PORT AUTHORITY NY NJ

Mechanical, Electrical & Plumbing Review Process Webinar

Presentation to Port Authority External TCAP Community

07.16.2025

AIR LAND RAIL SEA

We would like to hear from you

Thank you for your time, please share your comments with us by taking this short survey anonymously just scan the QR code or click here

Agenda for MEP Review Process Webinar

July 16, 2025
External Webinar

1. Mechanical Review - QAD DSU
    I. Submittal Package
    II. Review Process
    III. Basic Information
    IV. Comments: Typical Pitfalls & Common Comments
    V. Keys to Success
2. Electrical Review – QAD DSU
    I. Electrical Code, Standards
    II. Review Background & Process
    III. General Findings
    IV. Critical Comments
    V. Details Electrical Review
    VI. NEC/ NFPA-70 Relevant Articles
    VII. Comments Reference – Illustrations
    VIII. Final Takeway – Minimum Acceptable
3. Plumbing Review – QAD DSU
    I. Review Process – Reference Code and Standards
    II. Plumbing Review
4. Questions

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Mechanical Engineering Design Review

Port Authority Quality Assurance Division – Design Standard Unit

Stephan Kusik, P.E. – QAD-DSU

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Submittal Package

- Provide documents necessary to demonstrate that the design submitted for review is code compliant and satisfies PA's project requirements.
- Indicate the applicable building code for the jurisdiction on the submittal documents, 2022 NYCMC (2015 IMC with NYC Amendments), 2021 IMC, with New Jersey Amendments or 2020 MCNYS (2018 IMC with NYS Amendments).
- List appropriate reference standards as noted in the Mechanical Codes.
- 2025 TCRM

Submittal Package

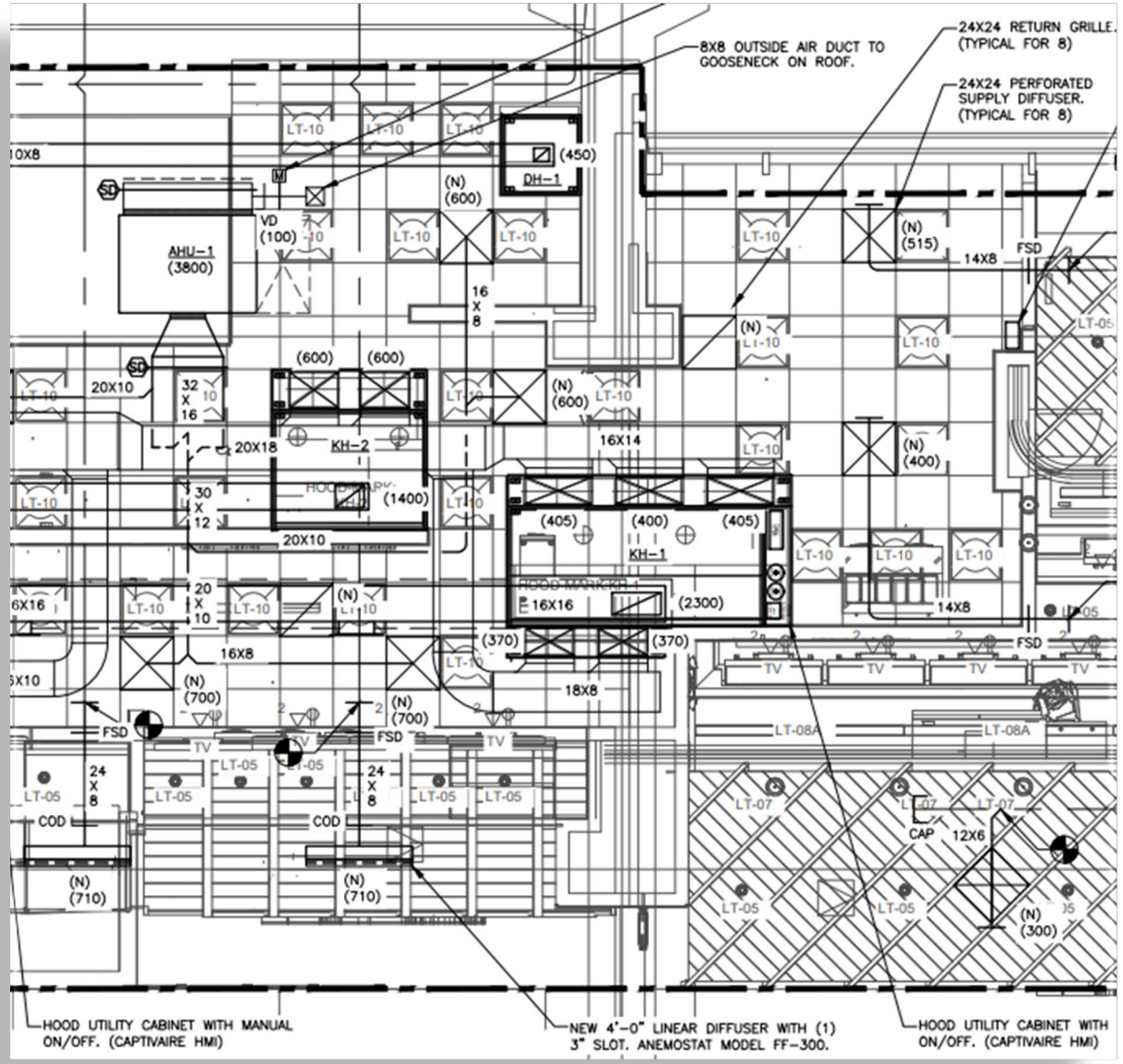
Checklist

- Drawings, Calculations, Reports, and Specification documents shall be digitally signed and sealed and third party verified by a licensed PE.
- Provide applicable technical specifications.
- Show design criterias
- List required special inspections
- Verify Mechanical drawings are fully dimensioned and all HVAC equipment are called out

Submittal Package

Construction Documents

Avoid cluttered and disguised work within the background



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Review Process

Construction Documents

- Audits are based on the requirements of the applicable Mechanical codes adopted by each local jurisdiction in which the Port Authority has facilities, as well as the requirements of the Port Authority Tenant Construction Review Manual (TCRM).

- Audits are performed by individual reviewers, in collaboration with the other reviewers within QAD DSU. All comments are peer reviewed prior to being formally issued.

Review Process

Tenant Construction Review Manual

- Airport Fueling
- PABT Fire /Smoke Dampers and Post Fire Smoke Purge
- Passenger Loading Walkway & Boarding Bridges
- The use of PVC Pipe
- Smoke Control Systems – Check the Base Building Plans

Basic Information

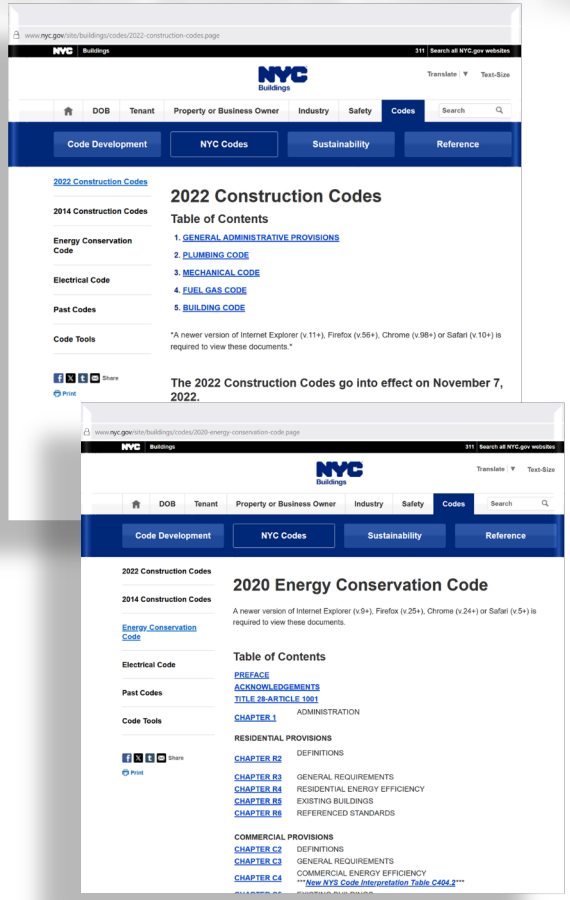
Review Elements

- QAD audits the construction documents to confirm that the design complies with code requirements, including but not limited to those for fresh outside air ventilation, fire barrier and smoke control barrier integrity.

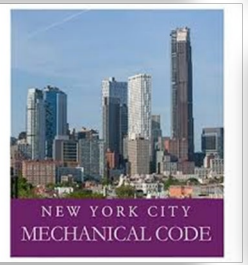
- QAD audits conceptual designs and provides guidance but only recommends approval for construction when the construction documents are complete and digitally signed and sealed that are third party verified, by a licensed architect or engineer, registered in the state in which the project occurs.

