

ARCHITECTURE

SECTION 15050

**GENERAL MEP / FP CRITERIA**

PART 1 - GENERAL

1.1. General Scope:

A. The work of the MEP / FP Systems consists of Design/Build of complete systems, properly tested and ready for operation. The work includes all necessary minor details and accessories required to make the work complete, even though such items may not be expressly shown or specified in the contract documents. .

The work of the MEP / FP trades also includes relocation of utilities as indicted as well as tying the new building and the existing building to function as independent and complete buildings insofar as possible.

All relocations and modifications to utility service to the existing building shall be coordinated with the Owner to minimize disruptions during business hours.

B. Design / Build:

Refer to Section 01100 – “SUMMARY AND GENERAL REQUIREMENTS” for Trade Contractor and Engineering requirements including insurances.

Included in the work is Engineering design of the building systems and of furnishing of all labor, materials, tools, transportation, services, etc., which are applicable and necessary to complete the installation of the systems based upon the criteria outlined in the Division 15: Mechanical and Division 16 Electrical sections of this specification and which is acceptable to the jurisdiction having authority..

C. Drawings show diagrammatically the locations of various shafts, lines, ducts, conduits, fixtures, outlets, and equipment anticipated in the project. It is not intended to show every required space necessary for the installation of Mechanical and Electrical systems which will be determined in the early design/build stages. Exact locations of these items shall be provided by the Subcontract Design / Build trades

D. Note that, like the existing building know as the Blake Building, 7 Custom House Street, much of the MEP / FP systems are exposed. Routing of various systems components and coordination of the MEP / FP components with the architectural features of the building is of utmost importance. The trade Contractor and his Engineer shall submit preliminary system layouts to be coordinated with the other MEP / FP trade preliminary drawings at a coordination meeting with the Owner, Architect, Tenant / Tenant Designer, and the other trades.

**CE.** In general, the various lines and ducts shall be run in a neat and satisfactorily workmanlike manner. Run work parallel or perpendicular to the lines of the building unless otherwise noted as required by particular conditions at the site, and as required to conform to the generally accepted standards so as to complete the work.

**DE.** The construction details of the building are illustrated on the Architectural and Structural Drawings. The Contractor shall thoroughly acquaint himself with the details before submitting his bid as no allowance will be made because of the Contractor's unfamiliarity with these details. The Contractor shall place all inserts to accommodate the ultimate installation of pipe hangers in the forms before concrete is placed. Set sleeves in place in forms before concrete is placed, and in masonry walls while they are under construction. All concealed lines shall be installed as required by the pace of the general construction to precede that general construction.

**EG.** Locations and elevations of the various site utilities included within the scope of this work have been obtained from City or other substantially reliable sources and are offered separately from the Contract Documents, as a general guide only, without guarantee as to

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accuracy. Contractor shall verify the locations, elevations, and availability of all utilities and services required. Building utility services that will serve both the existing and the new buildings will be entering the new building from Fore and Custom House Streets and then be split to travel along the ceiling at the lowest level to the existing building.

~~F.H.~~ The Contractor shall provide all necessary motors, starters, disconnect switches, wiring diagrams, and control wiring requirements to provide complete functional systems as called for in the summary of work.

~~G.I.~~ The entire hot and cold domestic potable water systems shall be thoroughly sterilized after installation per the requirements of the local health and building codes.

~~H.J.~~ No plumbing fixture, device, or piping shall be installed which will provide a cross connection or interconnection between a distributing supply for drinking or domestic purposes and a polluted supply such as drainage system or a soil or waste pipe which will permit or make possible the backflow of sewage, polluted water, or waste into the water supply system.

K. Architectural considerations shall be given to location of all mechanical and electrical devices. Final locations will be approved by the Owner.

### 1.2 RELATED DOCUMENTS

A. Provisions established within the General and Supplementary General Conditions of the Contract, Division 1 - General Requirements, and the Drawings are collectively applicable to this Section as if bound herein.

B. The drawings show diagrammatically the locations of the various primary shafts, lines, ducts, conduits, fixtures, outlets, and equipment anticipated in the project. It is not intended to show every required space necessary for the full concealment of the Mechanical and Electrical systems which will be determined in the early design/build stages. Exact locations of systems shall be determined by reference to the Architectural, Structural, Civil and Electrical plans and details and measurements at the building and in coordination with other Subcontractors, and in all cases, shall be subject to the approval of the Owner and the Architect. When conflicts arise with the other work the Architect shall be the sole authority as to the exact location of all items.

### 1.3. Mechanical Noise and Vibration Isolation

A. Equipment installed in the building shall not cause noise levels in occupied spaces to exceed noise criteria (NC) recommended by current ASHRAE handbook as average design goals for spaces having the same function. Mechanical equipment and piping shall be installed with appropriate fittings such that structure borne vibration noise is isolated from the building structure.

B. **SEISMIC RESTRAINTS:** Provide resilient earthquake restraints with suitable structural support for vibration isolated equipment and piping. Restraints shall be attached to structural members capable of withstanding the design dynamic load required. Contractor shall be responsible for ensuring that the dynamic load capacity of the attachment bolts and supporting structure is greater than or equal to the capacity of the seismic restraint. He shall also coordinate the size of concrete housekeeping pads to ensure adequate room for the isolators and the restraints.

