A DESIGN STUDY FOR SPRINGFIELD ARMORY,
SPRINGFIELD, MASSACHUSETTS.

by

Frederick T. Kubitz

October 28, 1955
I wish to express my sincere gratitude to Dean Belluschi, and the members of the Graduate Thesis Committee for their most helpful assistance and advice. I also wish to convey my deep appreciation to those persons affiliated with the Springfield Armory for their generous co-operation.
This thesis is submitted in partial fulfillment of the requirements for the degree of Master in Architecture at the Massachusetts Institute of Technology,

to:

Professor Lawrence B. Anderson,
Head of the Department of Architecture,
Massachusetts Institute of Technology,

by:

Frederick T. Kubitz

October 28, 1955
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Dean Pietro Belluschi,  
Department of Architecture and Planning,  
Massachusetts Institute of Technology,  
Cambridge, Massachusetts.  

Dear Sir:  

As partial fulfillment of the requirements for the degree of Master in Architecture, I respectfully submit my thesis entitled:

"A Design Study for Springfield Armory, Springfield, Massachusetts".

Sincerely yours,  

Fredrick T. Küblitz
ABSTRACT

A Design study for Springfield Armory, Springfield, Massachusetts.

This thesis is based on a hypothetical study of the redevelopment of the Hill Shop Branch of Springfield Armory. Using the same basic requirements, spatial and functional, as those of the existing facilities, the author has attempted to give them new meaning. By reevaluating the present situation, and determining the problem to be treated, the author is then able to adapt them to a new and more valid architectural approach.

Briefly the design requirements are as follows:

1. To re-establish basic land usage so all elements located thereon can better serve their purpose, their adjacent function, as well as, the total organization both functionally and esthetically.

2. To create a more friendly architectural attitude between Armory and community, by opening it up both physically and visually.

3. To retain those buildings symbolizing its first beginning, and blend them with the new in such a way that the old are given a place of dignity.

4. To develop a more subtle approach to the problem of security than the one presently used.
MODEL OF PRESENT HILL SHOP BRANCH
MISSION OF SPRINGFIELD ARMORY

The mission of Springfield Armory is to design, develop, procure and manufacture small arms weapons, components, accessories, and related equipment. In addition, Springfield Armory is charged with the storage and maintenance of standby tools and equipment.

To accomplish its production mission, the Armory must work closely with industry exercising every effort to devise ways and means whereby the items assigned to it for design, development, procurement and manufacture may be instantly transferred to industry for mass production.

Springfield Armory is not a mass production center; it is a job shop with pilot manufacturing lines. Designs, descriptions of manufacture, drawings, specifications, and allied documents must be such that they can be utilized by commercial manufacturers who in time of war will mass produce. They must not be prepared from the limited point of view of the Armory and its facilities. They must be based on the utilization of America's industrial plants and must incorporate the best of industry's ideas and techniques.¹

HISTORY AND DEVELOPMENT OF THE ARMORY

Springfield Armory is one of the oldest of our national institutions. The history of Springfield Armory dates back to the founding of Springfield, Massachusetts, from which it takes its name, by settlers from the Massachusetts Bay Colony, sixteen years after the settlement of that Colony.

In the early days of the Colonies, when new lands in little-known territory were opened to settlers, a most necessary item was a gun. In time, the population increased as did the number of weapons. At that time all guns were manufactured in either England, Germany, France or Spain, and because of the great distance from Europe some farsighted individuals who possessed the necessary talents opened gun repair shops. Soon they had a great quantity of trade with all the Colonies. The gun business attracted some of the best gun-making talent of the old world and soon Springfield and the surrounding communities were known for the quality and quantity of their gun work.

Because of the presence of a large number of gunsmiths, blacksmiths, and artisans of all kinds, it was not surprising that arrangements were made at the outbreak of the Revolutionary War whereby men, working in combination--some specializing in
barrels and ramrods, some in locks and riggings, and others in stocks—were able to turn out a limited quantity of muskets.

