SUBJECT

Remodel

(formerly CAN 2-3403A)

CAN: 2-102.6

Effective: 6/19/2008
Revised: 8/8/2013

CODE SECTIONS

Section 102.6
2010 California Building Code (CBC)

Sections 104.1 and 104.3
2010 California Mechanical Code (CMC)

Sections 101.5.1 and 101.5.4
2010 California Plumbing Code (CPC)

2010 California Building Code

DIVISION II SCOPE AND ADMINISTRATION
SECTION 102 APPLICABILITY

102.6 Existing structures. The legal occupancy of any structure existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in the code, the *California Building Code* or the *California Fire Code,* or as is deemed necessary by the *building official* for the general safety and welfare of the occupants and the public.

2010 California Mechanical Code

DIVISION II ADMINISTRATION
104.0 Application to Existing Mechanical Systems.

104.1 Additions, Alterations or Repairs. Additions, alterations, or repairs shall be permitted to be made to any mechanical system without requiring the existing mechanical system to comply with all the requirements of this code, provided the addition, alteration, or repair conforms to that required for a new mechanical system. Additions, alterations, or repairs shall not cause an existing system to become unsafe or create unhealthy or overloaded conditions.

Minor additions, alterations, and repairs to existing mechanical systems shall be permitted to be installed in accordance with the law in effect at the time the original installation was made, when approved by the Authority Having Jurisdiction.

104.3 Changes in Building Occupancy. Mechanical systems that are a part of any building or structure undergoing a change in use or occupancy, as defined in the Building Code, shall comply with the requirements of this code that may be applicable to the new use or occupancy.

2010 California Plumbing Code

DIVISION II ADMINISTRATION
101.5 Application to Existing Plumbing System.

101.5.1 Additions, Alterations, or Repairs. Additions, alterations, or repairs shall be permitted to be made to any plumbing system without requiring the existing plumbing system to comply with all the requirements of this code, provided the addition, alteration, or repair conforms to that required for a new plumbing system. Additions, alterations, or repairs shall not cause an existing system to become unsafe, insanitary or overloaded.

101.5.4 Changes in Building Occupancy. Plumbing systems that are a part of any building or structure undergoing a change in use or occupancy, as defined in the Building Code, shall comply to the requirements of this code that may be applicable to the new use or occupancy.

PURPOSE

The purpose of this Code Application Notice is to provide owners, designers and authorized plan review and enforcement agencies with a consistent method for planning, reviewing and implementing projects on existing buildings and systems. Historically, these types of projects have proven difficult because of the structure of the code, nonspecific requirements for applicability to existing structures, and Title 22 requirements to conform to the current code for any alteration affecting the function of a licensed health facility.

INTERPRETATION

Alternate Materials and Methods of Construction

These guidelines are not intended to prevent the use of an alternate material or method of construction provided OSHPD approves the alternate. The requirements for alternate materials and methods of construction are shown in 2010 CBC Section 104.11, 2010 CMC Section 105.0, and 2010 CPC Section 301.2.

How to use the Guidelines

The guideline information is presented as a series of flowcharts which describe the process and a narrative which explains each block on the flowchart. For the purpose of implementing this CAN, the following guidelines (attached) shall be used:

1. Health Facility Remodel Flow Chart / Narrative
2. Electrical Remodel Flow Chart / Narrative
3. Fire and Life Safety Remodel Flow Chart / Narrative
4. Mechanical, Plumbing, and Medical Gas and Vacuum Systems Remodel Flow Chart / Narrative

The main document, titled “Health Facility Remodel Flowchart”, describes the entire process from project inception through construction. Please note that this flowchart addresses the two following common areas of concern regarding remodel projects:

1. The need for a pre-design consultation with the office.
2. How to handle conditions discovered during construction.

There are three supporting flowcharts: Electrical, Fire and Life Safety, and Mechanical, Plumbing, and Medical Gas and Vacuum Systems. These flowcharts are mutually supporting and are meant to be used concurrently to provide an accurate guide for project accomplishment.

Structural Issues

Historically, OSHPD has not observed a problem with designers identifying the structural scope of remodels, which is why this document does not include structural considerations in the flow charts. However, this CAN may be helpful in determining the scope of work required for non-structural elements, components and systems affected by seismic repairs to existing buildings or structures. For OSHPD 1 and 4, the structural additions, alterations or repairs shall meet the requirements of Section 16A of the CBC. OSHPD 2 and 3 projects should be evaluated to insure that they meet the requirements of Chapter 16 of the CBC. If a designer has questions regarding the structural considerations on a project, they are encouraged to contact the appropriate OSHPD structural plan checking staff.

Temporary Construction

OSHPD recognizes that temporary construction is sometimes required to accommodate phasing of construction or to provide a transitional solution to a problem. Because each temporary installation is unique, OSHPD will review each installation on an individual basis. At the discretion of OSHPD, the facility must submit a letter that describes the type of temporary installation, the reason for the installation, how much time the temporary installation will exist, and any additional information required by OSHPD. OSHPD will use the written information to decide the extent of the plan or field review and the allowance of time for the installation. When appropriate, clients shall notify the local fire department, and the OSHPD project manager, to request that Department of Public Health, Licensing and Certification division staff attend the meeting. The OSHPD project manager facilitating their attendance contributes to the most effective use of the Licensing and Certification staff’s time and knowledge.

All required temporary construction must be shown on the plans or reviewed by OSHPD field staff. Temporary construction barriers must comply with CAN 9-1401. Temporary services or equipment must be provided and shown on the plans for projects that involve the replacement of an air handling unit, a medical air compressor, a medical vacuum pump, or similar types of

equipment unless it serves unoccupied space. The plans must show the precautions being taken to maintain code compliance in the areas affected by the temporary installation or condition. Temporary installations must not have a negative impact on existing systems nor cause unsafe conditions.

Pre-Design Conference
The flow charts and corresponding narratives are intended as a guide in establishing the level of compliance that OSHPD will require for projects that involve existing buildings and their systems. We encourage our clients to call or meet with OSHPD staff when the flow charts and narratives do not address a specific project or issue, or when it is unclear as to how to proceed with the proposed project.

Handicap Accessibility
The issues relating to handicap accessibility requirements when applied to remodel, repair, or alteration projects is extensive and is therefore addressed in CAN 2-11B, Accessibility in Health Facilities. Also, please refer to Section 1134B of the CBC.

OSHPD Requirements
This CAN has been developed to clarify the remodel requirements pursuant to Section 3401 and 3401.A of the CBC. The adoption matrix in the CBC shows that Chapter 34A has been adopted for OSHPD 1 and 4 only.

Chapter 34 of the CBC, as amended, has been adopted for OSHPD 2 and 3. Because there are no material differences between chapter 34 and 34A regarding the issues discussed in this CAN, the attached flow charts shall be used on OSHPD 1, 2, 3 and 4 projects.

Terms and Definitions
The following terms are utilized in this guideline. Definitions found in the California Building Standards Code apply.

Change in Function. A change in activity or service provided within the project limits that does not change the use, specific use, or occupancy.

Change of Occupancy/Use. Change of an occupancy or use defined in Chapter 3 of the CBC. Also see CBC Section 3406A.

Change of Occupant Load. Includes a change in the number of occupants and/or a change in the type of occupants including those identified or described as ambulatory, non-ambulatory, bedridden, restrained, developmentally disabled, inpatient, outpatient, non-patient, public, staff, adults, children and infants.

Current Code. California Building Standards Codes and referenced standards in effect at the time of application for plan review (see CAN 1).

Discovered Condition. An unknown condition found during construction.

