

COMPLIANCE CHECKLIST

IP18: Radiation Therapy

The following checklist is intended to be used in the plan review applications for health care facilities submitted to the Massachusetts Department of Public Health. This checklist summarizes and references the applicable requirements from the Licensure Regulations and the 2014 Edition of the FGI Guidelines for Design and Construction of Hospitals and Outpatient Facilities. Applicants must verify compliance of the plans submitted to the Department with all referenced requirements from the Licensure Regulations and FGI Guidelines when completing this Checklist. A separate Checklist must be completed for each nursing unit, hospital or clinic department, or clinical suite.

Other jurisdictions, regulations and codes may have additional requirements which are not included in this checklist, such as:

- NFPA 101 Life Safety Code (2000) and applicable related standards contained in the appendices of the Code
- State Building Code (780 CMR)
- Joint Commission on the Accreditation of Health Care Organizations
- CDC Guidelines for Preventing the Transmission of Mycobacterium Tuberculosis in Health Care Facilities
- USP 797
- Accessibility Guidelines of the Americans with Disabilities Act (ADA)
- Architectural Access Board Regulations (521 CMR)
- Local Authorities having jurisdiction.

Instructions:

1. All requirement lines must be completed according to the following instructions and included in the plan submissions for Self-Certification Process or Part II of the Abbreviated Review Process.
2. This checklist must be completed by the project architect or engineer based on the design actually reflected in the plans at the time of completion of the checklist.
3. Each requirement line (___) of this Checklist must be completed exclusively with one of the following symbols, unless otherwise directed in the checklist. If a functional space is not affected by a renovation project, the symbol "E" may be indicated on the requirement line (___) before the name of the functional space (associated requirements on indented lines below that name, or associated MEP requirements do not have to be completed in this case). If more than one functional space serves a given required function (e.g. patient room or exam room), that clarification should be provided in the Project Narrative, and the requirement lines are understood to only address the functional spaces that are involved in the project.

X = Requirement is met, for new space, for renovated space, or for existing direct support space for an expanded service.

= Check box under section titles or individual requirements lines for optional services or functions that are not included in the project area.

E = Requirement relative to an existing suite or area that has been *licensed* for its designated function, is *not affected* by the construction project and *does not pertain to a required direct support space* for the specific service affected by the project.

W = Waiver requested for specific section of the Regulations or FGI Guidelines, where hardship in meeting requirement can be demonstrated (a Physical Plant Waiver Form must be completed for each waiver request).

4. All room functions marked with "X" must be shown on the plans with the same name labels as in this checklist.
5. Mechanical, electrical & plumbing requirements are only partially mentioned in this checklist. The relevant section of the FGI Guidelines must be used for project compliance with all MEP requirements and for waiver references.
6. Oxygen, vacuum, medical air, and waste anesthesia gas disposal outlets (if required) are identified respectively by the abbreviations "OX", "VAC", "MA", & "WAGD".
7. Requirements referenced with "FI" result from formal interpretations from the FGI Interpretations Task Group.
8. The location requirements including asterisks (*) refer to the definitions of the Glossary in the beginning section of the FGI Guidelines.

Facility Name:

DoN Project Number: (if applicable)

Facility Address:

Satellite Name: (if applicable)

Building/Floor Location:

Satellite Address: (if applicable)

Submission Dates:

Project Description:

Initial Date:

Revision Date:

Architectural Requirements

Building Systems Requirements

2.2-3.7

RADIATION THERAPY

2.2-3.7.2

EXTERNAL BEAM RADIATION THERAPY SUITE

check if not included in project

2.2-3.7.2.2

___ Radiation therapy room

Space Requirements:

(1)

(a) ___ Sized for equipment

(b) ___ accommodates access to equipment for patient on stretcher

(c) ___ accommodates medical staff

access to equipment & patient

(d) ___ accommodates service access to equipment

(2) ___ sized in compliance with

manufacturer specifications

___ installation plans have been submitted to DPH Plan Review

(a) ___ room sized to provide min.

