

CHANGE FRONT: THE ARCHITECTURE OF CANADIAN MILITARY DWELLING

by

Kaitlyn Elizabeth Labrecque

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ABSTRACT

[Change Front, to shift a military force in another direction]

This thesis investigates the advancement of military dwelling in the Canadian Armed Forces, focusing on the traditional Canadian Army base. It proposes a forward thinking approach to address current methods of military habitation, which have not significantly altered since World War II. Canadian Forces Base Gagetown in Oromocto, New Brunswick will be utilized as a testing ground in the development of a mixed-use housing type, that aims to accommodate choice and difference in this community. The architectural program aims to amalgamate the various users of military accommodation, including family units, single members, and transient refugee populations, while simultaneously connecting the building to its surrounding community and environment. In sum, the integration of user, flexibility, and place intend to strengthen the social sustainability of the network at large, and act as a catalyst in future residential development within the Canadian military domain.

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CHAPTER 1: INTRODUCTION

THESIS QUESTION

How can architecture push the hierarchical boundaries of Canadian military dwelling to reflect a shifting military culture and increasingly diverse user group, while advocating a forward thinking approach to habitation that instils a sense of pride and place for the individual?

THE CANADIAN ARMY BASE

The broad division under study will be the Canadian Army Base. Due to vast land requirements and potentially dangerous training operations, Army bases are distinct from surrounding communities. In turn these bases have to accommodate a sustained neighbourhood within the military domain. Further, the Army stands distinct from the three branches, as over half of service members work in the Army, at 56% land, 24% air, 17.3% sea, and 1.9% communications (Park 2008). Thus, the Canadian Army base acts as the core of the Department of National Defence, and presents itself as a quintessential branch for study.

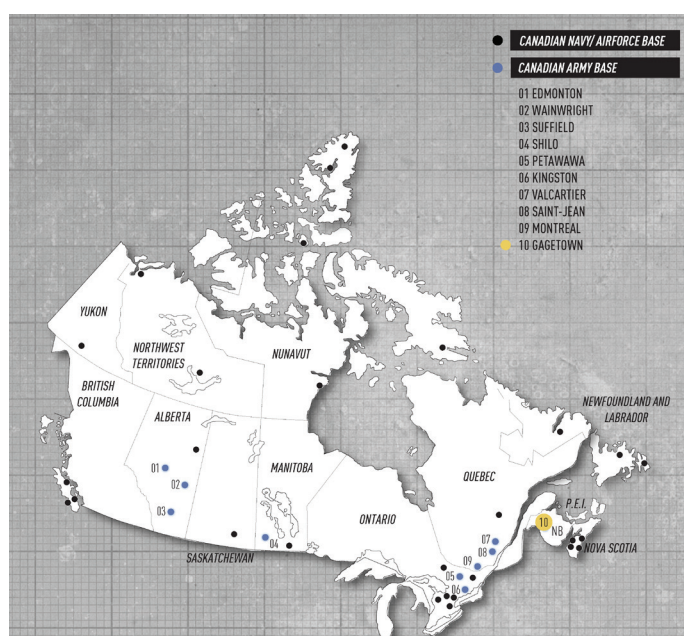


Figure 1. Map illustrating distribution of Canadian military bases across Canada (base map from Government of Canada 2014)

THE EVOLUTION OF CANADIAN MILITARY DWELLING

1760 - 1890

Once Great Britain defended the St. Lawrence against New France in 1760 the British established a resilient Canadian defence system, including the Citadels in Halifax and Québec City, the naval dry dock in Halifax and Fort Henry in Kingston (Canadian Army 2015). The dictating element for such military establishment was the consideration of landscape. Already established high points in the natural terrain fostered optimal sightlines for security, and critical points along water bodies afforded first sightings of possible invasion. At such time, life for soldiers and their families was confined to the walls of the fort, where living, working, and educating all took place. For example, in the Halifax Citadel, eight to twelve soldiers would share a room in barracks, accompanied by wives and children. The husband and wife would share a bed, while the children would sleep below. As the men occupied the training and operations grounds during the day, the children were sent to school, and the women completed domestic duties and miscellaneous civilian tasks. The living quarters were designed purely under utilitarian means, constructed only to serve the direct needs of the users, while supporting the greater military efforts of the time, as seen in figure 2. What transpired from such early military efforts was the development of the pragmatic barrack housing type. Principles established from this early barrack style can be seen throughout the duration of Canadian military base development, design, and planning.



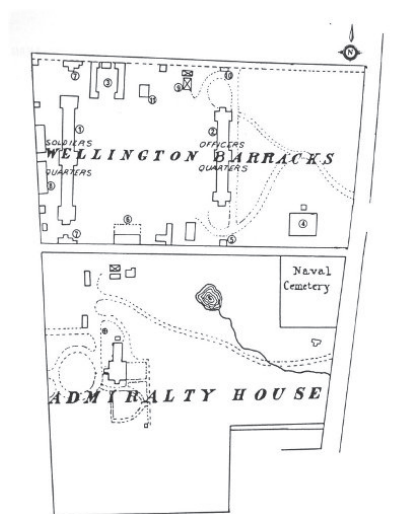
Figure 2. Images demonstrating the confinement of Citadel Hill barracks, Halifax NS (Modaki 2013)

In the late 1890s many of Canada's historic forts were condemned due to being deemed not useful in the capacity of defence in case of war (Modaki 2013). The erection of new military facilities, surrounding initial establishments, including the development of armories, training grounds, and new military accommodation were built to serve the local citizen-soldiers. Such development took place in already

established communities, allowing access to reliable transportation and communication networks (Lombaerde 2011). At such time, pragmatic approaches were still utilized in the development of barracks. Married quarters were separated from single quarters, and design styles, although advanced from initial settlement methods, were still robust and highly monotonous.

1890 - 2016

With rapid urban migration and the onset of war during the twentieth century the purpose, scale, and location of land used by the Canadian military changed drastically. Technology brought more advanced, diversified systems, and weapons to the forefront of military practice. Tanks and armored personnel carriers replaced horses, and mechanization required broader expanses to practice manoeuvres and test new weaponry. These factors, coupled with the need for military expansion during World War II, resulted in the mass consumption of rural land by the Canadian Army.



Wellington Barracks circa 1890

Legend

- | | |
|-------------------------------------|-----------------------|
| 1. 'A' Mess (Soldiers Quarters) | 7. Latrines |
| 2. Officers Quarters | 8. Main Gates |
| 3. Married Quarters (finished 1887) | 9. Stables |
| 4. 'C' Magazine | 10. Officers' Latrine |
| 5. Shell Store. | 11. Well |
| 6. Coal Store | |

Figure 3. Base site plan depicting all individuals residing in barracks (The Minute Book 2015)

With drastic outward migration and the need to negotiate with financial institutions to develop priorities for the control of materials during a period of shortages, the vast need to house military families could not be met by the private sector. It was a matter that had to be handled through federal government jurisdiction. The instrument of this new government pursuit was Wartime Housing Ltd., a crown corporation created under the authority of the War Measures Act in February 1941 (Evenden 1997).

By the time World War II ended, Wartime Housing Ltd. built some 30,000 single family dwellings and barrack blocks (Wicks 2007). The perception was that the housing effort would be short-lived and the houses themselves temporary. The ideology was that of uniformity and conformity, designing only on a slight variation of typology. The 'new' barrack was developed as a mere replica as to what was established

in the 1750s, a dorm like style housing complex, with communal facilities. Although within this new rural model of the Canadian Army base, barracks no longer served both families and single members. They were now designed solely for single members and those still undergoing training. The barracks blocks were therefore placed within the physical enclosure of base operations, and the family quarters were placed near but outside the enclosure of base operations. Designs for family quarters, often referred to as, private married quarters, varied from: the Cape Cod design; in side-gabled single storey; one-and-a-half storey version; and a hip-roofed cottage less commonly used (Evenden 1997).

Towards the end of the war, when it was realized that the houses would no longer be temporary, changes such as improved footings were permitted (Wicks 2007). Although the fundamental concept of the house types and forms did not alter (Evenden 1997). Further, since these communities were now to be seen long term, the military supplemented base accommodation with the construction of community halls, schools and other social facilities, primarily within the vicinity of family quarters. What transpired were two distinct residential zones: barracks, developed within base operations; and primary military quarters, developed within the base community. Still utilizing the traditional barrack style meant single members of various ranks were made to dwell in communal arrangements, where their sense of private dwelling was a mere door in a relentless hall that offered little relief. Additionally since barracks were completely cut off from the base community, dwellings had no sense of place or landscape, they purely embodied military life. Such distinct residential zones and monotonous design styles are still found on the Canadian Army bases known today. Both barrack and family housing styles are depicted in figures 4-6.

To view an extended orthographic drawing catalogue of the uniform communal architectural style of barracks versus the more private family quarter, refer to Appendix C.



Figure 4. Barrack block, CFB Gagetown New Brunswick, developed in 1958 still utilized today



Figure 5. Wartime housing, city of North Vancouver, Jan 13, 1942 (City of Vancouver Archives 2015)



Figure 6. Primary married quarters, Quebec, 1996 (Erupit 2015)

DETERMINATE COLLECTIVE DWELLING

The early approach to military accommodation can be directly related to both company town housing and social housing complexes, as seen in figures 7-8. Although holding prominent differences, company and military dwelling are 'selected' as a way of life by an individual but, like social housing, ultimately determined and designed by authoritative parties.

The intention during the conception of social housing in Canada was that of obsolescence. The ideology was founded in a short sighted approach to make social housing less desirable and in turn encourage people to progress. Therefore, early social housing types in Canada were highly monotonous and robust. This unsustainable approach was coupled with community isolation. These factors only fostered discriminatory attitudes, and on occasion such stigmatism can still be perceived today.

Company town settlement is also likely to be distinct from neighbouring communities, forcing such environment to function solely as a collective. Prospects for activity and growth beyond the initial function of resource extraction rarely materialize. Thus, these communities frequently lack diversity in housing types.

Further, like today's military dwelling, all the aforementioned collective dwelling circumstances are created primarily by market driven forces and lack uniqueness and variance.



Figure 7. Uniform and robust nature of Regent Park social housing, Toronto (Urban Toronto 2013)



Figure 8. View of employee living quarters, Gatineau Mills company town (City of Gatineau Archives 1926)

CURRENT CONDITIONS

Regulation

Within today's Army base model military members and their families generally have the option to reside in civilian accommodation. The only exception pertains to certain regimental policies which mandate all members to reside in barracks at the beginning of a posting. Excluding this exception, service members and families generally choose to live within the military domain for three main reasons: first, the possible pending relocation, including knowing you could be posted in a short time to a specific base/wing; second, financial reasoning, due to a lack of affordable alternatives in the private real estate market place comparative to the cost or affordability of a military residential housing unit; and third, community being the third major motive. Military housing fosters an environment that maintains military values and supports the unique challenges of military life, with moving assistance, recreation facilities, retailers, chapels, community groups, parks and schools. A comprehensive program list of all Army base facilities can be found in Appendix A.

Case For Action

Although a vast array of programs exist on Canadian Army bases, the approach to base accommodation has not altered since World War II development. Residential zones as previously stated are still distinct, separating the family quarters from the single barrack quarters. A systemic review conducted by the office of Ombudsman Pierre Daigle surveyed three-hundred-seventy families on ten Canadian Forces Bases and found that a "significant portion" of families living in military housing stated that problems such as mold, asbestos, leaky pipes, limited space, electrical issues, uneven flooring, and water infiltration

were “major” stressors (Daigle 2013). According to the report, of the 12,248 military housing units across the country, only 0.6 percent are newly constructed builds. “The bulk of existing units were built between 1948 and 1960,” the report states, adding that about twenty-nine per cent of the units were considered to be in poor condition, according to a June 2012 assessment (Daigle 2013).

Military housing falls under the jurisdiction of the Canadian Forces Housing Agency, the special operating agency established in October 1995 to manage and maintain the housing portfolio (Daigle 2013). The organization is responsible for the maintenance and allocation of military housing across Canada, as well as for the provision of customer services to their occupants. To accomplish this, the Agency has a staff of three-hundred located at the national office as well as twenty-six Housing Service Centres and satellite offices across the country (Daigle 2013).

The Agency has permitted minor renovations on units, covering the basic needs of maintenance, including updating insulation, siding, windows, kitchens, and heating systems. Such renovations are often conducted while occupants are in the dwelling, and are often referred to as ‘betterment’ renovations. According to the Agency, the major emphasis lately has been on this type of renovation because it proved to be the most cost-effective method of taking a unit originally assessed as poor to acceptable status.

On February 2nd 2016 the Canadian Press released statements based on a government audit noting that although the National Defence has a goal of ‘modernizing’ the units, there is no adequate and approved long term plan (The Canadian Press 2016). Continuing that, the department has no clear idea of the work that needs to be done, the time required and the resources needed to achieve the goal. David Christopherson, NDP Member of Parliament concludes that the department is more

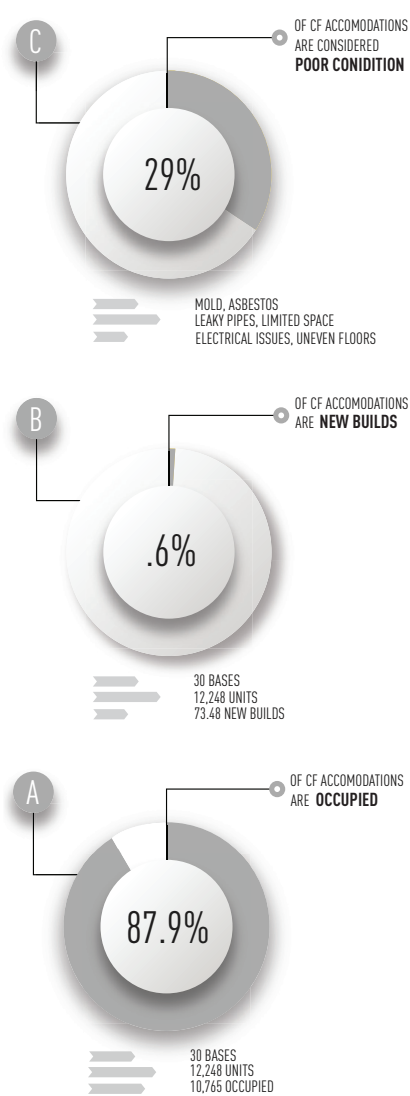


Figure 9. Diagram illustrating the need to address dwelling in the Canadian military (Daigle 2013)

concerned about buying bullets and bombs than the more important aspects of billets and bread. Stating that, "I find it incredibly hard to believe that something as fundamental as where you're going to house your Armed Forces personnel has not evolved to a fine art" (The Canadian Press 2016).

Societal Flux

With fluctuating societal norms and an influx of transient refugee populations, it is evident that there needs to be more progressive alternatives added to the military housing portfolio. Alternatives that address the unique needs of a diverse user group. First, the modern Canadian Forces family has changed and is significantly different than that of previous generations. Arguably these changes coincide with shifting Canadian societal norms, as proven in figure 10. Generally, relatively stable family configurations of the past have increasingly given way to more complex arrangements. Canadians are more likely to change and re-configure their family structures over time.

Second, in addition to Canadian Forces families, refugees historically and currently are being housed in Canadian military accommodation. Like military families, refugees are unaware how long they will reside in military housing, as pending relocation is a factor in both circumstances. The Department of National Defence first engaged in refugee support by housing approximately 5000 individuals fleeing the Kosovar war in 1999. Bases such as Gagetown, Greenwood, Aldershot and Halifax opened their doors and lent beds for those seeking shelter and safety. During this time refugees typically stayed at bases for roughly four months (Chase and Leblanc 2015). Today with the outbreak of civil conflict in Syria, including the arrival of Islamic militants from neighbouring Iraq, devastating war torn conditions have led individuals to flee their home land. Canada plans to receive 25 000 Syrian refugees by 2016, with the military prepared to house 12 000 of these individuals in vacant barracks

CANADIAN 'COUPLE' FAMILY

	2001		2011		PERCENTAGE CHANGE 2001-2010
	#	%	#	%	
ALL COUPLES	7,059,830	100	7,861,860	100	10.20
OPPOSITE SEX	7,025,630	99.5	7,797,280	99.2	09.99
MARRIED	5,981,425	83.6	6,272,935	79.8	05.98
COMMON-LAW	1,724,200	15.9	1,524,345	19.4	26.30
SAME SEX	34,200	0.5	64,575	0.8	47.00
MARRIED	0 NOT LEGAL	0	21,815	3	---
COMMON-LAW	34,200	5	43,560	6	21.50

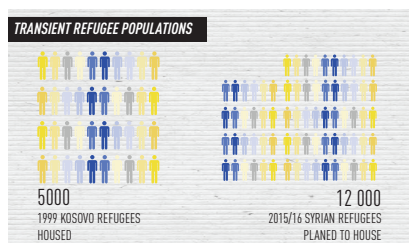
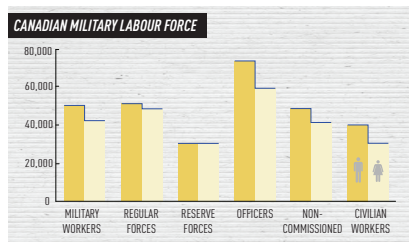
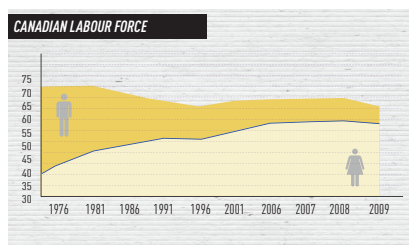
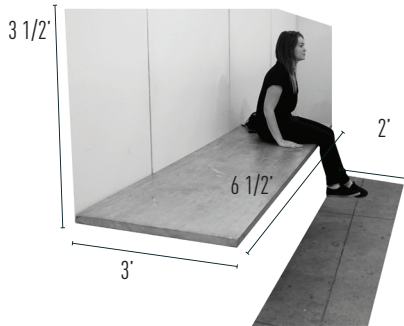
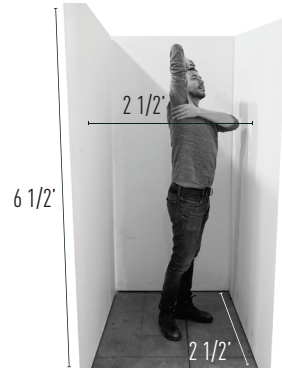


Figure 10. Infographic depicting societal flux coinciding with fluctuating military family dynamics and the introduction of transient refugee populations (data from Statistics Canada 2012)

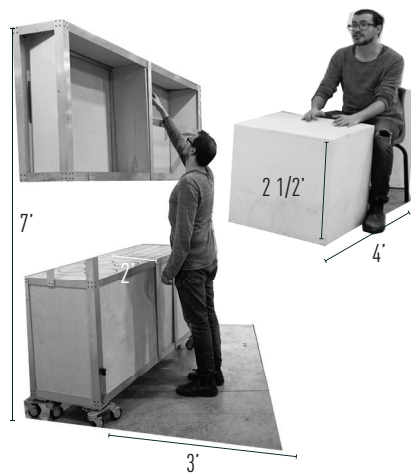
activity: sleep



activity: bath



activity: cook/consume



activity: relax/release

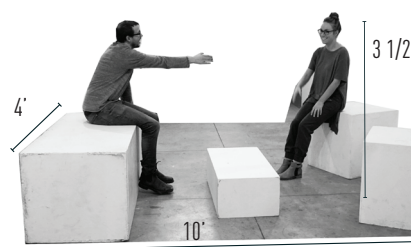


Figure 11. Experiment, quantifying private dwelling, concluding flexibility of space is paramount

(Chase and Leblanc 2015). Once again these accommodations will be temporary until further programs and initiatives have been established.

Arguably military accommodation, since being designed before implementing refugee support, does not address the unique needs of such individuals. It is evident that there is no longer a single characterization of individuals living in military housing, with fluctuating societal norms and incoming transient populations. Further, it is clear that the culture of the Canadian military is changing, and military dwelling is not reflective of such shift.

CHOICE AND DIFFERENCE

When considering building upon the housing agency's portfolio to introduce new methods of dwelling, choice and difference must be paramount considerations.

As military dwelling is uniform and utilitarian in nature, it is important to establish what private dwelling truly encompasses. Christian Norberg-Schulz in his book titled, *The Concept of Dwelling*, describes private dwelling as the establishment of a meaningful relationship between man and a given environment (Schulz 1984, 5). Continuing, that to dwell in the qualitative sense is a basic condition of humanity, and that when one identifies with a place they dedicate themselves to a way of being in the world. Therefore, dwelling demands something from individuals as well as from their places. Likewise, places must offer the rich unique possibilities for identification. Private dwelling thus takes place in the house, a place of refuge where man may gather to express those memories which make up his personal world (Schulz 1984, 8). A quick experiment was conducted by attempting to quantify how much space one needs to dwell, as illustrated in figure 11. Concluding that it is not necessarily how large of a space one occupies, rather how flexible and variant that space is, so when one occupies it, they can make it their own.

Supporting the notion of flexibility, Robert Kronenberg notes that establishing a personal, identifiable private dwelling is dependent on the ability to modify ones surroundings (Kronenberg 2002, 22). In his reading of Martin Heidegger, it is recognized that the process of making a building is what creates dwelling, and gives meaning to place. He then highlights that such dwelling does not have to only embody permanence. Kronenberg references the Japanese landscape as indicating passage, and place through the placement of rocks and encircling trees with rope, all of which were flexible in their nature. Furthermore, he states that the process of making a home is not a finite act, but rather a “transient and continuously developing act” (Kronenberg 2002, 22). Therefore, it becomes evident that greater autonomy over ones own surroundings is vital when diverse groups are assigned a particular private dwelling, rather than getting the privilege of choice.

