



# Williamson County

## Emergency Services District No. 4

### Liberty Hill Fire Department

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

#### **COMMERCIAL BUILDING CONSTRUCTION SUMITTAL GUIDELINES**

This guide is intended as a resource for the building construction drawings submittal requirements for commercial developments. Building construction plans are reviewed to determine compliance with WCESD No.4 Fire Marshal's Office requirements. These requirements can be found in the 2021 International Fire Code, as adopted and amended by WCESD No.4. In an effort to expedite the building plan review process, please ensure the following list of items are incorporated into the proposed building construction plans. Please submit plans to [www.lhfdpermits.com](http://www.lhfdpermits.com).

#### **SUPPROTING DOCUMENTATION**

- A check or money order for the permit fee(s). Please visit [www.lhfdpermits.com](http://www.lhfdpermits.com) for the current fee schedule. Checks and money orders shall be payable to WCESD No. 4. Plans will not be reviewed until payment has been recieved.
- One complete set of construction drawing for the proposed building(s). Guidelines for submission of construction drawings are provided in this document.
- A registration number from Texas Department of Licensing and Registration (TDLR) for the project or provide documentation from TDLR, or a Registered Accessibility Specialist, verifying this project is exempt from TAS compliance. Applicants can contact TDLR at (512) 463-6599 or (800) 803-9202 for more information regarding TAS requirements.

#### **GENERAL GUIDELINES**

- All drawings submitted for review must be computer generated. In addition WCESD No.4 cannot accept computer generated drawings which include hand-drawn items. Examples include plans with exit doors, exit signs and similar items penciled in on the drawings.
- Building drawings must be stamped by an architect or engineer.

- Drawings submitted for hazardous materials installations must be stamped by a licensed engineer.
- All drawings shall include a point of compass.
- All drawings shall be included a scale and shall be drawn to the scale provided.
- Do not submit specification books with construction drawings. Any specifications necessary to conduct the plan review shall be provided in details and/or on the shop drawings.
- Do not submit fire alarm and fire protection drawings with building construction plans. Fire alarm and protection systems require a separate permits and submittal.
- The project manager shall be responsible to ensure coordination between various disciplines to ensure a coherent plan submittal. For example, floorplans shown on MEP drawings must be consistent with floorplans shown on architectural drawings.
- Many detail and note sheets contain generic items which may not be included in the project being reviewed. Details and notes which are not applicable to the project under review shall be omitted from the submittal. Items not omitted, which are not part of the project, shall be marked through with a **X** to clearly indicate the item is not part of the project plan review.

### **Title Sheet**

Construction drawings shall be submitted in the following format and shall include the requested information. Some of the items listed will not be applicable to all projects. Notes should be provided to indicate which items are not included in the project and will not be addressed in the drawings.

The title sheet shall identify the project and the design professional responsible for the project. The title sheet should also include:

- A short narrative or description explaining the intended use of the building or complex.
- A sign-off line for WCESD No. 4.
- An index of drawings which clearly identifies all sheets provided in the submittal. For large projects the index can be provided on a separate sheet.
- Notes regarding any code modifications and/or alternate methods of compliance which have been approved for the project.

The title sheet may be combined with the code analysis sheet if all required information can be provided in a legible format.

### **CODE ANALYSIS**

A code analysis sheet shall be provided for each project. The code analysis sheet shall identify the applicable codes related to the project. The code analysis sheet shall include the required information presented in the following format. The following list is not all-inclusive and additional items may be addressed in the code analysis. For certain projects additional information may be required By WCESD No. 4.

### **General Information**

- **Construction type.** Provide construction type based upon ICC construction classifications
- **Occupancy type.** Provide occupancy type based upon ICC occupancy classifications
- **Mixed Use.** If mixed use, explain whether the building will be designed as a separated use or

non-separated use per Chapter 3 of the IBC.

- **Building Area.** Actual square footage of proposed construction.
- **Allowable Area.** Allowable square footage based upon construction type and occupancy classification
- **Area Increases.** If area increases will be utilized, provide calculations and code references to support the proposed increases.
- **Building Height.** Actual number of stories and total height in feet.
- **Allowable Height.** Allowable number of stories and total height in feet based upon construction type and occupancy classification.
- **Height Increases.** If height increases will be utilized, provide calculations and code references to support the proposed increases.

