



# **Third Party Review Vendor Training Refresher**

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# Resources

## ➤ Guides:

- ❖ [Guidance Document for Technical Project Review](#)

## ➤ Previous TPR Trainings:

- ❖ [Architectural Training Presentation \(2019\)](#)
- ❖ [Engineering Training Presentation \(2019\)](#)

➤ Please note that codes have changed since these documents were created and the therefore may include outdated references



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### GUIDANCE DOCUMENT FOR TECHNICAL PROJECT REVIEW

#### Referenced Codes Rules and Regulations:

**UCS:** 2016 Uniform Code Supplement  
**IBC:** International Building Code 2015  
**IFC:** International Fire Code 2015  
**IMC:** International Mechanical Code 2015  
**IPC:** International Plumbing Code 2015  
**IGC:** International Fuel Gas Code 2015  
**IEBC:** International Existing Building Code 2015  
**ECCC:** 2016 Supplement to the New York State Energy Conservation Construction Code  
**MPS:** Manual of Planning Standards (1998)  
**155:** 8 NYCRR 155 Regulations of the Commissioner of Education

#### 1. SED PROJECT SUBMISSIONS:

##### a. COMPLETE, COORDINATED, CODE COMPLIANT

**COMPLETE:** The project design documents, plans and specifications, must include all design information and details required to determine code compliance. Missing information is not acceptable:

- Rated walls, rescue windows, travel distance to exits;
- Fire dampers, smoke dampers;
- Electric circuits, emergency lighting, exit signs, fire alarm devices;
- Sizes and ratings of materials and equipment, such as wire, conduit, fuses, circuit breakers, pipes, ducts, strobe candela, etc. must be indicated; and
- Specification sections must be complete/

If you believe you have a set of plans that are not complete, and not reviewable, stop review and contact SED.

**COORDINATED:** The project design documents, plans and specifications, must be fully coordinated among all trades. Fire rated construction shown on architectural drawings must be coordinated with mechanical drawings such that required fire dampers are shown. Smoke barrier construction shown on architectural drawings must be coordinated with mechanical and electrical drawings such that required smoke dampers are shown. Secondary (emergency) roof drains must be coordinated between the architectural, civil, and plumbing drawings. Site features, shown on civil drawings which require power, such as pumps and signs, must be coordinated with electrical drawings such that required electrical circuits are shown. Electrical requirements for equipment provided by the mechanical contractor must be coordinated with the electrical drawings.

# New Resources

➤ Reference OFP Home Page for updates:

❖ <http://www.p12.nysed.gov/facplan/>

➤ New Forms and Checklists:  
Updated workbook and an associated guidance  
PowerPoint document

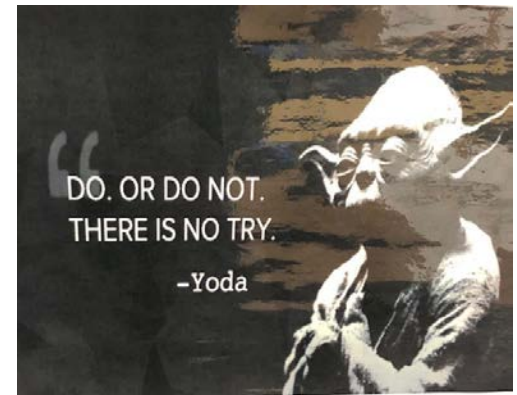
❖ [Forms Workbook](#)

❖ [Forms Workbook Guidance](#)



# Life Safety

- Fire alarm (EVACS; strobes; CO; pull stations; ECS/MNS; tie in PA/security/BMS; DH)
- Emergency lighting; continuous lighting; exit signs
- Fire suppression (sprinklers; standpipes; kitchen hoods; dust collector spark arrestors; limited area sprinklers)



# HVAC

- Ventilation (UV Ez; VUVs; DCV; ERV)
- Relief air in existing buildings
- Sequence of operations
- Opening protectives (FDs; FSD; SDs; shaft enclosures)
- Dust collectors

# Plumbing

- Plumbing fixture counts; drinking fountains and bottle fillers; accessibility
- Lavatories in a corridor alcove
- Tempered water; temperature limiting devices
- Rural water supply for fire fighting; talk to the fire department

# Plumbing

- Lead-in-drinking water, NSF 61
- ASME water heaters
- Island venting; acid waste and vent; chemical air admittance valves; 3-bay sinks
- Secondary roof drainage PC 1108
- underground domestic water crossings

# Other

- Lighting controls ECCC 405.2
- Pool entry alarm and routine variance
- Security vestibules (fire shutters with SDs; pull stations)



TPR engineering presentation

So you wanna become a reviewer – eh?