On a neighbourhood scale, Randolph T. Hester’s, *Design for Ecological Democracy* notes that neighbourhood resilience suffers from extreme homogeneity. Adding that the single most important design action for achieving community diversity is to provide more choice in housing types and arrangements while maintaining overall unity within the neighbourhood. He describes that the housing choices must be reinforced by services for the diverse population and places shared by the disparate groups (Hester 2006, 197). Additionally, Hester criticizes American city makers stating that they continue to design urban areas more and more the same and less and less particular to: vegetative mosaics; micro climates; and air movement patterns. Finalizing that the conveniences of: air conditioning; television; home delivery of mail; private swimming pools; the internet; and underground storm drainage systems separate us from local environments and render us ecologically illiterate (Hester 2006, 196). Yet, when combing an awareness of landscape and nature with a diverse palette of both buildings and program an active citizen can be created.

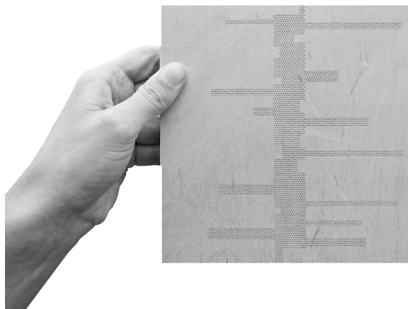
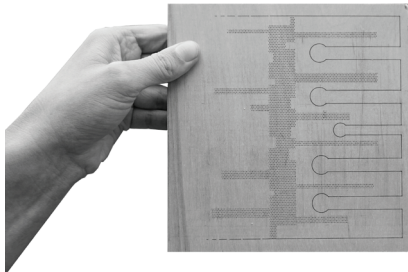
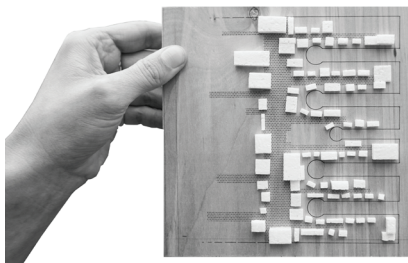
Step 1: Define Axis*Step 2: Define Walkable Boundary**Step 3: Separate Pedestrian and Vehicular Traffic**Step 4: Incubate the Axis with Mixed-Use Program*

Figure 12. The anti-thesis, creating a 'better' nationally applied planning model, deemed not the solution

The aforementioned cutting edge ideas surrounding both dwelling and neighbourhoods will be harnessed and applied at a multitude of scales throughout this study.

THE ANTI THESIS

Due to the drastic issues surrounding today's military accommodation, the thesis inquiry was initiated by developing a top down proposal that intended re-think the entirety of the Canadian Army base. The strategy was centered around defining an axis, and combining the social, commercial, and residential programs offered on base to incubate such axis with mixed-use program. Stages of the planning strategy can be seen in the models presented in figure 12. This strategy was founded in the ideals of new urbanist planning, where walkable communities that diversified their streets were seen to be ideal (Howard 1965). Reflecting upon this exercise it became clear that what was developing was a nationally prescribed model. The aforementioned issues surrounding military housing stem from similar design approaches that were developed during WWII expansion efforts. The only difference was during such time, distinct zoning leading to the suburban 'utopia' was the planning method utilized by the western world and the one the Canadian military deemed fit. Further, by conducting this exercise it became clear that meaningful change in regards to military dwelling could not be done by simply applying a 'better' nationally applied model. The process has to be initiated through a more targeting bottom up approach. An approach that reflects upon the intimate relationship between a communities' strengths, weaknesses and natural environment.

Therefore, this thesis focuses on introducing a new type of military housing that advocates for choice and difference and intends to blur the physical and social barriers between the various user groups that occupy Canadian military accommodations. The aim is to develop a catalyst project which establishes progressive principles that can be

harnessed when Canadian Army bases are considering the future of military dwelling.

The architecture intends to facilitate the social aspirations of the project. Design intentions revolve around three main ideas: connection with the natural environment, intended to establish a sense of place for residents; connection to both the greater community and military community, as a means to encourage social interaction; and flexibility in private dwelling allowing individualization to incubate and flourish.

CHAPTER 2: CANADIAN FORCES BASE GAGETOWN

CONTEXT

Due to the similarities between Canadian Army bases one base was selected for this thesis inquiry. Canadian Forces Base Gagetown was chosen to undergo deeper analysis due to its large size and unique relation to its surrounding community.

Fifth Canadian Division Support Base Gagetown, (Canadian Forces Base Gagetown) is located in the town of Oromocto, New Brunswick and covers an approximate 1 100 000 hectares of land. It is 27.4 kilometres outside of the Fredericton urban centre, as seen in figure 13. CFB Gagetown was the largest military base constructed in the British Common Wealth during the 1950s and is currently the second largest base in Canada and the largest military facility in Eastern Canada. At any one time there is approximately 1000 personnel training on the base and up to 5000 additional personnel during the summer training period. Moreover, the base itself is the second leading public sector employer for the province of New Brunswick. It contributes over 220 million dollars to the local economy and more than 500 million to the provincial economy annually (Canadian Forces 2015).

The base has a unique supportive relationship with the surrounding Oromocto community, as the population formed around the base in direct response to the military efforts of the time. Military members and their families represent roughly seventy-five percent of the more than 10,000 residents of Oromocto (Canadian Forces 2015). Further, the base provides a vast array of both infrastructural and social services to the community. Including: water treatment; sewage treatment; schools; community centers; recreation facilities; and health care clinics.

Distinction between the base community and Oromocto can be seen in figure 14.



Figure 13. Location map demonstrating the distance between CFB Gagetown and urban centre (base map from OpenStreetMap n.d.)



Figure 14. Canadian Forces Base Gagetown and surrounding Oromocto community (base map from OpenStreetMap n.d.)

PLACE AND LANDSCAPE

Dense forests surrounding CFB Gagetown facilitate not only the forestry industry which has been New Brunswick's mainstay since the early 1800s, but also the vernacular context and leisure activities within this area. Vernacular homes within this region of New Brunswick are typically seen as the New England interpretation of the Georgian form, simple asymmetrical hall and parlour folk dwellings, constructed primarily from locally sourced wood (Ennals and Holdsworth 1981). Historically, these houses are characterized to have small overhangs and utilize traditions of shipbuilding. Moreover, the dense forest found within this region was traditionally home to nomadic hunter and gatherers and is still widely used for recreation by both the Oromocto community and individuals residing within the military domain. These rich qualities of place will be expressed on-site through the inclusion of dwellings and community space that embody such environment.

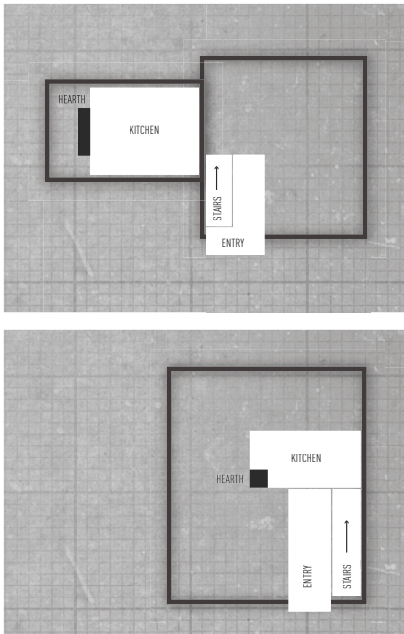


Figure 15. Diagrammatic plans demonstrating vernacular homes within this region (base plans from Ennals and Holdsworth 1981)



Figure 16. Photo portraying the local environment of Oromocto New Brunswick (Cusson 2011)

A vast array of social services exist within CFB Gagetown, although one program not incorporated within the base is a food supplier. In 1958 during the establishment of the military community in Oromocto, the Canadian Forces utilized the suburban planning method that the rest of the world deemed fit. Although such patterns of suburban development created separation between people, the land on which they live, and walking accessibility to food. Instead of gardens brimming with fresh fruits, vegetables, and herbs, military residential lawns found are surrounded by groomed landscaping (Lodal 2008). In order to obtain food one must travel by car to the local Sobeys Grocery off base, as illustrated in figure 14 on the previous page. This diminishes the ecologically literacy of individuals as people must rely on business practices instead of a localized network of food. This site issue will be addressed through the provision of public amenities which facilitate regaining a local food culture.

HOUSING STOCK AND USERS

There are three primary types of military housing offered on base, which can be seen as three levels of threshold. First, family housing, second, single member housing and third, training and support housing. These three levels of threshold relate directly to three levels of isolation, and therefore implicitly stigmatize each user group in their own way, and suppress interaction amongst individuals. Such housing distinction can be seen in figure 19 on page 20.

Family Housing

CFB Gagetown has 1461 family housing units, commonly referred to as either Private Military Quarters or Private Married Quarters, both fall under the abbreviation (PMQs). PMQs were initially constructed when the base was established in 1958 and were designed to provide members and their families accommodation outside the physical enclosure of the military base. As previously mentioned such dwellings have undergone minor changes, although the design styles have not altered since conception and are uniform across the country. Therefore, within this nationally applied housing model, locality and place are irrelevant. Today, types include detached two, three, and four bedroom units with varying floor plans, and duplex/ row housing. The current inventory is seen in figure 17.

Single Member Housing

When Base Gagetown was first established in 1958 a number of barrack blocks were constructed to support the line and training units on the base. Each barrack block was designed to accommodate 250 persons and included consolidated shower and washroom facilities, common laundry facilities, and storage. Individual rooms were designed for up to eight individuals and had sufficient in-room storage to accommodate a

<i>FAMILY HOUSING</i>	<i>Quantity</i>
2 Bedroom	223
3 Bedroom (detached and semi-detached)	1006
4 Bedroom	232

Figure 17. Chart of family housing stock (National Defence and the Canadian Armed Forces 2015)

soldier's basic requirements. Additionally, there were no integral dining areas designed within these facilities, as such activity took place in separate dining halls. This factor limited the opportunity for single-members to prepare their own meals. These initial barracks are still in use today, with only minor improvements applied, including reducing the number of soldiers per room to two. More recently in 2008 and 2010 there have been brand new barrack blocks constructed, with improvements such as, integrated bathrooms and the allocation of individual rooms. Although, the initial robust approach to design has not altered.

Training and Support Housing

Camp Argonaut is the most secluded section of Canadian Forces Base Gagetown and is primarily home to all cadets training in Atlantic Canada. Throughout the summer months all the cadet's requirements are accommodated at the Camp including, dining, first line medical support, library, and training facilities. Further, during such time individuals are housed in barracks style complexes, similar to the ones offered to enlisted single members. From a logistical perspective Camp Argonaut is a self-sufficient collective. This factor led the decision to house Kosovo refugees in the Camp's barracks in 1999. The Canadian military thought the approach of isolation was ideal. This restricted refugees from interacting with both the military community and surrounding Oromocto community and confined them within the most secluded location on base. Moreover, the Canadian military still intends to house today's incoming Syrian refugees in similar barrack blocks across the country.

It is important to note that barracks that are used for short-term accommodation can be seen as the exception, as facilitating training is the primary duty of such facilities.

Orthographic drawings represented in figures 20-21 illustrate the stagnant evolution of both family and barrack housing examples. To view a comprehensive set of all housing types refer to Appendix C. Also, to view a comprehensive image catalogue of military housing across Canada refer to Appendix B. Furthermore, it is clear that the aforementioned dwelling styles do not represent change, rather they embody historic polices.



Figure 18. Images demonstrating the robust nature of barracks, photographed in August 2015

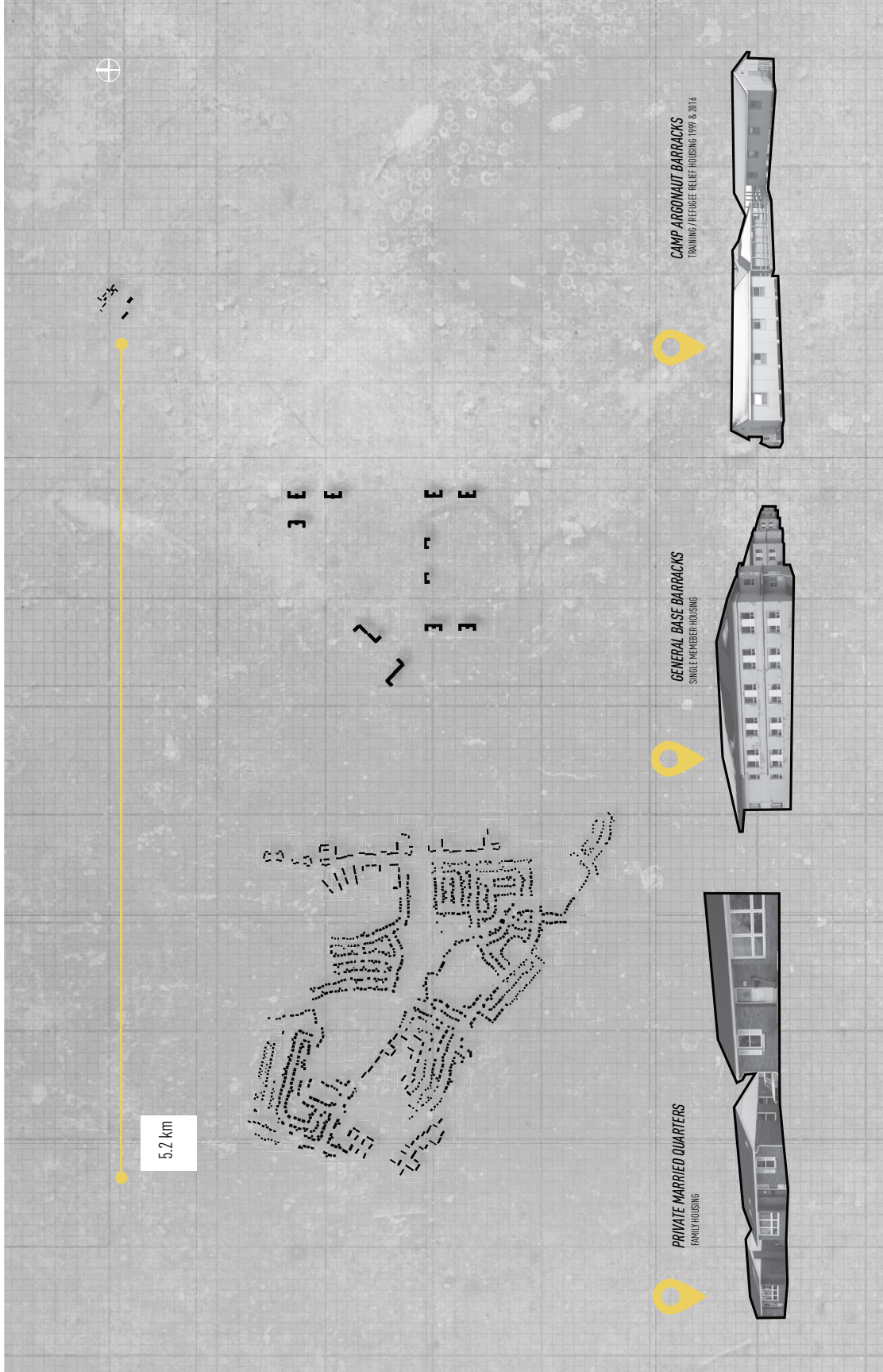


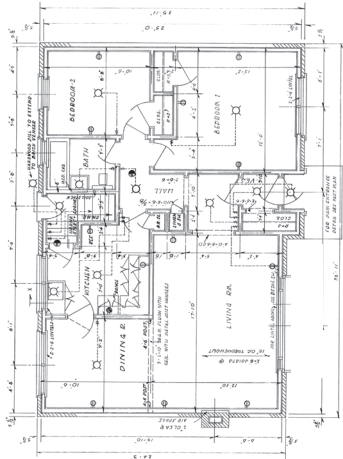
Figure 19. Diagrammatic map illustrating the distribution of housing types on CFB Gagetown (base map from OpenStreetMap n.d.)

1958

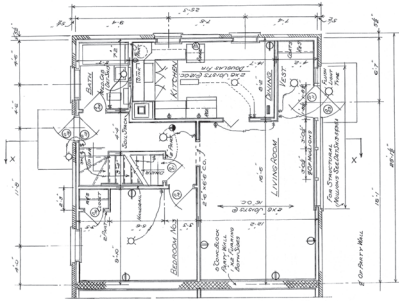
1958

1982

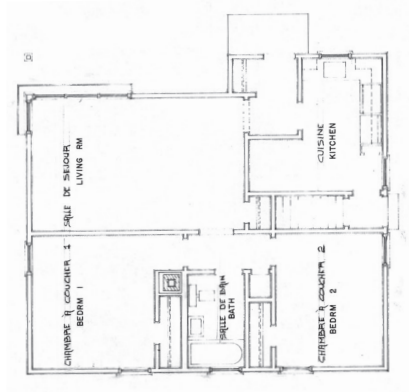
1988



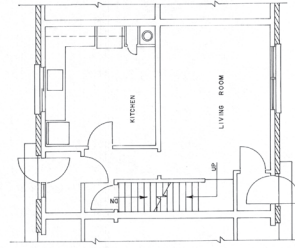
ground floor plan



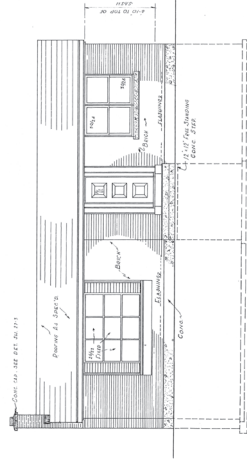
ground floor plan



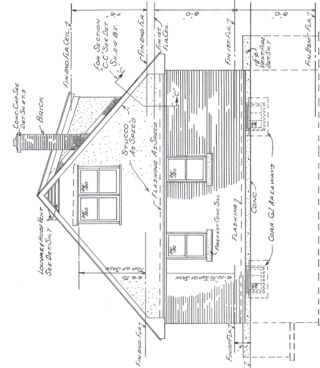
ground floor plan



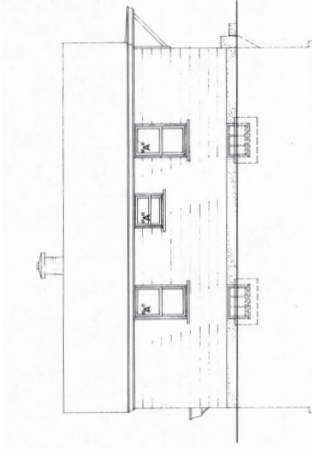
ground floor plan



front elevation



side elevation



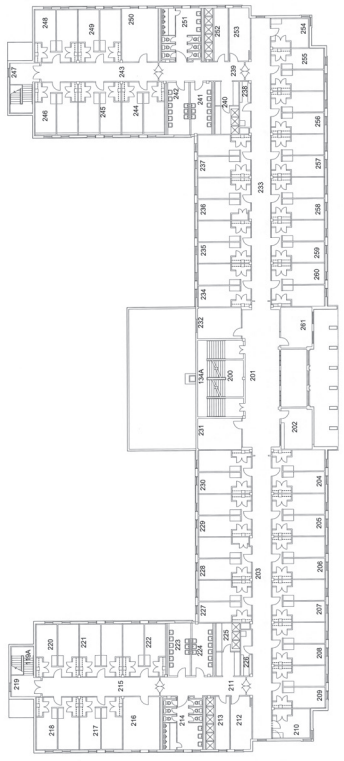
rear elevation



front elevation

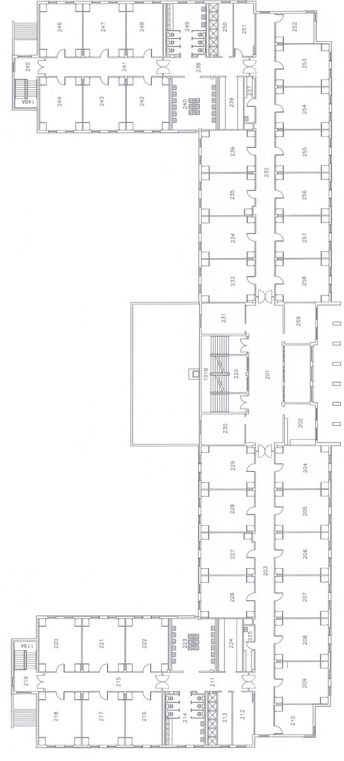
Figure 20. Examples of the evolution of family housing on CFB Gagetown, illustrating stagnant design ideas (National Defence and the Canadian Armed Forces 2015)

1985



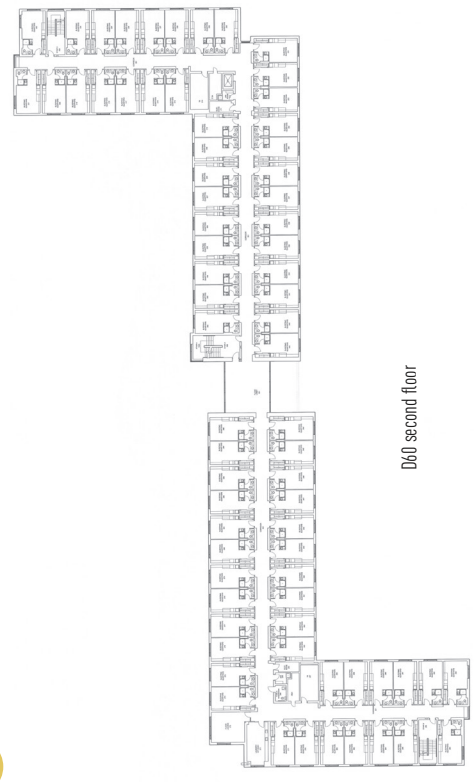
HZ1 second floor

1985



D25 second floor

2008



D60 second floor

2010



G8 first floor

Figure 21. Examples of the evolution of barracks on CFB Gagetown, illustrating stagnant design ideas (National Defence and the Canadian Armed Forces 2015)

CHAPTER 3: DESIGN

The intention of this proposal is not to replace all military accommodations, or house every user, rather to push traditional approaches to provide a new type of mixed-use housing in the context of a stagnant environment. The primary design goal is to create a viable seed that may serve to promote change in future residential development for Army bases across Canada.

