

DIRECTORATE OF ENGINEERING

DESIGN CRITERIA HANDBOOK

JUNE 2022



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CCND

14 July 2022

MEMORANDUM FOR CHIEF, PLANNING/ENERGY DIVISION CHIEF, FACILITY SUSTAINMENT DIVISION PROGRAM MANAGER, JACOBS ARCHITECT/ENGINEER FIRMS (DECA CONTRACTS)

SUBJECT: Engineering Memorandum NO. M-2021-054 Notification of Change to DeCA Design Criteria

Effective today, the DeCA Engineering Design Criteria have changed in accordance with the attached summary of revisions.

Changes do not apply to projects currently under construction contract, including Design/Build projects. Changes highlighted in YELLOW shall be incorporated into projects prior to 65% design completion.

For addition information the complete criteria can be accessed at <u>https://www.decafacilities.com/decadesign/</u>

Please disseminate this information to your organizations. Should you have any questions regarding this change, please contact me or the assigned DeCA Project Manager.

GARCIA.MIGUEL, Digitally signed by GARCIA.MIGUELA.1231143153 A.1231143153 Miguel A. Garcia, P.E. Chief, Design and Construction

CC: Deputy Director, SO

Attachment as stated

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JUNE 2022 SUMMARY OF REVISIONS

TO JUNE 2022 DECA DESIGN CRITERIA

Items highlighted in **GREEN** shall be incorporated into Projects concurrent with Project Definition. Items highlighted in **YELLOW** shall be incorporated into Projects prior to 65% Design Completion.

DESIGN CRITERIA

SECTION	TITLE	DESCRIPTION		
<mark>21 13 00</mark>	FIRE-SUPPRESSION SPRINKLER SYSTEM	 Section reference revised in Article 2.01. 		

GUIDE SPECIFICATIONS

SECTION	TITLE	DESCRIPTION
<mark>10 26 00</mark>	WALL EQUIPMENT PROTECTION	 Acrovyn rigid wallcovering color has been discontinued. Replacement colors have been reselected from InPro.
<mark>11 40 00.13</mark>	BAKERY EQUIPMENT	 Added requirement to Article 3.3 Installation that installation of fixed equipment shall meet Tri- Service Food Code.
<mark>11 40 00.16</mark>	DELI EQUIPMENT	 Added requirement to Article 3.3 Installation that installation of fixed equipment shall meet Tri- Service Food Code.
<mark>21 13 00</mark>	FIRE-SUPPRESSION SPRINKLER SYTEMS	 Nitrogen Generator added to Article 1.4 Submittals.
<mark>23 34 23</mark>	HVAC POWER VENTILATORS	 Deleted Destratification Fan Basis of Design from Article 2.7 Paragraph E.
<mark>23 37 13</mark>	DIFFUSERS, REGISTERS, AND GRILLES	 Diffusers added to 1.1 Summary. Depth options added to Article 2.8 Louvers.
<mark>23 74 13</mark>	PACKAGED ROOFTOP HVAC UNITS	 Revised article 2.2 to reference ASHRAE Standards. Deleted Article 2.4 D. Air Filters. Revised Article 2.7 require 1-inch thick MERV 8 filters.
<mark>23 81 23</mark>	DUCTLESS SPLIT SYSTEM AIR CONDITIONERS	 Revise Article 2.1 General product features.



JUNE 2022 SUMMARY OF REVISIONS

TO JUNE 2022 DECA DESIGN CRITERIA

<mark>23 84 16</mark>	MECHANICAL DEHUMIDIFICATION UNITS	Added Article 2.17 Heat Reclaim Cool.
<mark>26 05 33</mark>	RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS	 Miscellaneous updates to Available Manufacturers.
<mark>206 05 48</mark>	VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS	 Miscellaneous updates to ASTM standards.
<mark>26 09 23</mark>	LIGHTING CONTROL DEVICES	 Miscellaneous updates to Available Manufacturers.
<mark>26 12 19</mark>	MEDIUM-VOLTAGE TRANSFORMERS	 Miscellaneous updates to IEEE standards.
<mark>26 24 19</mark>	MOTOR-CONTROL CENTERS	 Miscellaneous UL update.
<mark>26 27 26</mark>	WIRING DEVICES	 Miscellaneous IEC standard update.
<mark>26 28 01</mark>	COORDINATED POWER SYSTEM PROTECTION	 Miscellaneous correction.
<mark>26 32 14</mark>	DIESEL-ENGINE DRIVEN GENERATOR SETS	 Miscellaneous correction.
<mark>26 35 33</mark>	POWER FACTOR CORRECTION EQUIPMENT	 Miscellaneous standards update.
<mark>26 42 13</mark>	PASSIVE CATHODIC PROTECTION FOR UNDERGROUND AND SUBMERGED	 Miscellaneous updates to Available Manufacturers.
<mark>26 43 00</mark>	SURGE PROTECTIVE DEVICES	 Miscellaneous updates to Available Manufacturers.
<mark>27 15 00</mark>	COMMUNICATIONS HORIZONTAL CABLING	 Miscellaneous updates to Available Manufacturers.
<mark>28 16 00</mark>	INTRUSION DETECTION	 Miscellaneous updates to Available Manufacturers.
<mark>28 23 00</mark>	VIDEO SURVEILLANCE	 Miscellaneous updates to Available Manufacturers.



JUNE 2022 SUMMARY OF REVISIONS

TO JUNE 2022 DECA DESIGN CRITERIA

<mark>28 31 76</mark>	FIRE ALARM / MASS NOTIFICATION SYSTEMS	 Revised notification-appliance circuit in Article 2.2 C. Added Product Data Sheets and Design Calculations to Final Documentation requirements in Article 3.8 A.

APPENDIX D – DÉCOR PACKAGE

CHEET		DESCRIPTION
SHEET		DESCRIPTION
ID8.1A	FINISH SCHEDULE	 Acrovyn rigid wallcovering color has been discontinued. Replacement colors have been recelered from In Pro-

END OF SUMMARY

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Design Criteria and Guide Plates

Guide Specifications can be downloaded from the DeCA Facilities Website:

www.decafacilities.com/decadesign/

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Division 00 – Procurement and Contracting Requirements

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1. GENERAL

1.1. This guidance is intended for use during the design and construction of commissary facilities.

1.2. This guidance also sets basic facilities standards for use in the identification of deficiencies in existing facilities for planning and programming purposes.

2. ORGANIZATION

2.1. This guidance consists of the following parts:

- 2.1.1. Requirements and Use
- 2.1.2. As Applicable for Each Section in Division 01 through 33.
 - a. Design Criteria.
 - b. Guide Specifications.
 - c. Design Standard Plates.
- 2.1.3. Appendix A Schedules and Tables.
- 2.1.4. Appendix B Product Data Sheets.
- 2.1.5. Appendix C Commissioning.
- 2.1.6 Appendix D Uniform Décor Package.

3. INTENT

3.1. The intent of this Design Guidance is to have Architect-Engineers (A/E) include all items necessary for the proper execution and completion of the Work by the Contractor awarded the Work.

3.2. The various parts of this Design Guidance, including any graphical representations, are complementary, and what is required by one part shall be as binding as if required by all.

3.3. A/E shall edit all CSI MasterFormat 2011 guide specifications as applicable to the project and incorporate them into the contract documents.

4. CONVENTION OF MEANING

4.1. In general, this Design Guidance is written in the imperative mood.

4.2. DeCA Design Guidance is updated quarterly, with the baseline guidance updated each year in June; at which time Design Criteria, Guide Specifications, and Design Standard Plates will be reviewed for applicability and documents will be re-dated to reflect the current year. Manufacturer product data will be updated as necessary to remain current.

Quarterly updates are identified as follows:

- April, May, and June updates will be highlighted in "red"
- July, August, and September updates will be highlighted in "turquoise"
- October, November, and December updates will be highlighted in "pink"
- January, February, and March updates will be highlighted in "bright green"

Guide Specification edit notes are highlighted in "yellow". Edit notes must be eliminated as specifications are developed. Do not leave as hidden text.

A summary of revisions for each monthly Design Guidance Update will be posted on the DeCA Design Guidance website.

4.3. In the interest of brevity, this guidance frequently omits modifying words such as "all" and "any" and articles such as "the" and "an", but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

4.4. Several sections have highlighted text. These areas should be discussed by the project design team and the A/E should edit the text as necessary.

4.5. Several sections identify choices in brackets []. A/E shall edit the choices as applicable to the specific project requirements.

5. DESIGN REQUIREMENTS

5.1. GENERAL

5.1.1. Design a completely functional and operational facility within the parameters of the cost and scope constraints of the project. Should the designer anticipate impending cost overruns, make recommendations to bring the scope and cost within the authorized limitations of the project. Include this information in the design analysis and bring it to the DeCA Project Manager's attention in writing.

5.1.2. Make every effort to reduce utility runs and site preparation requirements through proper design. Include in the bid package identification of support costs outside the 5'-0" line.

5.1.3. Do not use deductive bid items in the bid schedule. Use additive bid items discriminately. DeCA will approve and prioritize any additives.

5.1.4. Add/Alter Projects shall be designed to indicate a logical sequence of site and building construction phasing. The phasing design shall be clearly delineated to allow the Contractor to develop accurate bid pricing and to understand the relationships of the integrated construction work allowing the Contractor to develop a complete Project Phasing Schedule. Make certain the construction activities will allow for use of the existing facilities maintaining continuous store operation throughout the construction period. Phasing shall be reviewed during the design phases to ensure that the needs of the installation, and store management are being met and as approved by DeCA management. Refer to the Add/ Alter Construction Phasing Checklist attachment. Refer to section 013216 Construction Progress Documentation.

5.2. ARCHITECTURAL DESIGN

5.2.1. Design excellence ranks equally with economy of construction and functional efficiency in importance. Recognize that good design does not imply added expense.

5.2.2. Front entrance canopies provide an important architectural element of a store's main facade. The canopy can provide architectural accent to entrance and exit locations and protection from the weather. While DeCA recognizes the importance of canopies to overall design, use them sparingly and primarily to cover entry and exit locations and to enhance the architectural expression of the function within. Avoid excessive lengths and depths. The architectural solution should define a clean front entry/exit area compatible with other installation architecture and nearby community facilities.

5.2.3. The design solution should emphasize compatibility with installation architectural guidelines without unnecessary embellishment. The primary focus for premium building materials, such as brick masonry, should be on the front elevation and others that are prominent to the customer. DeCA encourages the use of CMU block and precast panels. Stucco, EIF systems or other similar materials may be appropriate for less prominent elevations and locations not subject to damages from carts and daily operations. Balance maintainability and durability of exterior building materials with cost regional climatic considerations.

5.2.4. Include the DeCA exterior signage per Section 101400 Signage and Appendix "D" Uniform Décor Package Building Sign.

5.3. INTERIOR DESIGN

5.3.1. The interior design should complement the exterior design philosophy in terms of economy and restraint without sacrificing creativity and a pleasing store environment. Provide the commissary

customer with the same standard of quality found in modern commercial food retail operations. The focus should be the product using the interior environment design to strengthen that focus, or act as a backdrop to the product. Customers look for value to their dollar and the interior design should strengthen that image. To the extent practicable, achieve the objectives without embellishment, the perception of extravagance or added expense.

5.3.2. Give professional attention to the selection of colors and finishes. Use accent colors and colored wall fabrics and materials to add interest and/or satisfy specialized requirements such as acoustical control, etc.

5.3.3. Include the DeCA Uniform Décor Package within customer areas per Section101500 Interior Décor Specialties and Appendix "D" Uniform Décor Package. Adapt the Uniform Décor Package components to fit the scale, layout, and ceiling height of the specific existing Store condition for Add/ Alter Contracts.

5.3.4. Provide a comprehensive interior design that reflects contemporary design technologies for a commercial retail shopping environment. Specifically, design and integrate the colors, materials and finishes, graphics, signage and lighting considering the following:

- a. Methods of merchandising the product and define the sales area envelope.
- b. Scale and proportion of space.
- c. Integration of lighting systems including, utilization of accent, task and ambient lighting. Use lighting to establish comfortable light levels in the sales area; to highlight specialty areas and product display cases; to supplement materials used for surface enrichment; as a decorative or functional design element over checkout counters; and to illuminate signage. Refer to Section 265100 for required lighting fixtures and illumination level requirements.
- d. Development of a customer information system.
- e. Maintenance of surface finishes.
- f. Color and finishes of equipment.
- g. Consumer behavior/shopping patterns.
- h. Store environmental systems.
- i. Community influences/characteristics.
- j. Ease of cleaning.
- k. Use construction materials to enhance architectural design and details and to enrich building surfaces, graphics, and the color scheme.
- I. Use graphics as a system of visual arts using color, line, pattern, and texture for the purpose of decoration and communication in the shopping environment.
- m. Use customer information systems as a method of organizing and communicating displays and products in the shopping environment. Customer information will include, but not be limited to, the following (Refer to section 101500 for specific details on design requirements):
 - 1. Product information.
 - 2. Department identification.
 - 3. Aisle markers.
- 5.4. SITE DESIGN

5.4.1. Provide for all necessary site work. Include in site plans grading, drainage, roads, parking, service area, walks, utilities, area lighting, screened/bermed service areas, lawn, planting, and required underground sprinkler and drip irrigation system. Site building to avoid excessive grading and balance site work. Consider berms only when excess cut is present. Carefully evaluate site

drainage, runoff and irrigation requirements with sustainability and LEED certification planning goals. Refer to section 5.11 below.

5.4.2. Design access drives and internal site roads to provide convenient and safe access and circulation (including collections, deliveries, and fire protection) within the areas and to discourage through traffic.

5.4.3. Relate pedestrian circulation to parking and facilities. Design the site to facilitate safe and efficient pedestrian movement to and from the parking lot and commissary. Do not site large utility elements such as transformers and cooling towers in areas where they become prominent and conflict with design features.

5.4.4. Refer to Section 320000 for paving and surfacing accessibility requirements.

5.4.5. Study roadways, exits, and parking areas to determine the most efficient traffic flow for customers, employees, and trucks. Separate delivery traffic from customer traffic on the site.

5.5. OTHER DESIGN CONSIDERATIONS

5.5.1. Carefully evaluate air-conditioning design considerations for the building, such as siting, orientation, the relative values of insulation, reflective glass coatings, in order to reduce the heat load and the resulting total capacity of the air-conditioning plant and its subsequent operating cost. Make studies to establish an optimum balance between costs of these design details in the building structure and savings in the first cost of the mechanical installation and its operating cost during the planned life of the building.

5.5.2. Generally, display cases, refrigeration systems, material-handling equipment (MHE), staging/receiving and storage room racks, and modular furniture will be contractor-furnished, contractor-installed. Specify refrigerated display cases as a single system with associated compressor systems, condensers, power wiring, piping and controls.

5.5.3. Should the designer locate roof drain downspouts in the sales area, enclose them within walls or furring to render them not visible. When located in the staging/receiving area or adjacent to the receiving aisle, design them to not impede full use of racks or locate them where material-handling equipment cannot damage them.

5.5.4. Consider the use of insulated daylighting panels, passive dome skylights, and similar products in commissary designs. Where appropriate, consider passive solar design. Consider clerestory windows for use in appropriate areas. With appropriate justification, also consider skylights in staging/receiving area. Analyze skylights with respect to the following criteria: additional construction costs, roof system detailing, structural deck reinforcements, anticipated electricity consumption savings for lighting, anticipated additional heating and air-conditioning requirements, costs associated with additional controls such as photocells and anticipated maintenance costs (if any). Address side benefits such as safety during electrical power outages and aesthetics. Describe passive solar design features that present a more expensive construction technique in the design analysis with appropriate costs, comparisons, and alternatives. All such systems and alternatives contemplated shall align with established sustainability requirements and LEED certification planning goals identified for each Commissary during the Charrette or Investigative phases.

5.5.5. Determine the regional soil treatment requirements for termite protection if required, and specify chemical treatment. Specify full compliance with all local, state and Federal regulations on toxic chemicals and handling, removal and disposal of hazardous materials. Work closely with the installation environmental authorities to ensure all requirements and methods are identified and specified for design and bidding purposes.

5.5.6. Standards of workmanship and selection of materials must achieve the maximum degree of pest exclusion. Place particular emphasis around doors, refrigeration, electrical, heating and air-conditioning duct or conduits particularly where openings are created in outside walls and utility rooms. Require doors fit to tolerances less than 1/4" and that exterior doors be fitted with durable weather stripping appropriate to the location and relevant pest considerations. Require sealing utility ducts, piping, and other wall penetrations with caps, metal flashing, masonry grout, escutcheon or other

suitable material to exclude rodents. Design of systems should result in minimum interior pest harborage.

5.5.7. Special Studies may be required for each project. AE is to conduct all special studies during the Charrette Phase of the design process. Potential Special Studies include, but are not limited to, the following:

- a. Slab Moisture Testing
- b. HAZMAT Assessment (building)
- c. Geotechnical Investigation
- d. Topographic Survey
- e. Site Environmental Assessment
- f. Laser2Cadd
- g. Roof Assessment
- h. Site Infiltration Assessment
- i. Electrical Systems Assessment
- j. Structural Seismic Analysis
- k. Ground Penetrating Radar

Special Study Reports are to be included in the contract documents.

5.6. DIFFERING SITE CONDITIONS

5.6.1. Include provisions in the project design documents which address differing site conditions. Ensure these provisions comply with the latest Federal Acquisition Regulations (FAR) and include the following:

- a. Require the Contractor to promptly, and before disturbing existing conditions, give written notice to the Government Authorized Technical Representative of (1) subsurface or latent physical conditions at the site which differs materially from those indicated, or (2) unknown physical conditions at the site of an unusual nature, which differ materially from those ordinarily encountered.
- b. The Government Authorized Technical Representative will investigate the site conditions promptly after receiving the notice. If the conditions do materially differ and cause an increase or decrease in the Contractor's cost of, or the item required for, performing any part of the work, whether or not changed as a result of the conditions, the government will make an equitable adjustment and modify the contract in writing accordingly.
- c. Do not allow any request by the Contractor for an equitable adjustment to the contract unless the Contractor has given the written notice required; provided that the Government Authorized Technical Representative may extend the time prescribed for giving written notice.
- d. Do not allow any request by the Contractor for an equitable adjustment to the contract for differing site conditions if made after final payment.

5.7. LIFE CYCLE COST

5.7.1. <u>General</u>: Provide a computer analysis justifying the selection of systems and materials as the least life cycle cost alternative, taking into account building aesthetics, geographic location, etc. BLAST, TRACE or other similar computer programs which perform this analysis are acceptable. The analysis should result in the selection of materials with the least building cost over the life cycle of the building.

5.7.2. <u>Life Cycle Cost (LCC)</u>: Include a complete analysis for structural, mechanical, refrigeration, electrical, plumbing, and pavements in the analyses. Consider the total life cycle cost where the LCC includes all costs associated with a system over its expected life, including but not limited to construction/procurement, energy, maintenance, operation, repair, alteration, and disposal costs. Use the present value discounting approach described in DOD criteria: Economic Analysis and Program Evaluation for Resource Management and DOD criteria: Economic Procedures Handbook. Specific criteria:

- a. Discount rate: 6% net. DeCA prefers use of mid-year factors for cost/savings occurring in a steady stream but end-of-year factors are acceptable.
- b. Analysis period: 12 to 15 years from the Beneficial Occupancy Date.
- c. Base cash flow used in the analysis on the actual calendar dates on which events and costs are projected or scheduled to occur.
- d. Neglect general rate of inflation of the economy as a whole. Calculate rates for energy costs.
- e. Base estimates for all costs on actual prices in effect on the date of study (constant date-ofstudy dollars).

5.8. FIELD ENGINEERING

5.8.1. <u>Scope</u>: Perform field reconnaissance, surveys, and site investigations, including travel and work required to obtain engineering information and design data for the accomplishment of the project contract documents in accordance with requirements of this criteria.

5.8.2. <u>Area Traffic Study</u>: Perform traffic studies only where requested by the host installation or where obvious traffic congestion issues exist. Research traffic requirements, indicate anticipated traffic circulation patterns, and provide a traffic flow plan for those areas in and immediately around the new commissary. Consider surface traffic patterns to and from the commissary. Provide recommendations to separate customer from service traffic and pedestrian from vehicular traffic. Also include recommended modifications to the affected existing installation roadways, but do not conduct an installation roads study.

5.8.3. <u>Field Reconnaissance and Surveying</u>: Make a complete survey of the project site recording existing topography, terrain features, location of all utilities above and below ground including sizes and elevations; width of adjacent streets, pavements, sidewalks, curbs and ditches; location, size and types of existing trees and hedges; and other obstructions such as catch basins, manholes, utility poles and fire hydrants. Coordinate with the installation engineer and utility shops to locate and identify all underground utilities in the project site area. Present data as a comprehensive site topographic survey and include in the contract documents.

5.8.4. Engineering Information and Design Data:

- a. Obtain geotechnical engineering services from a qualified geotechnical engineer. The geotechnical engineer should determine the extent and type of investigative studies required. These studies shall include infiltration testing as required by the local agency having jurisdiction over storm water design. Authorize those investigations that the geotechnical engineer recommends and assume responsibility for areas overlooked by the geotechnical engineer. Provide the geotechnical engineer all information he may require to recommend services, investigate soils conditions, and recommend soils related influences on the project design and specifications.
- b. The geotechnical engineer shall prepare a soils investigation report in a form suitable for inclusion in the bid documents for each general contract bidder.
- c. The soils investigation report shall include the geotechnical engineer's recommendations for building foundations, paving design, corrosive soil conditions, and other soil related construction problems that the geotechnical engineer has identified and recommended for investigation.

- d. The soils investigation report shall include the geotechnical engineer's recommended clearing and earthwork specifications for both materials and workmanship for site work, structure, and below grade utilities suitable for incorporation into the project specifications by reference.
- e. The geotechnical engineer shall prepare an addendum to the soils investigation report following completion of structural and civil engineering. This addendum shall reflect the completed engineering and any modifications developed with the structural or civil engineers during their work. The addendum shall eliminate options contained in the initial report that are no longer available in the context of the completed engineering, so that construction bidders have no confusion on options no longer appropriate.
- f. The soils investigation report shall include detailed recommendations for follow-up and confirmation of soils engineering recommendations to include all tests, observations, and services to be performed during construction and presented in a form suitable for inclusion in the construction contract. In the project specifications, require the contractor to provide these services with his own qualified geotechnical engineer.
- g. Ensure the data results in a complete and comprehensive geotechnical report for inclusion in the contract documents. Prepare other specifications as needed for architectural earthwork not reasonably part of the geotechnical engineer's study.

5.9. REFERENCE STANDARDS

5.9.1. DeCA will provide guidance for program development, design, and construction of a commissary facility which will include but not be limited to the following:

- a. DeCA Definitive Floor Plan.
- b. DeCA Design Criteria.
- c. DeCA Guide Specifications.
- d. DeCA Design Standard Plates.
- e. Applicable DoD standards.
- f. Programmed project budget.
- g. Applicable installation maps, base exterior architectural plans, and drawings.

5.9.2. <u>Applicable Standards</u>. Use national codes and regulations for building construction and safety where applicable. In the event of conflicts between criteria, the more stringent shall apply. Edition dates of criteria, codes, and standards listed shall be that current and in effect as of the date of the 100% documents submission. Refer to the Code Analysis section within the DeCA Commissary Design Guidance for requirements.

5.9.3. Provisions of the design shall fully comply with the ABA Accessibility Standard for Department of Defense Facilities, identify features required for accessibility by handicapped on the contract drawings so that no feature be omitted or compromised by change order or on-site conditions during construction. Locate the standard accessibility emblem next to each design feature, dimension, and piece of equipment shown on the contract drawings or include a list of such features on the drawings. Locate accessible parking spaces designated to serve commissary customers, employees, and visitors on the shortest accessible route of travel from adjacent parking to an accessible area.

5.9.4. Base selection of materials on the architectural style of existing facilities on the Installation. If no planned or existing architectural style exists, then define the design to the local region.

5.9.5. To the extent practicable, provide fixed windows in offices with exterior walls. Do not provide windows at or near cash control areas that are located on exterior walls. Provide windows at all offices facing sales areas. Designers may use fenestration on entry/exit areas at the front of the store.

5.9.6. Place special attention on the design of interior building surfaces and details in order to:

a. Eliminate the potential for dust and trash accumulation.

b. Provide opportunities to highlight areas of like products such as produce, frozen foods, etc. Design interior to accommodate use of colors and decor schemes that accentuate product displays.

5.9.7. DeCA will furnish a definitive floor plan drawing of each proposed commissary facility from which the A-E will develop and produce the individual contract documents for each project. Make no major departure from the basic floor and equipment plans and equipment list unless dictated by differing structural, mechanical, and/or electrical considerations. Make suggestions that will improve the operational functions, enhance appearance, and prove to be economical and advantageous for each project at the appropriate review session.

5.9.8. Describe technical provisions by commercial standards (CSI format).

5.9.9. To the extent practical, use a modular grid structural system for economy and efficiency. However, exercise great care in selection of initial grid to assure column locations are subordinate to functional considerations of the commissary. To the extent possible, place columns within walls so that all work areas, sales area, and product movement aisles remain free of columns. Do not locate columns within cold storage rooms, in aisles or queuing area, checkout lanes or within refrigerated display cases. Columns are permissible in the Staging/Receiving Area, but locate them between the back-to-back warehouse racks, where applicable or protect exposed columns with concrete filled bumper posts. In the sales area, arrange shelves or display cases to enclose or conceal the columns without a break in the shelving/display run.

5.10. SPECIFICATION OF PREFERENTIAL RECYCLABLE ITEMS

5.10.1. New DoD policy related to compliance with Executive Order 13423 and Section 6002 of the Resource Conservation and Recovery Act (42 U.S.C. 6962) require Federal agencies establish preference programs for EPA designated items. The current list of EPA designated guideline items is included in Attachment 1. It is Department of Defense Policy to require that 100% of the purchases of these designated items meet or exceed the EPA guidelines. Include as a part of the pre-design investigative study an assessment of the availability and feasibility for use of these guideline materials and appropriate specifications for their use. Exceptions to use of these materials will require you provide written documentation based on one or more of the following conditions:

- a. The product is not available competitively within a reasonable time.
- b. The product does not meet appropriate performance standards.
- c. The product is only available at an unreasonable price.

5.10.2. Additional guidance about the EPA Environmentally Preferable Purchasing Program is available in the Publication Greening the Government, which can be downloaded at the office of Federal Environmental Executive web site <u>www.ofee.gov</u>, or by telephone at (202) 260-1297. Other guidance and direction is available at the EPA's Environmentally Preferable Purchasing Program web site at <u>www.epa.gov/opptintr/epp</u> or by calling the EPA's Pollution Prevention Information Clearinghouse (PPIC) at (202) 260-1023 or FAX at (202) 260-4659.

5.10.3. Refer to <u>http://www.epa.gov/cpg/index.htm</u> for further guidance pertaining to the EPA Environmentally Preferable Purchasing Program.

5.11. ENERGY EFFICIENCY AND WATER CONSERVATION AT FEDERAL FACILITIES

5.11.1. Reference is made to Presidential Memorandum: Environmentally and Economically Beneficial Practices on Federal Landscape Grounds, April 26, 1994, and DUSD (ES)/PP Memorandum of September 23, 1994, same subject. During the design of any project, consider the following mandated requirements:

5.11.2. Design facilities to minimize life-cycle cost of the facility using energy efficiency, water conservation, or solar or other renewable energy technologies.

5.11.3. Implementation of actions to increase environmentally and economically beneficial landscaping

practices at Federal facilities and Federally funded projects. Where cost effective, and to the extent practicable, Federal agencies will incorporate the following for Federal grounds and Federally funded projects:

- a. Use regionally native plants and landscaping.
- b. Design, use or promote construction practices that minimize adverse effects on the natural habitat.
- c. Seek to prevent pollution by reducing fertilizer and pesticide use, using integrated pest management techniques, recycling green waste, and minimize runoff.
- d. Implement water efficient practices, such as use of mulches, efficient irrigation systems, audits, use of recycled or reclaimed water (when economically justified), and selecting and siting plants in a manner to conserve water and control soil erosion. Landscape practices, such as use of native shade trees around buildings to reduce heat gains and provide natural wind breaks are also encouraged.
- e. Landscaping that encourages native plants and pollution prevention and water conserving techniques are also encouraged.
- f. Additional information on the designated items is contained in EPA's Environmental Fact Sheet, "EPA Issues Comprehensive Procurement Guideline," April, 1995, EPA530-F-95-010, or by calling EPA's RCRA Hotline at 1-800-424-9646.

5.11.4. Implement Executive Order 13423– Strengthening Federal Environmental, Energy, and Transportation Management and Executive Order 13514 Federal Leadership in Environmental, Energy and Economic Performance in accordance with Design Criteria 013329 Sustainable Design Reporting.

5.11.5. In addition to meeting the requirements of the memorandum and executive orders described above, design and administer construction for all New and Add / Alt Projects to meet the requirements of LEED Silver with an initial design target of 55 points. Do not register the Project through LEED. The design team shall submit to DeCA a completed LEED scorecard during the early design phase of the project indicating the credits to be pursued as part of the design process in addition to the required pre-requisites and minimum program requirements (MPR's). At the end of the project the design team shall submit to DeCA a report showing compliance with the targeted LEED credits.

5.12. ENVIRONMENTAL DESIGN CONSIDERATIONS

5.12.1. <u>Environmental Considerations</u>. Give special attention to the environmental factors in the design and construction of DOD facilities to eliminate or minimize degradation of the environment IAW Public Law 91-190, National Environment Policy Act; PL 92-500, Federal Water Pollution Control Act; PL 94-580, Resource Conservation and Recovery Act; PL 95-95, Clean Air Act 1977; PL 93-523, Safe Drinking Water Act; Executive Order 11514; Energy Independence and Security Act Section 438; and to meet the Federal, State, and local environmental quality standards, particularly with regard to air and water pollution. For projects having pollution abatement features, obtain necessary Environmental Protection Agency (EPA) and other State agency coordination and concurrence, and permits for construction.

5.12.2. Air and Water.

5.12.2.1. <u>Water Pollution Abatement Facilities</u> - Design of waste water treatment facilities shall ensure compliance with the Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES) permits. Industrial waste treatment facilities to be connected to the sanitary systems shall meet current EPA pretreatment standards and comply with requirements of DOD regulations. Address secondary containment and other requirements for fuel storage tanks.

5.12.2.2. <u>Water Quality Permits</u> - The installation will obtain a Permit to Construct, when required by State or local authority. Evaluate water treatment projects to determine permit requirements.

5.12.2.3. <u>Assemblage of Permit Data</u> - Assemble the necessary data to enable the construction contractor, working in coordination with the installation, to apply for a Clean Water Act Authority to

Construct Permit. Include instructions and drafts of the proposed project's necessary permit applicable documents. Meet with the applicable permitting authority (State and/or local) to determine the specific requirements for the project. Advise the installation and DeCA of all meetings to allow both to establish their need to attend. The Clean Air lists specific procedures.

5.12.2.4. <u>Clean Air Act Amendments of 1977</u> - The 1977 amended Clean Air Act (CAA) requires DOD facilities to comply with State procedural requirements concerning permits for military construction projects. Evaluate the project to determine whether or not permits are required pursuant to the Clean Air Act Amendments of 1977. If required, provide instructions to the Contractor on how to coordinate with the installation to obtain permits, where required, to construct facilities that emit pollutants.

a. <u>Assembly of Permit Data</u>: Assemble the necessary permitting application data to enable the Contractor to submit draft documents to the installation to apply for a CAA Authority to Construct Permit. This includes the review of the proposed project against the governing air quality regulation and preparation of the necessary permit application documents. To accomplish this, meet with applicable permitting authority (EPA, State, and/or local) to determine the specific requirements for this project. Advise the installation and DeCA of all meetings to allow both to establish their need to attend. The construction contractor will submit a rough draft of the permit data to the installation for review and coordination. After approval, prepare the final package, including any draft letters of transmittal and a summary of the permit costs. If a permit is not required, so indicate.

b. <u>Filing of the Application</u> - The installation will file the application with the permitting authorities.

- c. <u>Specific Procedures</u>:
 - 1. Ensure the contract specifications identify that the installation will sign and transmit all correspondence to permitting agencies.
 - 2. Provide the following information and data with the Early Preliminary Design submittal at the 30% design stage where the final design only is authorized, or as early in the design as possible.
 - a. Permitting authority (Federal, State and/or local).
 - b. Type permit required (construction and/or operation).
 - c. Procedure and time necessary to process permit application(s).
 - d. Fee schedule to include filing/application fees, charges for actual emissions, and fees relative to testing of abatement equipment toward insuring compliance with air quality standard.
 - 3. Discuss your approach for obtaining permits (including whom to contact, when, etc) with the installation prior to initiating any communications with the permitting authorities as well as copies of any correspondence.
 - 4. Carefully examine environmental factors during design and during studies of alternative means of satisfying requirements. For those projects for which environmental statements have been written or are being written, incorporate the environmental mitigation measures specified in the draft/final environmental statement into the project design. The Council on Environmental Quality Regulations, Nov 29, 1978, part 1605, apply.
 - In accordance with the provisions of the National Historic Preservation Act of 1966 and Executive Order 11593, preserve eligible historic, scenic and archaeological sites and other areas of special interest to the extent practical.
 - Project siting must consider the facility locations with respect to applicable criteria for accident hazard zones and CNR, NEF, or LDN noise contours. Incorporate provisions

for noise attenuation, where required, in the design.

- Water conserving landscape designs should incorporate plants that are drought resistant and/or require low amounts of water. Consider irrigation systems of drip irrigation/emitter type. Consider low maintenance design in lieu of lawn or vegetative ground cover.
- In accordance with Public Law 91-190, the design shall consider those measures necessary to mitigate construction activities, i.e., existing trees and ground cover shall be preserved by minimizing grading.
- 9. Abide by the provisions of the Endangered Species Act PL 95-632 (92 Stat. 3751) relating to wildlife and plant life and critical habitants.
- 10. Design, where appropriate, shall be in accordance with Executive Order 11990, Protection of Wetlands.

5.12.2.5. Energy Independence and Security Act of 2007 (EISA) – EISA Section 438 establishes strict stormwater runoff requirements for federal development and redevelopment projects that exceed a footprint of 5000 square feet. EISA requires these developments or redevelopments "... to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to temperature, rate, volume, and duration of flow." <u>Technical</u> <u>Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects Under</u> <u>Section 438 of the Energy Independence and Security Act</u> is available to guide compliance with EISA.

5.12.3. Environmental Permitting Action: See sample A-E Statement of Work for Environmental Permitting (See Attachment).

5.12.3.1. Unless specifically requested to do otherwise, investigate the need for, and provide complete unsigned permit application forms to the Government Authorized Technical Representative as deemed necessary by the investigation. Accomplish this as early as possible to allow regulatory agencies adequate time to evaluate and process the application.

5.12.3.2. Submit a completed Environmental Permits Status Matrix (see Attachment) to the Government Authorized Technical Representative.

5.12.4. Consider and propose other alternatives which provide more effective solutions to environmental issues or present more cost-effective options.

5.12.5. DeCA Policy on Management of Asbestos:

5.12.5.1. Asbestos in building facilities is managed because of potential adverse human health effects. Asbestos must be removed or controlled if it is in a location and condition that constitutes a health hazard or a potential health hazard or it is otherwise required by law. The hazard determination must be made by a professional trained to make such determinations. While removal is a remedy, in many cases management alternatives (such as encapsulation) within the building are acceptable and cost-effective methods of managing asbestos in-place. The key to dealing with asbestos is knowledge of its location and condition and having a management plan to prevent asbestos-containing materials that continue to serve their intended purpose from becoming a health hazard. There is no alternative to such management, because DeCA does not have the resources to remove and dispose of all asbestos in all the facilities under its management. Most asbestos is not now nor will it become a health hazard if it is properly managed. Statutory or regulatory requirements that result in removal or management of asbestos are based on human exposure or the potential for human exposure (i.e., National Emission Standards for Hazardous Air Pollutants (NESHAP) = no visible emissions, OSHA = number of airborne fibers per cc). Professional judgment based on exposure levels or potential exposure levels must be the primary determinant of what should be done with asbestos. Asbestos containing materials must be analyzed to determine the most prudent course in terms of removal or management in-place and cost that will be incurred as a result:

5.12.5.2. It is DeCA policy that whenever Commissary facilities or other facilities are demolished as part of construction, or components of a facility are removed during construction, an inspection and survey must be performed to determine the amount of asbestos containing materials, lead-based paints, and PCB containing electrical components that may be present.

5.12.5.3. The following specific policies apply to asbestos containing materials:

- a. Asbestos will be removed if the protection of human health, as determined by a qualified professional, requires removal (e.g., exposed friable asbestos within a building) in accordance with applicable health laws, regulations, and standards.
- b. When asbestos is present but no immediate action is planned, a plan for managing the asbestos in-place using commonly accepted standards, criteria, and procedures to assure sufficient protection of human health and the environment, in accordance with applicable and developing health standards, will be developed.
- c. A thorough survey for asbestos (including review of facility records, visual inspection, and where appropriate as determined by the Bio-environmental Engineer and the installation engineer, (intrusive inspection) will be conducted prior to any major construction on commissary facilities.
- d. Encapsulated asbestos in a building structure, friable or not, is not regarded as hazardous waste, nor does encapsulation within the structure of a building constitute "storing" or "disposing of" hazardous waste. However, it is not DeCA's policy to use encapsulation as a form of abatement, unless specifically approved in advance.
- e. Friable asbestos, or asbestos that will probably become friable, will be properly disposed of in a landfill or other disposal facility property permitted for friable asbestos disposal.
- f. The final determination regarding the disposition of asbestos will be dependent on the plan for disposal and any planned continued use of the building.
- 5.12.6. A-E Services for Hazardous Materials Survey/Inspection and Abatement Design:

5.12.6.1. If required by AE SOW, provide an environmental investigation and abatement design for hazardous materials impacted by the proposed construction to include but not be limited to Asbestos Containing Materials, lead based paints, and existing fluorescent light fixtures for PCB in ballasts. Provide a written detailed report of findings along with recommended design for abatement.

5.12.6.2. Part A - Investigative: Provide environmental survey services to determine the existence of hazardous materials within the limits of the proposed construction project. This survey shall include field reconnaissance by a licensed and accredited inspector qualified to inspect the facility and site for asbestos materials, lead contaminated paint, and PCB contaminated light ballasts. It will begin by the contractor reviewing available documents, including as-built construction documents, prior surveys by the installation, lab results, prior management actions, and briefing key personnel before commencing work. It will also include records of communications with state and local regulatory agencies to clarify the nature and scope of required coordination, approval, permitting, and licensing actions required for work to be performed. AE assumes all responsibility for payment of any fees to state and local agencies associated with the investigation/survey and/or design of abatement actions. Conduct survey in a manner to avoid any conflict with on-going store operations and coordinate in advance with the Government Authorized Technical Representative. Sample and test any materials found to be suspect of containing asbestos and lead to determine levels of contamination. Test a minimum of three samples of each homogeneous material suspected of containing asbestos. Bulk samples will be analyzed by an independent, licensed and accredited testing laboratory which participates in the National Voluntary Laboratory Accreditation Program (NVLAP) administered by the National Institute of Standards and Technology (NIST). Once a sample tests positive for hazardous components in a specific homogeneous area, further testing of other samples of the same material from that homogeneous area is not required. Identify locations of samples to depict the specific location at

the building or site. Base any determination of potential PCB containing light ballasts on name plate data and serial numbers cross-referenced against manufacturer's information.

5.12.6.3. <u>Part B - Analysis and Reporting</u>: After all field inspection, sampling, and testing have been completed, prepare a comprehensive report indicating the results of inspection and laboratory tests. Include in the written report of findings a table of asbestos containing materials (materials containing more than 1% asbestos), if present, sample analysis results and a floor plan and photographs to show sample locations. At the discretion of the Government, retest lab results indicating the presence of asbestos material in levels of 5% or less using more accurate point counting methods. Upon completion and acceptance of the inspector's report, address appropriate design actions including an analysis of the potential risk of hazardous material that may be encountered during the renovation phase of the project and a recommended method of abatement of these materials. Have an experienced Licensed Asbestos Consultant prepare the report. Finally, include in the report recommended procedures and required actions and a detailed cost estimate for required abatement actions.

5.12.6.4. Part C - Abatement Design: Prepare an abatement design for all materials identified for removal or disposal in the survey report described above. Have a person licensed and accredited to perform such work in the state where the work is to be performed prepare the design. Coordinate the results of this abatement design into the demolition work associated with construction or renovations to the commissary. Consider phasing of the abatement work an integral part of the phasing of construction so to not disrupt commissary operations. Include in the abatement plan drawings, details, and specifications defining and delineating the physical quantity of the work. Additionally, describe in the contract specifications the technical and qualitative aspects of the work to meet and/or exceed minimum regulatory requirements. Include in the design documents a requirement that the abatement contractor's submittal show proof of insurance, licenses, training, medical certificates, and worker protection measures necessary to comply with federal, state, and local laws and regulations. Require the abatement contractor to identify a competent person responsible for overseeing all work. Require that a licensed and accredited air monitoring technician provide independent air monitoring as part of the asbestos abatement procedures. Clearly state in the design documents will that the contractor assumes all responsibility for regulatory permits, fees and fines levied as a result of his work. Final completion of all work shall be contingent upon government acceptance of the procedures for abatement and documentation of approved disposal of all hazardous waste materials. Require that a final government walk-through be scheduled at the completion of all abatement work to assure work has been performed according to plans and applicable federal, state and local laws and regulations. Require the contractor provide statements certifying this before undertaking to apply lock-down or other materials that cover or encapsulate any remaining residue (see Attachment 5). Upon completion and acceptance of all work, require the contractor provide the government's representative with a complete record of all abatement actions as a permanent record file to be maintained by the installation.

5.12.6.5. Include in the design specifications for all new work, provisions requiring the construction contractor to verify that the new construction does not contain asbestos materials or lead-based paints. See sample certification form.

5.12.7. <u>Minimum Requirements for Design of Asbestos Abatement Projects for Commissary Facilities</u>: See the attached provisions which <u>outline</u> the minimum requirements for protection of public health and safety required for acceptable design of asbestos abatement work associated with commissary construction projects. This <u>outline</u> does not constitute complete and sufficient specifications for an asbestos abatement project and is intended only as an aid to design. The more detailed requirements stipulated in the plan and specifications for a particular abatement project shall take precedence over these limited provisions.

Sample Statement of Work for Environmental Permitting

ARCHITECT-ENGINEER STATEMENT OF WORK

ADD/ALTER COMMISSARY INSTALLATION NAME

ENVIRONMENTAL PERMITTING

1. Environmental Considerations: Pay special attention to the environmental factors in the design and construction of DoD facilities to eliminate or minimize degradation of the environment in accordance with Public Law and to meet all federal, state and local environmental quality standards, particularly with regard to air and water pollution.

2. A-E Requirements.

2.1. Determine what environmental permits are required, if any. If applicable, also provide to the installation the name, address and a point of contact for each of the various agencies required. For the permitting authorities to accomplish this, meet with the applicable permitting authorities (EPA, state and/or local) to determine the specific requirements for this project.

2.2. Identify necessary data for the installation to file with the permitting authorities. This will include the review of the proposed project against the governing regulation and preparation of the necessary permit application documents. To accomplish this, you may have to meet with the applicable permitting authority (EPA, State and/or Local) to determine the specific requirements for this project. Advise the installation of all scheduled meetings to allow it to establish its need to attend. Submit a rough draft of the permit data to the installation for review and coordination. After approval, prepare a list of required actions, identifying appropriate authorities, and providing projected submittal and approval events and estimated lead times. Also prepare a summary of the projected permit costs, including procedural costs as well as additional construction costs. If a permit is not required, so indicate.

Sample Environmental Permits Status Matrix

ENVIRONMENTAL PERMITS STATUS MATRIX

(TO BE COMPLETED DURING PROJECT DEFINITION)

PERMIT TYPE	PERMIT REQUIRED Y/N AND NUMBER	PERMIT FOR	LOCAL JURISDICTION CONTACTED AND DATE	SUBMITTAL REQUIREMENTS	IF YES, TIME REQUIRED FOR PERMIT	PERMIT FEE
AIR QUALITY						
WATER QUALITY						
SOLID WASTE						
HAZARDOUS WASTE 1/						
STORM WATER EROSION CONTROL PLAN						
COASTAL ZONE MANAGEMENT						
FLOOD PLAIN/ DREDGE AND FILL						
OTHER 2/						

Include underground tank permits for fuels and other hazardous materials.
 Includes any permitting requirements not specifically categorized in the matrix, such as FAA coordination, stormwater management, etc.

Sample Contractor Certification upon Completion of Abatement Work

CERTIFICATION OF COMPLETED ABATEMENT

As authorized representative of the contractor, I hereby certify and attest that I have completed abatement work on project _____

Description

At _____, Contract Number _____

Location Number

In accordance with the contract provisions, federal, state and local regulations and have disposed of all waste and debris associated with this work at a landfill or disposal site authorized and licensed to accept such wastes. Copies of project logs and documents, landfill receipts and waste manifests are attached. At completion of all work, the work area was visually inspected and found to be free and clear of all visual signs of asbestos materials and that clearance air quality monitoring and sample analysis under aggressive air disturbance conditions was found to be within permissible levels for space re-occupancy.

The contractor's representative further accepts and acknowledges that the contractor assumes all responsibilities for latent defects attributable to his failure to follow prescribed procedures or failure to properly abate the required conditions as described in the contract.

by:

Signature, Contractor or Authorized Representative Date

Printed Name

Printed Title and Firm

GOVERNMENT INSPECTOR'S CERTIFICATION

The Government's Inspector hereby certifies that he has accompanied the Contractor's Representative on his visual inspection and reviewed the results of his final clearance air quality monitoring and verifies that, to the best of his knowledge and belief, the above representations by the Contractor's Representative are true and correct.

By: _

Signature

Date

Printed Name

Printed Title and Firm

Sample Contractor Certification Upon Completion of New Construction

ENVIRONMENTAL CERTIFICATION ACCOMPANYING COMPLETION OF NEW CONSTRUCTION

by: _

Signature, Contractor or Authorized Representative Date

Printed Name

Printed Title and Firm

GOVERNMENT INSPECTOR'S CERTIFICATION

The Government's Inspector hereby certifies and attests that, to the best of knowledge and belief, the above representations by the Contractor's representative are true and correct.

by: _

Signature Date

Printed Name

Printed Title and Firm

SAMPLE OUTLINE COVERING MINIMUM REQUIREMENTS FOR INVESTIGATIVE SURVEY AND DESIGN OF ASBESTOS ABATEMENT PROJECTS FOR COMMISSARY FACILITIES

SAMPLE OUTLINE

1. Design Inspections Sampling:

1.01. Inspections must be performed by accredited and licensed inspectors. The inspection survey reports must be signed by the inspector, dated, and include, if applicable, the accreditation number.

1.02. Laboratory testing of sample surveys must be performed by licensed and accredited labs and must be signed by the laboratory.

1.03. The inspection survey must visually inspect, as a minimum, all areas of the commissary facility or site to be affected by the project and identify the locations of all suspected asbestos containing building material (ACBM).

1.04. The inspection must identify all homogeneous areas of suspected ACBM.

1.05. The inventory must include the locations of the homogeneous areas where samples are collected, the exact location where each bulk sample is collected, the dates the samples were collected and a description of the sampling methodology.

1.06. The inspection shall classify and give reasons for classification in the written assessment the asbestos containing building materials and assumed ACBM according to condition (damaged, significantly damaged, potential for damage, potential for significant damage, friable or non-friable).

1.07. The written assessment must include:

Location and amount of material, both on terms of total quantity and as a percentage of the functional space.

Condition of material.

- 1. Type of damage or significant damage.
- 2. Severity of damage.
- 3. Extent of damage.
- 4. Accessibility.
- 5. Potential for disturbances.
- 6. Known or suspected causes of damage.

Preventive measures which might eliminate the reasonable likelihood to undamaged ACBM from being significantly damaged.

Appropriate recommendations for design of abatement actions and/or recommendations for in-place management of ACBM.

1.08. Inspection sampling protocols, must, as a minimum, comply with Asbestos Hazard Emergency Response Act (AHERA) guidelines provided in 40 CFR 763 Subchapter E.

1.09. The overall inspection effort must include reviewing the results of previous installations surveys.

1.10. Statements of Work for inspection shall not be structured in times that specifically limit the number of survey samples that will be taken. The number of samples required will be limited by the number and type of homogeneous areas to be sampled. For example, for surfacing material, the "3-5-7 Rule" will be used. However, the lab analysis can be stipulated only to "test" until the first positive" for each homogeneous material.

1.11. The Statement of Work for inspection and sampling of asbestos material must require separate sampling of each layer of material of a homogeneous area. For example, mastics must be separated from floor tiles and roofing materials and joint components separated from wallboard.

SAMPLE OUTLINE COVERING MINIMUM REQUIREMENTS FOR INVESTIGATIVE SURVEY AND DESIGN OF ASBESTOS ABATEMENT PROJECTS FOR COMMISSARY FACILITIES

1.12. Sample results yielding 5% or less of asbestos material must be retested using point counting method.

2. Design Specifications:

2.01. The plans and specifications must reference provisions of appropriate federal, state and local laws, regulations and procedures applicable to the specific work to be accomplished.

2.02. The plans and specifications for abatement work, including inspections must be prepared and signed by a person licensed and accredited to perform the work in the appropriate jurisdiction.

2.03. The plans and specifications must be signed by an accredited and licensed asbestos project designer.

2.04. The design for asbestos abatement actions must include drawings, which as a minimum address the location, quantity and condition of asbestos containing materials to be abated and identifies critical elements of work containment areas and work procedures.

2.05. Specifications for abatement work should be based on some acceptable standard. Usually this might be the installation's guide specification for abatement work. If no local standards are available, the National Institute of Building Sciences (NIBS) has published the not widely accredited industry standard specification which is available both in hard copy and computer disk.

2.06. The containment areas for specific abatement phases of work should be identified on the plans.

2.07. Entry/exit points to these containment areas need to be defined.

2.08. The decontamination room needs to be defined and shown on the plans.

2.09. Waste loading areas need to be defined in the plans.

2.10. Removal methods should be described in detail.

It is DeCA's policy that wet methods will be used and specified unless alternate methods are specifically detailed in the design analysis and approved by DeCA.

Procedures should require immediate bagging of removed equipment.

Specifications should require daily clean up.

2.11. Specifications should address security and access to containment areas.

2.12. Specifications must stipulate posting of entry/exit points.

2.13. Specifications must require Contractor notification to the appropriate state and local agency at least 10 days before work commences. The notification procedures must be coordinated with and consistent with the local installation procedures.

2.14. Provisions for contractor notification of employees and others in the general work area must be covered.

2.15. If abatement work is linked to other work, then it must be integrated into the project's overall phasing plan.

2.16. The contract documents must describe in detail the contractor's provisions for assuring worker protection and sealing off of work areas.

2.17. The minimum requirements for personnel protective gear and types of masks to be used need to be defined in the contract documents.

2.18. The specifications must require the contractor to prepare and file a safety/fire emergency egress plan.

2.19. The design specifications must address, as a minimum the following:

SAMPLE OUTLINE COVERING MINIMUM REQUIREMENTS FOR INVESTIGATIVE SURVEY AND DESIGN OF ASBESTOS ABATEMENT PROJECTS FOR COMMISSARY FACILITIES

The contractor's licenses and accreditation to perform such work.

The contractor's proof of insurances.

Certificate of training for employees.

Medical clearances.

Designation and credentials of a "competent person" designated to oversee workers.

2.20. Provisions must be included in the design documents to lock out all mechanical/electrical systems in the work area before the contractor will be permitted to start abatement. These provisions must also insure that lock out procedures remain in effect until all abatement work is completed and final clearances provided.

2.21. Provisions must be included in the specifications to address protective seal for any plumbing, electrical, mechanical or operating equipment remaining in the contaminated area.

2.22. Specifications must require a hot/cold shower with water filtration system be provided in the decontamination chamber for abatement workers.

2.23. Specifications must include provisions for a small vision window(s)/small Plexiglas panel(s) to provide viewing for a government representative to observe the entire work area at all times from outside the contaminant area.

2.24. The specifications must make the contractor responsible for all state/local permits, notification and fees. Additionally, the contractor assumes responsibility for any fines incurred as a result of their actions.

2.25. The contractor for all abatement projects will be required to provide a certification in form similar to the attached that certifies that all abatement work is free and clear of asbestos, lead paint and other defined hazardous materials.

2.26. The specifications must describe air monitoring techniques. At least four separate areas must be covered.

The work area.

Output of Negative Pressure System. These systems will use high efficiency particulate air (HEPA) filters.

Worker equipment/clean room.

Personnel air monitoring.

2.27. The air monitoring must be preformed by someone qualified to do the work but not be controlled or hired by the contractor. Provisions may be included in the documents for the contractor to submit a list to the government of qualified independent air monitoring consultants for the government to select from. The government could either pay this separately or deduct from the overall contract amount, depending on how it is specified.

2.28. The specification must require the contractor to provide proof of manifesting and acceptance of all disposed asbestos containing material from a licensed transporter and approved landfill licensed to accept such wastes. Waste disposal manifests should be included with post job submittals.

2.29. The required contractor controls what will be in place for the duration of the abatement need to be specified in detail.

2.30. The specifications must require negative air pressure to be maintained at all times in the work area from start to finish (before abatement start until after the work has been inspected and accepted).

2.31. The specification for final clearance must be quire specific, but yet, not so inflexible or to allow a variety of acceptable methods. One possible work sequence is provided in the Appendix.

SAMPLE OUTLINE COVERING MINIMUM REQUIREMENTS FOR INVESTIGATIVE SURVEY AND DESIGN OF ASBESTOS ABATEMENT PROJECTS FOR COMMISSARY FACILITIES

2.32. Once visible quantities of asbestos have been removed, the contract documents must require the contractor to "lock down" any removing minuscule quantities of asbestos within an approved lock down material.

2.33. Contract specifications must include provisions which require the contractor to build a permanent record file of all submittals, licenses, certifications, and notifications related to completion of work to be turned over to the government in a three-ring binder for indefinite retention.

2.34. As a general rule, DeCA policy will not permit covering over asbestos containing material such as floor tile. Specific exceptions to this policy will be addressed in the design criteria and required prior DeCA approval.

3. Final Clearance Procedures for Asbestos Abatement: The procedures for final clearance of the work area for re-occupancy must be quite specific but are not so inflexible as to not allow a variety of methods. One possible work sequence for final clearance is provided below.

3.01. Complete removal of asbestos surfacing material

3.02. Remove gross contamination from equipment and surfaces including poly liners using wet wiping techniques and HEPA vacuuming. Top layer of poly can be sealed with lock-down material.

3.03. Using aggressive air monitoring techniques (use at leaf blower on surfaces), the air is tested to show air quality is above safe levels.

3.04. The Government's representative inspects conditions of any remaining visible signs and either accepts conditions of completed removal or gets contractor to correct deficiencies.

3.05. Remove top layer of poly. It is folded inward to form an easily disposed bundle with the hazardous material.

3.06. Spray lock-down material in abated surfaces.

3.07. Remove remaining layer of poly sheeting as before.

3.08. Inspect and clean all debris and tools.

3.09. Wet clean walls and floors, HEPA vacuum.

3.10. Wait overnight and repeat procedures.

3.11. Visually inspect and reclean any areas found unclean.

3.12. Perform final clearance with aggressive air monitoring techniques (Use air blower). Air monitoring done by an independent, accredited and licensed air monitoring technician hired by the Government.

3.13. Shut down HEPA filtration unit.

3.14. Remove critical barriers.

3.15. Receive and accept contractor's final submittals of completed work and certifications of this.

4. Environmental Certifications: The AE shall include as part of the construction documents, whether it be new construction or addition/alteration, a statement prohibiting the use of asbestos materials and lead-based paints. The following is a sample contract provision:

Construction Free and Clear of Asbestos for Materials or Lead-Based Paints: The contractor shall be prohibited from use of any asbestos construction materials or lead-based paints in completing this project as determined by the manufacturer's labels or submittal literature. At the conclusion of this project, the contractor shall provide the Government with written certification that this is true and correct.

Add/ Alter Construction Phasing Checklist

Note: Use the checklist as a general review for the design of addition/alteration projects to assure the design gives adequate care and concern to phasing issues.

1. _____ Will the contractor be responsible for providing a detailed project phasing schedule that he is required to follow during construction (e.g., CPM with two step phasing - overall phasing at the outset plus specific phasing schedules due at the start of each progress period)?

2. _____ Are important milestones specifically identified for the contractor to include in his project phasing schedule? Is the contractor provided guidance on a minimal number of significant construction milestones to include on his phasing schedule or is a specific list of milestones provided?

3. _____ Is the contractor responsible for providing a safety plan specifically addressing contractor safety measures to insure the safety and protection of his work force as well as for commissary customers and employees from construction activity?

4. _____ Have the contractor's work and storage areas been specifically identified and confined only to areas required for efficient and effective construction?

5. _____ Are there stringent provisions for daily clean up of all work and storage areas, inclusive of weed and grass control within the construction limits?

6. _____ Are construction work and materials storage areas sufficiently barricaded, screened or partitioned off at all times to preclude mingling of patron and construction activities?

7. _____ Are there definite provisions to allow for continuation of vehicular traffic throughout the area of construction in a safe and efficient manner?

7.1. _____ Are there adequate barriers and markings for smooth vehicular flow?

7.2. _____ Is there space for vehicular turn around between parking and contractor's work area?

7.3. _____ Is proper traffic control signage for safe movement of vehicles being maintained at all times?

7.4. ____ Are there provisions to maintain handicapped and VIP reserved parking spaces during construction?

8. ____ Can service and product deliveries be maintained throughout the period of construction?

9. _____ Do the temporary entrance-ways offer safe and efficient patron movement, including:

10.1. ____ Handicapped access

10.2. ____ Protection from the weather?

10.3. ____ Cart storage?

10.4. ____ Obstruction-free corridors?

10. _____ Are there adequate provisions to insure safe movement of pedestrians and shopping carts from available parking areas into and out of the store throughout the period of construction?

10.1. _____ Are barriers and protected corridors provided to isolate patrons from construction activities?

10.2. _____ If utility trenches and pavement cuts are required in pedestrian and vehicular areas, do the design documents require immediate resurfacing to prevent any hazard to pedestrians and motorists?

11. _____ Will there be adequate fire egress from the store throughout construction?