clearance 4'-0" on three sides of patient table

(b) ___ door swing does not encroach on equipment or on patient circulation or transfer space

2.2-3.7.2.3

(1)

(a) ___ Mold room

___ handwashing station

(b) ___ Block room (may be combined with mold room)

Ventilation:

___ Exhaust hood

2.2-3.7.2.3(1)

2.2-3.7.3

RADIOSURGERY SUITE

check if not included in project

2.2-3.7.3.1

(1)

___ Radiosurgery suite located near imaging services suite to facilitate image acquisition prior to radiosurgery treatment

2.2-3.7.3.2

___ Radiosurgery treatment room

(1)

Space Requirements:

(a) ___ accommodates patient access on stretcher

___ accommodates medical staff access to equipment & patient & service access

___ sized in compliance with manufacturer specifications

(b) ___ room sized for min. clearance 4'-0" on all sides of treatment table

___ door swing does not encroach on equipment or patient circulation or transfer space

(2)

___ handwashing station

Architectural Requirements

Building Systems Requirements

- 2.2-3.7.3.3 Pre-procedure/recovery area or room
 check if not included in project
- 2.2-3.5.3.1 (2) immediately accessible* to procedure rooms
 separate from corridors
- (3) arranged to permit visual observation by staff before & after procedure
- 2.2-3.5.3.2 Space Requirements:
 - patient bays*
 check if not included in project
 - min. clear floor area 60 sf
 - 4'-0" between sides of patient beds/stretchers
 - 3'-0" between sides of patient beds/ stretchers & adjacent walls or partitions
 - patient cubicles*
 check if not included in project
 - min. clear floor area 80 sf
 - min. clearance 3'-0" between sides & foot of lounge chairs/stretchers & adjacent walls or partitions
 - single-bed rooms
 check if not included in project
 - min. clear floor area 100 sf
 - min. clearance 3'-0" between sides & foot of lounge chairs/stretchers & adjacent walls or partitions
 - provisions such as cubicle curtains used for patient privacy

- Nurse Call System:
 - Patient station
 - Emergency staff assistance station
- Table 2.1-2

- 2.1-2.6.5 Handwashing Stations:
- 2.1-7.2.2.8(1) handwashing stations in patient care areas located to be visible & unobstructed
- 2.1-2.6.5.3 handwashing stations that serve multiple patient care stations
 check if not included in project
 - (1) at least one handwashing station for every 4 patient care stations or fewer & for each major fraction thereof
 - (2) evenly distributed
 provide uniform distance from two patient care stations farthest from handwashing station

Architectural Requirements

- 2.2-3.7.3.4 Support Areas for RS Treatment Rooms:
- (1) ___ space for sterilization of head-frames
 - (2) ___ target planning area
 - (3) ___ medication storage with nurse observation
 - (4) ___ nourishment area
 - (5) ___ head-frame storage
 - (6) ___ toilet rooms for patients, staff & public
 - (7) ___ area for sedation of pediatric patients
- 2.2-3.7.3.6 Support Areas for Patients:
- (2) ___ storage for patient belongings

