



# Warrington Township Fire Marshal's Office

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## FIRE PROTECTION SYSTEM REQUIREMENTS

### Effective Immediately All Submissions For Fire Protection Systems Must Meet The Following Requirements:

1. Fire Protection systems including fire alarm, cooking hood systems, fire sprinklers and other suppression or detection system shall require 3-sets of original drawings. (Signed and sealed with cut sheets and calculations as required)
2. All drawings must be prepared by a minimum NICET Level III Designer (or higher) or signed and sealed by a Fire Protection Engineer (design professional proficient in this field).
3. All work shall be performed by NICET certified or properly factory trained personnel. Proof of training and/or certification must be provided. All persons working on fire protection system must have certification cards and photo identification available for inspection upon request by the Fire Marshal. Documentation to be provided prior to permit issuance.
4. Review permit for required site inspections.
5. Approved plans must be on site for installation and inspector.
6. The building, property owner, or the General Contractor can apply for permits.
7. Work cannot be started until an approved permit has been issued and paid for. (If work starts prior to the permit being issued the fees will be doubled).

### I. Code List For Warrington Township

#### A. The following are the current codes enforced by Warrington Township:

- Warrington Township Codes
- International Building Code 2009
- International Fire Code 2009, including Appendices A, B, C, D, E, F & G
- National Electric Code, 2008
- International Mechanical Code, 2009
- ICC/ANSI A117.1 2009
- NFPA 13, 2007
- NFPA 72, 2007
- NFPA 17A 2008
- Other codes as referenced by the above codes
- See the Warrington Township website ([www.warringtontownship.org](http://www.warringtontownship.org)) for all code requirements
- All permit applications shall include (3) **THREE** sets of *original complete* plans with the original stamp/seals from designer or engineer.
- **All submissions must be complete.** A complete submission shall include all information listed in this package, signed permit application, construction specifications, cut sheets, plans and completed checklist. Submissions missing any of these items will be rejected as incomplete.
- All contractors must be currently registered in Warrington Township.

**Plan review may be up to 30 working days for commercial and 15 working days for residential from the date of complete submission. Information submitted via fax machine will not be accepted.**

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### All PROJECTS (Except Residential)

**Complete as-built drawings in PDF Format are required at the time of completion and must be provided prior to final inspection. A drawing of the floor plan on CD-Rom or electronic media is required at the time of final inspection. This plan must include the location of the electrical and gas shut offs and the sprinkler controls. This copy is for the Fire Department preplan use. (This plan may be Adobe Acrobat versions 5.0 -9.0) NO EXCEPTIONS.**

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## II. REQUIRED COMMERCIAL CONSTRUCTION DOCUMENTS

All plans must be signed and sealed by the registered design professional responsible for the following work:

**SITE PLAN:** Scaled drawing, which shows the size and location of all new construction and all existing structures on the site, distances from structure(s) to property lines and to other structures on site, impervious and building coverage.

**SPECIFICATIONS:** Requirements for submittal may vary on how much information is shown on the construction drawings.

**LIFE SAFETY:** Provide a plan that shows egress calculations, occupancy loads and uses for each room, travel distance, exit widths, emergency lighting and exit signs in accordance with **IFC the IBC**.

**FIRE PROTECTION:** When required, the construction documents may include a submission for the automatic fire suppression system, the fire alarm system, the smoke control system, single/multiple station detectors, standpipes, fire department connections and fire extinguisher(s) size & location. (**See Submission Checklists**).

**MECHANICAL:** Location, size and listed/labeled information for all equipment and appliances that comprise parts of the buildings mechanical system. Ventilation and exhaust calculations, schedules, supply and exhaust ductwork, chimney termination, materials, and any other information required to complete the buildings HVAC system. **Plans must be signed and sealed by the registered design professional responsible for this work**

**ELECTRICAL:** Construction documents shall be signed and sealed by the design professional, drawn to scale upon suitable material and shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, including and show in detail that it will conform to the provisions of the electrical code and relevant laws, ordinances, rules and regulations, as determined by the code official. **Plans must be signed and sealed by the registered design professional responsible for this work**

**USE & OCCUPANCY:** A Change in the Use or Occupancy of any commercial space requires the issuance of a Use and Occupancy permit from Warrington Township.

