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**Bid Fax: (819) 997-9776**

**SOLICITATION AMENDMENT**  
**MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

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**Issuing Office - Bureau de distribution**  
Fuel & Construction Products Division  
L'Esplanade Laurier,  
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East Tower, 4th floor,  
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Ontario  
K1A 0S5

<b>Title - Sujet</b> Camp Sustain Deployable Camp Infrastructure and Utilities Systems (Camp Sustain)	
<b>Solicitation No. - N° de l'invitation</b> W8476-226540/A	<b>Amendment No. - N° modif.</b> 011
<b>Client Reference No. - N° de référence du client</b> W8476-226540	<b>Date</b> 2024-01-26
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$SHL-675-80770	
<b>File No. - N° de dossier</b> hl675.W8476-226540	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> Eastern Standard Time EST <b>on - le 2024-12-31</b> Heure Normale du l'Est HNE	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> ian.arboleda@tpsgc-pwgsc.gc.ca	<b>Buyer Id - Id de l'acheteur</b> hl675
<b>Telephone No. - N° de téléphone</b> ( ) - ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> See herein.	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b>	<b>Delivery Offered - Livraison proposée</b>
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<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</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/</b> <b>de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

## **QUESTION AND ANSWER – SERIES VII**

Q56. Are Suppliers required to register to the Industry Day scheduled on February 8 and the One-on-one Session: Product Demonstration scheduled between February 9 to March 1, 2024?

A56. All Suppliers interested in attending the upcoming virtual (via MS Teams) 2<sup>nd</sup> Industry Day and participate in the 2<sup>nd</sup> One-on-one Sessions: Product Demonstrations MUST submit and complete the revised Invitation form identified in below amendment.

For detailed instructions, please refer to amendment below.

Q57. Can Suppliers, at any time, make a presentation and/or share/provide information to Canada on its products and services or update the information provided in previous engagement?

A57. Suppliers may, at any time, share/provide information to Canada on its products and services via email to the Contracting Authority only. Any other form of engagement, e.g. presentation, one-on-one session, etc. will have to be conducted in accordance with an identified engagement activity in the RFI. Suppliers are encouraged to monitor the RFI posting on Canada Buys for future industry engagement activities.

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**THIS AMENDMENT IS RAISED TO CHANGE THE RFI CLOSING DATE, PRELIMINARY PROCUREMENT STRATEGY, INDUSTRY DAY AND ONE-ON-ONE SESSIONS AND RELATED DOCUMENTS. THE FOLLOWING REVISIONS ARE:**

1. At the Letter of Interest (Request for Information) cover page, Solicitation Closes box, DELETE in its entirety and REPLACE with the following,

<p>"Solicitation Closes - L'invitation prend fin At – à 1400 hours EST/ heures HNE On – le 31 December/décembre 2024"</p>
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2. At Part 3 – Preliminary Procurement Strategy, 3.1 Introduction, 3.1.1 Approximate Schedule, DELETE and REPLACE with the following,

**"3.1.1 Approximate Schedule**

Activity	Planned/Actual Date
Initial RFI	December 21, 2021
Initial Industry Feedback	January 28, 2022
Initial Industry Day	March 1, 2022
Initial One-on-One Sessions	March 28 - April 1, 2022
2 <sup>nd</sup> Industry Day	February 8, 2024
2 <sup>nd</sup> One-on-One Sessions – Virtual Product Demonstrations	February 9 – March 1, 2024
Working Group Meetings	TBD
Additional Industry Engagement Activities (Industry Day, One-on-one session and/or Questionnaire)	TBD
RFI - Draft RFP	Spring 2025
Posting Final RFP on CanadaBuys	Winter 2025
Award (Contract(s))	2027
Initial Operational Capability (IOC)	2029/2030
Full Operational Capability (FOC)	2031/2032"

3. At Part 3 – Preliminary Procurement Strategy, 3.4 Preliminary System Requirements and Associated Costing, ADD the following,

"3.4.1 An updated Background (Annex A1), System Requirements (Annex A2) describe the latest background information and technical requirements. Respondents are requested to provide responses, for their products, to the questions listed in Annex A3 – Technical and Support Requirements Questions."

4. At Part 3 – Preliminary Procurement Strategy, 3.6 Procurement Questions, DELETE Annex C – Procurement and ITB/VP Questions and REPLACE with the following,

**“3.6. Procurement Questions**

Annex C – Revised Procurement: This annex requests Respondents to provide feedback on various procurement topics.”

5. At Part 4 – Industry Day(s) and One-on-One Sessions, 4.1 Invitation to Industry Day(s) and One-on-One Sessions, 4.1.2 Additional Industry Day(s), ADD the following,

**“4.1.2.1 2<sup>nd</sup> Industry Day – Virtual Only (MS Teams)**

The 2<sup>nd</sup> Industry Day, held virtually via MS Teams, is intended to be an open forum. It will allow Canada representatives to present industry representatives with information about the CS project updates and communicate high-level equipment capability requirements. It will also provide a venue for industry representatives to ask questions and seek information required to gain a sound understanding of Canada’s business needs.

Representatives from PSPC and DND will lead Industry Day presentations and discussions on the technical and procurement requirements.

**The 2<sup>nd</sup> Industry Day is scheduled for February 8, 2024 at 1000 to 1200 hours EST.**

**Suppliers are requested to confirm their attendance by submitting a completed Annex F – Invitation Form (2<sup>nd</sup> Industry Day and 2<sup>nd</sup> One-on-one Session: Product Demonstration), to the Contracting Authority and a list of potential concerns they wish to discuss no later than 1400 hours EST, February 6, 2024.**

The MS Teams invitation will be sent directly to the registered participant’s Point of Contact.”

6. At Part 4 – Industry Day(s) and One-on-One Sessions, 4.1 Invitation to Industry Day(s) and One-on-One Sessions, 4.1.4 Additional One-on-One Sessions, 4.1.4.1 2<sup>nd</sup> One-on-one Sessions: Product Demonstrations, DELETE in its entirety and REPLACE with the following,

**“4.1.4.1 2<sup>nd</sup> One-on-One Sessions: Product Demonstrations – Virtual Only (MS Teams)**

**The 2<sup>nd</sup> One-on-One Sessions will be held virtually ONLY via MS Teams between February 9 and March 1, 2024.** Exact Date(s) and Time(s) will be confirmed directly with the registered participant’s Point of Contact.

**Suppliers must confirm their attendance to the One-on-One Session by submitting a completed Annex F – Invitation Form (2<sup>nd</sup> Industry Day and 2<sup>nd</sup> One-on-One Session: Product Demonstrations), to the Contracting Authority no later than 1400 hours EST, February 6, 2024.** Late registrants will not be accepted.

The MS Teams invitation will be sent directly to the registered participant’s Point of Contact.”

7. At Part 5 – Related Documents, ADD the following annexes: Annex A1 – Camp Sustain Background (Updated), Annex A2 – Camp Sustain System Requirements (Updated) and Annex A3 – Technical and Support Requirements Questions, attached hereto.
8. At Part 5 – Related Documents, Annex C – Procurement and ITB/VP Questions, DELETE in its entirety and REPLACE with Annex C – Revised Procurement Questions, attached hereto.
9. At Part 5 – Related Documents, Annex F – Invitation Form – 2<sup>nd</sup> One-on-One Session: Product Demonstrations, DELETE in its entirety and REPLACE with the attached revised annex.

**ALL OTHER TERMS AND CONDITIONS OF THE REQUEST FOR INFORMATION REMAIN UNCHANGED.**

## ANNEX A1

### CAMP SUSTAIN BACKGROUND

(UPDATED)

January 2024

The Department of National Defence (DND) is seeking industry knowledge to help develop specifications for the next generation of deployable military camp systems. This Request for Information (RFI) is an opportunity for interested parties to provide input and feedback by informing DND of their current or anticipated camp equipment technical capabilities, preliminary costs and other performance characteristics.

The Camp Sustain (CS) project seeks to replace the current in-service Relocatable Temporary Camp (RTC) system used throughout the Canadian Armed Forces (CAF). The in-service RTC system no longer fully supports CAF deployed utilities and infrastructure requirements. The RTC system has an increasingly large demand for preventative and corrective maintenance and its sub-systems are not integrated to maximize efficiency and minimize resource consumption, making the system incapable of enabling Strong, Secure, Engaged (SSE) or achieving Defence Energy and Environment Strategy (DEES) targets. This resource inefficiency also exposes deployed forces to greater operational risk through larger and more frequent resupply activities.

The CS project seeks to support the following SSE initiatives:

- a. Initiative 41: Improve the Army's ability to operate in remote regions by investing in modernized communications, shelters, power generation, advanced water purification systems, and equipment for austere environments.
- b. Initiative 102: Examine alternative energy options and their potential use for operations.
- c. Initiative 106: Enhance the mobility, reach and footprint of the CAF in Canada's North to support operations, exercises and the CAF's ability to project force into the region.

The goal of the CS project is to deliver a deployable camp infrastructure and utilities system that can provide sustained, robust and flexible support during expeditionary and domestic operations. CS project will integrate modern and innovative technologies to maximize resource efficiency which will increase operational sustainability and effectiveness while reducing the environmental impact of the CAF's deployed forces. CS will also be designed to ensure enhanced interoperability within the CAF and with Allies as well as increased soldier resiliency via improved accommodations and health and welfare facilities.

CS project will have robust and flexible capacity to provide sustained support to up to two concurrent deployed task forces in geographically dispersed operations. These deployed task forces will range in size up to 4800 personnel for a single operation or a combination totalling 4800 personnel for concurrent operations. The deployments can range in duration from six to more than 24 months. CS will be required to include all aspects of operational, domestic, industrial and administrative services and utilities. CS will not include physical force protection measures as they will vary depending on mission threat level. However, CS control software and hardware will need to be hardened against cyber and Electronic Warfare (EW) threats when deployed on operations.

The CS project is considering the procurement of new camp systems and upgrading current RTC stock to provide for a deployment of up to 3200 personnel. The method of procuring the balance

of systems required to fulfill the remaining 1600 personnel requirement to get up to the 4800 deployed level will be determined at a future date.

Accordingly, DND is seeking industry feedback to help generate specifications that maximize performance and efficiency in complete camp or component level systems in the following key areas:

- 1) Current technologies, concepts and/or proposals on integrated camp systems.
- 2) Camp shelter systems (all types of shelters).
- 3) Camp power generation and distribution.
- 4) Solid waste, wastewater (grey and black) handling, storage and treatment.
- 5) Camp shelter heating and cooling.
- 6) Potable water production, treatment, storage and distribution.
- 7) Food handling, preparation and distribution.
- 8) Equipment storage, deployment, set-up, tear-down and maintenance concepts.

DND is placing additional emphasis on environmental impact in the execution of this project. To that effect, the department is open to accept proposals and suggestions from industry for current proven in-use camp systems or for those that are at Technology Readiness Level (TLR) 7 or greater. Description of TRLs are outlined at <https://buyandsell.gc.ca/initiatives-and-programs/build-in-canada-innovation-program-bcip/program-specifics/technology-readiness-levels>.

In early 2024, the Government of Canada (GoC) will hold industry day(s) where a more detailed presentation of the project will be provided to all interested participants. Opportunities will be provided for industry partners to have one-on-one sessions, including demonstrations, with GoC representatives. If required, the GoC will provide an area and support in the NRC region for industry partners to provide a “hands-on” review of their proposed systems. The GoC is open to receive information on all type of camp and related systems, components, equipment and concepts and encourages industry to submit any and all pertinent information.



## ANNEX A2

# CAMP SUSTAIN SYSTEM REQUIREMENTS (UPDATED)

January 2024

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# 1 High Level Mandatory Requirements (HLMRs) for all Systems

The following capability area categories outlines the high-level mandatory requirements that the systems delivered as part of the Camp Sustain (CS) project must meet.

Capability Area	High Level Mandatory Requirements description
Reliable Camp Utilities	The ability to provide utilities that are available when required and sufficient to keep camp systems operational for mission duration and sustains the health and welfare of deployed soldiers.
Flexibility	The ability to provide relocatable, modular, and scalable camp systems and utilities that can be tailored to different mission profiles and meet the SSE requirements for concurrent operations.
Efficient Resource Consumption	The ability to equipment, facilities, and utilities that minimize the consumption of resources (fuel, energy, and water), and utilizes those resources efficiently with minimal waste and reduced production of greenhouse gases.
Robustness	The ability to support sustained operations in all climate zones down to -40 °C (modified NATO C2) and up to +44 °C (NATO A2).
Sustainability	The ability to utilize common commercially available off the shelf (COTS) replacement parts and for hardware and field-loadable software components to be upgradable.
Infrastructure	The ability to centrally store and maintain the camp systems with access to a climate-controlled setting for maintenance and storage of critical items when not in use.
Interoperability	The ability to interoperate with allies, coalition partners (NATO and ABCANZ) and Host Nations while conducting joint operations (including RCAF and RCN) in a hostile environment and remain technically compatible with current CAF equipment and assets.
Transportability	The ability to be transported within the tactical, operational, and strategic environments, by sea, air, or land, and by CAF prime movers or contracted civilian assets.
Personnel Health and Protection	The ability to protect deployed personnel from the deployed environmental conditions in a manner that supports personal and collective health, hygiene, and welfare.

## 1.1 General Assumptions

- CS alone will not support more than two large concurrent missions.
- CS support to an Arctic deployment will be a maximum of 500 personnel. The remain 2750 personnel will not be required to meet the Arctic requirement (**amended assumption and this could be a rated desirable**).
- Arctic equipment will be designed for a NATO C2 (Command and Control) environment.
- During any CS deployment, a full contingent will be on camp 100% of the time.
- Appropriate machinery will be available for CS setup and tear down.
- Scalable size for CS is 250 personnel increments.
- All CS provided components will be Commercial Off-The-Shelf (COTS) or Militarized Off-The-Shelf (MOTS).

## 1.2 System Specific Assumption

## 1.3 System Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for Specs
			•
			•
			○

## 1.4 System Specification Considerations

- 

## 1.5 Questions

- What is the scalable size / Base Building block size for each sub-system in a camp?
- What requirements management software tools do you use (if any) and what is your experience in using them? For example, IBM's Rational DOORS.

## 2 EIS (Equipment Issue Scale)

This category is to capture the smaller sub-systems and components that are common throughout a camp and not necessarily part of just one system. They could be stand-alone items or integrated. EIS should be standardized.

### 2.1 Assumptions

### 2.2 Sub-System Specific Assumptions

- CS is not responsible for providing Fire extinguishers, First Aid Kits, or Automated External Defibrillators (AED).

