

# Riverside County Fire Protection Planning

## Customer Building Matrix Guidelines

### INTRODUCTION AND PURPOSE

This is a guide to assist an owner/builder, general contractor or sub-contractor in the required steps of the Riverside County Fire Department building and inspection process.

The information provided is a general guide. As procedures can vary from one jurisdiction to another and with various types of occupancies, this guideline is to provide the basic information necessary to meet Riverside County Fire Department inspection requirements.

This guide also includes checklists for various types of inspections and information on how to access online county standards and pertinent codes.



### **FIRE CODES**

Fire codes are designed to achieve a minimum level of safety, even though the level of detail in the codes is extensive they can't possibly cover every hazard or combinations of hazards. To use traffic laws as an analogy, just because you are obeying traffic laws does not mean that you will not get into an accident. The same is true of fire codes; they are designed to reduce the opportunities for fires to start, reduce the opportunities for fires to spread, provide for evacuation of occupants, and provide access for firefighters to extinguish the fire.

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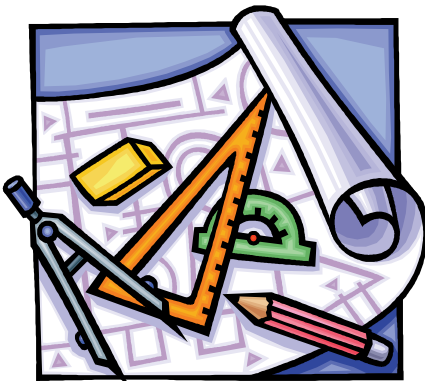
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## DEFINITIONS



### **SAFETY TOPIC**

The difference between a small financial loss and a catastrophic loss with the potential for loss of life, will come down to the level of fire safety knowledge and the application of that knowledge in building design and operational practices.



#### *FIRE SAFETY SPECIALIST:*

The officer who does the building plan checks and the fire system plan checks, including verifying all calculations, materials and codes.

#### *FIRE SYSTEMS INSPECTOR:*

The field inspector.

#### *PRE-POUR INSPECTION:*

Thrust block excavation shall be completed, but thrust blocks shall not be poured. All pipe shall be in place and exposed for visual inspection. Pipe shall be laid with ferrous pipe and fittings wrapped and tightly taped, bolts and ferrous joints coated with asphaltic sealant or other corrosion retarding material, and trench depth sufficient to allow the required cover above pipe.

#### *UNDERGROUND HYDRO TESTING:*

Thrust blocks or joint restraints shall be in place. Pipe shall be center-loaded to prevent up-lift, but all joints to remain exposed. The system shall be hydrostatically tested @200 psi. (or 50 psi over maximum static pressure, whichever is greater) for a duration of at least two hours prior to the arrival of the inspector.

#### *OVERHEAD (SPRINKLER) ROUGH INSPECTION AND HYDRO TESTING:*

Sprinkler systems requiring hydrostatic testing shall be tested a 200 psi (or 50 psi over maximum static pressure, whichever is greater) and shall maintain that pressure without loss for 2 hours. All areas of overhead piping shall be accessible for rough inspection and any equipment necessary for the inspector to make a complete visual inspection of the sprinkler system, the materials used and the construction of the system.

#### *FLUSH INSPECTION:*

All portions of the underground system shall be flushed to remove debris prior to connection to overhead piping. Flow shall be through a minimum of a four-inch hose or pipe. *Flush* and *Hydro* inspections may be scheduled concurrently. Upon *Flush* inspection, all detector check assemblies, control valves and FDC shall be clearly labeled, per code, and valves shall be locked in the open position with breakaway locks. All PIV's, FDC's and Hydrants shall be installed to required height, painted, protected and oriented per code requirements. Hydrant & FDC caps shall be in place.

#### *FIRE ALARM PRE-TEST:*

Required from the system installer indicating that the system has been thoroughly checked before the fire department inspection.

**FIRE ALARM PRE-WIRE INSPECTION:**

To verify actual wiring and circuitry against the approved drawings to ensure that all are located and connected properly. Also that the approved materials have been used and installed correctly.

