to TIE.

15. **Verbal, Written, Gone:** Explain Zero Tolerance Program.

16. **Joint/Worker Safety Committee:** Sites of over twenty (20) workers must establish a safety committee; over fifty (50), an additional worker committee. Workers required to attend committee meetings will do so and not be prevented by employers.

17. **Fire Protection:** All trades involved in performing hot work of any kind are required to provide fire protection at the work location.

18. **Guardrails:** Advise contractors that where temporary removal of guardrails is necessary, the area around them must be cordoned off with a barrier. Guardrails must be replaced as soon as possible.

19. **First Aider:** Each contractor is required to have a first aid kit and trained first aider. Employer must name their first aider.

20. **Visitors:** Advise contractor that any visitors to site must be suitable protected from hazard. They must wear hard hat, safety vest, and proper safety footwear while on site.
21. **Task Lighting:** Review responsibilities of task specific lighting (who provides it).

22. **Swamper/Riggers Competency:** Where cranes are used, the contractor must use a swamper/rigger. They shall provide TIE with a written statement identifying, by name(s), their rigger and that the named person is a competent worker as described in the construction regulations.

23. **Scaffolds:** Review scaffold building requirement:
    - Use all braces required by design
    - Access ladder for platform over 1.5 meters
    - Full width platform if height over 3 meters (10 feet)(PEI Regulations require double planks)
    - Full guardrails and toeboards
    - Tied in three times base dimension or use of outriggers
    - Engineered over 50 feet in height (standard frame type)

24. **Elevating Work Platforms:**
    - All boom and scissors lifts required to be CSA approved and have approval on machine
    - Operators manual required on machine at all times
    - Maintenance record on machine at all times
    - Operator must receive training in operation of equipment
    - Fall protection must be used at all times on a boom lift
    - Fall protection required to be used on scissor lift when unit is being moved

25. **Protruding Rebar:** Installer's of reinforcing steel must protect the protruding hazard or make arrangements to have it protected. Removal of protective coverings for task purposed only is allowed, however, protective covering must be replaced as soon as possible.

26. **WCB Clearance Certificates:** Advise contractor that TIE will not release any funds for payment until Workers Compensation Board Clearance Certificate has been received by TIE.

PRE-CONSTRUCTION CONTRACTOR SAFETY CHECKLIST

PROJECT: _____ DATE: _____

CONTRACTOR: _____

WORK BEING PERFORMED: _____

_____ _____

_____ _____
(Print name and title) (Print name and title)

_____ _____
E-D Project Manager/Superintendent Contractor Representative
(Sign) (Sign)

☑ Means Yes
☒ Means No

☐ 1. Safety Policy Submitted
☐ 2. Safety Representative
☐ 3. Emergency Procedure Review
☐ 4. Employee Orientation
☐ 5. Written Safe Work Plan Submitted
☐ 6. Personal Protective Equipment Review
Hard hats and Footwear
Safety Glasses
☐ 7. Fall Protection
☐ 8. Housekeeping
☐ 9. Tool Box Safety Talks (Weekly)
☐ 10. Material Handling/Storage
☐ 11. Landing Platforms
☐ 12. WHMIS Training Verification – MSDS received
☐ 13. GFCI Requirements
☐ 14. Accident/Incident Investigations Notification
☐ 15. Verbal, Written, Gone
☐ 16. Joint Worker Safety Committee
☐ 17. Fire Protection
☐ 18. Guardrails
☐ 19. First Aider on Staff – Name Supplied
☐ 20. Visitors and Safety Equipment
☐ 21. Task Lighting
☐ 22. Swampers/Riggers Competency (in writing)
☐ 23. Scaffolds
☐ 24. Elevating Work Platforms
☐ 25. Protruding Rebar Protection
☐ 26. WCB Clearance Certificate

1. GENERAL

a) Include in the Contract Price, cash allowances stated herein.

b) Cash allowances, unless otherwise specified, cover the net cost to the Contractor of services, products, construction machinery and equipment freight, handling, unloading, storage and other authorized expenses incurred in performing the work.

c) The Contract Price and not the cash allowance, includes the Contractor's overhead and profit in connection with such cash allowances.

d) The Contract Price will be adjusted by written order to provide for an excess or deficit to each cash allowance. Work executed on a cash allowance basis fully itemized upon billing (similar to a CCO submission).

e) Where costs under a cash allowance exceed the amount of the allowance the Contractor will be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in the Contract Documents.

f) Progress payments on accounts of work authorized under cash allowances shall be included in the Consultant's monthly certificate of payment.

g) The total amount of cash allowance(s) is to be calculated for the tender bid as follows:

.1 Include in the contract price the sum of **$850** for the supply and installation of an operable, interior security grille for the exterior window in the new Security Office. Owner will provide details of fabrication and supplier for Contractor's coordination during the project.

.2 Include in the contract price the sum of **$550** for the supply and installation of the security screening in the upper and lower openings of Door ID-15. Owner will provide details of fabrication and supplier for Contractor's coordination during the project.

.3 Include in the contract price the sum of **$2,000** for the supply and installation of an epoxy flooring system in WR 313 (to match the newly-completed flooring in Unit 3B WR). Owner will provide details of fabrication and supplier for Contractor's coordination during the project.

END

1. GENERAL

a) The General Contractor is to provide each item and properly execute all work as specified herein, indicated by drawings, specifications, addenda, or change orders issued with respect to this Project.

b) The General Contractor shall co-ordinate, administer and supervise all work and material acquisition unless noted otherwise in either the Specifications or Drawings. Faulty work by any Section which could have been avoided by proper co-ordination and/or supervision by the General Contractor will not be accepted.

c) Unless specified otherwise, the provisions of this Section shall apply to all Sections of the specifications.

d) Study all Contract documents to determine additional work required by your section on which the work of other sections depends.

e) Establish rates of wages and conditions of work in accordance with the Industrial standards Act of the Province of Prince Edward Island. Wherever possible give preference to local labour.

f) Workmanship shall be of highest quality in accordance with best standard practice for this type of work, except where specified more precisely.

2. SPECIFICATION FORMAT

a) These specifications are not intended as a detailed description of installation methods but serve to indicate particular requirements in the completed work.

b) Conform to the latest edition of the National Building Code, together with all its related supplements, hereinafter referred to as the “Code” or “code”. Where Drawings and Specifications exceed code requirements provide such additional requirements.

c) Where a material is designated on Drawings or in the Specifications for a certain application, unless otherwise specified, that material shall conform to standards designated in the latest edition of the National Building Code and any other Code, Act or Bylaw of Provincial or Local Application provided that in the case of conflict or discrepancy the more stringent requirement shall apply. Similarly, unless otherwise specified, installation methods and standards of workmanship shall also conform to standards invoked by the aforementioned code. Where no particular material is specified for a certain use, the bidder shall select from the choice offered in the code in each case.

d) References to codes, standards, including manufacturers' direction for installation shall be the latest edition thereof.

e) Provide a copy of all certificates of acceptance issued by Provincial or Local authorities.

f) Parts of the specification are written in short form, therefore it is understood that where a component of the work is stated in a heading followed by a material or operation, the words "Shall be", "Shall consist of" or similar words or phrases are implied which denote complete supply and installation of such materials of operations for the component of work designated by the heading.

g) Where the aforementioned Code or this specification does not provide all information necessary for complete installation of any item, then the manufacturer's instructions for first quality workmanship shall be strictly complied with.

h) Where words in the Contract Documents occur in the singular number, they shall be taken as plural where applicable in accordance with the quantities required to satisfy the requirements of the Contract.

3. STANDARDS AND DEFINITIONS

a) Where a reference is made to specification standards produced by various organizations, conform to latest edition of standards, as amended and revised to date of Contract.

b) Have a copy of each specified standard which relates to your work available on the Site to be produced immediately on the Consultant's request.

4. CO-OPERATION

a) Co-operate with and co-ordinate with other trades as required for the satisfactory and expeditious completion of the work. Take field dimensions relative to this work. Fabricate and erect work to suit field dimensions and field conditions. Provide all forms, templates, anchors, sleeves, inserts and accessories required to be fixed to or inserted in the work and set in place or instruct the related trades as to their location. Pay the cost of extra work caused by and make up time lost as the result of failure to provide the necessary co-operation, information or items to be fixed to or built in, in adequate time.

b) This Section shall provide other Sections with and be responsible for levels and dimensions which other sections require for establishing proper locations for their work.

5. MATERIAL STORAGE AND HANDLING

   a) Store packaged materials in original, undamaged condition with manufacturers' labels and seals intact. Handle and store materials in accordance with manufacturers' and suppliers' recommendations and in a manner to prevent damage to materials during storage and handling.

6. SITE VISIT

   a) All bidders submitting tenders for this work shall first examine the site and all conditions therein. All tenders shall take into consideration all such conditions as may affect the work under this contract, no claims for extras resulting from conditions existing at the time of tender will be accepted by the Owner.

7. EXAMINIATION

   a) All trades shall examine the existing conditions upon which their work depends. Report to the General Contractor with a copy to the consultant in writing defects in such work. The application of their work or any part of it shall be deemed acceptance of the work upon which their work or that part of it which has been applied depends.

   b) Drawings are, in part, diagrammatic and are intended to convey scope of work and indicate general and approximate location, arrangement and sized of building components.

8. CONSTRUCTION SAFETY

   a) Observe construction safety measures of the latest edition of the National Building Code Part 8, Provincial Government Workers/Workers Compensation Board and municipal authority provided in any case of conflict or discrepancy more stringent requirements shall apply.

   b) Comply with requirements of FCC no. 301.

   c) Ensure no part of Work is subjected to loading that will endanger its safety or will cause permanent deformation.

   d) Design and construct falsework in accordance with CSA S269.2.

   e) Operate such equipment only by qualified hoist or crane operators, and maintain current inspection certificate.

   f) Design and construct Scaffolding in accordance with CSA S269.2.

g) Comply with the requirements of the Fall Protection & Scaffolding Regulations, Province of Prince Edward Island 1988.

h) Each user of equipment or tools shall be appropriately trained and be responsible to examine for sufficiency before use. Make equipment and tools safe if necessary, or notify the Contractor in writing that user will not commence work with such tools until it is made safe.

i) Comply with the requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and comply regarding labeling and provision of material safety data sheets.

.1 Have a copy of WHMIS data sheets available at the workplace on delivery of materials.

9. PROTECTION

a) Take reasonable and required measures, including those required by authorities having jurisdiction to protect the public and those employed on work from body harm and to protect adjacent public and private property from damage. Make full restitution for such harm and damage resulting from failure to take adequate protective measures. Make good damage to work from whatever cause.

b) Take all necessary precautions to guard site, premises, materials and the public at time other than when supervised work is in progress.

c) Provide and maintain in working order, suitable Underwriters' labeled fire extinguishers and locate in prominent position to approval of authorities having jurisdiction.

d) Provide all signs, ramps, barricades, and hoarding and protective measures necessary to the safe execution of the work and protection of the public.

e) Protect, relocate and maintain existing, active services wherever they are encountered. Wherever inactive services are encountered, cap them off and remove the unwanted portion, with the approval of the authorities having jurisdiction or the public utility concerned, in the manner approved by them.

f) All trades shall protect previously installed work while carrying out their own work.

g) Damaged work shall be made good by appropriate trades but at the expense of those causing damage.

h) Attach and fasten fixtures and fittings in place in safe, sturdy, secure manner so that they cannot work loose or fall or shift out of position during the occupancy of building as a result of vibration or other causes in normal use.

i) Protect existing buildings, landscaping, curbs, roads and lanes and utilities. If, during work, any buildings, landscaping, curbs, roads and lanes are damaged, repair or replace them at no extra expense to the Owner.

j) Provide safety helmets for Consultants, Owner's representatives and any other authorized visitors to site if required.

10. FASTENINGS

a) All exposed fastenings for this project to be security, tamper-proof type, suitable for applications in a high-security, corrections-type environment.

b) Supply all fastenings, anchors and accessories and adhesives required for fabrication and erection of the work.

c) Exposed metal fastenings and accessories shall be of same texture, colour and finish as base metal on which they occur.

d) Exterior anchors for windows and roofing sheet metal and anchors occurring on or in an exterior wall shall be noncorrosive or hot dip galvanized steel.

e) Anchoring and fastening devices or adhesive shall be of appropriate type and shall be used in sufficient quantity in such a manner as to provide positive permanent anchorage of the unit to be anchored in position. Install anchors at spacing to provide for required load carrying capacity.

f) Keep exposed fastenings to a minimum, evenly spaced and neatly laid out.

g) Supply adequate instructions and templates and, if necessary, supervise installation where fastenings or accessories are required to be built into work of other trades.

h) Fastenings shall be of permanent type. Wood plugs are not permitted.

i) Fastenings which cause spalling or cracking of material to which anchorage is being made are not permitted.

j) Do not use powder actuated fastening devises, which are stressed in withdrawal on any part of this work without written approval from the Consultant. Take particular stringent safety precautions when using powder actuated fastenings. Only low velocity plunger-type are permitted.

11. CUTTING, FITTING, AND PATCHING

a) All cutting and patching shall be the responsibility of the General Contractor.

b) All excavation backfilling and concrete work required to complete the work of Section 15 and or Section 16 shall be the responsibility of the General Contractor.

c) Where new work connects with existing and where existing work is altered, ct and patch and make good to match existing work.

d) Make cuts with clean, true, smooth edges. Make patches inconspicuous in final assembly.

12. EXISTING SERVICES

a) Where work involves breaking into or connecting to existing services, submit work schedule sufficiently in advance to allow coordination of possible interruption with the Owner. **Confirm each interruption at least one (1) week prior to scheduled date of implementation.**

13. ENVIRONMENTAL PROTECTION

a) Ensure that pollution and environmental control of construction activities are exercised during the work to requirements of the federal and provincial environmental acts; including, but not limited to, the Prince Edward Island Environmental Protection Act.

14. HAZARDOUS MATERIAL

a) Should material resembling hazardous materials (other than those identified within the Contract Documents), including, but not limited to spray or trowel applied asbestos, be encountered in course of work; stop work immediately. Do not proceed until written instructions have been received from Consultant.

b) Any material which contains asbestos that is disturbed or removed during construction work (see Asbestos Content Report (where applicable)), shall be removed in accordance with the regulations set out by the Occupational Health & Safety Act. All costs for proper cutting, removal and disposal of all asbestos on this contract shall be included in Tender. Refer also to Section 2C (as applicable).

c) Where work entails use, storage, or disposal of toxic or hazardous materials, chemicals and or explosives, or otherwise creates a hazard to life, safety, health, or the environment; work shall be in accordance with the Jurisdictional Authority.

15. CLEANING

a) All rubbish and construction debris must be removed from the entire site on a regular basis, so that the site is maintained in a clean, safe condition. Materials removed are to be disposed of in a manner acceptable to the Provincial Department of Communities, Land and Environment.

b) Vacuum clean all areas prior to painting and close all areas after completion of painting to restrict access to authorized persons.

c) On completion of work, by other trades, mop clean all new resilient flooring strip using wet method to remove all layers of new or existing finish. Reseal with one coat sealer and two coats wax (wax to contain a minimum of 22% solids). Vacuum clean all carpets. All cleaning to be carried out by competent cleaners.

d) Dust and clean all surfaces including glass (interior and exterior), doors and hardware.

e) Arrange and pay for replacement of heating, ventilation and air conditioning filters if operated during construction.

16. FIRES

a) Do not light fires of any sort to burn rubbish resulting from the work.

17. ACCESS TO SITE

a) Access to site shall be directed by the Consultant.

18. SITE LIMITS

a) The limits of the site are shown on the drawings and all activity relating to the contract shall be confined within these limits.

