# SYNTHESIS PLAZA : STRUCTURE & MEP



## CODE:

403.2.1 TYPES OF CONSTRUCTION -THE FOLLOWING MODIFICATIONS TO THE MINIMUM FIRE RESISTANCE RATING OF THE BUILDING ELEMENTS IN TABLE 601 SHALL BE AS FOLLOWS: 1. HIGH RISE BUILDINGS 420' (128 000 MM) OR GREATER IN BUILDING HIEGHT SHALL BE CONSTRUCTED OF TYPE IA CONSTRUCTION.

403.3 ELEVATOR LOBBIES -ELAVATOR LOBBIES SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 708.14.2

403.7 OUTDOOR AIR INTAKES. -FOR HIGH-RISE BUILDINGS, OUTDOOR AIR INTAKES SERVING SPACES ABOVE TEH SECOND

STORY AND SERVING SPACES GREATER TAHN 10,000 SQUARE FEET (929M<sup>2</sup>) OF FLOOR AREA SHALL BE LOCATED IN ACCORDANCE WITH SECTION 401.5 OF THE NEW YORK CITY MECHANICAL CODE.

#### CH.5, 909.1.1

SMOKE CONTROL SYSTEM, MECHANICAL, AN ENGINEERED SYSTEM TAHT USES MECHANICAL FANS TO PRODUCE PRESSURE DIFFERENCES ACROSS SMOKE BARRIERS OR THAT ESTABLISHES AIRFLOWS TO LIMIT AND DIRECT SMOKE MOVEMENT









(IMAGE VIA PROFESSOR DOSSO, SUPERTALL SP21 GSAPP)



SLAB UNITY

-24 x 24

-W18 -W21 -W24 -W30

Intersection of office floors and core floors. The office's metal decking tiews into the foundation wall, while the 6" core walls remain inside the core.

Mesh is lade where columns pierce the slabs to tie into beams below.

Note: the strongest metal decking flooring orientation is perpendicular to Beam.

Note: Floor rebar within concrete pours for strength and stability.

### STEEL INTERSECT

Belt Truss Connection Detail Intersection steel beams cut/ welded and bolted together to create secure connection at trusses and throughout tower

> CONSTRUCTION PROCESS FAN & SMOKE PURGE DISTRIBUTION



Roof

- Bulkhead

- Belt Truss

- Cooling Towers



62F MECHANICAL Power -Toilet/Smoke Exhaust -Co Gen Plant

Water -Primary Chiller Water Pumps for Cooling Towers -Plumbing Equipment

- Window Washing Track

Air/Mech -Mechanical Room -Heat / Vent System High Rise Outside Air

Power

Water

Air

-Intake

-Generator Plant

-Heat Exchangers

-Loading Dock

-Heating/Vent Systems -Low Rise Outside Air

-Lobby Air Handling Unit

-Stair Pressurization

-Below Grade Supply

-Plate/ Frame Heat Exchangers

-Secondary Chiller Water Pumps



## MECHANICAL SYNTHESIS

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Above - Cooling Fan - Access Ladders - Cooling Tower Structure - Piping

> Struct./Dunnage - Springs Dunnage SupportSupporting Structure - Tower Structure

> > Below - Main Pipes to/from cooling towers - Secondary Pipes - Chillers

> > > OUTSIDE AIR DISTRIBUTION • SPLIT HALFWAY BTW TOP • AND BTTM UNITS

> > > > AC UNIT

SUPPLY

RETURNS

QUTSIDE AIR INTAKE

LOUVRE/ SCREEN

COOLING SYNTHESIS

SMOKE PURGE NORTH AND SOUTH, ALL FLOORS

> DUCT OUTSIDE CORE BY TENANT

BELT TRUSS @2ND FL MECH.