

DESIGN CRITERIA

1. Reference Standards: Basic requirements for design are set forth in NFPA-101 Life Safety Code, NFPA-70 National Electrical Code, National Electrical Safety Code, and in OSHA Regulations.
2. Related Sections: Sections 26 51 00, and Design Standard Plates 26 51 00-01 and -02, apply.
3. Lighting Intensities: Maintained average lighting intensities shall comply with foot-candle levels stipulated by the Minimum Commissary Illumination Standards (attached). Design to the FC shown, within +10 percent / -5 percent. If any spaces are not covered by the Minimum Commissary Illumination Standards, provide illumination in accordance with the Handbook of the IES (Illuminating Engineering Society). Use point-to-point method of analysis in the sales area and for parking lot lighting. In calculating the sales area illumination, take into consideration the effect of gondola shelving. Evaluate lighting intensity on the vertical gondola facings as well as the horizontal plane; vertical illumination on the gondola facing at 30" AFF shall be not less than 50 percent of the specified horizontal illumination. Use the zonal cavity method of analysis in all other spaces.
 - A. Provide minimum illumination levels for each room and area as indicated.
 - B. Illumination levels, expressed in footcandles (FC), are based on a horizontal work plane 30" above the floor surface, unless otherwise noted. Additional specific requirements are annotated in the Remarks column. Notes referenced in the Remarks column refer to additional specific requirements detailed in LIGHTING DESIGN REQUIREMENTS NOTES following the table.
4. The designer may recommend other than the type of lamps indicated, provided a cost study addressing initial and twenty year life-cycle costs shows the selected lamps to be substantially more cost-effective. Alternative light sources shall provide equal quality of illumination and color rendering.
5. Electrical power: 277 volts where practicable for interior lighting.
6. Lighting Power Monitoring: Install current transformers and transducers associated with the Refrigeration Monitoring and Control System (RMCS) in lighting power wiring to monitor interior lighting power consumption and demand. For remodel projects or where total lighting monitoring is impractical, monitor major general lighting in the sales and staging areas as a minimum.
7. LED Lighting: Use LED lighting as the primary interior lighting system except where the Minimum Commissary Illumination Standards indicate otherwise. Use of LED retrofit kits in existing fluorescent fixtures is only permitted where kits are UL listed as and where light levels meet lighting intensity requirements (see paragraph 3 above) while reducing the overall fixture wattage.
8. Fluorescent Lighting: Use Fluorescent lighting only when modifying existing fluorescent systems or when specifically directed to use fluorescent. Use fluorescent lighting with a minimum Color Rendering Index (CRI) of 82, and low mercury content ("green" lamps).
 - A. 8' 0" lamps: minimum efficacy of 86 lumens per watt.
 - B. 4' 0" lamps: minimum efficacy of 82 lumens per watt.
 - C. Highly efficient T8 or T5
 - D. Lamps: use throughout all areas where fluorescent lamps are indicated.
 - E. Minimize the number of different types of lamps used throughout the commissary, thus reducing maintenance requirements.
 - F. Preferred color temperature for sales area general lighting, offices and utility areas: 3500 Kelvin (e.g., SPX35 lamps)
 - G. Fluorescent lamps over red meat displays: 3000 Kelvin color temperature, e.g. SPX30 lamps.
 - H. Design lighting in larger interior areas (Sales, Staging/Receiving) for specific lamp/ballast combinations providing optimum lumens-per-watt efficacy in the range of 95 to 105, with a system ballast factor range of 0.95 to 1.15. Call out the specific design system efficacy and ballast factor as

a requirement in the Fixture Schedule. Specific lamp and ballast products also may be cited in the schedule as "basis of design" products.