To General Henry Knox, of Boston one of General Washington's most experienced officers, is given the credit of first suggesting the need of manufacturing and storage places for munitions to supply the rebellious colonies. General Knox recommended that one or more laboratories and depots be erected far from the seat of war. His recommendations strongly approved by General Washington were accepted by the Continental Congress and one of the "laboratories" was established at Springfield. Early in 1777, buildings were rented on Main Street, and the "laboratory" in which cartridges were made was located in a barn in the rear.

A few years later, the works were removed to the high ground of Springfield then known as the "Training Field." This is now called Armory Square, the area bounded by the high iron fence. There barracks, shop buildings, storehouses and a powder magazine were constructed. A powder mill was erected on the banks of Mill River and thus the forerunners of the Hill and Water Shops.

General Washington was convinced of the need for the adoption of a standard military rifle and the development of adequate facilities to manufacture such an arm in quantities. Acting
upon such recommendations, the Third Congress, when it met in the spring of 1794, authorized the establishment, under the President of the United States, of three or four arsenals with magazines for the safe keeping of military stores and also provided for the establishment of a National Armory for the fabrication of small arms at each of these arsenals. President Washington selected Springfield as the site for one of the arsenals. The Armory has been known by several designations since its establishment; the "United States Armory," the "National Armory," and since 1892, the "Springfield Armory."

The climax of the Armory growth and development came in 1942, when employment rose to an all time high of 15,000 workers. Springfield was the major provider of M-1 rifles to all armed forces. Today the plant has been reduced to a standing personnel of from 2,000 to 5,000 people. At best it can only be surmised as to what the future will bring. Current Department of Defense directives have indicated a leveling off in production and it is believed this trend could continue on an indefinite basis. Its new role began during the Korean War when it served as a pilot plant for civilian industry contracting to make war weapons. Today it is a place where industry can come to learn from a teacher with a 160 years of experience.
Springfield Armory as it now exists is made up of three plants—the Hill Shops and the Water Shops about one mile apart, and Page Boulevard, in an outlying part of town. The Hill Shops occupy the old "Training Field," of fifty-three acres, and an additional fourteen acres, today known as Federal Square. These two sections are separated by Federal Street, a public right-of-way ceded to Springfield in 1801. The one side called Armory Square, is predominately of military residents and administration buildings, thirty-six in all. On the other side, Federal Square, manufacturing structures are most prevalent, eighteen major elements there. These two tracts of land are generally considered to be the heart of the installation and referred to as "The Armory."

Of the 237 acres of Water Shops, only a scant fourteen acres are not inundated by the Mill Pond. These facilities are devoted entirely to manufacturing and forging operations. Page Boulevard, the newest of the three, started in 1950, partially covers some sixteen acres of suburban Springfield. Principally it is a materials and machine warehousing area for the manufacturing branches of the Armory.
CORE OF SPRINGFIELD, MASSACHUSETTS
In the succeeding paragraphs the author has simply tried to record a few of the ideas and comments of Armory officials about the possibility of removing the facilities to another location, thus consolidating them.

So far as it is possible to judge, they believe it should remain in its present location. Primarily New England, because of its skilled labor resources, allied manufacturers, and compatible transportation facilities, lends itself quite aptly to this form of manufacturing. Although other industries have moved away, and have better situated themselves, the small arms industry could never survive in conditions other than those prevailing. The only other logical shift which could be made, would be within its own immediate vicinity.

Here again they see no real merit in changing sites within the city. From the three succeeding observations, the author can agree with this point of view.

1. Essentially there is no rail head immediately accessible to the Armory. They feel this presents no major disadvantage, because of the type, quantity, and flow of material transported. Raw materials supplied are by weight, heavy, but by volume, easy to handle.
2. Consolidation of facilities, though desirable, would not be necessary. If in the future there were to be any reorganization of Armory facilities it would remain within the same framework. At present the Armory manufacturing facilities are sub-divided into three distinct and separate operations administered under one head. Operations taking place in the Water Shops, are completed before their finished products are trucked to the Hill. The Hill Shops are dependent on the shops below for forged parts and completed assemblies, otherwise they carry on an entirely different set of operations. The same independent existence is true of Page Boulevard. Concentration would afford administrative personnel, "more comfort, less problems, but otherwise no greater efficiency would be derived."