### 2.3 EIS Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for Specs
	Tables and Chairs	For use throughout camp	<ul style="list-style-type: none"> <li>Required in: <ul style="list-style-type: none"> <li>Mess Hall</li> <li>Office Space</li> <li>Rest and Relaxation facilities</li> <li>Physical Rec facilities</li> <li>Laundry Facility</li> <li>Worship Facility</li> <li>Post Office Facility</li> </ul> </li> <li>Stackable Chairs (Arm rests?)</li> <li>Smooth Surface tables</li> <li>Easily cleanable</li> </ul>
	Desks and Chairs	For use in all office spaces	<ul style="list-style-type: none"> <li>For Computers</li> <li>Potential for built-in electrical and conduits for networking? Or each desk and cable to connect to tent electrical?</li> <li>Simple office Chairs - wheeled or not?</li> </ul>
	Office Clocks		<ul style="list-style-type: none"> <li>A standard plug-in clock (analog, 24 hr)</li> </ul>
	Service Desk	As required	<ul style="list-style-type: none"> <li>Stand up with shelving behind</li> </ul>
	OHSA	As required for OHSA standards	<ul style="list-style-type: none"> <li>Accommodation / holder for (Standard for all shelters, located near main doorways): <ul style="list-style-type: none"> <li>First Aid kit</li> <li>Eye wash bottle</li> <li>AED</li> <li>Fire Extinguisher (slightly adjustable to accommodate</li> </ul> </li> </ul>

			<p>differences for room space and potential fire type)</p> <ul style="list-style-type: none"> <li>• Provided with (including holder): <ul style="list-style-type: none"> <li>○ Fire Blanket</li> </ul> </li> <li>• Provided as required: <ul style="list-style-type: none"> <li>○ Safety shower</li> <li>○ Eye Wash Station (plumbed or not)</li> <li>○ Field Stretcher Accommodation</li> </ul> </li> </ul>
	Personal Protective Equipment (PPE) Racks		<ul style="list-style-type: none"> <li>• GFI or GFE</li> <li>• Flak Jacket / Helmet / etc</li> </ul>
	Weapons Storage		<ul style="list-style-type: none"> <li>• Dependant on shelter type</li> <li>• Group and individual Weapons racks (potentially GFE/GFI) labelled with tags or:</li> <li>• Individual weapons lockers</li> <li>• For Personal Weapons</li> </ul>
	Shipping containers	ISO Containers 20ft	<ul style="list-style-type: none"> <li>• Will be used as on-camp storage or workspaces for various sections</li> <li>• Some removable / adjustable shelving</li> <li>• Potentially removable workbenches (racking system/ wall mount system)</li> <li>• Lighting and Electrical Kits / connections</li> <li>• Label / plates should note the Center of Gravity</li> </ul>
	ISO Container to Shelter Connector		<ul style="list-style-type: none"> <li>• Allows sea containers to be connected to shelter complexes</li> <li>• Will require adjustable ramp to enable pallet jacks to go from complexes down or up to Sea containers</li> </ul>
	Bicycle Racks		<ul style="list-style-type: none"> <li>• For Bicycle storage outside shops</li> </ul>
	Lightning Arrestors		<ul style="list-style-type: none"> <li>• One per camp or one on each shelter, or multiple placed around camp?</li> </ul>
	Janitor Station		<ul style="list-style-type: none"> <li>• Cold and hot water supply and distribution</li> </ul>

			<ul style="list-style-type: none"> <li>• Wastewater removal (storage?)</li> <li>• Water collection tray / floor (easily cleanable) with drain to wastewater</li> <li>• Laundry Sink</li> <li>• Workshelf / space</li> <li>• Storage for cleaning supplies / mops / brooms / buckets / etc</li> <li>• Probably stainless-steel room like the toilets / showers</li> </ul>
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## 2.4 System Specification Considerations

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## 2.5 Sub-System Specific Questions



### 3 Climate Controlled Shelter

#### 3.1 General Assumptions

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#### 3.2 Climate Controlled Shelter Specific Assumptions:

- Shelter can refer to both hard wall and soft wall shelters

#### 3.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for Specs
	Shelter	Appropriate HVAC	<ul style="list-style-type: none"> <li>• to meet HLMR</li> </ul>
		Meet fire codes	<ul style="list-style-type: none"> <li>• fire extinguisher (s)</li> <li>• Smoke/CO Detectors</li> <li>• emergency lighting/exit signs</li> </ul>
		easily cleaned and decontamination to meet cleaning regulations upon return to Canada	<ul style="list-style-type: none"> <li>•</li> </ul>
		windows	<ul style="list-style-type: none"> <li>• Need to open</li> <li>• ? Be capable for black out conditions?</li> <li>• Non-fragmenting type.</li> <li>• No requirement for windows to be rigid.</li> </ul>
		Hard type non-slip interlocking and modality flooring	<ul style="list-style-type: none"> <li>• Cable runs?</li> </ul>
		lockable standard size rigid doors	<ul style="list-style-type: none"> <li>• Single door and swings outward as per Canadian Fire Code.</li> </ul>
		OSHA Requirements	<ul style="list-style-type: none"> <li>• Accommodation / holder (located near main doorways) for: <ul style="list-style-type: none"> <li>○ First Aid kit</li> <li>○ Eye wash bottle</li> <li>○ AED</li> <li>○ Fire Extinguisher</li> </ul> </li> <li>• Provided with (including holder): <ul style="list-style-type: none"> <li>○ Fire Blanket</li> </ul> </li> <li>• Provided as required: <ul style="list-style-type: none"> <li>○ Safety shower</li> <li>○ Eye Wash Station</li> <li>○ Field Stretcher</li> </ul> </li> <li>Accommodation</li> </ul>

		trash can(s), recycling containers	<ul style="list-style-type: none"> <li>• External/Internal?/lockable? / or just accommodation?</li> </ul>
		Electrical kit including lighting and outlets,	<ul style="list-style-type: none"> <li>• Softwall should be GFI / GFE;</li> <li>• Hardwall to be prewired.</li> <li>• USB Power / charging only (USB Type A)?</li> </ul>
		Accommodate IT / networking installation	<ul style="list-style-type: none"> <li>• Conduit and cable routing</li> <li>• Access ports</li> </ul>
		Meets all relevant and latest versions of any Canadian codes and regulations pertaining to the usage and design of shelters.	<ul style="list-style-type: none"> <li>•</li> </ul>
		Weapons rack and PPE storage.	<ul style="list-style-type: none"> <li>• Scalable to shelter capacity</li> </ul>
		GBA+ required for accessibility (to be determined)	<ul style="list-style-type: none"> <li>•</li> </ul>

### 3.4 Climate Controlled Shelter System Specification Considerations

- For hard wall solutions potentially include a separate mechanical room for mechanical and electrical components such as air compressors or hot water tanks or if design is to include HVAC as integral to shelter.
  - Canopy or solar shade type cover for any exterior components that will come with any soft wall type shelters.

### 3.5 Sources of requirements

- Is shelter blackout possible or inherent?

## 4 Breezeway / Hallway (formally mud/cloak room)

The Breezeway / Hallway is intended to allow for shelters to be connected and to provide a covered entry way into a shelter complex. There is the potential for space to take off boots or overcoats.

### 4.1 General Assumptions

### 4.2 Breezeway Specific System Assumptions:

- Breezeways will be used as both entry ways and to connect shelters together

### 4.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	Breezeway	Climate controlled shelter	• Desirable
		Enclosed space with doors	•
		Rigid hard type doors	• Removable / installable as required
		Lighting kit	• Potentially GFE (TBC)
		Seating	• Benches (as required) or chairs
		Coat racks/boot cleaners	• (as required)
		Janitor sink/Janitor closet for supplies.	• Desirable. / Possible depending on requirement
		Cold water supply and distribution	• Desirable (As required)
		Hot water supply and distribution	• Desirable (As required)
		Grey water removal and disposal	• Desirable (As required)
		Hard type non-slip flooring	• Designed for easy cleaning and water/dirt drainage

### 4.4 Breezeway System Specification Considerations

- Needs to be expandable connectable to breezeways to make larger interior space without sub-divisions.
- Potentially a plumbed breezeway and a non-plumbed breezeway.

### 4.5 Sub-System Specific Questions

## 5 Junction Point

The Junction Point is a common component of the shelter system which will allow shelters to be connected to create complexes as required. Complexes will be created to ensure that depending on deployment climate and environment personnel will not always be required to exit a shelter when going from shelter to shelter.

### 5.1 General Assumptions

### 5.2 Junction Specific System Assumptions:

- Junction will be used as both entry ways and to connect shelters together.

### 5.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	Junction	Climate controlled shelter	<ul style="list-style-type: none"><li>• Desirable</li></ul>
		Enclosed space with doors	<ul style="list-style-type: none"><li>• Allows shelters to be connected.</li><li>• Potentially used for meeting space</li><li>• Not too small or too big. Wider than just a hallway</li></ul>
		Rigid hard type doors	<ul style="list-style-type: none"><li>• At least 4 doors required at 90 degrees from each other for access on all sides</li></ul>
		Lighting kit	<ul style="list-style-type: none"><li>• Potentially GFE (TBC)</li></ul>
		Hard type non-slip flooring	<ul style="list-style-type: none"><li>• Designed for easy cleaning and water/dirt drainage</li></ul>

### 5.4 Junction Point Specification Considerations

- Needs to be expandable or connectable to breezeways and Junction Points to make larger interior space without sub-divisions

### 5.5 Sub-System Specific Questions

- Do the Breezeways and Junction Points need to be separate items? Or can they be interchangeable / the same piece of equipment?

## 6 Camp wide Systems

The Camp Wide Systems are intended to capture and provide facilities and equipment found throughout the camp but not tied to or covered under a specific system.

### 6.1 General Assumptions

- 

### 6.2 System Specific Assumptions

### 6.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	Exterior Walkways and Flooring		<ul style="list-style-type: none"><li>• Probably not</li></ul>
	Camp PA System		<ul style="list-style-type: none"><li>• Potentially an IT / provided thing.</li><li>• Or a simple 2 wire speaker system.</li></ul>
	Emergency Bunkers		<ul style="list-style-type: none"><li>• Tables and chairs</li><li>• IT conduits</li><li>• Shelving for rations / water</li><li>• Lighting and electrical kit.</li><li>• Battery backup.</li><li>• Shelter (non-climate controlled)</li><li>• Blast / Bullet protection not a CS responsibility</li></ul>

### 6.4 System Specification Considerations

- Current Emergency Bunkers are referred to as Suffield RAM Shelter

### 6.5 Sub-System Specific Considerations

- Are lighting arrestors independent systems that are part of CS or integrated into the shelters?

## 7 Kitchen and Mess Hall (Dining) Facility

This facility will be the location where the cooking staff prepares, cooks, and serves food. The food will be served in the mess hall. The washing and sanitizing of kitchen items will be done here. This facility will provide storage for unprepared food stores and an office area for the kitchen staff. The design will include a direct link to the kitchen facility so that kitchen staff do not need to go outside to transit to the mess hall. There will be self-serving and kitchen staff food dispensing locations.

### 7.1 General Assumptions

- During any CS deployment, a full contingent will be on camp 100% of the time.
  - Not all personnel will eat every meal in the Mess Hall. There will be dispersed meals with hay boxes.

### 7.2 Kitchen Assumptions

- The kitchen and mess hall will be scalable to meet up to 100% of capacity.
- CS will provide 100% kitchen equipment for initial set-up for both the kitchen and mess hall facilities related to serving food.
- The shipping containers / ISOs used for the transport and for long term storage of small wears (i.e. pots, pans, pallet jacks, e.g. things not tied down) will be used as dry food storage containers
- All equipment will be electrical based.
- CS will not be providing any audio/visual equipment and associated IT hardware however will allow for install by others.
- For dietary requirements:
  - Food preparation and production areas are cleaned between different meals.
  - For other special dietary requirements, (e.g., Kosher) contracts are established with nearby contractors where possible

### 7.3 Kitchen Facility Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for Specs
0	General Requirements	Climate-controlled shelter	•
1	Food Reception Area	Loading bay with equipment to move supplies around such as a pallet jack	• Some kind of unloading mechanism to unload the pallets from trucks onto the loading bay
1a	Food Storage Area	Dry goods Storage (Shipping container and other shelter)	• Shipping container(s) / ISO (s) used to transport / long term storage of small wears re-used. • Pallet jack • Mobile shelving
		Climate Controlled shelter	• Dry goods storage

		Reefer(s) (Walk in fridges and freezers)	<ul style="list-style-type: none"> <li>• For Freezer</li> <li>• For Refrigeration</li> <li>• Possibly a split reefer with shelving</li> <li>• Reefers require some shelving.</li> <li>• Ramp Up/Down to reefers to allow pallet jacks / carts to be used</li> </ul>
		Safety Equipment	<ul style="list-style-type: none"> <li>• First aid kit (fitted for but not with)</li> <li>• AED</li> </ul>
2	Food preparation area	Major equipment for baking and cooking	<ul style="list-style-type: none"> <li>• e.g. stoves, grills</li> <li>• No Deep Fryers (TBC)</li> <li>• Recommend qty and type</li> </ul>
		Specialized flooring due to constant standing or spillage	<ul style="list-style-type: none"> <li>• Anti-fatigue mats (part of the check list) at all stations</li> </ul>
		Exhaust system	<ul style="list-style-type: none"> <li>• Range Hood fans</li> </ul>
		Reach-in refrigerators and freezers	<ul style="list-style-type: none"> <li>• Commercial Units</li> </ul>
		Cold water supply and distribution	<ul style="list-style-type: none"> <li>• Potable Water</li> </ul>
		Hot water supply and distribution	
		Wastewater removal and disposal	<ul style="list-style-type: none"> <li>• Major equipment to be in berm with drain for cleaning.</li> <li>• Consider lowered floor with raised legs under equipment for appropriate working height</li> </ul>
		Dry/Wet Composting disposal system	<ul style="list-style-type: none"> <li>• Bins that can be transported to central kitchen disposal storage</li> </ul>
		Grease fire protection system/sprinklers	<ul style="list-style-type: none"> <li>• Probably not required – no deep fryer</li> </ul>
		Floor sink	<ul style="list-style-type: none"> <li>• To wash the floors</li> </ul>
		Minor equipment for baking and cooking	<ul style="list-style-type: none"> <li>• e.g. stirring spoons, knives, spatulas, strainers.</li> <li>• Recommend quantity and type</li> </ul>
		Working and storage equipment such as tables and shelves	<ul style="list-style-type: none"> <li>• Recommend Square footage</li> </ul>
		Hand wash / sanitizer station	<ul style="list-style-type: none"> <li>• i.e. CleanTech 400 as an example</li> </ul>
3	Food Production Area	Major equipment for baking and cooking	<ul style="list-style-type: none"> <li>• e.g. stoves, grills</li> <li>• No Deep Fryers</li> <li>• Recommend quantity and type</li> </ul>
		Specialized flooring due to constant standing or spillage	<ul style="list-style-type: none"> <li>• Anti-fatigue mats (part of the check list) at all stations</li> </ul>
		Exhaust system	<ul style="list-style-type: none"> <li>• Range Hood fans</li> </ul>
		Reach-in refrigerators and freezers	<ul style="list-style-type: none"> <li>• Commercial Units</li> </ul>

		Cold water supply and distribution	<ul style="list-style-type: none"> <li>• Potable Water</li> </ul>
		Hot water supply and distribution	<ul style="list-style-type: none"> <li>•</li> </ul>
		Wastewater removal and disposal	<ul style="list-style-type: none"> <li>• Major equipment to be in berm with drain for cleaning.</li> <li>• Consider lowered floor with raised legs under equipment for appropriate working height</li> </ul>
		Dry/Wet Composting disposal system	<ul style="list-style-type: none"> <li>• Bins that can be transported to central kitchen disposal storage</li> </ul>
		Grease fire protection system/sprinklers	<ul style="list-style-type: none"> <li>• Probably not required – no deep fryer</li> </ul>
		Floor sink	<ul style="list-style-type: none"> <li>• To wash the floors</li> </ul>
		Minor equipment for baking and cooking	<ul style="list-style-type: none"> <li>• e.g. stirring spoons, knives, spatulas, strainers.</li> <li>• Recommend quantity and type</li> </ul>
		Working and storage equipment such as tables and shelves	<ul style="list-style-type: none"> <li>• Recommend Square footage</li> </ul>
		Hand wash / sanitizer station	<ul style="list-style-type: none"> <li>• i.e. CleanTech 400 as an example</li> </ul>
4	Food servicing area	Climate-controlled shelter	
		Serving equipment	<ul style="list-style-type: none"> <li>• such as tables, shelves, display cases, carts.</li> <li>• Make recommendations</li> </ul>
		Power consideration	
		Grease fire protection system/sprinklers (is this required)	<ul style="list-style-type: none"> <li>• Probably not required – no deep fryer</li> </ul>
		Specialized flooring due to constant standing or spillage	<ul style="list-style-type: none"> <li>• Anti-fatigue mats (part of the check list) at all stations</li> </ul>
		Hot service line	
		Minor equipment	<ul style="list-style-type: none"> <li>• such as trays, plates, cutlery holders.</li> <li>• Small wears (Pots, Pans, toasters etc)</li> </ul>
		Cold water supply and distribution	<ul style="list-style-type: none"> <li>• Potable water</li> </ul>
		Hot water supply and distribution	
		Floor sink	<ul style="list-style-type: none"> <li>• To wash the floors</li> </ul>
		Wet/dry disposal / Compost / Garbage	<ul style="list-style-type: none"> <li>•</li> </ul>
		Hand wash / sanitizer station	<ul style="list-style-type: none"> <li>• i.e. CleanTech 400 as an example</li> </ul>
5	Mess Hall (dining area)	Climate-controlled shelter	
		Equipment such as tables and chairs	