12. ____ Will there be adequate provisions to insure store security throughout the period of construction, including temporary barriers?

13. ____ Do temporary partitions and enclosures provide sufficient protection against weather and dust to prevent damage to store interiors and product, and is the contractor made responsible for any damages that

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may occur?

14. _____ Are alarms and switches being relocated, as necessary, to temporary walls?

15. _____ Is the contractor required to maintain Heating Ventilating and Air conditioning (HVAC) in the sales and administrative areas throughout construction?

16. ____ Is the time sequence for contractor installation of government-furnished equipment specifically identified and phased to coordinate with government acquisition schedules?

17. ____ Will manufacturer's representatives be available for the initial start up, calibration and testing of contractor-furnished equipment?

18. _____ Are there provisions to ensure a safe can be located, installed and secured in the cashier's office?

19. _____ Is the sequencing of equipment replacement, sales area remodeling, and processing area remodeling consistent with efficient store operations?

19.1. ____ Can perishable processing and storage activities be maintained throughout the period of construction?

19.2. ____ What provisions will insure the minimum amount of time required to change-out or relocate refrigerated display equipment? Is this work being accomplished without disruption of service to other refrigerated equipment areas?

20. _____ Are refrigerated storage areas being constructed or modified with minimal impact on other refrigerated storage areas?

21. _____ If down time is required in refrigerated storage and display areas to accomplish work, is the store to be provided adequate notice (10 days minimum) to adjust product deliveries?

22. ____ What provisions have been identified for partial inspection, acceptance, and warranty of completed work?

22.1. ____ How much time is the contractor allotted to correct punch list items?

22.2. ____ Are there provisions to control future payments until punch list items are corrected?

22.3. ____ Do the contract documents clearly indicate when warranty periods begin?

22.4. ____ What is the procedure specified for turnover of equipment operating manuals, warranties, and servicing information?

22.5. ____ What procedures have been identified for base real property acceptance (DD 1354 preparation) of completed work?

23. _____ Are utility modifications and site work phased in such a manner to insure minimal disruption to present service?

24. ____ Does the design and construction process ensure total coordination on all pertinent aspects of phasing with:

24.1. ____ The installation engineer?

24.2. ____ The installation fire department?

24.3. ____ The installation security (military) police?

24.4. ____ The store director?

24.5. ____ The DeCA field engineer?

24.6. ____ DeCA/DOFC and DeCA Comm, POSM, and Equipment specialists?

25. _____ Is the disposition of removed equipment specifically addressed and consistent with GFE acquisition plans? Does this equipment become the property of the contractor? The following is a partial list of some of the more frequent equipment items that need to be addressed:

- 25.1. ____ Cash registers.
- 25.2. ____ Scales.
- 25.3. ____ Checkout stands.
- 25.4. ____ Refrigerated display cases.
- 25.5. ____ Shelving.
- 25.6. ____ Sinks.
- 25.7. <u>Compressors/condensers</u>.
- 25.8. ____ Warehouse racks.

26. _____ Has a specific list of government-furnished equipment been identified by the Region and HQ DeCA/OC? Is existing equipment, fixtures, and material being reutilized where designated?

27. _____ Have site plans been coordinated with the installation and if applicable, AAFES or NEXCOM for land utilization, impact on parking, and overall constructability with the master development plans for the area?

28. _____ Is the contractor responsible for ensuring that adequate ventilation will be maintained in all areas throughout the period of construction, including protection from noxious fumes and vapors that may occur during construction?

29. _____ Is issue of weather days and extensions for adverse weather specifically addressed to allow the Government Authorized Technical Representative a rationale and defendable method for evaluating a contractor's claim for adverse weather conditions?

30. ____ Has the A-E reviewed the signed Memorandum of Understanding (MOU) between DeCA and the installation and coordinated the contract documents to specifically identify procedures and responsibilities with the installation?

30.1. ____ Are host installation responsibilities as agreed to for demolition, utilities extension, and environmental cleanup clearly defined?

30.2. ____ Do the contract documents address latent, unforeseen conditions such as buried asbestos materials and clarify responsibilities for dealing with them as agreed between DeCA and the installation?

31. _____ Does the project design and phasing plan clearly delineate which areas of the store will be available for use at all times?

32. _____ Does the A-E Statement of Work include adequate provisions in the investigative Phase (Services A) to identify potential environmental compliance actions required as part of the project? Are provisions included to sample and test potentially hazardous materials?

33. ____ Ensure A-E documents verify power requirements to support "temporary" refrigerated trailers for produce, meat, dairy products during phasing as applicable.

34. _____ Ensure contract documents make contractor fully responsible for dismantling, moving and reassembly of office furniture and equipment between phases.

35. ____ Ensure contract documents (phasing) require contractor to install "temporary" connections to <u>all</u> building systems so as to provide "zero-downtime" throughout all phases of construction.

36. _____ Sound attenuation blankets and dust barriers should be provided at all temporary 2" x 4" stud walls which enclose the sales area.

37. _____ Ensure that fire detection/suppression capabilities are maintained at all times during construction.

38. _____ Ensure that the required handicapped parking spaces are provided at all times.

39. ____ Ensure that contract documents include design and physical layout department moves, to include furniture and equipment, and mechanical, electrical and plumbing support.

40. ____ Contractor's phasing requirements shall comply fully with the project construction management/quality

June 2021
assurance plan.

41. ____ Ensure that all phasing elements, to include temporary moves, are included in the network analysis system.

END OF SECTION

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Code Analysis

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CODE ANALYSIS - TYPICAL NEW DECA COMMISSARY FACILITY

JUNE 2022

CODE ANALYZED : UNIFIED FACILITIES CRITERIA, UFC 1-200-01, 8 October 2019

NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
1	STRUCTURE OF ANALYSIS	UFC 1-200-01 REFERENCES OTHER UFC AND MODEL MODELS CODES. UFC AND MODEL CODES (THAT ARE PERTINENT TO THIS REVIEW) ARE LISTED BELOW:	UFC 1-200-01 1-6	5
		- UFC 3-600-01 08 AUGUST 2016 with Change 4 - 7 February 2020 - IBC 2018 CODE AND COMMENTARY (Referenced herein as		
		IBC) - NFPA 101, 2018 (Referenced herein as NFPA) - ABA ACCESSIBILITY STANDARDS FOR DEPARTMENT OF DEFENSE FACILITIES - 2015 (Reference herein as ADA/ABA) - ADDITIONAL UFC's, REFERENCED CODES AND STANDARDS AS LISTED IN APPENDIX A		
		CONCLUSIONS AND DESIGN NOTES ARE SHOWN IN BOLD AND ITALICIZED RED COLOR FONT		
2	ABSENCE OF CRITERIA	WHEN A SPECIFIC APPLICATION IS NOT COVERED BY THE CRITERIA SPECIFIED IN THE UFC, FOLLOW NATIONAL BUILDING CODES, RECOGNIZED INDUSTRY STANDARDS, AND STANDARD ENGINEERING PRACTICES. IN THE ABSENCE OF SUCH TECHNICAL INFORMATION, CONTACT THE DoD COMPONENT AUTHORITY HAVING JURISDICTION (AHJ)	UFC 3-600-01 1- 4.2.6	3
2.1	CONFLICTS IN CRITERIA	IF CONFLICT EXISTS BETWEEN THE UFC'S AND ANY OTHER DoD DOCUMENT, REFERENCED CODE, STANDARD OR PUBLICATION, PLEASE SEE UFC HIERARCHY	UFC 1-200-01 1- 3.4	2
2.2	ANTITERRORISM STANDARDS	ANTITERRORISM REQUIREMENTS MUST NOT PRECLUDE ANY FIRE PROTECTION REQUIREMENTS	UFC 3-600-01 1- 4.4	3
2.3	DESIGN ANALYSIS	FIRE PROTECTION DESIGN ANALYSIS IS REQUIRED	UFC 3-600-01 1- 7.2	4



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
2.4	BASIC CRITERIA	EXTERIOR FIRE RESISTANCE REQUIREMENTS, ALLOWABLE FLOOR AREA, BUILDING HEIGHT LIMITATIONS, AND SEPARATION DISTANCE REQUIREMENTS SHALL CONFORM TO IBC; NFPA 101 SHALL BE USED FOR INTERIOR FIRE RESISTANCE, SAFETY TO LIFE, MEANS OF EGRESS, AND OCCUPANT LOADS	UFC 3-600-01 3-2 and 3-3	24
3	USE AND OCCUPANCY CLASSIFICATION	USE CHAPTER 3 OF IBC AND UFC 3-600-01. IF ANY CONFLICTS OCCUR, THE REQUIREMENTS OF UFC 3-600-01 TAKE PRECEDENCE	UFC 1-200-01 2-3	16
3.1	"CONSTRUCTION" OCCUPANCY CLASSIFICATION	STRUCTURES OR PORTIONS OF STRUCTURES SHALL BE CLASSIFIED WITH RESPECT TO OCCUPANCY GROUPS LISTED BELOW. STRUCTURES WITH MULTIPLE OCCUPANCIES OR USES SHALL COMPLY WITH SECTION 508	IBC 302.1	45
		THE FOLLOWING OCCUPANCIES ARE PART OF A TYPICAL COMMISSARY:		
		GROUP "M" - MERCANTILE (SALES AREAS) display and sales of merchandise i.e. markets	IBC 309	52
		GROUP "B" - BUSINESS (OFFICE AREAS) office including storage of records	IBC 304	46
		GROUP "S-1" - STORAGE (MODERATE HAZARD) storage of bags, cardboard and cardboard boxes, grains, soaps, sugar, tobacco	IBC 311.2	53
		GROUP "S-2" - STORAGE (LOW HAZARD) storage of non-combustible materials as products on wood pallets or in paper cartons, I.e. food products, fresh fruits & vegetables, etc. NO REASON TO INCLUDE THIS USE SINCE MORE RESTRICTIVE USE "S-1" IS ALREADY INCLUDED	IBC 311.3	54
		GROUP " F-1 " - FACTORY (MODERATE HAZARD) food processing areas Meat, Produce, and Bakery/Deli	IBC 306.2	47
3.2	MIXED OCCUPANCIES	EACH PORTION OF A BUILDING SHALL BE INDIVIDUALLY CLASSIFIED IN ACCORDANCE WITH SECTION 302.1	IBC 508.1	113
		WHERE A BUILDING CONTAINS MORE THAN ONE OCCUPANCY GROUP, THE BUILDING OR PORTION THEREOF SHALL COMPLY WITH SECTIONS 508.2 (ACCESSORY OCCUPANCIES), 508.3 (NONSEPARATED OCCUPANCIES), 508.4 (SEPARATED OCCUPANCIES) OR A COMBINATION OF THESE SECTIONS.		



CODE ANALYZED :

DEFENSE COMMISSARY AGENCY DIRECTORATE OF PERFORMANCE AND POLICY FACILITIES PROGRAMMING AND PLANNING DIVISION Fort Lee, Virginia FACILITIES CONSTRUCTION AND SUSTAINMENT DIVISION Lackland AFB, Texas

UFC 1-200-01, 8 OCTOBER 2019

NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		DeCA COMMISSARY FACILITIES ARE TYPICALLY MIXED USE OCCUPANCIES		
3.3	ACCESSORY OCCUPANCIES	ACCESSORY OCCUPANCIES ARE THOSE OCCUPANCIES SUBSIDIARY TO THE MAIN OCCUPANCY OF THE BUILDING OR PORTION THEREOF. AGGREGATE ACCESSORY OCCUPANCIES SHALL NOT OCCUPY MORE THAN 10 PERCENT OF THE AREA OF THE STORY IN WHICH THEY ARE LOCATED AND SHALL NOT EXCEED VALUES IN TABLE 503	IBC 508.2	114
		GROUP "F-1" FACTORY - MODERATE HAZARD (FOOD PROCESSING) AREAS ARE TYPICALLY LESS THAN 10% OF FLOOR AREA - SO CONSIDERED ACCESSORY USE . IF GREATER THAN 10% OF FLOOR AREA THEN ADD TO MAIN USE		
3.4	INCIDENTAL USE AREAS	PROTECTION FROM ANY AREA HAVING A DEGREE OF HAZARD GREATER THAN THAT NORMAL TO THE GENERAL OCCUPANCY OF THE BUILDING OR STRUCTURE MUST BE PROTECTED USING A SPRINKLER SYSTEM IN THE SPACE, SEPARATING THE SPACE WITH 1-HOUR BARRIERS, OR BOTH IF THE HAZARD IS SEVERE NFPA DOES NOT IDENTIFY EXAMPLES OF THESE SPACES, PLEASE SEE IBC 509 FOR EXAMPLES OF SPACES THAT SHOULD HAVE EXTRA PROTECTION:	NFPA 101 8.7	105
		COMMON COMMISSARY INCIDENTAL USE AREAS :		
		FURNACE ROOM WHERE LARGEST PIECE OF EQUIPMENT IS OVER 400,000 BTU PER HOUR INPUT - REQUIRES ONE HOUR SEPARATION OR PROVIDE AUTOMATIC FIRE-EXTINGUISHING SYSTEM	IBC 509	116
		ROOMS WITH BOILERS OVER 15 PSI AND 10 HORSEPOWER - REQUIRES ONE HOUR SEPARATION OR PROVIDE AUTOMATIC FIRE-EXTINGUISHING SYSTEM	IBC 509	116
		REFRIGERANT MACHINERY ROOMS - REQUIRES ONE HOUR SEPARATION OR PROVIDE AUTOMATIC SPRINKLER SYSTEM	IBC 509	116

DeCA COMMISSARY CONSTRUCTION IS REQUIRED TO BE FIRE SPRINKLERED - SO NO FIRE RATING REQUIRED



CODE ANALYZED : UFC 1-200-01, 8 OCTOBER 2019

IBC CHAPTER 9.

NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		IN NEW CONSTRUCTION WHERE PROTECTION IS PROVIDED WITH AN AUTOMATIC FIRE-EXTINGUISHING SYSTEM WITHOUT A FIRE BARRIER, THE SPACE SHALL BE SEPARATED BY SMOKE BARRIERS UNLESS THE SEPARATED SPACE IS A MERCANTILE GENERAL STORAGE OR STOCKROOM. THE WALLS SHALL EXTEND FROM THE FLOOR TO THE UNDERSIDE OF THE FIRE-RESISTANCE-RATED FLOOR/CEILING ASSEMBLY OR TO THE UNDERSIDE OF THE FLOOR OR ROOF DECK ABOVE. DOORS SHALL BE SELF- CLOSING OR AUTOMATIC CLOSING UPON DETECTION OF SMOKE. DOORS SHALL NOT HAVE AIR TRANSFER OPENINGS AND SHALL NOT BE UNDERCUT IN EXCESS OF CLEARANCE PERMITTED IN ACCORDANCE WITH NFPA 80.	NFPA 101 8.7.1.2(1), 8.4 IBC 509.4.2	105 100 115
		SMOKE PARTITIONS (AND ASSOCIATED DOORS) ARE REQUIRED AT INCIDENTAL USE AREAS, LISTED ABOVE, WHERE FIRE SPRINKLERS ARE PROVIDED		
3.5	SEPARATED OCCUPANCIES	INDIVIDUAL OCCUPANCIES SHALL BE SEPARATED FROM ADJACENT OCCUPANCIES IN ACCORDANCE WITH TABLE 508.4	IBC 508.4.4	114
		NO SEPARATION REQUIRED BETWEEN M, B, AND S-1 MAIN OCCUPANCIES (F-1 OCCUPANCY AS WELL IF OVER 10% OF FLOOR AREA, AND THEREFORE A MAIN OCCUPANCY)	Table 508.4	115
		A TYPICAL COMMISSARY WOULD MEET SEPARATED OCCUPANCY CODE CRITERIA BUT SUGGEST CLASSIFYING AS A NONSEPARATED OCCUPANCY TO CLARIFY THAT NO SEPARATION BETWEEN USES ARE REQUIRED		
3.6	NONSEPARATED OCCUPANCIES	EACH PORTION OF THE BUILDING SHALL BE INDIVIDUALLY CLASSIFIED AS TO USE. THE REQUIRED TYPE OF CONSTRUCTION FOR THE BUILDING SHALL BE DETERMINED BY APPLYING THE HEIGHT AND AREA LIMITATIONS FOR EACH OF THE APPLICABLE OCCUPANCIES TO THE ENTIRE BUILDING. THE MOST RESTRICTIVE TYPE OF CONSTRUCTION, SO DETERMINED, SHALL APPLY TO THE ENTIRE BUILDING, ALONG WITH MOST RESTRICTIVE EXITING AND FIRE PROTECTION REQUIREMENTS. OTHER CODE REQUIREMENTS SHALL APPLY TO EACH PORTION OF THE BUILDING BASED ON THE USE OF THAT SPACE. FIRE SEPARATIONS ARE NOT REQUIRED BETWEEN USES, EXCEPT AS REQUIRED BY OTHER PROVISIONS.	IBC 508.3	114
		REMINDER:PER UFC 1-200-01 - FOLLOW NFPA 101 FOR EXITING IN LIEU OF IBC CHAPTER 10 AND USE UFC 3-600-01, IN LIEU OF		



NO.

DEFENSE COMMISSARY AGENCY DIRECTORATE OF PERFORMANCE AND POLICY FACILITIES PROGRAMMING AND PLANNING DIVISION Fort Lee, Virginia FACILITIES CONSTRUCTION AND SUSTAINMENT DIVISION Lackland AFB, Texas

REFERENCE

PAGE

 CODE ANALYZED :
 UFC 1-200-01, 8 OCTOBER 2019

 ITEM
 SUMMARY OF REQUIREMENTS

 SUGGESTED OCCUPANCY CLASSIFICATION :
 NON-SEPARATED, MIXED OCCUPANCY GROUPS "M"

 MERCANTILE, "B" BUSINESS, AND "S-1" STORAGE (MODERATE

 HAZARD) WITH "F-1" ACCESSORY USE (IF F-1 AREA IS OVER 10%

 BLDG AREA - THEN ADD TO MAIN USE). PER IBC TABLE 508.4 AND

THESE USES.

4 SPECIAL USE UFC 3-600-01(FIRE PROTECTION ENGINEERING) IN LIEU UFC 1-200-01 2-4 16 DETAILED OF IBC CHAPTER 4 REQUIREMENTS BASED ON USE MOST OF IBC CHAPTER 4 ITEMS DO NOT PERTAIN TO DECA AND OCCUPANCY COMMISSARIES, WITH THE EXCEPTION OF SECTION 413 COMBUSTIBLE STORAGE. THERE IS NO DIRECT CORRELATION

NFPA 101 6.1.14.1.3, NO SEPARATIONS ARE REQUIRED BETWEEN

4.1 COMBUSTIBLE LIMITATIONS ON COMBUSTIBLE STORAGE : STORAGE ALL STORAGE SHALL COMPLY WITH UFC 3-600-01 AND NFPA 13. HIGH PILED STOCK OR RACK STORAGE (HIGHER THAN 12'-0" FOR ORDINARY COMBUSTIBLES AND 6'-0" FOR PLASTICS) IN EXCESS OF 500SQFT SHALL COMPLY WITH ADDITIONAL REQUIREMENTS IN NFPA 1 - FIRE CODE

OF THIS SECTION IN UFC 3-600-01 . SEE BELOW.

DeCA DESIGN CRITERIA DOES NOT ALLOW STORAGE IN EXCESS OF 12' HIGH - SO PROVIDE PAINTED WALL SIGNS ON EACH WALL (OF HIGH CEILING STORAGE ROOMS AND RECEIVING AREA), AND AT 50' MAX. SPACING ON LONG WALLS, PROHIBITING STORAGE ABOVE 12' HEIGHT

5 GENERAL USE CHAPTER 5 OF IBC. NOTE THAT THE BUILDING AREA UFC 1-200-01 2-5 16 FOR FUNDING AND PLANNING PURPOSES IS CALCULATED **BUILDING HEIGHT** DIFFERENTLY THAT THE METHOD DEFINED IN IBC CHAPTER AND AREAS 5. THIS ANALYSIS TAKES THE POSITION THAT THERE WILL BE TWO DIFFERENT "BUILDING AREAS": - ONE AREA IS THE "GROSS BUILDING AREA" USED ONLY FOR DECA PLANNING PURPOSES (SEE DEFINITION BELOW). - THE OTHER AREA IS THE "BUILDING AREA" AS DEFINED IN IBC AND IS USED FOR ALL CODE RELATED CALCULATIONS (SEE DEFINITION BELOW) 5.1A DECA GROSS GROSS BUILDING AREA: (USED ONLY FOR DECA PLANNING UFC 3-101-01 2-4 BUII DING AREA PURPOSES) . INCLUDES: AREA WITHIN EXTERIOR FACES OF 2.2 EXTERIOR WALLS; AREA OF MEZZANINES; AREA OF EXTERIOR SPACES THAT ARE UNDER ROOF I.E. ENTRY CANOPIES, LOADING PLATFORMS, COVERED WALKS, ETC. (FIGURED AT ONE-HALF ACTUAL AREA).

NOTE: THIS AREA MAY BE LARGER THAN THE IBC BUILDING AREA



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
5.1B	IBC GROSS FLOOR AREA	THE AREA WITHIN THE <u>INTERIOR</u> FACE OF EXTERIOR WALLS, EXCLUSIVE OF VENT SHAFTS AND COURTS. MEZZANINES AND ROOF-COVERED EXTERIOR AREAS TYPICALLY DO NOT ADD TO THIS NUMBER (SEE CODE EXCEPTIONS) BUILDING AREAS NOTED IN ANALYSIS BELOW REFER TO THE IBC BUILDING AREA	IBC 202 DEFINITIONS	26
5.2	HEIGHT AND AREA LIMITATIONS	THE BUILDING HEIGHT AND AREA SHALL NOT EXCEED THE LIMITS SPECIFIED IN TABLE 504.3, TABLE 504.4, AND 506.2.	IBC 503	103-111
		NEW FACILITIES ARE REQUIRED TO BE SPRINKLERED NON- COMBUSTIBLE CONSTRUCTION - SO CALCULATIONS BELOW ASSUME A TYPE II B CONSTRUCTION, SPRINKLERED, ONE-STORY		
		GROUP "M" - MERCANTILE (MAIN USE GROUP) 3 STORIES OR 75 FEET AND 50,000 SF		
		GROUP "B" - BUSINESS (MAIN USE GROUP) 4 STORIES OR 75 FEET AND 92,000 SF		
		GROUP "S-1" - STORAGE (MAIN USE GROUP) 3 STORIES OR 75 FEET AND 70,000 SF		
		GROUP "F-1" - FACTORY (ACCESSORY USE) 3 STORIES OR 75 FEET AND 62,000 SF		
		IAW NON-SEPARATED OCCUPANCY REQUIREMENTS, NOTED ABOVE, BUILDING MUST MEET MOST STRINGENT REQUIREMENTS OF HEIGHT AND AREA OF ALL THE <u>MAIN</u> OCCUPANCIES.		
		TABULAR MAXIMUM AREA, HEIGHT & STORY LIMITS: MAX. AREA: 50,000 SF MAX HEIGHT: 75' HEIGHT MAX. STORIES : 3 STORIES		
		SEE AREA, HEIGHT AND STORY MODIFICATIONS AS IDENTIFIED BELOW:		
5.4	AREA MODIFICATIONS	AREA LIMITS OF TABLE 506.2 SHALL BE PERMITTED TO BE INCREASED DUE TO FRONTAGE (If) IN ACCORDANCE WITH EQUATION 5-1 : Aa = At + (NS x If)	IBC 506.2.1	108



	CODE ANALYZED :	UFC 1-200-01, 8 OCTOBER 2019		
NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		Aa = ALLOWABLE AREA At = AREA OF MOST RESTRICTIVE OCCUPANCY (USING NS, S1, OR SM) = MERCANTILE = 50,000 SF		
		NS = TABULAR AREA OF OCCUPANCY USING NONSPRINKLERED VALUE, REGARDLESS OF WHETHER BUILDING IS SPRINKLERED OR NOT If = INCREASE DUE TO BUILDING FRONTAGE		
		If = [F / P - 0.25] x W / 30 (Equation 5-5)	IBC 506.3	108
		F = BUILDING FRONTAGE THAT FRONTS ON PUBLIC WAY (IN FEET) P = TOTAL BUILDING PERIMETER (IN FEET) W = WIDTH OF PUBLIC WAY (IN FEET) (MAY NEED TO AVERAGE) - PER 506.2.1		
		NOTE : DESIGNER MUST USE FORMULAS 5-5 AND 5-1 TO DETERMINE ACTUAL ALLOWABLE AREA. MAXIMUM AREA ALLOWED IS 59,375 S.F. WHICH IS FOR A SPRINKLERED BUILDING WITH A 30' WIDE (MINIMUM) PUBLIC WAY ALL AROUND BUILDING. THIS MAXIMUM AREA WILL BE SIGNIFICANTLY REDUCED IF BUILDING IS NOT SPRINKLERED (THOUGH SPRINKLERS ARE REQUIRED BY CURRENT UFC) AND IF BUILDING IS NOT SURROUNDED BY 30' WIDE PUBLIC WAY. COMMISSARY AREA REQUIREMENTS ARE TYPICALLY LARGER THAN AREA ALLOWED HERE . IF SO, MUST LOOK TO CLASSIFY COMMISSARY AS AN "UNLIMITED AREA" BUILDING.		
5.5	UNLIMITED AREA BUILDING	1-STORY BUILDINGS ALLOWED TO BE UNLIMITED IN AREA IF EQUIPPED WITH AUTO SPRINKLER AND PER IBC 507.4 AND INCLUDING A 60' CLEAR, OPEN AREA AROUND BUILDING	IBC 507.4	112
		2-STORY BUILDINGS ALLOWED TO BE UNLIMITED IN AREA IF EQUIPPED WITH AUTO SPRINKLER AND PER IBC 507.45 INCLUDING A 60' CLEAR, OPEN AREA AROUND BUILDING	IBC 507.5	112
		REQUIRED 60' OPEN SPACE MAY BE REDUCED TO 40' FOR UP TO 75% OF BUILDING PERIMETER IF PROVIDE 3 HOUR CONSTRUCTION AND OPENING PROTECTION AT CONSTRUCTION FACING THE REDUCED SPACE	IBC 507.2.1	112
		SEPARATION BETWEEN BUILDINGS : USE IBC TO DETERMINE REQUIRED SEPARATION DISTANCES	UFC 3-600-01	77

	CODE ANALYZED :	UFC 1-200-01, 8 OCTOBER 2019		
<u>NO.</u>	ITEM	SUMMARY OF REQUIREMENTS TYPICAL DeCA COMMISSARY FACILITIES ARE UNLIMITED AREA BUILDINGS DUE TO ATFP SETBACK DISTANCES AND OPERATIONS. IF SITE CANNOT ACCOMMODATE 60' OPEN AREA REQUIREMENTS (OR 60' ON ONE SIDE AND 40' ON THREE SIDES PER IBC 507.52.1) AS REQUIRED FOR UNLIMITED AREA BUILDING, THEN BUILDING IS NON-COMPLIANT AND DESIGNER MUST RECEIVE WRITTEN APPROVAL OF NON-COMPLIANCE FROM AHJ (AUTHORITY HAVING JURISDICTION)	REFERENCE	PAGE
5.6	MEZZANINES	SHALL BE CONSIDERED A PORTION OF THE STORY BELOW. SUCH MEZZANINES SHALL NOT CONTRIBUTE TO EITHER THE BUILDING AREA OR THE NUMBER OF STORIES	IBC 505.2	105
5.61	AREA LIMITS	AGGREGATE AREA OF MEZZANINE(S) SHALL NOT EXCEED ONE-HALF OF THE ROOM OR SPACE IN WHICH THEY ARE LOCATED IF EQUIPPED THROUGHOUT WITH APPROVED SPRINKLER SYSTEM AND EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM (ONE-THIRD ROOM AREA IF NO APPROVED SPRINKLER OR COMMUNICATION SYSTEMS)	IBC 505.2.1	105
		DECA COMMISSARY SPRINKLERS AND COMMUNICATIONS SYSTEMS TYPICALLY MEET SPRINKLER & COMMUNICATIONS REQUIREMENTS.		
		DESIGNER MUST DETERMINE IF AN AREA IS A "MEZZANINE" OR A "SECOND FLOOR". ALL STAIRS FROM A SECOND FLOOR TYPICALLY REQUIRE A 1-HR RATED EXIT ENCLOSURE - TO THE EXTERIOR.		
5.62	ENCLOSURE REQ'S	MEZZANINE SHALL BE OPEN AND UNOBSTRUCTED TO THE ROOM IN WHICH SUCH MEZZANINE IS LOCATED EXCEPT FOR WALLS NOT MORE THAN 42" HIGH, COLUMNS AND POSTS. EXCEPTIONS: 1. MEZZANINE AREA ENCLOSED BY AN OCCUPANT LOAD OF NOT MORE THAN 10.	IBC 505.2.3	105
		USING EXCEPTION NO. 1, AREA OF ENCLOSED MECHANICAL EQUIPMENT MEZZANINE CANNOT EXCEED 3.000 S.F. (STORAGE AREA OCCUPANT LOAD OF 1/300)		
		2. AREA OF ENCLOSED MEZZANINE SPACE DOES NOT EXCEED 10% OF THE TOTAL MEZZANINE AREA		
		EXCEPTION 3, BELOW, ADDRESS EXITING FROM A MEZZANINE. USE NFPA 101 FOR EXITING REQUIREMENTS.		



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		3. A MEZZANINE WITH 2 OR MORE MEANS OF EGRESS MAY BE ENCLOSED, PROVIDED AT LEAST ONE OF THE MEANS OF EGRESS PROVIDES DIRECT ACCESS FROM THE ENCLOSED AREA TO AN EXIT AT THE MEZZANINE LEVEL. (THE EXIT MUST BE CONTINUOUS TO THE EXTERIOR)	NFPA 101 8.6.10.3.2	105
		TYPICALLY, SMALL AND OPEN MEZZANINE STAIRS DO NOT NEED TO BE RATED OR ENCLOSED. THIS EXCEPTION ALLOWS FOR LARGER, ENCLOSED MEZZANINES BUT REQUIRES AT LEAST ONE, OF THE 2 (OR MORE), REQUIRED STAIRS BE A 1-HOUR EXIT STAIR (ENCLOSURE) WITH CONTINUOUS ENCLOSED RATED ACCESS TO THE BUILDING EXIT.		
5.63	MEZZANINE MEANS OF EGRESS	MOST SIZABLE AND ENCLOSED MEZZANINES WILL REQUIRE TWO INDEPENDENT MEANS OF EGRESS AS NOTED IN NO. 3 ABOVE. ONE EXIT IS ALLOWED FOR FOLLOWING CONDITIONS:		
		REQUIRED FROM MEZZANINE UNLESS MEZZANINE IS OPEN (NOT ENCLOSED) AS NOTED ABOVE.		
		1. OCCUPANT LOAD IS NO MORE THAN 49 (50 OR MORE OCCUPANTS FROM ANY SPACE REQUIRES AT LEAST 2 EXITS) AND		
		2. COMMON PATH (FROM FURTHEST CORNER OF MEZZANINE TO BOTTOM OF STAIRS) OF TRAVEL DOES NOT EXCEED BUILDING TRAVEL DISTANCE (TYPICALLY 100') AND 3. PER IBC SECTIONS 1015.3, 1015.4 & 1015.5	NFPA 101 38.2.4.5 7.4.1.1(2)	358 83
6	TYPES OF CONSTRUCTION	USE CHAPTER 6 OF IBC AND UFC 3-600-01. IF CONFLICT OCCURS BETWEEN IBC CHAPTER 6 AND UFC 3-600-01, THE REQUIREMENTS OF UFC 3-600-01 TAKE PRECEDENCE	UFC 1-200-01 2-6	16
6.1	CONSTRUCTION CLASSIFICATION	TYPICAL COMMISSARY CLASSIFIED AS TYPE II B UNPROTECTED NON-COMBUSTIBLE CONSTRUCTION	IBC 602.2	119
6.2	FIRE-RESISTIVE RATINGS (BUILDING)	0 HOUR FIRE RESISTANCE RATING REQUIRED FOR STRUCTURAL FRAME, BEARING WALLS, FLOOR, & ROOF - EXCEPT SEE FOOTNOTES F&G WHICH REFERENCE TABLE 602 FOR EXTERIOR WALL RATINGS DUE TO FIRE SEPARATION	IBC Table 601 TYPE IIB	119
		EXTERIOR WALLS :	IBC Table 602	120
		2 HOUR RATING IF < 5' FIRE SEPARATION DISTANCE 1 HOUR RATING IF ≥ 5' ≤ 10' FIRE SEPARATION DISTANCE 0 HOUR RATING IF > 10' FIRE SEPARATION DISTANCE		



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		INTERIOR LOAD-BEARING PARTITIONS: 0 HOUR	IBC Table 601 TYPE IIB	119
			IBC Table 601 TYPE IIB	119
		INTERIOR NON-BEARING PARTITIONS - WHICH IS 0 - HOUR. UFC 3- 600-01 2-1.2 NOTES TO FOLLOW NFPA 101 REQUIREMENTS FOR INTERIOR NON-BEARING PARTITIONS FOR ITEMS REGARDING EGRESS AND SAFETY. SEE SECTION 7.4 OF THIS ANALYSIS FOR ADDITIONAL INFO.	UFC 3-600-01 3-2.1.2	24
6.3	COMBUSTIBLE MATERIALS	ALLOWABLE COMBUSTIBLE MATERIALS IN TYPE I AND II CONSTRUCTION. SOME TYPICAL APPLICATIONS (OF THE MANY LISTED) ARE NOTED BELOW:	IBC 603.1	120
		1. FIRE-RETARDANT TREATED (FRT) WOOD ALLOWED IN : - NONBEARING PARTITIONS (LESS THAN 2 HR RATING)	IBC 603.1.1.1.1	120
		- NON-BEARING EXTERIOR WALLS WITH NO FIRE RATING		
		NOTE: UFC 3-101-01 SECTION 4-6 REQUIRES GLASS MAT GYPSUM SHEATHING FOR INTERIOR SIDE OF EXTERIOR WALLS - TO PREVENT FOOD SOURCE FOR MOLD.		
		- FRT PLYWOOD MUST NOT BE USED IN ANY PART OF THE ROOF OR ROOFING SYSTEM.	UFC 3-600-01 23-1	126
		"ROOFING SYSTEM" INCLUDES UNDERLAYMENTS WHICH SUPPORT ROOFING PRODUCTS. THE UNDERLAYMENT OF ANY SURFACE COVERED BY SINGLE-PLY ROOFING MEMBRANE IS PART OF ROOFING SYSTEM. BACKSIDE OF PARAPET WALLS ARE PART OF THE ROOF SYSTEM WHEN COVERED WITH SINGLE-PLY ROOFING MEMBRANE. THEREFORE, NO FRT PLYWOOD (NOR ANY PLYWOOD DUE TO COMBUSTIBILITY) SHALL BE ALLOWED FOR ROOFING-COVERED PARAPET CONSTRUCTION (EXCEPT FOR NAILERS, BLOCKING AS NOTED IN CODE).		
		2. THERMAL AND ACOUSTICAL INSULATION (OTHER THAN FOAM PLASTIC) IN NON-COMBUSTIBLE BUILDINGS SHALL HAVE A FLAME SPREAD (FS) INDEX OF NOT MORE THAN 25.	IBC 603.1.2	120
		IBC AND UFC NOTE FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS IN SEVERAL AREAS. SEE INFO IN 7.7 (OF THIS ANALYSIS) FOR COMPLETE ANALYSIS OF INSULATION RATINGS.		
		3. FOAM PLASTIC IN ACCORDANCE WITH CHAPTER 26.	IBC 603.1.3	121



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		3. ROOF COVERINGS: NO FLAME OR SMOKE LIMITATIONS FOR INSULATION INSTALLED ABOVE ROOF DECKS WHERE ENTIRE ROOF CONSTRUCTION ASSEMBLY, INCLUDING THE INSULATION, IS UL LISTED AS FIRE CLASSIFIED, OR FM APPROVED CLASS 1 ROOF DECK CONSTRUCTION OR EQUAL LISTING OR CLASSIFICATION BY A NRTL (NATIONALLY RECOGNIZED TESTING LAB).	UFC 3-600-01 8- 3.2.2	81
		UFC 3-600-01 2-8.1 REQUIRES ROOF COVERINGS TO BE NRTL LISTED AND REQUIRES USE OF CLASS A OR B ROOFS (CLASS C ALLOWABLE ONLY FOR BUILDING UNDER 8,000 S.F.)		
		4. INTERIOR FLOOR FINISH AND FLOOR COVERING MATERIALS INSTALLED PER SECTION 804	IBC 603.1.5	121
		5. INTERIOR FINISH, TRIM, AND MILLWORK SUCH AS DOORS, DOOR FRAMES, WINDOW SASHES, AND FRAMES	IBC 603.1.6	121
		6. BLOCKING SUCH AS FOR HANDRAILS, MILLWORK, CABINETS, AND WINDOW & DOOR FRAMES	IBC 603.1.14	121
		7. WALL CONSTRUCTION OF FREEZERS AND COOLERS OF LESS THAT 1,000 SQFT IN SIZE, LINED ON BOTH SIDES WITH NONCOMBUSTIBLE MATERIALS AND THE BUILDING IS PROTECTED THROUGHOUT BY AN AUTOMATIC SPRINKLER SYSTEM	IBC 603.1.26	121
		COOLERS AND FREEZERS LESS THAN 1,000 SQFT MAY HAVE COMBUSTIBLE INSULATION, OF ANY MATERIAL ALLOWED BY THE CODE, BETWEEN THE SHEET METAL PANELS. FOR COOLERS AND FREEZERS 1,000 SQFT OR LARGER, NOTE 3 OF SECTION 603.1 ALLOWS FOR FOAM PLASTIC INSULATION, THAT COMPLIES WITH THE REQUIREMENTS LISTED IN CHAPTER 26 OF THE CODE, BETWEEN THE SHEET METAL PANELS.		
7	FIRE-RESISTANT RATED CONSTRUCTION	USE CHAPTER 7 OF IBC AND UFC 3-600-01. IF ANY CONFLICT OCCURS BETWEEN CHAPTER 7 AND UFC 3-600-01, THE REQUIREMENTS OF UFC TAKE PRECEDENCE.	UFC 1-200-01 2-7	17
7.1	PROJECTIONS	CORNICES, EAVE OVERHANGS AND SIMILAR ARCHITECTURAL APPENDAGES EXTENDING BEYOND THE FLOOR AREA IN TYPE II CONSTRUCTION SHALL BE OF NONCOMBUSTIBLE MATERIALS	IBC 705.2 & 705.2.1	126
		ENTRY/EXIT CANOPIES AND DOCK CANOPIES NEED TO BE OF NON-COMBUSTIBLE CONSTRUCTION		
7.2	PARAPETS	PARAPETS NOT REQUIRED BY ANY OF THE EXCEPTIONS 1. 0 HR. RATED WALLS OR 3. NONCOMBUSTIBLE CONSTRUCTION	IBC 705.11	129



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
7.3	FIRE WALLS	NOT TYPICAL ON DeCA COMMISSARIES UNLESS BUILDING IS DIRECTLY ATTACHED TO ANOTHER	IBC 706	130
7.4	FIRE BARRIERS	NON-LOAD BEARING PARTITIONS TO BE PER NFPA 101	UFC 3-600-01 7-1	79
7.4.1	FOR BUILDINGS WITH A SECOND FLOOR (DOES NOT APPLY TO ELEVATORS AND SHAFTS SERVING MEZZANINES)	1-HOUR RATED FIRE BARRIERS AROUND THRU-FLOOR SHAFTS AND ELEVATOR HOISTWAYS: (WHEN CONNECTING LESS THAN 4 STORIES)	NFPA 101 8.6.5	103
		STAIRS SERVING AS AN EXIT SHALL BE ENCLOSED PER NFPA 7.1.3.2, EXIT ACCESS STAIRS PER 8.6	NFPA 7.2.2.5.1	67
		STAIRS: WHERE SEPARATION IS REQUIRED, SEPARATION SHALL HAVE A MINIMUM 1-HOUR FIRE RESISTANCE RATING WHERE CONNECTING 3 STORIES OR LESS	NFPA 101 7.1.3.2.1 (1)	52
		SEPARATION SHALL BE SUPPORTED BY CONSTRUCTION OF NOT LESS THAN 1-HOUR COLUMNS AND FLOORS, THAT SUPPORT THE 1-HOUR SEPARATION WALLS, NEED TO BE 1-HOUR PROTECTED THEMSELVES. THIS OFTEN MEANS FIR RATING THE STRUCTURAL BAY THAT SUPPORTS THE FIRE SEPARATION WALLS	NFPA 101 7.1.3.2.1 (2)	52
		STAIRWELLS AND SHAFTS AT OPEN MEZZANINES TYPICALLY DO NOT NEED TO BE RATED. STAIRWELLS AT <u>ENCLOSED</u> MEZZANINES MAY NEED TO BE RATED AND, IF SO, WOULD NEED TO FOLLOW REQUIREMENTS FOR STAIRWELL NOTED ABOVE.		
7.4.2	TYPICAL FIRE BARRIERS	TYP. NON-LOAD BEARING PARTITIONS: 0 HOUR		
		DECA COMMISSARIES ARE TYPICALLY NON-SEPARATED OCCUPANCY USES TYPICALLY DO NOT REQUIRE INTERIOR RATED SEPARATIONS BETWEEN USES. IF BUILDING IS CLASSIFIED AS SEPARATED USE, THEN MUST FOLLOW AREA SEPARATION REQUIREMENTS.		
		EXIT ACCESS CORRIDORS: 0 HOUR	NFPA 101 7.1.3.1 (2)	52
		-SECTION 7.1.3.1 REQUIRES 1- HOUR RATING UNLESS OTHERWISE PROVIDED IN CHAPTERS 11-43.	. /	
		CHAPTERS 11-43 DO CONTAIN CODE TO ELIMINATE THE 1-HOUR RATING - SEE BELOW:		



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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		"MINIMUM 1-HOUR FIRE RESISTANCE RATING UNLESS ONE OF THE FOLLOWING CONDITIONS EXIST: (1) EXITS ARE AVAILABLE FROM OPEN AREA (2) SPACE OCCUPIED BY A SINGLE TENANT (3) COMPLIANT AUTO SPRINKLER SYSTEM	NFPA 101 36.3.6.1 (2) OR (3)	344
		TYPICAL DECA COMMISSARIES WOULD MEET EITHER (2) OR (3) AND THEREFORE DROPS THE 1-HOUR EXIT ACCESS CORRIDOR RATING TO O HOUR. THIS EXCEPTION (OR SIMILAR) IS PRESENT IN THE OTHER MAIN OCCUPANCIES - (MERCANTILE AND STORAGE).		
7.5	OPENING PROTECTIVES	OPENINGS IN FIRE BARRIERS AROUND 1-HOUR STAIR AND SHAFTS SHALL BE 1-HOUR RATED	IBC TABLE 716.1(2)	146
		OPENINGS IN OTHER 1-HOUR FIRE BARRIERS SHALL BE 3/4- HOUR RATED	IBC TABLE 716.1(2)	146
7.6	CONCEALED	FIREBLOCKING AND DRAFTSTOPPING NOT REQUIRED IN		
	SPACES	NONCOMBUSTIBLE COMMISSARIES. IN <u>COMBUSTIBLE</u> CONSTRUCTION, FIREBLOCKING SHALL BE	IBC 718.2	155
		IN <u>COMBUSTIBLE</u> CONSTRUCTION, DRAFTSTOPPING SHALL BE DECA COMMISSARY CONSTRUCTION IS TYPICALLY NON- COMBUSTIBLE CONSTRUCTION SO FIREBLOCKING AND DRAFTSTOPPING REQUIREMENTS OF THESE SECTIONS TYPICALLY DO NOT APPLY.	IBC 718.3	156
		COMBUSTIBLE MATERIALS NOT PERMITTED IN CONCEALED SPACES WITH THE FOLLOWING EXCEPTIONS:	IBC 718.5	156
		1. COMBUSTIBLE MATERIALS IN ACCORDANCE WITH SECTION 603 (COMBUSTIBLE MATERIALS IN TYPE 1 & 2 CONSTRUCTION). THIS INCLUDES THERMAL INSULATION NOTED BELOW		
		2. CLASS A INTERIOR FINISHES (PER SECTION 803)		
		3. SOME MECHANICAL AND PIPING MATERIALS - SEE 718.5		
		COMBUSTIBLE MATERIAL MAY NOT BE LOCATED WITHIN PLENUM SPACES	UFC 3-600-01 28- 1.2	127
7.7	INSULATING MATERIALS	SMOKE DEVELOPMENT AND FLAME SPREAD RATINGS : USE ASTM E84 OR UL 723	IBC 720.1	157



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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		MAX. FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS:		
		1. EXPOSED INSULATION - NOT IN A CONCEALED SPACE - MAX. FLAME SPREAD : 75 - MAX. SMOKE DEVELOPMENT : 150	UFC 3-600-1 8-3.1.1	81
		2. INSULATION <u>NOT</u> WITHIN NONCOMBUSTIBLE ASSEMBLY: EXPOSED INSULATION IN A CONCEALED SPACE: - MAX. FLAME SPREAD : 25 - MAX. SMOKE DEVELOPMENT : 50	UFC 3-600-01 8- 3.1.2	81
		UFC 3-600-01, SECTION 8-3.1, NOTES A MAXIMUM FLAME SPREAD OF NOT MORE THAN 75 AND SMOKE DEVELOPMENT OF 150. THESE UFC RATINGS ARE A GUIDELINE FOR ALL INSULATION LOCATIONS IN ALL BUILDING TYPES WHICH FALL UNDER THIS UFC. HOWEVER, DESIGNERS NEED TO EXAMINE AND FOLLOW RATINGS FOR SPECIFIC INSULATION TYPES AND LOCATIONS WITHIN THE TYPICAL NON-COMBUSTIBLE DECA COMMISSARY FACILITY IF THEY ARE MORE RESTRICTIVE.		
		TO MEET THE 25 SD RATING, FACED FIBERGLASS BATT INSULATION WILL NEED TO BE TYPE FSK. AN ALTERNATIVE TO USING FSK FACED INSULATION IS TO PROVIDE FULL-HEIGHT GWB, ON INSIDE FACE OF EXTERIOR WALLS THUS "ENCLOSING" THE INSULATION WITHIN A WALL ASSEMBLY AND THUS MEETING THE IBC EXCEPTION NOTED BELOW.		
		- DOES NOT APPLY TO MASONRY CAVITY WALL INSULATION PER UFC 3-600-01 8-3.2.2 (d) WHERE MASONRY SEPARATES INSULATION FROM INTERIOR OF BUILDING - DOES NOT APPLY TO INSULATION WITHIN HOLLOW METAL DOORS PER UFC 3-600-01 8-3.2.2 (f)		
		ROOF INSULATION : INSULATION INSTALLED ABOVE ROOF DECKS WHERE THE ENTIRE ROOF CONSTRUCTION ASSEMBLY, INCLUDING THE INSULATION, IS UL-LISTED AS FIRE CLASSIFIED, OR FM- APPROVED FOR CLASS I ROOF DECK CONSTRUCTION OR EQUAL LISTING OR CLASSIFICATION BY AN NRTL.	UFC 3-600-01 8-3.2.2 (b)	82
		COMMISSARY ROOF INSULATION IS TYPICALLY PART OF A CLASS "A" ROOFING SYSTEM AND THEREFORE COMPLIES		



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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
8	INTERIOR FINISHES	USE UFC 3-600-01 IN LIEU OF IBC CHAPTER 8 IN CONJUNCTION AND COORDINATION WITH UFC 3-120-10 INTERIOR DESIGN	UFC 1-200-01 2-8	17
		UFC 3-120-10 INTERIOR DESIGN REQUIREMENTS DO NOT FOCUS ON LIFE SAFETY ISSUES SUCH AS EGRESS AND FIRE HAZARD REQUIREMENTS, AND AS SUCH, ARE NOT PART OF THIS ANALYSIS.		
		CEILING, WALL AND FLOOR FINISHES TO CONFORM TO NFPA 101	UFC 3-600-01 3- 3.1.1	24
8.1	CLASSIFICATION	INTERIOR CEILING, WALL AND FLOOR FINISHES SHALL	NFPA 101 36.3.3.1	344
8.2	WALLS AND CEILING FINISHES	WALL AND CEILING INTERIOR FINISHES SHALL BE TESTED IN ACCORDANCE WITH ASTM E 84, OR ANSI/UL 723 AND BE CLASSIFIED AS FOLLOWS: CLASS A: FLAME SPREAD 0-25; SMOKE DEV. 0-450 CLASS B: FLAME SPREAD 26-75; SMOKE DEV. 0-450 CLASS C: FLAME SPREAD 26-75; SMOKE DEV. 0-450	NFPA 101 10.2.3.3	113
		CLASS C. FLAME SPREAD 78-200, SMORE DEV. 0-450 CLASS A FINISHES MAY BE USED WHEREVER CLASS B OR C FINISHES ARE ALLOWED. CLASS B FINISHES MAY BE USED WHEREVER CLASS C FINISHES ARE ALLOWED.	NFPA 101 10.2.3.3.3	113
8.3	FLOOR FINISHES	FLOOR FINISHES (OTHER THAN CARPET) SHALL BE TESTED IN ACCORDANCE WITH NFPA 253 OR ASTM E 648, OR ANSI/UL 723 AND BE CLASSIFIED BASED ON THEIR CRITICAL RADIANT FLUX VALUES: CLASS 1 : CRF 0.45 W/CM*CM OR GREATER CLASS 2 : CRF 0.22 W/CM*CM UP TO .45 W/CM*CM	NFPA 10.2.7.4	116
		CARPET AND CARPET-LIKE FINISHES SHALL COMPLY WITH ASTM D 2859.	NFPA 10.2.7.1	116
		INTERIOR FLOOR FINISHES SHALL COMPLY WITH 10.2.7.1 (CARPET) OR 10.2.7.2 (MATERIALS OTHER THAN CARPET)	NFPA 101 36.3.3.3.3	344
		0.1 W / cm (squared) MIN. RADIANT FLUX REQUIRED FOR FLOORING OTHER THAN CARPET	NFPA 101 10.2.7.2	116
		SEE ADDITIONAL SECTIONS FOR FINISHES IN RATED EXIT ENCLOSURES		
		SEE TABLE A.10.2.2 FOR THE COLLECTED REQUIREMENTS BY OCCUPANCY		
8.4	TRIM AND INCIDENTAL FINISH	CLASS "C" WALL AND CEILING TRIM AND INCIDENTAL FINISHES (BULLETIN BOARDS, PAPER, ETC) ALLOWED IF THEY TOTAL LESS THAN 10% OF AGGREGATE WALL AND CEILING AREA AND CLASS "A" OR "B" IS REQUIRED	NFPA 101 10.2.5.1	116



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		BULLETIN BOARDS, POSTERS, AND PAPER ATTACHED DIRECTLY TO THE WALL ARE ALLOWED IF THEY TOTAL LESS THAN 20% OF THE WALL AREA TO WHICH THEY ARE ATTACHED.	NFPA 101 10.2.5.3	116
9	FIRE PROTECTION SYSTEMS	USE UFC 3-600-01 IN LIEU OF IBC CHAPTER 9.	UFC 1-200-01 2-9	17
		COMPLETE AUTOMATIC SPRINKLER PROTECTION MUST BE PROVIDED IN BUILDINGS OF TYPE II CONSTRUCTION OVER 15,000 SQFT.	UFC 3-600-01 9- 7.2.1.1	96
		COMMISSARIES LARGER THAN 8,000 SQFT AND PART OF ANOTHER FACILITY MUST MEET UFC 3-600-01 9-7.2.	UFC 3-600-01 4- 7.1	30
		COMMISSARIES THAT ARE STAND-ALONE AND GREATER THAN 8,000 SQFT MUST HAVE SPRINKLER PROTECTION REGARDLESS OF CONSTRUCTION TYPE	UFC 3-600-01 4- 7.2	30
		FLEXIBLE SPRINKLER CONNECTIONS INTENDED FOR DIRECT CONNECTION TO SPRINKLERS MUST BE APPROVED BY THE AHJ.	UFC 3-600-01 9- 7.6.8	100
10	MEANS OF EGRESS	USE UFC 3-600-01 AND ABA IN LIEU OF IBC CHAPTER 10. WHEN ABA REFERENCES CHAPTER 10, USE THE 2018 IBC FOR THAT REFERENCE ONLY.	UFC 1-200-01 2-10	17
		UFC REQUIRES COMPLIANCE WITH NFPA 101, FOR EXISTING, EXCEPT AS MODIFIED BY UFC 3-600-01	UFC 3-600-01 10- 1.1	120
10.1	LIFE SAFETY CLASSIFICATION OF OCCUPANCY	CLASSIFICATION : MULTIPLE OCCUPANCY - MIXED OCCUPANCY	NFPA 101 6.1.14.1.3	49
		MERCANTILE (SALES AREA)	NFPA 101 6.1.10.1 &	99
		 MERCANTILE SUB CLASSIFICATION: MORE THAN 30,000 S.F OF MERCANTILE = CLASS 'A' MORE THAN 3,000 S.F UP TO 30,000 S.F OF MERCANTILE = CLASS 'B' 3000 S.F. OR LESS OF MERCANTILE = CLASS 'C' 	36.1.2.2.1	340
		BUSINESS (OFFICE AREAS) - OFFICE, STORAGE, AND SERVICE FACILITIES INCIDENTAL TO THE SALE OF MERCHANDISE AND LOCATED IN THE SAME BUILDING ARE PERMITTED TO BE CONSIDERED PART OF THE MERCANTILE OCCUPANCY.	NFPA 101 A6.1.10.1	406



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		STORAGE : STORAGE AND RECEIVING AREAS - OFFICE, STORAGE, AND SERVICE FACILITIES INCIDENTAL TO THE SALE OF MERCHANDISE AND LOCATED IN THE SAME BUILDING ARE PERMITTED TO BE CONSIDERED PART OF THE MERCANTILE OCCUPANCY.	NFPA 101 A6.1.10.1	406
		INDUSTRIAL (BAKERY/DELI, MEAT & PRODUCE WORK ROOMS) - OFFICE, STORAGE, AND SERVICE FACILITIES INCIDENTAL TO THE SALE OF MERCHANDISE AND LOCATED IN THE SAME BUILDING ARE PERMITTED TO BE CONSIDERED PART OF THE MERCANTILE OCCUPANCY.	NFPA 101 A6.1.10.1	406
10.2	LIFE SAFETY - MIXED OCCUPANCIES	WHERE INCIDENTAL TO ANOTHER OCCUPANCY, AREAS USED AS FOLLOWS SHALL BE PERMITTED TO BE CONSIDERED PART OF THE PREDOMINANT OCCUPANCY AND SHALL BE SUBJECT TO THE PROVISIONS OF THE CODE THAT APPLY TO THE PREDOMINANT OCCUPANCY: 1 - MERCANTILE, BUSINESS, OR STORAGE USE	NFPA 101 6.1.14.1.3	49
		DECA COMMISSARIES ARE TYPICALLY CLASSIFIED AS MULTIPLE OCCUPANCY, CLASS "A" MERCANTILE, BUSINESS AND ORDINARY HAZARD STORAGE. (INDUSTRIAL IS TYPICALLY AN ACCESSORY USE, AND THEREFORE NOT A MAIN USE - SO INDUSTRIAL EGRESS REQ'S NOT APPLICABLE FOR ENTIRE BUILDING ASSESSMENT)		
10.3	CLASSIFICATION OF HAZARD OF CONTENT	ORDINARY HAZARD	NFPA 101 6.2.2.3	52
10.4	OCCUPANT LOAD	FOLLOW TABLE 7.3.1.2	NFPA 101 Table 7.3.1.2	81
		MERCANTILE SALES AREA ON STREET LEVEL		
		BUSINESS (OFFICES)		
		CONCENTRATED BUSINESS		
		STORAGE (STORAGE & RECEIVING) 300 SF/PERSON		
		INDUSTRIAL (WORK ROOMS/KITCHENS) 100 SF/PERSON		
10.5	MINIMUM NO. OF MEANS OF EGRESS - BUILDING	NOT LESS THAN 2 SEPARATE EXITS SHALL BE PROVIDED ON EVERY STORY - SEE MECHANICAL ROOM EXCEPTION BELOW (10.7)	NFPA 101 36.2.4.1 (2)	342



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		EXCEPTION : STORIES USED EXCLUSIVELY FOR MECHANICAL EQUIPMENT, FURNACES, OR BOILERS SHALL BE PERMITTED TO HAVE A SINGLE MEANS OF EGRESS WHERE THE TRAVEL DISTANCE TO AN EXIT ON THAT STORY IS NOT IN EXCESS OF THE COMMON PATH OF TRAVEL .	NFPA 101 7.13.2	91
		STAIRS BETWEEN <u>STORIES</u> NEED TO BE RATED EXIT ENCLOSURES SO COMMON PATH OF TRAVEL WOULD BE FROM MOST REMOTE POINT TO THE SECOND STORY DOOR INTO THE STAIR ENCLOSURE. THIS VARIES FROM A MECHANICAL <u>MEZZANINE</u> IN THAT A SINGLE EXIT STAIR ON A MEZZANINE IS NOT TYPICALLY RATED - SO COMMON PATH OF TRAVEL (FROM A SINGLE EXIT MEZZANINE) WOULD BE FROM MOST REMOTE POINT TO BOTTOM OF STAIR.		
		3 EXITS (MINIMUM) REQUIRED FOR OCCUPANCY LOAD OF 500 - 1000	NFPA 101 7.4.1.2	83
		4 EXITS (MINIMUM) REQUIRED FOR OCCUPANCY LOAD OF 1000+		
10.6	MINIMUM NO. OF MEANS OF EGRESS - MEZZANINE	A SINGLE MEANS OF EGRESS IS ALLOWED FROM A MEZZANINE PROVIDED THE COMMON PATH OF TRAVEL (TO AN EXIT) DOES NOT EXCEED MAX. COMMON PATH (TYPICALLY 100' W/ SPRINKLERS)	NFPA 101 36.2.4.5	342
		COMMON PATH OF TRAVEL (TYPICALLY 100') FOR A MEZZANINE WOULD INCLUDE THE LENGTH OF TRAVEL DOWN THE STAIRS AND TO A POINT WHERE THERE ARE TWO DIRECTIONS TO EXIT. IF THE STAIRS ARE A RATED EXIT ENCLOSURE, THAN COMMON PATH WOULD BE MEASURED TO THE ENTRANCE TO THE STAIR (EXIT) ENCLOSURE.		
10.7	EGRESS FROM SPECIAL USE	MECHANICAL EQUIPMENT ROOMS, BOILER ROOMS AND FURNACE ROOMS	NFPA 101 7.13	91
	ROOMS	COMMON PATH OF TRAVEL NOT EXCEEDING 100' FOR NEW BUILDINGS WITH AN APPROVED , SUPERVISED AUTO SPRINKLER	NFPA 101 7.13.1 (1)	91
		NOTE: THE IBC DENOTES SPECIAL SECOND MEANS OF EGRESS REQUIREMENTS FOR BOILER, FURNACE, REFRIGERATION MACHINERY ROOMS, AND REFRIGERATED SPACES. HOWEVER, PER UFC, THE IBC MEANS OF EGRESS CODE IS NORMALLY SUPERSEDED WITH THE NFPA MEANS OF EGRESS CODE WHICH HAS NO SIMILAR REQUIREMENTS. AHJ MAY STILL ENFORCE THE IBC AS IT IS MORE RESTRICTIVE.	1006.2.2	261
		WHERE MORE THAN ONE EXIT, EXIT ACCESS, OR EXIT DISCHARGE IS REQUIRED FROM A BUILDING OR PORTION THEREOF, THEY MUST BE REMOTELY LOCATED TO MINIMIZE THE POSSIBILITY THE MORE THAN ONE HAS THE POTENTIAL TO BE BLOCKED BY ANY ONE EMERGENCY CONDITION.	NFPA 101 7.5.1.3.1	84