PROGRAM

A layered programmatic approach will address the three main aspirations for the project including: first, connection with the natural environment, intended to establish a sense of place for residents; second, connection to both the greater community and military community, as a means to encourage social interaction; and third, flexibility in dwelling, an arguable necessity when considering diverse transient residents.

First, **private** spaces which are made up of one and two-three bedroom units will be designed for single members, military families, and, when necessary, transient refugee populations. The private program intends to break down the traditional ideas of separating user groups, allowing for everyday diversity. It will do so through flexible living arrangements, so when residents occupy a dwelling for a short period they have greater autonomy over their space and can make it their own.

Second, **semi-private** spaces which include a communal lounge, event space, and makerspace will be designed to facilitate social interaction between residents. As previously stated the culture of the military is changing, and often with that comes both partners occupying a career role. Due to frequent relocations home based businesses are booming for the non-service partner, although traditional military housing does not take this into account. Additionally, when transient refugee groups

are trying to re-establish their families in another country, resources on gaining employment or skills training opportunities are not readily available for on base. Therefore, the makerspace intends to provide resources, space, and a flexible work environment to facilitate such needs. Further with family sizes evolving due to a higher percentage of blended families, large spaces for gathering within the home are limited. The lounge and event space help facilitate these needs.

Third, the development of **public** space is a crucial layer to the program, allowing a connection to be established between the building and surrounding Oromocto community. This connection is critical as it ensures that residents are not stigmatized and separated from the neighbourhood whole. Such public space allows the community to engage with the landscape and environment through a community forested garden, educational kitchen, and market. These spaces foster another layer of social interaction, provide a needed alternative food distributor, and begin to define the project as a node for the greater community. Such aspects of place and engagement are not otherwise apparent in the nationally applied Army base model.

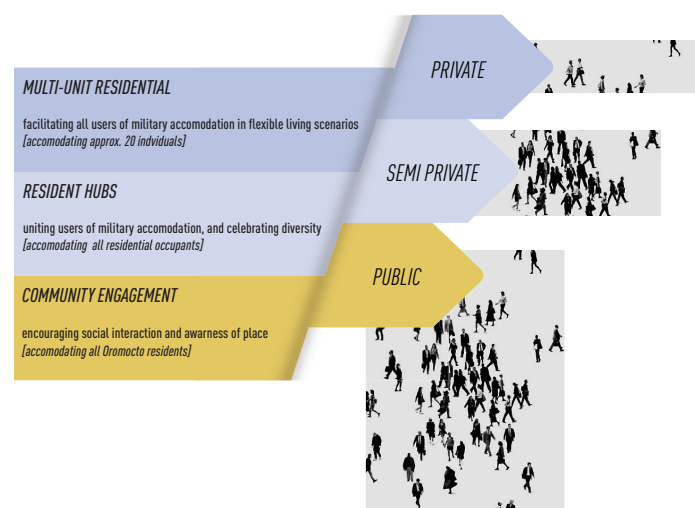


Figure 22. Programmatic Summary

SITUATING

The connection between the building and its surrounding community is fundamental to site selection. This connection ensures that residents can interact with a diverse group of individuals while simultaneously being surrounded by a multitude of services. Jane Jacobs notes that in real life, only diverse surrounding have the practical power of inducing a natural, continuing flow of life and use (Jacobs 1991, 15). Therefore, a site was selected that can allow for a high level of interaction due to four critical factors: first, its position on the hinge point of the Oromocto community, base community, and base operations; second, its walkable network of public program; third, its adjacencies to varying scales of residential program; and forth, its vast open space which holds potential to evolve into a universal community hub. The existing site condition can be seen in figure 23, and the site selection factors are illustrated in figure 24.



Figure 23. Image collage depicting existing site conditions

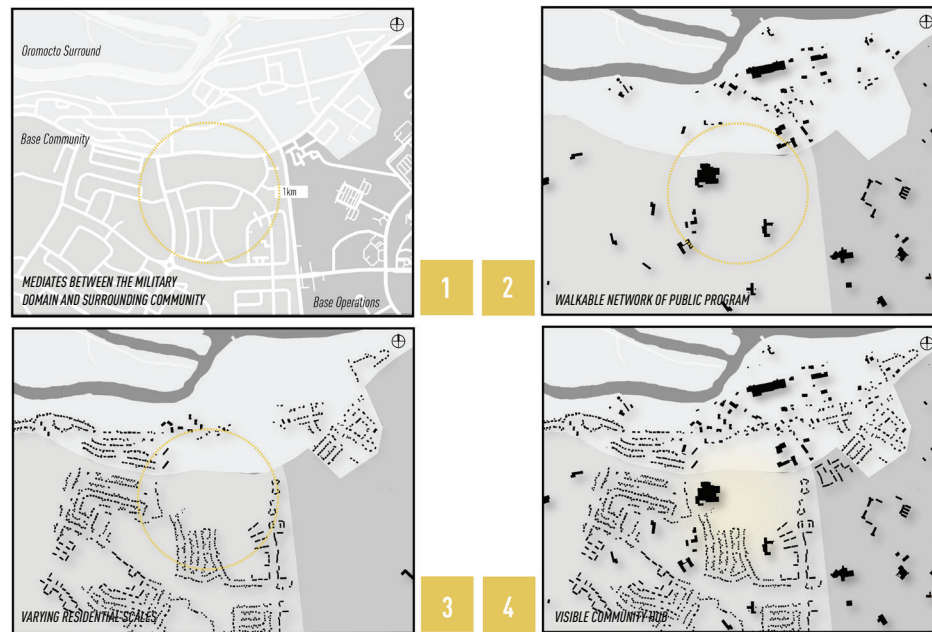


Figure 24. Site map depicting surrounding support network (base map from OpenStreetMap n.d.)

STRATEGIES

Site Strategies

Since located at the end of a residential block, but surrounded by larger commercial and social program, this proposal aims to adhere to the compositional make up of the site. It will do so through adjusting the scale and rhythm of the building to fit seamlessly into its surroundings.

Step One:

The first stage in this process is to harden an existing foot path which connects the neighbouring houses to the high school beyond. This also scales the site to a common block size.

Step Two:

The second strategy, is to establish rhythm lines which are projected from surrounding buildings to support decisions regarding building footprint. This also allows the building to fit within the rhythm of the neighbourhood whole.

Step Three:

The third strategy is to anchor the corner of the site, adhering to an average set back and allowing the option for future mixed-use development along the street edge. This proposed mixed use zoning which is represented to the east of the site will allow the area to become a hub for the greater community, and allow this proposal to become a node that initiates such growth.

The series of diagrammatic site models represented in figure 25 illustrate each site strategy, and the site plan depicted in figure 29 further represents how the site engages with its immediate context.

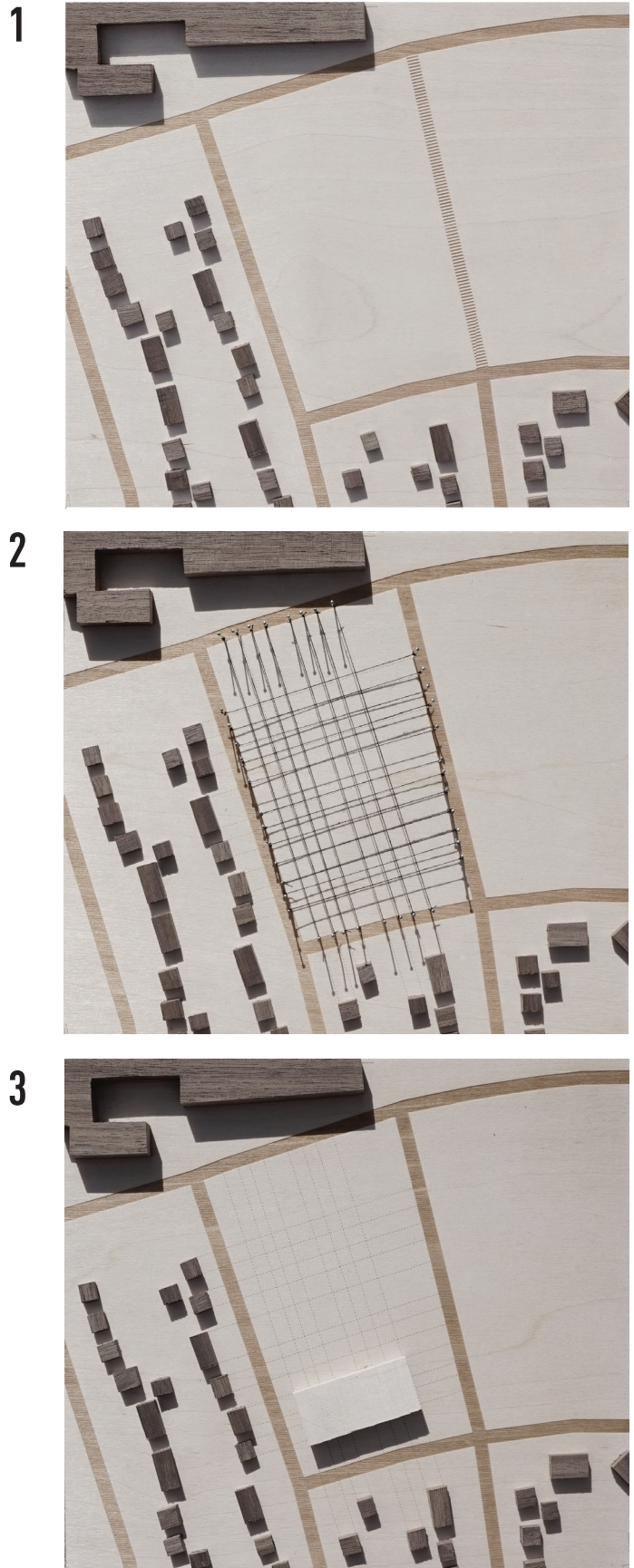


Figure 25. The aforementioned site strategies

Architectural Strategies

Building upon the three key site strategies, three architectural strategies will begin to define the building phase of this thesis. The series of diagrammatic models in figure 26-28 illustrate each architectural strategy.

Step One:

The first architectural strategy intends to set back the private program to be the third level of threshold off the street edge. This strategy allows such residential space to embody place with the use of locally sourced materials and a form that allows for optimal solar gain in the central interior of the home and on the north and south face facades. This strategy is opposing a nationally applied military standard of a universal material palette, and dwelling style.

Step Two:

The second architectural strategy intends to allow the semi-private zones to activate the in-between space between the residential program. Such semi-private zones are also intended to push forward to be the second level of threshold off the street edge. This strategy opposes the traditional un-used stagnant side lawn found in military 'suburbs' today.

Step Three:

The third architectural strategy allows for the private space to be the first level of threshold off the street edge, drawing users into the communal program. Such public space is situated to face the rising sun, as the hours of operation would lean towards the early day. This strategy also intends to articulate public invitation by allowing the public space to be the most transparent programmatic portion of the building. This strategy opposes the stark public buildings that read equally as opaque as residential dwellings, and provide no interaction at street level.

1

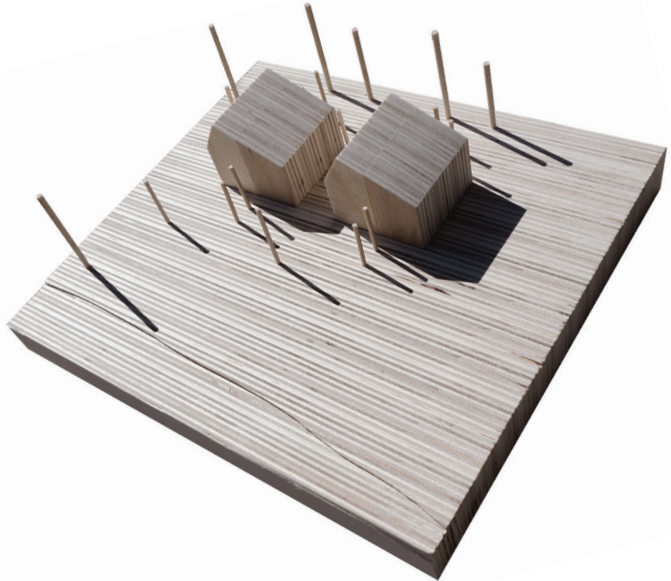


Figure 26. Diagrammatic models illustrating architectural strategy one vs. opposing condition

2



Figure 27. Diagrammatic models illustrating architectural strategy two vs. opposing condition

3



Figure 28. Diagrammatic models illustrating architectural strategy three vs. opposing condition

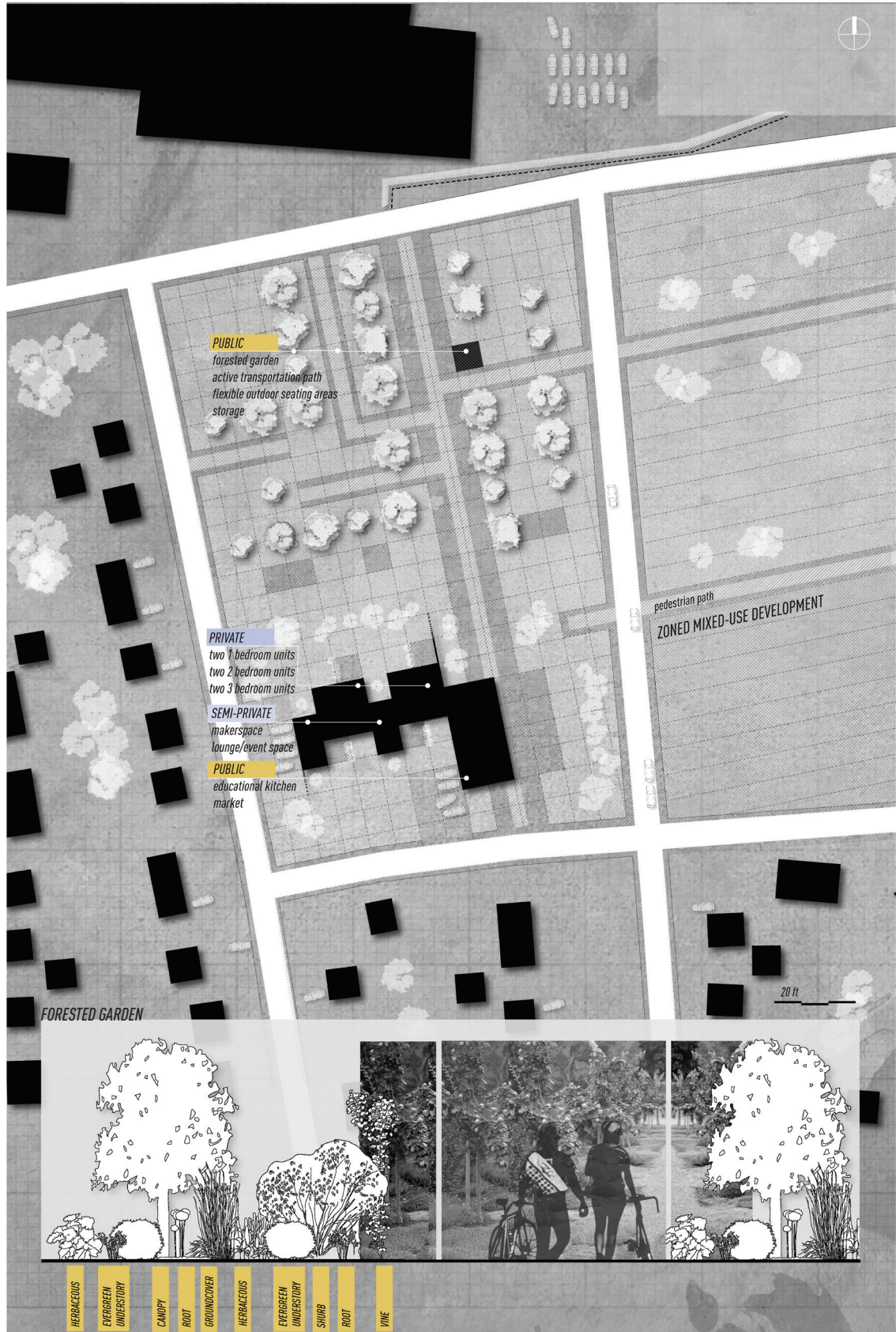


Figure 29. Site plan expressing how the strategies engage with their immediate context (base map from OpenStreetMap n.d.)

BUILDING ELEMENTS

A series of architectural intentions or building elements begin to articulate the project further.

Non-Distinction

It is crucial that all residents are treated as equals, without distinction based on their marital or national status. This begins with not differentiating units based on user status. The intention is that all users of military accommodation are able to be housed within this building and units are allocated based on family size. Therefore, both military families, transient refugee populations, or single members can be housed in either the one, two or three bedroom units. Additionally, non-distinction is addressed in the notion of flexibility. It is paramount that the dwellings designed are flexible, so when one occupies a home for a temporary time they can make it their own. This subject of flexibility is later addressed through a more detailed analysis of the system.

Environment

As previously stated, the architecture strives to create a connection to the natural environment present within this region. This manifests in different ways throughout the project. It can be seen as public program, as the forested garden and educational market allow opportunities for ecological education. Here, individuals across the base and surrounding community can gain skills related to forest farming and deploy them within their own private spaces. Additionally, this connection to environment manifests as solar orientation, as locally sourced materials, or simply by engaging with an exterior semi-private courtyard.

Materiality + Structure

This proposal aims to utilize a set of materials rooted in the local wood

building culture. Therefore, wood frame construction is the primary structural system utilized within this project as it highlights the traditional shipbuilding techniques found within the region. The private portion of the program is clad in naturally greyed vertical cedar laths, while the semi-private and public zones provide a visible juxtaposition by being clad in blackened cedar laths. All of which intend to instil a greater sense of place. Distinction between the two primary materials can be seen in figure 30.

Privacy + Entrance

When introducing mixed-use program, and considering the user groups occupying this project, privacy is an arguable concern. The aim is to address privacy through implementing locally sourced concrete fin walls that dissolve into both the street and garden. These fin walls are intended to act as blinders for adjacent public activity. Movable shade screens give the option of privacy within the residential interiors, while entrances are staggered from both the north and south sides of the building to offer alternative access. Further, exterior lighting brightens both the forested garden and pedestrian path during the night to ensure safety amongst users.



Figure 30. Blackened cedar lath (top), naturally greyed cedar laths (bottom)

Circulation + Service

The circulation and service zones are programmatically grouped together in each unit to form a core that organizes the interior spaces. This core mediates both the hard and soft approaches to flexibility in each unit, and mediates a clear fenestration strategy that highlights the served zones.

The following building elements are articulated in a series of axonometric diagrams in figures 31-32, additionally they are seen throughout the visualisations and orthographic drawings portion of this thesis, beginning on page 38.