## **Fire Systems**

- **Fire Sprinkler.** Explain whether a fire sprinkler system will be provided. If so, identify the type of system and provide a note stating the system will be installed in accordance with (insert the correct NFPA Standard). Provide a note which specifies the fire sprinkler system will require a separate permit and submittal. Provide a note which clarifies that issuance of a building permit does not imply approval to install the fire sprinkler system.
- **Fire Standpipe.** Explain whether a standpipe system will be provided. If so, identify the type of system.  
Provide a note stating the system will be installed in accordance with NFPA Standard 14. Provide a note which specifies the standpipe system will require a separate permit and submittal. Provide a note which clarifies that issuance of a building permit does not imply approval to install the standpipe system.
- **Fire Alarm.** Explain whether a fire alarm system will be provided. If so, identify the type of system and provide a note stating the system will be installed in accordance with NFPA Standard 72. Provide a note which specifies the fire alarm system will require a separate permit and submittal. Provide a note which clarifies that issuance of a building permit does not imply approval to install the fire alarm system.
- **Automatic Extinguishing Systems.** Explain whether additional fire extinguishing systems will be installed. Examples may include kitchen suppression systems or clean agent systems installed to protect electronic equipment. If so, identify the type of system, the area where it will be installed, and provide a note stating the system will be installed in accordance with (insert the correct NFPA Standard). Provide a note which specifies the additional systems will require a separate permit and submittal. Provide a note which clarifies that issuance of a building permit does not imply approval to install the additional suppression systems.
- **Portable Fire Extinguishers.** Explain which type and size of portable fire extinguishers will be installed. Identify spacing requirements and verify extinguishers will be mounted and accessible. State whether extinguishers will be installed in cabinets or wall mounted. Identify the drawing which provides details regarding extinguisher cabinets and installation. Fire extinguishers will be required to have a current inspection tag by a Texas licensed fire extinguisher company.

## **Life Safety Systems**

- **Emergency Lighting.** Explain whether emergency lighting will be provided. If so, explain if emergency lighting will be provided by generator, unit lighting, or uninterrupted power supply (UPS). If generator or UPS, identify the location within the building and the drawing which provides details regarding this installation.
- **Emergency Power.** Explain whether emergency and/or standby power will be provided. If so, identify the equipment provided with backup power, explain how the power will be provided, and identify the drawing which provides details regarding this installation.
- **Elevators.** Explain whether elevators will be provided. If so, provide a note verifying fire-fighters emergency operation will be provided and that elevators will be installed in accordance with Chapter 30 of the IBC. Identify the drawing which provides details regarding the elevator installation.
- **HVAC Shutdown.** Explain whether duct detectors will be provided for HVAC shutdown. If so, identify the drawings which provide details regarding duct detectors. If not, provide a note providing code support for their omission.
- **Smoke Control Systems.** Explain whether smoke control and/or stair pressurization systems will be provided. If so, identify the location, purpose and drawings which provide details regarding the installation.

## **Fire-Resistive Construction**

- **Exterior Walls.** Explain whether a fire-resistance rating will be required for exterior walls based upon proximity to property lines or other buildings. If so, identify the location and the drawing which provide details regarding these assemblies.
- **Structural Members.** Explain whether a fire-resistance rating will be required for structural members based upon type of construction. If so, identify the drawings which provide details regarding structural fire protection.
- **Floor-Ceiling.** Explain whether rated floor-ceiling assemblies will be provided. If so, identify the location and identify the drawings which provide details regarding these assemblies.
- **Roof-Ceiling.** Explain whether a rated roof-ceiling assembly will be provided. If so, identify the drawing which provides details regarding this assembly.
- **Fire Barriers.** Explain whether fire barriers, partitions, walls and/or smoke barriers will be installed. If so, identify the locations and explain the reason for the installation. Reasons may include area separation, hazard separation and occupancy separation. Identify the drawings which provide details regarding fire barrier construction.
- **Vertical Shafts.** Explain whether rated vertical shafts will be provided. If so, identify the locations and identify the drawings which provide details regarding shaft construction.
- **Corridors.** Explain whether fire-resistive corridors will be provided. If so, identify the location and identify the drawing which provides details regarding corridor construction.
- **Exit Enclosures.** Explain whether rated exit enclosures will be provided. If so, identify the locations and identify the drawings which provide details regarding stair construction.
- **Fire Dampers.** Explain whether fire/smoke dampers will be provided. If so, identify the drawings which provide details regarding dampers. If not, provide a note providing code support for their omission.
- **Interior Finish.** Provide an interior finish schedule for the building. The schedule may be

provided on the code analysis sheet or a separate sheet when necessary. Provide the schedule in a table format. Provide information regarding ceiling, wall and floor finishes.