Basic Information

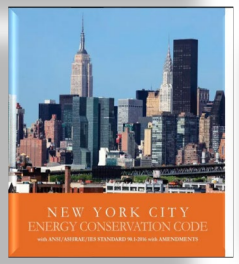
Current Building Codes: New York City



New York City: 2022 Building Code



New York City: 2022 Mechanical Code



New York City: 2020 Energy Conservation Code

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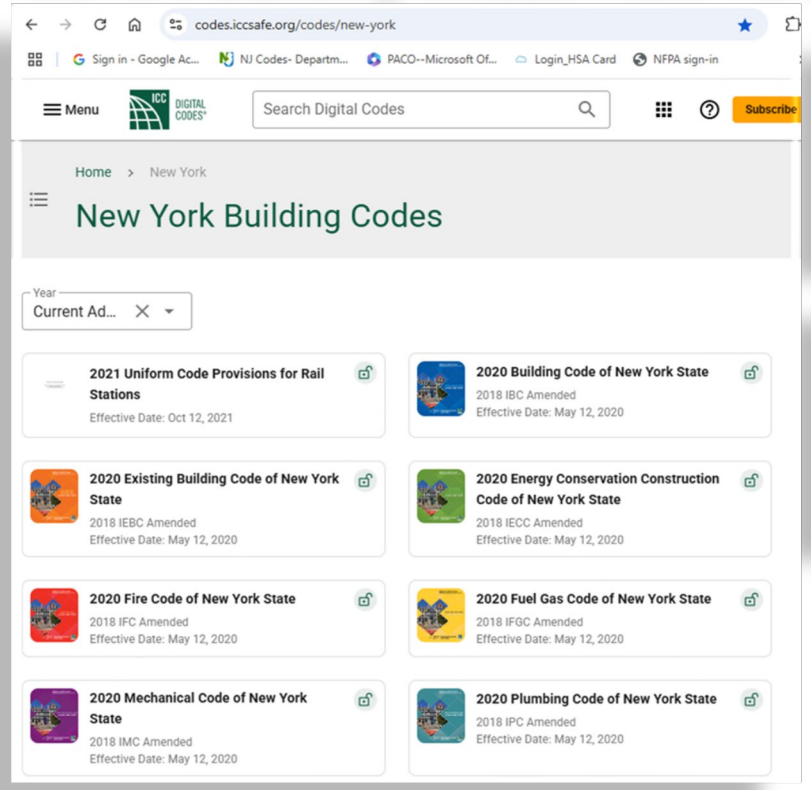
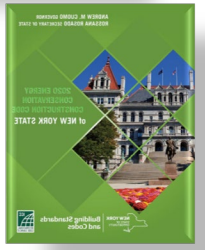
Basic Information

Current Building Codes: New York State





New York State: 2020 Building Code

New York State: 2020 Mechanical Code

New York State: 2020 Energy Conservation Code

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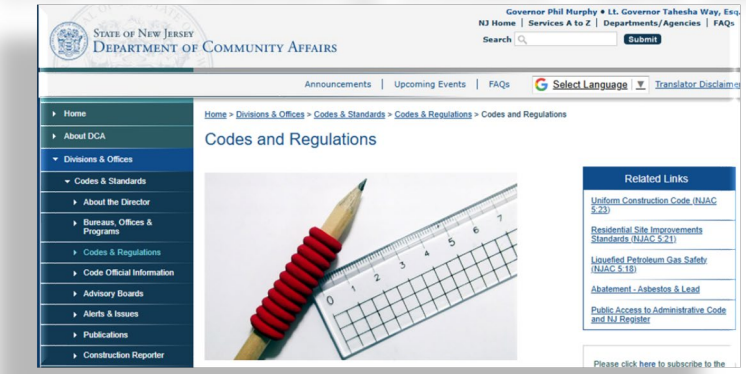
Basic Information

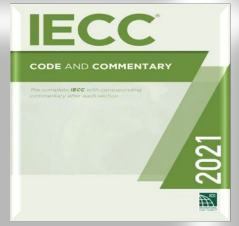
Current Building Codes: New Jersey



CODE *(as adopted by NJAC 5:23)*	Adoption Date
BUILDING SUBCODE *(NJAC 5:23-3.14)* International Building Code/2021, NJ ed * Corrected pages (NJ errata) * Corrected sections (ICC errata) Other referenced I-Codes (IFC/2021; ISPSC/2021; etc.) Other referenced ICC Standards (ICC/ANSI A117.1-2017; ICC 300-2017; etc.)	Sept. 06, 2022
MECHANICAL SUBCODE *(NJAC 5:23-3.20)* International Mechanical Code/2021	Sept. 06, 2022
ENERGY SUBCODE (NJAC 5:23-3.18) International Energy Conservation Code/2021 (Low-Rise Residential) ASHRAE 90.1-2019 (Commercial & all other Residential)	Sept. 06, 2022

New Jersey: 2021 NJ Building Subcode – NJ Edition

New Jersey: 2021 NJ Mechanical Subcode



New Jersey: 2021 NJ Energy Subcode

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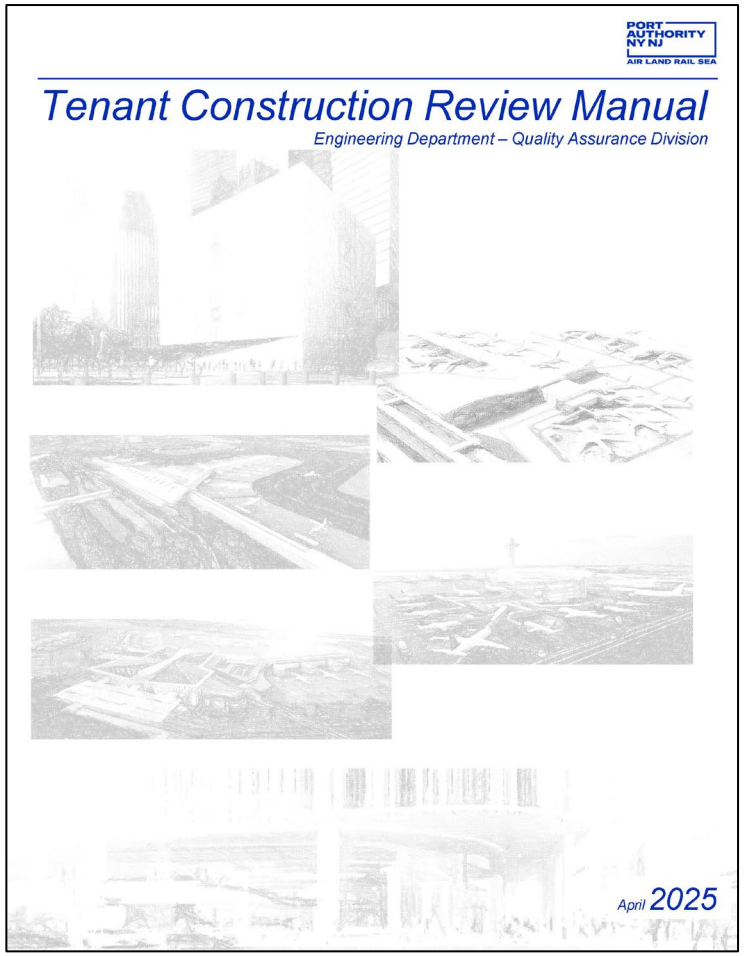
Basic Information

2025 TCRM



Typical Pitfalls

Common Issues and Corresponding Comments from QAD

Issue: HVAC equipment must meet corresponding Energy Conservation Code

QAD Comment: Verify that the efficiency of the proposed equipment complies with the 2020 NYC ECC, Table C403.3.2(1).

TABLE C403.3.2(1)

MINIMUM EFFICIENCY REQUIREMENTS: ELECTRICALLY OPERATED UNITARY AIR CONDITIONERS AND CONDENSING UNITS

EQUIPMENT TYPE	SIZE CATEGORY	HEATING SECTION TYPE	SUBCATEGORY OR RATING CONDITION	MINIMUM EFFICIENCY[c]	TEST PROCEDURE[a]
Air conditioners, air cooled	< 65,000 Btu/h[b]	All	Split System, three phase	13.0 SEER	AHRI 210/240
			Single Package, three phase	14.0 SEER	
Through-the-wall (air cooled)	≤ 30,000 Btu/h[b]	All	Split system, three phase	12.0 SEER	
			Single Package, three phase	12.0 SEER	
Small-duct high-velocity (air cooled)	< 65,000 Btu/h[b]	All	Split System, three phase	11.0 SEER	
Air conditioners, air cooled	≥ 65,000 Btu/h and < 135,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.2 EER 12.9 IEER	AHRI 340/360
		All other	Split System and Single Package	11.0 EER 12.7 IEER	
	≥ 135,000 Btu/h and < 240,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	11.0 EER 12.4 IEER	
		All other	Split System and Single Package	10.8 EER 12.2 IEER	
	≥ 240,000 Btu/h and < 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	10.0 EER 11.6 IEER	
		All other	Split System and Single Package	9.8 EER 11.4 IEER	
	≥ 760,000 Btu/h	Electric Resistance (or None)	Split System and Single Package	9.7 EER 11.2 IEER	
		All other	Split System and Single Package	9.5 EER 11.0 IEER	
	< 65,000 Btu/h[b]	All	Split System and Single Package	12.1 EER 12.3 IEER	AHRI 210/240
	≥ 65,000 Btu/h and	Electric Resistance (or None)	Split System and Single Package	12.1 EER 13.9 IEER	

Typical Pitfalls

Common Issues and Corresponding Comments from QAD

Issue: Ventilation Calculations are omitted when changes or additions to HVAC system are made. Also, toilet and shower rooms are omitted from the calculations.