3. The last observation though not as important, should be considered. Because of the Armory's desirable location, many of its employees have taken permanent roots near their work. Public transportation has been relied upon for many years carrying them to and from their jobs. To alter this situation, it would lead to some minor disadvantages outside the realm of either plant management or architecture.

The possibility of a staging program could be investigated. (Although the author would question its usefulness in a thesis of this nature.) There are certain recent buildings which
are quite satisfactory in their present function, and by observation, look as though they will continue to be so. Armory officials feel certain that most phases of Armory operation could be kept active during such a program. Temporary paralysis should be avoided.
A DISCUSSION OF THE HILL SHOP FACILITIES

From the concluding statements under the "History and Development of the Armory" it can be assumed that present facilities (area requirements, relationships of elements, etc.) will be adequate for any future Armory activities. It was then established that the same general balance between Branches would be continued. From this point forward the author has chosen to limit his discussion to that portion of the Armory complex under consideration in this thesis.

Within the Hill Shop Branch of the Armory on Armory Square and Federal Square, we find a smattering of all Armory activities in one sub-division: administration, residential, manufacturing, research and development, and warehousing. It is felt that by limiting the program to this one area, the problems are not lessened, but are merely concentrated.

Today the Armory's manufacturing facilities and their related elements are totally out of date and inadequate, because of their antiquity, for the purpose of continuing its present and future missions in a well organized pattern. Buildings designed for one purpose are now being used for another, floor loadings and area requirements once satisfactory, are no longer adequate; and buildings whose shapes were once commodious for light production are not compatible for this use today.
From a chronological break down one could measure the qualifications of the buildings this way. Of the fifty building units located on the Hill, five are comparatively new, fifteen were constructed around the turn of the century, and the remaining thirty were built prior to 1880.

As the Armory grew, buildings were erected in a hit or miss fashion without the benefit of a master plan. Broad greens were created sometimes by circumstance, for relatively unimportant functions and where land was genuinely needed, there was none to be had. Proper land usage was greatly neglected, and with the advent of the automobile, even more confusion was added. Although it is quite pleasant to see the beautiful broad courts surrounded by old red-brick facades, and walk along tree shaded sidewalks, one cannot help feel the piece-meal existence carried on within.
GENERALIZED REQUIREMENTS FOR DESIGN

In a hypothetical design project of this nature the problems to be dealt with are many times vague and abstract, not easily recognized as what they are. The problems underlying the project are then as important as the solution itself. To seek out the basic requirements, those points the author feels will have the greater bearing on successful culmination of the project, requires a rather exhaustive appraisal of the existing situation.

An important part of the project, when examining the site with respect to its own urban surrounding, is concerned with the adjustment of buildings located thereon to the activities and open area around it.

The Armory as it has developed has contributed much to the growth of Springfield, Massachusetts. This fact has been acknowledged many times and ways. The City of Springfield itself has paid highest tribute to the Armory by incorporating in their city seal a remembrance of its presence. Evolution continues and even though the city has reached new limits, the Armory still holds a prominent position in the community both by its location and stature. It is then unfortunate from the author's point of view, to see continued a stigma which seems to plague most government architecture. The
same story exists here as elsewhere, "U. S. Property, No Trespassing." This feeling is synonymous with government installations of this nature, and should, the author believes, be broken down.

It has been the author's purpose to remove the visual barriers created by high fences and continuous lines of buildings that now shut out the city. Instead, he has from various vantage points tried to penetrate deeply into this complex, creating broad vistas and well-balanced combinations of differentiated open spaces. At the same time a general level of architectural unity should be maintained between buildings and open spaces so that their appearance-mass-proportion-form and color will integrate harmoniously with its urban environment. Thus, a more friendly architectural attitude could be created between Armory and community.

The accent is on the preparation of a new approach to the design project both architecturally and philosophically. The author feels one factor that would influence this approach most assuredly, is the historical significance of this installation. One of the oldest institutions of its kind, it is closest to the hearts of military and civilian alike. A certain vestige of its history, which is American history, should be retained without disrupting the new pattern. There has been a definite attempt from the very outset to retain
those buildings symbolizing its first beginning, and blend them with the new in such a way that the old are given a place of dignity. Yet, at the same time permitting the public direct access to the old structures. Another link with the past and symbolic with most military installations in history, is the drill field. The present large quadrangle in the center of Armory Square, the old "militia training field" of Revolutionary days, is felt to be synonymous with the Armory. The author can retain this inherent atmosphere which has dominated the architecture of this post since its founding in 1794, by recalling in essence this feeling of space.