19. MAINTENANCE MANUALS

Prior to the issuance of the final certificate the following items shall be assembled and incorporated into a three ring binder complete with table of contents:

a) All warranties and guarantees submitted by manufacturers.

b) The printed or typewritten copies of recommended maintenance procedures for all items requiring regular maintenance.

c) A copy of all approved Shop drawings.

20. PERMITS

a) Obtain a pay for all required permits, licenses, and inspections; required by applicable laws and regulations. Except the building permit which will be paid for by the Owner.

21. TOBACCO PRODUCT USAGE BAN

The use of Tobacco products is not permitted within or immediately adjacent the building.

a) Property – Includes all lands and buildings under the control of the government of PEI.

b) Tobacco Products – Includes cigarettes, cigars, pipes, chewing tobacco, snuff, and any other products containing or reasonably resembling tobacco or tobacco products except approved cessation products used in approved cessation programs.

END

1. CUTTING AND PATCHING

a) Cut, patch and make good to leave work in a finished condition where new work connects with existing.

b) Sections responsible for various categories of cutting and patching are as follows:

.1 All cutting and patching shall be the responsibility of the General Contractor.

.2 All excavation, backfilling and concrete work required to complete the work of Section 15 and/or Section 16 shall be the responsibility of the General Contractor.

c) Carry out cutting and patching in the following manner:

.1 Regardless of which Subcontractor or Section of the specifications is responsible for any portion of cutting and patching work, in each case tradesmen qualified in the work being cut and patched shall be employed to carry out or supervise this work to ensure that it is correctly done.

.2 Where new work connects with existing and where existing work is altered, cut and patch and make good to match existing work.

.3 Do not cut, drill or sleeve load-bearing members without first obtaining the Consultant's written authority for each condition.

.4 Drill work carefully, leaving a clean hole not larger than required. This applies to both new and existing work.

.5 Cut holes after they are located by trades requiring them.

.6 Bulkheads to be constructed with steel studs, furring and seam filled gyproc.

.7 Make cuts with clean, true, smooth edges. Make parches inconspicuous in final assembly.

.8 Co-ordinate work of your Section with work of other Sections, taking into account existing installations to assure best arrangement of components in available space. For critical locations consult with Consultant before commencing work.

.9 At penetrations of fire rated ceilings, walls, and floor/roof assemblies, completely seal voids with fire rated material, fill thickness of constructed element.

END

1. TEMPORARY TOILET

   a) This Contract shall erect and maintain in a sanitary and secure condition a temporary toilet for the use of persons engaged in the work on site. Construction personnel will not be permitted to utilize hospital toilet facilities.

2. TEMPORARY SERVICES

   a) Contractors can use the hospital's power, heat and water services to facilitate their work. However, any requirement or connections for additional temporary electrical / mechanical service shall be at the Contractor's expense.

3. STORAGE CONTAINERS

   a) Storage containers and / or temporary site offices, as required, shall be erected in locations coordinated with Hospital Administration and approved by the Consultant.

4. TEMPORARY HEAT

   a) Provide all necessary equipment material and personnel to keep that work which requires protection from cold adequately warm and sheltered from elements and to allow it to be done safely and well. Provide minimum required temperatures and do everything necessary to proceed without delay at all times of year. The permanent heating system may be used for temporary heating only when the building is closed in, and the permanent radiation installed.

   b) Particular attention is drawn to the requirement that the Contractor shall commence work immediately after the Contract is awarded, and shall continue full scale until completion of the project.

   c) The total Tender Price is to include sufficient funds for the provision of all necessary measures to enable all trades to proceed without delay regardless of weather.

   d) The Contractor will be responsible for all temporary heating and fuel costs, in the existing building, from the date renovations start until substantial completion.

END

1. GENERAL

   a) This section shall install and maintain the items required to prevent environmental damage.

   b) Ensure that pollution and environmental control of construction activities are exercised during the Work to requirements of the federal and provincial environmental acts; including, but not limited to, the Prince Edward Island Environmental Protections Act.

2. DISPOSAL OF WASTE

   a) Do not bury rubbish or waste material on site.

   b) Provide containers or otherwise prevent material from being wind-blown around the site and on to adjoining properties.

   c) Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

   d) All rubbish and construction debris must be removed from the site on a regular basis, so that the site is maintained in a clean, safe condition. Materials removed are to be disposed of in a manner acceptable to the Provincial Department of Environment, Labour & Justice.

3. DRAINAGE

   a) Provide temporary drainage and pumping as necessary to keep excavations and site free from water.

   b) Do not pump water containing suspended materials into waterways, sewer or drainage systems.

   c) Control disposal of runoff of water containing suspended materials or other harmful substances in accordance with local Authorities.

END

1. RELATED REQUIREMENTS

a) SPECIFIED ELSEWHERE

.1 Particular requirements for Inspection and Testing to be carried out by testing laboratory designated by Owner are specified under various sections.

2. APPOINTMENT AND PAYMENT

a) The owner will appoint and pay for services except for the following:

.1 Inspection and testing required by Laws, Ordinances, Rules, Regulations or Orders of Public authorities.
.2 Inspection and testing performed exclusively for contractor's convenience.
.3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
.4 Mill tests and certificates of workmanship, Code and/or Reference Standard compliance.
.5 Tests specified to be carried out under the supervision of the Consultant.
.6 Additional tests specified in paragraph 2.2.
.7 All civil sanitary and storm pipe, manhole, catch basins, water line, etc. pressure or leakage tests.

b) Where tests or inspections by designated testing laboratory reveal Work not in accordance with Contract Requirements, Contractor shall pay costs for additional tests or inspections as Consultant may require to verify acceptability of corrected Work.

3. CONTRACTOR'S RESPONSIBILITY

a) Furnish Labour and Facilities to:

.1 Provide access to Work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good Work disturbed by inspection and Test.
.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

b) Notify Consultant sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

c) Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

d) Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Consultant.

e) Provide consultant with three (3) sets of fully documented test reports.

f) Include a copy of all test reports in Maintenance Manuals, Section 01730.

END

1. GENERAL

a) INTRODUCTION

.1 CSA Standard Z317.13-03 Infection Control During construction or Renovation of Health Care Facilities.

.2 A common situation for the development of indoor air quality problems is a construction or renovation project taking place in or around an occupied space.

Examples often include:

(a) Improper isolation of the construction areas.
(b) Damage or open sections of the ventilation systems.
(c) Construction materials left in or near occupied spaces.
(d) Poor housekeeping during the project.
(e) Indiscriminate use and poor ventilation of solvents, paints, adhesives, etc., during the project construction.
(f) Improper removal and disposal of existing materials.

.3 There are several sources of potential contamination during a construction/renovation project. These include:

(a) **Demolition Activities:** Demolition activities release dust, biological contaminants, and fibrous materials into the air. Asbestos control is essential. Insulation in ceilings and walls, wall coverings, and ceiling tile all have a high fibre content which may produce substantial fibrous materials during demolition. Total suspended particulate levels may be very high with a significant portion of the total being of the respirable particle sizes.

(b) **Construction:** Construction introduces additional dust and fibrous materials. Many construction materials used today emit a range of volatile organic compounds, especially formaldehyde. All glues, vapours, and gases rise from solvents used to prepare surfaces for bonding, and emissions from welding and soldering can introduce a range of metals into the air.

(c) **Finish Work and Materials:** Final finishing and decorating of the renovated spaces can introduce strong odours and more VOCs. Solvents, paints and varnishes, and adhesives, and other glues all add to the accumulation of these irritating compounds.

b) ENVIRONMENTAL PRECAUTIONS

.1 It will be the sole responsibility of the Contractor to ensure the construction is carried out in a manner that is consistent with CSA Z317.13-03 – Infection Control During Construction or Renovation of Health Care Facilities so as to minimize the risk of indoor air quality problems and risk to occupant safety.

.2 Contractors planning to submit a tender for this project shall familiarize themselves with the CSA Z317.13-03 Standard before submitting their bid and before construction work begins.

c) RESPONSIBILITY

.1 The Owner and the Contractor will be responsible for strictly enforcing the CSA Z317.13-03 procedures. In the event of a violation of any of these requirements, the Owner will instruct the Contractor to rectify the violation immediately. In the even the Contractor does not respond within two hours immediately following notification by the Owner, the Owner may take whatever remedial action is required. All costs incurred by the Owner, as a result of a failure to adequately respond by the Contractor, will be deducted from the lump sum contract price for the work. In all cases, the cost to maintain the site as described above is the responsibility of the Contractor.

d) SITE-SPECIFIC APPROACHES TO INFECTION CONTROL AT HILLSBOROUGH HOSPITAL:

.1 ***Drilling or screwing into wall surfaces (i.e. fastening conduit to wall surfaces or cutting into wall surfaces):*** Provide immediate source-point extraction of generated debris and particulates with the nozzle of a HEPA-certified vacuum placed directly below area being drilled / screwed / cut into. Once the drilling / screwing / cutting is complete, re-vacuum any remaining debris in the vicinity. Then, with a clean, damp cloth, wipe down any remaining “dust” on affected surfaces which cannot be extracted with the vacuum.

.2 ***Cutting / patching small areas of GWB to accommodate electrical boxes or similar elements.*** Same approach as d.1 above.

.3 ***Removing ceiling tiles to run services above:*** Carefully remove affected ceiling tile(s) to minimize the potential for falling debris from the top of the tiles. Immediately clean the debris off the top of the removed tile(s) with a HEPA-certified vacuum. Immediately vacuum any additional surfaces where dust and debris has been generated due to the removal of the ceiling tile. Complete the necessary above-ceiling work, continuing to take care not to generate any further debris. Once above-ceiling work is complete, replace ceiling tile(s) and re-vacuum any remaining debris in the vicinity. Then, with a clean, damp cloth, wipe down any remaining “dust” on affected surfaces which cannot be extracted with the vacuum.

.4 ***Enlarging of transaction window opening, installation of new transaction window and trim, and installation of millwork at Security Office:*** Same approach as d.1 above.

.5 ***Replacement of bay window at Kitchenette in Unit 3B:*** Same approach as d.1 above.

.6 ***Cutting into existing doors / frames and repairing / adjusting frames to facilitate hardware and new door installation:*** Same approach as d.1 above.

.7 ***Refinishing Unit 3 WR, Room 313:*** Ensure the room is tightly sealed and put the room under negative pressure as per CSA Z317.13-03, including any provision for air-tight vestibules, prior to undertaking renovations in this room. HEPA-certified negative air unit will be supplied by the hospital, however all required filters and ducting to exterior via the WR window will be the responsibility of the Contractor. Room is to remain continuously under the required negative pressure until the renovations and construction cleaning have been completed.

.8 Removal of all bulk debris through the hospital to the exterior to occur in clean, sealed containers. At no time can debris be left unattended within the building.

.9 Contractor personnel working on the inside of the hospital should also ensure that they keep their clothing free from dust and debris as well, including HEPA-vacuuming as necessary.

2. PRODUCTS

a) Not Used.

3. EXECUTION

a) Not Used.

END

1. GENERAL

.1 This section shall include the supply and installation of all the carpentry as shown on the drawings or specified herein.

.2 Work shall include but not be limited to the following items:

1. Rough framing of interior and exterior walls as well as any necessary sheathing.
2. Wood bucks and blocking.
3. Wood blocking and cant strips (as applicable).
4. Ceiling or wall strapping, where indicated.
5. New wood trim.

2. MATERIALS

.1 All materials are to be the best of their kind, new materials as indicated on the drawings or suitable for the application.

.2 Lumber shall be new, Eastern Spruce No. 1 (Construction) Grade, dressed four sides.

.3 Moisture content shall not exceed 19% when installed.

.4 All pine material shall be kiln dried, knot free straight, unchecked pine of the dimensions indicated on the details.

.5 Hardwood shall be clear D4S kiln dried maple or birch, with a maximum moisture content of 9%.

.6 All lumber in contact with masonry or concrete and used for cants shall be treated with a copper sulphate solution Pentox or approved equal. Preservative shall be coloured for easy identification.

.7 All exposed fasteners shall be galvanized or stainless steel.

.8 All caulking shall be silicone-based premixed caulking material.

3. WORKMANSHIP

.1 Use only expert carpenters to execute the work, according to the best

practice, making a neat, plumb, level, straight and square job in every respect. Damaged finish surfaces shall not be permitted.

.2 All exposed woodwork shall be carefully installed with all joints mitred or scribed. Use galvanized or stainless steel fasteners.

.3 Caulk joints between dissimilar materials and where required to provide water proof joints.

END

1. **GENERAL**

.1 This section shall supply all labour, material and equipment to install Architectural Woodwork and particle board cabinetwork as outlined on the drawings.

.2 Do architectural woodwork to Millwork Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC) latest edition, except where specified otherwise.

.3 Shop Drawings

.1 Indicate details of construction, profiles, jointing, fastening and other related details.

.3 Indicate all materials, thicknesses, finishes and hardware.

.4 Indicate locations of all service outlets in casework, typical and special installation conditions, and all connections, attachments, anchorage and location of exposed fastenings.

.4 Samples:

.1 Submit samples as requested by consultant.

.5 Delivery, Storage, and Handling:

.1 Protect millwork against dampness and damage during and after delivery.

.2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

2. **PRODUCTS**

2.1 Materials

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 15% or less in accordance with following standards:

.1 CAN/CSA 0141.

.2 NLGA Standard Grading Rules for Canadian Lumber, 1987.

.3 Douglas Fir Plywood (DFP) to CSA 0121-M 1978 625.

.4 Machine stress-rated lumber is acceptable for all purposes.

.5 Hardwood lumber: moisture content 7% or less in accordance with following standards:

.1 National hardwood Lumber Association (NHLA), January 1982.

.2 Clear Birch species where indicated on drawings.

.6 Hardwood veneer: to CSA 0115-M1982.

.1 Clear matched birch veneer to thickness as indicated.

.7 Melamine faced composition board, (MFCB) with high density particle board core to CSA 0188.0-M78, to overall thicknesses specified, except where specifically indicated otherwise.

.8 Laminated plastic: to CAN3-A172.

.9 Nails and staples: to CSA B111.

.10 Wood screws: to CSA B35.4-1972 electroplated.

.1 Provide zinc-plated "CUP" washers at all locations where exposed screws are indicated or required.

.11 Splines: wood plastic metal.

2.2 Manufactured Units

.1 Casework:

.1 Fabricate caseworks to AWMAC custom quality grade and as detailed on drawings.

.2 Furring, blocking, nailing strips, grounds and rough bucks and sleepers.

.1 S2S is acceptable for bases.
.2 Board sizes: “Standard” or better grade.
.3 Dimension sizes: “Standard” light framing or better grade.

2.3 Laminated Plastic Tops

.1 Countertops (including side splashes and integral back splashes where indicated on drawings): one piece, selected by Consultant from standard range of Arborite, Nevamar or Formica laminates.

.2 Core: 19mm MDF particleboard.

.3 Adhesive: As recommended by manufacturer.

.4 Draw bolts: Blum or equal.

2.4 Hardware

.1 Hinges: Blum heavy-duty concealed hinges for flush-mounted or frame-mounted doors, 110 degree swing.

.2 Door and drawer pulls:

.1 “D” handles with brushed aluminium finish.

.3 Adjustable shelving standards: to CGSB 69-GP-8M,

.1) Heavy Duty, Item #233SS, Type 304 Stainless Steel

.1) Standard of acceptance

a) Knape-Vogt or equal.

.4 Shallow drawer slides, 125mm or less:

.1 Full extension type with self-closer and capacity of 34 kg.

.2 Acceptable material:
.1 Knape and Vogt, 1375.
.2 Accuride, 3832.
.3 Julius Blum Canada Ltd, BS 430E.

