

The Chicago Courtyard Apartment Building: A Sustainable Model Type

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INTRODUCTION

I was originally attracted to the civic presence of this typically prosaic building type. The composition of many small apartments around a court that is open to the street creates an urban space that is greater than the sum of its parts. In Chicago, streets lined with three flats and six flats can have a stately presence but no other multi-unit housing type matches the typological flexibility, humane scale and civic elegance of the courtyard type.

While courtyard apartment buildings can be found throughout Chicago and the suburbs the examples used for the type / variant analysis were selected from an area bounded by Lawrence Avenue on the north, Fullerton Parkway on the south, Racine Avenue on the west and Lake Michigan on the east. Within this approximately three square mile area there are nearly two hundred courtyard apartment buildings. According to the vernacular of local real estate rental listings the Chicago courtyard apartment building type is commonly referred to as simply a courtyard building. The two terms are interchangeable in this paper.

SUSTAINABILITY

The multi-unit housing types developed in Chicago after 1902 (Tenement House Ordinance) and until 1929 (Stock Market Crash) accommodated most modern utilities and appliances. These utilities included a municipal water and sewer system that supported indoor plumbing, coal gas (natural gas was not common until much later), electrical and telephone utilities. Before 1930, most residences

still relied on the delivery of block ice for the refrigeration of fresh food. The alley system, common throughout Chicago's residential districts, allowed for delivery of block ice and fresh milk to the rear door and provided a location off the street for storing coal ash and rubbish for municipal collection. The use of Freon (invented in 1930) and the improvements in compressor technology that allowed for a refrigerator in every kitchen and central air conditioning for every apartment was not widely available until after World War II. The lack of air-conditioning meant that these multi-unit housing types were planned to allow for cross ventilation in every apartment, a feature seldom achieved in modern multi-unit housing design.

As air-conditioning made it possible to ignore passive ventilation and lighting strategies, building footprints became wider and larger and the potential for passive ventilation and lighting was compromised or lost. New technologies were imagined and applied in ways that allowed the average home owner to realize a complete and artificial climate within their home regardless of the local climate or season.¹

The tenement house reforms that were intended to improve multi-unit housing sanitation for the urban poor were inadvertently, as we understand them today, sustainable. The 1902 Tenement House Ordinance specified that all occupied rooms have an exterior window and this dictated a building configuration with a relatively shallow width that facilitated cross ventilation. *"In every new tenement house every habitable room... shall have at least one window opening directly upon a street, alley,*

yard or court.”¹ The Ordinance also dictated the design of individual windows so that the size and the manner in which windows opened facilitated passive ventilation and day lighting and made it possible to vent rooms utilizing natural convection. *“The total area of windows opening from any such room ... upon a street, alley, yard or court shall be at least one-tenth of the floor area of that room, and the top of at least one window shall be not less than seven feet above the floor and the upper half of that window shall be made to open its full width.”*²

As we design the next generation of sustainable multi-unit apartment buildings we may want to look back to the era before abundant and inexpensive energy. The footprint for apartment buildings of the future may start to look more and more like these “modern” buildings of the 1920’s. It is the position of this paper that, for low-rise multi-unit housing design, the height of planning was reached, with regard to the integration of passive ventilation and lighting strategies, more than seventy years ago.

COMPARING CHICAGO AND NEW YORK CITY TENEMENT TYPES

In 1907 Herbert Croly, a writer from New York City, wrote in *Architectural Record* about a new type of apartment building that was being developed in Chicago and observed that the planning of this tenement type was superior to the types utilized in New York City. *“On the whole, one gets the impression that the Western apartment houses are built in order to supply pleasant residences for people of some taste, whereas the New York apartment house is the victim from start to finish of conditions which force their tenants merely to take what they can get.”*³ New York City tenements developed around lot line double loaded corridor types that had two or more units per floor and were commonly five or six stories in height in response to the need for higher densities and higher returns on rent. Some early New York tenements even included windows that opened onto adjoining interior rooms because early ordinances did not specify that windows had to open to the exterior or a ventilation shaft.

In contrast, Chicago tenement types developed around a planning module that featured multiple pairs of vertical stair halls instead of a single double loaded corridor that bisected the building. This planning was superior for cross ventilation because

the multiple vertical stair halls did not isolate apartments on either side of a central corridor. (figs. 10-16) The multiple stair halls of the courtyard building had the added benefit of making the entry sequence more domestic in scale. *“It must be remarked also that the effect of domestic privacy which these low buildings give is not wholly an illusion. As a matter of fact, the tenants of apartment houses built around courts do have much more privacy than the tenants of buildings which rise higher from a smaller area.”*⁴ This was possible because courtyard buildings had several entries that served no more than six apartments unlike elevator buildings which had a ground floor public hall that served every unit in the building.