QAD Comment: Provide ventilation calculation as per 2022 NYC Mechanical Code, Table 403.3.1.1.

TABLE 403.3.1.1MINIMUM VENTILATION RATES

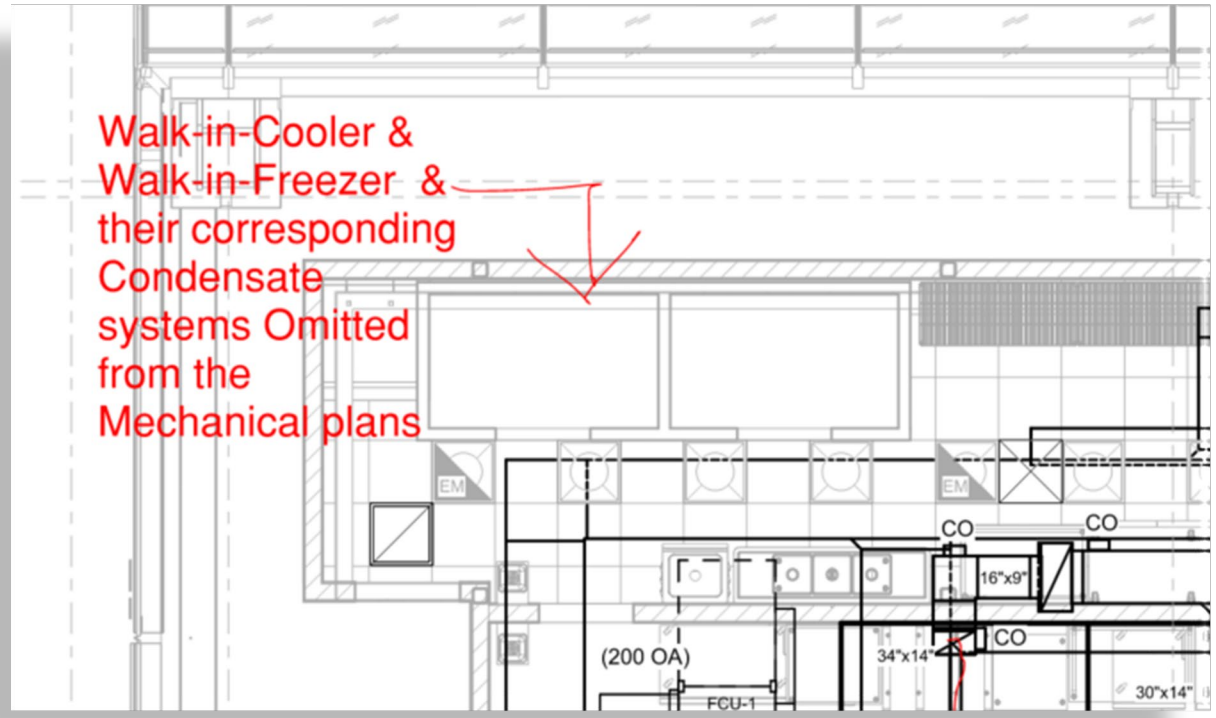
OCCUPANCY CLASSIFICATION	OCCUPANT DENSITY #/1000 FT²ᵃ	PEOPLE OUTDOOR AIRFLOW RATE IN BREATHING ZONE, R_p CFM/PERSON	AREA OUTDOOR AIRFLOW RATE IN BREATHING ZONE R_a CFM/FT²ᵃ	EXHAUST AIRFLOW RATE CFM/FT²ᵃ
Correctional facilities				
Booking/waiting	50	7.5	0.06	—
Cells				
without plumbing fixtures	25	5	0.12	—
with plumbing fixtures[g]	25	5	0.12	1.0
Day room	30	5	0.06	—
Dining halls (see food and beverage service)	—	—	—	—
Guard stations	15	5	0.06	—
Dry cleaners, laundries				
Coin-operated dry cleaner	20	15	—	—
Coin-operated laundries	20	7.5	0.06	—
Commercial dry cleaner[f]	30	30	—	—
Commercial laundry	10	25	—	—
Storage, pick up	30	7.5	0.12	—
Education				
Art classroom[g]	20	10	0.18	0.7
Auditoriums	150	5	0.06	—
Classrooms (ages 5-8)	25	10	0.12	—
Classrooms (age 9 plus)	35	10	0.12	—
Computer lab	25	10	0.12	—
Corridors (see public spaces)	—	—	—	—
Day care (through age 4)	25	10	0.18	—
Lecture classroom	65	7.5	0.06	—
Lecture hall (fixed seats)	150	7.5	0.06	—
Locker/dressing rooms[g]	—	—	—	0.25
Media center	25	10	0.12	—
Multiuse assembly	100	7.5	0.06	—
Music/theater/dance	35	10	0.06	—
Science laboratories[g, k]	25	10	0.18	1.0
Sports locker rooms[g]	—	—	—	0.5
Wood/metal shops[g]	20	10	0.18	0.5
Food and beverage service				
Bars, cocktail lounges	100	7.5	0.18	—
Cafeteria, fast food	100	7.5	0.18	—
Dining rooms	70	7.5	0.18	—
Kitchens (cooking)[b]	—	—	—	0.7
Non-tobacco smoking establishments[b]	70	60	—	—

Typical Pitfalls

Common Issues and Corresponding Comments from QAD

Issue: Walk-in-Coolers and Walk-in-Freezers & Condensate Drainage Systems serving this equipment are often omitted from Mechanical Plans

QAD Comment: KEC drawings show a Walk-in Freezer and a Walk-in Refrigerator, but this equipment is missing from the Mechanical Plans. Show on the Mechanical plans a Walk-in Freezer and a Walk in Refrigerator with condensate drainage system(s) to serve the new equipment evaporator cooling coils that are designed, constructed and installed in accordance with 2022 NYC MC, Sections 307.2.1 through 307.2.6. Note that PVC is not allowed by the 2025 TCRM.



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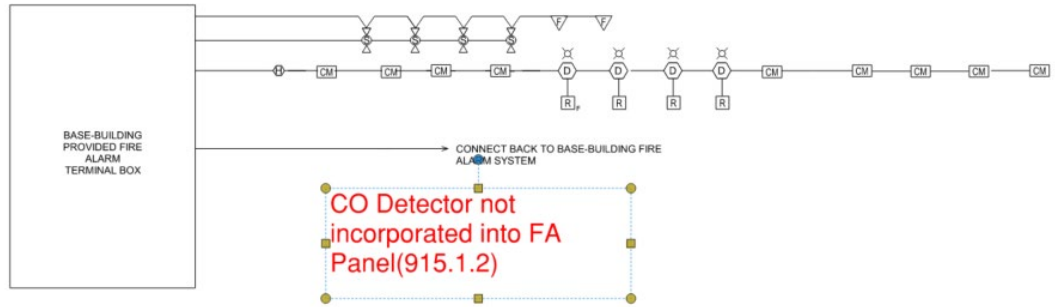
Typical Pitfalls

Common Issues and Corresponding Comments from QAD

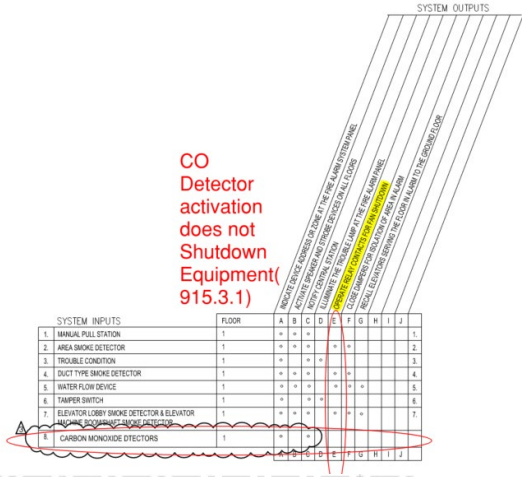
Issue: Missing code compliant components of Carbon Monoxide(CO) Detection System

QAD Comment: Demonstrate compliance with the Carbon Monoxide Detection section within the 2022 NYC BC, Section 915.1 and 1 RCNY 908-01 (Renumbered to 915-01). Be sure to include, on the plans, the following items, but not limited to; distinct and separate visual notification appliance devices for CO detection (UL listed equipment) within 10ft of any CO detector, required CO detector/alarm locations with sounder bases, reqd. equipment shutdowns and all necessary items for a complete, code-compliant operating system.

