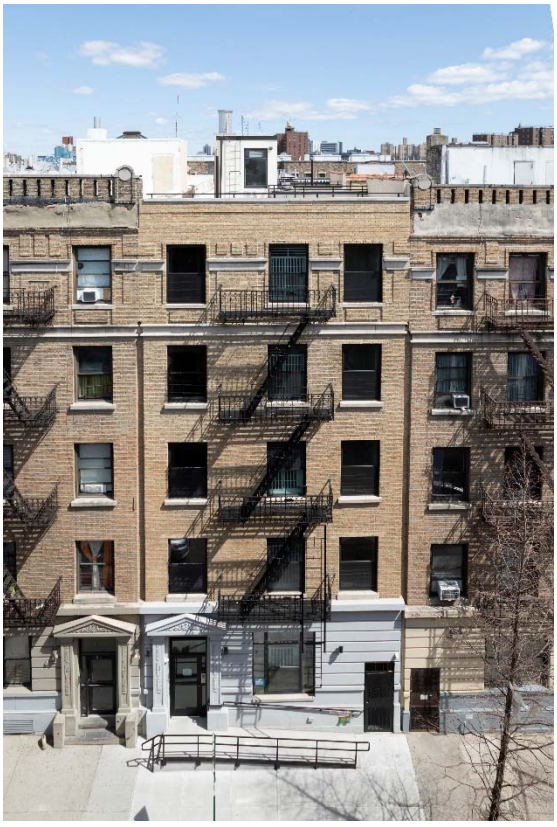
21 ARDEN STREET, NEW YORK

Project:	Fifteen (15) Multi-Family Residential Units at 21 Arden Street, New York, NY
Description:	A Substantial (Gut) Rehabilitation of a 5-story and a Cellar level Multi-Family building with fifteen (15) Residential Units.
Features:	Six (6) One-Bedroom Units, Nine (9) Two-Bedroom Units and building storage and mechanical rooms in the cellar.
Structural Innovation:	Solid 'Atlas' Clay Brick Masonry bear walls, wide flange steel columns and beams and light gage metal joists.
Size:	12,650 Square Feet Gross Area
Completion:	Spring 2022
Cost:	$4,792,000.00 (Construction Hard Cost)

Project Description:

This building is located on Arden Street, between Nagle Avenue and Sherman Avenue in the Fort George neighborhood of Manhattan. Prior to extensive renovation, the building was originally owned by the New York City Department of Housing Preservation and Development (HPD). In the early 2000's the building was deemed unsafe, which caused the tenants to be relocated to another building. It is well documented that affordable housing is a crisis in New York City. Due to pressure from the City Council and neighborhood activist groups renovated this building was slated to be renovated through participation in the HPD - Affordable Neighborhood Cooperative Program (ANCP). Thus making this building, one of the very first projects renovated under this program.

EXISTING BUILDING PRIOR TO RENOVATION



BUILDING FAÇADE AFTER RENOVATION

Temporary timber shoring supports were also installed at various locations on the all the floor levels. In addition, all of the floors from the second to the fifth floor appeared to be uneven and / or sloped.

Images of temporary timber supporting each floor

Existing Building Condition and Challenges:

This 5-story new law tenement building was constructed around 1914 and contained a full cellar. The fist site visit revealed how time had taken a toll on the vacant building. The cellar was in extreme poor condition; the interior masonry walls were cracked and the heavy shoring and bracing slowed the sinking of the floors. This sinking caused the building to be deemed structurally unstable, resulting in the tenants being relocated from the premises and the building abandoned.

