VA

U.S. Department of Veterans Affairs

Office of Construction & Facilities Management

Lighting Design Manual

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1. GENERAL REQUIREMENTS

1.1 PURPOSE

This manual is a guide for Architects, Engineers and Lighting Design Professionals (hereafter referred as A/E) for the planning and design of the lighting and lighting control systems (hereafter referred to as lighting systems, or systems) at the Department of Veterans Affairs (VA) facilities.

Lighting systems are dependent on electrical power for their function and operation. Therefore, this manual shall be used in conjunction with the VA Electrical Design Manual to produce complete and functional systems.

It is expected that the systems planned and designed with the use of this manual shall meet their primary objectives stated in Chapter 2. In order to provide the latitude needed for new technologies and concepts, technical deviations from the stipulations of this manual may be made only if a safe, reliable, and energy efficient design shall result. A/E shall present proposed deviations with backup technical data and rationales to VA. Deviations must be approved by VA. Deviations are not permitted from those requirements included in public laws, federal regulations, executive orders, and all applicable codes.

1.2 RESPONSIBILITY

A/E shall provide all necessary engineering and professional services to perform planning and design of the systems for the project. A/E is responsible and liable for the engineering and professional design in accordance with the contract, good engineering and design practices, latest VA standards and applicable codes, and project-specific requirements.

1.3 COORDINATION

1.3.1 PLANNING AND DESIGN

A/E shall coordinate planning and design of the lighting systems with architectural, structural, civil, site utility and site work, HVAC, plumbing, fire protection/alarm systems, and sustainable designs, as applicable. A/E shall coordinate design information between construction drawings to ensure clarity, completeness and correctness in accordance with latest VA Standards and applicable codes, project-specific requirements, and pre-existing conditions (if any).

A/E shall coordinate and edit applicable VA master specifications and standard details to ensure clarity, completeness and correctness in accordance with latest VA Standards and applicable codes, project-specific requirements, and pre-existing conditions (if any).

For renovation projects, A/E shall perform site visit(s) to investigate and document pre-existing conditions. Findings of pre-existing conditions shall be taken into account for the planning and design of the project.

For exterior spaces, focus should be on coordination of hardscape, softscape, and landscape. Base designs for pole-mounted luminaires should be coordinated with civil and structural engineers. A/E shall reference VA base-mounting details and modify to meet specific project scope. Base-mounting details shall be shown on drawings.

For interior spaces, focus should be on coordination of luminaire type, trim and layout with ceiling type, construction, layout, plenum depths, diffusers, ceiling tracks, and all ceiling-mounted objects. Luminaire layout should be coordinated with furniture, casework, millwork, and equipment layouts. Lighting control device locations should be coordinated with interior features and furnishings to assure ready access, as well as proper sensor performance.

1.3.2 INSTALLATION

A/E is not responsible to provide (furnish, install, and connect) lighting systems. However, lighting design document shall show clear, complete and correct information regarding all aspects of lighting and electrical power designs.

During the submittal review phase, A/E shall coordinate lighting equipment submittals with ceiling system submittals to ensure complete and correct coordination between lighting and ceiling systems.

For renovation projects, separate demolition drawings are required for all areas involved in the project. Specific information and design of interfaces between renovated and existing-to-remain conditions shall be clearly indicated on the drawings.

1.4 DESIGN STANDARDS AND CODES

1.4.1 GENERAL

At the minimum, comply with the latest Codes and Standards of the following organizations:

(1) American National Standards Institute (ANSI)
(2) ASTM International (ASTM)
(3) Building Industry Consulting Service International, Inc. (BICSI)
(4) Illuminating Engineering Society of North America (IESNA): A/E shall pay particular attention to latest edition of the following publications:
- Illuminating Engineering Society Handbook.
- RP-29 Lighting for Hospitals and Health Care Facilities
- RP-28 Lighting and the Visual Environment for Senior Living
- RP-33 Lighting for Exterior Environments
- RP-20 Lighting for Parking Facilities
- RP-8 Roadway Lighting
- DG-10 Choosing Light Sources for General Lighting
- G-1 Guidelines on Security Lighting for People, Property and Public
- G-2 Guidelines for Application of General Illumination - LED Technologies

(5) Institute of Electrical and Electronic Engineers (IEEE)

(6) National Fire Protection Association (NFPA)
(7) National Electrical Manufacturers Association (NEMA)
(8) Underwriters Laboratories, Inc. (UL)
(9) ANSI **/** ASHRAE / IES Standard 90.1

1.4.2 VA STANDARDS

Comply with latest VA standards. Pertinent standards can be found on the Office of Construction & Facilities Management's (CFM) Technical Information Library (TIL). Some of the major standards are:

(1) Master Specifications (PG-18-1)
http://www.cfm.va.gov/TIL/spec.asp
(2) Design and Construction Procedures (PG-18-3)
http://www.cfm.va.gov/TIL/cPro.asp
(3) Design Manuals (PG-18-10)
http://www.cfm.va.gov/til/dManual.asp
(4) Design Guides (PG-18-12)
http://www.cfm.va.gov/til/dGuide.asp
(5) Design Submission Requirements (PG-18-15)
http://www.cfm.va.gov/til/aeDesSubReq.asp
(6) Architect / Engineer Review Checklist
http://www.cfm.va.gov/til/aeDesSubReq.asp
(7) Design Alerts
http://www.cfm.va.gov/til/alert.asp
(8) Quality Alerts
http://www.cfm.va.gov/til/alert.asp#qalert
(9) Physical Security Design Manual for VA Facilities
http://www.cfm.va.gov/til/spclRqmts.asp#PHS
(10) Sustainable Design and Energy Reduction Manual
http://www.cfm.va.gov/til/sustain.asp
(11) Seismic Design Requirements (H-18-8)
http://www.cfm.va.gov/til/seismic.asp

1.4.3 OTHER STANDARDS AND CODES

A/E shall bring provisions of state and/or local building and zoning codes that are significantly different and/or more stringent than the codes and standards listed above to the attention of VA. A/E shall provide VA with specific information on how the proposed design will differ from the local requirements.

1.5 DAYLIGHTING

1.5.1 GENERAL

A/E shall strive to employ daylighting practice in the design. When appropriate, lighting control strategies should integrate daylighting and electric lighting to achieve sufficient high quality illumination.

Location of windows and skylights in a building must be designed to avoid the admittance of direct sun on task surfaces or occupants. Suitable glare control devices such as blinds or shades should be provided. .

Daylight harvesting controls must be commissioned. The system must have the lighting set points properly configured if the system is to properly respond to available daylight. The success of a daylighting design depends on commissioning and occupant education and training.

1.6 ABBREVIATIONS

Use only the abbreviations and symbols shown in the VA Standard Details (PG-18-4) and the Uniform Drawing System (UDS) of the U.S. National CAD Standard (NCS). A complete listing of terms and abbreviations can be found on the Construction Specification Institute (CSI) website under Standards and Formats.

1.7 GLOSSARY

Ambient Lighting – Lighting throughout an area that produces general illumination.

Area Lighting Luminaire – A complete lighting device consisting of a light source and ballast, where appropriate, together with its direct appurtenances such as globe, reflector, refractor, housing, and such support as is integral with the housing. The pole, post, or bracket is not considered part of the luminaire.

Average Luminance – Luminance is a property of a geometric ray. Luminance as measured by conventional meters is averaged with respect to two independent variables, area and solid angle; both must be defined for a complete description of a luminance measurement.

BAS – Building automation system.

Baffle – A single opaque or translucent element to shield a source from direct view at certain angles, to absorb or block unwanted light, or to reflect and redirect light.

Ballast – A device used with an electric-discharge lamp to obtain the necessary circuit conditions (voltage, current, and waveform) for starting and operating.

Ballast Factor – The fractional flux of a fluorescent lamp operated on a ballast compared to the flux when operated on the standard (reference) ballast specified for rating lamp lumens.

Bollard – Luminaires having the appearance of a short, thick post, used for walkway and grounds lighting. The optical components are usually top-mounted.

Bowl – An open-top diffusing glass or plastic enclosure used to shield a light source from direct view and to redirect or scatter the light.

Bracket (mast arm) – An attachment to a lamp post or pole from which a luminaire is suspended.

Candela, cd – The SI unit of luminous intensity, equal to one lumen per steradian (lm/sr).

Candlepower (cp), $\mathbf{I = d\varphi/d\omega}$ – Luminous intensity expressed in candelas.

Coefficient of Utilization (CU) – The ratio of luminous flux (lumens) calculated as received on the work plane to the total luminous flux (lumens) emitted by the lamps alone. It is equal to the product of room utilization factor and luminaire efficiency.

Color Matching – the action of making a color appear the same as a given color.

Color Rendering – a general expression for the effect of a light source on the color appearance of objects in conscious or subconscious comparison with their color appearance under a reference light source.

Color Rendering Index (of a light source) (CRI) – a measure of the degree of color shift objects undergo when illuminated by the light source as compared with those same objects when illuminated by a reference source of comparable color temperature.

Color Temperature (of a light source*)* – the absolute temperature of a blackbody radiator having a chromaticity equal to that of the light source. See *Correlated Color Temperature*.

Contrast – See Luminance Contrast.

Correlated Color Temperature (of a light source) (CCT) – The absolute temperature of a blackbody whose chromaticity most nearly resembles that of the light source.

Daylight Availability – The luminous flux from the sun plus sky at a specific location, time, date, and sky condition.

Diffused Lighting – Lighting provided on the work plane or on an object that is not incident predominantly from any particular direction.

Dimmer – A device used to control the intensity of light emitted by a luminaire by controlling the voltage or current available to it.

Direct Glare – Glare resulting from high luminances or insufficiently shielded light sources in the field of view. It is usually associated with bright areas, such as luminaires, ceilings, and windows that are outside the visual task or region being viewed. A direct glare source can also affect performance by distracting attention.

Direct-Indirect Lighting – A variant of general diffuse lighting in which the luminaires emit little or no light at angles near the horizontal.

Direct Lighting – Lighting involves luminaires that distribute 90% to 100% of the emitted light in the general direction of the surface to be illuminated. The term usually refers to light emitted in a downward direction.

Directional Lighting – Lighting provided on the work plane or on an object. Light that is predominantly from a preferred direction.

Disability Glare – The effect of stray light in the eye whereby visibility and visual performance are reduced. A direct glare source that produces discomfort can also produce disability glare by introducing a measurable amount of stray light in the eye.

Discomfort Glare – Glare that produces discomfort. It does not necessarily interfere with visual performance or visibility.

Downlight – A small direct lighting unit that directs the light downward and can be recessed, surface-mounted, or suspended.

Efficacy – See *Luminous Efficacy of a Source of Light.*

Efficiency – See *Luminaire Efficiency*.

Electroluminescence – The emission of light from a phosphor excited by an electromagnetic field.

Emergency Exit – A way out of the premises that is intended to be used only during an emergency.

Emergency Egress Lighting – Lighting designed to supply illumination essential to the safety of life and property in the event of a failure of the normal supply. The system must be capable of providing minimum required illuminance specified in NFPA 101, Code for Safety to Life from Fire in Buildings and Structures, Section 5.9.

Essential Electrical System (EES) – Source of power for emergency egress, critical operations and essential equipment.

Exit Sign – A graphic device including words or symbols that indicates or identifies an escape route or the location of, or direction to, an exit or emergency exit.

Floodlight – A projector designed for lighting a scene or object to a luminance considerably greater than it surroundings.

Fluorescent Lamp – A low pressure mercury electric-discharge lamp in which a fluorescing coating (phosphor) transforms some of the UV energy generated by the discharge into light.

Flush-mounted or Recessed Luminaire – A luminaire that is mounted above the ceiling (or behind a wall or other surface) with the opening of the luminaire level with the surface.

Footcandle, fc – A unit of illumination equal to 1 lm/ft^2.

Glare – The sensation produced by luminances within the visual field that are sufficiently greater than the luminance to which the eyes are adapted, which causes annoyance, discomfort, or loss in visual performance, and visibility.

Globe – A transparent or diffusing enclosure intended to protect a lamp, to diffuse and redirect its light, or to change the color of the light.

High-Intensity Discharge (HID) Lamp – An electric-discharge lamp in which the light-producing arc is stabilized by bulb wall temperature, and the arc tube has a bulb wall loading in excess of 3 W/cm². HID lamps include groups of lamps known as mercury, metal halide, and high pressure sodium.

High-Pressure Sodium (HPS) Lamp – A high intensity discharge (HID) lamp in which light is produced by radiation from sodium vapor.

Illumination – The areal density of the luminous flux incident at a point on a surface.

Illumination (footcandle or lux) Meter – An instrument for measuring illumination on a plane. The instrument is comprised of some form of photodetector, with or without a filter, driving a digital or analog readout through appropriate circuitry.

Illumination – An alternative but deprecated term for illuminance.

Indirect Component – The portion of the luminous flux from a luminaire that arrives at the work plane after being reflected by room surfaces.

Indirect Lighting – Lighting involving luminaires that distribute 90% to 100% of the emitted light upward.

Instant-start Fluorescent Lamp – A fluorescent lamp designed for starting by a high voltage without preheating of the electrodes.

Intensity (candlepower) Distribution Curve – A curve, often polar, that represents the variation of luminous intensity of a lamp or luminaire in the plane through the light center.

Kelvin – The unit of temperature used to designate the color temperature of a light source.

Lamp – A generic term for a source created to produce optical radiation.

Lamp Lumen Depreciation (LLD) Factor – The fractional loss of lamp lumens at rated operating conditions that progressively occurs during lamp operation.

Lens – A glass or plastic element used in luminaires to change the direction and control the distribution of light rays.

Light – Radiant energy that is capable of exciting the retina and producing a visual sensation.

Light-Emitting Diode (LED*)* – A solid state diode whose radiated output is a function of its physical construction, material used, and exciting current.

Light Loss Factor (LLF*)* – Formerly called maintenance factor. The ratio of illuminance (or exitance or luminance) for a given area to the value that would occur if lamps operated at their (initial) rated lumens and if no system variation or depreciation had occurred.

Light Meter – A common name for an illuminance meter.

Light Source Color – The color of the light emitted by a source.

Louver – A series of baffles used to shield a source from view at certain angles, to absorb or block unwanted light, or to reflect or redirect light.

Lumen, lm – SI unit of luminous flux.

Lumen Depreciation – The decrease in lumen output that occurs as a lamp is operated, until failure.

Lumen (or flux) Method – A lighting design procedure used for predetermining the relation between the number and types of lamps or luminaires, the room characteristics, and the average illuminance on the work plane.

Luminaire (light fixture) – A complete lighting unit consisting of a lamp(s) and ballast(s) (when applicable) together with the parts designed to distribute the light, to position and protect the lamps, and to connect the lamps to the power supply.

Luminaire Dirt Depreciation (LDD) – The fractional loss of task illuminance due to luminaire dirt accumulation.

Luminaire Efficiency – The ratio of luminous flux (lumens) emitted by a luminaire to that emitted by the lamp or lamps used therein.

Luminance Contrast – The relationship between the luminances of an object and its immediate background.

Luminance Ratio – The ratio between the luminances of any two areas in the visual field.

Luminous Efficacy of a Source of Light – The quotient of the total luminous flux emitted to the total lamp power input. It is expressed in lumens per watt.

Lux, lx – A SI unit of illuminance equal to 1 lm/m^2.

Matte Surface – A surface from which the reflection is predominantly diffused, with or without a negligible specular component.

Means of Egress – An unobstructed and continuous way of exit from any point in a building or structure to a public way.

Mercury Lamp – A high-intensity discharge (HID) lamp in which the major portion of the light is produced by radiation from mercury operating at a partial pressure in excess of 10s Pa.

Metal Halide Lamp – A high-intensity discharge (HID) lamp in which the major portion of the light is produced by radiation of metal halides and their products of dissociation - possibly in combination with metallic vapors such as mercury.

Orientation – The relation of a building with respect to compass directions.

Overhang – The distance between a vertical line passing through a specified point (often the photometric center) of a luminaire and the curb or edge of a roadway.

Pendant Luminaire – See Suspended Luminaire.

Peripheral Vision – The seeing of objects displaced from the primary line of sight and outside the central visual field.

Photometry – The measurement of quantities associated with light.

Photopic Vision – Vision mediated essentially or exclusively by the cones. It is generally associated with adaptation to a luminance of at least 3.4 cd/m².

Point Method – A lighting design procedure for predetermining the illuminance at various points and location in lighting installations by use of luminaire photometric data.

Point Source – A source of radiation, whose dimensions are sufficiently small, compared with the distance between the source and the irradiated surface that these dimensions can be neglected in calculations and measurements.

Pole (roadway lighting) – A standard support generally used where overhead lighting distribution circuits are employed.

Primary Corridor, or Primary Circulation – The main corridor or circulation route which connects the building core and common spaces, such as elevators and exit stairs.

Programmed Rapid Start – A fluorescent starting method where the cathode is preheated before the lamp is ignited. This softer ignition increases the number of starts over the life of the lamp.

Quality of Lighting – Pertains to the distribution of luminance in a visual environment. The term is used in a positive sense and implies that all luminances contribute favorably to visual performance, visual comfort, ease of seeing, safety, and aesthetics for the specific visual tasks involved.

Rapid-Start Fluorescent Lamp – A fluorescent lamp designed for operation with a ballast that provides a low-voltage winding for preheating the electrodes and initiating the arc without a starting switch or the application of high voltage.

Rated Lamp Life – The life value assigned to a particular type lamp. This is commonly a statistically determined estimate of average or of median operational life.

Reflected Glare – Glare resulting from reflections of high luminances in polished or glossy surfaces in the field of view.

Reflection – A general term for the process by which the incident flux leaves a (stationary) surface or medium from the incident side without change in frequency.

Reflector – A device used to redirect the flux from a source by the process of reflection.

Secondary Corridor, or Secondary Circulation – The corridor or circulation that includes the aisles between individual spaces, such as offices and cubicles, and support spaces.

Self-Ballasted Lamps – Any arc discharge lamp of which the current limiting devices is an integral part.

Spacing – For roadway lighting, the distance between successive lighting units, measured along the centerline of the street.

Spacing-to-Mounting-Height Ratio – The ratio of the actual distance between luminaire centers to the mounting height above the work plane.

Suspended (pendant) Luminaire – A luminaire that is hung from a ceiling by supports.

Torchiere – An indirect floor lamp that sends all or nearly all of its light upward.

Transparent – Having the property of transmitting rays of light through its substance so that bodies situated beyond or behind can be distinctly seen.

Troffer – A long recessed lighting unit usually installed with the opening flush with the ceiling.

Visibility – The quality or state of being perceivable by the eye.

2. LIGHTING DESIGN REQUIREMENTS

2.1 ENERGY CONSERVATION

Energy conservation is mandated by the Federal Government in all government buildings. A/E shall employ energy conservation strategies focusing on meeting energy mandates and to maintain required illumination to enhance patient care and safety, life/fire safety and security. The following strategies shall be evaluated for use:

(1) Design shall include task lighting that allows occupants to achieve task-focused illumination.
(2) Design shall include daylight harvesting where practical.
(3) Design shall use vacancy sensor instead of occupancy sensor where practical.
(4) Design shall use occupancy sensors in public rest rooms and large multi-occupant spaces.
(5) Design shall select luminaires with maximum efficiency.
(6) Design shall avoid lighting above or in front of illuminated vending machines.
(7) Design shall limit façade lighting to public entrances.
(8) Design shall include automatic lighting control system in conjunction with by-pass switches for lighting circuits in non-patient care areas and where practical.

2.2 LIGHTING DESIGN STRATEGIES

In order to achieve design objectives stated in this manual, A/E should employ design strategies with focus on the function/use of the space/room and the occupants/ end-users. Moreover, A/E shall also employ design strategies that include complete coordination and collaboration with other design team professionals, VA contracting and project team, and local VA Medical Center's clinical and engineering staff.