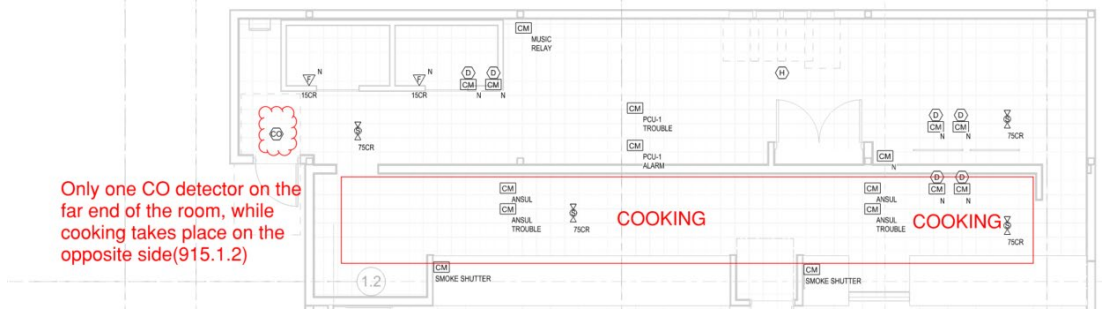


1. Visual Notification Appliances Missing(LL 126 & 1 RCNY 915-01)
2. UL Listing & Sounder base detail missing for detectors(915.1.2& 915.6)

CO Detector activation does not Shutdown Equipment(915.3.1)



Only one CO detector on the far end of the room, while cooking takes place on the opposite side(915.1.2)



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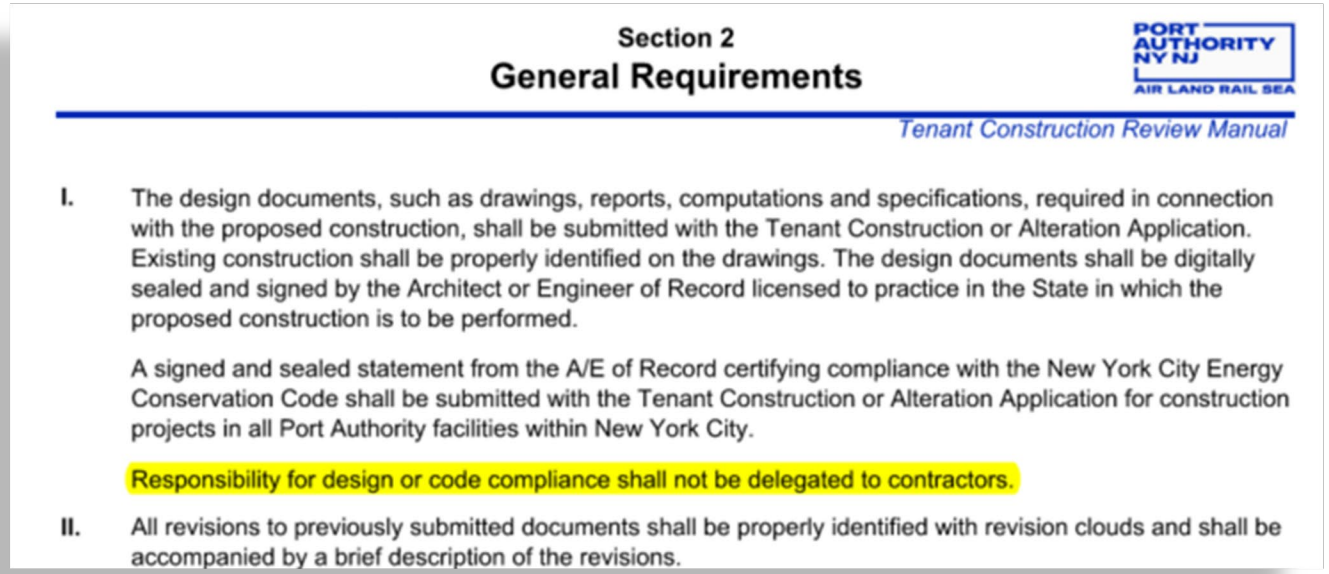
Typical Pitfalls

Common Issues and Corresponding Comments from QAD

Issue: A/EOR delegates aspects of design to Contractor

QAD Comment: Responsibility for design, code compliance and/or federal/state/municipality requirements shall not be delegated to contractors. See 2025 TCRM, Section 2.I. Note that the EOR is responsible for the final design and should act as the Engineer to review/approve and provide comments to the contractor's submittals while the Owner's Engineer shall be copied for review with comments provided to the EOR for incorporation.



Section 2

General Requirements

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Tenant Construction Review Manual

I. The design documents, such as drawings, reports, computations and specifications, required in connection with the proposed construction, shall be submitted with the Tenant Construction or Alteration Application. Existing construction shall be properly identified on the drawings. The design documents shall be digitally sealed and signed by the Architect or Engineer of Record licensed to practice in the State in which the proposed construction is to be performed.

A signed and sealed statement from the A/E of Record certifying compliance with the New York City Energy Conservation Code shall be submitted with the Tenant Construction or Alteration Application for construction projects in all Port Authority facilities within New York City.

Responsibility for design or code compliance shall not be delegated to contractors.

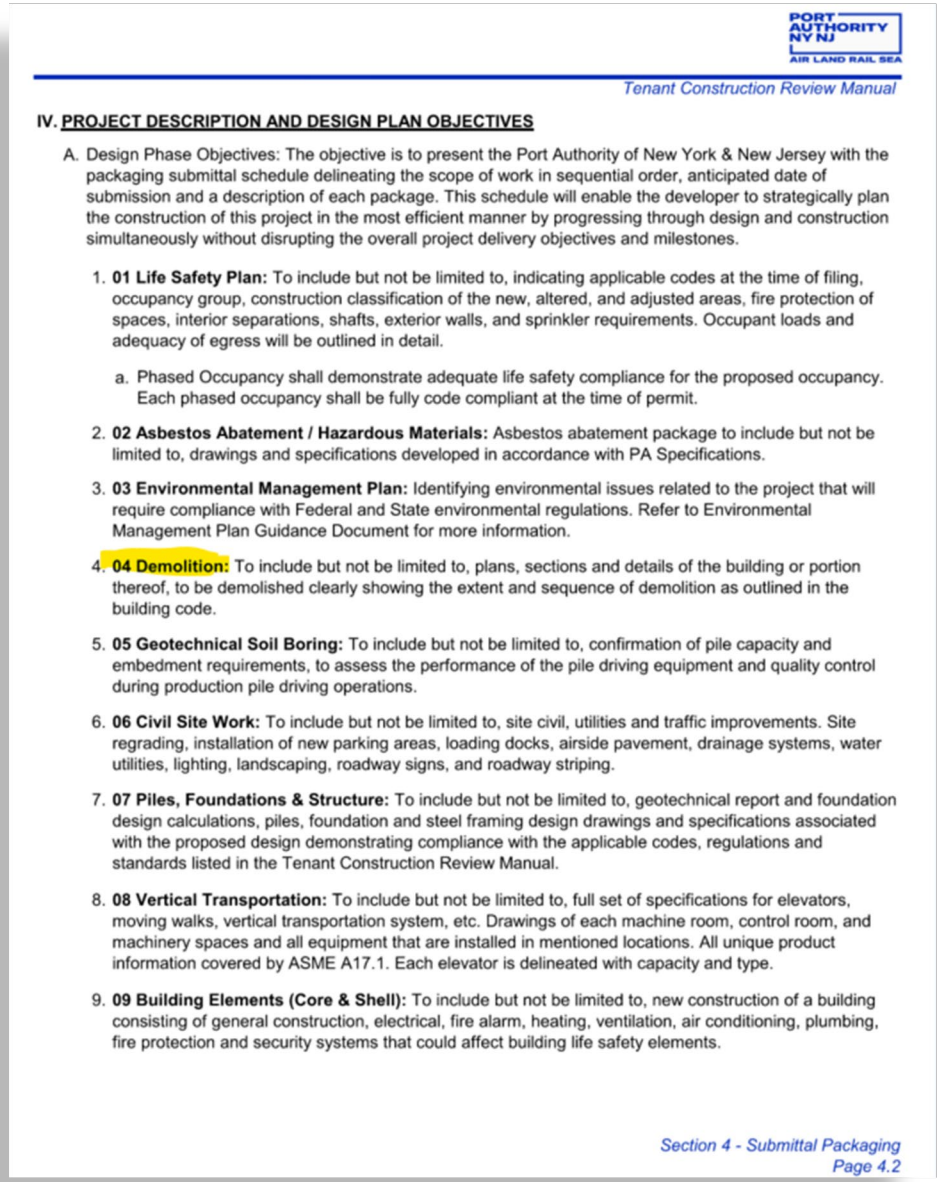
II. All revisions to previously submitted documents shall be properly identified with revision clouds and shall be accompanied by a brief description of the revisions.

