

**RETURN BIDS TO:**  
**RETOURNER LES SOUMISSIONS À:**  
**Bid Receiving - PWGSC / Réception des  
soumissions - TPSGC**  
**11 Laurier St./ 11 rue, Laurier**  
**Place du Portage, Phase III**  
**Core 0A1 / Noyau 0A1**  
**Gatineau, Québec K1A 0S5**  
**Bid Fax: (819) 997-9776**

## REQUEST FOR PROPOSAL DEMANDE DE PROPOSITION

**Proposal To: Public Works and Government  
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services  
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

<b>Title - Sujet</b> Radiation Portal Monitor Upgrade Pa	
<b>Solicitation No. - N° de l'invitation</b> 47064-130497/A	<b>Date</b> 2013-01-31
<b>Client Reference No. - N° de référence du client</b> 1000310497	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$PV-924-62109	
<b>File No. - N° de dossier</b> pv924.47064-130497	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-03-13</b>	<b>Time Zone Fuseau horaire</b> Eastern Standard Time EST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Caron, Anne	<b>Buyer Id - Id de l'acheteur</b> pv924
<b>Telephone No. - N° de téléphone</b> (819) 956-3874 ( )	<b>FAX No. - N° de FAX</b> (819) 956-3814
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> CANADA BORDER SERVICES AGENCY 79 BENTLEY AVE OTTAWA Ontario K2E6T7 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

Scientific, Medical and Photographic Division / Division de  
l'équipement scientifique, des produits photographiques et  
pharmaceutiques  
11 Laurier St./ 11 rue, Laurier  
6B1, Place du Portage  
Gatineau, Québec K1A 0S5

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address</b> <b>Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone</b> <b>Facsimile No. - N° de télécopieur</b>	
<b>Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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## PART 1 - GENERAL INFORMATION

### 1. Security Requirement

There is no security requirement associated with the requirement.

### 2. Requirement

The requirement is detailed under Article 2 of the resulting contract clauses.

### 3. Debriefings

After contract award, bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

## PART 2 - BIDDER INSTRUCTIONS

### 1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2012-11-19) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

#### 1.1 SACC Manual Clauses

SACC Manual clause B1000T (2007-11-30), Condition of Material

### 2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

### 3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is

eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

#### **4. Applicable Laws**

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

#### **5. Bidders' Conference**

A bidders' conference will be held at CBSA (79 Bentley Ave, Ottawa, Ontario) on February 13, 2013. The conference will begin at 10:00 am. The scope of the requirement outlined in the bid solicitation will be reviewed during the conference and questions will be answered. It is recommended that bidders who intend to submit a bid attend or send a representative.

Bidders are requested to communicate with the Contracting Authority before the conference to confirm attendance. Bidders should provide, in writing, to the Contracting Authority, the names of the person(s) who will be attending and a list of issues they wish to table at least 3 working days before the scheduled conference.

Any clarifications or changes to the bid solicitation resulting from the bidders' conference will be included as an amendment to the bid solicitation. Bidders who do not attend will not be precluded from submitting a bid.

### **PART 3 - BID PREPARATION INSTRUCTIONS**

#### **1. Bid Preparation Instructions**

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid ( 1 hard copy and 3 soft copies on CD)  
Section II: Financial Bid ( 1 hard copy and 1 soft copy on CD)  
Section III: Certifications (1 hard copy)

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process [Policy on Green Procurement](#)

(<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

## **Section I: Technical Bid**

In their technical bid, bidders must explain and demonstrate how they propose to meet the requirements and how they will carry out the Work. Detailed instructions for documentation formats and deliverables may be found in Annex "A", Annex "B" and Annex "D".

## **Section II: Financial Bid**

Bidders must submit their financial bid in accordance with the Basis of Payment. The total amount of Goods and Services Tax (GST) or Harmonized Sales Tax (HST) must be shown separately, if applicable.

### **1.1 Exchange Rate Fluctuation**

*SACC Manual* clause C3011T (2010-01-11), Exchange Rate Fluctuation

## **Section III: Certifications**

Bidders must submit the certifications required under Part 5.

## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **1. Evaluation Procedures**

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

### **1.1 Technical Evaluation**

All proposals submitted must be completed in full and provide all of the information requested in the Request for Proposal (RFP) package to enable a full and complete evaluation. If the requirement is not addressed in the bidder's proposal, the proposal will be considered incomplete or non-responsive and will be rejected. The onus is on the bidder to provide all the information necessary to ensure a complete and accurate assessment.

#### **1.1.1 Mandatory Technical Criteria**

See Annex "A" - Mandatory Specifications

#### **1.1.2 Point Rated Technical Criteria**

See Annex "B" - Point Rated Technical Criteria

## **Factors for Evaluation**

### **ABILITY TO MEET THE REQUIREMENTS AND SPECIFICATIONS (MANDATORY):**

The Bidder must clearly demonstrate how the requirement and each of the Mandatory Specifications are satisfied. The bidder must also submit the information requested in the associated Data Item Description (DID) documents. Failure to submit any of the requested information, or failure to do so in the requested format will result in the Bid being deemed non-compliant. By submission of a Bid, the Bidder agrees to provide all future information requested in the DIDs, according to the schedule defined therein. Bidders must also sign the compliance acknowledgement statement.

## 1.2 Financial Evaluation

- a) prices will be evaluated in Canadian Funds including any applicable Excise Taxes and Canadian Customs Duty (if applicable) and excluding the Goods and Services Tax (GST) or Harmonized Sales Tax (HST) (if applicable). For evaluation purposes, bids received in a foreign currency will be converted to Canadian funds using the appropriate rate of exchange using the rate quoted by the Bank of Canada as being in effect on date of bid closing.
- b) prices will be evaluated on a FOB Destination.
- c) prices will be evaluated based on all prices included in Annex "C".

## 2. Basis of Selection

### 2.1 Highest Combined Rating of Technical Merit and Price

A bid must comply with the requirements of the bid solicitation and meet all mandatory criteria (detailed in Annex "A") in order to be considered for the point-rated technical evaluation portion (detailed in Annex "B"). Bidders not meeting the Mandatory Requirements will be deemed non-responsive and no further consideration will be given.

- The evaluation will be based on the highest responsive combined rating of technical merit and price. The ratio will be 75 % for the technical merit and 25 % for the price.
- To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows: total number of points obtained / maximum number of points available (100 points) multiplied by the ratio of 75 %.
- To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 25 %.
- For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.
- Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The two (2) responsive bids with the highest combined rating of technical merit and price will each be recommended for award of a contract for one (1) system.