2.3 LIGHTING DESIGN OBJECTIVES

Lighting design shall meet the following primary objectives:

2.3.1 INTERIOR

(1) Design for Safety and Security: Lighting systems shall effectively support patient care and safety, life/fire safety and security for patients, staff, and visitors.
(2) Design for Function: Lighting systems shall provide sufficient level of lighting for occupants to effectively perform designated tasks and functions.
(3) Design for Visual Comfort: Lighting systems shall contribute to the visual comfort for patients, staff, and visitors. Glare should be mitigated using practical design methods and correct specification of luminaires.
(4) Design for Maintenance and Operation: Lighting systems shall be easily maintained and operated. Similar components of luminaires from different manufacturers should be compatible and interchangeable.

2.3.2 EXTERIOR

(1) Design for Safety and Security: Lighting systems shall contribute to maintain effective safety and security for patients, staff, visitors, and property.
(2) Design to Function and Wayfinding: Lighting systems shall provide sufficient level of lighting for patients, staff, and visitors to effectively perform desired tasks such as driving, parking and walking, as well as wayfinding.
(3) Design for Maintenance and Operation: Lighting systems shall be easily maintained and operated. Similar components of luminaires from different manufacturers should be compatible and interchangeable.

2.4 LIGHTING CONTROL DESIGN STRATEGIES AND OBJECTIVES

A/E should employ lighting control design strategies with focus on effective patient care and safety, life/fire safety and security, and energy conservation.

2.5 LIGHTING CONTROL DESIGN METHODOLOGIES

2.5.1 INTERIOR

(1) Do not use time-scheduled lighting controls such as time clocks, astronomical clocks and timers for patient care space, and utility closet/rooms/vaults.
(2) Provide automated lighting controls only after careful consideration that safety and security is not compromised.
(3) Maximize daylight harvesting, where applicable.
(4) Provide override devices where automated lighting controls are installed. Local override devices shall be readily accessible and labeled.
(5) Define automated lighting control zones. Provide a Lighting Control Zone Schedule on the drawings.
(6) Integrate automated lighting controls with BAS controls, where possible.

2.5.2 EXTERIOR

(1) Utilize automated control.
(2) Use photo-electric sensors to control all outdoor luminaires.
(3) Use infrared motion sensors to reduce illumination in non-essential areas that require illumination but are not commonly occupied after operating hours.
(4) Use programmable time clock controls or BAS time control in non-patient care areas that are unoccupied after operating hours.

2.6 LUMINAIRE SELECTION GUIDELINES

2.6.1 INTERIOR

(1) Review and edit all relevant VA Division 26 specifications and detail drawings to meet project's scope, specific project requirements, pre-existing conditions (if any), and latest applicable codes.
(2) Review product installation data to assure compliance with specifications.

(3) If LED is specified, review LED luminaires to evaluate glare control, flicker rates, and color rendering capabilities.
(4) Confirm luminaire construction shall be able to withstand surface wipe down disinfection.
(5) Lenses shall not deflect on contact.
(6) Sterile environments shall utilize sealed and gasketed luminaires.
(7) Luminaires in patient-care areas shall be provided with lens.

2.6.2 EXTERIOR

(1) Review and edit all relevant VA Division 26 specifications and details to meet project's scope, specific project requirements, pre-existing conditions (if any), and latest applicable codes.
(2) Review product data to assure compliance with specifications.
(3) Luminaires shall be UL listed for wet locations.
(4) Recessed in-grade luminaires shall have a non-wicking conduit entrance.
(5) Luminaires shall be rated for operation at temperatures anticipated for local area.
(6) Pole height for site lighting shall comply with local codes or ordinances, and specific project scope and requirements.

2.7 LIGHT SOURCE SELECTION GUIDELINES

Selection must be determined in conjunction with luminaire, ballast/driver, and/or light controls.

2.7.1 FLUORESCENT

(1) Utilize 2 foot (0.6 m), 2 foot (0.6 m) U and 4 foot (1.2 m) T8 and T5 lamps with extended life (based on 3 hours per start), low mercury content (TCLP). Maximize lamp life by using with program rapid start ballasts.
(2) Select appropriate quantity of lamps in each luminaire providing that design criteria for each area/room shall be met.
(3) Quantity of luminaires shall be kept to a minimum while maintaining design criteria for each area/room.
(4) Do not use high output lamps.
(5) Do not use screw-in type self-ballasted compact fluorescent lamps.

2.7.2 HIGH INTENSITY DISCHARGE (HID)

(1) Use only HID lamps listed in VA Interior Lighting specification 26 51 00.
(2) In applications where color rendering is not important, High Pressure Sodium lamps may be considered for use.
(3) HID sources are not recommended to provide emergency illumination. Where HID sources are fed from emergency power, luminaires must be provided with quartz restrike kits that utilize either current sensing or time-delayed restrike.
(4) HID sources are prohibited for applications that require "instant on" operation.

2.7.3 LIGHT EMITTING DIODES (LED)

(1) Industry practice is to provide LED luminaire as a complete luminaire consisting of housing, reflector/lens, LED module, and driver. LED luminaires from different manufacturers which have similar housing, lumen output, input wattage, and optical system may have different photometric performance. A/E shall review all important performance parameters to assure a minimum of three domestic manufacturers are producing equivalent equipment.
(2) Utilize LED luminaires when operating at or below temperatures of 0 degrees C (32 degrees F). LED luminaires perform well in cold weather. Do not specify LED luminaires for environments that exceed 50 degrees C (122 degrees F), unless LED luminaires are certified, listed and warranted by manufacturer for such environment. Verify with manufacturer that performance and warranty are not altered.
(3) Do not use LED lamps for non-LED luminaires as a replacement or retrofit.
(4) Avoid using RGB (red, green, blue) LED light sources in applications where only white light is desired.

2.8 BALLAST AND LED DRIVER SELECTION GUIDELINES

Selection must be determined in conjunction with luminaire, lamp source, and controls.

2.8.1 FLUORESCENT BALLAST

(1) Utilize program rapid-start ballasts to maximize energy savings and lamp life.
(2) Dimming ranges for dimmable ballasts must correlate to visible light control, not power consumption. For most dimming applications a range from 10% to 100% is acceptable.

2.8.2 HID BALLAST

(1) HID ballasts fed from emergency power must be provided with either current sensing or time delayed quartz restrike.
(2) Consider electronic ballast as the basis of design.

2.8.3 LED DRIVER

(1) Utilize 0-10V dimmable power supplies as the basis of design.
(2) In patient-care areas, LED power supplies must be field accessible.

2.9 EMERGENCY POWER PACK SELECTION GUIDELINES

(1) Provide emergency power packs in selected luminaires located in surgical/operating rooms.
(2) Provide emergency power packs in selected luminaires located in areas where life safety emergency power is not available, or as required by latest codes.
(3) Specify emergency power pacts with integral self-testing and self-diagnostic features.

2.10 LIGHTING CONTROL SELECTION GUIDELINES

(1) Verify lamp/ballast/LED driver compatibility with control devices prior to finalizing specifications. Confirm compatibility during the submittal review phase.

(2) Consider utilizing central lighting control system or BAS. Use of central lighting control system or BAS offers the following advantages:

- The ability to access status, alarm conditions, and change control sequences remotely from a computer.
- Time clock scheduling.
- The ability to assign/reassign any control device to any lighting control zone through program software.
- The ability to log and record hours of operation to support group re-lamping maintenance.
- The ability to track actual energy usage and energy savings.
- The ability to easily swap local control devices.

(3) Coordinate circuiting with control zones and devices.

(4) Consider LED in dimming application.

(5) HID sources are not suitable for frequent switching. Access to the ON/OFF control should be limited.

(6) Wireless controls are prohibited. Consider using automatic sensors for applications where hands-free switching is desirable due to operational or infection control concerns.

2.11 LIGHTING CALCULATIONS

(1) Calculations should be performed using computer software such as AGI, Elum or Radiance.

(2) Calculation grids should not exceed 5 feet x 5 feet (1.5 m x 1.5 m) at grade for exterior applications unless otherwise noted, and 2 feet x 2 feet at 2’-6” (0.6 m x 0.6 m at 0.76 m) above finished floor for indoor application unless otherwise noted. Rooms that are smaller in size or have critical illumination requirements should utilize a 1 foot x1 foot (0.30 m x 0.30 m) calculation grid.

(3) Utilize surface reflectance to reflect specified room finish. However, if specified room finish is not available, utilize standard values of 80% for ceiling, 50% for walls, and 20% for floors. Confirm the lamp lumen output listed in the photometric report of the luminaire matches the lumen output of the specified lamping.

(4) Calculations shall use appropriate light loss factors. Light loss factors shall include lamp lumen depreciation, ballast factor, and luminaire dirt depreciation.

(5) Calculations performed for spaces with fluorescent lamps operating outside of standard temperature ranges should include an ambient temperature adjustment factor for the lamp. Refer to lamp manufacturer's information for lamp temperature operating range and adjustment factors.

(6) Utilize daylight rendering software to determine extent of daylight penetration and create daylight harvesting responsive control zones accordingly.
(7) Provide a hardcopy report of lighting calculations to VA. Include all functional areas and list of average illumination levels, types of luminaires, quantities and type of light sources, maximum and minimum illumination, and light loss factor used.

2.12 LIGHTING SYSTEM COMMISSIONING

Employ total building commissioning practices tailored to the size and complexity of the building and its system components to ensure design requirements are met. This should include a designated commissioning authority, the inclusion of commissioning requirements in construction documents, a commissioning plan, verification of the installation and performance of systems to be commissioned, and a commissioning report.

2.13 LIGHTING MAINTENANCE CONSIDERATIONS

(1) Luminaire components, such as lamps, ballasts, and power supplies, must be accessible from below the ceiling.
(2) Minimize the number of different light sources to simplify maintenance and operation.
(3) Lighting luminaire components should be compatible and interchangeable.

3. EXTERIOR LIGHTING GUIDELINES

3.1 ROADWAYS

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Pedestrian Conflict Area: 8-12 lx (0.8-1.2 FC)
- No Pedestrian Conflict Area: 6-9 lx (0.6-0.9 FC)

(2) Uniformity Ratio (ave / min):
- Primary Roadways 4:1
- Secondary Roadways 6:1

(3) Color Temperature (CCT)
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- High Pressure Sodium: 1900 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- High Pressure Sodium: minimum of 21

(5) Power Source:
- Normal power

DESIGN APPROACH:

Lighting should enhance nighttime visibility to promote safety and security for pedestrians and vehicles. Higher pole heights will reduce glare and permit wider spacing. Provide increase illumination at signage, pedestrian crosswalks, and bus stops. Consider photometric distribution types when selecting and spacing to minimize pole locations. Luminaires should be mounted on one side unless uniformity limits are exceeded. When mounted on both sides, the poles should be staggered.

RECOMMENDED LUMINAIRES:

(1) Pole-mounted full cutoff, low profile, LED, metal halide or high pressure sodium luminaire.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Comply with Dark Sky recommendations.
(3) Roadway surface luminance impacts night time visibility and should be considered.

(4) Coordinate pole and luminaire with exterior building and landscape color palette.
(5) Coordinate pole locations with civil and landscape features, signage, pedestrian crosswalks, underpasses, overpasses and bus stops.
(6) Coordinate pole base height to reduce pole damage. Consider elevated bases when located in vehicular ways.
(7) Coordinate pole-mounted security cameras and devices, banners, and signs with structural engineer.
(8) Provide house side shields at property lines to mitigate light trespass.

3.2 OPEN PARKING AREAS

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Asphalt Surfaces: 5 lx (0.5FC) minimum point
- Concrete Surfaces: 10 lx (1 FC) minimum point

(2) Uniformity Ratio (avg / min): 4:1

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- High Pressure Sodium: 1900 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- High Pressure Sodium: minimum of 21

(5) Power Source:
- Normal power

DESIGN APPROACH:

Lighting should enhance nighttime visibility to promote safety and security for pedestrians and vehicles. Higher pole heights will reduce glare and permit wider spacing. Special consideration should be taken to provide increase illumination at signage, pedestrian crosswalks, and bus stops. Consider photometric distribution types when selecting and spacing to minimize pole locations. Consider multiple luminaires per pole to further reduce pole locations.

RECOMMENDED LUMINAIRES:

(1) Pole-mounted full cutoff, low profile, LED, metal halide or high pressure sodium luminaire.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Comply with Dark Sky recommendations.
(3) Coordinate pole and luminaire with exterior building and landscape color palette.
(4) Coordinate pole locations with civil and landscape features, signage, pedestrian crosswalks, underpasses, overpasses, and bus stops.

(5) Coordinate pole base height to reduce pole damage. Consider elevated bases when located in parking areas.
(6) Coordinate pole-mounted security cameras and devices, banners, and signs with structural engineer.
(7) Provide house side shields at property lines to mitigate light trespass.

3.3 WALKWAYS

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Adjacent to Roadside: 10 lx (1 FC)
- Remote from Roadway: 5 lx (0.5 FC)

(2) Uniformity Ratio (ave / min): 4:1

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal power
- Life Safety branch of the EES power for egress lighting at exit discharge.

DESIGN APPROACH:

Lighting should enhance nighttime visibility to promote safety and security for pedestrians. Vertical illumination should be considered. Luminaires with visible brightness will create visual interest and reinforce wayfinding and highlight intersections and cross walks. Consider pedestrian scale poles (12 foot (3.65 m) mounting height or less) and luminaires instead of bollards. Consider photometric distribution types when selecting and spacing to minimize pole locations.

RECOMMENDED LUMINAIRES:

(1) LED, compact fluorescent or metal halide bollard with cutoff type optics.
(2) Pole-mounted LED or metal halide pedestrian scale luminaire with visible brightness.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Comply with Dark Sky recommendations.
(3) Coordinate pole and luminaire with exterior building and landscape color palette.

(4) Coordinate locations with civil and landscape features, signage, pedestrian crosswalks, and bus stops.
(5) Coordinate pole-mounted security cameras and devices, banners and signs with structural engineer.
(6) Coordinate location of walkway lighting to avoid light trespass in interior spaces.

3.4 ENTRIES

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Emergency/Ambulance: 500 lx (50 FC)
- Main: 50 lx (5 FC)

(2) Uniformity Ratio (max /ave): 4:1

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal power
- Life Safety branch of the EES power for egress lighting at exit discharge and emergency/ambulance entry.

DESIGN APPROACH:

Lighting at building entrances shall include a combination of approaches to enhance nighttime visibility and promote safety and security. Transitions should be highlighted to adjust for visual adaption through out the day. Vertical illumination and surface brightness should be considered to create a lit destination. Decorative wall luminaires should be considered to provide visual interest and create a visual cue to mark the building entrance from a distance at night. Color rendering and temperature are particularly important at the emergency/ambulance entrance where patient assessment can occur.

RECOMMENDED LUMINAIRES:

(1) LED, compact fluorescent or metal halide bollard with visible brightness.
(2) Pole-mounted LED or metal halide pedestrian-scale luminaire with visible brightness.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Recessed ceiling-mounted compact fluorescent, LED or metal halide downlight or wall washer.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.
(3) Ambulatory entrance shall remain at full brightness throughout the night.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Recessed soffit/ceiling-mounted lights shall have a minimum UL listing for damp locations.
(3) Coordinate pole and luminaire with exterior building and landscape color palette.

3.5 LANDSCAPE

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Trees, Shrubbery: 30 lx (3 FC)
- Decorative Structures: 50 lx (5 FC)
- Focal Points: 50 lx (5 FC)
- Water Features: 30 lx (3 FC)

(2) Uniformity Ratio (max / min): n / a

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degree

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65

(5) Power Source:
- Normal power

DESIGN APPROACH:

Landscape lighting should be limited to entries, courtyards and meditation gardens, as well as the highlighting of building or landscape features (i.e., trees, plant life, artwork, water features, and hardscape). Glare and direct light source view should be minimized by luminaire placement and aiming. Color rendering and temperature should be evaluated with the features being illuminated.

RECOMMENDED LUMINAIRES:

(1) In grade LED or metal halide uplights.
(2) Stanchion- or base-mounted LED or metal halide accent and floodlights.
(3) Surface-mounted in landscape feature linear LED exterior strip lights.
(4) LED step light.
(5) LED underwater accent light.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Coordinate fixture layout with hardscape and landscape.
(3) Coordinate location and aiming to avoid light trespass in interior spaces.

3.6 BUILDING PERIMETER

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Non-Public Building Entries: 30 lx (3 FC)
- Walkways Adjacent to Perimeter: 5 lx (0.5 FC)
- Loading Dock Platforms: 30 lx (3 FC)

(2) Uniformity Ratio (max / ave): 4:1

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal power
- Life Safety branch of the EES power for egress lighting at exit discharge.

DESIGN APPROACH:

Lighting should enhance nighttime visibility to promote safety and security at building perimeter. Vertical illumination and glare should be considered.

RECOMMENDED LUMINAIRES:

(1) Wall-mounted full cutoff, low profile, LED, metal halide or high pressure sodium luminaire.
(2) Wall-mounted LED, metal halide or high pressure sodium wall pack luminaire with lens.
(3) Wall-mounted LED, metal halide or high pressure sodium floodlights.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Comply with Dark Sky recommendations.
(3) Coordinate luminaire with exterior building color palette.
(4) Coordinate luminaire layout with building elevations.

3.7 FLAGPOLES

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Flag: 100 lx (10 FC)

(2) Uniformity Ratio (max / min): n / a

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65

(5) Power Source:
- Normal power

DESIGN APPROACH:

Lighting should highlight flag uniformly. Consider horizontal and vertical illumination. Glare and direct light source view should be minimized by luminaire placement and aiming. Color rendering and temperature should be evaluated with the flags being illuminated.

RECOMMENDED LUMINAIRES:

(1) In grade LED or metal halide up light.
(2) Stanchion- or base-mounted LED or metal halide spot light.
(3) Pole-mounted LED or metal halide accent and flood lights.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.

SPECIFIC COORDINATION ISSUES:

(1) Comply with Federal laws governing nighttime illumination of the flag of the Unites States.
(2) Coordinate mounting requirements for luminaires mounted to flag pole.
(3) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.

3.8 PARKING STRUCTURES

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Basic: 50 lx (5 FC) with a minimum point of 10 lx (1 FC)
- Ramps Day: 100 lx (10 FC) with a minimum point of 20 lx (2 FC)
- Ramps Night: 50 lx (5 FC) with a minimum point of 10 lx (1 FC)
- Entrance Areas Day: 2500 lx (250 FC) with a minimum point of 500 lx (50 FC)
- Entrance Areas Night: 50 lx (5 FC) with a minimum point of 10 lx (1 FC)
- Stairways: 20 lx (2 FC)
- Top Level Open to Sky: 25 lx (2.5 FC) with a minimum point of 5 lx (0.5 FC)

(2) Uniformity Ratio (max / min): 10:1

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- Compact Fluorescent: 3500 degrees
- Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- Compact Fluorescent: minimum of 80
- Fluorescent: minimum of 80

(5) Power Source:
- Normal power
- Life Safety branch of the EES power for egress and exit discharge lighting.

DESIGN APPROACH:

Lighting should enhance interior parking structure visibility to promote safety and security. Consider horizontal and vertical illumination. Provide brightness at ceiling to improve contrast between deck and side wall openings. Glare and direct light source view should be minimized by luminaire selection and placement. Transitions should be highlighted to adjust for visual adaption throughout the day. Signage, pedestrian walkways, and elevator lobbies should be illuminated to create lit destinations. The top deck should be treated as an exterior parking area using pole-mounted luminaires mounted on the perimeter and ramps.

RECOMMENDED LUMINAIRES:

(1) Surface-mount to ceiling low profile LED, HID, fluorescent or compact fluorescent parking garage luminaire with uplight component.

(2) Pole-mounted full cutoff, low profile, LED or metal halide luminaire.
(3) Recessed ceiling-mounted compact fluorescent or LED downlight at lobbies.

CONTROL APPROACH:

(1) Photocontrols for all luminaires.
(2) Automatic control zones with time schedule for all exterior lighting circuits.
(3) Automatically reduce light by stepped switching or dimming when no activity is detected by local sensors.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(2) Coordinate pole base height to reduce pole damage. Consider elevated bases when located in parking areas of roof deck.
(3) Coordinate interior parking area luminaire layout with structural grid and ceiling clearances.
(4) Consider luminaire options to discourage nesting by birds.

