

Office of the **Oklahoma State Fire Marshal**  
P.O. Box 36690  
Oklahoma City, Oklahoma 73136-2690  
(405) 522-5005 Fax: (405) 522-5028



**Electronic Plan Review Submittal Requirements Information**  
**&**  
**Project Submittal Handbook**

Dear Customer,

The Office of the Oklahoma State Fire Marshal is dedicated to improving efficiency and reducing costs with the new implementation of an electronic plan submission and review program.

Electronic Plan Review enables the Oklahoma State Fire Marshal Plan Review Division to receive, review and return building, fire protection, engineering, and other design plans electronically.

Applicants for a number of construction and life safety related permits can now apply and submit construction documents digitally. This service not only greatly reduces the consumption of paper but saves applicants time and costs associated with printing and manually delivering paper plans.

The system is integrated with our new electronic document management system and electronic payment system. This allows engineers, architects, licensed fire protection contractors, owners, and others to submit plans, receive required correction comments, resubmit corrected plans, pay fees and print final permits entirely online using a customer access portal.

Customers will need to set up a login and password and first-time users of the system are encouraged to follow the requirements of setting up an account and following the provided user guide.

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### **\*\*IMPORTANT\*\***

**ALL PLAN REVIEW FEES ARE NON-REFUNDABLE ONCE SUBMITTED INTO OUR SYSTEM. PLEASE VERIFY THAT ALL PLANS MEET OUR REQUIREMENTS AND THAT ALL REQUIRED AND REQUESTED DOCUMENTATION IS PROVIDED WITH THE ELECTRONIC PLAN REVIEW SUBMITTAL APPLICATION AND DOCUMENT UPLOAD CENTER. IT IS THE RESPONSIBILITY OF THE SUBMITTER TO VERIFY COMPLIANCE OF SUBMISSION.**

**\*\*ALL FEES MUST BE PAYED PRIOR TO THE START OF THE PLAN REVIEW\*\***

## **DO YOU NEED A PERMIT?**

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- The Oklahoma State Fire Marshal requires that all use and occupancy classifications identified in the International Building Code and specific situations identified in the International Fire Code must have building plans submitted for review and be permitted by the Oklahoma State Fire Marshal's Office. All remodels, alterations, and change in use or occupancies shall be in accordance with the International Existing Building Code.
- The Oklahoma State Fire Marshal oversees the entire State of Oklahoma unless the County or City has provided the State Fire Marshal with an approved document, entirely filled out with no alterations, (AHJ letter) to the Oklahoma State Fire Marshal's Office.
- Any owner or owner's authorized agent who intends to construct, enlarge, alter, repair, move, demolish or change the occupancy of a building or structures, or to erect, install, enlarge, alter, repair, remove, convert or replace any electrical, gas, mechanical, or plumbing systems, the installation of which is regulated by this code, or to cause any such work to be performed, shall first make application to the Oklahoma State Fire Marshal's Office and obtain the required permit. Failure to obtain a permit may result in fines and additional fees.
- The Oklahoma State Fire Marshal's Office performs plan reviews and inspections of all State of Oklahoma state owned facilities to include facilities rented and or leased by the State of Oklahoma. This jurisdiction is not extended to any AHJ and the State Fire Marshal is the sole authority for any State of Oklahoma property.
- An Accela application is required for:
  - Each building and/or structure required to have a permit.
  - Multiple buildings on a plan site, each building will need a permit.
  - Storm Shelters/Hardened Areas require a separate permit.
  - Deferred submittals need to have an Accela application for each building.
- Phased Reviews need a permit for each building in each review phase

## **ELEMENTS ALLOWED TO BE STARTED PRIOR TO PERMITTING**

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- Limited construction elements that will be allowed to proceed at risk concurrently with the OKSFM plan review and permitting process would include:
  - Earthwork
    - i. Site work and site utility plans
    - ii. Cast piles
    - iii. Concrete pile caps
  - Concrete
    - i. Foundations, piers, and grade beams
    - ii. Slabs on grade and suspended slabs
    - iii. Structural: columns and beams
    - iv. Civil abutments and retaining walls

## **STATUS INQUIRES**

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### **PLAN REVIEW TURN-AROUND TIMES**

- Plans are reviewed on a first come, first served basis, and in the order received.
- While we strive for a 30 day turnaround, plan review queue times are approximately 4 to 8 weeks prior to the start of the review.
- Actual review time is dependent on the size and complexity of the project and the **quality** of the plans and or documents provided.

### **NOTIFICATIONS**

- Updates are not provided during the review and will not be provided by office staff.
- Accela will auto generate e-mail notifications at each review milestone within the process and or if the plan reviewer has questions.

## **DEFERRED PERMIT SUBMITTALS**

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Deferred submittals will not be accepted for review until after the construction plans for the project have been reviewed, approved, and issued a OKSFM building permit.

OKSFM only allows the following elements to be deferred (unless otherwise previously approved):

- Fire Alarm Systems
- Fire Sprinkler Systems
- Hood Suppression Systems
- Alternative Suppression Systems
- Access Control Systems
- Carbon Dioxide Systems
- Carbon Monoxide Systems
- Smoke Control Systems
- Emergency Responder Radio Coverage Systems

## **ADDENDUMS**

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For the purposes of our office, addendums are changes requested to previously approved documents after work has commenced. Requests for addendums will utilize the existing permit that the original plans were approved under.

Log into Accela and fill out an addendum request sheet:

- Provide a change or scope of work narrative to assist reviewer in identifying what changes have been made
- Upload and submit only your revised sheets following all the requirements and processes required for electronic plan review.

## **PHASED PLAN REVIEWS**

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For large projects wishing to utilize a phased review process. Ensure each building in each phase has a permit. Any fire protection plans will also be required to be phased.

**A PHASED PROJECT MUST BE PERMITTED SEPARATELY.**

## **ELECTRONIC PLAN REVIEW**

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All plans submitted for electronic review must meet the following requirements or will be returned unprocessed:

- Shall not contain pre-printed OKSFM approval stamp block and language
- File types for uploading shall be in accordance with the drawing file submission requirements.
- Accepted sheet sizes shall be in accordance with the OKSFM requirements.
- Title Block and document cover page configurations shall be in accordance with the title block configuration and stamp location.
- Plans shall be in accordance with the drawing scale requirements.
- Files shall be in accordance with electronic file naming standards. Files shall be electronically stamped and signed by the responsible licensed design professional
- Once submitted, plans submitted in the electronic format cannot be changed.
- Once Electronic plans are approved, they can be downloaded from the customers online portal.

### **Submission File Format Requirements:**

The following details the recommended Submission Standards when uploading Plans as part of your application/permit Submission File Format Requirements:

- To support accurate measurement, the ability to search for text and for optimized performance, applicants should only submit vector files. Files containing raster or scanned content can be viewed and processed in our electronic plan review system, but for the reasons listed, vector is recommended.
- All text in submitted PDF files should be searchable
- PDF files must NOT require a password in order to view or to restrict the PDF permissions within the file
- For optimized performance and integration with the permitting system, the file size of each submission file may not exceed 225MB
- PDF Packages / Portfolios are not accepted

### **File Naming Standards:**

- The file names of Plans and other supporting documents should describe the file contents and include the submission order number, for example Architectural Plan Set – Rev001.pdf
- The same file name may be used for resubmissions, but the Submission number should be incremented for each resubmission by the applicant, for example Architectural Plan Set – Rev002.pdf
- All files should be numbered and named according to their order listed on your provided Title Sheet, Cover Sheet, or Table of Contents.
- File names should start with a numeric value followed by the document name. The numeric value at the beginning of the file name ensures the order in which they are displayed
- Please limit the number of characters in the file name to 35 characters or less, no dashes, no special characters (&, %, #, etc.).

