

CASE STUDY 1 – MEP + FP Narrative

Office Fit-Out

Project Description

Case Study 1 illustrates a Level 1 Alteration in a prior code office building. This high-rise building is comprised of 9-stories plus a cellar, with a gross floor area of 8,800 sf per floor and a total building area of 88,000 sf. The building was completed in 1971 under the 1968 NYC Building Code. Per the existing certificate of occupancy, its dominant occupancy is Group B (Group E under the 1968 code), its construction type is I-B (I-C under the 1968 code), and the building is fully sprinklered. The building has two exit stairs and two elevators. Its structural system is a steel frame supporting cast-in-place concrete floor slabs. As defined by the NYC Administrative Code, the building is considered a prior code building.

The case study's architectural scope includes the partial renovation of the 6th floor and full renovation of the 7th floor for a commercial office tenant. There is no change in use, occupancy, or egress. The occupant load will be maintained at 70 persons per floor, per the existing certificate of occupancy.

Accordingly, the scope of work includes mechanical, electrical, plumbing, sprinkler, and fire alarm modifications limited to the tenant work areas. Because the work area on the 7th floor exceeds 50% of that floor, supplemental requirements of EBC Chapter 8 apply throughout the 7th floor.

All newly installed MEP/FP systems comply with the NYC Construction Codes as referenced by the EBC.

Scope of Work

Mechanical Systems. The Mechanical scope of work for this application includes:

- Installation of new tenant-level air conditioning for the area of work associated with the partial interior fit-out on the 6th floor. The new air conditioning will connect to the existing ventilation system and condenser water systems. This includes associated ductwork, air distribution devices, controls, dampers, and balancing.
- **EBC 809.1.1:** The installation of new tenant-level air conditioning for the work area comprising the full 7th floor, must comply with the NYC Mechanical Code requirements for new construction, including: connection to existing ventilation system and condenser water systems; associated ductwork; air distribution devices; controls; and balancing. Dedicated cooling systems are also provided for data center and IT equipment.
- **EBC 809.4:** The installation of a new pantry exhaust, new general exhaust fan, and new sidewall louver penetrations on both the 6th and 7th floors must comply with chapter 5 of the New York City Mechanical Code.
- Exhaust connections from the renovated toilet rooms on the 7th floor to the existing toilet exhaust systems.

- **EBC 809.12:** Install a new air conditioning unit in the 7th floor IT room, with exterior refrigerant run to a remote, rooftop condensing unit in compliance with chapter 11 of the New York City Mechanical Code.
- **EBC Sections 309 and 809:** While newly installed and modified mechanical components are required to comply with the NYC Mechanical Code, existing base building systems outside the work area can remain unchanged. All work complies with applicable ventilation, fire/smoke damper, and NYCECC Chapter C4 & C5 requirements.
- Existing high-rise, fully sprinklered building systems such as post-fire smoke purge systems to remain unaltered.

Plumbing Systems. The Plumbing scope of work for this application includes:

- **EBC 310.2:** No fixture count increase, as the occupant load is not increased by more than 10 percent.
- **EBC 810.2:** Previously concealed piping that is exposed during a Level 1 Alteration must be insulated to the extent required by the New York City Energy Conservation Code.
- Installation of a new pantry sink and dishwasher on the 6th floor, including supply, drainage, and vent connections to existing building risers.
- Installation of new pantry sink and dishwasher, (3) new water closets, (2) new lavatories, new bilevel drinking fountain on the 7th floor. Connect to existing building risers.
- All new work must comply with the applicable requirements of the New York City Plumbing Code.

Sprinkler Systems. The Sprinkler scope of work for this application includes:

- Interior fit-out of sprinkler system on 6th floor to match new proposed partitions and ceilings for new tenant space. Installation of new floor control assembly with water-flow switch and tamper switch for the new tenant, connected to existing riser.
- Interior fit-out of sprinkler systems on 7th floor to match new proposed partitions and ceilings. Remove one existing floor control assembly and connect to one existing floor control assembly to support combination of two existing tenants into one new tenant space on the 7th floor.
- **EBC 804.3:** Work area includes changes to means of egress Stair B per architectural assessment, which connects tenant areas on the 6th and 7th floors. Therefore, standpipe painting requirements apply.
- **EBC Chapter 15:** Temporary core sprinkler protection (TCSP) shall be provided for the area of work.

