



Fire Protection Engineering  
Mechanical/Electrical/Plumbing  
Engineering  
Code Consulting

# Healthcare Facilities



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FSC has extensive experience in providing professional engineering services for Hospitals, Medical Buildings, Doctor's Offices and Clinics.



**Truman Medical Center - Lakewood Campus  
Kansas City, Missouri**

The original building was dedicated in 1908. Since then, the facility has faced numerous expansions and renovations. Our firm has been involved in numerous projects over the past 18 years which included upgrades, renovations, and expansions throughout all areas of the facility. Our involvement has ranged from studies concerning the HVAC systems to replacing and upgrading the 5 KV primary electrical distribution system.

MEP and FP projects include:

- Long Term Care Building Addition:  
This \$18,000,000.00, 128,300 sq. ft., 212 bed addition/renovation project was completed in 1998.
- Lobby, Surgical, and Inpatient Care Addition:  
175,000 sq. ft. addition which included new 18 bed emergency services department; surgical services which included 8 bed pre-op, 8 bed recovery, and 4 state-of-the-art operating rooms; 25 bed patient care rooms; and 8 bed ICU. Design included services for a 50 bed expansion in the future and spaces for medical office expansion.
- Clinic Air Handling Unit Modification
- Kitchen Phase I & II
- Dock/Freezer Remodel
- MOB/Surgery Addition
- Utility Review (ROI Renovation)
- Tuberculosis Room System Modifications
- Data Cable System
- Pharmacy Revisions
- Electrical Switchgear Room Modifications
- Waiting Room HVAC System Investigation
- Sterilizer Modifications
- Tuberculosis Exam Rooms
- Materials Management Revisions
- O/B Security Revisions, Test & Balance, Department Renovation, Remodel, and Rehab Cabling
- Cat Scan Revisions
- Dietary Storage Room Modifications
- Service Building Basement Revisions
- Fire Main Modifications
- WIC Remodel
- Operating Room Controls Modification
- Multi-Purpose Building Addition
- Laundry Relocation
- Dentistry Remodel
- Master Plan Consulting
- Boiler Replacement
- Office/Sleeping Room Renovation

- 480 Volt Power Modifications
- Elevator A & B Power
- Parking Lot Lighting
- Helicopter Pad Remodel
- Isolation Room Modifications
- Acute Care Remodel
- RCD Basement Repipe
- Radiology Remodel
- Purchasing Department
- Chiller Tie-In
- Gift Shop
- Intensive Care Unit (ICU) Remodel
- Geriatric Psych Unit
- HR Remodel
- Coffee Shop
- Emergency Power System – LTC Building
- PBX HVAC Upgrade
- Bulk Oxygen System
- NC4 Fire Protection
- South Clinic/LTC Ground Floor
- Operating Rooms Review
- Vacuum Pump Sizing
- Sprinkler Layout
- Corridor, RTU's
- RTU-EIU & NE Mammoth System
- Pain Management
- Emergency Room Shell Completion
- Medical Gas Alarm Wiring
- Fuel Oil Tank
- PSB Exhaust
- Retro-Commissioning Discovery
- Cafeteria Remodel
- Connecting Corridor - Radiology Vestibule 1st Floor
- Cave AHU
- Electric Riser Diagram
- LTC Fan Coils
- Ophthalmology Clinic
- Storage Air Handling Unit
- Penthouse Coils
- Laboratory Dumbwaiter
- Communication Room
- Margaret Truman Room
- 2nd Floor, Acute Patient Unit





**Truman Medical Center - Hospital Hill  
Kansas City, Missouri**

MEP design and construction administration for the 7-story, 500,000 sq. ft. general teaching hospital and medical center. Projects at the Hospital over the last 5 years include:

- Laser Remodel
- Nuclear Medicine Renovation
- Smoking Area Exhaust
- Data Processing UPS System
- Dishwasher Exhaust
- Contaminated Trash Compactor Exhaust System
- Finance Building Generator
- Histology Exhaust System
- Gift Shop Renovation
- Emergency Generator
- UVC Emmitter
- D&T Remodel
- Building Pressure
- Sterilizers/Condensate System
- Medical Examiner's Facility
- Telecommunications
- Dining Addition
- Emergency Department
- D&TC Lobby
- GI Lab
- Isolation Rooms
- Master Plan
- Diabetes Clinic
- D&TC Chiller Replacement
- DD Box Replacement
- Sterilizer Equipment Rooms
- Server/Call Center
- North Entry Heat
- Oncology
- OB Waiting Room
- Combustion Air
- 2nd Floor O.R. Corridor
- Behavioral Health

**Deer Creek Surgery Center  
Overland Park, Kansas**

This 11,000 s.f. stand alone Surgery Center and Glaucoma Specialty Clinic is designed to be a self-contained facility for complete surgical eye care. The center has two operating suites and is designed for any outpatient ophthalmology procedure.