### **Plan Sheet Numbering Standards:**

- PDF files containing Plan / Drawing Sheets should contain a PDF bookmark for each sheet, that contains the Sheet Reference Number and optionally a Sheet Title, for example A1.0 LOWER FLOOR
- Plan Sheet Reference Numbers should be unique within a Record/Permit, two different drawing sheets should not have the same Sheet Reference Number. Take that into account when the number is entered manually and when verifying the sheet numbers.
- TIP - For best results, your plan sets should include a table of contents, i.e., bookmarks, of the sheet names. Suggested order for the table of contents is as follows:
  1. C (ex: Cover sheet, construction plans, civil)
  2. G (ex: General notes)
  3. S (ex: Structural)
  4. A (ex: Architectural)
  5. E (ex: Electrical)
  6. M (ex: Mechanical)
  7. P (ex: Plumbing)
  8. L (ex: Landscape)
  9. FP (ex: Fire Protection)
- Plan Sheets should be correctly orientated in the PDF submission file, to allow the Sheets to be viewed without needing to rotate the sheet, typically Landscape



- If Plans need to be revised and resubmitted, exactly the same Plan / Drawing Sheet Reference Number should be used for each subsequent submission version of the same drawing sheet.
- Plans should be generated to a fixed scale, for example 1/4" to 1', 1/8" to 1', 1" to 30'

### **Supporting Document Standards**

- Supporting documents should be submitted as separate files and not combined as part of a plan sheets submission file where applicable
- All files required as part of the application submission, other than drawing files, e.g., Specifications, Structural Calculations, Reports, Product Data Sheets, shall be uploaded as individual multi-page documents.
- Documents that contain multiple pages, for example Cut Sheets, Fire Alarm Submittal Brochure, Smoke Control Reports, etc. should be submitted as a single, multi-page file.
- Different categories of supporting documents should be submitted as separate files, for example do not include a large packet with multiple or different categories of supporting documentation. i.e., fire sprinkler submitted with access control cut sheets, fire alarm calculation with fire sprinkler calcs, etc.
- Documents should be correctly orientated in the PDF files, to allow the contents to be viewed without needing to rotate the page, typically Portrait

### **File Type Requirements**

- ALL Drawings and Documents shall be provided in an approved Accela format.
- Flatten all PDF files to the smallest possible size.
- Supporting Documents: Searchable PDF files are required for calculations, reports, and other non-drawing files.
- Accela does not support 3D files.

## **Title Block Configuration and Stamp Location**

The location of the OKSFM batch stamp is required to be located as noted. The OKSFM batch stamp will be placed along the right-hand side of the approved sheets in a dedicated space. The following locations are identified to ensure that when viewed, the OKSFM Approval Stamp is visible and not truncated.

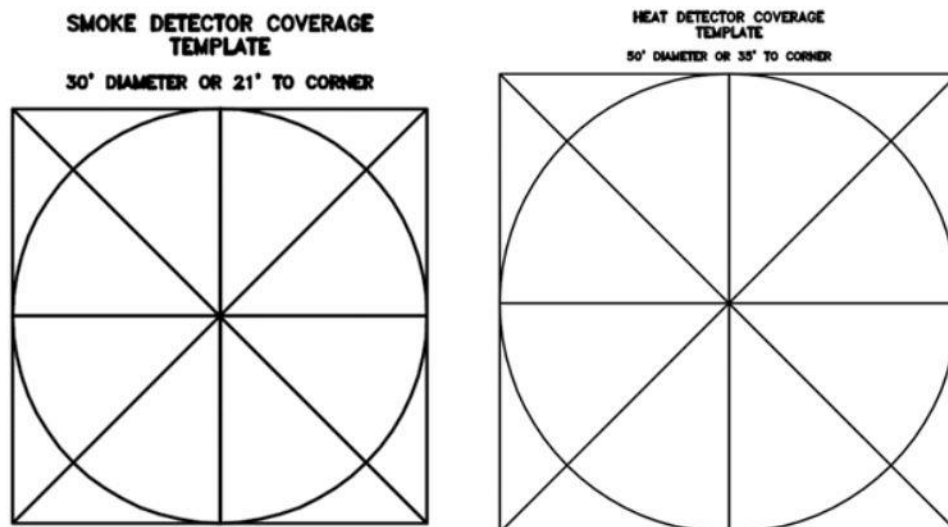
<b>SHEET SIZE</b>	<b>TYPE</b>	<b>STAMP LOCATION</b>	<b>BOX DIMENSIONS</b>
8.5" X 11"	SPECS/SUPPORT DOC	From bottom righthand corner of the SHEET: <ul style="list-style-type: none"> <li>• Bottom of box is 1" up.</li> <li>• Top of Box is 3.5" up.</li> <li>• Right side of box is 1" from right edge of sheet.</li> </ul>	3.5" x 3.5" Cover Page Only
22" X 34"	ANSI D	From bottom righthand corner of the SHEET: <ul style="list-style-type: none"> <li>• Top of box is 6" up.</li> <li>• Bottom of Box is 3" up.</li> </ul>	3.5" x 3.5" Provide dedicated space on each sheet
24" X 36"	ARCH D	From bottom righthand corner of the SHEET: <ul style="list-style-type: none"> <li>• Top of box is 6" up.</li> <li>• Bottom of Box is 3" up.</li> </ul>	3.5" x 3.5" Provide dedicated space on each sheet
30" X 42"	ARCH E1	From bottom righthand corner of the SHEET: <ul style="list-style-type: none"> <li>• Top of box is 6" up.</li> <li>• Bottom of Box is 3" up.</li> </ul>	3.5" x 3.5" Provide dedicated space on each sheet
36" X 48"	ARCH E	From bottom righthand corner of the SHEET: <ul style="list-style-type: none"> <li>• Top of box is 6" up.</li> <li>• Bottom of Box is 3" up.</li> </ul>	3.5" x 3.5" Provide dedicated space on each sheet

## Drawing Scale Requirements

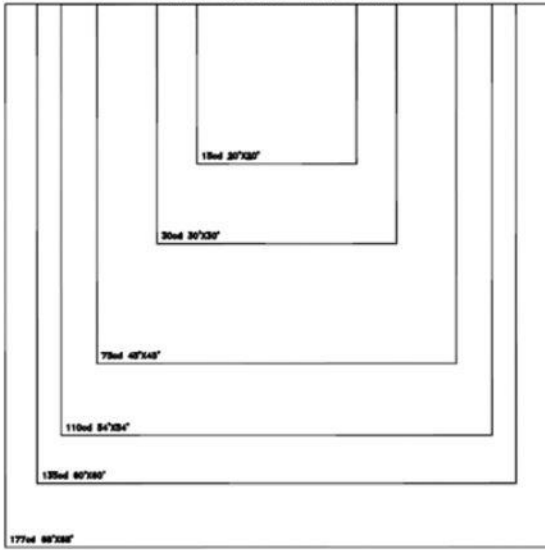
- All plans must be drawn to scale
- Each sheet must have an independent scale: ex. 1in = 40ft or 3/16in = 1ft
- Each sheet must have a scale bar for each scale used on its respective sheet. Reflect a 3” bar for the designated scale.
- When more than one scale is used on a sheet, an independent scale must accompany the applicable detail.
- Fire alarm and or fire protection plans shall utilize 1/8” scale.
  - Fire alarm plans shall contain a sheet with a legend of scale square outlines for wall and ceiling mounted strobe coverage areas for all candela ratings and ceiling heights per NFPA 72. See examples below. The legend shall identify the following for each outline:
    - 1. Mounting location: Wall or Ceiling
    - 2. Candela rating
    - 3. Max lens height
    - 4. Size of outline (same scale as the drawings)

Specific requirements for electronic plans.