9. Metal Halide Interior: For existing stores that have metal halide fixtures installed, change fixtures out to meet current criteria.
10. Exposed Overhead Structure: In sales area designs featuring overhead space open to structure use LED as primary general illumination.
11. LED Fixtures: Use LED fixtures for specialty lighting of displays and highlighting wall graphics.
12. Incandescent and High Pressure Sodium (HPS) lighting: Do not use incandescent or high pressure sodium (HPS) light fixtures for general interior lighting, except where specifically authorized in this section or requested by DeCA.
13. Energy Saving Devices: Use energy saving devices in the design (e.g. providing RMCS based controls to enable the store manager to reduce the lighting intensity in the sales area to 50 percent during stocking and cleaning). Provide only state-of-the-art energy efficient lighting fixtures, drivers, electronic ballasts, and energy saving lamps and controls. Where specifically approved by DeCA, daylight harvesting methods may be considered, with economic justification. Ensure that local switching is provided in all offices and areas; utilize occupancy sensors where appropriate. Illumination quality is not to be reduced for energy / cost benefits.
 - A. RMCS Control: Refer to Design Standards 26 51 00-01 and 26 51 00-02. The RMCS presents a closing maintained contact for "on" control of lighting. The number of control circuits required for the Sales Area is five – two for general lighting subject to 50 percent reduction for all Sales Areas and the Checkout Area; and one for all Accent and Décor lighting.
 - B. Occupancy Sensors: Provide occupancy sensors for control of the lighting in all offices, breakrooms, restrooms, training rooms, and other areas subject to intermittent use. Occupancy sensors shall not be used in meat processing area(s).
14. Safety Features: Include proper safety features for all lighting fixtures to prevent food contamination and injury to personnel, e.g. shielded, shatter-proof light fixtures or tube guards beside or above areas where unprotected, un-packaged, or uncovered foods are stored, prepared, or served, and where utensils and equipment are cleaned and stored, so that broken glass cannot contaminate food. This includes 1P01, 2P02 produce cases, 1D00 deli cases, 1B04 bakery cases, and clerk service fish cases 1F00. Provide appropriate emergency lights in public areas, processing rooms, restrooms and mechanical rooms.
15. Emergency Lighting: Provide as necessary to permit safe egress from all offices and areas during power outages, in accordance with NFPA-101 Life Safety Code, and in other areas as specified herein. All life-safety required emergency lights shall have automatic battery backup or connected to generator power. Other emergency lighting for occupant convenience and comfort may utilize generator power alone. Provide battery-operated emergency light fixtures in Meat Cutting, Meat Wrap, stairwells and electrical rooms also for safety and egress. Batteries shall be remotely located outside of refrigerated areas. Where emergency lighting fixtures also function as normal illumination in a space, switch the fixtures with the other lights in the space.
16. Night Lighting: Provide a very limited amount of unswitched 24-hour night lighting only in the sales area, receiving-staging (near exits), and offices having exterior windows. The intent is to enhance security by permitting observation from outside the store, and also to provide minimal entry illumination for personnel opening the store. These fixtures may also be part of the emergency lighting where appropriate.
17. Staging and Receiving Areas: Provide LED lighting in Staging and Receiving where free-standing pallet racks are included. Place light fixtures in the Staging and Receiving areas in such a manner that there shall be a sufficient clear height 17' 0" minimum from the finished floor. Determine the exact arrangement of light fixtures based on the pallet rack storage layout. Control receiving, staging, and MHE charging area lights by individual fixture mounted occupancy sensors. Fixtures located where natural lighting is sufficient for dimming shall have individual fixture mounted combination

photocell/occupancy sensor control to dim or turn off lights when natural lighting is sufficient. Coordinate placement of light fixtures with overhead doors, unit heaters, pallet racks and refrigeration piping.