		Hand cleaning equipment	<ul style="list-style-type: none"> <li>• Hand wash/sanitizing station (tap and sink) for kitchen staff only</li> </ul>
		Trash cans for dry/wet/recyclable	<ul style="list-style-type: none"> <li>• See note for section 6</li> </ul>
		Return tray equipment	<ul style="list-style-type: none"> <li>• See note for section 6</li> </ul>
		Wet/dry disposal / Compost / Garbage	<ul style="list-style-type: none"> <li>• Disposal for dinners. For 'eaters' to clean their trays off and put trays away.</li> </ul>
		Dedicated 24-hour snack food and drink area	<ul style="list-style-type: none"> <li>• Power consideration and dedicated space for microwave ovens and toasters and other equipment utilized by non serving personnel.</li> </ul>
		Potable water	<ul style="list-style-type: none"> <li>• Bottled water (bottled water is provided by supply. Potential we can include a Water Bottle filler)</li> </ul>
		Audio/Visual equipment locations and accommodations	
		Safety Equipment	<ul style="list-style-type: none"> <li>• First aid kit (fitted for but not with)</li> <li>• AED</li> </ul>
		Salad / Soup bar	<ul style="list-style-type: none"> <li>• Self-Serve</li> </ul>
		Sandwich bar / Cold service line	<ul style="list-style-type: none"> <li>• Kitchen staff will operate this line if required and staffing allows</li> </ul>
6	Disposal	Wet/dry disposal	<ul style="list-style-type: none"> <li>• Disposal for dinners. For 'eaters' to clean their trays off and put trays away.</li> </ul>
		Main disposal System	<ul style="list-style-type: none"> <li>• For the recuperation from sub-stations</li> <li>• From here the waste will be transferred to the incinerator or local contractor.</li> <li>• Consider locating near loading docks, (or clear path to loading docks</li> <li>• Need to contain odors</li> </ul>
7	Dishwashing area	Climate-controlled shelter	
		Dishwashing Equipment	<ul style="list-style-type: none"> <li>• e.g. sinks, tables, dishwashers</li> <li>• Potentially 2 total - 1 located in food prep (or between prep and production) the other for servicing / dining</li> </ul>

		Specialized flooring (due to water spillage)	•
		Trash cans for dry/wet/recyclable	•
		Cold water supply and distribution	• Potable Water
		Hot water supply and distribution	•
		Wastewater removal and disposal	•
		Wash bay system with proper drainage	<ul style="list-style-type: none"> <li>• For cleaning large items (such as food racks) and other that will not fit in the dishwasher.</li> <li>• Enclosed room with a floor drain</li> </ul>
		Ventilation system due to steam	• To prevent mold, mildew etc.
8	Kitchen admin area	Climate-controlled shelter	•
		Chief-cook office area	•
		Office/common area for cooks Rest and Relaxation	•
		Weapon Storage Lockers	•
		Audio/Visual equipment locations and accommodations	•
		IT Accommodations	• Conduits & Power
		Furnishings	• E.g. desks, chairs, tables
		Janitor sink/Janitor closet for supplies.	•
9	Dispersed Area	Climate-controlled shelter	<ul style="list-style-type: none"> <li>• where hay boxes, box lunches are prepared.</li> <li>• Washing system (sinks etc.) for hay boxes</li> <li>• Separate room with separate exterior entrance.</li> <li>• Shelving &amp; storage for Hay boxes</li> <li>• Work surfaces</li> </ul>
		Cold water supply and distribution	• Potable Water
		Hot water supply and distribution	•
		Working and storage equipment such as tables and shelves	• Square footage required?
		Floor sink	• To wash the floors
		Wet/dry disposal / Compost / Garbage	•
		Hand wash / sanitizer station	• i.e. CleanTech 400 as an example
		Specialized flooring due to constant standing or spillage	• Anti-fatigue mats (part of the check list) at all stations
		Minor equipment for baking and cooking	• e.g. Such as stirring spoons, knives, spatulas, strainers.

## **7.4 Kitchen System Specification Considerations**

### **7.4.1 From the BG-L-005-312/FP-001:**

- Near track/road for re-supply and waste pick-up.
- Relatively close to water production due to being a heavy user.

### **7.4.2 Other Considerations**

- Interior doorways between food servicing and mess will be double swing and double sided with windows and lockable.
- There must be at least 7 days of food on a camp.
- Power requirements
  - steady use and peak (based on times) Peak from 05:00 to 13:00 & 14:00 to 17:00 hrs.  
For prep cooking & serving
- Set up of kitchen is crucial for safety & control of food (reception, prep, production, serving, dinning, disposal areas to be in this order. Ideally kitchen would be set-up in a linear fashion.
- A washroom must be adjacent to the kitchen for kitchen staff including General Duties (GDs) /Locally Employed Personnel support (LEPS)
- Kitchen staff accommodations do not need to be co-located with kitchen, but kitchen staff should be bunked together (due to sleep schedules)
- Some back up / emergency power required for critical equipment.

## **7.5 Sub-System Specific Questions**

- What is the optimal scaling size / base building block size for the kitchen design?
  - How many personnel can it serve per meal?
  - How does the kitchen “Scale up” for larger camp sizes. (more kitchens or are they combined/complexed)?
    - Estimated storage area for ration stores
    - Estimated sq ft per person for mess dining
    - How much solid waste can system handle per person per day?
    - How much wet solid waste can system handle per person per day?

## 8 Accommodation (Sleeping) Facilities

This facility will be used for personal relaxation and sleeping while off duty and for storing personal items. It is anticipated that accommodation facilities will be located close to washroom and shower facilities.

### 8.1 General Assumptions

### 8.2 Accommodation System Specific Assumptions:

- These shelters will be considered “quiet area.”
- Senior Non-Commissioned Members (NCM), junior NCMs, and officers shall be separated. Camp Chief Warrant Officer and Commanding Officer (CO) have their own co-located accommodations. VIP accommodations to be a copy of the CO.

### 8.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specifications
	Accommodations (primary sleeping quarters)	climate controlled shelter	•
		Breezeway	• TBD based on design
		hard type entry door (min 2 doors)	•
		Single bed frame (solid bottom mattress support) – commercial standard size	• Mattress and bedding consumable (not part of CS)
		Occupant Privacy	• Visual privacy required, audio deduction desirable, • Provide options
		Windows	• Need to be used as vents so openable with screen. • Fire code requirements. • In each room
		Personal lighting	• desk lamp, wall mounted individual controlled. • Keep in mind effect of partitions.
		Individual power outlets/USB power outlets	•
		Small table/chair	•
		Lockable personal cabinet (footlocker)	•
		Weapons Rack	• Beside each bed/one per room
		Non-lockable storage space	• Closet/drawers
		Noise reduction	• From exterior of system to the interior.

		Janitor sink/Janitor closet for supplies.	•
	On-call Room (Secondary sleeping quarters)		<ul style="list-style-type: none"> <li>• Two beds</li> <li>• Bedside table with lights</li> <li>• Assume will always be connected to another facility (i.e. Medical / MP/ etc)</li> <li>• Telecom accommodation</li> <li>• Weapons rack and PPE storage</li> </ul>
	VIP Sleep quarters		<ul style="list-style-type: none"> <li>• Single Bed</li> <li>• Bedside table</li> <li>• Sound insulated</li> <li>• Telecom accommodation</li> <li>• Weapons rack and PPE Storage</li> <li>• (for CO/ SM, VIP's)</li> </ul>

#### 8.4 Accommodation System Specification Considerations

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#### 8.5 System Specific Questions

- Number of troops per shelter?
- Is vertical integration of sleeping quarters possible / feasible / reasonable?

## 9 Medical Facilities

This facility will be used by medical staff, and potentially dental staff, to provide medical services to the deployed camp.

### 9.1 General Assumptions

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### 9.2 Medical Facility Specific Assumptions:

- One Role 1 or 2 facility per camp.
- Role 3 facilities and capabilities are not part of CS project. If required will be contracted.
- Medical Facility will not support the Forward Operating Bases
- CS will only provide the shelter systems and not any required niche medical equipment (e.g. hospital beds/x-ray machines/operating room equipment)
- Dental equipment is within the scope of CS. (It will be part of role 2)
- All hospital wastewater will be considered black (TBC)
- Anything that touches a patient (Medical equipment) not part of CS

### 9.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments
1	Role 2 Facility	climate controlled shelter	<ul style="list-style-type: none"> <li>• Needs to be accessible (wheelchair, etc)</li> </ul>
		Breezeway	<ul style="list-style-type: none"> <li>•</li> </ul>
		Side storage area for supplies	<ul style="list-style-type: none"> <li>•</li> </ul>
		Easy cleaning	<ul style="list-style-type: none"> <li>• All surfaces and equipment must be non-porous to ensure easy cleaning and Sanitization</li> </ul>
		Safety Equipment	<ul style="list-style-type: none"> <li>• E.g Eye wash stations</li> </ul>
		Specialized flooring	<ul style="list-style-type: none"> <li>• Potentially reinforced (for heavy equipment i.e. X-ray machine weighs 1000 lbs and is mobile)</li> </ul>
		Emergency Power	<ul style="list-style-type: none"> <li>• For full facility ATS required</li> </ul>
		HVAC system with higher level of filtration.	<ul style="list-style-type: none"> <li>• AC is mandatory</li> <li>• HEPA mandatory</li> <li>• 15 to 25 degree variant</li> </ul>
		Positive pressure inside shelter systems	<ul style="list-style-type: none"> <li>• Negative Pressure for the OR</li> </ul>
		Cold water supply and distribution	<ul style="list-style-type: none"> <li>• Potable water</li> </ul>
		Hot water supply and distribution	<ul style="list-style-type: none"> <li>•</li> </ul>
		Wastewater removal and disposal	<ul style="list-style-type: none"> <li>• Black/grey (mostly black)</li> <li>• (Potentially treat all hospital waste as black)</li> </ul>
		Wider / larger doors	<ul style="list-style-type: none"> <li>• double swing?</li> </ul>
		Sloping entrance	<ul style="list-style-type: none"> <li>• ramp</li> </ul>

		Standard furniture such as desk/chairs/exam tables/cabinets.	•
		Staff Office	• Potentially utilize a standard office shelter
		Conference Room	• See standard Conference Room
		Interior dividing walls	•
		Specialized lighting	•
		Specialized network connections.	• Provided by IT (no part of CS)
		Biomedical waste control	• Needs to be more robust for mobility • Requires a medical standard incinerator
		Lockable medical cabinets	• Keypad or key lock?
		Refrigeration storage capabilities	•
		Janitor sink/Janitor closet for supplies.	• No special floor drains required for Hospital
		Kitchen	• For patients only • Special hospital menus
		Morgue	•
		Laundry	• For patient items • For hospital attire (scrubs)
		Pharmacy	• For Role 2 Facility only • Lockable / Securable • Refrigerators • Freezers • Stand-alone section • Loading dock required
		Dental	•
		Toilets and Showers	• Large walk-in shower(s) • Larger door • Bathroom • (Alarm / pull cord?) • Preferably 1 per patient room • At least 1 separate bathrooms for staff and patients each
		Staff Lounge	• A/V accommodation • Table and Chairs • Couches (Not CS Provided) • Water and Power • Snack / Coffee Station
		On-call Room	• Space for at least 2 persons to sleep. (or more depending on building block size)

			<ul style="list-style-type: none"> <li>• Bedside tables, lamps</li> <li>• Dimmable lighting</li> </ul>
		Operating Room (OR)	<ul style="list-style-type: none"> <li>• Recommend quantity</li> <li>• Sinks required outside OR in prep room)</li> </ul>
		Exam Rooms	<ul style="list-style-type: none"> <li>•</li> </ul>
		Command Point (CP)	<ul style="list-style-type: none"> <li>• For Hospital operations</li> </ul>
		Standard Patient Room(s)	<ul style="list-style-type: none"> <li>• Requires bathroom near by (preferably connected)</li> <li>• Recommended number of patients per room / building block?</li> </ul>
		Isolation Room	<ul style="list-style-type: none"> <li>• Negative pressure?</li> </ul>
		Weapons Lock up	<ul style="list-style-type: none"> <li>• 1 for hospital staff (in staff room)</li> <li>• 1 for “visitors” in an entryway</li> <li>• Consider individual lockers (with keys) that each hold 1 pistol 1 rifle and small shelf for ammo / Night Vision Goggles’s etc.)</li> <li>• Requires back up / master key</li> </ul>
	Role 1 Facility		<ul style="list-style-type: none"> <li>• Basically a clinic</li> <li>• Field Ambulance Manages</li> </ul>
		Mental Health Facilities	<ul style="list-style-type: none"> <li>• Private patient rooms</li> </ul>
		Offices	<ul style="list-style-type: none"> <li>• Desk and chairs</li> <li>• A/V accommodations</li> </ul>
		Exam Room(s)	<ul style="list-style-type: none"> <li>•</li> </ul>

#### 9.4 Medical Facility System Specification Considerations

- Artic Deployment (maximum 500 personnel) will be very primitive (Robust Role 1)
- Medical Facility should be co-located to a LZ for role 2.
- Patients will be brought to this facility. Unlike a role 1 which is more of a Medical Inspection Room) (MIR)/clinic.
- Foot Pedal controls for sinks.
- Red Cross placard required on all doors, and roof tops to identify medical facilities

#### 9.5 Sub-Systems Specific Questions

- Number of patients a base building block serves? Does it scale up by multiplying or can building blocks be complexed?



## 10 Field Ambulance

### 10.1 General Assumptions

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### 10.2 System Specific Assumptions

- Field Ambulance provides clinics / Role 1 facility.
- Patient touching equipment are not the responsibility of CS. (See Medical Section 9)
- Mainly for “Drop in clinic” services and stabilization of critical before forwarding to Role 2 or Role 3 facility. (if not co-located).
- Located close to Helipads

### 10.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate Control Shelter	<ul style="list-style-type: none"> <li>• Special HVAC/ filtration requirements? (Probably not)</li> </ul>
		Office Space	<ul style="list-style-type: none"> <li>• Desks and Chairs</li> <li>• A/V accommodation</li> </ul>
		Conference Room	<ul style="list-style-type: none"> <li>•</li> </ul>
		Storage	<ul style="list-style-type: none"> <li>• Cabinets</li> <li>• Shelving</li> <li>• Medication distribution?</li> </ul>
	Breezeway		<ul style="list-style-type: none"> <li>• Lighted hallway / covering to Helipad</li> </ul>
	Patient check up Space		<ul style="list-style-type: none"> <li>• Patient tables</li> <li>• Desk and Chair</li> <li>• Special lighting.</li> <li>• Dividers / Privacy curtain</li> </ul>
	Patient Meeting / check-up room		<ul style="list-style-type: none"> <li>• Separated / Isolated Room(s?)</li> </ul>
	Vehicle Bay		<ul style="list-style-type: none"> <li>• For the “Ambulances” and to re-kit.</li> </ul>
		Hot / Cold / Wastewater provision and removal	<ul style="list-style-type: none"> <li>• Potable Water</li> </ul>
	Personal Protective Equipment (PPE) Racks		<ul style="list-style-type: none"> <li>• GFI or GFE</li> <li>• Flak Jacket / Helmet / etc</li> </ul>
			<ul style="list-style-type: none"> <li>• AED accommodation</li> </ul>

### 10.4 System Specification Considerations

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### 10.5 Sub-System Specific Questions

## 11 Shower Facility

This facility will be used for personal hygiene. This facility will not contain toilets or urinals. At this time, there is no specification or differences in the gender of people that will be using the facility. At a later date, a gender-based analysis will be conducted by DND and will provide more data on this type of facility, including non-binary gender association.

### 11.1 General Assumptions

### 11.2 Shower specific Assumptions:

- Shower facility will be co-located with the washroom facilities. If design is within an ISO container, then each must be separate.

### 11.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments
		Climate controlled shelter	•
		Cold water supply and distribution	•
		Hot water supply and distribution	• Desirable use of on-demand water heating system especially for arctic situations.
		Grey water removal and disposal	• Used shower water could be repropose for toilet or firefighting purposes.
		Private shower stall including shelving for shampoo/soap	•
		Private stall attached to shower for dressing/undressing	• Desirable to have rigid lockable doors. Potentially may need weapons rack.
		Personal hygiene waste containers in stalls	•
		HVAC with shower ventilation	•
		Hanger storage with shelving	•
		Sink and mirror	• Consider designed within the private stalls.
		Dedicated outlets for hair dryers/razor	•
		Waterproof non-slip flooring	•
		Benches	•
		Towel racks	•
		Breezeway	• Depends on system design and possible use as a waiting area.
		Boot wash	• Potentially within a breezeway.
		Janitor sink/Janitor closet for supplies.	•

#### **11.4 Shower Facility System Specification Considerations**

- Stainless steel throughout

#### **11.5 Sub-System Specific Questions**

- Do you typically provide shelters with both Showers and Toilet facilities or separate shelters for Showers and toilets?
- How do your designs and camp layouts account for gender fluidity? Sources of requirements

## 12 Toilet Facility

This facility will be used for personal hygiene. This facility will not contain showers. At this time, there is no specification or differences in the gender of people that will be using the facility. At a later date, a gender-based analysis will be conducted by DND and will provide more data on this type of facility, including non-binary gender association.