Essential Electrical System (EES). This is the system described in California Electrical Code Sections 517-25 through 517-45.

Health Facility. Any health facility licensed pursuant to Section 1250 of the Health and Safety Code under the jurisdiction of the Office.

Load Capacity. This term refers to the rated ability of electrical equipment to carry loads calculated in accordance with the requirements of the California Electrical Code.

Load Capacity Verification. How one determines and documents load capacity. Refer to the California Electrical Code and PIN 38.

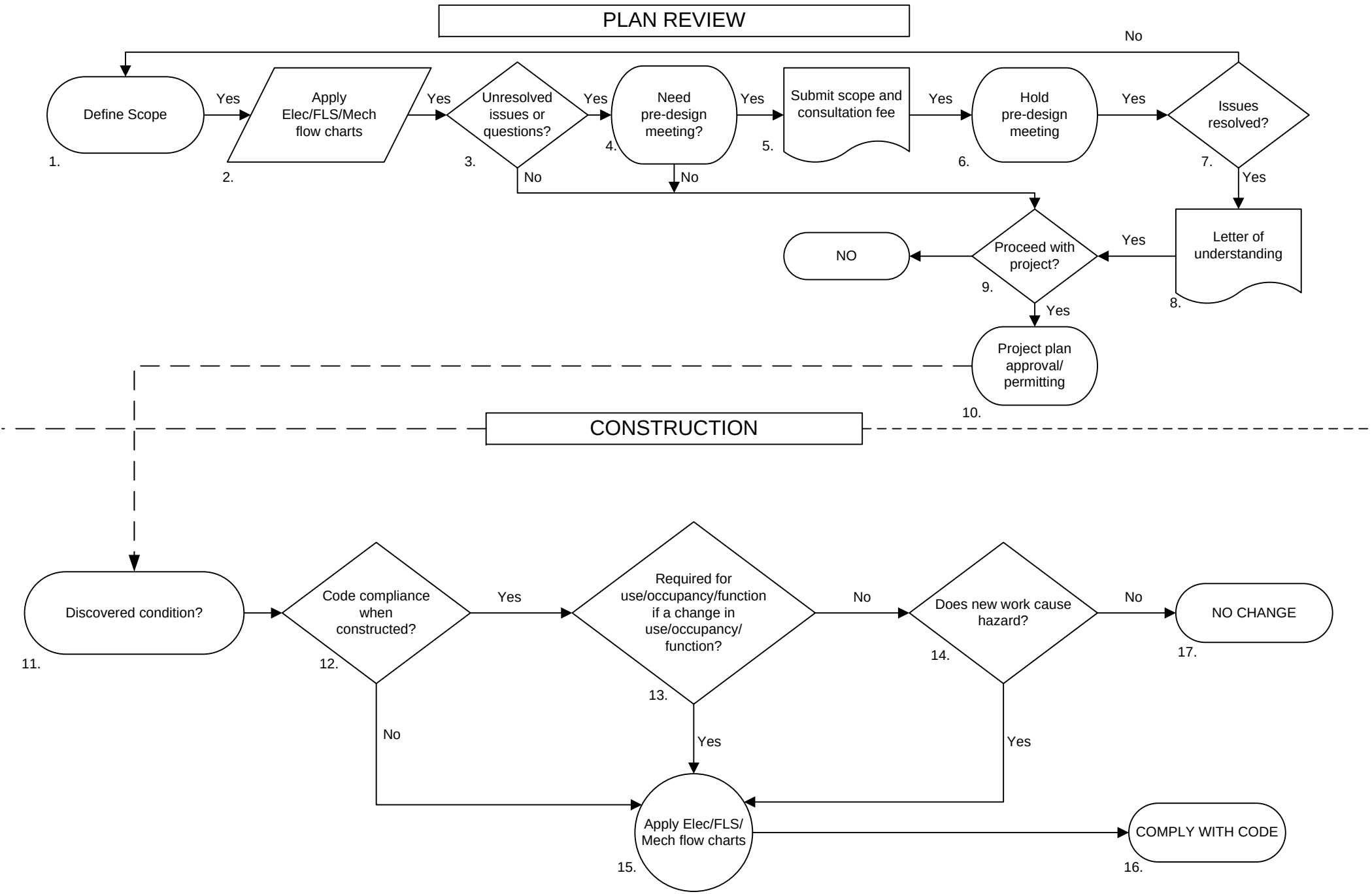
Non-Essential Electrical System (Non-EES). This is normal source system described in California Electrical Code Sections 517-30, 35.

Panel. Any panelboard, switchboard, motor control center, distribution panelboard, etc. Transfer switches and transformers are not defined as panels. Refer to California Electrical Code Articles 100 and 384.

Previous Code. An applicable code under which an existing condition was constructed or installed. It may be a previous edition of the California Building Standards Codes, the Uniform Building Codes, the Life Safety Code or other nationally recognized standards.

Original signed	8/8/2013
Paul Coleman	Date

HEALTH FACILITY REMODEL FLOW CHART



NARRATIVE FOR HEALTH FACILITY REMODEL FLOW CHART

The following comments apply to the Health Facility Remodel Flow Chart. The chart addresses the design and office plan review process on the upper portion and construction issues on the lower portion. The narrative comments are numbered and correspond with the numbered items on the flow chart.

1. Define Scope

a. It is the responsibility of the project team with their client to initially assess the needs of the facility in determining the project scope.

b. In developing project scope, consideration should be given to:

1. The project objectives
2. Analysis and assumptions of existing conditions
3. Key code assumptions (Title 24 and Title 22)
4. Applicable OSHPD CANs and PINs
5. Identify change of function or service.

2. Apply Mechanical / Plumbing, Electrical, Fire & Life Safety Remodel Flow Charts

Once the project scope is determined, apply Mechanical / Plumbing, Electrical, Fire & Life Safety remodel flow charts to the design alternatives to consider how applicable code requirements may impact the project.

3. Unresolved Issues or Questions

If the flow charts lead to a clear understanding of the level of compliance and resolutions of project concerns, the project may proceed.

4. Need Pre-design Meeting

If the flow charts do not lead to resolutions of project concerns or if questions regarding particular project issues are not addressed, it may be advisable to conduct a pre-design meeting with OSHPD.

5. Submit Scope & Consultation Fee

a. To take advantage of this service, it is necessary to request, in writing, a consultation pursuant to Section 129835, Health and Safety Code.

b. Prior to scheduling a pre-design meeting, OSHPD will require the applicant to submit the following:

1. Meeting Agenda (prepared by the project team) listing major points of discussion
2. Proposed floor plan with any new function or service complying with current CBC provisions, including sections 1224, 1225, and/or 1226 and Chapter 11B.
3. Existing floor plan with impacts on adjacent areas and services
4. Description / Scope of the remodel (design)
   (1) Define applicable code sections
   (2) Define applicable PINs & CANs
   (3) Possible Program Flexibility, alternate material and methods of construction, and alternate means of protection issues should be listed
5. Type of construction
6. Occupancy - existing and proposed with justification

7. Accessibility considerations, including path of travel
8. Mechanical / Plumbing /Electrical / Fire and Life Safety considerations
9. Preliminary exiting plan
10. Local Zoning / Land use agreements – Determine conditional use for outpatient versus hospital.

c. Fees - OSHPD consultation associated with a pre-design conference shall be billed at an hourly rate to recover actual cost.