The Old Law, New Law and dumbbell type tenements developed as a response to the higher densities common in New York City never became popular in Chicago. Land was less expensive in Chicago so new and unique multi-unit housing types had a chance to develop. *“It is an extremely encouraging fact that buildings such as these are being erected by speculative builders in response to an ordinary commercial demand.”*⁵ Because single family residences, whether owned or rented, were abundant and affordable in Chicago, courtyard buildings had to have a domestic appeal. *“They (courtyard buildings) prove that in Chicago at least, the tenant of a flat can retain many of the advantages which in New York belong almost exclusively to the owner of a private dwelling. He can obtain space, air, light, a court in which his children might play, green grass and flower beds, and a habitation which looks like the residence of refined and civilized people. The builder of an apartment house in Chicago is obliged really to compete with the builder of private residences. He has to make the living accommodations he offers as pleasant in appearance as a tenant could obtain by the purchase of a house of his own, because such a tenant could obtain such a home for a comparatively small increase in rent.”*⁶

HISTORIC CHARACTER OF THE STUDY AREA

The courtyard buildings within the study area were built after 1902 and before 1930. The primary historic housing types of the study area include: single family detached dwellings, two flats, three flats, six flats, row houses, apartment towers, reverse corner lot buildings and courtyard buildings.

Single lot single family detached dwellings along with two, three and six flats are found throughout the area with larger double lot single family detached residences generally located within a few blocks of the lakefront. Apartment towers from this period are generally found within a few blocks of the lakefront. Courtyard buildings are found throughout the study area with concentrations near the lakefront and near elevated stations. With regard to the density or variety of courtyard buildings, this study area is by no means unique within Chicago. Any area in Chicago that had an elevated line is likely to have courtyard buildings. Suburban cities such as Oak Park and Evanston also have many courtyard buildings.

CHICAGO FLAT APARTMENTS

In Chicago, "flat" refers to a specific type of apartment. Every floor of a flat apartment building is essentially the same as the floor below and the number preceding the word "flat" represents the number of units in the building. That is to say, a three flat has three apartments and the three apartments are stacked on three levels. The basic planning increment for flat type apartment buildings is the two or three flat. (fig. 1) When a two or three flat is mirrored around a common stair hall it becomes a four or six flat. (fig. 2) Six flats have an enclosed public stair hall on the street side of the building and an open but covered service stair on the rear of the building. Most buildings have a gangway on one side of the building that provides a private exterior path through the site from street to alley. For the courtyard building type the six flat becomes a module that is repeated along three sides of a court effectively bending the street façade into the court. (fig. 2)

THE COURT

The courtyard building is characterized primarily by its low height and the open court that extends into the block perpendicular to the street. The courtyards are generally deeper than they are wide but many of the finer courtyards are wider than they are deep. This geometry suggests that the visual connection of the door to the street was the primary objective of the public entry sequence. *"It will be noticed that ... these lower buildings are arranged around courts so liberal in size that even the rooms on the bottom of the court obtain an abundance of light and air. It*



Figure #1: Chicago Two Flat and Six Flat Types

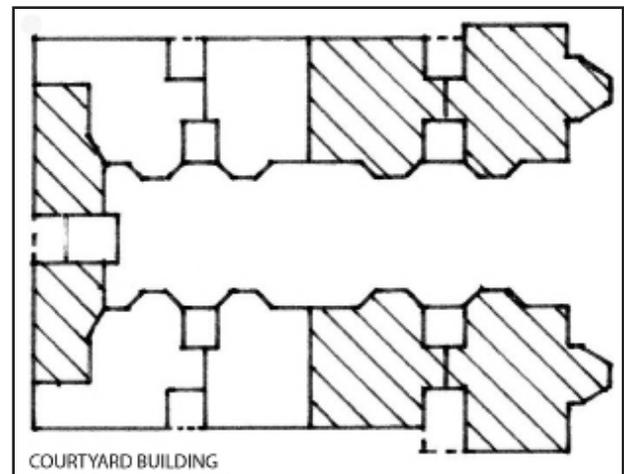


Figure #2: Paired Units Form Courtyard

is of course, these courts which give the buildings their character ..." If the public entry sequence is an important defining element for the court the service sequence plays an important role in maintaining the character of the court. The service sequence reveals much about the complexity and refinement of this building type. Because the units of these buildings

were required to have access to two stairs, the second stair allowed service access totally isolated from the street side court.