### 12.1 General Assumptions

### 12.2 Toilet Facility Specific Assumptions:

- Washroom facility will be co-located with the shower facilities. If design is within an ISO container, then each must be separate containers.
- Consider also a combined shower / toilet facility with 1-2 toilets and 1-2 showers (mainly for medical, but can be used / located with other systems eg MP's, near the CO, etc.

### 12.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments
		climate controlled shelter	•
		Cold water supply and distribution	•
		Hot water supply and distribution	• Desirable use of on-demand water heating system especially for arctic situations.
		Black water removal and disposal	• From toilet
		Grey water removal and disposal	• From sinks
		Private stalls with toilet	• Hooks for FFO / PPE
		Stall air extraction/ventilation	•
		Sinks and mirrors with shelving	• Co-located as part of toilet facility or attached.
		Breezeway	• Depends on system design and possible use as a waiting area.
		Waterproof non-slip flooring	•
		Urinals (?)	• Depends on design
		Personal hygiene product dispensers	• Toilet paper, pads, tampons
		Personal hygiene waste containers	• Within the toilet stall and beside the sinks
		Paper towel dispensers and electrical hand dryers	•
		Hand soap dispensers	•
		Janitor sink/Janitor closet for supplies.	•

### 12.4 Toilet Facility Specification Considerations

- Stainless steel throughout (including Toilets)

### 12.5 Sub-system Specific Questions

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## 13 Laundry Facilities

This facility will be the location where clothes (uniforms, personal clothing, etc.) get washed, dried and distributed to camp staff.

### 13.1 General Assumptions:

### 13.2 Laundry Facility Specific Assumptions

- 

### 13.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments
	Central Washing Facility	Climate controlled shelter	•
		Washers	• Industrial Size – • Assigned washers for (i.e. oil covered) contaminated items.
		Dryers	• Industrial Dryers
		Janitor sink/Janitor closet for supplies.	•
		Desirable workspace	• Clothes sorting area
		Laundry supplies storage area	• Hazmat lockers required
		Cold water supply and distribution	•
		Hot water supply and distribution	•
		Black water removal and disposal	•
	Individual Washing Facilities	Climate Controlled Shelters	• Probably co-located with accommodations?
		Individual Washing Capabilities	• Stacked Washers and Dryers • ISO Solution?
		Cold water supply and distribution	•
		Hot water supply and distribution	•
		Black water removal and disposal	•
		Folding and Sorting Area	• Tables for folding • Drying Racks? • Ironing space and supplies

### 13.4 Laundry Facility Specification Considerations

- Stainless Steel throughout

### 13.5 Sub-System Specific Questions

## 14 Physical Recreational Facilities

This exercise component provides space to exercise including the use of weights and cardio machines as well as sufficient area to perform aerobic type classes. The gym component is much larger than the exercise room facility to provide sufficient space for a running track and multi-purpose courts for team sports. Although there is currently no prescription on the design, the gym facility could include a separate space for activities performed in the exercise room facility.

### 14.1 General Assumptions

### 14.2 Physical Recreational Facilities Assumptions:

- Number of facilities will be limited. Max 4-5 “Gyms” will be provided by CS.
  - Number of Individual and Group work out rooms will also be limited and not scale similarly to other Camp systems (eg toilets / office space / accommodations)
- All internal physical fitness equipment by others (PSP) see “CJOC Directive for international operations”
- Some toilet facilities will be located close to the Physical Recreation area.

### 14.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments
1	Weight Room / Individual Exercise	Climate controlled shelter	<ul style="list-style-type: none"> <li>• May need additional windows</li> <li>• Airflow requirement</li> <li>• Space for Equipment as per Appendix B</li> </ul>
		Breezeway	•
		Impact resistant Flooring	• High impact exercise (i.e. deadlifting)
		Mirrors	• Mirror wall – Impact Resistant
		hand washing station(s)	• Portable / stand alone
		Audio/Visual equipment locations and accommodations	• PA System? – Probably not, assume the provided radio loud enough
2	Multi-Purpose Room / Group Exercise	Climate controlled shelter	<ul style="list-style-type: none"> <li>• May need additional windows</li> <li>• Airflow requirement</li> </ul>
		Breezeway	• Depends on system design and possible use as a waiting area.
		Mirrors	• Mirror wall – Impact Resistant
		hand washing station(s)	• Portable / stand alone
		cushioned/rubberized floor	•
		Audio/Visual equipment locations and accommodations	• PA System? – Probably not
3	Gym	Climate controlled shelter	• Larger shelter – see Annex B

			<ul style="list-style-type: none"> <li>• High Ceiling dependant on sports available</li> </ul>
		upgraded air extraction/ventilation	<ul style="list-style-type: none"> <li>• Requirement for air movement throughout shelter.</li> </ul>
		Breezeway	<ul style="list-style-type: none"> <li>• Depends on system design and possible use as a waiting area.</li> </ul>
		water dispensing	<ul style="list-style-type: none"> <li>• Potable / portable stand alone</li> </ul>
		hand washing station(s)	<ul style="list-style-type: none"> <li>• Desirable – stand alone</li> </ul>
		cushioned/rubberized floor	<ul style="list-style-type: none"> <li>• Sports friendly flooring</li> <li>• Possibly removable for different sports</li> </ul>
		Running track	<ul style="list-style-type: none"> <li>• If larger gym probably</li> <li>• Probably not in smaller gym</li> <li>• 200m or determine standard size or what is a minimum useful size</li> </ul>
		multi-purpose courts	<ul style="list-style-type: none"> <li>• Including dividers / temporary walls / curtain</li> </ul>
		Audio/Visual equipment locations and accommodations	<ul style="list-style-type: none"> <li>• Jumbotron / scoreboard or larger screen / projection (camp wide townhalls etc) (desirable)</li> </ul>
4	Storage Room / Office	Shelving	<ul style="list-style-type: none"> <li>• Potentially provide list of equipment provided (Bidders to show how they will store it.)</li> </ul>
		Office equipment (Desk, Chairs, tables, filing cabinets, desk lamps	<ul style="list-style-type: none"> <li>• Dependant on staff requirements</li> </ul>
		Caged area with service desk	<ul style="list-style-type: none"> <li>• Equipment requiring sign out storage</li> </ul>
5	Janitor Facilities	Janitor sink/Janitor closet for supplies.	<ul style="list-style-type: none"> <li>•</li> </ul>
6	Cloakroom	change room with benches/lockers	<ul style="list-style-type: none"> <li>• Possibly a breezeway</li> <li>• Individual changing areas</li> </ul>
7	Potable Water		<ul style="list-style-type: none"> <li>• (Possibly centrally located plumbed fountain)</li> </ul>

#### 14.4 Physical Recreation Facility System Specification Requirements

- Desirable that can be setup as an interconnected complex or can be setup individually - modularity.
- Each of the rec facility sub (1 through 4) – systems should be its own “building”

#### 14.5 Sub-system Specific Questions

## 15 Wellness Center / Rest and Relaxation Facility

This facility will be the location for off-duty socializing with activities such as watching television or playing games. An area will be designated for internet activities via computers / tablets. Rooms will be available for private conversations.

### 15.1 General Assumptions

### 15.2 Wellness Facility Assumptions:

- Toilet facilities should be located nearby.
- The wellness center will also fill the requirement for rank separated spaces.
- As camps get larger, separate wellness centers may be required depending on camp design.
- Components (i.e. different rooms such as game, cards) of the wellness center should be connectable/expandable.

### 15.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
1	Main Facility	Climate controlled shelter	•
		Breezeway	•
		PA System	• TBC
		Table and Chairs	• Extra chairs
2	Main Room / Gathering Room	Main Room / Common Area	•
		Audio/Visual equipment locations and accommodations	•
		Dedicated space for Activities	• Pool Tables, Ping Pong
		Snack bar	• Potable water
		Grey water disposal	•
		Cold water supply and distribution	•
		Hot water supply and distribution	•
		Couches	• Not part of CS
		Internet café area	• Extra space for hard wired internet • Desks and chairs for computers • Networked for gaming
3	Private Rooms	Individual Silent rooms	• Telephone and internet access, may require separate facility or part of a wellness center • Potentially a separate / Standalone (for sound insulation properties) • For calls home etc



			<ul style="list-style-type: none"> <li>Limited numbers of suites as troops should have direct cell phone access.</li> </ul>
		Hard wired internet access area	<ul style="list-style-type: none"> <li></li> </ul>
4	Side Rooms (A/V Room)	TV/Movie/Gaming room	<ul style="list-style-type: none"> <li>For 10 personnel / room</li> <li>Sound insulated.</li> </ul>
		Furniture	<ul style="list-style-type: none"> <li>(not part of CS)</li> </ul>
		Accommodations for A/V Equipment	<ul style="list-style-type: none"> <li></li> </ul>
5	Rank Separated Rooms		<ul style="list-style-type: none"> <li>Expandible or connectable to make larger with bigger deployments.</li> </ul>
		Furniture	<ul style="list-style-type: none"> <li>(not part of CS)</li> </ul>
5	Side Room (Board game / Card room)	Board Game / Card Room	<ul style="list-style-type: none"> <li>Number of people per room is 10 personnel.</li> </ul>
		Table and Chairs	<ul style="list-style-type: none"> <li>For 10 People (Min)</li> </ul>
		Space for audio	<ul style="list-style-type: none"> <li>Not part of CS</li> </ul>
6	Barber Facilities	Chairs	<ul style="list-style-type: none"> <li>For waiting area</li> </ul>
		Barbers chair	<ul style="list-style-type: none"> <li>Mirrors (impact resistant)</li> <li>Hair stylist facilities required.</li> <li>Styling station</li> </ul>
		Vacuum system	<ul style="list-style-type: none"> <li>To remove hair cuttings off head.</li> </ul>
		Cold water supply and distribution	<ul style="list-style-type: none"> <li>Washing machine</li> </ul>
		Hot water supply and distribution	<ul style="list-style-type: none"> <li>Water heater</li> <li>Bowls for hair washing</li> </ul>
		Grey water disposal	<ul style="list-style-type: none"> <li></li> </ul>
		A/V consideration?	<ul style="list-style-type: none"> <li></li> </ul>
7	Storage Facilities	Lockable Storage area	<ul style="list-style-type: none"> <li>For gaming machines, games, etc</li> </ul>
8	Travel Coordinator	Desk And Chairs	<ul style="list-style-type: none"> <li>2-3 guest chairs and 1 coordinator chair</li> </ul>
9	Janitor Facilities	Janitor sink/Janitor closet for supplies.	<ul style="list-style-type: none"> <li></li> </ul>

## 15.4 Wellness Facility Specification Considerations

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## 15.5 Sub-System Specific Questions

- B

## 16 Retail Store Facility

This facility will allow the purchase of items for personal use such as off duty clothing, personal items, snacks and drinks.

### 16.1 General Assumptions:

### 16.2 Retail Store Specific Assumptions

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### 16.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate Controlled Shelter	<ul style="list-style-type: none"><li>• Lockable / Securable</li></ul>
		Secure lock up - Display cases / display racks / “valuables” display racks / display fridges / display freezers	<ul style="list-style-type: none"><li>• will need input on design and layout of store.</li></ul>
		Refrigerated Sea Container	<ul style="list-style-type: none"><li>•</li></ul>
		Service counter for cash register	<ul style="list-style-type: none"><li>•</li></ul>
		Safe	<ul style="list-style-type: none"><li>• For cash and valuables</li><li>• How to protect?</li></ul>
		Security System	<ul style="list-style-type: none"><li>• Alarm</li><li>• CCTV system? life limited technology</li></ul>
		Mirrors	<ul style="list-style-type: none"><li>• (impact / shatter proof)</li></ul>
		Coffee / snack serving area	<ul style="list-style-type: none"><li>• Fancy coffee and snacks</li><li>• desk with water supply</li></ul>
		Cold water supply and distribution	<ul style="list-style-type: none"><li>•</li></ul>
		Hot water supply and distribution	<ul style="list-style-type: none"><li>•</li></ul>
		Grey water disposal	<ul style="list-style-type: none"><li>•</li></ul>
	Janitor Facilities	Janitor sink/Janitor closet for supplies.	<ul style="list-style-type: none"><li>•</li></ul>

### 16.4 System Specification Considerations

- See Appendix B for requirements

### 16.5 Sub-System Specific Questions

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## 17 Worship facility

This facility is a multi-denominational area that would allow the practice of one's faith in a private setting or religious gatherings. The Worship facility is considered a sacred and quiet space.

### 17.1 General Assumption

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### 17.2 Worship Facilities Assumptions

- CS will not provide religious icons
- Chaplains are imbedded on deployments at ratio of 1:500 people. No padres will be attached to a deployment of less than 500 people.
- For less than 500-person deployment no office space is required. Only a sacred space and quiet meeting room are needed for padre visits / to enable worship on an as required basis.
- Worship space to accommodate 15-20 ppl per 500-person. For larger services (i.e camp funerals) Mess hall or outdoor space will be used.
- Chaplains should have CO/VIP type accommodations, or at minimum be bunked together.
- Ideally chaplain accommodations are located close to the Sacred Space
- Chaplain offices and accommodations should not be located close to the CO/SM.

### 17.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate Controlled Shelter	<ul style="list-style-type: none"><li>• Spaces complexed together</li></ul>
1	Quiet / Private Meeting rooms		<ul style="list-style-type: none"><li>• Accommodations for video-conferencing capabilities for members whose faith is not represented</li><li>• Sound insulated for privacy</li><li>• IT accommodations / Conduit</li><li>• Table/Desk and office chair</li><li>• Co-located with / connected to sacred-space.</li><li>• Wider doors</li></ul>
2	Office rooms		<ul style="list-style-type: none"><li>• Desk and chairs</li><li>• Only required 1 office / 500 troops</li><li>• IT Accommodations</li><li>• Sound insulated space</li></ul>
3	Multi-Faith Sacred Space	Worship Hall	<ul style="list-style-type: none"><li>• Foldable tables</li><li>• Chairs</li><li>• Podium,</li></ul>

			<ul style="list-style-type: none"> <li>• A/V accommodation for Projector / TV, at “front”</li> <li>• PA system with: <ul style="list-style-type: none"> <li>○ Speakers throughout</li> <li>○ Mic for worship leader</li> <li>○ 3.5 mm connection for other audio</li> <li>○ Audio source selector / mixer</li> </ul> </li> <li>• Accommodate 15 people + Padre on “stage”</li> <li>• Expandible/ connectable to increase space size.</li> <li>• Dimmable lighting</li> <li>• Weapons rack (at rear)</li> <li>• Shoe Rack / cubbies at rear</li> <li>• Mat to dust off feet at entrances</li> <li>• Easily cleaned, smooth floor, comfortable for bare / socked feet</li> <li>• Wider / double doors / accessible</li> <li>• Should present as a quiet / reverent space</li> </ul>
		Side room / Alcove	<ul style="list-style-type: none"> <li>• Curtain for privacy</li> <li>• Enable semi-private worship</li> <li>• Enable Padre to change vestments</li> </ul>
		Storage Area	<ul style="list-style-type: none"> <li>• Shelving for general use items</li> <li>• Lockable / secured space</li> <li>• Include subdivided lockable / secured “lockers/cabinets”</li> <li>• Misc items (Eg prayer mats)</li> </ul>
		Breezeway	<ul style="list-style-type: none"> <li>• Includes coat rack / hangers / hooks for 15 people</li> <li>• Includes some sort of washbasin for hands and for feet (ideally plumbed)</li> <li>• Bench/chairs to allow removal of shoes</li> </ul>

#### 17.4 Worship Facility System Specification Considerations

- Ideally washroom or latrines are located near the sacred space

## **17.5 Sub-System Specific Questions**

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## 18 Fuel Management Facility

This facility allows the receiving, storage, and supply of fuel to vehicles.