Typical Pitfalls

Common Issues and Corresponding Comments from QAD

Issue: Demolition plans are often not provided and are helpful with understanding the work being done

QAD Comment: Update and show on plans the corresponding Demolition Plans for the Scope of Work detailed under this TAA in compliance with 2025 TCRM Section IV.A.4



PORT AUTHORITY NY NJ AIR LAND RAIL SEA

Tenant Construction Review Manual

IV. PROJECT DESCRIPTION AND DESIGN PLAN OBJECTIVES

A. Design Phase Objectives: The objective is to present the Port Authority of New York & New Jersey with the packaging submittal schedule delineating the scope of work in sequential order, anticipated date of submission and a description of each package. This schedule will enable the developer to strategically plan the construction of this project in the most efficient manner by progressing through design and construction simultaneously without disrupting the overall project delivery objectives and milestones.

1. **01 Life Safety Plan:** To include but not be limited to, indicating applicable codes at the time of filing, occupancy group, construction classification of the new, altered, and adjusted areas, fire protection of spaces, interior separations, shafts, exterior walls, and sprinkler requirements. Occupant loads and adequacy of egress will be outlined in detail.
   a. Phased Occupancy shall demonstrate adequate life safety compliance for the proposed occupancy. Each phased occupancy shall be fully code compliant at the time of permit.
2. **02 Asbestos Abatement / Hazardous Materials:** Asbestos abatement package to include but not be limited to, drawings and specifications developed in accordance with PA Specifications.
3. **03 Environmental Management Plan:** Identifying environmental issues related to the project that will require compliance with Federal and State environmental regulations. Refer to Environmental Management Plan Guidance Document for more information.
4. **04 Demolition:** To include but not be limited to, plans, sections and details of the building or portion thereof, to be demolished clearly showing the extent and sequence of demolition as outlined in the building code.
5. **05 Geotechnical Soil Boring:** To include but not be limited to, confirmation of pile capacity and embedment requirements, to assess the performance of the pile driving equipment and quality control during production pile driving operations.
6. **06 Civil Site Work:** To include but not be limited to, site civil, utilities and traffic improvements. Site regrading, installation of new parking areas, loading docks, airside pavement, drainage systems, water utilities, lighting, landscaping, roadway signs, and roadway striping.
7. **07 Piles, Foundations & Structure:** To include but not be limited to, geotechnical report and foundation design calculations, piles, foundation and steel framing design drawings and specifications associated with the proposed design demonstrating compliance with the applicable codes, regulations and standards listed in the Tenant Construction Review Manual.
8. **08 Vertical Transportation:** To include but not be limited to, full set of specifications for elevators, moving walks, vertical transportation system, etc. Drawings of each machine room, control room, and machinery spaces and all equipment that are installed in mentioned locations. All unique product information covered by ASME A17.1. Each elevator is delineated with capacity and type.
9. **09 Building Elements (Core & Shell):** To include but not be limited to, new construction of a building consisting of general construction, electrical, fire alarm, heating, ventilation, air conditioning, plumbing, fire protection and security systems that could affect building life safety elements.

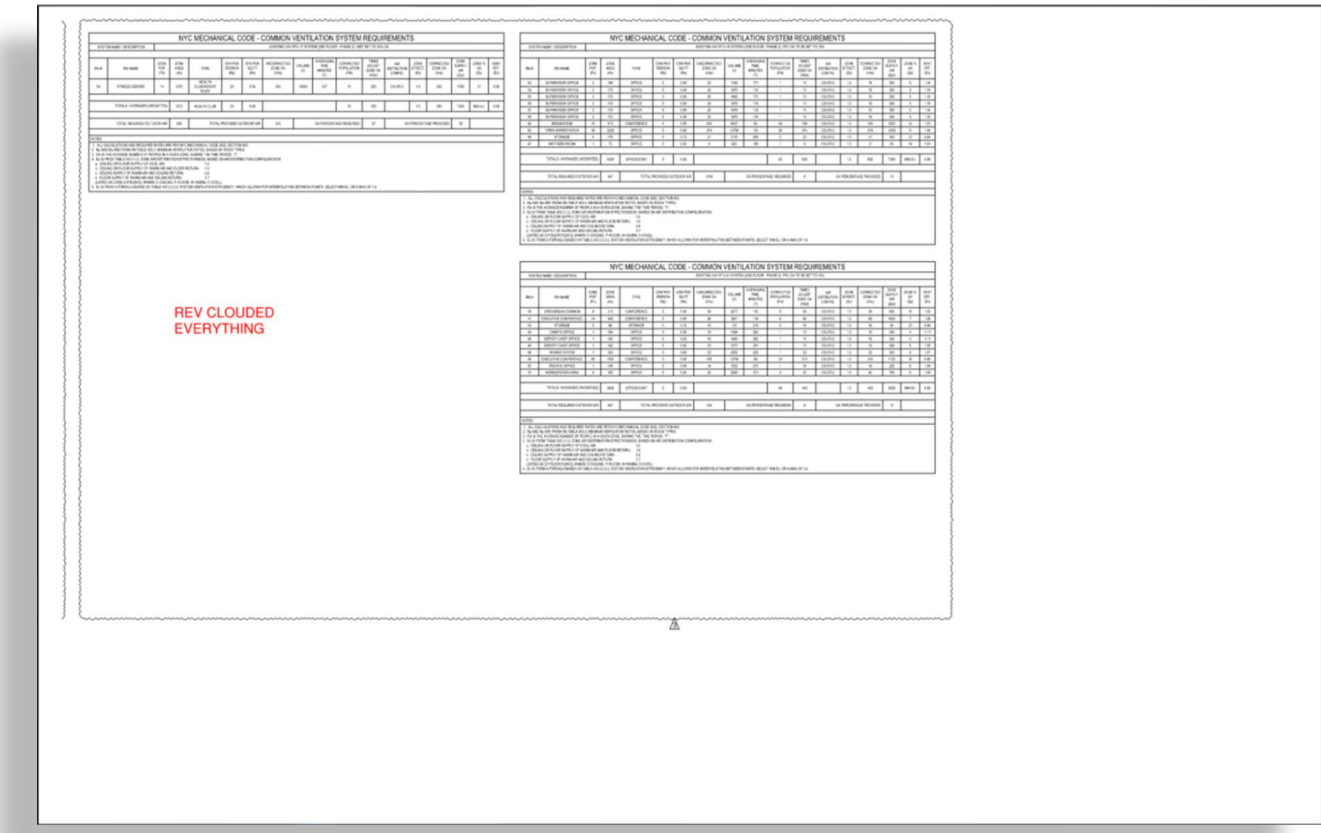
Section 4 - Submittal Packaging
Page 4.2

Typical Pitfalls

Common Issues and Corresponding Comments from QAD

Issue: A/EOR bubbles/rev clouds the entire floor plan without being specific to the changes made

QAD Comment: Be specific. Avoid clouding the entire floor plan.



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Common Comments

Rooftop Supply Air and Exhaust Air Equipment

- Can weigh anywhere from 200 to 30,000 lbs, or more
- Require openings (penetrations) in the roof structure for sheetmetal ductwork penetrations
- The installation may require separate penetrations for gas and electrical
- Requires framing for the curbs and it may require supplemental support steel to carry the weight of the unit(s).
- When air capacity is greater than 2,000-cfm, duct smoke detectors are required.

Common Comments

Rooftop Supply Air and Exhaust Air Equipment

- Often drawings omit roof opening information and details
- Often the “operating” weight of the equipment is missing from the equipment schedule
- Often the electrical usage information (ie, circuit breaker size) is missing from the equipment schedule.
- Often an electrical outlet at or near the new roof top equipment is missing

Common Comments

Fire and Combination Fire/Smoke Dampers:

- Dampers need to be shown on the drawings where required in rated walls or partitions.
- Installation Details of FD or FSD in the wall or partitions are required with reference to UL 555 and/or UL 555S.
- Providing a Sequence of Operation indicating manner of operation of the dampers.

Common Comments

Fire and Combination Fire/Smoke Dampers: Equipment Significance (cont.)