EARLY CHICAGO PRECEDENTS

It is difficult to pinpoint the exact source of the Chicago courtyard type but there is compelling evidence that this building type evolved from a variety of local conditions and precedents. Despite the Panic of 1893 the Columbia World Exposition was a short lived financial boon for the city attracting huge crowds and significant residential speculation. Many new apartments built around this time were used as hotels temporarily during the fair. One such example was the Mecca Flats Building on 34th Street on the south side. The Mecca Flats (1891) (a Mecca for flat renters) is the earliest example of a court building in Chicago that follows the form of a multi entry walk-up apartment building with a court open to the street. Most images of the Mecca Flats focus on the buildings two internal glass enclosed atriums (fig. 3) but the building also had an exterior court that opened onto 34th Street which functioned in the same manner as the later courtyard buildings. (fig. 4) The interior courts may

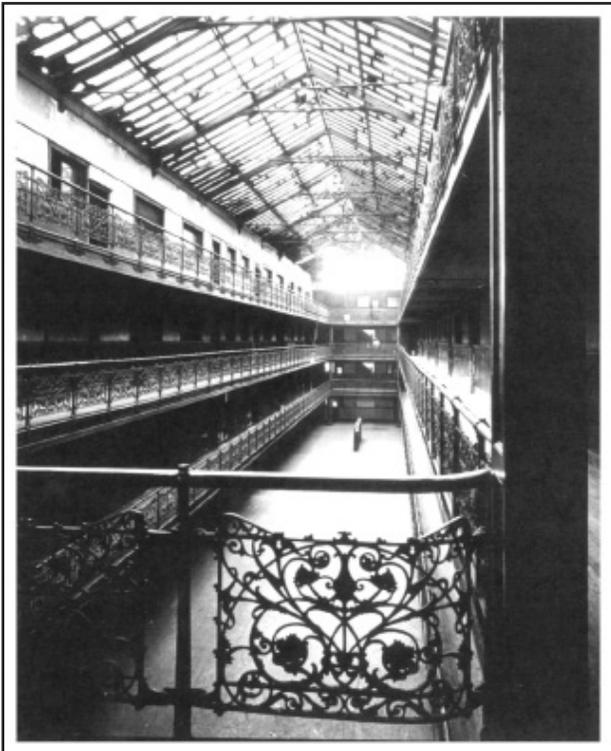


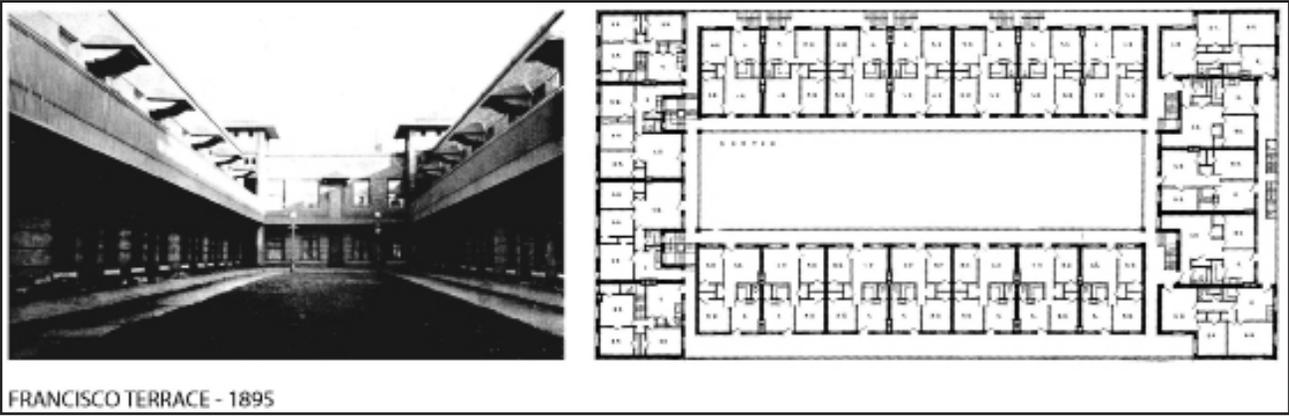
Figure #3: Mecca Flats Covered Court



Figure #4: Mecca Flats Open Court – Two Views

