

ACTIVE DESIGN GROUP

COURTESY OF INOA ARCHITECTURE

2020 NAIOP NJ MIXED-USE AWARD

Lotus 315 is a seven-story luxury residential (180 units), retail mixed-use building and one-story parking structure located in East Orange, New Jersey, just eleven miles from New York City. The design of building empowers the visionary design, high-end finishes, amenities, and professional management that defines B-360 living. Gross floor area is 250,000 square feet above the grade and 52,550 square feet below ground.

The residence building has a unique-shaped floor plate on each floor like a curved boomerang, stretching to North and West directions, while varying and stepping in depth. Along each wing are apartment units receiving sunlight and fresh air with aesthetically harmonized private terrace confined by the glass guide rail.

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Architectural Rendering by INOA Architecture

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DESIGN COMPLEXITY

1. Geometry Complexity: Architectural creative and elegant form is a key essence of this project but creates design and construction challenges. The overall geometry features the curvilinear boomerang-like layout with stepping and sloping profiles at each wing, providing individual outdoor terrace space to end units.
2. Mix-used Function Complexity: the building has retail at low floor and residence at upper floors. Two different demands require creative planning to layout the columns and walls. To meet tenant and market demand, the design team took into consideration numerous unit layout in conjunction with retail on the low floor. Design team strategically located an inbound and shaped column and wall to be integrated into the dividing walls to maximize the unit efficiency and the view from the units.

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ENVIRONMENTAL & SUSTAINABLE GOALS:

- 1. The parking garage roof has significant green space to provide environment-friendly space to retail customers and tenants.**

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CREATIVITY/INNOVATION SOLUTION

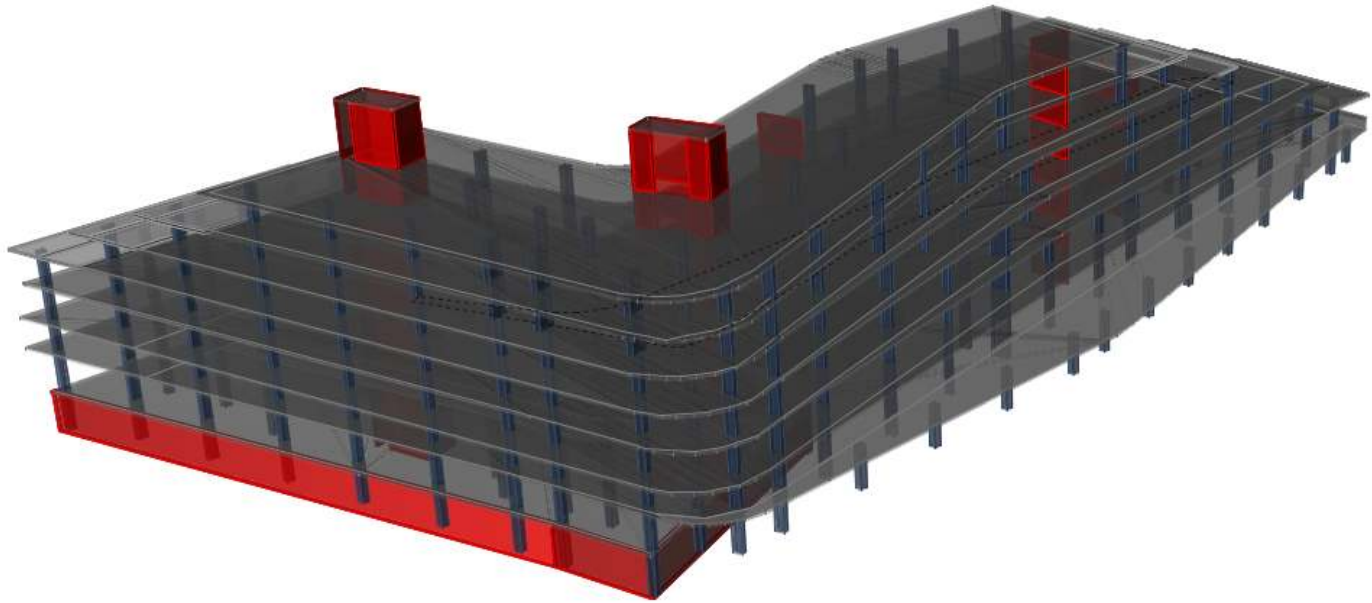
The concrete provides an optimal solution for this project, by offering high floor ceiling adopting flat plate with no ceiling finish, allowing to generate curved shape, stepping-in terrace house configuration with economical, local material, and highly benefiting fast building construction. Alongside the residence, the elegant Concrete is best fit to realize resident-friendly environment such as a curved walking path and skylight along green roof over the parking garage.