The table below illustrates an example where all three bids are responsive and the selection of the contractor is determined by the highest overall combined ranking based on a weighting of 60% technical and 40% price, respectively. The total available points equals 30 and the lowest evaluated price is \$50,000 (50\*).

<b>Example of Highest Overall Combined Rating Technical Merit (60%) and Price (40%)</b>				
<b>Bidder</b>	<b>Bidder 1</b>	<b>Bidder 2</b>	<b>Bidder 3</b>	
<b>Technical Points (Total Possible Points 30)</b>	<b>27</b>	<b>25</b>	<b>22</b>	
<b>Price Quoted</b>	<b>\$70,000.00</b>	<b>\$55,000.00</b>	<b>\$50,000.00</b>	
<b>Calculation</b>	<b>Technical Points</b>	<b>Price Points</b>	<b>Total Points</b>	<b>Ranking</b>
<b>Bidder 1</b>	<b>27/30 x 60 = 54.0</b>	<b>*50/70 x 40 = 28.6</b>	<b>82.6</b>	<b>3</b>
<b>Bidder 2</b>	<b>25/30 x 60 = 50.0</b>	<b>*50/55 x 40 = 36.4</b>	<b>86.4</b>	<b>1</b>
<b>Bidder 3</b>	<b>22/30 x 60 = 44.0</b>	<b>*50/50 x 40 = 40.0</b>	<b>84.0</b>	<b>2</b>

## PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and related documentation to be awarded a contract. Canada will declare a bid non-responsive if the required certifications and related documentation are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications, to provide the related documentation or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

### 1. Mandatory Certifications Required Precedent to Contract Award

#### 1.1 Code of Conduct and Certifications - Related documentation

By submitting a bid, the Bidder certifies, for himself and his affiliates, to be in compliance with the Code of Conduct and Certifications clause of the Standard instructions. The related documentation hereinafter mentioned will help Canada in confirming that the certifications are true. By submitting a bid, the Bidder certifies that it is aware, and that its affiliates are aware, that Canada may request additional information, certifications, consent forms and other evidentiary elements proving identity or eligibility. Canada may also verify the information provided by the Bidder, including the information relating to the acts or convictions specified herein, through independent research, use of any government resources or by contacting third parties. Canada will declare non-responsive any bid in respect of which the information requested is missing or inaccurate, or in respect of which the information contained in the certifications is found to be untrue, in any respect, by Canada. The Bidder and any of the Bidder's affiliates, will also be

required to remain free and clear of any acts or convictions specified herein during the period of any contract arising from this bid solicitation.

Bidders who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Bidder. Bidders bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Bidders bidding as societies, firms, partnerships or associations of persons do not need to provide lists of names. If the required names have not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to comply will render the bid non-responsive. Providing the required names is a mandatory requirement for contract award.

Canada may, at any time, request that a Bidder provide properly completed and Signed Consent Forms ( Consent to a Criminal Record Verification form- PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>) for any or all individuals aforementioned within the time specified. Failure to provide such Consent Forms within the time period provided will result in the bid being declared non-responsive.

## **2. Additional Certifications Precedent to Contract Award**

The certifications listed below should be completed and submitted with the bid, but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

### **2.1 Federal Contractors Program - Certification** (*Bidder to complete*)

Suppliers who are subject to the Federal Contractors Program (FCP) and have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive federal government contracts over the threshold for solicitation of bids as set out in the Government Contracts Regulations. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.

The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

- a. ☐ is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;
- b. ☐ is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c. 44;
- c. ☐ is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, having not bid on requirements of \$200,000 or more;
- d. ☐ has not been declared an ineligible contractor by HRSDC, and has a valid certificate number as follows: \_\_\_\_\_.

Further information on the FCP is available on the HRSDC Web site.



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## PART 6 - RESULTING CONTRACT CLAUSES

### 1. Security Requirement

There is no security requirement associated with the requirement.

### 2. Requirement

The Canada Border Services Agency (CBSA) - Science and Engineering Directorate has a requirement for two (2) Advanced Radiation Portal Monitor (ARPM) to be delivered to Ottawa, ON. The two (2) responsive bids with the highest combined rating of technical merit and price will each be recommended for award of a contract for one (1) ARPM. The Contractors must provide equipment in accordance with Annex "A" and Annex "B". It must be possible to configure and to fit the proposed radiation detection equipment within the existing physical and communications structures of CBSA's test Radiation Portal Monitor (RPM). See Appendix 1 - CBSA Test Portal Information Package for information related to the existing RPM.

### 3. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual

(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

#### 3.1 General Conditions

2010A (2012-11-19), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

### 4. Term of Contract

#### 4.1 Delivery Date

All the deliverables must be received on or before *(to be filled in only at contract award)*.

### 5. Authorities

#### 5.1 Contracting Authority

The Contracting Authority for the Contract is:

**Anne Caron**

Public Works and Government Services Canada  
Acquisitions Branch

Commercial Consumer Products Directorate  
11 Laurier Street, 6A2, Phase III

Place du Portage, Hull, Quebec, K1A 0S5

Telephone: (819) 956-3874

Facsimile: (819) 956-3814

E-mail address: [anne.caron@tpsgc-pwgsc.gc.ca](mailto:anne.caron@tpsgc-pwgsc.gc.ca)

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

## 5.2 Project Authority

The Project Authority for the Contract is : *(to be filled in only at contract award)*

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority, however the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

## 5.3 Contractor's Representative

The information of the person responsible for: *(Bidder to complete)*

### General Enquiries

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

Telephone No.: \_\_\_\_\_

Facsimile No.: \_\_\_\_\_

eMail address: \_\_\_\_\_

### Delivery & Follow-Up

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

Telephone No.: \_\_\_\_\_

Facsimile No.: \_\_\_\_\_

eMail address: \_\_\_\_\_

## 6. Payment

### 6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid firm unit price, as specified in Annex C for a cost of \$ *(to be filled in only at contract award)*. Customs duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

### 6.2 Single Payment

SACC Manual clause H1000C (2008-05-12) Single Payment

## 7. Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.
2. Invoices must be distributed as follows:
  - (a) The original and one (1) copy must be forwarded to the following address for certification and payment. *(to be filled in only at contract award)*
  - (b) One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

## 8. Certifications

Compliance with the certifications and related documentation provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification, provide the related documentation or if it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

## 9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

## 10. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the general conditions 2010A (2012-11-19);
- (c) Annex A, Mandatory Specifications;
- (d) Annex B, Point Rated Technical Criteria;
- (e) Annex C, Pricing;
- (f) Annex D, Data Item Descriptions (DID)
- (g) Appendix 1, CBSA Test Portal Information Package
- (h) the Contractor's bid dated *(insert date of bid)*

## 11. SACC Manual Clauses

SACC Manual clause B1501C (2006-06-16) Electrical Equipment  
 SACC Manual clause B7500C (2006-06-16) Excess Goods  
 SACC Manual clause G1005C (2008-05-12) Insurance

## **12. Shipping Instructions – FOB Destination**

Goods must be consigned and delivered to the destination specified in the contract:

FOB Destination (CBSA, 79 Bentley Ave, Ottawa, Ontario, K2E 6T7) including all delivery charges and customs duties and taxes.