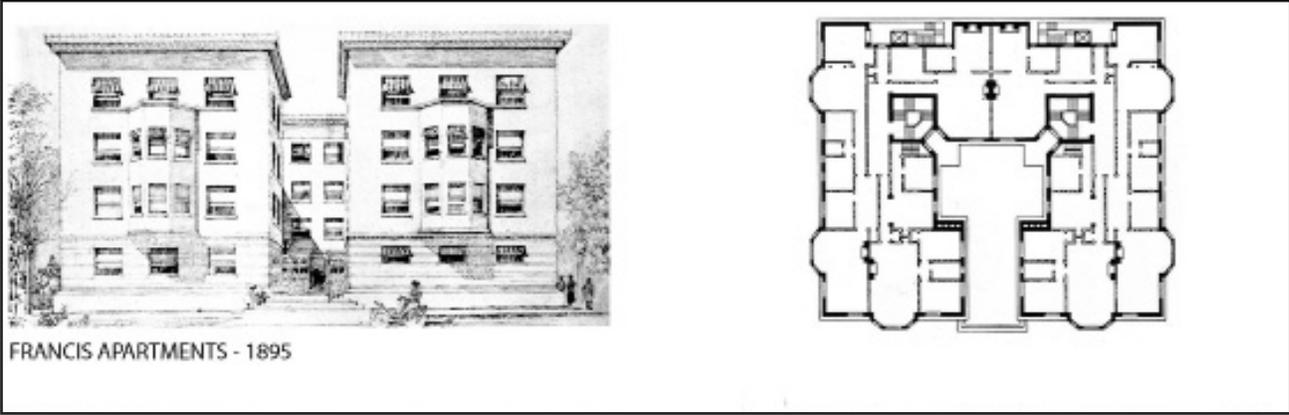
have been inspiration for the Francisco Terrace project of 1895. (fig. 5)

Two buildings designed by Frank Lloyd Wright in 1895 have been cited as being forerunners to the courtyard type in Chicago. Francisco Terrace is the first of these precedents. This building was designed as a model tenement and in many ways resembles the typical later courtyard building type. Henry-Russell Hitchcock says of Francisco Terrace “The galleries foreshadow twentieth century practice.”⁸ Grant Manson says “the scheme is more inventive than rational; yet it was imitated several times.”⁹ (fig. 5) The Francis Apartments is the second early Wright precedent. Grant Manson says of this building, “This apartment-house established a new high level for such buildings in the Middle West ... That it was much admired is attested by the frequency with which it was imitated.”¹⁰ (fig. 6) While the Francisco Terrace and Francis apartments were influential buildings neither was a true courtyard of the later type. However in 1906 Wright designed an unrealized courtyard apartment building for Warren McArthur that closely followed the planning strategies of the later type. This building was