For existing spaces undergoing a **change of tenant only** without any new work, an application with two sets of sealed drawings showing the layout of the space, emergency lighting and exit signs, locations of means of egress, occupancy loads and egress calculations are required for a Use and Occupancy Inspection.

**Note: Changes in Use and Occupancy requiring construction or changes in the Use Group of the building shall be subject to all provisions of the applicable codes.**

## III. General Information required for plan review for Commercial Hood, Duct System, and Suppression:

- Provide a complete floor plan showing the location of all equipment (cooking heat producing, vapor producing), size of the hood and size and type of the cooking equipment.
- Indicate the type of equipment being used. Indicate the production of steam, heat or grease laden fumes.
- Indicate the type of cooking extra heavy to light duty.
- Commercial kitchen interlocks [fans on whenever cooking systems are on (IMC)].
  - Makeup air shall be supplied during the operation of commercial kitchen exhaust systems that are provided for commercial cooking appliances. The amount of makeup air supplied shall be approximately equal to the amount of exhaust air. The makeup air shall not reduce the effectiveness of the exhaust system. Makeup air shall be provided by gravity or mechanical means or both. For mechanical makeup air systems, the exhaust and makeup air systems shall be electrically interlocked to insure that makeup air is provided whenever the exhaust system is in operation.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

### A. Type I Systems

- Provide catalog cut sheets for a factory built commercial kitchen hood. It shall comply with UL 710 Indicate the gage of the exhaust hood a minimum of 18 gage for steel and 20 gage for stainless steel.
- The hood joints and seams shall be made with a continuous liquid tight weld or braze on the external side of the hood.
- Indicate the minimum distance from the hood to combustible material shall be 18 inches and no clearance is required when gypsum board is attached to non combustible materials.

- Indicate the distance from the filter to the cooking surface, type of filter, size of filter and mounting position.
- Provide details showing the size of the cooking surface, size of hood and distance to the cooking surface.
- Provide a calculation showing the capacity of the exhaust system including type of hood and linear feet of the hood.
- The exhaust system shall automatically activate whenever cooking occurs (IMC).
- Provide a calculation for the non-canopy hood showing not less than 300 cfm per linear foot of cooking surface.
- Indicate a performance test for the kitchen hood.
- The duct joints and seams shall be made with a continuous liquid tight weld or braze on the external side of the duct system.
- Indicate the method of supporting the duct. The supports construction shall be noncombustible material. The supports and supporting construction and designed to carry the gravity and seismic loads.
- Indicate that the township will be notified before the grease duct test.
- The velocity in the duct shall be a minimum of 500 feet per minute. Velocity = cfm divided square foot of duct.
- The ductwork shall be installed so that grease cannot collect in any portion. Indicate the slope of the horizontal ductwork: 1/4 in 12, ducts over 75-feet 1 in 12.
- Provide a cleanout with maximum dimensions of 12 in. x 12 in. on the side of all horizontal ducts with a maximum spacing of 20 feet.
- Provide an enclosure where the duct penetrates a ceiling, wall, and floor. The enclosure shall comply with the building code with a clearance of 18 inches (combustible) to 3 inches (gypsum board on non-combustible).
- Provide a catalog cut sheets for the exhaust fan being used for the type I hood. It shall show the fan outside the air stream.
- Provide details for the grease diverter when a centrifugal fan with horizontal discharge including size of vertical outlet, length of duct and a low point drain outlet.
- The exhaust fan shall terminate 40-inches above the roof, not less than 10-feet to air intakes or less than 10-feet above grade.
  - Wall exhaust termination shall be a minimum of 3-feet from other exterior wall openings.
  - Exhaust fans shall be 10-feet from adjacent buildings or property lines or air intake openings and 10-feet above grade.
- The exhaust fan housing shall be the same as the exhaust duct work and extend 18-inches above the roof.
- Indicate the source of the makeup air and the other source of the air for other equipment in the room.
- The makeup air shall be tempered where it enters the conditioned space.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