## **13. Software**

### **Right to Modify:**

If the source code for the Licensed Programs is provided to Canada under the Contract, that code forms part of the "Licensed Software" for the purposes of the Contract. Canada will have the right, at Canada's discretion, to copy and modify the Licensed Software for Canada's own purposes and use, through the services of Canada's own employees or of independent contractors, as long as those contractors agree not to disclose or distribute any part of the Licensed Software to any other person or entity or otherwise violate the proprietary rights of the owner of the Licensed Software.

Canada will be the owner of any modifications contemplated in this clause, but will obtain no ownership interest in the Licensed Software, and any portion of the Licensed Software contained in those modifications will remain subject to the conditions of Canada's license. The Contractor must not incorporate any such modifications into its software for distribution to third parties unless Canada has granted the necessary distribution rights to the Contractor under a written license agreement. The provisions of this section do not prevent the Contractor or its third-party licensors from independently developing modifications. Unless provided otherwise in the Contract, Canada agrees not to reverse engineer the Licensed Software.

### **Enhancements and Improvements**

The Contractor agrees to provide Canada with all improvements, updates, upgrades and enhancements to the Licensed Software for ninety (90) days following the acceptance of the Licensed Software.

## ANNEX "A" – MANDATORY SPECIFICATIONS

The following applies to the requirement and must be provided by the Contractor.

The supplied equipment must meet or better all of the requirements defined below. Systems not meeting all the following Mandatory Specifications will be considered non-compliant.

For requirements referencing a DOCUMENTATION DELIVERABLE, the Bidder must provide all information requested as detailed on the Data Item Description (DID) document.

For requirements NOT referencing a DOCUMENTATION DELIVERABLE, supporting technical documentation and technical brochures and/or technical data should be provided to verify compliance.

### Compliance Acknowledgement: *(Bidder to complete)*

I, the Bidder, certify that proposed system will be in compliance with all requirements listed below and I agree to provide all remaining information requested in the DID according to the schedule defined therein.

Signed: \_\_\_\_\_

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

### 1.0 Requirements

#### 1.1 Hardware Requirements

Item	Requirement	Description	Reference <i>(Bidder to complete)</i>
A1	Gamma Radiation Sensor Panels	The offered components must include at least two radiation sensor panels, sensitive to x-rays and gamma-rays, to be mounted in opposing sides of a radiation portal monitor configuration.	
A2	Signal Processing Electronics	The offered components must include all electronics necessary for generating, measuring, and processing signals from the <u>gamma</u> detection modules.  The offered components must be configurable to enable data input from a neutron detection module supplied by CBSA.	
A3	Portal Occupancy Sensors	The offered components must include sensors to determine the presence of vehicles or trucks occupying the portal.	
A4	Electronic Control and Storage Media	The offered components must include a computer module to control system parameters, settings and thresholds; these must also include storage media and standard media connection ports (USB, CD/DVD).	
A5	Electronic Cables and Connectors	The offered components must include all electronics for necessary to: run power to, and communicate with all detector modules.	
A6	Mechanical Fasteners	The offered components must include all associated mechanical fasteners to enable	

		mounting of detectors in a stand-alone portal configuration.  Note: A steel shroud is not a requirement for this procurement.	
<b>A7</b>	Schematics	The vendor must provide as-built schematics for all electrical and mechanical components.  <u>DOCUMENTATION DELIVERABLE:</u> DID 001-System Configuration Report	
<b>A8</b>	Power	The power requirements for the offered components must not exceed 20 A/240 V.	

**1.2 Data Management Requirements**

Item	Requirement	Description	Reference (Bidder to complete)
<b>A9</b>	Data Management	CBSA must be granted Administrator Rights to all software and data stored or embedded within the offered components.  <u>DOCUMENTATION DELIVERABLE:</u> DID 001-System Configuration Report	
<b>A10</b>	Data Management Structure	The vendor must provide diagrams and definitions for the management of data within the system.  <u>DOCUMENTATION DELIVERABLE:</u> DID 001-System Configuration Report	

**1.3 Configuration and Alarming Requirements**

Item	Requirement	Description	Reference (Bidder to complete)
<b>A11</b>	Manual Calibration	The offered components must enable a means to manually calibrate or to manually verify calibration of the gamma detectors with defined test sources.  <u>DOCUMENTATION DELIVERABLE:</u> DID 002-Detector Calibration and Sensitivity Testing	
<b>A12</b>	Auto Calibration	The offered components must enable automatic calibration and gain adjustment.  <u>DOCUMENTATION DELIVERABLE:</u> DID 002-Detector Calibration and Sensitivity Testing	
<b>A13</b>	Manual Sensitivity Testing		
<b>A14</b>	Radiation Alarms	The offered components must generate alarms when: <ul style="list-style-type: none"> <li>- background variation exceeds thresholds</li> <li>- measured radiation exceeds gross counting thresholds</li> <li>- measured radiation exceeds spectral thresholds</li> </ul>	

		<u>DOCUMENTATION DELIVERABLE: DID 002-Detector Calibration and Sensitivity Testing</u>	
<b>A15</b>	Non-radioactive materials	The offered components must not generate an alarm of any type when scanning non-radioactive materials.  <u>DOCUMENTATION DELIVERABLE: DID 003-Radiation Detector Performance</u>	
<b>A16</b>	Alarm Thresholds	All radiation alarm thresholds must be configurable by CBSA.  <u>DOCUMENTATION DELIVERABLE: DID 002-Detector Calibration and Sensitivity Testing</u>	
<b>A17</b>	Background Suppression	The offered software must employ techniques to account for background suppression.	