Speaking again of the existing facilities, another close tie was found between the inherent atmosphere of the Armory and the semi-regimentation of its architecture. Again it is felt that this relationship can be continued by expressing the new in the simplest possible terms, using common denominators of form, material and color.

Including the public in the activities of the Armory has been of a prime consideration. Last year no fewer than 32,000 interested persons were admitted to the grounds to view the few activities open to the public. This number was limited simply because there were not adequate facilities to accommodate more. The author has attempted to open as much of the site as possible to the public.
One immediate reaction after observing the present facilities, is the great waste of usable space. It is felt that by re-establishing basic land usages, all elements might better serve their purpose, their adjacent function, as well as the total organization.

In order to create as much public domain as possible, the author has made an attempt to revaluate and interpret the present security needs of the Armory, and employ more subtle approaches to this problem. It is felt by doing this a greater amount of flexibility can be achieved. Public and private spaces could overlap and the observer would then be afforded a greater sense of unobstructed visual freedom. In accordance with this approach, all elements and their surrounding areas are categorized into the following groups:

<table>
<thead>
<tr>
<th>Restricted</th>
<th>Semi-private</th>
<th>Public</th>
</tr>
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<tbody>
<tr>
<td>Research and Development</td>
<td>Administration</td>
<td>Personnel</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>Parking</td>
<td>Museum</td>
</tr>
<tr>
<td>Warehousing</td>
<td></td>
<td>Housing (and Officers' Club)</td>
</tr>
<tr>
<td>* Power Plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Armory Operations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Doubly restricted.
There are many ways to successfully bar intruders. Water barriers have been proven quite effective, smooth stone fences, pits, and steep inclines, all offering greater possibilities than the chain fence. At present military regulations require a seven foot high chain fence topped with barbed wire along the periphery of any land housing military buildings, unless otherwise protected by natural or other artificial barriers.
SITE AND AREA REQUIREMENTS

The Site.

Of the two sites the one to be used is Armory Square. This fifty-three acre tract of land is bounded on the southeast by State Street, the northeast by Federal Street, by Pearl Street to the northwest and by Byers Street to the southwest. This complex is located more nearly in Springfield along "Old Boston Road" situated on the edge of a bluff overlooking the Connecticut River. Approximately 70 per cent of this area is flat, although along one half of State Street, and all of Byers and Pearl Streets the land falls sharply away forming rather high embankments.

State Street is by far the most important of the four. From its origin in the center of the business district, to the outskirts of the city, it is lined with a wide variety of commercial, public, and private buildings. Opposite the site there are a number of large buildings including a high school, Masonic Temple, and an insurance building. The best vantage point for a view of Armory grounds is from this heavily traveled street along the more easterly portion of the site. Federal Street, though quite heavily traveled during certain times of the day, affords possibly the best automobile and truck access to the site. This street linked with Walnut Street forms the mile long run between the Hill and the
Water Shops. Pearl Street, lined with apartments and other multiple dwelling units, is of little consequence from a visual and practical point of view. It is too steep, thus being of little value as a suitable entrance for cars and trucks, and the embankment along the northwest boundary hides practically any vestige of Armory activity. Byers Street is little more than a residential street serving the homes bordering it.
### Area Requirements