.5 Deep Drawer Slides (over 125mm):

.1 Full extension type with self-closer and capacity of 68 kg.

.2 Acceptable material:
.1 Knape and Vogt, 1485.
.2 Accuride, 4005.

.6 File hangers:

.1 Provide purpose-made, commercial grade file hanging hardware for bottom “file” drawers. Hardware should be configurable to suit either 8.5" x 11" letter-size files or 8.5" x 14" legal-size files.

2.5 Fabrication

.1 Set nails and countersink screws, apply plain wood filler to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.3 Shelving to cabinetwork to be adjustable unless otherwise noted.

.4 All joints are to be cut accurately and filler is not to be used to compensate for poor joints.

.5 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.6 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

2.6 Construction

.1 Cabinet Construction (including backs, ends, gables, etc.):

.1 3/4" melamine-faced particle board complete with plastic laminate over to CAN-A172-M79 Grade STD Type GP-1, .07 mm thick. Colour to be chosen by TIE representative.

.2 Shelves, interior panels:

.1 3/4" melamine faced particle board. All exposed edges to have melamine tape applied. Colour white. Inside front panels to have outside face prepared to accept plastic laminate.

.3 Drawer Construction:

.1 Fronts: Full overlay, 3/4" Melamine with PLAM, edges to have 3mm PVC edging. Colour to be chosen by TIR representative.

.2 Inner Front, Back, Sides of drawers: 5/8" melamine. All exposed edges to have melamine tape applied. Colour white.

.3 Drawer Bottoms: 1/8" white masonite dadoed and glued to drawer sides, back, and inner front.

.4 Door Construction:

.1 Fronts: Full overlay, 3/4" Melamine with PLAM, edges to have 3mm PVC edging. Colour to be chosen by TIR representative.

2.7 Finishing

.1 Refer to Section 09900 - Painting where applicable.

3. EXECUTION

3.1 Workmanship

.1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.

.3 Fasten and anchor millwork securely. Provide heavy duty fixture attachments for wall mounted cabinets.

.4 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.

.5 Use draw bolts in Counter top joints.

.6 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, cutlets or other projecting, intersecting or penetrating objects.

.7 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

.8 Apply water resistant building paper over wood framing members in contact with cementitious construction.

. .9 Prepare exposed, non-prefinished wood surfaces ready for finishing.

.10 Replace items of finish carpentry with damage to surfaces, including hammer and other bruises.

. .11 Install all cabinet hardware in accordance with manufacturer's recommendations and adjust to provide proper clearances and to function freely and properly.

3.2 Cleaning

.1 Clean millwork and cabinet work inside cupboards and outside surfaces.

3.3 Protection

.1 Protect millwork and cabinet work from damage until final inspection.

- End -

1. GENERAL

1.1 This section will supply and install all steel hollow metal doors indicated on the plan and in this specification.

1.2 Shop Drawings

.1 Submit shop drawings for approval before proceeding.

.2 Indicate dimensions, type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, and openings.

2.1 MATERIALS

.1 Sheet steel: 1.2 mm base thickness, commercial grade steel to ASTM A366-72, Class 1 finished to ASTM A526(1975) W25 (wiped) zinc finish.

.2 Door Core: Hollow steel; all voids filled with semi-rigid fibrous insulation, minimum density 24 kg/m^3, or polystyrene insulation.

.3 Primer: For touch up to CGSB 1-GP-181M+Amdt-Mar-78.

2.2 Fabrication

.1 Fabricate steel door as detailed, in accordance with Canadian Steel Door and Frame Manufacturers' Association, "Canadian Manufacturing Specifications for Steel Doors and Frames", most recent edition, for hollow steel construction, except where specified otherwise.

.2 Mortise, reinforce, drill and tap doors and reinforcements to receive hardware using templates provided by finish hardware supplier.

.3 Touch up doors with primer where galvanized finish damaged during fabrication.

.4 Reinforcement gauges to meet or exceed CSDFMA specifications.

.5 Pressure laminate faces to core with water proof adhesive.

.6 Conceal welds where possible; if exposed, grind and buff smooth to match adjacent surfaces.

.7 Close top and bottom of doors with welded recessed end closures.

.8 All edge profile to be revealed vertically on locking jamb edge 1/8" to 2".

.9 After fabrication, clean, sand, fill and grind tool marks and surface imperfections and make face and vertical edges smooth, level and free of irregularities.

.10 All exterior door joints to be sealed to prevent moisture penetration.

.11 Top of all exterior doors to be fitted with vinyl cap.

.12 Weep holes to be provided in bottom closure channel of all exterior doors.

.13 Provide cutouts and stops for all glazing.

.14 Hardware preparation:

.1 Doors and frames shall be prepared to receive hardware.

.2 Unless otherwise shown on the drawings, locate hardware in accordance with the Recommended Locations for Architectural Hardware as published by the Door and Hardware Institute.

3.0 WORKMANSHIP

3.1 Installation

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

.2 Adjust operable parts for correct function.

1.0 GENERAL

1.1 This section will supply and install all steel hollow metal frames to suit the window for Kitchenette 3B as indicated on the plans and in this specification.

1.2 Shop Drawings

.1 Submit shop drawings for approval.

.2 Indicate dimensions, each frame type, material, core thickness, reinforcements, location of anchors, exposed fasteners and finishes.

.3 Confirm all dimensions on site prior to generation of shop drawings for window frame.

2.0 MATERIALS

2.1 Sheet steel: Commercial grade steel to ASTM A366-72, Class 1 finished to ASTM A526 W25 (wiped) zinc finish.

.1 Frames: 1.6 mm base thickness steel.
.2 Floor anchors, channel spreaders and wall anchors: minimum 1.6 mm base thickness steel.
.3 Guard boxes: minimum 0.8 mm base thickness steel.
.4 Glazing stops: minimum 1 mm base thickness steel, screw fixed, tamper proof security-type. (Glazing to be 12.7mm (½") thick laminated polycarbonate security glazing.)

2.2 Reinforcing channel: to CSA G40.21, type 300W.

2.3 Primer: to CSGB 1-GP-181M+Amdt-Mar-78.

3. FABRICATION

3.1 Fabricate frames as detailed and indicated on drawings to Canadian Steel Door and Frame Manufacturers' Association, "Canadian Manufacturing Specifications for Steel Doors and Frames", most recent edition; except where specified otherwise.

3.2 Cut mitres and joints accurately and weld continuously on inside of frame profile.

3.3 Grind welded corners and joints to flat plans, fill with metallic paste filler and sand to uniform smooth finish.

3.4 Touch up frames with primer where galvanized finish damaged during fabrication.

3.5 Frame to be "knock-down" type for installation in existing opening and be supplied with anchors to suit the adjacent wall construction. Provide butt type frames with suitable anchors if indicated or required.

4. INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical supports at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

End

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes:
   1. Aluminum, heavy-duty commercial sliding service windows as indicated in drawings and in sections.

1.02 SUBMITTALS

A. Product Data: Submit Manufacturer's technical product data substantiating that products comply.
B. Shop drawings: Submit for fabrication and installation of windows. Include details, elevations and installation requirement of finish hardware and cleaning.
C. Certification: Provide printed data in sufficient detail to indicate compliance with the contract documents.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver windows crated to provide protection during transit and job storage
B. Inspect windows upon delivery for damage. Unless minor defects can be made to meet the Architect's specifications and satisfaction, damaged parts should be removed and replaced.
C. Store windows at building site under cover in dry location.

1.04 PROJECT CONDITIONS

A. Field measurements: Check opening by accurate field measurement before fabrication. Show recorded measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

1.05 WARRANTY

All material and workmanship shall be warranted against defects for a period of one (1) year from the original date of purchase.

PART 2 - PRODUCTS

2.01 STANDARD OF ACCEPTANCE:

A. Basis of design: Design is based on aluminum (DW) series, deluxe sliding service window manufactured by **C.R. Laurence Co., Inc. (800) 421-6144**

2.02 MATERIALS

A. Frames: 4” Aluminum frame modules shall be constructed of 6063-T5 extruded aluminum. Replacement and servicing of glass shall be from the clerk side of the window by means of an access panel in the top header and does not require the removal of the frame from the opening. Window glides on top-hung heavy-duty ball bearing slides. Poly-pile weather stripping and self-latching handle. Overall frame sizes are to be in accordance with the contract drawings.
B. Finish: All aluminum to be clear anodized.
C. Glazing: Laminated polycarbonate security glazing, 12.7 (½”) in thickness.
D. Required Options: keyed lock, full bottom track, Satin Anodized Aluminum 5-5/16" No-Draft Speak-Thru (CRL model #834A)

PART 3 – EXECUTION

3.01 INSTALLATION

A. Install window in accordance with manufacturer’s printed instructions and recommendations. Repair damaged units as directed (if approved by the manufacturer and the architect) or replace with new units.

3.02 CLEANING

A. Clean frame and glazing surfaces after installation, complying with requirements contained in the manufacturer’s instructions. Remove excess glazing sealant compounds, dirt or other substances.

3.03 PROTECTION

A. Institute protective measures required throughout the remainder of the construction period to ensure that all the windows do not incur any damage or deterioration, other than normal weathering, at the time of acceptance.

END OF SECTION

1. GENERAL

1.1 This section shall include the supply and installation of all finishing hardware (including aluminium doors / frames) as specified herein or listed in the hardware schedule.

.1 Contractor is responsible for the supply of finish hardware.

.2 Contractor is responsible for the preparation and installation of hardware.

1.2 Shop Drawings

.1 Submit shop drawings for all hardware items for approval before proceeding.

.2 Indicate dimensions, type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, and openings.

1.3 Installation /Manufacturer's Instructions

.1 Hardware to be prepped for and installed by skilled professionals who are familiar and experienced with the type of work required for the execution of this section. Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions and date sheets.

2. MATERIAL

.1 Hardware shall be from manufacturer indicated on the hardware package, or approved equal.

.2 Finishes unless noted otherwise in hardware packages to be as follows:

Hinges	26D
Flat Goods	C32D
Stops/holders, bolts,	C26D
Locks	C26D
Exit Hardware	10B / 32D

.3 Unless specifically noted the following manufacturer are acceptable.

.1 Hinges - McKinney, Stanley
.2 Stops, Push, Pulls - Standard Metal
.3 Lock Sets, Exit Devices and Door Closers - Sargent
.4 Electronic Power Transfers - Securitron

Other hardware products will be considered prior to tender close provided Contractor can demonstrate they are equivalent to the specifications of the products noted above.

3. Keying

.1 Lock on Security Office ID 1.1 requires “stand-alone” type key. Provide six copies.

.2 Locks on new delayed exit devices to be keyed to match facility “Master” key.

.3 Lock on new door ID-15 keyed to match staff “A” key.

4. HARDWARE SCHEDULE

.1 Refer to plans for door types and sizes.
.2 The following hardware packages shall be supplied for the doors indicated on the plans and Door Schedule:

SET #HW-01: Door #’s ID 1.1 Door to Security Office

3	hinges	TA 714 114 x 101 (to fit existing frame)	26D	CMC
1	lockset	8204 LNJ Lc	26D	CSA
1	closer	EN-1431		
1	door viewer	511C Peek-o by Allmar		

SET #HW-02: Door #’s ID4, ID5, ID10, ID11 (all are double doors)

2	closers	EN-1431	
1	pull plate	SM H412 (Doors ID10 & 11 only)	Stainless

SET #HW-03: Door #’s ID28

2	closers	EN-1431	26D
1	exit device	59-NB-8710	26D
1	exit device	59-NB-8715	32D

SET #HW-04: Door #’s ED15

1	TA 714-4 1/2 x 4 CC10		26D
1	exit device	59-8810	32D

SET #HW-05: Door #’s ED12, ED13, ED14

1	power transfer	EPT	
1	exit device	59-8810	10B to match existing doors

SET #HW-06: Door #’s ID-15

3	hinges	TA 714-4 ½ x 4	26D
1	closer	EN-1431	26D
1	lockset	8217 LNJ Lc	26D CSA

End

1. GENERAL

.1 This section shall supply all labour and materials required to erect and finish the drywall in the locations shown on the drawings as per ASTM C 840 Application and Finishing of Gypsum Board.

2. MATERIALS

.1 Gypsum Board

.1 Standard board to ASTM C36/C 36M 16mm thick and Type X, 1200mm wide x maximum practical length, ends square cut, edges bevelled.

.2 Abuse Resistant and Water and Mold Resistant board (for use in WR 313): Standard 16mm thick , firecode core when used in fire-rated partition, 1200mm wide x maximum practical length, ends square cut, edges bevelled. Standard of Acceptance: CGC Fibrerock Brand Aqua-Tough Interior Panel AR. Installation and finish as per manufacturer's written recommendations.

.2 Metal Accessories:

.1 Casing Beads, corner beads, reveal beads, control joints and edge trim: to ASTM C 1047, metal, zinc-coated by electrolytic process, 0.5mm base thickness, perforated flanges, one peice length per location.

.3 Fastenings:

1. Drywall Screws: to ASTM C 1002.

2. Drywall Nails: to ASTM C 514

3. Adhesive: to CGSB 71-GP-25M

.3 Acoustic sealant: to CAN/CGSB-19.21-M87

.4 Joint Treatment Material:

1. Joint Compounds & Tape: to ASTM C475, asbestos free.

3. INSTALLATION

.1 In strict accordance with manufacturer's specifications.

.2 Gypsum board on ceilings shall be applied in longest lengths available to minimize end joints.

.3 Unnecessary joints shall be removed if directed by the Consultant, or these joints shall be back-blocked as per manufacturer’s recommendations.

.4 Joint treatment material shall be mixed according to manufacturer's printed instructions.

.5 Pre-filling: All "V" grooves formed by abutting radial edges of wallboard shall be filled flush to plane of taper with pre-fill compound. Excess compound beyond the "V" groove shall be struck clean leaving a flat joint for taping.

.6 Taping: After pre-fill has hardened, a thin, uniform layer of taping compound shall be applied to all joints and angles to be reinforced. Reinforcing tape shall be applied immediately, centred over joint, seated into compound. A skim coat shall follow immediately, but shall not function as a fill or second coat. Tape shall be properly folded and embedded in all angles to provide a true angle.

.7 Filling: After taping compound has hardened, topping compound shall be applied, filling board tape flush with surface. Fill coat shall cover tape and feather out slightly beyond taper. On joints with no taper, fill coat shall cover tape and feather out at least 100 mm on either side of tape. No fill coat is necessary on interior angles.

.8 Finishing: After topping compound is dry, a finishing coat of topping compound shall be spread evenly over and extending slightly beyond fill coat on all joints and feathered to a smooth, uniform finish. Over tapered edges, finished joint shall not protrude beyond plane of surface. All taped angles shall receive a finish coat to cover tape and taping compound, and provide a true angle. Where necessary, sanding shall be done between coats and after final application of compound to provide a smooth surface, ready for decoration.

.9 This Contractor shall promptly remove from the site all debris resulting from this work.

.10 Any jointing material which became adhered to adjacent surfaces must be removed by this Contractor, leaving those surfaces in a condition similar to when he started work.

End

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ELECTRICAL

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APPENDICES

Appendix A Panel Sheets

DRAWING LIST - ELECTRICAL

SECTION	TITLE
E-1	Main Floor Plan Part A and Legend
E-2	Main Floor Plan Part B
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E-4	Second Floor Plan Part B
E-5	Door Access and Intrusion Alarm Risers

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Section Includes:

.1 General requirements common to Sections of Division 26 – Electrical, Division 27 – Communications and Division 28 – Electronic Safety and Security.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International) Latest Edition of the following:

.1 CSA C22.1-15, Canadian Electrical Code, Part 1, Safety Standard for Electrical Installations.