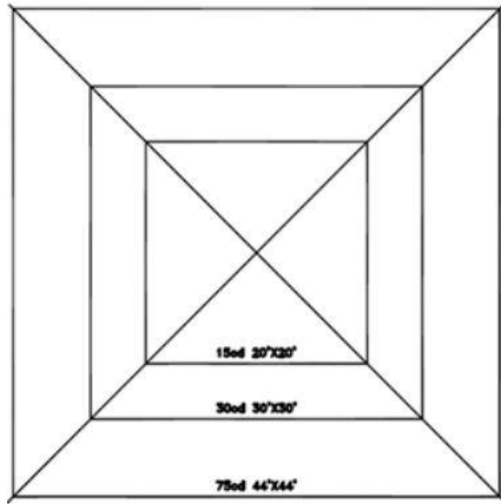
- All drawings must be calibrated. This calibration shall be saved in the drawing ensuring it is available to the reviewer.
- Fire alarm plans shall be done in accordance with NFPA 72 and shall contain:
  - 1. A general note identifying required detector spacing based on NFPA 72
  - 2. To scale spacing outline templates shall be provided per the examples below.



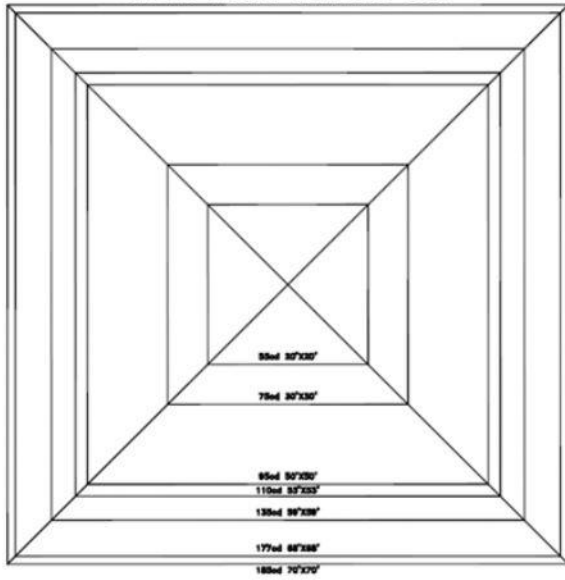
WALL MOUNT TEMPLATE



CEILING MOUNT TEMPLATE @10'



CEILING MOUNT TEMPLATE @30'



## Common Mistakes

- Uploading wrong files or wrong format.
- Incorrect document orientation.
- Drawing sheets should be uploaded in landscape.
- Supporting documents should be in their correct orientation.
- Drawing file requirements not followed.
- Each drawing sheet plan set needs to be uploaded as a singular file.
- Supporting documents should be uploaded as a whole and not individual sheets.
- File naming standards not followed.
- Drawing sheet file names should follow our drawing file naming convention.
- Tasks or requirements not being completed. Required sections left blank.
- Complete your task when you are done uploading all applicable drawing and documents.
- Automatic Sign Outs. The system may automatically sign you out after inactivity. Please save and save often.

## Steps after plans are approved by OKSFM.

- After an approval has been issued the plans will be electronically stamped by the OKSFM.
- When the plan review is approved by OKSFM, you will be notified by email.
- Login to Accela online customer account.
- You will then receive an e-mail indicating that your permit is ready and instructions on how to download and print your files. These files will then need to be printed and in place at the job site.
- Retrieve approved documents. Print the Approved Plans/Documents in COLOR and to the size of plan sheet designed.
- Note: A printed copy of the approved plans must be available on site.
- **ALL APPROVED PLANS OR DOCUMENTS MUST BE PRINTED IN COLOR AND TO ACTUAL SIZE AND OR SCALE SUBMITTED. ANY PLANS ONSITE THAT ARE NOT IN COLOR WILL RESULT IN FAILED INSPECTIONS BY THE OKSFM AGENT AND INCUR ADDITIONAL FEES AND OR CAUSE DELAYS.**

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Building Project Handbook

**EACH SEPARATE BUILDING MUST BE PERMITTED SEPARATELY.**

**EACH SAFE ROOM/STORM SHELTER MUST BE PERMITTED SEPARATELY. BUILDINGS WITH A SAFE ROOM/STORM SHELTER WITHIN A BUILDING MUST BE PERMITTED SEPARATELY.**

**A PHASED PROJECT MUST BE PERMITTED SEPARATELY.**

**A PROJECT WITH A REMODEL AND NEW CONSTRUCTION MUST BE ACCOMPANIED BY A NEW BUILDING APPLICATION AND AN EXISTING BUILDING APPLICATION.**

The Office of the Oklahoma State Fire Marshal is charged with the issuance of building permits in those areas of the state that do not require such permit. In accordance with this statute, the OKSFM requires the submission of plans and specifications to cover the proposed construction or alteration. (OS 74 § 324.11)

The OKSFM shall review all plans and specification of proposed construction or alteration to any correctional facility as defined in OS 74 § 317. (OS 74 § 324.11)

Per OS 74 § 324.11, the following occupancies shall have a building permit issued by the OSFM when there is no local authority having jurisdiction.

The OKSFM shall review and approve all State owned, leased, or otherwise occupied facilities, projects, or buildings. This is not extended to any other AHJ.

All Occupancies and or Structures Identified in the International Building Code.

Projects that are exempt from the Architectural Act (refer to Title 59 O.S. § 46.1 *et al*) shall be drafted to a legible, professional standard suitable for review and possible permitting.

The **minimum** scale that drawings shall be drafted to is:

Architectural – 1/8” to 1 foot

Site Plans/Maps – 1” to 20’ or 30’ or 40’ feet (**the best fit while showing sufficient detail**)

All projects submitted to the OKSFM shall be designed to those building codes and references as last adopted by the Uniform Building Code Commission, reference 59 O.S. § 1000.23.

**REQUIRED DOCUMENTS**

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Completed online electronic permit application forms for each building or system in the project.

Please utilize the checklist forms to verify conformance before submitting your project!