**B. Information required for plan review for commercial Hood and Duct extinguishing system:**

- Provide a complete design, installation and maintenance manual for the extinguishing system. (To Township and owner).
- Provide legible working plans for the required fire suppression system.
- Indicate a manual means of activation between 10-feet and 20-feet from the exhaust system in the path to the exit with the activation device between 42 and 48 inches above the floor. The manual means of activation shall have operating instructions.
- Provide an automatic shut down for the energy source(s) for the cooking equipment.
- Indicate the fuel and electric power supply reset shall be manual.
- Indicate the extinguishing system shall have an acceptance test in accordance with NFPA-17A and the manufacturer's instructions. (To be witnessed by Warrington Township Fire Marshal)
- Indicate the system activation shall be connected to the building fire alarm system on a separate zone on the fire alarm.
- Provide a calculation showing the total number of flow points for the extinguishing system.
- Indicate the type of pipe being used in the system. Galvanized pipe shall not be used.
- Provide a piping layout showing the length of all pipes.
- Indicate the type of detection system including the location of the detectors.
- Indicate the type of caps used on the nozzles.
- Indicate the type of nozzles used in each location.

- Indicate the pipe penetrations of the hood and ducts will be liquid tight.
- The fire extinguisher in the kitchen shall be compatible with the agent in the fixed system (need sign).
- Indicate alarm supervision shall indicate trouble in the automatic detection system, electrical actuation circuit and the electric power supply.
- Indicate a fusible link above each cooking appliance or within 12-inches of the entrance to the exhaust duct.
- The plan shall state design and installation will comply with the codes adopted by Warrington Township including edition of codes and standards.
- The plan shall include a statement that the system including all equipment and appliances is installed in accordance with the manufacturer's installation instructions.
- The plan shall indicate person(s) trained by the manufacturer will test and install the system and will be witnessed by Warrington Township Fire Marshal.
- The owner shall be provided with a copy of the manufacturer's installation and maintenance manual.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

#### IV. **Commercial Cooking Suppression Systems:**

**A. Kitchen Hood Wet Chemical System Submittals: \*See NFPA 17A for a complete submittal list**

**B. Kitchen Hood Mechanical System Submittals: \*See Attached list and NFPA 96/International Mechanical code for a complete submittal list**

**C. Clean Agent System Submittals: \*See NFPA 2001 for a complete submittal list**

- Plans must include exact hood, duct, pipe, and appliance dimensions.
- Plans must show job name and complete address.
- All plans must have the contractors name, address, and phone number.
- Catalog cut sheets must be provided for all nozzles and equipment to be used.
- The tank size and flow point count must be noted on the plans.
- A plan view of the kitchen must show the hood, tank, and pull station locations. Also equipment location and layout.
- The plans must clearly show the type of nozzles to be used and show the mounting height, and aiming point for each.
- Plans must include complete hood, duct, and mounting dimensions.
- Plans must include a roof detail showing the exhaust fans and all equipment within 15'.
- Specific information and manufacturers UL listing must be provided for all hoods calculated for other than code requirements.
- Complete calculations must be shown for both the CFM and FPM used in sizing the exhaust duct and fan.
- Notes or details shall be provided showing shut down of fuel, electric, and fans.
- Plans must be to scale and clearly show all work to be done.
- A key plan shall be provided showing the area of work in the building.
- Complete catalog cut sheets shall be provided for all equipment to be used.
- The scope of work shall include a description of hazard being protected and type/manufacturer of agent being used.
- Calculations for required agent quantity and discharge time shall be provided.
- All alarm portions of the system shall comply with the submittal requirements of a fire alarm system.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

**D. Information Required For Fire Protection Submittal: to be Reviewed by Warrington Township: Three copies of signed and sealed plans must be submitted (Fire Protection Engineer or Minimum NICET Level IV Commercial and NICET Level III for residential).**

#### V. **Sprinkler System Submittals: \*See NFPA 13 for a complete submittal list**

**A. Commercial Fire Sprinkler:**

- Plans must be to scale and clearly show work to be done including a **detailed scope of work**.
- Plan must show the job name and complete address.
- All plans must have the contractors name, address, and phone number.
- The specific type and quantity of sprinklers must be provided on every page.
- Catalog cut sheets for all equipment including sprinklers, valves, etc. must be included and highlighted.
- Fire hydrant flow test information must be dated and **done within 6 months**, of permit submittal.