3.9 HELICOPTER PADS

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Apron: 32 lx (3.2 FC)

(2) Uniformity Ratio (max / min): n /a
(Comply with FAA helipad lighting regulations.)

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65

(5) Power Source:
- Normal power

DESIGN APPROACH:

Helipad lighting shall comply with FAA helipad lighting regulations which include but are not limited to:

(1) Wind sock shall be internally or externally illuminated.

(2) Touchdown and Lift Off Area (TLOF) shall be illuminated by a minimum of three (3) flush or elevated green perimeter lights per side with one (1) fixture mounted at each corner if TLOF is square or rectangular; maximum spacing of 25 feet (7.6 m) between fixtures whether TLOF is square, rectangular, or round.
- Flush fixtures shall be located within 1 foot (0.3 m) inside or outside of TLOF perimeter.
- Elevated fixtures shall be located within 1 foot (0.3 m) outside of TLOF perimeter.

(3) Final Approach and Take Off Area (FATO) shall be illuminated by a minimum of three (3) flush or elevated green perimeter lights per side with one (1) fixture mounted at each corner if FATO is square or rectangular; maximum spacing of 25 feet (7.6 m) between fixtures whether FATO is square, rectangular, or round.
- Flush fixtures shall be located within 1 foot (0.3 m) inside or outside of FATO perimeter.
- Elevated fixtures shall be located 10 feet (3 m) outside of FATO perimeter.

(4) Optional floodlights may be utilized to illuminate the TLOF or FATO but must not interfere with the area and should be capable of being turned OFF during takeoffs and landings.

(5) Optional landing direction lights shall be utilized only when necessary and consist of five (5) yellow omni-directional lights on the centerline of the preferred approach/departure path spaced at 15 foot (4.57 m) intervals.
(6) Optional heliport identification beacons shall be utilized only when necessary and flash white/green/yellow at the rate of 30-45 flashes per minute.
(7) Obstructions (i.e., unmarked wires, antennas, poles, cell towers, etc.) within the approach/departure space shall be adequately illuminated to FAA standards.

RECOMMENDED LUMINAIRES:

(1) LED or HID lighted wind cone.
(2) Flush or elevated omni-directional green LED perimeter lights.
(3) Optional flush or elevated omni-directional yellow LED landing lights.
(4) Wall- or building-mounted LED or HID floodlight.

CONTROL APPROACH:

(1) Local manual switch for flood lights.
(2) Photocontrols for perimeter and landing lights.

SPECIFIC COORDINATION ISSUES:

(1) Comply with appropriate regulatory agency documents.
(2) Determine size and shape (rectangular, square, circular) of TLOF and FATO.
(3) Determine location of helipad (roof or ground).
(4) Determine if TLOF will be elevated above FATO and coordinate lighting with safety net if TLOF is elevated.
(5) Determine any obstructions to the TLOF and FATO.
(6) Determine if landing direction lights will be needed.
(7) Determine if heliport identification beacons will be needed.
(8) Determine if taxiway and taxi routes will be located on site.
(9) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.
(10) Life safety from ESS is required if helicopter pad is used for helicopter medical evacuation purposes.

3.10 WATER TANKS

DESIGN PARAMETERS:

(1) Average Maintained Illumination:
- Horizontal: 100 lx (10 FC)
- Vertical: 30 lx (3 FC)

(2) Contrast Ratio (max / min): n / a

(3) Color Temperature (CCT):
- LED: 4000 degrees
- Metal Halide: 4000 degrees
- High Pressure Sodium: 1900 degrees

(4) Color Rendering (CRI):
- LED: minimum of 85
- Metal Halide: minimum of 65
- High Pressure Sodium: minimum of 21

(5) Power Source:
- Normal power

DESIGN APPROACH:

Proper vertical and horizontal illumination and uniformity should be provided for the water tank storage area. Glare and direct light source view should be minimized by luminaire placement and aiming.

RECOMMENDED LUMINAIRES:

(1) Pole-, base- or building-mounted LED, metal halide or high pressure sodium floodlight.

CONTROL APPROACH:

1) Automatic full OFF with local manual control devices for all lighting.

SPECIFIC COORDINATION ISSUES:

1) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.

3.11 ROOF MOUNTED ANTENNA-OBSTRUCTION LIGHTS

DESIGN PARAMETERS:

(1) Average Maintained Illumination: n / a
(2) Uniformity Ratio (max / min): n / a
(3) Color Temperature (CCT): n / a
(4) Color Rendering (CRI): n / a
(5) Power Source:
- Life Safety branch of the EES power.

DESIGN APPROACH:

Obstruction lighting shall comply with FAA regulations which include but are not limited to:

(1) Flashing or steady burning aviation red obstruction light beacons used during nighttime.
(2) Flashing medium intensity white obstruction lights used during daylight and twilight that automatically reduce intensity during nighttime. Other methods may be omitted if structure is less than or equal to 500 feet (152 m). This system is not recommended for structures less than or equal to 200 feet (60.9 m).
(3) Flashing high intensity white obstruction lights used during daytime with automatically selected reduced intensities for twilight and nighttime operations. Other methods may be omitted if this is used. This system is not recommended for structures less than or equal to 500 feet (152 m).
(4) Flashing or steady burning aviation red obstruction light beacons used during nighttime and high or medium intensity white lights for daytime and twilight. Other methods may be omitted if medium intensity is used and structure is less than or equal to 500 feet (152 m) or if high intensity is used and structure is any height.
(5) If structure is located in the midst of numerous structures with white lights, red obstruction lights should be used.
(6) Temporary obstruction lights must be provided during building construction.

RECOMMENDED LUMINAIRES:

(1) Red flashing or steady obstruction light beacons.
(2) Medium intensity flashing white obstruction light beacons.
(3) High intensity flashing white obstruction light beacons.

CONTROL APPROACH:

(1) None. Lights shall remain ON at all times.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate location of lights with structure.
(2) Coordinate type of obstruction lights on other buildings with new structure.
(3) Continually coordinate type of obstruction lights needed as construction of new structure progresses.
(4) Luminaires shall be enclosed and sealed in weatherproof housing with UL listing for wet locations.

4.1 PATIENT AREAS LIGHTING GUIDELINES MATRIX

The following matrix provides lighting guidelines for selected patient areas/rooms. Room names for these patient areas/room are extracted from VA Design Guides (PG-18-12) published on TIL in 2015 and prior. For patient areas and rooms not listed on this matrix, A/E may refer to Appendix A for the lighting guideline references, or illumination levels. In case A/E is unable to locate lighting guideline for any patient area/room of the project, A/E can follow lighting guidance shown in the matrix or Appendix A with closest similar function to that of the project's patient area/room.

Subsequent sections of Chapter 4 show specific lighting guidelines for patient areas/rooms. These lighting guidelines are referenced in the matrix under the column "Guideline Reference".

SERVICES	ROOM NAME	GUIDELINE REFERENCE
AMBULATORY CARE	CLEAN SUPPLY ROOM	7.1
AMBULATORY CARE	HOUSEKEEPING AIDS CLOSET	7.2
AMBULATORY CARE	JANITOR'S CLOSET	7.2
AMBULATORY CARE	MEDICATION ROOM	4.3.3
AMBULATORY CARE	OFFICES	6.1
AMBULATORY CARE	RECEPTION	5.8
AMBULATORY CARE	SOILED UTILITY ROOM	7.3
AMBULATORY CARE	TOILET, WHEELCHAIR ACCESSIBLE	4.3.8
AMBULATORY CARE	TOILET/SHOWER, WHEELCHAIR	4.3.8
AMBULATORY CARE	ER/UC: CLEAN UTILITY ROOM	7.4
AMBULATORY CARE	ER/UC: EXAM ROOM, ISOLATION	4.2.1

SERVICES	ROOM NAME	GUIDELINE REFERENCE
AMBULATORY CARE	ER/UC: EXAM ROOM, SECURITY	4.4.7
AMBULATORY CARE	ER/UC: LIFE SUPPORT UNIT	4.2.1
AMBULATORY CARE	ER/UC: NURSE STATION / COMMUNICATION CENTER	4.3.1
AMBULATORY CARE	ER/UC: OBSERVATION AND TREATMENT ROOM	4.2.1
AMBULATORY CARE	ER/UC: VITAL SIGN STATION	4.2.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: AUDIOMETRIC BOOTH	4.2.12
AMBULATORY CARE (HOSPITAL BASED)	ETM: BLOOD DRAW	4.2.2
AMBULATORY CARE (HOSPITAL BASED)	ETM: EXAM ROOM	4.2.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: EXAM ROOM, ISOLATION	4.2.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: GYN EXAM ROOMS	4.2.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: INTAKE/EXIT INTERVIEW	6.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: NURSE STATION COMMUNICATION CENTER	4.3.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: NURSE TRIAGE	4.2.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: PROCEDURE ROOM, GENERAL PURPOSE	4.2.5
AMBULATORY CARE (HOSPITAL BASED)	ETM: AIDS CLINIC: AEROSOLIZED PENTAMIDINE PROCEDURE ROOM	4.2.5
AMBULATORY CARE (HOSPITAL BASED)	ETM: DERMATOLOGY: PHOTOTHERAPY TREATMENT ROOM & SHOWER ROOM	4.2.1, 4.3.8

SERVICES	ROOM NAME	GUIDELINE REFERENCE
AMBULATORY CARE (HOSPITAL BASED)	ETM: DERMATOLOGY: PROCEDURE/TREATMENT ROOM	4.2.1
AMBULATORY CARE (HOSPITAL BASED)	ETM: GI CLINIC: GASTRIC (ESOPHAGEAL) MOTILITY PROCEDURE ROOM	4.2.5
AMBULATORY CARE (HOSPITAL BASED)	ETM: GI CLINIC: SCOPE CLEANING/CLEAN STORAGE	4.7.1 4.7.6
AMBULATORY CARE (HOSPITAL BASED)	ETM: GI CLINIC: SCREENING PROCTOSCOPY/SIGMOIDOSCOPY ROOM	4.2.5
AMBULATORY CARE (HOSPITAL BASED)	ETM: MOHS CLINIC PROCEDURE / TREATMENT ROOM	4.2.5
AMBULATORY CARE (HOSPITAL BASED)	ONCOLOGY: CHEMOTHERAPY AGENT PREPARATION AREA	4.2.8
AMBULATORY CARE (HOSPITAL BASED)	ONCOLOGY: CHEMOTHERAPY TREATMENT ROOM	4.2.8
AMBULATORY CARE (HOSPITAL BASED)	ORTHOPEDIC CLINIC: CAST ROOM	4.2.3
AMBULATORY CARE (HOSPITAL BASED)	DISPOSITION: AGENT CASHIER	6.1
CARDIOVASCULAR LABORATORY	EKG TESTING ROOM	4.2.7
CARDIOVASCULAR LABORATORY	HOLTER MONITOR ROOM	4.2.7
CARDIOVASCULAR LABORATORY	ECHOCARDIOGRAPH ROOM	4.2.7
CARDIOVASCULAR LABORATORY	STRESS ECHOCARDIOGRAPH ROOM	4.2.7
CARDIOVASCULAR LABORATORY	STRESS TESTING TREADMILL ROOM	4.2.7

SERVICES	ROOM NAME	GUIDELINE REFERENCE
CARDIOVASCULAR LABORATORY	TILT TABLE TESTING ROOM	4.2.7
CARDIOVASCULAR LABORATORY	EVENT/HOLTER MONITOR WORK ROOM	4.2.7
CARDIOVASCULAR LABORATORY	CARDIAC CATHETERIZATION LABORATORY	4.2.5
CARDIOVASCULAR LABORATORY	CONTROL ROOM, CARDIAC CATHETERIZATION	4.2.5
CARDIOVASCULAR LABORATORY	TRANSESOPHAGEAL ECHOCARDIOGRAPH ROOM	4.2.5
CARDIOVASCULAR LABORATORY	SYSTEM COMPONENT ROOM	4.2.5
CARDIOVASCULAR LABORATORY	RECOVERY ROOM, PATIENT PREP	4.2.15
DENTAL SERVICE	X-RAY PANORAMIC/ CEPHALOMETRIC	4.2.6
DENTAL SERVICE	CONE BEAM COMPUTERIZED TOMOGRAPHY	4.2.6
DENTAL SERVICE	DENTAL TREATMENT ROOM, MULTIFUNCTIONAL	4.2.16
DENTAL SERVICE	DENTAL TREATMENT ROOM: SPECIAL NEEDS PATIENT	4.2.16
DENTAL SERVICE	ORAL SURGERY, MINOR PROCEDURE ROOM	4.2.17
DENTAL SERVICE	STORAGE, STERILE INSTRUMENTS	7.1
DENTAL SERVICE	DENTAL EQUIPMENT MECHANICAL ROOM	7.9
DENTAL SERVICE	LABORATORY, GENERAL PURPOSE	4.2.4
DENTAL SERVICES	LABORATORY, PORCELAIN/ CERAMICS	4.2.4

SERVICES	ROOM NAME	GUIDELINE REFERENCE
DIGESTIVE DISEASE - ENDOSCOPY SERVICE	PROCEDURE ROOM, ENDOSCOPY	4.2.5
DIGESTIVE DISEASE - ENDOSCOPY SERVICE	PROCEDURE ROOM, ERCP / ENDOSCOPIC ULTRASOUND	4.2.5
DIGESTIVE DISEASE - ENDOSCOPY SERVICE	RECOVERY ROOM, PATIENT PREP	4.2.15
DIGESTIVE DISEASE - ENDOSCOPY SERVICE	REPROCESSING ROOM, SCOPE	4.7.6
ELECTROENCEPHALOGRAPHY LABORATORY	EXAM ROOM, EEG	4.2.1
ELECTROENCEPHALOGRAPHY LABORATORY	EXAM ROOM, EMG	4.2.1
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	PATIENT ROOM	4.3.4
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	PATIENT ROOM, ISOLATION	4.3.5
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	PATIENT ROOM, INTENSIVE CARE	4.3.6
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	NURSE STATION	4.3.1
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	MEDICATION ROOM	4.3.3

SERVICES	ROOM NAME	GUIDELINE REFERENCE
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	NOURISHMENT STATION	4.3.10
MEDICAL/SURGICAL INPATIENT UNITS & INTENSIVE CARE NURSING UNITS	TEAM WORK ROOM	6.1
MAGNETIC RESONANCE IMAGING (MRI)	MRI SCANNING ROOM	4.2.6
MAGNETIC RESONANCE IMAGING (MRI)	MRI CONTROL ROOM	4.2.6
MAGNETIC RESONANCE IMAGING (MRI)	MRI SYSTEMS COMPONENT ROOM	4.2.6
MENTAL HEALTH FACILITIES	BCU: PATIENT ROOM AND TOILET, ONE BED	4.4.1 4.4.2
MENTAL HEALTH FACILITIES	BCU: PATIENT ROOM AND TOILET, TWO BED	4.4.1 4.4.2
MENTAL HEALTH FACILITIES	BCU: ISOLATION, RESTRAINT	4.4.1 4.4.2
MENTAL HEALTH FACILITIES	BCU: NURSE STATION	4.4.6
MENTAL HEALTH FACILITIES	BCU: NURSE WORKROOM	6.1
MENTAL HEALTH FACILITIES	BCU: MEDICATION ROOM	4.3.3
MENTAL HEALTH FACILITIES	BCU: TEAM ROOM	6.3
MENTAL HEALTH FACILITIES	BCU: DINING ROOM	4.4.3
MENTAL HEALTH FACILITIES	BCU: SERVING/PANTRY	4.4.3

SERVICES	ROOM NAME	GUIDELINE REFERENCE
MENTAL HEALTH FACILITIES	BCU: DAY ROOM	4.4.4
MENTAL HEALTH FACILITIES	BCU: GROUP ROOM	4.4.5
MENTAL HEALTH FACILITIES	RRTP: BEDROOM, ONE BED	4.4.8 4.4.9
MENTAL HEALTH FACILITIES	RRTP: BEDROOM, TWO BED	4.4.8 4.4.9
MENTAL HEALTH FACILITIES	RRTP: LIVING AREA, DINING AREA, AND KITCHENETTE	4.4.10
MENTAL HEALTH FACILITIES	RRTP: LOUNGE	4.3.11
MENTAL HEALTH FACILITIES	RRTP: MULTI-PURPOSE ROOM / KITCHENETTE	4.3.12
MENTAL HEALTH FACILITIES	RRTP: EDUCATION / CONFERENCE / GROUP ROOM	6.2
MENTAL HEALTH FACILITIES	RRTP: DINING ROOM	5.6
MENTAL HEALTH FACILITIES	RRTP: SERVING LINE / TRAINING KITCHEN	5.6
MENTAL HEALTH FACILITIES	RRTP: RECREATION THERAPY ROOM	4.2.11
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: EXAM ROOM	4.2.1
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: TREATMENT ROOM	4.2.1
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: GROUP THERAPY ROOM	4.4.11
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: GROUP TESTING ROOM	6.1
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: BIOFEEDBACK LABORATORY TREATMENT ROOM	4.2.7

SERVICES	ROOM NAME	GUIDELINE REFERENCE
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: BIOFEEDBACK LABORATORY CONTROL ROOM	6.1
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: OFFICE, COUNSELOR	6.1
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: SOCIAL ACTIVITIES, DINING, MULTI-PURPOSE	4.3.12
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: CLASSROOM / GROUP ROOM	4.4.11
MENTAL HEALTH FACILITIES	OUTPATIENT SERVICES: OCCUPATIONAL THERAPY	4.2.11
NUCLEAR MEDICINE	NUCLEAR MEDICINE SCANNING ROOM	4.2.6
NUCLEAR MEDICINE	BONE DENSITOMETRY ROOM	4.2.6
NUCLEAR MEDICINE	PATIENT DOSE ADMINISTRATION	4.2.6
NUCLEAR MEDICINE	PET/CT SCAN ROOM	4.2.6
NUCLEAR MEDICINE	PET/CT SCAN CONTROL ROOM	4.2.6
NUCLEAR MEDICINE	PET/CT SYSTEM COMPONENT ROOM	4.2.6
NUCLEAR MEDICINE	RADIOPHARMACY	4.2.18
OUTPATIENT CLINIC (SOC/CBOC)	BLOOD DRAW	4.2.2
OUTPATIENT CLINIC (SOC/CBOC)	CLEAN UTILITY ROOM	7.4
OUTPATIENT CLINIC (SOC/CBOC)	DRESSING ROOM	4.3.13
OUTPATIENT CLINIC (SOC/CBOC)	EXAM ROOM	4.2.1

SERVICES	ROOM NAME	GUIDELINE REFERENCE
OUTPATIENT CLINIC (SOC/CBOC)	HOUSEKEEPING AIDS CLOSET	7.2
OUTPATIENT CLINIC (SOC/CBOC)	MEDICATION ROOM	4.3.3
OUTPATIENT CLINIC (SOC/CBOC)	NURSE STATION	4.3.1
OUTPATIENT CLINIC (SOC/CBOC)	NURSE / COMMUNICATION STATION	4.3.1
OUTPATIENT CLINIC (SOC/CBOC)	OFFICE	6.1
OUTPATIENT CLINIC (SOC/CBOC)	PACS VIEWING ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	RECEPTION	5.8
OUTPATIENT CLINIC (SOC/CBOC)	SOILED UTILITY ROOM	7.3
OUTPATIENT CLINIC (SOC/CBOC)	TOILET/SHOWER, WHEELCHAIR	4.3.8
OUTPATIENT CLINIC (SOC/CBOC)	TOILET, WHEELCHAIR ACCESSIBLE	4.3.8
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: AGENT CASHIER	6.1
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: DERMATOLOGY PHOTOTHERAPY TREATMENT ROOM	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: DERMATOLOGY PROCEDURE/TREATMENT ROOM	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: ETM NURSE TRIAGE	4.2.1