#### 1.4 Performance Requirements

Item	Requirement	Description	Reference (Bidder to complete)
<b>A18</b>	Gamma Energy Range	The offered components must detect gamma photons between 25 keV and 3 MeV.  <u>DOCUMENTATION DELIVERABLE: DID 003-Radiation Detector Performance</u>	
<b>A19</b>	Geometric Response (Vertical)	The offered components must provide uniform detector response ( $\pm 20\%$ ) when a source is varied in the vertical direction from 0.20 – 2.0 m at a distance 2.5 m from the face of the detector.  <u>DOCUMENTATION DELIVERABLE: DID 003-Radiation Detector Performance</u>	
<b>A20</b>	Dose Rate	The offered components must compute the measured radiation dose rates in micro-Sieverts per hour [ $\mu\text{Sv/h}$ ].	
<b>A21</b>	Count rate	The offered components must record the measured radiation in counts per second [cps].	
<b>A22</b>	Source Localization	The offered components must compute the linear position (as % of object length) where the maximum radiation was detected.	
<b>A23</b>	Speed	The offered components must compute the speed of the scanned object.	
<b>A24</b>	Portal Occupancy	The offered components must detect when a vehicle or object is passing through the portal.	
<b>A25</b>	IEEE Standard	The offered components must be readily configured to meet all applicable requirements (radiation detection, environmental, physical, electrical, etc.) of the IEEE standard N42.35-2006, "American National Standard for Evaluation and Application of Radiation Detection Portal Monitors for Use in Homeland Security".	
<b>A26</b>	Environmental	The offered components must function properly in	

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	Conditions	temperatures ranging from -40°C to +50°C.  The offered components must function properly in relative humidity (RH) varying from 0 – 99%.	
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**1.5      *Delivery Requirement***

<b>A27</b>	Delivery	<i>(Bidder to complete)</i> Delivery of the systems is required by April 30, 2013, the best delivery that could be offered by the Bidder is _____
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## ANNEX "B" –POINT RATED TECHNICAL CRITERIA

### 1. POINT RATED TECHNICAL CRITERIA

The Bidder must submit the information requested in the associated Data Item Description (DID) documents.

Rated Mandatory Requirements			
Item	Requirement	Description	Reference
<b>B1</b>	Gross Counting Sensitivity	<p>The offered components must detect minimum net counts (above background) per unit activity (micro-Curie) [cps/μCi] for each of the following sources:</p> <p>Am-241 <math>\geq</math> 16 cps/μCi  Co-57 <math>\geq</math> 100 cps/μCi  Ba-133 <math>\geq</math> 200 cps/μCi  Cs-137 <math>\geq</math> 110 cps/μCi  Co-60 <math>\geq</math> 220 cps/μCi</p> <p><i>See Point Rated Technical Criteria Matrix</i></p>	003- Radiation Detector Performance
<b>B2</b>	Naturally Occurring Radioactive Materials (NORM) Classification	<p>The offered components must be able to classify the following as "NORM", by spectral analysis:</p> <p>K-40 (kitty litter):  Th-232 (clay tiles)</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance
<b>B3</b>	Source Classification (unmasked)	<p>The offered components must be able to classify the following sources as "Non-NORM", by spectral analysis:</p> <p>Am-241  Co-57  Ba-133  Cs-137  Co-60</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance

Rated Options			
Item	Option	Description	Reference
<b>B4</b>	Source Classification (with masked NORM)	<p>The offered components should be able to classify the following sources as "Non-NORM", by spectral analysis, when masked by NORM commodities:</p> <p>Am-241 Co-57 Ba-133 Cs-137 Co-60</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance
<b>B5</b>	Naturally Occurring Radioactive Materials (NORM) Identification	<p>The offered components should be able to identify the primary isotopes in these materials:</p> <p>K-40 (kitty litter): Th-232 (clay tiles)</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance DID
<b>B6</b>	Source Identification (unmasked)	<p>The offered components should be able to properly identify these isotopes, by spectral analysis:</p> <p>Am-241 Co-57 Ba-133 Cs-137 Co-60</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance
<b>B7</b>	Source Identification (masked)	<p>The offered components should be able to differentiate and identify the "NORM" and "Non-NORM" when each of the following sources is masked by a NORM commodities:</p> <p>Am-241 Co-57 Ba-133 Cs-137 Co-60</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance
<b>B8</b>	Auto Sensitivity Testing	<p>The offered components should be able to automatically determine the detector sensitivity.</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 003- Radiation Detector Performance
<b>B9</b>	Sealed Detector	<p>The offered detector module should be sealed so as to prevent water ingress in a standard portal configuration.</p> <p><i>See Point Rated Technical Criteria Matrix.</i></p>	DID 001- System Configuration Report

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<b>B10</b>	Modular Design	The offered components (within RPM) should modular and easy to replace replaced.  <i>See Point Rated Technical Criteria Matrix.</i>	DID 001- System Configuration Report
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## 2. POINT RATED TECHNICAL CRITERIA MATRIX:

The presence and the performance of options, along with the mandatory requirements, will be considered in evaluating the technical capabilities of the system.

The technical point allocation of the rated criteria is detailed in the matrix below.

Rated Mandatory Requirements		Systems' Result (bidder to complete)	Min Pts	Max Pts	Reference to proposal documentation	Indication
<b>B1 - Gross Counting Sensitivity</b>	Am-241 $\geq 16$ cps/ $\mu$ Ci		0	5	DID 003- Radiation Detector Performance	For (X= net counts/ $\mu$ Ci) (X-16) / 16 * 2.5
	Co-57 $\geq 100$ cps/ $\mu$ Ci		0	5		(X-100) / 100 * 2.5
	Ba-133 $\geq 200$ cps/ $\mu$ Ci		0	5		(X-200) / 200 * 2.5
	Cs-137 $\geq 110$ cps/ $\mu$ Ci		0	5		(X-110) / 110 * 2.5
	Co-60 $\geq 220$ cps/ $\mu$ Ci		0	5		(X-220) / 220 * 2.5
<b>B2 - NORM Classification</b>	Bulk NORM material (K-40)		0	1	DID 003- Radiation Detector Performance	# of "Non-NORM" / 10
	Bulk NORM material (Th-232)		0	1		# of "Non-NORM" / 10
<b>B3 - Source Classification (unmasked)</b>	Am-24		0	1	DID 003- Radiation Detector Performance	# of "Non-NORM" / 10
	Co-57		0	1		# of "Non-NORM" / 10
	Ba-133		0	1		# of "Non-NORM" / 10
	Cs-137		0	1		# of "Non-NORM" / 10
	Co-60		0	1		# of "Non-NORM" / 10