**FIRE ALARM ACCEPTANCE TESTING:**

Performed after the system has been installed to make sure it meets the design criteria and functions properly. All required documentation shall be present, signs posted and any specialized equipment (i.e.: Db meter, volt meter or appliance to test heat detectors) shall be present for testing. Phone lines are required to be installed. System shall be on *TEST* and tenants notified.

**CONDITIONS OF APPROVAL:**

Conditions assigned by Fire Dept. to each set of plans. All *CONDITIONS* must be satisfied prior to Fire Final Inspection. Copy must be provided to Inspector at Final Inspection.

**SHELL BUILDING FINAL INSPECTION:**

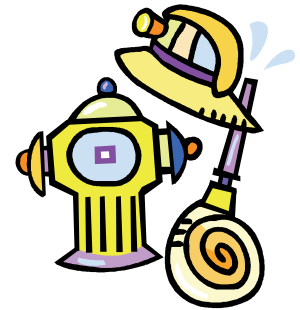
Fire final inspection on shell building. All building fire systems must be inspected and passed prior to shell building final. All "*CONDITIONS*" issued by Fire must be met. HVAC system must be operable to verify operation of duct smoke detectors (if required).

**FINAL OCCUPANCY INSPECTION:**

Fire final inspection for occupied building or suites. All "*CONDITIONS*" issued by Fire must be met prior to occupation of the building or suite.

**COMMODITIES:**

Are a combination of products, packing materials and containers. They can include; noncombustible products on pallets, ordinary combustible materials, plastics, mixed commodities, flammable and combustible liquids and aerosols, and hazardous materials.