SERVICES	ROOM NAME	GUIDELINE REFERENCE
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: ETM PROCEDURE ROOM	4.2.5
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: ETM VITAL SIGN STATION	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: GI SCREENING PROCTOSCOPY/SIGMOIDOSCOPY ROOM	4.2.5
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: GYN EXAM ROOM	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: ONCOLOGY CHEMOTHERAPY TREATMENT ROOM	4.2.8
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: ORTHOPEDIC CLINIC CAST ROOM	4.2.3
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: UC INFECTIOUS ISOLATION ROOM	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: UC MONITORED BEDS	4.2.15
OUTPATIENT CLINIC (SOC/CBOC)	AMBULATORY CARE: UC OBSERVATION AND TREATMENT ROOM	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	AUDIOLOGY: INSTRUMENT CALIBRATION AND STORAGE ROOM	7.1 7.6
OUTPATIENT CLINIC (SOC/CBOC)	AUDIOLOGY: OFFICE/THERAPY ROOM	6.1
OUTPATIENT CLINIC (SOC/CBOC)	DENTAL: GENERAL TREATMENT OPERATORY	4.2.16
OUTPATIENT CLINIC (SOC/CBOC)	DENTAL: ORAL SURGERY RECOVERY ROOM	4.2.17
OUTPATIENT CLINIC (SOC/CBOC)	DENTAL: ORAL SURGERY ROOM	4.2.17
OUTPATIENT CLINIC (SOC/CBOC)	DDP-ENDOSCOPY: EGD PROCEDURE ROOM	4.2.5
OUTPATIENT CLINIC (SOC/CBOC)	ENDOSCOPY: SCOPE CLEANING/CLEAN STORAGE	7.1 7.6

SERVICES	ROOM NAME	GUIDELINE REFERENCE
OUTPATIENT CLINIC (SOC/CBOC)	ENGINEERING: BIOMEDICAL ENGINEERING REPAIR SHOP	7.5
OUTPATIENT CLINIC (SOC/CBOC)	EYE CLINIC: EYE EXAMINATION/TREATMENT ROOM	4.2.1
OUTPATIENT CLINIC (SOC/CBOC)	EYE CLINIC: FITTING AND DISPENSING ROOM	4.2.7
OUTPATIENT CLINIC (SOC/CBOC)	EYE CLINIC: VISUAL FIELDS ROOM AND PHOTOGRAPHY ROOM	4.2.7
OUTPATIENT CLINIC (SOC/CBOC)	LABORATORY: CLINICAL CHEMISTRY	4.2.4
OUTPATIENT CLINIC (SOC/CBOC)	LABORATORY: MICROBIOLOGY	4.2.4
OUTPATIENT CLINIC (SOC/CBOC)	MENTAL HEALTH: OFFICE/EXAM ROOM	4.4.7
OUTPATIENT CLINIC (SOC/CBOC)	PHARMACY: BASIC SERVICE	4.2.18
OUTPATIENT CLINIC (SOC/CBOC)	PHARMACY: ONCOLOGY DRUGS PREPARATION AREA	4.2.8
OUTPATIENT CLINIC (SOC/CBOC)	PULMONARY: EXERCISE OFFICE	6.1
OUTPATIENT CLINIC (SOC/CBOC)	PULMONARY: SPECIAL PROCEDURES/ BRONCHOSCOPY ROOM	4.2.5
OUTPATIENT CLINIC (SOC/CBOC)	PULMONARY: VENTILATORY TEST ROOM/SPIROMETRY	4.2.7
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: CHEST ROOM, DEDICATED	4.2.7
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: CT SCANNING ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: CT COMPUTER POWER AND EQUIPMENT ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: FILM LIBRARY	7.1

SERVICES	ROOM NAME	GUIDELINE REFERENCE
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: GENERAL PURPOSE ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: MAMAGROPHY ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: RADIOGRAPHIC/FLUOROSCOPIC ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	RADIOLOGY: ULTRASOUND ROOM	4.2.6
OUTPATIENT CLINIC (SOC/CBOC)	SPD: BASIC SERVICE	7.1
OUTPATIENT CLINIC (SOC/CBOC)	SPD: MANUAL EQUIPMENT WASH AREA	7.6
OUTPATIENT CLINIC (SOC/CBOC)	SURGERY: AMBULATORY SURGERY CYSTOSCOPY ROOM	4.2.5
OUTPATIENT CLINIC (SOC/CBOC)	SURGERY: MINOR PROCEDURE OPERATING ROOM	4.2.13
OUTPATIENT CLINIC (SOC/CBOC)	SURGERY: SUB-STERILE ROOM	7.6
PHARMACY SERVICE	UNIT DOSE AND WARD STOCK	4.2.18
PHARMACY SERVICE	MEDICATION ASSIGNMENT AND STAT COUNTER	4.2.18
PHARMACY SERVICE	CONTROL SUBSTANCE VAULT AND SECURED DISPENSING AREA	4.2.18
PHARMACY SERVICE	RECEIVING AREA	4..2.18
PHARMACY SERVICE	EXTEMPORANEOUS REPACKAGING AND EXTEMPORANEOUS COMPOUNDING	4.2.18
PHARMACY SERVICE	INTRAVENOUS ADMIXTURE AND ASEPTIC TRANSFER	4.2.18
PHARMACY SERVICE	ONCOLOGY DRUGS	4.2.8

SERVICES	ROOM NAME	GUIDELINE REFERENCE
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	PATIENT ROOM	4.3.4
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	NURSE STATION	4.3.1
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	RECREATION THERAPY ROOM, GROUP	4.2.11
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	DINING ROOM	5.6
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	QUIET TREATMENT ROOM	4.2.11
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	FAMILY MULTIPURPOSE ROOM	4.3.12
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	FAMILY LIVING	4.3.11
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	REHABILITATION GYM	4.2.11
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	COGNATIVE THERAPY EXAM/TREATMENT ROOM	4.2.1
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	COMPUTER ACTIVITIES ROOM	4.3.11

SERVICES	ROOM NAME	GUIDELINE REFERENCE
POLYTRAUMA REHABILITATION: INPATIENT REHAB CENTER	COGNATIVE THERAPY MULTIPURPOSE ROOM	4.3.12
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	TRANSITIONAL REHAB RESIDENT BEDROOM	4.3.7 4.3.9
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	DOUBLE APARTMENT UNITS	4.3.7 4.3.9
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	NURSE STATION/CHECK IN STATION	4.3.1
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	DINING AREA	5.6
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	RECREATION ACTIVITY ROOM, GROUP	4.2.11
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	LOUNGE SPACE	4.3.11
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	PHYSICAL/OCCUPATIONAL THERAPY	4.2.11
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	RECREATION THERAPY ROOM, GROUP	4.2.11
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	GAIT AND BALANCE LAB	4.2.11

SERVICES	ROOM NAME	GUIDELINE REFERENCE
POLYTRAUMA REHABILITATION: TRANSITIONAL REHAB CENTER	EXAM ROOM	4.2.1
PULMONARY MEDICINE SERVICE	PULMONARY FUNCTION TESTING LAB	4.2.7
PULMONARY MEDICINE SERVICE	EXTENDED PULMONARY FUNCTION TESTING LAB	4.2.7
PULMONARY MEDICINE SERVICE	PULMONARY EXERCISE PHYSIOLOGY LAB	4.2.7
PULMONARY MEDICINE SERVICE	RESPIRATORY THERAPY ROOM	4.2.7
PULMONARY MEDICINE SERVICE	BRONCHOSCOPY PROCEDURE ROOM	4.2.5
PULMONARY MEDICINE SERVICE	SLEEP STUDY ROOM	4.3.7
PULMONARY MEDICINE SERVICE	SLEEP STUDY MONITORING ROOM	4.2.6
PULMONARY MEDICINE SERVICE	RECOVERY ROOM, PATIENT PREP	4.2.15
RADIATION THERAPY SERVICE	LINEAR ACCELERATOR ROOM & CONTROL AREA	4.2.6
RADIATION THERAPY SERVICE	CT SIMULATOR UNIT ROOM AND CONTROL ROOM	4.2.6
RADIATION THERAPY SERVICE	ULTRASOUND PLANNING UNIT ROOM	4.2.6 4.3.8
RADIATION THERAPY SERVICE	TREATMENT PLANNING COMPUTER ROOM / DOSIOMETRY ROOM	4.2.6
RADIOLOGY SERVICE	GENERAL PURPOSE RADIOLOGY ROOM	4.2.6
RADIOLOGY SERVICE	CHEST ROOM	4.2.6
RADIOLOGY SERVICE	RADIOGRAPHIC/ FLUOROSCOPIC ROOM	4.2.6 4.3.8

SERVICES	ROOM NAME	GUIDELINE REFERENCE
RADIOLOGY SERVICE	MAMMOGRAPHY ROOM	4.2.6
RADIOLOGY SERVICE	ULTRASOUND ROOM	4.2.6 4.3.8
RADIOLOGY SERVICE	IR SPECIAL PROCEDURE ROOM	4.2.6
RADIOLOGY SERVICE	IR SPECIAL PROCEDURE CONTROL ROOM	4.2.6
RADIOLOGY SERVICE	IR SPECIAL PROCEDURE SYSTEM COMPONENT ROOM	4.2.6
RADIOLOGY SERVICE	CT SCANNING ROOM	4.2.6
RADIOLOGY SERVICE	CT CONTROL ROOM	4.2.6
SPINAL CORD INJURY/DISORDERS	ACUTE CARE ONE BED ROOM	4.3.4
SPINAL CORD INJURY/DISORDERS	ACUTE CARE ISOLATION, ANTE ROOM	4.3.5
SPINAL CORD INJURY/DISORDERS	ACUTE CARE TWO BED ROOM	4.3.4
SPINAL CORD INJURY/DISORDERS	PATIENT BATHROOM	4.3.8
SPINAL CORD INJURY/DISORDERS	ACUTE RESPIRATORY ONE BED ROOM	4.3.4
SPINAL CORD INJURY/DISORDERS	NURSE STATION	4.3.1
SPINAL CORD INJURY/DISORDERS	NOURISHMENT KITCHEN	4.3.10
SPINAL CORD INJURY/DISORDERS	HYDROTHERAPY/ TUBROOM	4.2.11
SPINAL CORD INJURY/DISORDERS	LITTER STORAGE	7.1

SERVICES	ROOM NAME	GUIDELINE REFERENCE
SPINAL CORD INJURY/DISORDERS	TRANSFER EQUIPMENT STORAGE	7.1
SPINAL CORD INJURY/DISORDERS	DAY ROOM/LOUNGE	4.3.11
SPINAL CORD INJURY/DISORDERS	RESIDENT DINING/SERVING	5.6
SPINAL CORD INJURY/DISORDERS	MULTI-PURPOSE ROOM	4.3.12
SPINAL CORD INJURY/DISORDERS	INTERNET CAFÉ	4.3.11
SPINAL CORD INJURY/DISORDERS	ACTIVITIES OF DAILY LIVING	4.2.11
SPINAL CORD INJURY/DISORDERS	THERAPEUTIC POOL	4.2.11
SPINAL CORD INJURY/DISORDERS	DRESSING ROOM	4.3.13
SPINAL CORD INJURY/DISORDERS	TYPICAL CORRIDOR	4.3.2
SPINAL CORD INJURY/DISORDERS	SCI ELEVATOR	5.2
SPINAL CORD INJURY/DISORDERS	MAIN ENTRANCE CANOPY	3.5
SPINAL CORD INJURY/DISORDERS	URODYNAMICS: EXAM/TREATMENT ROOM	4.2.1
SPINAL CORD INJURY/DISORDERS	URODYNAMICS: CYSTOSCOPY/LITHOTRIPSY	4.2.5
SPINAL CORD INJURY/DISORDERS	URODYNAMICS: STORAGE AND INSTRUMENT CLEANING ROOM	7.1 7.6
SPINAL CORD INJURY/DISORDERS	URODYNAMICS: RECOVERY ROOM	4.2.15
SPINAL CORD INJURY/DISORDERS	URODYNAMICS: DRESSING ROOM	4.3.13

SERVICES	ROOM NAME	GUIDELINE REFERENCE
SPINAL CORD INJURY/DISORDERS	URODYNAMICS: NURSE STATION	4.3.1
SPINAL CORD INJURY/DISORDERS	OUTPATIENT URODYNAMICS: CLEAN UTILITY ROOM	4.7.4
SPINAL CORD INJURY/DISORDERS	HOME ENVIRONMENT LEARNING	4.2.11
SPINAL CORD INJURY/DISORDERS	PHYSICAL THERAPY	4.2.11
SPINAL CORD INJURY/DISORDERS	OCCUPATIONAL THERAPY	4.2.11
SPINAL CORD INJURY/DISORDERS	UROLOGIST OFFICE	6.1
SUPPLY PROCESSING AND DISTRIBUTION	HOUSEKEEPING AIDES CLOSET	7.2
SUPPLY PROCESSING AND DISTRIBUTION	STAFF-CONFERENCE ROOM	6.2
SUPPLY PROCESSING AND DISTRIBUTION	ADMINISTRATION, FIRST CLERK	6.1
SUPPLY PROCESSING AND DISTRIBUTION	ADMINISTRATION, CHIEF OF SPD	6.1
SUPPLY PROCESSING AND DISTRIBUTION	ADMINISTRATION, ASSISTANT CHIEF OF SPD	6.1
SUPPLY PROCESSING AND DISTRIBUTION	ANTE-ROOM	4.7.6
SUPPLY PROCESSING AND DISTRIBUTION	LOCKER ROOMS	6.4
SUPPLY PROCESSING AND DISTRIBUTION	TOILET AND SHOWER ROOMS	6.4

SERVICES	ROOM NAME	GUIDELINE REFERENCE
SUPPLY PROCESSING AND DISTRIBUTION	AUTOMATIC CART WASH	7.6
SUPPLY PROCESSING AND DISTRIBUTION	DETERGENT & WATER TREATMENT	7.8
SUPPLY PROCESSING AND DISTRIBUTION	SOILED RECEIVING AND DECONTAMINATION	7.3
SUPPLY PROCESSING AND DISTRIBUTION	MANUAL EQUIPMENT WASH	7.6
SUPPLY PROCESSING AND DISTRIBUTION	ENDOSCOPE DISINFECTION	7.6
SUPPLY PROCESSING AND DISTRIBUTION	SCOPE STORAGE	7.6
SURGICAL SERVICE	GENERAL OPERATING ROOM	4.2.13
SURGICAL SERVICE	PRE-OPERATIVE HOLDING / PHASE II RECOVERY PATIENT ROOM	4.2.15
SURGICAL SERVICE	ORTHOPEDIC OPERATING ROOM	4.2.13
SURGICAL SERVICE	UROLOGY / CYSTOSCOPY OPERATING ROOM	4.2.13
SURGICAL SERVICE	CARDIOTHORACIC OPERATING ROOM	4.2.13
SURGICAL SERVICE	CARDIOTHORACIC PUMP ROOM OR HYBRID OR CONTROL ROOM	7.10
SURGICAL SERVICE	NEUROSURGICAL OPERATING ROOM	4.2.13
SURGICAL SERVICE	ROBOTICS OPERATING ROOM	4.2.13
SURGICAL SERVICE	TRANSPLANT OPERATING ROOM	4.2.13

SERVICES	ROOM NAME	GUIDELINE REFERENCE
SURGICAL SERVICE	MONOPLANE HYBRID OPERATING ROOM	4.2.13
SURGICAL SERVICE	BIPLANE HYBRID OPERATING ROOM	4.2.13
SURGICAL SERVICE	IMMEDIATE USE STERILIZATION ROOM	7.6
SURGICAL SERVICE	ANESTHESIA CLEAN WORK ROOM	4.2.1
SURGICAL SERVICE	DECONTAMINATION / CLEAN UP AREA	4.2.14
SURGICAL SERVICE	SOILED SURGICAL UTILITY ROOM	7.3
SURGICAL SERVICE	CARDIAC CATHETERIZATION LABORATORY	4.2.4
SURGICAL SERVICE	ELECTROPHYSIOLOGY PROCEDURE ROOM	4.2.5
SURGICAL SERVICE	TRANSESOPHAGEAL ECHOCARDIOGRAPH ROOM	4.2.5
SURGICAL SERVICE	ISOLATION PACU / PHASE I RECOVERY	4.2.15
SURGICAL SERVICE	IPACU / PHASE I RECOVERY PATIENT	4.2.15
SURGICAL SERVICE	FROZEN SECTION LABORATORY	4.2.4

4.2 SPECIALTY, DIAGNOSTIC, AND TREATMENT AREAS

4.2.1 EXAMINATION AND TREATMENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50FC)
(2) Average Maintained Illumination - Task Focus:
- Exam: 1000 lx (100 FC) on exam table
- Charting: 300 lx (30 FC) on desk

(3) Uniformity Ratio (max / min):
- Ambient 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient, exam, and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for caregiver performance and patient comfort. Luminaires should be visually comfortable with appropriate optics to minimize glare during examinations when the patient is in a reclining position. Color rendering and temperature are particularly important.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted fluorescent or LED under cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral switch.
(5) Provide separate controls for areas enclosed by curtains.

SPECIFIC COORDINATION ISSUES:

(1) Rooms may require supplemental medical procedure lights. Coordinate placement with casework and equipment layouts. Ensure that room luminaires match the CCT and CRI of supplemental medical lights.
(2) Isolation and infection control examination and treatment rooms shall be specified with enclosed and sealed luminaires, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.
(3) Consider luminaire placement and optical control to mitigate glare and veiling reflections.

4.2.2 BLOOD DRAW STATION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC)
(2) Average Maintained Illumination - Task / Focus:
- Blood Draw: 1000 lx (100 FC) at blood draw site

(3) Uniformity Ratio (max / min):
- Ambient: 5:1
- Blood Draw Site: 2:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for blood draw rooms, specifically at blood draw chair. Color rendering and temperature are particularly important.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted fluorescent or LED under cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all luminaires.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral switch.
(5) Provide separate controls for areas enclosed by curtains.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and optical control to mitigate glare and veiling reflections.

4.2.3 ORTHOTIC AND CASTING ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC)
(2) Average Maintained Illumination - Task / Focus:
- Bench Top: 500 lx (50 FC) at 3'-0" AFF
- Fine Detail: 1000 lx (100 FC) at 3'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination should be considered to provide adequate illumination on the cast and splint area. Luminaires should be visually comfortable with appropriate optics to minimize glare when the patient is in a reclining position.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral switch.

SPECIFIC COORDINATION ISSUES:

(1) Rooms may require supplemental medical procedure lights. Coordinate placement with casework and equipment layouts. Ensure that room luminaires match the CCT and CRI of supplemental medical lights.

(2) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.4 LABORATORY

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC)
(2) Average Maintained Illumination - Task / Focus:
- Bench Top: 800 lx (80 FC) at 3'-0" AFF on work surface
- Dental Prosthetics: 2000 lx (200 FC) at 3'-0" AFF on work surface

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Vertical illumination should be considered at shelving. Color rendering and temperature are particularly important. In cell and tissue labs, provide UV-free or UV-filtered light luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Surface-mounted fluorescent or LED under cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral switch.
(5) If sensors are used, motion detectors shall be placed in every aisle to ensure complete coverage.
(6) Lighting in laboratories that use photographic or optical diagnostic techniques, or use electron microscopes, shall be controlled with dimmers.

SPECIFIC COORDINATION ISSUES:

(1) Consider light sources with higher CRI and CCT for critical color rendering tasks.
(2) Consider luminaire placement and optics to mitigate glare and veiling reflections.

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4.2.5 PROCEDURE ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC)
(2) Average Maintained Illumination - Task / Focus:
- Medical Task: 10000 lx (1000 FC), surgical task lighting
- Control Room: 300 lx (30 FC) at finished floor
- System Component: 100 lx (10 FC) at finished floor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination should be considered for procedure rooms. Luminaires should be visually comfortable with appropriate optics to minimize glare during procedures when the patient is in a reclining position.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight.
(3) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Rooms may require supplemental medical procedure lights. Coordinate placement with casework and equipment layouts. Ensure that room luminaires match the CCT and CRI of supplemental medical lights.
(2) Isolation and infection control examination and treatment rooms shall be specified with enclosed and sealed luminaires, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.
(3) Consider luminaire placement and optics to mitigate glare and veiling reflections.
(4) Consider light sources with higher CRI and CCT for critical color rendering tasks.