Building Systems Requirements

- Ventilation:
- ___ Min. 10 air changes per hour Table 7.1
 - ___ Exhaust

2.2-3.7.4 **PROTON THERAPY SUITE**

check if not included in project

- 2.2-3.7.4.1 ___ Rooms & spaces accommodate equipment manufacturer specifications
- ___ installation plans have been submitted to DPH Plan Review
- 2.2-3.7.4.2 ___ Proton therapy treatment room
- (1) Space Requirements:
- (a) ___ sized for proton therapy equipment
 - ___ sized for patient access on stretcher
 - ___ sized for medical staff access to equipment
 - ___ sized for service access
 - (b) ___ min. clearance 4'-0" on three sides of treatment table to facilitate bed transfer & provide access to patient
 - ___ door swing does not encroach on equipment or on patient circulation or transfer space
 - (2) ___ cyclotron vault
 - (3) ___ hand sanitation dispenser located immediately inside or outside proton therapy room
- 2.2-3.7.4.3 ___ Patient stretcher holding
- ___ 2 stretcher holding bays for each proton therapy treatment room
 - (1) ___ located next to treatment rooms & screened for privacy
 - (2) ___ separate seating area for queued patients
 - ___ separation & privacy of outpatients & inpatients
- 2.2-3.7.4.6 Support Areas for Proton Accelerators:
- (1) ___ general supply storage in treatment room
 - (2) ___ storage for patient positioning devices
 - ___ located in or next to treatment room
 - (3) ___ storage for patient-specific treatment devices
 - (4) ___ post-treatment storage room for patient-specific treatment devices
 - (a) ___ separate shielded room

Architectural Requirements

Building Systems Requirements

- 2.2-3.7.8.2 Patient gowning area
 - 2 gowning cubicles* for each proton therapy room
- (1) secure storage for valuables & clothing
- (2) at least 1 cubicle sized for staff-assisted dressing

2.2-3.7.6 **SUPPORT AREAS FOR RADIATION THERAPY SUITE**

- 2.2-3.7.6.1 Business office and/or reception/control area
- 2.2-3.7.6.11 Stretcher holding area
 - (1) immediately accessible* to radiation therapy treatment rooms
 - (a) screened for privacy
 - located for direct observation & control combined with seating area for outpatients

- 2.1-2.6.12 Environmental services room
 - 2.1-2.6.12.1 serves one or more than one nursing unit on a floor
 - (1) readily accessible* to unit it serves
 - (2) service sink or floor-mounted mop sink
 - 2.1-2.6.12.2 provisions for storage of supplies & housekeeping equipment
 - (1) handwashing station or hand sanitation station
 - (2)
 - (3)

Ventilation:
 10 air changes per hour Table 7.1
 Exhaust

- 2.2-3.7.6.13 Examination room (may be combined with private pre-procedure/recovery patient care room)
 - (1) one examination room for each radiation therapy treatment room except for proton therapy rooms
 - (a) two examination rooms for each proton therapy room
 - (b) min. clear floor area 100 sf
 - (2)
 - (3) handwashing station

Ventilation:
 6 air changes per hour Table 7.1

- 2.2-3.7.6.14 Oncologist office (may be combined with consultation room)
 - (1) check if not included in project
 - (a) Physicist office (may be combined with treatment planning & record room)
 - check if not included in project
 - (b)
 - (2) Consultation room
 - check if not included in project
 - (3) Quality control area
 - check if not included in project
 - image viewing station

Architectural Requirements

Building Systems Requirements

2.2-3.7.8 **SUPPORT AREAS FOR PATIENTS**

- 2.2-3.7.8.1 (1) Waiting area for gowned patients
 adjacent* to gowning cubicles
- (2) provisions made for patient privacy
- 2.2-3.7.8.3 Patient toilet rooms
 directly accessible* to waiting & procedure rooms

- Ventilation:
- Min. 10 air changes per hour Table 7.1
 - Exhaust

2.2-3.7.9 **SPECIAL DESIGN ELEMENTS FOR RADIATION THERAPY SUITE**

- 2.2-3.7.9.1 Architectural Details:
- (1) Floor structure meets min. load requirements for equipment, patients & personnel
 - (2) Ceiling-mounted equipment has properly designed rigid support structures located above finished ceiling
 - (3) Direct-shielded door to radiation vault
 check if not included in project
 motor-driven automatic opening system
 manual emergency opening system
 - (4) Height & width of doorways, elevators & radiation treatment rooms entries adequate to allow delivery of equipment & replacement sources into treatment rooms
 - (5) Radiation protection of radiation treatment rooms
 - (a) layouts designed to prevent escape of radioactive particles
 - (b) openings into room, including doors, ductwork, vents & electrical raceways & conduits, baffled to prevent direct exposure to other areas of facility
 - (c) means of radiation protection have been submitted to the DPH Radiation Control Program