A bit about reference codes and the code compliance path

Life safety – fire alarm; emergency lighting and exit signs; fire suppression

Fire alarm (EVACS; strobes; CO; pull stations; ECS/MNS; tie in PA/security/BMS; DH):

Emergency lighting; continuous lighting; exit signs:

Fire suppression (sprinklers; standpipes; kitchen hoods; dust collector spark arrestors; limited area sprinklers)

HVAC

Ventilation (UV Ez; VUVs; DCV; ERV)

Relief air in existing buildings

Sequence of operations

Opening protectives (FDs; FSD; SDs; shaft enclosures)

Dust collectors

Plumbing

Plumbing fixture counts; drinking fountains and bottle fillers; accessibility

lavatories in a corridor alcove

Tempered water; temperature limiting devices

Rural water supply for fire fighting; talk to the fire department

lead-in-drinking water, NSF 61

ASME water heaters

Island venting; acid waste and vent; chemical air admittance valves

Secondary roof drainage PC 1108

3-bay sinks; underground potable water cross

Other

Lighting controls ECCC 405.2

Pool entry alarm and routine variance

Security vestibules (fire shutters with SDs; pull stations)

Life safety – fire alarm; emergency lighting and exit signs; fire suppression – get out!

Fire alarm (EVACS; strobes; CO; pull stations; ECS/MNS; tie in PA/security/BMS; DH):

- Emergency voice alarm communication for Group E new construction, additions, fire alarm replacement, some exceptions; look for speaker/strobes in every classroom; follow existing building code compliance path by architect.
- General fire alarm - strobes in all rooms 2 or more occupancy; strobes within 15 ft of ends and intersections of corridors, assuming cross-corridor doors closed; strobes not recommended in stairs; door hold-opens (kitchen; corridors; stairs); recommended in areas of traffic to avoid illegal door props; fire shutters (security/concession transaction; dishwasher pass-through; kitchen-cafeteria)
- CO – existing building – generally existing coverage is fine (battery); often, a new FAS - connects new CO detection and alarm; notification at constantly attended station. Where generally – first air outlet off main duct trunk; labs with open flame; adjacent garages; non-classroom detection zone (up to 10,000 sf)
- Note – detectors may be multi-criteria: field settable for smoke, heat, and/or CO
- Pull stations: FC 907.2.3 notable exceptions 3 & 4 (sprinklered bldg.) in response to school shootings or nuisance false alarms: pull stations not required if corridors, assembly; shops and labs have automatic fire detection; additionally (for exception 3), we require at least one manual pull station in normally attended station (main office or security) so someone can manually dump the bldg.
- Emergency communication/mass notification system: if it's voluntary (not required), the requirements of a required system apply, NFPA 72 requires it meet listing requirements for interconnection with the fire alarm system
- PA/security/BMS connecting to fire alarm system must be listed/labeled as fire alarm

Emergency lighting; continuous lighting; exit signs:

- MPS S803-2: switching of some lights in windowless student occupancy; corridors, assembly spaces; pools (regardless of daylighting), etc.- shall be to a lighting panel or keyed switch
- Emergency lighting: provide in locations of hot, rotating machinery, chemical hazards; in windowless student occupancy; assembly spaces and toilet rooms that are likely to serve such spaces after dark, stairs and corridors, means of egress components (including exit discharge ie. outside exterior exit doors to the right of way – if touching existing lighting or new construction).
- (NEC 700.16 and 17) emergency lights must be designed so that failure of any individual lighting element (such as a lamp) would not leave the space in darkness; where em lts required; must have two separate branch circuits serving local area, one normal and one emergency (eg normal and emergency battery); for generator/central inverter; multiple light fixtures – UL 924 ok; for single light fixture (eg. toilet room) – UL 1008 required.
- Exit signs: in corridor means of egress, should always see two ways out (2 exit signs) in case one way is blocked, always consider fire doors are closed; provide in assembly (50 or more occupant load); enclosed courts

Fire suppression (sprinklers; standpipes; kitchen hoods; dust collector spark arrestors; limited area sprinklers; water supplies)