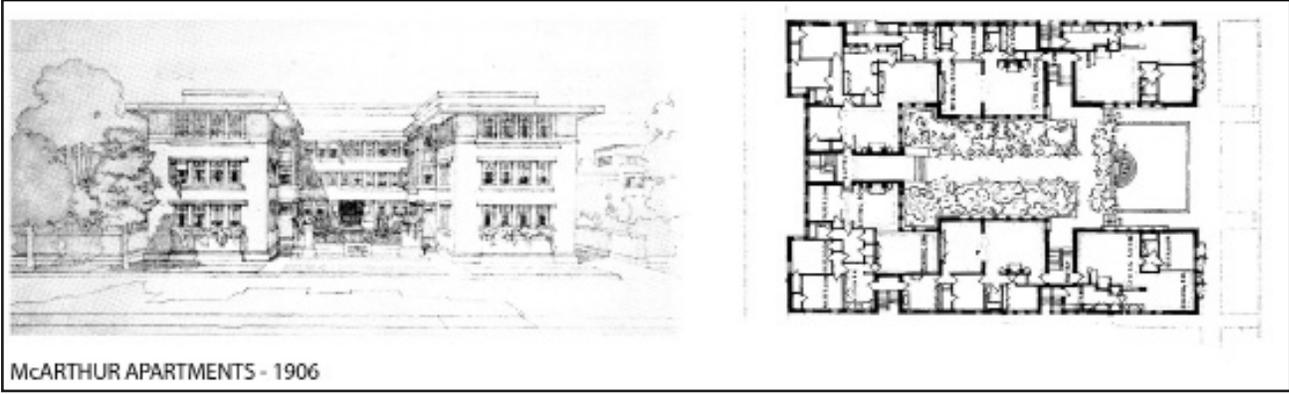
FRANCISCO TERRACE - 1895

Figure #5: Francisco Terrace 1895 – Frank Lloyd Wright



FRANCIS APARTMENTS - 1895

Figure #6: Francis Apartments 1895 – Frank Lloyd Wright



McARTHUR APARTMENTS - 1906

Figure #7: Warren McArthur Concrete Apartment House 1906 – Frank Lloyd Wright

designed the same year as Unity Temple and along with its concrete structure, resembles the more famous building. The McArthur apartment building is one of the most outstanding designs my research has revealed and it is unfortunate that this project was never realized. (fig. 7)

Herbert Croly's 1907 article "Some Apartment Houses in Chicago" in *Architectural Record* described and illustrated several early south side Chicago courtyard apartment buildings and this article may have introduced the building type to the rest of the country. The article describes the new and unique courtyard type but does not identify specific precedents.

THE 1902 TENEMENT HOUSE ORDINANCE

The use of the term tenement house to describe multi-family dwellings is commonly associated with New York City but is today rarely associated with Chicago multi-family housing types developed during the same period. This is somewhat surprising since Chicago's 1902 Tenement House Ordinance was the template for Chicago's unique multi-family housing types.

The scope of the 1902 Tenement House Ordinance was comprehensive covering every type of multi-unit housing. "'Tenement House' is any house or building or portion thereof which is (a) intended or designed to be occupied or (b) leased for occupation, or (c) actually occupied as a home or residence of two or more families living in separate apartments, and includes all apartment houses, flat buildings, residential hotels, etc."¹¹ The Ordinance effectively eliminated the use of the wood frame tenement types that were popular with residential apartment developers until that time.

The construction types permissible for tenement housing outlined in the Ordinance effectively limited the majority of courtyard buildings to three and a half stories above grade. "Every new tenement house more than five (5) stories and basement high shall be of fire-proof construction ... every new tenement house more than three (3) stories and basement high, but not more than five (5) stories and basement high, shall be of "slow-burning construction" ... with the cellar and basement construction, including the floor construction of the first story above the cellar or basement, fire-proof."¹² The Ordinance established

that the perimeter walls of any multi-unit apartment building up to three and a half stories must be constructed from solid fire proof masonry construction but the interior construction could be of more economical but combustible dimensional lumber. The low height of the courtyard building also meant that elevators were not necessary, further reducing the cost of this building type.

The Ordinance established the different types of permissible courts. "'Court" is an open, unoccupied space, other than a yard, on the same lot with a tenement house; a court entirely surrounded by a tenement house is an "inner court;" a court bounded on one side and both ends by a tenement house and on the remaining side by a lot line is a "lot line court;" a court extending to a street, alley or yard is an "outer court."¹³ The dimensions of the court were determined by a complicated calculation based upon the minimum width required if the court had windows on one side or two sides and the total height of the building. While the Ordinance defined the allowable court types and minimum sizes Chicago's residential developers established the preference for using oversized outer courts on the street side of the building.

The ordinance dictated that interior public halls in tenements must have exterior windows. "In every new tenement house every public hall shall be lighted by at least one window in each story opening directly upon a street, alley, yard or court, or by a skylight. Such window shall be so placed that light may pass directly through it and the hall to the opposite end of the hall, or else there shall be one window opening directly upon a street, alley, yard or court in every twenty (20) feet in length or fraction thereof of such hall,"¹⁴

The smaller two, three and six flat types already popular in Chicago easily accommodated the requirements of the 1902 Ordinance but larger tenement designs did not commonly incorporate windows in the public hall. By linking the units to the ground through multiple vertical stair halls the newly developed courtyard type eliminated this planning challenge by eliminating interior public halls.

TYPE / VARIANT ANALYSIS

This type / variant analysis has been included in order to illustrate the planning flexibility of the

courtyard type by documenting the wide variety of urban lots that can accommodate courtyard buildings. The model type and five of the six variants for this analysis were all chosen from a relatively small area on the north side rich in a variety of lot sizes and courtyard types. The study area is bounded on the north by Waveland Avenue, on the south by Cornelia Street, on the west by Broadway Avenue and on the east by Lake Shore Drive and Lincoln Park. The study area is bisected east / west by Addison Street. The density of the neighborhood is offset by the lakefront and Lincoln Park. The nearest elevated line station is located on Addison Street a few blocks west of the study area just east of Wrigley Field.