.2 CAN3-C235-83 (R2006) Preferred Voltage Levels for AC Systems, 0 to 50,000 V.

.3 CSA Z317.5-98 (R2002) – Illumination Systems in Health Care Facilities.

.4 CSA Z32-15 – Electrical Safety and Essential Electrical Systems in Health Care Facilities.

.5 CAN/CSA-C282-09 “Emergency Electrical Supply for Buildings”.

1.3 SCOPE OF WORK

.1 The work shall include all labour, materials and equipment necessary for the complete installation of the electrical, communications and electronic safety and security systems shown on the drawings and described in these specifications.

.2 It is the requirement of this work to provide all systems completely functioning in intended system operation, notwithstanding that every item necessarily required may not be specifically mentioned.

.3 Contractor shall follow and enforce all infection control requirements and standards required by the Hospital authority and listed out in specification.

1.4 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard:

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.5 SUBMITTALS

.1 Shop drawings:

.1 Refer to individual specification sections for shop drawing requirements.

.2 Identify applicable specification section and paragraph number on each shop drawing.

.3 Contractor shall approve all shop drawings by signing and dating them prior to submitting to Consultant.

.4 Faxes are not acceptable for shop drawings.

.5 Any equipment that a shop drawing is not requested for within the speciation but requested for during duration of project by the Engineer shall be supplied as requested.

.2 As-Built Drawings:

.1 On a set of opaque drawings, record all changes as work progresses. Incorporate all information issued in Addenda, Site Instructions and Change Orders and all changes in actual installation as a result of site conditions and coordination.

.2 Identify each drawing in lower right hand corner in letters at least 13 mm high as follows: AS-BUILT DRAWING, Name of Contractor, Signature of Contractor and Date.

.3 Submit to the General Contractor for approval and make all corrections as directed.

1.6 SUBSTITUTIONS

.1 It is the intent of these specifications to establish the required quality of materials. Where manufacturer's name, catalogue reference, data are used, it is done in order to establish the required quality, style, size or function. The decision as to suitability shall rest with the Engineer.

.2 All materials not meeting the standards as set down by these specifications shall not be allowed on the job site.

.3 Substitutions affecting the design will not be permitted. Additional costs to any other trade as a result of a change or substitution by this Contractor shall be borne by this Contractor.

.4 The listing of a manufacturer as acceptable does not imply acceptance of all products of that manufacturer and only products of that manufacturer and only products meeting the standards as set out in the specifications will be accepted.

.5 All requests for alternates must be submitted no later than ten (10) working days prior to tender close.

.6 All alternates shall be clearly marked to show equivalent specifications. If this is not completed, they will not be reviewed.

.7 Faxes are not acceptable for request for alternates. If sent by fax, they will not be reviewed.

1.7 SAMPLES

.1 Submit samples as requested by Engineer.

.2 After review and acceptance, samples will be returned for incorporation into work.

1.8 TEST REPORTS

.1 Submit certified test reports and certificates to Engineer from approved independent testing laboratories.

.1 Indicate compliance with specifications for specified performance characteristics and physical properties.

.2 Manufacturer's Field Services: submit copies of manufacturer's field inspection reports.

1.9 OPERATION AND MAINTENANCE DATA

.1 Provide operation and maintenance data for incorporation into operation and maintenance manual.

.2 Include in Operation and Maintenance Data:

.1 Table of Contents.

.2 Names, addresses and telephone numbers of local suppliers for items included in Operation and Maintenance Manuals.

.3 Copy of reviewed Shop Drawings.

.4 Name and address of Electrical Contractor.

.5 Copy of all test certificates.

.6 Copy of all final panelboard schedules.

.7 Copy of signed transmittal verifying all maintenance materials turned over to the owner/user.

.8 Two (2) paper copies of as-built drawings and specifications.

1.10 MAINTENANCE MATERIALS

.1 Provide maintenance materials – General Requirements and as indicated in respective specification sections.

1.11 EXISTING CONDITIONS

.1 Tie into existing systems at times coordinated with Owner.

.2 Submit written request for approval 10 days minimum, prior to commencement of work.

.3 Be responsible for damage to existing construction by this work.

.4 Ensure daily clean-up of existing areas.

1.12 FIRESTOPPING

.1 All fire stopping work is to be performed by the General Contractor.

.2 Electrical contractor shall coordinate all fire rated assembly penetrations with General Contractor.

.3 Electrical Contractor shall provide required clearances between outside surface of conduits and inside surface of sleeves, core drilled holes or listed fire rated systems.

1.13 ACCESS HATCHES

.1 All access doors shall be provided by the Electrical Contractor, where required, and shall be the responsibility of the Electrical Contractor to have installed.

1.14 INTERPRETATION OF PLANS AND SPECIFICATIONS

.1 These specifications are to be considered as an integral part of the plans which accompany them and neither the plans nor the specifications shall be used alone. Any item which is omitted in one but which is reasonably implied in the other shall be considered properly and sufficiently specified and must, therefore, be provided by this Contractor.

.2 Drawings are diagrammatic. Building dimensions shall not be scaled from the Electrical plans.

.3 Any discrepancy between the drawings and the building shall be questioned before proceeding with any installation.

1.15 CO-OPERATION OF CONTRACTORS

.1 This Contractor shall become familiar with the work of other contractors and in lying out and installing the work shall co-operate with the other Contractors, so as to facilitate the progress of the work as a whole and avoid interference or delays. Where interference exists, this Contractor shall notify the Project Manager and the Engineer before installing the work. Any changes in the work or alterations of the Electrical Contractor's schedule required for such co-operation will not be considered as a claim for extra compensation.

.2 Due to the complexities of many sub-trades, and the restrictive space available in this project, it is required that all trades co-operate closely so as to install all systems in their allotted locations as indicated on the drawings, or as coordinated on site.

1.16 ERRORS AND OMISSIONS

.1 The drawings are not intended to show every item of accessory equipment, but the Contractor shall tender on and install all essential details to provide for efficiency of operation and ease of maintenance.

.2 Should this Contractor discover errors or discrepancies in the plans or specification, they shall refer the matter to the Engineer for change or clarification and shall not proceed with that portion of the work until advised by the Engineer to do so.

1.17 DELIVERY, STORAGE, AND HANDLING

.1 Waste Management and Disposal:

.1 Construction/Demolition Waste Management and Disposal: required shall be coordinated with the user’s requirements.

.2 Store and handle materials in accordance with Division 01 – General Requirements and manufacturer’s written instructions.

1.18 SYSTEM START-UP

.1 Instruct operating personnel in operation, care and maintenance of systems, system equipment and components.

1.19 PERMITS, FEES AND INSPECTION

.1 Submit to Electrical Inspection Department necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Obtain an electrical work permit and pay associated fees.

.3 Notify Engineer of changes required by the Electrical Inspection Department.

1.20 ELECTRICAL REQUIREMENTS FOR HEALTH CARE FACILITIES

.1 The Section 24 of the Canadian Electrical Code and CSA Z32 “Electrical Safety and Essential Electrical Systems in Health Care Facilities” apply to this project. Key requirements include, but are not limited to:

.1 Non-metallic raceways shall not be used unless encased in concrete.

.2 All current carrying conductors shall be #12 AWG or larger.

.3 All conductors sized #10 AWG or smaller shall be solid copper.

.4 Branch circuits (including bonding conductors) intended for medical electrical equipment serving a Patient Care Environment (PCE), or two adjacent PCEs, shall not enter a junction or pull box containing branch circuits to other areas.

.5 All branch circuits in a PCE and adjacent PCEs shall be supplied on same phase.

.6 Neutral conductors shall not be shared by different branch circuits.

.7 The size of the bonding conductor shall not be smaller than #12 AWG.

.8 Bonding conductors shall be insulated.

.9 All receptacles powered by the Essential Electrical System shall be red and have red faceplates.

.10 All receptacles shall be Hospital Grade.

.11 Install receptacles with ground contact up.

.12 Essential power and normal power shall be in phase with each other (i.e. Essential Power Phase “A” corresponds to Normal Power Phase “A”, and so on).

.13 All Light switches within a Patient Care Area shall have a bonding conductor installed in the back box which also bonds the light switch and luminaire.

.14 All switches on the Essential Electrical System shall have a red toggle and red faceplate.

.15 Provide identification lamicoid nameplates mechanically affixed to the wall for all wiring devices.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

.1 Material and equipment to be CSA certified. Where CSA certified material and equipment are not available, obtain special approval from authority having jurisdiction, before delivery to site.

.2 Factory assemble electrical panels and component assemblies.

2.2 ELECTRIC MOTORS, EQUIPMENT AND CONTROLS

.1 Verify installation and co-ordination responsibilities related to motors, equipment and controls, as indicated.

.2 Division 26 responsibility is as follows:

.1 Supply and installation of breakers and/or switches.

.2 Supply and installation of power feeder (conduit and wire) from panel to starter, from starter to disconnect switch and from disconnect switch to motor.

.3 Supply and installation of starters complete with motor protection unless noted otherwise.

.4 Supply and installation of disconnect switches at motors unless noted otherwise.

.5 Supply and installation of 120V branch wiring to mechanical equipment as indicated on drawings.

.6 Control wiring and conduit is by Division 25 unless noted otherwise on electrical drawings.

2.3 WARNING SIGNS

.1 Warning Signs: in accordance with requirements of authority having jurisdiction, inspection authorities and Engineer.

.2 Signs, minimum size 178 x 254 mm.

2.4 WIRING TERMINATIONS

.1 Ensure lugs, terminals and screws used for termination of wiring are suitable for copper and aluminum conductors.

2.5 FINISHES

.1 Shop finish metal enclosure surfaces by application of rust resistant primer inside and outside, and at least two (2) coats of finish enamel.

.1 Paint outdoor electrical equipment "equipment" green finish to EEMAC Y1-1.

.2 Paint indoor switchgear and distribution enclosures light grey to EEMAC 2Y-1.

.2 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.3 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

2.6 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows.

.2 Nameplates:

.1 Lamicoid 3 mm thick plastic engraving sheet, white face, black core (normal power) red face, white core (essential power), mechanically attached with self tapping screws.

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.3 Labels:

.1 Embossed plastic labels with 6 mm high letters unless specified otherwise.

.4 Wording on nameplates to be approved by Engineer prior to manufacture.

.5 Allow for average of twenty-five letters per nameplate.

.6 Identification to be English.

.7 Nameplates for terminal cabinets and junction boxes to indicate system and/or voltage characteristics. Label both box and cover.

.8 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.9 Terminal cabinets and pull boxes: indicate system and voltage.

.10 Transformers: indicate capacity, primary and secondary voltages.

.11 Each receptacle shown on plans (new and existing) shall have the circuit number and supplying panelboard permanently identified at the outlet. This identification shall be a lamicoid nameplate, mechanically attached and shall be visible when the receptacle coverplate is in place, and shall be in a position not likely to be painted over, and shall not be on the coverplate itself. Label all computer and housekeeping receptacles in patient care areas “Not for medical use” in French and English.

.12 Each light switch, wall mounted occupancy sensor or dimmer shown on plans shall have the circuit number and supplying panelboard permanently identified. This identification shall be a mechanically attached lamicoid nameplate, and shall be visible when the coverplate is in place, and shall be in a position not likely to be painted over, and shall not be on the coverplate itself.

2.7 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, either numbered or coloured plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding throughout.

.3 Colour coding: to CSA C22.1–15.

.4 Use colour coded wires in communication cables, matched throughout system.

2.8 CONDUIT AND CABLE IDENTIFICATION

.1 Colour code conduits, boxes and metallic sheathed cables.

.2 Code with plastic tape or paint at points where conduit or cable enters wall, ceiling or floor, and at 15 m intervals.

.3 Colours: 25 mm wide prime colour and 20 mm wide auxiliary colour.

.4 All electrical and communications conduits shall be color coded as per user's requirements. Obtain list from user.

	Prime	Auxiliary
600 V essential	Yellow	Red
208/120 V essential	Black	Red
600 V Normal	Yellow	
208/120 V Normal	Black	
Fire Alarm	Red	
Telephone	Blue	
Data	Yellow	Black
Nurse Call	Orange	
Intercom	Green	
Television	Turquoise	Blue
Dictation	Yellow	Green
Public Address	Green	White
Switch Returns	Yellow	
Low Voltage	White	

.5 Provide identification of equipment, components, and assemblies specified, using materials suitable to withstand anticipated operating environment.

Part 3 Execution

3.1 FIELD QUALITY CONTROL

.1 Confirm other related work is complete to receive work of this and related electrical sections.

.2 Commission electrical systems, refer to Division 1, General Requirements for commissioning requirements.

.3 Qualifications:

.1 Electricians: qualified, licensed electricians or apprentices in accordance with Provincial Act respecting manpower vocational training and qualifications.

.2 Apprentices: employees registered in provincial apprentices program permitted, under direct supervision of qualified licensed electrician, to perform specific tasks. Permitted activities determined based on level of training attained and demonstration of ability to perform specific duties.

.4 Contractor holding valid Master Electrical contractor licensed as issued by Province that work is being constructed.

.5 The New Brunswick Department of Health reserves the right to conduct tests or have tests conducted on their behalf.

3.2 INSTALLATION

.1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, MSDS, and product datasheets.

.2 Protect electrical equipment from dust and dirt. Plug or cap openings in conduit, fixtures and equipment during construction with Consultant approved materials.

.3 Conceal conduit in finished areas, unless otherwise authorized. Run exposed conduit parallel to building lines, and maintain maximum headroom.

.4 Install outlets, plates and other visible items parallel to building lines. Line up exposed raceways, parallel and at right angles to building walls, partitions, and ceilings.

.5 Set equipment and components plumb and level, accurate to position intended, and position hanger rods plumb.

3.3 LOCATION OF OUTLET BOXES

.1 Do not install outlet boxes back to back in same wall or partition.

.1 Provide minimum 150 mm horizontal separation between boxes when installed in same wall or partition.

.2 Prior to completion of rough-in, relocate outlets up to 3 m at no change in Contract cost.

.3 Locate disconnect devise on latch side of door.

.2 Equipment mounting height, from finished floor to centerline of equipment item unless indicated otherwise:

.1 Local switches: 1200 mm.

.2 Receptacles:

.1 General: 300 mm.

.2 Above top of continuous baseboard heater: 300 mm.

.3 Above top of counters or counter splash backs: 250 mm.

.3 Fire alarm:

.1 Pull stations: 1370 mm.

.2 Firemen's handset: 1370 mm

.4 Card reader: 1200 mm.

.3 Attach electrical equipment, components and devices directly to structure and structural supporting elements.

.4 Coordinate device heights with architectural room and casework elevations.

3.4 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.5 CONDUIT AND CABLE INSTALLATION

.1 Install conduit and sleeves prior to pouring of concrete:

.1 Sleeves through concrete: schedule 40 steel pipe, sized for free passage of conduit, and protruding 53 mm.

.2 If plastic sleeves are used in fire rated walls or floors, remove before conduit installation.

.3 Install cables, conduits and fittings to be embedded or plastered over, neatly and close to building structure so furring can be kept to minimum.

3.6 VERIFICATION

.1 Measure phase current to panelboards with normal loads operating at time of acceptance. Adjust branch circuit connections as required to obtain best balance of current between phases and record changes.

.2 Measure phase voltages at loads and adjust transformer taps to within 2% of rated voltage of equipment.

.3 Submit report, at completion of measurements, listing phase and neutral currents on panelboards, dry-type transformers and motor control centres, operating under normal load. Include hour and date on which load was measured, and voltage at time of test.

