



### FIRE INSPECTION CHECKLIST

#### Applicable Base Codes

- Florida Fire Prevention Code, 2010 Edition
- NFPA 1, Uniform Fire Code, Florida 2010 Edition
- NFPA 101, Life Safety Code, Florida 2010 Edition
- NFPA 13, 2007 edition
- NFPA 72, 2007 edition
- City of Orlando Fire Code, Chapter 24

#### Fire Safety During Construction (NFPA 1/NFPA 241)

- Fire department access is provided.
  - A. Stabilized all-weather capable surface.
  - B. Clear width through fences, gates, and roadways.
  - C. Turnarounds are provided for dead-ends >150'.
- Fire extinguishers are provided.
- Fire hydrants and water distribution prior to combustibles on site.
- LSC-compliant stairs with lighting when above the first floor.
- Temporary standpipe with FDC when building reaches 50' in height.
- FD access door to building within 50' of FD access road; 150' around perimeter (450' for AS building).

#### Building Fire Final

- Confirm shop drawings are approved; permit **on** jobsite.
- General Building Features:
  - Verify:
    - Fire department access is provided to the building.
    - Lock boxes are installed at the primary point of building access.
    - Building is addressed properly with signage.
    - All hydrants, valves, FDCs, and appurtenances have proper clearance / striping/signage.
    - Underground mains and hydrants are installed, approved, and in service.
    - Fire extinguishers are provided in accordance with the plans.
    - Distance of hydrant to standpipe FDC < 100'.

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## Economic Development – Permitting Services

### Fire Inspection Checklist

March 1, 2010

Page 2 of 13

- Hydrant > 50' from building it serves.
- Number of hydrants within 300'/SOO distance from most remote area.
- Collect Contractors' paperwork for all Fire permits after approval.
- Fire Alarm System (NFPA 72)
  - Confirm the shop drawings are approved.
  - Verify panel is online and clear.
  - Call dispatch (321.235.5200) with your location and status.
  - For new flow switches and tamper switches, verify operation.
  - Verify that City dispatch has received an alarm signal.
  - Place the alarm system in "Test Mode" to prevent further signals to dispatch.
  - Conduct Fire Alarm Operations Test.
- Sprinkler System (NFPA 13)
  - Confirm the shop drawings are approved.
  - Verify:
    - Sprinkler system fire permit is cleared.
    - Sprinklers are installed properly as shown on approved plans.
    - All escutcheon plates are installed properly.
    - Hydraulic nameplates are installed on each riser.
- Building Life Safety Systems (NFPA 101)
  - Confirm the plans are approved.
  - Verify:
    - Travel distances/common paths are in accordance with NFPA 101.
    - Changes in the level in the means of egress by ramp/stair.
    - Trip hazards.
    - Handrails/Guardrails for elevation changes.
    - Obstructions to clear width of doors/corridors/exits.
    - Exit signs are visible and legible within 100' of all points in exit access.
    - Exit signs at each exit.
    - Exit tactile signage provided at each exit.
    - Exit stair identification sign provided for buildings > 4 stories.
    - Exit stair construction is rated, continuous, and enclosed.
    - Exit stairs/ramps contain handrails and guardrails.
    - Exit stair tactile and stair identification signage is provided.
    - Panic hardware is provided on exit doors from an Assembly, Educational, and Day-Care.
    - All fire-rated doors are auto-closing, latching, and listed.
    - Door opening forces (30 lbf to start; 15 lbf to open).
    - Exit discharge to public way.
    - Fire rated construction has listed assemblies.
    - Fire command center is 1 hr. rated; controls and status indicators.
    - Emergency generator system meets NFPA 110.
    - Automatic transfer to emergency power < 10 seconds.

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- Emergency lighting is provided in the means of egress.
- Illumination at floor level of egress path is at least 1 ft-candle; max contrast 40:1, no less than 0.2 ft-candle with outage.
- Illumination outside the building extends to the public way.
- Occupant content signs have been placed near the main exit and each area in Assembly occupancies; must match approved p1 axis.
- Access control systems meet LSC.
- Elevator lobbies have a means of egress.
- Finish materials meet LSC.
- Furniture layout meets plan for all assemblies.