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CONCRETE SOLUTION

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3D FEM model of the Residential Tower

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ADG, Engineer of Record, provided a structurally efficient and cost-effective concrete solution to meet the architectural vision for highly set life of residence as well as the client's financial budget.

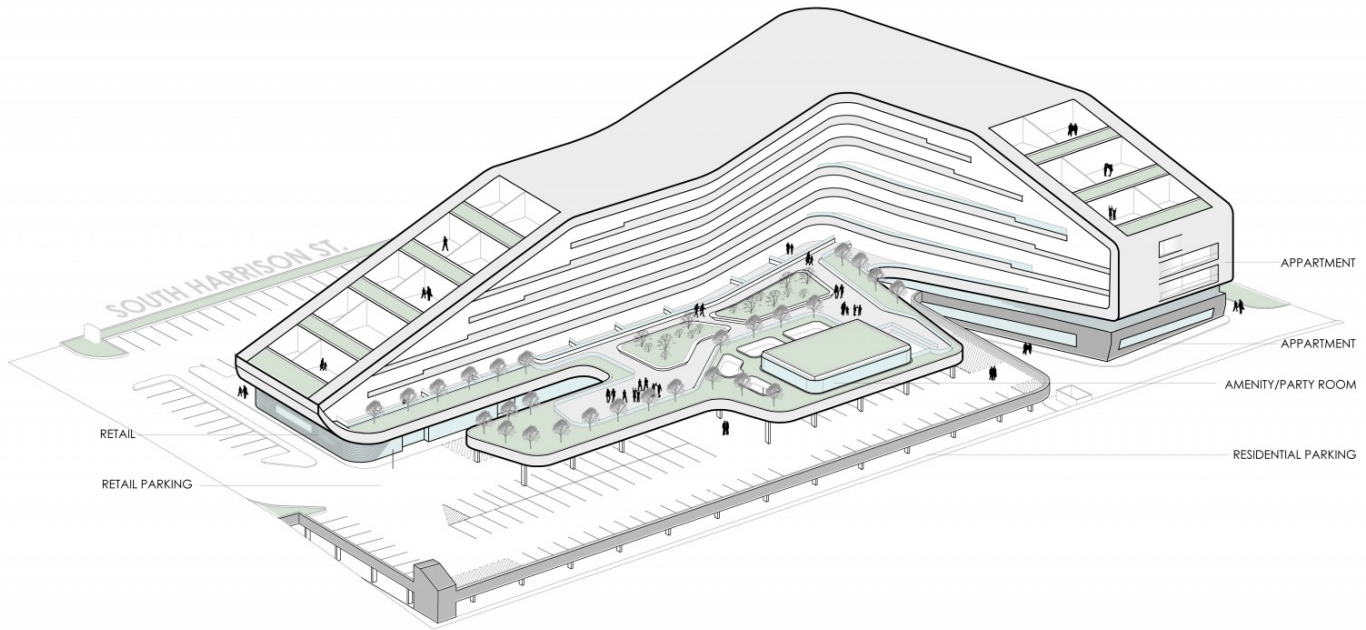
Structural System conforms to the 2015 New Jersey International Building Code and referenced ASCE7-10 and ACI318-14. All concrete elements are specified as 5000 psi concrete at the 28th day.

Foundation element receives 5000 psi concrete with air entrainment and water reducer to meet slump of 4 to 5 inches and target air content of 6.0 % and W/C ratio of 0.4.

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Both residential and parking buildings are founded on variously sized spread footing and mat bearing on 3 tons soil. The bottom of the parking building is approximately 10 feet lower than that of the residential building. Both ground floors are constructed of 5" ~ 6" thick concrete slab on grade reinforced with TUF-Strand SF Synthetic MACRO Fibers.