Architectural Details & MEP Requirements

2.1-7.2.2 ARCHITECTURAL DETAILS

- 2.1-7.2.2.1 NFPA 101 Aisles, corridors & ramps required for exit access in a hospital not less than 8'-0" in clear & unobstructed width
or
 Code Review Sheet establishing compliance with NFPA 101 has been submitted
 Aisles, corridors & ramps in adjunct areas not intended for the housing, treatment, or use of inpatients not less than 44" in clear width

- 2.1-7.2.2.2 CEILING HEIGHT:
 - (1) Min. ceiling height 7'-6" in corridors & normally unoccupied spaces
 - (4) Min. height 7'-6" above floor of suspended tracks, rails & pipes located in traffic path for patients in beds and/or on stretchers
 Min. ceiling height 7'-10" in other areas
- 2.1-7.2.2.3 DOORS & DOOR HARDWARE:
 - (1) (a) Doors between corridors, rooms, or spaces subject to occupancy swing type or sliding doors

- (b) Sliding doors
 check if not included in project
 manual or automatic sliding doors comply with NFPA 101
 code review sheet attached
 no floor tracks
- (2) (a) Min. 45.5" clear door width for diagnostic/treatment areas
 Min. 83.5" clear door height for diagnostic/treatment areas
- (b) Swinging doors for personnel use in addition to sliding doors
 check if not included in project
- (3) min. clear width 34.5"
 Doors do not swing into corridors (except doors to non-occupiable spaces & doors with emergency breakaway hardware)
- (4) (b) Lever hardware
- (5) Doors for patient toilet facilities
- (a) 2 doors separated by horizontal distance equal to one-half length of max. diagonal room dimension
or
 door that swings outward
or
 door equipped with emergency rescue hardware
or
 sliding door
- toilet room door opening in public area or corridor maintains visual privacy
- 2.1-7.2.2.7 **GLAZING MATERIALS:**
- (4) Glazing within 18" of floor
 check if not included in project
 safety glass, wire glass or plastic break-resistant material
- 2.1-7.2.2.8 **HANDWASHING STATIONS:**
- (1) Handw. stations in patient care areas located to be visible & unobstructed
- (3) Anchoring suitable for vertical or horizontal force of 250 lbs.
- (4) Handwashing Station Countertops:
 check if not included in project
- (a) porcelain, stainless steel or solid surface materials
- (b) plastic laminate countertops

- check if not included in project
- substrate marine-grade plywood (or equivalent) with impervious seal
- (5) Designed to prevent storage beneath sink
- (6) provisions for drying hands
- (a) hand-drying device does not require hands to contact dispenser
- (d) directly accessible* to sinks
- (7) Liquid or foam soap dispensers
- 2.1-7.2.2.9 **GRAB BARS:**
- (2) Grab bars anchored to sustain concentrated load of 250 lbs.
- 2.1-7.2.2.10 **HANDRAILS:**
- (1) Handrails installed on both sides of patient use corridors
- (3) Rail ends return to wall or floor
- (4) Smooth non-textured surface free of rough edges
- (5) Eased edges & corners
- (6) Finishes cleanable
- 2.1-7.2.2.11 **RADIATION PROTECTION:**
- Protection for X-ray & Gamma-ray installations are shown in the plans
- Documentation for radiation protection has been submitted separately to the DPH Radiation Control Program
- 2.1-7.2.2.12 **NOISE CONTROL:**
- (2) Partitions, floors & ceiling construction in patient areas conform to Table 1.2-6
- 2.1-7.2.3 SURFACES**
- 2.1-7.2.3.1 **FLOORING & WALL BASES:**
- (1) Selected flooring surfaces cleanable & wear-resistant for location
- (2) Smooth transitions between different flooring materials
- (3) Flooring surfaces, including those on stairways, stable, firm & slip-resistant
- (b) Carpet
 check if not included in project
 provides stable & firm surface
- (4) Floors & wall bases of soiled workrooms, toilet rooms & other wet cleaned areas are not physically affected by cleaning solutions