## **Fire Alarm Operational Test (NFPA 72)**

- Confirm shop drawings are approved; permit on jobsite.
- Compare permit to label on the back sheet of approved plans.
- Verify panel is online and clear.
- Verify device types and locations match approved plans:
  - End-of-line resistors.
  - Circuitry components, conductors, junction boxes (low-voltage ELE permit req.).
  - Power supply and alarm panels.
  - Notification appliances:
    - Strobes.
    - Horns.
    - Speakers.
  - Initiation devices:
    - Manual pull stations.
    - Smoke detectors.
    - Heat detectors.
    - Beam smoke detectors.
    - Sprinkler flow switches.
    - Flame detectors.
- Verify:
  - Date on batteries within 3 years.
  - Zone map is available.
  - Control panel legend and signage.
  - Phone numbers emergency contact persons.
  - Account numbers.
- Call dispatch (321.235.5200) with your location and status.

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- Conduct operational test:
  - Test initiation devices and verify response by City dispatch.
  - Place system in “Test Mode” with the central station.
  - Test all initiation devices (10% for recert.) for appropriate signals and description
  - Verify:
    - Operation of trouble and ground faults on initiation and notification loops (200 sec to trigger and restore).
    - Supervisory tamper switches on control valves operate.
    - Sound level using dB meter exceeds 15 dB over ambient.
    - Visual notification devices produce at least 75 candela except in corridors.
    - Visual notification device within 15’ of end of corridors.
    - Shut down of AHU on local smoke detection activation.
    - Monitoring of new subsystems to building fire alarm system (90 sec.).
    - Monitoring of fire pump and emergency generator supervision.
    - Access control systems release in the means of egress.
    - Fire-rated doors on auto-closers or door hold-opens close release.
    - Operation of elevator recall upon activation of elevator lobby, machine room, or shaft smoke detector.
    - Access control devices release on egress components.
    - Smoke damper detectors activation closes damper.
    - Voice evacuation is audible/intelligible.
    - Interface with audio/visual effects shunts to eliminate confusion.
    - Elevator recall service.
- Call dispatch to clear the test location.
- Collect Fire Alarm Pre-Test Chart (supplied at pre-construction meeting).
- Witness the contractor tagging the equipment.
- Contractor’s NFPA 72 Record of Completion forms collected at BLD Fire Final.

## **Operational Test - Kitchen Hood Dry/Wet Chemical Agent Suppression System (NFPA 17/17A)**

- Confirm shop drawings are approved; permit on jobsite.
- Compare permit to label on the back sheet of approved plans.
- Verify appliance types and locations match approved plans.
- Verify proper nozzle installation (height, orientation, placement).
- Perform manual pull station test:
  - Activate the gas or electric supply of the cooking equipment.
  - Activate the exhaust and supply fans.
  - Pull the manual alarm station.

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- Verify:
  - The agent (or test gas) discharges from the nozzles.
  - The gas or electric source is interrupted.
  - Supply fan stops and exhaust fan operates.
  - Activation of building fire alarm.
  - Activation of local (audible or visual) notification device.
- Perform link test:
  - Deactivate supply and exhaust fans.
  - Ready fusible link or heat detector above systems with single nozzle.
  - Ready suppression system.
  - Manually break fusible link or trigger heat detector.
  - Verify:
    - The agent (or test gas) discharges from the nozzles.
    - The gas or electric source is interrupted.
    - Exhaust fan activates.
    - Activation of building fire alarm.
    - Activation of local (audible or visual) notification device.
- Contractor's system certification forms collected at BLD Final.
- Witness the contractor tagging the equipment.

### **Operational Test — Alternate Gaseous Suppression Agent (NFPA 12/NFPA 2001)**

- Plans; Permit.
- Enclosure.
- Nozzles.
- Agent release/storage.
- Fire alarm pre-signal/notification.
- Communication with building FACP.

### **Operational Test — Fire Pumps (NFPA 20)**

- Confirm shop drawings are approved; permit on jobsite.
- General Inspection:
  - Pump manufacturer, engine manufacturer, controller manufacturer, and transfer switch manufacturer (or their respective representatives) shall be present during the test.
  - A copy of the fire pump acceptance test data paperwork must be received prior to fire pump inspection request.
  - All electrical wiring to the fire pump motor, including controllers, emergency power supply, and jockey pump must be completed, inspected, and approved.