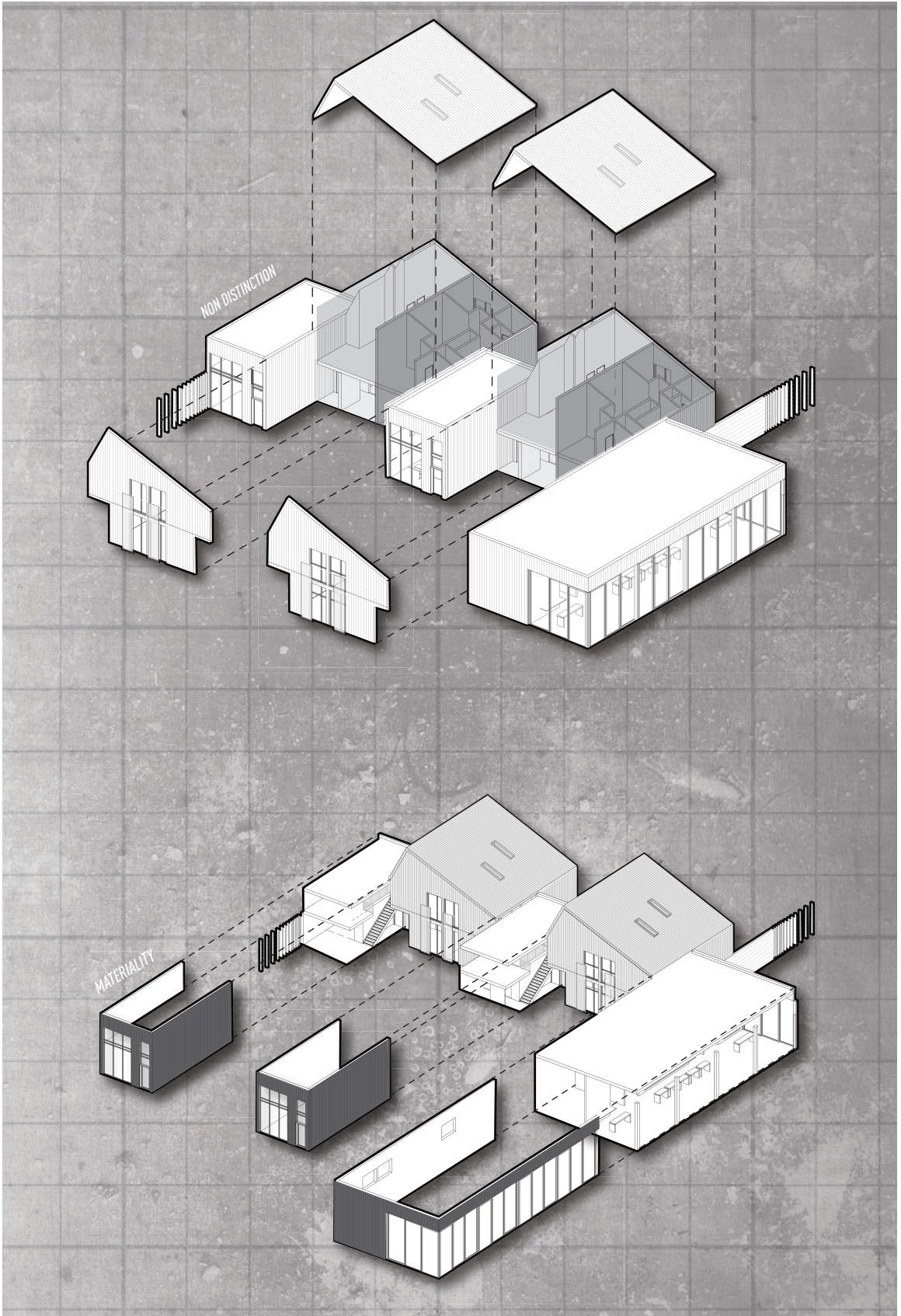


Figure 31. Diagrams expressing non-distinction and materiality

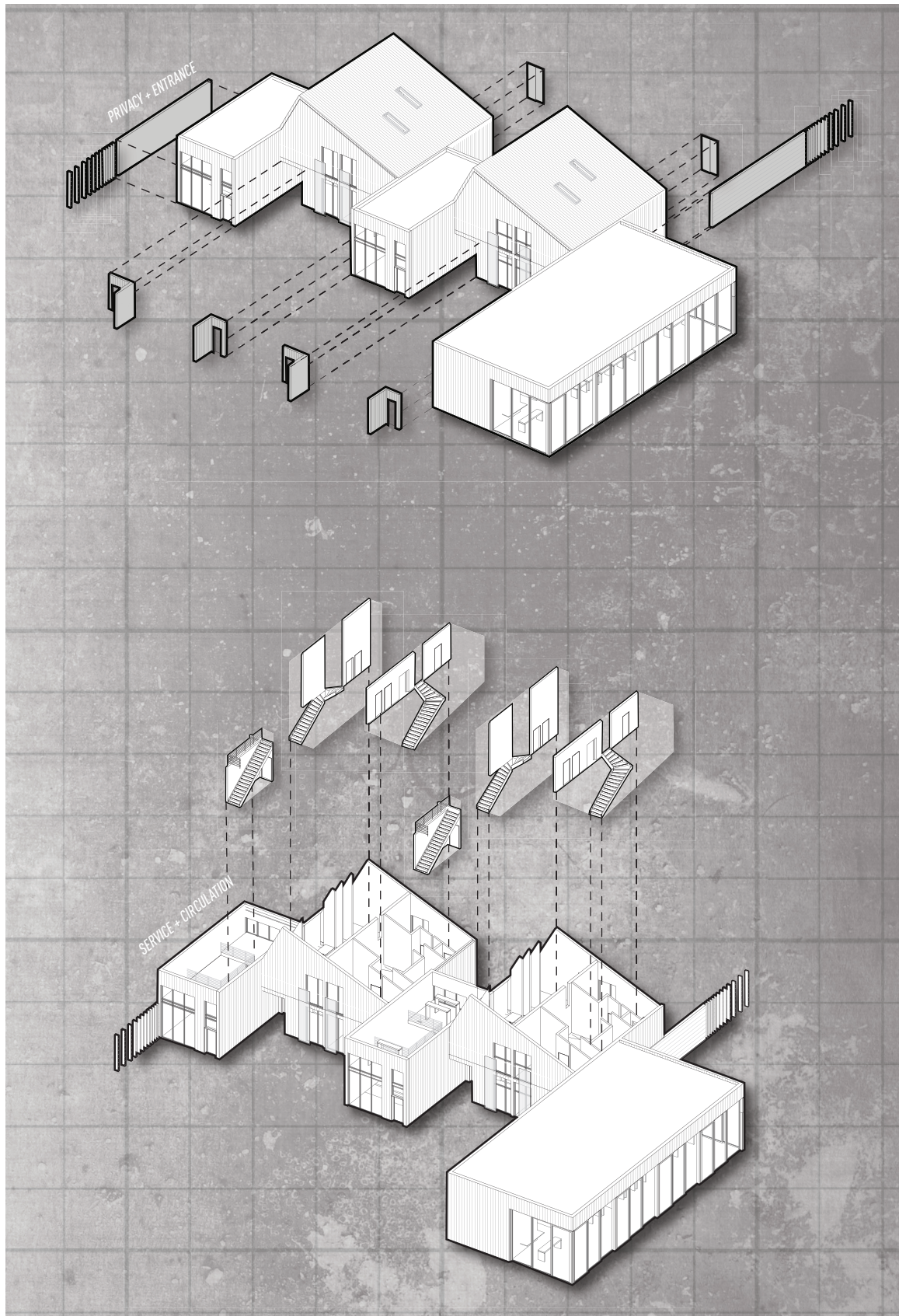


Figure 32. Diagrams expressing privacy/ entrance and circulation /service

VISUALISATIONS + ORTHOGRAPHS



Figure 33. Winter scene on the south facade



Figure 34. Spring scene on the east facade

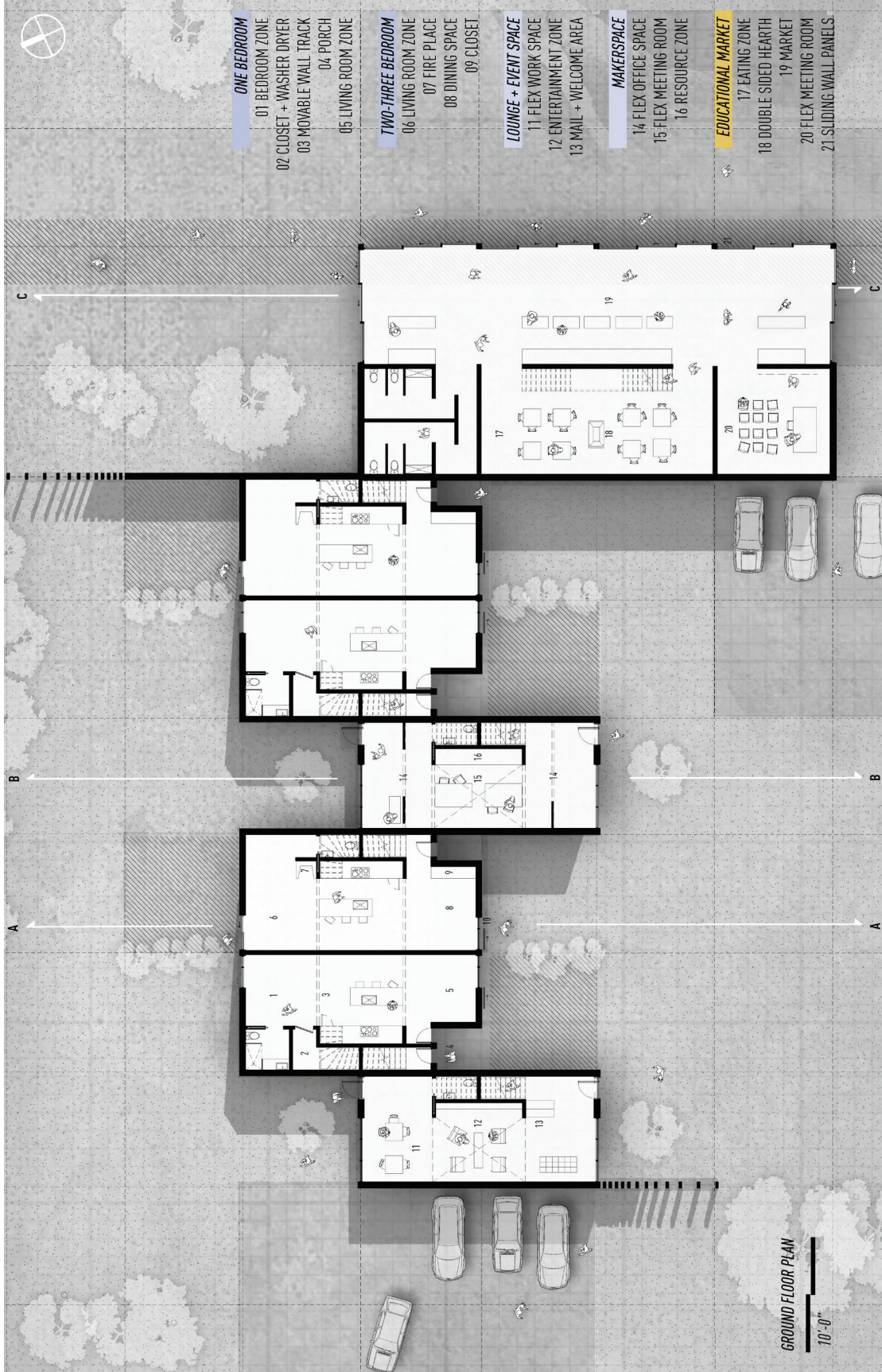


Figure 35. Ground floor plan

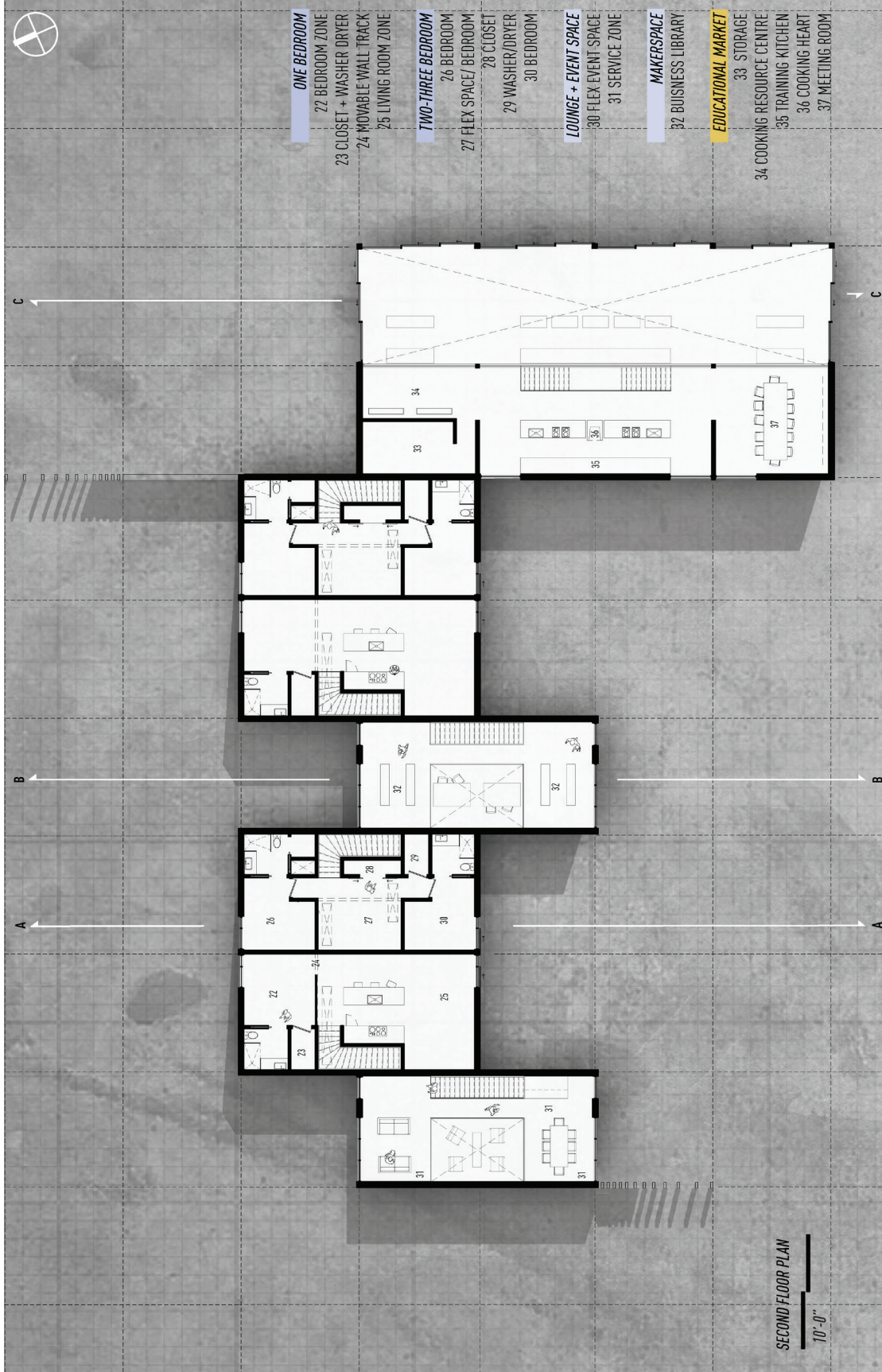


Figure 36. Second floor plan



Figure 37. Section cut through two to three bedroom residential unit



Figure 38. Section cut through makerspace



Figure 39. Section cut through educational market space

FLEXIBILITY

Flexibility was a paramount consideration for this thesis inquiry as residents come and occupy these dwellings until their next unknown posting and therefore require greater autonomy over their domain. This concept was addressed first through the notion of soft flexibility, essentially designing a plan that will allow for multiple living scenarios. Second, the concept was explored through the notion of hard flexibility, having the opportunity to manipulate rooms with movable parts.

For example, in the two to three bedroom unit the ground floor plan allows options as to where the traditional living and dining spaces are located; or, if one requires a more private space, such as a designated office or prayer room they are able to close the area off with the use of movable walls which extend out from a concealed closet, as represented in figure 40.

Additionally, for example, within the one bedroom unit, if one has guests over the plan can be left completely open as the bed folds into the wall; or, if the individual desires privacy they can close the room again with the use of the concealed movable wall. Enlarged plans, figures 41-44, on the following pages demonstrate a variety of floor plan arrangements, divided in terms of soft and hard flexibility.

In addition, figures 45-46, illustrate two flexible details that are incorporated in this project. First, the movable wall is detailed to have a level of acoustic isolation and be able to bare weight if one wants to screw shelves into it. Additionally, the intention was that if it was not in use the wall could hide in a concealed closet. This is represented in a section detail, plan detail, and 1:1 detailed model on page 50. Second, a detail of the exterior movable shade screen is articulated, which allows residents to see directly out but on an oblique angle one can not see in, a sectional detail and model of the screen convey this idea on page 51.



Figure 40. Interior visualisations illustrating the movable wall extending out from a concealed closet