The site plans included in this analysis were generated from 1930's era Sanborn Fire Insurance maps. The Sanborn maps show the stair halls and the rated partitions between individual units in apartment buildings three and one half stories tall or less. This feature makes it easy to diagram the individual units while also illuminating the ventilation strategies. Apparent gaps in these maps indicate lots that had not yet been developed by the date of the map.

For the tenant, the courtyard buildings primary advantage is that it maintains a scale similar to that of a single family residence. Since the 1920's lifestyles have changed but the courtyard building has adapted well. Courtyard building advertisements from the 1920's often touted such amenities as "furnished heat," a feature that keeps these units popular with renters today. These buildings were built late enough to have electricity pre-wired and this helped to keep the interiors uncluttered and appealing. The interior finishes of the average courtyard building is usually quite high with hardwood floors and trim and plaster moldings.

THE MODEL COURTYARD TYPE

The model Chicago courtyard apartment building type (fig. 8) is characterized by the following:

- A mid block building site on a residential street.
- A landscaped court ("outer court") that is open to the street.
- Multiple grade level public entries accessed from the street or court and organized
- around vertical stair halls.
- Multiple grade level service entries accessed from the gangway or alley and
- organized around open but covered stairs.
- Three and a half stories building height.
- Cross ventilation in each apartment.
- Operable windows.
- Face brick on street and court facades and common brick on other facades.
- Modern systems including hot and cold water, heating (typically hot water or steam), electricity and telephone.
- First floor units are half a level above grade to increase street level separation and
- to allow a service basement that is not entirely below grade.
- The basement level houses the boiler and utility rooms, laundry rooms and tenant
- storage units.
- Basement level apartment units are rare but when they do occur they are generally
- limited to the front of the court and are commonly referred to as garden
- apartments.
- The perimeter walls are constructed from bearing wall masonry (brick)
- construction.
- The window trim and exterior ornamentation is fabricated from terra cotta or
- limestone.
- Interior bearing walls and partitions are constructed from protected (plaster
- coated) dimensional lumber.
- Interior floor and ceiling joists are constructed from protected (plaster coated)
- dimensional lumber.
- A high quality of interior finishes including decorative plaster moldings, tile
- bathrooms and hardwood trim and flooring.

Having defined the model courtyard type, we will examine the courtyard type variants.

THE COURTYARD TYPE VARIANTS

The first significant variant is a courtyard building on a corner lot fronting two residential streets. Typically, the units that face the court and side street are still entered from the court. The face brick is extended to the side street façade so there is no common brick on a street façade.