Rated Options		Systems' Result (bidder to complete)	Min Pts	Max Pts	Reference to proposal documentation	Indication
<b>B4 - Source Classification (with masked NORM)</b>	Am-241		0	2	DID 003- Radiation Detector Performance	# of "Non-NORM" /10 * 2
	Co-57		0	2		# of "Non-NORM" /10 * 2
	Ba-133		0	2		# of "Non-NORM" /10 * 2
	Cs-137		0	2		# of "Non-NORM" /10 * 2
	Co-60		0	2		# of "Non-NORM" /10 * 2
<b>B5 - NORM Identification</b>	Bulk NORM material (K-40)		0	3	DID 003- Radiation Detector Performance	# of "Non-NORM" /10 * 3
	Bulk NORM material (Th-232)		0	3		# of "Non-NORM" /10 * 3
<b>B6 -Source Identification (unmasked)</b>	Am-241		0	3	DID 003- Radiation Detector Performance	# of "Non-NORM" /10 * 3
	Co-57		0	3		# of "Non-NORM" /10 * 3
	Ba-133		0	3		# of "Non-NORM" /10 * 3
	Cs-137		0	3		# of "Non-NORM" /10 * 3
	Co-60		0	3		# of "Non-NORM" /10 * 3
<b>B7 - Source Identification (masked)</b>	Am-241		0	5	DID 003- Radiation Detector Performance	# of "NORM" + "NON-NORM" /10 * 5
	Co-57		0	5		# of "NORM" + "NON-NORM" /10 * 5
	Ba-133		0	5		# of "NORM" + "NON-NORM" /10 * 5
	Cs-137		0	5		# of "NORM" + "NON-NORM" /10 * 5
	Co-60		0	5		# of "NORM" + "NON-NORM" /10 * 5
<b>B8 - Auto-Sensitivity</b>	Up to 1% decrease		0	10	DID 003- Radiation Detector Performance	Automatically determine the detector sensitivity % decrease
	Between 1% and 5% decrease		0	6		
	Between 5% and 10%		0	3		
<b>B9 - Sealed detector</b>			0	1	DID 001- System Configuration Report	Yes / No

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B10 - Modular Design				0	1	DID 001- System Configuration Report	Yes / No
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## ANNEX "C" – PRICING

### 1. PRICING FOR ADVANCED RADIATION PORTAL MONITOR (RPM) TEST PORTAL *(Bidder to complete)*

Details	Unit Price \$
Advanced Radiation Portal Monitor (ARPM)	

**ANNEX "D" – DATA ITEM DESCRIPTION SHEETS (DID)**

<b>TITLE</b>	<b>System Configuration Report</b>
<b>DID NUMBER</b>	001
<b>DESCRIPTION / PURPOSE</b>	<p>To provide CBSA with detailed information on the hardware and software configuration of the procured system.</p> <p>To verify compatibility with test portal and business requirements.</p>
<b>SUBMISSION DATE</b>	<p><b>Preliminary Report due with Bid Submission</b></p> <p><b>Full Report due 30 days after contract award</b></p>
<b>INSTRUCTIONS - Format</b>	<p>The Bidder must provide a Scanning Operations Report. This report must be formatted accordingly:</p> <ul style="list-style-type: none"> <li>- Title page (with DID No, Title, Author, Date)</li> <li>- Table of Contents</li> <li>- Page numbers</li> <li>- Figure and Table numbers</li> </ul> <p>Hard copies of all documents must be provided and soft copies (searchable .pdf) are requested at the time of submission.</p>
<b>INSTRUCTIONS- Content</b>	<p>The following details what must be provided in the System Configuration - Preliminary Report and - Full Report. At a minimum the respective reports must contain the requested data, and be sectioned according to the following:</p> <p><b>Preliminary Report</b></p> <p>The following information must be detailed in the System Configuration Preliminary Report:</p> <ul style="list-style-type: none"> <li>- Detailed information on the detector type and setup geometry</li> <li>- Detailed information on the protection (e.g., IP ratings) of detector modules and front-end electronics</li> <li>- Block diagram of all components housed within the RPM shroud and their connection types</li> </ul> <p><b>Final Report</b></p> <p><b>A. Hardware</b></p> <p>The vendor must provide:</p> <ul style="list-style-type: none"> <li>- Detailed schematics of the radiation detection modules and front-end electronics</li> <li>- Detailed wiring schematics</li> <li>- Detailed installation instructions</li> </ul> <p><b>B. Data Processing and Storage</b></p> <p>The vendor must provide:</p> <ul style="list-style-type: none"> <li>- Detailed flow charts showing all lines of communication, the data transmitted and its formats</li> <li>- Detailed data storage schema</li> <li>- Detailed data on all routines related to radiation measurement, events and alarm generation</li> </ul> <p><b>C. Data Management and Communication</b></p> <p>The vendor must provide:</p> <ul style="list-style-type: none"> <li>- Remote access protocols</li> </ul> <p><b>D. Additional Information</b></p>



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	<p>The Bidder may submit any additional technical information they deem to be pertinent to this DID; such as, but is not limited to: test results, 3<sup>rd</sup> party reports, configuration options, or other raw data. Note that all information specifically requested in previous sections must be presented completely therein. This section must be formatted in the same manner as the rest of the DID and must be properly referenced in the Table of Contents (any references to additional supporting technical documentation (ex. Technical Brochures) must be specific (Document title, page and paragraph number).</p>
<b>DELIVERABLES (Schedule)</b>	<b>Preliminary Report due with Bid Submission</b> <b>Full Report due 30 days after contract award</b>

<b>TITLE</b>	<b>Detector Calibration and Sensitivity Testing</b>
<b>DID NUMBER</b>	002
<b>DESCRIPTION / PURPOSE</b>	To provide CBSA with detailed information relating to the radiation detector calibration, testing and alarming data processes.
<b>SUBMISSION DATE</b>	<b>Preliminary Report due with Bid Submission Full Report due 30 days after contract award</b>
<b>INSTRUCTIONS - Format</b>	<p>The Bidder must provide a Scanning Operations Report. This report must be formatted accordingly:</p> <ul style="list-style-type: none"> <li>- Title page (with DID No, Title, Author, Date)</li> <li>- Table of Contents</li> <li>- Page numbers</li> <li>- Figure and Table numbers</li> </ul> <p>Hard copies of all documents must be provided and soft copies (searchable .pdf) are requested at the time of submission.</p>
<b>INSTRUCTIONS- Content</b>	<p>The following details what must be provided in the Detector Calibration and Sensitivity Testing - Preliminary Report and - Full Report. At a minimum the respective reports must contain the requested data, and be sectioned according to the following:</p> <p><b>Preliminary Report</b></p> <p>The following information must be detailed in the Detector Calibration and Sensitivity Testing Preliminary Report:</p> <ul style="list-style-type: none"> <li>- the method for manual calibration</li> <li>- the recommended frequency for manual calibration</li> <li>- the method used for auto-calibration</li> <li>- all radiation alarm types</li> </ul> <p><b>Full Report</b></p> <p><b>A. Manual Calibration</b></p> <p>The Bidder must describe in detail:</p> <ul style="list-style-type: none"> <li>- the method for manual calibration</li> <li>- the recommended frequency for manual calibration</li> <li>- all system parameters affecting the measured output from the radiation detection modules (e.g., high-voltage settings, gain, discriminator limits, etc.)</li> <li>- instructions on how to access and modify all radiation module system parameters</li> </ul> <p><b>B. Sensitivity Testing</b></p> <ul style="list-style-type: none"> <li>- the method for recording raw radiation detection data collected over a selected time period (including all time increments)</li> <li>- instructions on how to access raw recorded radiation detection data</li> <li>- data formats</li> </ul> <p><b>C. Automatic Calibration</b></p> <p>The Bidder must describe in detail:</p> <ul style="list-style-type: none"> <li>- the method used for auto-calibration</li> <li>- all algorithms used in the auto-calibration routine</li> <li>- how to configure the auto-calibration routine</li> </ul> <p><b>D. Radiation Alarms</b></p>