4.2.6 DIAGNOSTIC IMAGING ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Control Station: 300 lx (30 FC) at finished floor
- System Component: 200 lx (20 FC) at finished floor
- Patient Screening: 400 lx (40 FC) at finished floor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1 in imaging and control rooms
- Ambient: 4:1 during imaging

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for caregiver performance and patient comfort. Luminaires should be visually comfortable with appropriate optics to minimize glare when the patient is in a reclining position. Graphic and decorative luminaires are recommended in imaging rooms for visual interest during testing.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Surface-mounted fluorescent or LED under-cabinet task light.
(4) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Imaging and control rooms shall be fully dimmable.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.

(3) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) In imaging rooms with electromagnetic (EMI) and radio frequency (RFI) fields, light must be constructed of non-ferrous materials. Ballasts and drivers should be located outside of the magnetic resonance field, typically in the system component room or control room and provided with electrical noise filters.
(2) Coordinate luminaire placement with scanning equipment locations. Do not place luminaires over large scanning equipment.
(3) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.7 DIAGNOSTIC TESTING ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC) at 3'-0" AFF
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Luminaires should be visually comfortable with appropriate optics to minimize glare during examinations when the patient is in a reclining position. In ophthalmology testing rooms, providing dimming controls is especially important, as patients' eyes may be medically dilated and much of the equipment requires low lighting levels.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Surface-mounted fluorescent or LED under-cabinet task light.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Lights must be fully dimmable for patient comfort and relaxation during testing.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.8 CHEMOTHERAPY TREATMENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 200 lx (20 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Task (Injections): 500 lx (50 FC) at 3'-0" AFF
- Agent Preparation: 1000 lx (100 FC) at 3'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination should be considered for chemotherapy treatment rooms. Luminaires should be visually comfortable with appropriate optics to minimize glare during procedures when the patient is in a reclining position. Color rendering and temperature are particularly important.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight.
(3) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Provide patient bed/chair control for lighting in treatment rooms or cubicles. Dimming controls are preferable for patient comfort.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Mitigate light spill from common areas into patient areas.
(2) Coordinate if pillow switch lighting control is provided for patient use.
(3) Lighting in chemotherapy agent preparation areas shall be specified with enclosed and sealed luminaires, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners, and comply with USP 797 standards.
(4) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.9 RADIATION THERAPY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC)
(2) Uniformity Ratio (max / min):
- Ambient: 3:1
- Ambient: 4:1 during treatment

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Luminaires should be visually comfortable with appropriate optics to minimize glare during examinations when the patient is in a reclining position. Light luminaires with graphics, color changing coves, or video screens may be used in these spaces to provide visual interest to patients during their procedure.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Surface-mounted fluorescent or LED under-cabinet task light.
(4) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Provide patient bed/chair control for lighting in treatment rooms or cubicles.
(2) Dimming controls are preferable for patient comfort.
(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate if pillow switch lighting control is provided for patient use.
(2) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.10 DIALYSIS TREATMENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Needle Insertion: 2000 lx (200 FC) at site (procedure light)
- System Component: 100 lx (10 FC) at finished floor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination should be considered for dialysis treatment rooms. Luminaires should be visually comfortable with appropriate optics to minimize glare during procedures when the patient is in a reclining position. Color rendering and temperature are particularly important.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Surface-mounted fluorescent or LED under-cabinet task light.
(4) Wall-mounted linear fluorescent or LED indirect/direct luminaire.
(5) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Provide patient bed/chair control for lighting in treatment rooms or cubicles.
(2) Dimming controls are preferable for patient comfort.
(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(4) Automatic daylight response by photocontrols for ambient lighting.

(5) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Mitigate light spill from common areas into patient areas.
(2) Coordinate if pillow switch lighting control is provided for patient use.
(3) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.11 PHYSICAL/OCCUPATIONAL THERAPY

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Clinics: 500 lx (50 FC) at 3'-0" AFF
- Arm and Leg Whirlpools: 300 lx (30 FC) at 2' AFF
- Hubbard Tanks: 300 lx (30 FC) at 2' AFF
- Hydrotherapy: 300 lx (30 FC) at 2' AFF
- Special Treatment: 750 lx (75 FC) at 3'-0" AFF
- Tables and Exercise: 300 lx (30 FC) at 3'-0" AFF
- Food Preparation: 500 lx (50 FC) at 3'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Lighting in the room should appear pleasant and comfortable. Specify luminaires with lenses or wire guards in recreational therapy areas. Luminaires should be visually comfortable with appropriate optics to minimize glare in spaces where the patient is in a reclining position.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Suspended linear fluorescent or LED indirect/direct luminaire.
(5) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and optics to mitigate glare and veiling reflections especially in areas with pools.
(2) Luminaires in rooms with whirlpools, Hubbard tanks, and pools shall be enclosed and sealed and UL listed for wet locations.

4.2.12 AUDIOLOGY TESTING ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC)
(2) Average Maintained Illumination - Task / Focus:
- Control Booth: 300 lx (30 FC)

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

Lights in audiometric booths are typically provided in a pre-packaged system.

CONTROL STRATEGY:

(1) Lighting should be controlled with switches provided by manufacturer.

SPECIFIC COORDINATION ISSUES:

(1) When possible, have the manufacturer provide light sources that comply with the facility standards for maintenance.

4.2.13 SURGERY/OPERATING ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 2000 lx (200 FC) at 3'-0"
(2) Average Maintained Illumination - Task / Focus:
- Setup/Cleanup: 1000 lx (100 FC) at 3'-0" AFF
- Table: 3000 lx (300 FC) at 3'-0" AFF, dimmable
- Surgical Field: 15000 lx (1500 FC), surgical task light
- Control Room: 500 lx (50FC)

(3) Uniformity Ratio (max / min):
- Ambient: 2:1
- Setup/Cleanup: 3:1
- Table: 1.5:1

(4) Color Temperature (CCT):
- Fluorescent: 4100 degrees, or matching the surgical light CCT
- LED: 4000 degrees, or matching the surgical light CCT

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80 and minimum R9 of 90
- LED: minimum of 80 and minimum R9 of 90

(6) Power Source:
- Normal
- Life Safety branch of the EES.
- Critical branch of the EES.
- Each luminaire above the surgery table shall be designed with 50% integral emergency power battery packs.

DESIGN APPROACH:

A combination of ambient, surgery, and task illumination should be provided to reach desired illumination levels. The use of fully dimmable lighting luminaires provides medical staff with the flexibility required for procedures. Color rendering and temperature are particularly important.

RECOMMENDED LUMINAIRES:

(1) Recessed sealed ceiling-mounted fluorescent or LED lensed luminaires.
(2) Recessed sealed ceiling-mounted LED downlight.
(3) Surface-mounted sealed fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) All lighting shall be fully dimmable to provide flexibility during preparation, procedures, and clean-up.
(2) Coordinate location of room and medical equipment light control stations and provide station at door.

(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.

SPECIFIC COORDINATION ISSUES:

(1) Operating rooms require surgical lights. Coordinate placement with casework and equipment layouts. Ensure room light luminaires match the CCT and CRI of surgical lights.
(2) Luminaires shall be enclosed and sealed, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.
(3) Luminaires shall meet the requirements for Electromagnetic Interference/Compatibility (EMI), and Radio Frequency Interface (RFI).

4.2.14 SURGICAL CORRIDOR AND SCRUB AREA

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Scrub Area: 1000 lx (100 FC) at 3'-0" AFF on scrub sink

(3) Uniformity Ratio (max / min):
- Ambient: 6:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Luminaires should be visually comfortable with appropriate optics to minimize glare when the patient is transported in a reclined position.

RECOMMENDED LUMINAIRES:

(1) Recessed sealed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed sealed ceiling-mounted compact fluorescent or LED downlight.
(3) Recessed sealed ceiling-mounted fluorescent or LED perimeter cove light.

CONTROL APPROACH:

(1) Automatic full or partial OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.

4.2.15 PRE-OPERATIVE AND POST-ANESTHETIC CARE (PACU)

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Observation: 500 lx (50 FC) at 3'-0" AFF
- Examination: 1000 lx (100 FC) at 3'-0" AFF on patient bed

(3) Uniformity Ratio (max / min):
- Ambient: 5:1
- Exam: 2:1 on patient bed

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for caregiver performance and patient comfort. Luminaires should be visually comfortable with appropriate optics to minimize glare during examinations when the patient is in a reclining position.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight.
(3) Wall-mounted linear fluorescent or LED indirect/direct luminaire.

CONTROL APPROACH:

(1) General illumination for pre- and post-operative areas are grouped together and switched at the nurse station.
(2) Observation and exam settings are controlled through switches at the patient headwall.
(3) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(4) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(5) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.16 DENTAL EXAM AND TREATMENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Treatment: 1000 lx (100 FC) at 3'-0" AFF on chair

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 5000 degrees
- LED: 5000 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for caregiver performance and patient comfort. Luminaires should be visually comfortable with appropriate optics to minimize glare during examinations when the patient is in a reclining position.

RECOMMENDED LUMINAIRES:

(1) Recessed sealed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Rooms may require supplemental medical procedure lights. Coordinate placement with casework and equipment layouts. Ensure that room luminaires match the CCT and CRI of supplemental medical lights.

(2) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.17 ORAL SURGERY, MINOR PROCEDURE ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 2000 lx (200 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Setup/Cleanup: 1000 lx (100 FC) at 3'-0" AFF
- Recovery, General: 100 lx (10 FC) at 3'-0" AFF
- Surgery, Chair: 3000 lx (300 FC) at 3'-0" AFF on chair
- Recovery, Chair: 750 lx (75 FC) at 3'-0" AFF on chair

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 5000 degrees
- LED: 5000 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient, surgery, and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for a dentist's performance. Luminaires should be visually comfortable with appropriate optics to minimize glare during examinations when the patient is in a reclining position. Color rendering and temperature are particularly important.

RECOMMENDED LUMINAIRES:

(1) Recessed sealed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted sealed fluorescent or LED under-cabinet task light.

CONTROL STRATEGY:

(1) All lighting shall be fully dimmable to provide flexibility during preparation, procedures, and clean-up.
(2) Coordinate location of room and medical equipment light control stations and provide station at door.
(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.

SPECIFIC COORDINATION ISSUES:

(1) Operating rooms require supplemental medical surgical and procedure lights. Coordinate placement with casework and equipment layouts. Ensure that room luminaires match the CCT and CRI of supplemental medical lights.
(2) Luminaires shall be enclosed and sealed, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.
(3) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.2.18 PHARMACY

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 1000 lx (100 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Compounding Areas: 1000-1500 lx (100-150 FC) at 3'-0" AFF
- Storage: 300 lx (30 FC) at finished floor
- Storage Shelving: 500 lx (50 FC) at vertical face of shelving
- Receiving: 500 lx (50 FC) at 3'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 2:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

Both horizontal and vertical illumination should be considered, especially in storage areas. All luminaires should be sealed to contain lamp breakage.

RECOMMENDED LUMINAIRES:

(1) Recessed sealed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted sealed fluorescent or LED under-cabinet task light.

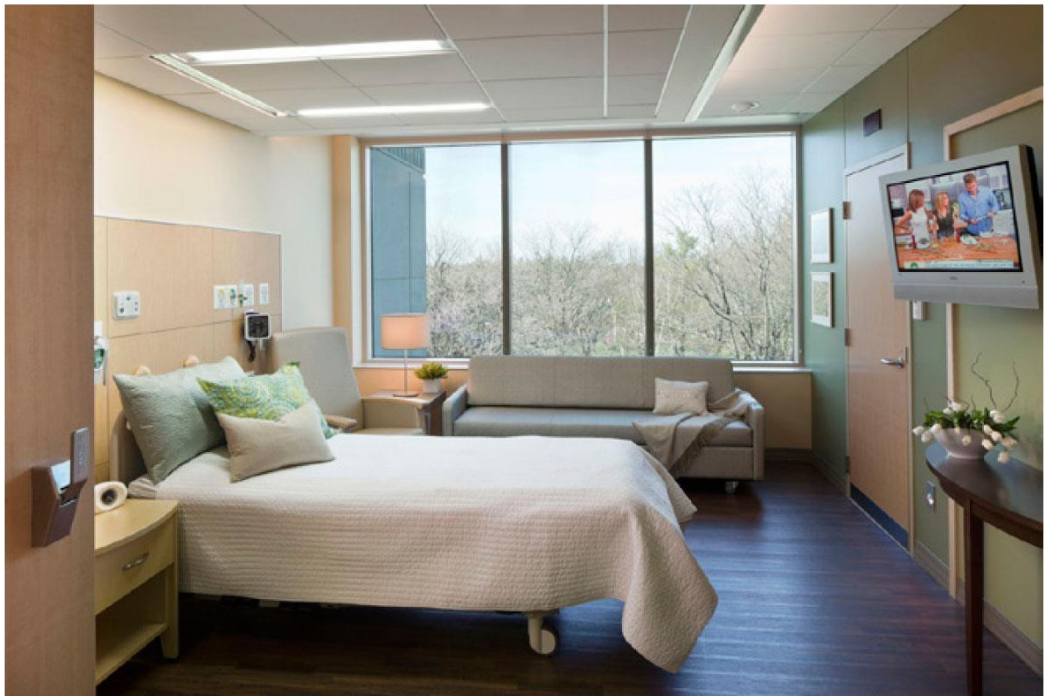
CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Manual on only operation.
(4) Automatic daylight response by photocontrols for ambient lighting.
(5) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires shall be enclosed and sealed, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners and comply with USP 797 standards.
(2) The exterior lens surface of ceiling luminaires shall be smooth and mounted flush.
(3) Consider luminaire placement and optics to mitigate glare and veiling reflections.

4.3 PATIENT CARE AREAS



4.3.1 NURSE STATION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- General Day: 300 lx (30 FC) at finished floor
- General Night/Quiet: 100 lx (10 FC) at finished floor
- ICU Day: 500 lx (50 FC) at finished floor
- ICU Night/Quiet: 300 lx (30 FC) at finished floor

(2) Average Maintained Illumination - Task / Focus:
- Desk Surface: 500 lx (50 FC) at 3'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.
- Critical branch of the EES.

DESIGN APPROACH:

The nurse station lighting will include a combination of ambient and task lighting strategies to allow for wayfinding, charting and note taking, filing, and computer work. Illumination levels should be uniform throughout the nurse station. Decorative lights such as sconces and pendants may be used for visual interest.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Surface-mounted fluorescent or LED under-cabinet task light.
(5) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce or ceiling-mounted pendant.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Desk lights shall be controlled with integral occupancy sensors or switches.
(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(4) Automatic daylight response by photocontrols for ambient lighting.
(5) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) If using pendants, ensure complete field of view from nurse station to patient rooms for patient observation.
(2) Wall-mounted sconces must be ADA compliant.
(3) Coordinate style of lighting luminaires with adjacent areas.

4.3.2 PATIENT CORRIDOR

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Day: 200 lx (20 FC) at finished floor
- Night/Quiet: 50 lx (5 FC) at finished floor
- ICU Night/Quiet: 100 lx (10 FC) at finished floor

(2) Uniformity Ratio (max / min):
- Ambient Day: 2:1
- Ambient Night: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Patient circulation lighting should be consistent throughout each facility. Lighting in corridors should be coordinated with adjacent spaces for a cohesive appearance. Vertical illumination should be considered with respect to signage and wayfinding. Consider locations of decentralized nurse stations when placing luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.

CONTROL APPROACH:

(1) Automatic full or partial OFF or scheduled OFF with local manual control (devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Mitigate possibly glare from highly polished floors.

(2) Luminaires should be easily serviceable from below without the need to open the ceiling plenum.
(3) Wall-mounted sconces must be ADA compliant.

4.3.3 MEDICATION ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500 lx (50 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Desk Surface: 750 lx (75 FC) at 3'-0" AFF
- Storage: 300 lx (30 FC) at vertical face of shelving

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

A combination of general and task lighting should be utilized for medication rooms. Consider vertical illumination on storage shelves when placing light luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted fluorescent or LED under-cabinet task light fixture.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate luminaire placement with overhead cabinets and shelving. Do not install luminaires directly above.

4.3.4 PATIENT ROOM, GENERAL

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Reading: 400 lx (40 FC) at head of bed
- Hand Washing Sink: 500 lx (50 FC) at 3'-0" AFF
- Examination: 1000 lx (100 FC) at patient bed
- Night Observation: 100 lx (10 FC) at patient bed
- Night Light: 2 lx (0.2 FC) at finished floor, to toilet and corridor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of general, task, and exam lighting should be provided to reach desired illumination levels. Luminaires should be provided with sufficient shielding to minimize glare during examinations and when the patient bed is reclined. Locations of patient bed, charting area, and hand washing sink should be considered when placing luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed patient room luminaire (single or tandem).
(2) Recessed ceiling-mounted fluorescent or LED exam light.
(3) Recessed ceiling-mounted compact fluorescent or LED downlight.
(4) Recessed wall-mounted amber LED night light.
(5) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.

CONTROL APPROACH:

(1) Multi-level switching shall be used for tasks including general, reading, night observation, and exam lights.

(2) General and reading lights shall be controlled with the patient pillow switch.
(3) Exam light shall be controlled with a red switch at the patient headwall.
(4) Light at hand washing sink shall be controlled with a switch above the sink.
(5) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(6) Automatic daylight response by photocontrols for general and night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires must contain lamp breakage within luminaire.
(2) Avoid using luminaires with surfaces that collect dust and debris.
(3) In multi-patient rooms, night lights to toilet and corridor should not be blocked by curtains. Control devices must be accessible when curtains are closed.

4.3.5 PATIENT ROOM, ISOLATION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Reading: 400 lx (40 FC) at head of bed
- Hand Washing Sink: 500 lx (50 FC) at 3'-0" AFF
- Examination: 500 lx (50 FC) at patient bed
- Night Observation: 30 lx (3 FC) at patient bed
- Night Light: 2 lx (0.2 FC) at finished floor, to toilet and corridor
- Cleaning: 300 lx (30 FC) at finished floor
- Ante Room: 200 lx (20 FC) at finished floor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of general, task, and exam lighting should be provided to reach desired illumination levels. Luminaires should be provided with sufficient shielding to minimize glare during examinations and when the patient bed is reclined. Locations of patient bed, charting area, and hand washing sink should be considered when placing luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED sealed lensed patient room luminaire (single or tandem).
(2) Recessed ceiling-mounted fluorescent or LED sealed exam light.
(3) Recessed ceiling-mounted compact fluorescent or LED sealed downlight.
(4) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Multi-level switching shall be used for tasks including general, reading, night observation, and exam lights.
(2) General and reading lights shall be controlled with the patient pillow switch.
(3) Exam light shall be controlled with a red switch at the patient headwall.
(4) Light at hand washing sink shall be controlled with a switch above the sink.
(5) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(6) Automatic daylight response by photocontrols for general and night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires must contain lamp breakage within luminaire.
(2) Avoid using luminaires with surfaces that collect dust and debris.
(3) In isolation rooms luminaires shall be specified as enclosed and sealed, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.

4.3.6 PATIENT ROOM, INTENSIVE CARE

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Hand Washing Sink: 500 lx (50 FC) at 3'-0" AFF
- Examination: 1000 lx (100 FC) at patient bed
- Night Observation: 100 lx (10 FC) at patient bed
- Night Light: 2 lx (0.2 FC) at finished floor, to toilet and corridor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of general, task, and exam lighting should be provided to reach desired illumination levels. Luminaires should be provided with sufficient shielding to minimize glare during examinations and when the patient bed is reclined. Locations of patient bed, charting area, and hand washing sink should be considered when placing luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed patient room luminaire (single or tandem).
(2) Recessed ceiling-mounted fluorescent or LED exam light.
(3) Recessed ceiling-mounted compact fluorescent or LED downlight.
(4) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Multi-level switching shall be utilized for general and exam lighting.
(2) Recessed downlights should be controlled with a dimming switch.
(3) Exam light shall be controlled with a red switch at the patient headwall.

(4) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(5) Automatic daylight response by photocontrols for general and night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires must contain lamp breakage within luminaire.
(2) Avoid using luminaires with surfaces that collect dust and debris.