CODE ANALYZED : UFC 1-200-

NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
10.8	ARRANGEMENT OF MEANS OF EGRESS	IN BUILDINGS PROTECTED THROUGHOUT BY AN APPROVED, SUPERVISED AUTOMATIC SPRINKLER SYSTEM, THE MINIMUM SEPARATION DISTANCE BETWEEN TWO EXITS SHALL BE NOT LESS THAN ONE-THIRD THE DIAGONAL OF THE BUILDING OR AREA SERVED	NFPA 101 7.5.1.3.3	84
		WHERE MORE THAN TWO EXITS, EXIT ACCRESS, OR EXIT DISCHARGES ARE REQUIRED, AT LEAST TWO OF THEM SHALL BE ARRANGED TO COMPLY WITH THE MINIMUM SEPARATION DISTANCE REQUIREMENT.	NFPA 101 7.5.1.3.6	84
10.9	DEAD END CORRIDORS	DEAD ENDS CORRIDORS SHALL NOT EXCEED 50 FEET WITH APPROVED, SUPERVISED AUTO. SPRINKLER SYSTEM. (MERCANTILE IS MOST RESTRICTIVE OF USES).	NFPA 101 36.2.5.2.1	342
10.10	COMMON PATH OF TRAVEL	COMMON PATH OF TRAVEL SHALL NOT EXCEED 100 FEET WITH APPROVED, SUPERVISED AUTO. SPRINKLER SYSTEM (MERCANTILE IS MOST RESTRICTIVE OF USES).	NFPA 101 36.2.5.3 (2)	342
10.11	TRAVEL DISTANCE	TRAVEL DISTANCE SHALL NOT EXCEED 250' IN ORDINARY HAZARD, MERCANTILE OCCUPANCIES WITH AN APPROVED, SUPERVISED AUTO. SPRINKLER SYSTEM. (MERCANTILE IS MOST RESTRICTIVE OF USES).	NFPA 101 36.2.6.2	343
10.12	EGRESS CAPACITY AND WIDTH	LEVEL COMPONENTS AND RAMPS = .2" / OCCUPANT STAIRWAYS = .3" / OCCUPANT	NFPA 101 Table 7.3.3.1	82
		EXIT ACCESS WIDTH IN NEW BUILDINGS: GREATER OF 36" - OR AS NEEDED TO SERVE OCCUPANT COUNT	NFPA 101 7.3.4.1	82
		MINIMUM WIDTHS NOTED SHALL NOT BE ASSUMED FOR ANY OR EVERY CIRCUMSTANCE. MINIMUM REQUIRED WIDTHS ARE OFTEN INCREASED TO ACCOMMODATE ACTUAL OCCUPANT LOADS OR BY OTHER PARTS OF CODE.		
10.13	MERCANTILE SPECIFIC EGRESS REQUIREMENTS	IN CLASS A MERCANTILE (OVER 30,000 SQFT) NOT LESS THAN ONE AISLE WITH A 60" MINIMUM CLEAR WIDTH SHALL LEAD FROM THE BACK OF THE STORE DIRECTLY TO AN FXIT.	NFPA 101 36.2.5.6	343



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		FRONT WALL EXITING: IF THE ONLY MEANS OF CUSTOMER ENTRANCE IS THROUGH ONE EXTERIOR WALL OF THE BUILDING, A MINIMUM OF ONE-HALF OF THE REQUIRED EGRESS WIDTH FROM STREET FLOOR SHALL BE LOCATED IN SUCH WALL. A/E MUST PROVIDE EXIT WIDTHS, IN THE FRONT ENTRANCE WALL, THAT WILL ACCOMMODATE AT LEAST ONE-HALF OF THE MAXIMUM OCCUPANT LOAD. VERIFY THE MAIN CUSTOMER ENTRANCE IS THROUGH THE SAME WALL AS THE MAIN EXITS.	NFPA 101 36.2.5.7	343
		EXITING THRU CHECKSTANDS: NOT LESS THAN ONE-HALF OF THE <u>REQUIRED</u> EXITS SHALL BE LOCATED SO AS TO BE REACHED WITHOUT PASSING THROUGH CHECKOUT STANDS.	NFPA 101 36.2.5.8	343
		AISLES USED TO SATISFY THE ABOVE REQUIREMENT WOULD BE SUBJECT TO THE CODE BELOW.		
		REQUIRED AISLES SHALL NOT BE LESS THAN 36" IN WIDTH	NFPA 101 36.2.5.5	343
		WHERE WHEELED CARTS OR BUGGIES ARE USED BY CUSTOMERS, ADEQUATE PROVISION SHALL BE MADE FOR THE TRANSIT AND PARKING OF SUCH CARTS TO MINIMIZE THE POSSIBILITY THAT THEY MIGHT OBSTRUCT MEANS OF EGRESS	NFPA 101 36.2.5.10	343
		CART CORRALS WITH PERIMETER RAILINGS AND ADEQUATE PARKING AREAS (FOR POWERED CARTS) ARE TYPICALLY PROVIDED TO COMPLY WITH THIS		



CODE ANALYZED :

DEFENSE COMMISSARY AGENCY DIRECTORATE OF PERFORMANCE AND POLICY FACILITIES PROGRAMMING AND PLANNING DIVISION Fort Lee, Virginia FACILITIES CONSTRUCTION AND SUSTAINMENT DIVISION Lackland AFB, Texas

UFC 1-200-01, 8 OCTOBER 2019

SUMMARY OF REQUIREMENTS REFERENCE NO. ITEM PAGE EXIT ACCESS THROUGH STOREROOMS IS ACCEPTABLE IN **NFPA 101** 343 CLASS "A" MERCANTILE WITH APPROVED AUTOMATIC FIRE 36.2.5.11 SPRINKLER SYSTEM IF: (1) NOT MORE THAN 50% OF EXIT ACCESS SHALL BE PROVIDED THROUGH STOREROOM. (2) THE STOREROOM SHALL NOT BE SUBJECT TO LOCKING. (3) THE MAIN AISLE THROUGH STOREROOM SHALL NOT BE LESS THAN 44 INCHES WIDE. (4) THE PATH OF TRAVEL THROUGH THE STOREROOM, DEFINED, DIRECT AND CONTINUOUSLY MAINTAINED IN AN UNOBSTRUCTED CONDITION. TYPICAL COMMISSARY EXITING IS NO LONGER DESIGNED TO EXIT MERCANTILE PATRONS THROUGH STOREROOM / RECEIVING AREAS ALTHOUGH THIS IS AN OPTION. THE PREVIOUS REQUIREMENT FOR "FIXED BARRIERS" HAS BEEN REMOVED FROM THIS NFPA CODE HOWEVER THE WORD "DEFINED" STILL LEAVES ROOM FOR INTERPRETATION BY THE AHJ - AND AHJ REQUIREMENTS HAVE VARIED GREATLY. FIXED RAILS ACROSS THE STOREROOM FLOOR. FOR EXAMPLE, WOULD NOT BE CONDUCIVE TO RECEIVING AREA TRAFFIC FLOW A/E WILL PREPARE OCCUPANCY / EGRESS PLANS WITH WRITTEN CALCULATIONS/SUMMARIES AND TO GRAPHICALLY DEMONSTRATE COMPLIANCE WITH EGRESS AND TRAVEL DISTANCE REQUIREMENTS 10.14 ILLUMINATION OF EGRESS ILLUMINATION SHALL BE ILLUMINATED IN NFPA 101 36.2.8 343 ACCORDANCE WITH SECTION 7.8 MEANS OF EGRESS 10.15 EMERGENCY CLASS "A" MERCANTILE OCCUPANCIES SHALL HAVE NFPA 101 36.2.9 343 EMERGENCY LIGHTING IN ACCORDANCE WITH SECTION 7.9 LIGHTING OF MEANS OF EGRESS 10.16 MARKING OF WHERE AN EXIT IS NOT IMMEDIATELY APPARENT FROM ALL NFPA 101 36.2.10 343 MEANS OF PORTIONS OF THE SALES AREA, MEANS OF EGRESS SHALL HAVE SIGNS IN ACCORDANCE WITH SECTION 7.10 EGRESS SECTION 7.10 OUTLINES REQUIREMENTS FOR EXIT SIGNS. PROVIDE THE FOLLOWING ITEMS IN ADDITION TO EXIT SIGNS. IN NEW BUILDINGS, TACTILE SIGNAGE SHALL BE LOCATED NFPA 101 7.10.1.3 88 AT EACH EXIT DOOR REQUIRING AN EXIT SIGN AND SHALL

READ "EXIT" AND SHALL COMPLY WITH ICC/ANSI A117.1



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
10.17	OOORS AS PART OF MEANS OF EGRESS	SWINGING DOORS : EGRESS CAPACITY SHALL BE MEASURED BETWEEN THE FACE OF THE DOOR (WHEN OPENED 90 DEGREES) AND THE STOP ON THE OPPOSITE JAMB.	NFPA 101 7.2.1.2.1.1	55
		MINIMUM DOOR <u>OPENING</u> IS 32" (ALSO MINIMUM FOR ADA) 2'-10" WIDE DOOR IS LIKELY MIN. WIDTH ALLOWED.	NFPA 101 7.2.1.2.3	55
		POWERED SLIDING DOORS: HORIZONTAL-SLIDING DOORS COMPLYING WITH ALL REQUIREMENTS OF 7.2.1.9 SHALL BE PERMITTED.	NFPA 101 7.2.1.9	60
		CURRENT SPECIFIED SLIDING DOORS ARE LISTED TO BE NFPA 101 COMPLIANT		
		LOCKS : LOCKS COMPLYING WITH 7.2.1.5.5 SHALL BE PERMITTED ONLY ON PRINCIPLE ENTRANCE/EXIT DOORS.	NFPA 101 36.2.2.2.2	341
		SEE APPENDIX A FOR DEFINITION OF PRINCIPLE ENTRANCE - SUMMARIZE - TYPICALLYONLY AUTO-SLIDING DOORS FOR NORMAL CUSTOMER ENTRANCE AND EXIT QUALIFY FOR PRINCIPLE ENTRY/EXIT, THEREFORE, PROVIDE PANIC OR FIRE EXIT HARDWARE ON TYP. EXIT DOORS THAT DO <u>NOT</u> REQUIRE A KEY TO UNLOCK.		
		AUTO-SLIDING DOORS MAY BE KEY LOCKED PROVIDED ALL THE FOLLOWING: 1- A READILY VISIBLE, DURABLE SIGN IN LETTERS NOT LESS THAN 1 INCH HIGH ON A CONTRASTING BACKGROUND IS LOCATED ADJACENT TO OR ON THE DOOR "THIS DOOR TO REMAIN UNLOCKED WHEN THE BUILDING IS OCCUPIED" 2- THE LOCKING DEVICE IS OF A TYPE THAT IS READILY DISTINGUISHABLE AS LOCKED 3- A KEY IS IMMEDIATELY AVAILABLE TO ANY OCCUPANT INSIDE THE BUILDING WHEN IT IS LOCKED	NFPA 101 7.2.1.5.5.1	57
		REQUIREMENTS 2 & 3 ABOVE (7.2.1.5.5.1) ARE NOT DIFFICULT TO ACHIEVE IN A COMMISSARY. TO SATISFY REQUIREMENTS, TYPICAL HARDWARE FOR AUTO SLIDING DOOR LOCKS INCLUDE A THUMB TURN ON THE INTERIOR SIDE (KEYED LOCK ON OUTSIDE) ALONG WITH A SIGN THAT MEETS ITEM 1 ABOVE (7.2.1.5.5.1). THESE DOORS ARE ONLY LOCKED WHEN STORE IS CLOSED AND THE RELATIVELY FEW EMPLOYEES WORKING THEN KNOW TO OPERATE THE THUMB-TURN . ALSO, BECAUSE THE OCCUPANT LOAD (OF EMPLOYEES - WHEN STORE IS CLOSED) IS VERY LOW, THEY CAN LEGALLY EXIT THROUGH OTHER DOORS.		
		DELAYED-EGRESS LOCKS ARE PERMITTED ON EXIT DOORS PROVIDED THEY MEET PROVISIONS OF NFPA 101 7.2.1.6.1.1	NFPA 101 36.2.2.2.5 & 7.2.1.6.1	341 58



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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		DOORS FROM THE SALES AREA, WHICH LEAD DIRECTLY TO THE EXTERIOR ARE ALLOWED TO BE PROVIDED WITH DELAYED EGRESS SYSTEMS		
		ACCESS-CONTROLLED EGRESS DOORS ARE PERMITTED ON EXIT MAN DOORS PROVIDED THEY MEET PROVISIONS OF NFPA 7.2.1.6.2	NFPA 101 36.2.2.2.6 & 7.2.1.6.2	341 59
		POWERED DOORS : WHERE MEANS OF EGRESS DOORS ARE OPERATED BY POWER, THE DESIGN SHALL BE SUCH THAT, IN THE EVENT OF POWER FAILURE, THE DOORS OPEN MANUALLY TO ALLOW EGRESS TRAVEL	NFPA 101 7.2.1.9.1	60
		DOOR ASSEMBLY MUST SWING-OUT WHEN PUSHED TO PROVIDE FULL EGRESS WIDTH. DOORS MUST MEET ATFP AND LIFE SAFETY CODE.	7.2.1.9.1.5	60
		A READILY VISIBLE, DURABLE SIGN IN LETTERS NOT LESS THAN 1" HIGH ON CONTRASTING BACKGROUND SHALL BE LOCATED ON THE EGRESS SIDE OF EACH DOOR "IN EMERGENCY, PUSH TO OPEN"	NFPA 101 7.2.1.9.1.6	60
11	ACCESSIBILITY	USE THE ABA ACCESSIBILITY STANDARD FOR DEPARTMENT OF DEFENSE FACILITIES AS ADOPTED BY THE DEPUTY SECRETARY OF DEFENSE MEMORANDUM DATED OCTOBER 31, 2008, IN LIEU OF IBC CHAPTER 11. REFERENCED AS (ADA/ABA)	UFC 1-200-01 2-11	17
11.1	APPLICATION	ALL AREAS OF NEWLY DESIGNED AND CONSTRUCTED BUILDINGS AND FACILITIES, AND ALTERED PORTIONS OF EXISTING BUILDINGS SHALL COMPLY WITH THESE REQUIREMENTS.	ADA/ABA F201.1	
		EACH ADDITION TO AN EXISTING BUILDING SHALL COMPLY WITH REQUIREMENTS FOR NEW CONSTRUCTION	ADA/ABA F202.2	
		ALTERATIONS SHALL COMPLY EXCEPT:	ADA/ABA F202.4	
		1. AN EXISTING CIRCULATION ROUTE - TO AN ALTERED AN AREA OR SPACE, WHICH IS NOT A PRIMARY FUNCTION AREA OR SPACE - MAY NOT BE REQUIRED TO BE MADE ACCESSIBLE. (SEE 202.4 FOR ADD'L INFO)		
		2. IN ALTERATIONS WHERE COMPLIANCE WITH APPLICABLE REQUIREMENTS IS TECHNICALLY INFEASIBLE (SEE DEFINITIONS), THE ALTERATION SHALL COMPLY WITH THE REQUIREMENTS TO THE MAXIMUM EXTENT FEASIBLE.		
		NOTE: SEVERAL REQUIRED UPGRADES TO EXISTING FACILITIES WITHIN A BUILDING WITH A NEW ADDITION	ADA/ABA F202.2.1 - 5	



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
11.2	EXEMPT SPACES	ACCESSIBLE EXEMPT SPACES: - MACHINERY SPACES FREQUENTED ONLY BY SERVICE PERSONNEL - INCLUDING ELEVATOR ROOMS AND PITS, MECHANICAL, ELECTRICAL AND COMMUNICATION EQUIPMENT ROOMS, WATER PUMP ROOMS. - LIMITED ACCESS SPACES ACCESSED BY LADDERS,	ADA/ABA F203.6 ADA/ABA F203.5	
		CRAWL SPACES OR VERY NARROW PASSAGEWAYS,		
11.3	ACCESSIBLE ROUTES	EACH SITE ARRIVAL POINT MUST BE CONNECTED BY AN ACCESSIBLE ROUTE TO THE ACCESSIBLE ENTRANCE(S) SERVED.	ADA/ABA F206.2.1	
		AT LEAST ONE ACCESSIBLE ROUTE SHALL CONNECT ACCESSIBLE BUILDINGS OR ELEMENTS THAT ARE ON THE SAME SITE UNLESS THE ONLY MEANS OF ACCESS BETWEEN THEM IS A VEHICULAR WAY WITH NO PEDESTRIAN ACCESS.	ADA/ABA F206.2.2	
		ACCESSIBLE ROUTE (SUCH AS ELEVATOR) REQUIRED TO EVERY STORY AND MEZZANINE UNLESS THE SECOND LEVEL HAS AN OCCUPANT LOAD OF FIVE OR FEWER (ALSO SEE F203.5 & 6 EXEMPTIONS)	ADA/ABA F206.2.3	
		ACCESSIBLE ROUTE REQUIRED BETWEEN ACCESSIBLE ENTRANCE AND ALL ACCESSIBLE AREAS	ADA/ABA F206.2.4	
		ACCESSIBLE ROUTES SHALL COINCIDE OR BE LOCATED WITHIN THE SAME AREA AS GENERAL CIRCULATION PATHS. WHERE CIRCULATION PATHS ARE INTERIOR, SO SHALL BE ACCESSIBLE ROUTES.	ADA/ABA F206.3	
		AT LEAST 60% OF ALL PUBLIC ENTRANCES SHALL BE ACCESSIBLE	ADA/ABA F206.4.1	
11.4	ACCESSIBLE PARKING SPACES	PARKING LOT IS NOW REFERENCED AS 'FACILITY' WHICH INDICATES BOTH PARKING LOTS AND PARKING STRUCTURES.	ADA/ABA F208.2 ADVISORY	
		WHERE MORE THAN ONE PARKING FACILITY (LOT) EXISTS ON A SITE, CALCULATE MINIMUM NUMBER OF SPACES WITHIN EACH FACILITY BASED ON PARKING TOTAL OF CARS WITHIN EACH FACILITY - NOT BASED ON TOTAL NUMBER OF SPACES FROM ALL FACILITIES ON A SITE	ADA/ABA F208.2 ADVISORY	



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NO.	ITEM	SUMMARY OF REQUIREMENTS		REFERENCE	PAGE
		TOTAL PARKING SPACES 1 - 25 26 - 50 51 - 75 76 - 100 101 - 150 151 - 200 201 - 300 301 - 400 401 - 500 501 - 1,000 1001 AND OVER	MINIMUM REQUIRED 1 2 3 4 5 6 7 8 9 2% OF TOTAL 20, PLUS 1 FOR EACH 100, OR FRACTION THEREOF, OVER 1000	ADA/ABA F208.2	
		PROVIDE A MINIMUM OF 1 ACC SPACE PER 502 AND NOT LESS PARKING SPACE FOR EVERY 6 ACCESSIBLE PARKING SPACES	ESSIBLE VAN PARKING THAN ONE ACCESSIBLE VAN (OR FRACTION OF) <u>REQUIRED</u>	ADA/ABA F208.2.4	
		STANDARD ACCESSIBLE PARK MINIMUM 8' WIDE STALL WITH / LENGTH) ACCESS AISLE WHICH DISCOURAGE PARKING (CROS CONNECTED TO ACCESSIBLE F PARKING STALLS SHALL BE PE COMMON ACCESS AISLE.	ING STALL: PROVIDE A MINIMUM 5' WIDE (FULL H IS MARKED TO S STRIPE) AND IS ROUTE. TWO ADJACENT RMITTED TO SHARE A	ADA/ABA 502.2 & 502.3	
		ACCESSIBLE VAN PARKING ST ACCESS AISLE (16' TOTAL WID SPACE TO 8' WIDE STALL WITH - BOTH CONFIGURATIONS ARE A - NOT REQ'D BUT BEST TO CONFI RIGHT SIDE OF VAN PARKING	ALL: 11' WIDE WITH 5' WIDE TH). MAY RECONFIGURE VAN 8' WIDE ACCESS AISLE 16' WIDE VAN SPACE IGURE ACCESS AISLE ON	ADA/ABA 502.2 & 502.3	
		ACCESSIBLE PARKING SHALL E AND ON THE SHORTEST ROUT ENTRANCE. WHERE THERE IS I ACCESSIBLE ENTRANCE, ACCE DISPERSED IN DIFFERENT LOT SHORTEST ROUTES TO EACH I SEE ADVISORY F208.3.1	BE LOCATED WITHIN ONE LOT TE TO AN ACCESSIBLE MORE THAN ONE ESSIBLE STALLS MAY BE IS AND LOCATED ON DOOR IF THAT IS A BENEFIT -	ADA/ABA F2083.1	
11.5	PASSENGER	MINIMUM 8' WIDE X 20' LONG V	EHICULAR PULL-UP SPACE	ADA/ABA 503.2	
	LUADING ZUNE	ADJACENT TO PULL-UP SPACE AISLE X LENGTH OF PULL-UP, F PASSENGERS. ACCESS AISLE AT SAME LEVEL AS PULL-UP AI DISCOURAGE PARKING.	, PROVIDE 5' WIDE ACCESS FOR LOADING OF SHALL BE SLOPED < = 1:48, SLE AND MARKED TO		
		DeCA COMMISSARY FACILITIES O BOLLARDS BETWEEN PULL-UP SI BOLLARDS PREVENT PARKING IN ROOM BETWEEN BOLLARDS TO L	FTEN HAVE DECORATIVE PACE AND ACCESS AISLE. AISLE WHILE STILL ALLOWING OAD PEOPLE.		



CODE ANALYZED :

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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE	
11.6		STAIRWAYS:			
	REQUIREMENTS	 7" MAXIMUM RISER, 11" MAXIMUM TREAD DEPTH OPEN RISERS ARE NOT PERMITTED STAIR TREADS AND LANDINGS SUBJECT TO WET CONDITIONS SHALL BE DESIGNED TO PREVENT THE ACCUMULATION OF WATER 	ADA/ABA 504.2 ADA/ABA 504.3 ADA/ABA 504.7		
		HANDRAILS : - PROVIDE ON BOTH SIDES OF STAIRS AND RAMPS. - 34-38" ABOVE NOSINGS, RAMPS AND LANDINGS - EXTENSIONS: SLOPING HANDRAILS, AT STAIRS, SHALL EXTEND AT LEAST THE DISTANCE OF 1 TREAD DEPTH AT BOTTOM OF STAIR AND EXTEND 1'-0" HORIZ. AT TOP OF STAIR. HANDRAILS AT RAMPS SHALL EXTEND 1'-0" HORIZ. AT TOP AND BOTTOM OF RAMP	ADA/ABA 505.2 ADA/ABA 505.4 ADA/ABA 505.10.1- 3		
		STAIR WIDTH (ALLOWS 4 1/2" HANDRAIL PROJECTION) : - 36" WIDE STAIR (OCCUPANT LOAD LESS THAN 50) - 44" (UP TO OCCUPANT LOAD OF 2,000)	NFPA 101 7.2.2.2.1.2 (A) 7.2.2.2.1.2 (B)	64	
11.7	11.7	PLUMBING FACILITIES	TOTAL NUMBERS OF REQUIRED PLUMBING FIXTURES ARE DETERMINED BY OTHER UFC REQUIREMENTS I.E. 3-420-01. THE INFORMATION BELOW ADDRESSES ONLY THE ACCESSIBILITY REQUIREMENTS OF PLUMBING FIXTURES AND ROOMS.		
		DRINKING FOUNTAINS: SHALL COMPLY WITH SECTION 602:			
		- NO FEWER THAN 2 DRINKING FOUNTAINS SHALL BE PROVIDED. ONE GENERAL UNIT SHALL COMPLY WITH 602.1 - 6 AND THE OTHER UNIT SHALL COMPLY WITH 602.7 (STANDING PERSONS) - EXCEPTION: MAY PROVIDE A COMBINATION UNIT THAT COMPLIES WITH POTH 602.1 6 AND WITH 602.7	ADA/ABA F211.2		
		- WHERE 3 OR MORE DRINKING FOUNTAINS PROVIDED, PROVIDE 1/2 OF TOTAL (+/5) SHALL BE OF EACH TYPE	ADA/ABA F211.3		
		SINKS: SHALL COMPLY WITH SECTION 606 : WHERE SINKS ARE PROVIDED IN ACCESSIBLE ROOMS, AT LEAST 5% AND AT LEAST ONE SINK, SHALL BE ACCESSIBLE.	ADA/ABA F212.3 ADA/ABA F212.1		
		-EXCEPTION: MOP AND SERVICE SINKS : NO ACCESSIBLE FLOOR SPACE REQ'D	ADA/ABA F212.3		



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SUMMARY OF REQUIREMENTS REFERENCE NO. ITEM PAGE ADA/ABA 606.2 - SIDE APPROACH TO KITCHEN-TYPE SINK IS ALLOWED FOR A SINK WHEN NO COOK TOP OR RANGE IS PROVIDED WITHIN THE SAME ROOM (I.E. BREAK ROOMS). THE CODE NOTES ONLY SINKS HERE - SO CANNOT USE THIS SECTION FOR SIDE APPROACHES TO LAVATORIES - WHICH **REQUIRE FRONT APPROACHES**. TOILET ROOMS : EACH TOILET ROOM SHALL COMPLY WITH ADA/ABA F213.2 SECTION 603: EXCEPTION: - ALTERING AN EXISTING TOILET ROOM SHALL NOT BE REQUIRED, WHERE TECHNICALLY INFEASIBLE, AND WHERE A NEW, SINGLE, UNISEX TOILET ROOM IS PROVIDED IN THE SAME AREA. FOR ALTERATIONS : IT WOULD SEEM, THOUGH NOT STATED, ADDITIONAL, SEPARATE MALE AND FEMALE TOILET ROOMS, IN THE SAME AREA. WOULD ALSO ALLOW EXISTING ROOMS TO REMAIN ADVISORY F213.2 NOTES BENEFIT OF PROVIDING UNISEX, F213.2 ADVISORY SINGLE USER TOILET ROOMS IN ADDITION TO ACCESSIBLE SINGLE-SEX TOILET ROOMS. - PROVIDE COMPLIANT TURNING SPACE ADA/ABA 603.2.1 - REQUIRED FIXTURE CLEARANCES ARE ALLOWED TO ADA/ABA 603.2.2 **OVERLAP TURNING SPACE** - DOOR SWING MAY OVERLAP TURNING SPACE, BUT NOT ADA/ABA 603.2.3 FIXTURE CLEARANCES - A MINIMUM OF ONE TOILET, TOILET STALL (IF PROVIDED), ADA/ABA LAVATORY, URINAL (IF PROVIDED), AND MIRROR SHALL F213.3.1 - .5 MEET ADA/ABA REQUIREMENTS. FIXTURES AND STALLS SHALL COMPLY WITH SECTIONS 603-ADA/ABA F213.3.1-606 7 ACCESSIBLE TOILET STALL MINIMUM SIZE: 56" DEEP X 60" ADA/ABA 604.8.1.1 MINIMUM - WITH COMPLIANT WALL-HUNG TOILET. OUT-SWINGING DOOR AND PROPER TOE CLEARANCES. (SEE 604.8.1.4 FOR TOE CLEARANCES) - IF 6 OR MORE TOILETS AND URINALS (COMBINED) IN A ADA/ABA F213.3.1 ROOM, THEN ONE STALL (IN ADDITION TO THE ACCESSIBLE STALL) MUST BE AN "AMBULATORY ACCESSIBLE TOILET STALL" AND MEET 604.8.2 (60" DEEP MINIMUM X 35-37 " WIDE)



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
11.8	OTHER FACILITIES	LOCKER ROOMS : - SHALL HAVE COMPLIANT TURNING SPACE WITHIN THE ROOM - REQUIRES A BENCH, PER 903, WHERE LOCKERS ARE PROVIDED. BENCH REQUIRES A BACK UNLESS BENCH IS PLACED AGAINST WALL AND SECURED IN-PLACE PER 903.4.	ADA/ABA 803	
		WHERE LOCKERS ARE PROVIDED, PROVIDE AT LEAST 5%, AND NO FEWER THAN ONE OF EACH TYPE, THAT COMPLIES WITH SECTION 811	ADA/ABA F225.2.1	
11.9	FIRE ALARM SYSTEMS	PERMANENTLY INSTALLED AUDIBLE AND VISIBLE ALARMS COMPLYING WITH NFPA 72 (2002 LATEST EDITION) WITH EXCEPTIONS.	ADA/ABA 702	
11.10	WORK SURFACES	5% OF PERMANENT WORK SURFACES NEED TO BE ACCESSIBLE PER 902 <i>(I. E., COUNTERS IN ROOM 4)</i> - EXCEPTIONS : SALES COUNTERS AND SERVICE COUNTERS		
11.10	SALES AND SERVICE COUNTERS	PROVIDE AT LEAST ONE ACCESSIBLE COUNTER AREA : FRONT APPROACH : 30" WIDE X 36" MAX. HIGH COUNTER SIDE APPROACH : 36" LONG X 36" MAX. HIGH COUNTER	ADA/ABA 904.4.1 & 904.4.2	
11.11	CHECK-WRITING COUNTERS	WHERE PROVIDED, CHECK WRITING COUNTERS MUST FOLLOW SECTION 902.3 AND BE 28"-34" IN HEIGHT	ADA/ABA 904.3.3	
11.12	CHECK-OUT AISLES, QUEUES	ALL SHALL COMPLY WITH 904 - (ON AN ACCESSIBLE ROUTE)	ADA/ABA F227.1	
		$\begin{array}{rrrr} \mbox{ACCESSIBLE CHECK-OUT AISLES:} \\ \mbox{SHALL COMPLY WITH 904.3 (36" AISLE)} \\ \mbox{IF SALES AREA < 5,000 S.F., PROVIDE 1 MIN. AISLE} \\ \mbox{IF SALES AREA > 5,000 S.F, PROVIDE AISLES AS SUCH :} \\ \hline \mbox{TOTAL NO. CHECK-OUT AISLES} & \mbox{MIN. ACCESSIBLE AISLES} \\ \hline \mbox{1 - 4 } & 1 \\ \mbox{5 - 8 } & 2 \\ \mbox{9 - 15 } & 3 \\ \mbox{16 and Over} & \mbox{3 + 20\% OF ADD'L AISLES} \\ \end{array}$	ADA/ABA F227.2	
12	INTERIOR ENVIRONMENT	USE IBC CHAPTER 12. (AND MINOR REVISIONS, NOTED, THAT ARE NOT A PART OF THIS CODE ANALYSIS)	UFC 1-200-01 2-12	17
		MUCH OF IBC CHAPTER 12 REQUIREMENTS CONCERN RESIDENTIAL REQUIREMENTS AS WELL AS BASIC MECHANICAL VENTILATION AND LIGHTING OF SPACES - WHICH IS NOT PART OF THIS CODE ANALYSIS AND IS PART OF THE MECHANICAL CODE ANALYSIS. REMAINING REQUIREMENTS ARE AS FOLLOWS :		



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
12.1	FLOORS	TOILET ROOM FLOORS SHALL HAVE A SMOOTH, HARD, NON- ABSORBENT SURFACE THAT EXTENDS WITH A 4" MINIMUM HIGH WALL BASE	IBC 1209.2.1	325
12.2	WALLS	WALLS WITHIN 2 FEET OF URINALS AND TOILETS SHALL HAVE A SMOOTH, HARD, NON-ABSORBENT SURFACE TO A HEIGHT OF 4 FEET ABOVE THE FLOOR AND WALL MATERIALS SHALL BE OF A MATERIAL THAT IS NOT ADVERSELY AFFECTED BY MOISTURE	IBC 1209.2.2	325
12.3	PRIVACY	TOILET COMPARTMENTS ARE REQUIRED FOR EACH TOILET (EXCEPT IN A SINGLE TOILET ROOM WITH LOCKABLE DOOR)	IBC 1209.3.1	326
		URINAL SCREENS REQUIRED PER IBC 1209.3.2	IBC 1209.3.2	326
13	ENERGY	USE UFC 3-400-01 IN LIEU OF IBC CHAPTER 13	UFC 1-200-01 2-13	18
	EFFICIENCY	NOT PART OF THIS CODE REVIEW		
14	EXTERIOR WALLS	USE IBC CHAPTER 14. ALSO, UFC 3-101-01 (ARCHITECTURE) NOTES SOME PERTINENT REQUIREMENTS	UFC 1-200-01 2-14	18
		MOST CHAPTER 14 REQUIREMENTS ARTICULATE REQUIREMENTS FOR GOOD AND ACCEPTABLE PRACTICES FOR EXTERIOR WALLS - WHICH ARE TYPICALLY SPECIFIED AND DETAILED WITH EVERY DECA FACILITY. THEREFORE, REQUIREMENTS OF THIS SECTION ARE NOT REPRODUCED AS PART OF THIS ANALYSIS.		
15	ROOFING: ROOF ASSEMBLIES AND ROOFTOP	USE IBC CHAPTER 15 AND UFC 3-101-01 (ARCHITECTURE) AND UFC 3-101-01 (ROOFING)	UFC 1-200-01 2-15	19
	STRUCTURES	UFC 3-101-01 (ARCHITECTURE) NOTES LITTLE REGARDING ROOFS. IBC CHAPTER 15 NOTES MANY REQUIREMENTS FOR GOOD AND ACCEPTABLE PRACTICES - WHICH ARE TYPICALLY SPECIFIED AND DETAILED WITH EVERY DECA FACILITY. THEREFORE, MANY IBC ROOFING REQUIREMENTS ARE NOT REPRODUCED AS PART OF THIS ANALYSIS WITH THE FOLLOWING EXCEPTIONS:		



CODE ANALYZED :

DEFENSE COMMISSARY AGENCY DIRECTORATE OF PERFORMANCE AND POLICY FACILITIES PROGRAMMING AND PLANNING DIVISION Fort Lee, Virginia FACILITIES CONSTRUCTION AND SUSTAINMENT DIVISION Lackland AFB, Texas

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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
15.1	LOW-SLOPE ROOFING	BUILT-UP, MODIFIED-BITUMEN, AND SINGLE-PLY ROOF SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH FM4474 UL 580 OR UL 1879	IBC 1504.3.1	342
		ADDITIONALLY, UFC 3-600-01 15-1 REQUIRES ROOF COVERINGS TO BE NRTL LISTED AND REQUIRES USE OF CLASS A OR B ROOFS (CLASS C ALLOWABLE ONLY FOR BUILDING UNDER 8,000 S.F.)		
		DECA COMMISSARY'S STANDARD LOW-SLOPE ROOFING CRITERIA SPECIFIES A FULLY ADHERED, SINGLE-PLY MEMBRANE ROOFING. MOST APPLICABLE CHAPTER 15 CODE REQUIREMENTS WOULD BE ADDRESSED BY TYPICAL DECA COMMISSARY ROOF SPECIFICATIONS		
		UFC 3-110-03 (ROOFING) NOTES ADDITIONAL REQUIREMENTS FOR LOW-SLOPE ROOFING	UFC 3-110-03 CHAPTER 2	9
		DECA COMMISSARY'S STANDARD LOW-SLOPE ROOFING CRITERIA SPECIFIES A FULLY ADHERED, SINGLE-PLY MEMBRANE ROOFING WHICH IS COMPLIANT WITH THIS SECTION.		
		UFC 3-110-03 (ROOFING) NOTES "MINIMUM ROOF SLOPE FOR CONSTRUCTION OF NEW BUILDINGS IS 1/2 : 12 TO ACHIEVE POSITIVE DRAINAGE"	UFC 3-110-03 2- 3.1	9
		UFC 3-110-03 (ROOFING) NOTES SLOPE OF TAPERED INSULATION CRICKETS AND SADDLES SHALL BE TWICE THAT OF THE MAIN SLOPE.	UFC 3-110-03 2- 5.2.7	14
15.2	HIGH-SLOPE ROOFING	ROOF SYSTEMS SHALL BE TESTED IN ACCORDANCE WITH FM4474, UL 580, OR ASTM E 1592	IBC 1504.3.2	342
		UFC 3-110-03 (ROOFING) NOTES ADDITIONAL REQUIREMENTS FOR STANDING SEAM ROOFING	UFC 3-110-03 CHAPTER 5	33
15.3	METAL FASCIAS AND COPINGS	LOW-SLOPE ROOF SYSTEM METAL EDGE SECUREMENT , EXCEPT GUTTERS, SHALL BE ANSI/SPRI ES-1, -03 TESTED	IBC 1504.5	342
		FIELD-FORMED FASCIAS AND COPINGS WOULD BE ACCEPTABLE BUT RECEIVING ACCEPTABLE ANSI/SPRI TESTING DATA HAS BEEN PROBLEMATIC TO THIS POINT. DECA COMMISSARY CRITERIA NOW SPECIFIES PREMANUFACTURED FASCIAS AND COPINGS THAT ARE ANSI/SPRI TESTED.		
15.4	ROOF COVERINGS	TYPES AND REQUIREMENTS :		
		ASPHALT SHINGLE ROOF - FOLLOW 1507.2 CLAY TILE ROOFING - FOLLOW 1507.3 METAL PANEL ROOFING - FOLLOW 1507.4 - 3:12 MINIMUM SLOPE UNLESS PROVIDE LAPS AND SEAM	IBC 1507.2 IBC 1507.3 IBC 1507.4 IBC 1507.4.2	345 347 348 348

SEALANT, THEN OK DOWN TO 1/2:12



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
15.5	ROOF INSULATION	THERMAL INSULATION PERMITTED PROVIDED IT IS COVERED WITH AN APPROVED ROOF COVERING AND PASSES THE TESTS OF NFPA 276 OR UL 1256 WHEN TESTED AS AN ASSEMBLY.	IBC 1508.1	356
		POLYISOCYANURATE ROOF BOARD INSULATION SHALL MEET ASTM C 1289, TYPE I OR II	IBC TABLE 1508.2	356
15.6	REROOFING	SHALL COMPLY WITH SECTION 1511 - FOR NEW ROOFING EXCEPT THAT ROOF SLOPES TYPICALLY FOLLOW EXISTING.	IBC 1511.1	356
16	STRUCTURAL DESIGN	USE IBC CHAPTER 16 AS MODIFIED BY UFC 3-301-01. USE IBC CHAPTER 16 AND UFC 3-310-04 FOR SEISMIC DESIGN OF BUILDINGS. IBC CHAPTER 16 DESCRIBES MINIMUM STRUCTURAL LOADING, AS WELL AS LOAD COMBINATIONS AND PERMITTED DESIGN METHODOLOGIES.	UFC 1-200-01 2-16	19
	FALL PROTECTION	FALL PROTECTION TO BE DESIGNED PER UFC 3-101-01. ANCHORAGE MUST MEET IBC 1607.10.4 AS MODIFIED BY UFC 3-301-01.	UFC 1-200-01 2-16	19
17	STRUCTURAL TESTS AND INSPECTIONS	USE IBC CHAPTER 17 AS MODIFIED BY UFC 3-220-01, UFC 3- 301-01, AND UFC 3-600-01. USE DEFINITIONS FROM UFC 1- 200-01 IN LIEU OF IBC/ASCE 7 FOR "AHJ" AND "BUILDING OFFICIAL"	UFC 1-200-01 2-17	19
		REPLACE IBC 2018 1704.2 - THE CONTRACTOR MUST EMPLOY ONE OR MORE APPROVED AGENCIES TO PERFORM INSPECTIONS DURING CONSTRUCTION ON THE TYPES OF WORK LISTED UNDER SECTION 1705. THESE INSPECTIONS ARE IN ADDITION TO THE INSPECTIONS DEFINED IN SECTION 110. THE INSPECTING AGENCY MUST PROVIDE REPORTS OF THE SPECIAL INSPECTIONS DIRECTLY TO THE GOVERNMENT.	UFC 1-200-01 2-17	20



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UFC 1-200-01, 8 OCTOBER 2019

NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
18	SOILS AND FOUNDATIONS	USE IBC CHAPTER 18, AS MODIFIED BY UFC 3-201-01, UFC 3- 220-01, AND UFC 3-301-01	UFC 1-200-01 2-18	20
		ADD TO IBC 1804.4 - ENSURE THAT THE GRADING AND ASSOCIATED STORM WATER RUNOFF DO NOT ADVERSELY AFFECT SURROUNDING SITES. ESTABLISH FINISHED FLOOR ELEVATIONS 6" (150MM) MINIMUM ABOVE FINSHED GRADE AT THE PERIMETER OF THE BUILDING AND PROVIDE SITE GRADING PER UFC 3-201-01. COMPLY WITH UFC 3-600-01 FOR DESIGN OF ENTRANCES AND EXITS FROM BUILDINGS.		
		DELETE IBC 1804.4 EXCEPTION 1.		
		REPLACE IBC 1804.4 EXCEPTION 2: IMPERVIOUS SURFACES ARE PERMITTED TO SLOPE LESS THAN 2% WHERE SURFACE IS A DOOR LANDING OR RAMP REQUIRED TO COMPLY WITH UFC 3-600-01.		
19	CONCRETE	USE IBC CHAPTER 19 AS MODIFIED BY UFC 1-200-02 AND UFC 3-301-01.	UFC 1-200-01 2-19	21
20	ALUMINUM	USE IBC CHAPTER 20, EXCEPT FOR HVAC SYSTEMS. USE UFC 3-410-01.	UFC 1-200-01 2-20	21
		THIS SECTION MAINLY ADDRESSES ALUMINUM FOR STRUCTURAL USE .		
21	MASONRY	USE IBC CHAPTER 21 AS MODIFIED BY UFC 3-301-01	UFC 1-200-01 2-21	21
21.1	MATERIALS	LOAD-BEARING CMU SHALL CONFORM TO ASTM C90 -HOLLOW, CLAY FACE BRICK SHALL CONFORM TO ASTM C652 -SOLID, CLAY FACE BRICK SHALL CONFORM TO ASTM C216 LOAD-BEARING MASONRY MOVED TO CHAPTER 18	IBC 1807.1.6.3(5) IBC 1807.1.6.3(6)	435 435
		-TYPICAL MORTAR FOR USE IN MASONRY CONSTRUCTION SHALL CONFORM TO ASTM C 270.	IBC 2103.2	467
22	STEEL	USE IBC CHAPTER 22 AS MODIFIED BY UFC 3-301-01	UFC 1-200-01 2-22	21
23	WOOD	USE IBC CHAPTER 23, AS MODIFIED BY UFC 3-301-01.	UFC 1-200-01 2-23	21
		THIS SECTION MAINLY ADDRESSES WOOD FOR STRUCTURAL USE WHICH IS NOT TYPICAL FOR DECA COMMISSARIES WHICH ARE NON-COMBUSTIBLE CONSTRUCTION.		
		COMPOSITE WOOD (eg PLYWOOD) MUST BE MOISTURE RESISTANT OR EXTERIOR GI UE GRADE	UFC 1-200-01 2- 23.1	21


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UFC 1-200-01, 8 OCTOBER 2019

NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		FIRE-RESISTANT-TREATED PLYWOOD SHALL NOT BE USED IN ANY PART OF THE ROOF SYSTEM	UFC 1-200-01 2- 23.2.1	21
		FIRE-RETARDANT-TREATED WOOD SHALL HAVE A FLAME SPREAD OF 25 OR LESS PER ASTM E 84 OR UL 723 AND SHALL BE IDENTIFIED PER SECTION 2303.2.4	IBC 2303.2	475
24	GLASS AND GLAZING	USE IBC CHAPTER 24 AS MODIFIED BY UFC 4-010-01	UFC 1-200-01 2-24	21
24.1	SAFETY GLAZING	THE FOLLOWING GLAZED AREAS SHALL BE CONSIDERED HAZARDOUS LOCATIONS REQUIRING SAFETY GLAZING MATERIALS:	IBC 2406.4	558
		 GLAZING IN ALL FIXED AND OPERABLE PANELS OF DOORS WINDOW GLAZING ADJACENT TO DOORS: WITHIN 24" HORIZONTAL OF A DOOR JAMB AND WHERE BOTTOM OF THE PANE IS LESS THAN 60" ABOVE FLOOR. (CURTAIN WALLS AND STOREFRONT ADJACENT TO DOORS). WINDOW GLAZING IN A PANE > 9 SQFT <u>AND</u> EXPOSED BOTTOM EDGE < 18 " AFF <u>AND</u> EXPOSED TOP EDGE > 36" <u>AND</u> WITHIN 36" HORIZONTALLY TO A WALKING SURFACE. GLAZING IN GUARDS AND RAILINGS GLAZING LESS THAN 60" ABOVE WALKING SURFACE IN SHOWER AND TOILET ROOMS. (NOTE MIRROR EXCEPTION 2406.1). GLAZING ADJACENT TO STAIRWAYS AND RAMPS GLAZING ADJACENT TO BOTTOM STAIRWAY LANDING FIRE DEPARTMENT ACCESS PANELS EXCEPTIONS TO THESE LOCATIONS ARE NOTED IN THE TEXT OF THE IBC. THE FIRST 2 ARE TYPICAL SAFETY GLAZING LOCATIONS IN DECA COMMISSARY FACILITIES. THE 3rd LOCATION CAN BE ELIMINATED BY SIMPLY ADDING A HORIZONTAL RAIL ON THE ACCESS SIDE 34" AND 38"AFF CAPABLE OF WITHSTANDING 50 POUNDS PER LINEAR FOOT WITHOUT CONTACTING THE GLAZING AND HAS A CROSS SECTIONAL HEIGHT OF 1 1/2" MINIMUM - WHICH IS TYPICAL IN MOST DECA COMMISSARY CURTAIN WALL & STOREFRONT DESIGNS. 		
		SAFETY GLAZING SHALL PASS THE IMPACT TEST REQUIREMENTS OF SECTION 2406.2	IBC 2406.1.1	558
		GLAZING SHALL BE TESTED IN ACCORDANCE WITH CPSC 16 CFR PART 1201 OR ANSI Z97.1 AS APPROPRIATE, AND SHALL	IBC 2406.2	558
		GENERALLY ALL GLASS IS CATEGORY II/A EXCEPT : - WINDOWS LESS THAN 9 SQ. FT IN AREA THAT ARE NOT WITHIN 24" HORIZ. OF A DOOR JAMB. - WINDOWS IN DOORS LESS THAN 9 SQ. FT OR WHICH DO NOT LET PASSAGE OF A 3" DIAMETER SPHERE.	IBC TABLE 2406.2 (1) OR 2406.2 (2)	559



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UFC 1-200-01, 8 OCTOBER 2019

SUMMARY OF REQUIREMENTS REFERENCE NO. ITEM PAGE SAFETY GLAZING MUST BE IDENTIFIED BY A IBC 2406.3 558 MANUFACTURER'S MARK PER 2406.2, PLEASE NOTE EXCEPTIONS AND IBC 2406.3.1 CURRENT UFC BLAST REQUIREMENTS REQUIRE LAMINATED GLASS FOR MANY AREAS WHICH WILL TYPICALLY SATISFY SAFETY GLAZING REQUIREMENTS WALL-MOUNTED MIRRORS ARE EXEMPT FROM SAFETY IBC 2406.1 558 GLAZING 25 **GYPSUM BOARD USE IBC CHAPTER 25** UFC 1-200-01 2-25 22 AND PLASTER - MOST CHAPTER 25 REQUIREMENTS ARTICULATE ASTM STANDARDS AND OTHER REQUIREMENTS FOR GOOD AND ACCEPTABLE PRACTICES - WHICH ARE TYPICALLY SPECIFIED AND DETAILED WITH EVERY DECA FACILITY, AND THEREFORE NOT PART OF THIS CODE ANALYSIS WITH THE FOLLOWING EXCEPTIONS: USE IBC 1210.2 FOR WALLS AT PUBLIC TOILETS AND IBC 2509.1 566 SHOWERS DO NOT USE MOISTURE RESISTANT GWB IN AREAS WHERE IBC 2509.3 566 THERE WILL BE DIRECT EXPOSURE TO WATER OR IN AREAS WITH HIGH HUMIDITY 26 PLASTIC USE IBC CHAPTER 26 AS MODIFIED BY UFC 3-600-01 UFC 1-200-01 2-26 22 - MOST CHAPTER 26 REQUIREMENTS ARTICULATE **REQUIREMENTS OF PRODUCTS WHICH ARE NOT FOUND IN** TYPICAL DECA COMMISSARY AND IS THEREFORE NOT PART OF THIS CODE ANALYSIS, WITH THE FOLLOWING EXCEPTIONS: NOTE : THIS IBC SECTION MATCHES ENCOMPASSES THE RIGID 26.1 FOAM PLASTIC INSULATION TYPICALLY USED WITHIN COMMISSARY ROOFING. INSULATION MASONRY CAVITY WALLS, AS WELL AS THE INSULATION MATERIAL WITHIN COOLER AND FREEZER WALL PANELS. PACKAGING CONTAINING FOAM PLASTIC INSULATION IBC 2603.2 569 DELIVERED TO THE JOB SITE SHALL MEET 2603.2 FOR LABELING REQUIREMENTS TO DETERMINE CODE COMPLIANCE FLAME SPREAD AND SMOKE DEVELOPMENT RATINGS NOTED IN IBC 2603.3 569 SECTION 2606.3 ARE OVERALL MAX. REQUIREMENTS - SPECIFIC, MORE STRINGENT, REQUIREMENTS ARE COVERED IN PREVIOUS CODE SECTIONS FOAM PLASTIC INSULATION SHALL BE SEPARATED FROM IBC 2603.4 569 THE INTERIOR OF THE BUILDING BY A "THERMAL BARRIER" WHICH IS MINIMUM OF 1/2" GWB WHEN INSTALLED IN COMPLIANCE WITH IBC 2603.4



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		EXCEPTIONS: - FOAM PLASTIC WITHIN A MASONRY CAVITY WALL WHERE THERE IS AT LEAST A 1" MASONRY COVERAGE SEPARATING THE INSULATION FROM THE BUILDINGS INTERIOR.	IBC 2603.4.1.1	569
		 FOAM PLASTIC COOLER / FREEZER WALLS OF 10" THICKNESS OR LESS THAT MEETS ALL THE FOLLOWING : 1. HAVE A FLAME SPREAD OF 25 OR LESS AND A SMOKE- DEVELOPED INDEX OF NOT MORE THAN 450 WHERE TESTED IN A MINIMUM 4" THICKNESS. 2. HAVE FLASH IGNITION AND SELF-IGNITION TEMPS. OF NOT LESS THAN 600 AND 800 DEGREES F., RESPECTIVELY. 3. HAVE A COVERING OF NOT LESS THAN .032-INCH ALUMINUM OR CORROSION-RESISTANT STEEL HAVING A BASE METAL THICKNESS OF NOT LESS THAN 0.0160 INCHES. 4. A SPRINKLER SYSTEM SHALL BE INSTALLED WITHIN THE COOLER OR FREEZER AS WELL AS THE AREA OF THE BUILDING IN WHICH IT IS LOCATED SHALL BE SPRINKLERED. 	IBC 2603.4.1.2	570
		TYPICAL COMMISSARY COOLER AND FREEZER ROOMS WOULD FALL UNDER THIS EXCEPTION- SO THE ADDITIONAL, SIMILAR EXCEPTIONS ARE NOT NOTED HEREIN		
		- FOAM PLASTIC THAT IS PART OF A CLASS A, B, OR C ROOF- COVERING ASSEMBLY (NOTE THAT A CLASS "C" ROOF COVERING IS NOT ALLOWED)	IBC 2603.4.1.5	570
		- METAL-FACED, NON-FIRE RATED DOORS WHERE FOAM PLASTIC IS NOT MORE THAN 75/450	IBC 2603.4.1.7	570
26.2	FOAM PLASTIC FINISH AND TRIM	FOAM PLASTIC INSTALLED AS INTERIOR FINISH OR TRIM MUST MEET SECTIONS 2604.2.1 - 4 WHICH INCLUDES DENSITY, THICKNESS, AREA LIMITATION AND FLAME SPREAD.	IBC 2604.2	575



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NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
27	ELECTRICAL	USE IBC CHAPTER 27, WHICH REFERENCES NFPA 70 NATIONAL ELECTRICAL CODE, AS MODIFIED BY UFC 3-501-01 AND THE FOLLOWING: 1. USE UFC 3-520-01 FOR INTERIOR ELECTRICAL SYSTEMS CRITERIA. 2. USE UFC 3-530-01 FOR INTERIOR AND EXTERIOR LIGHTING AND CONTROLS CRITERIA. 3. USE UFC 3-540-01 FOR ENGINE DRIVEN GENERATOR CRITERIA 4. USE UFC 3-550-01 FOR EXTERIOR POWER DISTRIBUTION SYSTEMS CRITERIA. 5. USE UFC 3-560-01 FOR ELECTRICAL SAFETY AND ELECTRICAL 0 & M CRITERIA. 6. USE UFC 3-580-01 FOR BUILDING TELECOMMUNICATIONS CRITERIA. 7. USE 3-600-01 FOR FIRE PROTECTION CRITERIA 8. USE UFC 4-021-01 FOR MASS NOTIFICATION SYSTEMS CRITERIA. 9. USE NFPA 1 FIRE CODE IN LIEU OF IFC WHEN REFERENCED BY IBC 2702	UFC 1-200-01 2-27	22
28	MECHANICAL SYSTEMS	USE IBC CHAPTER 28, WHICH REFERENCES THE IMC, AS MODIFIED BY UFC 3-401-01 FOR MECHANICAL CRITERIA. USE 3-600-01 FOR FIRE PROTECTION FEATURES FOR MECHANICAL SYSTEMS. USE NATIONAL FUEL GAS CODE (NFPA 54, ANSI Z223.1), IN LIEU OF THE INTERNATIONAL FUEL GAS CODE, FOR THE DESIGN AND INSTALLATION OF FUEL GAS PIPING SYSTEMS.	UFC 1-200-01 2-28	23
29	PLUMBING SYSTEMS	USE IBC CHAPTER 29 AS MODIFIED BY UFC 3-420-01 IBC CHAPTER 29 IS A COPY FROM IPC TABLE 403.1 WHICH IS DIRECTLY REFERENCED BY UFC MODIFICATIONS	UFC 1-200-01 2-29	23
29.1	MINIMUM NUMBER	NUMBER OF WATER CLOSET, LAVATORIES AND DRINKING FOUNTAIN (SEE BELOW FOR SERVICE SINKS) FIXTURES SHALL BE BASED ON OCCUPANT LOAD FOR EACH OCCUPANCY TYPE. OCCUPANT LOAD SHALL BE DETERMINED FROM NFPA 101 TABLE 7.3.1.2 (SECTION 10.4 OF THIS ANALYSIS). FOR MULTIPLE OCCUPANCIES, CALCULATE MIN. FIXTURE COUNTS FOR EACH OCCUPANCY AND THEN ADD COUNTS TOGETHER TO ACHIEVE ONE TOTAL FIXTURE COUNT. (ROUND THIS NUMBER UP TO A WHOLE NUMBER IF FRACTIONAL). IBC COMMENTARY, SAMPLE PROBLEM 1 EXPLAINS A SAMPLE OF THIS CONDITION. UFC 3-420-01 NOTES SIGNIFICANT REVISIONS, IN PLUMBING FIXTURE COUNTS, FROM THE IBC/IPC TABLES. FURTHER, ARMY REQUIREMENTS DIFFER FROM USE GROUP REQUIREMENTS BY NOTING "EMPLOYEES" AS A BASIS FOR FIXTURE COUNT.	IBC 2902.1.1	587



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UFC 1-200-01, 8 OCTOBER 2019