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	<p>The Bidder must describe in detail:</p> <ul style="list-style-type: none"><li>- all alarm types</li><li>- nominal alarm thresholds</li><li>- all algorithms used in the alarm generation engine</li></ul> <p><b>E. Additional Information</b></p> <p>The Bidder may submit any additional technical information they deem to be pertinent to this DID; such as, but is not limited to: test results, 3<sup>rd</sup> party reports, configuration options, or other raw data. Note that all information specifically requested in previous sections must be presented completely therein. This section must be formatted in the same manner as the rest of the DID and must be properly referenced in the Table of Contents (any references to additional supporting technical documentation (ex. Technical Brochures) must be specific (Document title, page and paragraph number).</p>
<b>DELIVERABLES (Schedule)</b>	<b>Preliminary Report due with Bid Submission</b> <b>Full Report due 30 days after contract award</b>

<b>TITLE</b>	<b>Radiation Detection Performance</b>
<b>DID NUMBER</b>	003
<b>DESCRIPTION / PURPOSE</b>	To provide CBSA with detector performance information for technical evaluation of the systems.
<b>APPLICATION / INTER-RELATIONSHIP</b>	
<b>SUBMISSION DATE</b>	<b>Full Submission due with Bid Submission</b>
<b>INSTRUCTIONS - Format</b>	<p>The Bidder must provide a Scanning Operations Report. This report must be formatted accordingly:</p> <ul style="list-style-type: none"> <li>- Title page (with DID No, Title, Author, Date)</li> <li>- Table of Contents</li> <li>- Page numbers</li> <li>- Figure and Table numbers</li> </ul> <p>Hard copies of all documents must be provided and soft copies (searchable .pdf) are requested at the time of submission.</p>
<b>INSTRUCTIONS-Content</b>	<p>The following information must be provided in the Radiation Detector Performance Report. At a minimum the report must contain the following data, and be sectioned according to the following:</p> <p>Note – unless otherwise defined, sources used in test must be those defined in the RFP having strengths defined by ANSI 42.35 (2006) – Table 4. All pallets must be centered in the container. NORM materials should be kitty litter (K-40 NORM) and clay tiles (Th-232 NORM); if unavailable, similar NORM materials (one K-40 emitter and one Th-232emitter) may be used instead <u>if written approval is granted</u> by CBSA in advance. The same NORM materials and configurations must be used for NORM and Source (masked) classification tests in section B.</p> <p><b>A. Sensitivity Testing</b></p> <p>The Bidder must provide detailed information (including all raw data) on:</p> <ul style="list-style-type: none"> <li>- gross counting sensitivity:</li> </ul> $Sensitivity = \frac{Source [cps] - Bkg [cps]}{Activity [\mu Ci]}$ <p>where: <i>Source</i> is the average total count rate taken from 3 measurements of 30 second intervals with isotope placed unmasked at mid-height of detector, at a distance 2.5 m from detector face; and, <i>Bkg</i> is the average total background the over 5 measurements of 30 second intervals.</p> <p><b>B. Source Classification and Identification</b></p> <p>The Bidder must provide detailed information (including all raw data, and system classification levels) for:</p> <ul style="list-style-type: none"> <li>- NORM Classification and Identification, by the following test: <ol style="list-style-type: none"> <li>1) Passing a container laden with 1 standard pallet of K-40 NORM stacked 5' high through the portal at a speed of 8 km/h, a total of 10 times.</li> </ol> </li> </ul>

	<p>2) Passing a container laden with 1 standard pallet of Th-232 NORM stacked 5' high through the portal at a speed of 8 km/h, a total of 10 times.</p> <ul style="list-style-type: none"> <li>- Source (unmasked) Classification and Identification, by the following test:           <ol style="list-style-type: none"> <li>1) Passing a source unmasked (on a stand or rail) through the portal at mid-detector height at a speed of 8 km/h, a total of 10 times. This test is to be repeated for each source listed in the requirements.</li> </ol> </li> <li>- Source (masked) Classification and Identification, by the following test:           <ol style="list-style-type: none"> <li>1) Passing a container laden with a radioactive source and a standard pallet of K-40 NORM stacked 4' high through the portal at a speed of 8 km/h, a total of 10 times. This test is to be repeated for each source listed in the requirements.</li> </ol> </li> </ul> <p><b>C. ANSI Test Results</b> The Bidder must provide test results from:</p> <ul style="list-style-type: none"> <li>- ANSI 42.35 Section 6: Radiological Tests</li> </ul> <p><b>D. Auto-Sensitivity Testing</b> The Bidder must provide detailed information on:</p> <ul style="list-style-type: none"> <li>- Method for Automatic Sensitivity Testing</li> <li>- Auto-Sensitivity Test Results (Intrinsic Efficiency)</li> </ul> <p><b>E. Additional Information</b> The Bidder may submit any additional technical information they deem to be pertinent to this DID; such as, but is not limited to: test results, 3<sup>rd</sup> party reports, configuration options, or other raw data. Note that all information specifically requested in previous sections must be presented completely therein. This section must be formatted in the same manner as the rest of the DID and must be properly referenced in the Table of Contents (any references to additional supporting technical documentation (ex. Technical Brochures) must be specific (Document title, page and paragraph number).</p>
<b>DELIVERABLES (Schedule)</b>	<b>Full Submission due with Bid Submission</b>