### **SPECIAL HAZARDS**

- **Hazardous Materials.** Identify the location of any hazardous materials that will be utilized inside buildings. Include the quantity of materials, the hazard classification and identify any protective measures provided (fire separations, mechanical ventilation, spill control etc.). Identify the drawings which provide details regarding hazardous material locations.
- **HMMP/HMIS.** For facilities which contain a significant quantity of hazardous materials, a Hazardous Materials Inventory Statement and/or Hazardous Materials Management Plan may be required. (See 2021 IFC Appendix H).
- **Shop Areas.** Identify the location of laboratories, shop areas, woodworking, and engine repair or spray- paint operations. Identify the drawings which provide details regarding these operations.
- **Refrigerant Rooms.** Identify the location of refrigerant machinery rooms. Identify the type, quantity and hazard classification of refrigerants that will be utilized at the facility. Identify the drawings which provide details regarding refrigerant storage.
- **Boiler Rooms.** Identify the location of boiler and furnace rooms. Identify the size of equipment that will be installed. Identify the drawings which provide details regarding boiler and furnace equipment.
- **High-Piled Storage.** Explain whether the building will be used for high-piled combustible storage. If so, provide information regarding the storage configuration and identify the drawings which provide storage details.
- **Stage or Platform.** Explain whether a platform or stage will be installed? If so, provided information regarding the stage and identify the drawings which provide stage details.

### **OCCUPANT LOAD AND EXIT ANALYSIS**

An occupant load and exit analysis is required for each building. This analysis may be provided on the code analysis sheet or separate drawings. When provided on separate drawings this analysis shall be located on the sheet immediately following the code analysis.

#### **Occupant load**

- **Room Loads.** Provide an occupant load for each room. Identify the use of the room, the area of the room, the occupant load factor and occupant load. This may be provided on drawings or in a table format.
- **Assembly Rooms.** For assembly rooms used for multiple purposes, show the occupant load which yields the highest density of occupants and ensures an adequate number of exits and exit capacity is provided.
- **Floor Loads.** Provide an occupant load for each floor and ensure an adequate number of exits, and exit capacity, is provided for each floor. Identify the number of exits, show the width of each exit, the capacity factor used for each exit, and the capacity of each exit.
- **Building Loads.** Provide an occupant load for the building and ensure adequate exits and exit capacity is provided to accommodate the occupant load. Identify the number of exits, show the

width of each exit, the capacity factor used for each exit, and the capacity of each exit. Show the discharge from each exit and ensure the exit discharge provides unobstructed access to a public way.

### **Exiting**

- **Number of Exits.** Verify all portions of the building have access to the required number of exits.
- **Exit Width.** Verify all exit components provided adequate width to accommodate the design occupant load.
- **Single Exit.** For areas provided with a single exit, verify the common path of travel does not exceed the maximum allowable distance. Provide measurements on drawings or in a table format. Verify the occupant load does not require access to multiple exits.
- **Exit Separation.** When two exits are provided, verify exits are adequately separated in accordance with requirements of the Fire Code and show this measurement on drawings.
- **Travel Distance.** Verify the maximum allowable travel distance is not exceeded from any portion of the building. Show travel distance on measurements on drawings.
- **Corridors.** For corridors which contain a dead-end, show the distance of the dead-end and verify code compliance.
- **Door Swing.** Verify exit doors swing in the direction of exit travel when required by the Fire Code. Examples may include, but not be limited to, doors serving an assembly area, a hazardous area, entering or exiting an exit stairwell, or when serving an occupant load of 50 or more persons.
- **Gates.** Identify the location of any gates, sliding doors, or overhead doors installed across an exit or exit access. Verify code compliance for the installation.
- **Exit Discharge.** Verify that required exits discharge to a public way. Verify there are no obstructions installed across the exit discharge and that the required number of exits, and exit capacity is not reduced.
- **Exiting Plan.** Provide an exiting plan for each building. Indicate the primary exit that occupants from each room or area can be expected to utilize during an emergency. Ensure exits are spaced and sized so that, as much as practical, all exits will be utilized by an equal number of occupants.

### **Accessibility**

- **Accessible Exits.** Identify the accessible exit(s) for each building. Verify accessible routes and components comply with requirements of the Texas Accessibility Standards.
- **Accessible Elevators.** Identify the location of any accessible elevators. Provide details of accessible elevators.
- **Area of Refuge.** Identify the location of any areas of refuge. Provide details of each area of refuge.
- **Accessible Discharge.** Verify that accessible exits discharge to a paved public way, or a paved sidewalk which leads to a public way.