- Dampers installed within ductwork are mounted in and attached to metal sleeves.
- Dampers installed in ductwork need an access panel or door in the duct to access the damper for inspections and maintenance.
- Signs are required indicating where dampers are located

Common Comments

Commercial Kitchen Exhaust Systems:

- Grease Hoods- Must provide UL listing for Type 1 hood on EOR drawings- NOT foodservice drawings.
- Food Service drawings are good, but Code required aspects need to either go on the MEP set OR the Engineer should sign/seal the Foodservice drawings.
- Verification from the Type I hood that the UL 710 Listed and Labeled equipment will perform as designed for a former kitchen cooking appliance arrangement when re-using an existing Type I hood.
- Carbon Monoxide Detection System whenever an appliance generates Carbon Monoxide.

Common Comments

Commercial Kitchen Exhaust Systems and Other Requirements:

- Rooftop equipment (exhaust fan and make-up air unit) are omitted from the plans every now and then.
- Clear indication that the make-up air unit's OA intake opening has enough clearance from other exhaust openings usually goes missing.
- Not providing UL710 or UL 710B listing
- Hazardous Material Exhaust Systems.
- UST/ASTs - appropriate UL Listed and Labeled per the application and to register the tank with the EPA/NYSDEC.

Keys To Success

Your Succes is OUR Success

- The QAD-DSU is not an adversary and is available to discuss and assist in the resolution of comments.
- Understand that the intent of the audit is for a code compliant design.
- Anticipate the reviewer's needs and make it easy to locate needed information
- The requirements of the building code, referenced standards and the TCRM will dictate the methodology of the review; present information with the intent to verify that the code requirements have been satisfied.

PORT AUTHORITY NY NJ

Electrical Code Review Design Review

Port Authority Quality Assurance Division – Design Standard Unit

Juan M Ramirez, PhD P.E. – QAD-DSU

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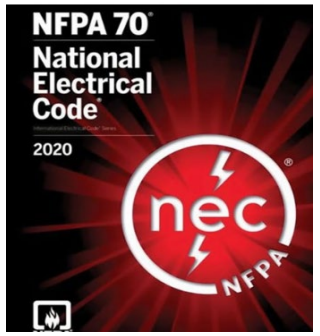
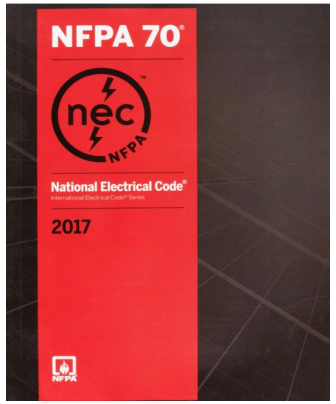
Electrical Code Review

I. Electrical Codes and Standards - Reference





- 2015 Tenant Construction Review Manual (TCRM) – Section 9.
- 2023/25 Tenant Construction Review Manual (TCRM) – Section 10
- 2020 National Electrical Code (NEC-NFPA-70) (NJ)
- 2017 National Electrical Code (NEC-NFPA-70) (NYS)
- 2011 NY City Electrical Code (adopts 2008 NEC-NFPA-70)
- 2021 International Building Code, New Jersey Edition
- 2020 Building Code of New York State based on IBC 2018
- 2022 New York City Building Code based on IBC 2015
- 2019 NFPA 241- Standard for Safeguarding Const Alter., and Demo Operations (Good-Practice)
- 2021 NFPA-70E - Standard for Electrical Safety in the Workplace® (Good-Practice)
- BICSI-TDMM 15th Edition – Structuring & Fiber Optic Cabling Distribution Manual (Good Practice)

Electrical Code Review

II. Review Background & Process

A. Based on QAD Design Standards & Latest Codes Approved by AHJ.

B. We perform a high-level code review process similar to the NYC Department of Buildings and State of New Jersey-Department of Community Affairs.

C. Design Review - QAD DSU – Electrical Trade

I. Basic Information
II. Submittal Package (Letters, Drawings, SOW, etc.)
III. Review Process & Analysis
IV. Common & Critical Comments Crafting
V. Issuing Comments to QAD Project Coordinator

Electrical Code Review

III. General Findings – Comment Based on TCRM 2015/23/25 Review

Responsibility for design or code compliance **shall not be delegate** to contractors. **2025 TCRM Section 2.I.**

Wrong Sign & Seal - seal does not belong to the State where the project is performed.
The design documents shall be digitally sealed and signed by the Architect or Engineer of Record (AOE, EOR) licensed to practice in the State in which the proposed construction is to be performed. **2025 TCRM Section 2.**I.

Incomplete drawings or key information missing.
The design documents, such as drawings, reports, computations, and specifications shall be submitted with Tenant Construction or Alteration Application. **2025 TCRM Section 2.I.**

Code Compliance **Approved by Authority Have Jurisdiction**; Applicable latest code approved by State Laws, City Laws and Porth Authority; no, the last version issued by code organizations.

2025 TCRM Section 3.II; NFPA70 Annex H Administration & Enforcement

Electrical Code Review

IV. Critical Comments

- Exploded-view drawings of existing and proposed electrical manholes in which the tenant performs any work shall be submitted for review. **2025 TCRM 10.II.A.5; Attachment E.1.3.**
- Rigid Polyvinyl Chloride Conduit (PVC) conduits shall not be used within buildings. As per NFPA70: Article 352.12; **2025 TCRM 10.II.A.6.**
- The minimum size underground conduit for 600V power and communication systems shall be 2 inches. For Low Voltage system, provide a minimum of 25% spare conduits but not less than 1 spare conduits in each duct bank. **2025 TCRM 10.II.A.7.**
- Shop drawings of medium voltage or service entrance switchgear shall be submitted for PA approval in advance of fabrication. The Port Authority may request to participate in the factory inspection of the switchgear. **2025 TCRM 10.II.A.11; NFPA70 Annex H Administration.**
- Lack of details on drawings such as: Scope of Work, Computations, Specifications, Reports, and General Notes. **2025 TCRM Section 2.I; NFPA70 Annex H Administration & Enforcement.**

Electrical Code Review

IV. Critical Comments – Cont.

A. Medium Voltage Power System, JFK International and LGA Airports:

- The tenant's drawings shall include a complete one-line diagram showing all primary connections, switching and interlocks; power sources, routing and feeder designations; size and type of feeder and conduit; KVA rating; types and voltages of all transformers; and all load data in justification of the amount of power requested. **2025 TCRM 10.II.B.8.**

- The load letter shall be prepared and submitted to PA in the format similar to utility company letters and should provide a breakdown of major types of loads, indicate the largest motor load, total anticipated demand, etc.

- A short circuit current calculation and coordination study for the proposed power system shall be submitted for review. **2025 TCRM 10.II.B.11.**

A. Medium Voltage Power System, JFK and LGA Airports - Cont.

Each incoming service shall be provided with required Port Authority approved metering current transformers (CT's) and potential transformers (PT's). The CT's and PT's shall be connected to the primary side of the incoming feeders. **2025 TCRM 10.II.B.12.**

B. Electrical Systems for Tenants at Port Authority Owned and Operated Buildings

2025 TCRM 10.II.E

- All tenancies shall be metered.
- Ground rods shall be copper, ¾" diameter, and ten feet long.
- Ground cables shall be soft-drawn copper, Class 'B' stranding and connected to the ground rods by exothermal welds.

B. Electrical Systems for Tenants at Port Authority owned and operated buildings - Cont.

2025 TCRM 10.II.E.2.b
NEC 110, 210, 215 408

- Panelboards shall have a main circuit breaker, 100% neutral bus, ground bus, copper buses, bolt-on type line circuit breakers, and be UL listed.

- Each panelboard shall contain at least 25% additional space for future circuits.

- Single pole breakers shall not be ganged to form multipole breakers and ‘Series’ rated equipment shall not be acceptable.

Electrical Code Review

V. Details Electrical Review – Summary

2025 TCRM 10.III

- The power distribution system (feeders, switchgear, transformers, panels and over-current protective devices), including coordination of plans regarding connections and available capacities with PA utilities.

- A one-line diagram giving source identification, conductor types and sizes, connected and demand loads, basis of source capacity, voltage drop, and adequacy of over-current protection shall be presented.

- Characteristics of special loads, e.g., large motor loads, shall be detailed. Key- and mechanical- interlocks shall be shown, identifying operational procedures for energizing, de-energizing and grounding of medium voltage equipment.