### 18.1 General Assumptions:

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### 18.2 Fuel Management Facility Specific Assumptions

- Assume that diesel will be the only fuel through the system
- Aircraft refueling is out of scope

### 18.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Fuel receipt capability (product transfer area)	•
		Security provisions	• Fence around the facility
		Pump House	•
		Fuel Storage	•
		Distribution to vehicles	• Tracked and Wheeled vehicles
		Maintenance and testing capability	• Fuel Quality testing
		Fire protection	• Fire fighting system
		Lighting for night operations	• LED's
		Fuel Management System	•
		HAZMAT Cabinets	•
		First Aid	• Safety Shower • Eye Wash Station

### 18.4 System Specification Considerations

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### 18.5 Sub-System Specific Questions

- How many vehicles can your system (or a single building block) refuel simultaneously?

## 19 Potable Water System

This facility allows the receiving, storage, and distribution of potable water to the various facilities within the camp.

### 19.1 General Assumptions:

- 

### 19.2 Potable Water Storage Specific Assumptions

- All potable water provided to CS will be clean. CS will not be required to treat water.

### 19.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Ability to receive Potable water	<ul style="list-style-type: none"><li>• Can receive from truck well or water recycling / production facilities.</li><li>• Artic Requirement – Heated facility to keep incoming water at a minimum temperature.</li><li>• Solar Shade for sea can in high solar temperature conditions</li></ul>
		Water Testing / Monitoring	<ul style="list-style-type: none"><li>•</li></ul>
		Water Heating	<ul style="list-style-type: none"><li>•</li></ul>
		Water Storage	<ul style="list-style-type: none"><li>•</li></ul>
		Pump House	<ul style="list-style-type: none"><li>•</li></ul>
		Distribution System	<ul style="list-style-type: none"><li>• Limiting distances?</li></ul>
		First Aid	<ul style="list-style-type: none"><li>• Safety Shower</li><li>• Eye Wash Station</li></ul>

### 19.4 System Specification Considerations

- 

### 19.5 Sub-System Questions

- What is the maximum pressure of your water bladders?
- Recommended system pressure?

## 20 Wastewater Management System

This facility allows the receiving, storage, treatment and disposal of grey and black wastewater gathered from the various facilities within the camp.

### 20.1 General Assumptions:

- 

### 20.2 Wastewater Management Facility Specific Assumption

- 

### 20.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Wastewater collection system	<ul style="list-style-type: none"><li>• Separated by Grey / Black</li></ul>
		Wastewater storage	<ul style="list-style-type: none"><li>• Separated by Grey / Black / Non-potable for re-use</li></ul>
		Wastewater treatment	<ul style="list-style-type: none"><li>• Separated by Grey / Black</li><li>• Grey water Treat for non-potable usage</li><li>• Treat enough for disposal</li></ul>
		Sludge management	<ul style="list-style-type: none"><li>• Black Water</li></ul>
		Wastewater disposal	<ul style="list-style-type: none"><li>• Into environment or take-away</li></ul>
		HAZMAT Cabinets	<ul style="list-style-type: none"><li>• Part of Maintenance in CE facilities</li></ul>
		First Aid	<ul style="list-style-type: none"><li>• Safety Shower</li><li>• Eye Wash Station</li></ul>

### 20.4 System Specification Considerations

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### 20.5 Sub-System Specific Questions

- Do we need to pump it or is it Gravity operated.



## 21 Solid Waste Management Facility

This facility controls the receiving, storage, treatment and disposal of solid waste gathered from the various facilities within the camp.

### 21.1 General Assumptions:

- 

### 21.2 Solid Waste Management Facility Specific Assumptions

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### 21.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		solid waste collection	•
		medical waste collection	•
		food waste collection	•
		waste sorting/recycling	•
		waste storage	•
		waste treatment	• (e.g. incinerators / composting)
		waste disposal	•
		recycling disposal	•
		HAZMAT cabinets	• Part of Maintenance Facility
		First Aid	• Safety Shower • Eye Wash Station

### 21.4 System Specification Considerations

- A Camp will always have an incinerator deployed as part of the camp

### 21.5 Sub-system Specific Questions

-

## 22 Electrical Generation and Distribution System

This facility allows the generation, supply, and distribution of electricity to the various facilities within the camp.

### 22.1 General Assumptions:

- 

### 22.2 Electrical Systems Specific Assumptions

- 

### 22.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	Power Generation	scalable power generation and distribution	<ul style="list-style-type: none"> <li>• Battery Bank / Farm / Energy Storage</li> <li>• Generator Farm</li> <li>• Renewable Power Generation feasible?</li> <li>• Scalable Power Generation</li> <li>• Redundant Power Generation (For Diesel generator farms there are 3 per set, i.e. Prime, Standby/Augment, and alternate)</li> <li>• Fuel Tanks - can they automatically be refuelled / connected to a larger tank)</li> </ul>
	Power Distribution		<ul style="list-style-type: none"> <li>• switchboard/master control panel</li> <li>• Automated Switching and generation scaling</li> <li>• PDU need to be matched to Gen farm</li> </ul>
		automation	•
		HAZMAT cabinets	•
		First Aid Provisions	<ul style="list-style-type: none"> <li>• Safety Shower</li> <li>• Eye Wash Station</li> </ul>
	Battery Shop		<ul style="list-style-type: none"> <li>• Similar to EME Battery shop</li> <li>• Separate battery shop by battery type. (Lead Acid vs Li-Ion vs Li-Ph vs other)</li> </ul>
	Battery Storage		• Climate Controlled
	Maintenance Shop		• Parts Storage

## **22.4 System Specification Considerations**

- A variety of genset sizes should be considered along with some battery banks
- Large gensets (500kW) are not recommended. 300kW are the maximum recommended genset.

## **22.5 Sub-System specific Questions**

- What is scaling size for maintenance shop - what size camp can a base shop support?
- What is the maximum recommended genset size?
- Smart Grid: Do we want to data log the system?
  - Is transmission of system status back to Canada feasible / possible?
  - Can the system be capable of transmission of status, but have capability “turned off”?
  - Remote access from camp vice direct connection?
  - Is there a smart grid standard we should use so that our grid and controllers can talk to other nations?
  - Load tracking to enable management possible?
- Define Smart Grid and Micro Grid.
- What Battery Technology is available
  - Shipping requirements and limitations.
  - Other hazards and considerations
  - Maintenance
- How is grounding performed? Is it provided per shelter or centrally / separately

## 23 Camp Lighting System

### 23.1 General Assumptions:

- 

### 23.2 Camp Lighting Specific Assumptions

- LED's are required

### 23.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Lighting Towers	<ul style="list-style-type: none"><li>• Shut-offs at base</li><li>• Inward / base lighting</li><li>• Compound lighting (ie vehicle compound) always on.</li><li>• Outward lighting. Towers or wall mount - adjustable manually / pointable</li><li>• Height? Minimum for spread potentially adjustable or sectioned poles.</li><li>• Lighting level recommended</li></ul>
		Variable lighting	<ul style="list-style-type: none"><li>• White lighting only</li></ul>
		Central Control panel	<ul style="list-style-type: none"><li>• Centrally controllable desirable</li></ul>
		Walkway lighting / building exterior lighting	<ul style="list-style-type: none"><li>• Potentially solar panels.</li></ul>

### 23.4 System Specification Considerations

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### 23.5 Sub-System Specific Questions

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## 24 EME Maintenance Facility (OLD)

This facility allows the military electrical and mechanical engineering trades with work areas for vehicles and equipment maintenance.

### 24.1 General Assumptions:

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### 24.2 Maintenance Facility Specific Assumptions

- Battery powered tools are not provided by Camp Sustain
- Basic hand tools and tool boxes will be provided by Camp Sustain

### 24.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	General Requirements (Each Shop)	Climate Controlled Shelter	<ul style="list-style-type: none"> <li>• Special ventilation required</li> </ul>
		Vehicle Exhaust Collection System	<ul style="list-style-type: none"> <li>• For all vehicle Bays</li> </ul>
		Weapons Racks	<ul style="list-style-type: none"> <li>• For Personal Weapons</li> </ul>
		First Aid Provision	<ul style="list-style-type: none"> <li>• Safety Shower Used for emergency (i.e. oil spill on technician)</li> <li>• Eye Wash Station</li> <li>• Spill Kit equipment (each shop)</li> <li>• First Aid Kits</li> </ul>
		HAZMAT Storage	<ul style="list-style-type: none"> <li>• Each shop</li> <li>• For used oil / rags</li> </ul>
		Tool Storage Cabinets	<ul style="list-style-type: none"> <li>• Lockable Special Tools and Test Equipment (STTE)</li> </ul>
		Heavy Tools Storage (i.e. Jack stand, floor jack)	<ul style="list-style-type: none"> <li>• Every shop needs its own dedicated location</li> </ul>
		Workbenches and chairs	<ul style="list-style-type: none"> <li>•</li> </ul>
		Electrical	<ul style="list-style-type: none"> <li>• Extra plugs (110V, 240V)</li> <li>• some on retractable lines</li> <li>• 240V for Welding / compressor)</li> </ul>
		IT conduits	<ul style="list-style-type: none"> <li>• To enable wired connections in shop</li> </ul>
		Parts Storage	<ul style="list-style-type: none"> <li>• Consumable parts (nuts / bolts)</li> <li>• Parts Bath</li> </ul>
		Lighting	<ul style="list-style-type: none"> <li>• Some lighting on reels</li> </ul>

			<ul style="list-style-type: none"> <li>• LED variable lighting (white / red / green / IR)</li> <li>• Flood lighting / Trouble lighting (on reels or battery powered)</li> </ul>
		Compressed Air System	<ul style="list-style-type: none"> <li>• Pressure as appropriate for each shop</li> <li>• Air Piping in each shop</li> <li>• Air Dryer system</li> <li>• FRL, Filter, regulator, lubricator system one main for each compressor and one system for each bay.</li> <li>• Retractable wall mounted tool lines</li> <li>• Should be connected to the oil dispenser (IE Engine Oil)</li> </ul>
		Shelving	<ul style="list-style-type: none"> <li>• For Books / Manuals</li> </ul>
		Cold water supply and distribution	<ul style="list-style-type: none"> <li>•</li> </ul>
		Hot water supply and distribution	<ul style="list-style-type: none"> <li>•</li> </ul>
		Grey water disposal	<ul style="list-style-type: none"> <li>•</li> </ul>
		Hand wash station	<ul style="list-style-type: none"> <li>• Heavy duty hand wash station (each shop)</li> </ul>
		Fire protection system	<ul style="list-style-type: none"> <li>• As appropriate for each shop (see fire Marshall / fighter)</li> </ul>
		Accessibility	<ul style="list-style-type: none"> <li>• Each shop should be accessible by forklift for heavy parts delivery (i.e. engines, metal plates, oil drums)</li> </ul>
	General Common Area	Office Space	<ul style="list-style-type: none"> <li>• Maint O &amp; ETQMS, Shop supervisors &amp; Technician will need desk</li> <li>• Service Desk</li> <li>• Meeting Rooms</li> </ul>
	Weapons Tech Shop	Includes both a small arms / Hydraulic repair shop and vehicles / Heavy guns (i.e. M777) shop	<ul style="list-style-type: none"> <li>• Heavy shop must be co-located with EO Shop</li> </ul>
		HAZMAT Waste	<ul style="list-style-type: none"> <li>• Used oil , fluids and rags</li> </ul>
		Secured Weapons Storage (Weapons Vault)	<ul style="list-style-type: none"> <li>• Alarm system required</li> <li>• For weapons maintenance only</li> </ul>
	Small Weapons Shop	Weapons bath	<ul style="list-style-type: none"> <li>•</li> </ul>
		Sand blast Cabinet	<ul style="list-style-type: none"> <li>• Need appropriate Air System</li> </ul>
		Weapon Unloading Boot	<ul style="list-style-type: none"> <li>•</li> </ul>
		Bicycle rack repair system	<ul style="list-style-type: none"> <li>•</li> </ul>

	Heavy Weapons Shop	Overhead Crane	<ul style="list-style-type: none"> <li>• 25T Min (TBC)</li> </ul>
		Working Bays	<ul style="list-style-type: none"> <li>• Requires shelter large enough for a tank, and enable a turret to turn 360 degrees</li> <li>• Share Bays with EO Heavy equipment shop possibly</li> </ul>
	Electro-Optics Maintenance	Small / Medium Equipment	<ul style="list-style-type: none"> <li>• Repair A/C</li> <li>•</li> </ul>
		Heavy Weapons Shop	<ul style="list-style-type: none"> <li>• For Heavy guns, LAV 6, repair ship</li> <li>• Co-located with Weapons Shop</li> <li>• Zeroing target system for electronic gun system adjustment</li> </ul>
	Small Electro-Optics Shop	Clean Room	<ul style="list-style-type: none"> <li>• Work on Optics (side arm sights / NVG's / binoculars / etc)</li> </ul>
		Secured Storage Area	<ul style="list-style-type: none"> <li>• NVG's etc</li> <li>• CCTV or alarm system?</li> </ul>
	Materials Technician Facility	General	<ul style="list-style-type: none"> <li>• Metal Bin and recuperation system for debris from metal and machine shop</li> </ul>
		Metal Shop	<ul style="list-style-type: none"> <li>• Overhead crane to move heavy sheet metal</li> <li>• Metal Racking for storage of 4x8 metal sheets and square tubing</li> <li>• Power voltage (for welders, plasma cutters, etc)</li> <li>• Exhaust collection for welders</li> <li>• Screen protection system to isolate welders (available for but not with)</li> </ul>
		Textile Shop	<ul style="list-style-type: none"> <li>• Work bench and table (to fix large canvas)</li> <li>• Sewing machines</li> <li>• Pully System installed on ceiling to raise tentage (fix holes)</li> <li>• Metal racking system for storage rolls of fabric</li> </ul>
		Machine Shop	<ul style="list-style-type: none"> <li>• For milling and metal working tools</li> <li>• Special Power requirements</li> </ul>

			<ul style="list-style-type: none"> <li>• Metal racking system, storage of square tubes / round tubs</li> </ul>
	Vehicle Maintenance	Heavy Equipment Shop	<ul style="list-style-type: none"> <li>• 25T min Overhead crane</li> <li>• Enable canon to rotate 60 degrees</li> <li>• Potentially share with EO / Heavy or Weapons Heavy shop</li> </ul>
		Vehicle Work Area (Heavy)	<ul style="list-style-type: none"> <li>• currently largest vehicle will be AHSVS – Base 25 ton, 10.5m long x 2.8 width x 3.4m height With trailer (7 axles (72 tons)</li> <li>• Will require bays for both 1<sup>st</sup> and second line repairs.</li> </ul>
		Storage Area / Racking Cage	<ul style="list-style-type: none"> <li>• Every shop, for books, parts, tools, and consumables.</li> </ul>
		Light vehicle Section	<ul style="list-style-type: none"> <li>•</li> </ul>
		Small Engine Section	<ul style="list-style-type: none"> <li>•</li> </ul>
		Equipment	<ul style="list-style-type: none"> <li>• Tire / Runflat Changers</li> </ul>
		Used fluid storage	<ul style="list-style-type: none"> <li>• Fuel / oil / coolant</li> <li>• Most likely petroleum, oils and lubricants and Hydraulics point (small containment pallet for each shop)</li> </ul>
		Portable and/or “permanent vehicle hoists”	<ul style="list-style-type: none"> <li>• Size will have to be according to the equipment IE Light or Heavy</li> </ul>
		Crane System	<ul style="list-style-type: none"> <li>• Appropriate crane system will be needed within the 2nd line Light &amp; Heavy shop</li> </ul>
		Exhaust Collection System	<ul style="list-style-type: none"> <li>• Each shop</li> </ul>
		Wash Bay (Parts and sub-system cleaning)	<ul style="list-style-type: none"> <li>• Walk in space (needs to fit transmissions, engines etc._</li> <li>• Floor Drain</li> <li>• Hot and cold water and Grey / Black water recovery</li> <li>•</li> </ul>
	Tire Shop	Equipment	<ul style="list-style-type: none"> <li>• Tire Install machine for both light, heavy vehicles and runflats</li> <li>• Balancing machine</li> <li>• Test tank for leak testing</li> <li>• Crane for tire manipulation (Portable?)</li> </ul>
		Cold Water supply and wastewater	<ul style="list-style-type: none"> <li>• Test tank</li> </ul>



		Storage	<ul style="list-style-type: none"> <li>• Racking for tire storage</li> <li>• Waste tire storage</li> </ul>
	Vehicle Recovery	Tool and equipment storage	<ul style="list-style-type: none"> <li>• Spare equipment to recover vehicles (Chains, snatch blocks, rope, wire cable, etc)</li> <li>• Office space and sleep space for on call.</li> </ul>
		Lighting	<ul style="list-style-type: none"> <li>• Compound lighting for security and vehicle repair / inspection</li> </ul>
	EME Tool Crib	General Requirements	<ul style="list-style-type: none"> <li>• Cabinets and shelving</li> <li>• Should be lockable / securable space (high value items)</li> </ul>
	SPSS (Supply) Section	General Requirements	<ul style="list-style-type: none"> <li>• Cabinets Shelving and Racking</li> <li>• Securable space / compound</li> </ul>
	Battery Room	General Requirements	<ul style="list-style-type: none"> <li>• Fire safety is important (should contain fire for certain time or needs to be isolated on camp install)</li> <li>• Each battery chemistry requires its own room</li> <li>• Racks for battery storage</li> <li>• Work tables / Benches</li> </ul>
		Charging Stations	<ul style="list-style-type: none"> <li>• Including tool battery charging stations</li> </ul>
		OSHA	<ul style="list-style-type: none"> <li>• Safety Shower</li> <li>• Alarm system with exterior light for Emergency indicator</li> </ul>
	POL (Waste Management)	General Requirements	<ul style="list-style-type: none"> <li>• Racking and shelving for new, empty and waste petroleum and oil drums and containers</li> <li>• Various container sizes (i.e. 205L, 95L, 160L, 60L, small spray cans.</li> </ul>

#### 24.4 System Specification Considerations

- Thickness of floor
- Height of shops
- Size of Doors / Access
- Size of shops (according to each section)
- Size of Bays (small vs heavy, common or vehicle dependant)
- HVAC
- Exhaust System
- Fire Protection System,

- Drain system (shops) to capture contaminated water from maintenance and catch snow / rain runoff.
- Compound Lighting
- Compressor System Size
- Lighting for shop
- Hand wash stations for shops.