**INSPECTION**

**SCHEDULING TIPS:**

*YOU CAN ALWAYS  
CALL TO CHECK THE  
TIMEFRAME FOR  
SCHEDULING  
INSPECTIONS.*

**INSPECTION LINE:**

*Riverside:*

*951-955-5282*

*Palm Desert:*

*760-863-8866*

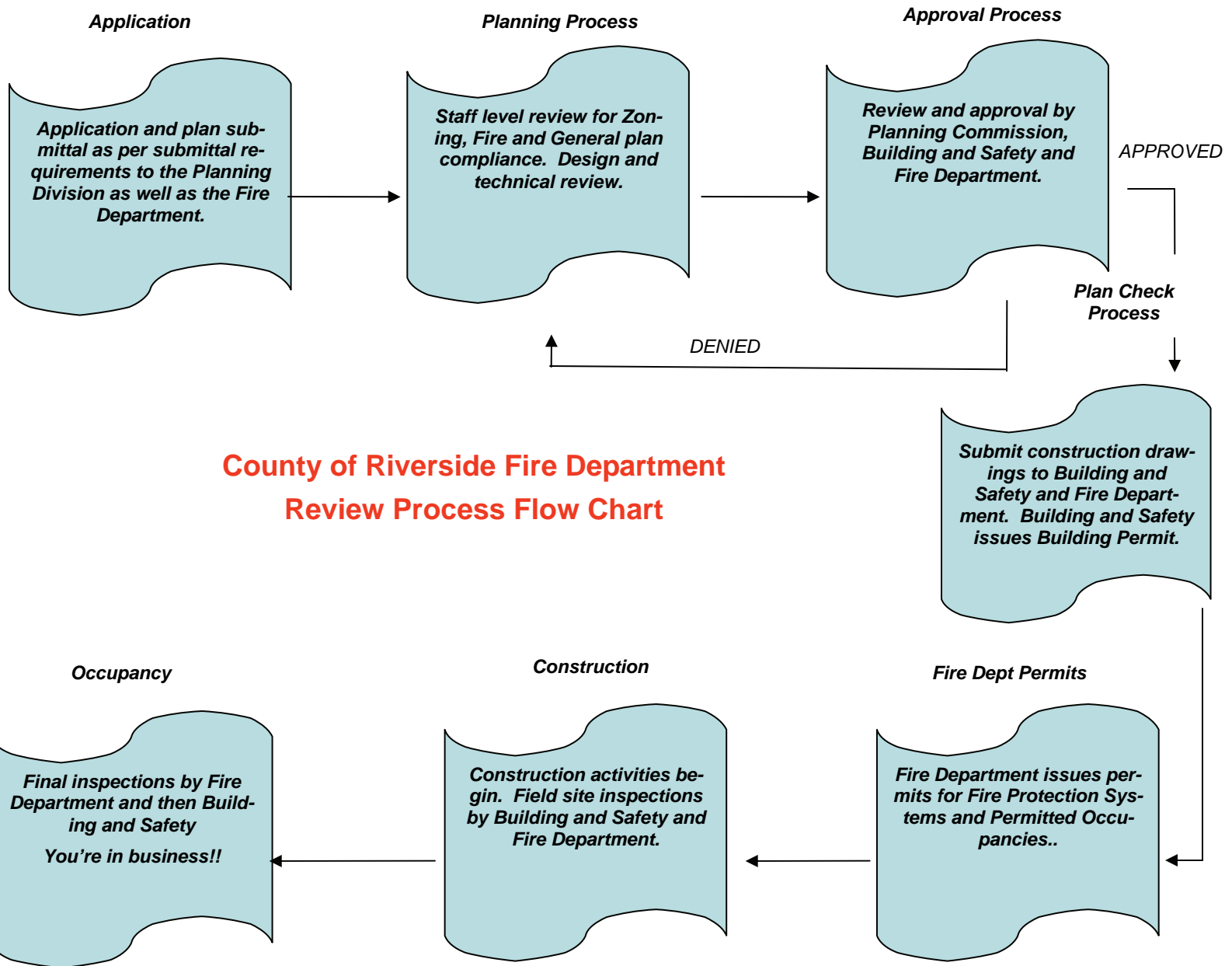


## HELPFUL TIPS

- All construction or modification to Fire Systems shall not be started until plans have been submitted and approved.
- Any changes made to the approved construction or materials used, in a Fire System, can require plan revisions submitted or as-builts, which must be approved prior to Final Inspection, and could potentially, delay the project.
- Tenant improvement work should not start until the shell building, sprinkler or alarm has been finalized.
- Some types of inspections can be made along with other inspections; however this needs to be set up in advance so we can schedule enough time to complete all the inspections. All appropriate technicians need to be present.
- The contractor responsible for that specific inspection should call in the request for an inspection, and be available or have an employee present. The approved plans, job card and any correction notices or pertinent paperwork should be present. The superintendent can coordinate all contractors.
- All permits with Fire Department *Conditions* require a Final Inspection by the Fire Department.
- Obtain and read your *Conditions of Approval*. Each condition must be satisfied prior to Fire Department Final Inspection.
- The Fire Department requires access to all gated commercial facilities and plans submitted and acceptance testing for electrically operated gates.

***You can obtain an application to purchase Knox Box from our Fire Protection Planning office.***

- Please have all keys ready to be placed into the Knox Box with I.D. tags.
- All HVAC ducts with smoke controlled devices will be tested. The HVAC tech. should be present.
- Disclose Manufacturing and Assembly occupancies and materials, as well as Warehouse and Storage Materials and commodities.
- Certain inspections are required to be made by a *certified* outside inspector, such as anchor installation and fire flow testing.



**County of Riverside Fire Department  
Review Process Flow Chart**

# Inspections Guide

## ALARM SYSTEMS

### GENERAL INFORMATION

1. There shall be no modification to Fire Alarm Systems with out approved plans.
2. Any deviation from the approved plans or changes in materials may require revisions or as-builts submitted and approved prior to final inspection.
3. Shell Bldg. shall be final prior to T. I. work starting.
4. Any egress-control devices shall be indicated on approved plans.  
All system components must be U. L./CSFM listed and installed for the appropriate application in accordance with their listing and manufactures specifications.

### PRE-WIRE INSPECTION

1. Pre-wire inspection shall be made while wire runs and devices are visible and not covered up or made inaccessible due to construction.
1. Be prepared to perform a loop-resistance and stray voltage tests.
2. Through penetration Fire Stopping for all fire walls, floor/ceilings and assemblies shall comply with approved methods.  
All devices shall have backboxes.