SUMMARY OF REQUIREMENTS REFERENCE NO. ITEM PAGE UFC 3-420-01 APPENDIX "A" NOTES SPECIFIC FIXTURE APPEND. A A-4 COUNT REQUIREMENTS FOR BUSINESS, FACTORY AND CH. 4, D & E WAREHOUSE (STORAGE) USE GROUPS IN NAVY/AIR FORCE FACILITIES AND NOTES SPECIFIC FIXTURE COUNT REQUIREMENTS FOR "EMPLOYEES" IN ARMY FACILITIES. DESIGNER SHOULD NOTE THAT NEITHER MERCANTILE OCCUPANTS (WHICH ARE NOT EMPLOYEES) NOR MERCANTILE USE GROUP IS LISTED AS PART OF EITHER THE PREVIOUSLY NOTED SPECIFIC ARMY/NAVY/AIR FORCE REQUIREMENTS - SO MINIMUM PLUMBING FIXTURES. FOR MERCANTILE AREAS. SHALL BE BASED ONLY ON IBC/IPC CODES WHICH USE NFPA OCCUPANT LOADS. TOTAL MERCANTILE OCCUPANT LOAD SHALL BE APPLIED TO TYPICAL IBC/IPC REQUIREMENTS. SEE IBC/IPC TABLE BELOW FOR MERCANTILE USE AREAS. TO DETERMINE OCCUPANT LOAD OF EACH SEX. THE TOTAL IBC 2902.1.1 587 (MERCANTILE) OCCUPANT LOAD (FROM NFPA) SHALL BE DIVIDED IN HALF - AND THEN APPLIED TO TABLE - FOR EACH SEX. (USE THE FULL OCCUPANT LOAD FOR DRINKING FOUNTAINS). 29.1A FIXTURE COUNTS IBC TABLE 2902.1 587 FOR MERCANTILE WATER CLOSET LAVATORY DRINKING FOUNTAIN (IPC TABLE 403.1) AREAS / OCCUPANT / OCCUPANT / OCCUPANT MALE & FEMALE MALE & FEMALE 1 / 500 1 / 750 1/1.000 - SERVICE SINKS: ONE PER FLOOR ONE PER FLOOR IS THE MINIMUM REQUIREMENT (WHICH IS ALSO THE REQUIREMENT NOTED IN ADDITIONAL NAVY/AIR FORCE REQUIREMENTS). HOWEVER TYPICAL DECA FACILITIES PROVIDE MORE THAN THIS. DESIGNER SHOULD CALCULATE FIXTURE COUNTS (FOR MERCANTILE AREAS) FROM ABOVE. FRACTIONAL COUNTS DO NOT NEED TO BE ROUNDED YET AS THIS IS ONLY A SUBTOTAL FIXTURE COUNT FOR MERCANTILE AREAS WHICH WILL BE ADDED TO THE SUBTOTAL FIXTURE COUNT FOR THE BUSINESS/FACTORY/STORAGE (EMPLOYEE) AREAS BELOW. 29.1B FIXTURE COUNTS UFC 3-420-01 NOTES FIXTURE COUNT REQUIREMENTS FOR FOR NON-SPECIFIC USE AREAS - FOR NAVY / AIR FORCE FACILITIES AND FOR ARMY FACILITIES MERCANTILE AREAS FOR BUSINESS (OFFICE) ; FACTORY / WAREHOUSES APPEND. A NAVY / AIR FORCE A-4 FACILITIES PROVIDE FIXTURES (BOTH MALE AND FEMALE) AT THE CH. 4, D FOLLOWING RATES:



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		THE AREAS NOTED ABOVE ARE EFFECTIVELY ALL THE NON- MERCANTILE AREAS. USE THE MAXIMUM OCCUPANT LOAD (FROM NFPA) FOR THE BUSINESS, FACTORY, AND STORAGE (WAREHOUSE) USES AND APPLY TO THE FIXTURE REQUIREMENTS AS NOTED BELOW. THE REQUIREMENT ABOVE NOTES THAT THE RESULTANT FIXTURE COUNTS WILL BE FOR BOTH MALES AND FEMALES (NOT APPLICABLE FOR DRINKING FOUNTAINS AND SERVICE SINKS)		
		- <u>WATER CLOSETS</u> : 1 FIXTURE PER 20 OCCUPANTS UP TO 100 OCC; THEN 1 FIXTURE PER 40 OCCUPANTS. - <u>LAVATORIES</u> : 1 FIXTURE PER 20 OCCUPANTS UP TO 100 OCC; THEN 1 FIXTURE PER 45 OCCUPANTS. - <u>DRINKING FOUNTAINS</u> : 1 FIXTURE PER 75 OCCUPANTS.	FOOTNOTE J	A-4
		- <u>URINALS</u> : URINALS MAY BE SUBSTITUTED FOR NO MORE THAN ONE-THIRD OF THE WATER CLOSETS REQUIRED, ONE FOR ONE.	FOOTNOTE H	A-4
		DESIGNER SHOULD CALCULATE FIXTURE COUNTS (FOR THESE NON-MERCANTILE AREAS) FROM ABOVE AND ADD TO THE FIXTURE COUNTS FROM THE MERCANTILE AREAS. FRACTIONAL NUMBERS SHALL BE ROUNDED UP TO NEXT WHOLE NUMBER, THIS IS THE TOTAL FIXTURE COUNT.		
	ARMY FACILITIES	UFC 3-420-01 NOTES SPECIFIC FIXTURE COUNT REQUIREMENTS FOR "EMPLOYEES" - FOR ARMY FACILITIES		
		FIXTURE ALLOWANCES. TOILET FACILITIES WILL BE PROVIDED FOR <u>EMPLOYEES</u> AS FOLLOWS:	APPEND. A CH. 4, E. 403.1	A-4
		IF THE ACTUAL EMPLOYEE COUNT IS KNOWN, THEN THIS NUMBER MAY BE APPLIED TO THE ARMY FIXTURE REQUIREMENTS BELOW. HOWEVER, THE EMPLOYEE COUNT IS OFTEN NOT KNOWN, DURING THE DESIGN PHASE, SO DESIGNER MAY ASSESS SUBSTITUTING THE ACTUAL EMPLOYEE COUNT WITH THE MAXIMUM OCCUPANCY LOAD OF THE BUSINESS/FACTORY/STORAGE AREAS - AS THESE AREAS ARE BASICALLY THE SAME AS THE EMPLOYEE AREAS. AS SUCH, THE MAXIMUM OCCUPANCY LOAD OF THESE AREAS WOULD ALSO BE THE MAXIMUM EMPLOYEE COUNT (AS EMPLOYEE COUNT CANNOT EXCEED MAX. OCCUPANT LOAD). THE MAXIMUM EMPLOYEE COUNT WILL OBVIOUSLY BE HIGHER THAN THE ACTUAL EMPLOYEE COUNT, SO THE DESIGNER MAY WANT TO ASSES THE LIKELY DIFFERENCE IN FIXTURE COUNTS.		
		WATER CLOSETS IN SEPARATE TOILET ROOMS FOR EACH SEX WILL BE PROVIDED IN ALL PLACES OF EMPLOYMENT ACCORDING TO TABLE 403-1.	APPEND. A CH. 4, E. 403.1.1	A-4
		THE REQUIREMENT ABOVE NOTES THAT THE RESULTANT FIXTURE COUNTS WILL BE FOR BOTH MALES AND FEMALES		



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
		- WATER CLOSETS: 1 FIXTURE UP TO 15 OCCUPANTS. 2 FIXTURES FROM 16 - 35 OCCUPANTS. 3 FIXTURES FROM 36 - 55 OCCUPANTS 4 FIXTURES FROM 56 - 80 OCCUPANTS 5 FIXTURES FROM 81 - 110 OCCUPANTS 6 FIXTURES FROM 81 - 110 OCCUPANTS <u>6 FIXTURES FROM 111-150 OCCUPANTS</u> <u>6 FIXTURES FROM 151 - AND OVER</u> ONE ADDITIONAL FIXTURE FOR EACH ADDITIONAL 40 OCCUPANTS	APPEND. A CH. 4, E. Table 403-1	A-5
		LAVATORIES WILL BE MADE AVAILABLE IN ALL PLACES OF EMPLOYMENT ACCORDING TO THE REQUIREMENTS FOR LAVATORIES AS SPECIFIED IN TABLE 403-2.	APPEND. A CH. 4, E. 403.1.2	A-5
		 - LAVATORIES: 1 FIXTURE UP TO 15 OCCUPANTS. 2 FIXTURES FROM 16 - 35 OCCUPANTS. 3 FIXTURES FROM 36 - 55 OCCUPANTS 4 FIXTURES FROM 56 - 80 OCCUPANTS 5 FIXTURES FROM 81 - 110 OCCUPANTS 6 FIXTURES FROM 111 - 150 ONE ADDITIONAL FIXTURE FROM 151 AND OVER FOR EACH ADDITIONAL 45 OCCUPANTS 	APPEND. A CH. 4, E. Table 403-2	A-5
		- <u>DRINKING FOUNTAINS</u> : 1 FIXTURE PER 75 OCCUPANTS - <u>URINALS</u> : THERE IS NO SPECIFIC REQUIREMENT NOTED HERE SO REFER BACK TO IBC/IPC WHICH ALLOWS A 1 FOR 1 REPLACEMENT OF WC'S UP TO 50% TOTAL	APPEND. A CH. 4, E. 403.1.3	A-6
		SECTION 403.3 NOTES TO USE TABLE 403-5 TO DETERMINE MINIMUM FIXTURE COUNTS FOR TOILET FACILITIES IN FACILITIES WITH PERSONS OTHER THAN EMPLOYEES. HOWEVER NO MERCANTILE-TYPE USE (OR EVEN SIMILAR) IS LISTED SO IBC/IPC MERCANTILE REQUIREMENTS WOULD STILL BE USED.	APPEND. A CH. 4, E. Table 403-5	A-7
		DESIGNER SHOULD CALCULATE FIXTURE COUNTS (FOR THESE NON-MERCANTILE AREAS) FROM ABOVE AND ADD TO THE FIXTURE COUNTS FROM THE MERCANTILE AREAS. FRACTIONAL NUMBERS SHALL BE ROUNDED UP TO NEXT WHOLE NUMBER, THIS IS THE TOTAL FIXTURE COUNT.		
29.2	FAMILY OR ASSISTED-USE TOILET ROOMS	FIXTURES (ONE WC AND ONE LAV) WITHIN EACH FAMILY RESTROOM MAY BE USED TO SATISFY ONE WC AND ONE LAV REQUIRED FIXTURE COUNT - FOR EITHER MALE OR FEMALE. WHERE MULTIPLE FAMILY RESTROOMS EXIST, ONE WC AND LAV CAN APPLY FOR EACH ROOM.	IBC 2902.1.2	587



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
30	ELEVATOR AND CONVEYING	USE IBC CHAPTER 30 AS MODIFIED BY UFC 3-490-06 AND UFC 3-600-01.	UFC 1-200-01 2-30	23
	STOTEMO	IF THERE ARE CONFLICTS BETWEEN CHAPTER 30 AND UFC 3-600-01, UFC 3-600-01 SHALL TAKE PRECEDENCE.		
30.1	GENERAL REQUIREMENTS	PASSENGER ELEVATORS SHALL CONFORM TO ASME A17.1/CSA B44	IBC 3001.3	591
		EMERGENCY 2-WAY COMMUNICATION - A SYSTEM THAT IS ACCESSIBLE TO THE DEAF, HARD OF HEARING, AND SPEECH IMPAIRED MUST BE PROVIDED THAT ALSO INCLUDES A VOICE-ONLY OPTION FOR HEARING INDIVIDUALS.	IBC 3001.2	591
		PASSENGER ELEVATORS, INCLUDING "FREIGHT" ELEVATORS THAT ALLOW PASSENGERS TO RIDE, AND LOCATED ON AN ACCESSIBLE ROUTE SHALL BE ACCESSIBLE AND COMPLY WITH CHAPTER 30	IBC 1109.7	316
		ACCESSIBLE ELEVATORS SHALL CONFORM TO SECTION 407 AND ASME A17.1	ABA 407.1	
		ABA SECTION 407 LISTS EXTENSIVE REQUIREMENTS FOR ELEVATOR SIZE, SIGNALING, SIGNAGE, AND OPERATIONS. DESIGNERS SHOULD SEEK ADA AND ASME COMPLIANCE BY THE ELEVATOR MANUFACTURER.		
30.2	FIRE-RATING	WHERE HOISTWAY FIRE-RATING IS REQUIRED, HOISTWAY ENCLOSURE SHALL BE A SHAFT ENCLOSURE AND SHALL FOLLOW REQ'S OF IBC CHAPTER 7 SEE SECTION 7 OF THIS ANALYSIS ABOVE FOR ADDITIONAL INFORMATION	IBC 3002.1	591
30.4	ELEVATOR AND STAIRS	AN ELEVATOR CANNOT BE IN THE SAME ENCLOSURE AS A STAIR, IF EITHER IS REQUIRED TO HAVE FIRE-RATED CONSTRUCTION.	IBC 3002.7	592
30.5	SECONDARY POWER	IF STANDBY POWER FOR THE ELEVATORS IS REQUIRED, AND THE BUILDING HAS ONLY ONE ELEVATOR, THE ELEVATOR SHALL AUTOMATICALLY TRANSFER TO STANDBY POWER WITHIN 60 SECONDS AFTER NORMAL POWER FAILURE	IBC 3003.1.2	592
30.6	EMERGENCY OPERATIONS	ELEVATORS SHALL BE EQUIPPED WITH PHASE 1 (EMERGENCY RECALL) AND PHASE II (IN-CAR OPERATION) OPERATIONS IN ACCORDANCE WITH ASME A17.1/CSA B44	IBC 3003.2	592



NO.	ITEM	SUMMARY OF REQUIREMENTS	REFERENCE	PAGE
30.7	MACHINE ROOMS	IF THE HOISTWAY REQUIRES FIRE-RATED CONSTRUCTION,	IBC 3005.4	593
		FIRE RESISTANCE OF THE MACHINE ROOM SHALL BE		05
		EQUAL TO THE RATING OF HOISTWAY. OPENINGS SHALL BE	UFC 3-600-01	35
			4-12.2.1	
		ROOM THE ELEVATOR CONTROLLER IS IN FOR MACHINE		
		AS NOTED IN SECTION 7 OF THIS ANALYSIS, FIRE		
		RESISTANCE RATING FOR ELEVATORS IS GENERALLY 1-		
		HOUR (SEE EXCEPTIONS) WHICH MEANS MACHINE ROOM		
		AND OPENING PROTECTION SHALL BE 1-HOUR RATED.		
		- ELEVATORS CONNECTING 4 OR MORE STORIES SHALL BE		33
		AT LEAST 2-HOUR, 3 OR LESS SHALL BE 1-HOUR.		
		ELEVATORS CONNECTING A FIRST FLOOR TO A MEZZANINE		
		DO NOT REQUIRE A RATING.		
		PROVIDE SPRINKI ERS AT THE TOP OF THE HOISTWAY	UFC 3-600-01 4-	36
		WHEN ELEVATOR MACHINERY IS LOCATED WITHIN THE	12.4.3.1	
		SHAFT.		
31	SPECIAL	USE IBC CHAPTER 31.	UFC 1-200-01 2-31	23
	CONSTRUCTION			
		MOST ITEMS IN CHAPTER 31 DO NOT PERTAIN TO TYPICAL		
		COMMISSARIES SO ARE NOT PART OF THIS ANALYSIS		500
31.1	AWNINGS &	AWNINGS AND CANOPIES SHALL BE DESIGNED TO	IBC 3105.3	586
	CANOPIES	WITHSTAND WIND LOADS AND LIVE LOADS		
		COVERINGS SHALL MEET NFPA 701 OR HAVE A FLAME	IBC 3105.4	586
		SPREAD INDEX OF 25 OR LESS PER ASTM E 84 OR UL 723.		
32	ENCROACHMENT	USE IBC CHAPTER 32. MILITARY CRITERIA TAKES	UFC 1-200-01 2-32	24
	INTO THE PUBLIC PRECEDENCE OVER THE PR	PRECEDENCE OVER THE PROVISIONS IN CHAPTER 32.		
	RIGHT-OF-WAT	LOCAL OR BASE REGULATIONS OFTEN SET OR MODIFY THESE		
		REQUIREMENTS		
33	SAFEGUARDS	USE IBC CHAPTER 33 AND UFC 3-600-01. IF ANY CONFLICT	UFC 1-200-01 2-33	24
	DURING	OCCURS BETWEEN IBC CHAPTER 33 AND UFC 3-600-01, THE		
	CONSTRUCTION	REQUIREMENTS OF UFC 3-600-01 TAKE PRECEDENCE.		
34	EXISITING	USE UFC 1-200-01 CHAPTER 3	UFC 1-200-01 2-33	24
	BUILDINGS			
35	REFERENCE	USE IBC CHAPTER 35, EXCEPT AS MODIFIED BY UFC 1-200-	UFC 1-200-01 2-35	24
	STANDARDS	01 PARAGRAPH 1-6.2		
36	APPENDICES	DO NOT USE IBC APPENDICES	UFC 1-200-01 2-36	24
			51 5 1 200 01 2 00	4 7

Division 01 – General Requirements



1. <u>Summary</u>. Phasing the Work is critical to the success of DeCA construction projects. This is particularly true of ADAL (Additions and Alterations), Sustainment, and R22/HVAC upgrade projects. Projects may also require phasing of the Site Work. Typically, the store shall remain open during construction. Safety of all building occupants and the quality of the shopping experience for patrons is of the utmost importance. Store operations shall be maintained throughout construction, including but not limited to delivery, storage, processing, stocking, and selling of goods. A detailed phasing plan shall be developed during design to help the contractor ensure safety, minimize disruption to patrons with a high-quality shopping experience during the execution of the Work for each construction project. The information below must be taken into account on each project when developing the phasing strategy for that project. The phasing plan for the work should be developed concurrently with the design of the building, and planning should commence during the charrette phase of the project.

2. Include the following in the contract documents:

- A. Detailed phasing plan drawings for the entire project. Phasing plan(s) shall include but not be limited to:
 - 1. Overall phasing plan showing all phases of the Work.
 - 2. Detail phasing plan drawings showing each individual phase in greater detail as needed to fully describe the requirements.
 - 3. General phasing notes directing the Work in regards to phasing (see attached example).
 - 4. Phasing schedule indicating the sequence and interrelation of phases, which phases can occur concurrently, which phases cannot be started until the previous phase(s) are completed, etc.
 - 5. Demolition Plan(s).
 - 6. Site Phasing Plan(s) when required.
 - 7. Phasing Life Safety Plan(s) when required.
 - 8. Phasing details, including but not limited to:
 - A. Temporary partition types.
 - B. Temporary signage.
 - C. Temporary protective structures.
 - D. Temporary fencing.
 - E. Temporary vehicle barriers.
 - F. All other temporary items required for the execution of the Work.
- B. Detailed phasing requirements in the specification, including but not limited to, the following:
 - 1. Contractor's phasing plan.

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- 2. Contractor's construction schedule.
- 3. Completion of work and phase turnover requirements.
- 4. Conditions for proceeding to subsequent phases.
- 5. Indicate to the bidders the time that will be required for DeCA to occupy a new phase prior to commencing work on the subsequent phase(s).
- 6. Utility outage requirements. Power outages typically must occur during non-sales hours and be coordinated with the store management a minimum of two weeks prior to the outage. If planned power outages will exceed 2 hours, temporary generators for the product refrigeration system must be provided.
- 7. Installation and removal of temporary construction barriers.
- 8. Debris removal requirements (from within the store). Debris removal that must travel through the sales area or processing rooms must be during non-sales hours.
- 9. Work hours restrictions and limitations. Discuss with store management what hours the store is occupied by staff at night and weekends. It is desirable to make the store available to the contractor for work performance at all times the store is occupied by government personnel.
- 10. All other phasing related items that require specifications to ensure that the Work is performed safely and as planned.
- 11. Noisy construction and demolition activities such as use of a jack hammer or concrete saw must occur during non-sales hours.
- 12. Dust, odor and vapor generation must be taken into account and measures should be taken to ensure that there is minimal intrusion of dust, odors and vapors into the parts of the store not being worked on.

3. <u>Considerations in the development of the Phasing Plans</u>

- A. Develop the phasing plan(s) to maintain sufficient display space in the Sales Area to meet sales demand to the greatest degree possible.
 - It is highly desirable to maintain all gondola shelving capacity during the performance of the Work. Relocate or supplement with temporary gondola shelving to accommodate phasing. If gondola shelving must be reduced, as a general rule, do not remove more than 2 rows of gondola at a time.
 - 2. When possible, set up a temporary sales area in the warehouse to offset loss of display space during performance of the Work.
 - 3. Temporary facilities may be required as a part of the construction contract see the temporary facilities section below.
 - 4. DeCA personnel typically move the product on and off of the gondola and the display cases.

- 5. The contractor typically moves the gondolas and display cases.
- 6. New gondola is GFGI and the installation must be coordinated with the contractor's Work. Often the new gondola is installed after the entire project is complete, in which case the contractor will move and reinstall the existing gondola at each phase.
- 7. Checkstands are GFGI and the installation must be coordinated with the contractor's Work. Verify if the government's CARTS contractor (not the general contractor performing the work) is required to move the checkstands when the existing checkstands are to be relocated and reused as a part of the project.
- The contractor shall be responsible for the relocation of large equipment items that require hard wired or hard plumbed utility connections. The contractor shall also be responsible to relocate large bulky equipment such as safes and large storage cabinets.
- A. Develop the phasing plan(s) to maintain adequate number of checkouts for store operations at all times.
 - 1. Maintain at least two thirds of the checkout capacity in all phases of the Work.
 - 2. In some instances the new checkouts can be installed before the existing are demolished and removed.
 - 3. In extreme instances, a temporary checkout area can be utilized.
 - Consider incorporating the use of the mobile checkstands if the Work reduces the number of checkstands below acceptable numbers, or if the reduction occurs during the Holiday season (November through December).
 - 5. New checkstands are GFGI and their disconnection, reconnection, and installation must be coordinated with the contractor's Work. Often the new checkstands are installed after the entire project is complete, in which case the contractor may be required to move and reinstall the existing checkstands at each phase in order to accomplish the work. In this case, the GFGI DeCA CARTS contractor will be required to disconnect and connect the existing checkstands to the CARTS system. Verify who is responsible for moving the checkstands, the contractor or the CARTS contractor and indicate on the plans.
- B. Develop the phasing plan(s) to schedule work that affects patron areas and/or the patron parking lot to NOT occur during the holiday season when possible (November and December).
- C. Develop the phasing plan(s) to maintain sufficient storage and prep capacity in the back room to support the sales area.
 - 1. Renovate back room areas in phases to limit the amount of area lost during any one phase to the degree that is possible and viable.
 - 2. Utilize areas that are still operational to temporarily house functions whose areas are being renovated.
 - 3. Utilize temporary facilities when required (see temporary facilities section below).
 - 4. In multi-room meat processing and produce areas, renovate one room at a time so that displaced functions can occur in the areas not under construction.

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- 5. In extreme situations, check to see if some of the functions can be performed offsite or if local Vendor support is available and can be utilized during construction (for example baked goods can be brought in to the store by a local bakery during renovation of the deli-bakery area).
- 6. It may be possible to increase the number of deliveries per week during certain phases of the Work that reduce storage capacity.
- 7. When possible and applicable, phase the project to construct new storage and/or processing areas prior to work in the existing storage and/or processing areas whenever possible so that the new area is fully functional prior to demolishing the existing area it replaces.
- D. Develop the phasing plan(s) to maintain vehicular access to the store and service yard.
 - 1. Phase the work in the parking lot and access roadways to minimize disruptions to patron access to the Commissary.
 - 2. Maintain adequate parking for the store during the performance of the Work.
 - 3. Provide temporary traffic signage as required to ensure safe and efficient flow of motorists and pedestrians in the parking lot.
 - 4. Ensure that emergency response vehicles can access the site during all phases of the Work.
 - 5. Maintain two means of ingress and egress into the site at all times during the Work to reduce the chance of access being blocked by an accident.
 - 6. Engage a traffic consultant to develop a traffic plan for the phases of the patron parking lot when necessary.
- E. Develop the phasing plan(s) to maintain utility services to the Commissary:
 - 1. Construct new utilities prior to removal of existing.
 - 2. Minimize utility outages and coordinate all outages with store director two or more weeks in advance.
 - Provide temporary service prior to removing and replacing utility service when required for outages whose duration will affect store operations and/or the safe storage of refrigerated and/or frozen product.
- F. Develop phasing plans to best accommodate the Work to the building's engineering systems and major components. When applicable, take the following items into consideration when developing the phasing plan:
 - 1. Consider the sequence required to demolish, remove and replace the following items in the Sales Area, taking into account that the Work must be done in multiple phases, one phase at a time (often one or more of the below items will drive which direction across the Sales Floor that the work must progress):
 - A. The ductwork.

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- B. The plumbing.
- C. The ceiling (tile and/or grid).
- 2. Consider the sequence required to demolish, remove and replace the refrigeration systems.
- 3. Consider the sequence requirements to perform the electrical work that is a part of the project.
- G. Include staging and lay down areas, material storage areas, job trailer areas, and other contractor space requirements in the phasing plans.
- H. Consider how the contractor will remove debris from demolition work from the building and develop the phasing plans to minimize exposure and disruptions to patrons and store operations.
- I. Verify that the doors into the Sales Area are large enough for existing equipment to be removed from and new equipment to be brought in to the Sales Area. Include in the contract documents a permanent door large enough if one does not exist.
- J. Verify that doors into other areas of the building, especially areas containing large pieces of equipment such as the HVAC units in a mezzanine area, are large enough for existing equipment to be removed from the building and new equipment to be brought in to the building. Include in the contract documents enlargement of openings or the creation of new temporary or permanent openings when required.
- K. Develop the phasing plan(s) to utilize temporary facilities to compensate for the loss of storage, processing, office, and/or sales area when necessary. Temporary facilities are to be utilized only when all other possibilities have been explored and there are no other options available.
 - 1. Temporary chill and freeze trailers can be used when the area of existing chill and/or freeze is reduced below required minimum during the renovation.
 - 2. Temporary restrooms can be utilized if there is no way to keep restrooms in the building available to store occupants during the Work.
 - Temporary tent structures to house the sales areas and warehouse area can be utilized when the entire building must be vacated as a part of the Work (as an example, for remediation or other similar activities).
 - 4. In some cases the entire store can be relocated and a temporary store can be constructed in an existing warehouse or hangar on the Installation. This is often a viable solution when renovating small stores.
 - 5. Temporary refrigeration systems can be installed when there is not sufficient space for the new system to be installed while the existing is still in place.
 - 6. Temporary HVAC and/or electrical can be installed when there is not sufficient space for the new system to be installed while the existing is still in place.
- L. In ADAL projects, often it is possible to build the addition(s) during the first phases of the Work, and utilize the new area in the addition as swing space for each of the phases of the Work to the sales area.

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- 1. Sales area can be moved into new Sales Area that is added, allowing the store to maintain the same amount of display space during the entire ADAL project.
- 2. On projects that include new restrooms as a part of the Work, phase the Work so that the new restrooms are operational and can be used prior to demolishing the existing restrooms when possible.
- M. Construct new utilities under new pavements prior to constructing the new pavements, even if this requires constructing new utilities in phases. Do not phase new utilities in a way that requires cutting and trenching through newly constructed pavements.
- N. Develop phasing plans to ensure that stormwater is adequately managed during construction. In some cases, it may be necessary to install new stormwater systems prior to doing work that will increase the stormwater load generated on the site or prior to demolishing existing stormwater structures.
- 2. Phasing documents shall direct the contractor's Work to include, but not be limited to, the following:
 - A. Maintain safe operation of the commissary throughout the duration of the Work.
 - 1. Safety shall be considered for all building occupants, including but not limited to:
 - A. Patrons.
 - B. Store operations personnel.
 - C. Vendors.
 - D. DeCA field personnel.
 - E. Construction personnel.
 - F. Construction site visitors (inspectors, AE of record, BCE/DPW personnel, fire officials, base security, comm squad, base environmental, DeCA visitors, etc.).
 - G. All other people occupying the Commissary or Commissary site during the execution of the Work.
 - 2. Construct temporary barriers to protect building occupants from the Work.
 - 3. Maintain required egress capacity at all times for all occupied areas of the building, including the areas where the Work is occurring during each phase of the Work.
 - 4. Maintain the proper number of exits during all phases of the Work.
 - 5. Maintain compliance with required maximum travel distances, common path of travel, and distance between required exits during all phases of the Work.
 - 6. Maintain emergency lighting during all phases of the Work.
 - 7. Maintain the fire alarm system, mass notification system, smoke detection system, and sprinkler system in working order throughout all phases of the Work.

- 8. Provide temporary fire extinguishers when and where required during the performance of the Work.
- 9. Maintain compliance with all other life safety code requirements during all phases of the Work.
- 10. Move all large (50 lbs or more) pieces of existing to reuse commissary equipment indicated in the contract documents. This includes moving the equipment to its temporary location, moving it back to its final location, and re-installing it. Re-installation includes making all utility connections required. Store personnel will move the following items:
 - A. All products and supplies.
 - B. Any small moveable equipment that plugs in the wall such as scales and slicers.
 - C. Any small equipment that does not plug in such as small bakery oven racks and storage racks.
- B. Provide temporary signage as required to ensure the safety of building occupants during the Work. Signs may include, but are not limited to:
 - 1. Construction Area Do Not Enter.
 - 2. Exit.
 - 3. Notice Temporarily Closed for Construction.
 - 4. Hard Hat and Safety Glasses Required Beyond This Point.
 - 5. Standard traffic control signage in the parking lot.
 - 6. Please Pardon Our Dust While We Improve Your Store.
- C. Utilize temporary barriers, construction practices, and work performed during non-business hours to protect building occupants from, but not limited to, the following:
 - 1. Noise.
 - 2. Dust.
 - 3. Fumes/vapors.
 - 4. Smoke.
 - 5. Debris.
 - 6. Welding hazards.
 - 7. Vibrations.
 - 8. Water (particularly slip and fall hazards).
 - 9. Tripping hazards.
 - 10. Hazardous materials.

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- 11. Fire.
- 12. Personal injury and/or death.
- 13. Construction activities that could be hazardous to building occupants.
- 14. Any other hazards resulting from performance of the Work.
- D. Stormwater and Erosion Control
 - 1. Provide and maintain erosion control measures that comply with local jurisdictions throughout each phase of construction.
 - 2. Provide and maintain proper stormwater management measures that comply with local jurisdiction throughout each phase of construction.

END OF SECTION

APPENDIX A

Typical General Phasing Notes for use on ADAL and Sustainment Projects

(Edit as Required for each project)

STORE OPERATING HOURS

(STORE HOURS ARE - SUNDAY: 1000-1800; MONDAY: CLOSED; TUESDAY: 0900-1900; WEDNESDAY - FRIDAY: 1000-1900; SATURDAY: 0900-1800). VERIFY WITH STORE DIRECTOR THE STANDARD HOURS OF OPERATION AND ALL SCHEDULED EVENTS OR VARIATIONS IN STORE HOURS.

GENERAL PHASING NOTES:

1. THE COMMISSARY WILL CONTINUE TO OPERATE AND PROVIDE FULL SERVICE TO CUSTOMERS DURING CONSTRUCTION. THE FOLLOWING NOTES APPLY TO THE CONTRACTOR'S PLAN TO ACCOMPLISH CONSTRUCTION WITHIN THE EXISTING FACILITY. THE CONTRACTOR MUST VISIT THE FACILITY AND CAREFULLY EXAMINE THOSE PORTIONS OF THE BUILDING AND SITE AFFECTED BY THIS WORK BEFORE SUBMITTING PROPOSAL AND BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF WORK. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION WAS CONDUCTED AND LATER CLAIMS FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WILL NOT BE RECOGNIZED.

2. THE INTENT OF THE PHASING PLANS IS TO MINIMIZE THE IMPACT OF THE CONSTRUCTION ON THE OPERATION OF THE COMMISSARY. THE PHASING PLAN MUST ENABLE FULL SERVICE COMMISSARY SALES TO CUSTOMERS AT ALL TIMES THAT THE COMMISSARY IS OPEN TO CUSTOMERS. CONSTRUCT THE PROJECT IN SEQUENTIAL PHASES AS OUTLINED IN THE PLANS UNLESS OTHERWISE APPROVED BY THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE.

3. PHASING PLANS SHOWN ARE DIAGRAMMATIC & FOR PHASING PURPOSES ONLY. THEY SHOULD NOT BE SCALED OR OTHERWISE USED FOR TAKE-OFFS. COORDINATE PHASING WITH DEMOLITION DRAWINGS AS WELL AS PLANS FOR NEW WORK AND REPAIRS. COORDINATE WITH PROJECT PLANS AND SPECIFICATIONS.

4. THE BOUNDARY LINES SHOWN (HATCHED AREAS) ARE FOR GENERALIZATION PURPOSES ONLY AND DO NOT INDICATE A BOUNDARY WITHIN WHICH ALL WORK MUST BE CONTAINED. THE CONTRACTOR MUST COORDINATE ANY WORK THAT COULD DISRUPT REGULAR COMMISSARY BUSINESS ACTIVITY WITH THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE PRIOR TO BEGINNING WORK. MAINTAIN VEHICULAR AND PEDESTRIAN ACCESS INTO AND OUT OF FACILITIES FREE OF OBSTRUCTIONS DURING CONSTRUCTION UNLESS OTHERWISE SHOWN.

5. PHASING NOTES DO NOT LIST ALL ITEMS OF WORK REQUIRED BY THE CONSTRUCTION DOCUMENTS BUT ARE A GUIDE TO ACCOMPLISHING MAJOR AREAS OF WORK.

6. ALL WORK ITEMS NOT INCLUDED IN PHASING PLANS ARE TO BE COMPLETED PER TIME FRAMES DICTATED BY THE CONTRACT DOCUMENTS. WORK MAY BE DONE DURING STORE OPERATING HOURS PROVIDED THE WORK DOES NOT INTERFERE WITH COMMISSARY OPERATIONS AND HAS PRIOR APPROVAL BY THE STORE DIRECTOR.

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7. PHASES ARE TO BE COMPLETED IN SEQUENTIAL ORDER. PROPOSED DEVIATIONS TO THE SPECIFIED SEQUENCE MUST BE SUBMITTED IN ADVANCE FOR APPROVAL BY THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE. PROVIDE A JUSTIFICATION FOR WHY THE DEVIATION IS REQUIRED TO ACCOMPLISH THE CONTRACT.

8. CONTRACTOR SHALL SUBMIT A CONSTRUCTION PHASING/SEQUENCING PLAN (IN ACCORDANCE WITH SPECIFICATION SECTION 013216) WHICH COMPLIES WITH THE OPERATIONAL AND ACCESS REQUIREMENTS INDICATED IN THESE PHASING PLANS AND REQUIREMENTS OF THE CONTRACT DOCUMENTS. THE CONTRACTORS PHASING PLAN MUST BE SPECIFIC AND INCLUDE ALL WORK REQUIRED INCLUDING DEMOLITION, LOCATION & CONSTRUCTION OF TEMPORARY WALLS & BARRICADES, UTILITY DOWN TIME, TEMPORARY UTILITY AS REQUIRED TO KEEP THE COMMISSARY FACILITY OPERATIONAL AT ALL TIMES, AND WORK TO OCCUR DURING NON-OPERATIONAL HOURS WITHIN THE COMMISSARY. COORDINATE THE PRODUCTION OF THE CONTRACTOR'S PHASING PLAN WITH THE SPECIFIED REQUIREMENTS FOR THE CONSTRUCTION PROGRESS MANAGEMENT SCHEDULE AND THE STORE DIRECTOR.

9. THE CONTRACTOR'S PHASING PLAN MUST IDENTIFY MEASURES TO PROVIDE FOR PUBLIC AND EMPLOYEE SAFETY AS WELL AS CONTRACTOR'S WORKFORCE SAFETY. DIAGRAM HOW THE CONTRACTOR WILL MAINTAIN VEHICULAR CIRCULATION, SERVICE CIRCULATION, AND PEDESTRIAN CIRCULATION THROUGHOUT THE SITE DURING THE ENTIRE PROJECT. THE PLAN MUST SHOW CUSTOMER ACCESS, SERVICE ACCESS AND EMERGENCY EGRESS DURING EACH PHASE AND THROUGHOUT THE DURATION OF CONSTRUCTION.

10. NOTIFY THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE IN WRITING UPON COMPLETION OF EACH PHASE. DO NOT PROCEED TO THE SUBSEQUENT PHASE UNTIL THE WORK IS ACCEPTED BY THE GOVERNMENT. PROVIDE REASONABLE TIME FOR THE COMMISSARY TO RELOCATE PRODUCT AND GOVERNMENT EQUIPMENT WHEN MOVING IN AND OUT OF PHASES.

11. DO NOT BEGIN A SUBSEQUENT PHASE OF CONSTRUCTION UNTIL ALL WORK IN THE PREVIOUS PHASE IS SUBSTANTIALLY COMPLETE AND TURNED OVER TO THE COMMISSARY FOR USE.

12. DO NOT COMMENCE WORK IN ANY AREA UNTIL ALL MATERIALS, SUPPLIES AND EQUIPMENT REQUIRED TO RETURN THAT AREA TO FULLY OPERATIONAL SERVICE HAVE ARRIVED ON SITE AND ARE READILY AVAILABLE.

13. GOVERNMENT IS RESPONSIBLE FOR REMOVAL/RELOCATION OF MERCHANDISE WITHIN EACH AREA OF WORK & WILL DO SO AFTER RECEIPT OF CONTRACTOR'S WRITTEN NOTICE OF INTENT TO COMMENCE WORK.

CONTRACTOR IS RESPONSIBLE FOR REMOVAL/RELOCATION OF EXISTING EQUIPMENT AND FURNITURE AS NEEDED TO COMPLETE WORK.

PROTECT EQUIPMENT AND MERCHANDISE IN AREAS OF WORK. EQUIPMENT AND FURNITURE THAT IS MOVED IN ORDER TO COMPLETE WORK MUST BE RETURNED TO ITS ORIGINAL POSITION, CLEANED, AND FULLY OPERATIONAL AT THE BEGINNING OF EACH BUSINESS DAY UNLESS THAT AREA OF WORK IS DESIGNATED TO BE TEMPORARILY SHUT DOWN OR RELOCATED DURING CONSTRUCTION. MAINTAIN IN OPERATION EXISTING EQUIPMENT

OUTSIDE AREAS OF WORK DURING CONSTRUCTION AND PROVIDE TEMPORARY UTILITIES AND CONNECTIONS AS REQUIRED TO DO SO.

14. REMOVE DEBRIS AND TRASH FROM THE CONSTRUCTION WORK AREAS DAILY AND PLACE INTO DUMPSTERS OR OTHER APPROVED CONTAINERS. IF TRASH MUST BE HAULED WITHIN OPERATING AREAS, IT MUST BE IN APPROVED CLOSED CONTAINERS.

15. MAINTAIN CLEAR PATHS THROUGH WORK AREAS FOR DELIVERY ACCESS TO PROCESSING AND STAGING AREAS. COORDINATE WORK TO ACCOMMODATE GF/GI (GOVERNMENT FURNISHED / GOVERNMENT INSTALLED) EQUIPMENT DELIVERY AND INSTALLATION AS REQUIRED.

16. COMMISSARY SALES AND OPERATIONAL AREAS MUST BE CLEAN AND FREE OF DEBRIS, DUST, DIRT, MUD, CONSTRUCTION MATERIALS, EQUIPMENT, ETC AT ALL TIMES. IN INTERIOR CONSTRUCTION AREAS WHERE SIGNIFICANT DUST IS GENERATED PROVIDE ACTIVE EXHAUST VENTILATION TO PROVIDE A NEGATIVE AIR PRESSURE IN THE DUST AREA. PREVENT MIGRATION OF DUST TO OCCUPIED AREAS OF THE BUILDING

17. THE CONTRACTOR MAY USE AREAS ON COMMISSARY PROPERTY FOR CONSTRUCTION STAGING AND EQUIPMENT STORAGE AS SHOWN ON THE PLANS AND WHERE DEEMED APPROPRIATE. THE LOCATION OF THESE AREAS MUST BE APPROVED IN ADVANCE AND MUST COMPLY WITH ALL CONTRACT REGULATIONS GOVERNING STAGING AND EQUIPMENT STORAGE AREAS (I.E.: FENCING, UTILITIES, ACCESS HOURS, HAUL ROUTES, ETC.) AS PRESCRIBED BY THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE. THE CONTRACTOR IS RESPONSIBLE FOR THE SECURITY OF THESE AREAS THROUGHOUT THE DURATION OF THE CONSTRUCTION. AFTER USE, RESTORE TO ORIGINAL CONDITION ANY LANDSCAPING, PAVEMENT, FLOOR FINISHES, ETC. WHICH HAVE BEEN DAMAGED OR ALTERED DURING CONSTRUCTION.

18. THE REPLACEMENT OF FINISHES IN THE SALES AND CHECKOUT AREAS SHALL BE PHASED AS INDICATED IN THE CONTRACT DOCUMENTS UNLESS OTHERWISE APPROVED BY GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE AND IN COORDINATION WITH THE STORE DIRECTOR.

19. DURING HOLIDAY MONTHS OF NOVEMBER AND DECEMBER, DO NOT SCHEDULE WORK IN THE CHECKSTAND AREA DURING SALES HOURS. ALL EXISTING CHECKSTANDS MUST BE OPERATIONAL FOR STORE USE DURING THESE MONTHS.

20. EACH STORE DEPARTMENT (MEAT, PRODUCE, DAIRY, FROZEN FOODS, DELI / BAKERY) SHOULD LOSE NO MORE THAN 50% OF THEIR DISPLAY AT ANY TIME UNLESS OTHERWISE APPROVED BY STORE DIRECTOR AND GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE.

21. PROVIDE TEMPORARY COLD STORAGE TRAILERS AS REQUIRED DURING WORK IN PROCESSING AREAS AND COLD STORAGE ROOMS. REFER TO GENERAL DESCRIPTION OF WORK EACH PHASE FOR MINIMUM NUMBER OF TRAILERS REQUIRED EACH PHASE.

22. THE CONTRACTOR IS RESPONSIBLE TO DETERMINE HOW TO TRANSFER NEW AND EXISTING EQUIPMENT WHICH MAY OR MAY NOT FIT THROUGH EXISTING OPENINGS. PROVIDE ANY TEMPORARY MODIFICATIONS NEEDED TO ACCOMMODATE ALL EQUIPMENT.

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23. COORDINATE PROCUREMENT AND INSTALLATION OF DECOR PACKAGE (GRAPHICS, AISLE MARKERS, BANNERS, ETC.) WITH PHASING SCHEDULE.

24. COORDINATE PROCUREMENT AND INSTALLATION OF NEW GONDOLA SHELVING (GF/GI) WITH PHASING SCHEDULE.

25. ALL UTILITY TRENCHES, PAVEMENT CUTS, ETC. MUST BE RESURFACED IMMEDIATELY IN AREAS OF PEDESTRIAN OR VEHICULAR TRAFFIC TO PREVENT ANY HAZARD TO PEDESTRIANS AND MOTORISTS.

26. CONTRACTOR SHALL HAVE MANUFACTURER'S REPRESENTATIVES AVAILABLE FOR THE INITIAL START UP, CALIBRATION AND TESTING OF CONTRACTOR FURNISHED EQUIPMENT.

28. CONTRACTOR SHALL MOVE, RELOCATE, AND RE-INSTALL LARGE (50 LBS OR MORE) EXISTING TO REUSE PIECES OF EQUIPMENT INDICATED IN THE CONTRACT DOCUMENTS. THIS INCLUDES MOVING THE EQUIPMENT OUT OF THE WORK AREA SO THAT WORK MAY BE DONE, MOVING IT BACK TO ITS FINAL LOCATION AFTER THE WORK IS COMPLETED, AND RE-INSTALLING IT. THE TEMPORARY LOCATION FOR THE EQUIPMENT WILL BE IDENTIFIED BY THE DECA GOVERNMENT REPRESENTATIVE. RE-INSTALLATION INCLUDES MAKING ALL UTILITY CONNECTIONS REQUIRED BY EACH PIECE OF EQUIPMENT.

MECHANICAL / PLUMBING/ELECTRICAL / FIRE PROTECTION NOTES

1. COORDINATE ALL WORK WITH THE MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE PROTECTION PHASING NOTES AND DRAWINGS. MAINTAIN ALL UTILITIES IN SERVICE AT ALL TIMES.

2. HEATING, COOLING, ELECTRICAL & PLUMBING UTILITY INTERRUPTIONS MUST BE COORDINATED WITH THE STORE DIRECTOR AND SUBMITTED IN WRITING TO THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE FOR REVIEW AND APPROVAL A MINIMUM OF 2 WEEKS BEFORE WORK CAN BEGIN. RE-CONFIRM UTILITY SERVICE DISRUPTIONS WITH THE STORE DIRECTOR A MINIMUM OF 24 HOURS PRIOR TO THE ACTUAL APPROVED OUTAGE.

3. TEMPORARY UTILITIES MUST BE INSTALLED, MAINTAINED, AND REMOVED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND IN A MANNER SATISFACTORY TO THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE. REMOVE TEMPORARY UTILITIES AND CONNECTIONS PRIOR TO THE FINAL ACCEPTANCE OF THE CONTRACT. THE GOVERNMENT WILL NOT BE HELD LIABLE FOR THE CONTRACT DELAYS, DAMAGES, OR COST INCREASES INCURRED BY INTERRUPTIONS OF UTILITY SERVICE.

4. HVAC SUPPLY AND RETURN AIR DUCTWORK CROSSING THROUGH OR TERMINATING WITHIN A CONSTRUCTION AREA SHALL BE TEMPORARILY COVERED OR BLOCKED OFF (AS APPROPRIATE) TO PREVENT CONSTRUCTION DUST AND DEBRIS FROM ENTERING OTHER AREAS OF THE STORE. MAINTAIN ENVIRONMENT (TEMPERATURE AND HUMIDITY) WITHIN

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EXISTING COMMISSARY BUILDING THROUGHOUT ENTIRE CONSTRUCTION PERIOD.

5. PROVIDE POWER FOR CONTRACTOR SUPPLIED TEMPORARY REFRIGERATED TRAILERS.

6. WHERE POSSIBLE, UNIT COOLER CHANGES ARE TO BE STAGED SO THAT NEW UNIT COOLERS ARE RUNNING WHEN EXISTING UNIT COOLERS ARE SHUT DOWN. WHEN STAGING IS NOT POSSIBLE, PREP IS TO BE DONE TO KEEP DOWN TIME TO A MINIMUM.

7. ENSURE ADEQUATE VENTILATION IS MAINTAINED IN ALL AREAS THROUGHOUT THE PERIOD OF CONSTRUCTION, INCLUDING PROTECTION FROM NOXIOUS FUMES AND VAPORS THAT MAY OCCUR DURING CONSTRUCTION.

NOTES REGARDING CONSTRUCTION BARRIERS:

1. PROVIDE A HARD CONSTRUCTION BARRIER WITH SOUND ATTENUATION BATT INSULATION IN ALL AREAS WHICH INVOLVE HEAVY DEMOLITION, EXCESSIVE NOISE, OR HIGH DUST PRODUCTION (JACK HAMMERING, CONCRETE SAWING, FLOOR GRINDING, ETC.). PROVIDE BARRIER IN ACCORDANCE WITH PLAN DETAILS.

2. PROVIDE A SOFT CONSTRUCTION BARRIER AT AREAS OF WORK WHICH CREATE MINOR LEVELS OF DUST, DEBRIS, OFFENSIVE ODORS, AND OTHER ACTIONS WHICH COULD BE DISRUPTIVE TO COMMISSARY OPERATION. SOFT CONSTRUCTION BARRIER CONSISTS OF A FOUR FOOT HIGH PLYWOOD BARRIER AND 6 MIL (MIN) POLY CONSTRUCTION SHEETING TO THE CEILING. THE SOFT BARRIER IS TO BE ADEQUATELY SUPPORTED AND COMPLETELY SEALED AT ALL SHEET JOINTS AND AT THE FLOOR AND CEILING (OR ROOF DECK). WHERE CEILING HEIGHTS PROHIBIT SEALING THE BARRIER TO THE CEILING, A CAP IS TO BE PROVIDED. DURING NON OPERATIONAL STORE HOURS; SOFT BARRIERS MAY BE PLACED OUTSIDE OF LIMITS OF CONSTRUCTION BARRIERS AS DESCRIBED ON THE PHASING PLANS AND DIAGRAMS AND THEN TAKEN DOWN WITH THE AREA MADE CLEAN AND SAFE IN THE MORNING PRIOR TO STORE OPERATING HOURS.

3. A PARTIAL HEIGHT CONSTRUCTION BARRIER MAY BE USED AS SAFETY BARRIER TO AREAS OF WORK FOR SHORT PERIODS OF TIME (LESS THAN ONE WEEK) WHICH DO NOT CREATE DUST, DEBRIS, OFFENSIVE ODORS OR EXCESSIVE NOISE. PARTIAL HEIGHT BARRIERS WILL BE PLYWOOD FOUR FEET HIGH AND MAY REMAIN IN PLACE DURING NORMAL STORE OPERATING HOURS.

4. MAINTAIN ALL TEMPORARY SIGNAGE, BARRIERS, FENCES, CONES, SCAFFOLDING, COVERED SCAFFOLDING FOR OVERHEAD PROTECTION, SERVICE AND EGRESS ACCESS CORRIDORS THROUGH WORK AREAS, TEMPORARY FIRE PROTECTION, ETC. IN GOOD CONDITION FOR THE DURATION OF THE PROJECT.

5. PROVIDE TEMPORARY SIGNAGE TO DESIGNATE CONSTRUCTION AREAS, FOR EXAMPLE "HARD HAT AREA"; "EMERGENCY EXIT"; AND NECESSARY SIGNAGE FOR RE-ROUTING PATRONS AND EMPLOYEES AS REQUIRED BY THE GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE.

6. PROVIDE ADA ACCESSIBLE PROTECTION BARRIERS OVER ANY EXPOSED OPENING IN FLOOR.

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7. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES TO COMMISSARY FACILITY AND PRODUCTS OCCURRING FROM INSUFFICIENT PROTECTION FROM WEATHER, DUST, ETC.

EGRESS / LIFE SAFETY NOTES

1. REQUIRED MEANS OF EGRESS MUST BE MAINTAINED AT ALL TIMES. TEMPORARY PARTITIONS MUST ALLOW ACCESS TO EXISTING EXITS, CORRIDORS, OCCUPIED SPACES, ETC. DURING NORMAL STORE HOURS. TEMPORARY EGRESS CORRIDORS MUST MEET APPLICABLE CODES FOR EXIT SIGNAGE, EMERGENCY LIGHTING, LIFE SAFETY SPEAKER / STROBES, FIRE EXTINGUISHER PLACEMENT, SPRINKLERS, ETC. DO NOT CLOSE OR OBSTRUCT EXITS, CORRIDORS, OR ACCESS TO OTHER OCCUPIED SPACES WITHOUT APPROVED WRITTEN PERMISSION FROM GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE.

2. LIFE SAFETY SYSTEMS MUST REMAIN FULLY OPERATIONAL THROUGHOUT DURATION OF CONSTRUCTION. ALL EXISTING SYSTEMS (FIRE ALARM, PULL STATIONS, HORNS, STROBES, SPEAKERS, ETC) SHOULD BE EITHER RELOCATED OR TEMPORARILY SUSPENDED FROM THE STRUCTURE AS REQUIRED. BEFORE TEMPORARILY DISCONNECTING OR RELOCATING EXISTING FIRE ALARM EQUIPMENT NOTIFY GOVERNMENT AUTHORIZED TECHNICAL REPRESENTATIVE.

3. PROVIDE TEMPORARY FIRE EXTINGUISHERS ON PORTABLE STANDS WHERE DOING HOT WORK AND WHERE MOUNTED EXTINGUISHERS ARE NOT ACCESSIBLE.

END OF APPENDIX








TEMPORARY PARTITION NOTES:

	1.	COORDINATE ALL TEMPORARY PARTITION TYPES AND	LOCATIONS AND C	GATE
	2.	LOCATE VERTICAL FRAMING TO PREVENT INTERFEREN	NCE WITH LIGHT	
	3.	SECURE PLYWOOD TO PARTITION FRAMING WITH SCR	EWS AT 12" O.C. VE	ERT.
	4.	REPAIR / REPLACE ANY DAMAGED FLOOR SLAB OR WA	LL FINISHES DUE 1	ГО
	5.	ALL BARRIERS MUST BE PAINTED WHITE WHERE EXPO AREAS.	SED TO CUSTOME	R
DATE		DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		DESIGN STANDARD
JUN 2022	TITLE		REF.	013216.10-05
		I EMPORARY PARTITIONS FOR PHASED WORK	REV.	

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GENERAL

- 1.01. <u>Applicable Sections</u>. Division 01 applies.
- 1.02. <u>Summary</u>. The computer analysis predicts energy consumption and energy system performance. It can optimize electrical and mechanical system operations and architectural alternatives such as building orientation, building length and width, number of building stories, wall and roof construction, thickness of insulation, window size and type, and solar and shading applications. Base optimization on a life cycle cost study. Normally, designers will choose the least life cycle cost alternatives taking into account building aesthetics. Perform analysis at the 30% Design Stage. BLAST 3.0, DOE-2.2, Trane TRACE 700, Carrier HAP-E20, EnergyPlus, or other similar computer programs which perform transient thermal analyses are acceptable.
- 1.03. <u>Compliance with 10CFR</u>. Compliance with energy targets shown in Table 1 (from 1991 Corps of Engineers Design Criteria) are mandatory and are predicated on Title 10 CFR, Subpart F, Part 434 "Energy Conservation Voluntary Performance Standards for New Commercial and Multifamily High-Rise Residential Buildings, Mandatory for New Federal Buildings," Section 434.601. See attached Figures 1 and 2 for compliance.
- 1.04. <u>Compliance with current regulations:</u>
 - A. Regulation
 - 1. Executive Order 13514 Federal Leadership in Environmental, Energy, and Economic Performance.
 - 2. Executive Order 13423 Strengthening Federal Environmental, Energy, and Transportation Management, dated January 24, 2007.
 - 3. Energy Policy Act of 2005 (EPACT 2005)
 - 4. Energy Independence & Security Act of 2007 (EISA 2007)
 - B. Optimize Energy Performance
 - Energy Efficiency. Establish a whole building performance target that takes into account the intended use, occupancy, operations, plug loads, other energy demands, and design to earn the Energy Star targets for new construction and major renovation where applicable. For new construction, reduce the energy cost budget by 30 percent compared to the baseline building performance rating per the American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., (ASHRAE)/Illuminating Engineering Society of North America (IESNA) Standard 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential. For major renovations, reduce the energy cost budget by 20 percent below pre-renovations 2003 baseline. Laboratory spaces may use the Labs21 Laboratory Modeling Guidelines. Use Energy Star and FEMP-designated Energy Efficient Products, where available.
 - 2. The basis for the 2003 baseline shall be taken from:

National Renewable Energy Laboratory Technical Report NREL/TP-550-46101 September 2009 "Grocery Store 50% energy Savings Technical Support Document"

Table 4-21 to 4-23 which establish monthly electrical demand factors and shall be used to predict consumption of electrical energy in the proposed refrigeration system knowing the maximum demand of that system.

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Figure 4-4 which gives the energy consumption for the assumed 2003 baseline building knowing the climatic zone.

1.05. Life Cycle Cost Analysis:

- A. Base on the National Bureau of Standards (NBS) handbook 135, "Life-cycle Costing Manual for the Federal Energy Management Program," the current edition.
- B. Analysis shall result in the least building energy use, consistent with least life cycle cost.
- C. The HVAC system to be considered will be packaged rooftop DX cooling, indirect gas fired heating equipment as this equipment has been demonstrated to have the lowest life cycle costs in most instances. Where rooftop equipment is prohibited by Base or post policy, consider split system DX cooling and heat pump heating. Where electric or gas utilities are abnormally high or climatic conditions are extreme, the use of boilers, desiccant dehumidifiers or other strategies may be considered. In these cases, provide a life-cycle cost economic analysis to evaluate alternative fuel sources and other energy reduction strategies. See paragraph this section entitled "Guidelines".
- 1.06. <u>Definitions</u>:
 - A. <u>Energy Use Budget (EUB)</u>. The energy KCAL that is consumed within the 5'-0" line of a building per year over a 24 hour/day, 365 days/year period and specified operating hours. This energy consists of space heating, space cooling, ventilation and lighting loads, excluding process loads. See Tables 1 and 1A attached.
 - B. <u>Process Loads</u>. Non-real property installed equipment or user equipment loads (typewriters, copiers, merchandise display cases, commissary refrigeration systems, computer systems, industrial equipment, training systems, etc.) and their cooling requirements, meat department wash down, and hot water heating requirements for commissaries. Do not include specialized ventilation systems, such as exhaust hoods or those required by OSHA standards, in the calculation of the EUB. People are not considered process loads. Therefore, include their contribution to the EUB in the energy calculations and base such calculations on expected or actual operating times. Combine them with other EUB elements which are calculated at the expected or actual operating times to provide the total EUB.
 - C. <u>Design Energy Usage (DEU)</u>. Sum of energy figures for heating, cooling, ventilation, domestic hot water (DHW), and lighting, which the designer calculates as part of the design. Make DEU computations based on normal operating hours over a period of one year.
 - D. <u>Total DEU (TDEU)</u>. Similar to DEU, except, its basis is expected or actual operating hours over a one-year period. It not only includes the sum of five energy consumption components (heating, cooling, lighting, and ventilation), but also includes process load energy figures.
 - E. <u>EUB</u>. Target energy figure which represents maximum allowable energy consumption in KCAL/m²/YR (BTU/SF/YR) over a 24 hour/day, 365 days/year period with the operating hours specified.
 - F. <u>Heating Energy Figure</u>. Calculated energy figure for heating building environment based on the required operating time.
 - G. <u>Cooling Energy Figure</u>. Calculated energy figure for cooling the building environment based on the required operating time.
 - H. <u>Ventilation Energy Figure</u>. Calculated energy figure for ventilating building environment based on required operating time. This figure is the fan energy for circulating air during the economizer cycle, if used, and conditioned air when the heating or cooling system is not on.
 - I. <u>Lighting Energy Figure</u>. Calculated energy figure for lighting the building based on the required operating time.

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- J. <u>Domestic Hot Water (DHW) Energy Figure</u>. Calculated energy figure for heating domestic hot water based on the operating hours. This energy figure does not include the process load for meat department wash down operation.
- K. <u>Process Load Energy Figure:</u> Calculated energy figure for process loads based on the average load factor from "Grocery Store 50% Energy Savings Technical Support Document".

1.07. <u>Guidelines</u>:

- A. DEUs apply only to building loads and to energy consumed within the 5'-0" line of a building except for the following cases:
 - 1. Where a packaged chiller, cooling tower, air-cooled refrigeration condenser, transformer or substation, or heating plant is located outside the 5'-0" line but serves only one building, charge the energy required to operate these facilities to the building.
 - 2. Where equipment in paragraph 1.6.A.1. above serves two to four buildings, pro-rate the energy requirements among the buildings. Where such facilities serve five or more buildings, consider these facilities in the category of central plants.
- B. Losses from steam, chilled water, high temperature water or hot water distribution lines beyond the 5'-0" line are not chargeable to the building energy consumption except as provided in paragraph 1.6.A.2. above.
- C. Exterior lighting beyond the 5'-0" line is not chargeable to the building energy consumption.
- D. For the purposes of calculating energy budget figures, use the fuel conversion factors indicated in Table 2 attached.
- E. At specific installations where the energy source KCAL (BTU) content varies significantly from the value presented in Table 2 above, then the local value may be used provided:
 - 1. There is adequate data on permanent file covering a period of at least two years to support the different value, and
 - 2. There is a fully documented basis to expect that different value to remain in effect for the foreseeable future with the documentation to remain in a permanent file.
- F. Measure energy in the form of steam, high temperature water, medium temperature water or chilled water which is supplied from a central plant, at the building boundary with proper credit given to the energy in the condensate return or water return. Do not charge distribution line losses beyond the building 5'-0") line against the building consumption.
- G. Consider hot water requirements, with the exception of domestic hot water (hand washing, restrooms, etc.) as process load in commissaries.
- H. Clearly identify the calculated TDEU in the summary analysis of the energy report. Calculated TDEU should be in the range of 131,000 to 160,000 BTU/SF/YR.