An Architect/Engineer’s or sub-contractor written statement as it applies to the project concerning the **foundation, structural, mechanical, electrical, plumbing** on letterhead identifying code compliance with all the applicable codes in relation to the specific being built. The letter must identify the project name address, county, dated, signed, and stamped if applicable. **THESE ARE REQUIRED. FAILURE TO SUBMIT WITH THE PROJECT WILL RESULT IN REJECTION AND DISAPPROVAL. IF NOT APPLICABLE, THEN INDICATE AS SUCH IN THE SCOPE OF WORK LETTER.**



Building project plans submitted to the OKSFM for permitting shall consist of:

**1. A cover sheet detailing;**

- a. The name, location and owner(s) of the project (NOTE: The project name and address SHALL be on all submitted plans for other permitted construction such as fire alarm, sprinkler systems and alternative suppression systems)
- b. The scope of work, to include;
  - i. List of codes and the applicable year that are applicable
  - ii. Occupant load factor
  - iii. Code defined use group(s)
  - iv. Code define construction type(s)
  - v. Special use and occupancy requirements
  - vi. Square footage of the project, to include all floors, roof overhangs, covered patios, decks, balconies, etc.
  - vii. Identify and provide the square footage of all fire areas, when applicable
  - viii. Number of stories
  - ix. Elevator-hydraulic or electric (if applicable)
  - x. Allowable building heights and areas. Designed building height and area
  - xi. If allowable increases are taken, how the increases are made (must show calculations), or unlimited area building if permissible.
  - xii. Roof assembly construction and rating
  - xiii. Occupant load-new and existing (if applicable)
  - xiv. Wall and ceiling finish classifications
  - xv. Interior floor finish classification
  - xvi. Decorative materials and trim-the percentage allowed and the percentage that will be used
  - xvii. Fire sprinkler system required. Fire sprinkler system present. Fire sprinkler system being installed
  - xviii. Fire standpipe system required. Fire standpipe system present. Fire standpipe system being provided
  - xix. Fire alarm system required. Fire alarm system present. Fire alarm system being installed
  - xx. Carbon monoxide system required. Carbon monoxide system present. Carbon monoxide system being installed
  - xxi. Fire suppression system required. Fire suppression system present. Fire suppression system being installed
  - xxii. Smoke control system required. Smoke control system present. Smoke control system being installed

- xxiii. Smoke and Heat Vents required. Smoke and/or heat vents present.  
Smoke and/or heat vents being installed
- xxiv. Fire command center required. Fire command center present. Fire  
command center being installed. Provide the proper rated enclosure
- xxv. Fire pump required. Fire pump present. Fire pump being installed.  
Provide the proper rated enclosure
- xxvi. Required plumbing fixtures and number of provided plumbing fixtures.  
Provide the ratio
- xxvii. Reference modification to the IBC by the OUBCC
- xxviii. Codes utilized in the design (Must be the current adoption by the OUBCC,  
refer to <http://www.ok.gov/oubcc/> or call 405-521-6501 for assistance)
- c. Identify any specific chapters and/or sections of the International Fire Code as  
related to this project being used
- d. If a remodel, what level of alteration per the IEBC.
  - i. Remodels are required to have known Code deficiencies identified and the  
proposed Code compliant corrections.
  - ii. Building Layout:
    - Dashed lines showing all walls being demolished
    - Dashed lines showing all doors being demolished
    - Details identifying the scope of work being done
    - Identify any fire walls being affected
    - Identify any fire barriers being affected
    - Identify any fire partitions being affected
  - iii. Remodels shall identify all systems (M, E, P, fire alarm, fire sprinkler,  
carbon monoxide, etc.) that will be affected, and the extent of upgrades as  
defined by the IEBC.
  - iv. Designers may request an OSFM inspection for deficiencies prior to  
submitting a project for review.
- e. If an addition, the changes needed to the existing building for code compliance.
- f. If an addition or remodel, what year was the current occupancy permitted  
(reference modification to the IEBC by the OUBCC)
- g. Name, address and legal stamp of the designer (if required by Title 58 O.S. § 46.1  
*et al*)
  - i. Wet or electronic stamps are accepted
  - ii. Must be signed by the designer
- h. Any alternatives that are selected. Identify each alternate specifically
- i. Any directives that are used. Identify each directive applied

## **2. Site map detailing**

- a. The physical location of the project and all structures within 30 feet of the project
  - i. Distances between buildings shall be dimensioned in feet
  - ii. Means of egress locations shall be shown on all buildings within 30 feet of the project
- b. The outline of the proposed project new and existing (if applicable)
- c. Identify all lot lines indicating the private property side and public property side
- d. Fire department access roads
  - i. Width at least 20' wide
  - ii. Length of road
  - iii. Turn around (if required)
  - iv. Provide a dimension of the distance from the roads to all sides of the building
  - v. Identify all designated fire department access lanes
- e. All new fire hydrants must be installed within the Public Easement. A fire hydrant is required to be installed within 400' of a non-sprinklered building and 600' of a sprinklered building. The new fire hydrants are measured as the hose lays off the back of the fire truck on a hard surface and not as the crow flies.
- f. Identify all fire hydrants as either existing or new

## **3. Project Plans**

- a. Another term for this is the "Life Safety Sheet"
- b. The floor plan of the entire project, to include basements, crawlspaces and attics.
- c. All rooms and spaces shall be named, or provided another designation, to permit easier identification in the review and inspections phases.
- d. Occupant loads per room or space (table & chairs or other furniture may need to be drawn to establish a lower factor) along with the occupant load factor and square footage per room
- e. Fuel Burning Appliance-Fuel Burning Fireplace-Fuel Burning Forced Air Furnace locations with ducting
- f. All rated construction
  - i. Wall design and rating (fire wall, fire barrier, fire partition, draft stopping, load bearing walls), please utilize UL Fire Wizard (<http://database.ul.com/cgi-bin/ulweb/LISEXT/1FRAME/FireResistanceWizard.html>) for assistance. Identify the location of all fire walls, fire barriers, fire partitions, draft stopping, & load bearing walls. Provide the associated hourly rating for each type of wall. Provide the associated UL design cut sheet
  - ii. Penetration protection (doors, dampers, piping, etc.) Identify the location of all dampers

- iii. Door and window design (occupant per door must be shown). Identify the associated rating for each door and window. Identify the location of all panic and fire exit hardware. Identify the door swing. Identify any special locking arrangements. Identify the location of all rescue windows
- g. All elements of the means of egress
  - i. Maximum travel distance
  - ii. Exit access
  - iii. Egress path and travel distances
  - iv. Exits (must show calculated occupant load egress along with the occupant load factor. Identify any occupant load egress as modified by the OUBCC)
    - 1. If an alteration or addition, the calculated occupant load of the existing building must be included in the exit calculations.
    - 2. All exits must be accurately shown for the existing building.
  - v. Exit discharge
  - vi. Exit signs
  - vii. Exit illumination (interior and exterior)
  - viii. Rescue windows, if required. Windows designated for rescue shall have the dimensions shown of the opening.
  - ix. Area(s) of refuge
  - x. Stairs and/or ramps
    - 1. Pitch of stairs must be shown
    - 2. Ramp incline must be shown
    - 3. Handrail specifications
  - xi. Corridor rating when applicable
  - xii. Elevator and/or lift-electric or hydraulic
  - xiii. Specifically identify any dead-end corridors and calculated distances
- h. Location of fire extinguishers with the associated travel distance
- i. Fire command rooms specifically identified
- j. Fire sprinkler riser room
- k. Identify accessible dwelling and sleeping units (including hearing impaired rooms)
- l. Identify accessible wheelchair spaces where required
- m. Provide a building section view elevation diagram with dimensions for multiple story buildings (more than 2 floors).
- n. Provide a roof pitch for all buildings.
- o. Identify all dead loads within 10' of the roof edge and the location of all guards

#### **4. Safe Rooms/ Storm Shelters**

- a. All construction intended for this use shall be designed to the Codes and references as adopted or modified by OUBCC, regardless of the funding source.
- b. All the above requirements shall be met, with the following additions:
  - i. All FEMA Tornado/Storm Shelter and safe room designs shall be accompanied by a completed 2015 edition, FEMA P-361 Appendix C form.
  - ii. All ICC-500 Tornado/Storm Shelter and safe room designs shall be designed to ICC500.
  - iii. All Tornado/Storm Shelters shall undergo a peer review prior to submittal to the OKSFM.
    1. The peer review report shall be attached to the submitted documents.
    2. Any and all conflicts between the designer and peer review SHALL be resolved prior to submittal for review.
- c. Fuel Burning Appliance-Fuel Burning Fireplace-Fuel Burning Forced Air Furnace locations with ducting
- d. Planning and scheduling for the required special inspections and the quality assurance plan. Copies of these special inspection reports shall be presented to the OKSFM Agent at the final inspection.