4.3.7 PATIENT ROOM, RESIDENTIAL

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Reading: 400 lx (40 FC) at head of bed
- Night Light: 2 lx (0.2 FC) at finished floor, to toilet and corridor
- Cleaning: 300 lx (30 FC) at finished floor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of general and task lighting should be provided to reach desired illumination levels. Luminaires should be provided with sufficient shielding to minimize glare during examinations and when the patient bed is reclined. Light luminaires should have a residential feeling, and the use of table and floor lamps is recommended.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(2) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.
(3) Stand-mounted compact fluorescent or LED table or floor lamp.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Table and floor lights shall be controlled with integral occupancy sensors or switches.
(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(4) Automatic daylight response by photocontrols for general and night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires must contain lamp breakage within luminaire.
(2) Wall-mounted sconces must be ADA compliant.

4.3.8 PATIENT TOILET/SHOWER

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 1'-6" AFF
(2) Average Maintained Illumination - Task / Focus:
- Shower: 200 lx (20 FC) at finished floor
- Night Light: 10 lx (1 FC) at finished floor

(3) Uniformity Ratio (max / min):
- n/a

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

Provide adequate vertical illumination at the vanity.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight.
(2) Wall-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.
(3) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Bariatric care rooms must coordinate luminaire placement with ceiling track and ceiling track supports.
(2) Lighting in the toilet rooms should be located to coordinate with plumbing fixtures, vanities, and wall-mounted equipment.

4.3.9 PATIENT TOILET/SHOWER - RESIDENTIAL

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 1'-6" AFF
(2) Average Maintained Illumination - Task / Focus:
- Shower: 200 lx (20 FC) at finished floor
- Night Light: 10 lx (1 FC) at finished floor

(3) Uniformity Ratio (max / min):
- n/a

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

Provide adequate vertical illumination at the vanity.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight.
(2) Wall-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.
(3) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Lighting in the toilet rooms should be located to coordinate with plumbing fixtures, vanities, and wall-mounted equipment.

4.3.10 NOURISHMENT STATION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 150 lx (15 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Food Preparation: 500 lx (50FC) at 3'-0" AFF on counter

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

A combination of ambient and task lighting should be used at the nourishment station.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed light luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight.
(3) Surface-mounted fluorescent or LED under-cabinet task light luminaire.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.
(4) If nourishment station is open, overhead lighting shall be controlled with adjacent area.
(5) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) If nourishment station is open, coordinate style of lighting luminaires with adjacent areas.

4.3.11 DAY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Reading: 400 lx (20 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

The day rooms should include a combination of lighting strategies to perform a variety of tasks. Consider both horizontal and vertical illumination for day rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.
(4) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(5) Stand-mounted compact fluorescent or LED table or floor lamp.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Table and floor lights shall be controlled with integral occupancy sensors or switches.
(3) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(4) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) If day room is open, coordinate style of lighting luminaires with adjacent areas.
(2) Wall-mounted sconces must be ADA compliant.

4.3.12 MULTI-PURPOSE ACTIVITY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Games: 200 lx (20 FC) at 2'-6" AFF
- Crafts: 500 lx (50 FC) at 2'-6" AFF
- Kitchenette: 500 lx (50 FC) at 3'-0" AFF on counter

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

The multi-purpose activity rooms should include a combination of lighting strategies to perform a variety of tasks. Consider both horizontal and vertical illumination for multi-purpose rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Not applicable.

4.3.13 DRESSING ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 2'-6" AFF
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Consider both horizontal and vertical illumination for dressing rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Mitigate reflections mirrors by considering luminaire position.

4.4 BEHAVIORAL HEALTH AREAS

4.4.1 PATIENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Reading: 400 lx (40 FC) at head of bed
- Hand Washing Sink: 500 lx (50 FC) at 3'-0' AFF
- Examination: 1000 lx (100 FC) at patient bed
- Night Observation: 100 lx (10 FC) at patient bed
- Night Light: 2 lx (0.2 FC) at finished floor, to toilet and corridor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of general, task, and exam lighting should be provided to reach desired illumination levels. Luminaires should be provided with sufficient shielding to minimize glare during examinations and when the patient bed is reclined. Locations of patient bed, charting area, and hand washing sink should be considered when placing luminaires.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed patient room luminaire (single or tandem).
(2) Recessed ceiling-mounted fluorescent or LED exam light.
(3) Recessed ceiling-mounted compact fluorescent or LED downlight.
(4) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Multi-level switching shall be used for tasks including general, reading, night observation, and exam lights.

(2) Lighting controls should be located in the corridor next to the observation window.
(3) Automatic daylight response by photocontrols for general and night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires must contain lamp breakage within luminaire.
(2) Avoid using luminaires with surfaces that collect dust and debris.
(3) In multi-patient rooms, night lights to toilet and corridor should not be blocked by curtains. Control devices must be accessible when curtains are closed.
(4) Vandal-resistant luminaires should be used in Behavioral Health Units (BHU).

4.4.2 PATIENT TOILET

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 1'-6" AFF
(2) Average Maintained Illumination - Task / Focus:
- Shower: 200 lx (20 FC) at finished floor
- Night Light: 10 lx (1 FC) at finished floor

(3) Uniformity Ratio (max / min):
- n/a

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

Lighting in the toilet rooms should be located to coordinate with plumbing fixtures, vanities, and wall-mounted equipment. Provide adequate vertical illumination at the vanity.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight.
(2) Recessed ceiling-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.
(3) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Bariatric care rooms must coordinate luminaire placement with ceiling track and ceiling track supports.
(2) Vandal-resistant luminaires should be used in Behavioral Health Units (BHU).

4.4.3 CANTEEN

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Dining: 150 lx (15 FC) at 3'-0' AFF
- Kitchen: 200 lx (20 FC) at 2'-6" AFF

(2) Average Maintained Illumination - Task / Focus:
- Serving Line: 500 lx (50 FC) at food handling surface
- Food Preparation: 500 lx (50 FC) at food-handling surface
- Food Storage: 100 lx (10 FC) at 2'-6" AFF
- Equipment Storage: 200 lx (20 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1 in dining areas
- Task / Focus: 2:1 at food displays

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Horizontal and vertical illumination should be considered when illuminating food displays.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.

(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Vandal-resistant luminaires should be used in Behavioral Health Units (BHU).

4.4.4 DAY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Games: 200 lx (20 FC) at 2'-6" AFF
- Crafts: 500 lx (50 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

The day rooms should include a combination of lighting strategies to perform a variety of tasks. Consider both horizontal and vertical illumination for day rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Vandal-resistant luminaires should be used in Behavioral Health Units (BHU).

4.4.5 GROUP THERAPY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 2'-6" AFF
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Consider both horizontal and vertical illumination for group rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Vandal-resistant luminaires should be used in Behavioral Health Units (BHU).

4.4.6 NURSE STATION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- General Day: 300 lx (30 FC) at finished floor
- General Night/Quiet: 100 lx (10 FC) at finished floor

(2) Average Maintained Illumination - Task / Focus:
- Desk Surface: 500 lx (50 FC) at 3'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.
- Critical branch of the EES.

DESIGN APPROACH:

The nurse station lighting will include a combination of ambient and task lighting strategies to allow for wayfinding, charting and note taking, filing, and computer work. Illumination levels should be uniform throughout the nurse station.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Surface-mounted fluorescent or LED under cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Not applicable.

4.4.7 EXAMINATION AND TREATMENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 500lx (50FC)
(2) Average Maintained Illumination - Task Focus:
- Exam: 1000 lx (100 FC) on exam table
- Charting: 300 lx (30 FC) on desk

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of ambient, exam, and task illumination should be provided to reach desired illumination levels. Both horizontal and vertical illumination is important for caregiver performance and patient comfort. Luminaires should be visually comfortable with appropriate shielding to minimize glare during examinations when the patient is in a reclining position. Color rendering and temperature are particularly important. Lighting should have dimming capabilities so light levels can be lowered to calm patients who may be agitated.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Surface-mounted fluorescent or LED under-cabinet task light luminaire.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.
(5) Provide separate controls for areas enclosed by curtains.

SPECIFIC COORDINATION ISSUES:

(1) Rooms may require supplemental medical procedure lights. Coordinate placement with casework and equipment layouts. Ensure room luminaires match the CCT and CRI of supplemental medical lights.
(2) Isolation and infection control examination and treatment rooms' luminaires shall be specified as enclosed and sealed, UL listed for wet locations and have the ability to be wiped down with corrosive cleaners.
(3) Consider luminaire placement and shielding to mitigate glare and veiling reflections.

4.4.8 RESIDENTIAL REHABILITATION TREATMENT PROGRAM - PATIENT ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Reading: 400 lx (40 FC) at 2'-6" AFF
- Night Light: 2 lx (0.2 FC) at finished floor, to toilet and corridor

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

A combination of general and task lighting should be provided to reach desired illumination levels. Luminaires should be provided with sufficient shielding to minimize glare during examinations and when the patient bed is reclined. Locations of patient bed and furniture should be considered when placing luminaires. Table and floor lamps are recommended to enhance the residential feeling of the room.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight.
(2) Stand-mounted compact fluorescent or LED table or floor lamp.
(3) Amber LED night light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Table and floor lights shall be controlled with integral occupancy sensors or switches.
(3) Automatic daylight response by photocontrols for night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires must contain lamp breakage within luminaire.

4.4.9 RESIDENTIAL REHABILITATION TREATMENT PROGRAM - TOILET/SHOWER

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 1'-6" AFF
(2) Average Maintained Illumination - Task / Focus:
- Shower: 200 lx (20 FC) at finished floor
- Night Light: 10 lx (1 FC) at finished floor

(3) Uniformity Ratio (max / min):
- n/a

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Critical branch of the EES.

DESIGN APPROACH:

Provide adequate vertical illumination at the vanity.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight.
(2) Wall-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.
(3) Recessed wall-mounted amber LED night light.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for night lighting.

SPECIFIC COORDINATION ISSUES:

(1) Luminaires mounted over a shower or vanity should have a rating of IP44 or greater.
(2) Lighting in the toilet rooms should be located to coordinate with plumbing fixtures, vanities, and wall-mounted equipment.

4.4.10 RESIDENTIAL REHABILITATION TREATMENT PROGRAM - LIVING AREA, DINING AREA, AND KITCHENETTE

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Food Prep: 500 lx (50 FC) at counter top
- Eating: 200 lx (20 FC) at 3'-0' AFF
- Task: 400 lx (40 FC) at task area

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

A combination of general and task lighting should be provided to reach desired illumination levels. Lighting should have a residential appearance.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight.
(2) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Under-cabinet task lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Locations of furniture should be considered when placing luminaires.

4.4.11 RESIDENTIAL REHABILITATION TREATMENT PROGRAM - GROUP THERAPY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 2'-6" AFF
(2) Average Maintained Illumination - Task / Focus:
- A/V Presentation: 30 lx (3 FC) at 2'-6" AFF
- Table / Desk: 500 lx (50 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Consider both horizontal and vertical illumination for group rooms. Lighting should be flexible for a variety of tasks including group therapy sessions, educational classes, and A/V presentations.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Surface-mounted fluorescent or LED under-cabinet task light luminaire.

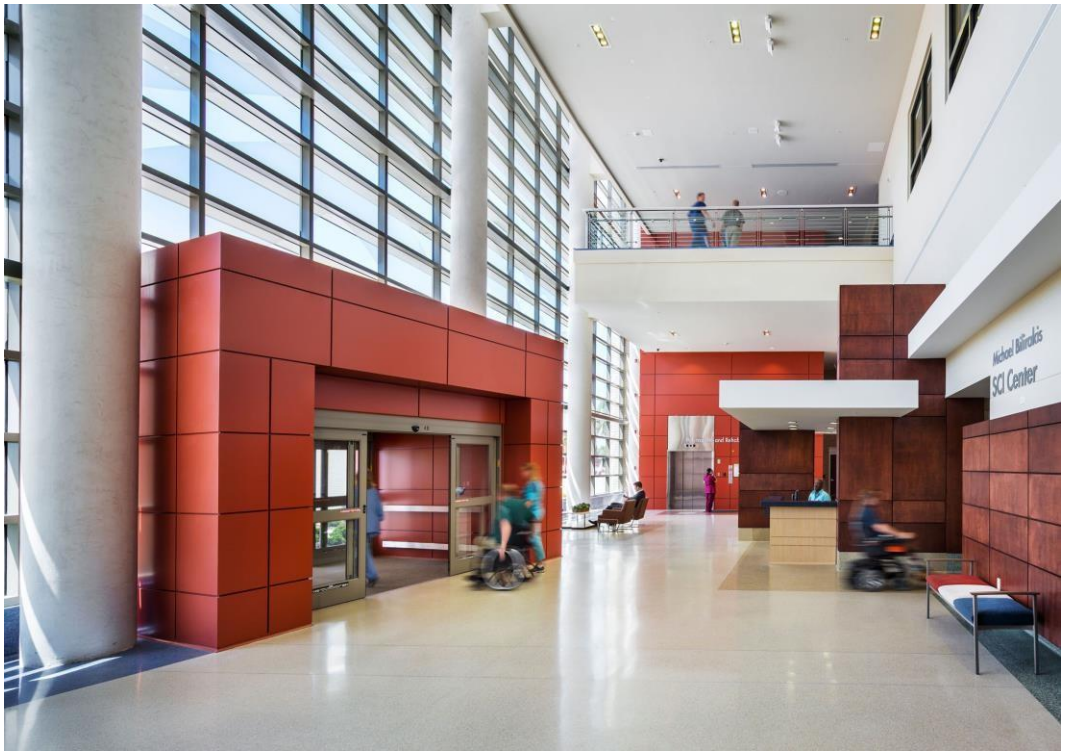
CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral occupancy sensors or switches.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and shielding to mitigate glare and veiling reflections especially at presentation screen.

5. PUBLIC AREAS



5.1 MAIN LOBBY

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- General Day: 400 lx (40 FC) at finished floor
- General Night: 200 lx (20 FC) at finished floor

(2) Uniformity Ratio (max / min):
- Ambient: 5:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Lighting in the main lobby should be aesthetically pleasing, and enhance the architectural features of the space. Lighting should reinforce wayfinding for patients and visitors through the use of brightness and contrast, with emphasis placed on signage and reception desk. Decorative luminaires, such as pendants and sconces, may be utilized for visual interest.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(2) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce or ceiling-mounted pendant.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Wall-mounted sconces must be ADA compliant.

(2) Luminaire maintenance requirements should be considered when locating luminaires in high ceilings.

5.2 ELEVATOR LOBBY

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Day: 200 lx (20 FC) at finished floor
- Night: 100 lx (10 FC) at finished floor

(2) Uniformity Ratio (max / min):
- Ambient: 4:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

The elevator lobby should have a higher illumination level than surrounding corridors to support wayfinding for patients and visitors. Decorative luminaires may be added for visual interest.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce or ceiling-mounted pendant.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate luminaires in elevator lobbies with adjacent corridors.
(2) Sconces must be ADA compliant.

5.3 WAITING AREA

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Day: 200 lx (20 FC) at finished floor
- Night: 100 lx (10 FC) at finished floor

(2) Average Maintained Illumination - Task / Focus:
- Sitting Area: 600 lx (60 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 5:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Lighting in the waiting area should have a combination of general and task lighting. Consider vertical illumination for facial recognition and conversation. Decorative luminaires such as sconces or pendants may be added for visual interest.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed light luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce or ceiling-mounted pendant.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate luminaires in open waiting areas with adjacent spaces.
(2) Sconces must be ADA compliant.

5.4 PRIMARY CORRIDORS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100-150 lx (10-15 FC) at finished floor
(2) Uniformity Ratio (max / min):
- Ambient: 4:1 general

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Primary circulation lighting should be consistent throughout each facility. Lighting in corridors should be coordinated with adjacent spaces for a cohesive appearance. Vertical illumination should be considered, especially with regard to signage and artwork displays. Decorative sconces may be used to add visual interest.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Sconces must be ADA compliant.

5.5 SECONDARY CORRIDORS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50-100 lx (5-10 FC) at finished floor
(2) Uniformity Ratio (max / min):
- Ambient: 4:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Secondary circulation lighting should be consistent throughout each facility. Lighting in corridors should be coordinated with adjacent spaces for a cohesive appearance. Vertical illumination should be considered with respect to signage and wayfinding.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed light luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Sconces must be ADA compliant.

5.6 CANTEEN

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Dining: 150 lx (15 FC) at 3'-0" AFF
- Food Storage: 100 lx (10 FC) at 2'-6" AFF
- Equipment Storage: 200 lx (20 FC) at 2'-6" AFF

(2) Average Maintained Illumination - Task / Focus:
- Serving Line: 500 lx (50 FC) at food handling surface
- Grab and Go: 200 lx (20 FC) at food display
- Kitchen: 200 lx (20 FC) at 2'-6" AFF
- Food Preparation: 500 lx (50 FC) at 3'-0" on countertop

(3) Uniformity Ratio (max / min):
- Ambient: 3:1 in dining areas
- Food Displays: 2:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Horizontal and vertical illumination should be considered when illuminating food displays and food storage. Decorative sconces or pendants may be used to add visual interest. Heat lamps may be required to keep food warm.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce or ceiling-mounted pendant.
(5) Heat lamps.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate heat lamps with food serving and display areas.
(2) Sconces must be ADA compliant.
(3) To avoid food contamination from violent lamp failure, lamps must be fully enclosed in luminaire.

5.7 BARBER SHOP

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 200 lx (20 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Barber Chair: 500 lx (50 FC) at 4'-0" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1
- Chair and Vanity: 2:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

Horizontal and vertical illumination should be considered at barber chair locations. Mirror or vanity lighting should be considered at barber stations. Luminaires should be visually comfortable with appropriate optics to minimize glare when the patient is in a reclining position at hair washing sinks.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight.
(3) Wall-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate luminaire layout with equipment and vanities.

5.8 RECEPTION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 2'-6" AFF
(2) Uniformity Ratio (max / min):
- Ambient: 5:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Vertical illumination should be considered to illuminate the reception desk or wall behind the reception desk. Decorative sconces or pendants may be used to add visual interest.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce or ceiling-mounted pendant.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) If decorative pendant are used, ensure the mounting height does not interfere with the line-of-sight for receptionist.

(2) Coordinate light luminaires at reception with adjacent areas.
(3) Sconces must be ADA compliant.

5.9 PUBLIC TOILET

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Vanity: 150 lx (15 FC) at finished floor (H)

(3) Uniformity Ratio (max / min):
- Ambient: n/a
- Vanity: 2:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Vertical illumination should be considered at hand washing sinks and mirrors. Decorative sconces may be used at sink areas.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Wall-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.
(5) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate lighting with toilet stall partitions, and ensure that all stalls are properly illuminated.
(2) Sconces must be ADA compliant.

5.10 VETERANS CANTEEN SERVICE AND GIFT STORE

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- General: 500 lx (50 FC) at 2'-6" AFF
- Circulation: 200 lx (20 FC) at 2'-6" AFF
- Storage: 200 lx (20 FC) at 2'-6" AFF

(2) Average Maintained Illumination - Task / Focus:
- Display: 1000 lx (100 FC) at merchandise
- Cashier: 500 lx (50 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 1.5:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Horizontal and vertical illumination should be considered when illuminating retail displays. Decorative sconces or pendants may be used to add visual interest. Accent lighting should be used to highlight merchandise displays.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Track mounted LED accent of flood light.