6. Hold Pre-design Meeting

a. After OSHPD has had the opportunity to review the submitted information, the project team will be contacted to set up the pre-design meeting. It is incumbent on the project team to coordinate required meeting attendees and scheduling, i.e. Project Consultants, OSHPD (plan review and compliance, when necessary), Department of Public Health, Licensing and Certification, when necessary, and Facility Representatives. The OSHPD project manager must be contacted by the Architect of Record with the meeting information. The project manager will then invite the appropriate Department of Public Health, Licensing and Certification staff to the meeting.
b. It is envisioned that meetings will be held at OSHPD offices, but in special circumstances may be held at project team offices or project facilities.
c. During the meeting, the OSHPD staff will respond to the issues and concerns of the project team so they have a better understanding of how the project will proceed through the OSHPD process.

7. Issues Resolved

a. If the meeting results in resolution of the substantive issues regarding the project, it will be recorded in a letter of understanding.
b. If the meeting does not result in resolution of substantive issues or creates additional questions regarding the project, the project team should reassess the scope in response to the issues and, if necessary, reconvene another meeting with the OSHPD.
c. Issues that are not satisfactorily resolved in this process may be addressed through the OSHPD appeals process. See Section 7-159, California Administrative Code for appeals to the Hospital Building Safety Board. Also see the OSHPD website for information regarding the Comment, Process Review (CPR) process to resolve issues directly with OSHPD staff and/ or supervisors.

8. Letter of Understanding

a. Resolutions will be recorded in a letter of understanding. The letter of understanding will be made available to the project team and the Facility Representative, and will be maintained in the OSHPD project file. The intent of the letter is to document a common understanding for the Basis for Design, Basis for Plan Review and Basis for Field Compliance. The letter will be prepared by the design team and signed by the owner, design professional of record, OSHPD Regional Supervisor, and OSHPD Regional Compliance Officer.
b. It should be noted that the letter of understanding is only as good as the assumptions presented at the pre-design meeting. Changes in design, program requirements, project delivery or other unforeseen issues may necessitate modifications to the letter of understanding.

9. Proceed with Project

The letter of understanding will be utilized by the Office in its application of this CAN to your project.

10. Project Plan Approval and Permitting Process

a. The project should be submitted to OSHPD for review identifying any of the special conditions (program flexibilities, alternate designs, etc.) as resolved and recorded in the letter of understanding.
b. At completion of the plan review / approval process, any conditions recorded in the letter of understanding should be brought to the attention of the OSHPD Regional Compliance Officer at time of permitting.

11. Discovered Conditions

Existing non-complying conditions are encountered frequently during construction. It must be determined whether non-complying conditions may be allowed to continue or must be corrected in accordance with current building code.

12. Code Complying when Constructed

It must be determined if the discovered condition was in accordance with applicable codes when it was constructed or installed. See Section 3401A, CBC.

13. Required for Use/Occupancy/Function if a change in Use/Occupancy/Function

When a change of occupancy, use, or function occurs, it must be determined if the discovered condition is required for the new occupancy, use, or function. See Section 3403A.1, CBC.

14. Does new work cause Hazard

When new construction, elements or systems are provided, it must be determined if they cause an unsafe, unsanitary or hazardous condition or a life safety or fire risk. See Section 3403A.1, CBC.

15. Apply Electrical, Fire & Life Safety, Mechanical / Plumbing Remodel Flow Charts

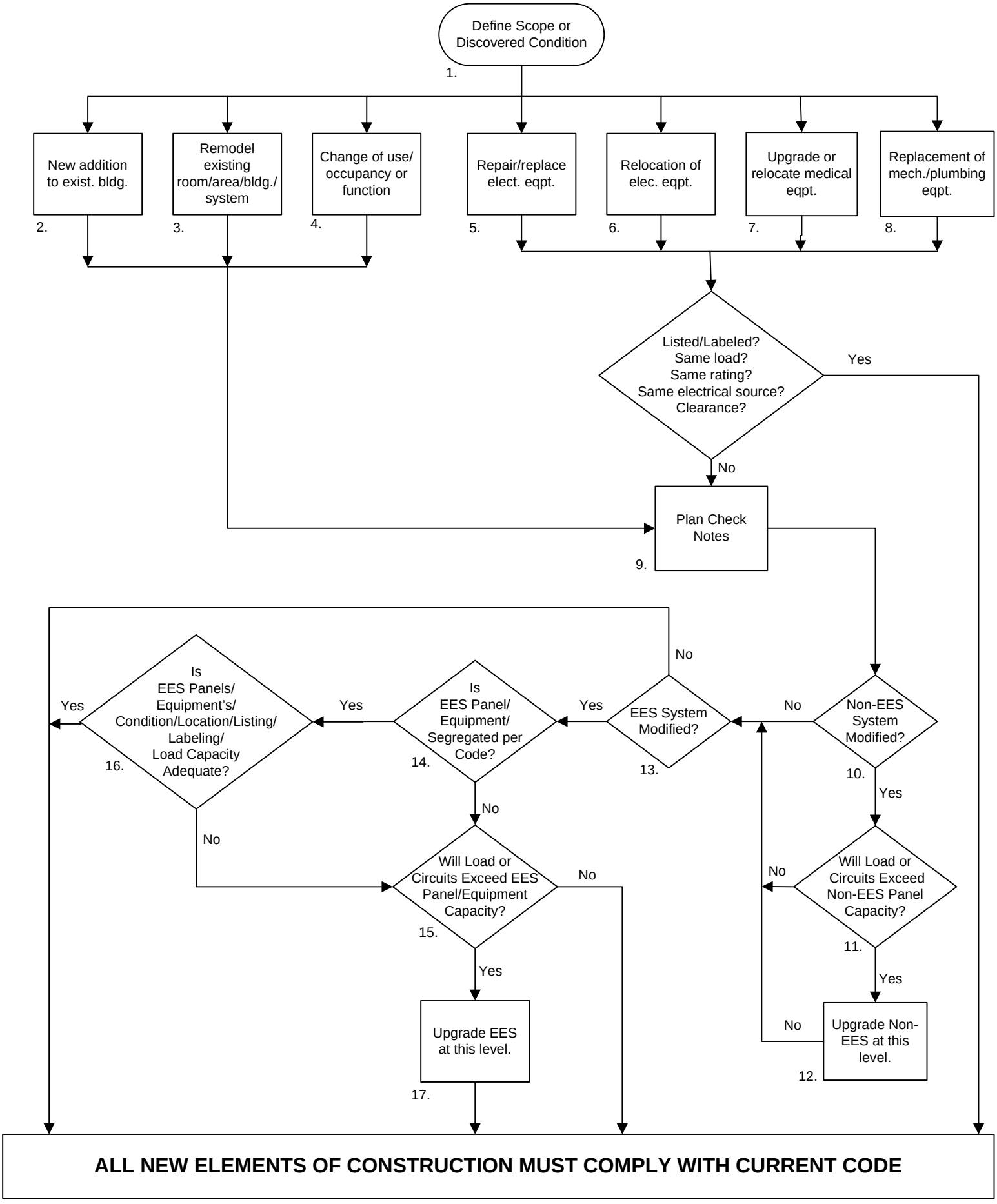
16. Comply with Code

Submit a post-approval document in accordance with Section 7-153, California Administrative Code (CAC).

17. No Change

No change or correction is required if the discovered condition was code compliant when constructed and if it is not otherwise required for change in occupancy, use, function or occupant load. Additionally, no change or correction is required if the new construction, elements or systems do not cause an unsafe, unsanitary or hazardous condition or a life safety or fire risk.

ELECTRICAL REMODEL FLOW CHART



NARRATIVE FOR THE ELECTRICAL REMODEL FLOW CHART

This narrative must be used with the Health Facility Remodel Flow Chart for Electrical Systems. The numbers shown on the Flow Chart correspond to the numbers shown below. The purpose of this narrative is to elaborate on the terminology used in the Flow Chart and to show the code requirements that OSHPD will enforce.