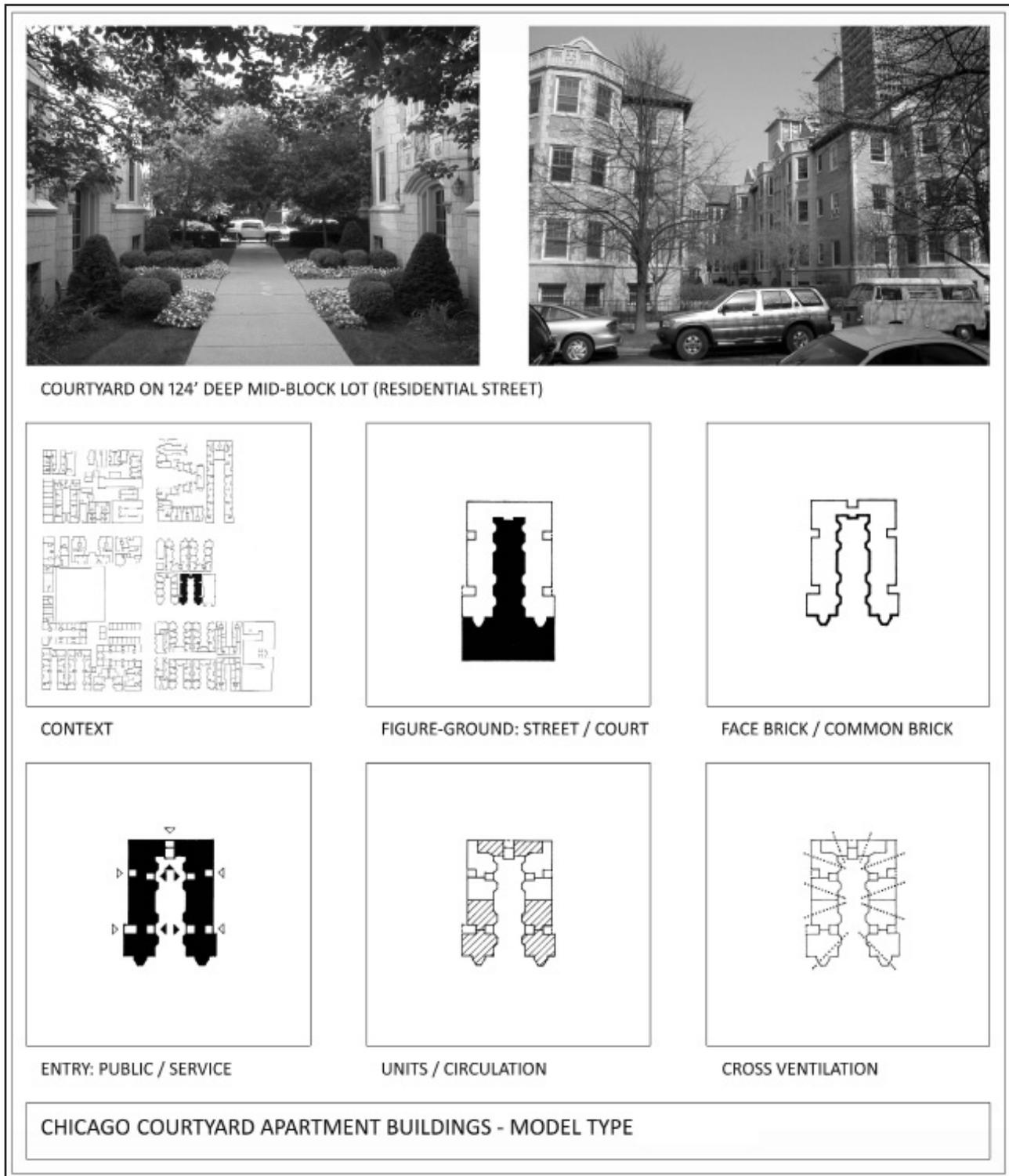


Figure #8: Chicago Courtyard Apartment Building – Model Type (Mid-Block Type)



COURTYARD ON OVERSIZED MID-BLOCK LOT (RESIDENTIAL STREET) - LANDSCAPED COURTS AT REAR OF BUILDING



CONTEXT

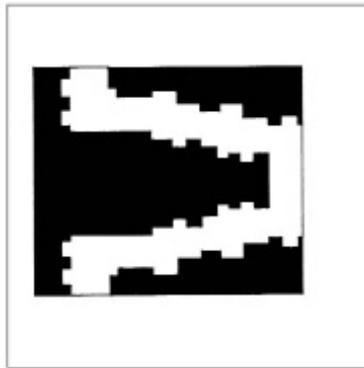
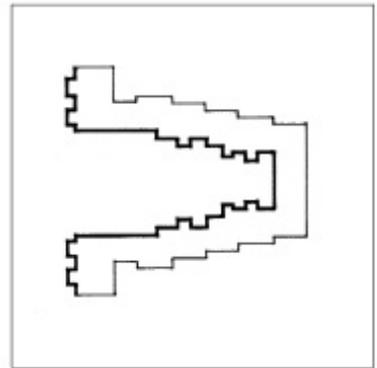
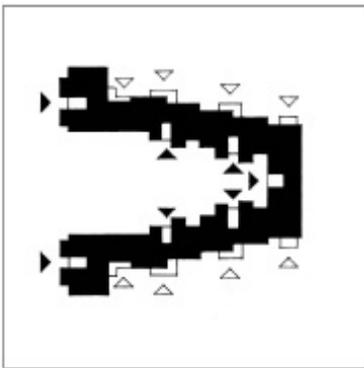