1.08. <u>Energy Budget Analysis Requirements shall include but not be limited to the following information</u>:

- A. The space heating, cooling, ventilation, lighting, and DHW energy figures based on the operating hours, plus the DEU based on the actual or expected operating hours per day and days per week, not including process loads.
- B. Comments on the ease or difficulty of meeting the EUB, if the DEU varies from the EUB by 10 to 14.9% (+ or -).
- C. A detailed summary of the heat gain/loss analysis at the 30% design stage.
- D. A computer-generated printout of DEUs that are calculated after all optimized, cost effective and practicable energy efficient applications, or techniques are included in the envelope of the building and building non-process loads. Design the facility to an optimum EUB, and do not

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consider the EUB as a convenient stopping point for determining the building energy efficiency. Likely, the calculated DEU will be less, and in some cases much less, than the EUB, depending on the incorporation of other forms of energy efficient applications.

E. Provide certification of mandatory compliance with Section 435.112 of Title 10 CFR, Part 435, Subpart A, "<u>Energy Conservation voluntary Performance Standards for New Commercial and</u> <u>Multifamily High-Rise Residential Buildings, Mandatory for Federal Buildings</u>," published January 30, 1989, for each design. Provide the statement below on the first sheet of the design documents.

"We certify that these design documents comply with the requirements of Section 435.112 of Title 10 CFR, Part 435, Subpart A."

(Provide Signature)	(Provide Signature)	<u>(Provide Signature)</u>
Architect	Mechanical Engineer	Electrical Engineer

- F. Provide a listing of the minimum compliance requirements of Section 435.112 in the design analysis at the 30% design stage. Provide the designer's approach to meeting compliance requirements in the design analysis. See Figure 1 attached.
- G. EUB values in Table 1 are the highest allowable calculated annual energy consumptions for a commissary or commissary office building design. Target the design below the tabulated EUB values. Use of tabulated EUB values shall serve as maximum criteria for designers and design review personnel.
- H. Indicate in the completed energy analysis the final calculated TDEU. Include a written evaluation of the calculated energy figure. Mention in the written evaluation the ease or difficult in meeting the recommended TDEU range. If necessary, itemize recommendations for energy saving initiatives for government action.

END OF SECTION

Energy Use Budget (EUB) Values in 1000 BTU/ft²/YR (2713 KCAL/M²/YR) Weather Regions							HR S PE R DA Y	DAY S PER WEE K					
	1	2	3	4	5	6	7	8	9	10	11		
ADMIN/ OPERATIO NS BUILDINGS: OVER 740 SM (8,000 SF)	45	45	40	40	35	40	40	35	35	40	40	10	5
UNDER 740 SM (8,000 SF)	50	50	40	40	40	45	45	35	30	35	35	10	5
COMMISSA RY BUILDINGS	90	80	70	60	55	60	70	55	55	55	65	12 ²	6 ²

TABLE 1

NOTE 1: If more than one distinct function such as warehousing is being performed in an area which comprises more than 10% of the building's floor area, the EUB will be normalized using the following formula:

EUB=EUB 1 (Area 1/Area Total) + EUB 2 (Area 2/Area Total) + EUBN (Area N/Area Total)

Where: EUB is for the mixed use building, EUBN is for one of the distinct functional areas, Area N is the gross floor area devoted to function N, and Area Total is the total gross floor area of the building.

NOTE 2: Occupancy hours per day and days per week may vary. Tabulated EUB values are based on 12 hours per day and 6 days per week.

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WEATHER REGION DEFINITION						
WEATHER REGION	COOLING DEG DAYS	HEATING DEGREE DAY RANGE (BASE 65 F)				
1 \2	N/A	> 15000	N/A			
2 \2	N/A	> 13000	< = 15000			
3 \2	N/A	> 11000	< = 13000			
4 \3	< 2000	> 9000	< = 11000			
5 \3	< 2000	> 7000	< = 9000			
6 \3	< 2000	> 5500	< = 7000			
7 \3	< 2000	> 4000	< = 5500			
8 \3	< 2000	> 2000	< = 4000			
9 \4	< 2000	N/A	< = 2000			
10 \4	< 2000	N/A	< = 2000			
11 \4 < 2000 > 2000 N/A						
\1 The data published in	1 The data published in TM 5-785/AFM 88-29/NAFAC P-89 (Engineering Weather Data) will be					
used to select the appr	opriate weather regions.	the Heating Degree Dev De	and independent of the			
Cooling Degree Dav.	z and s are determined by	the neating Degree Day Ra	ange independent of the			
\3 Weather Regions 4,	5, 6, 7, 8 and 9 are determi	ned by the Cooling Degree	Days being less than			
2000 and then by the a	appropriate range bracket o	t Heating Degree Day.	aing graatar than 2000			
veather Regions 10 and 11 are determined by the Cooling Degree Days being greater than 2000 and then by the appropriate range bracket of Heating Degree Day.						

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TABLE	2
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FUEL CONVERSION FACTORS /1 /2 & /3					
TYPE OF FUELS	CONVERSION FACTORS				
Anthracite Coal	7,890,000 cal/Kg 28.4 million BTU/short ton				
Bituminous Coal	6,858,000 cal/Kg 24.6 million BTU/short ton				
Electricity	860.06 cal/KWH 3,413 BTU/KWH				
No. 2 Distillate Fuel Oil	9,271,100 cal/LITER 138,700 BTU/gal				
Residual Fuel Oil	10,006,400 cal/LITER 149,700 BTU/gal				
Kerosene	9,023,800 cal/LITER 135,000 BTU/gal				
LP Gas	6,583,500 cal/LITER 95,5000 BTU/gal				
Natural Gas	44,512,400 cal/m³ 1,031 BTU/ft³				
Purchased Steam or Steam from Central Plant	580,800 cal/Kg 1,000 BTU/lb				

1 High temperature, Medium temperature, or Chilled Water from a Central Plant will use the heat value of fluid based on the actual temperature and pressure delivered to the 5' line.

- \2 The EUB values assume that no electric resistive heating will be used in the building (except auxiliary electric resistive heating used with heat pump systems). When 10% or more of a building's annual heating consumption will be derived from electric resistive heating, the electric resistive portion will be multiplied by 2.2 to reflect additional conversion losses.
- \3 At specific installations where the energy source cal/Kg (BTU) content is known to vary consistently by 10% or more from the values given above the local value may be used provided there is adequate data on file for two years or more to justify the revision and that this value is expected to hold true for at least five years following building occupancy.

Figure 1

Building Energy Compliance Alternative



REVISED VERSION September 14, 2000

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Figure 2 A-E SUMMARY OF ENERGY CONSUMPTION FOR EUB VALUE

INSTALLAT PDC A-E F	ION: NO.: IRM:		HOST PROJECT		
L BUILDI	SIGN	SS PER DEGREE HO	- UR (DH)		
AREA	ORIENTATION		()		
ROOF		"U" FACTOR		KW/DH	
WALL	N OR NE	"U" FACTOR		KW/DH (BTU/DH)	
WALL	E OR SE	"U" FACTOR		(BTU/DH)	
WALL	S OR SW	"U" FACTOR		KW/DH (BTU/DH)	
WALL	W OR NW	"U" FACTOR		KW/DH (BTU/DH)	
	T	OTAL WALL LOSS:		KW/DH (BTU/DH)	
GLASS	N OR NE	"U" FACTOR		KW/DH	
GLASS	E OR SE	- "U" FACTOR		KW/DH (BTU/DH)	
GLASS	S OR SW	"U" FACTOR		(BTU/DH)	
GLASS	W OR NW	"U" FACTOR		`KW/DH´ (BTU/DH)	
	то	TAL GLASS LOSS:		KW/DH (BTU/DH)	
	INF	FILTRATION LOSS:		KW/DH	
	ROL	JND FLOOR LOSS:		(BTU/DH) KW/DH (BTU/DH)	
TOTAL LOS	SS THROUGH BUIL	DING ENVELOPE:		KW/DH (BTU/DH)	
II. SOLAR	GAIN THROUGH E		E		
ROOF: WALL WALL WALL WALL	N OR NE E OR SE S OR SW W OR NW	TEMP DIFF TEMP DIFF TEMP DIFF TEMP DIFF TEMP DIFF		KW/H (BTUH) KW/H (BTUH) KW/H (BTUH) KW/H (BTUH) KW/H (BTUH)	
	TOTAL /	AVERAGE SOLAR GA	<u>AIN WITH 100%</u> DLAR ENERGY:	KW/H (BTUH)	
		S	WINTER GAIN: SUMMER GAIN:	KW/H (BTUH) KW/H (BTUH)	

Figure 2 A-E SUMMARY OF ENERGY CONSUMPTION FOR EUB VALUE

III. INTERNAL HEAT GAINS OCCUPANT NUMBE KW/H SENS S: GAIN/OCCUPANT (BTUH) R LIGHTING: TYPE TOTAL WATTAGE KW/H (BTUH) KW/H TOTAL INTERNAL HEAT GAINS (WINTER): (BTUH) KW/H TOTAL GAIN TO THE INTERIOR (WINTER): (BTUH) (ENVELOPE + INTERNAL GAINS) V. ENERGY USED FOR HEATING SALES POINT TEMPERATURE: OCCUPIED DEGREE HOURS DESIGN BALANCE DH POINT TEMP: KW HEATING LOAD OCCUPIED: (MBTU) KW HEATING LOAD UNOCCUPIED: (MBTU) KW VENTILATION HEATING LOAD: (MBTU) KW TOTAL HEATING LOAD: (MBTU) VI. COOLING LOADS AND ENERGY USED FOR COOLING OCCUPIED COOLING HOURS: DH OCCUPIED COOLING DEGREE HOURS: DH CONDUCTION GAIN THROUGH WALLS KW (MBTU) AND ROOF: CONDUCTION GAIN FOR GLASS: KW (MBTU) SOLAR GAIN: KW (MBTU) HEAT GAIN FROM VENTILATION AIR: KW (MBTU) HEAT GAIN FROM LIGHTS: KW (MBTU) HEAT GAIN FROM OCCUPANTS: KW (MBTU) TOTAL COOLING LOAD: KW (MBTU)

Figure 2 A-E SUMMARY OF ENERGY CONSUMPTION FOR EUB VALUE (CONT.)

VII. CALCULATION OF NON HEATING AND NON COOLING LOADS

SERVICE WATER HEAT	ING: LITERS (G	GALLONS)	DAYS PER	
ENERGY USE			KW (MBTU)	
ANNUAL USE WITH SYS	TEM DEFICIENC	Y:	KW (MBTU)	
ANNUAL LIGHTING EN OCCUPIED WK NITE WKEND	ERGY KWH KWH <u>TOTAL</u> KWH			
ANNUAL VENTILATION AIR HANDLER MOTO EXHAUST FANS	LOAD DRS KWH KWH			
VIII.TOTAL ANNUAL EN	ERGY USE			
HEATING:	KW/m²/YR (BTU/SE/YR)			
COOLING:	(BTU/SF/YR)			
LIGHTING:	(BTU/SF/YR)			
VENTILATION:	(BTU/SF/YR)			
DHW HEATING:	(BTU/SF/YR) (BTU/SF/YR)			
DESIGN ENERGY U VALUE:	JSE BUDGET		KW/m²/YR (BTU/SF/YR)	
BASED ON OPERATING	TIME OF:		HRS/DAY DAYS/WEEK	

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Implementation by DeCA facilities of Executive Order (EO) 13693 – Planning for Federal Sustainability in the Next Decade.

BACKGROUND

Executive Order (EO) 13423 – Strengthening Federal Environmental, Energy, and Transportation Management, (signed January 24, 2007) provided for specific guidance concerning efficiencies to be incorporated into all federal facilities. This EO rescinded *EO 13101 - Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition* and *EO 13123 - Greening the government Through Efficient Energy Management.* These two EOs were baseline documents for the implementation of efficiencies in facilities as measured by Leadership in Energy and Environmental Design [LEED]. Many federal agencies, including DeCA, adopted the LEED's ratings guidelines to measure elements contained in their facilities to acquire various levels of compliance with EOs 13101 and 13121. In response to EO 13423, DeCA re-evaluated the requirements and measurements of its facility program. They were further clarified in the UFC 4-030-01 Sustainable Design Requirements document.

EO 13514 – *Federal Leadership in Environmental, Energy, and Economic Performance,* (signed October 5th 2009) contained numerous requirements on greenhouse gas and energy reduction, water use efficiency, pollution prevention and waste reduction, sustainable acquisition, electronic stewardship, and other sustainability aspects. EO 13514 built on the requirements contained in EO 13423. EO 13514 made mandatory the five Guiding Principles of the Memorandum of Understanding for all new construction and major renovations and set an aggressive goal for applying these practices to existing capital assets.

EO 13693 - Planning for Federal Sustainability in the Next Decade, (signed March 19, 2015), EO 13693 Implementing Instructions (June 10, 2015), and the Guiding Principles for Sustainable Federal Buildings and Associated Instructions issued by the Council on Environmental Quality (CEQ) in February 2016, among other things, require that beginning in fiscal year (FY) 2020, all new construction of Federal buildings greater than 5,000 gross square feet that enters the planning process is designed to achieve energy net-zero and, where feasible, water or waste net-zero by fiscal year 2030. E.O. 13693 reconfirmed that green building work is an important part of Federal efforts to protect the environment, support communities, and address climate change.

In addition to meeting the requirements of the EOs described above, design and administer construction for all New and Add / Alt Projects to meet the requirements of LEED Silver with an initial design target of 55 points. Do not register the Project through LEED. The design team shall submit a completed LEED scorecard to DeCA during the early design phase of the project indicating the credits to be pursued as part of the design process in addition to the required pre-requisites and minimum program requirements (MPR's). At the end of the project, the design team shall submit a report showing compliance with the targeted LEED credits to DeCA.

IMPLEMENTATON PLANNING

DeCA facilities will implement 13693 using the *DeCA Commissary Design Guidance*, as the basis of all commissary designs. All current sustainable design requirements for compliance with EO 13693 are available to all users on the DeCA Facilities website and can be accessed at <u>www.decafacilities.com</u>.

DESIGN CRITERIA

1. DeCA Sustainable Design Requirements

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- A. The Defense Commissary Agency is committed to sustainable design and construction practices that comply with the Guiding Principles for Sustainable Federal Buildings and Associated Instructions (CEQ Feb 2016), the Energy Policy Act of 2005, and EO 13693 *Planning for Federal Sustainability in the Next Decade.* Consistent with the above, EO 13693 directs Federal Agencies to ensure that new construction and major renovation of federal facilities comply with the Guiding Principles for Sustainable Federal Buildings. These principles require designers to incorporate the following goals during project design:
 - 1. Reflect the evolution of sustainable building design, construction, and operating practices since 2008,
 - 2. Incorporate other building-related EO 13693 requirements,
 - 3. Increase the economic and environmental benefits of Federal investments in facilities,
 - 4. Enhance occupant health, wellness, and productivity
 - 5. Include climate resilience in building design, construction, and operations, and protect Federal facilities investments from the potential impacts of climate change, and
 - 6. Provide information on tracking agency green building performance.

These principles are to be followed in order to reduce the total ownership cost of facilities; improve the energy efficiency and water conservation; provide safe, healthy, and productively built environments; and, to promote sustainable environmental stewardship. EO 13693 can be viewed at <u>www.fedcenter.gov</u>.

- B. As an Agency of the Department of Defense, DeCA fully recognizes the economic and environmental benefits of sustainable design and construction practices. The Agency also recognizes that certain objectives for the sustainability goals may be harder to achieve than others. The designer of DeCA facilities is to identify the sustainable design features and requirements early in the design process so that these features can be incorporated into the design at the lowest possible cost. A 30% energy reduction over ASHRAE 90.1-2004 must be achieved in all new building projects. LEED Silver Design requires comparison with ASHRAE 90.1-2007 for energy savings results. Since ASHRAE 90.1-2007 has stringent energy design requirements, the energy reduction over ASHRAE 90.1-2007 may be less than 30%. Design teams must provide DeCA with predicted energy savings thresholds from an energy model compared to both the ASHRAE 90.1-2004 and 2007 baselines for the building to validate compliance.
- C. Designers are to review the following Guiding Principles and incorporate them in designs. These outlines are intended to provide an example guide to implement the goals of EO 13693. Designers should review these principles at <u>http://www.wbdg.org/sustainableEO/</u> and complete the February 2016 Determining Compliance with the Guiding Principles for Sustainable Federal Buildings. <u>https://www.whitehouse.gov/sites/default/files/docs/determining_compliance_with_the_guiding</u> principles for sustainable federal buildings february 2016.pdf
- D. For building evaluation purposes, "not applicable" may be used where the building's inherent function, mission, safety, or designation prevents compliance with a specific guiding principle, element, or sub-element. However, for existing buildings, criteria that are determined to be

"not applicable" do not count toward the total number of required metrics for an individual building. Documentation of all non-applicability determinations is required.

Guiding Principles for Sustainable Federal Buildings. The following outlines issues to be addressed during the design stage.

GUIDING PRINCIPLES FOR SUSTAINABLE FEDERAL BUILDINGS

Federal Agencies are required to incorporate the Guiding Principles for New Construction and Major

Renovations into all new construction, major renovation, or repair and alternation of Federal

Buildings. This set of Guiding Principles is linked below, with additional links to technical guidance on specific topics covered in the WBDG.

http://www.wbdg.org/references/fhpsb_new.php

DeCA Implementation Plan

The revised Guiding Principles shall be implemented consistent with applicable law and regulations, and subject to the availability of appropriations or other authorized funding. The revised Guiding Principles do not supersede or invalidate any existing laws, regulations, or other legal requirements. If there is any conflict between the revised Guiding Principles, and a statute, regulation, or executive order, the statute, regulation, or executive order governs. Additional requirements specific to DeCA Projects are listed below.

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- **B.** Guiding Principles for Existing Buildings

1. - Employ Integrated Assessment, Operation, and Management Principles

1. a. - Integrated Assessment, Operation, and Management

- **Requirement:** Use a collaborative, integrated process and team to plan, program, design, construct, commission, and transition to operation and maintenance policies that improve building environmental performance, support occupant health and wellness, and improve the climate resilience of facilities and operations.
- **Application:** To ensure consistency, every effort will be made to maintain the same members of the project development team from the programming and charrette through completion of construction. The team will not only comply with all relevant codes and laws, but will incorporate into the project the essence and intentions of EO 13693 *Planning for Federal Sustainability in the Next Decade*. The team will develop and implement an overall strategic plan to implement to the highest degree possible, the goals of this EO.
- Suggested Steps:
 - 1. Integrate the use of OMB's Circular A-11, Part 7 Capital Programming Guide.
 - 2. Assess existing condition and operational procedures of the building and major building systems, adequacy of electric vehicle charging infrastructure, in accordance with applicable laws and regulations, and identify areas for improvement.
 - 3. Establish operational performance goals for energy, water, material use and recycling, indoor environmental quality, and daylighting along with other comprehensive design goals and ensure incorporation of these goals throughout the design and life cycle of the building and verify that they are being met.
 - 4. Follow sustainable landscape and water conservation design principles including protection and promotion of pollinator habitat.
 - 5. Consider design choices that improve the environmental performance, protect historic properties, enhance indoor environmental quality, support health, and wellness of building occupants, and address climate risks, including wildfire.
 - 6. Consider all stages of the building's life cycle based on International (Organization for Standardization) ISO 14044.
- **Submittal:** Provide documentation by a responsible professional demonstrating and stating performance goals have been achieved. Integrate strategies into commissioning report.

1. b. - Commissioning

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- **Reference:** Appendix C COMMISSIONING. The referenced source will be the guide for completing this requirement.
- **Requirements:** The commissioning process activities shall be completed by the commissioning team, in accordance with Appendix C. Some of the requirements of that document will be:
 - Designate an individual as the Commissioning Agent to lead the commissioning process activities. This individual must have the minimum defined experience level and be independent, as defined in the Commissioning Reference.
 - Clearly document the owner's project requirements and the basis of design for the building's energy related systems. Updates to these documents shall be made during design and construction by the design team.
 - Develop and incorporate commissioning requirements into the construction documents.
 - Develop and utilize a commissioning plan.
 - Verify that the installation and performance of systems being commissioned meet the owner's project requirements and basis of design.
 - Complete a commissioning report that confirms identified issues were appropriately addressed.
- **Commissioning Systems:** The systems to be included in the commissioning process activities include as a minimum:
 - Heating, ventilating, air conditioning and refrigeration (HVAC &R) systems (mechanical and passive) and associated controls
 - Lighting controls, including day lighting
 - Domestic hot water systems
 - Renewable energy systems (PV, wind, solar, etc.)
 - Water distribution and conservation
- **Application:** A formal building commissioning program for commissary construction will provide considerable benefits as stated above. DeCA has adopted a policy to require a formal building commissioning process during design and construction. An independent commissioning agent will be designated to lead the commissioning process. Appendix C provides guidance on how the commissioning process must be structured.
- Suggested Steps:
 - 1. Designate a Facility Commissioning Agent to lead facility commissioning activities. The commissioning agent must be independent of the designer or construction manager and qualified to serve as the owner's commissioning representative.
 - 2. Identify systems that require commissioning during the early stages of project development. Require the commissioning agent to review the design documents and design energy modeling and coordinate with DeCA and the architect-engineer (A-E) on conformance to objectives.
 - 3. In conjunction with the A-E and DeCA, the Commissioning Agent will ensure that the owner's project requirements are documented and addressed in the design documents.
 - 4. Require the commissioning agent to coordinate with the A-E designers and DeCA on specific commissioning goals for sustainable design, including water and energy conservation.
 - 5. Incorporate a review of the building's water and energy related systems into the commissioning process.

- 6. Have the commissioning agent review and comment on the design documents and design energy model.
- 7. Develop and coordinate a commissioning report after the commissioning activities have been completed.
- 8. Plan for and schedule a Post Occupancy Survey to assess building performance with operations and maintenance (O&M) staff and operators within one year of final acceptance and develop a plan for addressing lessons learned, operational issues and outstanding commissioning issues.
- 9. Provide for verification of O&M training for operational personnel on building performance.
- **Submittal:** As directed by Appendix C, DeCA Commissary Design Guidance.

2 - Optimize Energy Performance

2. a. - Energy Efficiency

- **Reference:** Design Criteria 23 00 00, paragraph 1.05-Efficiency Recommendation Tables from DOE (Department of Energy)/FEMP's (Federal Energy Management Program) Buying Energy Efficient Products.
- **Requirements:** Reduce the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2007 (without amendments), for the total energy consumption within and associated with the building project, as demonstrated by a whole building project simulation using the Building Performance Rating Method in Appendix G of Standard 90.1-2007.

All building energy loads associated with the project must be included in the energy simulation model. Improvements to non-regulated loads must be documented as described below. Regulated energy systems include HVAC (includes heating, cooling, fans, and pumps), service water heating, and general interior lighting. Process loads for retail may include display lighting, refrigeration equipment, cooking and food preparation, and other major support appliances. Merchandise for sale that is plugged in, and small moveable appliances are not candidates for improved energy performance.

Appendix G of Standard 90.1-2007 requires that the energy analysis done for the Building Performance Rating Method include ALL of the energy consumption within and associated with the building project.

To achieve the goal the proposed design must:

- Must comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4) in Standard 90.1-2007 (without amendments);
- Must include all the energy consumption within and associated with the building project; and
- Must be compared against a baseline building that complies with Appendix G to Standard 90.1-2007 (without amendments).

For the purpose of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g. lighting integral to medical equipment) and other (e.g. waterfall pumps). Process energy does <u>not</u> include any lighting (such as for the interior, parking garage, surface parking, façade, or building grounds, except as noted above), nor any HVAC (such as for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), nor any service water heating for domestic or space heating purposes.

For Process Loads provide cut sheets or other documentation demonstrating budget and proposed equipment. A clear baseline must be described and documented to compare to proposed improvements in process load categories. The baseline and improvements must be documented in the following ways:

- <u>Appliances & Equipment</u>: For appliances and equipment, provide cut sheets of typical budget and proposed equipment that indicates hourly energy use. Provide a spreadsheet calculation estimating the daily use hours for each piece of equipment listed. Use the total estimated energy use in the energy simulation model as a plug load. Reduced use time (schedule change) is not a category of energy improvement in this credit. Energy star ratings and evaluations are a valid basis for performing this calculation.
- <u>Display Lighting</u>: For display lighting, the space by space method of determining allowed lighting power under ASHRAE 90.1-2001 must be used to determine the appropriate baseline for both the general building space and the display lighting. Section 9.3.1.2 of ASHRAE 90.1-2001 describes the methodology for determining a baseline that includes display lighting. Installed lighting in the proposed building, including display lighting is compared to this baseline in the simulation.
- <u>Refrigeration</u>: For hard-wired refrigeration loads, the impact of energy performance improvements must be modeled with a simulation program specifically designed to account for refrigeration equipment. For example, eQUEST has a refrigeration module that can be used to simulate performance improvements in refrigeration equipment. An energy simulation template for DeCA using the eQUEST Refrigeration Model is currently being developed and will be available soon. Included with the template will be spreadsheet tools that are designed to provide an easy means to transfer information from design plans and specifications into a format for ease of inputting into eQUEST. The template will include specific modeling guidelines for commissaries, including how to determine infiltration loads through customer doors, DHW loads and sources for determining appropriate utility rates to apply in the model.
- **Application:** The intent of these performance standards is to ensure that Commissaries facilities are being designed to maximize energy performance of the building envelope and building systems. It is within DeCA's best interest to ensure that facilities are being designed and constructed to maximize energy performance. These objectives provide a good target of opportunity and some results could be achieved without significantly impacting overall project costs above baseline. Other factors to consider:
 - Passive solar features should also be considered for potential commissary application. Not only can these features contribute to the overall reduction of energy use, but they also can have an impact on customer sales. Studies have demonstrated a positive contribution to sales from implementing these features. Use of solar light tubes in the

sales area and warehouse could offer a significant contribution to overall energy reduction.

- High efficiency HVAC systems, refrigeration equipment and various other process and equipment loads and lighting will have the greatest incremental impact on overall energy consumption in commissaries. The greatest amount of design effort should be devoted to improving these systems. The refrigeration process loads are the expected to be the biggest energy use in commissary stores. DeCA typically utilizes heat recovery and heat rejection strategies, high efficiency motors, high efficiency ballasts and high efficiency lamps in display cases to lower total energy use. Designers should coordinate with equipment manufacturers to improve energy efficiency, particularly for volume build applications.
- The designer should look at all equipment and systems that use energy and identify strategies to reduce energy use. Consider first cost verses life cycle cost, maintenance, replacement costs, and any potential benefit or detriment to staff or customers when selecting strategies. Design the building envelope and building systems to maximize energy performance. Use a computer simulation model to assess the energy performance and identify the most cost-effective energy efficiency measures. Quantify energy performance as compared to the baseline benchmark. The designer should use historic utility bills from similar stores, generic retail energy use data, data from their local utility, or computer modeling to assess typical and projected loads. Regardless of the methodology used in setting the energy budget, the credit narrative should include a description of the methodology used and assumptions made.
- The U.S. Environmental Protection Agency's Energy Star Program is working to establish retail energy benchmarks. Benchmark data is available for grocery stores. Beta testing is underway to compile benchmark data for convenience stores and warehouses. Designers should use Energy Star data when determining their energy budget. In the absence of established retail benchmarks, the retailer-specific, relative energy savings credit will meet the intent of increasing energy performance as well as generate retail energy usage data.
- DeCA commissaries are required under the Federal Energy Management Program (FEMP) to provide energy reductions. Consistent with this guidance, DeCA has established a goal to achieve an Energy Use Index (EUI) for commissaries of 137 by 2010 (137,000 BTU/SF/YR). Typical commissary facility project designs are currently rated with a Design Energy Use (DEU) Index in the range of 150 to 200 (150,000 to 200,000 BTU/SF/YR). This is more than the required EUI goal, so additional improvements will be required to meet the Guiding Principles' goal of a 30% reduction for new facilities and a 20% reduction for major renovations.

The following table describes average building and process loads for several categories of retail types. This table provides a guideline as to the anticipated significance of process energy categories in retail projects. (The data is assembled from several national studies and data provided by the LEED^R-NC Retail Committee.)

Retail Energy Use Distribution by Retail Type					
Retail Type	Regulated	Loads	(including	Process Loads	
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Food Service	50-65%	35-50%
Grocery	40-45%	55-60%
Specialty Service	80-90%	10-20%
Merchandise	65-85%	15-35%

 Particular care and attention should be devoted to careful selection of refrigeration equipment and other connected equipment loads to carefully select energy efficient models and to recapture generated heat and cold air. The designer should provide DeCA with equipment cut sheets and other manufacturers or industry literature to demonstrate selection of energy efficient equipment in comparison to normal industry standards.

• Suggested Steps:

- 1. Establish an energy performance baseline for similar-sized and used facilities, considering adjustments for climatic conditions.
- Incorporate energy performance objectives into architect-engineer design statement of work. Target unit area reductions of 30% under baseline for new buildings and 20% under baseline for existing buildings.
- 3. Review and assess cost and benefits of identified cost saving opportunities.
- 4. Select preferred options for incorporation into design documents.
- 5. Review design documents to assure compliance with design intent.
- 6. Document achievement of objectives as part of the facility commissioning report.
- **Submittal:** Provide certification by the designer of record that incorporates a quantitative summary table that specifically lists each of the energy saving strategies into the proposed building design and demonstrate how the energy reductions compare with the baseline building. Compare items such as window U-factors, installed lighting wattage per square foot, HVAC and refrigeration equipment efficiencies, etc. and demonstrate the projected energy savings expressed as a percentage of baseline. Demonstrate via a summary printout from an energy simulation model that the building performance rating will be less than the baseline performance rating as defined in ASHRAE/IESNA 90.1-2007, Appendix G for the total energy consumption within and associated with the building. All energy loads must be included in the calculations and simulation.

2. b. - Renewable and Clean Energy

• **Requirement:** Implement life cycle cost-effective renewable electric and thermal energy projects onsite. Consider long-term off-site sources of renewable power or Renewable Energy Certificates (RECs) where on-site opportunities are limited. Utilize clean and alternative energy sources where possible.

2. c. - Metering

 Requirements: To track and continuously optimize energy performance, install building level meters for electricity, natural gas, and steam. Install advanced meters as required by statute. Standard meters should be used when advanced meters are not appropriate. FEMP metering guidance is available at http://energy.gov/sites/prod/files/2014/11/f19/metering_guidance.pdf

2. d. - Benchmarking

- **Requirements:** Benchmark building performance at least annually, preferably using ENERGY STAR Portfolio Manager. Regularly monitor building energy performance against historic performance data and peer buildings to identify operating inefficiencies and conservation opportunities.
 - Develop and implement a Measurement and Verification plan consistent with Option D: Calibrated Simulation (Savings Estimation Method 2), or Option B: ECM Isolation, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume III: Concepts and Options for Determining Energy Savings in New Construction, April, 2003.

OR

- Develop and implement a Measurement and Verification plan consistent with Option C: Whole Building, as specified in the International Performance Measurement & Verification Protocol (IPMVP) Volume I: Concepts and Options for Determining Energy and Water Savings 2012 http://www.coned.com/energyefficiency/PDF/EVO%20-%20IPMVP%202012.pdf
- The option selected shall be appropriate for the size and nature of the building.
- The M&V period shall cover a period of no less than one year of post-construction occupancy.
- **Application:** DeCA provides for substantial metering and verification of energy consumption over time through its refrigeration monitoring and alarm contracts. As an integral part of the facility commissioning and post validation assessment surveys, DeCA can include provisions in these contracted efforts to demonstrate thru measurement and verification that the objectives for reduced building energy consumption over time have been achieved. Other factors to consider:
 - DeCA's current metering policy does not include sub-metering to identify discrete elements of energy performance. In the early stages of the design, sub-metering needs to be discussed and made part of the overall design appropriate to the scope of the project.
 - Sub-metering capabilities, their potential benefits and costs, need to be discussed during the design process.
 - In interpreting the intent of this requirement, it may be assumed that DeCA would not have to implement metering down to individual components. Instead metering would be implemented at the aggregate component portion of load. In other words, load components, such as refrigeration case load, sales area lighting, process energy loads, exterior lighting and other key components would be each be measured in aggregate and provide opportunity to assess load contribution and potential energy reduction strategies for each component.

• Suggested Steps:

- 1. Comply with DeCA's criteria on type of commissary metering.
- 2. Review opportunities for sub-metering to identify discrete components of energy reduction. Include necessary metering and sub-metering devices in the design to measure energy.

- 3. Incorporate into commissioning procedures and post construction validation assessment procedures to measure and verify anticipated energy reductions.
- 4. Review design documents and A-E contracts to assure compliance.
- 5. Document achievement of objectives as part of the facility commissioning report and postvalidation assessment survey.
- **Submittal:** Provide certification by a licensed Professional Engineer or Requirements Architect confirming that all necessary metering was been installed per the M&V Plan and that a contract or commitment is in place for the professional services necessary to implement the M&V program. Provide a copy of the M&V Plan following IPMVP Volume III, April 2003, or IPMVP.

3. - Protect and Conserve Water

3. a. - Indoor Water Use

- **Reference:** <u>Guidance, paragraph 5.11-Energy Efficiency and Water Conservation at Federal</u> <u>Facilities</u>.
 - **Requirements**: Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. Employ strategies that minimize water use and waste including: 1. Water-Efficient Products: Purchase water conserving products, including WaterSense and FEMP-designated products, as required by EO 13693 and EPACT 2005.

2. Water Meters: Install building level water meters to allow for the management of water use during occupancy, including detecting leaks.

- 3. Cooling Towers: Optimize cooling tower operations.
- 4. Single Pass Cooling: Eliminate single pass cooling.
- **Application:** Commissary facilities are typically large consumers of potable water as a result of water demands associated with food preparation, processing and sanitation. DeCA has already established target guidelines to reduce water consumption in new and existing facilities. There is a general trend in the food industry toward reduction in the amount of food preparation and processing that occurs on-site in a retail grocery facility. The trend is toward more centralized preparation and processing of food items such as meats, produce and bakery products. Consequently, the process loads in commissaries will be decreasing significantly over the next few years, thus reducing water demand. Preliminary design considerations should examine the potential impact of these trends on store potable water needs and how those needs might be further reduced. Other design considerations include:
 - As with many similar retailing operations, process water (water used to provide a product or service) far outweighs the water used for toilets and hand sinks. Process water also includes water used in cooling systems or any other equipment not directly regulated by the Energy Policy Act of 2005 (which covers faucets, toilets, urinals and showerheads).

- To address process water use, the water calculation spreadsheet template has been expanded for retail projects to include commercial fixtures not covered by EPACT 2005. In addition to specifying water efficient fixtures and appliances, consider reclaimed water for non-potable applications such as toilet flushing, mechanical systems, cleaning, plant irrigation (for plants that are for sale and not part of site landscaping), hosing of dock or processing areas, or other applications that do not require potable water.
- Specify only high-efficiency fixtures for plumbing consistent with DeCA's Commissary Design Guidance Section 22 05 00. The fixtures reduce potable water intake and wastewater generation.
- Consider reclaimed water for flushing systems.
- Treated non-potable water can be used for boiler and HVAC system make-up water.
- A wide variety of fixtures for sinks, lavatories and hose valves are also available in highefficiency models. Specify only water-conserving fixtures, with electronic operational sensors for hand sinks.
- Specify high efficiency ice makers, pre rinse spray valves, and other processing equipment consistent with water efficiency criteria, including EPACT2005.

• Suggested Steps:

- 1. Review current water consumption records and identify water reduction goals.
- 2. Identify fixture and equipment requirements and assess application of water reduction methodologies to them.
- 3. Research and identify high-efficiency fixtures and equipment; document life cycle costs as part of design analysis.
- 4. Identify installation and local code requirements regarding specification and use of lowflow or dry fixtures, or reuse of storm-water or reclaimed water volumes.
- 5. Determine water consumption by domestic vs process loads and calculate the energy savings contribution of each. Extra reductions over and above those needed to receive the credit may be applied to Innovation and Design credit.
- **Submittal:** Provide appropriate documentation to substantiate that the required reduction in potable water demand to satisfy Guiding Principle criteria is met. Include documentation and drawings to verify use of high-efficiency fixtures. Provide a spreadsheet to demonstrate a reduction in water demand, compared to baseline conditions. Provide cut sheets and other manufacturer's data to demonstrate efficiency of equipment. For additional equipment for which no benchmark is provided in EPACT 05, provide the following:
 - 1. Manufacturer's data or cut sheets regarding flow rates.
 - 2. Benchmarking data that compares these flow rates with industry averages or the industry standard for that particular equipment type (water research organization study, industry audit data, etc.).

3. b. - Outdoor Water Use

50 Percent reduction in potable water use for landscaping

- **Reference:** <u>Guidance, paragraph 5.11-Energy Efficiency and Water Conservation at Federal</u> <u>Facilities</u>.
- **Requirements:** Use water efficient landscapes that incorporate native, non-invasive, drought tolerant, and low maintenance plant species. Employ water efficient irrigation strategies to reduce outdoor potable water consumption. Water meters and timers should be installed for irrigation systems serving more than 25,000 square feet of landscaping. Base the irrigation reduction goals on base standards.
- Application: Commissary landscape features are usually identified during the early design stages of commissaries and integrated into the civil site design. DeCA encourages the use of native landscape materials in site design and minimizes the area requiring landscaping to key areas in the front of the store. The use of native materials and Xeriscape should make this credit achievable under normal circumstances. If irrigation is provided, use high efficiency irrigation technology (e.g. Smart Sensors). If irrigation is not provided collect and reuse water from on the site that would otherwise be released. Other design considerations include:
 - Maximize the extent of surfaces excluding the building footprint with native or adaptive vegetation areas.
 - The A-E's selection of landscape materials requires coordination with the installation to assure selection of native materials and ensure that it conforms to the local landscape plan.
 - Drip irrigation systems and smart sensors afford opportunities to dramatically reduce water consumption over conventional means of irrigation.
 - Consider integration of water collection and storage features into the landscape design.
 - If irrigation systems are used, use only high efficiency irrigation systems that ensure a return on investment due to lower water use and less maintenance.
- Suggested Steps:
 - 1. Review installation landscaping plans and guidelines along with site constraints to identify opportunities for water efficient landscaping.
 - 2. Unless available from the installation, require the A-E designers to perform a soil and climate analysis and consider Xeriscape and water-efficient irrigation technologies, including high-efficiency irrigation systems and/or reclaimed water systems for irrigation.
 - 3. Document collaborative decisions with the installation prior to commencing final design.
 - 4. Perform design analysis and investigative studies to substantiate water savings over conventional design. Include information on native species selected and irrigation equipment used.

• **Submittal:** Provide documentation that necessary analysis has occurred to determine that the project site meets the design criteria. Include appropriate documentation and drawings to depict natural vs landscape areas. Identify irrigation areas and types of systems used.

No Potable Water Use or No Irrigation for Landscaping

- **Reference:** Eliminate the use of potable water, natural surface, or subsurface water resources available on or near the project site, for landscape irrigation.
- **Requirements:** When irrigation is required, use only water collected on site that would otherwise be released from the site, such as captured stormwater, reuse water, or reclaimed water, or a combination of water from these sources to eliminate all potable water use for site irrigation, except as needed for plant establishment.
- **Application:** Commissary landscape features are usually identified during early design stages and integrated into the civil site design. DeCA encourages the use of native landscape materials in site design and minimizes the area landscaped to areas in the front of the store. The sole use of native materials and Xeriscape could make this achievable under normal circumstances. Other design considerations include:
 - Rely solely on native or adaptive vegetation areas as landscape features to the site.
 - The A-E's selection of landscape materials must be coordinated with the installation to assure selection of native materials.
 - Stormwater retained on the site must be incorporated into the landscape plan.
 - Eliminating a permanent irrigation system altogether reduces costs throughout the lifecycle of the facility.
 - Irrigation systems that capture and reuse stormwater runoff, or reclaimed water are more costly to design and may require code variances.
- Suggested Steps:
 - 1. Review installation landscaping plans and guidelines along with site constraints to identify opportunities for water efficient landscaping.
 - 2. Require the A-E designers to perform a soil and climate analysis and consider Xeriscape and water-efficient irrigation technologies.
 - 3. Document collaborative decisions with the installation prior to commencing final design.
 - 4. Provide sustainability analysis of the landscape design without permanent irrigation systems.
- **Submittal**: Provide appropriate documentation in design documents that Requirements necessary analysis has occurred to determine that the project site meets the LEED criteria. Include appropriate documentation and drawings to depict natural areas and landscape areas.

3. c. - Alternative Water

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• **Requirements:** Implement cost effective methods to utilize alternative sources of water such as harvested rainwater, reclaimed water, air handler condensate capture, grey water, and reclaimed water, to the extent permitted under local laws and regulations.

3. d. - Stormwater Management

• **Requirements:** Employ design and construction strategies that reduce stormwater runoff and discharges of polluted water offsite to protect the natural hydrology and watershed health. For any new construction per EISA section 438, use site planning, design, construction, and maintenance strategies to maintain hydrologic conditions after development, or to restore hydrologic conditions following development, to the maximum extent that is technically feasible.

4. - Enhance Indoor Environmental Quality

4. a. - Ventilation and Thermal Comfort

- **Requirements:** Provide safe and healthy ventilation and thermal comfort that supports the productivity and well-being of building occupants. Comply with ASHRAE Standards 55-2004, Thermal Comfort Conditions for to Human Occupancy, and 62.1-2007 Ventilation for Acceptable Indoor Air Quality. Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants. Mechanical ventilation systems shall be designed using the Ventilation Rate Procedure. Naturally ventilated buildings must comply with ASHRAE 62.1-2007, paragraph 5.1.
- **Application:** Typical commissary design provides efficient ventilation and thermal comfort for human occupancy. The DeCA Design Criteria has established efficient operating and patron comfort criteria to provide and maintain ventilation and comfort ranges for human occupancy that comply with ASHRAE Standards 55-2004 and 62.1-2007 Ventilation for Acceptable Indoor Air Quality. Commissary ventilation designs conform to ASHRAE standards for Acceptable Indoor Air Quality. Mechanical Ventilation systems are designed using the Ventilation Rate Procedure. Facilities must be designed to conform to Sections 4, 5, 6, and 7 of ASHRAE standard

• Suggested Steps:

- 1. Address ventilation and thermal comfort control requirements in the early stages of design.
- 2. Provide required thermal comfort to building occupants in compliance with ASHRAE Standard 55-2004.
- 3. Review A-E design for compliance with these requirements.
- 4. Include verification of compliance with these provisions as part of the facility commissioning process.
- **Submittal:** Provide documentation by a responsible design professional demonstrating and stating that the required criteria for ventilation and thermal comfort conform to ASHRAE Standards 55-2004 and 62.1-2007 that all design compliance documentation and performance validation requirements

have been successfully completed or will be provided under existing contracts. Include a summary of calculations in the project Design Analysis, including all assumptions, assumed occupant densities, zone air distribution effectiveness, and ventilation system efficiency

4. b. – Daylighting and Lighting Controls

- Reference: Defense Commissary Agency (DeCA) Lighting Review, February 2007.
- **Requirements:** Maximize opportunities for daylighting in regularly occupied space, except where not appropriate because of building function, mission, or structural constraints. Maximize the use of automatic dimming controls or accessible manual lighting controls, task lighting, and appropriate shade and glare control.
- Application: This goal is considered achievable in commissary construction without significant change in practices, even though most new commissary construction introduces very little daylight into the occupied space, other than through store front glazing, administrative office windows, or warehouse overhead door openings. There are opportunities to introduce daylight into the sales area through greater use of clerestory windows or other features of the store that are added as architectural features. Concepts for the Store of the Future introduced daylight as an important element of sales area design. The DeCA Design Criteria does not currently address these options and they would have to be considered as separate design objectives at the outset of design. Other factors to consider:
 - Operationally, DeCA has opposed use of daylight features based on three arguments:
 - 1. The first argument addresses the perceived non-uniformity of light caused by the introduction of daylight into the operating areas of the store. Without control devices, the natural light can introduce glare and heat into the operating space and create bright spots and dark spots throughout the sales space. Provision of daylight redirection and/or glare control devices can overcome this objection and ensure daylight effectiveness.
 - 2. Additionally, there is also operational concern over the extra heat generated and how this heat might affect refrigerated products such as produce. DeCA studies have demonstrated the heat gain on product to be negligible.
 - 3. Finally, there are concerns about maintenance and housekeeping requirements for operative light and glare control devices.
 - Clerestory windows in the produce area provide a distinguishable architectural element of the store design. Designers are to investigate methods that are employed to reduce the amount of light leaving the building.
 - Use of extensive storefront glazing, skylights and other light features need to be reconciled with force protection entry and blast resistance standards.
 - Strategies to consider include building orientation, shallow floor plates, increased building perimeter, exterior and interior permanent shading devices, high performance glazing and photo integrated light sensors.
 - Predict daylight factors via manual calculations or model daylight strategies with a physical or computer model to assess foot-candle levels and daylight factors achieved. Modeling must

demonstrate 25 horizontal foot-candles under clear sky conditions, at noon, on the equinox, at 30" above the floor. Any portion of a room achieving the requirements can qualify for this credit.

- Many retail applications may not be able to use perimeter windows for day-lighting, due to display
 or other security concerns. Skylights, clerestories and light wells may provide more feasible retail
 alternatives. Depending on the design of a skylight (vertical monitor, horizontal/domed skylight,
 or saw-tooth) and the transmittance of the glazing, providing skylights at approximately 3-6% of
 the applicable roof area may achieve this goal. For any project, glazing performance must be
 carefully balanced for optimum daylight, heat loss and solar heat gain performance.
- Suggested Steps:
 - 1. Introduce use of day-lighting in early design discussions.
 - 2. Design the building to maximize interior day-lighting when feasible.
 - 3. Review A-E design for compliance with these recommendations
 - 4. Verify compliance with these provisions as part of the facility commissioning process.
- **Submittal:** Provide documentation demonstrating that the criteria for day-lighting have been achieved. Provide area calculations that define the daylight zones and provide a summary of daylight factor prediction calculations through manual methods or in a summary of computer simulations illustrating that the foot-candle levels have been achieved.

4. c. – Indoor Air Quality

- **Requirements:** Take actions to ensure optimal indoor air quality, including:
 - 1. Radon: Test for radon in buildings and mitigate as required.
 - 2. Moisture Control: Establish policy and implement a moisture control strategy to prevent building materials damage, minimize mold growth, and reduce associated health risks.
 - 3. Low-Emitting Materials: Use low emitting materials for building construction, modifications, maintenance, and operations. In particular, specify the following materials and products to have low pollutant emissions: composite wood products, adhesives, sealants, interior paints and finishes, solvents, carpet systems, janitorial supplies, and furnishings.
 - 4. Indoor Air Quality during Construction: Establish a policy and implement necessary protocols to protect indoor air quality during construction and in the finished building.
 - 5. Environmental Smoking Control: Prohibit smoking in any form within the building and within 25 feet of all building entrances, operable windows, and building ventilation intakes.

6. Integrated Pest Management: Use integrated pest management techniques as appropriate to minimize pesticide usage.

• Suggested Steps:

- 1. Target opportunities to enhance indoor Air Quality during the early stages of design.
- 2. Include appropriate investigation in A-E design contracts
- 3. Obtain baseline information from the installation on potential Radon gas residual levels and required mitigation measures.
- 4. Review design and location of all proposed and/or existing air intake structures for potential impact on indoor air quality.
- 5. Review design of cooling coil drain pans to ensure complete draining.
- **Submittal:** Provide documentation by a responsible design professional demonstrating that the criteria for maintaining indoor air quality in buildings is met in the design

4. d. – Occupant Health and Wellness

• **Requirements:** Promote opportunities for occupants to voluntarily increase physical movement. Support occupant health by considering options such as providing potable water, daylight, plants, and exterior views.

5. – Reduce the Environmental Impact of Materials

5. a. - Material Content and Performance

Requirements: Procure construction materials and building supplies that have a lesser or reduced effect on human health and the environment over their life cycle when compared with competing products or services that serve the same purpose, including:

- 1. Recycled Content and Comprehensive Procurement Guidelines: Use Resource Conservation and Recovery Act (RCRA) section 6002 compliant products that meet or exceed EPA's recycled content recommendations for building construction, modifications, operations, and maintenance.
- Biobased Content: Per section 9002 of the Farm Security and Rural Investment Act (FSRIA), for USDA-designated products, use products with the highest content level per USDA's biobased content recommendations.
- 3. Other Green Products: Purchase products that meet Federally Recommended Specifications, Standards, and Ecolabels, or are on the Federal Green Procurement Compilation.
- 4. Non-Ozone Depleting Compounds and Low Global Warming Potential (GWP) Chemicals: Do not use ozone depleting compounds and high GWP chemicals where EPA's Significant New Alternative Policy (SNAP) has identified acceptable substitutes or where other environmentally preferable products are available during construction, repair, or replacement at the end of life.

- **Application:** This goal should be achievable in commissary construction by the specification of materials in the construction documents.
- Suggested Steps:
 - 1. Include requirements for the construction contractor to prepare and implement a Construction Indoor Air Quality Management Plan.
 - 2. Provide specific requirements for this plan consistent with the requirements stipulated above.
 - 3. Specify low-VOC materials and require contractors to provide product cut sheets, MSDS data, or other manufacturers documentation that clearly demonstrates that materials qualify as low VOC materials in construction documents.
 - 4. Assure the contractor's quality control procedures address continual monitoring of materials for compliance.
 - 5. Require the PMAC construction manager to document with the contractor's adherence with the credit requirements.
 - 6. Include verification of compliance with these provisions as part of the facility commissioning process.
- **Submittal:** Provide documentation by a responsible design professional that attests to design conformance with the credit criteria including the goal requirements that have been met. Include a list of all building materials and products. List the materials and quantities of materials and products designated as environmentally responsible. Identify their costs and the total costs of materials and products for the project. Provide copies of specifications and contractor submittals to verify that compliant materials and products have been purchased and used on the project.

5. b. - Waste and Materials Management

- **Requirements:** Incorporate appropriate space, equipment, and transport accommodations for collection, storage, and staging of recyclable and, as appropriate, compostable materials in building design, construction, renovation, and operation. During construction, where markets or on-site recycling exist, divert at least 60% (by weight) of construction and demolition materials, excluding land clearing debris and material used as alternative daily cover, from landfills. Maximize reuse or recycling of building materials, products, and supplies wherever possible. Provide reuse and recycling services, including composting, for building occupants where markets or on-site recycling exist and divert at least 50% of non-hazardous and non-construction related materials (by weight), from landfills.
- **Application:** A considerable amount of construction and demolition waste is generated during construction and, unless specified, or provided some economic incentive, the contractor is likely to dispose of all of it in landfills and incinerators. The costs for transporting and disposal are directly passed on to the commissary project. Contractors have recycled concrete and rock directly on site for base, using crushers. Greater care and attention to details during the investigative design stages of a project can identify opportunities for recycling. On large projects, the contractor is required to

submit a construction waste management plan to indicate how he intends to divert construction and demolition wastes. Contractors should recycle cardboard, metal, brick, concrete, plastic, clean wood, glass, gypsum wallboard, carpet and insulation. Designate a specific area or areas on the construction site for separated or commingled collection of recyclable materials, and monitor efforts throughout the construction process. Other factors to consider:

- 1. The contractor may achieve the objectives of this requirement by diverting wastes to charitable organizations, such as Habitat for Humanity. Documentation of materials and weights diverted, must be reported.
- 2. Include appropriate investigative studies to confirm the suitability of the materials for diversion. Documentation of studies must be provided.
- 3. Exclude hazardous materials from being diverted to other uses or other construction sites.

• Suggested Steps

- 1. Identify opportunities for waste diversion during the project planning and design stages.
- 2. Estimate quantities of waste (by material type) that will be generated during construction.
- 3. Identify construction haulers and recyclers that could handle the designated materials and include requirements in the criteria.
- 4. Include verification requirement for the construction contractor that materials have been diverted. Have the contractor specify material types, quantities and final disposition.

Submittal: Provide certification that requirements have been met. Document the estimated total non-hazardous materials, the quantities diverted, and the means of diversion.

6. – Assess and Consider Climate Change Risks

6. a. – Mission Criticality

• **Requirements:** Assess potential impacts and vulnerabilities, from both acute weather events and chronic climate changes, to inform the design of new construction and modernization and facility operations to increase climate resilience. Determine the long-term mission criticality of the physical asset and operations to be housed in the facility.

6. b. – Floodplain Consideration

• **Requirements:** For new construction, avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and avoid floodplain development whenever there is a practicable alternative

6. c. – Facility Design

• **Requirements:** For new construction, based on the most recent National Climate Assessment, determine key potential climate change impacts for the project location, identify projected climate changes, where feasible, during the useful life of the building, and incorporate those projections as performance targets for project design. Consider fire-resistant design and construction to enhance resilience to the impacts of wildfires and reduce risks to the lives of occupants in the event of a wildfire. Balance options to address predicted climate change impacts against mission criticality, cost, and security to determine design parameters. At a minimum, include low or no cost resilience measures to address predicted climate conditions.

6. d. – Facility Adaptation

• **Requirements:** For modernization, focusing on the resilience of the physical facility, take action to mitigate identified physical risks considering mission criticality, potential climate change impacts, security, and cost. Consider phased adaption over time.

END OF SECTION

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DESIGN CRITERIA

- 1. Related Section: See related Division 32 Design Criteria.
- 2. This section specifies project requirements for the Contractor to employ the services of a qualified arborist to ensure that the tree protection and trimming work is completed in accordance with accepted standards and practices. This cost shall be included in the construction contract amount.
- 3. Contract Documents shall clearly indicate which trees are to remain, which trees are to be removed, and which trees are to be transplanted.

Division 03 – Concrete

DESIGN CRITERIA

- 1. Related Sections: Division 03 Sections; Insulated Freezer Floors, Polished Concrete Finishing, Precast Architectural Concrete, and Tilt-Up Concrete; and Division 09 Sections for floor finishes requiring special preparation of concrete floor slabs.
- 2. This Section specifies cast-in-place, normal-weight concrete for general building construction including related formwork, reinforcement, concrete materials and admixtures, vapor retarders, concrete mixture requirements, placement, as-cast and applied finishes, curing, repairs, and field guality control.
 - A. This Section does not specify structural lightweight concrete, light weight insulating concrete, tiltup concrete, post-tensioned concrete, precast concrete, grouts, metallic and nonmetallic floor toppings, cement concrete pavement, or decorative cement concrete pavements.
 - B. DeCA Guide Specifications require that floor slabs not be placed until building spaces are enclosed and weathertight, as recommended by the Portland Cement Association (PCA) and the National Ready Mixed Concrete Association (NRMCA).
- 3. Codes and Standards:
 - A. ACI 301 is incorporated by reference and applies to cast-in-place structural concrete construction for any Commissary building project.
 - B. ACI 318 is adopted by IBC and establishes minimum requirements for acceptance of design and construction of structural concrete.
 - C. ASTM standards are referenced throughout to establish appropriate requirements for specifications, test methods, practices, classifications, and terminology.
- 4. Design concrete in accordance with the Concrete Mixture Schedule at the end of Part 3 of the specifications and the following unless project conditions require alternatives:
 - A. Floor Slab-on-Grade Reinforcing:
 - ACI 302.1R indicates that concrete slab reinforcement can be furnished in the form of deformed steel bars, welded wire reinforcing, steel fibers, synthetic fibers, or post-tensioning tendons. ACI 302.1R discusses the attributes of various types of reinforcing. It is left to the A/E of record to specify the type of reinforcing most appropriate for each project. Regardless of the reinforcement selected special attention must be given to the spacing and kind of support provided for each type of reinforcement.
 - 2. While both wire mesh reinforcing and deformed steel bar reinforcing provide suitable crack control in floor slabs, quality control during construction has a significant impact on actual crack control. If reinforcing is not maintained within the upper third of slab thickness or 2" below the slab surface (whichever is closer to the slab surface), its crack control qualities are reduced. When wire mesh reinforcing is used, its larger flexibility dictates that the Contractor pay close attention to establishing and maintaining adequate support of the reinforcement during concrete placing operations. Wire mesh reinforcing shall not be placed on the ground and pulled up after placement of the concrete, nor shall the mats be walked in after placing the concrete.
 - 3. ACI Committee 302 "Strategic Development Council Task Group on Moisture" indicates that for the best crack control, reinforcing steel should be placed as close to the surface as

possible and adequately supported so the location doesn't change during floor construction. They further state that designers should consider using supported deformed bars no smaller than #4 instead of welded wire reinforcing. Smaller-diameter bars are too limber, requiring too many bar supports, and welded wire reinforcing is difficult to keep in the correct location. For a 5" thick floor slab, consider using #4 or #5 bars near the top with 1" of clear cover. Typically, #4 bars spaced at 12" to 18" on center both ways are used. This amount of steel holds crack faces together tightly enough for non-rigid floor coverings by maintaining aggregate interlock and significantly reducing slab curling. In some instances, closer spacing or larger diameter bars may be needed. Constructability becomes an issue when bar spacing is so close that workers can't step into openings between the bars. Larger-diameter bars may be the better choice in this case.