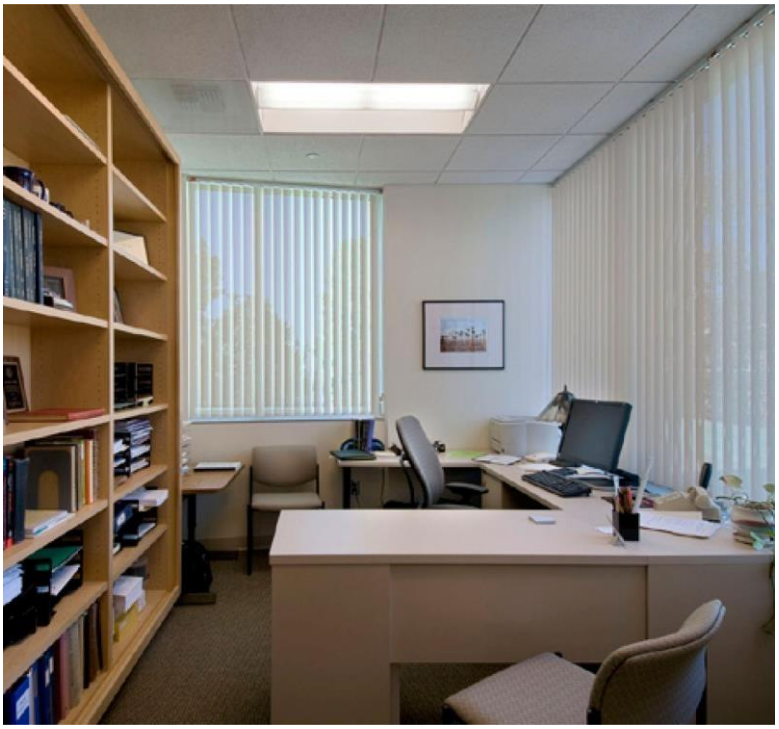
CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate general and accent lights with merchandise displays.

6. ADMINISTRATIVE AREAS



6.1 OFFICE

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task / Focus:
- Desktop: 500 lx (50 FC) at counter

(3) Uniformity Ratio (max / min):
- Ambient: 2:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

Lighting in the office spaces should be a combination of indirect general lighting and direct lighting on the task surface. Task lighting should be provided at each workstation.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Linear suspended fluorescent or LED indirect/direct luminaire.
(3) Linear wall-mounted fluorescent or LED indirect/direct luminaire.
(4) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Under-cabinet task lights and desk lights shall be controlled with integral occupancy sensors or switches.
(3) Automatic full OFF with local manual control devices for all lighting.
(4) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) In open office areas, coordinate location of occupancy sensors in ceiling with space plan.

(2) Consider luminaire placement and optics to mitigate glare and veiling reflections.

6.2 CONFERENCE ROOM/CLASSROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Conference Room: 300 lx (30 FC) at 2'-6" AFF
- Classroom: 500 lx (50 FC) at 2'-6" AFF

(2) Average Maintained Illumination - Task / Focus:
- A/V Presentation: 30 lx (3 FC) at 2'-6" AFF
- Video Conference: 300 lx (30 FC) at 2'-6" AFF (H)
- Video Conference: 400 lx (40 FC) at 3'-0"-5' AFF (V)

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

Conference rooms should be provided with dimmable lighting luminaires for a variety of tasks, including meetings, A/V presentations, and conferences. Consider both horizontal and vertical illumination when designing these spaces.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Suspended linear fluorescent or LED indirect/direct luminaire.
(4) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and optics to mitigate glare and veiling reflections especially at presentation screen.

6.3 TEAM/BREAK ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at 2'-6" AFF
(2) Average Maintained Illumination - Task / Focus:
- Food Preparation: 300 lx (30 FC) at counter

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal

DESIGN APPROACH:

The break room should be illuminated with general ambient lighting. Task lighting should be used at food preparation counters. Full dimming should be provided in On-Call Duty Rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Suspended linear fluorescent or LED indirect/direct luminaire.
(4) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(5) Surface-mounted fluorescent or LED under-cabinet task light.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Under-cabinet task lights and desk lights shall be controlled with integral occupancy sensors or switches.
(3) Automatic full OFF with local manual control devices for all lighting.
(4) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Not applicable.

6.4 STAFF TOILET AND LOCKERS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 50 lx (5 FC) at finished floor
(2) Average Maintained Illumination - Task / Focus:
- Sinks: 200 lx (20 FC) at 5' AFF (V)
- Showers: 100 lx (10 FC) at finished floor
- Lockers: 50 lx (5 FC) at finished floor

(3) Uniformity Ratio (max / min):
- Ambient: n/a

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees
- Compact Fluorescent: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80
- Compact Fluorescent: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Vertical illumination should be considered at hand washing sinks and mirrors. Decorative sconces may be used at sink areas.

RECOMMENDED LUMINAIRES:

(1) Recessed ceiling-mounted fluorescent or LED lensed luminaire.
(2) Recessed ceiling-mounted compact fluorescent or LED downlight or wall washer.
(3) Recessed ceiling-mounted fluorescent or LED cove or perimeter light.
(4) Wall-mounted compact fluorescent, fluorescent or LED mirror or vanity luminaire.
(5) Decorative compact fluorescent, fluorescent or LED wall-mounted sconce.

CONTROL APPROACH:

(1) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate lighting with toilet stall partitions; ensure all stalls are properly illuminated.
(2) Sconces must be ADA compliant.

7. SUPPORT AREAS

7.1 STORAGE

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Bulk Storage: 100 lx (10 FC) at finished floor
- Clean/Sterile Storage: 200 lx (20 FC) at finished floor
- Filing: 300 lx (30 FC) at 2'-6" AFF

(2) Uniformity Ratio (max / min):
- n/a

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Consider vertical illumination on shelving in storage rooms.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.
(2) Surface or suspended ceiling-mounted fluorescent or LED industrial fixture.
(3) Wall-mounted fluorescent or LED industrial fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) If using industrial fixtures, provide with lamp shield or guard.
(2) In gas cylinder storage rooms, provide luminaires with hazard rating matching room rating.

7.2 HOUSEKEEPING

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 100 lx (10 FC) at finished floor
(2) Uniformity Ratio (max / min):
- n/a

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- (LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Consider vertical illumination on shelves.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate fixture placement with overhead cabinets and shelving. Do not install fixtures directly above.

7.3 SOILED UTILITY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 200 lx (20 FC) at finished floor
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Consider vertical illumination on shelves.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate fixture placement with overhead cabinets and shelving. Do not install fixtures directly above.

7.4 CLEAN UTILITY ROOM

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 200 lx (20 FC) at finished floor
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Consider vertical illumination on shelves.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate fixture placement with overhead cabinets and shelving. Do not install fixtures directly above.

7.5 MAINTENANCE/REPAIR SHOPS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 3'-0" AFF
(2) Average Maintained Illumination - Task Focus:
- Benches: 1000 lx (100 FC) at 3'-0" on benches

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Consider vertical illumination and body shadows at machines and equipment.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.
(2) Surface or suspended ceiling-mounted fluorescent or LED industrial fixture.
(3) Wall-mounted fluorescent or LED industrial fixture.
(4) Surface-mounted fluorescent or LED under-cabinet task light fixture.

CONTROL APPROACH:

(1) Multi-level switching controls for fluorescent luminaires, or dimming controls for LED luminaires.
(2) Automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(3) Automatic daylight response by photocontrols for ambient lighting.
(4) Under-cabinet lights shall be controlled with integral switch.

SPECIFIC COORDINATION ISSUES:

(1) Consider luminaire placement and shielding to mitigate glare and veiling reflections.
(2) If using industrial fixtures, provide with lamp shield or guard.

7.6 STERILE PROCESSING AND DISTRIBUTION: CLEAN SIDE

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Clean Receiving: 300 lx (30 FC) at 2'-6" AFF
- Ante Room: 300 lx (30 FC) at finished floor

(2) Average Maintained Illumination - Task Focus:
- Autoclave: 500 lx (50 FC) at 2'-6" AFF
- Manual Equipment Wash: 500 lx (50 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Light fixtures in the SPD areas shall be sealed and gasketed to prevent steam from entering, and have a minimum rating of IP65.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate fixture placement with overhead cabinets and shelving. Do not install fixtures directly above.

7.7 STERILE PROCESSING AND DISTRIBUTION: EQUIPMENT PREPARATION

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Preparation and Assembly: 300 lx (30 FC) at 2'-6" AFF
- SPD Storage: 300 lx (30 FC) at finished floor

(2) Average Maintained Illumination - Task Focus:
- Pack Inspection: 500 lx (50 FC) at 2'-6" AFF

(3) Uniformity Ratio (max / min):
- Ambient: 3:1

(4) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(5) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(6) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Light fixtures in the SPD areas shall be sealed and gasketed to prevent steam from entering, and have a minimum rating of IP65.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate fixture placement with overhead cabinets and shelving. Do not install fixtures directly above.

7.8 STERILE PROCESSING AND DISTRIBUTION: DETERGENT AND WATER

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 2'-6" AFF
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Light fixtures in the SPD areas shall be sealed and gasketed to prevent steam from entering, and have a minimum rating of IP65.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate fixture placement with overhead cabinets and shelving. Do not install fixtures directly above.

7.9 ELECTRICAL AND MECHANICAL ROOMS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Electrical: 100 lx (10 FC) at 3'-0" AFF
- Switchgear: 500 lx (50 FC)
- Mechanical: 200 lx (20 FC) at 3'-0" AFF
- IT/Computer Service: 500 lx (50 FC)

(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.
- Critical branch of the EES power for 50% of electrical rooms.
- Critical branch of the EES power for 100% of IT rooms.
- Battery powered emergency lighting at main electrical and generator rooms.

DESIGN APPROACH:

Lighting should provide vertical and horizontal illumination and illuminate below and above.

RECOMMENDED LUMINAIRES:

(1) Surface or suspended ceiling-mounted fluorescent or LED industrial luminaire.

CONTROL APPROACH:

(1) Local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate luminaire placement with floor-mounted MEP equipment and with ducts, pipes and conduits above.
(2) If using exposes light source industrial luminaire, provide with lamp shield or guard.

7.10 EQUIPMENT ROOMS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient: 300 lx (30 FC) at 2'-6" AFF
(2) Uniformity Ratio (max / min):
- Ambient: 3:1

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal

DESIGN APPROACH:

Consider vertical illumination and body shadows at equipment.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed luminaire.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Coordinate luminaire placement with overhead cabinets and shelving. Do not install luminaire directly above.
(2) Coordinate luminaire placement with equipment.

7.11 LOADING DOCKS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Loading Dock: 100 lx (10 FC) at finished floor
- Staging: 200 lx (20 FC) at finished floor

(2) Uniformity Ratio (max / min):
- n/a

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Consider vertical illumination.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.
(2) Surface or suspended ceiling-mounted fluorescent or LED industrial fixture.
(3) Wall-mounted fluorescent or LED moveable dock light.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) Specify wet-listed and tamper-resistant luminaires for loading dock exterior.
(2) If using industrial luminaires in loading dock interior, specify lamp shield or guard for luminaires.
(3) Coordinate location of dock lights with loading platform.

7.12 MAIL ROOMS

DESIGN PARAMETERS:

(1) Average Maintained Illumination - Ambient:
- Sorting: 500 lx (50 FC) at finished floor
- Distribution: 200 lx (20 FC) at finished floor

(2) Uniformity Ratio (max / min):
- n/a

(3) Color Temperature (CCT):
- Fluorescent: 3500 degrees
- LED: 3500 degrees

(4) Color Rendering (CRI):
- Fluorescent: minimum of 80
- LED: minimum of 80

(5) Power Source:
- Normal
- Life Safety branch of the EES.

DESIGN APPROACH:

Consider vertical illumination.

RECOMMENDED LUMINAIRES:

(1) Recessed or surface ceiling-mounted fluorescent or LED lensed light fixture.
(2) Surface or suspended ceiling-mounted fluorescent or LED industrial fixture.
(3) Wall-mounted fluorescent or LED moveable dock light.

CONTROL APPROACH:

(1) Manual ON with automatic full OFF or scheduled OFF with local manual control devices for all lighting.
(2) Automatic daylight response by photocontrols for ambient lighting.

SPECIFIC COORDINATION ISSUES:

(1) If using industrial fixtures, provide with lamp shield or guard.
(2) Coordinate luminaire placement with overhead cabinets and shelving. Do not install luminaire directly above.
(3) Coordinate luminaire placement with equipment.

APPENDIX A: ILLUMINATION LEVELS

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
ACTIVITIES ROOM AND DINING SPACE		4.4.4
AGENT CASHIER		6.1
AIRLOCK (ANTE ROOM)		5.5
AMBULATORY CARE		
AMB. SURGERY OR		4.2.13
CONSULTATION		6.1
EXAMINATION/TREATMENT		4.2.1
LIFE SUPPORT UNIT		
GENERAL		4.3.6
OVER BED		4.3.6
MULTIPURPOSE EXAMINATION		4.3.6
OBSERVATION AND TREATMENT		
GENERAL		4.3.6
OVER BED		4.3.6
OVER HEAD OF BED		4.3.6
SCREENING PROCTOSCOPY AND SIGMOIDOSCOPY		4.2.1
SECURITY EXAMINATION		4.2.1
ANESTHESIA		
ANESTHESIOLOGY PREPARATION		4.2.4
STORAGE		7.1
WORKROOM, ANESTHESIA, AND EQUIPMENT STORAGE		7.1
ANIMAL HOUSING AREA	200-600 (20-60)	Notes: a, b
APPARATUS AND EQUIPMENT STORAGE		7.1
AUDIOMETRY ROOM AND TEST ALCOVE		4.2.12
AUDITORIUM		
SOCIAL ACTIVITIES	300 (30)	Notes: a, c
ASSEMBLY	200 (20)	Notes: a, c
AURAL REHABILITATION/SPEECH PATHOLOGY THERAPY		4.2.11
AUTOPSY AND MORGUE		
AUTOPSY	1000-3000 (100-300)	Notes: a, d, e
ISOLATION/TEACHING AUTOPSY	1000-3000 (100-300)	Notes: a, d, e
MORTUARY REFRIGERATOR(COLD ROOM)	300 (30)	Notes: a
BARBER SHOP		5.7
BARIUM PREPARATION		4.2.1
BATHROOM		5.9
BEAUTY SHOP		5.7
BEDROOM		
NON-PATIENT	100-200 (10-20)	Notes: a
PATIENT (SEE PATIENT ROOMS)		
BILLIARD ROOM		4.4.4
BLOOD SPECIMEN COLLECTION		4.2.2
BOILER ROOM		
BURNER		7.9

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
PLATFORMS		7.9
CANTEEN		
FOOD SERVICE AREA (SEE FOOD SERVICE)		
KITCHEN (SEE FOOD SERVICE)		
RETAIL STORAGE AND RECEIVING		7.1
RETAIL STORE		5.10
VENDING MACHINE AREA		7.1
WARD CART STORAGE		7.1
CAN WASH AND CAN CRUSHER(SEE FOOD SERVICE)		
CARDIAC PROCEDURE/CATHETERIZATION		4.2.5
CARDIOPULMONARY REHABILITATION CENTER		4.2.1
CART STORAGE		7.1
CAST ROOM		4.2.3
CHAPEL		
ALTAR/ARK/REREDOS	500 (50)	Notes: a, c
CHANCEL (INCLUDING ALTAR & CHOIR)	200 (20)	Notes: a, c
CHOIR ROBING	300 (30)	Notes: a
EUCHARISTIC AND DEVOTIONAL	200 (20)	Notes: a, c
NAVE	200 (20)	Notes: a, c
SACRISTY	200 (20)	Notes: a, c
CLASSROOM		6.2
CLEAN CAGE STORAGE		7.6
CLEAN LINEN		7.4
CLEAN LINEN SORTING		7.6
CLEAN UTILITY/SUPPLIES		7.7
CLEAN UTILITY/SPD CART		7.7
CLINIC, EVALUATION		2.1
CLINIC SPACE, LEARNING STATIONS		6.1
CLINIC SPACE, VOC. REHABILITATION THERAPY		4.2.11
CLOSETS		
ELECTRICAL		7.9
GENERAL		7.2
HOUSEKEEPING AIDS		7.2
HOUSEKEEPING AIDS(SURGERY)		7.2
LINEN		7.4
PLASTER AND SPLINT		7.2
CLOTHING CHANGE		7.2
CONFERENCE/CLASSROOM		6.2
CONFERENCE ROOM		6.2
CONGREGATE BATH/TOILET/HOPPER	500 (50)	Notes: a
CONSULTATION		6.1
CONSULTATION/MEDICATION/CHART		4.3.3
CONSULTATION, VIEWING, AND TEACHING		6.1
CONTROLLED TEMPERATURE ROOM	200 (20)	Notes: a
CONTROL ROOMS		
CONTROL AREA (RAD. THERAPY)		4.2.6
CONTROL BOOTH/ALCOVE (X-RAY)		4.2.6

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
CONTROL CENTER (INTENSIVE CARE)		4.2.6
CONTROL STATION (SURGERY SUITE)		4.2.13
CORRIDORS		
DENTAL SUITE		5.5
GENERAL NON-NURSING		5.5
GENERAL NURSING		4.3.1
LABORATORIES		5.5
QUARTERS		5.5
SURGICAL SUITE		4.2.14
COUNSELING/TREATMENT		4.4.7
CRAWL SPACE	50 (5)	Notes: a
CREDIT UNION	500 (50)	Notes: a
CYSTOSCOPIC ROOM (NON-SURGERY)		
GENERAL		4.2.5
DARKROOM: DEVELOPING, PRINTING, AND ENLARGING	300 (30)	Notes: a, c
DAY ROOM		4.3.11
DECONTAMINATION		7.6
DENTAL SUITE		
DARKROOM	300 (30)	Notes: a, c
DENTAL OFFICE		6.1
DENTAL RESIDENTS AND TRAINEES STUDY/CONFERENCE ROOM		6.2
EXAMINATION, HYGIENE, AND GENERAL TREATMENT OPERATORIES		4.2.16
INSTRUMENT PREPARATION AND STERILIZATION		7.7
ORAL SURGERY		4.2.17
PATIENT INTERVIEW		6.1
PREVENTIVE DENTISTRY		4.2.16
PROSTHETIC LABORATORY		4.2.4
RECOVERY		4.2.16
RESEARCH LABORATORY		4.2.4
SOILED SPD CART HOLDING		7.3
SUPPLY ROOM		7.6
X-RAY AREA		4.2.16
DIALYSIS CENTER		
BEDROOM (MULTI-BED)		4.2.10
LOCAL OVER BED		4.2.10
LOCAL OVER ARM		4.2.10
OVER HEAD OF BED		4.2.10
DIALYSATE PREPARATION		4.2.10
DIALYSIS TRAINING (SEE BEDROOM ABOVE)		
EQUIPMENT SERVICE AREA SOILED/CLEAN		4.2.10
EQUIPMENT SERVICE AREA STORAGE		4.2.10
FINAL WATER TREATMENT		4.2.10
DISPENSING (SEE PHARMACY)		
DRESSING/RECOVERY		4.3.13
DRESSING ROOM		4.3.13

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
DRESSING/TOILET		4.3.8
EAR, NOSE AND THROAT CLINIC (ENT)		
AUDIOMETRY ROOM AND TEST ALCOVE		4.2.1
EXAMINATION AND TREATMENT		4.2.1
STERILIZATION, PREPARATIONS, AND STORAGE		7.6
ELECTROCARDIOGRAPHIC (ECG)		
GENERAL		4.2.7
MACHINE		4.2.7
ELECTROENCEPHALOGRAPHIC (EEG)		
EEG INSTRUMENT AND WORKROOM		4.2.7
EXAMINATION		4.2.7
PHYSICIANS READING		4.2.7
PREPARATION		4.2.7
ELECTROMYOGRAPHIC (EMG)		4.2.7
ELECTRON MICROSCOPE SUITE		
CUTTING ROOM	2000 (200)	(Notes: a, d)
PREPARATION	1000 (100)	(Notes: a, d)
SCOPE ROOM	300 (30)	(Notes: a, c)
ELEVATORS	200 (20)	(Notes: a)
EMERGENCY GENERATOR		7.9
ENDOSCOPY		
UPPER AND LOWER GI		4.2.5
WORKROOM		4.2.5
ENGINEERING CONTROL CENTER		6.1
ENTRANCE (SEE LOBBY)		
ENTRANCE (EXTERIOR)		3.4
EQUIPMENT STORAGE		7.1
EQUIPMENT STORAGE AND TESTING		7.10
ESCORT SERVICE	200 (20)	(Notes: a)
EXAMINATION AND TREATMENT		4.2.1
EXAMINATION/CONSULTATION		4.2.1
EXERCISE ROOM		4.3.12
EXITS (AT FLOOR LEVEL)	50 (5)	(Notes: a)
EYE CLINIC		
EXAMINATION AND TREATMENT		4.2.1
REFRACTION AREA		4.2.1
SURGERY		4.2.13
VISUAL FIELD/DARKROOM ADAPTATION	500 (50)	(Notes: a, c)
FILM PROCESSING	300 (30)	(Notes: a, c)
FLAMMABLE OR TOXIC STORAGE		7.1
FOOD SERVICE		
BULK FOOD CARTS		5.6
CART WASH CENTER		5.6
CLEAN DISH STORAGE		5.6
COLD FOOD AND DESSERT PREPARATION		5.6
DIETITIANS		6.1
DIETETICS-SERVING UNIT		5.6