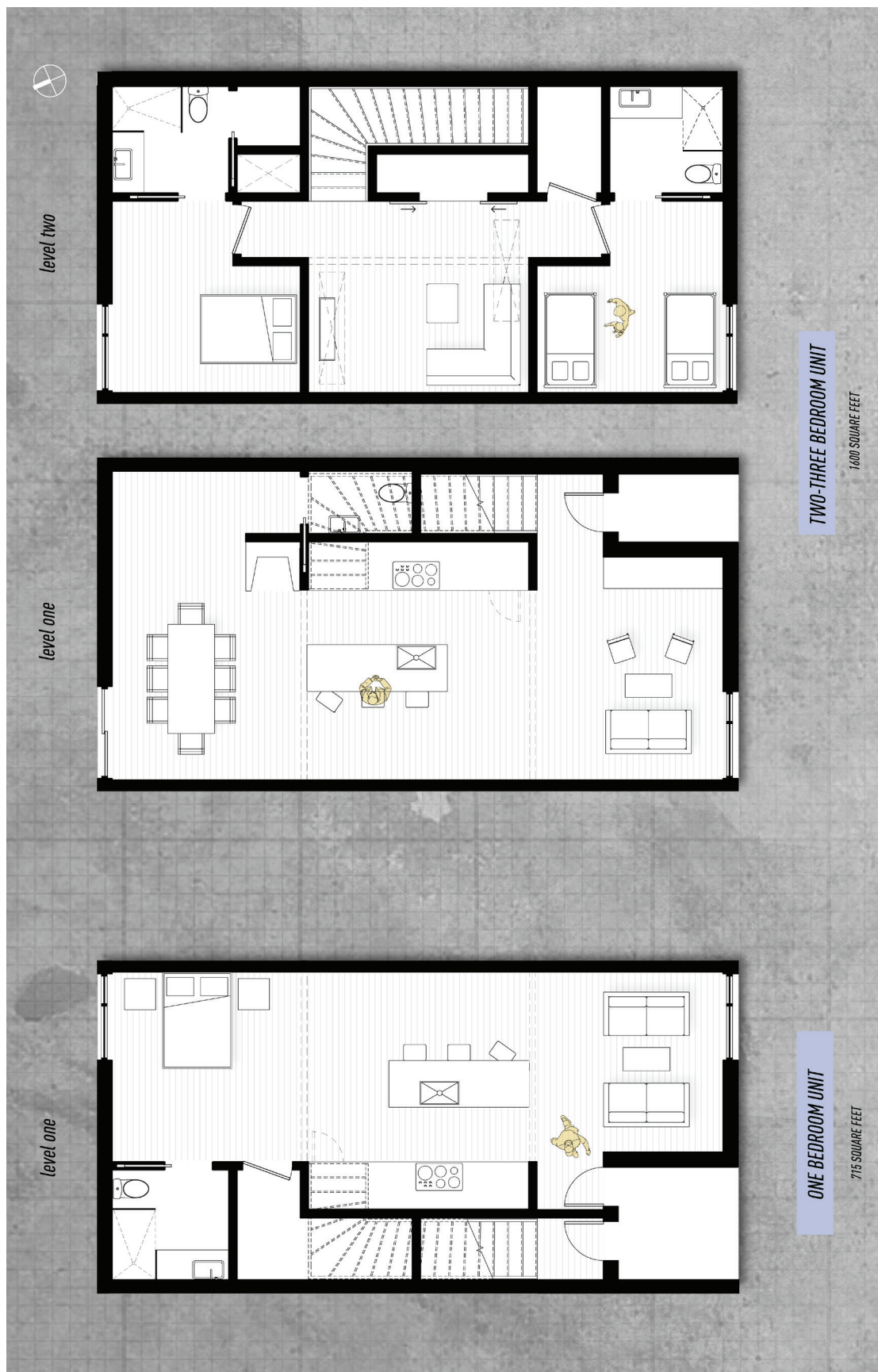


Figure 41. Soft flexibility plan iterations part one

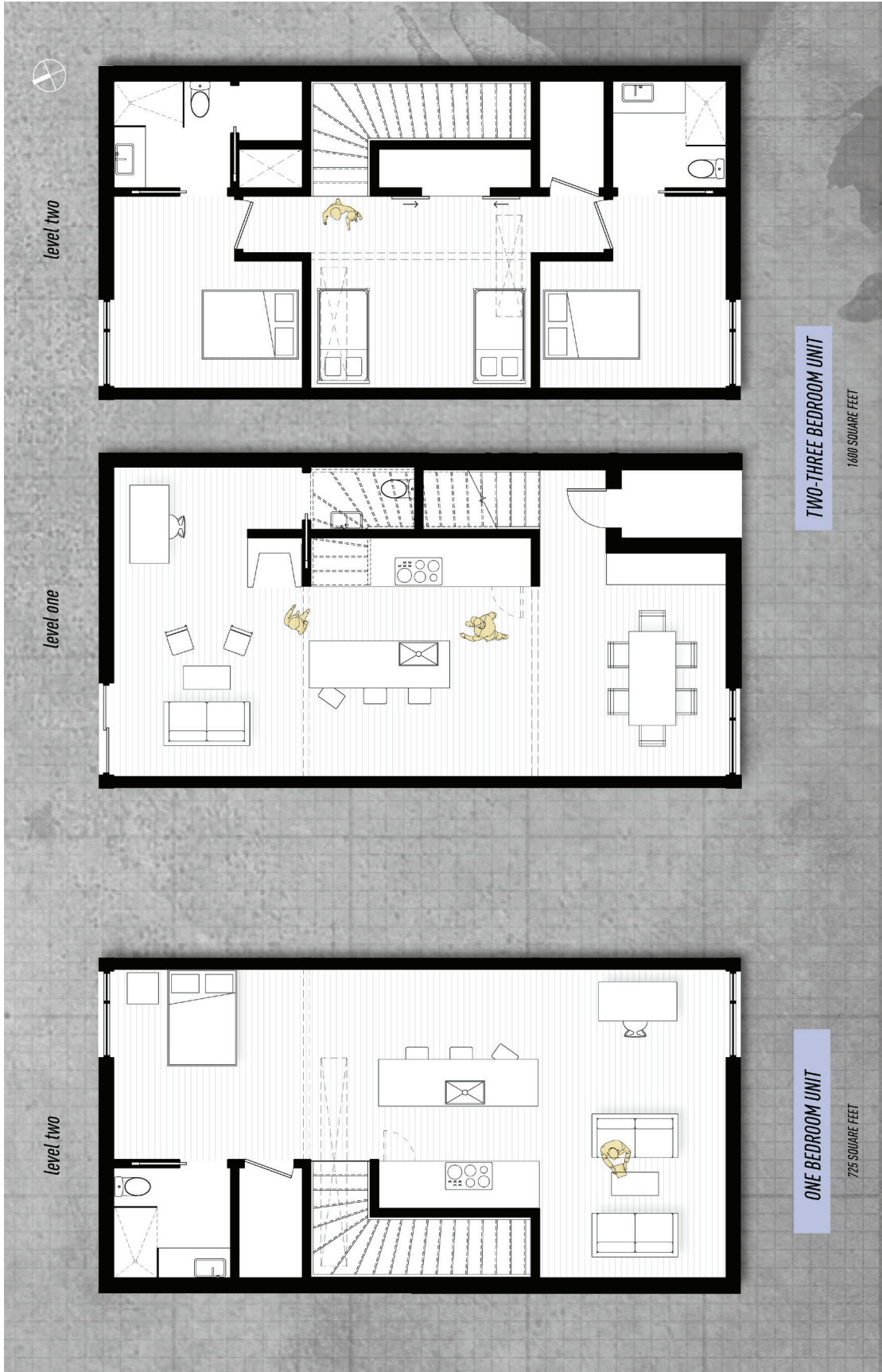


Figure 42. Soft flexibility plan iterations part two



Figure 43. Hard flexibility plan iterations part one



Figure 44. Hard flexibility plan iterations part two

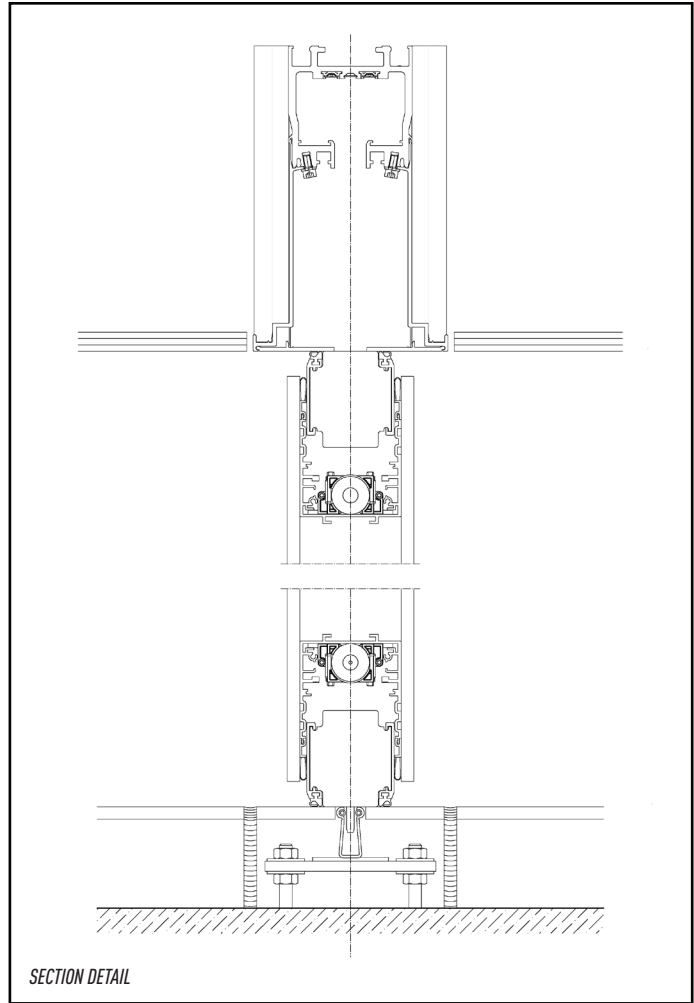
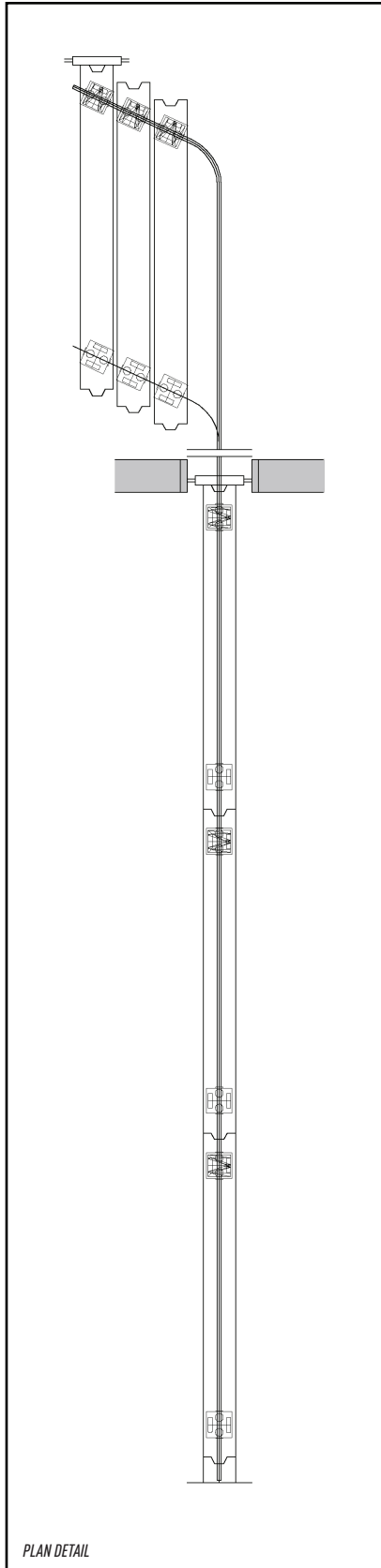


Figure 45. Movable wall partition detail represented in plan, section, and model form

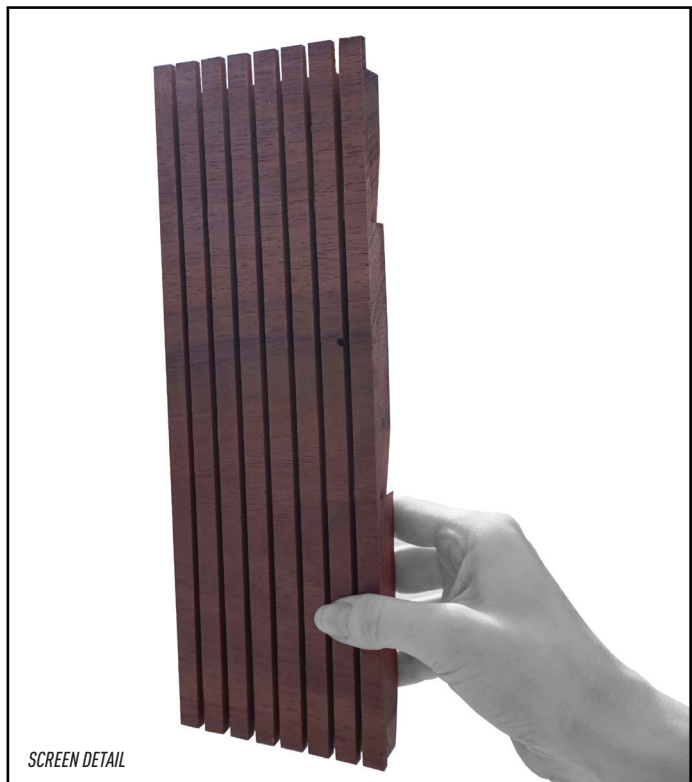
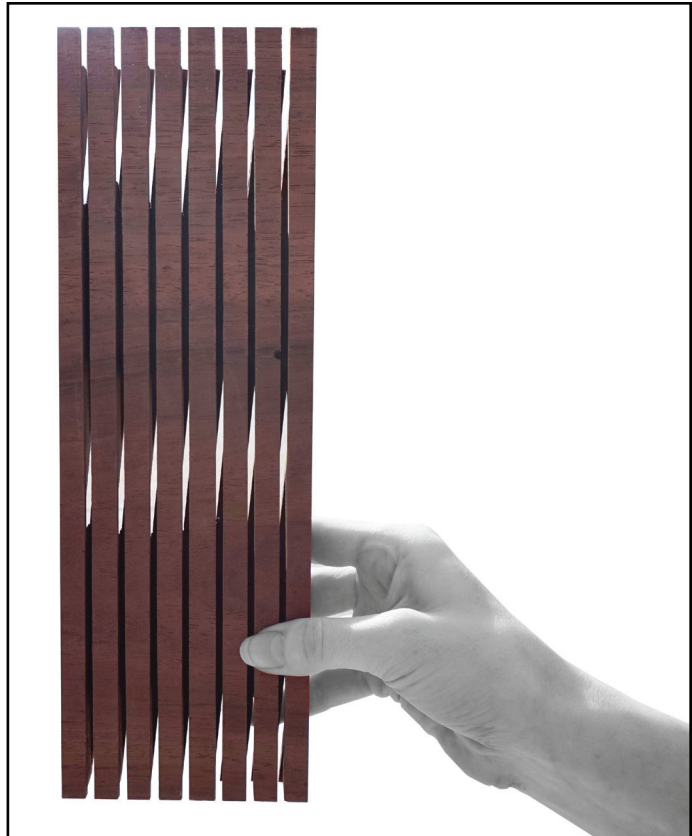
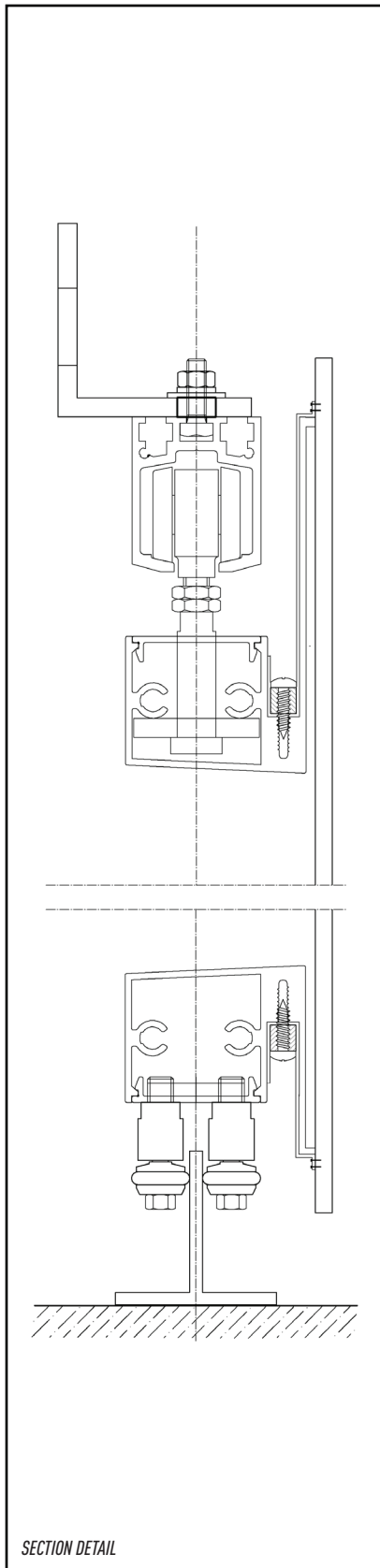


Figure 46. Exterior movable shade screen detail represented in section and model form

CHAPTER 4: CONCLUSION

Architecture that embodies choice and difference has the practical power to push the conventional boundaries of Canadian military dwelling to reflect a shifting military culture and increasingly diverse user group. It is clear that targeted approaches to military residential design can instil a sense of pride and place for the individual and strengthen what it means to dwell collectively in the Canadian military domain.

As previously stated, this thesis strives to act as a seed that promotes change in residential development for Canadian Army bases. Although in doing so it also aims to establish clear principles that can be reviewed when considering development at a national scale. Such principles intend to aid the decision making process for both small scale renovations and new base development. Principles are outlined below:

1. Siting

Re-evaluate base adjacencies between social, commercial, and residential program, and target a zone for development where these programs begin to cluster. In many of the post World War II military bases, this zone is found within the private married quarters patch. Target a site that holds the potential for bordering mixed-use growth, allowing the development of an identifiable community hub. Moreover, limit the stagnant spaces between buildings, and articulate any in-between space with usable program.

2. Understanding Place

Understand the local culture of the region, including adjacent industries, landscapes, historical significance, or even a celebrated recreational activity. Highlight such community strength by incorporating public program within the hub that allows a multitude of individuals to experience the richness of the place they inhabit. Additionally,

understand environmental constraints including, solar orientation, and local building materials, and incorporate these techniques into the design and building process. Such practices can also be considered when embarking on renovating current facilities.

3. Multiple Stakeholders

Incorporate program within the base community that encourages multiple stakeholders, such as the forested garden example presented in this thesis. This example directly involves all base residents, neighbouring schools, surrounding community members, and base management. This concept allows ownership to be transferred over time, and allows the base to develop within its broader community.

4. Rethinking the User

Rather than separating residents based on status, unite users by allowing a diverse group to occupy adjacent dwellings, bringing diversity to the whole. When engaging in refugee support, allow incomers to be ingrained within the community, living beside a wide range of welcoming neighbours. Facilitate this unity throughout the base, but when considering new development within the aforementioned hub, deliberately design for this type of interaction.

5. Community Stewardship

Allow any new social or commercial development to also target the surrounding community, blurring any social divide constructed between the base community and surrounding region. Allow this public program to be strengthened with the introduction of mixed-use residential program, creating more opportunity for social interaction. For current social and commercial facilities undergoing renovation, strategically modify them to become more visible to the public. This could be achieved through greater transparency within the facade or simply through inclusive

public invitation.

6. Space Planning

Allow the interior spaces of new residential dwellings to be flexible, whether it be through the introduction of easily manipulable parts or through open space planning. This strategy allows individuals greater autonomy over their environments, and thus evokes a deeper sense of home.

In sum, the hope is that these principles and this thesis at large, not only advocate for social and physical change in regards to the Canadian Forces approach to dwelling, but also interject into a stagnant area of discourse that is in need of a pressing forward thinking alternative.

APPENDIX A: EXISTING PROGRAM LIST

RESIDENTIAL

- Primary Military Quarters:
 - Multi-Unit
 - Duplex
 - Apartment Style
 - Single Family Homes
- Barracks:**
 - Dorm Style Complexes



EDUCATION + HEALTH

- Education:**
 - Family Resource Centre
 - Base Schools
 - Teen/ Learning Centre
 - Daycare/ Casual Care
 - Library
- Health:**
 - Child Clinics



LEISURE + CULTURE

- Indoor:**
 - Swimming Pool
 - Gym/Track
 - Chaples/ Padres
- Outdoor:**
 - Sports Field/ Trails
 - Community Garden
 - Children's Park



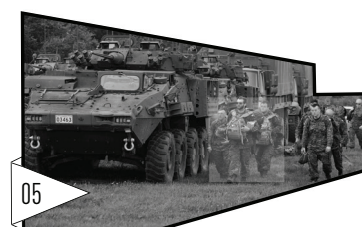
COMMERCE

- Internet Cafe
- Community Coffee
- CANEX Store
- Farmers Market
- Home Based Businesses
- SISIP Financial



BASE OPERATIONS

- Logistics:**
 - Fleet Maintenance Garages
 - Supply Warehouses
 - Transportation Fleet Facilities
- Base Engineering:**
 - Work Yard
 - Facility Management Building
- Base Telecommunication**
- Base Headquarters:**
 - Pay Offices
 - Base Administration Offices
 - Base Communication Offices
- Unit Lines [Each Unit]:**
 - Unit Accommodation
 - Unit Headquarter
 - Vehicles/Fleet Buildings



Graphic illustrating the programmatic variety found across Canadian army bases (Canadian Army 2015)

APPENDIX B: EXISTING IMAGE CATALOGUE

Barrack block



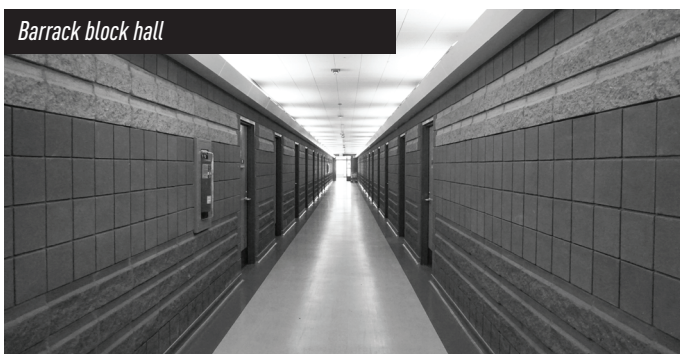
Primary military quarter patch



Outdoor recreation space



Barrack block hall



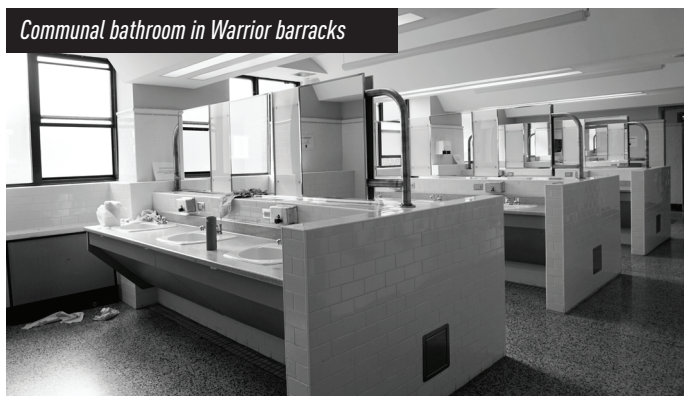
Primary military quarter single detached home



Warrior barrack block



Communal bathroom in Warrior barracks



Communal room in Warrior barracks



Primary military quarters, single detached homes



Primary military quarters, single detached homes



Primary military quarters, row housing



Army barrack block



Images of Canadian Forces Base Gagetown,
Oromocto New Brunswick, photographed in
January 2016

Army barrack block



Camp Argonaut barracks



Camp Argonaut barracks



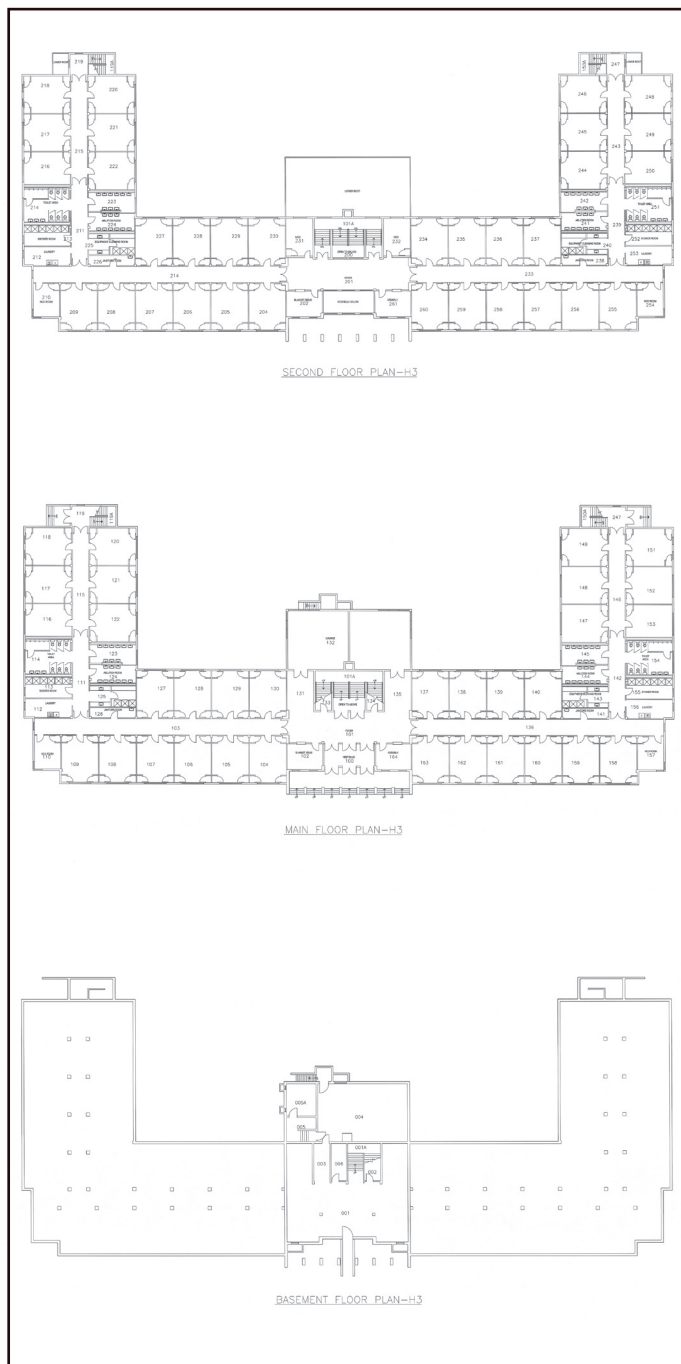
Camp Argonaut barracks



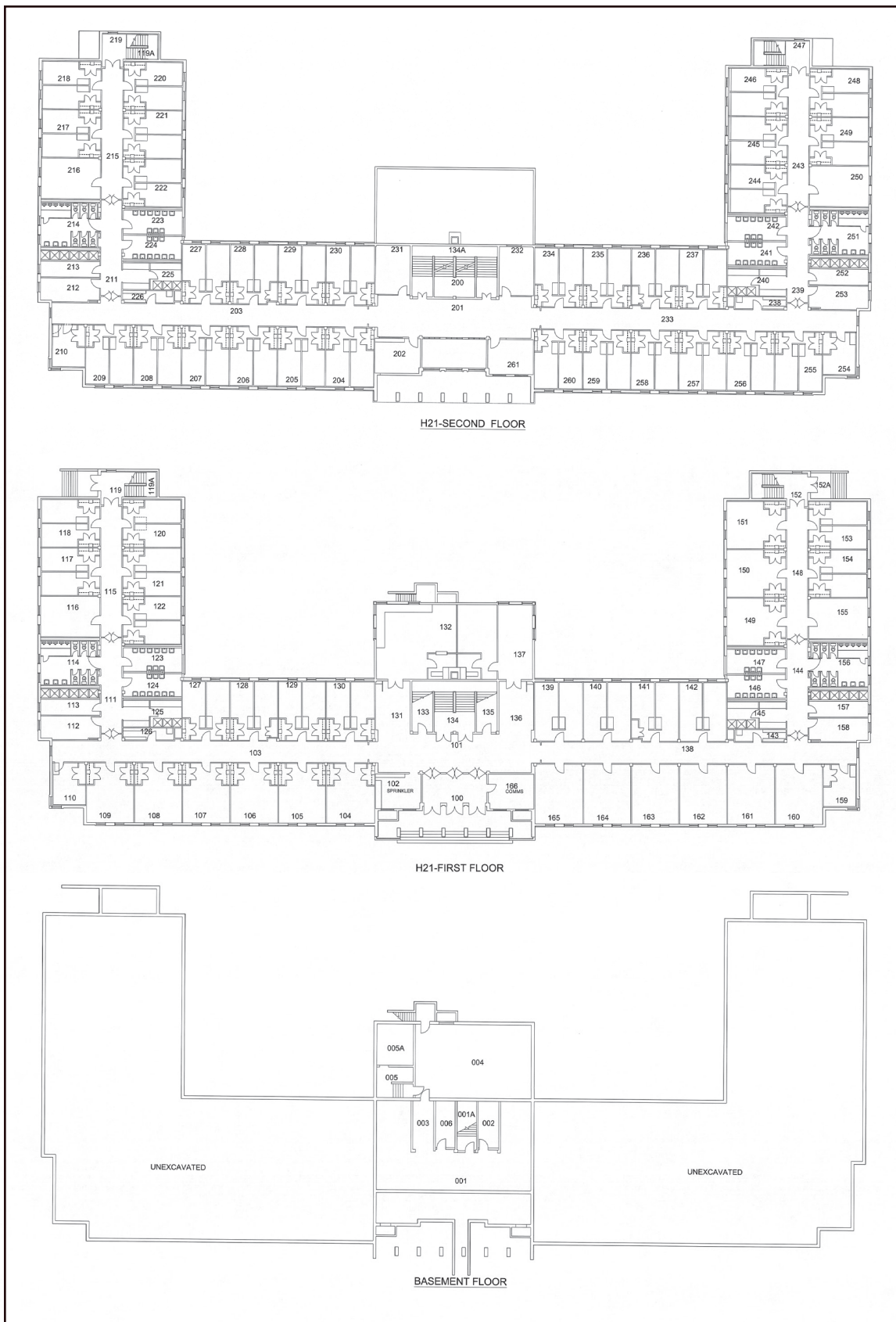
Images of Canadian Forces Base Gagetown,
Oromocto New Brunswick, photographed in
January 2016