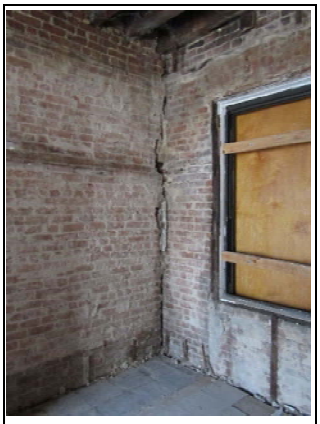
Since the building was vacant for more than 6 months, under the New York City 1968 Building Code it was mandatory for the project to be filed as an Alteration Type 1 Application and attain a new Certificate of Occupancy. Design AIDD was first awarded the project in 2012, but unfortunately the project was put on hold due to insufficient funding under the ANCP program. When the project was finally renewed, the 2014 Building Code was adapted which called for the project to comply with the new Building Code and required it to be filed under the newly formed Alteration Type 1 – New Building (NB) application. This resulted, in a significant redesign of the building's structural system which, increased the overall building hard and soft costs.

Portions of the ceiling below the lower floors and roof joist, had either fallen down due to active water damage from stemming from the deteriorated roof. In some areas were the joist were exposed, signs of a fire remained on the burnt floor joists. The wood framing underneath the existing bathroom areas were also heavily deteriorated. Cross bracing also fell away from the joist. Many of the existing wood floor joists in the kitchens and bathroom areas were either partially missing, damaged by the installation of plumbing fixtures, rotten or some combination of all three conditions.

Images of existing wood joist and ceiling heavily deterorated and damaged

Once demolition commenced, the structural engineer determined that additional bracing and shoring was required in order to keep the building exterior walls intact and the construction workers safe. The demolition revealed that the outer exterior walls perpendicular to the party walls were in need of reinforcing.

With the interior partition plaster and sheet rock removed, the Engineer could see that the stud composition was composed of a mix of 2″ x 3″ and 2″ x 4″ studs spaced at 16″ on center which did not match the 12″ on center floor joist spacing. As a result, the interior walls which were not intended to be load bearing; were forced to act as load bearing walls and this explained the unevenness and sloping of the existing floors and the reason for the installation of structural shoring supports on all the floors throughout the building.



Splaying of existing masonry wall at corner between party and outer exterior wall

Now that the floor deflection question was answered, the question still open to the team was; why were the interior pseudo load bearing walls sinking at the cellar level and why was this phenomena not happening to the adjacent buildings on either side of 21 Arden?

This question was answered, when the existing Cellar concrete floor slab was removed in order to prepare for the new concrete floor slab. The design team received a phone call from the GC stating that water was peculating through the soil from the water table below. The water was coming in at such a rate that pouring any new concrete would be futile. This situation not only delayed the project but added additional cost. So we added a Geotechnical Engineer to the team to assist in resolving the sub surface water infiltration. The design team colabrated on a solution that was cost

Structural Features and Achievements:

As part of the structural challenges, the new design required a non-destructive

Flatjack Measurement Test to determine the compressive strength of the existing brick masonry exterior walls and test pits to determine depth of existing footings and location of bedrock to accommodate new column footings. After the interior of the building was demolished, splaying of the existing brick masonry walls along the corners was observed causing additional concerns. Through wall ¾″ steel rod masonry ties with ½″ steel plates were provide along the existing walls and tied back to the new steel structural framing to provide stability.

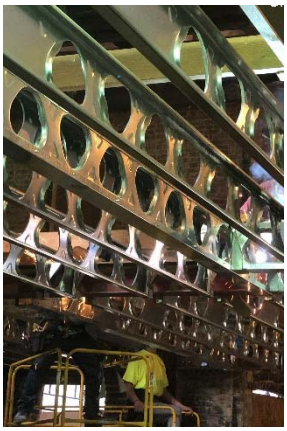
The new framing system includes Marino/WaRE JoistRite metal joists, wide-flange steel beams and a few steel tube columns with interior bearing walls consisting of 3-5/8″, 12 gauge studs @ 16″o.c. which were transferred onto beams and columns in the cellar floor.