- 4. Considering the above, DeCA Design Standard shall be to reinforce concrete slab-on-grade floors using properly supported deformed steel bars.
- B. Key Joints: Do not use.
- C. Placement of slab-on-grade contraction joints (i.e., control joints) shall be continuous at intersecting joints. Avoid designing non-continuous or "T" joints, as they will typically crack. Provide additional slab reinforcing where non-continuous joints are unavoidable.
- D. Floor Slopes in Food Storage and Processing Areas: Slope to drains approximately 1/8 in/ft. Locate drains so that maximum overall slope is approximately 1". Coordinate floor drain rim elevations with plumbing.
- E. Floor Live Loads: Design for the most stringent of the IBC, local codes, or the following DeCA criteria:
 - 1. Administrative areas and corridors: 100 psf.
 - 2. Sales Area: 125 psf.
 - 3. Equipment mezzanine: 125 psf, unless equipment loads dictate greater.
 - 4. Staging/receiving and dock areas: 300 psf, unless loads at point of contact of shelving uprights or material handling equipment wheel loads dictate greater.
 - 5. Other areas (frozen food, produce, dairy, etc.): 250 psf.
- F. The mixes indicated in the Schedule are based on Type I Portland cement without supplements.
 - Concrete and cement products containing fly ash are included in the current list of EPA designated guideline items. Specify cementitious materials in accordance with Article 5.10 -Specification of Preferential Recyclable Items of the DeCA Commissary Design Guidance except where project conditions exclude their use.
- G. Slump Limit: A 4" slump is indicated in the Schedule for all the Mix Uses listed. This in accordance with ACI 301, 4.2.2.2, and allows a tolerance of ± 1" in accordance with ACI 117. This slump also agrees with ACI 302.1R, Table 8.4.1a, for floors. Modify slumps as required by project conditions.
- H. Air Content: The air content indicated in the Schedule for the Mix Uses listed are in accordance with ACI 301, Table 4.2.2.7.b, ACI 201.2R, Table 4.2.3.2.4, and ACI 318/318R, Table 19.3.3.1, based on relationship of air content of concrete and size of coarse aggregate. Modify air content

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percentages in accordance with project conditions. Entrained air is not recommended for concrete to be given a smooth, dense, hard troweled finish (ACI 302.1R, 8.4.3).

- 1. Consider omitting air entrainment if project will not be exposed to freeze/thaw conditions.
- I. Footings and Foundation Walls Not Subject to Freezing and Thawing: The Maximum watercementitious materials ratio indicated in the Schedule for this Mix Use is in accordance with the w/c ratio of ACI 211.1, Table 6.3.4 (a), for concrete containing Type I Portland cement, non-airentrained concrete, not subject to special exposure conditions or sulfate exposure, and for compressive strength indicated. If Type of cement, exposure or compressive strength is changed, change w/c ratio accordingly.
- J. Foundation Walls Subject to Freezing and Thawing, i.e., Retaining Walls: The Maximum watercementitious materials ratio indicated in the Schedule for this Mix Use is in accordance with the w/c ratio of ACI 201.2R, 4.2.3.2, ACI 318 Table 19.3.2.1, and ACI 211.1, Table 6.3.4 (a), for concrete containing Type I Portland cement, air-entrained concrete, subject to freezing and thawing, not subject to sulfate exposure, and for compressive strength indicated. If Type of cement, exposure or compressive strength is changed, change w/c ratio accordingly.
- K. Concrete Floor Finishing: DeCA has determined ACI 302.1R, Table 4.1, Class 5, with hard steeltroweled final finish as the standard concrete floor finish for Commissaries. Because of the impracticality of preparing small isolated floor areas for different finish floor surface materials, a hard-troweled concrete floor finish is specified for all interior floor slabs. Where distinctive concrete floor surfaces are required, the preparation of the concrete floor slab to receive the floor covering is specified as the responsibility of the finish flooring installer.
- L. Water-Cement Ratio: ACI 302.1R indicates that the total water content can have a major impact on the bleeding characteristics of the concrete, as well as the potential for shrinkage, so use of the lowest practical quantity of water in the concrete mixture is recommended. Typically, the higher the w/cm ratios, the lower the compressive strength of the concrete. ACI 302.1R further indicates that w/cm ratios in the range of 0.47 to 0.53 are applicable for most interior floors with Floor Classification 4 and higher. A typical Commissary Sales Area floor slab will have a Floor Classification 9. Other areas within a Commissary will have a Floor Classification 5. Interior floor slabs subject to freezing will have a w/cm ratio of 0.45 as recommended by ACI 302.1R. Refer to table at end of Section 03 30 00 Cast-in-place Concrete Guide Specification for recommended w/cm ratios.
- M. Concrete Floor Flatness: Provide minimum overall and local area F Flatness and minimum overall area and local F Levelness for appropriate slab construction, building usage, and slab finishing technique per ASTM E 1155 Determining Floor Flatness and Levelness Using the F-Number System. Test for flatness per ASTM E 1155.
- Vapor Retarders for Concrete Slabs on Grade: The following information was derived from ASTM E 1643, "Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs" and ACI 302.1R "Guide for Concrete Floor and Slab Construction".
 - A. Although both ACI and ASTM identify applications where vapor retarders may not be necessary, all new commissary facilities shall have vapor retarders installed beneath slab-on-grade construction. ACI 302.1R indicates that a vapor retarder should be provided if the project is required to have a humidity-controlled environment, which all commissary facilities are required to have. Additionally, the O & M life of a commissary facility will typically include multiple renovations. While current DeCA Design Criteria establishes an exposed concrete floor throughout most of the facility; this may not be criteria in the future. Providing a vapor retarder will accommodate moisture sensitive floor finishes possibly required at a later date.

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- 6. Floor Surface Treatments:
 - A. Floor Sealing: Provide for the application of two coats of 20% solids acrylic solvent-based sealer on floors indicated to be left exposed. The first coat, applied after the concrete has cured, is intended to protect the concrete from stains during construction operations. The second coat, applied just before completion of project, dresses-up the floor for the Commissary opening. Do not indicate a sealer on floors receiving a polished concrete finish specified in Division 03 Section Polished Concrete Finishing.
 - B. Floor Hardeners: Liquid surface treatments designed to reduce dusting and create a denser, harder surface, are not intended to provide additional wear resistance in new, well designed, well constructed and cured floors, nor to permit the use of lower quality concrete. Therefore, floor hardeners are not specified. Add/Alter projects exhibiting floors with low wear resistance or dusting may require remediation with a floor hardener.
- 7. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.
- 8. Medium Temperature Cold Storage Room Floor Slabs: Provide perimeter wood thermal break (preservative treated or redwood) around medium temperature cold storage room floor slabs. Discontinue wood thermal break at door openings and provide isolation membrane across door opening. Isolation membrane should be an ASTM D226 Type II No. 30 Asphalt Felt.

DeCA COMMISSARY DESIGN GUIDANCE 03 30 50 INSULATED FREEZER FLOORS

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Cast-In-Place Concrete, Division 13 Section Cold Storage Rooms and related Design Standard Plates.
- 2. Provide insulating concrete freezer floors at freezer locations indicated on Concept Floor Plan and as follows:
 - A. Low temperature cold storage rooms 200 SF in size, and larger, shall have insulated concrete freezer floors with positive underfloor ventilation for prevention of frost heave. Construct insulated concrete freezer floors systems consisting of:
 - 1. 36" deep drainage fill layer containing PVC ventilation piping.
 - 2. 10 mil vapor retarder directly on top of drainage fill.
 - 3. Concrete sub-slab.
 - 4. Three 2" layers of polystyrene insulation.
 - 5. Perimeter wood thermal break (preservative treated or redwood) around freezer slab recess.
 - 6. 10 mil vapor retarder set directly on top of insulation and wrapping-up and over exposed face of perimeter wood thermal break (note that purpose of this is to minimize possibility of excess concrete mix water from seeping down between joints in insulation).
 - 7. Concrete top slab designed to accommodate a 250 psf live load.
 - 8. Concrete top slab shall be level with hard trowel surface. Provide floor sealing treatment. Refer to related Section indicated above for additional information.
 - 9. Provide block-out at all door openings to accommodate heater cable and stainless steel threshold furnished as part of low temperature insulated cold storage room.
 - B. On new construction projects, low temperature cold storage rooms (less than 200 SF in size) shall be constructed similarly, except that an underfloor ventilation system is not required.
 - C. On alteration projects utilizing existing concrete floor slabs, low temperature cold storage rooms (less than 200 SF in size) shall be constructed using 4" thick prefabricated insulated aluminum floor panels with 1/4" thick aluminum diamond tread plate wearing surface. Refer to related section indicated above for additional information on this floor system.







DeCA COMMISSARY DESIGN GUIDANCE 03 35 43 POLISHED CONCRETE FINISHING FOR NEW CONSTRUCTION

DESIGN CRITERIA

- 1. Related Sections: See related Division 03 Design Criteria and Standard Commissary Room and Finish Schedule in Appendix "A".
- 2. Exposed concrete floors (of various types) are becoming more popular in retail facilities, as they are not subject to bond failure between the floor finish system and the concrete floor slab, commonly caused by moisture vapor transmission (from below the slab) and surface moisture (from above the slab). Surface moisture caused by refrigerated display case condensation, wet product displays (such as produce), and daily floor cleaning allow water to puddle which seeps into joints of applied floor finish systems causing bond failure.
- 3. Shrinkage cracking, differential settlement, slab curling / cupping, or any other surface defects will be visible in exposed concrete floors. Repairs are difficult to mask (i.e., conceal). Specifications will need to be carefully prepared, with emphasis placed on quality control for both material and installation. Guide Specification Division 03 Section Cast-In-Place Concrete has established floor flatness and floor levelness values at F(F) 50 F(L) 40 to minimize the appearance of waviness in a highly polished floor. Control joint spacing should be carefully planned to minimize (and hopefully eliminate) uncontrolled cracking.
- 4. The exposed concrete floor specified in Division 03 Section Polished Concrete Finishing is a natural concrete floor with polished finish, consisting of:
 - A. Concrete Dye
 - B. Concrete Polishing System
 - C. Joint Filler
- 5. The solvent-based dye is formulated using extremely fine molecules of color designed to penetrate and color concrete floor slabs. All bond barriers must be removed prior to application of dye. This dye was created for use with polished concrete. Solvent-based dye is for interior applications only. Color will fade over time in areas where dye is exposed to frequent UV light. The quality of UV protection in skylights, windows, and doors may also determine the amount of time it takes before color must be re-applied. Concrete slabs with high moisture content may adversely affect solvent-based dyes. The basis-of-design manufacturer for the solvent-based dye is "AmeriPolish Classic" Solvent-Based Concrete Dye".

It is important to note that the EPA has granted acetone VOC-exempt status. In addition, acetone is not a hazardous air pollutant (HAP) under the Clean Air Act Amendment of 1990. Most states follow these federal guidelines. A/E should verify with individual state requirements.

On addition/alteration projects where the commissary will remain occupied throughout construction, it may be necessary to use water-based dye. Coordinate with DeCA Project Manager during design of Project.

6. The joint filler used with polished concrete floors is a rapid setting, 100% solids, flexible, two part polyurea joint filler with a shore hardness in the 60's. It is designed to fill and protect joints in industrial floors that are subject to traffic such as trucks, forklifts or steel wheeled carts. Joint filler should be installed per manufacturer's recommendations. Overfill joints and trim joint filler flush with floor surface after hardening.

END OF SECTION

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DeCA COMMISSARY DESIGN GUIDANCE 03 35 43.01 POLISHED CONCRETE FINISHING FOR EXISTING FACILITY

DESIGN CRITERIA

- 1. Related Sections: See related Division 03 Design Criteria and Standard Commissary Room and Finish Schedule in Appendix "A".
- 2. Exposed concrete floors (of various types) are becoming more popular in retail facilities, as they are not subject to bond failure between the floor finish system and the concrete floor slab, commonly caused by moisture vapor transmission (from below the slab) and surface moisture (from above the slab). Surface moisture caused by refrigerated display case condensation, wet product displays (such as produce), and daily floor cleaning allow water to puddle which seeps into joints of applied floor finish systems causing bond failure.
- 3. Repairs due to issues in the sub-flooring slab are anticipated. Projects of this type should always be accompanied by specification section 03 35 40 Interior Concrete Slab Repairs & Joint Filler Replacement. Varying degrees of aggregate exposure are acceptable based on the flatness of the existing slab. Vinyl tile ghosting is common and is to be expected. All existing repair and underlayments are to be removed entirely and repaired according to specification 03 35 40. Any questions related to the interpretation of this specification should be addressed to the Government Authorized Technical Representative.
- 4. The exposed concrete floor specified in Division 03 Section Polished Concrete Finishing for Existing Facility is a natural concrete floor with polished finish, consisting of:
 - A. Concrete Polishing System
 - B. Joint Filler
- 5. The joint filler used with polished concrete floors is a rapid setting, 100% solids, flexible, two part polyurea joint filler with a shore hardness in the 60's. It is designed to fill and protect joints in industrial floors that are subject to traffic such as trucks, forklifts or steel wheeled carts. Joint filler should be installed per manufacturer's recommendations. Overfill joints and trim joint filler flush with floor surface after hardening.

DeCA COMMISSARY DESIGN GUIDANCE 03 45 00 PRECAST ARCHITECTURAL CONCRETE

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Sections Cast-In-Place Concrete and Tilt-Up Concrete and Division 04 Section Unit Masonry for precast concrete trim units.
- 2. This Section specifies architectural precast, conventionally reinforced normal-weight concrete units with conventional form-liner and abrasive-blast exposed-aggregate finishes.
 - A. This Section does not specify structural precast concrete, pretensioned or post-tensioned architectural precast, prestressed concrete units, insulated or sandwich wall panels, cast stone, autoclaved aerated concrete, glass-fiber-reinforced concrete, panels with applied brick or stone facings, or site-cast tilt-up concrete.
- 3. Codes and Standards:
 - A. ACI 318 is adopted by IBC and establishes minimum requirements for acceptance of design and construction of precast concrete.
 - B. PCI MNL 120, "PCI Design Handbook--Precast and Prestressed Concrete."
 - C. PCI MNL 117, "Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products."
 - D. ASTM standards are referenced throughout to establish appropriate requirements for specifications, test methods, practices, classifications, and terminology.
 - E. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.
- 4. Design Considerations:
 - A. Consult with local architectural precast concrete fabricators. Frequently, such factors as the weight and transport of units, handling and erection stresses, and standard fabrication techniques govern the design of architectural precast concrete units.
 - B. The precast concrete fabricator is specified in this Section to assume engineering responsibility of the architectural precast concrete units to comply with Project performance requirements.
 - C. Be sensitive to the environmental factors causing out of plane panel bow during panel to panel connection design.

DeCA COMMISSARY DESIGN GUIDANCE 03 47 13 TILT-UP CONCRETE

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Sections Cast-In-Place Concrete and Precast Architectural Concrete.
 - A. Where the casting slab is the building's permanent concrete slab-on-grade insure that the depth of floor brace anchors or the length of drilled-in anchors do not puncture the vapor retarder under the slab-on-grade; insure that the strength and thickness of the slab-on-grade will withstand temporary bracing loads and the combined weight of the crane and the lifted tilt-up panel; consider the effect of contraction joints and isolation joints on finishes; verify the compatibility of curing compounds with bondbreakers; and verify the suitability of the slab-on-grade finish.
- 2. This Section specifies tilt-up concrete wall panels that are cast, finished, and tilted into place on-site. This Section also specifies related formwork, reinforcement, concrete materials and admixtures, concrete mixture requirements, placement, as-cast and conventional form-liner and abrasive-blast exposed-aggregate finishes, bondbreakers, curing, repairs, and field quality control.
 - A. This Section does not specify cast-in-place architectural concrete or precast architectural concrete.
- 3. Codes and Standards:
 - A. ACI 301 is incorporated by reference and applies to tilt-up load bearing-concrete construction.
 - B. ACI 551.1R and 551.2R Tilt up construction guides provides further information for the A/E.
 - C. ASTM standards are referenced throughout to establish appropriate requirements for specifications, test methods, practices, classifications, and terminology.
 - D. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.
- 4. Design Considerations:
 - 1. The primary structural design of tilt-up panels is with the A/E. This includes a review of design analyses, building stability, structural systems, and permanent connections.
 - 2. The tilt-up concrete fabricator is specified in this Section to assume engineering responsibility of lifting inserts and devices, provide professional engineering services and take design responsibility for tilting and erection stresses; and also determines insert locations, selects lifting devices, and develops bracing designs for the tilt-up panels.
 - 3. Slabs to receive polished concrete finish shall not be used as casting bed for tilt-up concrete.

Division 04 – Masonry

DeCA COMMISSARY DESIGN GUIDANCE 04 20 00 UNIT MASONRY

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Tilt-Up Concrete for masonry veneer inserts, Division 05 Sections Metal Fabrications for loose lintels and Cold-Formed Metal Framing for metal stud supported masonry veneer.
- 2. This Section specifies clay and concrete masonry for engineered and empirically designed applications. Masonry units in this Section include ordinary concrete masonry units, decorative concrete masonry units, face brick made from clay, and precast concrete trim units.
 - A. This Section does not specify brick or concrete pavers, brick flooring, thin brick applications, glass block, stone masonry, or masonry restoration and cleaning.
- 3. Codes and Standards:
 - A. Building Code Requirements for Masonry Structures (TMS 402/ACI 530/ASCE 5) is adopted, with amendments, by IBC and establishes minimum requirements for acceptance of design of unit masonry assemblies. Refer to the IBC for current edition to be used.
 - B. Specification for Masonry Structures (TMS 602/ACI 530.1/ASCE 6) is adopted, with amendments, by IBC and establishes minimum requirements for acceptance of construction of unit masonry assemblies. Refer to the IBC for current edition to be used.
- 4. Design Considerations:
 - A. The Guide Specifications specify a minimum average net area compressive strength for each type of unit masonry in Part 1 "Performance Requirements". A mortar type is specified in Part 2 "Mortar And Grout Mixes". These requirements establish the basis of the unit masonry net-area compressive strengths (f'm) and functional performance of the masonry assemblies. Revise these requirements in accordance with project conditions requiring assemblies of different compressive strengths or more functional properties. Coordinate with the drawings the extent of each type of engineered designed masonry required.
 - B. Indicate and coordinate face brick size, color, texture, etc. on drawings for each specific project location.
 - C. Masonry Joint Reinforcement, Ties, and Anchors in Exterior Walls: Use only hot-dip galvanized, carbon steel. Laboratory tests and field experience indicate that portland cement-lime mortars provide better resistance to water leakage and higher flexural strengths than masonry cement mortars. Because both of these attributes are important in exterior wall construction and walls requiring resistance to seismic forces Portland cement-lime mortars and mortar cement mortars are specified in this Section. Where project conditions do not require resistance to water leakage or seismic forces the specification allows masonry cement to be used.
 - D. Indicate masonry anchored directly to structural steel members without gaps unless movement of structural member abutting masonry is anticipated, i.e., rigid frames, wind bents, etc. Where movement is anticipated provide an open space not less than 1/2" to 1" in width between masonry and structural member. Keep open space free of mortar and other rigid materials to avoid stress on masonry assembly.
 - E. Indicate an impermeable flashing material in all exterior unit masonry assemblies to provide water drainage and prevent water penetration through the assembly.

DeCA COMMISSARY DESIGN GUIDANCE 04 20 00 UNIT MASONRY

- F. Expansion, Control, and Isolation Joints: Analyze each Project and show the locations of control joints on Drawings based on visual and functional requirements.
 - 1. Clay Face Brick: Refer to The Brick Industry Association's (BIA) Technical Notes 18 and 18A for detailed analyses of differential movement, expansion joints, flexible anchorage of clay masonry construction, and the proper location of joints.
 - 2. Concrete Masonry Units: Refer to The National Concrete Masonry Association's (NCMA) TEK 10 Series for crack control in concrete masonry walls and the proper location of joints.
- G. In accordance with the IBC all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
- H. Exterior masonry walls shall be designed for security protection in accordance with UFC 4-010-01 DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS (12 DEC 2018), Standard 9, as follows:
 - 1. Unreinforced masonry walls are prohibited for the exterior walls of new buildings.
 - 2. A minimum of 0.05% vertical reinforcement with a maximum spacing of 48" shall be provided with reinforcement within 1.3' of the ends of walls. The horizontal reinforcement must be at least 0.025%, consisting of either joint reinforcement spaced no more than 1.3', or bond beam reinforcement spaced no more than 4', with reinforcement within 1.3' of the top and bottom of the wall.
 - 3. For conventional cavity wall construction reinforcement only needs to be in the inner wall unless other reinforcement is required by other criteria.
 - 4. For existing Buildings, implement mitigating measures to provide an equivalent level of protection.
 - 5. This requirement shall not preclude the need to design masonry assemblies for forces required by other criteria such as seismic requirements.
- 5. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.

Division 05 – Metals

DeCA COMMISSARY DESIGN GUIDANCE 05 12 00 STRUCTURAL STEEL FRAMING

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 Design Criteria.
- 2. This Section specifies the fabrication and erection of structural steel for building construction, including miscellaneous sub-framing units that may be part of the structural-steel framing system.
- 3. All structural steel shall be shop prime painted with a non-asphaltic primer. Do not allow the use of red oxide primers. This is necessary to develop bond for field applied paint finish.
- 4. All structural steel exposed to customer areas shall be finish painted.
- 5. All structural steel exposed to the building exterior shall be hot-dipped galvanized before priming or shop primed with an anti-corrosion primer that prevents or inhibits corrosion or rusting of steel.
- 6. In accordance with the IBC, all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards. ANSI/AISC 341 provisions apply when the seismic response modification factor R, as specified in the applicable building code, is taken greater than 3, regardless of the seismic design category.
- 7. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.

DeCA COMMISSARY DESIGN GUIDANCE 05 21 00 STEEL JOIST FRAMING

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 Design Criteria.
- 2. This Section specifies manufactured, open-web, K-series, KCS-type K-series, LH-series, DLH-series steel joists, and steel joist girders as defined by the Steel Joist Institute.
- 3. All steel joists shall be shop prime painted with a non-asphaltic primer. Do not allow the use of red oxide primers, as this will prohibit the possibility of finish painting as part of the current project or at some future date.
- 4. All steel joists exposed to customer areas shall be finish painted.
- 5. All steel joists exposed to the building exterior shall be hot-dipped galvanized before priming or shop primed with an anti-corrosion primer that prevents or inhibits corrosion or rusting of steel.
- 6. In accordance with the IBC, all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
- 7. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.

DeCA COMMISSARY DESIGN GUIDANCE 05 30 00 STEEL DECKING

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 Design Criteria.
- 2. This Section specifies steel composite floor deck, non-composite form deck and steel roof deck.
- 3. All steel deck shall have hot-dip galvanized finish prepared for field painting.
- 4. All steel deck exposed to customer areas shall be finish painted.
- 5. Verify that Contract Documents do not graphically show or indicate anything suspended from steel roof deck.
- 6. Locations of large roof mounted equipment (i.e., refrigeration mechanical centers, HVAC units, etc.) need to be accurately shown on structural drawings, with allowable openings in steel roof deck clearly identified. If actual deck opening sizes cannot be identified during design, the approximate size and location along with criteria establishing maximum opening sizes and required reinforcing for steel deck shall be noted on the structural drawings. This large roof mounted equipment typically has numerous penetrations through the steel roof deck (for HVAC ductwork, pipes, conduits, etc. that enter the building from the underside of these units) and ideally should be located above the cold storage rooms, not above the sales area. This location will provide maximum space for coordination of these items and keep it out of the view of customers. Leaks (roof or condensation) are also less of a nuisance in these areas. This location will also minimize noise transmission from the roof-mounted equipment into customer areas. Coordinate location of equipment and placement of sound attenuation insulation (on top of the steel roof deck) directly beneath the roof top equipment with Division 23 Design Criteria.
- 7. If the project requirements dictate a FM approved roof system, evaluate the metal deck fastening, deck properties and fastener approvals as indicated by Factory Mutual Guidelines.
- 8. In accordance with the IBC all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
- 9. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.
- 10. The Guide specifications indicate decking is to be fastened by welding. Mechanical fastening may be used if acceptable to the project A/E.
DeCA COMMISSARY DESIGN GUIDANCE 05 40 00 COLD-FORMED METAL FRAMING

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 Design Criteria.
- 2. This Section specifies cold-formed steel framing including exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; roof rafters and ceiling joists.
 - A. Interior nonstructural-steel studs are specified in Division 09.
- 3. Indicate all exterior cold-formed steel framing to be hot-dip galvanized.
- 4. Consideration should be given to structural supports to resist wind uplift on exterior suspended soffit systems.
- 5. In accordance with the IBC, all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
- 6. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.

DeCA COMMISSARY DESIGN GUIDANCE 05 50 13 METAL FABRICATIONS

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 and Division 08 Design Criteria, and related Design Standard Plates.
- 2. Metal fabrications are used for numerous applications in commissary construction, including steel framing for support of operable partitions, mechanical and electrical equipment, and miscellaneous steel trim such as wall mounted steel angle corner guards, dock leveler pit frames, and loading dock edge angles. Metal fabrications considered operational necessities in commissary facilities, include the following:
 - A. Structural Steel Door Frames: Provide at overhead receiving doors and interior traffic doors (in CMU walls) between the sales area and warehouse area. Traffic doors are subject to heavy use and the traffic door manufacturer recommends the use of structural steel door frames. Traffic doors installed in gypsum wallboard partitions facing Sales Area shall have 14 gage flush galvanized steel security frames, with 1/4" steel reinforcement plates at hardware attachment locations. Refer to Division 08 Section Hollow Metal Doors and Frames for further information.
 - B. Metal Ladders: Provide at above cooler access locations.
 - C. Metal Ships' Ladders: Provide at roof access hatch location in existing stores for replacement only. Ships ladder shall be at an angle of 50 to 60 degrees, width shall be 24", and stair tread depth shall not be less than 6".
 - D. Metal Bollards: Provide 8" diameter concrete filled steel bumper posts at jambs of all receiving doors to protect door tracks. Provide 4" diameter concrete filled steel bumper posts at jambs of all traffic doors between the sales area and warehouse area (not exposed to sales area). Provide 8" diameter concrete filled steel bumper posts at exterior locations to protect jambs of grade level receiving doors, leading edges of guardrails and handrails, corners of receiving platforms and ramps, and grade/pad mounted mechanical and electrical equipment.

Provide polyethylene thermoplastic sleeves over interior bumper posts (located in non-customer areas). Coordinate with Installation Design Guideline (IDG) or other Installation criteria controlling exterior architectural design for required appearance of exterior bumper posts. Default color shall be "safety yellow."

Bolt-down "flexcore" (flexible core) type bollards are required in the following situations:

In frozen food storage areas where the thru-penetration of a steel bollard could cause below slab freezing and heave to occur.

In stores with a structural concrete slab where the installation of steel bollards through the concrete slab could compromise the steel reinforcing in the structural concrete slab.

Refer to Section 10 26 00 WALL AND EQUIPMENT PROTECTION

- E. Mezzanine Openings to Staging/Receiving or Exterior where elevation change is equal to, or great than 48 inches: Provide OSHA approved protection device at mezzanine door openings for personnel or forklift access to mezzanine storage or mechanical spaces as follows:
 - 1. Ladder access openings (openings 16-3/4 inch to 38-1/2 inch): provide a self-closing 42 inch high safety gate with safety toe board.
 - 2. Pallet access openings with or without doors (5, 6, or 8 feet wide): provide a 42 inch high self closing pallet gate with high impact bumpers.
 - 3. Pallet access openings greater than 8 feet wide: provide a manual vertical lift gate 42 inch high with toe board (verify height clearance in existing facilities can accommodate a lift gate).

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DeCA COMMISSARY DESIGN GUIDANCE 05 50 13 METAL FABRICATIONS

- F. Metal Column Covers: Provide 6'-0" high stainless steel covers on all exposed columns within customer areas, including those located within gondola shelving.
- G. Stainless Steel Wall Panel: Provide quilted stainless steel wall panel in Deli, directly behind counter mounted chicken rotisserie, from top of counter or stainless steel table to underside of ceiling. Nominal size: 60" wide by 84" high.
- H. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the or the design professional, this Section specifies the Contractor shall engage special inspectors.

	JUN 2022	DATE	
METAL BOLLARD	TITLE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	CONCRETE FILLED METAL BOLLARD W/ DOMED TOP (8' Ø AT DOCK DOORS, ESPOSED PARTTICN CORNERS IN STRENDR LOCATIONS) SCHEDULE 40 STEEL PIPE WITH GALVANIZED FINISH PROVIDE POLYETHYLENE THERMOPLASTIC SLEEVES OVER INTERIOR BUMPER POSTS (LOCATED IN NON-CLISTOMER AREAS), COORDINATE UNHI NISTALLATION CRITERIA CONTROLLING EXTERIOR ACHITECTURAL DESIGN FOR REJURED ACHITECTURAL DESIGN FOR REJURED ACHITECTURAL DESIGN FOR REJURED ACHITECTURAL DESIGN FOR REJURED CONCRETE SLAB A A A A A B FOR REJURED A A A A A B FOR THE INFORMALLATION CONCRETE FOUNDATION 12' DIA, AT 4' POST
REV.	REF.		
	055013-01	DESIGN STANDARD	

DeCA COMMISSARY DESIGN GUIDANCE 05 51 00 METAL STAIRS

DESIGN CRITERIA

- 1. Related Sections: Division 05 Section Pipe Railings.
- 2. This Section specifies straight-run, steel-framed industrial stairs with steel floor plate treads, risers, and landings. Stairs are typically provided for interior access to non-customer areas such as mechanical equipment mezzanines and roof access stair towers. The guide specification indicates shop primed steel that will require field painting. Clearly identify on the Contract Drawings required dimensional layout and section of stairs, including requirement for field painting.
- 3. If conditions require exterior steel stairs, specify and detail hot-dipped galvanized steel bar grating construction.
- 4. If conditions require interior steel stairs to administration and customer accessible mezzanine or second floor spaces, specify and detail painted concrete filled steel pan construction.
- 5. In accordance with the IBC, all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
- 6. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.

DeCA COMMISSARY DESIGN GUIDANCE 05 52 00 PIPE RAILINGS

DESIGN CRITERIA

- 1. Related Sections: Division 05 Section Metal Stairs.
- 2. This Section specifies pipe railings fabricated from steel.
- 3. Exterior pipe railings are required at receiving area retaining walls, raised trash platforms, and stairs. Roof mounted pipe railings are required adjacent to mechanical equipment located within 10' from the edge of the building or raised equipment platform. DeCA standard requires exterior pipe railings to be hot-dip galvanized and not painted, for reduced maintenance. Some military installations require that exterior pipe railings be painted in accordance with the IDG and other Base standards. Provide painted finish if required by installation.
- 4. Interior pipe railings are required at mezzanines open to a floor below and at stairs. Interior pipe railings are prime painted immediately following fabrication and finish painted immediately following installation. Indicate primer and finish paint in accordance with Division 09 Section Painting and Coating.
- 5. In addition to the above locations indicate guards along open-sided walking surfaces, mezzanines, equipment platforms, stairways, ramps, and landings which are located more than 30" above the floor or grade below.
- 6. Where severe corrosion conditions exist, such as heavy industrial atmospheres or marine (salt water) environments, specify Type 316 or Type 317 stainless steel. Refer to designer handbooks "Design Guidelines for the Selection and Use of Stainless Steel" and "Stainless Steel Architectural Facts" available from the Specialty Steel Industry of North America.
- 7. The design of pipe railings shall comply with applicable building/life safety codes and OSHA requirements. Because commissary receiving areas are not open to the public, the 2018 IBC (Paragraph 1015.4) only requires that balusters, horizontal intermediate rails or other construction be designed so that a sphere with a diameter of 21 inches cannot pass through any opening.
- 8. In accordance with the IBC all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
- 9. Testing and Inspection: Although the IBC requires special inspections be performed by special inspectors who are engaged by the Owner or the design professional, this Section specifies the Contractor shall engage the special inspectors.

Division 06 – Wood, Plastics and Composites

DeCA COMMISSARY DESIGN GUIDANCE 06 10 00 ROUGH CARPENTRY

DESIGN CRITERIA

- 1. Related Sections: See Division 06 Sections Sheathing and Interior Architectural Woodwork.
- 2. This Section specifies miscellaneous wood framing, incidental rough carpentry required for the support or attachment of other construction. It is intended for projects that do not require wood framing as the primary structural system or extensive use of other carpentry items. The Section includes pressure-preservative-treated and fire-retardant-treated wood.
- 3. Design Considerations:
 - A. Indicate locations on drawings where pressure-preservative-treated and fire-retardant-treated wood are required if not covered in general by the Specifications.
 - B. In accordance with UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES (26 SEP 2006) with Change 3 (01 MAR 2013), paragraph 2-13.1, fire-retardant plywood is not to be used in any part of a roof or roofing system.

DeCA COMMISSARY DESIGN GUIDANCE 06 16 00 SHEATHING

DESIGN CRITERIA

- 1. Related Sections: See Division 07 Section Metal Panels for metal sheathing roof panels.
- 2. This Section specifies paper-surfaced gypsum wall sheathing, glass-mat gypsum sheathing board, and building paper.
- 3. Design Considerations:
 - A. Per UFC 3-101-01 ARCHITECTURE (28 NOV 2011) Section 4-6, use glass mat gypsum sheathing for all exterior applications.
 - B. Per UFC 3-101-01 ARCHITECTURE (28 NOV 2011) Section 4-6, use glass mat gypsum sheathing on interior face of exterior walls.

DeCA COMMISSARY DESIGN GUIDANCE 06 40 23 INTERIOR ARCHITECTURAL WOODWORK

DESIGN CRITERIA

- 1. Related Sections: See Division 6 Section "Miscellaneous Carpentry" and related Design Standard Plates.
- 2. This Section specifies wood products for use on the interior of the building. Architectural woodwork is distinguished from other forms of wood construction by being manufactured in a woodworking plant and by complying with standards of quality for material and workmanship. It includes items of woodwork permanently attached to the building and exposed to view, including:
 - A. Training Room counter and cabinets (Design Standard Plate 06 40 23-01).
 - B. Deli & Bakery customer service counter (Design Standard Plate 06 40 23-02).
 - C. Custom millwork product displays between refrigerated display cases (Design Standard Plate 06 40 23-03).
 - D. Kitchen Counter with Sink (Design Standard Plate 06 40 23-04).
 - E. Customer Restrooms solid surface countertop with undercounter mount sinks (Design Standard Plates 06 40 23-05 and 06 40 23-06).
 - F. Cashier's Office Window (Design Standard Plate 11 17 00-01 and 11 17 00-02).
 - G. Cashier's Office Cash Tray Window (Design Standard Plates 11 17 00-03 and 11 17 00-04).
 - H. Cashier Office, Cash Counting, and Customer Service counters and cabinets (Design Standard Plates 13 25 00-01, 13 25 00-02, 13 25 00-03, and 13 25 00-04).
 - Janitor's Closet utility shelving on adjustable wall standards. Includes (4) four 3/4" x 11-1/4" x 36" long solid lumber shelves, 16-gauge steel double slot shelf standards and adjustable double knife brackets with shelf rests. Bottom of standard to be mounted at 2'-6" AFF.
- 3. Indicate locations on drawings where cabinetry is to be installed.
- 4. Where provided, coordinate details from Design Standard Plates and modify for project.
- Including point of sale transitions and floor clearances, comply with ABA Accessibility Standard for Department of Defense Facilities as adopted by the Deputy Secretary of defense memorandum dated October 31, 2008.
- 6. Codes and Standards: "Architectural Woodwork Standards".
- 7. Custom grade is indicated throughout. It is an acceptable grade for commissary work that requires a reasonable level of durable quality in both materials and workmanship.
- 8. Interior architectural woodwork cabinetry shall be designed with plastic laminate finish except for service countertops which should be designed using solid-surfacing-material.
- All interior architectural woodwork shall be accurately detailed on the contract drawings. Colors of solid-surfacing-material countertops and plastic laminate shall be coordinated with the DeCA Standard Decor Package.

DeCA COMMISSARY DESIGN GUIDANCE 06 40 23 INTERIOR ARCHITECTURAL WOODWORK

10. Coordinate interior architectural woodwork with other design disciplines (i.e., electrical receptacles, POS-M, wall thermostats, etc.). Contract documents shall clearly identify requirements for wood blocking (or other material) within metal stud framed walls for proper attachment and support of woodwork.











JUN 2022	DATE	
DIRECTORATE OF ENGINE FORT LEE, VIRGINIA - LACKLAND TITLE SOLID SURFACE COUNTERTOP W UNDERCOUNTER MOUNT SINK	곱<푸르 요구요	
) AFB, TEXAS	ERAMIC TILE FLOOR, WALL, AND BAS OR CLARITY. DIMENSIONS INDICATE ONCRETE FLOOR SLAB AND GWB W IMENSIONS INDICATED WILL PROVID OOR COVERING THICKNESS UP TO OLATING ADA BARRIER FREE CLEAF EQUIREMENTS.	FACE OF GWB PARTITION BEYOND ¹ / ₂ " SOLID SURFACE BACKSPLASH & SIDESPLASH WITH CLEAR, SILICON NEEDLE-BEAD SEALANT (CORIAN, NEUTRAL CONCRETE) AUTOMATIC SENSOR ACTIVATED FAUCET ¹ / ₂ " THICK SOLID SURFACE ² / ₂ COUNTERTOP ON ³ / ₄ " THICK SUBSTRATE (CORIAN, NEUTRAL CONCRETE) (CORIAN, NEUTRAL CONCRETE) HSS 4" X 2" X ³ / ₆ " STEEL TUBE FASTENED TO FLOOR SUPPORTED STEEL TUBE POSTS CONCEALED WITHIN WALLS UNDERCOUNTER MOUNT SINK, ATTACHED WI MOUNTING CLIPS & SEALING COMPOUND ADA COMPLIANT DRAIN PIPE WRAP, TYPICAL
STANDARD 064023-06	D ARE TO ALL SURFACES. DE FOR A FINISH 1" WITHOUT RANCE	^ر ش

DESIGN CRITERIA

- 1. Related Sections: See Division 10 Section Wall and Equipment Protection.
- 2. This Section specifies semi-rigid, impact-resistant, washable, sheet wall panels for protection of gypsum wallboard partitions in high traffic, high abuse areas, including:
 - A. Corridors between Sales Area and Receiving/Staging Area.
 - B. Operational Supply Storage Rooms.
 - C. Janitor's Closets.
- 3. Refer to Standard Commissary Room and Finish Schedule in Appendix "A" for specific application requirements.
- 4. Codes and Standards: NFPA Class "A" interior finish in accordance with ASTM E 84.
- 5. Plastic sheet wall coverings have a high level of thermal elasticity, therefore, use edge trim and moldings to accommodate the resulting expansion and contraction. Install panels with adhesive except where fasteners are required for additional support.

Division 07 – Thermal and Moisture Protection

DeCA COMMISSARY DESIGN GUIDANCE 07 19 00 WATER REPELLENTS

DESIGN CRITERIA

- 1. Related Sections: See Division 04 Section Unit Masonry for integral water-repellent admixture for unit masonry assemblies.
- 2. This Section specifies liquid-applied, clear, penetrating water repellents for vertical and horizontal surfaces of concrete unit masonry.
- 3. Design Considerations:
 - A. Indicate water repellent where concrete unit masonry is exposed to moisture that will be absorbed through pores, capillaries, or cracks in its exterior surfaces. Water repellents limit the penetration of liquid water that is not under pressure, but they permit vapor transmission. They cannot be used below grade.
 - B. Verify that field-applied water repellent is compatible with the integral water-repellent admixture provided by the CMU manufacturer per Division 04.
DeCA COMMISSARY DESIGN GUIDANCE 07 19 13 ACRYLIC WATER REPELLENT STAINS

DESIGN CRITERIA

- 1. Related Sections: See Division 09 painting Sections for general field painting.
- 2. This Section specifies surface preparation and the application of concrete stains to exterior concrete surfaces.
- 3. When selecting an exterior concrete stain system, evaluate the substrate, the severity of the environment, and the actual cost of stain system, including maintenance programs necessary to protect the system's integrity.
- 4. Ensure products selected meet all federal, state, and local VOC requirements.
- 5. Require a full-coat field benchmark finish sample for each type of stain required, duplicating the finish of approved samples, for approval by the Government Authorized Technical Representative.

DeCA COMMISSARY DESIGN GUIDANCE 07 21 00 THERMAL INSULATION

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Insulated Freezer Floors, Division 04 Section Unit Masonry, Division 07 Section Exterior Insulation and Finish Systems (EIFS), and Division 07 Sections Ethylene-Propylene-Diene-Monomer Roofing, and Division 09 Section Gypsum Board for sound attenuation insulation.
- 2. This Section specifies common types of general building insulation installed in commissary facilities as separate elements rather than as components of prefabricated or field-assembled systems.
- Insulate above grade exterior wall systems to meet or exceed current IECC (International Energy Conservation Code) requirements, unless climatic conditions or the local Installation energy code requirements dictate otherwise. Current Federal Energy Reduction Mandates may require the use of increased insulation thicknesses. This will be determined through energy usage calculations prepared as part of project development.
- 4. If climatic conditions warrant below slab foundation insulation, a geotechnical report will typically indicate this requirement. Design foundation insulation in full compliance with the recommendations contained in the Project Geotechnical Report. If climatic conditions indicate that foundation insulation would be appropriate and the geotechnical report does not indicate same, consult with engineer responsible for preparation of report.
- 5. Moisture Protection:
 - A. As a constituent part of the atmosphere, water vapor migrates by diffusion through air and materials according to its own pressure differentials. Accordingly, the control of diffusion is more important with improved construction techniques controlling air leakage in commissaries. Overall control of moisture within a pressurized building envelope requires a vapor retarder.
 - 1. Where summer design dew point is above 70 degrees locate vapor retarder on outside of wall insulation.
 - 2. Where winter design temperature is below 65 degrees locate vapor retarder on inside of wall insulation.
 - B. A commissary has a pressurized building envelope with specific temperature and humidity requirements for refrigeration systems to function properly.
 - 1. The sales area is maintained at 75 degrees with 40 percent relative humidity.
 - 2. Cold storage rooms are maintained at various temperatures required for proper storage and processing of food products.
 - 3. Staging and receiving areas, as well as other non-refrigerated storage areas, typically have heat and ventilation only.
 - C. It is important that walls surrounding the staging and receiving areas extend to the underside of the roof deck, and that all penetrations through these walls are sealed air tight. This is necessary to prevent warm humid air from entering into the temperature and humidity-controlled sales area and attic spaces above sales area and cold storage rooms. If warm humid air is allowed to enter these spaces, condensation can occur that will damage other construction and impact proper operation of mechanical systems.

DeCA COMMISSARY DESIGN GUIDANCE 07 21 00 THERMAL INSULATION

- D. In particularly warm and humid locations it may be appropriate to insulate the full height wall surrounding the staging and receiving area, in addition to sealing penetrations air tight.
- E. In facilities with exposed roof structure in sales area, the perimeter walls / soffits shall extend to the underside of the roof deck with all penetrations sealed air tight. This is necessary to maintain proper temperature and humidity control of sales area, eliminate requirement for sprinklers in attic space above cold storage rooms and other adjacent areas, and aesthetic appearance.

DeCA COMMISSARY DESIGN GUIDANCE 07 24 00 EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS)

DESIGN CRITERIA

- 1. Related Sections: Division 07 Section Building Insulation.
- This Section specifies Class PB water-drainage exterior insulation and finish system (EIFS) for walls consisting of an inner layer of rigid cellular thermal board insulation, an integrally reinforced base coat, and a textured protective finish coat. EIFS shall be applied over glass-mat gypsum sheathing or masonry with moisture protection barrier. Provide additional base coat "impact resistant" reinforcing on wall surfaces below 8'-0" A.F.F.
 - A. Where high wind-load capacity is a design consideration, consult the product manufacturer for limitations of product specified and recommendations for alternative systems.
- 3. This Section includes Class PB exterior insulation and finish system (EIFS) for soffits. Where both water drainage wall systems and soffit systems are used in the design, channeled board insulation may be used in soffit systems if acceptable, in writing, to the EIFS manufacturer.
- 4. This Section does not specify direct-applied exterior finish systems (DEFS), i.e., EIFS without an insulation component.
- 5. It is recommended that EIFS <u>not</u> be used on exterior wall surfaces in receiving areas. Solid masonry and concrete wall surfaces should be considered for attachment of loading dock equipment (i.e., dock seals, dock hoods, etc.) and overhead receiving doors. Durability of wall surfaces is a major concern in these areas.
- 6. Verify acceptability of EIFS at Project location.
 - A. Before retaining manufactures names, verify that their systems comply with project building codes and other requirements. Manufacturers and/or system evaluation reports may prohibit their use as soffit panels.

DeCA COMMISSARY DESIGN GUIDANCE 07 40 00 METAL PANELS

DESIGN CRITERIA

- 1. Related Sections: See Division 05 Section Cold-Formed Metal Framing for secondary support framing, including roof rafters, purlins, and ceiling joists. See Division 07 Section Sheet Metal Flashing and Trim for flashing and other sheet metal work that is not part of metal roof or wall panel assemblies.
- 2. This Section specifies factory-formed and field-assembled standing-seam metal roof panels, glassmat gypsum sheathing panels, concealed-fastener, metal wall panels, and concealed-fastener, metal soffit panels.
- 3. UFC 3-600-01 does not allow the use of fire retardant treated plywood as part of a roof or roofing system. Guide specification Division 07 Section Metal Panels requires the use of glass-mat gypsum sheathing panels for metal panel assemblies.
- 4. Contract Drawings should graphically indicate locations of specified underlayment materials.
- 5. UFC 3-110-03: Snow and ice issues are to be addressed early in design process. Issues to be addressed are contained in the Cold Regions Research & Engineering Laboratory (CRREL) report MP-01-5663, *Minimizing the Adverse Effects of Snow and Ice on Roofs*. In ASHREA climate zones 4 and above, all metal roofs shall include continuous snow retention devices at all eaves. Select snow retention devices to resist all in-service loads considering roof slope and design load. Prove adequacy on a site-specific basis by calculation and lab-tested holding strengths of devices. Snow retention devices that glue to panel surfaces or use attachments that penetrate roof panels are prohibited. Avoid using any device that voids material and coating warranties.

DESIGN CRITERIA

- 1. Related Sections: See Division 07 Sections SHEET METAL FLASHING AND TRIM and ROOF SPECIALITIES for metal copings, edge flashings, fasciae, gravel stops, flashing receivers, equipment support flashings, roof penetration flashings, and counter-flashings.
- 2. This Section specifies fully adhered two ply modified bituminous membrane roofing systems including roofing, cover board, insulation board, base flashings, walkways, and auxiliary roofing materials.
 - A. UFC 3-110-03 ROOFING (12 June 2020) requires that the designer of record determine wind uplift pressures and dimensions of the corners, perimeter, and field of the roof in accordance with ASCE-7, Minimum Design Loads for Buildings and other Structures. Coordinate roof design with UFC 3-101-01 ARCHITECTURE (05 January 2021) which provides design criteria for the building envelope as a whole, including the roof. UFC 3-101-01 includes requirements for air and vapor barriers associated with roofing systems as well as the required dew point calculation to determine the need for a vapor barrier and to verify that the vapor retarder has been positioned correctly in the roof assembly. Roofing system shall include a cover board installed directly below the roof membrane, regardless of design wind speed.
 - B. The basis-of-design system specified is for adhering cover board to insulation board with installation board over metal decking mechanically fastened through a top layer of roof insulation bard and secured to the metal decking. Attachment of cover board and insulation shall meet required uplift pressures.
 - C. The membrane underlayment shall not be fire retardant treated (FRT) plywood, article 2-13, UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES (24 September 2020).
- Provide insulation materials with a total minimum Long-Term Thermal Resistance (LTTR) R-value of 20, unless climatic conditions or local Installation energy code requirements dictate a higher R-value. Current Federal Energy Reduction Mandates may require the use of increased insulation thicknesses. This will be determined through energy usage calculations prepared as part of project development.
- 4. UFC 3-110-03 ROOFING requires that if a cool roof is selected, system shall comply with ASHRAE Standard 90.1 (2010) Chapter 5 values for cool roofing. If a cool roof is not selected in climate zones 1 through 3, meet one of the exception requirements listed in ASHRAE Standard 90.1 (2010) Chapter 5 or provide thermal insulation above the deck with a minimum R-value of 33 or greater.
- 5. Design roof slope in accordance with UFC 3-110-01 and roofing manufacturer's recommendations, but no less than 1/4" per foot to interior drains using roof structure for slopes. Achieving roof slope with insulation is not acceptable, except at drainage crickets, preformed saddles, tapered edge strips, and perimeter edge strips.
- 6. Keep interior vertical drops from roof drains to a minimum, combining when practical and locating them in concealed void spaces and storage areas. Do not locate exposed within customer areas.
- 7. If appropriate, locate overflow roof drains adjacent to normal roof drains with overflow outlets exposed on exterior wall of building.
- 8. Provide access to roof for equipment maintenance via ships ladder and roof hatch from mechanical equipment mezzanine, or stair tower from ground floor of building with standard steel door and frame roof access to roof.

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DeCA COMMISSARY DESIGN GUIDANCE 07 52 00 MODIFIED BITUMINOUS MEMBRANE ROOFING

9. Indicate roof walkways necessary to access roof mounted equipment requiring maintenance.

DeCA COMMISSARY DESIGN GUIDANCE 07 53 23 ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (BLACK)

DESIGN CRITERIA

- 1. Related Sections: See Division 07 Section SHEET METAL FLASHING AND TRIM for shop- or fieldfabricated sheet metal copings, fasciae, gravel stops, flashing receivers, equipment support flashings, roof penetration flashings, and counter-flashings.
- 2. This Section specifies fully adhered EPDM black membrane roofing systems including roof insulation, base flashings, walkways, and auxiliary roofing materials.
 - A. UFC 3-110-03 ROOFING (01 MAY 2012) requires that the designer of record determine wind uplift pressures and dimensions of the corners, perimeter, and field of the roof in accordance with ASCE-7, Minimum Design Loads for Buildings and other Structures. Coordinate roof design with UFC 3-101-01 ARCHITECTURE (28 NOV 2011) which provides design criteria for the building envelope as a whole, including the roof. UFC 3-101-01 includes requirements for air and vapor barriers associated with roofing systems as well as the required dew point calculation to determine the need for a vapor barrier and to verify that the vapor retarder has been positioned correctly in the roof assembly. Roofing system shall include a coverboard installed directly below the roof membrane, regardless of design wind speed.
 - B. The basis-of-design system specified is for installation over metal decking mechanically fastened through a top layer of roof insulation and secured to the metal decking for buildings and other structures located where the basic design wind speed (3-second gust) does not exceed 90 mph as indicated in UFC 3-301-01 STRUCTURAL ENGINEERING (01 JUN 2013).
 - C. For locations where the design wind speed is greater than 90 mph, design of cover board membrane underlayment is required in accordance with the membrane roofing system manufacturer. The membrane underlayment shall not be fire retardant treated (FRT) plywood, article 2-13, UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES (26 SEP 2006) with Change 3 (01 MAR 2013).
- Provide insulation materials with a total minimum Long Term Thermal Resistance (LTTR) R-value of 20, unless climatic conditions or local Installation energy code requirements dictate a higher R-value. Current Federal Energy Reduction Mandates may require the use of increased insulation thicknesses. This will be determined through energy usage calculations prepared as part of project development.
- 4. UFC 3-110-03 ROOFING requires that if a cool roof is selected, system shall comply with ASHRAE Standard 90.1 (2010) Chapter 5 values for cool roofing. If a cool roof is not selected in climate zones 1 through 3, meet one of the exception requirements listed in ASHRAE Standard 90.1 (2010) Chapter 5 or provide thermal insulation above the deck with a minimum R-value of 33 or greater.
- 5. Design roof slope in accordance with UFC 3-110-01 and roofing manufacturer's recommendations, but no less than 1/4" per foot to interior drains using roof structure for slopes. Achieving roof slope with insulation is not acceptable, except at drainage crickets, preformed saddles, tapered edge strips, and perimeter edge strips.
- 6. Keep interior vertical drops from roof drains to a minimum, combining when practical and locating them in concealed void spaces and storage areas. Do not locate exposed within customer areas.
- 7. If appropriate, locate overflow roof drains adjacent to normal roof drains with overflow outlets exposed on exterior wall of building.

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DeCA COMMISSARY DESIGN GUIDANCE 07 53 23 ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (BLACK)

- 8. Provide access to roof for equipment maintenance via ships ladder and roof hatch from mechanical equipment mezzanine, or stair tower from ground floor of building with standard steel door and frame roof access to roof.
- 9. Indicate roof walkways necessary to access roof mounted equipment requiring maintenance.

DeCA COMMISSARY DESIGN GUIDANCE 07 53 23 ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (WHITE)

DESIGN CRITERIA

- 1. Related Sections: See Division 07 Section Sheet Metal Flashing and Trim for shop- or field-fabricated sheet metal copings, fasciae, gravel stops, flashing receivers, equipment support flashings, roof penetration flashings, and counter-flashings.
- 2. This Section specifies fully adhered EPDM white membrane roofing systems including roof insulation, base flashings, walkways, and auxiliary roofing materials.
 - A. UFC 3-110-03 ROOFING (01 MAY 2012) requires that the designer of record determine wind uplift pressures and dimensions of the corners, perimeter, and field of the roof in accordance with ASCE-7, Minimum Design Loads for Buildings and other Structures. Coordinate roof design with UFC 3-101-01 ARCHITECTURE which provides design criteria for the building envelope as a whole, including the roof. UFC 3-101-01 includes requirements for air and vapor barriers associated with roofing systems as well as the required dew point calculation to determine the need for a vapor barrier and to verify that the vapor retarder has been positioned correctly in the roof assembly. Roofing system shall include a coverboard installed directly below the roof membrane, regardless of design wind speed.
 - B. The basis-of-design system specified is for installation over metal decking mechanically fastened through a top layer of roof insulation and secured to the metal decking for buildings and other structures located where the basic design wind speed (3-second gust) does not exceed 90 mph as indicated in UFC 3-301-01 STRUCTURAL ENGINEERING (01 JUN 2013).
 - C. For locations where the design wind speed is greater than 90 mph, design of cover board membrane underlayment is required in accordance with the membrane roofing system manufacturer. The membrane underlayment shall not be fire retardant treated (FRT) plywood article 2-13, UFC 3-600-01 FIRE PROTECTION ENGINEERING FOR FACILITIES (26 SEP 2006) with Change 3 (01 MAR 2013).
- Provide insulation materials with a total minimum Long-Term Thermal Resistance (LTTR) R-value of 20, unless climatic conditions or local Installation energy code requirements dictate a higher R-value. Current Federal Energy Reduction Mandates may require the use of increased insulation thicknesses. This will be determined through energy usage calculations prepared as part of project development.
- 4. UFC 3-110-03 ROOFING requires that if a cool roof is selected, system shall comply with ASHRAE Standard 90.1 (2010) Chapter 5 values for cool roofing. If a cool roof is not selected in climate zones 1 through 3, meet one of the exception requirements listed in ASHRAE Standard 90.1 (2010) Chapter 5 or provide thermal insulation above the deck with a minimum R-value of 33 or greater.
- 5. Design roof slope in accordance with UFC 3-110-01 and roofing manufacturer's recommendations, but no less than 1/4" per foot to interior drains using roof structure for slopes. Achieving roof slope with insulation is not acceptable, except at drainage crickets, preformed saddles, tapered edge strips, and perimeter edge strips.
- 6. Keep interior vertical drops from roof drains to a minimum, combining when practical and locating them in concealed void spaces and storage areas. Do not locate exposed within customer areas.
- 7. If appropriate, locate overflow roof drains adjacent to normal roof drains with overflow outlets exposed on exterior wall of building.

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DeCA COMMISSARY DESIGN GUIDANCE 07 53 23 ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (WHITE)

- 8. Provide access to roof for equipment maintenance via ships ladder and roof hatch from mechanical equipment mezzanine, or stair tower from ground floor of building with standard steel door and frame roof access to roof.
- 9. Indicate roof walkways necessary to access roof mounted equipment requiring maintenance.

DeCA COMMISSARY DESIGN GUIDANCE 07 60 00 SHEET METAL FLASHING AND TRIM

DESIGN CRITERIA

- Related Sections: See Division 04 Section Unit Masonry for manufactured and formed through-wall flashing, reglets, and other sheet metal flashing and trim included with unit masonry assemblies. See Division 07 Section Metal Panels for sheet metal flashing and trim associated with those assemblies. See Division 07 Section Roof Specialties for manufactured copings and roof-edge flashings which have been wind-uplift tested.
- 2. This Section specifies shop and field-formed sheet metal roof drainage systems, low-slope roof flashing, steep-slope roof flashing, and wall flashing.
- 3. Graphically indicate location and size of metal gutters and downspouts on drawings. Exterior building elevations shall locate exposed vertical downspouts with metal downspout boots. Select and identify types of metal downspout boots required on Project:
 - A. 48" high metal downspout boot with vertical discharge directly into buried storm pipe.
 - B. 48" high metal downspout boot with discharge at 35 degrees from horizontal onto splash block or pavement.
- 4. Do not discharge downspouts at grade in customer walk areas, or small landscape areas near customer areas that may be subject to flooding during heavy rainfall. Discharge directly into buried storm pipe systems.

DeCA COMMISSARY DESIGN GUIDANCE 07 71 00 ROOF SPECIALTIES

DESIGN CRITERIA

- 1. Related Sections: See Division 07 Section Sheet Metal Flashing and Trim for site-fabricated sheet metal flashing and trim and for roof-edge drainage-system components. See Division 07 Section Metal Panels for sheet metal flashing and trim associated with those assemblies.
- 2. This Section specifies manufactured copings and roof-edge flashings which have been SPRI ES-1 wind-uplift tested.
- 3. Roof specialties are plant manufactured and distinguished from sheet metal flashing and trim components that are also linear in nature, but which are formed or fabricated in the field or at the fabricator's shop.
- 4. Graphically indicate location and size of manufactured copings and roof-edge flashings on drawings.

DeCA COMMISSARY DESIGN GUIDANCE 07 72 33 ROOF HATCHES

DESIGN CRITERIA

- 1. Related Sections: See related Division 05, Division 07, and Division 08 Design Criteria.
- 2. Roof hatches shall be provided in facilities with minimal roof top equipment (i.e., air cooled condensing units, air intake and exhaust fans, small prepackaged HVAC units, etc.).
- 3. Stair towers for roof access, using 3'-0" wide by 7'-0" high insulated standard steel doors, shall be provided in facilities with roof mounted refrigeration mechanical centers and HVAC systems. Refer to Division 08 Hollow Metal Doors and Frames for roof access door criteria.
- 4. Roof hatch shall be single leaf-type with minimum opening size of 2' 6" by 4' 6" and typically accessed by a ship's ladder from the mechanical equipment mezzanine. Refer to Division 05 Metal Fabrications for ship ladder design criteria.
- 5. Locate roof hatch parallel with roof framing and position to avoid overhead clearance conflicts with intermediate framing / bridging and ship's ladder.
- 6. Verify intended roof surface drainage patterns are maintained around hatch installation. Provide crickets where required to direct surface runoff around units and not cause ponding.
- 7. Provide safety railing system, at roof level, around roof hatch.
- 8. Do not locate roof hatch or any equipment requiring maintenance within ten feet of a roof edge, unless safety railings are provided.
- 9. Provide roof walkway pads from roof hatch access point to all roof top equipment requiring maintenance. Location of walkway pads shall be indicated on roof plan.
- 10. Verify that a security alarm contact is provided at roof hatch, as well as padlock.