APPENDIX C: EXISTING ORTHOGRAPHIC CATALOGUE

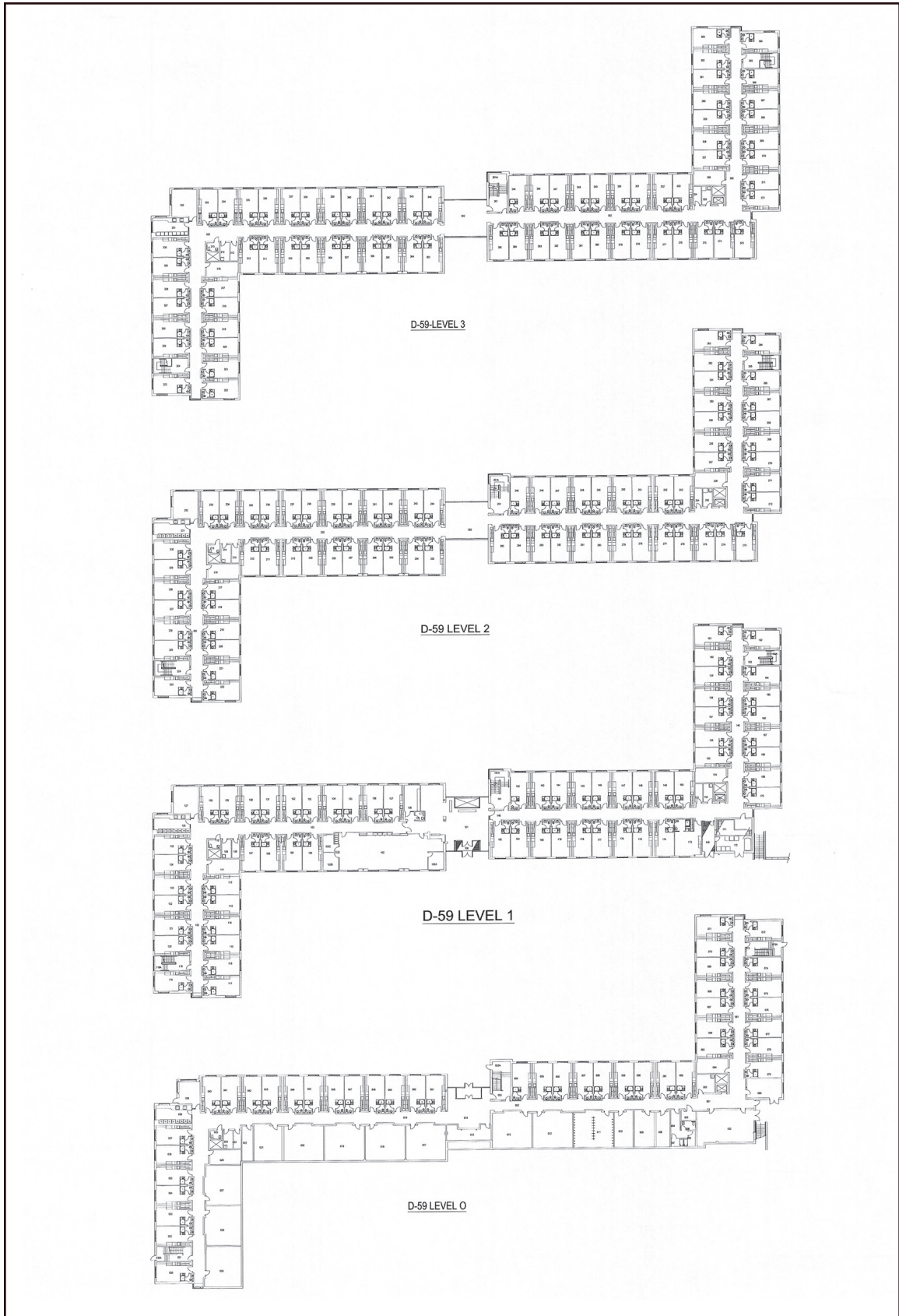
Existing Facilities on Canadian Forces Base Gagetown, catalogued chronologically in the order of, first, since member housing (barracks), second, family housing (primary military quarters), and third social support infrastructure.



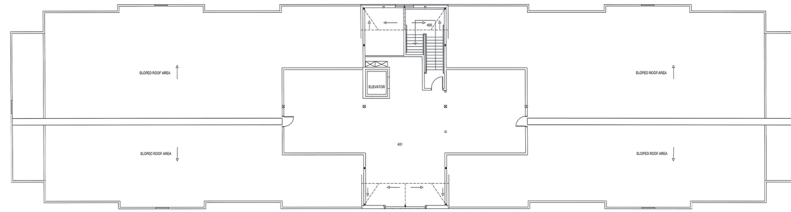
Barrack block H3 floor plans (National Defence and the Canadian Armed Forces 2015)



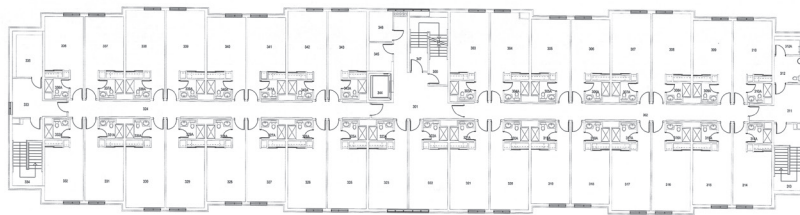
Barrack block H21 floor plans (National Defence and the Canadian Armed Forces 2015)



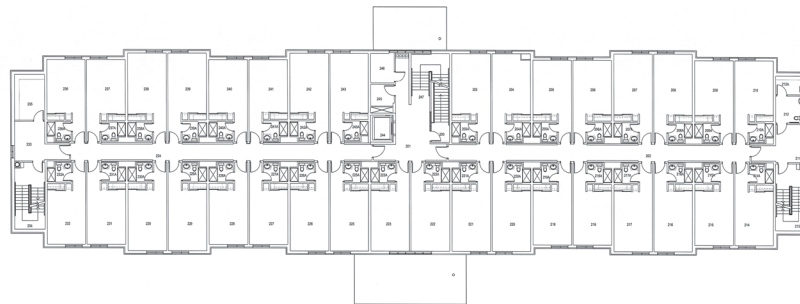
Barrack block D59 plans (National Defence and the Canadian Armed Forces 2015)



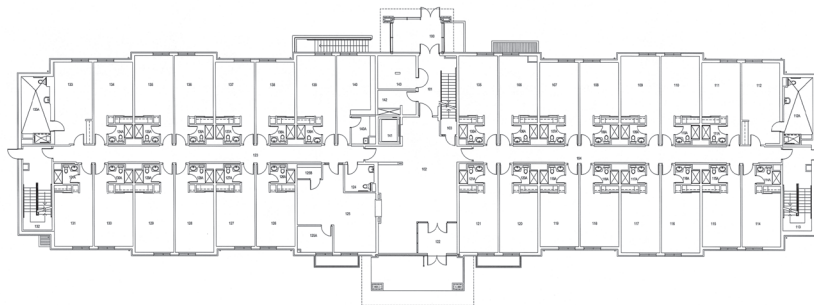
G-8 FOURTH FLOOR PLAN



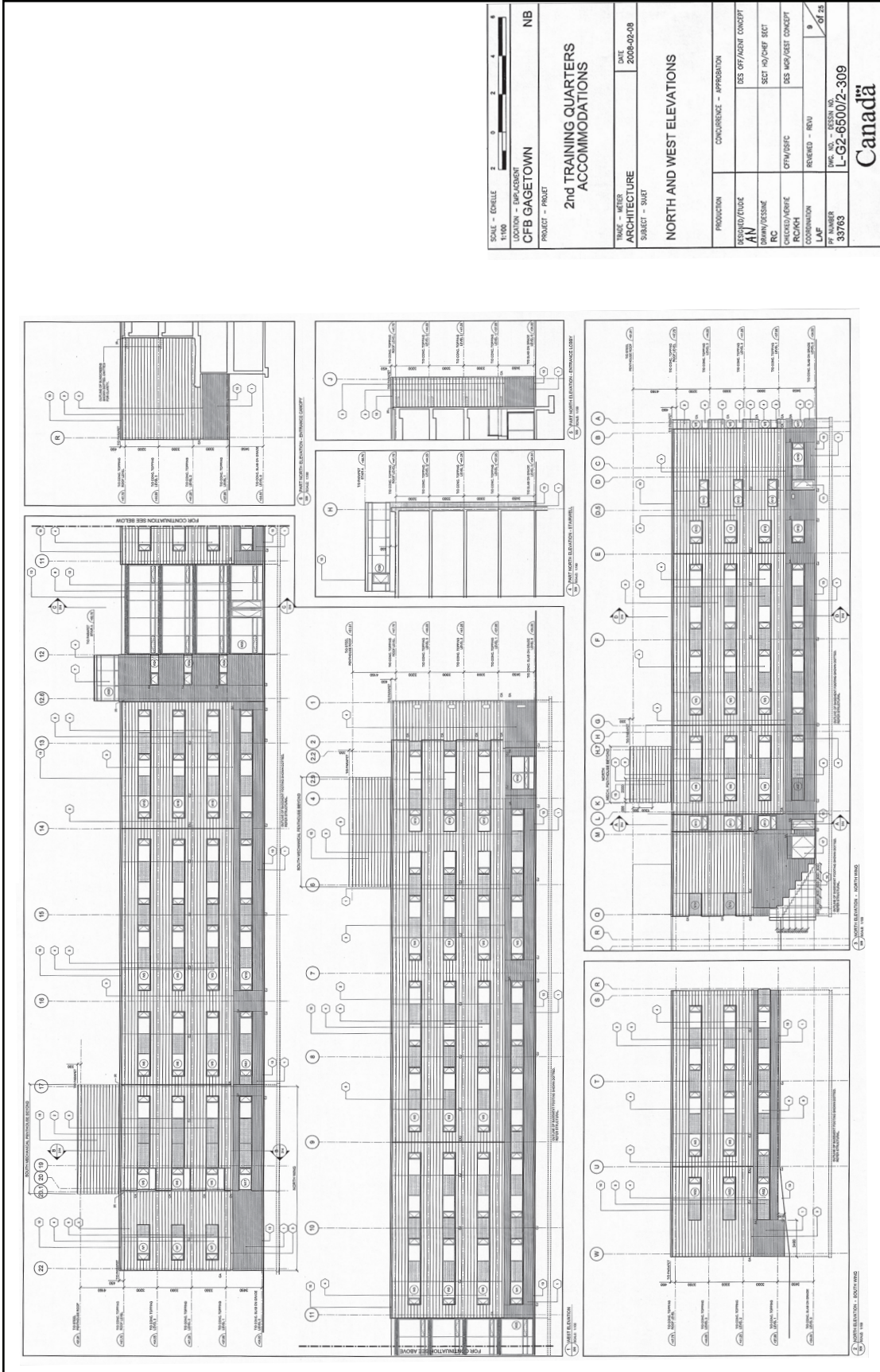
G-8 THIRD FLOOR PLAN



G-8 SECOND FLOOR PLAN



G-8 FIRST FLOOR PLAN



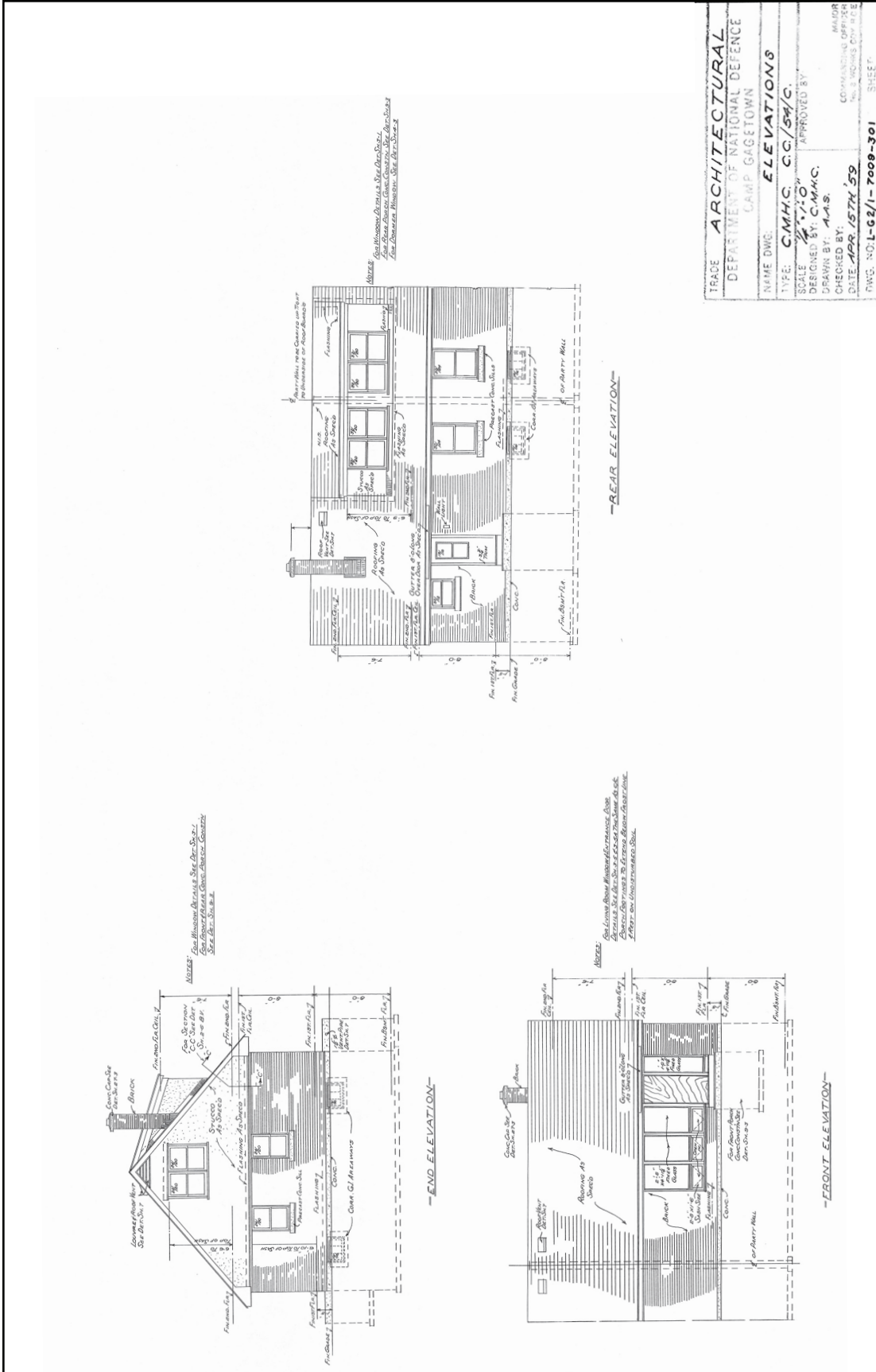
Barrack block elevations (National Defence and the Canadian Armed Forces 2015)

FRONT ELEVATION

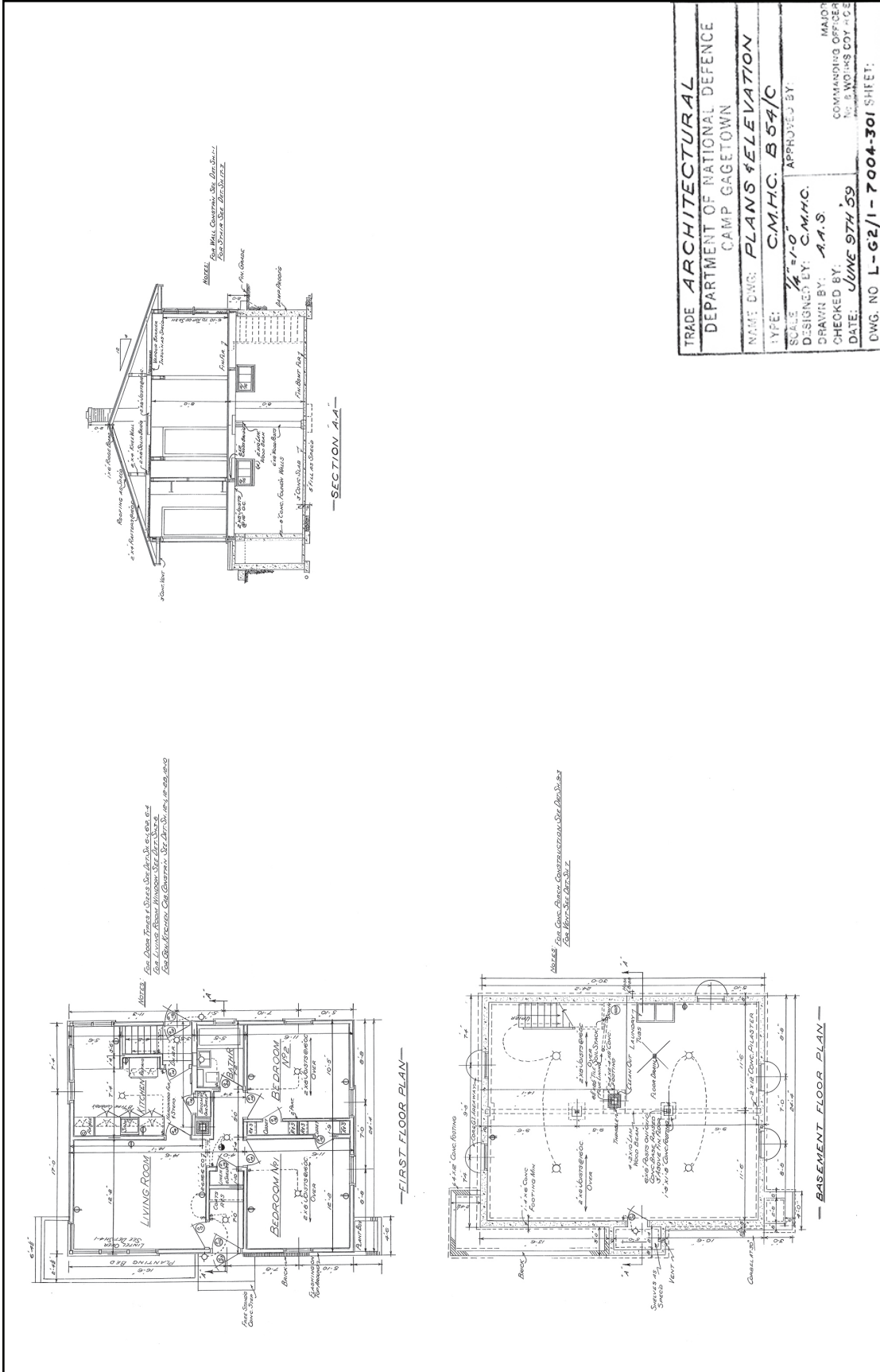
LEFT END ELEVATION

REAR ELEVATION

TRADE	ARCHITECTURAL
DEPARTMENT OF NATIONAL DEFENCE CAMP GAGETOWN	
NAME	DIV. ELEVATIONS
TYPE	C.M.H.C. JN/54/T
SCALE	1/4" = 1'-0"
DESIGNED BY	C.M.H.C.
DRAWN BY	A.A.S.
CHECKED BY	
DATE	MAR. 29 '59
DWG. NO.	L-62/1-7015-301
SHEET:	