- Hydraulic calculations must clearly show the friction loss for the backflow preventer and include a graph curve sheet.
- All hydraulic node points must be clearly **shown on the drawings**.
- All ceiling information including soffits, heights, construction type, slope, etc. must be shown and noted with cross section detailed on the plans.
- Specific code sections and storage information must be provided for all design densities over an Ordinary Group II.
- All plans must have the contractors name, address, and phone number.
- Provide a scaled site plan clearly showing the building fire department connection and fire hydrant locations.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

**B. Residential Fire Sprinkler: \* See NFPA 13D & 13R as applicable for a complete submittal list**

- Provide 3-sets of signed sealed plans including Hydraulic Calculations (signed & sealed) by NICET III (or higher) or Fire Protection Engineer.
- Provide shut off valve.
- Provide 300 PSI gage.
- Provide Sprinkler in all habitable areas to include garage and attics if accessible.
- Use of antifreeze- required signed sealed letter from design professional station that there is no wall around antifreeze. Only Anti-Freeze Loops will be allowed.
- New to comply with sprinkler manufacturer design requirements or demonstrate compliance with special and hydraulic calculations per look.
- Cut sheets for all devices used must be provided.
- Provide minimum density of .05 GPM for required number of design sprinkler per code.
- Provide proper temperature rating heads on plan.
- Use of air on system for any purpose will not be permitted.
- Garages shall be protected.
- Proper temperature heads to be provided by heat producing device (heaters, fire places, etc).
- Alarm bells to be installed throughout \* house.
- Show location and orifice size of system drain and test connection.
- Check water meter friction loss per code and or manufacture data sheet show on plan.
- Pump Installation to code (if applicable).
- Need details for sprinkler installed on sloped ceiling.
- Position sprinkler from obstructions.
- If basement steps are enclosed (closet) it will need protection.
- In Basement, if truss beam(s) is used a metal pipe is needed.
- Need to prevent all sprinkler piping from freezing. Must show details to protect piping from freezing in areas where piping can freeze. (Follow NFPA 13 D standards).
- Need to show drawings for the usage of the room.
- Soffits/Ducts 4-feet or larger needs to be protected.
- Need to show hanger location according to code/ manufacture requirements.
- Provide sprinkler in bathrooms where the area exceeds 55 square feet.
- Provide sprinkler in storage closet, linen closets and pantries where the least dimension is larger than 3-feet, or the area is larger than 24 square feet
- Add the following note to the plans: "The fire sprinkler installer shall provide to the owner/occupant instructions on inspection, texting and maintaining the system".
- Write the following notes from NFPA 13-D on the plans:
  - o "A sign shall be affixed adjacent to the main shut-off valve that states in minimum 1/4-inch letters, "Warning, the water system for this home supplies a fire sprinkler system that depends on certain flows and pressures being available to fight a fire. Devices that restrict the flow or decrease the pressure such as water softeners shall not added to this system without a review of the fire sprinkler system by a fire protection specialist. Do not remove this sign."
- Plot plan details illustrate the water supply connection, pipe diameters, lengths, and fittings to the building.
- Building dimensions, cross sectional views, and the location of partitions are provided,
- Total number of each type of sprinkler is noted on the plans.
- Type of sprinklers, K factors, temperature rating, coverage area, minimum operating pressure, and

orifice size are provided.

- Is the supply riser in a heated environment?
- Intermediate temperature sprinklers are used in skylights exposed to direct sun, in unvented concealed spaces under un-insulated roofs or in unvented attics, and near heat sources.
- Ceiling pockets are sprinklered unless the pocket volume is 100 square feet or less, its depth is 1 foot or less, the floor below is protected, it is separated from other pockets by at least 10 feet and the finish material is non-combustible or limited-combustible.
- Pendent sprinklers are at least 3-feet from obstructions e.g. light fixtures, ceiling fans, etc.
- Sidewall sprinklers are at least 5-feet from obstructions e.g. light fixtures, or in accordance with code.
- Soffits are provided sprinkler coverage.
- Sprinklers are in all areas except bathrooms 55-square feet or less; clothes closets 24 square feet or less with noncombustible or limited-combustible surface materials, and the least dimension does not exceed 3-feet garages, open attached porches, and carports; attics, crawl spaces, and concealed spaces not used; covered unheated projections from buildings at entrances/ exits as long as there is another means of egress from the dwelling unit.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