DeCA COMMISSARY DESIGN GUIDANCE 07 84 00 FIRESTOPPING

DESIGN CRITERIA

- 1. Related Sections: See Divisions 21, 22, 23, 26, 27 and 28 Sections to ensure that systems required under in this Section fit the types of mechanical and electrical penetrating items and the types of fire-rated construction penetrated.
- 2. This Section specifies through-penetration firestop systems and fire-resistive joint systems for headof-wall joints installed in fire-resistance-rated construction.
- 3. This Section does not specify fire-resistive joint systems for floor-to-floor, floor-to-wall, and wall-towall joints, and perimeter fire-containment systems (often called *fire-safing insulation*) for perimeter joints between curtain-wall assemblies and fire-resistance-rated floor assemblies.
- 4. This Section makes the Contractor responsible for selecting, furnishing, and installing throughpenetration firestop systems and fire-resistive joint systems for head-of-wall joints appropriate for the fire-resistance-rated construction indicated on the drawings.

DeCA COMMISSARY DESIGN GUIDANCE 07 92 00 JOINT SEALANTS

DESIGN CRITERIA

- Related Sections: See Division 32 Section Concrete Paving Joint Sealants; Division 03 Section Castin-Place Concrete for joint fillers; Division 04 Section Unit Masonry for joint fillers and gaskets for control and expansion joints in unit masonry; Division 07 Section Firestopping; Division 08 Section Glazing for glazing sealants; Division 09 Section Resilient Tile Flooring for joint fillers in concrete floor slab; and Division 09 Section Gypsum Board for sealing perimeter joints of gypsum board partitions to reduce sound transmission.
- This Section specifies elastomeric and latex joint sealants for applications indicated at beginning of Section, and continuous foam compression seals to fill voids between refrigerated display cases and adjacent wall surfaces. Refer to Design Standard Plate 10 15 00-01 and 10 15 00-02 07 92 00 - 1 and 07 92 00 - 2.
- 3. Control / contraction joints in exposed concrete floor slabs shall be filled with joint filler as specified in Division 03 Section Cast-In-Place Concrete.
- 4. Control / contraction joints in concrete floor surfaces receiving resilient floor tile covering shall be filled with latex patching or underlayment compound recommended by resilient flooring manufacturer.

Division 08 – Openings

DeCA COMMISSARY DESIGN GUIDANCE 08 11 13 HOLLOW METAL DOORS AND FRAMES

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 and Division 08 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. Typically, hollow metal doors and frames are used at office / storage areas in non-customer areas, and customer areas requiring increased durability. Hollow metal door frames with stained solid core wood doors are typically used in administrative office areas and office / storage areas facing customer areas.
- 3. Select all hollow metal doors and frames for high use, heavy traffic applications. Design doors and frames in accordance with ANSI/SDI A250.8, SDI-100 "Recommended Specifications for Standard Steel Doors and Frames" as Published by the Steel Door Institute.
- 4. Hollow Metal Frames:
 - A. Exterior frames shall be 0.067" minimum base metal thickness (nominal 14 gage) galvanized steel with reinforcement and grout guards at hardware locations. Frames shall be shop fabricated with mitered and welded face corners and seamless face joints. Do not use knockdown frames. Secure frames in masonry construction using adjustable galvanized strap-and-stirrup or T-shaped anchors. Do not use wire anchors. Grout frames solid.
 - B. Interior frames shall be 0.053" minimum base metal thickness (nominal 16 gage) (shop primed steel except where frames are exposed to a refrigerated space and where project conditions require galvanized steel) with reinforcement and grout guards at hardware locations, except where 0.067" minimum base metal thickness (nominal 14 gage) galvanized steel security frames are required. Refer to Commissary Door Schedule in Appendix "A". Frames shall be shop fabricated with mitered and welded face corners and seamless face joints. Do not use knockdown door frames. Secure door frames in masonry construction using adjustable galvanized strap-and-stirrup or T-shaped anchors. Do not use wire anchors. Grout frames solid. Secure door frames in steel stud framed partitions with stud-wall type anchors welded to steel studs. Spot grout frames at jamb anchor locations in accordance with Division 09 Section Gypsum Board.
 - 1. Traffic doors located in steel stud framed partitions shall have 0.067" minimum base metal thickness (nominal 14 gage) flush galvanized steel security frames with 1/4" steel plate at all hardware attachment points. Reinforcing shall be welded to concealed face of frame.
 - 2. Traffic doors located in concrete masonry unit (CMU) partitions shall have steel channel frames. Refer to Division 05 Metal Fabrications for further information.
- 5. Hollow Metal Doors:
 - A. Exterior doors shall be thermally insulated 0.053" minimum base metal thickness (nominal 16 gage) galvanized steel. Fabricate in accordance with ANSI/SDI A250.8 Level 3 and Physical Security Level A (Extra Heavy Duty), Model 2 (Seamless).
 - B. Interior doors shall be 0.053" minimum base metal thickness (nominal 16 gage) shop primed steel except where doors are exposed to a refrigerated space and where project conditions require galvanized steel. Provide thermally insulated doors at locations where doors are exposed to a refrigerated space. Fabricate in accordance with ANSI/SDI A250.8 Level 3 and Physical Security Level A (Extra Heavy Duty), Model 1 (Full Flush).
 - C. Interior security doors shall be 0.067" minimum base metal thickness (nominal 14 gage) shop primed steel. Fabricate in accordance with ANSI/SDI A250.8 Level 4 and Physical Security Level A (Extra Heavy Duty), Model 1 (Full Flush).
 - D. Glass vision panels in exterior doors shall be laminated glass. Glass vision panels in interior doors shall be tempered glass, except at security door locations where laminated glass shall be provided.

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DeCA COMMISSARY DESIGN GUIDANCE 08 11 13 HOLLOW METAL DOORS AND FRAMES

Refer to Design Standard Plates for Commissary Door Types in Appendix "A", for vision panel sizes. Note that vision panel in Cashier's Office security door shall not exceed 24" by 24" in size.

- E. Access through wall surfaces above cold storage rooms is frequently required and must be easily accessible. Provide access via a standard steel door and frame, with passage latch set, in lieu of conventional access openings as specified in Section 08 31 13 Access Doors and Frames. No locks are to be provided on these access door openings. Provide HM access doors (2'-8" wide by 3'-8" high) in these walls, allowing access from warehouse area to space above cold storage rooms as required for service access and maintenance. Locate bottom of access doors immediately above cold storage room ceilings at 11'-4 " AFF. Standard hollow metal frame, and stop, shall be continuous on all four sides of door opening.
- F. Facilities with roof mounted refrigeration mechanical centers and HVAC systems shall be designed with a stair tower for roof access. Provide an insulated standard hollow metal door in the stair tower at roof with appropriate security grade hardware and security alarm contact.
- Exterior swinging doors into inhabited areas shall be designed for security protection in accordance with UFC 4-010-01 DoD Minimum Antiterrorism Standards For Buildings (latest edition), Standard 12, as follows:
 - A. Ensure that exterior doors into inhabited areas open outwards. By doing so, the doors will seat into the door frames in response to an explosive blast, increasing the likelihood that the doors will not enter the buildings as hazardous debris. Alternatively, position doors such that they will not be propelled into inhabited spaces or provide other means to ensure they do not become hazards to building occupants.
 - B. Glazing in and around doors must comply with Standard 10.
 - C. Sliding glass doors and revolving doors do not have to open outwards.
 - D. Because of the nature of overhead door failures due to blast loads there are no antiterrorism requirements for overhead doors.
 - E. Compliance with the door requirements in Appendix B of UFC 4-010-01 (latest edition) and UFC 4-020-01 shall be required if one of the following is true:
 - 1. The facility has an identified Design Basis Threat (DBT) and a level of protection (LOP). The ATFP planning team for the installation and the building being designed/renovated shall determine if the facility has an identified DBT and LOP, and notify the AE of their findings. When a project has an identified DBT and LOP, the building shall be designed to specifically counter the identified DBT(s) and provide the required LOP, as well as the baseline requirements of the current version of UFC 4-010-01, whichever is more stringent. The building is not required to comply with additional requirements in UFC 4-010-01 Appendix B, (latest edition) and UFC 4-020-01 that are unrelated to countering the identified DBT.
 - 2. The facility is located outside the Installation Perimeter as defined in UFC 4-010-01. Installation Perimeter is now defined as "any demarcation identifying the limit of DoD property and directly or indirectly indicating that unauthorized access is prohibited".

It will be critical for projects that fall within either of these categories to have a clear assessment and determination established of the DBT and LOP for the facility prior to design start.

DeCA COMMISSARY DESIGN GUIDANCE 08 11 13 HOLLOW METAL DOORS AND FRAMES

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. Typically, solid core flush wood doors are used throughout administrative office areas and office/storage areas facing customer areas.
- 3. Doors shall comply with "Architectural Woodwork Standards".
- 4. Doors shall be Custom Grade in accordance with the "Architectural Woodwork Standards". A structural composite lumber core (SCLC) is used for durability and so that minimum stile widths at glazed doors may be provided in accordance with specified warranty requirements.
- 5. Wood veneer shall be rift cut red oak with factory applied transparent finish. Doors shall be factory fit to suit frame-opening sizes and factory machined for hardware that is not surface applied.
- 6. Where required, doors shall have wood louvers and wood frames for glass vision panels, matching wood veneer on door.

END OF SECTION

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DeCA COMMISSARY DESIGN GUIDANCE 08 31 13 ACCESS DOORS AND FRAMES

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. Provide access through finished walls and ceilings for concealed mechanical and electrical items, such as transformers, mixing valves, shut-off valves, and any other items requiring maintenance or access. Provide adequate general notes on contract documents requiring this access.
- 3. Typically, screwdriver-operated cam latches shall be provided on access doors, except at locations requiring frequent access / inspection and sized for passage of maintenance personnel. Locations requiring frequent access / inspection shall be identified (both size and location) on the drawings, and shall be self-latching bolt operated by an integral knurled knob turn.
- 4. Access through wall surfaces above cold storage rooms is frequently required and must be easily accessible. Provide access via a standard hollow metal door and frame in accordance with Section 08 11 13 Hollow Metal Doors and Frames.
- 5. Indicate access doors above refrigerated cases where case controllers are located on the top of the case. Locate the access doors between the décor soffit and the top of the case. Provide adequate space and adequately sized door to provide access to the controller. Indicate an access door at all case controller locations when required.

DeCA COMMISSARY DESIGN GUIDANCE 08 33 23 OVERHEAD COILING DOORS

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. Both sectional overhead doors and overhead coiling doors are used in commissary facilities. The type to be used on a specific project should be verified by the DeCA Project Manager at the start of design. Refer to Section 08 36 13 Sectional Doors for additional information.
- 3. Four different types of overhead coiling doors are typically used in commissary facilities.
 - A. Type OCD-1: Manually operated insulated exterior coiling service door in combination with manually operated ventilating security door. This door type is typically used at grade level receiving doors to permit fresh air ventilation while at the same time maintain security and rodent control.
 - B. Type OCD-2: Manually operated insulated exterior coiling service door. This door type is typically used at dock height receiving doors. It is also used sometimes when multiple grade level receiving doors are present.
 - C. Type OCD-3: Manually operated non-insulated interior coiling counter doors. This door type is typically used where a service window and counter is provided in the administrative office area.
 - D. Type OCD-4: Manually operated non-insulated interior coiling service doors. This door type is typically used at service opening between refrigeration equipment mezzanine and receiving area in warehouse. Forklift trucks are used to lift commercial refrigeration and other equipment up to mezzanine. Safety chains are required at this door opening as specified in Section 055013 Metal Fabrications. This requirement needs to be coordinated with door schedule.
 - E. If hurricane resistant sectional overhead doors are required for Project, add performance requirements to specification section.
DeCA COMMISSARY DESIGN GUIDANCE 08 36 13 SECTIONAL DOORS

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. Both sectional overhead doors and overhead coiling doors are used in commissary facilities. The type to be used on a specific project should be verified by the DeCA Project Manager at the start of design. Refer to Section 08 33 23 Overhead Coiling Doors for additional information.
- 3. Two different types of sectional overhead doors are typically used in commissary facilities.
 - A. Type 1: Manually operated insulated exterior sectional door in combination with manually operated ventilating security door. This door type is typically used at grade level receiving doors to permit fresh air ventilation while at the same time maintain security and rodent control.
 - B. Type 2: Manually operated insulated exterior sectional door. This door type is typically used at dock height receiving doors. It is also used when multiple grade level receiving doors are present.
- 4. If hurricane resistant sectional overhead doors are required for Project, add performance requirements to Specification Section.

DESIGN CRITERIA

- 1. Related Sections: See related Division 05, Division 08, and Division 13 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. This Section includes double action, self-closing, lightweight, impact resistant doors (i.e., traffic doors) and flexible vertical strip barrier doors (i.e., plastic strip curtains).
 - A. Type "FF" non-sealed traffic doors are typically used at air-lock vestibules located between conditioned sales areas and non-conditioned storage areas. This door type also provided at bakery /deli service entrance, with padlock brackets so doors can be secured during non-business hours. Coordinate with door schedule.
 - B. Type "GG" sealed traffic doors are typically used at cold storage room door openings with frequent pedestrian, as well as forklift traffic, that do not have sliding or swinging cold storage doors. At door openings requiring both traffic doors and either sliding or swinging cold storage doors, spring bumpers will project out too far and conflict with sliding doors which will result in sliding doors being knocked-off track or traffic doors being damaged. At these locations, spring bumpers will be used on one side of traffic doors, opposite the sliding door. The traffic door side facing the sliding door will have no spring bumper but will have scuff plate instead. This condition typically only occurs at Bulk Meat Storage (RM. 59) between Sales Area (RM. 69), Meat Preparation (RM. 55, and Meat Wrapping (RM. 56).
 - C. Type "O" plastic strip curtains are used at cold storage room door openings that have either sliding or swinging cold storage doors, to minimize loss of refrigeration cooling when cold storage doors are open.

Refer to Commissary Door Schedule for specific door locations.

- 3. Color of traffic doors shall be indicated in the Contract Documents. Standard color shall be "black."
- 4. Traffic doors are subject to heavy usage. It is imperative that structurally adequate door frames be provided at all traffic door locations.
 - A. Cold storage room wall panels have built-in structural framing to accommodate traffic doors. Stainless steel frames (18 gauge) shall wrap head and both jambs of door opening to provide additional rigidity and impact protection.
 - B. Structural steel channels (6" minimum face width) shall be used as door frames at concrete masonry unit (CMU) partitions. Channels shall be securely anchored to CMU construction and grouted solid.
 - C. Reinforced 14 gauge flush galvanized steel security frames shall be used at gypsum wallboard (GWB) partitions. Frames shall be securely anchored to partition framing and floor. Reinforce frames with 1/4"steel plate at all hardware attachment locations. Reinforcing shall be welded to concealed face of frame.

DESIGN CRITERIA

- 1. Related Sections: See Division 08 Sections Sliding Automatic Entrances and Glazing.
- 2. This Section specifies standard exterior and interior aluminum-framed entrance and storefront systems.
 - A. Entrance systems include manual-swing aluminum doors, door frames, vestibule enclosures, transoms, and sidelights.
 - B. Storefront systems include fixed glazing and framing.
- 3. Exterior aluminum framed systems shall be designed for security protection in accordance with UFC 4-010-01 DOD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS (latest edition) Standard 10. These provisions apply to all exterior window systems, including glazing in exterior doors. For glazing in exterior building elements such as storefronts, doors, windows, curtain walls, clerestories, and skylights provide no less than 1/4 in. (6 mm) nominal polycarbonate or laminated glass. The 1/4 in. (6 mm) laminated glass consists of two nominal 1/8 in. (3 mm) glass panes bonded together with a minimum of a 0.030 in. (0.75 mm) interlayer of a material designed for blast resistance. For insulated glass units (IGU), use the polycarbonate or laminated glass for the innermost pane as a minimum. For laminated glass, provide a glazing frame bite in accordance with ASTM F 2248. For polycarbonate, provide a glazing frame bite of no less than 1.5 times the polycarbonate thickness.

Monolithic glass or monolithic acrylic used as a single pane or as the inner pane of a multi-pane system is not allowed for the purposes of complying with this standard. Spandrel glass when backed by a structural wall or spandrel beam, translucent fiberglass panels, other lightweight translucent plastics, and glass unit masonry are not required to comply with this standard. Spandrel glass that is open to occupied space must be designed in accordance with this standard.

- 4. Glazing in stairwells, vestibules, and covered or enclosed walkways that are exterior to buildings required to comply with these standards must meet the provisions of this standard. In addition, any windows, inner doors, sidelights, and transoms that are interior to the exterior stairwells, vestibules, or covered or enclosed walkways must meet the requirements of this standard.
- 5. When windows or skylights are being replaced by filling in the openings with wall or roof material fill in the openings with the same or similar construction as the adjacent wall or roof construction. Alternatively install lightweight translucent fiberglass or plastic panels in the openings.
- Exterior swinging doors into inhabited areas shall be designed for security protection in accordance with UFC 4-010-01 DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS (latest edition) Standard 12, as follows:
 - A. Ensure that all exterior swinging doors into inhabited areas open outwards. By doing so, the doors will seat into the door frames in response to an explosive blast, increasing the likelihood that the doors will not enter the buildings as hazardous debris. Alternatively, position doors such that they will not be propelled into inhabited areas or provide other means to ensure they do not become hazards to building occupants.
 - B. Glazing in and around doors must meet the requirements of Standard 10.

DeCA COMMISSARY DESIGN GUIDANCE 08 41 13 ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

- C. Sliding glass doors and revolving doors are not required to open outwards for ATFP purposes, per UFC 4-010-01 section 3-13.2. However, they may be required to swing outwards for egress purposes in order to comply with life safety building codes.
- D. Compliance with the window and door requirements in Appendix B of UFC 4-010-01 (latest edition) and UFC 4-020-01 shall be required if one of the following is true:
 - 1. The facility has an identified Design Basis Threat (DBT) and a level of protection (LOP). The ATFP planning team for the installation and the building being designed/renovated shall determine if the facility has an identified DBT and LOP, and notify the AE of their findings. When a project has an identified DBT and LOP, the building shall be designed to specifically counter the identified DBT(s) and provide the required LOP, as well as the baseline requirements of the current version of UFC 4-010-01, whichever is more stringent. The building is not required to comply with additional requirements in UFC 4-010-01 Appendix B, (latest edition) and UFC 4-020-01 that are unrelated to countering the identified DBT.
 - 2. The facility is located outside the Installation Perimeter as defined in UFC 4-010-01. Installation Perimeter is now defined as "any demarcation identifying the limit of DoD property and directly or indirectly indicating that unauthorized access is prohibited".

It will be critical for projects that fall within either of these categories to have a clear assessment and determination established of the DBT and LOP for the facility prior to design start.

- 6. If project requires no exterior framing systems, edit Specification Section deleting requirements for security protection.
- 7. If hurricane resistant aluminum framed systems are required for Project, add performance requirements to Specification Section.

DeCA COMMISSARY DESIGN GUIDANCE 08 42 29.23 SLIDING AUTOMATIC ENTRANCES

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates.
- 2. Sliding automatic entrance doors are typically provided at all customer entrances and exits. Depending on egress requirements, either full-breakout or fixed sidelight door packages shall be provided. Perform an exiting analysis to determine which type is required.
- 3. Provide sliding automatic door packages with transom panels, unless conditions prevent the use of transom panels. Standard door package size, with transom, is 10' 0" 10'-8" wide (medium stile frame with 48" clear door opening) by 10' 0" high.
- 4. In new facilities with entrance carpet tile equip interior and exterior door openings with continuous tapered extrusion square by bevel threshold with bevel on non-carpeted side.
- 5. On addition / alteration projects with entrance carpet tile at vestibules, a threshold is required at interior and exterior doors. If continuous split track/threshold exists, replace just the threshold under the sliding panels. If continuous track exists, replace entire track. Equip interior and exterior doors with continuous tapered extrusion square by bevel threshold with bevel on non-carpeted side.
- 6. Exterior sliding automatic door package glazing shall be laminated type and secured using structural sealant to comply with current force protection requirements.
- 7. Entry, Exit and Cart Return Vestibule sliding automatic door systems, including sidelight frames and transoms, shall be designed for security protection in accordance with UFC 4-010-01 DoD Minimum Antiterrorism Standards For Buildings, (latest issue), Standard 12.

DeCA standard is to design commissary facilities so that both interior and exterior sliding automatic entrance door systems (operable doors, sidelights, and transoms) are positioned such that they will not be propelled into inhabited spaces, or provide other means to ensure they do not become hazards to building occupants. Sliding automatic entrance door systems glazing must comply with glass type and minimum frame bite provisions of Standard 10. The typical approach DeCA utilizes to ensure that the doors are not a hazard to building occupants is to include a wall between the automatic sliding doors and the inhabited portion of the building (usually the Sales Area). Design this wall with enough strength to stop the doors if they are blown off of the frames and fly into the building in a blast event. Typically the wall is of 8" CMU construction, with all cells filled, and with reinforcing as required for the height of the wall and the standoff distance. Ensure that the top of the wall is restrained as well, unless wall is designed to cantilever from the footing. Use SBEDS to calculate structural engineering requirements.

- 8. Compliance with the window and door requirements in Appendix B of UFC 4-010-01 (latest edition) and UFC 4-020-01 shall be required if one of the following is true:
 - 1. The facility has an identified Design Basis Threat (DBT) and a level of protection (LOP). The ATFP planning team for the installation and the building being designed/renovated shall determine if the facility has an identified DBT and LOP, and notify the AE of their findings. When a project has an identified DBT and LOP, the building shall be designed to specifically counter the identified DBT(s) and provide the required LOP, as well as the baseline requirements of the current version of UFC 4-010-01, whichever is more stringent. The building is not required to comply with additional requirements in UFC 4-010-01 Appendix B, (latest edition) and UFC 4-020-01 that are unrelated to countering the identified DBT.
 - 2. The facility is located outside the Installation Perimeter as defined in UFC 4-010-01. Installation Perimeter is now defined as "any demarcation identifying the limit of DoD property and directly or indirectly indicating that unauthorized access is prohibited".

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DeCA COMMISSARY DESIGN GUIDANCE 08 42 29.23 SLIDING AUTOMATIC ENTRANCES

It will be critical for projects that fall within either of these categories to have a clear assessment and determination established of the DBT and LOP for the facility prior to design start.

For assistance in the design of vestibules, catch walls, use of SBEDS, determining requirements and solutions, and determining when Vestibule Sliding doors are not required to be Blast Rated, or if the design of a Vestibule is required to include Blast Rated doors per UFC 4-010-01, contact the Omaha COE PDC (Protective Design Centers) at https://pdc.usace.army.mil/whoweare/contacts. Plans can be sent to the PDC via email, and they can assist in the design and analysis to ensure compliance with UFC 4-010-01. When analysis is required, the AE shall include on their team an engineer that is competent in designing structures to withstand blast loading.

- 9. Drawings shall graphically indicate the direction of travel at sliding automatic doors. Customer entrance and carry-out return doors shall have motion detectors that will activate doors allowing one-way only traffic flow into the commissary, when doors are in the closed position. Customer exit doors shall have motion detectors that will activate doors allowing one-way only traffic flow out of the commissary, when doors are in the closed position. Deviations from the above requirements shall be discussed during project design and documented in the Project Design Analysis. An exception to the above requirements would be at facilities sharing a common entrance from an adjacent exchange mall or possibly at a commissary with only one customer entrance, where two-way traffic flow is desired.
- 10. Provide door signage on both sides of each sliding automatic door package, identifying intended use of door (i.e., entrance, exit, emergency exit, carry-out return) based on which direction a person is approaching the door. Locate signage on center horizontal muntin.
- 11. Provide stainless steel protection plates on traffic side of exit doors/sidelight panels and carry-out return doors/sidelight panels to protect against impact damage from shopping carts. Do not provide stainless steel protection plates at entrance doors, unless shopping carts are stored on exterior of commissary. In addition to stainless steel protection plates, provide protection posts to guard leading edge of all sliding automatic doors. Protection posts on exterior side (breakaway side) shall be placed a minimum of 36" in front of doors to permit emergency breakaway door swing.
- 12. Provide 10" high door bottoms on automatic sliding doors and sidelights, to match that required by ANSI A117.1 on manual swing doors and storefront systems.
- 13. Indicate maintenance proximity from Installer's place of business to Project site to suit Project location.
- 14. If project requires no exterior sliding automatic door systems, edit specification section deleting requirements for security protection.
- 15. If hurricane resistant sliding automatic door systems are required for Project, add performance requirements to specification section.









DeCA COMMISSARY DESIGN GUIDANCE 08 62 00 DAYLIGHTING

DESIGN CRITERIA

1. Requirements

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. Use a combination of side-lighting and top-lighting to achieve a total daylighting zone that is at least 75% of regularly occupied sales and customer service areas, and any employee administration spaces occupied for critical visual task, including receiving and staging areas.

- A. Side-lighting Daylight Zone
 - 1. Achieve a value, calculated as the product of the visible light transmittance (VLT) and window-to-floor area ratio (WFR) of daylight zone, between 0.150 and 0.180. The window area included in the calculation must be the portion of the window at least 30 inches above the floor.
 - 2. The ceiling should not obstruct a line in section that joins the window-to-head to a line on the floor that is parallel to the plane of the window is twice the height of the window-head above the floor in distance from the plane of the glass as measured perpendicular to the plane of the glass.
 - 3. Provide sunlight redirection and/or glare-control devices to ensure daylight effectiveness
- B. Top-lighting Daylight Zone
 - 1. Achieve skylight roof coverage of 4% of the roof area within a minimum 0.5 VLT for the skylights.
 - 2. The distance between the skylights must not be more than 1.4 times the ceiling height.
 - 3. The skylight diffuser must have a measured haze value of greater than 90% when tested according to ASTM D1003.

Provide the integration of automatic dimming, daylight-sensing electric lighting controls to include appropriate glare control measures.

Skylights and other daylighting components shall be designed to comply with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings (latest issue). Use of extensive store front glazing, skylights and other daylighting features need to be reconciled with force protection entry and blast resistance standards when the facility is located outside the installation perimeter or the facility has an identified DBT and LOP that must be designed for.

Skylights shall comply with OSHA regulations. 29 CFR 1910.23 requires skylights in roofs of completed buildings, through which persons may fall while walking or working, be guarded by a standard skylight screen or a fixed standard railing on all exposed sides. The Basis-of-Design Product indicated in Guide Specification Section 08 62 00 DAYLIGHTING, contains an integral curb mounted safety screen and complies with these requirements. 29 CFR 1926 relates to OSHA fall protection safety requirements at roof openings (including skylights) for projects under construction.

2. Benefits

The introduction of daylight has the potential to provide a more comfortable environment for the occupants as well as reduce the buildings energy use. Good daylight is soft and cool, both in temperature and color. The ultimate goal is to control the admission of natural light into the building while balancing heat gain and loss, glare control and variations in daylight availability.

DeCA COMMISSARY DESIGN GUIDANCE 08 62 00 DAYLIGHTING

3. Related Sections

Section 26 51 00, Interior Lighting Section 26 09 23, Lighting Control Devices Section 08 81 00, Glazing`

- 4. Design Requirements
 - A. The A/E will develop strategies to address the following concerns:
 - 1. Daylighting Appropriateness For each space in the commissary, identify where daylighting will be beneficial to the occupants and the energy efficiency of the space.
 - Direct Sunlight Tolerance For each space in the commissary, identify areas for potential of direct sunlight and provide recommendations to maximize the penetration of diffused direct sunlight.
 - 3. Views and Connection to outdoors For spaces that are located close to the daylight source, consider the use of transoms or other clear glass to promote views to the outside.
 - 4. In addition to skylights, other means of daylighting should be considered when the building orientation and design allow it, such as light shelves and clerestory windows.
 - B. The A/E shall use the following design guidelines during the design process:
 - Building Orientation Where site design limitations allow, design the facility to maximize the north and south façade with windows and minimizing the direct exposure to the east and west.
 - 2. Windows and Skylights Design windows and skylights to maximize daylighting opportunities through the orientation and angle of windows, clerestories and diffused glazed skylights. The A/E shall investigate methods that are employed to reduce the amount of light leaving the building where clerestories are used. Avoid placing skylights directly above checkout stands or immediately adjacent to walls/soffits.
 - Lighting Design Orient the electric lighting system parallel to the source of daylight. Integrate the design with automatic dimming (to 20%, except the produce accent lighting.), task lighting, daylight-sensing electric light. Staging and receiving areas can be turned completely off.
- 5. Submittals
 - A. Provide documentation demonstrating that the criterion for daylighting zone has been achieved. Provide area calculations that define the daylight.
 - B. Provide anticipated electricity consumption savings for lighting and reduction in cooling and/or heating loads.

DeCA COMMISSARY DESIGN GUIDANCE 08 71 00 DOOR HARDWARE

DESIGN CRITERIA

- Related Sections: See Division 08 Sections Hollow Metal Doors and Frames and Aluminum-Framed Entrances and Storefronts for door and frame preparation, and reinforcement provided as part of doors and frames. See Division 08 Section Flush Wood Doors for factory pre-fitting and machining of wood doors for door hardware. See Division 08 Section Key Storage Equipment for key management system.
- 2. This Section specifies hardware, also known as *finish hardware*, *builders' hardware*, or *architectural finish hardware*, applied to doors. The Section uses manufacturers' product names and references to Builders Hardware Manufacturers Association standards in Part 3 "Door Hardware Schedule" Article to indicate door hardware requirements. Also included are hardware items essential to the operation, control, and weather stripping of doors, and electrified door hardware.
- Guide specification Division 08 Section Door Hardware includes typical hardware sets required in Commissary facilities. Select hardware sets from descriptive names of rooms indicated in specification. If necessary, adjust to suit project requirements. General guidelines for door locking is as follows:
 - A. Automatic entrance doors are specified with all required operational door hardware, except cylinder locks. Indicate cylinder locks that are key operated from exterior side and thumb turn operated from interior side.
 - B. Exterior aluminum framed glass door at Administrative Office entrance requires a two-point deadlatch, cylinder lock (key operated from exterior side and paddle from interior side), closer, and pull hardware.
 - C. Exterior employee entrance / exit doors in warehouse area require exit device, door closer, and local day alarm. Day alarm shall be the type where de-activation will be accomplished only by key access. Day alarm must be hard wired, with battery back-up. Any time receiving is not taking place these doors must be under surveillance by a DeCA employee or monitored by a local alarm to afford protection against unauthorized entry or exit. The local day alarm will typically be activated so that security can be controlled during the time when the store is closed to customers, but still occupied by cleaning, maintenance, and stocking personnel. The purpose of the local alarm is to serve as a deterrent and immediately notify management if unauthorized use of a particular door occurs. It does not replace the intrusion detection (IDS) that is monitored by Installation police, and typically activated when the building is unoccupied. IDS does not annunciate in the store.
 - D. Exterior emergency exit only doors require delayed egress lock with local day alarm. It is intended that these doors will only be used in an emergency. Day alarm shall be the type where de-activation will be accomplished only by key access or fire alarm signal. Day alarm must be hard wired, with battery back-up, and will typically be activated 24 hours per day. The purpose of the local alarm is to serve as a deterrent and immediately notify management if unauthorized use of a particular door occurs. It does not replace the intrusion detection (IDS) that is monitored by Installation police, and typically activated when the building is unoccupied. IDS does not annunciate in the store.
 - E. Exterior overhead receiving doors require a padlock at both jambs of door opening.
 - F. Interior aluminum framed glass door or solid core wood door at Administrative Office Corridor entrance from Sales Area requires a closer and push/pull hardware. Provide a deadlock on this door so that the administrative office area can be secured after hours. If door is designated as a required means of egress, provide sign on door stating that requirement.

DeCA COMMISSARY DESIGN GUIDANCE 08 71 00 DOOR HARDWARE

- G. Private offices require locksets.
- H. Cashier's Office and Cash Counting Room doors require mortise locks (storeroom function with a minimum 3/4" throw). The Cash Counting Room door also requires an electric door strike with operator located in Cashier's Office.
- I. Communications Room and Communications Closet require mortise locks (storeroom function with a minimum 3/4" throw).
- J. Employee Break Rooms, Toilet Rooms, Locker Rooms, and Training Rooms require push/pull hardware and door closers. Some locations require deadbolt locks to secure these rooms during non-business hours, to prohibit access to room by employees, stockers, and vendors after rooms have been cleaned. Verify requirement for deadbolt locks with the DeCA Project Manager.
- K. Janitor's Closets, mechanical rooms, and Storage Room doors require storeroom function locksets. Provide closers on doors opening to customer areas.
- 4. Assure that door hardware selected complies with ABA Accessibility Standard for Department of Defense Facilities as adopted by the Deputy Secretary of Defense memorandum dated October 31, 2008.
- 5. Guide specification indicates lever handles on all doors in accordance with accessibility requirements. Cast construction. Commercial plain design. Lever handles for exit devices shall meet test requirements of ANSI/BHMA A156.13 for mortise locks. Lever handle locks shall have breakaway feature (such as weakened spindle or shear key) to prevent irreparable damage to lock when force in excess of that specified in ANSI/BHMA A156.13 is applied to the lever handle. Lever handles shall return to within 1/8" of door face.
- 6. Indicate all high use interior personnel doors with kick plates on push side of door.
- 7. Indicate Type 2 Security Grade 1 locksets at the following locations:
 - A. Exterior Doors.
 - B. Administration offices.
 - C. Cashier's Office dead bolt lockset required.
- 8. Indicate Type 1 Operational Grade 1 locksets at all storage and utility rooms.
- Indicate door closers complying with ANSI/BHMA A156.4, Series C02000, Grade 1. Use closers Type C02011 with optional feature PT 4C (adjustable closing force at least 50% over minimum value for closer) for surface applications, except use parallel arm closers, C02021, on out-swinging exterior doors.
- 10. Indicate heavy-duty wall mounted or floor mounted door stops. Provide as necessary to preclude damage to door, hardware, and adjacent walls.
- 11. Locate building key box (KNOX-BOX) on exterior building wall adjacent to main customer entrance for use by Fire Department in an emergency. Verify with Fire Department that building key box specified is compatible with that used at Installation. Modify accordingly. Provide additional building key boxes as required by the AHJ.

DeCA COMMISSARY DESIGN GUIDANCE 08 71 00 DOOR HARDWARE

- 12. Under Building Access:
 - A. In accordance with UFC 4-010-01, Standard 20, indicate methods of controlling access to crawl spaces, utility tunnels, and other means of under building access.
 B. Verify with Installation safety authorities if under building access is to conform to OSHA requirements for confined spaces.

DeCA COMMISSARY DESIGN GUIDANCE 08 79 13 KEY STORAGE EQUIPMENT

DESIGN CRITERIA

- 1. GENERAL
 - A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - B. The key control cabinet is a key management system designed to control key access and accountability in commissary facilities. One or more key control cabinets may be required, depending on size of the building. Locations and sizes of cabinets should be determined during the design charrette process. They are typically located in areas accessible to employees at all times when the building is occupied, such as the administrative office area and warehouse staging and receiving area. If key control cabinet must be located in a corridor or circulation path, ensure it complies with ABA requirements. Coordinate required utility connections as specified. All utility connections (power, data, etc) shall be hardwired internal to the key control cabinet.
 - C. Sizes are as follows:
 - 1. 1E12-A Key Control Cabinet, 16 key set.
 - 2. 1E12-B Key Control Cabinet, 32 key set.
 - 3. 1E12-C Key Control Cabinet, 48 key set.
 - D. The same cabinet box is used for all three sizes. The 1E12-A has one 16 key module and two blank covers. The 1E12-B has two 16 key modules and one blank cover. The 1E12-C has three 16 key modules. The cabinet box is 29-1/2" tall x 20-1/2" wide. The control box is 4-1/2" tall and mounts to the bottom of the cabinet box. Overall height of assembled unit is 34". Indicate on drawings that top of cabinet shall be set at 66" AFF. This will set bottom of control box at 32" AFF with key board controls at 32" to 34" AFF (suitable for stand-up operation). Designer should note that key control cabinets protrude 13" from the face of wall, so verify that design provides adequate floor space.
 - E. Coordinate with electrical drawings to properly identify mounting height for electrical rough-in. Refer to Appendix "B" Product Data for required electrical rough-in locations.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES.
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the contract documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to

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DeCA COMMISSARY DESIGN GUIDANCE 08 79 13 KEY STORAGE EQUIPMENT

determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the contract specifications/drawings any equipment to be salvaged or relocated by the construction contractor.

- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
- D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

DeCA COMMISSARY DESIGN GUIDANCE 08 81 00 GLAZING

DESIGN CRITERIA

- 1. Related Sections: See other Division 08 Sections for doors and windows for glazing requirements specified by reference to this Section.
- 2. This Section specifies uncoated float glass for monolithic, laminated, and insulating-glass units along with the glazing materials required for their installation.
- 3. Individual glazed areas in hazardous locations shall comply with the International Building Code (latest edition) for safety glazing.
- 4. Glazing within exterior door and window systems shall be laminated type and secured using structural sealant to comply with current force protection requirements.
- 5. Glazing shall be designed for security protection in accordance with UFC 4-010-01 DoD MINIMUM ANTITERRORISM STANDARDS FOR BUILDINGS (latest edition) and shall be in compliance with standard 10. Glazing is not required to be designed or constructed for blast resistance. It is intended to minimize hazardous glazing fragments. For glazing in exterior building elements such as storefronts, doors, windows, curtain walls, clerestories, and skylights provide no less than 1/4 in. (6 mm) nominal polycarbonate or laminated glass. The 1/4 in. (6 mm) laminated glass consists of two nominal 1/8 in. (3 mm) glass panes bonded together with a minimum of a 0.030 in. (0.75 mm) interlayer of a material designed for blast resistance. For insulated glass units (IGU), use the polycarbonate or laminated glass for the innermost pane as a minimum. For laminated glass, provide a glazing frame bite in accordance with ASTM F 2248. For polycarbonate, provide a glazing frame bite of no less than 1.5 times the polycarbonate thickness.
- 6. Monolithic glass or monolithic acrylic used as a single pane or as the inner pane of a multi-pane system is not allowed for the purposes of complying with this standard. Spandrel glass when backed by a structural wall or spandrel beam, translucent fiberglass panels, other lightweight translucent plastics, and glass unit masonry are not required to comply with this standard. Spandrel glass that is open to occupied space must be designed in accordance with this standard.
- 7. Glazing in stairwells, vestibules, and covered or enclosed walkways that are exterior to buildings required to comply with these standards must meet the provisions of this standard. In addition, any windows, inner doors, sidelights, and transoms that are interior to the exterior stairwells, vestibules, or covered or enclosed walkways must meet the requirements of this standard.
- 8. When windows or skylights are being replaced by filling in the openings with wall or roof material fill in the openings with the same or similar construction as the adjacent wall or roof construction. Alternatively install lightweight translucent fiberglass or plastic panels in the openings.
- 9. Glazing in and around doors must meet the requirements of Standard 10.
- 10. Compliance with the window and door requirements in Appendix B of UFC 4-010-01 (latest edition) and UFC 4-020-01 shall be required if one of the following is true:
 - A. The facility has an identified Design Basis Threat (DBT) and a level of protection (LOP). The ATFP planning team for the installation and the building being designed/renovated shall determine if the facility has an identified DBT and LOP, and notify the AE of their findings. When a project has an identified DBT and LOP, the building shall be designed to specifically counter the identified DBT(s) and provide the required LOP, as well as the baseline requirements of the current version of UFC 4-010-01, whichever is more stringent. The building is not required to comply with additional requirements in UFC 4-010-01 Appendix B, (latest edition) and UFC 4-020-01 that are unrelated to countering the identified DBT.

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DeCA COMMISSARY DESIGN GUIDANCE 08 81 00 GLAZING

B. The facility is located outside the Installation Perimeter as defined in UFC 4-010-01. Installation Perimeter is now defined as "any demarcation identifying the limit of DoD property and directly or indirectly indicating that unauthorized access is prohibited".

It will be critical for projects that fall within either of these categories to have a clear assessment and determination established of the DBT and LOP for the facility prior to design start.

- 11. If project requires no exterior glazing systems, edit specification section deleting requirements for security protection.
- 12. If hurricane resistant glazing systems are required for Project, add performance requirements to Specification Section.

DeCA COMMISSARY DESIGN GUIDANCE 08 83 00 MIRRORS

DESIGN CRITERIA

- 1. Related Sections: See Division 10 Section Toilet Accessories for factory-assembled framed and backed mirror units (use with wall mount lavatory).
- 2. This Section specifies unframed silvered flat glass mirrors for mounting on walls.
- 3. Provide single unframed mirrors matching the width of lavatory countertops with undercounter mounted sinks in customer restrooms (RM. 10 and 11).
- 4. Use mechanical devices (brackets, frames, bolts, clips, etc.) on all mirrors, except for very small mirrors, in addition to mastic to support the weight of the mirror. Mechanical support needs to be used to support not only the weight of the mirror but also to prevent the top edge of the mirror from pulling away from the substrates to which the mirror is attached.
- 5. Mirrors in hazardous locations shall comply with the 2012 International Building Code for safety glazing.

Division 09 – Finishes

DeCA COMMISSARY DESIGN GUIDANCE 09 05 61 COMMON WORK RESULTS FOR FLOORING PREPARATION

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Cast-In-Place Concrete and Cast-In-Place Concrete; Division 09 Section Resilient Tile; Division 09 Section Resinous Flooring; Division 09 Section Tile
- This section specifies the preparation of new concrete floor slabs for installation of floor covering and testing of existing concrete floor slabs for moisture and pH. Section applies to all floors identified in the contract document to receive the following types of floor coverings:
 - A. Resilient Tile Flooring
 - B. * Resinous Flooring (see item 4.D. below)
 - C. Tile Flooring
- 3. Concrete Slab Moisture Testing: Testing is to be performed by an experienced, independent, testing agency employed and paid by the design AE during design. Construction contractor should perform slab moisture testing only when new concrete slab is constructed. AE should assume a new slab will have high moisture content and will require remedial floor coating.

Provide testing as listed below.

- A. Moisture Vapor Emission Testing.
- B. Internal Relative Humidity Testing.
- C. pH Testing.
- 4. Moisture Remediation: Test results in excess of that tolerated by flooring systems specified must be corrected prior to flooring application. Apply remedial floor coating over entire floor area that is to receive aforementioned floor coverings.
 - A. Remediation Basis of Design as follows:
 - 1. Patching Compound: Ardex Moisture Resistant Patch (MRF) or Ardex Transportation Repair Mortar (TRM).
 - 2. Crack Repair: Ardex ArdiFix two part polyurethane repair compound, Ardex Ardiseal for moving joints.
 - 3. Primer: Ardex P82 Primer.
 - 4. Remedial Floor Coating: Ardex MC Rapid epoxy moisture control system; with Ardex K15 or K13 self-leveling underlayment.
 - 5. Self-Leveling Underlayment: Ardex K15 or K13.
 - B. Provide all other Manufacturer required products for a complete remediation system.
 - C. Infilling Existing Concrete Slabs: Where existing concrete slab is removed and new concrete slab installed, extend the moisture remedial floor coating a minimum of 12" beyond the joint between the existing concrete slab and new concrete slab around the entire perimeter of new slab. Remediation Basis of Design at infill concrete slabs is as follows:

DeCA COMMISSARY DESIGN GUIDANCE 09 05 61 COMMON WORK RESULTS FOR FLOORING PREPARATION

- 1. Install Vapor Retarder in the infill area. Connect to existing Vapor Retarder under existing slab.
- 2. Fill with new concrete as specified.
- 3. Install Ardifix Joint Filler.
- 4. Prep, including shot blast, for Ardex membrane system 12" on each side on the infill.
- 5. Install the Ardex membrane system as specified 12" on each side of the infill.
- 6. Install self-leveling if required.
- 7. Install finish flooring system.
- D. * Remediation for Resinous Flooring to follow Manufacturers remediation system (Basis of Design is outlined in Resinous Flooring 09 67 23 specifications) and warranted by the Resinous Flooring Manufacturer.
- 5. The design AE is responsible for ensuring the drawings and specifications are edited to include all appropriate moisture remediation requirements for each project. Slab moisture requirements should be explicitly identified as a general note on the Room Finish Schedule sheet and reference specification section 09 05 61 Common Work Results for Floor Preparation.

DeCA COMMISSARY DESIGN GUIDANCE 09 24 23 PORTLAND CEMENT PLASTER

DESIGN CRITERIA

- 1. Related Sections: See Division 07 Section Thermal Insulation for thermal insulations and vapor retarders required in portland cement plaster soffit assemblies. See Division 05 Section Cold-Formed Metal Framing for metal framing that support furring, lath, and portland cement plaster.
- 2. This Section specifies portland cement plasterwork on metal lath exterior soffit applications. This Section also specifies furring that supports metal lath.
 - A. Indicate steel furring and lath as hot-dip galvanized.
 - B. Indicate metal accessories as zinc except where aluminum vented moldings are required.
- 3. Consideration should be given to structural supports to resist wind uplift on exterior suspended soffit systems.
- 4. Isolate plaster assemblies from abutting structural elements at points of contact. Because structural systems are subject to creep, settlement, deflection, thermal movement, and wind-load strains, consider the effect of these forces on assemblies and detail isolation requirements on the Drawings.
- 5. Locate control joints at natural lines of weakness to prevent cracking. Show the location of and detail control joints on the Drawings.
 - A. Delineate plaster soffits into areas (panels) of 100 sq. ft. maximum.
 - B. Locate distances between control joints of not more than 18' o.c.
 - C. Delineate plaster soffits into areas (panels) with length-to-width ratios of not greater than 2-1/2:1.
 - D. Locate control joints where plaster soffit framing or furring changes direction.
 - E. Where plaster soffit areas change dimensions, control joints should be located to delineate rectangular-shaped areas (panels) to relieve the stress that occurs at the corner formed by the dimension change.
- 6. Provide float finish, as opposed to a smooth finish, to receive a painted finish, because of the inevitability of fine, random shrinkage cracks or fissures occurring during curing.

DeCA COMMISSARY DESIGN GUIDANCE 09 29 00 GYPSUM BOARD

DESIGN CRITERIA

- 1. Related Sections: See Division 06 Section Rough Carpentry for plywood backing panels at communications equipment, Division 06 Section Sheathing for gypsum sheathing, and Standard Commissary Room and Finish Schedule in Appendix "A".
- 2. This Section specifies gypsum board assemblies, non-load bearing metal framing support systems, and sound attenuation blankets and acoustical sealants.
- 3. Provide water-resistant gypsum backing board at ceramic tile, wet walls, and high humidity areas.
- 4. Provide glass mat faced, gypsum core, wallboard for the interior side of exterior walls to comply with UFC 3-101-01 ARCHITECTURE, dated 28 NOV 2011. This type of wallboard has a rougher texture than typical interior gypsum wallboard, which is undesirable as a finish. This rougher finish is highlighted if gloss finish paint is used, or if wallboard is being illuminated from a sharp side angle. Where this occurs, follow manufacturer's additional recommendations to minimize this issue which may include specific primers and/ or a Level 5 finish skim coat.
- 5. Provide sound attenuation in partitions surrounding training rooms, administration offices, restrooms, and break rooms and at mechanical rooms. If partition stops at underside of acoustical panel ceiling, install sound attenuation above ceiling of room.
- 6. Provide fire retardant treated plywood as part of gypsum wallboard construction at locations identified in Standard Commissary Room and Finish Schedule. Fire-Retardant-Treated plywood is covered in Division 06 Section Rough Carpentry.
DeCA COMMISSARY DESIGN GUIDANCE 09 30 00 TILING

DESIGN CRITERIA

- 1. Related Sections: Division 07 Section Joint Sealants for sealing of expansion, contraction, control, and isolation joints in tile surfaces; and Division 09 Section Gypsum Board for ceramic wall tile substrate; Division 09 Section Common Work Results for Floor Preparation.
- 2. This Section specifies thin-set unglazed and glazed ceramic tile, including pavers, wall tile, stone thresholds, tile setting, grouting materials, accessories, and installation requirements.
- 3. TCNA Handbook, 2020, installation methods for F113, F116, F131, F132, F133, and F134 indicate concrete receiving tile be steel troweled and fine broom finished. The General Requirements: Subsurfaces and Preparations by Other Trades 2018 in the ANSI tile installation specification booklet (ANSI A108 series) suggests particular specifications for related trades regarding preparation for tile work that is not a part of the ANSI specifications. This Section specifies requirements to prepare the concrete slab in accordance with ANSI A108 series and roughen slab where required to assure bond.
- 4. Indicate expansion joints and other sealant-filled joints including control, contraction, and isolation joints on Drawings.
 - A. Indicate sealant-filled control joints at perimeter of floor tiles where abutting walls and columns.
 - B. TCNA notes to provide joints in tile immediately above joints in substrates. If A/E does not want a joint in tile above a joint in substrate (such as control joint in concrete floor slab) then indicate use and location of Crack Isolation Membrane or other system.
- 5. If tile is required in food processing areas, to match or replace existing tile:
 - A. Provide tile that is classified in ANSI A137.1 as Vitreous Tile, based on water absorption of 0.5 to 3.0 percent.
 - B. Provide epoxy grout in food handling and food processing areas where quarry tile is required.

DeCA COMMISSARY DESIGN GUIDANCE 09 51 00 ACOUSTICAL CEILINGS

DESIGN CRITERIA

- 1. Related Sections: See related Division 9 Design Criteria and Commissary Standard Room and Finish Schedule in Appendix "A."
- 2. This Section specifies acoustical panels and exposed metal suspension systems for ceilings.
- 3. The DeCA standard for customer areas with ceilings is 24" by 24", white, tegular edge, acoustical ceiling panels. The specifications indicate a panel manufactured with built-in humidity guard to resist panel warping and an anti-bacterial coating to resist mold growth (both common problems in commissary facilities).
- 4. Provide a detail on contract drawings indicating proper suspension of ceiling system. Verify that Contract Drawings do not graphically show or indicate ceiling hangers suspended from steel roof deck or utilities (i.e., ductwork, sprinkler piping, conduits, etc.). Splayed hanger wires shall have offset splayed wires.
- 5. Design Considerations:
 - A. In accordance with the IBC all projects are assigned to a Seismic Design Category. Where required by project location, add applicable requirements of the IBC and referenced codes and standards.
 - 1. This Section references specific requirements of the suspended ceiling system to withstand the effects of earthquake motions according to IBC.
 - 2. This Section specifies a manufactured suspension system meeting the requirements for all seismic categories, subject to engineering analysis of the system.
 - B. Overhead mounted architectural features shall be designed for security protection in accordance with UFC 4-010-01 DoD Minimum Antiterrorism Standards For Buildings (latest edition), Standard 15, as follows:
 - 1. Indicate overhead mounted features weighing 14 kilograms (31 pounds) or more (excluding distributed systems such as suspended ceilings that collectively exceed that weight) are mounted using either rigid or flexible systems to minimize the likelihood that they will fall and injure building occupants.
 - 2. Mount such system's so they resist forces of 0.5 times the component weight in any horizontal direction and 1.5 times the component weight in the downward direction.
 - 3. This requirement shall not preclude the need to design architectural feature mountings for forces required by other criteria such as seismic requirements.

DeCA COMMISSARY DESIGN GUIDANCE 09 65 19 RESILIENT TILE FLOORING

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Cast-In-Place Concrete and Cast-In-Place Concrete Design Criteria for slab finishes in spaces to receive resilient floor tile and for vapor retarder and granular base below slabs-on-grade; Division 09 Section Common Work Results for Floor Preparation.
- 2. This Section specifies solid vinyl tile (SVT), and resilient wall base and accessories typically installed with resilient floor tile.
- 3. Resilient tile flooring is required in administrative office areas, training rooms, and break rooms as indicated in Appendix "B" Standard Commissary Room and Finish Schedule. On projects where resilient floor tile is required in sales and other customer areas, extend tile completely under checkout counters, shelving, and movable display fixtures.

Extend tile beneath permanent (i.e., fixed & non-movable) refrigerated display cases. Refrigeration cases utilizing self-contained refrigeration are considered moveable and shall have resilient floor tile installed completely underneath them. Apply remedial floor coating over entire floor area as required per Division 09 Section Common Work Results for Floor Preparation.

- 4. Graphically indicate all floor finish transitions on drawings. Transitions should occur beneath doors when in the closed position, and other locations as indicated on Drawings.
- 5. Where resilient flooring terminates at corridors leading to Staging and Receiving Areas, extend resilient tile 3'-0" into corridor. Indicate transition strips fabricated of solid stainless steel 2" x 1/4" bars with tapered edges and secured to floor with countersunk fasteners. Do not use resilient edge strips.

DeCA COMMISSARY DESIGN GUIDANCE 09 65 19 RESILIENT TILE FLOORING

DeCA COMMISSARY DESIGN GUIDANCE 09 67 23 RESINOUS FLOORING

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Cast-In-Place Concrete and Cast-In-Place Concrete Design Criteria for concrete substrates to receive resinous flooring; Division 09 Section Common Work Results for Floor Preparation.
- 2. Resinous flooring systems are required in food processing areas, both refrigerated and non-refrigerated, as indicated in Appendix "A" Standard Commissary Room and Finish Schedule.
- 3. This Section specifies two types of trowel applied resinous flooring systems.
 - A. RES-1: Chemical and Thermal-Shock Resistant Urethane Mortar Flooring:
 - 1. This system is used in refrigerated food preparation and storage areas. Resinous floors in these areas are subject to thermal shock from daily cleaning of room. The refrigerated spaces, with maintained temperatures of 50 degrees, are washed down with 140 degrees water and then immediately returned to normal operating temperature. Resinous floor color is "Brick Red", with "Light Texture" finish.
 - B. RES-2: Primer, Trowel-Applied Epoxy Mortar Flooring:
 - 1. This system is used in non-refrigerated food preparation areas (Deli & Bakery). Resinous floor color is "Beechwood", with "Texture #2" finish.
- 4. Specifications require that concrete surfaces receiving resinous flooring be shot-blasted, with an apparatus that abrades the concrete surface, prior to application.
- 5. Concrete surfaces must be uniform and free of curing and sealing compounds, underlayments, leveling compounds, or other substances capable of impairing resinous flooring bond.
- 6. Crack Control:
 - A. Where RES-1 flooring is installed, saw cut resinous flooring where substrate joints occur and apply joint sealant.
 - B. Where RES-2 flooring is installed, apply crack and joint membrane at substrate joints to bridge non-moving joints with resinous flooring. At substrate isolation joints subject to movement, saw cut resinous flooring and apply joint sealant.

DeCA COMMISSARY DESIGN GUIDANCE 09 90 00 PAINTING AND COATING

DESIGN CRITERIA

- Related Sections: See Division 05 Sections for shop priming of metal substrates with primers; Division 08 Sections for factory priming hollow metal windows and doors with primers, and Division 08 Section Flush Wood Doors for factory applied stains and transparent finishes applied to interior wood doors.
- 2. This Section specifies surface preparation and the application of standard paint systems on exterior and interior substrates.
- 3. This Section specifies generic paint systems in accordance with *MPI Architectural Painting Specification Manual*, (hereafter, *MPI Manual*) which categorizes coating systems by location (exterior and interior) and by substrate.
- 4. Ensure products selected meet all federal, state, and local VOC requirements.
- 5. Select colors harmonizing with Commissary interior and interior décor. Indicate on the drawings colors from a major paint manufacturer as the basis of color selection.
- 6. Exterior and interior painting schedules are placed at the end of Part 3 of this Section and are representative of typical Commissary finishes used, including level of gloss.

Division 10 – Specialties

DeCA COMMISSARY DESIGN GUIDANCE 10 10 00 VISUAL DISPLAY SURFACES

DESIGN CRITERIA

- 1. Related Sections: See related Design Standard Plates.
- This Section includes markerboards and tack boards used in Commissary Training Rooms. Markerboards are low gloss finished porcelain enamel steel laminated to a medium density fiberboard (MDF) backing. Tack boards are polyester fabric faced cork sheets laminated to a particle board backing.
- 3. Design of markerboards and tack boards shall comply with Design Standard Plate for Training Room Cabinets.
- 4. Coordinate markerboard and tack board locations with other design disciplines (i.e., electrical receptacles, wall thermostats, etc.). Contract Documents shall clearly identify requirement for wood blocking (or other material) within metal stud framed walls for proper attachment and support of markerboards and tack boards.

DeCA COMMISSARY DESIGN GUIDANCE 10 14 00 SIGNAGE

DESIGN CRITERIA

- 1. Related Sections: Refer to related Division 10 and Division 26 Design Criteria, Commissary Door Schedule in Appendix "A", and related Design Standard Plates. Refer to Division 10 Section Storage Racks to coordinate storage height restrictions sign with height of storage racks.
- 2. Provide interior and exterior signage as follows:
 - A. Construction Sign.
 - B. Traffic and Parking Signs.
 - C. Exterior Illuminated Building Sign.
 - D. Store Hours Sign.
 - E. Automatic Entrance Door Signage.
 - F. Restroom Door Identification Signage.
 - G. Interior Door Identification Signage.
 - H. Receiving Door Identification Signage.
 - I. Exterior Door Identification Signage.
 - J. Customer Service Signage.
 - K. Traffic Door Identification Signage.
 - L. Storage Height Restriction Sign.
 - M. Surcharge Plaque.
- 3. All signage shall be graphically shown on the Drawings with location and mounting heights clearly identified.
- 4. Signage requirements are as follows:
 - A. Construction Sign: Immediately after issuance of Notice to Proceed with construction, Contractor shall furnish and erect a construction sign similar to that illustrated at the end of the sign Guide Specification. The location of the sign should be determined during preparation of Contract Documents with location clearly identified on Drawings, along with construction details identified in Design Standard Plate 10 14 00-03. The electronic artwork necessary to print the construction sign will be obtained by the design A/E from DeCA and made available to the Contractor after the award of construction. The design A/E shall edit the DeCA electronic artwork files to include Project Name, Location, Project Type (i.e., New Construction, Addition/Alteration, Architectural and Refrigeration Upgrade), and architectural rendering, and be included in sign Guide Specification. A/E shall obtain "Projected Completion Date" and "Contract Cost" signage information from DeCA Project Manager.
 - B. Traffic and Parking Signs: Signage shall be in accordance with the U.S. Department of Transportation, Manual on Uniform Traffic Control Devices.
 - 1. Accessible parking shall have post-mounted parking signs with the international accessibility symbol, in addition to having the international accessibility symbol painted on the pavement. Determine number of required spaces per code/regulation requirements. It is recommended that all accessible spaces be designed as van accessible spaces.
 - When a separate parking area is provided for commissary employees, provide permanent post mounted signs at each entrance clearly stating "COMMISSARY EMPLOYEE PARKING ONLY".
 - C. Exterior Illuminated Building Sign: Provide DeCA standard sign. A standard size has been developed for use on commissary facilities. Refer to DeCA Uniform Decor 2010, "Adaptive Uniform Décor Package" Exterior Wall Mounted Sign standard drawings. These are available in AutoCAD electronic format for use in Contract Documents. Sign location and sizing adaptation requirements

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should be determined during the initial design charrette process. Coordinate electrical connection rough-in with Division 26 Electrical.