18. Refrigerated Areas: Furnish areas refrigerated below 40 deg F with LED lighting units in moisture resistant fixtures. If occupancy sensors are used in refrigerated areas, one fixture located near the door in each refrigerated area shall remain unswitched.
19. Exterior Lighting: Provide lighting powered from the commissary. Provide lighting in the employee and customer parking lots, access roads, service yard and general security lighting around the building perimeter. Fixtures shall be dark sky compliant and provide cutoff angle to prevent spill light into adjacent areas.
 - A. General:
 - 1). Control Diagram: See Design Standard Plate 26 56 00-02, "Exterior Lighting Controls Detail".
 - 2). Photoelectric Control: Provided by RMCS.
 - 3). Timer: Timing functions provided through RMCS.
20. Receiving Door Lights: retractable loading lights at all receiving doors equipped with dock levelers and dock seals for direct unloading of trailers. Mount lights on opposite sides from door lift chain. Lights shall be Model DLAW with LED lamps as manufactured by Phoenix or approved equal.
21. Illuminated Exit Signs and Emergency Lights: Provide illuminated exit signs (color red or green as appropriate, LED type) and emergency lights (preferably battery type) for all emergency exits and passageways as required by the NFPA Life Safety Code No. 101 and local Ordinance. Give attention to the type and location of fixtures selected so that they shall be firmly anchored. Connect all emergency lighting to the emergency generator. Provide battery packs for the emergency lighting in the processing rooms, mechanical mezzanine, and all stairwells. Self-Luminous non-powered fixtures are permitted when listed by NFPA, UL924, OSHA, NRC and applicable Codes and ordinances.
22. Supplementary Lighting: Use supplementary lighting to provide the illuminating levels required for specific work areas. Do not direct heat producing accent spot lighting in sales areas at refrigerated display cases. Provide receiving door lighting for illuminating delivery vehicle interiors.
23. Spare Lamps: Spare lamps are not required. At completion, provide a list of lamps required for each fixture.

END OF SECTION

Attachments:

1. Minimum Commissary Illumination Standards
2. Lighting Design Requirements Notes

MINIMUM COMMISSARY ILLUMINATION STANDARDS

RM. NO.	ROOM NAME	FC (LUX)	TYPE	REMARKS
1	ENTRY VESTIBULE	20 (220)	LED	
2A/B/C	EXIT VESTIBULE	20 (220)	LED	
3A/B	CART RETURN VESTIBULE	20 (220)	LED	
4	CASHIER'S OFFICE	50 (550)	LED	NOTE 13
5	CASH COUNTING ROOM	50 (550)	LED	NOTES 7,13
6	CUSTOMER SERVICE MANAGER'S OFFICE	50 (550)	LED	NOTES 7
7	CUSTOMER WAITING	30 (320)	LED	NOTES 2,13
8	CART STORAGE	75 (810)	LED	NOTES 2,13
9	CUSTOMER SERVICE DESK/I.D.	75 (810)	LED	NOTES 2,13
10	CUSTOMER RESTROOM (MEN)	30 (320)	LED	50 FC (550 LUX) ACCENT OVER LAVATORIES; NOTES 7, 12, 13
10A	CUSTOMER RESTROOM VESTIBULE (MEN)	30 (320)	LED	NOTE 14, 15
11	CUSTOMER RESTROOMS (WOMEN)	30 (320)	LED	50 FC (550 LUX) ACCENT OVER LAVATORIES, NOTES 7, 12, 13
11A	CUSTOMER RESTROOM VESTIBULE (WOMEN)	30 (320)	LED	NOTES 12, 13
12	STORE DIRECTOR	50 (550)	LED	NOTE 7
13	ADMIN ENTRY VESTIBULE	20 (220)	LED	NOTE 13
14	ADMIN CORRIDOR	20 (220)	LED	NOTE 13
15	ADMIN AREA	50 (550)	LED	NOTE 13
16	EMPLOYEE BREAK ROOM (MAIN)	50 (550)	LED	NOTES 7, 12, 13
17	TRAINING ROOM	50 (550)	LED	NOTES 6, 7, 12, 13
18	STORE ADMINISTRATOR	50 (550)	LED	NOTE 7
19	STORE MANAGER'S OFFICE	50 (550)	LED	NOTE 7
20	JANITOR'S CLOSETS A/B/C/D	20 (220)	LED	NOTE 7
21A/B	VESTIBULE (STAGING TO SALES)	20 (220)	LED	
22	ADMIN STORAGE	30 (320)	LED	NOTE 7
23	DAMAGED MERCHANDISE	50 (550)	LED	
24	DAMAGED MERCH SALES NICHE	75 (810)	LED	SWITCH WITH SALES AREA LIGHTS.
25	LOCKER ROOM (WOMEN)	20 (220)	LED	NOTES 7, 13
26	EMPLOYEE RESTROOM (WOMEN)	20 (220)	LED	50 FC (550 LUX) ACCENT OVER LAVATORIES, NOTES 7, 13
26A	RESTROOM VESTIBULE (WOMEN)	20 (220)	LED	
27	EMPLOYEE RESTROOM (MEN)	20 (220)	LED	50 FC (550 LUX)ACCENT OVER LAVATORIES, NOTES 7, 13
27A	RESTROOM VESTIBULE (MEN)	20 (220)	LED	

