Construction Engineers: An Essential Component to a Support Team

By Captain Philippe Bolduc

The need for Construction Engineers in the Canadian Armed Forces is far and wide. On every operation, international and domestic, the need for Construction Engineers cannot be overstated. Entrusted with providing infrastructure support and management, the ever-growing and all-encompassing requirements of Construction Engineers in theatre are critical for mission success. In my experience, a Construction Engineer Troop can accomplish a great deal while deployed and are an essential component of a second-line support team.

CE TP members using an articulated boom lift to erect an RTC structure.

My name is Captain Philippe Bolduc and I was recently deployed on Operation IMPACT (Op IMPACT) between Nov 2020 - Apr 2021 as the Construction Engineer Troop Commander (CE TP Comd) within the Operation Support Hub - Southwest Asia (OSH-SWA) in Camp Canada, Ali Al Salem Air Base, Kuwait. Op IMPACT is part of the Government of Canada's approach to the Middle East. Its mission is to build the capabilities of Iraq, Jordan, and Lebanon and to set the conditions for stability and security in the region. Op IMPACT is broken down into sub-organizations of various elements and specialties based upon the requirements of the mission; Air Task Force, Joint Intelligence Centre, Operational Support Hub, etc. While there are personnel located in Lebanon, Jordan, and Iraq, the majority of Op IMPACT personnel are located on Camp Canada in Kuwait.

Planning Section coordinating the delivery of a containerized housing unit.

CE Members participating in DANCON march.

All Construction Engineer assets within this operation belong to the OSH-SWA. The OSH-SWA is responsible for providing and coordinating second-line support to all units across the Joint Operations Area (JOA) in order to sustain capacity-building efforts and enhance regional stability. Unlike our Combat Engineer counterparts whose purpose is to provide support to a combined arms team, Construction Engineers' sole responsibility is to deal with infrastructure. During Op IMPACT, Construction Engineers are responsible for the maintenance, development, and execution of all current and future infrastructure requirements of the task force. Camp Canada's current infrastructure is based around a temporary standard of Relocatable Temporary Camp (RTC) assets, semi-permanent hard-walled accommodation structures, and containerized housing units (CHUs). Power is provided to these structures through various diesel generators which are connected together through a subsurface electrical distribution grid.

All engineering support within the task force is coordinated through the Officer Commanding Engineer (OC Engr). The OC Engr commands all OSH-SWA engineers, including planning staff, a Defense Construction Canada (DCC) representative, the Task Force Fire Marshall, and the Construction Engineering Troop (CE TP). All project planning, concept development, and prioritization across the JOA reside within this engineering construct, with projects being completed by either the CE TP, Technical Assistance Visits (TAV), or through contracting support provided by DCC or the Contract Management Cell (CMC). During my time in Kuwait, there were approximately 21 personnel embedded within this organization.

As with any engineering organization, there were countless high-priority tasks to accomplish that demanded excellence from the entire CE organization. Generally speaking, the engineering support we provided was divided between short and long-term requirements, which ultimately dictated if they were the responsibility of the planning cell or the CE TP.

Infrastructure that requires long-term planning (6 - 18 months) and contracting services typically becomes the planning cell's responsibility. The planning section, in conjunction with DCC (who acted as the technical and contracting authority), was responsible for any infrastructure-related contracting services required for Camp Canada.

Short-term infrastructure projects within our expertise and existing maintenance within Camp Canada were the responsibility of the CE Tp. As the TP Comd, my job consisted primarily of resource management and project prioritization. While liaising with the procurement section, I was responsible for ensuring that personnel within the TP had the appropriate resources required to do their job. The day-to-day work orders for minor infrastructure repairs such as broken doors and plumbing issues were coordinated and tracked by the CE TP Warrant Officer who also acted as my command-team partner in the daily management of the TP. Throughout our time in Kuwait, the CE TP completed a total 846 work orders, which equates to a weekly average of about 32. Some of the short-term projects that we were also able to complete during this time included the relocation of RTC assets into a new COVID-19 isolation area, various room renovations for accommodations, the installment of numerous intrusion alarm devices, and a rebuild of a satellite server room.

Fire Brigade conducting live training in Camp Canada's burn pit.

Planning Section coordinating the erection of a sunshade structure with local contractors.

Transport members using heavy equipment assets to help move RTC structures.

CE TP members participating in a concrete pour.

Construction Engineers can provide essential operational support in unsuspecting ways. During Operation AEGIS, the Government of Canada's effort to evacuate Afghans with significant and enduring relationships to Canada, Construction Engineers constructed a self-sustaining sub-camp within Camp Canada of RTC assets to temporarily house these personnel as they made their way to Canada. From an Operation IMPACT perspective, this meant that Camp Canada became a staging area for these evacuees, increasing the camp's inhabitants by an additional 2000 personnel at times. Although not during my tenure as CE TP Comd, this monumental effort is worth noting, when considering the importance of CE TPs in theater.

CE TP members constructing a platform to mitigate future flooding concerns.

CE TP members participating with coalition forces on a Rapid Airfield Damage Repair (RADR) exercise.