## CBSA Test Portal Information / Information sur le portique d'essai de l'ASFC

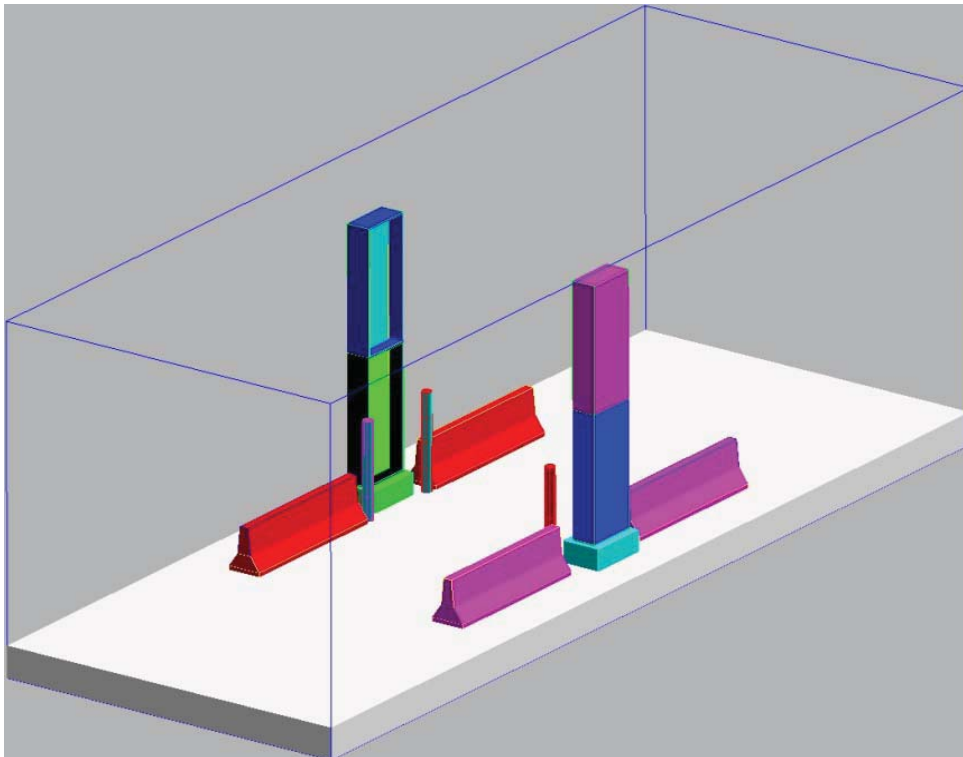
This document provides information regarding CBSA's test Radiation Portal Monitor (RPM). To enable a comparable assessment of the performance, it must be possible to fit and configure any new radiation detection equipment within the existing physical and communications structures.

*Ce document a pour but de fournir de l'information sur le portique d'essai de l'ASFC. Afin de permettre une évaluation comparable de la performance, il doit être possible de monter et configurer les nouveaux équipements de détection des rayonnement dans les structures physiques et la communication existantes.*

### Test RPM Setup / Configuration

CBSA's test RPM is comprised of 4 Radiation Sensor Panels (RSPs) secured in large steel shrouds, as shown in figure 1-2. Each shroud contains one Polyvinyl Toluene (PVT) scintillating gamma detector and up to two  $^3\text{He}$  neutron detector. The PVT is wrapped in black Mylar, and is fitted at one end with a brass plate for the attachment of 4 x 1" diameter photomultiplier tubes, as shown in figure 1.

*Le portique d'essai comprend 4 panneaux de détection de rayonnement installés dans des grands cabinets de métal (voir figure 1-2). Chacun des cabinet contient un détecteur scintillant de rayon gamma en Polyvinyl Toluene (PVT) et jusqu'à deux détecteur de neutron  $^3\text{He}$ . Le PVT est emballé dans du Mylar noir et est muni à une extrémité d'une plaque de laiton pour la fixation de 4 tubes photomultiplicateurs de 1" de diamètre tel que démontré dans la figure 1.*



**Figure 1 - CBSA's test Radiation Portal Monitor (RPM), showing 4 Radiation Sensor Panels (RSP), with concrete barriers and pillars.**

