

WEST VIRGINIA UNIVERSITY

Environmental Health and Safety (SOP)

WV State Fire Marshal (SFM)

Project Plans Review
Process & Procedures

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1.0 PURPOSE AND SCOPE

- 1.1 This Standard Operation Procedure (SOP) provides guidelines and directions to follow during the process of design, build, renovation, modification and close out of a construction projects on WVU property for the inclusion of the WV State Fire Marshal (AHJ)
- 1.2 This SOP is to reduce potential fire related incidents and increase life safety.
- 1.3 The West Virginia State Fire Marshal (WV SFM) is the authority having jurisdiction and WVU-owned buildings are exempt from city/municipality code enforcements. The WV State Fire Code (WV SFC) shall be followed based on the adopted year identified on the (WV SFM website). The WV SFC shall take precedence when in conflict with other model codes.
- 1.4 The Morgantown Fire Department will work in conjunction with the WV SFM regarding fire department access, Knox box locations, and fire connection threads.
- 1.5 This SOP will identify the process flow that is mandated to occur between WVU, Architects, Engineers, and Contractors hired by WVU and WV SFM regarding construction projects on WVU campus and Satellite campuses.
- 1.6 This SOP shall be used by WVU employees having responsibility to modify, change, or build new Facilities on WVU main or satellite campuses.

2.0 DEFINITIONS

- 2.1 WV SFM - West Virginia State Fire Marshal
- 2.2 AHJ – Authority Having Jurisdiction
- 2.3 SFC – State Fire Code
- 2.4 NFPA – National Fire Protection Association
- 2.5 A&E – Architect and Engineering Firm
- 2.6 GC – General Contractor (Hire by WVU and is responsible for the project and sub-contractors)
- 2.7 Subcontractor – Hired by the General Contractor and works under the auspice of the general contractor. Subcontractors are responsible for submission of the shop drawings of the sprinkler and fire alarm drawings to the SFM
- 2.6 WVU Satellite or Divisional Campuses – WVU institutions that are located outside the WVU main campus, (i.e., Potomac State, Jacksons Mills, WV Tech at Beckley Campus, Kearnsyville and Wardensville.)
- 2.7 RFI – Request for Information
- 2.8 CO – Certificate of Occupancy. This is given to WVU by the SFM upon completion of a project once the SFM deems the building has met all applicable code mandates.

3.0 ROLES/RESPONSIBILITIES

3.1 Environmental Health and Safety

3.1.1 WVU EHS will coordinate and Liaison with the WV SFM and MFD for project reviews, inspections, changes, installations, of a project, upon receipt of a service request is placed into the EHS website at www.ehs.wvu.edu.

- Provide support services for review of project plans prior to submission to the WV SFM and MFD
- Attend planning, design, and construction, and close out project meetings
- Arrange SFM and MFD meetings
- Communicate with the SFM and MFD on changes, updates, regarding projects as requested by the project manager, contractor or A&E firms.
- Attend on site construction inspections with the SFM and MFD.
- Control existing fire related systems per PM or contractor requests.
- EHS Fire Safety Systems will participate when connections are made or testing is conducted to fire related systems.

3.2 Architect & Engineer (A&E)

3.2.1 Consult with WVU prior to direct contact with the WV SFM. All communications to and from the SFM office shall be documented and delivered to the WVU Project Manager and Environmental Health and Safety

3.2.2 Minutes shall be taken of meetings and distributed to SFM, EHS and Project manager.

3.2.3 Consult the WV SFM website to obtain and conduct design drawings based on the State Fire Code and the NFPA codes adopted by the WV SFM office. SFM Website: www.firemarshal.wv.gov/Divisions/Fire_Inspections/Pages/Plans-and-Review-Division.aspx

3.2.4 The State Fire Code and NFPA codes shall be take precedence when in conflict with other model codes.

3.2.5 Conduct two/three SFM project walk in review meetings (Schematic, Design Development, and Construction Design) with the WV SFM, EHS and WVU PM. Plans shall be reviewed to determine if design complies with SFM and NFPA codes. Make appropriate changes based on the SFM recommendations, submit to WVU for evaluation and review

3.2.6. Submit to the WV SFM office for review and comment, or resubmit revised plans of shop drawings or RFI's, if modifications are made that impact life safety code, or other necessary equipment changes that impact the project and have applicable code requirements. These changes could be identified during the design phase or construction phase of the project. WVU Design and Construction and EHS shall receive a copy of all submissions.