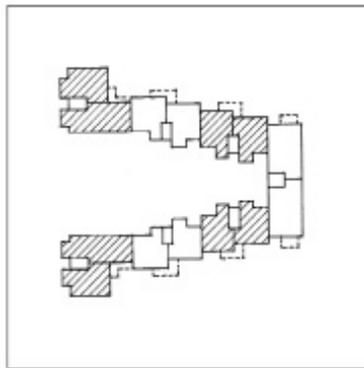
FIGURE-GROUND: STREET / COURT



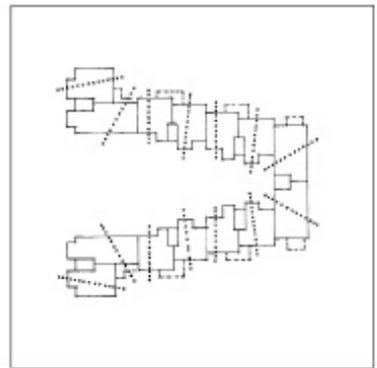
FACE BRICK / COMMON BRICK



ENTRY: PUBLIC / SERVICE



UNITS / CIRCULATION



CROSS VENTILATION

CHICAGO COURTYARD APARTMENT BUILDINGS - VARIANT SIX

Figure #9: Chicago Courtyard Apartment Building – Variant Six (Front and Rear Court Variant)

The second significant variant is a courtyard building on a corner lot where one or both of the streets is a commercial street.

The non-court frontage incorporates retail shops on the ground floor and apartments above that are accessed from the court. The second frontage incorporates the residential court.

The third variant is a courtyard building with a deeper than normal lot. The illustrated example is perhaps the deepest courtyard apartment building in Chicago.

The fourth variant is a courtyard building with a shallower than normal lot. This example is located on mixed commercial / residential street.

The fifth variant is an irregular lot. This example is located at the corner of a commercial and residential street and includes shops on the ground level of the commercial street.

The last diagrammed variant is one of the most interesting and unique courtyards I have identified. (fig. 9) The oversized lot along with a staggered ziggurat formed court have been utilized to develop green spaces at the front and rear of the building. This addition of green space at the rear of the building is the only example of this site plan strategy I have been able to identify making it the most unique courtyard in Chicago. The rear courts of this particular building have not been extensively landscaped but one can easily imagine the possibilities for this variant.

CONCLUSIONS

The Chicago courtyard apartment building is a flexible multi-unit housing type that should be considered for any sustainable residential or mixed-use residential project. For multi-unit residential buildings, the Chicago Building Code, like most building codes, requires heating and ventilation in all occupied rooms but does not require air-conditioning. Even though passive ventilation is the code norm, today most apartment buildings are designed to rely upon air-conditioning and little thought is given to effective passive ventilation. Because passive ventilation and day lighting were the key planning principals of the courtyard type the courtyard type is an appropriate sustainable

precedent today. The wide courts, shallow building width and low height of courtyard buildings all add to the passive ventilation and day lighting potential of courtyard buildings. As the price of energy increases the advantage of the passive systems inherent in these pre-air conditioned designs becomes apparent.

ENDNOTES

- 1 Adams, Charles R. Handbook for Architects and Builders: Tenement House Ordinance. Chicago: Press of Wm. Johnston Printing Co., 1903, 121.
- 2 Ibid., 121.
- 3 "Some Apartment Houses in Chicago." Croly, Herbert, Architectural Record, 21 (1907), pp.122.
- 4 Ibid., 130.
- 5 Ibid., 128.
- 6 Ibid., 122, 128.
- 7 Ibid., 128.
- 8 Hitchcock, Henry-Russell. In the Nature of Materials: 1887-1941 The Buildings of Frank Lloyd Wright. New York: Da Capo Press, Inc., 1975, ill. 34.
- 9 Manson, Grant Carpenter. Frank Lloyd Wright to 1910: The First Golden Age. New York: Reinhold Publishing Corporation, 1958, 83.
- 10 Manson, Grant Carpenter. Frank Lloyd Wright to 1910: The First Golden Age. New York: Reinhold Publishing Corporation, 1958, 81.
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- 12 Ibid., 119.
- 13 Ibid., 117.
- 14 Ibid., 123.

ILLUSTRATION CREDITS

- Figure 1 The Housing of the Poor in American Cities: The Prize Essay of the American Economic Association for 1892. pp. 69, 71.
- Figure 2 American Apartment Houses of Today. pp. 140.
- Figure 3 One Hundred Years of Land Values in Chicago. pp. 431.
- Figures 4, 5, 7 Drawn by the Author
- Figure 6 Drawn by the Author and Directory to Apartments of the Better Class: Along the North Side of Chicago. pp. 102.
- Figure 8 Ibid. pp. 383, 397.
- Figures 9 Photos and diagrams by the author.

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