1. Define Scope or Discovered Condition

a. It is the responsibility of the project team with their client to initially assess the needs of the facility in determining the project scope.
b. In developing project scope, consideration should be given to:
   1. The project objectives
   2. Analysis and assumptions of existing conditions
   3. Key code assumptions (Title 24 and Title 22)
   4. Applicable OSHPD CANs and PINs
   5. Identify change of function or service.

2. New Addition to Existing Building

As the title states, this type of project adds floor space to an existing building. The systems affected by the scope of the project must meet current minimum code requirements. Existing electrical systems not part of the remodel project scope, but utilized for connection to the systems of the remodel project scope, must be upgraded only if load capacity limits are exceeded as shown in the lower portion of the electrical flow chart.

3. Remodel of Existing Room/Area/Building/System

The electrical systems directly involved in the scope of the project must meet current minimum code requirements. Existing electrical systems, not part of the remodel project scope but utilized for connection to the systems of the remodel project scope, must be upgraded only if load capacity limits are exceeded as shown in the lower portion of the electrical flow chart.

4. Change of Use/Occupancy or Function

An example of this type of situation would be a change of use from a general acute patient care area to skilled nursing beds or an administration area. Another example would be a change of use from a general acute patient care area to a critical care area, or an administration area to a patient care area. As indicated in the lower portion of the electrical flow chart; systems, wiring, panels, devices, etc., within the scope of construction would be required to comply with current code requirements. Existing electrical systems not within the scope of construction, but connected to/supplying systems, wiring, panels, devices, etc., within the scope of construction, would only need to be upgraded if load capacity limits are exceeded.

5. Repair/Replace Electrical Equipment

This type of project involves repair of existing electrical equipment or replacement of electrical equipment. The repair or replacement of electrical equipment must be accomplished in compliance with the California Electrical Code (CEC). That is, equipment must be listed, labeled, or certified by a Nationally Recognized Testing Laboratory (NRTL). The replacement

of a specific piece of electrical equipment must be replaced with equipment of the same type, electrical rating and physical size.

The installation of the equipment must also comply with current code requirements.

6. Relocation of Electrical Equipment

This type of project involves the simple relocation of electrical equipment. In this type of project, there is no change in the electrical source or load. The reinstalled equipment must meet current code requirements for the installation. The electrical system upstream and/or downstream would not need to be upgraded unless the existing load capacity limits have been exceeded.

7. Upgrade/Relocate Medical Equipment

When medical equipment is upgraded or relocated, the equipment, when finally installed, would be required to meet current code requirements for the actual installation. Equipment, when finally installed, must be listed, labeled or certified by a Nationally Recognized Testing Laboratory (NRTL). As indicated in the lower portion of the electrical flow chart, existing electrical systems not within the scope of construction, but connected to/supplying the medical equipment, would only need to be upgraded if load capacity limits are exceeded.

8. Replacement of Mechanical/Plumbing Equipment

Existing electrical systems serving or monitoring the mechanical equipment must be reinstalled to meet the requirements of current code. Existing electrical systems to be reconnected must be code complying in terms of the type of source and branch. That is, the source must be normal, life safety branch, critical branch, or equipment system, as required by current code. If the EES is a non-segregated EES, the existing electrical system to be reconnected must meet current code requirements for either normal source or emergency source connection. Existing electrical systems serving the replaced mechanical equipment do not require upgrade/segregation unless load capacity limits are exceeded as shown in the lower portion of the electrical flow chart.

9. Plan Check Notes

Load capacity verification shall be provided for panels, panel feeders, and panel feeder overcurrent protective devices at points in the electrical distribution system where modifications occur. A load summary shall be provided per the requirements of OSHPD Policy Intent Notice (PIN) 38. For a net load reduction on an affected panel where load is to be added, the requirement for load capacity verification is satisfied. For a net load addition on an affected panel, follow OSHPD PIN 38 for the acceptable means of providing load capacity verification. Also, as used herein, the word “panel” is defined as any panelboard, switchboard, motor control center, distribution panelboard, etc. Refer to the “Terms” section of this CAN and to PIN 38. Submission of verification of compliance with OSHPD PIN 38 for affected electrical panels does not relieve the Electrical Engineer from fully complying with Article 220 of the current edition of the CEC relating to load capacity verification for the electrical system.

All electrical systems, wiring, panels, devices, etc. within the scope of construction shall be code conforming.

10. Non-EES System Modified

This system is typically the normal source system described in Article 517.35 of the CEC. The non-EES/branch circuit will not be considered as modified if the scope of construction involves only a simple removal of a load or device. Relocation of an existing load or device, or the addition of a load or device, constitutes a modification of the non-EES/branch circuit.

A "yes" answer leads to block #11: "Will loads or circuits exceed non-EES equipment capacity?". A "no" answer leads to block #13, "EES system modified?".

11. Load or Circuits Exceed Non-EES Panel Capacity

This is the non-EES panel to which load is being added. If load capacity verification per OSHPD PIN 38 indicates that this panel will be overloaded by the load addition, the panel, its feeder and feeder overcurrent protective device must be brought into conformance with current code requirements. The next panel electrically upstream towards the source must also undergo load capacity verification per the requirements of OSHPD PIN 38. If it is also overloaded, it must also be brought into conformance with current code requirements along with its feeder and feeder overcurrent protective device. It is not the intent of this paragraph to relieve the Electrical Engineer from the responsibility of performing load capacity verification calculations on affected feeders all the way back to the main service entrance or to the terminals of a separately derived system as required by Article 220 of the CEC.

A "yes" answer directs one to block #12. A "no" answer directs one to block #13.

12. Upgrade Non-EES at this Level

Replace panel, panel feeder, and panel feeder overcurrent protective device per current code requirements. Transformers, transfer switches and other electrical devices which are not panels but which occur at a level in the distribution system where upgrade is required, shall also be upgraded accordingly to meet current code requirements.

13. EES System Modified

This system is the Essential Electrical System described in Articles 517.25, through CEC 517.45 of the CEC. The EES/branch circuit will not be considered as modified if the scope of construction involves only a simple removal of a load or device. Relocation of an existing load or device, or the addition of a load or device, constitutes a modification of the EES/branch circuit.

A "no" answer leads to the box at the lower portion of the flow chart which delivers the reminder that all new elements of construction must comply with the current code.

A "yes" answer leads one to block #14.

14. EES Panel/Equipment Segregated per Code

Is the panel to which load is being added segregated per the requirements of Articles 517.25 through CEC 517.45 of the CEC?

A "yes" answer leads to block #16. A "no" answer leads to block #15.

15. Load or Circuits Exceed EES Panel/Equipment Capacity

This is the EES panel to which load is being added. If load capacity verification per OSHPD PIN 38 indicates that this panel will be overloaded by the load addition, the panel, its feeder and feeder overcurrent protective device must be brought into conformance with current code requirements. The next panel electrically upstream towards the source must also undergo load capacity verification per the requirements of OSHPD PIN 38. If it is also overloaded, it must also be brought into conformance with current code requirements along with its feeder and feeder overcurrent protective device. It is not the intent of this paragraph to relieve the Electrical Engineer from the responsibility of performing load capacity verification calculations on affected feeders all the way back to the main service entrance or to the terminals of a separately derived system as required by Article 220 of the CEC.

Non-segregated EES panels which are not overloaded do not need to be upgraded. However, new loads added to the panel must be segregated at the branch circuit level. That is, new loads must be connected to an existing or new branch circuit so that all loads on that circuit are either life safety branch loads, critical branch loads, or equipment system loads.