#### **24.4.1 Other Considerations**

**RCEME Trade involve.** The RCEME Corp encompass the following trades: Vehicle Technician, Material Technician, Electronic-Optic (EO) Technician and Weapon Technician.

#### **Equipment/Vehicles supported within Maintenance:**

Equipment supported by RCEME maintenance varies enormously. Vehicle technicians maintain equipment from chain saws to the Leopard Tanks to trailers and even civilian pattern vehicles (e.g. buses, forklifts, cars) and provide the recovery. Weapons technicians fix all armaments from 9 mm pistol to M777 as well as bicycles, and hydraulic systems. Electro-Optics technicians fix AC system, gun system, EOD robots, night vision goggles and sights. Materials technicians, do metal, textile, and body work, as well as welding on all kinds of equipment that needs repairs.

#### **24.5 Sub-system Specific Questions**

- Do you have any recommendations on 3D Printing capabilities which might be valuable.
- Do you have any recommendations about enabling electric vehicle repair support?
- Air Compressors (one for each shop or just a couple of central larger compressors?)
- Do you have a recommended standard tool list?

## 25 Vehicle Wash Facility

This facility allows the automatic washing of all types of vehicles within the camp. This facility will be a drive through style system.

### 25.1 General Assumptions:

- CS alone will not support more than two concurrent missions.

### 25.2 Vehicle Wash Facility Specific Assumptions

### 25.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Cold water supply and distribution	•
		Hot water supply and distribution	•
		Grey water disposal	•
		water storage	•
		vehicle reception area	•
		high/low pressure nozzles	•
		integrated detergent delivery system	•
		water/sludge capture	•
		recycling water with sludge removal	•
		treatment of sludge	•
		disposal of sludge.	•

### 25.4 System Specification Considerations

- Drive forward on and forward off

### 25.5 Sources of requirements

- Artic compatible? Does it need to be put it in a heated Shelter?

## 26 Communications Maintenance Facility

This facility will enable the maintenance of communications equipment as well as act as the central hub for IT support.

### 26.1 General Assumptions:

- 

### 26.2 Comms Maintenance Specific Assumptions

- Satellite Farm is not the responsibility of CS

### 26.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
1		Climate control Facility	•
			• Safety Shower • Eye Wash Station
2	Main Tool Crib		•
3	Radio Repair	Workshop	• Compressed Air • Considerations for anti-static • Clean room?
		Office Space	• Desk and chairs • Service Desk
		Lockable Storage	• Parts / Spares
4	IT Support	Office Space	• Service Desk
		Lockable Storage	• Parts / Spares
5	Lineman's Shop	Office Space	• Service Desk
		Storage / Workshop	• Parts / Spares
6	Network Support	Data / Server "Room"	• Fire suppression System (Argon or other Inert Gas) • Extra AC / Climate control
		Back up power	• UPS / Generators / Batteries
		Back up system (Server room)	•
7	Satellite farm	Power considerations only	•

### 26.4 System Specification Considerations

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### 26.5 Sub-System Specific Questions

## 27 General Stores Facility

This facility allows the storage, management and distribution of general supplies.

### 27.1 General Assumptions:

- 

### 27.2 General Stores Specific Assumptions

- Forklift will not be provided by CS

### 27.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate controlled shelter	•
		Office Space	•
		Shipping and receiving Area	• Loading dock
		Racking?	•
		Storage	• Large and small Bins • Shelving • Racking? • Cabinets
		Worktables	•
		HAZMAT Supply Cabinets	•
		First Aid Provision	• Safety Shower • Eye Wash Station
		Space for Forklift	• Electric powered?

### 27.4 System Specification Considerations

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### 27.5 Sub-System Specific Questions

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## 28 Secure Weapons Storage Facility

This facility allows the storage of weapons.

### 28.1 General Assumptions:

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### 28.2 Weapons Storage Facility Specific Assumptions

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### 28.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate controlled shelter	<ul style="list-style-type: none"><li>• Double Door Lock</li><li>• CCTV or Alarm required</li></ul>
		Weapons racks or lockers	<ul style="list-style-type: none"><li>• Lockable</li></ul>
		Storage	<ul style="list-style-type: none"><li>• Cabinets?</li><li>• Bins?</li><li>• Shelving?</li></ul>
		First Aid Provision	<ul style="list-style-type: none"><li>• Safety Shower</li><li>• Eye Wash Station</li></ul>
		Safe	<ul style="list-style-type: none"><li>• Multiple</li><li>• Potentially walk in?</li></ul>

### 28.4 System Specification Considerations

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### 28.5 Sub-system Questions

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## 29 Construction Engineer Facility

This facility allows the military construction trades with work areas for camp infrastructure maintenance.

### 29.1 General Assumptions:

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### 29.2 CE Facility Specific Assumptions

- Tools not provided by CS unless specified

### 29.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
1		climate controlled shelter	•
2	CE Office Facility	Control Office	<ul style="list-style-type: none"> <li>• Shared space for all trades (dependant on camp size)</li> <li>• Conference room</li> <li>• Private offices for Section heads and Sub section heads</li> <li>• Desks and Chairs</li> <li>• Service Desk</li> <li>• Size (10 ppl)</li> </ul>
		Hot Water Distribution	•
		Cold Water Distribution	•
		Grey Water Collection and Distribution	•
2	Water Fuel Environment (WFE)	Lab / Testing facility	<ul style="list-style-type: none"> <li>• Lab / Testing for: <ul style="list-style-type: none"> <li>○ Water Testing</li> <li>○ Fuel Testing</li> <li>○ Wastewater testing</li> </ul> </li> <li>• Co-located with fuel farm or water treatment plant.</li> <li>• HAZMAT storage</li> <li>• Safety shower</li> <li>• Eye Wash station</li> <li>• air compressor system</li> </ul>
		Hot Water Distribution	•
		Cold Water Distribution	•
		Grey Water Collection and Distribution	•
		Maintenance Shop	<ul style="list-style-type: none"> <li>• dust collection system</li> <li>• air compressor system</li> <li>• Work benches and chairs</li> <li>• Storage shelves and cabinets</li> </ul>

			<ul style="list-style-type: none"> <li>• Tool Storage</li> <li>• Eye Wash Station</li> </ul>
		As required for Occupational Health and Safety Act (OHSA) standards	<ul style="list-style-type: none"> <li>• Safety shower</li> <li>• Eye Wash Station, Plumbed and not plumbed</li> <li>• First Aid Kit (accommodation only)</li> <li>• AED, (accommodation only) standard for all shelters</li> </ul>
3	Construction (Const)	Wood Working shop	<ul style="list-style-type: none"> <li>• dust collection system</li> <li>• air compressor system</li> <li>• Work benches and chairs</li> <li>• chain hoist</li> <li>• Tool Storage</li> <li>• Major Tool accommodation (power and space)</li> <li>• Eye Wash Station</li> <li>• Height recommended</li> </ul>
		Storage	<ul style="list-style-type: none"> <li>• Wood Storage outdoors</li> <li>• Racking for wood (desirable)</li> </ul>
4	Electrical Distribution	Storage / “Shop”	<ul style="list-style-type: none"> <li>• air compressor system</li> <li>• Spare parts storage</li> <li>• Tool Storage</li> <li>• Work benches and chairs</li> <li>• Eye Wash Station</li> <li>• Shelving</li> </ul>
5	Electrical Generation Systems	Storage / “Shop”	<ul style="list-style-type: none"> <li>• See EGDS Vignette</li> <li>• Possibly located near Water, Fuels and Environmental (WFE) Lab</li> <li>• air compressor system</li> <li>• Work benches and chairs</li> <li>• Shelving</li> <li>• HAZMAT storage</li> <li>• Eye Wash Station</li> </ul>
6	Fire Fighters (FF) / Fire Hall	Office	<ul style="list-style-type: none"> <li>• Desks and Chairs</li> <li>• Service Desk</li> <li>• Conference Room</li> </ul>
			<ul style="list-style-type: none"> <li>• Sleeping accommodations (on call room) for duty personnel</li> </ul>
		Hot Water Distribution	<ul style="list-style-type: none"> <li>•</li> </ul>
		Cold Water Distribution	<ul style="list-style-type: none"> <li>•</li> </ul>
		Grey Water Collection and Distribution	<ul style="list-style-type: none"> <li>•</li> </ul>



		Vehicle Bays (Crash Bay)	<ul style="list-style-type: none"> <li>• Shelving and storage for FF Equipment</li> <li>• Work benches and chairs</li> <li>• Vehicle storage</li> <li>• chain hoist</li> <li>• Driver maintenance</li> <li>• Lockers / personnel equipment storage</li> <li>• Response / Personal Protective Equipment (PPE) staging area</li> </ul>
		Maintenance Area	<ul style="list-style-type: none"> <li>• FF equipment inspection and maintenance</li> </ul>
		Storage	<ul style="list-style-type: none"> <li>• Shelving</li> </ul>
8	Refrigeration Mechanical (RM)	Shop / Storage	<ul style="list-style-type: none"> <li>• air compressor system</li> <li>• Spare parts storage</li> <li>• Tool Storage</li> <li>• Work benches and chairs</li> <li>• HAZMAT storage</li> <li>• Eye Wash Station</li> </ul>
9	Drafting & Surveying (D&S)	Office Space	<ul style="list-style-type: none"> <li>• Plotters (not CS responsibility)</li> <li>• Desk and Chairs</li> <li>• Drafting Tables</li> <li>• Shelving / storage for drawings</li> <li>• Part of Main office</li> </ul>
10	Plumbing and Heating (PH)	Shop / Storage	<ul style="list-style-type: none"> <li>• air compressor system</li> <li>• Spare parts storage</li> <li>• Tool Storage</li> <li>• Work benches and chairs</li> <li>• HAZMAT Cabinet</li> <li>• Eye Wash Station</li> </ul>

## 29.4 System Specification Considerations

## 29.5 Sub-System Specific Questions

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## 30 Office Facilities

These facilities contain areas with access to desks and computers allowing for daily work activities. These facilities will include the camp headquarter operation offices.

### 30.1 General Assumptions:

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### 30.2 Office Facility Specific Assumptions

- Not all the office facilities will be co-located or connected.
- Vehicle connection (walk in / out) not required
- Whiteboards/ bulletin boards are not provided by CS

### 30.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
1	General	Climate controlled shelter	<ul style="list-style-type: none"><li>• Desks / Chairs</li><li>• Tables / Chairs</li><li>• Conference Tables and Chairs</li><li>• Storage Cabinets Unclassified with space for pens files misc items.</li><li>• Storage Cabinets (classified?)</li><li>• Shelving</li><li>• Filing Cabinets</li></ul>
		Breezeway / Hallway	<ul style="list-style-type: none"><li>•</li></ul>
2	Operations Center	Climate Controlled Shelter	<ul style="list-style-type: none"><li>• Potentially requires Extra Air Conditioning</li><li>• Video Tele-Conference (VTC) accommodation</li><li>• A/V accommodation (s)</li><li>• White board accommodations</li><li>• Extra electrical Outlets</li><li>• Level of security – LVL 2 min</li></ul>
		Specialized Flooring	<ul style="list-style-type: none"><li>• Electrical Runs</li></ul>
4	Conference Rooms	Varying sizes	<ul style="list-style-type: none"><li>• Climate Controlled Shelter</li><li>• 30 people approximately</li><li>• Larger meetings can take place in Mess Hall (Mess Hall might need to be sectioned off vice one big hall.)</li><li>• VTC accommodation</li><li>• A/V accommodation</li><li>• White board accommodations</li></ul>

			<ul style="list-style-type: none"> <li>• Central Table (can be same as other tables but put together)</li> <li>• Chairs</li> <li>• Side tables</li> <li>• Quantity (Minimum 4 probably more)</li> <li>• Separate shelter?</li> </ul>
		VIP conference Room	<ul style="list-style-type: none"> <li>• Nicer table and chairs</li> <li>• VTC accommodation</li> <li>• A/V accommodation</li> <li>• White board accommodations</li> <li>• Central Table</li> <li>• Chairs</li> <li>• Side tables</li> <li>• Water dispenser</li> <li>• Fridge</li> <li>• top/secret level discussion</li> </ul>
5	Contractor Offices		<ul style="list-style-type: none"> <li>• separate interpreter/local contractor area</li> <li>• 10-15 People</li> <li>• A/V accommodation</li> <li>• White board accommodations</li> <li>• Desks / Chairs</li> <li>• Tables / Chairs</li> </ul>
6	Reliability level Office		<ul style="list-style-type: none"> <li>• 10-15 People</li> <li>• A/V accommodation</li> <li>• White board accommodations</li> <li>• Desks / Chairs</li> <li>• Tables / Chairs</li> </ul>
7	Secret Level Office		<ul style="list-style-type: none"> <li>• 10-15 People</li> <li>• A/V accommodation</li> <li>• White Board accommodations</li> <li>• Desks / Chairs</li> <li>• Tables / Chairs</li> <li>• Lockable doors / windows?</li> <li>• Sound insulation or just stand off distances required.</li> </ul>
8	TS Level Office		<ul style="list-style-type: none"> <li>• 10-15 People</li> <li>• A/V accommodation</li> <li>• White board accommodations</li> <li>• Desks / Chairs</li> <li>• Tables / Chairs</li> <li>• Lockable doors / windows?</li> </ul>

			<ul style="list-style-type: none"> <li>• Sound insulation or just stand off distances required.</li> </ul>
9	VIP Office		<ul style="list-style-type: none"> <li>• For Task Force Commander</li> <li>• For Camp Sergeant-Major (SM)</li> <li>• For other guests</li> <li>• Possible side room or entry way with desk for aide.</li> <li>• Couches and coffee tables (Not CS provided)</li> <li>• Similar to Chaplain space?</li> </ul>
10	Section Head office		<ul style="list-style-type: none"> <li>• Side by side office for Section head, Second-in-Command and SM.</li> <li>• Usually 1 per section / unit.</li> </ul>
12	Administration	Orderly room	<ul style="list-style-type: none"> <li>• Office area with Service Desk</li> </ul>
		secured cashier's area	<ul style="list-style-type: none"> <li>• Lockable /securable office (only at main orderly room)</li> <li>• Half door / cage</li> <li>• Safe (decent size)</li> <li>• Handles Cash</li> </ul>
13	Meteorology	Office	<ul style="list-style-type: none"> <li>•</li> </ul>
14	ESCC (Engineering Service Coordination Center)	Mapping and Charting Geomatics	<ul style="list-style-type: none"> <li>• Map Storage</li> <li>• Map Distribution</li> <li>• Plotters space</li> </ul>
		Office Shelter(s)	<ul style="list-style-type: none"> <li>•</li> </ul>

### 30.4 System Specification Considerations

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### 30.5 Sources of requirements

- How do you recommend running conduit for IT and electrical?