#### **5. Other permits**

- a. Some systems require additional permits.
  - i. Fire sprinkler
  - ii. Alternative suppression (range hoods, paint booth, etc.)
  - iii. Fire alarm
  - iv. Carbon monoxide
  - v. Carbon dioxide
  - vi. Access control
  - vii. Smoke control
- b. These are separate requirements and must be submitted by a company licensed in Oklahoma to perform this work.
- c. **50% inspections will not occur until all required permits are issued and on site.**

#### **6. Field inspections**

- a. All permitted projects are required to be inspected for compliance with the permit and the applicable codes.
- b. Inspections are performed by OKSFM Agents.
  - i. Promptness on the design or owner's part can help reduce delays by making inspection requests on time and with 7-days advanced notice.

- c. Inspections occur at 50% and 100% stages of construction.
  - i. A 50% inspection requires the building to be weather-tight, and at least 1 (one) side of walls exposed to permit inspection.
    - 1. 50% inspections will be coordinated with other permitted trades so that only 1 (one) site visit is necessary.
    - 2. Agents are permitted to alter the 1 (one) 50% visit when they deem it necessary.
- d. Agents may elect to perform an 80% inspection at their discretion.
- e. Agents perform a 100% inspection at the conclusion of the project.
  - i. The project shall be complete at the time of the 100% inspection.
  - ii. All permitted aspects of the project must be completed at the time of the inspection.
    - 1. There are tests which occur for systems (sprinkler, fire alarm, carbon monoxide, carbon dioxide, smoke control, access control, etc.)
    - 2. It is vitally important that all contractor tests be successfully completed prior to the 100% OKSFM inspection.
  - iii. Use of the 100% inspection to create “punch lists” will create additional costs and time delays.
- f. Although the project is reviewed and permitted, it is not uncommon for Agents to identify issues that were unforeseen during the design and review processes. Agent may issue order to be completed before the 100% inspection.
- g. The Agent’s orders shall be completed before the 100% inspection for it to be successful.
- h. Projects which fail at 100% shall be subject to re-inspection fees of \$40.00 per hour, to include travel time with a minimum of fee of 2 hours or \$80.00
- i. To request an inspection please call the OKSFM main number at (405) 522-5005.

## **Building Plan Review Submittal Requirements**

### **Code Sheet**

#### 1. Code sheet identifying:

- The list of adopted codes and its year used for the building design
- Occupancy type
- Special use and occupancy requirements (IBC Chapter 4 and IFC)
- Total square footage. New and Existing (if applicable)
- Actual and Allowable building heights and areas
- Frontage increases applied. Provide calculations
- Fire sprinkler increase applied. What percentage? Provide calculations
- Unlimited area building (if applicable)
- Type of construction. New and Existing (if applicable)
- Fire and smoke protection features installed
- Interior finishes classification
- Fire protection systems being installed
- Occupant load New and Existing (if applicable)
- Occupant load per room including occupant load factor and square footage per room
- Occupant load per exit door including occupant load factor. New and Existing (if applicable).
- Travel distance
- Corridor ratings
- Accessibility requirements met
- Roof assembly construction and rating
- Elevator installed-electric or hydraulic
- Directives applied if any from OSFM website. Identify which will be applied
- Alternatives accepted? Specifically identify
- Fire walls, ratings, and UL Design (Provide copy of UL documents)
- Fire barriers and ratings
- Fire partitions and ratings
- Fire Doors, ratings, and UL Design (Provide copy of UL documents)
- Fire Windows, ratings, and UL Design (Provide copy of UL documents)
- Identify any deficiencies. Provide a plan of action, from the architect, to fix any problems identified during initial design (1 week)
- Identify all Oklahoma Uniform Building Code Commission changes to the current adopted building codes that have been applied during the design of this project

## **Site Plan**

2. Site Plan showing the location of all surrounding buildings, fire department access roads and fire hydrants.
  - Identify the New and Existing (if applicable) Building areas
  - Identify in feet the distance between all buildings
  - Identify all buildings within 30' of the primary building
  - Identify all lot lines indicating the private property side and public property side
  - All fire department access roads must be at least 20' wide.
  - Identify with a line and a distance in feet showing all hard surfaces used by fire apparatus within 150' of all sides of the building. This distanced is as the hose is pulled off a truck on a hard surface and not as the crow flies.
  - Identify all fire hydrants as new or existing
  - All new fire hydrants must be installed within the Public Easement. A fire hydrant is required to be installed within 400' of a non-sprinklered building and 600' of a sprinklered building. The new fire hydrants are measured as the hose lays off the back of the fire truck on a hard surface and not as the crow flies.
  - Identify with a line and a distance in feet showing the travel of a fire apparatus from the fire hydrant to all sides off the building as the hose lays off the back of the fire truck on a hard surface and not as the crow flies. (400' for non-sprinklered buildings and 600' for sprinklered buildings)
  - Identify all designated fire department access lanes

## **Demolition Plan for All Existing Buildings**

3. Building Layout:
  - Entire building layout
  - Dashed lines showing all walls being demolished
  - Dashed lines showing all doors being demolished
  - Details identifying the scope of work being done
  - Identify any fire walls being affected
  - Identify any fire barriers being affected
  - Identify any fire partitions being affected

## **Life Safety Plan**

4. Life Safety Plan:
  - Entire building layout. New and Existing (if applicable)
  - Occupant travel distance in feet
  - The location of all fire walls and its rating. Provide the UL design cut sheet
  - The location of all fire barriers and its rating
  - The location of all fire partitions and its rating
  - The location of all draft stopping
  - The location of all fire extinguishers with the associated travel distance
  - The location of all load bearing walls and its rating
  - Location of all rated doors, ratings, and door swing
  - Location of all rated windows and its rating
  - Location of all Rescue Windows



- Occupant load per room including the occupant load factor and square footage per room
- Occupants per exit door and its occupant load factor. New and Existing (if applicable)
- Dead end corridors

### **Building Layout**

#### 5. Building Layout Plan:

- Fire Dampers
- Smoke Dampers
- Location of all Fuel Burning Appliance-Fuel Burning Fireplace-Fuel Burning Forced Air Furnace locations with ducting
- Emergency lights
- Exit signs

### **Building Elevation**

#### 6. Building Elevation Plan:

- Building Height
- Floor Elevations
- Roof Slope
- Dead loads within 10' of the roof edge must have guards

### **Contractor or Compliance Letter and Plans**

7. An Architect/Engineer's or sub-contractor written statement concerning the **foundation** on letterhead identifying code compliance with all the applicable codes in relation to the specific being built. The letter must identify the project name address, county, dated, signed, and stamped.
8. An Architect/Engineer's or sub-contractor written statement concerning the **structural** on letterhead identifying code compliance with all the applicable codes in relation to the specific being built. The letter must identify the project name address, county, dated, signed, and stamped.
9. An Architect/Engineer's or sub-contractor written statement concerning the **mechanical** on letterhead identifying code compliance with all the applicable codes in relation to the specific being built. The letter must identify the project name address, county, dated, signed, and stamped.
10. An Architect/Engineer's or sub-contractor written statement concerning the **electrical** on letterhead identifying code compliance with all the applicable codes in relation to the specific being built. The letter must identify the project name address, county, dated, signed, and stamped.
11. An Architect/Engineer's or sub-contractor written statement concerning the **plumbing** on letterhead identifying code compliance with all the applicable codes in relation to the specific being built. The letter must identify the project name address, county, dated, signed, and stamped.
12. **Energy Conservation** requirements omitted by the OUBCC.
13. An Architect/Engineer's or sub-contractor written statement concerning the **safe room** on letterhead identifying code compliance with all the applicable codes in relation to the

specific being built. The letter must identify the project name address, county, dated, signed, and stamped.