**Ellett Memorial Hospital  
Appleton City, Missouri**

MEP and FP services for a new 8,440 sq ft addition, 14,260 sqft renovation, 12 bed community hospital.

The heating, ventilating, and air conditioning system is all electric heating and DX cooling controlled by an energy management system. Electrical distribution is a 277/480 Volts, three phase, 4 wire system for lighting and motors ¾ HP and larger and a 120/208 Volts, three phase, 4 wire system utilizing step down transformers for general receptacles and small equipment loads. An emergency generator provides power for the life safety, critical, and equipment systems in the hospital. Medical gas systems, oxygen, vacuum, medical air and nitrous, are piped throughout the hospital. The hospital is provided with a fully automatic sprinkler system and an addressable fire alarm annunciation and detection system. The following auxiliary systems are installed in the hospital: nurse call, public address, medical gas alarm, and raceway for telephone, data and security.

**Booneville Regional Hospital  
Booneville, Arkansas**

MEP and FP services for a new 46,225 sq ft, 25 bed community hospital.

The heating, ventilating, and air conditioning system is roof top units with gas heating and electric chilled water-cooling controlled by an energy management system. Electrical distribution is a 277/480 Volts, three phase, 4 wire system for lighting and motors ¾ HP and larger and a 120/208 Volts, three phase, 4 wire system utilizing step down transformers for general receptacles and small equipment loads. An emergency generator provides power for the life safety, critical, and equipment systems in the hospital. Medical gas systems, oxygen, vacuum, medical air and nitrous, are piped throughout the hospital. The hospital is provided with a fully automatic sprinkler system and an addressable fire alarm annunciation and detection system. The following auxiliary systems are installed in the hospital: nurse call, public address, medical gas alarm, and raceway for telephone, data and security.

**Susan B. Allen Memorial Hospital  
El Dorado, Kansas**

MEP Design:

- Chiller Replacement
- Temporary Administration
- Temporary Pharmacy
- Dr. McKesey's Suite
- Phase 3



**Lee's Summit Hospital Medical Office Building  
Lee's Summit, Missouri**

MEP design for this three (3) story building. This project consisted of a 33,000 sq. ft. addition to and expansion of the existing medical office building. The project was completed in two phases. First phase was the design of the base shell building. Phase two was the build of most of the medical office/clinic.

**Sayre Community Hospital  
Sayre, Oklahoma**

MEP and FP systems for a new 35,188 sq ft, 35 bed community hospital, a 6,275 sq ft, 6 bed psychiatric unit and 9,316 sq ft clinic.

The heating, ventilating, and air conditioning system is roof top units with gas heating and electric chilled water-cooling controlled by an energy management system. Electrical distribution is a 277/480 Volts, three phase, 4 wire system for lighting and motors ¾ HP and larger and a 120/208 Volts, three phase, 4 wire system utilizing step down transformers for general receptacles and small equipment loads. An emergency generator provides power for the life safety, critical, and equipment systems in the hospital. Medical gas systems, oxygen, vacuum, medical air and nitrous, are piped throughout the hospital. The hospital is provided with a fully automatic sprinkler system and an addressable fire alarm annunciation and detection system. The following auxiliary systems are installed in the hospital: nurse call, public address, medical gas alarm, and raceway for telephone, data and security.



**Goldstein Dermatology & Skin Cancer Center  
Lee's Summit, Missouri**

MEP services for this combination 22,000 s.f. MOHS Surgery Center, General Ambulatory Surgery Center, and Dermatology Clinic and Spa. It is a second facility in the Kansas City area specializing in the MOHS Cancer procedure.

**McPherson Hospital  
McPherson, Kansas**

MEP Design:

- Ventilation/Exhaust Air Balance
- HWR System



**Iron County Regional Hospital  
Pilot Knob, Missouri**

MEP and FP systems for a new 37,493 sq ft, 15 bed community hospital.