### FUNCTION TESTING

1. Provide Inspector with printed record of pre-test.
2. Be prepared to test all devices, batteries, audible alarm sound devices and verify voltage drop.
3. Be prepared to test Duct Detectors/Velocity
4. All Fire Sprinkler Monitoring and Fire Alarm Systems shall be tested to the current NFPA 72 standard.  
All systems monitored by Fire Alarm System shall have Tech's present (i.e.: Sprinkler, Hood & Duct, HVAC, Fire Pump, Elevator recall).

### FIRE ALARM FINAL

1. All signs shall be posted
  2. Post U.L. certification at FACP
  3. Post system matrix at remote annunciator.
  4. Provide "Record of Completion"
- Provide copy of Function Testing signals



# Inspections Guide

## WATER SYSTEMS

### GENERAL INFORMATION

1. All work shall be performed to approved plans. Any changes in system construction or materials may require revised plans or as-builts to be submitted and approved prior to Final Inspection.
2. Shell buildings shall be finished by Fire prior to construction of Tenant Improvements.
3. System contractor shall schedule inspections and arrange for personnel to be present.
4. Systems for warehouse, manufacturing and storage shall submit Commodities Storage Plan.
5. Contractor shall test system prior to calling for an inspection.
6. If a system fails acceptance testing, a re-inspection will be required.

### UNDERGROUND SYSTEMS

1. Thrust blocks should be formed.
2. Trenches should be free of debris and standing water.
3. Materials and hardware should be as per approved plans and cut sheets.
4. System shall have flush witnessed prior to tie-in with sprinkler system.
5. Provide "Contractor's Material and Test Certificate for Underground Pipe".



### SPRINKLER SYSTEMS

1. Rough and Hydro inspections shall be made in framing stage of construction, with entire system visible and accessible.
2. Any equipment necessary to inspect the entire system and all of its components( i.e.: ladders and lifts) shall be on site for the inspection.
3. Provide "Contractor's Material and Test Certificate for Aboveground Pipe".
4. Weld inspections shall have all required documentation and pipe shall be laid out on the ground.
5. Provide job card to show that Underground System has been flushed prior to tie-in.
6. Bell ring will be tested on Sprinkler Final Inspection.

### CHECKLIST

- ( ) Approved plans and job card
- ( ) Thrust block pre pour inspection
- ( ) Submit any plan revisions and cut sheets for approval
- ( ) Underground rough and hydro Inspection
- ( ) Flush
- ( ) Sprinkler weld inspection
- ( ) Anchor inspection (by *Certified* by outside inspector)
- ( ) Contractor pre test system
- ( ) Overhead rough and hydro. inspection

### TENANT IMPROVEMENT

1. Systems over 20 heads are required to isolate and hydro.
2. Systems under 20 heads are required to test at working pressure
3. Provide access to all T.I. work done.
4. Modification to any existing Fire System shall have plans submitted.
5. Provide maintenance and inspection reports for the existing systems.

**COMMERCIAL KITCHEN HOODS AND DUCTS****GENERAL INFORMATION**

No work started without approved plans. Any changes in system construction or materials may require revised plans to be submitted and approved prior to final inspection.

A system operation test is required to verify proper operation of all components. Fire Inspector must witness test.

Systems which are required to be monitored shall have plans submitted for Fire Alarm modification.

**AUTOMATIC FIRE EXTINGUISHING SYSTEMS**

A suppression system is required in all commercial Hood and Ducts where cooking produces grease laden vapors. Coverage must include cooking surfaces, deep fat fryers, griddles, upright broilers, char broilers, range tops, ovens, the enclosed plenum space within the hood above filters and exhaust ducts serving the hood.

Activation of the automatic fire extinguishing system must immediately shut off gas and electric supply to all appliances under the protected hood. Manual gas and electric resets are required.

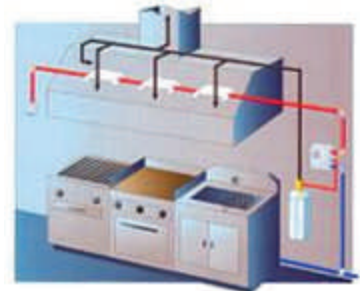
Exhaust ventilation must remain on and the make-up air must shut down upon activation of the system, unless otherwise specified by the manufacture.