### **ARCHITECTURAL DRAWINGS**

Provide architectural drawings for the project. Provide a note verifying the building will be constructed in accordance with 2021 International Fire Code and referenced documents. The following information shall be addressed on architectural drawings.

## **General Drawings**

- Provide structural and foundation drawings.
- Provide interior and exterior elevation drawings.
- Provide a roof plan.
- Provide a reflected ceiling plan.
- Provide floor plans.
- Provide a furniture plan where applicable.
- Provide glazing details.
- Provide insulation details.
- Provide wall sections.

In addition, provide detailed information regarding the following subjects.

## **Doors**

- Provide drawings(s) of the floorplan which indicates the location of all doors and assign an identification number to each door.
- Drawing(s) of the floorplan must clearly indicate the direction of door swing and whether the door opens to 90 or 180 degrees.
- Verify that open doors will not obstruct required width of exit components. (aisles, corridors, landings and stairs)
- Verify floors are essentially level on each side of every door.
- Indicate door landings for exterior doors. Verify landings comply with minimum size requirements.
- Provide a door schedule. Provide a legend which clearly identifies abbreviations used. The door schedule must provide the following information:
  - Door Number
  - Location
  - Door Size (height and width)
  - Clear width of door opening
  - Door type (wood, metal, reference detail)
  - Door swing (swinging door, overhead)
  - Door glazing
  - Fire-rating (if any)
  - For fire doors, whether doors will be self-closing or automatic closing.
  - Hardware type
- Provide details and/or notes of all door types
- Provide details of all fire-rated doors and frames.
- Provide details for automatic-closing door operations. Explain how doors will activate and show location of smoke detectors when provided.
- Provide a door hardware schedule. Door and hardware schedules may be combined if all required information can be provided in a legible format. Provide a legend which clearly identifies abbreviations used. The door hardware schedule must provide the following information;
  - Door Number
  - Location
  - Type of hardware installed
  - Whether door will be provided with electronic access-control

- Provide details and/or notes of all hardware types.
- Provide details and notes for electronic access-control systems

### **Fire Resistive Construction**

- Provide a legend identifying how each type of fire-resistive assembly will be marked on drawings.
- Clearly indicate the location of all smoke barriers, fire barriers, fire partitions, fire walls and fire-rated assemblies.
- Show the horizontal and vertical parameters of each barrier (through elevation or sectional drawings)
- Provide a copy of each UL design specification referenced in the drawings. These should be provided in a note format, not in a specification book.
- For remodels of existing buildings, when existing walls are to remain, provide the statement “similar to UL Design Number” and insert the appropriate number.
- Provide a note or detail describing how penetrations through barriers will be sealed.
- Examples of fire-resistive construction which must be identified include:
  - Area separation walls
  - Corridor partitions
  - Exterior walls based upon proximity to buildings or property lines.
  - Hazard Separation (boiler rooms and similar spaces)
  - Membrane protection of the structural frame
  - Occupancy separation walls
  - Fire-protection provided for structural elements
  - Vertical shaft construction for HVAC systems, elevators and stairs.

### **Interior Finish**

- Provide an interior finish schedule for floors, walls and ceilings. This is normally provided in a table format. Provide a legend which clearly identifies abbreviations used. The interior finish schedule must provide the following information:
  - Identify the room or area
  - Provide columns for floor, wall, ceiling
  - Identify the interior finish material for each exposed surface
  - Provide a flame-spread rating for each material (Use NC for non-combustible)
  - Provide a smoke-development rating for each material (NA for non-combustible materials which do not have a flame-spread rating)
  - Provide manufacturers’ documentation of flame-spread and smoke-development ratings. Provide this in a note format.
  - Verify code compliance for interior finish materials.

### **Ramps and Stairs**

- Identify the number of exit ramps and stairs that will be installed. Provide a separate identifier for each ramp or stair. Identifiers should be directional (North stair) or alphabetical (Ramp A).



Our office recommends that ramps and stairs not be identified by a numerical designation.

- Provide sections and details for all ramps and stairs.
- Provide details for stair treads and risers.
- Provide details for guardrails and handrails.
- Provide a barrier for stairs which continue below the level of exit discharge. Provide a detail of the barrier.
- Provide floor number signs for stairs which connect 4 or more floors. Provide a detail of floor number signs.
- Verify enclosed ramps and stairs do not share an HVAC system with the building.
- Identify any smoke-proof enclosures. Provide details and notes of enclosure design.