3.7 FIELD TESTS

.1 Provide advance notice to Consultant of proposed testing schedule.

.2 Perform tests at time of acceptance of work.

.3 Conduct and pay for field tests:

.1 Power distribution, including phase voltage, grounding and load balancing.

.2 Circuits originating from branch distribution panels.

.3 Motors, including sequenced operation.

.4 Lighting and lighting control.

.4 Perform tests in presence of Consultant:

.1 Provide instruments, meters, equipment and personnel required to conduct required tests.

.2 Test systems to verify operation as specified.

.5 Conduct di-electric tests, hi-pot tests, insulation resistance tests and ground continuity tests as required by nature of various systems and equipment.

.6 Perform following tests on completed power systems:

.1 Control and switching: test circuits for correct operation of devices, switches and controls.

.2 Polarity tests: test circuits for correct operation of devices, switches and controls.

.3 Voltage tests: test voltage at last outlet of each circuit; maximum potential drop 2% on 120 V, and 208 V branch circuits, 3% on feeder circuits. Correct deficiencies.

.4 Phase balance: measure load on each phase at switchboards, splitter, distribution panel board and lighting and power panel board:

.1 Submit results to Consultant in writing.

.2 Re-arrange phase connections as necessary to balance load on each phase as instructed by Consultant.

.3 After marking such changes, submit revised drawings showing modified connections to Consultant.

.5 Supply voltage: measure line voltage of each phase at load terminals of main breakers and report results in writing to Engineer Consultant. Perform test with majority of electrical equipment in use.

.6 Motor loading: measure line current of each phase of motors with motor operating under load, and report results in writing to Consultant:

.1 Upon indications of imbalances or overloads, thoroughly examine electrical connections and rectify defective parts or wiring.

.2 If electrical connections are correct, report overloads due to defects in driven machines in writing to Consultant.

.7 Insulation resistance tests:

.1 Test insulation resistance of branch and feeder conductors, prior to connection to panels or switchgear.

.2 Megger circuits, feeders and equipment up to 350 V with a 500 V instrument.

.3 Megger 350-600 V circuits, feeders and equipment with a 1000 V instrument.

.4 Check resistance to ground before energizing.

.8 Co-ordinate and carry out motor testing at same time as driven equipment is being tested. In addition to motor loading tests, provide labour and instruments to read and record motor load readings required to supplement tests on driven equipment through various load sequences, as required by driven equipment tests.

.7 General operations: energize and operate electrical circuit and item. Repair, alter, replace, test and adjust as necessary for a complete and operating electrical system.

.8 Provide labour, instruments, apparatus and pay expenses required for testing. Consultant reserves right to demand proof of accuracy of instruments used.

3.8 TEST RESULTS

.1 Submit test results to Consultant for review.

.2 Testing methods and test results: to CSA, CEC and authorities having jurisdiction.

.3 Remove and replace conductors found damaged, with new materials.

.4 Provide required labour and tools, if during testing Consultant requests equipment be opened and removed from their housings to examine equipment, terminations and connections.

3.9 TRAINING

.1 Train operating personnel in operation, care and maintenance of electrical equipment.

.2 Arrange and pay for manufacturer's factory service engineer to provide training. Ensure operating personnel are conversant with its care and operation.

.3 Obtain and submit written confirmation from operating personnel that satisfactory training has been received.

3.10 CLEANING

.1 Perform final cleaning of electrical equipment, systems and components.

3.11 DEMONSTRATION

.1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.

.2 Use operation and maintenance manual, as-built drawings, and audio visual aids as part of instruction materials.

.3 Owner's Representative may record these demonstrations on video tape for future reference.

3.12 PROTECTION

.1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

3.13 CONTROL OF HAZARDOUS ENERGY

.1 Lock out and tag out all electrical and other equipment before performing work as per CAN/CSA-Z460-05.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for wire and box connectors.

1.2 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 05 21 – Wires and Cables 0-1000V.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International) Latest Edition of the following:

.1 CAN/CSA-C22.2, No.18 (R2009), Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.

.2 CSA C22.2 No.65-03 (R2008) Wire Connectors.

.2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC) Latest Edition of the following:

.1 EEMAC 1Y-2, 1961 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

Part 2 Products

2.1 MATERIALS

.1 Pressure type wire connectors to: CSA C22.2 No. 65-03, with current carrying parts of copper sized to fit copper conductors as required.

.2 Fixture type splicing connectors to: CSA C22.2 No. 65-03, with current carrying parts of copper sized to fit copper conductors 10 AWG or less.

.3 Bushing stud connectors to: EEMAC 1Y-2 to consist of:

.1 Connector body and stud clamp for stranded, copper conductors.

.2 Clamp for stranded copper conductors.

.3 Stud clamp bolts.

.4 Bolts for copper bar.

.5 Sized for conductors as indicated.

.4 Clamps or connectors for armoured cable, flexible conduit, as required to: CAN/CSA-22.2 No. 18.1.

.5 Joints required in connecting all wiring up to and including # 8 are to be made using twist-on connectors.

.6 Joints for all other wiring shall be made using colour-keyed compression type connectors followed by a layer of CSA approved vinyl plastic tape.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Remove insulation carefully from ends of conductors and:

- .1 Install mechanical pressure type connectors and tighten screws with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2 No.65-03.
- .2 Install fixture type connectors and tighten. Replace insulating cap.
- .3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 05 20 – Wire and Box Connectors - 0 - 1000 V.

.3 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.4 Section 26 05 43 – Installation of Cables in Trenches and in Ducts.

1.2 REFERENCES

.1 CSA C22.2 No .0.3-09, Test Methods for Electrical Wires and Cables.

.2 CAN/CSA-C22.2 No. 131-M89 (R2004), Type TECK 90 Cable Latest Edition.

Part 2 Products

2.1 BUILDING WIRES

.1 Conductors: solid for #10 AWG and smaller; stranded for #8 AWG and larger. Minimum size: #12 AWG.

.2 Conductors: size as indicated, with 600V insulation of chemically cross-linked thermosetting polyethylene material rated RW90, RWU90 for wiring installed underground in conduit.

.3 Conductors: all wiring shall be copper.

.4 Neutral conductor insulated for 600V shall be continuous with no fuses, switches, or breaks of any kind.

.5 Wiring requirements for specialized systems such as fire alarm, public address, etc. are indicated in the respective specification sections or on drawings.

.6 The voltage drop shall in no case exceed 2% of the line volts for branch circuits.

.7 Voltage drop shall be calculated based on 80% of the circuit breaker current rating for all branch circuits unless noted otherwise.

.8 Voltage drop for motor branch circuits shall be calculated based on current equal to 80% of the ampacity of the branch circuit conductors.

.9 Branch circuit conductor sizes specified on drawings are the minimum required. Upsize branch circuit conductor sizes as required so that the voltage drop is less than the maximum value permitted.

2.2 TECK CABLE

.1 Cable: to CAN/CSA-C22.2 No. 131.

.2 Conductors:

.1 Grounding conductor: copper.

.2 Circuit conductors: copper, size as indicated.

.3 Insulation:

.1 Type: ethylene propylene rubber.

.2 Chemically cross-linked thermosetting polyethylene rated type RW90, 600 V.

.4 Inner jacket: polyvinyl chloride material.

.5 Armour: interlocking galvanized steel.

.6 Overall covering: thermoplastic polyvinyl chloride material.

.7 Connectors:

.1 Watertight approved for TECK cable.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION OF BUILDING WIRES

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34.

.2 In underground ducts and trenches in accordance with applicable codes standards.

.3 Use vibration proof expanding spring wire connectors for No. 10 and smaller.

3.3 INSTALLATION OF TECK CABLE 0 -1000 V

.1 Install cables:

.1 Group cables wherever possible on channels.

.2 Terminate cables in accordance with Section 26 05 20- Wire and Box Connectors - 0 - 1000 V.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International):

.1 CSA C22.2 No.41-07, Grounding and Bonding Equipment.

Part 2 Products

2.1 CONNECTORS AND TERMINATIONS

.1 Copper compression connectors to CSA C22.2 as required sized for conductors.

Part 3 Execution

3.1 INSTALLATION

.1 Install, terminations, and splices in accordance with manufacturer's instructions.

.2 Bond and ground as required to CSA C22.2 No.41.

.3 Do not install more than three (3) connections per junction box unless specifically permitted by Engineer (in writing).

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

Part 2 Products

2.1 EQUIPMENT

.1 Grounding conductors: bare stranded copper, soft annealed, size as indicated.

.2 Insulated grounding conductors: green, type RW90, RWU90 for conductors in underground conduit.

.3 Non-corroding accessories necessary for grounding system, type, size, material as indicated, including but not necessarily limited to:

- .1 Grounding and bonding bushings.
- .2 Protective type clamps.
- .3 Bolted type conductor connectors.
- .4 Thermit welded type conductor connectors.
- .5 Bonding jumpers, straps.
- .6 Pressure wire connectors.

2.2 MANUFACTURERS

.1 Acceptable manufacturers: Burndy Corp., Erico Inc., Cadweld Div., Thomas & Betts (or approved equivalent).

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION GENERAL

.1 Install complete permanent, continuous grounding system including electrodes, conductors, connectors, accessories. Where EMT or PVC is used, run ground wire in conduit.

.2 Install connectors in accordance with manufacturer's instructions.

.3 Protect exposed grounding conductors from mechanical injury.

.4 Make buried connections, and connections to conductive water main and grounding electrodes using copper welding by thermit process.

.5 Use mechanical connectors for grounding connections to equipment provided with lugs.

.6 Soldered joints not permitted.

.7 Install bonding wire for flexible conduit, connected at both ends to grounding bushing.

.8 Install separate ground conductor to outdoor lighting standards.

.9 Connect building structural steel and metal siding to ground by welding copper to steel.

.10 Make grounding connections in radial configuration only, with connections terminating at single grounding point. Avoid loop connections.

.11 Bond single conductor metallic armoured cables to cabinet at supply end, and provide non-metallic entry plate at load end.

.12 Install grounding conductors in conduit except where run in cable tray. Bond to EMT conduit.

.13 Ground secondary enclosures.

3.3 EQUIPMENT GROUNDING

.1 Install grounding connections to typical equipment included in, but not necessarily limited to following list: frames of motors, starters, control panels, distribution panels, and transformers.

.2 Where feeders over 100 A capacity pass through junction or pull boxes the ground continuity through the box shall be ensured by the use of grounding bushings and conductors sized in accordance with table 18 of CSA 22.1.

.3 Run continuous bond wire the entire length of cable tray. Bond to cable tray at each section.

3.4 GROUNDING BUS

.1 Install copper grounding bus mounted on insulated supports, on walls of electrical rooms as indicated on drawings.

.2 Use thermit weld connections for all connections to perimeter ground bus.

3.5 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Perform ground continuity and resistance tests using method appropriate to site conditions and to approval of Engineer and local authority having jurisdiction over installation.

.3 Perform tests before energizing electrical system.

.4 Disconnect ground fault indicator during tests.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

Part 2 Products

2.1 SUPPORT CHANNELS

.1 U shape, size 41 x 41 x 2.5 mm thick, surface mounted or suspended.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Secure equipment to hollow or solid masonry, tile and plaster surfaces with nylon shields.

.2 Secure equipment to poured concrete with expandable inserts.

.3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

.4 Secure surface mounted equipment with twist clip fasteners to inverted T bar ceilings. Ensure that T bars are adequately supported to carry weight of equipment specified before installation.

.5 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.6 Fasten exposed conduit or cables to building construction or support system using straps:

- .1 One-hole steel straps to secure surface conduits and cables 53mm and smaller.
- .2 Two-hole steel straps for conduits and cables larger than 53mm.
- .3 Beam clamps to secure conduit to exposed steel work.

.7 Suspended support systems:

- .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
- .2 Support 2 or more cables or conduits on channels supported by 10 mm dia. minimum threaded rod hangers where direct fastening to building construction is impractical.

.8 For surface mounting of two or more conduits use channels at 1.5 m on centre spacing.

.9 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.

.10 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.

.11 Do not use wire lashing, perforated strap or tie-wraps to support or secure raceways or cables.

.12 Do not use supports or equipment installed for other trades for conduit or cable support except with permission of other trade and approval of Engineer.

.13 Install fastenings and supports as required for each type of equipment, cable and conduit, and in accordance with manufacturer's installation recommendations.

.14 Do not support conduit from other conduit.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

Part 2 Products

2.1 JUNCTION AND PULL BOXES

.1 Welded steel construction with screw-on flat covers for surface mounting.

.2 Covers with 27 mm minimum extension all around, for flush-mounted pull and junction boxes.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 SPLITTER INSTALLATION

.1 Install splitters and mount plumb, true and square to the building lines.

.2 Extend splitters full length of equipment arrangement except where indicated otherwise.

3.3 JUNCTION AND PULL BOXES INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Install pull boxes so as not to exceed 30 m of conduit run or 2-90° bends between pull boxes.

.3 Mount cabinets with top not higher than 1800 mm above finished floor.

.4 Maximum three (3) connections per junction box unless explicitly permitted by Engineer.

3.4 IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results – Electrical.

.2 Install size 2 identification labels indicating system name, voltage and phase.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

1.2 REFERENCES

.1 CAN/CSA-C22.2 No. 18-98 (R2003) Outlet Boxes, Fittings and Associated Hardware.

Part 2 Products

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1-2015.

.2 102 mm square or larger outlet boxes as required for special devices.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 Combination boxes with barriers where outlets for more than one system are grouped. Normal power and essential power shall not enter the same box as per CEC 24-302(3).

2.2 SHEET STEEL OUTLET BOXES

.1 Electro-galvanized steel single and multi gang flush device boxes for flush installation, minimum size 76 x 51 x 38 mm or as indicated. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.

.2 Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 x 54 x 48 mm.

.3 102 mm square or octagonal outlet boxes for lighting fixture outlets.

.4 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished plaster walls.

2.3 MASONRY BOXES

.1 Electro-galvanized steel masonry single and multi gang boxes for devices flush mounted in exposed block walls.

2.4 CONCRETE BOXES

.1 Electro-galvanized sheet steel concrete type boxes for flush mounted devices in concrete with matching extension and plaster rings as required.

2.5 CONDUIT BOXES

.1 Cast FS boxes with factory-threaded hubs and mounting feet for surface wiring of switches, receptacles and above ceiling mounted data outlets.

2.6 FITTINGS - GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

.3 Conduit outlet bodies for conduit up to 32 mm and pull boxes for larger conduits.

.4 Double locknuts and insulated bushings on sheet metal boxes.

.5 EMT fittings to be steel set screw type.

2.7 IDENTIFICATION

.1 All boxes installed above finished ceilings and in interstitial levels shall have their covers color coded, as described in these specifications, and shall be labelled as to room number they serve.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Support boxes independently of connecting conduits.

.2 Fill boxes with paper, sponges or foam or similar approved material to prevent entry of debris during construction. Remove upon completion of work.

.3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

.4 Provide correct size of openings in boxes for conduit, mineral insulated, and armored cable connections. Reducing washers are not allowed.

.5 All boxes shall be installed recessed/flush unless indicated otherwise.

.6 Install all outlet boxes in exterior walls with flexible vapour barrier and seal with caulking.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

1.2 REFERENCES

.1 Canadian Standards Association (CSA) Latest Edition of the following:

- .1 CAN/CSA C22.2 No. 18.3-04 (R2009) Conduit, Tubing and Cable Fittings.
- .2 CSA C22.2 No. 56-04 Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
- .3 CSA C22.2 No. 83-M 1985 (R2008), Electrical Metallic Tubing.
- .4 CAN/CSA C22.2 No. 18.1-04 (R2009), Metallic Outlet Boxes.
- .5 CAN/CSA C22.2 No. 18.4-04 (R2009), Hardware for the Support of Conduit, Tubing and Cable.