MINIMUM COMMISSARY ILLUMINATION STANDARDS

RM. NO.	ROOM NAME	FC (LUX)	TYPE	REMARKS
28	LOCKER ROOM (MEN)	20 (220)	LED	NOTE 13
29	CONTROLLED TEMP STORAGE	30 (320)	LED	NOTES 8, 11, 12
30	CONTRACT STOCKER STORAGE	50 (550)	LED	NOTES 7, 13
31	MECHANICAL ROOM	30 (320)	LED	NOTE 13
31B	CISIC (COMMUNICATIONS)	50 (550)	LED	NOTE 13
32	SENSITIVE STORAGE	30 (320)	LED	NOTES 7, 13
33	OPERATING SUPPLY STORAGE	30 (320)	LED	NOTES 7, 13
34	MEDICAL FOOD INSPECTION OFFICE (VET)	50 (550)	LED	NOTE 7
35	RECEIVING MANAGER'S OFFICE	50 (550)	LED	NOTE 7
36	RECEIVING	30 (320)	LED	NOTE 13
37	STAGING AREA	30 (320)	LED	NOTES 1, 13
38	MHE CHARGING AREA	30 (320)	LED	NOTE 13
39	MASS DISPLAY AREA	75 (810)	LED	NOTE 2
40	HBC SALES	75 (810)	LED	NOTES 2, 12, 15
41	PLANT DISPLAY AREA	75 (810)	LED	NOTE 2
42A/B	PRODUCE SALES AREA	75 (800)	LED	100 FC (1100 LUX) ACCENT LTG. OVER ISLAND PRODUCE DISPLAY. NOTES 2, 3, 4, 12, 13
43	PRODUCE CHILLED STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
44	PRODUCE PROCESSING/ AMBIENT STORAGE	50 (550)	LED	NOTES 9, 11, 12
45	PRODUCE MANAGER'S OFFICE	50 (550)	LED	NOTE 7
46	FISH DISPLAY	75 (810)	LED	NOTES 2, 3, 4
47	MEAT/PROD OP SUPPLY STORAGE	30 (320)	LED	NOTES 7, 13
48	BREAK ROOM (MEAT/PROD)	30 (320)	LED	NOTE 13
49	UNISEX RESTROOM	30 (320)	LED	NOTES 7, 13
50	MEN'S LOCKER ROOM (MEAT/PROD)	20 (220)	LED	NOTE 13
51	MEN'S RESTROOM (MEAT/PROD)	20 (220)	LED	50 FC (550 LUX) ACCENT OVER LAVATORIES, NOTES 7, 13
52	WOMEN'S LOCKER ROOM (MEAT/PROD)	20 (220)	LED	NOTE 15
53	WOMEN'S RESTROOM (MEAT/PROD)	20 (220)	LED	50 FC (550 LUX) ACCENT OVER LAVATORIES, NOTES 7, 13
54	RECEIVING AISLE	30 (320)	LED	NOTES 1, 13
55	MEAT PROCESSING	70 (750)	LED	NOTES 9, 11, 12
56	MEAT WRAPPING	70 (750)	LED	NOTES 9, 11, 12