- 2.1-7.2.3.2 WALLS & WALL PROTECTION:
- (1)
 - (a) Washable wall finishes
 - (b) Wall finishes near plumbing fixtures smooth, scrubbable & water-resistant
 - (2) Monolithic wall surfaces in areas routinely subjected to wet spray or splatter
 - (5) No sharp, protruding corners
 - (6) Wall protection devices & corner guards durable & scrubbable

- 2.1-7.2.3.3 CEILINGS:
- (1) Ceilings in areas occupied by patients:
 - (a) cleanable with routine housekeeping equipment
 - (b) acoustic & lay-in ceilings
 - check if not included in project
 - do not create ledges or crevices

2.1-8.2 **HEATING, VENTILATION, & AIR-CONDITIONING (HVAC) SYSTEMS**

- 4/6.3.1 Outdoor Air Intakes:
- 4/6.3.1.1 Located min. 25 feet from cooling towers & all exhaust & vent discharges
 - Bottom of air intake is at least 6'-0" above grade
 - 4/6.3.1.2 Roof Mounted Air Intakes:
 - check if not included in project
 - bottom min. 3'-0" above roof level
 - 4/6.4 Filtration:
 - Filter banks conform to Table 6.4
 - 4/6.4.1 Filter Bank #1 placed upstream of heating & cooling coils
 - 4/6.4.2 Filter Bank No. 2 installed downstream of cooling coils & supply fan
 - 4/6.5 Heating & Cooling Systems:
 - 4/6.7 Air Distribution Systems
 - 4/6.7.1 Ducted return or exhaust systems in spaces listed in Table 7.1 with required pressure relationships
 - Ducted return or exhaust systems in inpatient care areas
 - 4/6.7.3 Smoke & Fire barriers:
 - HVAC zones coordinated with compartmentation to minimize ductwork penetrations of fire & smoke barriers

- 4/6.9 Duct Lining:
 - No duct lining in ductwork located downstream of Filter Bank #2
- 4/7. Space Ventilation:
 - 4/7.1 Spaces ventilated per Table 7.1
 - Air movement from clean areas to less clean areas
 - Min. number of total air changes indicated either supplied for positive pressure rooms or exhausted for negative pressure rooms
 - Recirculating room HVAC units
 - check if not included in project
 - each unit serves only single space
 - min. MERV 6 filter for airflow downstream of cooling coils

- 2.1-8.2.1.1 (5) Acoustic Considerations:
 - Equipment location or acoustic provisions limit noise associated with outdoor mechanical equipment to 65 dBA at building façade

- 2.1-8.2.1.2 (1) Ventilation & Space-Conditioning:
 - All rooms & areas used for patient care have provisions for ventilation
 - (2) Mechanical ventilation provided for all rooms & areas in facility in accordance with Table 7.1 of Part 4

- 2.1-8.2.3.2 (1) Exhaust Hoods:
 - (b) Makeup air provided around exhaust hoods to maintain required airflow direction & exhaust velocity
 - (c) Makeup systems for hoods arranged to minimize "short circuiting" of air & to avoid reduction in air velocity at point of contaminant capture

2.1-8.3 **ELECTRICAL SYSTEMS**

2.1-8.3.2 **ELECTRICAL DISTRIBUTION & TRANSMISSION**

- 2.1-8.3.2.1 Switchboards Locations:
 - (1)
 - (a) Located in areas separate from piping & plumbing equipment
 - (b) Not located in rooms they support
 - Accessible to authorized persons only
 - (c) Located in dry, ventilated space free of corrosive gases or flammable material