16. EES Panel's/Equipment's Condition/Location/Listing/Labeling/Load Capacity Adequate

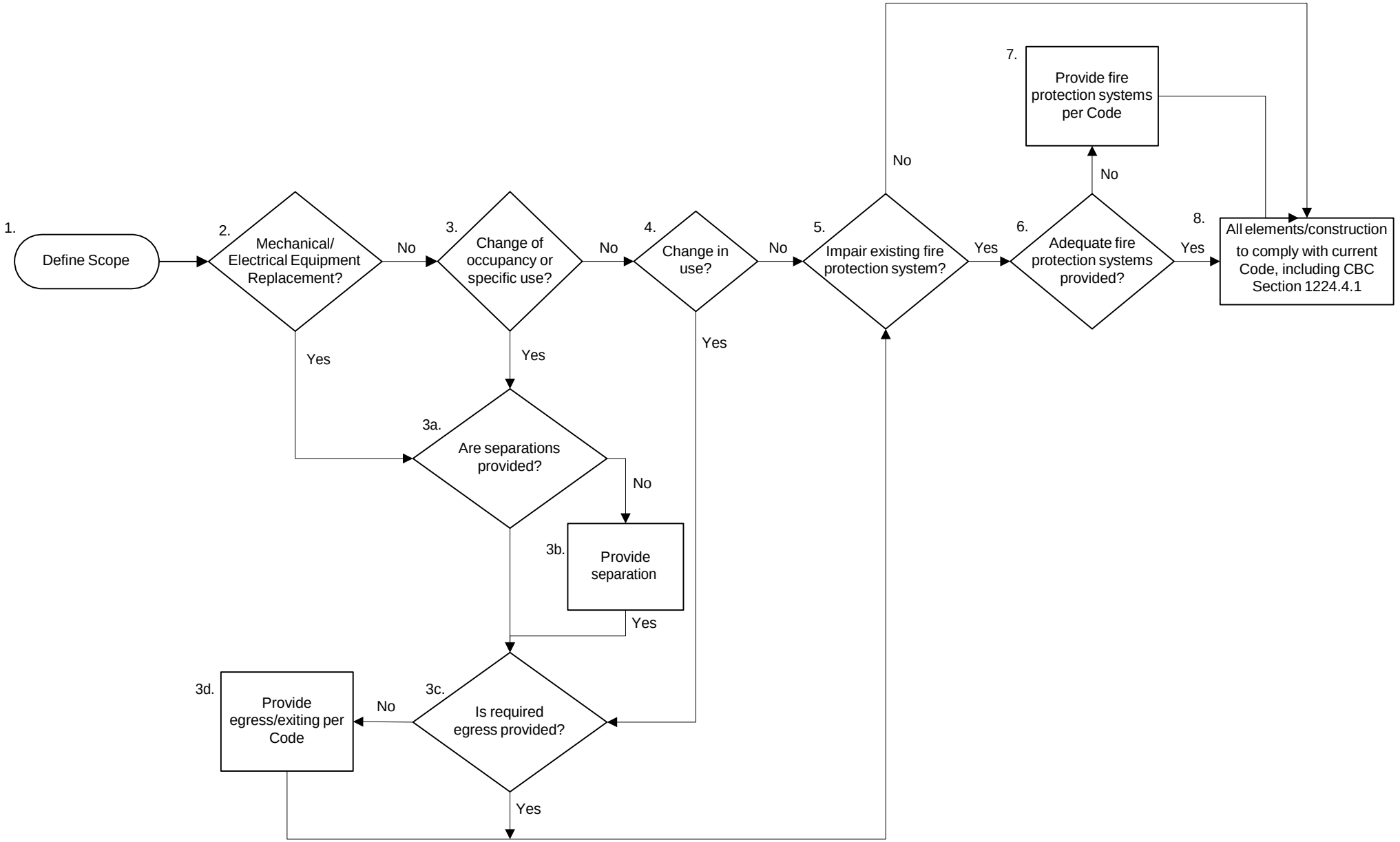
One arrives at this block with a "yes" answer to the question, "Is existing EES panel/equipment segregated per code?" If the EES panel/equipment which is proposed to be connected to electrical systems within the remodel project's scope of construction is not in proper working condition, is not located properly per current code requirements, is not adequately listed, labeled or certified per the requirements of Article 110.2 of the CEC, or does not have adequate load capacity per OSHPD PIN 38, one is directed to block #17 which requires upgrade of the EES at this level.

17. Upgrade EES at this Level

Where an existing segregated or non-segregated EES panel becomes overloaded based on the requirements of OSHPD PIN 38, the panel must be replaced with code conforming, segregated panels and panel feeders. If there are life safety branch loads, a life safety branch panel shall be provided with a separate feeder back to the serving panel electrically upstream towards the source. If there are critical branch loads, a critical branch panel shall be provided with a separate feeder back to the serving panel electrically upstream towards the source. If there are equipment system loads, an equipment system panel shall be provided with a separate feeder back to the serving panel electrically upstream towards the source. Existing non-segregated branch circuits not modified within the scope of construction per narrative note #13, will not be required to be segregated. However, non-segregated branch circuits shall not be fed from the life safety branch panel per Article CEC 517.32 of the CEC. Transformers, transfer switches and other electrical devices which are not panels but which occur at a level in the distribution system where upgrade is required shall also be upgraded to comply with current code requirements.

Where an existing segregated EES panel has adequate load capacity for the proposed new load, but is not in proper working condition, is not located properly per current code requirements, or is not listed, labeled, or certified, it shall be brought into conformance with current code requirements.

FIRE & LIFE SAFETY REMODEL FLOW CHART



NARRATIVE FOR FIRE AND LIFE SAFETY REMODEL FLOW CHART

This narrative must be used with the Health Facility Remodel Flow Chart for Fire and Life Safety Systems. The numbers shown on the Flow Chart correspond to the numbers shown below. The purpose of this narrative is to elaborate on the terminology used in the Flow Chart and to show the code requirements that OSHPD will enforce.

1. Define Scope

a. It is the responsibility of the project team with their client to initially assess the needs of the facility in determining the project scope.
b. In developing project scope, consideration should be given to:
   a. The project objectives
   b. Analysis and assumptions of existing conditions
   c. The protection of existing construction and fire/life safety conditions to maintain a safe facility.
   d. Key code assumptions (Title 24 and Title 22)
   e. Applicable OSHPD CANs and PINs
   f. Identify change of use, specific use, or occupancy.

2. Mechanical/Electrical Equipment Replacement

Examples include but are not limited to: boilers, chillers, air handlers, etc.

3. Change of Occupancy or Specific Use (refer to flowchart items 4a-4d)

Based upon the scope, it must be determined if a change of occupancy or a change of specific use, as identified in CBC Chapter 3, will occur as a result of the project.

3a. Separations Provided in Accordance with CBC Chapters 3 and 28

3b. Separations Provided in Accordance with CBC Chapters 3, 5, and 28

Provide separations in accordance with CBC Sections 302.1 and 504.

3c. Required Egress Provided

When changes of occupancy, specific use, or change in floor area occur that create a change in egress requirements, it must be determined if compliant egress is provided. The following conditions must be evaluated for this determination in accordance with CBC Chapter 10:

a. Maximum travel distance maintained or exceeded
b. Minimum exit width provided
c. Number of exits provided
d. Distance between exits provided
e. Fire-rated separations provided
f. Means of Egress compliant with SPC and NPC requirements per CBC Sections 1003.1.1.1 and 1003.1.1.2

Egress cannot be considered as adequate if not in compliance with provisions of current or previous code.