14. Electronic plans, signed and stamped by architect, designer or professional engineer. Include limited architectural sheets, mechanical sheets if fire and smoke dampers are installed and/or the location of all Fuel Burning Appliance-Fuel Burning Fireplace-Fuel Burning Forced Air Furnace locations with ducting, and electrical sheets showing all emergency light and exit sign drawings.
15. A Contractors Responsibility written statement is required for all FEMA and ICC-500 Tornado/Storm Shelters.

### **Fire Alarm Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided will result in the plans being rejected and returned without review.

#### Application

1. Completed Online Application Form with all fields filled in.

#### Plans

2. Electronic Plans Uploaded into system.
3. Plans must be original plans with fire alarm devices only. Room names shall be provided.
4. Plans must be drawn and printed to a scale no smaller than 1/8". Designed by a minimum of NICET III Certification or Professional Engineer with discipline in fire protection submitted by an Oklahoma Licensed Fire Alarm company.

#### Calculations

5. One (1) set of calculations. Uploaded to system.
6. One (1) set of voltage drop calculations. Uploaded to system.

#### Specifications

7. One (1) set of specification book/books. Uploaded to system.
8. VERIFY all drawings, calculations, and specifications uploaded to system.

### **Fire Sprinkler Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided will result in the plans being rejected and returned without review.

#### Application

1. Completed Online Application Form with all fields filled in.

#### Site Plan

2. Site Plan showing the location of the entire buildings, water line, fire department connection, and fire hydrant(s).

#### Plans

3. Plans must be drawn and printed to a scale no smaller than 1/8". Room names shall be provided. Designed by a minimum of NICET III Certification or Professional Engineer with discipline in fire protection submitted by an Oklahoma Licensed Fire Sprinkler company.

#### Calculations

4. One (1) set of calculations

#### Specifications

5. One (1) set of specification book/books. Uploaded to system.
6. VERIFY all drawings, calculations, and specifications uploaded to system.

## **Suppression System Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided will result in the plans being rejected and returned without review.

### Application

1. Completed Online Application Form with all fields filled in.

### Plans

2. Electronic Plan Uploaded into system. Plans must be drawn and printed to a scale no smaller than 1/8". Designed by a minimum of NICET III Certification or Professional Engineer with discipline in fire protection and submitted by an Oklahoma Licensed Fire Suppression company.

### Calculations

3. One (1) set of calculations. Uploaded to system.

### Specifications

4. One (1) set of specification book/books. Uploaded to system.
5. VERIFY all drawings, calculations, and specifications uploaded to system

## **Access Control Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided will result in the plans being rejected and returned without review.

### Application

1. Completed Online Application Form with all fields filled in.

### Plans

2. One (1) set of electronic plans uploaded into system.
3. Plans must be original plans with access control devices only
4. A floor plan must be drawn and printed to a scale no smaller than 1/8".
5. Room names shall be provided
6. Drawings detailing the installation location and layout, including all hookups/integration into building systems (i.e., fire alarm) and wiring
7. Circuit identification of initiating and releasing devices
8. A door schedule showing the fire rating, hardware, and any ancillary devices to be installed

### Scope of Work Letter

10. A letter identifying the operation of the Access Control/ Egress Control System in normal, loss of power, and the activation of a fire protection system – REQUIRED
11. Sequence of operation – REQUIRED

### Specifications

12. Manufacturer's specification sheets for the hardware (cut sheets)
13. Manufacturer's specification sheets for the type of detector used (cut sheets)
14. VERIFY all drawings, calculations, and specifications uploaded to system.
15. Indicate U.L. compatibility between system components and the fire alarm system

## **Carbon Dioxide Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided will result in the plans being rejected and returned without review.

### Application

1. Completed Online Application Form with all fields filled in.

### Plans

2. One (1) set of electronic plans uploaded into system showing all container locations, where it enters the building, piping, joints, and end use equipment.
3. Plans must be original plans with carbon dioxide devices only
4. Plans must be drawn and printed to a scale no smaller than 1/8". Room names shall be provided.
5. The carbon dioxide notification appliance cannot have the work "Fire" on the device
6. Any activation of the carbon dioxide detector shall initiate a "Local Alarm" both audible and visual if a fire alarm system is not installed.
7. Any activation of the carbon dioxide detector shall be tied to the fire alarm system and initiate the building's fire alarm system if one is installed.

### Specifications

8. One (1) set of specification book/books. Uploaded to system.
9. Verify all drawings and specifications. Uploaded to system.

## **Carbon Monoxide Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided may result in the plans being rejected and returned without review.

### Application

1. Completed Online Application Form with all fields filled in.
  - a. Fire Alarm
  - b. Carbon Monoxide

### Plans

2. One (1) set of electronic plans uploaded into system.
3. Plans must be original plans with carbon monoxide devices only
4. Plans must be drawn and printed to a scale no smaller than 1/8"

### Calculations

5. One (1) set of calculations. Uploaded to system.
6. One (1) set of voltage drop calculations. Uploaded to system.

### Specifications

7. One (1) set of specification book/books. Uploaded to system
8. Verify all drawings, calculations, and specifications. Uploaded to system

## **Smoke Control Plan Review Submittal Requirements**

The following is a list of requirements for all plan submittals. Any information that is not provided may result in the plans being rejected and returned without review.

### Application

1. Completed Online Application Form with all fields filled in.

### Plans

2. One (1) set of electronic plans uploaded to system in format below.
3. Floor Plan(s) with room names
4. Plans must be original plans with smoke control devices only
5. Plans must be drawn and printed to a scale no smaller than 1/8"
6. As part of the architectural drawings provide smoke barrier drawings showing the location of all smoke zones: delineate each zone as passive or active and provide a zone designation for each active zone. Additionally, show occupancies of each smoke zone and all openings required e.g., doors required to open for make-up air. The zones and designations used in the architectural drawings shall correspond to zones and designations used in the smoke control report
7. Provide sufficient detail in the drawings to support engineering calculations, e.g., leakage values for walls, ceilings, and doors; locations and heights of surrounding buildings; sizes and locations of make-up air openings; and smoke-barrier wall construction details
8. Provide a schematic riser diagram of the smoke control/management systems

### Mechanical

9. Identify the major mechanical components used for smoke control in appropriate schedules. Include fans, drivers, variable frequency drives (VFDs) and their locations, and louver and damper operators. Indicate the minimum service factor for fan motors (1.15) and the minimum number of fan belts for belt-driven fans, and temperature rating of fans and ducts
10. Identify the ducts and shafts used for smoke control in the schematic riser diagrams and plan drawings. Indicate the minimum test pressure for ducts and shafts used for smoke control (1.5 times the maximum design pressure)
11. For smoke control systems with variable frequency drives (VFDs), locate the VFDs outside the smoke zone they serve. Alternatively, protect VFDs within the smoke zone they serve from smoke and heat, so they are capable of continued operation after detection of fire for at least 20 minutes or the time set by the required safe exiting time (1.5 times RSET), whichever is greater. VFDs shall not serve more than one end device unless listed for smoke control service
12. For air-moving systems greater than 2,000 cfm, identify where automatic shutoffs are not provided due to smoke control