MINIMUM COMMISSARY ILLUMINATION STANDARDS

RM. NO.	ROOM NAME	FC (LUX)	TYPE	REMARKS
57	MEAT MANAGER'S OFFICE	50 (550)	LED	NOTE 7
58	MEAT RESTOCKING AISLE	50 (550)	LED	100 FC (1100 LUX) ACCENT OVER SINGLE DECK FRESH MEAT DISPLAY CASES, NOTES 2, 3, 4
59	MEAT CHILL STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
60	FAT AND BONES STORAGE	20 (220)	LED	NOTES 8, 10, 11, 12
61	PREPACKAGED MEAT CHILL STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
62	POULTRY CHILL STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
63	MECH CHASE TO MEZZ	10 (110)	LED	
64	VESTIBULE- RECEIVING/FROZEN FOOD / DAIRY	20 (220)	LED	NOTE 14
65	AISLE (RECV'G TO SALES)	20 (220)	LED	NOTE 13
66	DAIRY SALES	75 (810)	LED	NOTES 2, 3, 13
67	DAIRY CHILL STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
68	FROZEN FOOD STORAGE	30 (320)	LED	NOTES 10, 11, 12, 14
69	SALES	75 (810)	LED	NOTES 1, 2, 12, 13, 15. FC ON VERTICAL PLANE AT 30" AFF AT GONDOLA FACINGS SHALL BE NOT LESS THAN 50% OF HORIZONTAL FC INDICATED.
70	DELI SERVICE AREA	75 (810)	LED	NOTES 2, 3, 4, 13
71	BAKERY/DELI DISPLAY AREA	75 (810)	LED	NOTES 2, 3, 4, 13
72	BAKERY SERVICE AREA	75 (810)	LED	NOTE 13
73	DELI PREPARATION AREA	50 (550)	LED	NOTE 13
74	BAKERY PREPARATION AREA	50 (550)	LED	NOTE 13
75	BAKERY CHILL STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
76	BAKERY FREEZER STORAGE	30 (320)	LED	NOTES 10, 11, 12, 14
77	DELI CHILL STORAGE	30 (320)	LED	NOTES 8, 10, 11, 12
78	BAKERY/DELI DRY STORAGE	30 (320)	LED	
79	BAG STORAGE	30 (320)	LED	NOTE 7
80	BAGGER BREAK ROOM	30 (320)	LED	NOTE 13
81	CHECKOUT	60 (640)	LED	NOTES 2, 13
82	SINGLE LINE QUEUING	60 (640)	LED	NOTES 2, 13
83	MECHANICAL MEZZANINE	20 (220)	LED	NOTE 13
84	VENDOR ROOM	50 (550)	LED	NOTES 7, 13
85	SEAFOOD CHILL STORAGE	30 (320)	LED	NOTES 8, 11, 12
86	BAGGER RESTROOM	30 (320)	LED	NOTES 7, 13
87	PERISHABLE MANAGER	50 (550)	LED	NOTE 13
88	SEMI-PERISHABLE MANAGER	50 (550)	LED	NOTE 13
89	ZONE MANAGER	50 (550)	LED	NOTE 13
90	REGION MGT. SUPPORT	50 (550)	LED	NOTE 13