Electrical Code Review

V. Details Electrical Review – Summary – Cont.

- Coordination with other trade as need it, such as:
  Mechanical: Ventilation and cooling of electrical rooms; diffusion of battery gases; fire and smoke detection for air handling systems. **2025 TCRM 10.III.D**

- Grounding, including system grounding of derived systems such as transformers and generators. All grounding conductors sizing and type must be shown on drawings. NFPA70 – Article 250. **2025 TCRM 10.III.G.**

- Physical safety, such as clearances around equipment, and exit provisions from within electric rooms. NFPA70 – Articles 110, 210**; 2025 TCRM 10.III.L.**

- Demolition works, all electrical and communication cables and manholes shall be identified. All abandoned conduit and wiring shall be removed back to the overcurrent device serving the demolished circuit. For areas designated for demolition, disconnect from the power source and remove all existing electrical devices, lighting fixtures, and associated conduit and wiring, etc., unless noted as existing to remain. NFPA70 Articles; 590, 591, 725, 760, and 800; **2025 TCRM 10.II.E.1p.**

Electrical Code Review

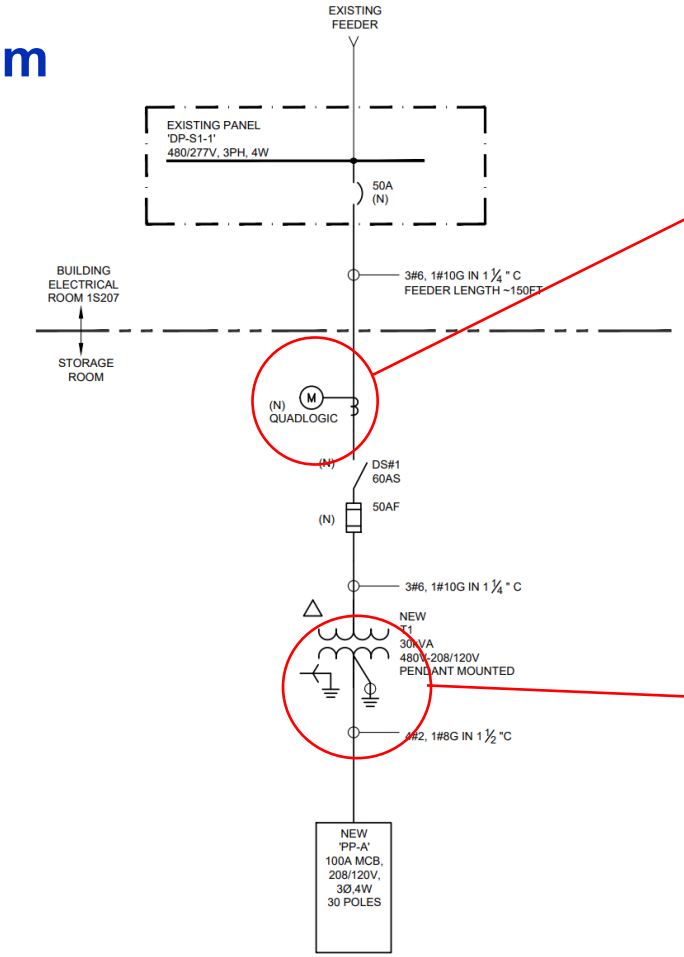
VI. National Electrical Code (NEC) – Relevant Articles

- 110 – Requirement for Electrical Installations
- 210 – Branch Circuits
- 215 – Feeders
- 220 – Branch Circuit, Feeder, and Service Load Calculations
- 240 – Overcurrent Protection
- 250 – Grounding and Bonding
- 352 – Rigid Polyvinyl Chloride Conduit - PVC
- 408 – Switchboards, Switchgear and Panelboards
- 450 – Transformers and Transformer Vaults
- 625 – Electric Vehicle Charging System (EV Charging)
- 645 – Information Technology Equipment
- 690 – Solar Photovoltaic (PV) Systems
- 691 – Large-Scale Photovoltaic (PV) Electric Supply Stations
- 700 – Emergency Systems
- 706 – Energy Storage Systems
- 708 – Critical Operations Power Systems (COPS)
- 725 – Remote Control, Signaling, Power Limited Circuits, Limited Power LP)
- 760 – Fire Alarm Systems / NFPA72
- 800 – Communications Systems

Electrical Code Review

VII. Reference Comments – Illustration 1

One-Line Diagram
NEC 215



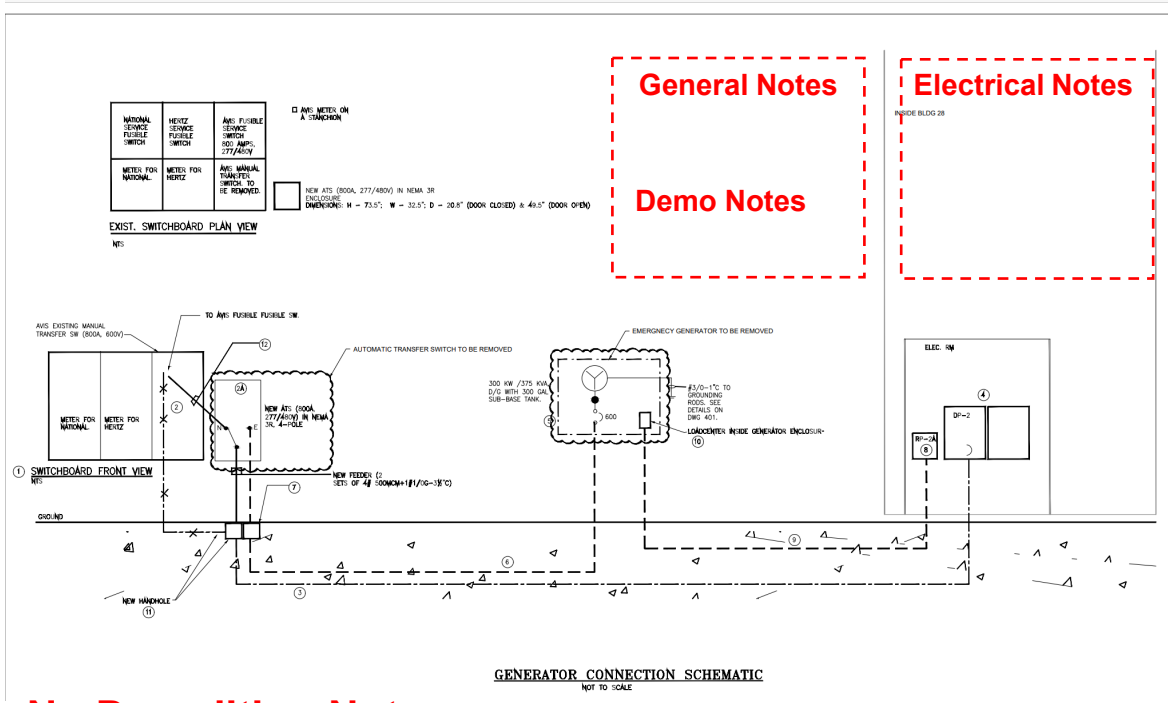
Commercial Metering Device – Ex: Quadlogic Solutions
No Model Specified
Model Ref: Qbrick 1 or 4, QTao G2 Data Hub, Qlic E-Meter 400
QBrick Display Unit
2025 TCRM Sections 10.II.A.1 / 10.II.E.1.b

Grounding
Wire & Conduit Sizes – Rating/Type/Spec
No Specified
2025 TCRM Sections 10.II.E.1.e / 10.III.G

Electrical Code Review

VII. Reference Comments – Illustration 2

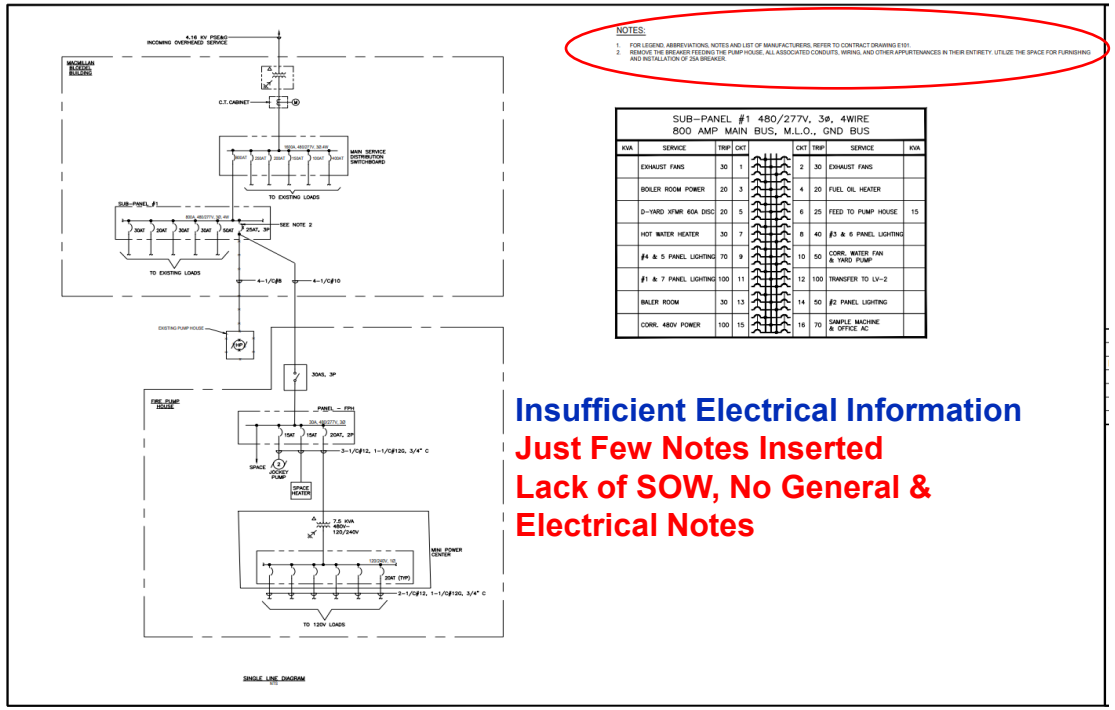
Drawing 1 – Gen Removal



No Demolition Notes
No Electrical Notes

No, in compliance with the 2023 Sections; 2.I & 10.
No, in compliance to AHJ

Drawing 2 – New Fire Pump



Insufficient Electrical Information
Just Few Notes Inserted
Lack of SOW, No General & Electrical Notes