To eliminate the protrusion of new columns into the public hallway along the interior face of the north party wall, we designed an 8″ secondary exposed ‘Atlas’ hollow clay structural brick wall by ‘Interstate Brick’. This satisfied the structural challenges at this location and provided a beautiful finished brick wall surface in the pubic corridors and the east and west end apartments.

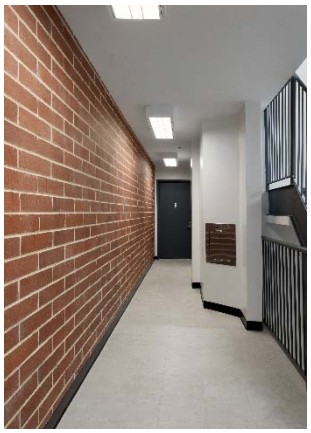
INSTALLATION OF JOISTRITE AND STEEL COLUMNS

INSTALLATION OF STRUCTURAL ATLAS WALL

THROUGH ROD MASONRY TIES INSTALLED AT EXTERIOR WALL



INSTALLATION OF JOISTRITE FLOOR JOISTS



FINISHED ATAST BRICK WALL ALONG PUBLIC CORRIDOR

During construction, water was observed in the cellar floor that required additional test pits. Groundwater was encountered at depths ranging from about 3 to 4 feet below the existing cellar level during the explorations of the Test Pits. The new cellar floor had to be re-designed with a 14" concrete matt foundation and concrete grade beams.

Design Features and Achievements:

The new design had to comply with the current ADA and building codes and the entire first floor had to be made accessible. By lower the first floor structural concrete slab and designing a handicap ramp along the front of the building, we were able to comply with the first floor accessibility requirements thus allowing for elderly tenants to enter the building through a spacious entry vestibule. The interior open egress stair was redesign to be more efficient and centrally located making the hallway more spacious and comfortable.

Handcap entrance ramp

Handicap entrance ramp

View of interior open egress stair

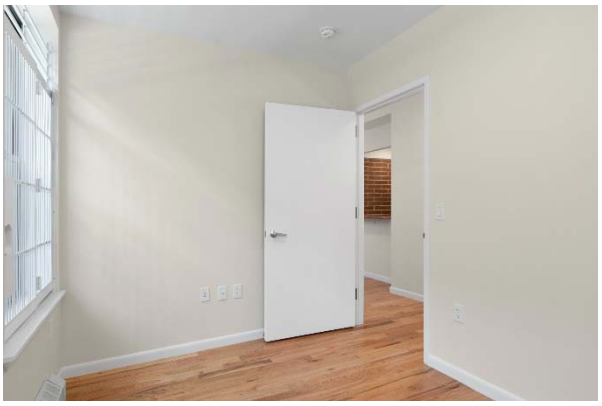
The existing apartments were not code complaint, small in size with inefficient room layouts. We designed two (2) 1-bedroom and one (1) 2-bedroom units on the first floor and two (2) 2-bedroom and one (1) 1-bedroom units on the typical floors) that were spacious. The living spaces optimizes the natural daylighting with large Low-E double hung windows by 'Crystal Windows'.

VIEW OF PASS-THRU KITCHEN FROM LIVING ROOM

VIEW OF BEDROOM LOOKING TOWARDS THE LIVING ROOM

Each of the newly designed units were provided with red oak hard wood floors in all living rooms and bedrooms. The kitchens were large, some with a pass-through had mocha colored cabinets and stainless steel ranges with porcelain floor tiles. The bathroom were installed with 12″x24″ Carrara ceramic tile for the tub surrounds, 12″x24″ porcelain tiles on the floors and Energy Star LED light fixtures.

VIEW Of master bedROOM



VIEW OF guest bedROOM

VIEW Of kitchen

View of bathroom

The floor of the existing uneven inner and rear courts was uneven and damaged throughout and had to be removed. A new concrete slab on grade was poured through out these courts rendering them pleasing and usable to the tenants.

New concrete slab on grade in inner court

New concrete slab on grade in inner yard

New concrete slab on grade in inner court