MINIMUM COMMISSARY ILLUMINATION STANDARDS

RM. NO.	ROOM NAME	FC (LUX)	TYPE	REMARKS
91	REGION MGT. SUPPORT STORAGE	20 (220)	LED	NOTE 13
92	CONFERENCE ROOM	50 (550)	LED	NOTES 6, 7, 13
---	TUNNELS	10 (110)	LED	LIGHTED PILOT SWITCH AT TUNNEL ENTRANCE
---	ABOVE WALK-IN COOLERS/FREEZERS	10 (110)	LED	LIGHTED PILOT SWITCH AT OVERHEAD ACCESS LOCATION
---	EXTERIOR CANOPIES	10 (110)	LED	LOW TEMPERATURE BALLAST
---	PARKING LOTS 0-150 LF FROM BUILDING MORE THAN 150 LF FROM BUILDING	5 (55) 1 (11)	LED	REFER TO ¶ 1.16

END OF TABLE

LIGHTING DESIGN REQUIREMENTS NOTES: For illumination standards.

1. Use occupancy sensor and daylight dimming (where appropriate) for fixtures in Staging/Receiving.
2. Use LED lighting for sales area illumination. Except as specified by Note 15, design Sales area and check out area general lighting so that it is controlled in two circuits by the RMCS controller, with RMCS manual switching on wall at customer service desk to over-ride the RMCS timer function (Refer to Design Standard Plate 26 51 00-02). Provide approximately half the required FC lighting level for night stocking on each lighting circuit. These two circuits are to be alternated nightly so that both groups of lamps will have approximately the same life expectancy. Display case lights and accent lights shall be controlled by the RMCS. Design sales area fluorescent lighting perpendicular to runs of gondola display shelving. Overall design shall provide for uniformity of illumination at both high and low-lighting levels. Both checkout and sales area shall have some lights that remain on at all times for night lighting (Refer to ¶ 14).
3. Design lighting above display cases to specifically enhance the product appearance and provide identity and personality to the department. Soft white lighting (3000°K) is recommended for red meat displays.
4. Provide RMCS control and local switching for area overhead and accent lighting in meat, fish, deli, and bakery display areas.
5. All timer functions, manual override and reset switching for the sales area are provided under Division 23 RMCS.
6. In Training Room 17 and Conference Room 92, provide reduced light level capability to accommodate projection equipment, either separately switched fixtures, dimmable fixtures, or dimmable down lights.
7. Occupancy sensors of the appropriate type shall be evaluated for use in office areas, storage rooms, restrooms, training rooms and areas subject to intermittent occupancy.
8. Cooler walk-in storage rooms require 0 deg F operation and gasket sealed waterproof fixtures.
9. Produce Processing, Meat Processing and Meat Wrapping Rooms require 0 deg F electronic operation and gasket sealed waterproof fixtures.
10. Provide 3-way light switches with pilot lights on the exterior of cold storage rooms and other storage rooms as appropriate.
11. Provide vapor-tight seal at all wiring penetrations of walk-in boxes and process rooms. Seal conduits inside around wires as well as around the outside of the conduit. Run conduit (PVC) exposed inside refrigerated space from fixture to fixture to minimize the number of penetrations. Only one penetration for the lighting shall be made into the room.
12. Provide emergency lighting for egress and life safety. Use some of the fixtures normally operating on the POS system generator with minimal required supplementary battery-operated egress lighting. Batteries shall be remotely located outside of refrigerated areas. Provide emergency lighting fixtures in restrooms. Emergency lights on emergency generator circuits should be switched with the normal lighting in the space, unless they are also designated unswitched "night lights". Unswitched night lights should be kept to a minimum (Ref. Criteria ¶ 14).
13. Provide emergency lighting fixtures in these areas for occupant convenience and comfort that operate off the POS system generator. Provide supplemental battery-operated lighting in stairwells and hazardous areas, and where required for life safety egress.
14. Frozen food storage rooms require LED lighting units.

15. Where "daylight harvesting" is authorized in individual project guidance, provide dimming for sales floor lighting. Provide control circuit to dim lights to 50 percent upon signal (contact closure) from the RMCS (except in produce sales).

END OF NOTES