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
DINING ROOM/AREA/SPACE		5.6
DINING ROOM/RECREATION AREA		5.6
DISHWASHING AREA/UNIT		5.6
FIXED SERVING LINE		5.6
FOOD PROCESS AND PREPARATION		5.6
FOOD STORAGE		5.6
INGREDIENT CONTROL AREA		5.6
KITCHENETTE		5.6
MAIN KITCHEN		5.6
KITCHEN SERVING		5.6
LUNCH AREA WITH KITCHEN UNIT		4.3.11
LUNCH ROOM		4.3.11
MEAT AND VEGETABLE UNIT		5.6
MOBILE SERVING LINE		5.6
NUTRITION CLINIC		5.6
POT WASHING CENTER		5.6
REFRIGERATED AND FROZEN STORAGE		5.6
REFRIGERATED GARBAGE AND TRASH STORAGE		5.6
SANITATION SUPPLY STORAGE		5.6
SERVING LINE		5.6
SERVING UNIT WORK AREA		5.6
SOILED DISH COLLECTION		5.6
SPECIAL NOURISHMENT PREPARATION		5.6
GAME AND ACTIVITY ROOM		4.3.11
GAS STORAGE		7.1
GROSS SPECIMEN STORAGE		7.1
GI SCREENING PROCTOSCOPY/SIGMOIDOSCOPY ROOM		4.2.5
GU CARE ROOM		4.2.5
GU EXAMINATION/TREATMENT		4.2.1
HEALTH RECORDS STORAGE		7.1
HOSPITAL PLANS AND DRAFTING		6.1
INACTIVE RECORDS STORAGE		7.1
INFORMATION COUNTER		5.8
INFORMATION TECHNOLOGY		
DEMARC ROOM		7.10
ANTENNA HEADEND EQUIPMENT ROOM		7.10
MAIN COMPUTER ROOM, BACKUP COMPUTER ROOM		7.9
NETWORK OPERATIONS ROOM		7.9
TELECOMMUNICATIONS ROOMS		7.9
TELEPHONE OPERATORS ROOM		7.9
WORKROOM, EQUIPMENT CONFIGURATION / REPAIR		7.5
INSTRUMENT CALIBRATION AND STORAGE		7.5
INTENSIVE CARE (SEE PATIENT ROOMS)		
INTERVIEW/CONSULTATION		6.1
INTERVIEW-EXAMINATION		4.2.1

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
ISOLATION BEDROOM (RECOVERY/ICU)		4.3.5
KITCHENETTE/MULTIPURPOSE		4.3.12
LABORATORIES; GENERAL		4.2.4
BENCH AND TABLE TOP LIGHTING		4.2.4
BIOCHEMISTRY		4.2.4
BIOSAFETY		4.2.4
CARDIAC BLOOD GAS ANALYSIS		4.2.4
CHEMISTRY		4.2.4
CLINICAL CHEMISTRY/MICROBIOLOGY		4.2.4
COAGULATION		4.2.4
CYTOLOGY		4.2.4
DERMATOLOGY		4.2.4
DIAGNOSTIC		4.2.4
ENVIRONMENTAL		4.2.4
FROZEN/AND GROSS SECTION		4.2.4
HIGH/LOW LEVEL IN-VITRO COUNTING		4.2.4
HISTOLOGY		4.2.4
IMMEDIATE RESPONSE (STAT)		4.2.4
IMMUNOPATHOLOGY		4.2.4
MICROBIOLOGY		4.2.4
MYCOBACTERIOLOGY (TB)		4.2.4
MYCOLOGY		4.2.4
ORTHOTICS		4.2.4
PHARMACEUTICAL EXPERIMENTATION		4.2.4
PHYSICS		4.2.4
PROCEDURAL		4.2.4
PULMONARY BLOOD GAS		4.2.4
RADIOIMMUNOASSAY (RIA)		4.2.4
ROUTINE (HEMATOLOGY)		4.2.4
SPECIAL CHEMISTRY		4.2.4
SPECIMEN ACCESSIONING, PROCESS / DISTRIBUTION		4.2.4
STUDENT LABORATORY-CLASSROOM		4.2.4
URINE (URINALYSIS) AND FECES		4.2.4
URODYNAMICS		4.2.4
LAUNDRY		
CART WASHER AREA		7.6
CENTRAL LIQUID SUPPLY SYSTEM		7.8
CLEAN LINEN HOLDING (FLOW RACK) AND ASSEMBLY AREA		7.6
CLEAN LINEN PROCESSING AREA		7.6
DISTRIBUTION AREA (CART STORAGE, DISPATCH, AND DOCK)		7.1
GENERAL ADMINISTRATIVE AREA		6.1
LINEN COLLECTION		7.3
LINEN PACK PREPARATION		7.6
LINEN REPAIR AREA		7.7
LINEN STORAGE		7.7

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
LUNCH ROOM/TRAINING ROOM		6.3
PRODUCTION AND SUPPORT AREA		7.7
RECEIVING AREA		7.7
SORTING AND WASHING AREA		7.7
UNIFORM EXCHANGE (AUTOMATED)		7.4
LIBRARY		
AUDIOVISUAL ROOM	300 (30)	(Notes: a, c)
CIRCULATION/REFERENCE DESK	300 (30)	(Notes: a)
LIBRARIAN	500 (50)	(Notes: a)
MICROFORM AREAS	300 (30)	(Notes: a)
PHOTOCOPY AREA	300 (30)	(Notes: a)
SEATING SPACE (READER STATIONS)	300 (30)	(Notes: a)
SHELVING/STACK AREAS	300 (30)	(Notes: a)
WORKROOM/TECHNICAL SERVICES	500 (50)	(Notes: a)
LINEN		
CLOSET		7.2
LINEN ROOM AND CLEAN SPD CART		7.7
LINEN SERVICE		7.7
SEAMSTRESS SPACE		7.5
SOILED COLLECTION		7.3
SOILED COLLECTION AND CENTRAL SORTING		7.3
SOILED LINEN HOLDING AREA		7.3
SOILED LINEN ROOM		7.3
LOADING DOCK		7.11
LOBBY/FOYER		5.1, 5.2
LOCKER ROOMS		6.4
LOUNGES		
READING		5.3
PATIENT'S LOUNGE AND TV ROOM		5.3
MAIL ROOM AND DISTRIBUTION CENTER		7.12
MAIL ROOM/UNIT		7.12
MAINTENANCE/SHOPS (SEE SHOPS)		
MEDICAL AND GENERAL STORAGE (SEE STOREROOM)		
MEDICATION AND TREATMENT		4.3.3
MEDICAL MEDIA PRODUCTION		
CAMERA ROOM	300 (30)	(Notes: a)
DARKROOM, FILM PROCESSING	300 (30)	(Notes: a, c)
FINISHING ROOM	500 (50)	(Notes: a)
GRAPHICS ILLUSTRATION ROOM; ILLUSTRATION PREP. AREA	700 (70); Tables 2000 (200)	(Notes: a, d)
PHOTOMICROGRAPHY	300 (30)	(Notes: a)
PRINTING AND ENLARGING	300 (30)	(Notes: a, c)
MEDICAL RESEARCH STORAGE (SEE STOREROOM)		
MINOR OPERATING ROOM		4.2.13
MULTIPURPOSE ROOM		4.3.12
MUSIC ROOM		4.3.12

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
NOURISHMENT KITCHEN		4.3.10
NUCLEAR MEDICINE		
COMMON VIEWING AND CONFERENCE		6.2
EQUIPMENT CALIBRATION		4.2.4
ISOTOPIC STORAGE AND PREPARATION AREA		4.2.18
RADIOPHARMACY		4.2.18
RECTILINEAR ORGAN SCAN		4.2.5
SPECIAL PROCEDURE		4.2.5
STATIONARY IMAGING		4.2.5
THYROID UPTAKE		4.2.5
WALK-IN REFRIGERATOR		7.1
NURSE'S STATION/WARD CLERK/DOCTOR'S CHARTING		
GENERAL; DAY		4.3.1
DESK/TABLE/COUNTER		4.3.1
OFFICES; GENERAL		6.1
OFFICES; STAFF		6.1
OFFICES; WORKSTATION CLERICAL OR TECHNICAL STAFF		6.1
ON-CALL ROOM		6.3
ONCOLOGY CHEMOTHERAPY AGENT PREPARATION		4.2.8
ONCOLOGY CHEMOTHERAPY TREATMENT		4.2.8
OPERATING ROOMS (SEE SURGERY SUITES)		
ORTHOPEDIC CAST ROOM		4.2.3
OXYGEN STORAGE		7.1
PARKING GARAGE		
ENTRANCE		3.8
GENERAL TRAFFIC, PARKING, AND PEDESTRIAN AREAS		3.8
PATIENT ROOMS		
GENERAL		4.3.4
ANTEROOM (ISOLATION)		4.3.5
BATH, PRIVATE, OR CONNECTING		4.3.5
NIGHT OBSERVATION		4.3.5
OVER-BED TASK ILLUMINATION		4.3.5
OVER HEAD OF BED		4.3.5
PATIENT LOCKER AREA		6.4
SECURITY/SECLUSION BEDROOM		4.3.5
SERVICE ALCOVE		4.3.5
TOILET		4.3.8
PHARMACY		
CONTROLLED SUBSTANCES VAULT AND SECURED DISPENSING		4.2.18
DRUG RECEIVING		4.2.18
DRUG UTILIZATION REVIEW		4.2.18
EXTEMPORANEOUS COMPOUNDING		4.2.18
EXTEMPORANEOUS REPACKAGING		4.2.18

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
FILING AND ASSEMBLY		4.2.18
HEMODIALYSIS (STORAGE)		4.2.18
INTERVENOUS ADMIXTURE AND ASEPTIC TRANSFER		4.2.18
MEDICATION ASSIGNMENT		4.2.18
MEDICATION PREPARATION AREAS		4.2.18
POISON CONTROL STORAGE		4.2.18
PREPACKAGING		4.2.18
PRESCRIPTION RECEIVING		4.2.18
PROSTHETICS AND MEDICAL SUPPLIES		7.1
RECEIVING		4.2.18
RECEIVING,STORAGE, AND RECORD CONTROL		4.2.18
STAT		4.2.18
STERILE FLUIDS AND ADMIXTURE SETS STORAGE		4.2.18
SUPPORT AREA		4.2.18
UNIT DOSE DISPENSING		4.2.18
VAULT (DRUGS)		4.2.18
PHONO-CARDIOGRAPHY		4.2.7
PLASTER AND SPLINT CLOSET		7.1
PNEUMATIC TUBE EQUIPMENT ROOM		7.10
POST OPERATIVE/RECOVERY WARD (RESEARCH)		4.2.15
PROJECTION, PREPARATION, AND STORAGE		6.1
PREFABRICATED SOUND SUITE-CONTROL ROOM		4.2.12
QUIET AREA (PSYCHIATRIC)		4.3.11
QUIET ROOM		4.3.11
RADIOLOGY SUITE		
ANESTHESIOLOGY PREPARATION AND RECOVERY		4.2.15
AUTOMATED ROOM		4.2.6
BARIUM PREPARATION		4.2.6
CENTRAL SILVER COLLECTION AREA		4.2.6
COMPUTERIZED AXIAL TOMOGRAPHY (CT)		4.2.6
CONTROL BOOTH/ALCOVE		4.2.6
DARKROOM		4.2.6
DEDICATED CHEST ROOM		4.2.6
EXAMINATION ROOM/AREA		4.2.6
FILM LIBRARY		4.2.6
FILM STORAGE UNDEVELOPED		4.2.6
MEGAVOLTAGE UNIT		4.2.6
PROCESSING AREA		4.2.6
RADIATION THERAPY		4.2.6
SCRUB ROOM		4.2.6
SPECIAL PROCEDURES		
FLUORESCENT	500 (50)	(Notes: a, c)
INCANDESCENT	200 (20)	(Notes: a, c)

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
SUPERFICIAL THERAPY UNIT AND CONTROLS	300 (30)	(Notes: a, c)
SUPERVOLTAGE UNIT (COBALT 60)	300 (30)	(Notes: a, c)
ULTRASOUND		4.2.6
VIEWING ROOM COMMON		4.2.6
X-RAY ROOMS		4.2.6
RECEIVING AND CLEANING		7.6
RECEIVING AND ISSUE AREA		7.11
RECEIVING AND SHIPPING DOCK		7.11
RECEPTION AND WAITING		5.8, 5.3
RECOVERY ROOM (SEE SURGERY SUITE)		
RECREATION/MULTIPURPOSE ROOM		4.3.12
RESIDENT CLOTHING AND LUGGAGE STORAGE		7.1
RESIDENT'S LAUNDRY		4.4.10
SCRUB ALCOVE		4.2.14
SEAMSTRESS		7.5
SHOPS, MAINTENANCE AND REPAIR		
AIR CONDITIONING SHOP		7.5
CARPENTER SHOP		7.5
ELECTRICAL SHOP		7.5
GROUNDS MAINTENANCE SHOP		7.5
MACHINE SHOP		7.5
MASON SHOP		7.5
PAINT SHOP		7.5
PARTS AND TOOLS CLERK		7.5
PLUMBING SHOP		7.5
REPAIRING AND DEVELOPMENT		7.5
STORAGE (SEE STOREROOMS)		
SHOWER		4.3.8
SITZ BATH		4.3.8
SPECIMEN TOILET		4.3.8
SOILED UTILITY/SPD CART		7.3
STAGE (GEN. ILLUM.)		7.11
STAIRWAYS		5.5
STERILIZATION AND SOLUTION PREPARATION		7.7
STOREROOMS		
FINE		7.1
MEDIUM		7.1
BULKY		7.1
STRETCHER AND WHEELCHAIR STORAGE		7.1
STRETCHER WAITING SPACE		5.3
SUBSTERILIZATION AND WORK AREA		7.7
SUPPLY PROCESSING AND DISTRIBUTION (SPD)		
AUTOMATIC CART WASH		7.8
BULK STORAGE AREA		7.6
CLEAN RECEIVING AND BREAKOUT		7.6
CLEAN SIDE		7.6
DISPATCHERS CONTROL STATION/OFFICE		6.1
SURGICAL LINEN AND PACKS		7.6

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
MANUAL EQUIPMENT WASH		7.8
PREPARATION ASSEMBLY AND STERILIZATION		7.7
SOILED RECEIVING AND DECONTAMINATION		7.6
STERILE/NON-STERILE STORAGE		7.6
STERILIZATION AND PREPARATION		7.7
VOLUNTEER AND TRAINING		6.1
WORK STATION/COMPUTER		6.1
SURGICAL SUITE		
CLEAN AND STERILE SUPPLIES		7.6
CLEAN CORE SUPPORT AREA		4.2.13
CONTROL ROOM (CYSTOSCOPIC)		4.2.13
DICTATION CUBICLE		4.2.13
EQUIPMENT AND APPARATUS STORAGE		7.1
EXTERNAL RADIOGRAPHIC CONTROL ROOM		4.2.13
OR HOUSEKEEPING AIDS CLOSETS		7.2
OPERATING ROOMS CARDIAC; CYSTOSCOPIC; GENERAL PURPOSE; NEUROSURGERY; ORTHOPEDIC		4.2.13
PATIENT HOLDING ROOM OR ALCOVE	500 (50)	(Notes: a, c)
PUMP TECHNICIAN'S PREPARATION ROOM	700 (70)	(Notes: a)
RECOVERY		4.2.15
SCRUB-UP ALCOVE		4.2.14
SOILED HOLDING AREA		7.3
SPECIAL EQUIPMENT RECORDING ROOM		7.4
WORKROOM, ANESTHESIA, AND EQUIPMENT STORAGE		7.10
SWITCHGEAR		7.9
THEATER	100 (10)	(Notes: a, c)
SUPPLEMENTAL	200 (20)	(Notes: a, c)
FOYER	100 (10)	(Notes: a, c)
THERAPY		
CORRECTIVE CLINIC		4.2.11
EDUCATIONAL/VOCATIONAL		4.2.11
ASSIGNMENT SPACE		4.2.11
COMPENSATED WORK THERAPY CLINIC		4.2.11
EVALUATION		4.2.11
INSTRUCTION, ORIENTATION, & SIMULATOR SPACE (DRIVER TRAINING)		4.2.11
PATIENT REST AREA		4.2.11
GROUP THERAPY ROOM		4.4.11
TABLE		4.4.11
CONFERENCE RM		6.2
INHALATION		4.2.11
OCCUPATIONAL		4.2.11
CLINICAL		4.2.11
ORTHOTIC AND SPLINTING AREA		4.2.11
PHYSICAL		

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
ARM AND LEG WHIRLPOOLS		4.2.11
CLINIC		4.2.11
HUBBARD TANKS		4.2.11
HYDROTHERAPY		4.2.11
SPECIAL TREATMENT		4.2.11
TABLES AND INDIVIDUAL EXERCISE		4.2.11
TREATMENT AREA		4.2.11
RADIATION		
ORTHOVOLTAGE THERAPY UNIT		4.2.9
PATIENT PRETREATMENT		4.2.9
RADIUM SEALED SOURCE ROOM		4.2.9
SIMULATOR		4.2.9
TREATMENT AREA		4.2.9
TREATMENT PLANNING AREAS		4.2.9
VIEWING AND CONSULTATION		4.2.9
RECREATION		
ARTS, CRAFTS, AND HOBBY		4.4.4
MULTIPURPOSE RECREATION		4.4.4
SPINAL CORD INJURY		
CLINIC		4.2.11
HUBBARD TANKS		4.2.11
WHIRLPOOL, ARM, LEG AND LO-BOY		4.2.11
THERAPEUTIC POOL		4.2.11
TOILETS		4.3.8
TRAINEE/STUDENT STUDY CUBICLE		6.1
TRANSFORMER ROOM		7.9
TRASH/COLLECTION ROOM		7.1
TUB ROOM		4.3.8
ULTRASOUND DIAGNOSIS		4.2.7
UNIFORMS		4.3.13
URINE TESTING ALCOVE		4.3.8
UTILITY AREAS		7.3, 7.4
VAULT		7.1
VECTORCARDIOGRAPHY		4.2.7
VENDING/MACHINE AREA/ALCOVE	100 (10)	(Notes: a)
VENTILATORY TEST		4.2.7
VESTIBULE		5.5
VESTIBULE AND WAITING AREA		5.5, 5.3
VOLUNTEER/ESCORT SPACE		6.1
VOLUNTEER SIGN-IN		6.1
WAITING ROOMS		5.3
WALK- IN REFRIGERATOR (COLD ROOM)		7.1
WARD CLERK		6.1
WARD SUPPLY		7.4
WHEELCHAIR AND SPECIAL BED STORAGE		7.1
WHEELCHAIR AND STRETCHER		7.1
WORD PROCESSING/COMPUTER ROOM		6.1
WORKROOM AND DRESSING ROOM		4.3.13

AREA DESCRIPTION	ILLUMINATION LEVEL Lx (FC)*	GUIDELINE REFERENCE
WORK STATION (COMPUTER)		6.1

Notes:

(a) No guideline reference. Use Illumination levels as a guide. A/E shall follow the most appropriate lighting guidance based on area/room function, latest code requirements, industry and professional design practices.

(b) Provide variable illumination with time schedule and manual control.

(c) Vary illumination levels by dimming control devices in accordance with specific project requirements.

(d) Provide illumination levels with a combination of general and localized lighting.

(e) Match color temperature of the surgical light(s).

(*) Average maintained horizontal illumination measured in Lux (Lx) (Footcandles (FC)) at 2’-6” above finished surface unless otherwise noted.