All system components should be pre tested by the installation contractor prior to inspection.

All appliances should be installed and functional prior to inspection.

**CHECKLIST**

- ( ) Approved plans and job card
- ( ) Gas and electric service to appliances
- ( ) Access to entire system, including above hood and fire rated shaft enclosure inspection.
- ( ) Exhaust and make-up air function
- ( ) Connection to building Fire Alarm Systems (if required)
- ( ) System function and final inspection





# Inspections Guide

## HIGH-PILED AND RACK STORAGE

### GENERAL INFORMATION

### INSPECTIONS

Classify the commodities and materials that will be stored. An accurate classification is essential to determine the appropriate sprinkler system design requirements and to avoid other expensive fire protection upgrades caused by inaccurate commodity classification.

Submit a complete storage plan including; floor plan, a commodities list, storage arrangement, quantities and heights of storage.

Submit a list of special operations such as welding, cutting or other hot work, battery charging stations, application of combustible or flammable finishes, dip tank operations and gas storage and use.

Provide floor plans indicating locations and specifications of equipment such as; spray booths, conveyor systems, dust collectors, parts cleaning and other industrial operations.

Specify idle pallet and trash storage.



Plans must be submitted for rack systems, conveyor systems and any modifications of the fire protection system or the building.

Rack systems, conveyer systems, spray booths, other industrial applications and modifications of the fire protection systems or the building will require inspections.

Provide job cards or copies for verification of approval inspections of all required modifications made prior to building occupancy final inspection.

Some concrete anchors, specified by the manufactures, will require a Certified outside inspector to witness the installation and we will require a report.

All work must be done to approved plans. Deviation from the approved plans or changes in materials may require revisions or as-builts submitted and approved prior to final inspection.

Provide maintenance and inspection reports to pre-existing fire protection systems.

*A Knox Box to store keys, MSDS and other emergency information may be required by your CONDITIONS .*

*The application to purchase a Knox Box must be obtained from our office.*

All required signage, including 704 placards, shall be posted.

Fire extinguishers visible and accessible.

### CHECKLIST

- ( ) Approved plans and job card
- ( ) Gas and electric service to appliances
- ( ) Access to entire system, including above hood and fire rated shaft enclosure inspection.
- ( ) Exhaust and make-up air function
- ( ) Connection to building Fire Alarm Systems (if required)

# Inspections Guide

## SHELL FINAL / OCCUPANCY FINAL

NOTE: This is a list of items commonly inspected prior to building occupancy. Additional items or tests may be required, depending on the occupancy classification. Please refer to "Conditions of Approval".

### GENERAL INFORMATION

1. Address: approved size, contrasting color and in approved location.
2. Fire extinguishers: approved size and type with Office of the State Fire Marshal tag, mounted in approved method and location.
3. Fire lanes: per approved plans with approved signage.
4. Fire Department access: gates either electric ( tested by Fire) or manual (with Knox padlocks).
5. Fire hydrants: painted per county specifications and blue reflective markers.
6. Exit signs and emergency lighting: as per plans
7. NFPA 704 placards: as required
8. Knox rapid entry: Knox Box, Knox Haz-mat Box, Knox padlock or Knox keypad in approved locations.
9. All required signage: Electrical Room, Mechanical Room, Fire Alarm Control Panel, Fire Sprinkler Riser and valves, Fire Pump Room, Roof Access and others as required.  
Life Safety Systems: tested and operational; emergency generators, communication system, fire pump, smoke evacuation system, elevator operation and recall, delayed egress and magnetic door devices.