### Electrical

13. Identify the major electrical components used for smoke control, including standby (or emergency) power source, transfer switches, and control system(s)
14. Provide load calculations for the standby/emergency power source STATE OF OKLAHOMA OFFICE OF THE STATE FIRE MARSHAL
15. Show the layout of the standby generator room (or other secondary power source). The standby generator and its transfer switches shall be in a separate room from the normal power transformers and switchgear

16. Show the locations of the fire alarm control panel (FACP), firefighters' smoke control panel (FSCP) and fire alarm annunciator(s).
17. Provide a 1-line diagram showing feeder conductor sizes, overcurrent protection sizes, ampacity calculations, and the connected loads on each feeder supplied by the standby (or emergency) power source
18. For high-rise buildings, show the layout of the Fire Command Center (Central Control Station) for required equipment and furnishings
19. For buildings with passive smoke zones, connect the motor operators for smoke dampers to the building power panel and emergency/standby power – not the tenant space power panels
20. Each stair pressurization fan (and any other smoke control fans) shall be provided with independent power and control wiring. Wiring for control and power may be installed in an exit enclosure only if it serves that particular exit enclosure

#### Fire Sprinkler

21. Sprinkler zones shall be coordinated and match the Smoke Control Report
22. For atriums, provide separate sprinkler zones for the atrium and non-atrium spaces

#### Fire Alarm

23. For atriums/atria show the simplified fire alarm/smoke control matrix per the Smoke Control

#### Report

24. Sequence of Operation – a written description or matrix chart shall be provided to define the events that occur when various initiating triggers are activated concerning the Smoke Control System
25. Show every fire alarm/smoke control system input in a column on the left. Include every initiating device by address. Inputs may be combined with prior approval. Include manual operation of control switches for fans and dampers where the switch controls multiple outputs
26. Show every fire alarm/smoke control system output in a row across the top. Include every notification appliance by zone, every fan and damper (or group of dampers) by identifier, every monitored device by identifier and every other event that must occur for proper operation of the smoke control system. Outputs may be combined with prior approval
27. Show automatic fan shutoffs where required or provided
28. Show supervised conditions for required smoke control components such as fan power disconnect, pressure differentials, switches, fans not full speed, and doors/windows/dampers open or closed
29. Alarm, supervisory and trouble signals shall be transmitted to an approved supervising station in accordance with NFPA 72
30. Provide a full-scale color drawing of the firefighters' smoke control panel (FSCP) for review and approval prior to fabrication
31. Show individual control switches for fans and dampers or multiple dampers with identical actions, and automatic closing/opening doors required for smoke control
32. Show status indicators for all smoke control equipment by pilot lamp-type indicators as follows: - GREEN: Fans, dampers and other operating equipment are in their ON or OPEN status. Provide a green light to indicate Smoke Control Mode and another for Manual Mode. - RED: Fans, dampers and other operating equipment are in their OFF or CLOSED status. - YELLOW: Fans, dampers and other operating equipment are in a fault status - WHITE: Fans, dampers and other

operating equipment are in their normal status (use of the white light on panels will be reviewed on a case-by-case basis and designed to what makes the most sense without creating confusion.) Add two visual indicators on the top right corner of the FSCP to indicate panel status. Green visual – Panel Normal, Red Visual – Panel in smoke control mode

33. Provide a legend or matrix either on the panel or separately mounted showing the configuration of fans, dampers and doors in normal status mode and smoke control status mode

34. Smoke control systems shall have an automatic weekly self-test feature. The self-test feature shall automatically command activation of each associated function(s). An audible and visual trouble signal shall be annunciated at the FSCP identifying any function that fails to operate within the required time period.

#### Scope of Work Letter

35. A basis of design report describing the system's purpose and design objectives. The design engineer should prepare a report that not only identifies the design objectives, code requirements, and system calculations, but should also explicitly state the design assumptions, system operation logic, and commissioning procedures. The engineer shall indicate if the objectives will be accomplished with smoke containment systems (e.g., stair pressurization) or smoke management systems (smoke exhaust).

36. A letter identifying the operation of the Smoke Control System in normal, loss of power, and the activation of a fire protection system

37. A letter identifying the testing procedures

38. Provide technical justification if any portion of the design basis does not conform to NFPA 92

#### Calculations

39. One (1) set of calculations uploaded to system.

40. One (1) set of voltage drop calculations uploaded to system.

#### Specifications

41. One (1) set of specification book/books. Uploaded to system.

42. VERIFY all drawings, calculations, and specifications. Uploaded to system.

#### Specific Items to Keep in Mind

43. System start-up time: The system start-up time needs to include the time for detection of the fire, signal processing time, and the system activation time. Specific oversights involve improperly estimating the time to detection or assuming that system activation commences immediately upon activation, thereby ignoring signal processing time, fan start-up times, or the time needed for dampers to open or close.

44. Makeup air: While some designs fail to even consider the need for providing makeup air for exhaust systems, others fail to consider the impact of the makeup air. What will be the impact of makeup air? What impact will the velocity have on plume dynamics and doors opening or closing? When answering these questions, consider the periodic testing and inadvertent operations of the system.

45. Interaction with other systems: These may include other systems, typically HVAC systems, in the building and other smoke control systems. The IBC requires one to consider the interaction effects of multiple smoke control systems



46. System reliability: Reliability data for various fire protection systems and the components of such systems is often hard to obtain. Even where data may exist, the range of reliability of such systems documented in various studies may be significant. As an alternative, the design engineer might consider evaluating fire scenarios in which individual systems and features fail. This is consistent with a design fire scenario often required for performance-based designs

47. Coordination of design documents: Frequently, the design of a smoke control system is not prepared by a single engineer, such as a fire protection engineer, but instead by multiple engineers, each practicing within their areas of expertise. The Basis of Design letter must demonstrate the coordination effort by business name and responsible party full name and signature of all participants on the last sheet of the drawing set.

#### Smoke Control Report

48. A written report, titled Smoke Control Report, shall be authored by the smoke control consultant or the mechanical engineer-of-record and submitted to the Oklahoma State Fire Marshal's office for review and approval. The Smoke Control Report is typically a multi-phased approval process and submitted as follows:

- a. The Smoke Control Report shall be submitted as part of the review and approval process
- b. Submit the Smoke Control Report and Special Inspection Program with the Architectural floor plan(s), Mechanical drawings as they apply, and Electrical drawings as they apply, as part of the drawings' review and approval process
- c. If the Smoke Control Report is revised after approval, the revised report shall be resubmitted as an addendum with all items required and provided in the original submittal and revised plans showing applicable, clouded changes.