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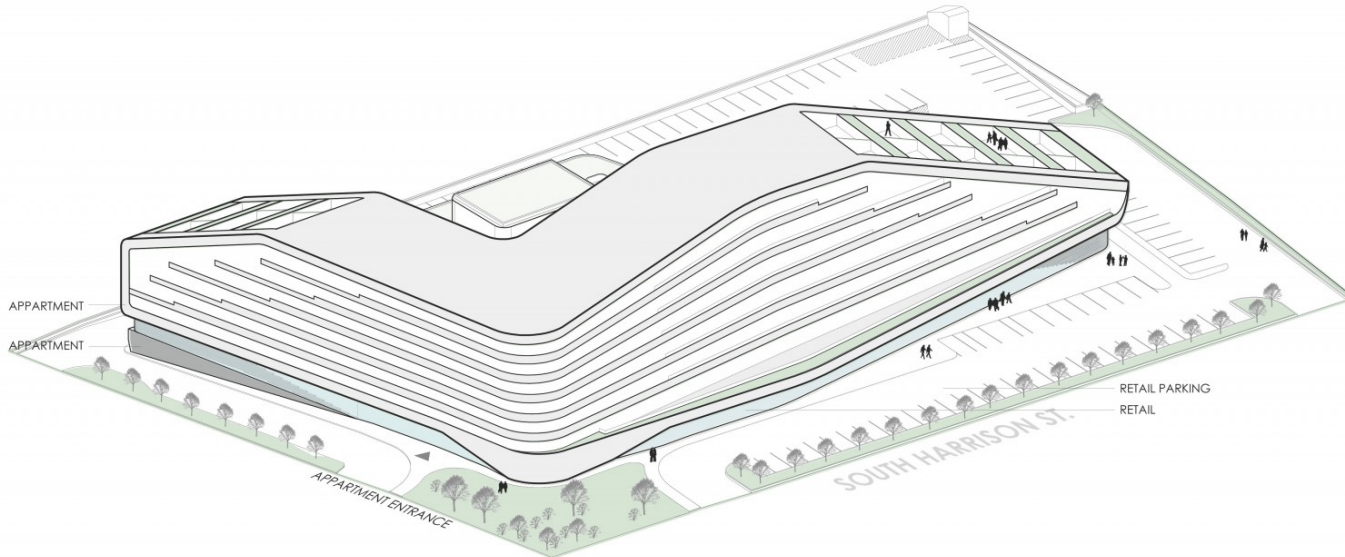
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The typical floor framing system of the residence is constructed of 9 ½" thick flat plate reinforced with conventional mild steel #4, # 5 and #7 bars and stud rails at high shear demand. The outdoor terrace is typically depressed down by 4" to accommodate water drainage finish. All columns are strategically located inbound and shaped to be buried in the dividing walls to maximize the view from the units.

The parking garage roof is constructed of 12 ½" flat slab with 6" drop panel for a green planter and terrace use. The lateral resisting system is ordinary reinforced concrete shear wall system.

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1. Total volume placed = 10,500 cubic yd.
2. Compressive strength Specified = 5,000 psi at 28th day
3. Concrete mix design including admixtures, Supplemental cementitious material, W/C, et. See attachment
4. Average field tested concrete strength of each mix = 5,960 psi
5. Reinforcing steel tensile strength and special features: couplers, coating, etc
 1. ASTM A615 Grade 60 (Minimum tensile strength 90 ksi)
6. Special concrete mixes used such as mass concrete, self-consolidating concrete, etc. N/A
7. Special concrete features such as special finishes, post-tensioning, void formers, maturity testing, etc.
N/A

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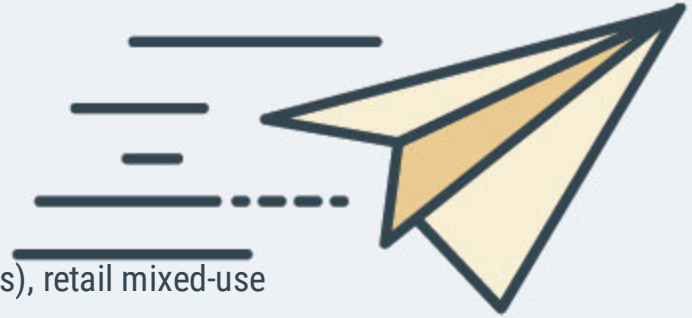
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<https://re-nj.com/naiop-honors-deals-of-the-year-industry-icons-as-virtual-gala-marks-50th-anniversary/>

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