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- The manufacturer shall provide a certified pump test characteristic curve for comparison to acceptance test results.
- The fire pump shall be operated for at least 1 hour cumulative time during the acceptance testing.
- The fire pump or controlling equipment shall not experience overheating, excessive vibration, or over-current during the acceptance testing.
- Alarm conditions shall annunciate locally and through the building fire alarm system for fire pump, controller, and control valves (phase or power loss, phase reversal, pump running, transfer switch in emergency).
- The fire pump must have a nameplate, suction and discharge gauges, and a suitable means to discharge and calibrate flow during a flow test (exterior test header with hose outlets as specified by NFPA 20, Table 5.25).
- The fire pump must have a pump bypass configuration.
- Reducers on the pump suction must be eccentric.
- Elbows installed in the parallel plane of a horizontal split-case pump shall be placed at least 10 supply pipe diameters in distance from the pump suction.
- A check valve is required in each fire and jockey pump discharge assembly.
- All flow meters and gauges must be calibrated within the past 12 months.
- The jockey pump must stop at the fire pump churn pressure plus the minimum City static supply.
- The jockey pump must start at the jockey pump stop pressure — 10 psi.
- The fire pump must start at the jockey pump stop pressure— 5 psi.
- The fire pump will return to normal state at the rated pressure plus the minimum City static. A timed automatic shutoff is permitted once the pump returns to normal state and a runtime of 10-minutes for electric, 30-minutes for engine driven is complete.
- Contractor's Certification paperwork collected at BLD Fire Final.
  
- Fire Pump Protection and Enclosure**
  - The fire pump must be separated by 2-hour fire rated construction from all areas of the building (1-hour if the building is not a high-rise and fully sprinkler protected) or separated from the structure by at least 50 feet.
  - The fire pump must be secured against unauthorized personnel.
  - The enclosure must reliably maintain at least 40°F, but not exceed 120°F.
  - The fire pump room must have emergency lighting.
  - The fire pump room must have ventilation.
  - The fire pump room must have drainage and an elevated pad at least 12" high for all electrical components.
  - An entrance must be at least 24" wide and 6'-6" high for access.
  - All electrical equipment must have at least 30" clear in front.
  - Diesel-driven fire pumps must have a fuel tank capacity based on 1 gallon per bhp of the pump plus an additional 10%.

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**Flow Test**

- Start the pump (simultaneously testing alternate power or batteries).
- Regulate flow vary discharge obtaining at least the churn, 100% capacity, 150% capacity flow points. (Do not allow suction side to drop below 20psi. The system should not be failed for not achieving 150% of the capacity. However, the system should minimally exceed the highest demand of the fire protection system. Most pumps are sized to accomplish this between 90% and 150% capacity.)
- Record the following information for each flow point:
  - Pump RPM.
  - Suction pressure.
  - Discharge pressure.
  - Number and sizes of hose nozzles (obtain the GPM via pitot or flow meter).
  - Amps.
  - Volts.
- Plot pump characteristic curve

$P_{\text{pump}} = P_{\text{discharge}} - P_{\text{supply}}$

1.1.1 Flow Test Point (% Rated Capacity)	Min Total Head (% Rated P)	Max Total Head (% Rated P)
0	100	140 (or shutoff)
100	100	140 (or shutoff)
150	65	140 (or shutoff)

**Electric-Driven Fire Pumps**

- Loads Start Test – Start the pump and bring up to the rated speed under discharge equal to the peak load.
- Phase Reversal Test – Test for phase reversal under normal and alternate power supplies.

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**Controller Acceptance Test**

- Perform at least 6 automatic and 6 manual operations during the acceptance testing.
- Operate the driver at full speed for at least 5 minutes per operation.
- Automatic operations must include testing from all provided starting features (pressure switches or remote starting signal).
- Divide operations between both sets of batteries for engine-driven pumps.
- Start fire pump from each power source for electric-driven pumps.
- Half of the operations must be performed with the fire pump connected to the alternate source. (Switch over to the alternate source must occur within 10 seconds with the peak flow established within 20 to 30 seconds.)

**Building (Commercial Fence) Fire Final (NFPA I)**

- Confirm the shop drawings are approved; permit on jobsite.
- Call dispatch (321.235.5200) with address of electric gate. Give phone number for return call.
- Dispatch will send emergency vehicle for test.
- Receive confirmation optical sensor operation on automatic gate.

**Underground Main – Visual (NFPA 24)**

- Confirm the shop drawings are approved; permit on jobsite.
- Verify:
  - Materials are consistent with approved plans and can resist 200-psi hydro.
  - All metallic joints and restraints are corrosion resistant.
  - All pipes and joints are properly restrained.
  - Depth of cover is at least 30", 36" under driveways, and 48" under railroads.
  - Hydrants:
    - Are connected to at least a 6" main.
    - Are no closer than 50' from the building of service.
    - Are within 100' of the fire department connection.
    - Are installed within 5' of a fire department access road.
    - Have a center hose outlet not less than 18" ABOVE FINAL GRADE.
    - Do not have obstructions within 7'-6" of side ports and 4' to the rear.
- Backflow prevention devices are consistent with the approved plans.
- Control valves:
  - Are consistent with the approved plans.
  - Contain electronic supervision if a fire alarm system is installed.
  - Include a post-indicating valve from every connection to a building.
  - Are not provided in the path of a fire department connection.