Part 2 Products

2.1 CONDUITS

.1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83 – M 1985 (2008), with couplings.

.2 Flexible metal conduit and liquid-tight flexible conduit, complete with anti-short bushings: to CSA C22.2 No. 56-04, steel and liquid-tight flexible metal.

2.2 CONDUIT FASTENINGS

.1 One-hole steel straps to secure surface conduits 53 mm and smaller. Two hole steel straps for conduits larger than 53 mm.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits at 1.5 m oc.

.4 Threaded rods, 10 mm diameter minimum, to support suspended channels.

2.3 CONDUIT FITTINGS

.1 Rain tight EMT connectors shall be used on "vertical" sections of conduit runs where terminating into tops of electrical equipment incorporating drip shields or hoods.

.2 Fittings: Use steel set screw connectors and fittings for EMT. Coating: same as conduit.

.3 Factory "ells" where 90 degree bends are required for 27 mm and larger conduits.

.4 Connectors for flexible conduit shall be set screw galvanized steel.

.5 Connectors for liquid tight flexible conduit shall be water tight, compression type galvanized steel.

.6 Threaded plastic or metal bushings to be installed on all EMT connectors sizes 35 mm and larger.

.7 Fittings: manufactured for use with conduit specified. Coating: same as conduit. To CAN/CSA C22.2 No. 18, Manufactured for use with conduit specified.

.8 Connections for liquid tight flexible conduit shall be watertight compression type galvanized steel.

2.4 FISH CORD

.1 Polypropylene.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.2 Conceal conduits except in mechanical and electrical service rooms and in unfinished areas.

.3 EMT shall be installed as a complete system.

.4 Support of electrical systems raceway shall be independent of any type of suspended ceiling support rods, wires, etc. and mechanical piping or duct systems.

.5 Use electrical metallic tubing (EMT) for all work, unless otherwise indicated, for panelboard feeders, branch circuit wiring, fire alarm and communications, etc., where not installed underground unless specifically indicated otherwise. Provide a separate green ground for all conduit systems, including E.M.T.

.6 Flexible Metal Conduit:

.1 Use flexible metal conduit for connection to surface or recessed fluorescent fixtures.

.2 Flexible metal conduit permitted above T-bar ceilings, for drops to various fire alarm devices mounted on flush outlet boxes in finished ceiling. Minimum size of flexible conduit: 22 mm, Maximum length of drop: 1.5 m.

.7 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment, furniture and transformers. Include a separate ground wire.

.8 Install conduit sealing fittings in hazardous areas. Fill with compound.

.9 Minimum conduit size for lighting and power circuits: 16 mm.

.10 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.11 Mechanically bend steel conduit over 22 mm dia.

.12 Field threads on rigid conduit must be of sufficient length to draw conduits up tight.

.13 Install fish cord in empty conduits.

.14 Run 3 – 27 mm spare conduits up to accessible ceiling or interstitial space for each flush panel. Terminate these conduits in 153 x 153 x 102 mm junction boxes in ceiling space / interstitial space.

.15 Remove and replace blocked conduit sections. Do not use liquids to clean out conduits.

.16 Dry conduits out before installing wire.

.17 Maximum spacing between supports as follows:

.1 1.5 m for 21 mm trade size conduit and smaller.

.2 2 m for 27 mm to 35 mm trade size conduit.

.3 3 m for 41 mm trade size and larger.

.18 Ground Wires:

.1 Provide a separate green ground wire in all conduit, including EMT.

3.3 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Run conduits in flanged portion of structural steel.

.3 Group conduits wherever possible on suspended or surface channels.

.4 Do not pass conduits through structural members except as indicated.

.5 Do not locate conduits less than 76 mm parallel to steam or hot water lines with minimum of 27 mm at crossovers.

.6 Unless approved in writing by Engineer, surface conduits are acceptable only in electrical, communications and mechanical rooms.

3.4 CONCEALED CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Do not run conduits horizontally in walls and do not run conduit on inside of metal studs.

.3 Do not install conduits in terrazzo or concrete toppings.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for breaker type panelboards.

1.2 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 28 21 - Moulded Case Circuit Breakers.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International) Latest Edition of the following:

.1 CSA C22.2 No.29–M 1989 (R2004), Panelboards and Enclosed Panelboards.

1.4 SUBMITTALS

.1 Submit shop drawings in accordance with Section 26 05 00 – Common Work Results – Electrical.

.2 Drawings include electrical detail of panelboard, branch breaker type, quantity, ampacity and enclosure dimension, shown in the same layout as on panelboard schedules.

Part 2 Products

2.1 PANELBOARDS

.1 Panelboards: to CSA C22.2 No.29–M 1989 (R2004) and product of one manufacturer:

.1 Install circuit breakers in panelboards before shipment.

.2 In addition to CSA requirements manufacturer's nameplate must show fault current that panel including breakers has been built to withstand.

.3 All provisional space shall be fully bussed and breaker ready.

.2 250V panelboards: bus and breakers rated for 10 kA rms (symmetrical) interrupting capacity minimum or as indicated.

.3 Sequence phase bussing with odd numbered breakers on left and even on right, with each breaker identified by permanent number identification as to circuit number and phase.

.4 Panelboards: mains, number of circuits, and number and size of branch circuit breakers as indicated.

.5 Two keys for each panelboard and key panelboards alike. Turn over keys to building Owner.

.6 Aluminum bus with neutral of same ampere rating as mains, unless noted otherwise.

.7 Mains: suitable for bolt-on to bus breakers.

.8 Trim with concealed front bolts and hinges.

.9 Trim and door finish: baked grey enamel.

.10 Copper ground bus.

.11 Surface mounted panelboard shall be sprinkler proof.

.12 Complete with main breakers where indicated.

2.2 BREAKERS

.1 Breakers: to Section 26 28 21 - Moulded Case Circuit Breakers.

.2 Breakers with thermal and magnetic tripping in panelboards except as indicated otherwise.

.3 Main breaker: separately mounted on top or bottom of panel to suit cable entry.

.4 Lock-on devices for 10% of 15 to 30 A breakers installed as indicated. Turn over unused lock-on devices to Owner.

.5 Lock-on devices for fire alarm, door supervisory, intercom, stairway, exit and night light circuits.

.6 Breakers shall be installed in panelboards as per schedule on drawings to shop drawings shall indicate above positioning.

2.3 SURGE SUPPRESSION

.1 Not Applicable

2.4 EQUIPMENT IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Requirements - Electrical.

.2 Nameplate for each panelboard size 4 engraved as indicated.

.3 Nameplate for each circuit in distribution panelboards size 2 engraved as indicated.

.4 Complete circuit directory, written in English, with typewritten legend showing location and load of each circuit.

2.5 ACCEPTABLE MANUFACTURERS

.1 Acceptable manufacturer: Eaton or approved equal by Schneider or Siemens.

Part 3 Execution

3.1 INSTALLATION

.1 Locate panelboards as indicated and mount securely, plumb, true and square, to adjoining surfaces.

.2 Mount panelboards to height specified in Section 26 05 00 - Common Work Results - Electrical or as indicated.

.3 Connect loads to circuits.

.4 Connect neutral conductors to common neutral bus with respective neutral identified.

.5 Each flush mounted panel shall have 3 – 27 mm empty conduits stubbed into accessible ceiling space or to junction box in existing interstitial spaces for future connections.

3.2 TESTS

.1 Test each branch breaker to verify that it controls the load indicated on the drawing and panel directory.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 - Common Work Results - Electrical.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International):

.1 CSA-C22.2 No.42-99 (R2004), General Use Receptacles, Attachment Plugs and Similar Devices.

.2 CSA-C22.2 No.42.1-00 (R2004), Cover Plates for Flush-Mounted Wiring Devices (Bi-national standard, with UL 514D).

1.3 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Division 01 requirements.

Part 2 Products

2.1 SWITCHES

.1 15 A, 120 V, single pole switches, as indicated.

.2 Manually-operated heavy duty specification grade ac toggle switches with following features:

.1 Terminal holes approved for No. 10 AWG wire.

.2 Silver alloy contacts.

.3 Urea or melamine moulding for parts subject to carbon tracking.

.4 Suitable for back and side wiring.

.5 Ivory toggle.

.3 Toggle operated fully rated for tungsten filament and fluorescent lamps, and up to 80% of rated capacity of motor loads.

.4 Switches of one manufacturer throughout project.

.5 Switches on normal power shall have ivory toggles and coverplates as shown below, on essential power supply red toggles and coverplates.

.6 Acceptable products:

.1 Momentary contact (indicated with ‘LV’ on drawings):

.1 Hubbell #HBL1556-I.

.2 Leviton #1256-I.

.3 Pass & Seymour #1250-I.

.4 Or approved equal by Eaton.

.2 Toggle switch:

.1 Hubbell #HBL1201-I

.2 Leviton #1201-2-I

.3 Pass & Seymour #15ACI-I

.4 Or approved equal by Eaton.

.7 Each light switch shown on plans (new and existing) shall have the circuit number and supplying panelboard permanently identified. This identification shall be a mechanically attached lamicoid nameplate, and shall be visible when the coverplate is in place, and shall be in a position not likely to be painted over, and shall not be on the coverplate itself. Lamicoid shall be white in colour with black lettering for normal power and red in colour with white lettering for emergency power.

2.2 RECEPTACLES

.1 Duplex hospital grade heavy duty receptacles, CSA type 5-15 R, 125 V, 15 A, U-ground, to: CSA-C22.2 No.42 with following features:

.1 Ivory urea moulded housing.

.2 Suitable for No. 10 AWG for back and side wiring.

.3 Break-off links for use as split receptacles.

.4 Eight back wired entrances, four side wiring screws.

.5 Triple wipe contacts and riveted grounding contacts.

.6 Acceptable materials:

.1 Hubbell #8200-I (red on essential).

.2 Leviton #8200-I (red on essential).

.3 Pass & Seymour #8200-I (red on essential).

.4 Or approved equal by Eaton.

.2 Ivory housing for receptacles connected to non-essential power. Red housing for receptacles connected to essential power.

.3 Surge suppressed receptacles, hospital grade, CSA type 5-15 R, 125 V, 15 A, U-ground with the following features:

.1 Blue urea housing.

.2 Decora style.

.3 Rated single pulse energy of 210 joules minimum.

.4 Clamping performance of L-N, L-G, N-G of 400 V peak.

.5 Acceptable manufacturers:

.1 Hubbell #HBL 8262SA-B.

.2 Leviton #8280-B.

.3 Pass & Seymour #8200-BLSP.

.4 Or approved equal by Eaton.

.6 Supply red coverplates for devices on essential power.

.4 Other grounding receptacles, hospital grade with ampacity and voltage as indicated. 20 A receptacles shall be 5-20R type as defined in CSA C22.1-15.

.5 Receptacles of one manufacturer throughout project.

.6 Each receptacle shown on plans shall have the circuit number and supplying panelboard permanently identified at the outlet. This identification shall be a lamicoid nameplate, mechanically attached and shall be visible when the receptacle coverplate is in place, and shall be in a position not likely to be painted over, and shall not be on the coverplate itself. Label all computer and housekeeping receptacles in patient care areas “Not for medical use” in English.

2.3 COVER PLATES

.1 Cover plates for wiring devices to: CSA-C22.2 No.42.1.

.2 Cover plates from one manufacturer throughout project.

.3 Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.

.4 Nylon coverplates, thickness 2.5 mm for wiring devices mounted in flush-mounted outlet box. Ivory coverplates for receptacles and switches connected to non-essential power. Red coverplates for receptacles and switches connected to essential power.

.5 Sheet metal cover plates for wiring devices mounted in surface-mounted FS or FD type conduit boxes.

Part 3 Execution

3.1 INSTALLATION

.1 Switches:

.1 Install switches in gang type outlet box when more than one switch is required in one location.

.2 Mount toggle switches at height specified in Section 26 05 00 – Common Work Results - Electrical.

.2 Receptacles:

.1 Install receptacles in gang type outlet box when more than one receptacle is required in one location.

.2 Mount receptacles at height in accordance with Section 26 05 00 - Common Work Results - Electrical.

.3 All receptacles shall be installed with the “U” ground at the top.

.4 All receptacles mounted horizontal shall be oriented with ground to the left.

.3 Cover plates:

.1 Protect cover plate finish with paper or plastic film until painting and other work is finished.

.2 Install suitable common cover plates where wiring devices are grouped.

.3 Do not use cover plates meant for flush outlet boxes on surface-mounted boxes.

.4 Switches and/or receptacles fed by different systems (normal versus emergency) shall not be installed in same box.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials for moulded-case circuit breakers.

1.2 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 24 17 – Panelboards Breaker Type.

1.3 REFERENCES

.1 Canadian Standards Association (CSA International) Latest Edition of the following:

.1 CSA-C22.2 No. 5-2 (R2007), Moulded-Case Circuit Breakers, Moulded-Case Switches and Circuit-Breaker Enclosures (Tri-national standard with UL 489, tenth edition, and the second edition of NMX-J-266-ANCE).

.2 CAN/CSA-C22.2 No. 144-M91 (R2001), Ground Fault Circuit Interrupters.

1.4 SUBMITTALS

.1 Submit Shop Drawings in accordance with Section 26 05 00 – Common Work Results for Electrical.

.2 Include time-current characteristic curves for breakers with ampacity of 100 A and over.

Part 2 Products

2.1 BREAKERS GENERAL

.1 Moulded-case circuit breakers: to CSA C22.2 No. 5.

.2 Bolt-on moulded case circuit breaker: quick-make, quick-break type, for manual and automatic operation.

.3 Common-trip breakers: with single handle for multi-pole applications.

.4 Magnetic instantaneous trip elements in circuit breakers to operate only when value of current reaches setting:

.1 Trip settings on breakers with adjustable trips to range from 3-8 times current rating.

.5 Circuit breakers to have minimum symmetrical rms interrupting capacity rating to match panel.

2.2 THERMAL MAGNETIC BREAKERS

.1 Moulded case circuit breaker to operate automatically by means of thermal and magnetic tripping devices to provide inverse time current tripping and instantaneous tripping for short circuit protection.

2.3 GFCI BREAKERS

.1 Ground fault circuit interrupter (GFCI) breakers to CAN/CSA-C22.2 No. 144, Class “A” type.

.2 Single pole GFCI breakers, rated as noted c/w test and reset facilities.

2.4 ACCEPTABLE MATERIALS

.1 Breakers shall be compatible with panelboards specified in Section 26 24 17 – Panelboards Breaker Type and shall meet the short circuit interrupting ratings as indicated.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

.1 Install circuit breakers as indicated.

.2 Adjust settings on breakers where required to ensure coordination with upstream breakers.

3.3 TESTS

.1 Demonstrate simulated ground fault tests for all GFCI breakers.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

1.2 REFERENCES

.1 American National Standards Institute:

.1 ANSI J-STD-607-A-2002, Joint Standard - Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.

.2 Telecommunications Industries Association (TIA)/Electronic Industries Alliance (EIA):

.1 TIA/EIA-606-2002, Administration Standard for the Commercial Telecommunications Infrastructure.

.3 U.S. Department of Labor/Occupational Safety and Health Administration (OSHA):

.1 Nationally Recognized Testing Laboratory (NRTL).

1.3 SYSTEM DESCRIPTION

.1 Telecommunications grounding and bonding system consisting of grounding bus bars, bonding backbones, and other bonding conductors.

.2 Provides ground reference for telecommunications systems within building and bonding to ground of equipment in telecommunications rooms.