## 31 Training Facility

This facility allows space to conduct training and enable mission. To train troops / retrain troops on mission specific / new mission equipment or technologies or situational awareness. For update training and briefings. Also enables mission briefings where required.

### 31.1 General Assumptions:

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### 31.2 Training Facility Specific Assumptions

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### 31.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate Controlled Shelter	<ul style="list-style-type: none"><li>•</li></ul>
		Breezeway / Junctions	<ul style="list-style-type: none"><li>•</li></ul>
1		Lecture Hall	<ul style="list-style-type: none"><li>• A/V accommodation (speakers and display)</li><li>• Potentially smart board</li><li>• Minimum 30 people (3 sections)</li><li>• Student Desks or tables and chairs?</li><li>• Amphitheatre (raised flooring) feasible?</li><li>• Weapons racks (at back of hall)</li></ul>
2		Hanger / Bay	<ul style="list-style-type: none"><li>• For Outdoor training “indoors”</li><li>• A/V accommodation (Display screen and speakers)</li><li>• Weapons racks</li><li>• Fit an Armoured Heavy Support Vehicle System (AHSVS)</li></ul>
		Office / staff area	<ul style="list-style-type: none"><li>• One office shelter</li></ul>
		Storage area	<ul style="list-style-type: none"><li>• Racks and shelves</li><li>• Sea can?</li></ul>

### 31.4 System Specification Considerations

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### 31.5 Sub-System Specific Questions

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## 32 Post Office Facility

This facility is a secure location where all outgoing and incoming mail and parcels (both personal and official work items) are sorted and stored.

### 32.1 General Assumptions:

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### 32.2 Post Office Specific Assumptions

- Post office calibrated equipment will be provided by Postal Section

### 32.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		climate controlled shelter	•
		Office Shelter	<ul style="list-style-type: none"><li>• service desk</li><li>• desks and chairs</li><li>• Tables and shelves for outgoing shipping supplies</li></ul>
		Mail receipt Area	<ul style="list-style-type: none"><li>• Loading Dock</li></ul>
		secured area for mail sorting and storage;	<ul style="list-style-type: none"><li>• Safe (size?)</li><li>• Shelving for packages</li><li>• Mail sorters</li></ul>
		sleeping area for constant presence for mail security	<ul style="list-style-type: none"><li>• Closed Circuit TeleVision (CCTV) System?</li></ul>
			<ul style="list-style-type: none"><li>• Safety Shower</li><li>• Eye Wash Station</li></ul>

### 32.4 System Specification Considerations

- 

### 32.5 Sub-System Specific Questions

- How does this requirement scale? Only one post office is required per camp, only amount of mail changes.

## 33 Military Police (MP) Facility

This facility will enable the MP detachment to conduct police functions while on deployment.

### 33.1 General Assumptions:

- 

### 33.2 MP Specific Assumptions

- The MP facilities will be within a secured compound

### 33.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	Office Space	Climate Control Shelter	<ul style="list-style-type: none"><li>• Climate Control</li><li>• Desks and Chairs</li><li>• Service Desk</li><li>• Weapons rack.</li></ul>
		Interview Room	<ul style="list-style-type: none"><li>• Telecom accommodation</li><li>• Sound insulated (soundproof)</li><li>• Table and Chairs</li></ul>
		Washroom	<ul style="list-style-type: none"><li>• Minimum 2-piece potentially 3 piece</li></ul>
			<ul style="list-style-type: none"><li>• AED Accommodation</li><li>• First Aid Kit accommodation</li></ul>
		Reception / processing Bay	<ul style="list-style-type: none"><li>• Service Desk</li></ul>
		Brig / Detainment Cell	<ul style="list-style-type: none"><li>• Secured / lockable</li><li>• Washroom facility</li></ul>
		On-Call Room	<ul style="list-style-type: none"><li>• On-call sleeping quarters</li></ul>
		Storage	<ul style="list-style-type: none"><li>• Climate Controlled</li><li>• Lockable / securable area for evidence locker / lockup</li></ul>
		Vehicle Bay	<ul style="list-style-type: none"><li>• Driver maintenance</li><li>• Large enough for TAP-V</li></ul>

### 33.4 System Specification Considerations

- Layout to enable travel between sections without going outside and to ensure that “detained personnel” do not have access to or must pass through secured areas.

### 33.5 Sub-System Specific Questions

-

## 34 Guard House Facility

### 34.1 General Assumptions

- 

### 34.2 System Specific Assumptions

- CS is not responsible for ballistic and blast protection.

### 34.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Hardened wall Shelter	<ul style="list-style-type: none"><li>• Office Space (IT Accommodations)</li><li>• A/V Accommodations</li></ul>
		Hot / Cold Water Supply	<ul style="list-style-type: none"><li>• Small canteen</li></ul>
		Wastewater disposal	<ul style="list-style-type: none"><li>•</li></ul>
		Visitor Access / Screening Area	<ul style="list-style-type: none"><li>• Separate entrance</li><li>• Glass separation to CAF staff</li></ul>
		Search Room(s)	<ul style="list-style-type: none"><li>• Table and Chairs (for searching visitors)</li></ul>
		OSHA Accommodations	<ul style="list-style-type: none"><li>• First Aid Accommodation</li><li>• AED Accommodation</li></ul>
		Washroom	<ul style="list-style-type: none"><li>• One for Visitors (Separated)</li><li>• One for Staff (Separated)</li></ul>

### 34.4 System Specification Considerations

- 

### 34.5 Sources of requirements

-



## **35 Observation Posts (OP) (Requirements capture only not a separate facility)**

The Observation post will enable surveillance of the camp perimeter. This is a Force Protection requirement and this system is established to capture the potential power and water impacts on CS.

### **35.1 General Assumptions**

- 

### **35.2 System Specific Assumptions**

### **35.3 Requirements and Responsibility**

<b>Item No.</b>	<b>Subsystem</b>	<b>Requirement</b>	<b>Comments for specification</b>
		Lighting	• Movable / aimable lighting
		Power provision	• Man-Pack Radio likely
		Weapons mount for larger weapons	•

### **35.4 System Specification Considerations**

### **35.5 Sub-System Specific Questions**

-

## 36 Aircraft Support (Requirements capture only not a separate facility)

These systems provided power / captures the power and water requirements for potential Tactical Helicopter and UAV facilities

### 36.1 General Assumptions

### 36.2 System Specific Assumptions

- CS will not provide maintenance facilities or hangers.

### 36.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
			•
			•
			•
			•

### 36.4 System Specification Considerations

- 

### 36.5 Sub-system Specific Questions

-

## 37 Combat Engineers (include Heavy Equipment) / EOD

This system will provide facilities for Combat Engineers to fulfill their role on operations.

### 37.1 General Assumptions

- 

### 37.2 System Specific Assumptions

- CS is not responsible for K-9 Units
- Engineering Operations Division (EOD) deployable capability will be used with CS
- EOD is separate from Combat Engineers

### 37.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate Controlled Shelter	<ul style="list-style-type: none"><li>•</li></ul>
	Sea Can accommodations (EOD Teams)	Power	<ul style="list-style-type: none"><li>• EOD &amp; other workshops</li><li>• Storage</li><li>• Vehicle Spares Pack</li></ul>
	Sea Can Lab Accommodations	Power & Water	<ul style="list-style-type: none"><li>• Labs</li><li>• Advanced search team Labs</li></ul>
		Storage	<ul style="list-style-type: none"><li>•</li></ul>
	OHSA	As required for OHSA standards	<ul style="list-style-type: none"><li>• Safety shower</li><li>• Eye Wash Station</li><li>• First Aid Kit (accommodation)</li><li>• AED (accommodation only)</li></ul>
	EOD	Office Space	<ul style="list-style-type: none"><li>• Secret level office</li><li>• 1 std office size</li><li>• Lockable cabinets / safes</li><li>• Lockable (Secret level Stores)</li></ul>
	Ammo Point / Temporary Deployable Magazine (TDM)		<ul style="list-style-type: none"><li>• Climate controlled, forklift accessible.</li></ul>
	Accommodations	For Contractors	<ul style="list-style-type: none"><li>• May include space for K-9</li></ul>
	Vehicle Bay (EOD)		<ul style="list-style-type: none"><li>• For cold conditions - heated storage for Expedient Route Opening Capability (EROC)</li><li>• 6 Huskies and 1 -2 Wolves.</li><li>• 1 vehicle repair bay for husky</li></ul>

### 37.4 System Specification Considerations

### 37.5 Sub-System Specific Questions

-

## 38 Quick Reaction Force Facility (QRF)

This Facility is for QRF to meet and coordinate tasks.

### 38.1 General Assumptions

- 

### 38.2 System Specific Assumptions

- 

### 38.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
		Climate Controlled Shelter	<ul style="list-style-type: none"><li>• Sleeping Accommodations?</li></ul>
		OSHA Requirements	<ul style="list-style-type: none"><li>• First Aid Kit Accommodation</li><li>• AED Accommodation</li></ul>
		“Office” Space	<ul style="list-style-type: none"><li>• Weapons Racks</li><li>• Tables and chairs</li><li>• A/V Accommodation</li><li>• Racks for PPE</li><li>• Potable Water</li></ul>
		Weapons / Ammo storage	<ul style="list-style-type: none"><li>• Potential vault</li><li>• Larger weapon storage (Carl Gustaf / TOW)</li></ul>

### 38.4 System Specification Considerations

- 

### 38.5 Sub-System Specific Questions

-

## 39 Ammo Tech and Ordnance Storage

This system enables the storage of Ordnance and the requisite maintenance and control

### 39.1 General Assumptions

- 

### 39.2 System Specific Assumptions

### 39.3 Requirements and Responsibility

Item No.	Subsystem	Requirement	Comments for specification
	Office Space	Climate Controlled Shelter	<ul style="list-style-type: none"><li>• 1 standard office size</li><li>• Desks and Chairs</li><li>• Service Desk</li><li>• Lockable cabinets / safes</li><li>• Lockable (Secret level Stores)</li></ul>
	OHSA	As required for OHSA standards	<ul style="list-style-type: none"><li>• Safety shower</li><li>• Eye Wash Station, Plumbed</li><li>• First Aid Kit accommodation</li><li>• AED accommodation</li></ul>
	Ammo Point (TDM)		<ul style="list-style-type: none"><li>• Climate controlled, forklift accessible. Sea cans acceptable</li><li>• Loading dock</li></ul>

### 39.4 System Specification Considerations

- 

### 39.5 Sub-System Specific Questions

# Appendix A – List of Acronyms and Abbreviations

AED	Automated External Defibrillator	HEPA	High Efficiency
A/C or AC	Air Conditioner	HLMR	High Level Mandatory Requirements
AHSVS	Armoured Heavy Support Vehicle System	HVAC	Heating, Ventilation, and Air Conditioning
A/V	Audio / Visual	IT	Information Technology
C2	Command and Control	LED	Light Emitting Diode
CAF	Canadian Armed Forces	LEPS	Locally Employed Persons
CCTV	Closed Caption Television	Maint O	Maintenance [commanding] Officer
CE	Construction Engineers	MIR	Medical Inspection Room
CFMWS	Canadian Forces Morale and Welfare Services	MOTS	Militarized Off-The-Shelf
C/O or CO	Commanding Officer	MP	Military Police
COTS	Commercial Off-The-Self	NCM	Non-Commissioned Member
CP	Command Point	OR	Operating Room
CWO	Chief Warrant Officer	OSHA	Occupational Safety and Health
DND	Department National Defence	PA System	Public Announcement System
EOD	Explosives Ordnance Disposal	PDU	Power Distribution Unit
EROC	Expedient Route Opening Capability	PH	Plumbing and Heating
ETQMS	Equipment Technical Quartermaster Sergeant	PPE	Personal Protective Equipment
FF	Fire Fighting	QRF	Quick Reaction Force
FFO	Full Fighting Order (Personal Tactical Equipment)	RM	Refrigeration Mechanical
FSR	Field Service Representative	SM/CO	Sergeant Major and Commanding Officer
GBA+	Gender Based Analysis Plus	STTE	Special Tools and Test Equipment
GFE	Government Furnished Equipment	TAP-V	Tactical Armored Patrol Vehicle
GFI	Government Furnished Information	TOW	Target on Wire (missile)
GD	General Duty	USB	Universal Serial Bus
HAZMAT	Hazardous Material	WFE	Water Fuel and Environment

# Appendix B - Morale and Welfare Provided Equipment

1. Types of MW Equipment. The four types of MW equipment are:
  - a. Fitness:
    - (1) Strength;
    - (2) Aerobic; and
    - (3) Calisthenics;
  - b. Sport;
  - c. Recreation; and
  - d. Messes (see recreation list).
  
2. Recommended Entitlement by Category. The provision of MW equipment is affected by a number of factors (operational tempo, location, duration of operation, number of CAF members, number of camps in the AOR, etc.) that affect the optimum level of MW equipment support.
  
3. A baseline level of equipment that is estimated to sustain a Roto 0 is provided in the tables below. It must be recognized that this is only a guide from which to determine optimum equipment amounts once each mission can be situated properly. Working closely with the Task Force, Canadian Forces Morale and Welfare Services (CFMWS) will facilitate in determining the appropriate levels of MW equipment required for each new mission.

	Small Camp	Camp	Camp	Camp	Camp	Camp	Camp
Staff	(0- 200)	(200 to 250)	(250 to 500)	(500 to 750)	(750 to 1000)	(1000 to 1250)	1250 +
MW Manager			1	1	1	1	1
Travel Supervisor			1	1	1	1	1
Travel Coordinator		1	2	3	4	5	1 Coord per 250 pers
FSR Supervisor			1	1	1	1	1
FSR Coordinator		1	1	2	3	3	4
Retail Supervisor				1	1	1	1
Retail Coordinator		1	1	1	1	1	1
Retail Attendant			1	3	5	5	5
Finance Coordinator				1	1	1	1

Barber		1	1	2	3	3	4
Add Indoor Sports Complex							
Equipment Coordinator				1			
Gym Attendant				2			
Add Canteens and Mess's							
Retail and Shipping					1		
Add fast food restaurant chain, like Tim Hortons "Full Service"							
Retail Shift Supervisor							2
Retail Buyer							1
Retail Shipping and Receiving							1
Baker (Kitchen)							1
Retail Attendant (Store/Tim's)							8

**Travel Office:** Each workstation design to have a customer and a small waiting area. DWAN access, phone, scanner/printer, filing cabinet.

**Retail Office:** Retail Manager, Supervisor, and buyer in one office "cubicle style workstation" close by or within the store. DWAN access, phone, scanner/printer, filing cabinet

**Finance Coordinator (Accounting Single Office):** Hold cash, safe bolt to floor, bars on window, metal door. See MP for security requirement. (Near Retail Office and Store)

**Barber Shop:** The normal square footage required per barber shop is 150 to 200 square feet. Electric: Water Heater 220 volts, 20 amps; washing machine 110 volts, 15 amps; styling station each 110 volt, 20 amps. Water Supply 1 to 2 bowls "hair washing" 3/4 line 50 gallons.