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## **Underground Main – Flush (NFPA 24)**

- Confirm the shop drawings are approved; permit on jobsite.
- Provide a suitable location for discharge of water.
- Restrain all piping to prevent damage.
- Open valves to generate flow according to the following table:

<input type="checkbox"/> Nominal Pipe Size (in.)	<input type="checkbox"/> Flow Rate (gpm)
<input type="checkbox"/> 4	<input type="checkbox"/> 390
<input type="checkbox"/> 6	<input type="checkbox"/> 880
<input type="checkbox"/> 8	<input type="checkbox"/> 1560
<input type="checkbox"/> 10	<input type="checkbox"/> 2440
<input type="checkbox"/> 12	<input type="checkbox"/> 3520

- Continue flushing operation until foreign matter is cleared.
- Close the control valves.

## **Underground Main – Hydro (NFPA 24)**

- Confirm the shop drawings are approved; permit on jobsite.
- Backfill the trench between joints to prevent movement.
- Verify that the contractor has maintained pressure of 200 psi for at least 2 hours.
- No loss of pressure allowed.
- Relieve all pressure and observe gauge for proper operation.
- Contractor certification paperwork collected at BLD Final.

## **Hydrant Flow Test (NFPA 291)**

- Confirm the shop drawings are approved; permit on jobsite.
- Verify all appropriate inspections have occurred prior to hydrant flow request.
- Provide a suitable location for discharge of water.
- Verify location of hydrants is consistent with approved plans.
- Flush the system to prevent damage to instruments by foreign matter.
- Select the “test” hydrant. The test hydrant should be the closest to the building, or the location of test relevance.
- Attach pressure gauge to the test hydrant.
- Open the test hydrant and take the static pressure reading (reading is no flow condition, **P<sub>1</sub>**).
- Select the “flow” hydrant(s):
  - Should be downstream of test hydrant.

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## Economic Development – Permitting Services

### Fire Inspection Checklist

March 1, 2010

Page 10 of 13

- May require multiple outlets on hydrants and/or multiple hydrants flowing to produce at least a 25% pressure drop.
  - If multiple (looped) supply is provided, the source is the larger of the supply mains.
  - Determine flow hydrant parameters. Measure diameter of hydrant outlet (**D**) in inches.
  - Feel hydrant barrel to determine the orifice coefficient ( $C_d$ ) (0.9 – rounded, 0.8 square, 0.7 projected).
    - Open flow hydrant(s) and outlet(s).
    - Use pitot gauge to obtain pitot pressure (**P**) in psi. Take residual pressure reading (flow condition,  $P_2$ ) off test hydrant while flowing.
  - Calculate the flow (**Q**) in GPM based on pitot gauge reading in accordance with:  
$$Q=29.83(C_d) D^2\sqrt{P}$$
- OR**
- If using a flow meter, verify that the flow meter is calibrated for the correct hydrant discharge orifice ( $C_a$ ) and record the flow (**Q**).
  - Plot static pressure ( $P_1$ ), residual pressure ( $P_2$ ), and flow value (**Q**) on flow test chart.
  - Determine the available flow at 20 psi at test hydrant (this will be a baseline for other hydrants on the site).
  - Conduct single hydrant flow test on remainder of hydrants:
    - Attach pressure gauge to one side outlet.
    - Attach flow meter to other side outlet if available.
    - Record static pressure from hydrant.
    - Open hydrant and record residual pressure.
    - Record flow meter or use pitot to calculate flow discharge using equation above
    - Plot the values on a flow test chart.
    - Determine the available flow at 20 psi for each hydrant.
    - Close the hydrant and remove gauges.
  - Collect flow test charts; Contractor paperwork to be collected at BLD Fire Final.
  - Verify the hydrant is properly painted in accordance with NFPA 291:
    - Barrel painted bright yellow for private; silver for public.
    - Bonnet painted either green (1000 – 1499 GPM) or light blue (1500+ GPM).
    - Tag private hydrants and record GPS coordinates.

## Fuel Tank Inspection (NFPA 30)

- Confirm the shop drawings are approved; permit on jobsite.
- Verify the location of the tank is in accordance with the approved plans.
- For underground tanks, verify cover depth is at least 2' nominally or 3' under traffic.
- Verify the tank is secured to prevent movement.
- Verify the tank has a manufacturer's approved listing mark.