3d. Provide Egress
If determined that compliant egress is not provided, egress must be provided in accordance with CBC Chapter 10.

4. Change in Use
If there is a change in use, then a determination must be made if adequate egress is provided (reference CBC Chapter 10, Table 1004.1.1 and Chapter 3, Section 302).

5. Impair Existing Fire Protection Systems
It must be determined if the project causes or creates a deficiency in the existing protection systems including fire dampers, fire/smoke dampers, smoke control, fire sprinkler, and fire alarm systems. If any fire protection system is impaired during the course of the project scope, these systems are to be included as part of the project. These would include fire dampers, fire/smoke dampers, smoke control, fire sprinkler, and fire alarm systems.

OSHPD Policy Intent Notice 14 shall be followed should these fire systems be impaired from performing during construction. All changes, modifications, or additions must comply with current code. CBC Chapter 35 shall be consulted for adopted codes.

6. Adequate Fire Protection Systems Provided
Projects must be evaluated for adequate fire dampers, smoke/fire dampers, and fire systems including smoke control, fire sprinkler, and fire alarm systems.

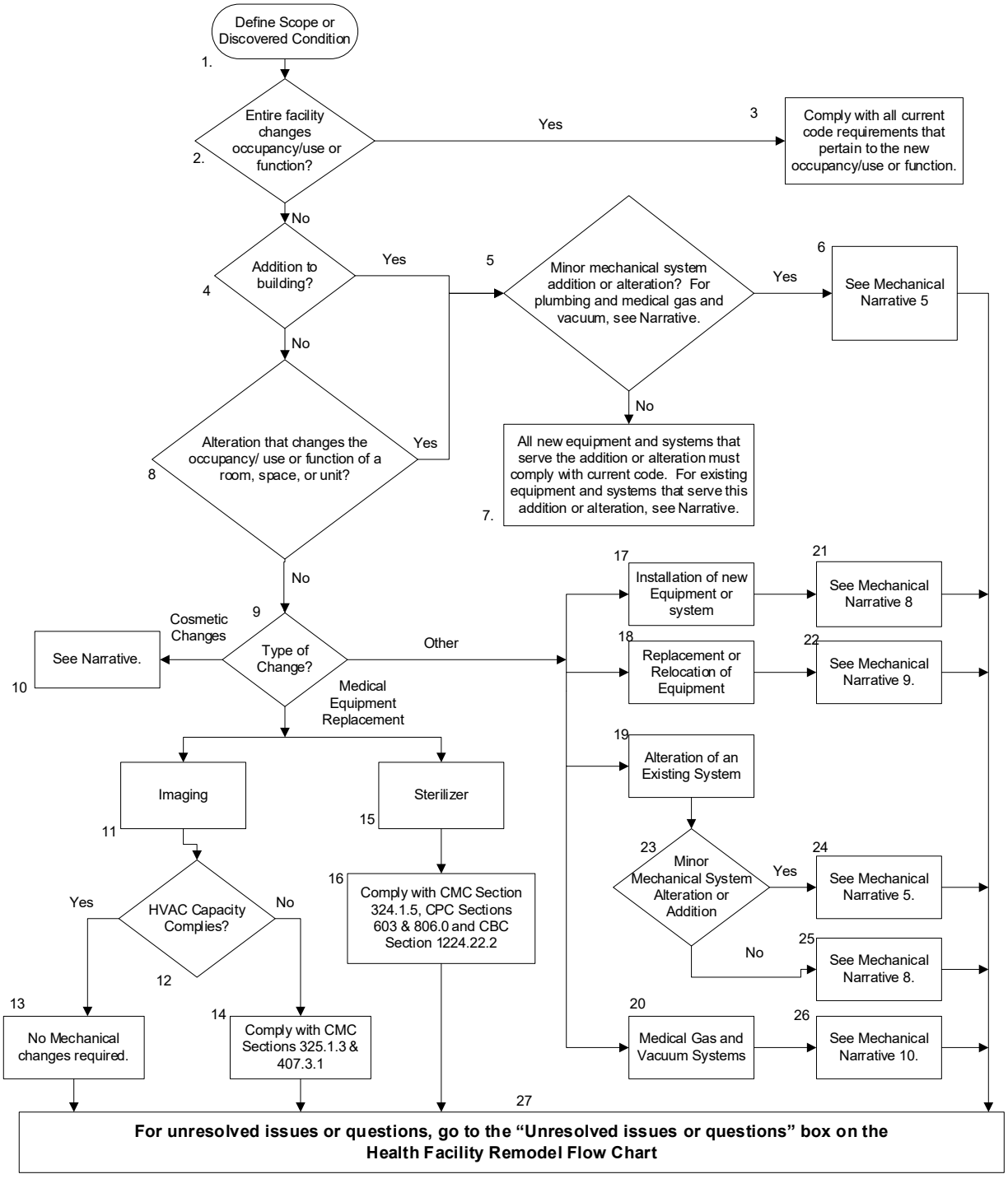
See CBC Chapters 3, 7, and 9, or an approved Alternate Means of Protection (CBC Section 104.11).

Fire protection systems are considered to be adequate when they are in compliance with the current California Building Standards Code, or are in compliance with the applicable code when they were installed.

7. Provide Fire Protection Systems per Code
If determined that adequate fire protection systems are not provided, systems must be provided in accordance with the California Building Standards Code or an approved Alternate Method of Compliance, in accordance with CBC Section 104.11.

8. All Elements/Construction to Comply with Current Code
All new construction, elements, and systems associated with new additions and remodel projects must comply with the CBC, including Section 1224.4.1 Services/Systems and Utilities, or an approved Alternate Method of Compliance, in accordance with CBC Section 104.11.

MECHANICAL, PLUMBING, AND MEDICAL GAS AND VACUUM SYSTEMS REMODEL FLOW CHART



3/3/14

NARRATIVE FOR MECHANICAL, PLUMBING, AND MEDICAL GAS AND VACUUM SYSTEMS REMODEL FLOW CHART

This narrative must be used with the Health Facility Remodel Flow Chart for Mechanical, Plumbing, and Medical Gas and Vacuum Systems. The numbers shown on the Flow Chart correspond to the numbers shown below. The purpose of this narrative is to elaborate on the terminology used in the Flow Chart and to show the code requirements that OSHPD will enforce. The "project boundaries" for each project or phase is defined by the physical barrier separating area(s) vacated for work from those remaining occupied. The definition does not preclude work outside the boundaries, as permitted by facility operations. Locations of temporary construction barriers must be identified on all plans. Work to create temporary barriers will generally appear on architectural plans.

At the discretion of OSHPD, the design professional may be requested to submit design calculations or measurements to verify that the existing systems and equipment can achieve code compliance.

Note: See the Fire and Life Safety Flow Chart and Narrative for fire damper, smoke damper and fire sprinkler system requirements.

1. **Define Scope**
   a. It is the responsibility of the project team with their client to initially assess the needs of the facility in determining the project scope.
   b. In developing project scope, consideration should be given to:
      1. The project objectives
      2. Verification and analysis of existing conditions
      3. Key code assumptions (Title 24 and Title 22)
      4. Applicable OSHPD CANs and PINs
      5. Identify change of function or service. Specific functions are identified in Chapter 3 and Section 1224, California Building Code (CBC). Identify rooms with the California Mechanical Code (CMC) Table 4-A nomenclature.

2. **The following are examples of an entire facility changing function:**
   a. Acute care hospital changes to a skilled nursing facility.
   b. Skilled nursing facility changes to an acute care hospital.
   c. Skilled nursing facility changes to an intermediate care facility.