49. The Smoke Control Report shall include the following information:

- a. Cover Page: Provide a cover page showing the facility name, address, revision number, building permit application number, date of submittal and preparer
- b. Signature Page: Provide a completed signature page with final report. Signatures shall include all of the following: Architect of record, Mechanical Engineer of record, Electrical Engineer of record, Smoke Control system designer, and owner
- c. Code References. List all applicable codes standards including editions, approved equivalencies, and pre-application agreements for the project.
- d. Building Description. Provide a general narrative overview of the building and its uses. Include the building height, number of stories, basement levels, gross floor area, types of occupancies and type(s) of construction. Identify the architectural features that affect smoke control design and life-safety: size of atriums, location of fire/smoke barriers, fire-proofing, fire safety, engineering judgments, make-up air openings, operable windows, vents, floor and wall openings, door closers, ceiling heights, pressurized and non-pressurized stair enclosures, open stairs, shafts used as ducts, duct construction and material, exiting, horizontal exits, heights and types of surrounding structures/buildings, Elevators for Firefighters use, etc.
- e. Fire suppression systems. Provide a concise narrative overview of the fire suppression system(s). Identify the types of systems and areas served (zoning), major equipment, design criteria and basic operation. Identify the type, location, and quantity of flammable or combustible fuel, and hazardous/toxic materials, if any
- f. HVAC and ventilation systems. Provide a concise narrative overview of the HVAC systems whether or not used for smoke control. Identify the types of systems and areas served (zoning), major equipment, fire and smoke dampers type and class including link temperatures, design objectives and basic operation. Identify where fire dampers have actuating devices with increased

operating temperatures (not more than 350 \_\_\_F) due to smoke control and specify the actuating temperatures for each type of fire damper. Specify damper response time design per. Identify where fire/smoke dampers are not provided due to smoke control. Identify where fire/smoke dampers are not provided at shafts due to 22-inch sub-ducts and continuously operating exhaust fans connected to the standby power system

g. Power supply systems. Provide a concise narrative overview of the primary and standby power sources for the smoke control systems. Include the locations of the standby power source, transfer switches, normal power transformers and switchgear, and describe the independent routing of the normal and standby power distribution systems. Each stairway pressurization fan power shall be supplied through a raceway separate from other stairway pressurization fan power supplies beginning at the automatic transfer switch. Address the need for uninterruptible power supplies and power surge protectors. Provide a table to indicate all equipment required to be connected to emergency power. Specify the required duration the Stand-by/Secondary Power supply is required to operate the Smoke Management System.

h. Fire alarm, detection, and control systems. Provide a concise narrative overview of the fire alarm, detection, and control systems as they relate to the smoke control system. Include the building management system (BMS) where used for or interconnected to the smoke control system. Identify the smoke control components that must be monitored for proper operation (supervised end-to-end) and the method of supervision. Address the listing of fire detection and control systems including the building management system where used for smoke control

i. Damper supervision and control at the Firefighters Control Panel is required for all active-passive zone boundaries, e.g., corridor to residential units, group control and interlocking on fans with dampers is allowed. The minimum acceptable supervision and control required will indicate proper damper operation and fault condition for smoke control operation i.e., open and closed. These dampers shall be included in the UUKL Self-Test and fail-safe in the closed position

j. Fan supervision and control at the Firefighters Control Panel is required for all fans used in the smoke control system. Each fan and damper shall have a separate annunciator lights and controls, unless otherwise approved. Power (amperage and voltage) shall be supervised at the downstream side of the electrical disconnects and a positive means of verifying airflow shall be provided (pressure switch/airflow sensor) at each fan and indicated on the Firefighters Control Panel as a fault condition if failure occurs. Supervision and control of additional fans may be required in cases where an alternate/equivalent method is approved, e.g., where garage CO exhaust is utilized for smoke control, and use of supply fans are necessary for adequate smoke exhausting

k. Firefighters Control Panel. Include a narrative description of the Firefighters Control panel. Refer to the Fire Alarm Plan submittal section for additional information

l. Smoke Control/Management Systems. Provide a concise conceptual narrative overview of the smoke control/management systems: concepts, approaches, and design objectives, types of systems, zoning, major equipment, analysis methods, and basic operation and activation sequences

m. As applicable provide a detailed description of each smoke control zone including: occupancy; fire suppression and fire alarm systems, including specific design criteria required by the smoke control system; construction type, ratings and leakage values; door and window types, ratings, leakage values, and closing methods; operable and fixed exterior openings; expected fire size/loads, combustible materials; means of egress; method(s) of smoke control; analyses methods, with referenced equations for hand calculations, name and version of software; design scenarios addressed, including specific weather data used for each scenario; summary of results including

but not limited to tenability, timed egress, i.e. ASET vs. RESET; sprinkler type and activation times; activation methods

n. Provide small-scale drawings, 11" x 17" minimum, showing the location of all smoke zones, including passive smoke zones; include the drawings as an appendix to the Smoke Control Report

o. Provide rational analyses of the design; address the stack effect, temperature effect of the fire, wind, HVAC interactions, climate, and minimum duration of operation. This includes any HVAC or non-smoke control related ventilation equipment such as fans intended to run continuously even during a fire event.

p. Smoke control systems using the passive method, identify the total leakage area for typical smoke barriers, and provide calculations, simulation results (CONTAM, FDS, etc.), and other technical justification as necessary to demonstrate that tenability is maintained in zones adjacent to each passive zone in the event of a fire with the given minimum leakage areas

q. Identify smoke zone openings which must be open or closed for proper operation, such as doors, windows, dampers, and louvers; identify smoke zone openings that are supervised in the open and/or closed positions

r. Address the piston effect of elevators. Additionally, for single car elevator shaft provide calculations to show the smoke control system is not overcome by the piston effect

s. For smoke control systems, identify the system components tested weekly by the automatic self-test features.

## Supporting Documents Information

### Construction Types - Definitions

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**TYPE I-A**--Fire Resistive Non-combustible (Commonly found in high-rise buildings and Group I occupancies).

- 3 Hr. Exterior Walls\*
- 3 Hr. Structural Frame
- 2 Hr. Floor/Ceiling Assembly
- 1 ½ Hr. Roof Protection

**TYPE II-B**--Fire Resistive Non-Combustible (Commonly found in mid-rise office & Group R buildings).

- 2 Hr. Exterior Walls\*
- 2 Hr. Structural Frame
- 2 Hr. Ceiling/Floor Separation
- 1 Hr. Ceiling/Roof Assembly

**TYPE II-A**--Protected Non-Combustible (Commonly found in newer school buildings).

- 1 Hr. Exterior Walls
- 1 Hr. Structural Frame
- 1 Hr. Floor/Ceiling/Roof Protection

**TYPE II-B**--Unprotected Non-Combustible (Most common type of non-combustible construction used in commercial buildings).

Building constructed of non-combustible materials but these materials have no fire resistance.

**TYPE III-A**--Protected Combustible (Also known as "ordinary" construction with brick or block walls and a wooden roof or floor assembly which is 1 hour fire protected).

- 2 Hr. Exterior Walls\*
- 1 Hr. Structural Frame
- 1 Hr. Floor/Ceiling/Roof Protection

**TYPE III-B**--Unprotected Combustible (Also known as "ordinary" construction; has brick or block walls with a wooden roof or floor assembly which is not protected against fire. These buildings are frequently found in "warehouse" districts of older cities.)

- 2 Hr. Exterior Walls\*
- No fire resistance for structural frame, floors, ceilings, or roofs.

**TYPE IV**--Heavy Timber (also known as "mill" construction; to qualify all wooden members must have a minimum nominal dimension of 8 inches.)

- 2 Hr. Exterior Walls\*
- 1 Hr. Structural Frame or Heavy Timber
- Heavy Timber Floor/Ceiling/Roof Assemblies

**TYPE V-A**--Protected Wood Frame (Commonly used in the construction of newer apartment buildings; there is no exposed wood visible.)

- 1 Hr. Exterior Walls
- 1 Hr. Structural Frame
- 1 Hr. Floor/Ceiling/Roof

**TYPE V-B**--Unprotected Wood Frame (Examples of Type V-N construction are single family homes; exposed wood so there is no fire resistance.)

Note exceptions in the building code for fire resistance ratings of exterior walls and opening protection.