Electrical Systems. The electrical scope of work for this application includes:

- Upgraded electrical services and distribution for the tenant spaces, new panels, feeders, branch circuitry, lighting fixtures, controls, and receptacles on the 6th and 7th floors.
- Power for data center equipment on 7th floor only.
- **EBC Sections 308 and 808:** All new electrical work must comply with the NYC Electrical Code. Existing systems outside the work area remain unchanged.

Fire Alarm Systems. The fire alarm scope of work for this application includes:

- Modifications to the existing Class E fire alarm system serving the work areas. These will include new initiating and notification devices and required smoke or heat detection. Fire alarm alterations are normally compatible with existing systems in post 1968-code buildings. Existing fire alarm system junction boxes and risers are to remain.
- Alternately, if this case included an instance where fire alarm alterations were not compatible with existing systems, the following would be required:
 - All existing core-related devices must be upgraded to comply with current New York City Construction Codes and New York City Electric Code.
 - Where the floor alteration encompasses an entire floor, all newly installed devices shall comply with the current New York City Construction Codes and New York City Electric Code.
 - Where the floor alteration encompasses only a partial floor area of a floor, the compliance requirement would be limited to the newly installed fire alarm equipment within the work area.
 - For areas outside of the alteration scope, the existing functional devices and wiring might remain.
 - When an alteration requires the installation of initiating and notification appliances, but the existing fire alarm control panel (FACP), fire command center (FCC), or other distributed control panels cannot support the additional appliances, new panels shall be allowed to be installed. Such panels must be installed in a similar manner and have wiring comparable to the existing, both approved and installed.
- In a building satisfying the following conditions, the fire alarm system shall not require full replacement where the scope of work includes a system technology upgrade of the fire alarm control panels (FACP), fire command center (FCC), or other distributed control panels such as data gathering panels (DGP):
 1. New or upgraded panels shall be in the same room or location as the existing panels.
 2. Wiring shall comply with NFPA 72, as amended by the current Building Code Appendix Q for the portion of the building that requires upgrades.

3. Control panels or distribution panels have adequate battery power capacity to support all system functions, therefore new electrical power supply is not required.
 4. A new electrical power supply for all affected control and distribution panels is provided in accordance with current NYC Electrical Code and NFPA 72 as amended by current Building Code Appendix Q when the existing battery capacity is insufficient.
 5. Initiating devices required by current building code for selective coverage smoke detection, must be installed throughout the building at Code-required locations, if not already present. Existing functional initiating devices may remain. Any new devices must comply with the current building code.
 6. All notification appliance circuits shall be supervised upon the completion of the system technology upgrade. All appliances shall be replaced and must comply with latest building code. The sequence of operation of the fire alarm system shall be programmed in accordance with current building code as if it were a new system in a new construction building of similar characteristics.
- In any building greater than 125 feet in height, (measured from the lowest level of fire department access to the highest occupied floor) where a one-way voice communication system does not currently exist, one shall be installed in accordance with the current building code requirements.

ENERGY CODE COMPLIANCE

- As a Level 1 alteration, the project must be evaluated for compliance based on NYCECC Chapter C5 – Existing Buildings. Only altered systems are required to meet current energy code requirements.

CONSTRUCTION SAFEGUARDS

- All work must comply with applicable requirements of EBC Chapter 15, including maintenance of active fire protection systems, occupant protection measures, and continuous maintenance of required means of egress during construction.

SUMMARY

- The proposed MEP/FP scope is governed by the NYC Existing Building Code requirements for an Alteration Level 1 in a prior code, high-rise office building. All newly installed systems must comply with current NYC Construction Codes, and supplemental compliance is provided where required.

EBC Applicability

Per the architectural scope of work, the combined square footage of the areas of work on the 6th and 7th floors constitute 12.89% of the building area. With a work area less than 50% of the building area, the project is classified as an Alteration Level 1.

The applicable sections of Mechanical, Electrical, Plumbing, Sprinkler, and Fire Alarm systems are:

- Chapter 3 – General Applicable Provisions
- Chapter 8 – Alteration Level 1
- Chapter 15 – Safety in Occupied Buildings