3. **For definition of building "addition" see definition in CBC Section 202.**

4. **OSHPD will use the following criteria as guidelines for deciding if an addition or alteration to an existing mechanical system will be considered as minor:**
   a. The project does not involve a room or area shown in Table 315, CMC.
   b. The project does not involve an Angiography Room, a Protective Environment Room, or an Airborne Infection Isolation Room.
   c. The building addition or altered space does not contain more than 2000 cfm of supply, return, or exhaust air.

d. The project does not use more than 10% of the connected existing mechanical system capacity. Mechanical systems include air handling and distribution systems, hot water systems, chilled water systems, steam, etc. If existing mechanical systems are used to serve the building addition, the addition must not cause the capacity of the existing systems to be exceeded.
e. The project involves only balancing of air or water systems.

The design professional should communicate with OSHPD for determining if an addition or alteration to an existing mechanical system will be considered as minor in accordance with the above guidelines.

The California Plumbing Code (CPC) does not have a section for **minor** additions or alterations to plumbing systems. Additions or alterations may be made to any plumbing system without requiring the existing plumbing system to comply with all the requirements of the CPC, provided the addition or alteration conforms to that required for a new plumbing system. Additions or alterations must not cause an existing system to become unsafe, insanitary or overloaded. See Appendix Chapter 1, Section 101.5.1, CPC.

The 2005 edition of NFPA 99 does not have a section for minor additions or alterations to medical gas and vacuum systems. See item 10 of this narrative.

5. **Minor additions or alterations** to existing **mechanical** systems may be installed in accordance with the code in effect at the time the original installation was made. The design professional is responsible for giving OSHPD sufficient information to decide if the original installation complies with the code in effect at the time of the installation. If existing mechanical systems are used to serve the building addition, the addition must not cause the capacity of the existing systems to be exceeded. Measures must be taken to assure that the modifications within the project boundaries do not impact airflow to spaces outside the project boundaries , see Narrative 15 for additional information. Plans must contain specific information and procedures to define the measures required.

6. **For definition of "alteration"** see the definition in CBC Section 202. Specific functions are identified in CBC Section 1224. Identify rooms with CMC Table 4-A nomenclature.

7. **All existing mechanical and plumbing equipment and systems** located within the scope of the project must comply with all current code requirements. For existing equipment or systems that serve the addition or alteration and are not located within the project boundaries, OSHPD will enforce the following code requirements:
   a. Air-Handling Units, Fan Coil Units, Forced-Air-Type Central Furnaces and exhaust fans.
      1. Filter efficiency, filter location, and filter gages. See Section 408, CMC.
      2. Pressure relationship and ventilation requirements for areas within the project boundaries. See Section 407.3.1, CMC. Measures must be taken to assure that the modifications within the project boundaries do not impact airflow to spaces outside the project boundaries, see Narrative 15 for additional information. Plans must contain specific information and procedures to define the measures required.
      3. Emergency electrical power for equipment serving areas or rooms in Table 315, CMC when required by Section 316, CMC.

4. Indoor temperature and humidity requirements, see Section 315, CMC.
5. Automatic shutoff for smoke control. See Section 609, CMC.
6. Use of corridor or space above ceiling as a plenum. See Sections 407.4.1.3 and 407.4.1.4, CMC.

b. All other types of existing mechanical, plumbing, and medical gas and vacuum equipment and systems.
   1. If the existing equipment or system has sufficient capacity to serve the addition or alteration, OSHPD will allow the equipment or system to remain as installed. Equipment or systems that do not have sufficient capacity must be replaced or supplemented.

c. See item 10 for additional medical gas and vacuum system requirements.

d. All services/systems and utilities serving building additions shall comply with CBC 1224.4.1.

8. For alterations to existing mechanical or plumbing equipment or systems, or the installation of new equipment, fixtures, or systems, OSHPD will require the alterations or installation to comply with current code within the project boundary. Mechanical alterations must not cause an existing system to become unsafe or create unhealthy or overloaded conditions. Measures must be taken to assure that the modifications within the project boundaries do not impact airflow to spaces outside the project boundaries, see Narrative 15 for additional information. Plans must contain specific information and procedures to define the measures required. Plumbing alterations must not cause an existing system to become unsafe, insanitary or overloaded.

9. For the replacement or relocation of mechanical or plumbing systems or equipment, OSHPD will enforce the following code requirements:

a. Air-Handling Units, Fan Coil Units, and Forced-Air-Type Central Furnaces.
   1a. Filter efficiency, filter location, and filter gages (see CMC Section 408.0, OSHPD 1, 3 and 4).
   1b. Filter efficiency, filter location, and filter gages. See CMC Section 408.0, except where two filter banks are required in Table 4-C, filter bank No. 1 (30% filter) shall be optional. (OSHPD 2)
   2. Condensate drain (see CMC Section 309, and CPC Chapter 8).
   3. Clearances and access (see CMC Sections 303 and 304).
   4. Emergency electrical power (see CMC Section 316, OSHPD 1 and 4 only).
   5. Outdoor air intake location (see CMC Sections 407.2, 414 and311.3, and CPC Section 906.2).
   6. Indoor temperature and humidity requirements (see CMC Section 315).
   7. Automatic shutoff for smoke control (see CMC Section 609).
   8. Air Balance (comply with Narrative 14).
   9. Outdoor air changes and total air changes (see CMC Table 4-A, OSHPD 1, 3, and 4).
   10. Fan operation (see CMC Section 407.1.1).
   11. Use of corridor or space above ceiling as a plenum (see CMC Sections 407.4.1.3 and 407.4.1.4).

b. Steam and Hot Water Boilers.
   1. All requirements (see CMC Chapter 10).
   2. Room size (see CMC Section 303).

3. Number of boilers (see CMC Section 314).
4. Emergency electrical power (see CMC Section 316).
5. Exit access doorways (see CBC Section 1015.3).
6. Temperature requirements (see CMC Section 314).
7. Combustion air requirements (see CMC Chapter 7).

c. Refrigeration Systems.
   1. All requirements (see CMC Chapter 11).

d. Exhaust Fans.
   1. Exhaust fan location (see CMC Section 407.1.2).
   2. Exhaust fan operation (see CMC Section 407.1.1).
   3. All requirements (see CMC Chapter 5).
   4. Emergency electrical power (see CMC Section 316).
   5. Exhaust discharge. Minimum 25' clearance from outside air intakes (see CMC Section 407.2.1).
   6. Air balance (comply with Narrative 14).

e. Evaporative Coolers.
   1. All requirements (see CMC Section 405).

f. Plumbing Fixture.
   1. All requirements (see CPC Table 4-2).
   2. Shower and bathtub valves (see CPC Section 418.0).
   3. All requirements (see CPC Chapter 4).
   4. See CPC Sections 311 and 316.2.
   5. Sterilization (see CPC Section 609.9).

g. Water Heater.
   1. All requirements (see CPC Chapter 5).
   2. All requirements (see CPC Sections 612.1, 612.2, 612.4, and 612.5).

h. Fuel Storage Tanks.
   1. Comply with Policy Intent Notice (PIN) 2.