3.3 WV Design and Construction Project Manager

- 3.3.1 Shall notify the A&E firm of this SOP and where to obtain direction for use.
www.ehs.wvu.edu
- 3.3.2 Shall submit all pertinent documentation to A&E firm for inclusion to the project (BRIM, SFM, Asbestos reports, and other reports impacting fire and life safety)
- 3.3.3 Shall contact EHS by creating a service request form at: www.ehs.wvu.edu for needed communications with the WV SFM, prior to project design, changes or modifications to original design, to assure clear communications with all team members affiliated with the project.
- 3.3.4 Assure EHS is included in the project walk-through of the building
- 3.3.5 Assure EHS is included in project meetings
- 3.3.6 If modifications occur during design or construction of a building, that could impact WV SFC/NFPA codes, a revised set of plans, shop drawings, or a Request for Information (RFI) shall be submitted to the WV SFM for review and comment prior to completion.
- 3.3.7 Shall notify EHS to coordinate with the local Fire Department to assure the following items are achieved prior to and after construction:
 - Identification and location of the Fire Department Connections
 - Identification and location of the Fire Command Center and placement of the Fire Alarm Control Panel
 - Identification and location of the Annunciator Panel
 - Identification and location of the Knox Box
 - Identification of the proper thread specifications for the Fire Department connections
 - Identification and placement of the Fire Hydrant(s)
 - Identification and placement of Fire Lanes for the building
 - Identification of the dates/times for a site visit of the building at the end of construction for each rotation of Fire Department shifts

4.0 PROCEDURE

- 4.1 WVU Project Manager or Person Responsible for new construction, renovation, modification, change, and or addition etc. is to contact EHS a minimum of two weeks (see: www.ehs.wvu.edu service request form) prior to the initiation of a project. This procedure will ensure notification, and participation to determine how the project will impact Fire and Life Safety codes and determine if a SFM review is required or other possible needs regarding fire and life safety need identified.
- 4.2 WVU Project Manager (PM) or Responsible Project Person and WVU Environmental Health & Safety (EHS) will determine what elements of the project require the State Fire Marshal (SFM) plans review based on the following criteria and not limited to:
 - New Construction
 - Property Acquisition
 - Building Alteration

- Change in occupancy class of building
- Integration of another occupancy class into an existing occupancy space
- Major modification or elimination of an exit or means of egress
- Alteration/modification of load bearing elements
- Adding additional floors to an existing structure
- Changing the footprint of an existing structure
- Renovation of more than 50% of a structure
- Installation of new Elevator
- Alteration/modification of existing elevator
- Installation of new or altered Fire Alarm System
- Installation of new or altered Sprinkler System
- Installation of new Fire Pump
- Alteration/modification of Sprinkler or fire alarm system involving 20 or more elements of those systems
- Installation of a new Fire Alarm Control Panel
- Development, alteration or modification of /to a Performance Based Design (PBD)
- Installation of a New Emergency Power Supply System (EPSS) to a high rise building more than 75ft. in height
- Installation of a new EPSS, even if not required by code, for providing power to any required fire and / or life safety system or device, (Exit signs, emergency lights, etc.)
- Installation of a new hood suppression system
- Any other questionable circumstances contact EHS directly at 304-293-3792

4.3 Design Process & Plans Review Procedures:

- During the project phases (schematic, design development, construction documents, final or bid documents) PM provides EHS project plans to review the design and provide comment to the project manager within the requested time period.
- EHS will Act as the liaison to the WV SFM office for the following and during the project development
 - Walk-in reviews, with the SFM Plans Review Department, are highly recommended during each phase of a project, thereafter immediate feedback can be obtained and modifications can be made to the plans for compliance with mandated codes. The size and complexity of the project will dictate how many walk in reviews are needed.
 - EHS and WVU project manager will collaborate to determine the project contacts (project team) for SFM communications and meetings.
 - EHS will arrange SFM walk-in reviews based on agreed time lines of the project and in coordination with the WVU team (D/C, EHS) and the (A&E Design team) and
 - The A&E firm will publish meeting minutes of the SFM walk-in meetings to all team members for review and comment.