### CHECKLIST

- ( ) Approved plans and "Conditions of Approval"
- ( ) Fire Sprinkler Final
- ( ) Fire Alarm Final
- ( ) Underground Water System Final & Flush
- ( ) UST / AST / Tank Installation Final
- ( ) Fire Pump Final
- ( ) Spray Booth Final
- ( ) Hood & Duct Suppression System Final

## Hazardous/High Fire Area – Single Family Homes

### DEFINITION

“Hazardous Fire Area is land other than State designated fire hazard severity zone FHSZ or Local designation of FHSZ which is covered with grass, grain, brush or forest, whether privately or publicly owned, which is so situated or is of such inaccessible location that a fire originating upon such land would present an abnormally difficult job of suppression or would result in great and unusual damage through fire or resulting erosion.” (Riverside County Ordinance 787.3, Ch. 2 –Definitions)

### GENERAL INFORMATION

- Plan submittal is required prior to grading for or building a structure in the High Fire Severity Zone (HFA).
- After preliminary review by the Fire Department, the plans if acceptable, will be stamped and valid for up to 6 months.
- After review by Land Use, the HFA plans will need to be resubmitted to the Fire Department for water requirements and final review.
- Generally, three sets of plans are preferred; a minimum of two copies are required. One set will be kept in the Fire Department files and one set will need to be kept on the construction site.
- The Property in Question (PIQ) will be required to have water available (for firefighting), or arrangements to have water available, prior to final approval. Letters from the Water District will be required.
- If gates are being installed they will need to be identified as manual or automatic and a plan detail, including Knox rapid entry devices, will be required.

### PLAN REQUIREMENTS

When reviewing HFA site plans, your plan checker is looking for the following items:

- Access-** Does the property have legal and feasible access? Is the width of the access acceptable? Is the surface of the access acceptable? Is there secondary access, if applicable? Is the grade of the access within the County's acceptable range? If you are installing gates, are they automatic or manual? Have you provided a Knox access device?
- Water-** Is there water available to this property? If there is water available, how far is it from the property in question? Are there hydrants in the area? If tanks are being used, where are they located? Have you submitted tank plans and are the tanks of a nature **currently** approved by the County?
- Fuel Modification Areas/ Setbacks-** How far is the structure from property lines? How far is the structure from other structures? Is there unusual terrain or questionable foliage around the area for the proposed structure?
- Secondary Access-** Will this property need a secondary means of egress/ ingress? Is this secondary access feasible?

## **Hazardous/High Fire Area – Single Family Homes**

### **Continued**

#### **INSPECTION CRITERIA**

When inspecting an HFA site, your inspector will be looking for the following items:

Does the physical site match the site plan? If it does not, “revised” plans may be required.

Do you have a set of stamped and approved plans on-site?

Is there someone present to grant access, open gates, answer questions...etc?

If there is a gate, is it unlocked and equipped with a Knox padlock, key box, or key switch device?

In the event that there is a tank, have you provided a ladder to check the water levels?

Is there water in your tanks?

Do your approved tanks have appropriate tags and labeling?

Is the surface of your access/driveway acceptable?

Is your property easily identifiable? Is your address posted in a conspicuous place?

\*These lists are not all inclusive. All projects are “Case-by-Case”. Please use this as a GENERAL guideline\*

#### **CHECKLIST**

- ( ) Approved Plans
- ( ) Verification Inspection
- ( ) Water Tank Inspection



# Temporary Indoor/Outdoor Events

## DEFINITION:

“Temporary Outdoor Events celebrate or display some specific theme and/or activity and have a definite opening and closing time. They are usually periodically occurring. These events may include, but are not exclusive to: Festivals, conventions, circuses, fairs, religious assemblies, carnivals, parades, runs/walks, and concerts.”

## GENERAL INFORMATION

It is a good idea to make sure you give yourself plenty of time between filling out the application and the date of your event. The Planning Department recommends submitting your plans a minimum of 60 days prior to your event. There should be adequate time before the start of the event to schedule a verification inspection, in the event that corrections are necessary. As required by Title 19 Fire Safety Officer (s) may be required for events held within Tents or Canopy.

## SUBMITTAL REQUIREMENTS

1. A submittal form will be required. The following information should be included:
  - The name, mailing address, and telephone number of the Applicant(s).
  - The name, mailing address, and telephone number of the land or property Owner.
  - The date and the hours during which the event is to be conducted
  - Permit number, if applicable.A form will be provided, by our office, that will indicate all of the information needed. This information should also be listed on the site plan.
2. A site plan showing the location and assessor's parcel number(s) of the premises where the temporary outdoor event is proposed to be conducted, indicate existing buildings on the site, and show all parking and other uses incidental to the outdoor activity.  
This site plan shall also indicate locations of: All fire extinguishers, tents or temporary structures, cooking facilities, generators, exits and egress to all buildings/structures/enclosures being used during the event.
3. An estimate of the maximum number of spectators, participants and other persons expected to attend the event for each day it is conducted.
4. An explanation of the applicant's plans to provide, medical facilities and services, fire protection, vehicle parking space, vehicle access and on site traffic control; and provisions for cleanup of the premises and removal of rubbish after the event has concluded.