- 2.1-8.3.2.2 Panelboards:
 - (1) Panelboards serving life safety branch emergency circuits only serve same floor, floor above & floor below
 - (2) Panelboards serving critical branch emergency circuits only serve same floor
 - (3) New panelboards not located in exit enclosures
- 2.1-8.3.3.1 **EMERGENCY ELECTRICAL SERVICE**
 - (1) Emergency power per NFPA 99, NFPA 101 & NFPA 110
- 2.1-8.3.5 **ELECTRICAL EQUIPMENT**
- 2.1-8.3.5.2 Required handw. station or scrub sink tied to building electrical service
 - check if not included in project
 - connected to essential electrical system
- 2.1-8.3.6 **ELECTRICAL RECEPTACLES**
- 2.1-8.3.6.2 Receptacles in Patient Care Areas:
 - receptacles provided according to Table 2.1-1
- 2.1-8.3.7 **CALL SYSTEMS**
 - Nurse call equipment legend includes patient stations, bath stations, staff emergency stations & code call stations
- 2.1-8.3.7.1
 - (1) Nurse call system locations provided as required in Table 2.1-2
 - (2) Nurse call systems report to attended location with electronically supervised visual & audible signals
 - (4) Call systems meet requirements of UL 1069 *Standard for Hospital Signaling & Nurse Call Equipment*
 - (5) Wireless system
 - check if not included in project
 - meet requirements of UL 1069
- 2.1-8.3.7.3 Bath Stations:
 - (1) provided at each patient toilet
 - alarm turned off only at bath station where it was initiated
 - (3) located to side of toilets within 12" of front of toilet bowl & 3'-0" to 4'-0" above floor
- 2.1-8.3.7.4 Staff emergency stations for summoning local staff assistance for non-life-threatening situations at each patient care location
- 2.1-8.3.7.5 Code call station equipped with continuous audible or visual signal at point of origin

- 2.1-8.4.2 **PLUMBING & OTHER PIPING SYSTEMS**
- 2.1-8.4.2.5 Heated Potable Water Distribution Systems:
 - (2) systems serving patient care areas are under constant recirculation
 - non-recirculated fixture branch piping does not exceed 25'-0" in length
 - (3) no dead-end piping
 - (4) water-heating system has supply capacity at minimum temperatures & amounts indicated in Table 2.1-3
 - (5) handwashing stations supplied as required above

or

 - handwashing stations supplied at constant temperature between 70°F & 80°F using single-pipe supply
- 2.1-8.4.2.6 Drainage Systems:
 - (1) drainage piping above ceiling of, or exposed in electric closets
 - check if not included in project
 - special provisions to protect space below from leakage & condensation
- 2.1-8.4.3 **PLUMBING FIXTURES**
- 2.1-8.4.3.1(1) Materials material used for plumbing fixtures non-absorptive & acid resistant
- 2.1-8.4.3.2 Handwashing Station Sinks:
 - (1) basins reduce risk of splashing to areas where direct patient care is provided, sterile procedures are performed & medications are prepared
 - (2) basin min. 144 square inches
 - min. dimension 9 inches
 - (3) made of porcelain, stainless steel, or solid-surface materials
 - (5) water discharge point of faucets at least 10 inches above bottom of basin
 - (7) anchoring for sinks withstands min. vertical or horizontal force of 250 lbs.
 - (8) fittings operated without using hands for sinks used by medical & nursing staff, patients, public & food handlers

- (a) blade handles or single lever
 - min. 4 inches long
 - provide clearance required for operation
- or**
- (b) sensor-regulated water fixtures
 - meet user need for temperature & length of time water flows
 - designed to function at all times & during loss of normal power

2.1-8.6.2

ELECTRONIC SURVEILLANCE SYSTEMS

check if not included in project

2.1-8.6.2.1

Devices in patient areas mounted in unobtrusive & tamper-resistant enclosures

2.1-8.6.2.2

Monitoring devices not readily observable by general public or patients

2.1-8.6.2.3

Receive power from emergency electrical system

- 2.1-8.4.3.4 Ice-Making Equipment:
 - copper tubing provided for supply connections

2.1-8.4.4 **MEDICAL GAS & VACUUM SYSTEMS**

Station outlets provided as indicated in Table 2.1-4

2.1-8.4.4.2

- (2) Vacuum discharge at least 25'-0" from all outside air intakes, doors & operable windows