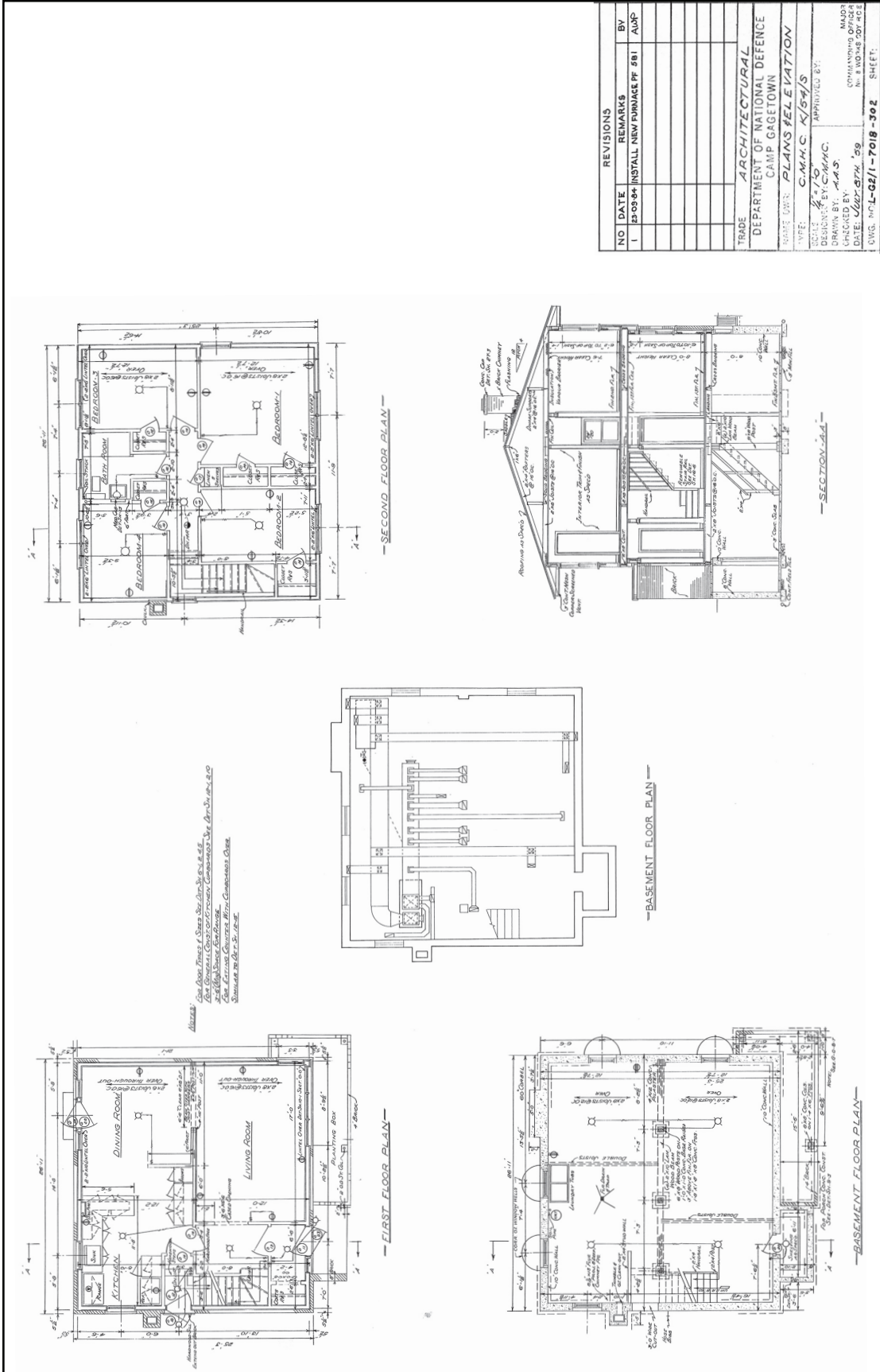


Family housing (National Defence and the Canadian Armed Forces 2015)



TRADE ARCHITECTURAL	
DEPARTMENT OF NATIONAL DEFENCE CAMP GAGETOWN	
NAME DWG: PLANS & ELEVATION	
TYPE: CMHC. B54/C	APPROVED BY:
SCALE: 1/4" = 1'-0"	DESIGNED BY: C.M.H.C.
	DRAWN BY: A.A.S.
	CHECKED BY: JUNE 9TH '59
	DATE: JUNE 9TH '59
DWG. NO L-62/1-7004-301 SHEET:	

Family housing (National Defence and the Canadian Armed Forces 2015)



Family housing (National Defence and the Canadian Armed Forces 2015)

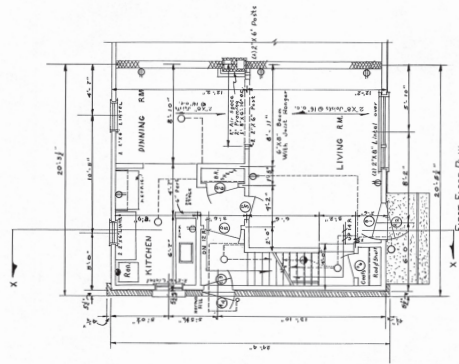
The drawing set includes four elevation views of a building:

- FRONT ELEVATION:** Shows a two-story structure with a gabled roof. The upper story features a large window with a decorative lintel. The lower story has a central entrance with a small porch and a window to the left. Materials are noted as 'BRICK' and 'STUCCO AS STUCCO'. A chimney is visible on the left side.
- REAR ELEVATION:** Shows the back of the building with a gabled roof and a chimney on the left. A set of stairs leads to a rear entrance. Materials include 'BRICK' and 'STUCCO AS STUCCO'.
- LEFT ELEVATION:** Shows the left side of the building with a gabled roof and a chimney. It features a window and a door. Materials are 'BRICK' and 'STUCCO AS STUCCO'.
- RIGHT ELEVATION:** Shows the right side of the building with a gabled roof and a chimney. It features a window and a door. Materials are 'BRICK' and 'STUCCO AS STUCCO'.

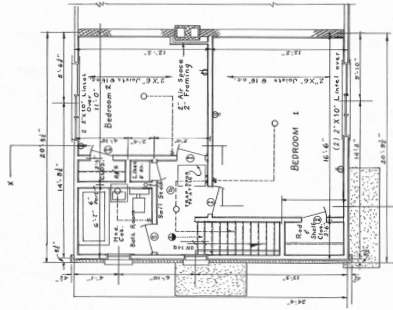
TRADE ARCHITECTURAL
DEPARTMENT OF NATIONAL DEFENCE
CAMP GAGETOWN

NAME DWG: **ELEVATIONS**
 TYPE: **CMHC K/54/S**
 SCALE: **1/20** APPROVED BY:
 DESIGNED BY: **CMHC**
 CHECKED BY: **A.A.S.**
 DATE: **JULY 9TH '39**
 DWG. NO: **L-62/1-7018-301** SHEET:

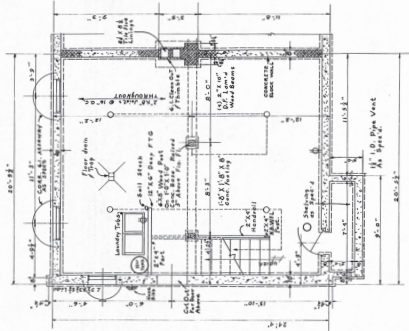
MAJOR COMMANDING OFFICER
 No. 8 WO-M5 COY RCE



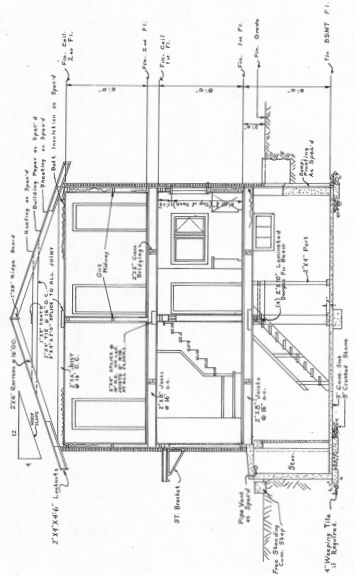
First Floor Plan



Second Floor Plan



Basement Floor Plan



Cross-Section XX

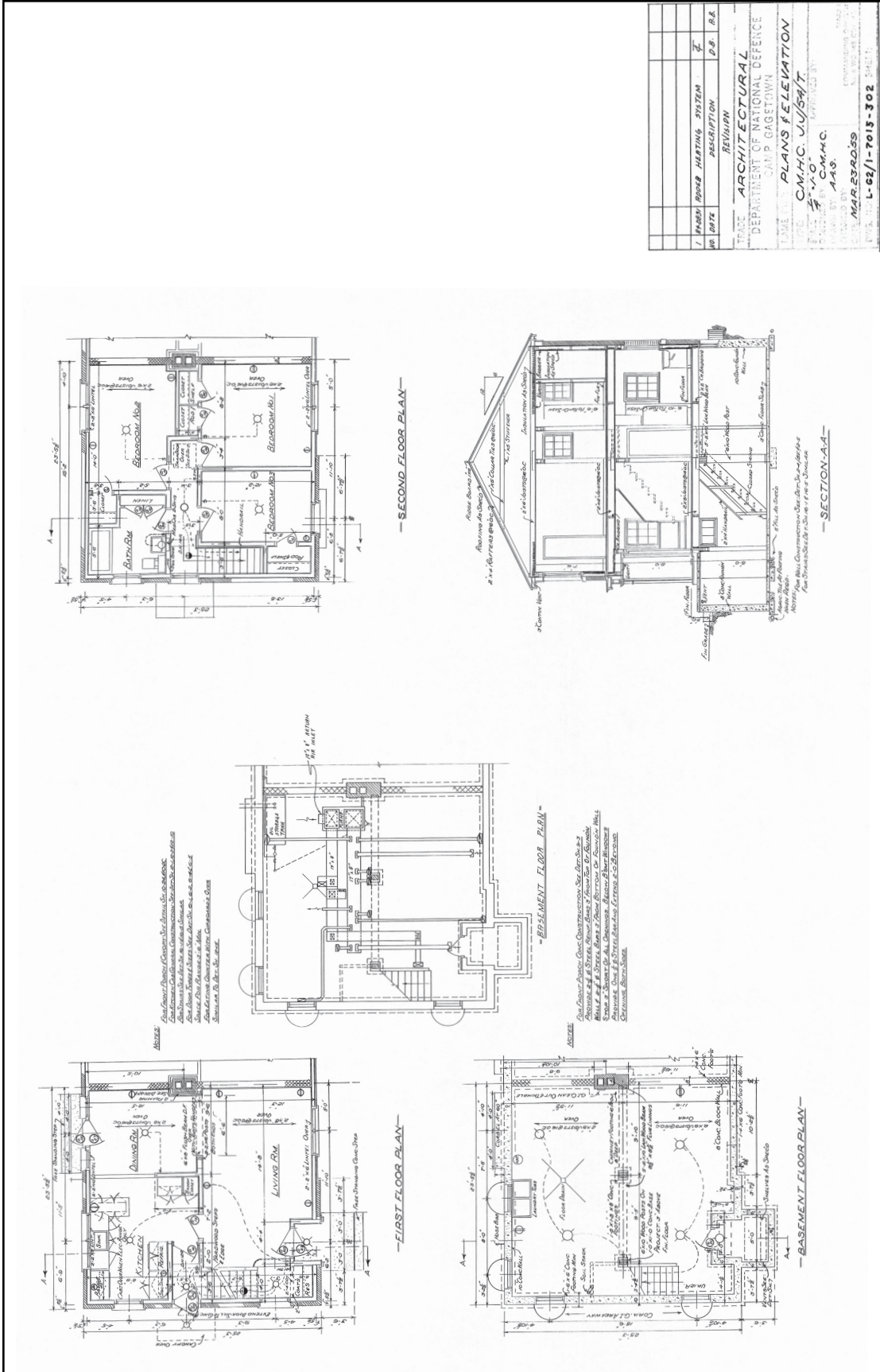
REVISIONS	
NO.	DESCRIPTION
1	ISSUED FOR CONSTRUCTION OF HOUSE
2	ISSUED FOR CONSTRUCTION OF HOUSE
3	ISSUED FOR CONSTRUCTION OF HOUSE
4	ISSUED FOR CONSTRUCTION OF HOUSE
5	ISSUED FOR CONSTRUCTION OF HOUSE
6	ISSUED FOR CONSTRUCTION OF HOUSE
7	ISSUED FOR CONSTRUCTION OF HOUSE
8	ISSUED FOR CONSTRUCTION OF HOUSE
9	ISSUED FOR CONSTRUCTION OF HOUSE
10	ISSUED FOR CONSTRUCTION OF HOUSE

DEPARTMENT OF NATIONAL DEFENCE
PROJECT LOCATION P.M.Q. CAMP GAGETOWN N.B.
TRADE ARCHITECTURAL
SUBJECT FLOOR PLAN - ELEVATION
P.M.Q. GG/56
PRODUCTION CONCURRENCE APPROVAL
DESIGNED BY
DRAWN BY A.G.J.
CHECKED BY
DATE 2, Dec. 65
SCALE 1/4" = 1'-0"
FIG. NO. L-68/1-7012-302
SHEET 1 of 2

The image contains three architectural drawings of a building elevation. The top drawing is a perspective view showing a two-story structure with a gabled roof, a chimney on the left, and a central entrance. Annotations include 'SHALE UNIT AS SPEC'S', 'ROOFING AS SPEC'S', 'FLASING AS SPEC'S', '2" x 4" STUDS', '2" x 6" JOISTS', '2" x 8" JOISTS', '2" x 10" JOISTS', '2" x 12" JOISTS', '2" x 14" JOISTS', '2" x 16" JOISTS', '2" x 18" JOISTS', '2" x 20" JOISTS', '2" x 22" JOISTS', '2" x 24" JOISTS', '2" x 26" JOISTS', '2" x 28" JOISTS', '2" x 30" JOISTS', '2" x 32" JOISTS', '2" x 34" JOISTS', '2" x 36" JOISTS', '2" x 38" JOISTS', '2" x 40" JOISTS', '2" x 42" JOISTS', '2" x 44" JOISTS', '2" x 46" JOISTS', '2" x 48" JOISTS', '2" x 50" JOISTS', '2" x 52" JOISTS', '2" x 54" JOISTS', '2" x 56" JOISTS', '2" x 58" JOISTS', '2" x 60" JOISTS', '2" x 62" JOISTS', '2" x 64" JOISTS', '2" x 66" JOISTS', '2" x 68" JOISTS', '2" x 70" JOISTS', '2" x 72" JOISTS', '2" x 74" JOISTS', '2" x 76" JOISTS', '2" x 78" JOISTS', '2" x 80" JOISTS', '2" x 82" JOISTS', '2" x 84" JOISTS', '2" x 86" JOISTS', '2" x 88" JOISTS', '2" x 90" JOISTS', '2" x 92" JOISTS', '2" x 94" JOISTS', '2" x 96" JOISTS', '2" x 98" JOISTS', '2" x 100" JOISTS'. The middle drawing is a side elevation showing a two-story structure with a chimney on the left, a central entrance, and a window. Annotations include 'FLASING AS SPEC'S', 'ROOFING AS SPEC'S', '2" x 4" STUDS', '2" x 6" JOISTS', '2" x 8" JOISTS', '2" x 10" JOISTS', '2" x 12" JOISTS', '2" x 14" JOISTS', '2" x 16" JOISTS', '2" x 18" JOISTS', '2" x 20" JOISTS', '2" x 22" JOISTS', '2" x 24" JOISTS', '2" x 26" JOISTS', '2" x 28" JOISTS', '2" x 30" JOISTS', '2" x 32" JOISTS', '2" x 34" JOISTS', '2" x 36" JOISTS', '2" x 38" JOISTS', '2" x 40" JOISTS', '2" x 42" JOISTS', '2" x 44" JOISTS', '2" x 46" JOISTS', '2" x 48" JOISTS', '2" x 50" JOISTS', '2" x 52" JOISTS', '2" x 54" JOISTS', '2" x 56" JOISTS', '2" x 58" JOISTS', '2" x 60" JOISTS', '2" x 62" JOISTS', '2" x 64" JOISTS', '2" x 66" JOISTS', '2" x 68" JOISTS', '2" x 70" JOISTS', '2" x 72" JOISTS', '2" x 74" JOISTS', '2" x 76" JOISTS', '2" x 78" JOISTS', '2" x 80" JOISTS', '2" x 82" JOISTS', '2" x 84" JOISTS', '2" x 86" JOISTS', '2" x 88" JOISTS', '2" x 90" JOISTS', '2" x 92" JOISTS', '2" x 94" JOISTS', '2" x 96" JOISTS', '2" x 98" JOISTS', '2" x 100" JOISTS'. The bottom drawing is another side elevation showing a two-story structure with a chimney on the left, a central entrance, and a window. Annotations include 'FLASING AS SPEC'S', 'ROOFING AS SPEC'S', '2" x 4" STUDS', '2" x 6" JOISTS', '2" x 8" JOISTS', '2" x 10" JOISTS', '2" x 12" JOISTS', '2" x 14" JOISTS', '2" x 16" JOISTS', '2" x 18" JOISTS', '2" x 20" JOISTS', '2" x 22" JOISTS', '2" x 24" JOISTS', '2" x 26" JOISTS', '2" x 28" JOISTS', '2" x 30" JOISTS', '2" x 32" JOISTS', '2" x 34" JOISTS', '2" x 36" JOISTS', '2" x 38" JOISTS', '2" x 40" JOISTS', '2" x 42" JOISTS', '2" x 44" JOISTS', '2" x 46" JOISTS', '2" x 48" JOISTS', '2" x 50" JOISTS', '2" x 52" JOISTS', '2" x 54" JOISTS', '2" x 56" JOISTS', '2" x 58" JOISTS', '2" x 60" JOISTS', '2" x 62" JOISTS', '2" x 64" JOISTS', '2" x 66" JOISTS', '2" x 68" JOISTS', '2" x 70" JOISTS', '2" x 72" JOISTS', '2" x 74" JOISTS', '2" x 76" JOISTS', '2" x 78" JOISTS', '2" x 80" JOISTS', '2" x 82" JOISTS', '2" x 84" JOISTS', '2" x 86" JOISTS', '2" x 88" JOISTS', '2" x 90" JOISTS', '2" x 92" JOISTS', '2" x 94" JOISTS', '2" x 96" JOISTS', '2" x 98" JOISTS', '2" x 100" JOISTS'.

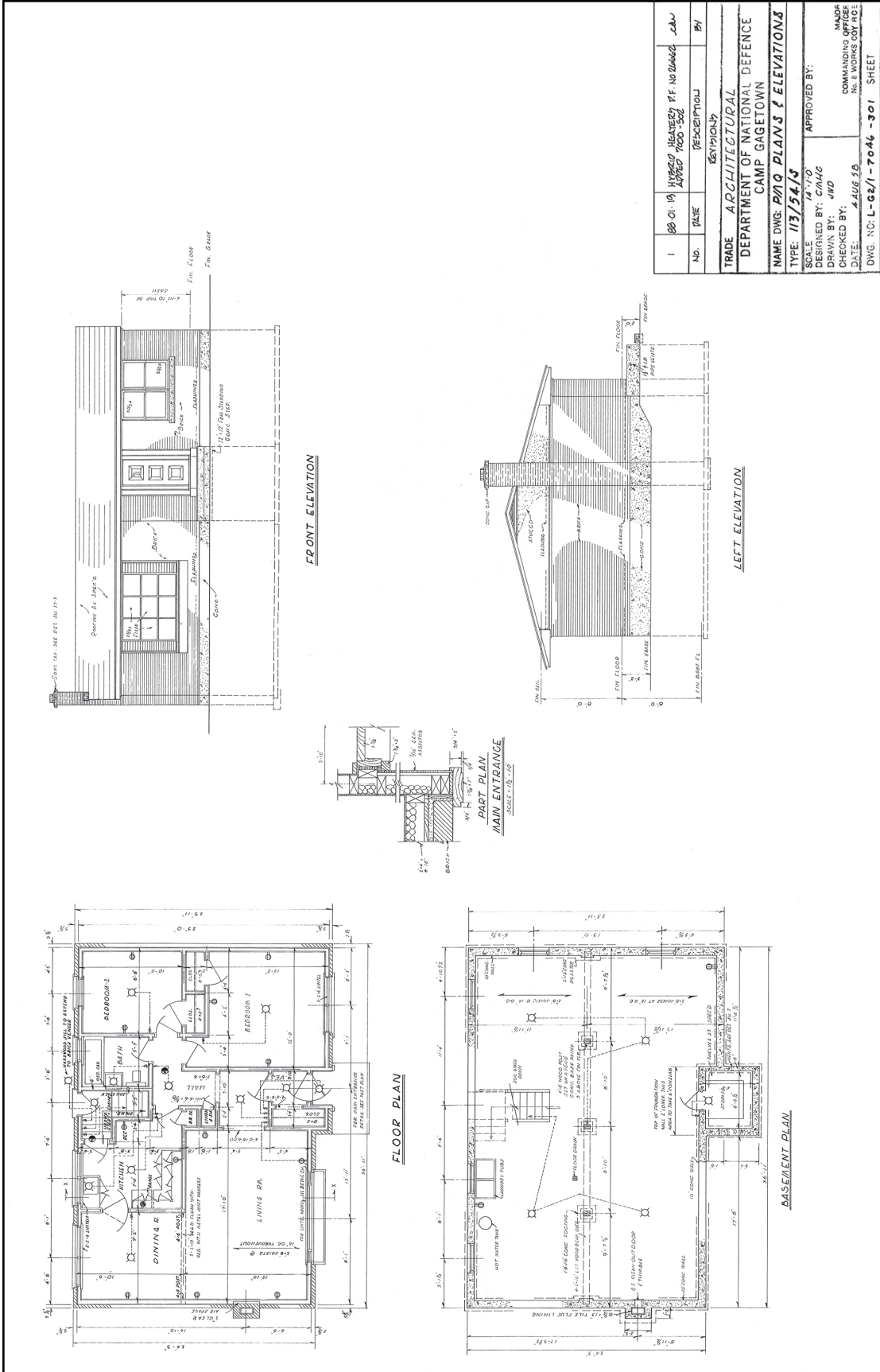
NO	DATE	DESCRIPTION	REVISIONS
1		PREPARED NEW WINDOWS & SIDING	✓
			DEVELOP
			DATE