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- Conduct a hydrostatic pressure test for 1 hour:
  - Horizontal above-ground – (3 to 5 psig).
  - Vertical above-ground – (1.5 to 2.5 psig).
  - Single-wall underground tanks (3 to 5 psig).
- Verify above-ground tanks contain spill control (remote impounding, curb, dike, etc.).
- Verify the foundation for tanks is made from concrete, masonry, piling, or steel:
  - Steel structures and exposed pilings require 2-hour fire rating.

### **Above-ground Hydro – Sprinkler (NFPA 13)**

- Confirm the shop drawings are approved; permit on jobsite.
- Verify that the contractor has maintained pressure of 200 psi or 50 psi above the system pressure (churn pressure available for fire pumps) for at least 2 hours.
- Determine the applicable sprinkler standard (NFPA 13, 13R or 13D).
- Verify location and materials are consistent with the approved plans:
  - Piping
    - Risers.
    - Cross mains.
    - Branch lines.
  - Fittings
  - Valves
  - Gauges
  - Sprinklers
    - Types.
    - Temperatures; RTI.
    - Spacing.
  - Corrosion Prevention
- Verify piping exposed to temperatures below 40°F nominal is protected against freezing (dry heads, dry-pipe system, heat trace on mains, ethylene-glycol).
- Verify piping is restrained properly in accordance with the following chart:

Pipe Diameter (in.)	1	1 ½	1 ½	2	2 ½	3	4+
Steel pipe (except threaded lightwall)	12'	12'	15'	15'	15'	15'	15'
Threaded lightwall	12'	12'	12'	12'	12'	12'	15'
Copper tube	8'	8'	10'	12'	12'	12'	15'
CPVC	6'	6'-6"	7'	8'	9'	10'	N/A

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- Verify hangers are provided in other locations:
  - Every segment of a branch line.
  - Within 36" of an end sprinkler for 1" pipe.
  - Within 48" of an end sprinkler for 1 ¼" pipe.
  - Within 60" of an end sprinkler for 1 ½" or larger pipe.
  - Within 12" of an end sprinkler where the maximum pressure exceeds 100 psi at the sprinkler head (generally if connected to a fire pump).
- For dry pipe and pre-action systems, an air pressure leakage test at 40 psi is conducted for 24 hours.
  - Maximum leakage allowed is 1 ½ psi.
  - Hydrostatic pressure test at 200 psi or 50 psi above system pressure required if connected to a FDC.
- Relieve all pressure and observe gauge for operation; gauge at lowest point on system.

### **Operation Test – Sprinkler/Standpipe (NFPA 13/14)**

- Confirm the shop drawings are approved; permit on job site.
- For sprinkler systems:
  - Verify that all alarm and supervisory devices are monitored:
    - Water Flow switches.
    - Pressure switches.
    - Control valve supervisory switches.
    - Alarm valves.
    - Local notification (for systems > 20 heads).
  - Verify operation of system:
    - Flow from inspector's test connection – alarm in less than 5 min. and water.
    - Delivered from dry pipe within 60 sec. (for dry pipe systems more than 750 gallons).
    - Trip each pressure switch.
    - Open main drain valve and record static and residual pressure.
  - Obstructions to sprinkler discharge eliminated.
  - Sprinkler distance to ceiling.
  - Hydraulic nameplates on each system riser.
  - Contractor's NFPA 13 system certification paperwork collected at BLD Final.
- For Standpipes
  - Verify fire hose valves are accessible and located as approved, intermediate landings.
  - Verify each standpipe control valve is supervised and work properly.

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- Verify a suitable means for discharge is provided (3" drain riser or exterior access for flow test and drain).
- Verify two 2-1/2" outlets are provided at the most remote riser.
- Verify each additional riser has a 2 ½ riser at the roof if access is not provided, or an outlet at the top of the stairs that access the roof.
- Verify pressure reducing hose valves inlet and outlet pressures static; residual; flow using approved device.
- Verify through flow test:
  - 500 gpm @ 100 psi at the roof manifold from the most remote riser.
  - 250 gpm @ 100 psi for two next remote risers up to 1000 GPM for combined system.
- Hydraulic nameplates on each system riser.
- Contractor's NFPA 14 system certification paperwork collected at BLD final.

**This document is intended to be a guide and may not contain all requirements needed to obtain permits and approval from the City of Orlando.**

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