Gym Equipment per Camp Size			Alternative Equipment List for 3,000 sq. ft. plus gym with focus on cardio.		
Gym: Fitness Instructor provided on a 250+ Camp	Small Camp (0-50)	Camp (50 to 250)	Camp (250-750)	Camp (750-1250)	Camp (1250 -2000)
Treadmills	2	5	8	12	15
Elliptical Crosstrainers	2	5	8	12	15
Upright Bikes	1	2	3	5	8
Recumbent Bikes	1	2	3	5	5
Rowing machine	1	2	5	8	8
Commercial Spinning Bikes			11	15	20
Olympic Flat Benches	1	1	2	2	2
Adj. Flat / Incline Benches		1	3	4	4



<b>Adj. Decline Sit Up Bench</b>		<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>
<b>5 Stack Jungle Gym</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Chest Press</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Shoulder Press</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Pec Deck / Rear Delt</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Bicep Curl</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Assisted Chin / Dip</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Leg Press</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Leg Extension</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Seated Leg Curl</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Inner / Outer Thigh</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Rotary Torso</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Ab / Low Back</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Olympic Incline</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Olympic Decline</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>CB Smith</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Power Rack</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Seated Arm Curl</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Seated Calf</b>			<b>1</b>	<b>1</b>	<b>1</b>
<b>Hack Squat</b>			<b>1</b>	<b>1</b>	<b>1</b>

<b>Fitness (Aerobic) Equipment</b>	<b>Small Camp (150-450)</b>	<b>Large Camp (450+)</b>
Reebok Step (Optional with Fitness Instructor)	20	30
Skipping Rope	12	20
Stairmaster (Requires Electrical Power)	4	6

<b>Fitness (Calisthenics) Equipment</b>	<b>Small Camp (150-450)</b>	<b>Large Camp (450+)</b>
Exercise Ball – 55 cm	20	30
Exercise Ball – 65 cm	20	30
Hand Weights (Metal) – 10 pound	20 pr	30 pr
Hand Weights (Metal) – 3 pound	20 pr	30 pr
Hand Weights (Metal) – 5 pound	20 pr	30 pr
Hand Weights (Metal) – 8 pound	20 pr	30 pr
Medicine Ball – 10 pound	20	30

Medicine Ball – 12 pound	20	30
Medicine Ball – 8 pound	20	30
Pump for exercise ball	10	10
Stereo – With AM/FM, CD, Cassette	2	2

Sports Equipment	Small Camp (150-450)	Large Camp (450+)
Air Pump	10	10
Air Pump Needles Inflating	30	30
Basketball	20	30
Basketball Net	20	30
Basketball Stand Portable	4	6
Eye wear protection – MH0201	120	160
Floor Hockey – Balls	120	200
Floor Hockey – Goalie Blocker	4	6
Floor Hockey – Goalie Chest Protector	4	6
Floor Hockey – Goalie Mask	4	6
Floor Hockey – Goalie Pads	4 pr	6 pr
Floor Hockey – Goalie Sticks	20	30
Floor Hockey – Goalie Trapper	4	6
Floor Hockey – Goggles	50	100
Floor Hockey – Net and Frame	6	8
Floor Hockey – Player Gloves	50 pr	100 pr
Floor Hockey – Shin Pads	50 pr	100 pr
Floor Hockey – Sticks Left Hand	8 doz	12 doz
Floor Hockey – Sticks Right Hand	8 doz	12 doz
Football	12	20
Football – Flags – Belt with 2 flags	6 sets	8 sets
Floor Hockey – Goalie Jockstrap – HOC-1400	4	6
Floor Hockey – Goalie Pants – HP9.1 Pro	4	6
Soccer Ball	20	30
Soccer Ball Goal Posts	4	6
Soccer Shin Pads	60	80
Softball Bases	3 sets	4 sets
Softball Bat – 32" (25 oz)	4	6

Softball Bat – 33" (26 oz)	4	6
Softball Bat – 34" (27 oz)	8	10
Softball Catchers Chest Protector	2	4
Softball Catchers Glove – Left Hand	2	4
Softball Catchers Glove – Right Hand	2	4
Softball Catchers Mask	2	4
Softball Glove – Left Hand	20	30
Softball Glove – Right Hand	15	20
Softballs	8 doz	12 doz
Team Sport Shirts – 15 per set	10 sets	10 sets
Volleyball	20	30
Volleyball Net	6	8
Volleyball Standard – Heavy Duty	2	4

Recreation Equipment	Small Camp (150-450)	Large Camp (450+)
Electronic Game System	20	30
Electronic Game System TV 32"	20	30
Electronic Games	10 per system	10 per system
Frisbee	25	40
Game – Chess/Checkers	12	20
Game – Cribbage	12	20
Game – Dart Board	4	8
Game – Darts	20 sets	40 sets
Game – Playing Cards	50 decks	100 decks
Game – Board (Assortment)	20	40
Horseshoe Set	8	12
Table Games – Foosball, billiards, table tennis)	6/games rm	6/games rm
TV for Movies – 42-65"	1/movie area	1/movie area
Movie Player	1/movie area	1/movie area
Stereo Sound System	1/social area	1/social area
Stereo Speaker – Wireless/Bluetooth	2/social area	4/social area
Fridge	1/break area	1/break area
Microwave	1/break area	1/break area
Coffee Machine	1/break area	1/break area

Electronic Game System	20	30
Electronic Game System TV 32"	20	30
Electronic Games	10 per system	10 per system

## ANNEX A3

### TECHNICAL AND SUPPORT REQUIREMENTS

### QUESTIONS

To better understand the proposed systems and allow DND to better define the final requirements, DND requests feedback on the following questions. As much detail as possible is requested.

### **Principal Systems and Original Equipment Manufacturers**

1. Would you be interested in provided solutions as a prime/coordinating contractor or just for individual sub-systems or equipment?
2. What are the main elements of the systems and sub-systems that make up your solution?
3. Who are the Original Equipment Manufacturers (OEMs) for the systems and sub-systems being proposed?
4. What experience do the OEMs have in direct delivery of in-service support?
5. To what extent does the prime/coordinating supplier have access to the data and Intellectual Property, of the OEMs of the systems and sub-systems, required to perform manufacturing and integration?
6. To what extent does the prime/coordinating supplier have access to the data and Intellectual Property, of the OEMs of the systems and sub-systems, required to perform In-Service Support (ISS)?
7. What requirements management software tools do you use (if any) and what is your experience in using them? For example, IBM's Rational DOORS.

### **Design Considerations**

1. What is the scalable size / Base Building block size for each sub-system in a camp?
2. What is the OEM's experience (if relevant for their systems) and ability working with lithium-ion batteries in terms of handling, maintaining, and sustaining? How is this accomplished? What about other new battery chemistries?
3. How do your designs and camp layouts account for gender fluidity?
4. Are design changes required for your systems and sub-systems for arctic deployment?
5. How do you recommend running conduit for IT and electrical?

### **Concept of Maintenance**

1. Canada will initiate the process of developing its in-service support solution. To help with the Options Analysis, Canada is interested in knowing the facts, best practices and lessons learned associated with the top-level work breakdown structure (WBS) elements?
  - a. Management (governance, program management, etc.)
  - b. Engineering (technical service and support, engineering service and support, FSR, etc.)
  - c. Maintenance (corrective, preventive, level 1 to 4, etc.)
  - d. Material (procurement, repair parts, consumable, forecasting, warehousing, distribution)
  - e. Technical Data and Publications (logistics support analysis, spare parts lists, manuals, etc.)

- f. Training (Operator Training, Technical Training, etc.)
  - g. Infrastructure (storage, workshop, training, etc.)
  - h. Support and test equipment (Specialized Tool & Test Equipment (STTE), calibration, etc.)
  - i. Electronic Information Environment (data collection and storage, data analytics, etc.)
2. What are the facts, best practices and lessons learned Canada will need to consider when developing the options for sustaining the platform. Please be specific in terms of:
    - a. Levels and Lines of maintenance
    - b. Supply Chain
    - c. Engineering Support including reach-back and configuration management.
    - d. Logistics (Purchasing, Warehousing and Distribution) and
    - e. Any other relevant aspects.
  3. What are the typical intervals (operating hours and calendar time) between scheduled and unscheduled maintenance events and the associated level of effort?
  4. What is the life cycle of the platform including maintenance, upgrade, life extension, etc?
  5. While it is recognized Canada's maintenance program is not yet defined, in consideration of your products, what is the typical type of support required from Technical Service Reps, or Field Service Reps to assist with ISS? More specifically:
    - a. What would be their responsibilities and the associated Level of Effort; and
    - b. How and why might the level of effort change over the life cycle of the product?

### **ISS (In-Service Support) Delivery**

1. Describe your Company's current ISS capabilities for your systems and sub-systems. What goods and services does your Company provide in comparison to subsidiaries, subcontractors and your supply chain?
2. Describe the breadth of support activities available for ISS. Include the facts, best practices and lesson learned related to who typically performs the different activities for this platform.
3. To what extent is ISS available through authorized or licensed companies?

### **Technical Data and Intellectual Property/License**

1. What nature of technical data (Maintenance Manuals, Parts Catalogues, Work Instructions, Operating Manuals, etc) is typically provided with your products?
2. What rights and restrictions are typically associated with the technical data/license?
3. What levels and or lines of maintenance does technical data typically support?
4. Are there typically restrictions in distributing technical data/licenses to third parties that could restrict Canada's options for sourcing sustainment goods and services?
5. What are the technical data/license provided by each of the OEMs within your solutions?

### **Delivery**

1. What are the considerations, best practices and lesson learned for phase-in of the ISS solution in relation to the acquisition sequence of events (first delivery, Initial Operational Capability (IOC), Full Operational Capability (FOC) and final delivery)?
2. In relation to transitioning from acquisition of the capability to delivering ISS what are the typical key milestones and timing?

### **Performance**

1. What are the typical metrics used to monitor the delivery of ISS and how are they applied?
2. What is the typical Mean Time Between Failure (MTBF) of the solution and its main systems and sub-systems?
3. What systems, sub-systems and equipment have a first order impact on performance in terms of availability, reliability and fit for purpose?
4. What are the significant operations or maintenance variables that impact actual performance?

### **Value for Money**

1. Describe the sub-systems and equipment that drive 80% of the maintenance cost and describe the nature of the cost (spare parts, repair and overhaul, replace, etc.)?
2. Are there any of the sub-systems equipment and components that are available as commercial off-the-shelf?
3. What are the typical opportunities for improvement (efficiency gains, learning curves, upgrades, value stream mapping, etc.) in delivery of sustainment that have been proven to be beneficial over the course of your solutions life?

### **Life Cycle**

1. Characterize the different phases of the life cycle for the platform including Phase in, wear in; mid-life; wear out, late life maintenance (characterized by obsolescence, and dwindling supply chains) and phase-out. What is the typical duration of each phase and, what is the required level of expenditure on a relative basis?
2. What are the considerations, best practices and lesson learned related to the transition from Acquisition to ISS that Canada should be mindful?
3. This requirement is expected to include the sustainment of technologies that are evolving rapidly, such as software. While Canada will be developing its ISS solution, what are the factors, best practices and lessons learned with regards to the rapid evolution of the equipment, specifically:
  - a. Usage of mid-life upgrade versus continuous upgrade or other industry best practice (specify)
  - b. Software
  - c. Hardware
  - d. Support
  - e. Typical intervals between upgrades (hardware and software)
  - f. Describe the breadth of support activities available for ISS upgrades



- g. Typical length of down-times associated with the upgrades (hardware and software)
  - h. Any other relevant aspect
- 4. Are there technology advances anticipated over the platform life cycle with a positive return on investment relating to sustainment that Canada should consider?
- 5. What ISS elements are automatically included with the acquisition of your solution?

## **ANNEX C – REVISED PROCUREMENT QUESTIONS**

In pursuit of conducting our procurement activities in a manner that enhances access, competition and fairness, PSPC is seeking initial industry feedback on the following elements, which will be considered in the formulation of the procurement strategy and solicitation documents:

### **1. Evaluation Methodology and Basis of Selection, Phased Bid Compliance Process**

Are there any concerns/comments on the following: award based on a combination of financial and technical criteria, inclusion of social and environmental factors as mandatory and/or rated criteria, and/or application of a Phased Bid Compliance Process?

### **2. Mandatory and Rated Criteria**

Are there specific technical and/or financial criteria that Canada should consider for a resulting RFP?

### **3. Foreign Bidders**

As a foreign bidder, are there specific factors or concerns that Canada should consider in its solicitation?

### **4. Intellectual Property**

Do you anticipate any IP generated as a result of the contract? Are you willing to have Canada use the (Contractor-owned) IP as long as it does not extend to commercialization of the IP by Canada?

### **5. Security Requirements**

Are there any concerns and/or potential issues that may arise from having security requirements associated with the work?

### **6. Environmental Considerations – Environmental Management Systems/Protocols, Disposal, Recycling**

Are there industry standards, processes, and/or practices related to reducing environmental impacts and/or increasing operating efficiencies? Does your firm have environmental management systems or established environmental performance requirements? If not, is your firm willing to incorporate any of the above?

### **7. Insurance**

Are there any specific insurance requirements that Canada should consider in its resulting contracts? If so, what are the most appropriate to our requirements? Is a Commercial General Liability Insurance sufficient?

### **8. Liability**

Given the nature of the requirements, are there specific concerns on a Contractor's Liability during the implementation of the contract? Does Canada need to consider conducting a risk management process for limiting a contractor's liability? If so, please provide your firm's the top potential risks, its impacts and mitigating strategy.

### **9. Optional Goods and Services**

Are there any concerns with the provision of optional goods and services in the resulting contracts, with and without a prescribed quantity and/or level of effort?

#### **10. Period of Contract and Optional Periods**

Are there any concerns with the provision of optional periods to the initial contract period?

#### **11. Bidders Conference**

Are there any concerns, issues, or considerations should Canada include an optional or a mandatory Bidders' Conference?

#### **12. Validation Process**

Are there any issues if Canada conducts its validation process before issuance of a contract as a condition of award or post-award?

#### **13. Basis of Payment**

What is the industry standard payment structure for the identified preliminary requirements?

#### **14. Procurement Timelines**

Are there any factors that would impact Canada's procurement schedule? Are there upcoming industry demand or domestic/international events that would affect the timelines?

#### **15. Pricing Structures**

At Annex A – Preliminary System Requirements and Costing, are the pricing structures provided acceptable industry standard? Is unit costing for the identified items acceptable? Are there volume discounts applicable? What type of price escalation mechanisms are commonly accepted? Are you able to provide firm pricing on a multi-year basis, e.g. 5, 10 years?

## ANNEX F – INVITATION FORM

### 2<sup>ND</sup> INDUSTRY DAY AND 2<sup>ND</sup> ONE-ON-ONE SESSION: PRODUCT DEMONSTRATIONS

Please fill out the invitation form in order to confirm your attendance to the 2<sup>nd</sup> Industry Day and the 2<sup>nd</sup> One-on-One Sessions.

For the 2<sup>nd</sup> One-on-one Sessions, you are required to indicate the date and time, in order of preference, and the number of participants that will be attending the event. Canada will make every effort to satisfy your preferred date and time, however should many suppliers request the same time, Canada will proceed on a first come first serve basis.

**The upcoming Industry Day and One-on-one Sessions will ALL be held virtually ONLY, via MS Teams. An invitation will be sent to registered participants prior to the events.**

<b>Company's name</b>	
<b>Point of contact</b>	
<b>Address</b>	
<b>Email</b>	
<b>Telephone number</b>	

Camp Sustain – Industry Day #2		
Date	Time	Number of attendees
8 February 2024	1000 – 1200 hours EST	

Product(s) to be demonstrated: \_\_\_\_\_.

Camp Sustain – 2 <sup>nd</sup> One-on-one Sessions – Product Demonstrations					
Available Dates	Preferred Dates* (Ranked 1-3)	Available Time Slots (EST) and Preference (Ranked 1-2)**			
		Time	Rank	Time	Rank
9 February 2024		1000 – 1130 hours		1300 – 1430 hours	
12 February 2024		930 – 1100 hours		1400 – 1530 hours	
13 February 2024		1000 – 1130 hours		1300 – 1430 hours	
20 February 2024		1000 – 1130 hours		1300 – 1430 hours	
21 February 2024		1000 – 1130 hours		1300 – 1430 hours	
22 February 2024		1000 – 1130 hours		1300 – 1430 hours	
23 February 2024		1000 – 1130 hours		1300 – 1430 hours	
26 February 2024		930 – 1100 hours		1400 – 1530 hours	
27 February 2024		1000 – 1130 hours		1300 – 1430 hours	
28 February 2024		1000 – 1130 hours		1300 – 1430 hours	
29 February 2024		1000 – 1130 hours		1300 – 1430 hours	
1 March 2024		1000 – 1130 hours		1300 – 1430 hours	

\*Suppliers must choose 3 dates and rank by preference (1, 2, 3).

\*\*Suppliers must rank time slots (1, 2) for each chosen date(s).

Note: Suppliers chosen dates and times are not guaranteed, however, Canada will try its best to accommodate all requests.

Participant List				
	Name(s)	Position(s)	Industry Day #2	One-on-One Session #2
			(Check, as applicable)	
1				
2				
3				
4				
5				