.3 Metallic pathways, cable shields, conductors, and hardware within telecommunications spaces are bonded to telecommunications grounding and bonding system.

Part 2 Products

2.1 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB)

.1 Predrilled copper bus bar, listed by NRTL with holes 8 mm diameter for use with standard-sized lugs to: ANSI J-STD-607-A.

.2 Dimensions 6 mm thick, 100 mm wide, 600 mm long to: ANSI J-STD-607-A.

2.2 TELECOMMUNICATIONS GROUNDING BUSBARS (TGB)

.1 Predrilled copper bus bar, listed by NRTL with holes 8 mm diameter for use with standard-sized lugs to: ANSI J-STD-607-A.

.2 Dimensions 6 mm thick, 50 mm wide, 600 mm long to: ANSI J-STD-607-A.

2.3 BONDING CONDUCTOR FOR TELECOMMUNICATIONS

.1 Copper conductor, green insulated, size as indicated to: ANSI J-STD-607-A.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB)

.1 Install TMGB on insulated supports 50 mm high in second floor electrical room close to telephone backboard.

3.3 TELECOMMUNICATIONS GROUNDING BUSBARS (TGB)

.1 Install one TGB in each communications room.

.2 Install copper bonding conductor, size as indicated, from each TGB to TMGB.

3.4 BONDING CONDUCTORS GENERAL

.1 When placed in ferrous metallic conduit or EMT, bond one end of conduit or EMT using grounding bushing.

3.5 BONDING CONDUCTOR FOR TELECOMMUNICATIONS

.1 Install bonding conductor for telecommunications, size as indicated, from TMGB to service equipment (power) ground.

.2 Use exothermic welding or approved 2-hole compression lugs for connection to TMGB.

3.6 BONDING TO TMGB

.1 Bond metallic communications raceways in second floor electrical room to TMGB using #6 AWG green insulated copper conductor.

.2 For communications cables within second floor electrical room having shield or metallic member, bond shield or metallic member to TMGB.

.3 Bond communications cabinets located in second floor electrical room to TMGB using #6 AWG green insulated copper conductor.

3.7 BONDING TO TGB

.1 Bond metallic communications raceways in communications rooms to the corresponding TGB using #6 AWG green insulated copper conductor.

.2 For communications cables within communications rooms having shield or metallic member, bond shield or metallic member to the corresponding TGB.

.3 Bond equipment racks and cabinets located in communications rooms to the corresponding TGB using #6 AWG green insulated copper conductor.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 05 31 – Splitters, Junction and Pull Boxes.

.3 Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

.4 Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings.

1.2 SYSTEM DESCRIPTION

.1 Raceway system for voice/data, systems consisting of outlet boxes, cover plates, conduits, pull boxes, fish wires, cable tray and overhead J-hook distribution system.

Part 2 Products

2.1 MATERIAL

.1 Conduits: In accordance with Section 26 05 34 - Conduits, Conduit Fastenings and Conduit Fittings.

.2 Junction and pull boxes: in accordance with Section 26 05 31 – Splitters, Junction and Pull Boxes.

.3 Outlet boxes, conduit boxes and fittings: in accordance with Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings.

.4 Fish wire: polypropylene type.

.5 J-Hook: in accordance with Section 27 05 30 - Cable Trays for Communications Systems.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

.1 Install fish wire, outlet boxes, pull boxes, coverplates, conduit, J-hooks, miscellaneous and positioning material to constitute a complete system, in preparation for cable installation under this contract.

.2 Conduits:

.1 Provide conduits for conveyance of voice/data, system cabling as follows:

.1 In ceiling spaces that are not accessible (i.e. above gypsum board ceilings).

.2 Supply and install conduits for conveyance of voice/data, system cabling from individual conduit stubs to communications rooms.

.3 In public areas that have exposed (open) ceilings.

.3 Outlets for Voice/Data system:

.1 Provide a 100mm x 100mm flush-mounted outlet box c/w square single-gang tile ring.

.2 Provide minimum 21mm EMT conduit from outlet box to server or demarcation point complete with grounding bushing.

.3 Bond conduit grounding bushing to nearest power conduit using #12AWG bare solid copper.

.4 Data outlets for wireless access points:

.1 Provide a 100mm x 100mm surface-mounted outlet box c/w square single-gang tile ring.

.2 Provide conduit and bonding as indicated in Article 3.2.3.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 05 36 – Cable Trays for Electrical Systems.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International):

.1 CSA-C22.2 No. 214-08, Communications Cables.

.2 American National Standards Institute (ANSI)/ Telecommunications Industry Association (TIA):

.1 ANSI/TIA-568-C.1- (February 2009), Commercial Building Telecommunications Cabling Standard.

.2 ANSI/BICSI-568-2008, Standard for Installing Commercial Building Telecommunications Cabling.

.3 TIA-568-B.10- (April 2008), Commercial Building Telecommunications Cabling Standard, Part 2: Balanced Twisted-Pair Cabling Components.

.4 TIA-606-A-1(January 2009), Administration Standard for the Commercial Telecommunications Infrastructure.

1.3 SYSTEM DESCRIPTION

.1 Structured telecommunications wiring system consisting of unshielded-twisted-pair cable, terminations, connectors, patch and line cords and related equipment installed inside a building for occupant's CCTV system.

1.4 SUBMITTALS AND SHOP DRAWINGS

.1 Provide shop drawings in accordance with Division 01 requirements.

.2 As-built Records and Drawings:

.1 Provide As-Built drawings in accordance with Division 01 requirements.

.1 Provide and place one hard copy of as-built records in telecommunications room.

Part 2 Products

2.1 MATERIALS

.1 Conduit: EMT to Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.2 Outlet boxes, conduit boxes and fittings: to Section 26 05 32.

.3 All “Permanent Link” components shall be from the same manufacturer.

2.2 CCTV CABLES – CATEGORY 6

.1 Horizontal distribution cables – copper:

.1 Four (4) unshielded twisted pairs formed into a cable core, with overall polyvinyl chloride jacket, Category 6 listed. Confirm CCTV cable colour with user prior to ordering.

.2 Conductors: 23 AWG copper with polyolefin PFE insulation.

.3 Non-parallel twists.

.4 Cables shall extend 300 mm beyond box at outlet, and minimum 3 m beyond termination point at network switch.

.5 Certification/Listings:

.1 CSA certified as CMR (FT4) per CSA standard C22.2 and UL standard 444.

.6 Acceptable manufacturers:

.1 Panduit #PUR 6004 XX-UY (XX = color) or approved equal by Belden, Leviton, Hubell.

2.3 CCTV CABLES – CATEGORY 6A

.1 Horizontal distribution cables – copper:

.1 Four (4) unshielded twisted pairs formed into a cable core, with overall polyvinyl chloride jacket, Category 6A listed, yellow.

.2 Conductors: 23 AWG copper with polyolefin PFE insulation.

.3 Non-parallel twists.

.4 Cables shall extend 300 mm beyond box at outlet, and minimum 3 m beyond termination point at network switch.

.5 Certification/Listings:

.1 CSA certified as CMR (FT4) per CSA standard C22.2 and UL standard 444.

.6 Acceptable manufacturers:

.1 Panduit #PUR 6A04 YL-UY or approved equal by Belden, Leviton.

2.4 CCTV DATA OUTLETS

.1 Data outlets – copper:

.1 Eight (8) conductor jacks as indicated.

.2 Fully compliant with all requirements for Category 6.

.3 2 port decora frame with lamicoid identification label and yellow keystone modules for CCTV (faceplate color to match existing).

.4 Suitable for flush mounting as indicated.

.5 Acceptable Products:

.1 Keystone frame: Panduit #NK2RMF-XX (XX indicates color).

.2 Blank modules: Panduit #NKBMXX-X (XX indicates color)..

.3 Keystone Modules: Panduit #NK688MYL (CCTV).

.4 Panduit or approved equal by Belden, Leviton.

.6 Provide blank keystone modules for all unused ports.

.7 Provide decora coverplate for every CCTV outlet shown on drawings.

2.5 CCTV PATCH CORDS

.1 Patch Cords – Copper:

- .1 Four (4) unshielded twisted pair.
- .2 Conductors, 24 AWG with overall polyvinyl chloride (PVC) jacket, Category 6 rated.
- .3 UL listed.
- .4 4 pair connector to RJ45.
- .5 Provide one (1) 3m line cord per CCTV data outlet.
- .6 Color: to match cables.
- .7 Acceptable Manufacturers:
  - .1 Panduit #NK6PCY or approved equal by Belden, Leviton, Hubbell.

2.6 WALL MOUNT EQUIPMENT RACK (CCTV)

.1 Holds equipment up to 20” deep

.2 Standard 19” EIA hole spacing

.3 Two rack bays; 2RU rack unit space in upper bay, 2RU rack unit space in lower bay.

.4 Acceptable Manufacturers:

- .1 Middle Atlantic #HDR-4 or approved equivalent by Belden, Panduit, Hubbell.

2.7 UNINTERRUPTABLE POWER SUPPLY

.1 UPS features:

- .1 120VAC input
- .2 1000VA capacity
- .3 Six NEMA 5-15R output receptacles
- .4 Tower configuration for floor mount where required. Rack mount in communications room.
- .5 Valve regulated, nonspillable, lead acid battery
- .6 Acceptable Manufacturers:
  - .1 Liebert #GXT4-1000RT120 C/W #GXT4-5A48BATTKIT

2.8 1O PORT POE CCTV network SWITCH

.1 10 PoE+ ports Gigabit switch.

.2 124W total PoE power (PoE+ supported).

.3 IEEE 802.3 at compliant.

.4 Acceptable Product:

- .1 Cisco #SG-300-10MPP.
- .2 Equivalent products by Avaya and HP.

2.9 24 PORT POE CCTV network SWITCH

.1 24 PoE+ ports Gigabit switch.

.2 375W total PoE power (PoE+ supported).

.3 IEEE 802.3 at compliant.

.4 Acceptable Product:

.1 Cisco #SF-300-28MP.

.2 Equivalent products by Avaya and HP.

Part 3 Execution

3.1 INSTALLATION OF DATA CABLES

.1 Install cables in continuously bonded conduit or j-hook system. Do not exceed maximum pulling tension, as per manufacturers' recommendations.

.2 Cables shall extend minimum of 300 mm beyond box at outlet and 3000 mm beyond termination point at terminal or patch panel, maximum conductor length from distribution terminal point (i.e. patch panel) to outlet - 90 m.

.3 Identification of cables:

.1 Label nomenclature to be approved by user prior to cable installation.

.2 Identify at both ends with approved wire markers.

.3 Include terminal, outlet, cable and room number.

3.2 CCTV CABLES TESTS

.1 CCTV cabling, terminations and testing shall be performed by an end to end "Certified System Vendor", or "Factory Authorized Contractor", and shall be "IBDN Certified". Provide test results.

.2 All tests shall be completed with a level III tester.

.3 Cables failing test shall be replaced by electrical contractor, at contractors expense.

.4 Test results shall be submitted on compact discs.

3.3 INSTALLATION OF EQUIPMENT CABLES

.1 Install equipment cables from equipment patch panel as indicated:

.1 Identify and label as indicated to: TIA-606-A.

END OF SECTION

Part 1 General

1.1 Related Sections

.1 Division 01 – General Requirements.

1.2 System Description

.1 System to consist of alarm control panel, keypads, wireless door contacts and wireless panic key (FOB), wireless panic button, wireless transceiver, wireless repeater.

.2 System shall be capable of annunciating a specific zone in duress on keypad when wireless panic key or wireless panic button is depressed. If a zone is in duress, panel shall be programmed to activate siren within that zone until alarm is cleared at the keypad.

.3 Wireless transceiver and repeaters will be installed throughout the facility to extend the communication range between wireless devices and alarm panel.

1.3 Submittals

.1 Submit shop drawings and product data in accordance with Division 01 – General Requirements.

.2 Include schematic, wiring and interconnection diagrams.

1.4 Closeout Submittals

.1 Provide operation and maintenance data for all security components for incorporation into manual specified in Division 01 – General Requirements.

1.5 Quality Assurance

.1 The manufacturer shall be a firm regularly engaged in the manufacture door access control systems and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar services for not less than three years.

.2 The system installer shall be a firm with at least five years of successful installation experience with projects utilizing specified system and equipment required for this project. A list of three (3) projects of similar size shall be made available, if requested.

.3 All items of equipment including wire and cable shall be designed by the manufacturer to function as a complete system and shall be accompanied by the manufacturer's complete service notes and drawings detailing all interconnections.

.4 The contractor shall be an established communications and electronics Contractor that has had and currently maintains a locally run and operated business for at least five years. The Contractor shall be a duly authorized distributor of the equipment supplied with full manufacturer's warranty privileges.

.5 The Contractor shall show satisfactory evidence, upon request, that they maintain a fully equipped service organization capable of furnishing adequate inspection and service to the system. The Contractor shall maintain at their facility the necessary spare parts in the proper proportion as recommended by the manufacturer to maintain and service the equipment being supplied.

Part 2 Products

2.1 Power Supply

.1 ULC listed.

.2 120 V AC output.

.3 Dual outputs: 12 or 24 V.

.4 Four (4) zones.

.5 Battery with charger, 3 or 5 amp capacity.

.6 LED power indicator.

.7 Fire alarm interface.

.8 Jumper selectable auto or manual reset (set auto at factory).

.9 Acceptable manufacturer: Rutherford Controls #10-5-PPD-FT.

2.2 Security Alarm Panel

.1 The Security Alarm panel shall provide, but not be limited to, the following options:

- .1 128 programmable zones.
- .2 4 programmable outputs.
- .3 1 supervised bell circuit.
- .4 8 partitions
- .5 Switched auxiliary power supply.
- .6 Supervised digital alarm communicator.
- .7 Supervised battery charger.
- .8 System partition.
- .9 1000 event buffer.
- .10 Comprehensive scheduling.
- .11 Upload/download capability.
- .12 Ground fault detection.
- .13 ULC-S302 listed.
- .14 Automatic daylight savings adjustment.
- .15 2 addressable loops for up to 128 addressable devices.
- .16 Acceptable product: DSC #HS2128 or approved equivalent.

2.3 Panic Pushbutton c/w Wireless Door Contact

.1 Panic pushbutton features:

.1 Enclosure: ABS plastic.

.2 Rated 3 A at 28 V DC/AC, 0.5 A at 125 V DC resistive.

.3 Temperature range 32°F to 140°F (85% maximum humidity).

.4 Momentary contact.

.5 Mount pushbutton on stainless steel coverplate.

.6 Pushbutton to be equipped with a wireless door contact installed in the backbox. Wire pushbutton to door contact auxiliary input.

.7 Acceptable product: Potter #HUB-M (pushbutton) c/w DSC #PG9945 (Wireless door contact with auxiliary input) or approved equivalent.

2.4 Wireless Panic Key

.1 One large panic pushbutton.

.2 2 second activation delay

.3 5 year battery life

.4 Acceptable product: DSC #PG9938 or approved equivalent.

2.5 Time Delay Pushbutton

.1 Mechanical pneumatic timer.

.2 Adjustable time range from 1s to 60s.

.3 Switch rating: 6A at 24VDC

.4 One N/O and one N/C contact.

.5 Red mushroom momentary button.

.6 Vandal and tamperproof resistant

.7 Weatherproof for exterior installation.

.8 Acceptable product: Camden #CM-4085-R

2.6 Wireless Door contact

.1 Signal quality LED indicator

.2 5 year battery life

.3 Acceptable product: DSC #PG9975

2.7 Wireless Transceiver

.1 Multichannel frequency hoping

.2 Spread spectrum technology

.3 Frequency to match wireless devices

.4 Acceptable product: DSC #HSMHOST9 or approved equivalent.