<table>
<thead>
<tr>
<th>Building</th>
<th>Dimensions</th>
<th>Area/Floor</th>
<th>Number of Floors</th>
<th>Total Area</th>
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<tbody>
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<td>Administration</td>
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<td>92,250 sq.ft.</td>
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<td>Personnel</td>
<td>80'x40'</td>
<td>3,200</td>
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<td>Manufacturing</td>
<td>600'x320'</td>
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<td>384,000</td>
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<td></td>
<td>190'x120'</td>
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<td>22,800</td>
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<td>Warehouse</td>
<td>235'x125'</td>
<td>30,000</td>
<td>2</td>
<td>60,000</td>
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<tr>
<td>Plant Facilities</td>
<td>200'x55'</td>
<td>11,000</td>
<td>3</td>
<td>33,000</td>
</tr>
<tr>
<td></td>
<td>160'x65'</td>
<td>10,400</td>
<td>4</td>
<td>41,600</td>
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<tr>
<td>Automobile Maintenance</td>
<td>140'x40'</td>
<td>5,600</td>
<td>1</td>
<td>5,600</td>
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<tr>
<td>Power Plant</td>
<td>150'x70'</td>
<td>10,500</td>
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<td>10,500</td>
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<tr>
<td>Drying Kiln</td>
<td>120'x25'</td>
<td>3,000</td>
<td>1</td>
<td>3,000</td>
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<tr>
<td>Armory Operations</td>
<td>185'x45'</td>
<td>8,325</td>
<td>4</td>
<td>33,280</td>
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<tr>
<td>Research and Development</td>
<td>235'x55'</td>
<td>12,925</td>
<td>3</td>
<td>38,775</td>
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<tr>
<td>Precision casting</td>
<td>50'x40'</td>
<td>2,000</td>
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<tr>
<td>Housing</td>
<td></td>
<td></td>
<td></td>
<td>71,000</td>
</tr>
<tr>
<td>Officers' Club</td>
<td>140'x40'</td>
<td>5,600</td>
<td>2</td>
<td>11,200</td>
</tr>
</tbody>
</table>
THE DESIGN

The overall concept is based on the following principal thoughts:

1. A system of elevated walks connecting all principal buildings and spaces to be used as the architectural key to security control for the Armory.

2. A series of open and closed spaces which will define and separate the various Armory activities.

3. The creation of as much public area as possible without infringing upon the vital functions of the Armory.
A. The Major Triad

The major triad, as the author has termed it, dominates and organizes the site. One element of this system is the large administration building with its axis parallel to and fifty yards from State Street. This element, as well as the personnel building connected to it by an entrance portico, keynotes the main public entrance to the installation. Second of the three elements, the parking garage, is located northeast of the administration building. This well articulated structure forms a subtle ending to the main entrance. It is set well back from both State and Federal Streets, so that its dominance is not too apparent to passers-by. Access is from Federal Street. Third, is the manufacturing plant. This massive eight acre structure is located more nearly in the center of the site, with its major axis parallel to Federal Street. This building form, because of its gigantic proportion, would seem to dominate the scene more than any other, but as will be seen later it has been suppressed to a point where it now stays within a proper dimension.

Aside from their functional relationships to each other, these buildings fulfill another important task, that of defining the boundaries of open and closed space. This is important when one considers the variety of activities carried on. Busy open areas set aside for manufacturing activities are
completely detached from the more quiet and restful public areas. These elements form the nucleus of the composition. They help to divide the site spatially and physically forming areas around which Armory life evolves.
B. Open Spaces and Plazas

In a sense, the open areas form the backbone of the author's planning. Created in several levels, they provide a certain adherence to the urban design pattern. Within the site they hold the key to its activities.

Dominant within this composition is the public plaza. Its major axis in conjunction with the triad is considered to be northeast-southwest. Enclosed by the parking garage to the east, and by the Old Main Arsenal to the west, by the administration building to the south, and by the manufacturing plant and Armory operation building in the north, it is the focal point of the complex.

One of the main planning problems confronting the author is that of retaining the inherent atmosphere of the present Armory without destroying the idea of openness. To the author's mind only one solution is worth merit; it is that the public plaza is intended to recall the intrinsic flavor of the Military Training Field, once the center of Armory activity.

A detailed description of the plaza is as follows:

It is divided unequally by an elevated walkway connecting the
main entrance to a central passage north of the plaza, around which all main elements are grouped. The larger of the two portions is depressed four feet, to differentiate it from the plaza as a whole. It is loosely defined on every side by buildings, trees, water and covered walks. To the observer, one feature stands as being most dominate. The Main Arsenal Building of 1805, symbolizing the beginning of this installation, towers above the other structures dwarfing them by its own importance. The other elements grouped around it are simple elevated masses lifted above ground. Thereby, they permit the observer complete visual freedom. To give a sense of scale to the grounds, a pattern of long rectangles is employed. This system is subtly discernible throughout both portions; the lower part, somewhat formal in character, is composed of unpaved rectangles filled with clipped hedges and well kept stands of grass, and the upper is reversed with more pavement than grass.