### **Electrical Drawings**

Provide a note verifying electrical systems will be installed in accordance with the National Electric Code (NFPA 70) and referenced documents. Provide an electrical cover sheet which includes a legend. The cover sheet shall be located at the beginning of the electrical drawings. The following information must be addressed on electrical drawings.

### **General**

- **Legend.** Provide a legend showing symbols used on drawings as adopted by nationally recognized societies or as explained on the drawings.
- **Service Equipment.** Show the type, location, and capacity of all service equipment and meters.
- **Circuit Protectors.** Show interrupting ratings of circuit protective devices specified and available symmetrical short circuit current at each panel and switchboard location where fault current is greater than the (10,000) amperes.
- **Grounding.** Show service entrance grounding conductor, sized and located, and method of grounding
- **Outlets.** Show locations of every proposed outlet, including switches.
- **Circuits.** Show circuiting of every electrical outlet with size of conductor and raceway.
- **Appliances.** Provide location, voltage, horsepower, kilowatt, or current rating of every motor, generator, transformer, or fixed appliance.
- **Schedules.** Provide details of the panel board, switchboard and distribution centers. Include schedule of equipment panel board or switchboard schedules and show connected and demand wattage or amperage, number of active branch circuits to be installed, and number of spare branch circuits for future use.
- **Access Control Systems.** Provide details regarding any access control systems and secure door circuitry.

### **Exit Illumination**

- **Exit Signs.** Provide floor plans which clearly indicate the location of illuminated exit signs. Provide a legend of sign types and a note which explains how emergency power will be provided for exit signs.

- **Emergency Lighting.** Provide floor plans which clearly indicate the location of emergency lighting fixtures. Provide a legend of fixture types and a note which explains how emergency power will be provided for lighting fixtures. Verify that emergency lighting is provided at all exterior door landings.

### **Emergency and Standby Power**

- Provide a list of all equipment provided with emergency or standby power per Article 700 of the NEC.
- Identify the source of emergency/standby power.
- Verify power source is in a location where its operation will not be impaired due to freezing, flooding or other hazards.
- Provide details of required loads and verify emergency equipment provides required capacity.
- Provide details and location of transfer equipment and control panels.
- Verify a dedicated circuit is provided for emergency and standby power.
- Identify all emergency circuits and wiring and verify compliance with Article 700.

### **Elevators**

Provide a note verifying elevators will be installed in accordance with the 2015 International Building Code and referenced documents. Address the following items in the elevator drawings.

- **Elevator.** Explain whether the elevator(s) will be electric or hydraulic and provide elevator details
- **Machine Room.** Provide details of the elevator room construction and verify room is provided with same fire-rating as the elevator shaft.
- **Shaft.** Provide details of the elevator shaft construction.
- **Hoist-way.** If provided, show details of hoist-way venting. If not, verify code compliance.
- **Size.** For buildings 4 stories or more in height, verify at least one elevator is sized to accommodate ambulance stretchers.
- **Sprinkler System.** Explain whether the hoist-way and machine room will be protected by a sprinkler system, if so, verify a shunt trip will be installed. If not, provide code support for omission.
- **Detectors.** Explain whether smoke/heat detectors will be provided in the hoist-way and machine room. If so, identify locations and sequence of operations. If not, provide code support for omission.
- **Emergency Service.** Verify that fire-fighter emergency service will be provided. Provide details and a sequence of operations.
- **Standby Power.** Explain whether standby power will be provided. If so, explain the method. If not, provide code support for omission.
- **Accessibility.** Explain whether an elevator will be utilized as part of an accessible route. If so, identify the elevator and provide elevator details. Verify code compliance.
- **Emergency Signs.** Verify emergency signs will be provided. Provide sign details.

### **Special Occupancies**

- **Special Occupancies.** Explain whether special occupancies, as defined in Article 500 of the NEC, will be included in the project.

- **Location.** Identify the type and location of special occupancies.
- **Details.** Provide details of circuits, equipment and wiring associated with special occupancies and provide NEC code references to verify code compliance.
- **Classified Locations.** Explain whether hazardous (classified) locations, as defined in Article 500 of the NEC, will be included in the project.
- **Location.** Identify the type and location of classified locations.
- **Details.** Provide details of circuits, equipment and wiring associated with classified locations and provide NEC code references to verify code compliance.