- Upon completion of 100% Construction Documents, the AE shall submit signed and sealed set of document to the WV SFM office for review and comment with the consent of PM. A copy of all documentation submitted to WV SFM shall be provided to EHS.
- Final plans shall be submitted to WV SFM on a full scale drawings or 11 x 17 as long as they are legible and includes all information.
- The transmittal letter shall be submitted with the final drawings and include the project construction budget and the AE name, address, and phone number. The submittal form can be found on the WV SFM website at: www.firemarshal.wv.gov
- Comments from SFM from the final plan reviews (sealed Construction Documents) are typically received in two weeks
- Comments from mailed/faxed plans followed by a phone call are received based on availability of SFM representative

4.4 Construction Phase - State Fire Marshal On-Site Project Inspections:

- WV SFM has the authority to make unplanned visits to construction site
- Contractor shall notify PM upon WV SFM representative arrival to construction site.
- The WVU PM shall notify EHS during planned and unplanned site visits of state and local SFM representative. If PM is not available, the contractor shall notify EHS (304) 293-3792.
- The WVU PM is to provide EHS progress information on SFM and Fire and Life Safety related impacts, changes, and needs immediately upon determination.
- The WVU PM is to notify EHS when stages of construction are complete (25%, 50%, 75% and 100%) and or appropriate stages of construction, such as the start of rough-in of utilities and when other fixture installation starts (fire alarms, sprinkler, etc.) for EHS to coordinate with the local SFM for planned periodic field inspections.
- WV SFM will supply formal inspection reports to PM, EHS, and AE after each field inspections have been completed.

4.5. Typical Construction Inspection Verification:

- 4.5.1 In order to make timely inspections and to have the opportunity to adequately review new construction while the building is being built, the following verifications during inspections are required by State Fire Marshal's Office:
- The WVU PM is to contact EHS for coordinating the WV SFM for on-site field inspections. However, if the SFM arrives on-site without request or notification, once the WVU PM learns about the visit, they are to contact EHS immediately for continuous communications.

- WVFSFM and WVU EHS will verify the following items below, but not limited to:
 - Framing
 - Inspection of wall framing
 - Inspection of rough electrical installation in rated walls
 - Inspection of rough fire damper installation
 - Inspection of fire assembly installation
 - Inspection of through penetrations of floors
 - Inspection of curtain wall fire protection
 - Inspect installation of rated seismic joints
 - Review adhesion, cohesion, thickness & density test results for fireproofing
 - Underground Sprinkler Systems
 - Inspection of piping
 - Inspection of thrust blocks
 - Verify hydrostatic pressure test
 - Witness flush
 - Aboveground Sprinkler Systems
 - Inspect piping
 - Inspect hangers
 - Inspect sway bracing
 - Verify hydrostatic pressure test
 - Fire Alarm Systems
 - Rough inspection
 - Pre-test in the presence of the electrical inspector
 - Duct detector pressure differential test
 - Indicating device audibility test
 - Fire Rated Assemblies
 - Inspect labels on all fire assemblies (doors, windows, dampers, etc.)
 - Inspect installation of fire assemblies
 - Fire Penetrations throughout the building
 - Electrical systems
 - Fire Pumps
 - Emergency Generator/Day Tanks
 - HVAC systems
 - Duct Detectors
 - Fire Dampers
 - Elevator and Elevator rooms
 - Exits and Exit Stairwell
 - Smoke Management / Stair Pressurization systems shall be submitted to the WVFSFM office for review, and comment, prior to final testing.

5.0 SFM APPROVALS & OCCUPANCY

5.1 Pre-Testing of all required systems shall be conducted by the contractor PRIOR to the final testing and verification of the SFM. This will assure all systems will operate properly to meet the requirements of the WV SFC and NFPA.