**VI. Fire Alarm System Submittals: \*See NFPA 72 for a complete submittal list**

- Plans must be to scale and include a **scope of work** outlining details of the project.
- Plans must show job name and complete address.
- All plans must have the contractors name, address, and phone number.
- The square foot area of the building must be noted on the plans.
- A summary sheet or symbol list showing a device count shall be provided.
- Catalog cut sheets must be provided and highlighted for all components to be installed.
- Specific details must be provided regarding the offsite monitoring of the system including type of transmission means and name and location of receiving station.
- All wiring information must be shown on the plans including size, type, and all point to point wire runs.
- Complete battery backup calculations must be provided that clearly note battery size to be provided.
- Voltage drop calculations using the "RMS" or "UL MAX" values for notification devices must be provided.
- A summary sheet or symbol list showing a device count shall be provided.
- Need UL certification of monitoring station
- Plans must show all-external drives connected to fire alarm, cooking system, fire sprinklers, must show individual zones and type of fire alarm, trouble suppression.
- Plans must show that a dedicated electrical circuit be provided. Also, this circuit must be identified and be locked out.
- Need to provide a weather resistant exterior strobe light at a location to be approved by the Fire Marshal.
- Duct detectors – will require a LED on the ceiling indicating detector status and location from the floor.
- Duct detectors must be accessible for maintenance.
- Manual pull station require protective covers
- Alarm contractor to provide operational, maintenance manuals and training to owner.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

**VII. Water Main Submittals: \*See NFPA 24 for a complete submittal list**

- Plans must show the job name and complete address.
- Plans shall have the contractors name, address, and phone number.
- Plans must be to scale and clearly show work to be done including a **detailed scope of work**.
- Provide a scaled site plan clearly showing the building fire department connection location and fire hydrant locations, specifications and details.
- Plans must show all new and existing underground piping, sizes, control valves, hydrants and flow test information.
- The specific size, type and quantity of all valves shall be provided on every page.
- Fire hydrant flow test information shall be dated and **less than 6 months old** from the date of submittal.
- Hydraulic calculations shall be submitted and include a graphed demand curve sheet. IFC Appendix "B".
- Indicating control valves shall be located at each Municipal water supply connection, each side of any check valves and for the building fire service main to the building (as required by code).

- Provide catalog cut sheets for all hydrants, valves and other underground water main components.
- All underground piping, joints and fittings shall comply with AWWA standards.
- All hydrants shall be on an 8-inch water main minimum.
- Provide hydrant and valve details on drawings.
- Plans shall indicate the building square footage and construction classification.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).

**VIII. Life Safety Code Submittals: \*See NFPA 101 for a complete submittal list**

- Three sets of complete plans showing the job name and complete address; and shall include the design professional in charge name, address and phone number.
- Plans must be signed and sealed by the design professional in charge of the project and include all architectural, electrical, plumbing, mechanical, accessibility, etc. drawings and material specifications.
- Plans must be to scale, fully dimensioned to determine building area and height; and clearly show work to be done including a **detailed scope of work**.
- Provide a scaled site plan clearly showing any existing structures, all new construction, distance from lot lines, street grades, proposed finish grades, location of underground mains, fire hydrant locations, building fire department connection location and any fire department access lanes.
- Description of building use or occupancy for all areas of the building.
- Description of design approach for mixed use buildings.
- Proposed type of construction including testing/listing agency details for all fire rated construction.
- Hazard of content classification and any proposed special storage arrangements.
- Complete exit details to fully evaluate the means of egress including; occupant loads, means of egress arrangement, corridors, doors, stairs, exit signage, emergency lighting, emergency power supply, etc.
- Special occupancy information including; assembly, high rise, mezzanine, atrium, covered mall, underground building, etc.
- Details for all fire protection systems proposed including fire sprinklers, fire alarm, standpipes, fire pumps, and other extinguishing systems.
- Requires a Warrington Township Application for Fire Protection System Permit (See Attached Form).