- Automatic sprinklers, FC 903.2.3 (surprise!) Group E – throughout all fire areas >12000 sf; fire area located on floor other than level of exit discharge (see exception – every classroom has an exterior exit door to grade); occupant load of 300+. Also, repair (S-1) and parking (S-2) garages: S-1 > 5000sf fire area; S-2 >12000sf fire area
- Stages: FC 914.6 sprinkler for 1000sf and >50ft in ht; standpipes FC 905.3.4 >1000sf class III wet, see exception if bldg. or area is sprinklered; standpipe on each side with hose cabinet; we really don't like standpipes and hose cabinets – requires trained staff, evacuate and leave to firefighters.
- Hood fire suppression systems – required for commercial cooking appliances (ie not required for residential appliances in home and careers, life skills); grease hoods require automatic fire suppression and control – power and fuel to appliances under the hood should be shunt tripped/shut off; hood exhaust fan may continue to run to draw agent across in-duct fire; MAU should shut down on fire alarm.
- Dust collector spark arrestors, paint rooms; limited area sprinklers – can run water line from domestic but must tag any and all intervening valves to water service entrance so no one inadvertently shuts off the water to fire suppression; see limited area sprinklers – no tamper/flow switches required for up to 6 heads.
- Water supplies FC 507 – for new construction, a fire apparatus road with fire hydrants required; if rural water supply – see NFPA 1142 and talk to the local fire dept. on their requirement for sufficient water supply to fight a fire – may need on-site water storage tanks.

## HVAC

- Ventilation (UV Ez; VUVs; DCV; ERV)
  - UV Ez: we ask designers use an  $Ez = 0.9$  for a typical horizontal UV for a few reasons: it usually leads to a ventilation rate of about 450 cfm OA, which we have looked for in typical classrooms as a historically healthy ventilation rate that won't overburden the existing heating distribution system; we feel in the typical scenario such a design does a pretty good job of introducing outside air to the breathing zone – but not a Ez of 1.
  - VUVs: with outside louver with intake above powered exhaust, we ask that the ventilation outside air increase by 10% due to the possibility of short circuiting the relief back to the fresh air intake
  - DCV: Please look at draft MPS appendix J. We recommend DCV for assembly spaces; they must be able to provide the heating capacity for full occupant load ventilation rate for design day; we recommend event scheduling for assembly; low limit shall be no less than 20% of the FOVR. For classroom, we recommend occupancy sensor based DCV, since classrooms are usually either fully occupied or empty, then also no pre/post purge since FOVR when occupied. We strongly advise against DCV for VAV systems.
  - ERV: note exceptions in ECCC

- Provide independent HVAC systems for odorous spaces (e.g. labs; vocational)
- Relief air in existing buildings: make sure it still works! Else can't bring in fresh air – it's a steady state steady flow. Beware of renovations that cut off the relief air path (e.g. stair enclosures)
- Sequence of operations: This is an art. Remember that some poor school facilities person may need to diagnose this later. Main thing - look for the code required ventilation outside air during occupancy.
- Opening protectives (FDs; FSD; SDs; shaft enclosures); DSDs: when did this become so controversial? We look for corridors to be protected from smoke from adjacent spaces; be common sensical with existing non-rated walls please....
- Dust collectors: we want them outdoors and 10 feet away from unprotected openings. Recirculation requires return air cleaning down to 99.9% at 10 microns – looking for HEPA.

#### Electrical

- Lighting controls ECCC 405.2: vacancy/occupancy sensors; keyed switches where required; two manual switches; daylight responsive – note 150W exception. Be wary of OS in corridors/stairs; needs minimum level of continuous lighting (NL)

#### Plumbing

- Plumbing fixture counts - check; drinking fountains and bottle fillers – look for lead-free compliance; accessibility
- lavatories in a corridor alcove: may be existing; not acceptable for new
- Tempered water (85-110F); temperature limiting devices: lavatories ASSE 1070, master mixing valves ASSE 1070 not >110F
- lead-in-drinking water, NSF 61(faucets) and NSF 372 (pipe and fittings)
- ASME water heaters: now in MC Ch 10; WHs are pressure vessels, hence ASME!
- Island venting (fun with plumbing); acid waste and vent; chemical air admittance valves
- Secondary roof drainage: PC 1108
- 3-bay sinks (separate drain pipes to floor sink); underground water service crossings PC 603 – sleeve either side 5 feet

## Other

- Lighting controls ECCC 405.2: vacancy/occupancy sensors; keyed switches where required; two manual switches; daylight responsive – note 150W exception. Be wary of OS in corridors/stairs; needs minimum level of continuous lighting (NL)
- Pool entry alarm and routine variance: many a pool entry alarm no worky; hence controlled access and alarm all entry doors into pool area; can also provide motion detectors at pool deck.
- Security vestibules (fire shutters with SDs; pull stations): transaction windows usually require a fire shutter and SDs on both sides. Move pull stations out of unsecured visitor space.