The second major area, perpendicular to the main axis, could be called the manufacturing plaza. Closed to the public and hidden from its view, it houses the hustle and bustle familiar to every factory. This area is enclosed on all four sides by elements directly related to the manufacturing operation. The asphalt pavement and the architecture of the enclosing buildings are indicative of the activity therein.
On the other side of the manufacturing block another plaza is created. This area is again closed to the public. It is perpendicular to the public plaza and separated from it by the Armory operation building. Opposite this building and at the far end is Research and Development. Enclosing the third side is the long facade of the manufacturing plant. This plaza then, completely informal in character is provided mainly for the recreation of Armory employees. Benches line the walks—shaded by informal grouping of trees. Open areas are present to accommodate the routine lunch time softball game. A restaurant and coffee shop are included in the operations building to complete the function of the space.

The fourth enclosed area, the housing area will be discussed under "Housing."
C. Security

The problem of security is resolved in two ways: by successfully enclosing the area under restriction and by providing suitable means of entrance and exit. The author's solution to the problem is a bit more devious than the direct government approach. To enclose the area he has employed water, fences, buildings, and in one location a firing range. To control the entrances, he uses elevated walkways. All of these methods are used to insure one design criterion, the unlimited feeling of space.

Water plays an important part in the planning, because it creates an artificial barrier, a moat, between public and private areas, and a source of interest within the composition.

A detailed description of the perimeter security is as follows: A smooth stone fence beginning at the west end of the moat, and continuing northeast to the firing range, separates the employees' recreation area from that of the housing. No visual tie need be affected there. The test ranges are in themselves a method of security, because they are formed into step-like terraces. The step is continued along Pearl Street by the use of retaining walls to a point behind the warehouse building. A metal fence, much the same as the one now in
existence, is then used to turn the corner at Pearl and Federal Streets. From the truck entrance to the employees' entrance the two plant Facility Buildings act as barriers. The ring is completed by a fence from the Employees' entrance to the water.

The elevated walkways are, in the author's opinion, the key to the security problem. Having once gained access to them, a pedestrian then is free to travel to any element on the site, by the most direct route. The central elevated passage is parallel to the public plaza, and combines with the moat to form its northern boundary. This passage can be entered from the west by the end of the moat, and from the east by the employees' entrance. An auxiliary walkway bisects the central passage and connects the Administration building with the others.

It is thought that these passages serve more than one function. Since they are apparent throughout a major portion of the composition, they would tend to separate as well as relate forms and planes within the composition.
D. THE BUILDINGS

1. Administration Building

The most important overall planning concept is to place the offices in correct relationship to both the public and factory, between whom the office attention must be equally divided. Visitors to the installation are met by a clean, spacious, well-designed unit yielding a good first impression of the composition. This building houses the executive branches of the Armory. The structure is elevated, thus closing it to the public. One mass formed by the elevator bank and stairs connects the building to the ground creating a single, controlled entrance. Located next to the administration building in a dependent fashion, is the personnel building, containing the reception area and personnel activities. Adjacent to both, defining the remainder of the main entrance, is the visitor's parking area.

2. Parking

Federal Street acts as a service way to the parking garage and manufacturing plaza. Since traffic can be controlled by Armory guards, and is less traveled than State Street, it is ideal for this purpose. The other streets have already been ruled out. A central parking garage such as shown, eliminates the problem of scattered unsightly parking areas, thus creating more usable land. In addition it serves to clear
the site of a number of access roads, giving people a more suitable pedestrian environment.

A series of vertical tension cables enclose the inner space of this structure. They are used functionally as a bumper guard, and architecturally as an interesting treatment of the exterior.