The heating, ventilating, and air conditioning system is gas heating and electric chilled water-cooling controlled by an energy management system. Electrical distribution is a 277/480 Volts, three phase, 4 wire system for lighting and motors ¾ HP and larger and a 120/208 Volts, three phase, 4 wire system utilizing step down transformers for general receptacles and small equipment loads. An emergency generator provides power for the life safety, critical, and equipment systems in the hospital. Medical gas systems, oxygen, vacuum, medical air and nitrous, are piped throughout the hospital. The hospital is provided with a fully automatic sprinkler system and an addressable fire alarm annunciation and detection system. The following auxiliary systems are installed in the hospital: nurse call, public address, medical gas alarm, and raceway for telephone, data and security.

This project was constructed one month ahead of schedule and within budget.

**32nd Street Doctors Office Building  
Joplin, Missouri**

MEP design and limited construction administration for the design and construction of a new doctor's office building with surgical suite.

**Freeman Hospital  
Joplin, MO**

MEP design services for the following facilities.

- Stephens Unit
- Wound Clinic
- Oncology Remodel
- ER Remodel
- Women's Health Clinic
- Freeman Library

**University of Kansas Medical Center  
Kansas City, Kansas**

- FP Design for a vertical 37,400 sqft. addition to the Research Support Facility for animal care/housing.
- FP Design for the Renovation of existing floors at Bell Hospital and Wahl Hall.
- MEP Design for upgrade of existing MRI equipment installation.
- Fire Safety, Life Safety, and Code Compliance consulting.
- Physical survey of existing building addressing fire detection, fire suppression, emergency lighting and signing of required egress and penetration protection of rated assemblies.
- Performed analysis of existing fire sprinkler system creating a model using **FSC's own Water Software.**



**Hoglund Brain Imaging Center**

MEP and FP Design:

- Establishing the design criteria
- Animal / Human Research Laboratory Design
- Preparation of contract documents
- Perform construction administration

**Shawnee Mission Medical Center**

**Shawnee Mission, Kansas**

MEP and FP services for the following areas:

- **Life Dynamics Building Addition and Remodel**
- **AHU-3 Study**  
Analysis of problems with air flow and cooling capacity for system serving the Laboratory areas and offices
- **Emergency Department Remodel** of 10,000 sqft. area:
  - New examination rooms
  - New triage area
  - Fast-track examination rooms
  - X-ray & dark room, Waiting room
  - Offices, Lounge, Nurses station
  - Support areas
  - Phasing
- **Addition to Specialty Care Units**  
Design of a 72,000 sqft., 2- story addition with 48 beds, where 16 beds were in ICU.
- **Day Surgery Remodel** of new Clean Sterile Decontamination, Scrub-up and other support areas.
- **Medical Library and Conference Center**  
Design to finish shell space for medical library and conference center with eight conference rooms.



**North Kansas City Hospital  
North Kansas City, Missouri**

- Mechanical design to replace underslab waste piping in the Cafeteria.
- Replacement of HVAC system in the Administration area.
- Replacement of existing exhaust in the MAWD Pathology Laboratory.
- Replacement of dishwasher.



**Corporate Medical Plaza Bldg. I  
Overland Park, Kansas**

- **KC Urology** - MEP services for the tenant finish design of a new 10,000 sqft. office plus a building addition of approx. 2,000 sqft. for the linear accelerator.
- **KC Bone & Joint** - MEP services for the tenant finish design of a new 20,000 sqft. office with exam rooms, x-ray rooms, offices, break rooms, cast rooms, etc.

**Corporate Medical Plaza Bldg. II  
Overland Park, Kansas**

- **Carondelet Orthopaedics Surgeons** - MEP services for the tenant finish design of a new 11,000 sqft. Surgeons office with exam and X-Ray rooms.
- **KUMED OB/GYN Clinic** - MEP services for the tenant finish design of a new clinic.



*FSC was awarded the 2002 International Illumination Design Award for Ingenuity, Originality Professionalism for our lighting design at Children's Mercy Hospital.*

### **Children's Mercy Hospital Kansas City, Missouri**

MEP and FP services for the following areas:

- **Surgery Department Remodel** of 3 new surgery rooms, 1 heart room, and 20 bed recovery area.
- **Expansion of existing Fire Alarm System**
- **Cafeteria and Kitchen**
  - New plumbing fixtures
  - Separate grease waste system
  - Special exhaust systems
  - Normal and emergency power
  - Special lighting
  - Fire alarm system
- **Catheterization Laboratory Remodel**
- **Sutherland Tower Addition** - 110,000 sqft, 5 story tower
- **Clinical Research Unit and Offices**
- **Main Lab Renovation**  
20,000 sqft area, which required special space pressurization, ventilation, filtration, humidity and temperature controls, included: Bacteriology, Virology, Hematology, Toxicology, Cytogenetics, Bio-Chem Genetics, Chemistry, Immunology, Central Processing.
- **Emergency Department Remodel**
  - Custom 26,000 cfm dual air handling unit with dual filtration.
  - New plumbing system
  - DDC system for the new unit and critical areas.
  - New exhaust distribution
  - New lighting and receptacles
  - New power distribution (normal and emergency power)
  - Special outlets (x-ray, data, phone).
  - Special systems (fire alarm, paging, nurse call, intercom)
  - Laminar flow diffusers for critical areas.
  - Phasing was a critical requirement.

### **VA Hospital Kansas City, MO**

- Cath Lab
- Upgrade Elevator Controls

### **Story County Medical Center - Critical Access Hospital Nevada, Iowa**

- MEP system assessment and report of existing medical center.
- MEP design of new 38,000 sqft. single story hospital facility, including wireless telecommunications. The new hospital includes offices, pharmacy, cafeteria, exam rooms, patient rooms, Operating Room, etc.
- Geothermal study and design.

### **IBA Molecular Laboratory Kansas City, Missouri**

MEP design for the renovation and build-out of an existing area for the installation of a new self-shielding cyclotron, cyclotron power supply room, synthesis room, a secure entrance, three new offices and an employee break room area.

### **DaVita Dialysis Centers**

MEP and FP engineering design on the following dialysis home training facilities.

- Chicago, IL
- Creston, IA
- Matteson, IL
- Independence, MO
- Effingham, IL
- Fairfield, IL
- Edwardsville, IL
- Florissant, MO
- Maryville, IL
- Belleville, MO
- Vandalia, IL
- Greenwood, IN
- Eureka, MO
- Carmel, IN
- Lockport, IL
- Woodridge, IL
- Riverside, MO
- Portage, IN
- Hammond, IN
- Gary, IN
- St. John, IN

### **Surgical Institute of Lake of the Ozarks Osage Beach, Missouri**

MEP design services for a new 8,400 s.f. multi-specialty ambulatory surgery center. The center features three fully equipped operating rooms that are equipped for dental/oral surgery, general surgery, gynecology, gastroenterology, ophthalmology, orthopedic surgery, ENT, pain management and plastic surgery.

## **Great Bend Hospital**

### **Great Bend, KS**

MEP design for a new 25,000 sqft. 2-story addition with patient rooms, surgery room, labor/delivery/recovery rooms, pharmacy and central sterile.

## **Dwight D. Eisenhower V.A. Medical Center**

### **Leavenworth, Kansas**

- Mechanical design to replace the HVAC system in the Elevator Control Room.
- MEP design to replace the elevator controls.

## **US Oncology North**

### **Kansas City, Missouri**

Mechanical design, in particular HVAC and plumbing, for a new US Oncology Center.

## **Western Missouri Medical Center**

### **Warrensburg, Missouri**

- MEP Design to add MRI unit.
- MEP and FP Design for 45,000 sqft. 2- story addition and 10,000 sqft. of remodeled area.

## **Other MEP design projects:**

- Sisterville Hospital - Sisterville, WV
- Dr. Taubers Clinic - Broadway M.O.B. - Kansas City, MO
- Bothweall (BRHC) Imaging Center - Sedalia, MO
- Higginsville Senior Center, Phase II - Higginsville, MO
- UMC - Operating Rooms - Columbia, MO
- Great Bend Hospital Addition - Great Bend, KS
- Teaching Hospital - Operating Room Electrical Power Upgrade - Columbia, MO
- KU Medical Center Lab Renovation - Kansas City, KS
- Okeene Municipal Hospital - Okeene, OK
- Pain Clinic - Merriam, KS
- Overland Park Health Center, Pharmacy - Overland Park, KS
- Broadway Medical Plaza #4 - Columbia, MO
- OPRMC Pharmacy Box Replacement - Overland Park, KS
- Elite Sports Medicine - Kansas City, MO
- Pharmacy - Menorah Hospital - Leawood, KS
- Elite Physical Therapy - Kansas City, MO
- Atoka, Oklahoma Hospital - Atoka, OK
- North Kansas City Hospital, Radiology - Kansas City, MO
- Excelsior Springs Hospital - Excelsior Springs, MO
- Cardinal Health, Lighting - Waukegan, IL
- Oswago Hospital - Oswago, KS
- Plymouth Hospital - Plymouth, NC