Planning Section coordinating the construction of the multi-use and sport recreation area.

Planning Section coordinating a generator swap-out with local contractors.

I would now like to explain my statement in why I believe that a CE TP is an essential component of a second-line support team. Every person in an operation serves a distinct purpose, and that purpose is usually defined by occupation and which organization you belong to. The other support trades that belonged to the OSH-SWA served a distinct purpose, and their purpose was required in order to support the mission of providing support to the JOA. CE is a necessity because the services we provided allow everyone else to do their job; CE serves as the base of the support system to the camp. A camp without power generation, running water, and basic amenities would not be able to function. In this way, the CE TP is integral to the success of the mission and acts as a force enabler for the entire support system of a camp. To be essential is to be a thing that is of absolute necessity. I do not believe that our necessity is derived from the vast number of work orders we accomplished, but rather from what was unnoticed; what we did when no one was looking in order to resume the things that are needed for a camp to survive.

During my tenure, the CE TP responded to a number of infrastructure emergencies. These emergencies were largely unnoticed on camp thanks to the efficient and effective intervention measures by the CE TP. Throughout our deployment, there were numerous instances that required an all-hands-on-deck approach due to the current state of the infrastructure in combination with the local climate in Kuwait. The following is a list of some of the emergencies that CE TP responded to:

East Side Generator Issues: All main generators are provided and maintained through a contract overseen by DCC, however the current contractors require significant

oversight by our technicians. One night, approximately one month into our deployment, it was reported that one third of the camp was without power. This section of camp included some critical areas that cannot be without power for extended periods of time. Upon further inspection, it was determined that the generators for that portion of camp were not producing any power before unexpectedly turning off. The cause of the outage was due to a broken starter motor, a part not readily stored within our supply. Due to this, we contacted the applicable contractor under an emergency servicing clause and had them deliver this part to us in the middle of the night which our technicians then had to swap out. Overall, this outage lasted for more than seven hours and power was restored before the majority of the camp woke up the next day.

Main Waterline Break: Non-potable water is provided to Camp Canada through a main waterline which is connected to a reservoir on the Kuwaiti side of the air base. Non-potable water is then stored on camp in a series of containers totaling approximately 120,000 liters, which is about 2-3 days of water supply. While conducting preventative maintenance on this system, CE technicians noticed that the level of water stored and the rate at which it was being replenished was lower than expected. Our technicians traced the waterline back to its source and found a significant amount of water pooling at a junction site that split the waterline between us and a neighboring American camp. The CE TP's quick response time, of about four hours, and preventative maintenance efforts ensured that the camp didn't have to enact water reducing measures.

West Side Electrical Issues: During my deployment, there were a series of significant rainfall events. This, combined with the poor drainage characteristics of the airbase ground material, caused extensive flooding at Camp Canada. Our initial mitigation efforts involved displacing the flood water with trash pumps and digging trenches to facilitate drainage. Unfortunately, another issue took us by surprise once the water dissipated. Due to the extended periods of time with a raised water level, water had infiltrated a portion of the subsurface electrical grid that connected one of the main panels to various buildings within the OSH-SWA section of camp. Due to this, various electrical wires short-circuited, resulting in daily power outages for numerous office spaces. Our technicians were able to solve this problem by isolating the buildings affected and placing them on temporary power with a back-up generator while they searched for the

CE TP members conducting repairs to a water distribution station.

CE TP and Transport members trenching electrical cable on the west side of camp.

CE TP members installing an electrical cable into a panel.

CE TP members investigating cable issues.

problematic cable. Once the problematic cable was identified, a significant portion of camp had to be trenched out in order to replace it.

Construction Engineers are found diligently beavering away wherever the CAF is sent on operations. The Engineers motto ‘UBIQUE’, which is Latin for everywhere, helps put it in perspective for everywhere the CAF is sent, you can expect us to be the first on the ground and the last ones to leave. The biggest lesson this deployment has taught me is how much the Construction Engineering branch lives up to this motto. While this sentiment, and many other engineering traditions, were tirelessly memorized during my training at the Canadian Forces School of Military Engineering (CFSME), I have never been in a position to experience our motto firsthand. It was with deployment, I was able to fully appreciate what this statement means and it gave me great pride and admiration to be a TP Comd to the technicians that made it happen. At the end of our tour, the entire CE TP was awarded a Joint Task Force – Impact Commander’s Commendation. The members of the CE TP that received this were; MCpl Donovan Willey, MCpl Robin Ducolon, MCpl Jacque Lajoie, MCpl David Lefebvre, MCpl Jean-Francois Boucher, MCpl Douglas Myers, MCpl Christian Jenson, Cpl Steven Barbour, Cpl Steven Arbour, and Cpl Sheldon Lesperance. I would also like to take this time to acknowledge and thank the efforts of the Transport Section within the OSH-SWA. Throughout the deployment, these members provided integral support to the CE TP in providing and coordinating heavy equipment assets as well as lending a helping hand when required.

Group photo with entire CE organization.

CE TP receiving Christmas cards from various elementary schools back in Canada.

Transport Section coordinating with coalition forces for the use of Heavy Equipment assets to move shipping containers.