3. Manufacturing Buildings

The one large eight acre structure houses the entire manufacturing operation of the Armory under one roof. By creating as much unobstructed floor area as possible, and by concentrating it in this manner, unrestricted flexibility is achieved, more compatible to pilot line production. As it was stated earlier, its location is intended to minimize its importance. The horizontal dimension of this structure is obviously quite long, but vertical it is no greater than the building surrounding it. The problem then is to suppress the longer sides. To the northeast of the block, the author has tried to hide the facade and the activity of the plaza, by using the other related elements as an architectural screen. The embankment controls the view from Pearl Street. The other two sides, toward the employees and public plazas are designed to continue the architectural standard of the composition.
Of the other related elements—power plant, warehouse and plant facilities building—only the power plant merits additional discussion. Because of the double security requirement, the author has elevated this structure by placing it on a platform; the thought being that the platform would limit access to the structure and also provide a base for its strong forms.

4. Armory Operation Building and Research and Development

In contrast to the heaviness of the manufacturing block, these buildings are treated more delicately. The operation building separates the public plaza from that of the employees', while the Research and Development building terminates the composition at the far end of the employees' plaza.

The upper floors of the Armory operation building are made up of a collection of offices supervising activities carried on within the manufacturing plant. The lower floor is allocated to the cafeteria and snack bar, both opening onto the green to the north. The cafeteria is centrally located serving the majority of Armory buildings.

Research and Development is essentially independent of the
rest of the Armory functions. Their work is highly secret. The author has intentionally set this branch apart of the major complex.

5. **Museum**

It is logical that the early Arsenal Building be used to house the weapons museum. It is thought that this building will make an excellent repository for ancient relics. It is not only symbolic of the past, but it maintains the possessions of its history.

6. **Public Park**

Originally it was intended that both Armory and Federal Squares be incorporated into the site for this project, but as the planning progressed it became apparent that Federal Square was no longer needed as part of the site. After consulting with the Springfield City Planning Commission, it was found that areas northeast of Federal Square were totally lacking in teen-age play area. It was then decided to develop a play field in this space, using only a portion of the grounds as a link between the two squares.

7. **Housing**

The author has chosen to locate the housing units along the
southwest slope of the site overlooking the core of the city. He feels that they are first more compatible with their urban surroundings and second adaptable to the terrain. Using the existing commanding officers' quarters as a pivot point, they form a large periphery enclosing two smaller spaces. The larger of the two is axial, pointing toward Quarters One. Its character is expressed by a formal pattern of trees and walks. The smaller is merely an extension of the broad greens surrounding the main quarters.

Two of the smaller quarters are for Enlisted personnel, the other two are to be used for key civilian employees or junior grade officers. The remaining eighteen units are for ranking military officers. It is felt that these units express a more desirable mode of living than the average military dwelling units found elsewhere.

The author's intent is to plan a standard housing unit spacious and flexible enough to supplement the requirements of any military family. The rhythmic pattern of the blocks offers a variety of spaces suitable for outdoor living with emphasis on the equal treatment of all. The units are tied together to form three collective bodies, at the same time affording a certain amount of individuality to each.
MODEL OF HOUSING GROUPS
Each pair of overlapping blocks forms a stairwell linking the basement, first and second floors. The ground floor is broken into a quiet and active area by the kitchen core. The living area, though quite large, is designed to accommodate large gatherings of people, common to military routine. The recreation area, open to the kitchen, is used for more informal living. A snack counter is provided on one side of the kitchen more near the service entrance. For added convenience a half-bath is contained within the core near the main entrance. Laundry facilities and added storage space are located in the basement where there is also space for spare-time activities. The elevated block in each case is composed of sleeping quarters--master bedroom and bath and four other rooms sharing a common bath. Beneath the elevated blocks facing the access road, is space for two cars and an outdoor storage cabinet.

All units are supplied with heat from the main power plant.

The smaller units function in much the same manner, differing from the others in shape and size.

Completing the housing complex is the officers' club. Used for many large public gatherings, as well as minor military recreational activities, this building is directly accessible from Pearl Street, and provided with a large parking lot.
Though different in function from the housing design, it is small enough to be treated in the same spirit.
A DESIGN STUDY FOR SPRINGFIELD ARMORY

FREDERICK T. KIRBITZ

THE SPRINGFIELD ARMORY
Topographical Plan of the
SPRINGFIELD ARMORY.
Springfield, Mass.
April 1854.