10. For the replacement, relocation or alteration to medical gas or vacuum systems or equipment, OSHPD will enforce the code requirements shown below. The cited code sections are from the 2005 edition of NFPA 99.

a. For alterations of existing systems, OSHPD will require all new work within the project boundaries to comply with NFPA 99. The existing systems may have their use continued, if the systems do not present a distinct hazard to life (see NFPA 99 Sections 1.2, 1.3, and 5.1, and the corresponding Sections in the 2005 edition "Healthcare Facilities Handbook," published by the NFPA. Testing of systems, including existing systems breached by project work, must comply with NFPA 99 Section 5.1.2.
b. Medical Air Compressor Replacement (comply with NFPA 99, Figure A.5.1.3.5 and applicable code sections).
c. Medical Vacuum Pump Replacement (comply with NFPA 99, Figure A.5.1.3.6 and applicable code sections).
d. Medical Gas Cylinder Manifold/Controls Replacement (comply with NFPA 99, Figure A.5.1.3.4.14 and applicable code sections.
e. Bulk Medical Gas System Alteration or Replacement (comply with NFPA 99, Figure A.5.1.3.4.10, applicable code sections, and NFPA 55.

f. Medical Gas Cylinder Storage Alteration (comply with the California Fire Code Section 3006).

11. **Cosmetic Change.** A cosmetic change is a superficial or decorative change to a room. A cosmetic change must not change the function, area, or volume of the room. Examples of cosmetic changes are: replacement and/or relocation of diffusers, registers, or grilles; painting; new wall coverings; new floor finishes; and similar work.

    The FREER Manual contains requirements for most projects considered cosmetic changes. For cosmetic changes that are not in the FREER Manual contact OSHPD mechanical staff. For cosmetic changes that involve the replacement of diffusers, or grilles, the room must comply with CMC Section 407.3.1.

12. **Examples of imaging equipment are**: X-ray equipment, Gamma Camera, CT Scanner, and MRI.

13. **The design professional must provide** sufficient information to OSHPD to show the existing HVAC system can maintain the proper room temperature required by CMC Section 315.1.3. OSHPD recommends the design architect or engineer determine that the HVAC system is capable of maintaining the room environmental conditions within the parameters recommended by the imaging equipment manufacturer. The final air balance in the space must comply with CMC Section 407.3.1. Where changes in airflow are necessary, measures must be taken to assure that the modifications within the project boundaries do not impact airflow to spaces outside the project boundaries (see Narrative 15 for additional information). Plans must contain specific information and procedures to define the measures required.

14. **Air Balance.** For projects involving the replacement of a supply, return or exhaust fan unit, the air distribution system shall be rebalanced in accordance with the following requirements:
    a. For acute care hospitals (OSHPD 1). The supply, return and exhaust airflows in the entire area served by the replaced unit shall be rebalanced to comply with CMC Table 4-A. For projects replacing a single component of a fan or air handler unit (i.e., fan scroll, cooling coil, heating coil, etc.) with a replacement component of the same capacity, the rebalance may consist of measuring the system airflow prior to replacing the component and then re-establishing the same system airflow after the component has been replaced. Replacement of multiple components will require the entire air distribution system to be rebalanced. Rebalancing shall not be required for fans serving entirely non-patient care areas.
    b. For skilled nursing facilities, licensed clinics, and correctional treatment centers (OSHPD 2, 3 and 4). Rebalancing the air distribution systems is not required if:
        1. There is no change to the system design airflow.
        2. There is no change to the air distribution system.
        3. The replaced fan system does not serve an operating room, cardiac cath lab, intensive care area, recovery room, nursery, airborne infection isolation room or a protective environment room.

        If any of these conditions are not met, then the entire air distribution system shall be rebalanced as described in Item 14a above.

c. General requirements: When rebalancing is required, the entire area served by the supply, return or exhaust fan(s) being replaced shall be rebalanced. Mechanical plans shall contain all necessary information to demonstrate design airflows in areas served by the equipment, and shall comply with the ventilation and air balance requirements in CMC Table 4-A. Plans shall include room name and number, and room volume of each room served by the unit. If the actual room name does not match an area designation in CMC Table 4-A, then an equivalent Table 4-A room designation based upon the functional use of the space shall be provided on the plans. Adjacent rooms or spaces not served from the replaced unit that have their airflow or air balance impacted must also comply with CMC Table 4-A for both ventilation and air balance.

15. Airflow Measurements - General Guidance and Best Practices

When measures must be taken to assure that modifications within the project boundaries do not impact airflow to spaces outside the project boundaries, several methods are commonly available to achieve compliance. The following methods are identified as common practices to achieve compliance. It is up to the design professional to evaluate which method or combination of methods are most appropriate for their design; however, OSHPD plan review comments may arise if the plans do not specifically address all measures necessary to demonstrate compliance.

a. Measure Outlets. The most common method is to measure and document the airflow of all outlets on the duct system to be modified prior to demolition work. At the completion of the project (and each separate phase) re-measure all outlets again and re-balance the duct system as necessary to re-establish documented measured airflows.
b. Duct Traverses. Branch ducts that are outside the project boundaries but served by the same HVAC system that serves the remodel project, duct (pitot) traverses may be taken prior to demolition work. At the completion of the project (or phase of work) re-measure these same duct traverses and re-balance duct system as necessary to re-establish the original measured airflows. Plans must show specific locations duct traverses are to be taken. New branch duct balancing dampers may have to be installed to achieve pre-demolition airflows if they do not exist at the time of the pre-demo airflow measurements.
c. Unchanged Airflow. If the remodel project re-distributes the existing airflow within the project boundaries such that ducts beyond the project boundaries do not experience a change in airflow, then measures beyond the project boundaries are not necessary. Use of this method requires recent documented airflow measurements be taken within the project boundaries prior to the design submission to OSHPD to establish the existing quantity of airflow that will be re-established.
d. Bypass Method. The bypass method is normally used only during construction to allow the contractor to construct the remodel without requiring elaborate or costly re-balancing effort outside the construction boundary during construction. Capping off ducts inherently causes airflow changes throughout the rest of the duct system unless the system has very specific volume controls built into the existing design. In lieu of capping off ducts, airflow to a remodel space can be measured and a bypass duct with a balancing damper can be installed such that the net supply and exhaust (or return) airflow remains constant throughout the rest of the system. The bypass duct shall comply with CMC Chapter 6.
e. Pressure Independent Systems. This method can be used on newer HVAC systems that have pressure independent supply air terminal units with variable frequency drive (VFD) volume control of the main supply fan. Such systems normally do not require

measurements be taken on the supply system, however, the plans must describe the existing system in sufficient detail that the use of this method can be allowed. Dual-duct systems will also tend to be self balancing and do not generally require balancing precautions. These simplifications do not generally apply to return or exhaust systems since they are not normally designed as pressure independent systems.

f. Comply with Current Code. Another method is to make affected areas outside the project boundaries to comply with current code requirements, namely CMC Table 4-A. In this case, pre-demolition airflow measurements are not required.

When fan speed changes are made to systems that are not pressure independent, the entire system must be rebalanced to maintain existing airflows to areas outside the project boundaries. For phased projects, rebalancing shall be completed at each phase to maintain existing airflows to areas outside the project boundaries. Corridors or areas that interface with the project boundaries may require rebalancing to ensure their original air balance is maintained.

A common question is: “Do I have to take measurements of the entire duct system?” Not necessarily, especially for relatively small projects. As you travel upstream in the duct system towards the fan, the percentage of project air to total air quantity decreases. When the percentage of project air is reduced to the point that air balancing tolerances exceed the quantity of project air, further upstream duct measurements are not necessary. Also, regardless of the type of method used, the relative air balance of a room (equal, negative or positive) must be maintained. Thus, even if the project only involves supply air modifications, the return and/or exhaust outlets to a room or space may need to be measured to ensure relative air balance of the room or space remains unchanged. The standard air balancing tolerances specified by the AABC and NEBB Standards are acceptable.