5.2. Final-Testing and Verification of systems for SFM in order to obtain occupancy: This process shall be conducted upon completion of the items below and in the presence of: WV SFM representative, WVU PM, WVU EHS, A&E representative and the GC representatives from each system trade.

5.3. Inspections/testing include the following:

- ✓ Sprinkler system (above and below ground)
 - Acceptance
 - Test flow switches
 - Test tamper switches
 - Test interconnection to alarm system
 - Witness flow test at rooftop (standpipe)
 - Witness concentration test (carbon dioxide systems)
- ✓ Fire alarm system
- ✓ Kitchen hood Automatic Extinguishing System
 - Witness pop-off test
- ✓ Smoke management system
- ✓ Stairwell pressurization
- ✓ Emergency generator 100% full load bank testing
- ✓ Fire pump
- ✓ Elevators witness firefighter recall, phase I and II
- ✓ Laboratory Fume Hoods – commissioning papers
- ✓ Automatic closing devices
 - Fire inspector drop-tests of 1-hour and 2-hour dampers
 - Fire doors must self-close and latch after gaskets have been installed
- ✓ Other specialized equipment or needs identified by the WV SFM

5.4. Required Documentation to be given to the WV SFM during final inspection/testing to obtain occupancy permit:

NOTE: The following certification and test papers shall be signed and placed together (binder/folder etc.) and presented at the final inspection to the WV SFM on site as a combined file to assure a Certificate of Occupancy is obtained from the SFM.

- ✓ Letter from electrical contractor indicating all electrical installation meets NEC
- ✓ Letter of Certification and test report from Fire Alarm contractor (elevator recall if applicable)
- ✓ Letter of Certification and test report from Sprinkler contractor for above ground and underground piping
- ✓ Letter of Certification from HVAC contractor

- ✓ Letter of Certification from Mechanical contractor for Smoke Management System
- ✓ Letter of Certification and test report from Generator contractor
- ✓ Letter of Certification and test reports from Fire Pump contractor
- ✓ Letter of Certification that fume hoods have been commissioned by a third party commissioning agent.
- ✓ Letter of certification and test report from Kitchen Hood Contractor
- ✓ Provide Commercial Building Energy Code ASHRAE 90.1 certification
- ✓ A copy of hard copy of (as-built drawings) shall be placed on site, within the fire command center.
- ✓ When all inspection reports are completed and verified by WV SFM, WVU will receive an occupancy permit issued by WV SFM office.

6.0 Reference and Recommendation Guide:

6.1 Design Guideline for New/Alteration of WVU buildings:

1. Design building to WV State Fire Code, Title 87, Series 1
2. Design building to current WV adopted National Fire Codes (NFPA)
3. Design building to current IBC codes
 - **Note: WV State Fire Code and NFPA codes always supersede IBC code**
4. Buildings 4 stories in height shall comply with 87CSR1 State Fire Code 87-1-10
5. Buildings 75 feet in height shall comply with 87CSR1 State Fire Code 87-1-10.5
6. Conduct at least 2 walk-in reviews with WV SFM office prior to final design
7. Submit smoke management calculations to SFM for review and comment
8. Submit final Architectural and Engineering Drawings to SFM for review and comment
9. Submit carpet specifications to SFM for review and comment
10. Buildings requiring a smoke management or stair pressurization system, design drawings and calculations shall be submitted to the WV SFM for review and approval.
11. Each Fire Alarm and Sprinkler Contactor will submit system drawings to the SFM office for review prior to installation
12. Provide Knox box and Knox Cap installation in compliance with City of Morgantown
13. Exit stairwells shall discharge directly to the outside. If stairs continue beyond level of exit discharge, a barrier shall be installed at the level of exit discharge
14. Electrical distribution rooms shall meet provisions of NFPA 70 Article 110 to include proper number of exits, exit signs, panic hardware and clearances as required
15. New sprinkler system main shut off requirements: Provide a man door directly from the outside to access the sprinkler control room -OR- a yard PIV