2 -

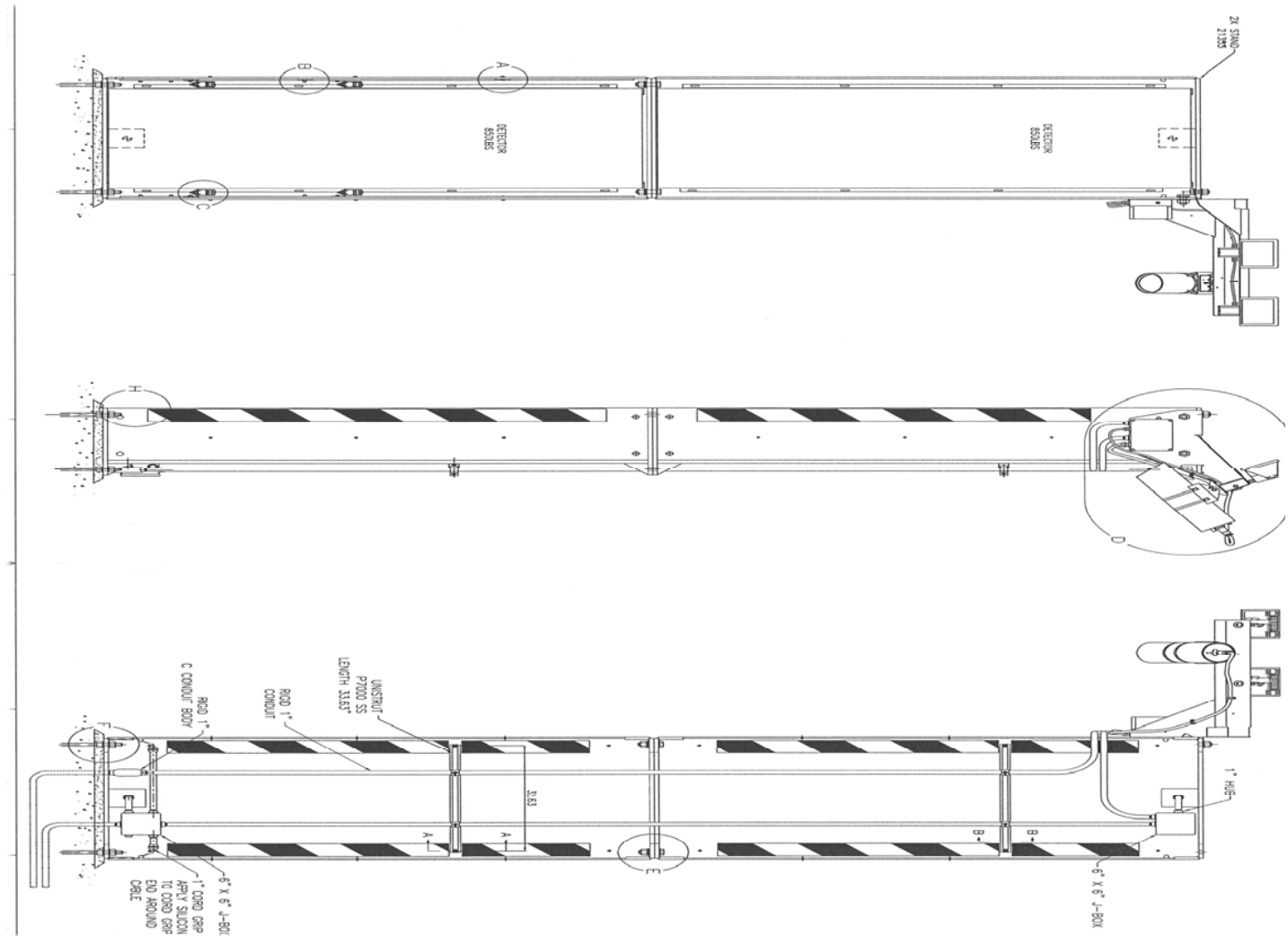
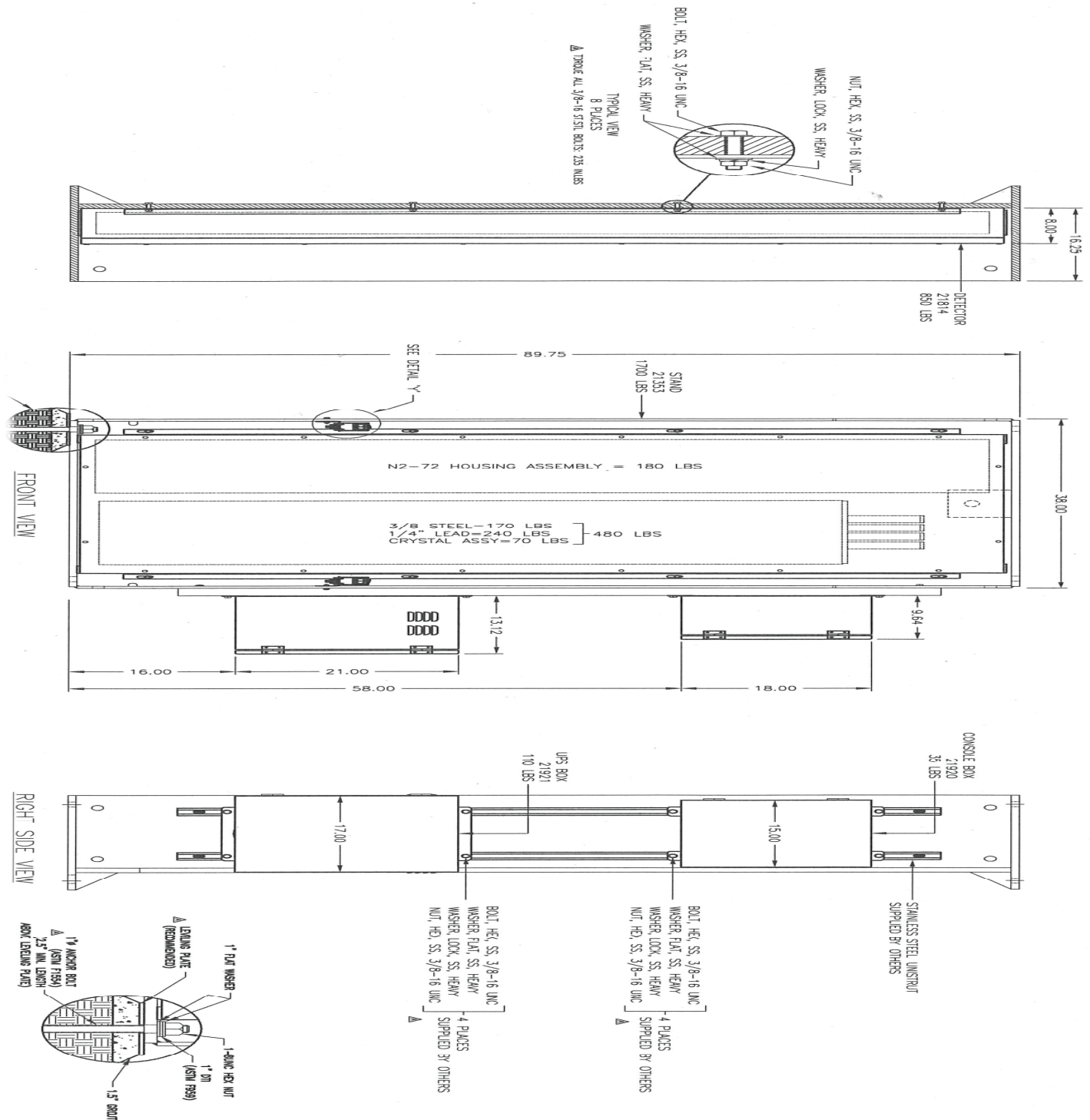


Figure 2 – Single side of RPM – two shroud mounting configuration showing front, side and back views with lights



**Figure 3 - Upper shroud configuration with gamma and neutron detection modules (note gamma module is inverted for lower shroud)**



### Cabinet Setup / Configuration du cabinet

CBSA's test Radiation Portal Monitor (RPM) is operated as a fully stand-alone system. As such, all electronics and controls are processed through a secure, environmentally regulated, control cabinet nearby. Figure 4 shows the space available (measured in Rack Units – U, 19 inches in depth) to be allocated new RPM control and communication hardware. It must be possible to supply lines of power and communication to the radiation detection equipment tested via a 1" diameter conduit. It must also be possible to supply lines of power and communication via similar conduit over distances up to 100 m.

Le portique est pleinement exploité comme un système autonome. Les appareils électroniques et les commandes sont traitées par une connexion sécurisée dans une armoire à proximité. La figure 4 démontre l'espace disponible pour les contrôle du nouveau système (mesurée en unités de rack - U, 19 pouces de profondeur). Il doit être possible de passer les lignes de courant et de communication à l'équipement de détection par un conduit de diamètre 1 " et ce sur des distances allant jusqu'à 100 m.

KVM
2 U Rack - Available
APS Switch
APS Switch
1 U rack - Available
Aux Power Supply
Aux Power Supply
Keyboard tray
Switch
Router
Router (2)
UPS
Shelf
Server
UPS
UPS Batteries

**Figure 4 - Block diagram of CBSA's existing RPM control cabinet, highlighting available rack space for new componentry.**