## **Mechanical**

Provide a note verifying mechanical systems will be installed in accordance with the 2015 International Mechanical Code and referenced documents. Provide a mechanical cover sheet which includes a legend. The cover sheet shall be located at the beginning of the mechanical drawings the following information must be addressed on mechanical drawings

- **Legend.** Provide a legend showing symbols used on drawings as adopted by nationally recognized societies or as explained on the drawings
- **Mechanical Equipment.** Provide details of all mechanical equipment, ducts and ventilation systems. Show location of equipment in building.
- **HVAC Ductwork.** Show location of all HVAC ductwork along with supply and return registers. Provide details of ductwork.
- **HVAC Return.** Explain how return-air is circulated in the HVAC system. (Ducted-return, plenum-return or another method)
- **HVAC Shutdown.** Explain whether HVAC shutdown will be provided. If not, provide code support for this omission.
- **Duct Detector.** Explain whether duct detectors will be provided. If not, provide code support for their omission. Clearly identify the location of duct detectors and verify code compliance. Provide a sequence of operations for duct detectors. If a fire alarm system is provided, verify detectors will be monitored by the fire alarm system.
- **Corridor.** Explain whether corridors will be used for air-movement. If so, verify code compliance.
- **Corridor Ceiling.** Explain whether the space above corridor ceilings will be used for air movement. If so, verify code compliance.
- **Fire Damper.** Explain whether fire/smoke dampers will be provided. If so, clearly indicate the location of all dampers installed in the building. Show the location of access panels. Provide details for each type of damper utilized. Provide details for access panels. Provide UL listing information for each type of damper utilized.
- **Stair Ventilation.** Explain whether exit enclosures will be conditioned. If so, verify stair HVAC is independent of the building HVAC system.
- **Stair Pressurization System.** Explain whether stair pressurization will be provided. If so, provide details and supporting documentation.
- **Smoke Control System.** Explain whether an engineered smoke control system will be provided. If so, provide details and supporting documentation.
- **Cooking Operations.** Explain whether cooking operations will be conducted. If so, identify the location and type of ventilation equipment that will be installed. For commercial cooking

operations, that produce grease laden vapors, verify a Type I hood and automatic fire suppression system will be installed. Provide details on cooking appliances and ventilation equipment.

- **Refrigerant Rooms.** Identify the location of refrigerant machinery rooms. Identify the type, quantity and hazard classification of refrigerants that will be utilized at the facility. Provide details for refrigerant equipment.
- **Hazardous Equipment.** Identify the location of ventilation systems provided for hazardous equipment.

Examples include boilers, systems designed to ventilate chemical or flammable liquid vapors, dust collection systems for woodworking equipment, and laboratory fume hoods. Provide details and supporting documentation.

### **Plumbing**

Provide a note verifying that plumbing systems will be installed in accordance with the 2018 International Plumbing Code, 2018 International Fuel Gas Code and referenced documents.

Provide a plumbing cover sheet which includes a legend. The cover sheet shall be located at the beginning of the plumbing drawings. The following information must be addressed on plumbing drawings.

- **Legend.** Provide a legend showing symbols used on drawings as adopted by nationally recognized societies or as explained on the drawings.
- **Floor Plan.** Provide a floor plan and riser diagram. Include information on waste, ventilation, water and gas piping systems.
- **Details.** Provide details, schedules and calculations for piping and risers.
- **Fixtures.** Provide a fixture schedule and material specifications
- **Gas Piping.** Explain whether natural gas or LPG will be provided. If so, provide the following information:
  - If storage tanks are utilized, show the location of tanks, tank capacity, and provide tank details.
  - Include piping and riser diagrams.
  - Show the location of equipment supplied by gas piping.
  - Verify isolation and shutoff valves are provided per code.
  - Verify all piping is marked in accordance with code and all appliances are provided with code compliant ventilation.
- **Medical Gas.** Explain whether medical gas or oxygen systems will be provided. If so, provide the following information:
  - If storage tanks are utilized, show the location of tanks, tank capacity, and provide tank details.
  - Include piping and riser diagrams.
  - Show the location of equipment supplied by piping.
  - Verify all piping is marked in accordance with code.
  - Verify isolation and shutoff valves are provided per code.
- **Hazardous Materials.** Explain whether other hazardous materials will be utilized at the facility. Examples may include compressed natural gas, gaseous hydrogen, or other materials. If so, provide detailed information regarding the type of materials, quantity of materials, hazard classification, and safety features installed to protect personnel and equipment.