2.8 Wireless Repeater

.1 Multichannel frequency hoping

.2 Spread spectrum technology

.3 Frequency to match wireless devices

.4 48 hour battery back-up

.5 Acceptable product: DSC #PG9920 or approved equivalent.

2.9 Keypad

.1 Two line, 16 character LCD display.

.2 Programmable LCD display contrast, brightness and back lite.

.3 Individual LED indicators for trouble, armed and ready.

.4 Piezo buzzer providing audible feedback for correct/incorrect key entries, entry/exit alert, and system trouble conditions.

.5 Display zone and systems status, “trouble” conditions, event buffer, and system instructions.

.6 Global or partition operation.

.7 5 programmable keypad functions.

.8 Dual digital dialer to monitor station.

.9 All programming in English.

.10 All site specific labels shall be Bilingual.

.11 Acceptable product: DSC #HS2LCD.

2.10 Piezo Sounder

.1 Piezo speaker mounted on a stainless steel coverplate

.2 12V to 24V operating voltage range, AC or DC

.3 5mA at 12Vdc, 7mA @24Vdc current draw

.4 85dB at 1m SPL

.5 Three tone adjustments: Steady, Slow Fast

.6 Acceptable product: Alarm Controls #TS42

2.11 Wiring

.1 All wiring shall be as recommended by the manufacturer, routed and fastened through communications j-hook system where T-Bar is present or surface mounted conduit fastened to wall where 310mm x 310mm asbestos tile is present.

Part 3 Execution

3.1 Installation

.1 Locate security devices as indicated and make interconnections in accordance with manufacturer's requirements.

.2 All security devices shall be mounted in recessed boxes, and all wiring run concealed.

.3 Program software to function in accordance with the Owner's requirements.

.4 The final programming and/or identification shall use room numbers which will be assigned by the user. The room numbers used on the contract drawings shall not be used unless advised otherwise.

3.2 Testing

.1 The complete system shall be tested and verified to confirm that it is operating in conformance with the manufacturer's requirements and the intentions of this specification.

.2 Provide a certificate from the manufacturer verifying that each component is functioning properly and that the system is functioning as intended.

.3 All cost associated with final commissioning system shall be included in the contractors tender price.

3.3 Training

.1 The Contractor shall provide a minimum of five (5) hours of in-service training with this system. These sessions shall be broken into segments which will facilitate the training of individuals in the operation of this system. Operators Manuals and Users Guides shall be provided prior to the time of this training. Segments shall as a minimum consist of the following periods: Upon completion of the installation, after six weeks use of the system and during the last month of the warranty period. All training shall be Bilingual.

END OF SECTION

Part 1 General

1.1 SYSTEM DESCRIPTION

.1 The closed circuit television system shall consist of IP cameras, network switches, uninterruptible power supplies, network video recorder capable of recording 30 days at 10 fps , software and all associated components and accessories.

.2 CCTV IP cameras in unit 3B are existing to remain, and shall be tied into the new Avigilon CCTV network. Locate new PoE switch adjacent to the existing NVR in unit 3B and connect all cameras to new network switch.

1.2 CARE, OPERATION AND START-UP

.1 Provide instructions in accordance with Division 01 Requirements.

1.3 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International):

.1 CAN/CSA-C22.3 No.1-M87 (R1997), Overhead Systems.

.2 Underwriters Laboratories of Canada (ULC):

.1 ULC-S317, Installation and Classification of Closed Circuit Video Equipment (CCVC) Systems for Institutional and Commercial Security Systems.

1.4 DEFINITIONS

.1 CCTV: Closed Circuit Television.

.2 CCVC: Closed Circuit Video.

.3 WDR: Wide Dynamic Range.

1.5 DESIGN PERFORMANCE REQUIREMENTS

.1 Switching:

.1 Provision to switch any camera in system to any monitor in system manually or automatically.

.2 Provision to switch system video recorders to selective monitor outputs in system.

.2 Enter and edit CCTV programs and save them for future use.

.3 Set dwell time for viewing of any camera picture.

.4 Define sequence for viewing cameras on each monitor.

.5 Bypass cameras in system during sequencing to monitor.

.6 Overall control of CCTV provided through software control, from master control room which provides complete integration of security components.

.7 Environment: Design video components and systems to operate with all specified requirements under following ambient temperatures:

.1 Indoor installations:

.1 Temperature: 0°C to 30°C.

.2 Humidity: 10 to 90%.

.2 Outdoor installations:

.1 Temperature: -40°C to 60°C.

.2 Humidity: 10 to 100%.

1.6 SUBMITTALS AND SHOP DRAWINGS

.1 Product Data: Submit manufacturer's printed product literature, specifications and datasheet in accordance with Division 01 Requirements.

.2 Shop Drawings: Submit in accordance with Division 01 Requirements:

.1 Submit shop drawings to indicate project layout, camera locations, point-to-point diagrams, cable schematics, risers, mounting details and identification labeling scheme including:

.1 Functional description of equipment.

.2 Technical data sheets of all devices.

.3 Device location plans and cable lists.

.4 Video camera surveillance chart.

.5 Video interconnection detail drawings.

.3 Quality Assurance:

.1 The manufacturer shall be a firm regularly engaged in the manufacture of integrated closed circuit television systems and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar services for not less than three years.

.2 The system installer shall be a firm with at least five years of successful installation experience with projects utilizing integrated closed circuit television systems and equipment similar to that required for this project. A list of three (3) projects of similar size shall be made available, if requested.

.3 All items of equipment including wire and cable shall be designed by the manufacturer to function as a complete system and shall be accompanied by the manufacturer's complete service notes and drawings detailing all interconnections.

.4 The contractor shall be an established communications and electronics Contractor that has had and currently maintains a locally run and operated business for at least five years. The Contractor shall be a duly authorized distributor of the equipment supplied with full manufacturer's warranty privileges.

.5 The Contractor shall show satisfactory evidence, upon request, that he maintains a fully equipped service organization capable of furnishing adequate inspection and service to the system. The Contractor shall maintain at his facility the necessary spare parts in the proper proportion as recommended by the manufacturer to maintain and service the equipment being supplied.

.6 Installation and commissioning of system and cabling shall be by the same company.

.4 Quality Assurance Submittals: Submit the following in accordance with Division 01 Requirements:

.1 Test Reports: Submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.

.2 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.1 Submit UL Product safety Certificates.

.2 Submit verification Certificate that service company is "UL Listed alarm service company".

.3 Submit verification Certificate that video surveillance system is "Certified alarm system".

.1 Instructions: Submit manufacturer's installation instructions.

.2 Manufacturer's Field Services: Submit copies of manufacturer's field reports.

.5 Maintenance Data: Submit maintenance data for incorporation into manual specified in Division 01 Requirements. Include the following:

.1 System configuration and equipment physical layout.

.2 Functional description of equipment.

.3 Instructions on operation, adjustment and cleaning.

.4 Illustrations and diagrams to supplement procedures.

.5 Manufacturer's operation instructions.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 19 – Construction Waste Management and Disposal.

Part 2 Products

2.1 DAY/NIGHT INDOOR DOME CAMERA, FIXED, RECESSED IN CEILING – TYPE 'A'

.1 2.0 Megapixel IP based WDR camera.

.2 Day/night, high resolution.

.3 Progressive scan CMOS.

.4 Image rate at full resolution: 30 fps.

.5 Active pixels: 1920(H) x 1080(V).

.6 3.0 – 9.0 mm varifocal lens (39° - 90° view angle).

.7 Power consumption (PoE): 7W

.8 Flush mount adapter.

.9 Acceptable Manufacturer: Avigilon #2.0C-H4SL-DO1-IR.

2.2 DOME CAMERA COVER (FOR INTERIOR CAMERAS)

.1 In-ceiling mount T-Bar where 305mm x 1220mm T-Bar is present.

.2 Surface mount where 305mm x 305mm asbestos tile is present.

.3 Totally enclosed.

.4 Acceptable Manufacturer: Avigilon #H4SL-MT-DCIL1 (in-ceiling mount) and Avigilon surface mounted adapter.

2.3 WEATHERPROOF OUTDOOR DAY/NIGHT BULLET CAMERAS – TYPE 'B'

.1 2.0 Megapixel IP based WDR camera.

.2 Progressive scan CMOS.

.3 Infrared illumination: 15m at 0 lux

.4 Minimum illumination: 0.01 lux in color mode; 0 lux in monochrome with infrared illumination on.

.5 Power consumption (PoE): 9W

.6 Vandal resistant construction

.7 IP66 rated camera enclosure.

.8 Active pixels: 1920(H) x 1080(V).

.9 3.0 – 9.0 mm motorized varifocal lens (39° - 90° view angle).

.10 Acceptable Manufacturer: Avigilon #2.0C-H4SL-BO1-IR

2.4 WALL MOUNTING BRACKET (FOR OUTDOOR CAMERAS)

.1 Acceptable Manufacturer: Avigilon #H4-BO-JBOX1.

2.5 DAY/NIGHT INFRARED WIDE ANGLE VIEW CORNER MOUNT CAMERA, FIXED – TYPE 'C'

.1 1.5 Megapixel IP based camera.

.2 CMOS image sensor type.

.3 Active Pixels: 1440 (H) x 1080 (V).

.4 Power consumption (PoE): 8.4W

.5 Fixed 2.0mm lens.

.6 Viewing Angle: 121° horizontal, 91° vertical.

.7 IP65 rated camera enclosure.

.8 Aluminum corner mount vandal resistant enclosure.

.9 Acceptable Product: Bosch #NCN-90022-FI (camera) complete with #NDA-5MB-CMT (enclosure).

2.6 NETWORK VIDEO RECORDER (NVR)

.1 Digital video recorder features:

.1 Input voltage 120V AC.

.2 Operating System: Windows Embedded Standard 7.

.3 Video Inputs: 110 cameras.

.4 Recording Data Rate / Playback / Live Streaming: up to 450Mbps

.5 Hard Disk Drive Configuration: Hot-swappable RAID 6.

.6 Processor: 1.9GHz Intel Xeon with 15MB Cache

.7 Memory: 16GB DDR4 RAM.

.8 Network Interface: 4 x Gigabit Ethernet Ports (1000Base-T).

.9 Maximum Internal Storage: Provide storage capacity calculation to record 10 fps for thirty (30) days minimum at 50% motion with expansion of 20% based on 2MP cameras.

.10 Optical Drive: DVD/RW.

.11 Display 1, 4, 9 or 16 cameras simultaneously.

.12 On-screen pan/tilt/zoom control.

.13 Rack mounted.

.14 Acceptable Product: Avigilon #HD-NVR3-STD-XXTB. (XXTB=storage capacity).

.15 Local viewing or remote view using video management software by Avigilon.

2.7 CCTV WORKSTATION

.1 Two monitor professional high performance remote monitoring workstation features:

.1 Microsoft windows embedded Standard 7.

.2 Intel Xeon Processor E3-1220V3.

.3 8GB memory.

.4 One DVI and one display port.

.5 DVD-RW optical drive.

.2 Acceptable Manufacturer: Avigilon #2MN-HD-RMWS complete with USB keyboard, mouse, power cord, display port to HDMI adapter.

2.8 CCTV MONITOR

.1 Monitor features:

.1 494 mm flat screen, high resolution, LED monitor, color.

.2 Contrast Ratio: 1000:1.

.3 Input Voltage: 120V AC.

.4 On-screen display for set-up and adjustment.

.5 DisplayPort, 2 X USB 2.0, VGA inputs.

.6 6 ms response time.

.7 Construction: black plastic.

.2 Acceptable Product: Dell #P2016, or approved equal complete with articulating wall mount bracket.

.1 Stand-by, low-profile, plug-and-play configuration.

.2 3 year warranty.

2.9 VIDEO SURVEILLANCE CABLING

.1 All wiring shall be CAT. 6 or CAT. 6A in J-Hooks (above T-Bar ceilings) or in surface mounted conduit as specified in specification section 27 11 19.

2.10 JUNCTION BOX

.1 Metal, sized to handle all system conduit interconnections with appropriate expansion.

2.11 NETWORK VIDEO MANAGEMENT SOFTWARE

.1 Install operational software on seven (7) user supplied computers and one CCTV workstation. Software shall be Avigilon Control Centre, Enterprise Edition or equivalent and be capable of viewing all cameras.

2.12 WARRANTY

.1 Warranty all work for a period of thirty six (36) months, from date of Substantial Completion. Warranty shall cover all parts and labour.

Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and datasheet.

3.2 INSTALLATION

.1 Install equipment in accordance with manufacturer's recommendations, and to instructions and wiring diagrams obtained from the manufacturer prior to roughing-in.

.2 Interconnect cameras to monitor, network recorder and POE switch.

.3 Make all adjustments to installed equipment including orientation, and aiming.

.4 Program cameras and sequence of operation to users' requirements.

.5 Make final camera lense adjustments to users' requirements.

.6 Final programming and/or identification shall use room name or numbers as assigned by the users. Do not use room numbers from contract drawings unless advised otherwise.

3.3 FIELD QUALITY CONTROL

.1 Manufacturer's Services:

.1 Have manufacturer of products, supplied under this Section, review work involved in the handling, installation/application, protection and cleaning, of its products and submit written reports, in acceptable format, to verify compliance of work with contract.

.2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for

inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits, to review work, at stages listed:

.1 After delivery and storage of products, and when preparatory work, or other work, on which the work of this Section depends, is complete but before installation begins.

.2 Twice during progress of work at 25% and 60% complete.

.3 Upon completion of the work, after cleaning is carried out.

.4 Obtain reports, within three (3) days of review, and submit, immediately, to Consultant.

3.4 VERIFICATION

.1 Perform verification inspections and tests:

.1 Perform tests in accordance with Division 01 Requirements.

.2 Test complete system including, control, signal strength, picture quality, and camera coverage.

.2 Visual verification: Objective is to assess quality of installation and assembly and overall appearance to ensure compliance with Contract Documents. Visual inspection to include:

.1 Sturdiness of equipment fastening.

.2 Non-existence of installation related damages.

.3 Compliance of device locations with reviewed shop drawings.

.4 Compatibility of equipment installation with physical environment.

.5 Inclusion of all accessories.

.6 Device and cabling identification.

.3 Technical verification: Purpose to ensure that all systems and devices are properly installed and free of defects and damage. Technical verification includes:

.1 Measurements of voltage and power.

.2 Connecting joints and equipment fastening.

.3 Measurements of signals (dB, lux, baud rate, etc).

.4 Compliance with manufacturer's specification, product literature and installation instructions.

.4 Commissioning: Purpose to ensure that devices and systems' performance meet or exceed established functional requirements. Commissioning includes:

.1 Operation of each device individually and within its environment.

.2 Operation of each device in relation with programmable schedule and or/specific functions.

.3 Operation control of camera lens, pan, tilt and zoom.

.4 Switching of camera to any monitor.

.5 Switching of system video recorder to selective monitor.

.6 Set dwell times.

.7 Demonstrate:

.1 Sequence viewing of cameras on each monitor.

.2 Bypass capability.

3.5 CLEANING AND ADJUSTING

.1 Remove protective coverings from cameras and components.

.2 Adjust cameras for correct function.

.3 Clean camera housing, system components and lens, free from marks, packing tape, and finger prints, in accordance with manufacturer's written cleaning recommendations.

3.6 TRAINING

.1 Provide two sessions of four hours of training to ensure that operating personnel are capable of proper operation of the systems. Provide memory stick with recorded maintenance training and setup. Allow for first session prior to occupancy and remaining session at Owner’s discretion. All training shall be Bilingual.

.2 All cost associated with final commissioning system shall be included in the contractors tender price

END OF SECTION