DEPARTMENT of NATIONAL DEFENCE
 PROJECT / LOCATION
 PMQ CAMP GABETOWN N.B.
 TRADE ARCHITECTURAL
 SUBJECT ELEVATIONS
 6656
 PRODUCTION CONCURRENCE APPROVAL
 DRAWN BY J.C.L.
 CHECKED BY
 DATE 3-18-65
 SCALE 1/4" = 1'-0"
 DWG NO. L-62/1-7012-301
 SHEET 2 - 2

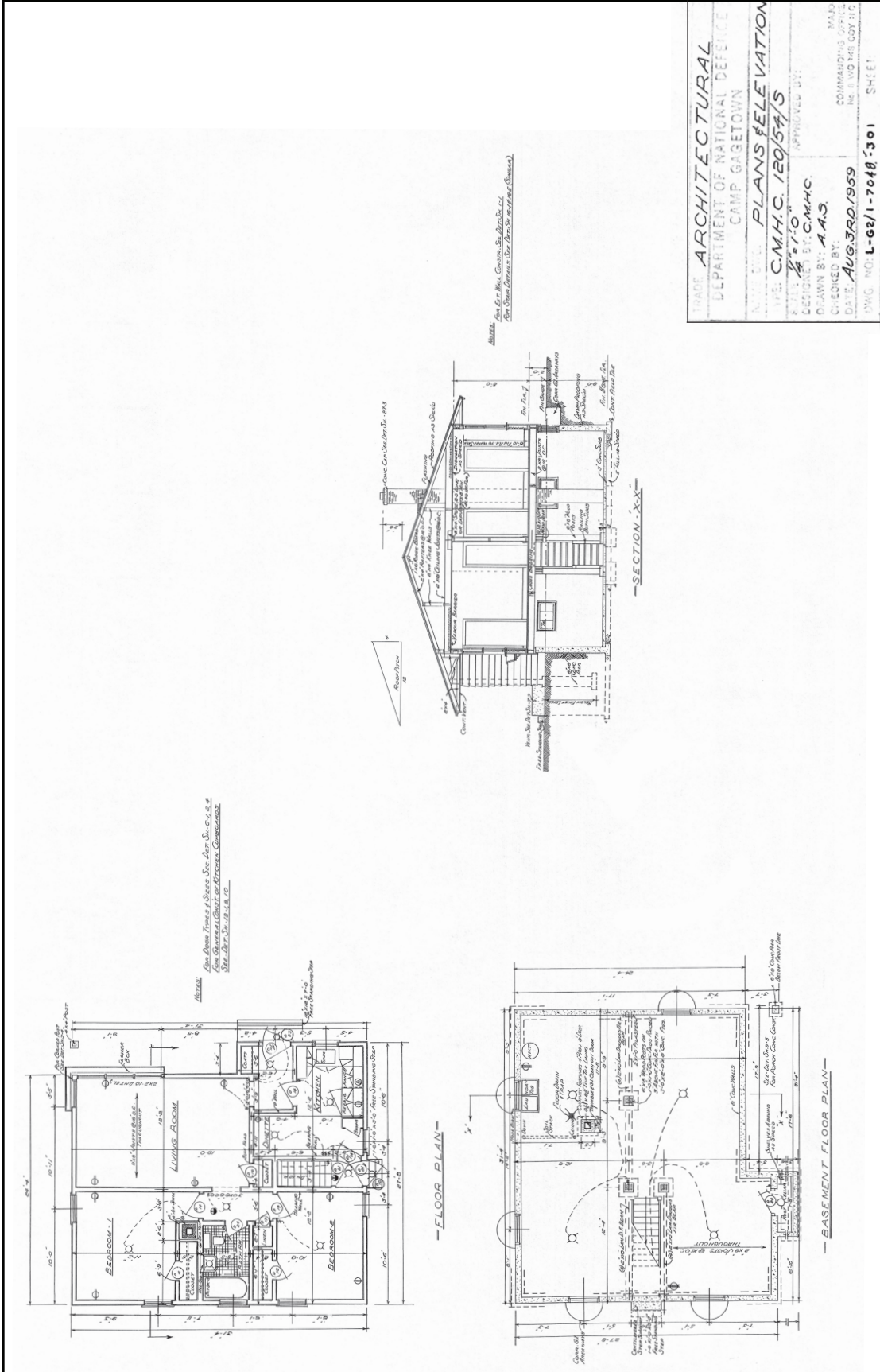


1	PARRY ROOM HEATING SYSTEM	F	D.S.	R.A.
2	REVISION			
TYPE ARCHITECTURAL DEPARTMENT OF NATIONAL DEFENCE CAMP GAGETOWN NAME PLANS & ELEVATION DATE 3-1-50 DRAWN BY C.A.M.C. CHECKED BY A.A.S. MAR. 23 1950 L-62/1-7015-302				

Family housing (National Defence and the Canadian Armed Forces 2015)



Family housing (National Defence and the Canadian Armed Forces 2015)



TRADE ARCHITECTURAL
 DEPARTMENT OF NATIONAL DEFENCE
 CAMP GAGETOWN

PLANS ELEVATION

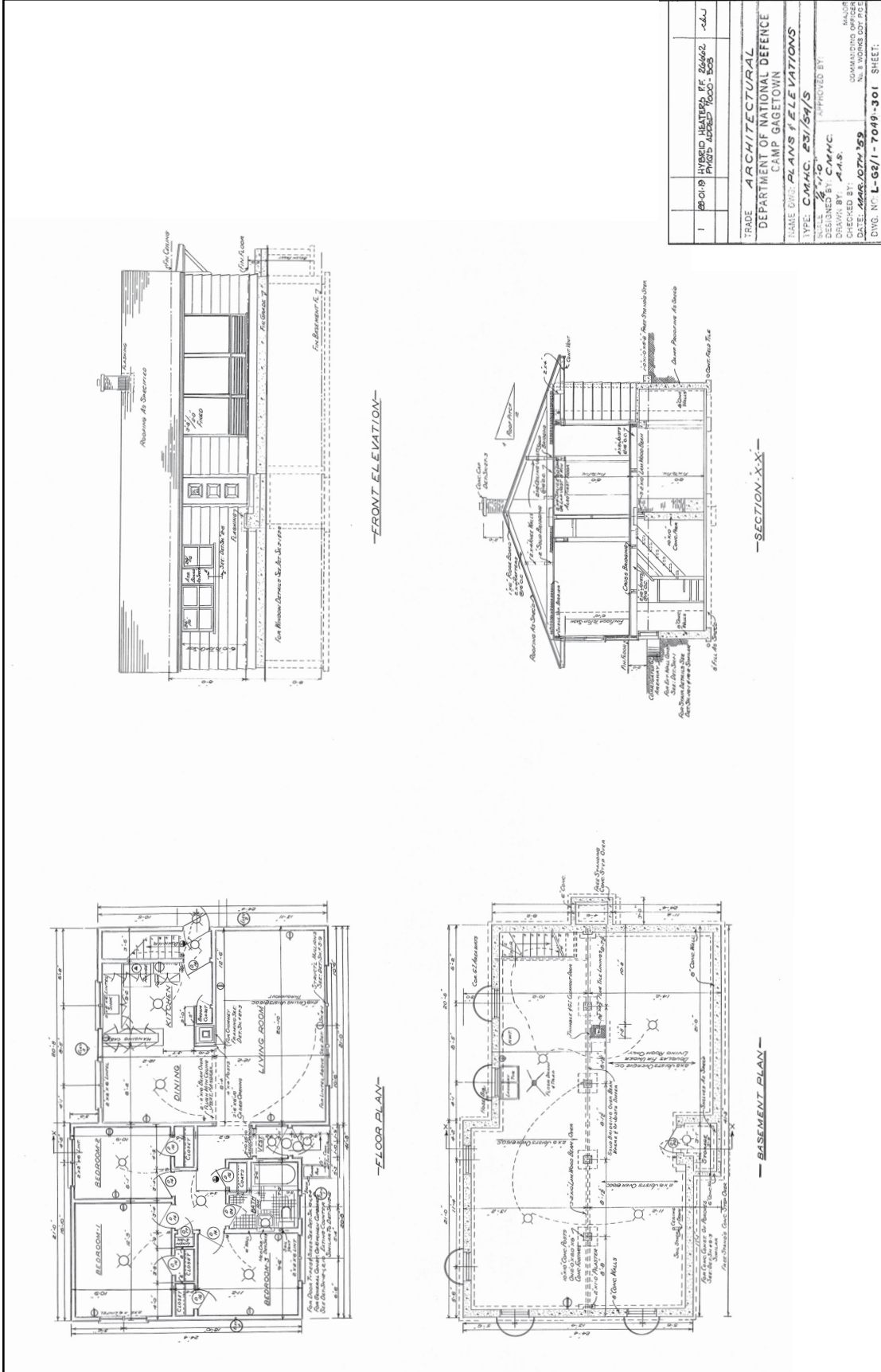
DATE: AUG 30, 1959

DESIGNED BY: C.M.H.C.
 DRAWN BY: A.A.S.
 CHECKED BY:
 APPROVED BY:

COMMISSIONING OFFICER
 NO. 8 WIND MIL COY 110

DRG. NO: L-62/1-7048-301 SHEET

Family housing (National Defence and the Canadian Armed Forces 2015)



1	280119 HYBRID HEATERS PF 26462 JUL	
TRADE ARCHITECTURAL DEPARTMENT OF NATIONAL DEFENCE CAMP GAGETOWN		
NAME CMMAC 231/34/S TYPE CMMAC 231/34/S DESIGNED BY CMMAC DRAWN BY AAS CHECKED BY AAS DATE: APRIL 27TH 59 COMMANDING OFFICER NO. 8 WORKS EDP P.O. DIV. NO. L-62/1-7049-301 SHEET		

**CHANGEMENTS BRUTE
à MODIFIER
ROUGH MODIFIED**

**PLAN DU REZ-DE-CHAUSSEE
GROUND FLOOR PLAN**

COUSINE KITCHEN
SALLE DE SEJOUR LIVING RM
CHAMBRE COUCHER BEDRM 1
CHAMBRE COUCHER BEDRM 2
SALLE DE BAIN BATH

**PLAN DE FONDATION
FOUNDATION PLAN**

**ELEVATION ARRIERE
REAR ELEVATION**

**ELEVATION CÔTÉ GAUCHE
LEFT SIDE ELEVATION**

**ELEVATION CÔTÉ DROIT
RIGHT SIDE ELEVATION**

**ELEVATION AVANT
FRONT ELEVATION**

ROUGH OPENING MODIFIED
à MODIFIER
à MODIFIER

NO.	DATE	DESCRIPTION	REVISION — RÉVISION
1	82-04-24	RENVOI À 145 BUILT AS PER. PT. 7688	ALTEL. DRAWN BY DATE SCALE

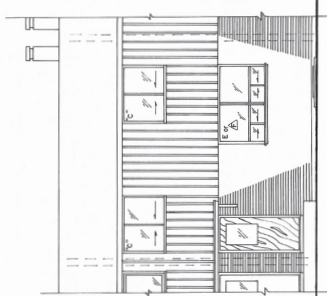
**DEPARTMENT OF NATIONAL DEFENCE
MINISTÈRE DE LA DÉFENSE NATIONALE
FORCE MOBILE COMMAND**

PROJECT & LOCATION — PROJET ET EMPLACEMENT
TYPE B/541C
L.E.B. GAGNON ARCHITECT
New BRUNSWICK
TRADE — MÉTIER ARCHITECTURAL ARCHITECTURE


PLANS AND ELEVATIONS
(NEW WINDOW)

CONCURRENCE — ASSESSMENT

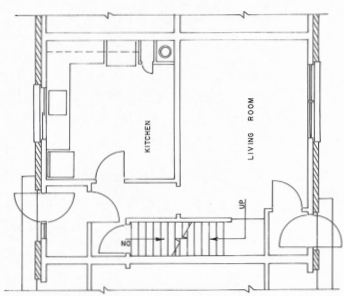
DESIGNED BY
CHECKED BY
DATE
SCALE — ÉCHELLE
DWG. NO. — DESSIN NO.
L-02/11-TC04-301



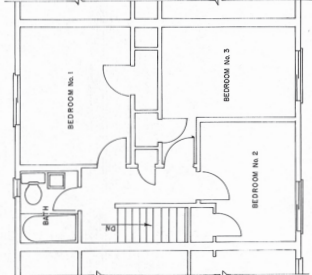
FRONT ELEVATION




REAR ELEVATION



FIRST FLOOR PLAN

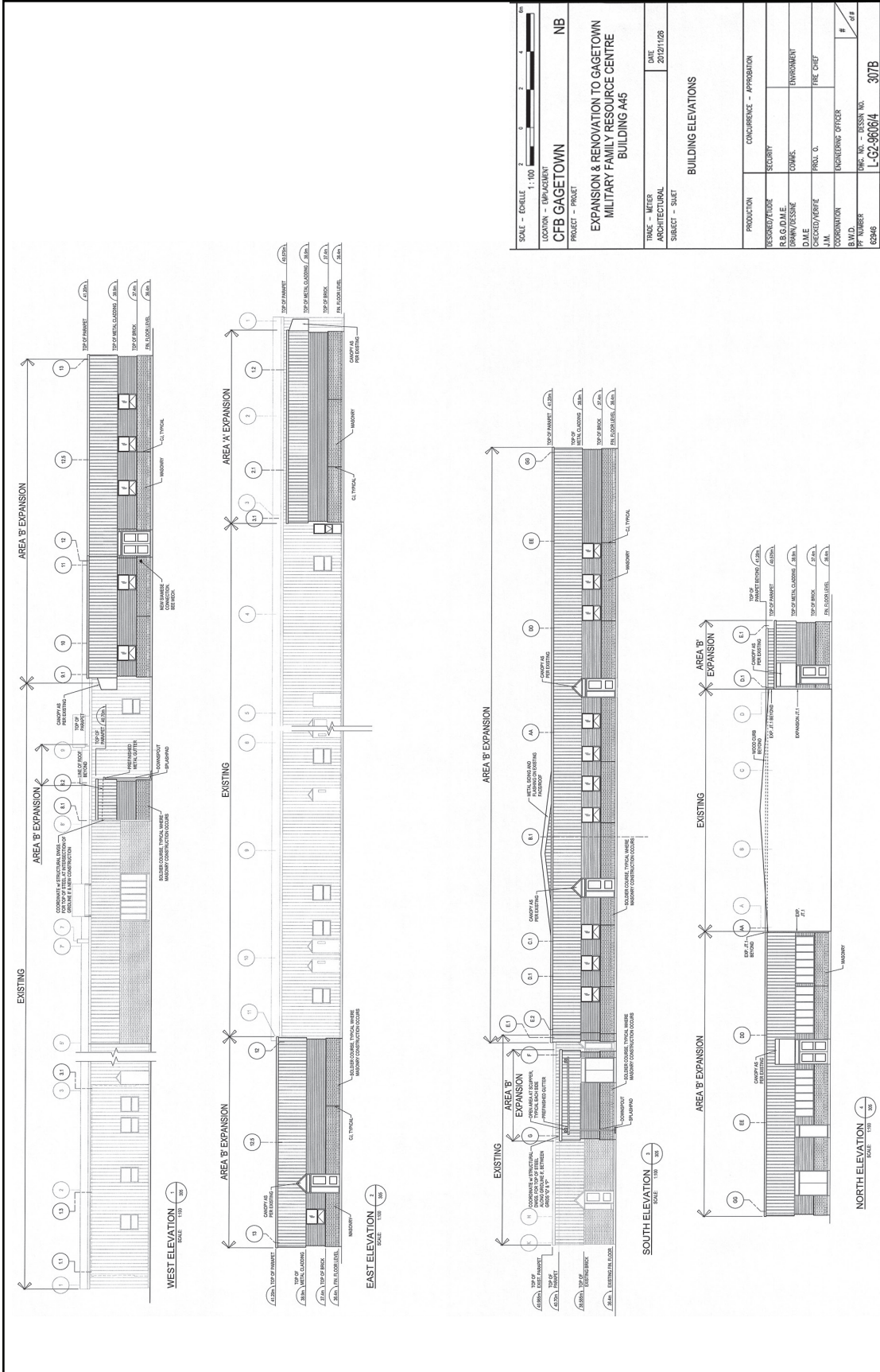


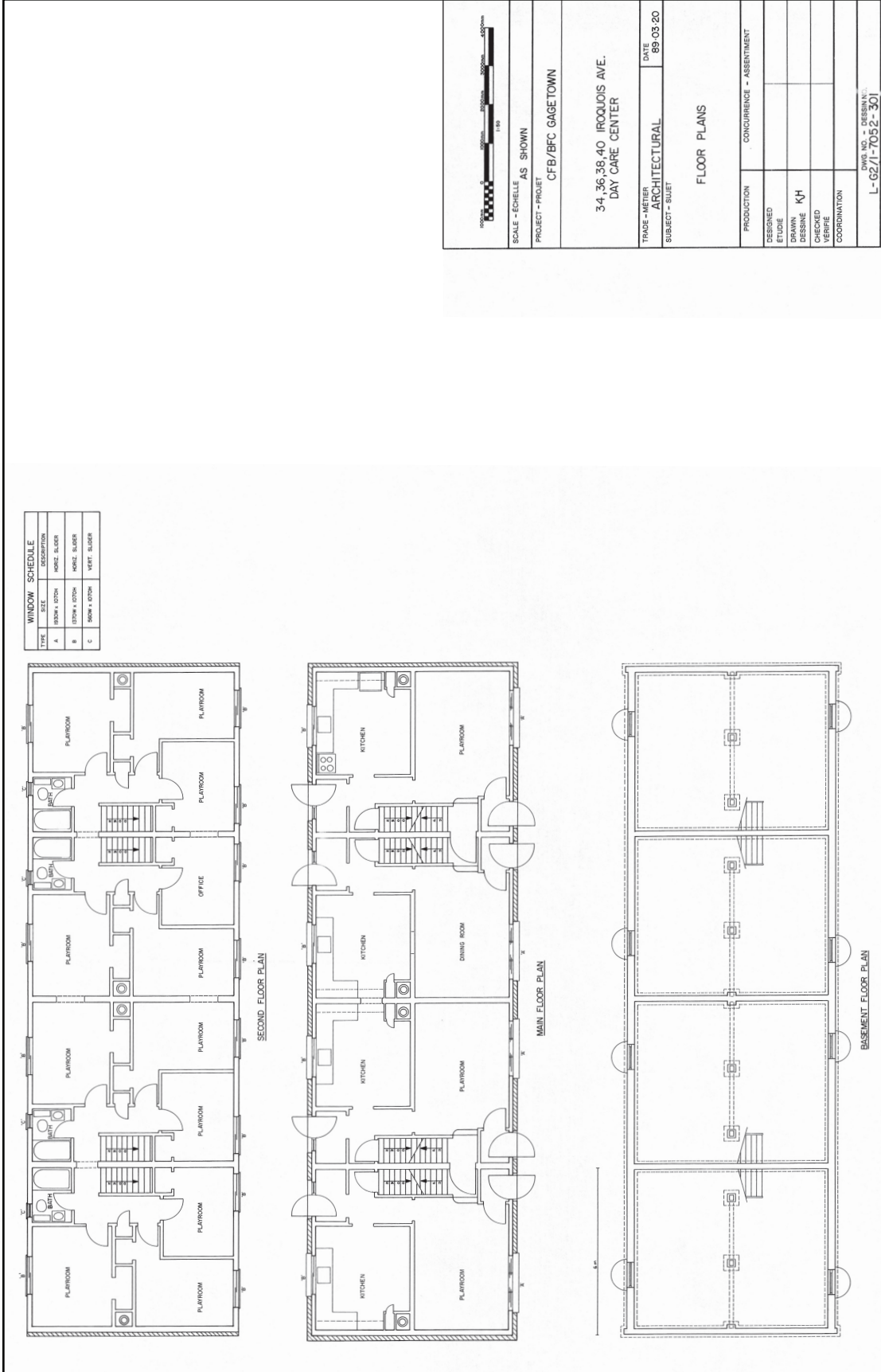
SECOND FLOOR PLAN



SCALE 1:50

SCALE - ÉCHELLE		AS SHOWN	
PROJECT - PROJET		CFB/BFC GAGE TOWN	
TRADE - MÉTIER		ARCHITECTURE	
SUBJECT - SUJET		TYPE M/BI/C	
DATE		88/07/22	
FLOOR PLANS AND ELEVATIONS			
DESIGNED	ETUDIÉ	CONCURRENCE - ASSENTIMENT	
DRAWN	AJP		
CHECKED			
COORDINATION			
DWS NO. - DESSIN NO. L-G21-7028-303M			





Social support infrastructure (National Defence and the Canadian Armed Forces 2015)

FRONT ELEVATION

REAR ELEVATION

	SCALE - ÉCHELLE 1:50	PROJECT - PROJET 34, 36, 38 & 40 IROQUOIS AVE. DAY CARE CENTER	TRADE - MÉTIER ARCHITECTURAL	DATE 89-03-17	ELEVATIONS
DESIGNED DRAWN CHECKED COORDINATION		PRODUCTION CONCURRENCE - ASSENTIMENT			

To whom it may concern,

3 March 2016

Authorization to use drawings of military housing and barracks

Kaitlyn Labrecque is hereby authorized to use the drawings of military housing and barracks for research purposes towards the completion of her graduate studies thesis in the Dalhousie Masters of Architecture program at Dalhousie University.

Larry Baba, P. Eng.
Engineering Officer
5 Engineer Services Unit
5 Canadian Division Support Base Gagetown

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