## INSPECTION CRITERIA

When inspecting a Temporary Event, your Inspector will be looking for the following items:

1. Does the site match the site plan?
2. Do all of the tents and membrane structures have the proper flam-resistance certifications?
3. Are all of the correct fire extinguishers in place? Does each of the extinguishers have current certifications?
4. Is there adequate access for patrons and emergency vehicles?
5. Where are the exits located? Are they visible and accessible?  
Are all of the proper signs posted (i.e. “No Smoking”, “No Parking”, etc...)?
7. Are there an approved set of plans and a set of “Conditions of Approval” on site?

**\*These lists are not all inclusive. All projects are “Case-by-Case”. Please use this as a GENERAL guideline\***

## CHECKLIST

- ( ) Approved Plans
- ( ) Conditions of Approval
- ( ) Verification Inspection

## **QUESTIONS AND ANSWERS**

(q) Why must I submit plan revisions?

Any changes made to materials used or changes which could effect the calculations or in the operation of a Fire System, must be examined and approved by a Fire Safety Specialist.

(q) Can I have the same inspector each time?

Yes, however this could delay your project, if that inspector has some other commitments. One reason we need your plans, job card and correction notices at each inspection is to maintain documentation. If another Inspector is at your jobsite, they will have the necessary information to assist your project to move forward.

(q) Why must I disclose a storage plan?

Certain types or quantities of materials require specific Fire Systems to mitigate potential hazards. These can be materials one does not even think could be considered a hazard; however it is the job of a Fire Safety Specialist to review this information.

(q) What is the number one reason that inspections fail?

The most frequently seen reason for inspections to fail is; failure to read and follow the plans, construction notes, and information provided by Fire. After the Fire Safety Specialist approves the plans, the Fire Systems Inspector's job is to verify that the building / systems are exactly and accurately built to approved plans and all adopted Codes and Standards.

(q) My approved plans show my Knox Box to have a tamper device tied into the Sprinkler Monitoring System. The tamper is no longer required by the County, can I delete it?

Yes, however if you choose to do so, you will need to submit revised plans for approval.

## REFERENCES

Several resources are available to help you through your project. Listed below are the sources we use to assist us in plan checking and inspecting.

- California Fire Code, 2007 Edition and Adopted Standards
- California Building Code, 2007 Edition and Adopted Standards
- California Fire Code Standards published by the International Code Council
- California Code of Regulations
  - Title 19- Public Safety
- Riverside County Ordinance 787
- Riverside County Ordinance 671
- NFPA handbook 13, Installation of Sprinkler Systems, 2002 ed.
- NFPA handbook 24, Standard or the Installation of Private Fire Service Mains and Their Appurtenances, 2002 ed.
- NFPA handbook 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems. 2002 ed.
- NFPA handbook 72, National Fire Alarm Code, 2002 ed.

In addition to the written resources you may also find the Riverside County Fire Department website helpful.

The website can be accessed through the following web address:

[www.rvcfire.org](http://www.rvcfire.org)

Once the website is accessed, click on the "Fire Protection Planning" link.

From this page you can access: the County Ordinance, Fire Department Standards  
Fire Department Bulletins, Forms, Fee schedules and Handouts.



## Riverside County Fire Protection Planning

Riverside Office: 2300 Market St., Ste. 150, Riverside, CA 92501 Ph. (951) 955-4777 Fax (951) 955-4886  
Palm Desert Office: 77-933 Las Montañas Rd., # 201 Palm Desert, CA 92211-4131 Ph. (760) 863-8886 (760) 863-7072  
Fire Website: [rvcfire.org](http://rvcfire.org)