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Electrical Code Review

VIII Final Takeway - Electrical

Professional Design Submission – Minimum Requirement

- ✓ Abbreviations
- ✓ Applicable Code by AHJ
- ✓ Coordination Notes – Other Trades
- ✓ Demolition Notes & Plans (Bubbled Areas)
- ✓ Electrical Panel Schedule
- ✓ Electrical Symbols / Legend
- ✓ Equipment Specifications
- ✓ Floor Plan / Power Plan / Ceiling Plan (Scaled)
- ✓ General Specifications
- ✓ Inspection Check List / Ideal
- ✓ Interior Lightning Compliance Certificate
- ✓ Load Calculation Chart
- ✓ Meter(s) / Distribution Equipment
- ✓ Signed & Sealed
- ✓ Technical Specifications
- ✓ One Line or Riser Diagram

PORT AUTHORITY NY NJ

Plumbing Code Review Design Review

Port Authority Quality Assurance Division – Design Standard Unit

Kehinde Odunsi, P.E. – QAD-DSU

AIR LAND RAIL SEA

Review Process (Plumbing)-1/2

Reference Codes and Standards

1. NYC Construction Codes

- 2022 NYC Building Code
- 2022 NYC Fuel and Gas Code
- 2022 NYC Plumbing Code

2. New Jersey UCC as adopted NJAC 5:23

- 2021 International Building Code, NJ Edition
- 2021 International Fuel and Gas Code
- 2021 National Standard Plumbing Code, NJ Edition

Review Process (Plumbing)-2/2

Reference Codes and Standards

3. New York State

- 2020 New York State Building Code
- 2020 New York State Plumbing Code

4. 2025 TCRM

Review Process (Plumbing)

Plumbing Review

- Work types – Minor additions, alterations or repairs – shall comply with current code provisions unless left in same arrangement and not hazardous. If your work falls under a minor addition or alteration, it needs to be submitted. Minor repairs shall be submitted to the facility.

- I am removing a toilet and replacing with a new one. - Not required to be submitted for TAA review but shall go through facility for authorization.

- I am relocating a fixture to a new location. - Should be submitted.
- Plumbing fixture counts - prior code buildings have the option to use either the 1968 or current 2022 NYC Plumbing Code (PC).

Review Process (Plumbing)

Plumbing Review

- Materials
- Sanitary and Vent systems – NYC PC -Table 702.1& 702.2(PVC not permitted aboveground within buildings – 2023 TCRM requirement).
- Storm water systems – NYC PC-Table 702.1 & 702.2 and 1102.4 (PVC not permitted aboveground within buildings – 2023 TCRM requirement).
- Domestic water systems – NYC PC-Tables 605.4, 605.5*

Review Process (Plumbing)

Plumbing Review

- **Plumbing Fixtures**
- Need to show in a fixture schedule
- Specifications should indicate type, make, model along with required flow rates, and pressures.
- Summation of loads (fixture units, gpms) – clarify for new systems in addition to showing pipe sizes.
- **Water heaters**
- Load calculations
- Locations of discharge piping from temperature/pressure relief valve – must be visible.
- Maintenance of water temperature where distances exceed 20 feet to the farthest fixture in New York (PC 607.2-NYC), or 100 feet in New Jersey(PC 10.15.2.1-NJ).

Review Process (Plumbing)

Plumbing Review

- **Backflow prevention**
- Primary – water service piping (NYC PC 603) as per NYC DEP – approval required.
- Secondary, sprinkler and standpipe – (NYC PC 608.3, 608.15, 608.16, and 608.17). Includes air gaps, vacuum breakers and double check valves. Some examples – coffee makers, pumps, dishwashers, etc.…
- **Indirect waste –** discharge is not via a hard connection to sanitary system **–** NYC PC, Chapter 8 - sprinkler drain shall discharge via indirect waste (i.e. mop sink, standpipe, floor drain, etc…) – must be properly sized.

- **Grease waste interceptors, and oil separators –** if you have any discharge that is detrimental or can harm sewer pipes or cause harm to the sewer it cannot be discharged directly into the sewer (NYC PC 302, Chapter 10).

Review Process (Plumbing)

Plumbing Review

New Gas Piping – shall be installed as per Fuel and Gas Code. New piping shall require calculations for determination of pipe sizes, indicate assume pressure, pressure drop and total cfh.

Permanent sanitary and water connections*

- Every building in which plumbing fixtures are installed shall have drainage piping and be connected to the sewer (NYC PC 701.2).
- Every structure equipped with plumbing fixtures and utilized for human occupancy shall be provided with potable water (NYC PC 602).
- Majority of trailers require permanent water hookups.

***Exception –** port a john shall be permitted for construction trailers with construction workers only (no office activity, or business, etc…).

Review Process (Plumbing)

Plumbing Review

Storm Drainage

- Sizing of drainage to include vertical and horizontal drain lines (NYC PC 1106).
- Secondary drainage where roof perimeter extends above roof (NYC PC 1108).

Flood Hazard Resistance (NYC PC 309) – A lot of our PA properties and structures are in flood hazard areas (Appendix G – 2022 NYC Building Code).

Thank you!

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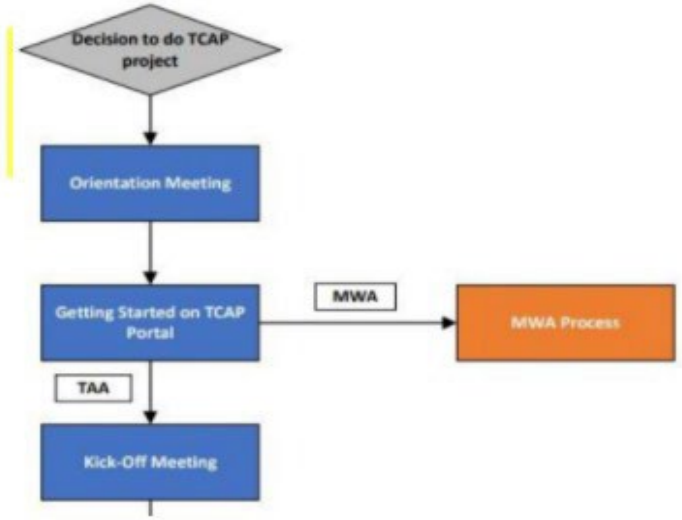
The TCAP Central Office

Start Here!
Interactive TCAP RoadMap

Download the Interactive TCAP Road Map using the link below for an overview of each step of the process. Once downloaded, click on the boxes in the flowchart and gain quick access to important TCAP forms and documents.

Click here to download Interactive TCAP Road Map



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TCAP@panynj.gov

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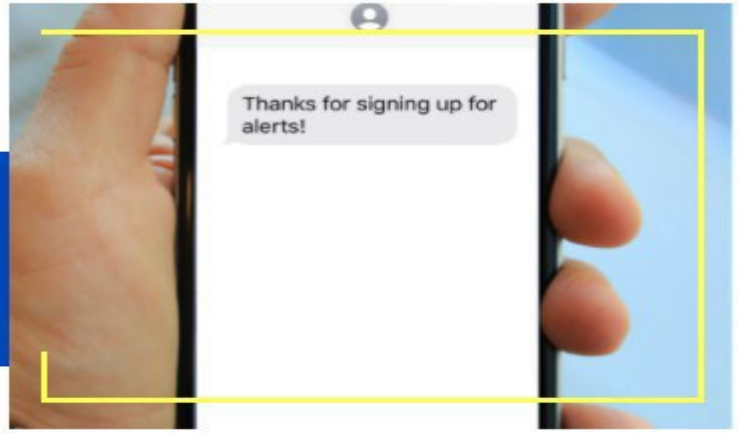

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