C. Electrical connections to all mechanical equipment motors shall be made through a flexible conduit designed to reduce motor vibration transfer into the rigid conduit which is directly attached to the building structure. Flexible conduit shall be sufficiently long to provide a 360 degree loop in the flex between the motor and the rigid conduit. A soft neoprene bushing shall be provided at the connection point between the flex and the rigid conduit to break the metal-to-metal contact. All ground wires from vibrating equipment shall be flexible with sufficient slack to prevent vibration transfer. Ground wires must not directly contact structural membranes (floors, walls or ceilings) of the building.

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### 1.4. DESIGN GENERAL CRITERIA:

- A. All Mechanical systems are to comply with requirements of the latest editions of the Applicable Codes as listed in Section 01100. Copies of all applicable codes shall be maintained on the construction site for the duration of the project.
- B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.
- C. Any special requirements not herein specified, by the Owner, the Owner's financing source or the Owner's insurance carrier.
- ~~FD.~~ MEP/FP contractors shall guarantee for one (1) year, from date of acceptance of the work under their subcontract, the quality of all materials, equipment and workmanship furnished and installed and to remedy, to the satisfaction of the Architect and Owner, all defects in the work. The commencement of the Warranty period shall occur not earlier than the Certificate of Substantial Completion or the Occupancy Permit. This includes replacing all defective apparatus, material and equipment, and correcting all damage to adjacent work, paint, woodwork, or building caused by leaking pipes or connections or other defects in his work and its operation. Where sound and vibration conditions arise, which the Owner or the Architect considers objectionable, the subcontractor shall pay all costs to remedy conditions. Subcontractor shall obtain guarantees from equipment manufacturers covering their respective equipment for the above period of time. Furnish three (3) copies of guarantees to the Owner.
- ~~GE.~~ All cutting, patching and firestopping is by the MEP/FP Subcontractor for the work of that trade. Do not cut structural members without prior written approval of Architect or Structural Engineer. This includes Structural bearing wall studs, headers, plates, posts, etc.
- ~~HF.~~ Access panels are furnished and installed by each trade Contractor where required for their work. Access panels are to be fire rated/clearly labeled when located in fire rated assemblies.
- ~~IG.~~ HVAC equipment, ducts, and piping shall be coordinated with the building structural framing, columns, beams, structural bearing walls, etc. No HVAC equipment, ducts, and shall be allowed to penetrate any Framing without the Structural Engineer's Written Approval. No equipment shall be suspended from nor supported upon the building without review by the Structural Engineer.
- ~~JH.~~ Hanger and Pipe Attachments: Factory fabricated with galvanized coatings; nonmetallic coated for hangers in direct contact with copper tubing.
- ~~KI.~~ Building Attachments: Submit data for review for all attachments. Powder-actuated-type, drive-pin attachments with pullout and shear capacities appropriate for supported loads and building materials; Mechanical-Anchor Fasteners: Insert-type attachments with pullout and shear capacities appropriate for supported loads and building materials. UL listing and FM approval for fire-protection systems.
- ~~LJ.~~ Gas fired HVAC furnace units, water heaters, etc. in unheated spaces shall have all water piping, and air intake duct/pipe, exhaust, piping, condensate lines etc. insulated.
- ~~MK.~~ Toilet exhaust ductwork shall be insulated.

### 1.5. ENERGY CONSERVATION:

- A. Design in conformance with IBC International Energy Conservation Code - 2003. All Heating/Ventilating/Air Conditioning, Plumbing, Sprinkler, Electrical and other Design/Build

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systems shall conform to the International Energy Conservation Code - 2003 as modified by the 2004 Supplements and as modified by the State in which the project is to be constructed.

B. Design/Build documents shall include calculations, diagrams, etc as required by the code and the official having jurisdiction. Submit calculations to Architect for review prior to submission to authorities having jurisdiction.

## 2.0 MATERIALS

2.1 Refer to individual trade sections. All materials to be new, undamaged from shipment, etc. Design/Build Engineer shall determine minimum material standards to satisfy code requirements.

## 3.0. INSTALLATION

### 3.1. INSTALLATION CRITERIA:

A. Mechanical, Plumbing, HVAC and Electrical distribution shall be run in designated chase and shaft locations indicated on plans, to the greatest extent possible. Where Design-Build System requires additional shafts or rated enclosures, they shall be provided as required, and coordinated with Architect and Owner.

B. All cutting, patching and firestopping by subcontractor. Do not cut structural members without prior written approval of the Structural Engineer of Record.

C. Access panels are furnished and installed by each sub where required for their work. Access panels are to be fire rated/clearly labeled where located in fire rated assemblies.

D. All mechanical equipment, ducts, and piping shall be coordinated with the structural frame. No HVAC equipment, ducts, and shall be allowed to penetrate any framing without written instructions obtained from the Structural Engineer.

E. Building Attachments:

Powder-actuated-type, drive-pin attachments with pullout and shear capacities appropriate for supported loads and building materials;

Mechanical-Anchor Fasteners: Insert-type attachments with pullout and shear capacities appropriate for supported loads and building materials.

Hanger and Pipe Attachments: Factory fabricated with galvanized coatings; nonmetallic coated for hangers in direct contact with copper tubing.

Provide seismic sway bracing as required by code.

F. Wiring in closets and ceilings used as return plenums shall be plenum rated wiring per local code requirements.

G. MEP/FP Subcontractors are responsible for making, sealing, and firestopping all penetrations for their work. Refer to Section 07840.

H. All materials to be protected from damage and exposure prior to installation.

I. All rough openings through the exterior sheathing shall be wrapped in minimum 25 mil rubber and with 25 mil rubber from the face of sheathing onto material of penetration. Ensure lap onto material is covered by exterior finish product. Refer to Section 07100

**END OF SECTION**