- D. Store Hours Sign: Provide DeCA standard grade mounted store hours sign. Refer to Design Standard Plate 10 14 00-01. Sign shall be internally illuminated with removable back panel and changeable store hour panel inserts. Design sign base with appropriate foundation for support of store hours sign. Materials used for base shall be compatible with that used on the commissary building. Location of store hours sign should be determined during design and clearly indicated on Contract Documents. Coordinate electrical connection rough-in with Division 26 Electrical. Provide note on sign detail requiring Contractor to verify store hours at time of sign fabrication.
- E. Automatic Entrance Door Signage: Provide pressure sensitive lettering on automatic entrance and exit doors that identify intended function of door opening. Signage color shall contrast with door color. Typically, white pressure sensitive lettering is applied to dark bronze doors. Lettering is typically located on center muntin of automatic doors, except at carryout return door opening where lettering is applied to vision lites. Required signage is "ENTRANCE", "EXIT","EXIT ONLY", "EMERGENCY EXIT ONLY" and "CARRY OUT RETURN ONLY". Identify required signage on Door Schedule.
 - Vestibule RM. 1 Entrance Vestibule: At exterior door provide signage "ENTRANCE" on exterior side of door opening and "EXIT" on vestibule side of door opening. At interior vestibule door provide signage "ENTRANCE" on vestibule side of door opening and "EXIT" on sales area side of door opening.
 - Vestibule RM. 2 Exit Vestibule: At exterior door provide signage "EXIT ONLY" on exterior side of door opening and "EXIT" on vestibule side of door opening. At interior vestibule door provide signage "EXIT ONLY" on vestibule side of door opening and "EXIT" on checkout area side of door opening.
 - Vestibule RM. 3 Carry Out Return: At exterior door provide signage "CARRYOUT RETURN ONLY" on exterior side of door opening and "EMERGENCY EXIT ONLY" on vestibule side of door opening. At interior vestibule door provide signage "CARRY OUT RETURN ONLY" on vestibule side of door opening and "EMERGENCY EXIT ONLY" on checkout area side of door opening.
- F. Restroom Door Identification Signage: Melamine plastic with raised text, Braille, border, and symbols. Locate at entrance to customer and employee restrooms, and employee locker rooms. Permanently mount sign on wall adjacent to latch side of door with the centerline of the sign 5'-0" AFF. Signs shall read "MEN" or "WOMEN" as appropriate and include appropriate silhouette symbol and international accessibility symbol. If an additional sign is required for identification, mount directly below restroom door identification sign with centerline of the sign 48" AFF. Locate a sign reading "EMPLOYEES MUST WASH HANDS BEFORE RETURNING TO WORK" 15' -0" above finished floor on the inside of each door in the employee's restrooms.
- G. Interior Door Identification Signage: Melamine plastic with raised text, Braille, border, and symbols. Provide interior door identification signage for all rooms (i.e., offices, break rooms, training rooms, storage rooms, mechanical rooms, etc.) other than cold storage rooms, identifying occupancy / function of room. Permanently mount sign on wall adjacent to latch side of door so bottom of raised characters is between 48" and 60" above finished floor with the centerline of the sign 5' -0" AFF. Signs may have both identification text (i.e., Cashier's Office, etc.) and direction text (Authorized Personnel Only). Requirements for signage text shall be clearly indicated in Door Schedule.
 - 1. Training Room shall have removable "Conference in Session" signage in conjunction with identification text "Training Room".
 - 2. Doors leading to utility tunnels under store shall have identification text "Underfloor Tunnel" with direction text "Danger Permit Required Confined Space Authorized Personnel Only".
- H. Receiving Door Identification Signage: Fiberglass sign with raised text (6" high numerals) and border. Provide signs at all overhead receiving doors. Locate signs 4' -6" above each dock level

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receiving door and centered on door opening. Locate signs 8' -0" above finish floor at grade level receiving doors, adjacent to either left or right jamb of door opening. Doors shall be numbered, starting with numeral "1" at the first door approached upon entering the commissary receiving area.

- Exterior Door Identification Signage: Fiberglass sign with raised text, Braille, and border. Permanently mount sign on wall adjacent to latch side of door with the centerline of the sign 5' -0" AFF. If an additional sign is required for identification, mount directly below door identification sign with centerline of the sign 48" AFF.
 - 1. Provide at exterior access mechanical / electrical room doors. Signs shall have both identification text (i.e., Fire Sprinkler Riser Room, etc.) and direction text (Authorized Personnel Only). Requirements for signage text shall be clearly indicated in Door Schedule.
 - 2. Provide at exterior entrance to commissary administrative office. Sign shall have both identification text (i.e., Commissary Administrative Office) and direction text (Authorized Personnel Only). Requirements for signage text shall be clearly indicated in Door Schedule.
 - 3. Provide at receiving area personnel doors that have door buzzer push buttons for delivery personnel to signal when deliveries are occurring. Push button shall be located directly beneath sign. Signs shall have both identification text (i.e., Meat Department, etc.) and direction text (Push Button for Deliveries). If multiple push buttons are located at one door opening, provide detail clarifying signage and push button placement. Requirements for signage text shall be clearly indicated in Door Schedule. Coordinate push button locations with Division 26 Electrical.
 - 4. Provide international "NO SMOKING" signs at all exterior personnel doors. This will typically be an additional sign located directly beneath the primary door identification sign. Provide international "NO SMOKING" two sided decal at automatic entrance doors (customer entrance and carryout return doors) and exterior administrative office entrance glass door(s).
- J. Customer Service Signage: Melamine plastic with raised text, Braille, border, and symbols. Provide in commissary sales area for customers to signal Meat Department and Produce Department personnel for customer service. Locate signs at closest entrance to these service support areas. Permanently mount sign on wall near door, with the centerline of the sign 5'-0" AFF. Push button shall be located directly beneath sign. Sign shall have both identification text (i.e., Meat Department, etc.) and direction text (Push Button for Customer Service). Requirements for signage text shall be clearly indicated in Door Schedule. Coordinate push button locations with Division 26 Electrical.
- K. Traffic Door Identification Signage: Provide pressure sensitive lettering applied to each door leaf of traffic doors that identify intended use of door opening (i.e., EMPLOYEES ONLY). Signage color shall contrast with door color. Typically, white color pressure sensitive lettering is applied to black color doors. Align (i.e., justify) lettering with edge of vision window closest to the middle of the door opening on pairs of doors and closest to strike jamb on single leaf traffic doors.
- L. Storage Height Restriction Sign: DeCA Design Criteria does not permit storage above 12'-0" in staging and receiving areas (i.e. high piled stock or rack storage). Contract Documents shall require that a continuous painted 6" wide red color stripe, at 12' -0" above floor slab, be provided on all walls facing staging and receiving areas. Provide one plastic sign centered on each wall and immediately above the stripe that reads "DO NOT STACK MERCHANDISE ABOVE THIS LINE". Refer to Design Standard Plate 10 14 00-02.
- M. Surcharge Plaque: The Government will furnish a 12" high by 18" wide, cast bronze surcharge plaque for installation by the Contractor. Plaque shall be permanently installed in a prominent location at the front customer entrance to the commissary. Location of surcharge plaque shall be determined during design of project and clearly indicated on Contract Documents.

END OF SECTION

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DeCA COMMISSARY DESIGN GUIDANCE 10 15 00 INTERIOR DECOR SPECIALTIES

DESIGN CRITERIA

- 1. Related Sections: See related Division 10 and Division 26 Design Criteria, related Design Standard Plates, and electronic AutoCAD files of the DeCA Uniform Decor 2010.
- 2. Provide a state-of-the-art integrated supermarket merchandising interior decor package in accordance with the DeCA "Adaptive Uniform Decor Package".
 - A. Refer to the DeCA "Adaptive Uniform Decor Package" for recommended placement of all interior decor components and fabrication requirements. Adapt recommended placements as required to accommodate specific store layout and to accommodate store ceiling heights less than the recommended new store height guidelines indicated.
 - B. Electronic AutoCAD (.dwg) files of the "Adaptive Uniform Decor Package" are available for A/E use in preparation of Contract Documents. Edit files as required to accommodate specific project requirements and incorporate all applicable details into the contract documents.
 - C. Decor packages are designed for new commissary facilities with a minimum 15'-0" AFF clear height to bottom of all obstructions, exclusive of décor elements and specialty lighting. Bottom of roof structure should be set at approximately 20'-0" to lowest point (height adjustable depending on roof slope configuration used in design). Decor packages for Add/ Alter Projects typically have suspended grid with acoustical tile ceilings at lower elevations requiring adaptations of the décor standards. Size, scale, and placement of décor elements must be evaluated and adjusted by the designer to accommodate each store size and layout.
 - D. Refer to "10 15 00-03 Metal Wall Blocking for Décor Attachment" Guide Plate for wall blocking requirements for department décor elements.
 - E. On exposed structure facilities, it is important that suspended lighting and HVAC diffusers are set at the same elevation as the top of the interior decor package (approximately 15'-0" AFF). All other utilities (HVAC ductwork, refrigeration piping, sprinkler piping, conduits, etc.) should be above the decor package. Set roof structure height, including roof drainage slope, accordingly. Provide flat oval or multiple HVAC supply air ducts to reduce building height.
 - F. The following interior decor specialties are included in the Guide Specification:
 - 1. Aisle Directory Signs
 - 2. Banners
 - 3. Department Decor Elements
 - 4. Department Blade Signs
 - 5. Frozen Food Identifier
 - 6. Frozen Food Valance
 - 7. Frozen Dimensional Letters
 - 8. Frozen Vinyl Wall Covering
 - 9. Historic Mural Vinyl Wall Covering
 - 10. Mission Graphic Vinyl Wall Covering
 - 11. Produce Decor Grid
 - 12. Customer Service décor grid
 - 13. Phrase Letters
 - 14. Soffit Trim
 - G. Electronic artwork of all printed decor elements is available for use by the interior décor fabricator.
 - H. Décor Truss Soffit: Décor element tube frame with kerfed-back panel and custom vinyl wallcovering face to create a curved décor soffit to be applied to existing walls. Intended for use on décor upgrades of existing facilities. Refer to ID3.10 in the DeCA Adaptive Uniform Décor Package.
 - I. Display Case Top Closure Where Soffit Occurs Above Case: The space between the top of the display cases and the bottom of the wallboard soffit must be closed off. If the space is not closed

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off, then the soffits are required to be protected with an automatic sprinkler system, regardless of distance between bottom of soffit and top of display case. Closure must also be removable to allow access to top mounted display case controllers. Utilize perforated closure to allow for ventilation. Where return air is drawn from behind and above the case, utilize "Sintra" closure in lieu of perforated. The following details are included as Design Standard Plates:

- 1. Design Standard Plate 101500-01A: Removable perforated metal closure.
- 2. Design Standard Plate 101500-01B (For Return Air Plenum): Removable 3mm "Sintra" foam board closure.
- J. Display Case Side Closure: Provide side closures to seal display cases to wall. Refer to Design Standard Plate 101500-02.








DESIGN CRITERIA

- 1. Related Sections: See related Division 10 and Division 22 Design Criteria.
- This Section includes floor mounted, overhead braced, textured stainless steel toilet compartments. If required in plan layout, provide matching wall mounted urinal screens. Size of urinal screens shall be 18" deep x 42" high, with top of screen set 58" above finish floor.
- 3. Layout of toilet compartments shall be in accordance with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's "Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities" and ICC/ANSI A117.1 guidelines.
- 4. Layout of room shall not permit direct view (or mirror reflected view) into toilet rooms. Current DeCA criteria requires that all multiple-use restroom doors (and locker room doors if connected) swing outward from the restroom or locker room for sanitation reasons. Single-use family restroom doors may swing into the rooms as these doors have locksets with handles.
- 5. Coordinate placement of toilet accessories, both partition mounted and wall mounted, to avoid conflicts with toilet compartment door swings.
- 6. Coordinate toilet compartment locations with other design disciplines (i.e., electrical receptacles, wall thermostats, radiant heaters, etc.). Contract Documents shall clearly identify requirement for wood blocking (or other material) within metal stud framed walls for proper attachment and support of toilet compartments.
- 7. Show dimensioned elevations on drawings. Indicate accessory locations where cutouts and reinforcements are required. Indicate pilaster, door, panel, and screen heights.

DeCA COMMISSARY DESIGN GUIDANCE 10 22 13 WIRE MESH PARTITIONS

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria and Standard Commissary Room and Finish Schedule in Appendix "A".
- 2. Wire mesh partitions are intended for building interior use. Refer to Division 32 Design Criteria for Chain link Fences and Gates intended for exterior use.
- 3. Wire mesh partitions may be used to provide lockable secure enclosures for Contract Stocker Storage (RM. 30), Sensitive Storage (RM. 32), and Operational Supply Storage (RM. 33 and 47).
- 4. Enclosures shall be full height galvanized steel wire mesh and secured to metal roof deck and adjacent partitions. Wire mesh partitions are not painted. Depending on location within the commissary, other durable building materials may be more practical and cost effective.

DeCA COMMISSARY DESIGN GUIDANCE 10 26 00 WALL AND EQUIPMENT PROTECTION

DESIGN CRITERIA

- 1. Related Sections: See related Division 05 Design Criteria and related Design Standard Plates.
- 2. Wall and equipment guards are required at numerous locations throughout commissary facilities, and are considered operational necessities.
 - A. Protection Posts: Provide at all exposed corners within sales area and other customer areas. Protection posts are stock-manufactured chrome plated steel, expansion bolted to the finish floor. Protection posts shall also be provided to guard leading edges of automatic entrance doors.
 - B. Flexible Bollards: Provide at Frozen Food Storage areas where the thru-penetration of a steel bollards (see criteria section 05 50 13 METAL FABRICATIONS) could cause below slab freezing and heaving to occur. Provide in stores with a structural concrete slab where the installation of steel bollards (see criteria section 05 50 13 METAL FABRICATIONS) could compromise the steel reinforcing in the structural concrete slab.
 - C. Cart Rails: Provide at shopping cart storage areas, mass display areas adjacent to customer checkout areas, and at end checkout counters as required to identify checkout aisle width. Provide double rail system at end checkout counters. Provide triple rail system at shopping cart storage areas and mass display areas. Cart rails are stock-manufactured chrome plated steel, expansion bolted to the finish floor.
 - D. Cart Bumper: Provide spring type floor mounted cart bumpers to protect sliding doors at walk-in cold storage rooms, and wall surfaces at cart storage areas subject to contact by shopping carts. Cart bumpers are stock-manufactured chrome plated steel, expansion bolted to the finish floor.
 - E. Case Corner Guards: Provide at exposed corners of all refrigerated display cases in sales area. Not required at movable refrigerated display cases. Case corner guards are stock-manufactured chrome plated steel, expansion bolted to the finish floor.
 - F. Stainless Steel Bumper Rails: Provide at display cases as identified in Design Standard Plate 10 26 00-02. Bumper rails are stock-manufactured in stainless steel and removable for daily floor cleaning. Provide detailed information on contract documents identifying bumper rail layout and required spacing at each display case line-up required to have bumper rail protection.
 - G. Wood Bumper Rails: Provide double wood bumper rails at all locations within customer areas that are subject to impact damage from shopping carts. Clearly identify extent of wood bumper rails on floor plans and interior elevations of sales area. Refer to Design standard Plate 10 26 00-01 for additional information. Coordinate mounting/rough-in height of utilities (electrical receptacles, hose bibs, etc.) on walls with double wood bumper rails.
 - H. Rigid Wall Covering: Provide rigid wall covering on all walls that have double wood bumper rails and on employee breakroom walls as indicated in Appendix "A" Standard Commissary Room and Finish Schedule. Refer to Design Standard Plate 10 26 00-01 for additional information.







DeCA COMMISSARY DESIGN GUIDANCE 10 28 13 TOILET ACCESSORIES

DESIGN CRITERIA

- 1. Related Sections: See related Division 10 and Division 23 Design Criteria.
- 2. This Section identifies toilet accessories typically used in commissary facilities. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
- 3. Toilet accessories are assigned Mark Numbers for coordination and identification on contract drawings. It may be necessary to add or delete items on a project. A "Toilet Accessory Schedule" shall be developed for each project that identifies Mark Number, Description, and Mounting Height. Coordinate accessory locations and mounting heights with other design disciplines (i.e., electrical receptacles, automatic flush valves, etc.). Contract documents shall clearly identify requirement for wood blocking (or other material) within metal stud framed walls for proper attachment and support of accessories.

NOTE: Show locations for all accessories on drawings. Provide paper towel dispensers and soap dispensers as part of 4S00 hand wash sinks.

4. Typical toilet accessories used are as follows:

Mark "A": Grab Bar Mounted Horizontally, Parallel to Side of Water Closet:

Use in handicap accessible toilet compartments only.

Mark "B": Grab Bar Mounted Horizontally, Parallel to Back of Water Closet:

Use in handicap accessible toilet compartments only.

Mark "C": Stainless Steel, Angle Framed Mirror:

Use above wall hung lavatories in both single-use customer restrooms and employee restrooms. Mounting heights shall comply with manufacturer recommendations for both standard and handicap accessible locations.

Provide single unframed mirrors matching the width of countertops with undercounter mounted sinks in customer restrooms (RM. 10 and 11). Refer to 08 83 00.

Mark "D": Liquid Soap Dispenser, Deck Mounted:

Use at wall hung lavatories. Coordinate with lavatory specification to confirm that lavatory is furnished with mounting hole for soap dispenser, and that spout dispenser is proper length for lavatory specified.

Mark "E": Waste Receptacle, Semi-Recessed:

Use in toilet rooms with metal stud framed walls.

Locate on wall adjacent to lavatories. Provide a minimum of one unit for every three lavatories.

Mark "F": Waste Receptacle, Surface Mounted:

Use at CMU wall locations and other locations where semi-recessed mounting is not possible.

Locate on wall adjacent to lavatories. Provide a minimum of one unit for every three lavatories.

Mark "G": Sanitary Napkin Disposal Unit, Partition-Mounted, Dual Access Type:

Use in female toilet rooms containing two or more toilet compartments.

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DeCA COMMISSARY DESIGN GUIDANCE 10 28 13 TOILET ACCESSORIES

Mark "H": Sanitary Napkin Disposal Unit, Recessed:

Use in single occupant female toilet rooms with metal stud framed walls and in framed wall side of end compartment in rooms with odd number compartments and metal stud framed walls.

Mark "I": Electric Hand Dryer, Surface Mounted:

Locate on wall adjacent to lavatories. Provide a minimum of one unit for every three lavatories.

Show required power on Electrical Drawings.

Mark "J": Jumbo Roll Toilet Tissue Dispenser, Surface Mounted:

Locate on wall adjacent to water closet.

Mark "K": Automatic Paper Towel Dispenser, Surface Mounted:

Locate on wall adjacent to lavatories, directly above waste receptacle (Mark E and F). Provide a minimum of one unit for every three lavatories. Show required power on Electrical Drawings

Mark "L": Surface Mounted Toilet Seat Dispenser, Surface Mounted:

Locate on back wall above standard water closet and on accessible wall at accessible toilets/ stalls.

5. Typical toilet accessories with assigned CED Item Numbers are as follows:

CED Item Number: 2A20 BABY CHANGING STATION, HORIZONTAL TYPE

Provide one baby changing station in each customer toilet room. For increased security, privacy, and sanitation, locate unit within handicap accessible toilet compartment.

6. Verify that adequate space is available for all specified toilet accessories.

DeCA COMMISSARY DESIGN GUIDANCE 10 44 00 FIRE PROTECTION SPECIALTIES

DESIGN CRITERIA

- 1. Related Sections: See related Division 21 and 23 Design Criteria.
- 2. This Section includes portable fire extinguishers, fire extinguisher cabinets, and fire protection accessories.
- 3. Design and placement of fire extinguishers shall be in accordance with NFPA 10 *Standard for Portable Fire Extinguishers* with locations clearly identified on the Drawings.
- 4. Extinguishers to be multipurpose dry chemical with a minimum rating of 4A:80B:C rated. Extinguishers located in customer and administrative office areas shall be provided with semi-recessed cabinets. Extinguishers located in warehouse and other similar areas shall be mounted on walls with manufacturer standard fire extinguisher hooks.
- 5. Per UFC 3-600-01 9-17.1, general purpose fire extinguishers must be installed where required by NFPA 101. Per NFPA 101 36.3.5.3, 38.3.5, Portable fire extinguishers shall be provided in all mercantile and business occupancies respectively.
 - A. Clean Agent extinguishers must be used in Electronic Equipment Areas.
 - B. Carbon Dioxide extinguishers may only be used in rooms more than 1,000 square feet.
- Extinguishers shall be located throughout the building with a maximum 75' travel distance and each extinguisher shall have a maximum coverage area of 1500 square feet per unit of A, up to 6,000 square feet for a 4A extinguisher per NFPA 10 Table 6.2.1.1. Commissaries are considered to be Ordinary Hazard per Code Analysis document.
- One extra B rated extinguisher shall be installed near locations that have the possibility of flammable liquids fires, such as Deli/Bakery, break rooms, and food prep areas per NFPA 1 13.6.3.1.1.2 and NFPA 10 6.1.1.2.
- 8. Commissary facilities with Deli Departments containing a 1D09 rotisserie, and/or 1D10-B combosteamer ovens, or other grease-laden vapor producing cooking appliance shall require a vented hood with a built-in fire suppression system. A minimum 6Liter (1.8-gallon) wet chemical (UL Rating 2-A:K) extinguisher is required to supplement this system, and shall be located in the immediate vicinity of the hood.
- 9. Coordinate placement of extinguisher cabinets with to avoid wall mounted wood bumper rails, hose bibs, and other concealed utilities within walls.
- 10. Locate fire extinguisher cabinets to comply with the guidelines of the ABA Accessibility Standard for Department of Defense Facilities.
- 11. Above each cabinet-mounted extinguisher and all other extinguishers that are not readily visible per NFPA 10 6.1.3.3.2, a wall-mounted sign shall be installed in close proximity to the extinguisher and visible from the normal path of travel.
- 12. Extinguisher location signs shall be a triangular acrylic sign able to be viewed from multiple directions similar to Brady "Tall Fire Extinguisher 'V' Sign" Part number SP818V.

END OF SECTION

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DeCA COMMISSARY DESIGN GUIDANCE 10 51 13 METAL LOCKERS

DESIGN CRITERIA

- 1. Related Sections: See related Division 10 Design Criteria.
- While Guide Specifications are continually being updated to incorporate the specified manufacturer's
 product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that
 each product specification is current. Provide written notification to the DeCA Project Manager when
 this verification has been completed.
- 3. Metal lockers are to be provided in employee locker rooms and break rooms (employee and carry-out return personnel). Location and quantity will be determined during the design charrette process. Lockers are typically single tier and double tier configurations with perforated diamond mesh fronts and sides with solid sloped metal tops. Lockers are to be set-on a raised concrete base in locker rooms and break rooms with permanent locker configurations. Use built-up wood bases in rooms where locker configuration could be revised. Cover exposed fronts and sides of locker bases with finish base material matching that used in room where lockers are located. Height of bases shall match height of finish base material.
- 4. The ABA Accessibility Standard for Department of Defense Facilities requires that when lockers are provided in any room, at least 5 percent, but no fewer than one, shall be handicap accessible.

All single tier lockers shall have hat/book shelf and coat hooks located no more than 48" above the finished floor. One additional shelf shall be placed near the bottom of the locker so that it is no lower than 15" above the finished floor.

An accessible bench is required wherever accessible lockers are provided. Benches shall have seats that are 42" long minimum, 20" deep minimum (24" deep maximum), and 17" minimum (19" maximum) above finished floor. Clear floor space shall be provided and shall be positioned at the end of the bench seat and parallel to the short axis of the bench. The bench shall provide for back support or shall be affixed to a wall. DeCA standard design is to provide a locker bench that is located along a wall and secured to the floor.

- 5. Coordinate locker locations with other design disciplines (i.e., concrete bases, electrical receptacles, wall thermostats, etc.). Contract documents shall clearly identify requirement for wood blocking (or other material) within metal stud framed walls for proper attachment and support of lockers.
- 6. Verify that adequate space is available for all specified lockers.

DeCA COMMISSARY DESIGN GUIDANCE 10 56 23 ROTATING MODULAR SYSTEM

DESIGN CRITERIA

- 1. GENERAL
 - A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - B. Rotating files are used to display damaged (i.e., salvaged) merchandise that is for sale to customers. Typically the unit is located within a cased gypsum wallboard opening between the Damaged Merchandise Room (RM. 23) and the Damaged Merchandise Sales Niche (RM. 24). While one side of cabinet is accessible to customers for product display, the opposite side is open to the salvage room for re-stocking.
 - C. A typical damaged merchandise display case assembly consists of a single starter unit with one add-on unit. The starter unit is 45" wide. The add-on unit is 38" wide. If a larger damaged merchandise display space is available, each add-on unit will increase overall width of assembly by 38". Only one starter unit is required per assembly. Locate foot pedal operator on salvage room side of unit. Provide cased opening, allowing +/- 2" clearance on both sides and top of assembled unit for construction / installation tolerances. Provide closures at same matching sales area décor.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES.
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
 - C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the

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property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.

D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

DeCA COMMISSARY DESIGN GUIDANCE 10 56 29 STORAGE RACKS

DESIGN CRITERIA

1. GENERAL

- A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
- B. Storage racks typically provided in Commissary facilities include the following:
 - 1. 2R16 Storage Rack, Shelf, Galvanized:

Racks are hot dipped galvanized steel and used in refrigerated spaces. Upright frames are 30" deep by 96" high and spaced 8'-3" center-to-center. Load beams are 96" long. Assembled units have three shelving levels (24", 60", and 96") with wire mesh decking on each level.

2. 2R17 - Storage Rack, Pallet, Painted:

Racks are painted steel and used in receiving/staging areas of a commissary for storage of palletized materials. Upright frames are 42" deep by 96" high and spaced 8'-3" center-to-center. Load beams are 96" long. Assembled units have two shelving levels (12" and 72"). The end upright frame of each row/set of 2R17 racks is 96" high.

3. 2R19 - Storage Rack, Pallet, Painted:

Racks are painted steel and used in receiving/staging areas of a commissary for storage of palletized materials. Upright frames are 42" deep by 120" high and spaced 8'-3" center-to-center. Load beams are 96" long. Assembled units have two shelving levels (60" and 120") in addition to a ground floor level. The end upright frame of each row/set of 2R19 racks is 132" high.

4. 2R24 - Shelving, Food Storage:

Racks are stainless steel and used in smaller cold storage rooms and other small storage areas where product is typically hand stocked. Assembled units are 48" wide by 24" deep by 72" high with five shelving levels. Each rack is provided with swivel casters.

2. DESIGN CHARRETTE PHASE RESPONSIBILITIES

- A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.

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- B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the Construction Contractor.
- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the Contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the Contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the Contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the Contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
- D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

Division 11 – Equipment

DeCA COMMISSARY DESIGN GUIDANCE 11 13 00 LOADING DOCK EQUIPMENT

DESIGN CRITERIA

- 1. Related Sections: See related Division 32, Division 05, and Division 26 Design Criteria and related Design Standard Plates.
- 2. General:
 - A. Truck/Trailer to Wall Relationship: A major consideration in design of recessed receiving areas for semi-trailer trucks is to prevent the rear top of the trailer from hitting the wall first when docking. A vertically parallel relationship with the building wall can best be achieved by providing a pavement surface that permits both front and rear axles to be at the same elevation when docking. To accommodate typical semi-trailer delivery vehicles (WB-50, WB-65, and WB-67), the pavement 50'-0" to 55'-0" from the face of the building should be approximately the same elevation as that adjacent to the building wall. A continuous trench drain, parallel to the building wall, should be located 26' from the building wall with a pavement slope of 2 percent to this trench drain. Rear top of trucks on shorter trailers will then, because of slope to drain, be angled safely away from the wall. Where this optimal dimension cannot be achieved and slopes cannot be designed to maintain a vertically parallel relationship, thicker dock bumpers must be provided to prevent impact damage to the building wall. In this event, however, thicker bumpers may impose requirements for special dock levelers having deeper lip extensions to compensate for increased bed to dock distance. Tapered dock seals shall also be provided where trailer bed slope could exceed 2 percent. Refer to Design Standard Plates 11 13 00-01 and 11 13 00-02.

Should site conditions warrant, it is also permissible to drain the entire recessed receiving area away from the face of the building, at a minimum grade of 0.75%, but not to exceed 1.0%. This configuration allows for elimination of the trench drain noted above, which is necessary in the standard recessed condition. Tapered dock seals should be specified if this recessed receiving area configuration is used.

- B. Dock Height: Normally, a 48" height from recessed receiving area pavement to staging/receiving area floor level, in combination with dock leveler, will accommodate most semi-trailer bed heights. Establish dock height at 47-1/2"; otherwise OSHA requires a guard railing across opening heights 48" and higher. Refer to Design Standard Plate 11 13 00-03.
- C. Slopes: Slopes of between 1.0% and 5.0% are considered optimum for all pavement within the receiving area, except for ramps into recessed areas which shall have minimum slope required, up to a 10 percent maximum. Where ramp must be at or near maximum slope in northern climates, give special consideration to providing traction for driving wheels; i.e., ribbed surface, snow/ice melting device, etc. Notwithstanding maximum and minimum allowable grades in the receiving area, there should be no locations where the grade change between two adjacent slopes (a.k.a. break-over) exceeds 8.0% (7.0% desirable). This condition, if allowed to occur, leads to the trailers landing gear catching on and scraping the ridge in the pavement, especially if the driver neglects to fully raise the landing gear.
- D. Paving: Pavement in both the recessed and grade level areas shall be 6" minimum thickness reinforced concrete on compacted, stabilized base, sufficient to withstand a minimum bearing capacity of 31,900 lbs. under tandem axle.
- E. Lane Markers: To facilitate accurate backing of semi-trailer vehicles, paint 6" wide white guidelines on receiving area pavement and up dock wall to finish floor level. Specify epoxy type paint that is specially formulated for use as pavement marking.
- 3. Loading Dock Equipment shall include following:
 - A. Dock Bumpers.
 - B. Dock Levelers.
 - C. Truck Restraints.
 - D. Dock Seals.

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- E. Metal Hoods (above dock seals).
- F. Wheel Chocks (connected by heavy chains to dock wall).
- 4. Receiving Areas:
 - A. Equip each overhead receiving door at recessed dock area of commissary with loading dock equipment listed above. Dock lights shall also be provided at each of these receiving doors as specified in Division 26.
 - B. Coordinate specified interlocks between dock leveler, overhead door, and truck restraint system. Dock leveler shall not operate if overhead door is in closed position and dock restraint is not engaged.
 - C. Nominal size of dock leveler shall be 6'-0" wide by 8'-0" deep. On projects with narrow receiving aisles, a nominal 6'-0" wide by 6'-0" deep may be used if approved by the DeCA Project Manager.
 - D. Provide Interlocking control to prevent dock leveler from operating when associated door is in closed position.
 - E. Laminated tire tread dock bumpers are typically 6" thick. Increase thickness of bumpers if site constraints prevent optimal grading at receiving docks as indicated above.
 - F. Provide dock bumpers at receiving and trash platforms. Provide 24" long bumpers evenly spaced (approximately 5'-0" apart) so that trash dumpsters or trucks will contact no less than two bumpers. Refer to Design Standard Plate 11 13 00-03.
 - G. Provide 8" diameter concrete filled steel pipe bumper posts with domed tops at interior jambs of overhead doors with dock levelers. Provide 8" diameter concrete filled steel pipe bumper posts with domed tops at both interior and exterior jambs of overhead door at grade level receiving areas. Embed posts 18" deep minimum in 18" diameter concrete foundations Depth of foundation at interior locations shall be 24" minimum. Depth of foundation at exterior locations shall be 24" minimum or deeper as required to accommodate frost depth.
 - H. Provide polyethylene thermoplastic sleeves over interior bumper posts (located in non-customer areas). Color shall be "safety yellow". Refer to Section 05 50 00 for further guidance. Coordinate with Installation Design Guide (IDG), or other Installation criteria controlling exterior architectural design, for required appearance of exterior bumper posts.
 - I. Provide 120-volt exterior weatherproof duplex receptacle adjacent to each overhead receiving door. Refer to Division 26 criteria for additional information.
 - J. Provide exterior-type weatherproof push button adjacent to receiving area personnel doors, connected to an interior buzzer. Push buttons shall be provided to activate buzzers in Produce Processing, Meat Processing, and Staging / Receiving Area. Provide individual push buttons at each receiving area personnel door for each individual area, with signage identifying same. Buzzers shall have different tones for each area. Refer to Division 26 criteria for additional information.
 - K. Trash containers are not allowed within the unobstructed space (33 feet) unless the containers are secured to preclude concealment of explosives as described 3-3.1 or if they are enclosed in accordance with 3-3.5 (UFC 4-010-01 latest edition, Standard 2). See Design Standard Plate 11 13 00-03 for DeCA standard approach to securing a trash container and trash platform using a chain-link enclosure when the trash container is located within the unobstructed space.






DeCA COMMISSARY DESIGN GUIDANCE 11 16 16 SAFES

DESIGN CRITERIA

- 1. GENERAL
 - A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - B. Safes are typically located within the Cashier's Office of the Commissary. The size of the safe is based on the sales volume of a commissary and will be determined during the design charrette. DeCA Directive 30-18 "DeCA Security and Loss Prevention" requires that safes be positioned so that the combination lock is not directly visible from windows or doors opening into the Cashier's Office. Further, it should be positioned so that the contents of the safe are not visible to persons outside the cashier's office when the safe door is open.
 - C. Sizes are as follows:
 - 1. 1E08 SAFE MEDIUM (22 MINIMUM CUBIC FOOT) CAPACITY, TL-30 RATED
 - 2. 1E10 SAFE LARGE (29 MINIMUM CUBIC FOOT) CAPACITY, TL-30 RATED
 - D. Refer to Section 13 25 00 Design Criteria for specific construction and security requirements for cashier offices.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES.
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
 - C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the

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property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.

D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

DeCA COMMISSARY DESIGN GUIDANCE 11 17 00 TELLER AND SERVICE EQUIPMENT

DESIGN CRITERIA

- 1. GENERAL
 - A. Teller and service equipment is used at the Cashier's Office of the Commissary, and is typically limited to a cashier's window (located between customer area and cashier's office) and a cash tray window (located between cash counting room and cashier's office). The size and location of these windows will be determined during the design charrette. DeCA Directive 30-18 "DeCA Security and Loss Prevention" provides glazing requirements / restrictions, and requires that operable windows be positioned so that a person cannot unlock the entrance door into the cashier's office by reaching through a window. Further, windows should be positioned so that the contents of the safe are not visible to persons outside the cashier's office.
 - B. It is the A/E's responsibility to verify with the basis-of-design manufacturer listed in the guide specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - C. Refer to Division 13 Design Criteria, Section 13 25 00 Cash Rooms and Design Standard Plates 13 25 00-01, 13 25 00-02, 13 25 00-03, and 13 25 00-04, for specific construction and security requirements for cashier offices.
 - D. Refer to Design Standard Plates 11 17 00-01 and 11 17 00-02 for information on cashier's window.
 - E. Refer to Design Standard Plates 11 17 00-03 and 11 17 00-04 for information on cash tray window.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
 - C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the



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DeCA COMMISSARY DESIGN GUIDANCE 11 17 00 TELLER AND SERVICE EQUIPMENT

property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.

D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.









DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.13 BAKERY EQUIPMENT

DESIGN CRITERIA

1. GENERAL

- A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Verify that equipment color is coordinated with the current DeCA décor and available from the manufacturer. Provide written notification to the DeCA Project Manager when this verification has been completed.
- B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
- C. It may be necessary to specify equipment that it not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the guide specification.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
 - B. Determine power source for bakery oven(s) and identify on Equipment List developed as part of Project Definition. Electric ovens are DeCA preference on new and major addition/alteration projects. Gas should only be used if an existing oven to be replaced is gas and electric service is not available.

3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES

- A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
- B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the

DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.13 BAKERY EQUIPMENT

property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.

- D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.
- E. Verify that proper utility connections and mounting heights (water, drain, vent, refrigeration, electrical, communication, etc.) are shown on Contract Documents for all specified equipment.
- F. If wedge configurations are utilized in bakery display case line-up, provide a three-step custom millwork unit with plastic laminate finish. Provide solid-surfacing material countertops for service and transaction counter locations. Millwork units are freestanding, finished on all surfaces (except bottom) and not attached to display cases. Do not locate any utilities within or attached to these wedge configurations. If required, locate utilities (i.e., electrical receptacles for normal housekeeping) in millwork counters.

DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.16 DELI EQUIPMENT

DESIGN CRITERIA

1. GENERAL

- A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed. Verify that equipment color is coordinated with DeCA's current standard décor and available from the manufacturer. Provide written notification to the DeCA Project Manager when this verification to the DeCA's current standard décor and available from the manufacturer. Provide written notification to the DeCA Project Manager when this verification has been completed.
- B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
- C. It may be necessary to specify equipment that it not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the guide specification.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
 - C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
 - D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.16 DELI EQUIPMENT

- E. Verify that proper utility connections and mounting heights (water, drain, vent, refrigeration, electrical, communication, etc.) are shown on Contract Documents for all specified equipment.
- F. If wedge configurations are utilized in deli display case line-up, provide three-step custom millwork stepped displays with plastic laminate and solid surfacing finishes as indicated in Design Standard Plate 06 40 23-03. Stepped displays are freestanding and not attached to display cases. Do not locate any utilities within or attached to these wedge configurations.
- G. Provide customer service counter with plastic laminate and solid surfacing finishes as indicated in Design Standard Plate 06 40 23-02. Customer service counter is freestanding and not attached to display cases. If required, locate utilities (i.e., electrical and data receptacles) within millwork counters using flexible connectors as permitted by code.

DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.19 GROCERY EQUIPMENT

DESIGN CRITERIA

1. GENERAL

- A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-ofdesign manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
- B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
- C. It may be necessary to specify equipment that is not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the guide specification.

2. DESIGN CHARRETTE PHASE RESPONSIBILITIES

- A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).

3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES

- A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
- B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
- D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.
- E. Verify that proper utility connections and mounting heights (water, drain, vent, refrigeration, electrical, communication, etc.) are shown on Contract Documents for all specified equipment.

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DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.23 MEAT DEPARTMENT EQUIPMENT

DESIGN CRITERIA

- 1. GENERAL
 - A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
 - C. It may be necessary to specify equipment that is not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the guide specification.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES
 - A. The contract documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the contract documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the contract specifications/drawings any equipment to be salvaged or relocated by the construction contractor.
 - C. On addition / alteration projects, provide specific guidance on the contract documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
 - D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.
 - E. Verify that proper utility connections and mounting heights (water, drain, vent, refrigeration, electrical, communication, etc.) are shown on contract documents for all specified equipment.

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DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.23 MEAT DEPARTMENT EQUIPMENT

- F. If wedge configurations are utilized in multi-deck meat display case line-up, provide full height gypsum wallboard on metal stud wedge shapes conforming to case configuration. Provide adequate clear space at ends of display cases for necessary end panels and clearances required by manufacturer.
- G. If return air will be taken from beneath refrigerated display cases, provide air tight closures at tops and sides of display cases to ensure that return air is drawn from beneath display case.

DESIGN CRITERIA

1. GENERAL

- A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
- B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
- C. It may be necessary to specify equipment that is not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the guide specification.

2. DESIGN CHARRETTE PHASE RESPONSIBILITIES

- A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).

3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES

- A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
- B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
- D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.
- E. Verify that proper utility connections and mounting heights (water, drain, vent, refrigeration, electrical, communication, etc.) are shown on Contract Documents for all specified equipment.

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DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.26 PRODUCE DEPARTMENT EQUIPMENT

- F. If wedge configurations are utilized in produce display case line-up, provide full height gypsum wallboard on metal stud wedge shapes conforming to case configuration. Provide adequate clear space at ends of display cases for necessary end panels and clearances required by manufacturer.
- G. If return air will be taken from beneath refrigerated display cases, provide air tight closures at tops and sides of display cases to ensure that return air is drawn from beneath display case.

DESIGN CRITERIA

1. GENERAL

- A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
- B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
- C. It may be necessary to specify equipment that is not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the guide specification.

2. DESIGN CHARRETTE PHASE RESPONSIBILITIES

- A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).

3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES

- A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
- B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.
- D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.
- E. Verify that proper utility connections and mounting heights (water, drain, vent, refrigeration, electrical, communication, etc.) are shown on Contract Documents for all specified equipment.

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DeCA COMMISSARY DESIGN GUIDANCE 11 40 00.29 SEAFOOD DEPARTMENT EQUIPMENT

- F. If wedge configurations are utilized in deli display case line-up, provide three-step custom millwork stepped displays with plastic laminate and solid surfacing finishes as indicated in Design Standard Plate 06 40 23-03. Stepped displays are freestanding and not attached to display cases. Do not locate any utilities within or attached to these wedge configurations.
- G. Provide customer service counter with plastic laminate and solid surfacing finishes as indicated in Design Standard Plate 06 40 23-02. Customer service counter is freestanding and not attached to display cases. If required, locate utilities (i.e., electrical and data receptacles) within millwork counters using flexible connectors as permitted by code.

DeCA COMMISSARY DESIGN GUIDANCE 11 82 36 FACILITY WASTE BALERS

DESIGN CRITERIA

- 1. GENERAL
 - A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each product specification is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - B. Vertical balers are typically used in commissary facilities and are located within the staging and receiving area, usually near a door opening to grade level receiving or trash platform. Quantity, size, and location of balers will be determined during the design charrette. Locate baler with 24" clearance from wall behind unit (or greater clearance if recommended by manufacturer). Provide adequate space around unit for door swing and bale removal.
 - C. Sizes are as follows:
 - 1. 1R00-B: Baler, Cardboard, Vertical, Medium.
 - D. Baler wire storage space is required.
 - 1. Wires for 1R00-B are 18'-0" in length by 12 GA. Provide a 14'-0" long, 6" diameter openended PVC pipe mounted on wall directly behind baler at 48" above finish floor.
 - 2. Secure pipe to wall with PVC pipe hangers spaced 4'-0" on center maximum. Locate pipe with adequate clearance at each end for insertion of and removal of baling wires.

2. DESIGN CHARRETTE PHASE RESPONSIBILITIES

- A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).

3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES

- A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
- B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
- C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated

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DeCA COMMISSARY DESIGN GUIDANCE 11 82 36 FACILITY WASTE BALERS

Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.

D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

Division 12 – Furnishings

DeCA COMMISSARY DESIGN GUIDANCE 12 21 13 HORIZONTAL LOUVER BLINDS

DESIGN CRITERIA

- 1. Related Sections: See related Division 08 Design Criteria, Commissary Door Schedule and Commissary Room Finish Schedule in Appendix "A", and related Design Standard Plates.
- 2. Horizontal louver blinds shall be provided at all windows located in offices and cash handling areas. Color of blinds shall match or be compatible with window frame.
- 3. Whenever possible, blinds shall be positioned between window frame jambs, not surface mounted to the face of the frame or wall.

DeCA COMMISSARY DESIGN GUIDANCE 12 48 13 ENTRANCE MATS

DESIGN CRITERIA

- 1. Related Sections: See Division 08 Section Sliding Automatic Entrances, and Aluminum-Framed Entrances and Storefront.
- 2. Equip Customer Entry Vestibule (RM. 1), Carry-Out Return Vestibule (RM. 3), and Administrative Entry Vestibule (RM. 13) with the following:

A. Section 12 48 13 Entrance Carpet Tile

3. Entrance carpet tiles should be installed wall-to-wall with releasable adhesive.

DeCA COMMISSARY DESIGN GUIDANCE 12 59 00 SYSTEMS FURNITURE

DESIGN CRITERIA

- 1. GENERAL
 - A. While Guide Specifications are continually being updated to incorporate the specified manufacturer's product improvements, it is the A/E's responsibility to verify with the basis-of-design manufacturer that each specified product is current. Provide written notification to the DeCA Project Manager when this verification has been completed.
 - B. The guide specification specifies equipment typically used in a commissary facility. The A/E shall edit the guide specification, deleting equipment not required on a particular project.
 - C. It may be necessary to specify equipment that is not included in the guide specification. The A/E will be responsible for developing product specifications for insertion into the Project Specification.
 - D. CF/CI Furniture typically provided in commissary facilities is limited to modular workstations that are located in various administrative office areas. Locations and sizes will be determined during the design charrette.
 - E. Modular Work Station sizes are as follows:
 - 1. 1A03-N Workstation, General Office, Low Profile
 - 2. 1A03-R Workstation, General Office, Stand Alone
 - F. Workstations shall be constructed as individual stand-alone units, each with all components necessary to function without attachment to adjacent workstations. On new construction projects, feed electrical and communication data from wall boxes at each modular workstation. On addition / alteration projects with existing floors, feed electrical and communication data from overhead power pole drops at each modular workstation. Feed all utilities into raceway bases of units with manufacturer's standard receptacles as specified.
- 2. DESIGN CHARRETTE PHASE RESPONSIBILITIES
 - A. During the design charrette process, the A/E (working with DeCA personnel) will develop a definitive floor plan of the commissary indicating operational equipment (drawn to scale with required end panels and clearances, etc.); and will develop an Equipment List for same indicating quantity, size, and description. Upon completion of this list, DeCA will review the list and incorporate additional operational equipment necessary for a complete and functional commissary. They will also identify responsibility for equipment as follows:
 - 1. Government-Furnished/Government-Installed (GF/GI).
 - 2. Government-Furnished/Contractor-Installed (GF/CI).
 - 3. Contractor-Furnished/Contractor-Installed (CF/CI).
- 3. CONTRACT DOCUMENT PHASE RESPONSIBILITIES.
 - A. The Contract Documents shall include the equipment list developed during the design charrette process, clearly identifying responsibility for all equipment. To facilitate and expedite technical review by DeCA, the Contract Documents shall use DeCA equipment item numbers to key both the contractor-furnished and government-furnished equipment to the Drawings.
 - B. If applicable, DeCA will provide the A/E with a list of existing government-owned equipment to be re-used in the new or renovated facility. The A/E shall evaluate the identified equipment to determine suitability, and confirm utility requirements for removal and relocation into the new or renovated facility. If applicable, list or note on the Contract Specifications/Drawings any equipment to be salvaged or relocated by the construction contractor.
 - C. On addition / alteration projects, provide specific guidance on the Contract Documents regarding disposition of salvaged equipment (i.e., will it become the property of the contractor or turned over to DRMO). Turn-in of salvaged equipment is the responsibility of the Commissary Store Director

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or designated Government representative. When the contractor is required to remove and/or otherwise dispose of commissary equipment such as display and storage shelving, display cases, refrigeration equipment and walk-in-boxes, the contractor will be required to sign DD Form 1348-1 "Receipt Release Documents" prepared by the Commissary Store Director or designated Government representative. The A/E shall clearly identify any equipment that will become the property of the contractor for salvage, and clearly identify that all other operational equipment shall remain the property of DeCA.

D. Verify that adequate space is available (both floor space and ceiling clearance) for all specified equipment.

DeCA COMMISSARY DESIGN GUIDANCE 12 93 00 SITE FURNISHINGS

DESIGN CRITERIA

- 1. Related Sections: See related Division 32 Design Criteria for additional Site Work.
- 2. Provide exterior site furnishings at front of commissary, to include benches, trash receptacles, and bicycle rack. Trash receptacle shall have built-in ash receptacle on top of unit. Clearly indicate on Contract Documents that site furnishings shall be permanently secured in-place. All site furnishings shall have matching design style. Select bench lengths and bicycle rack size as appropriate for building design. Locate bicycle rack at front of commissary, but away from busy pedestrian traffic areas.
- 3. The guide specification is based on powder coated steel site furnishings finished in a black color. Coordinate site furnishing materials and colors with building design and local Installation requirements. Consider the use of recycled materials for site furnishings if the local Installation has no specific requirements. If alternate site furnishings are selected, select only those types requiring no maintenance other than occasional washing.
Division 13 – Special Construction

DeCA COMMISSARY DESIGN GUIDANCE 13 21 26 COLD STORAGE ROOMS

DESIGN CRITERIA

- 1. Related Sections: See Division 03 Section Insulated Freezer Floors, Division 23 Section Product Refrigeration Systems, and Division 23 Section Refrigeration Monitoring and Control Systems (RMCS).
- 2. Summary: Provide cold storage rooms per Concept Floor Plan: Shop fabricated, site assembled, walk-in room type, complete with doors and frames. Erect freezers over insulated cast-in-place concrete floors and provide heated stainless steel threshold across door openings.
- 3. Doors for cold storage rooms are included in this section. Provide sliding and/or swinging cold storage room doors as well as 1G11 Dairy Reach-in doors. Provide cart corrals and milk and egg carts aligned with the 1G11 reach in doors in Dairy cold storage rooms. See Division 08 Section Traffic Doors for double action and flexible vertical strip doors used in cold storage rooms.
- 4. Windows for cold storage rooms are included in this Specification Section.
- 5. General Description:
 - A. Prefabricated Insulated Panels: Interior and exterior aluminum panels uniformly formed with metal dies, insulation, and panel fasteners. Maximum length: 12'-0". Maximum width: 48". Minimum thickness: Low temperature panels shall be 5" thickness with minimum "R" factor of 36. Medium temperature panels shall be 4" thickness with minimum "R" factor of 28. Panel joints: Interlocking design. Wood frame panels not acceptable. Provide panel fasteners to secure panels to each other. Provide vapor seal at panel joints when joints are assembled. Form seal by compressing closed cell gaskets or silicon sealant at the joint. Panel gaskets: Synthetic rubber or other manufacturer approved material. Panel skins: Minimum 0.032" thick stucco embossed aluminum. Provide factory applied USDA accepted white baked or acrylic enamel finish on exposed surfaces. Panels shall be UL approved, or shall be provided with an independent testing laboratory's test certificate certifying fire retardant properties of the insulation.
 - B. Insulation:
 - 1. Insulation shall be foamed-in-place polyurethane, 2 pcf minimum density, bonded to inner and outer metal panels.
 - 2. Thermal conductivity (K) shall not exceed 0.14 (BTU) (IN) / (HR.) (FT²) (DEGREE F).
 - 3. Insulation shall be Factory Mutual System classified Class I (per ASTM E-84) having a flame spread of no more than 25, fuel contributed of 0, and smoke developed rating not greater than 400 when tested in a 4" cross section.
 - C. Walls: Cold storage room walls shall be constructed using 10'-0" high panels.
 - D. Ceilings: Prefabricated insulated panels spanning width of cold storage room. Underside of ceiling panels shall have sufficient strength to support conduit and light fixtures affixed directly to the skin.
 - E. Ceiling Panel Suspension System: Provide suspension system for support of ceiling panels from roof structural members. Do not use ceiling support columns within the cold storage rooms. Suspension system shall consist of all members, including fasteners and attachments, required to support ceiling panels. Provide manufacturer's standard hangers conforming to panel joint configuration. Suspension system shall be of sufficient strength to support ceiling panels, workmen during construction, light fixtures, and equipment supported from panels.
 - F. Penetrations: Provide PVC conduit sleeves and resilient gaskets for all penetrations. Seal penetrations vapor tight with silicone sealant. Seal electrical conduits internally and externally to prevent moisture migration through electrical conduit.
 - G. Temperature Monitoring: Monitor temperatures within each cold storage room with the Refrigeration Monitoring and Control System (RMCS). Provide temperature probes to measure

DeCA COMMISSARY DESIGN GUIDANCE 13 21 26 COLD STORAGE ROOMS

temperature of return air to unit coolers and general room temperature. Do not mount temperature probes in unit cooler discharge air or near doors.

- H. Thermometers: At each cold storage room, provide a 4" flanged dial thermometer with a remote reading capillary tube. Range of thermometer shall be within operating temperature of the cold storage room. Locate thermometer adjacent to entrance door with capillary tube located remote from door opening.
- I. Pressure Relief Ports: Provide a pressure relief port for cold storage rooms operating at temperatures below 20 deg F. Design port so that air can move into and out of refrigerated space. The relief port shall be electrically heated.
- J. Floors:
 - Medium temperature cold storage rooms shall be constructed directly on top of concrete floor slabs as required by Section 03 30 00 Cast-In-Place Concrete. Provide perimeter wood thermal break (preservative treated or redwood) around medium temperature cold storage room floor slabs to isolate them from adjacent non-refrigerated floor slab areas. Discontinue wood thermal break at door openings and provide isolation membrane across door openings. Cold storage rooms shall have concrete floors sloped to drains.
 - 2. Low temperature cold storage rooms 200 SF in size, and larger, shall have insulating concrete freezer floors with positive underfloor ventilation for prevention of frost heave. Construct insulating concrete freezer floor systems consisting of:
 - a. 36" deep drainage fill layer containing PVC ventilation piping.
 - b. 10 mil vapor retarder directly on top of drainage fill.
 - c. Concrete sub-slab.
 - d. Three 2" layers of polystyrene insulation.
 - e. Perimeter wood thermal break (preservative treated or redwood) around freezer slab recess.
 - f. 10 mil vapor retarder set directly on top of insulation and wrapping-up and over exposed face of perimeter wood thermal break (note that purpose of this is to minimize possibility of excess concrete mix water from seeping down between joints in insulation).
 - g. Concrete top slab.
 - 3. On new construction projects, low temperature cold storage rooms (less than 200 SF in size) shall be constructed similarly, except that an underfloor ventilation system is not required.
 - 4. On alteration projects with existing concrete floor slabs, low temperature cold storage rooms (less than 200 SF in size) shall be constructed using 4" thick prefabricated insulated aluminum floor panels with 1/4" thick aluminum diamond tread plate wearing surface. Provide removable 1/4" thick aluminum diamond tread plate exterior ramp.
- K. Curbs:
 - 1. Provide concrete curbs (secured to concrete floor slab with steel dowels) for protection of prefabricated wall panels. Construct curbs with sloped tops for drainage, and isolated from face of wall panels with pre-molded expansion joint filler. Seal joint between back of curb and face of wall panel, water tight.
 - At cold storage rooms with resinous floor finish, cover exposed surfaces of curb with resinous material to match floor. (Note that curb is installed after wall panels are complete, using premolded joint filler as form against wall panel).

DeCA COMMISSARY DESIGN GUIDANCE 13 21 26 COLD STORAGE ROOMS

- 3. Provide heater cable within concrete curb on outside of frozen food storage. Refer to Division 3 Design Criteria and Design Standard Plates 13 21 26-04 and 13 21 26-08 for additional information.
- L. Sealing Existing Cooler and Freezer Panels Seams:
 - Seal cooler and freezer panel seams found to have air leaks with sealant tape described in specification section 13 21 26 Cold Storage Rooms. Panels must be sealed on outside (warm side) of seam to prevent warm moist air from entering the gap between panels. Before applying tape, surface must be clean and dry to ensure proper bond. Tape must be applied with roller to ensure permanent repair.
- M. Signage:
 - 1. Doors must have a means for a person inadvertently trapped inside a locked room to disable the lock and exit the room. Provide instructions for releasing the interior locking mechanism adjacent to lock. Instructions should be in English and host nation language as applicable.

END OF SECTION











	GYPSUM WALLBOARD AND METAL STUD PARTITION OR COLD STORAGE BOOM WALL		
	PANEL	4" 1/2" 11	
	SEALANT		
	#4 REINFORCING BAR CONTINUOUS		
	CONCRETE CURB		
	1 RUN HORIZ HEATING CABLE SECURED TO REINFORCEMENT WITH PLASTIC TIE WRAPS AT 12" O.C. AT FROZEN FOOD ONLY		4
	1/2" ISOLATION JOINT FILLER STRIP		4
	#4 REINFORCING BAR AT 12" O.C DRILL & EPOXY GROUT INTO CONCRETE FLOOR SLAB	/////	
	CONC. FLOOR		
DATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		DESIGN STANDARD
JUN 2022	TITLE COLD STORAGE ROOMS CONCRETE CURB	REF. REV.	132126-06A













CONT. 1X GYP. BD. COVER C TO SALES METAL S STUDS TO CONSTRU SCREW-T PANELS) TRIM EDO OPENING STAINLES ON GLAS DECOR. I FACE OF AND CON WITH COI 1" [WOOD NAILER FURRING ODDER WALL PANELS EXPOSED SAREA WITH 5/8' GWB ON 1-5/8' UDS @ 16'' O.C SECURE METAL OF ACE OF COOLER WITH (CTION ADHESIVE (DO NOT USE YPE FASTENERS INTO COOLER (HEAD AND JAMB) WITH 18 GA. STEEL TRIM TO MATCH THAT USED DOORS. COORDINATE COLOR W/ NEW SOPTH OF TRIM SHALL EXTEMD FROM GWB AND FIT BETWEEN COOLER PANEL TINUOUS BLOCKING. SECURE TRIM TAINLESS STEEL COVERED MER RAIL BELOW CH-IN GLASS D FRAME	- COLD STORAGE ROOM WALL PANEL
<u>HE</u>	AD AND JAMB DETAIL	
DATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	DESIGN STANDARD
JUN 2022	TITLE COLD STORAGE ROOMS 1G11 GLASS DOOR DISPLAY REV.	132126-12












DeCA COMMISSARY DESIGN GUIDANCE 13 25 00.10 CUSTOMER SERVICE KIOSK

DESIGN CRITERIA

GUIDANCE FOR PLACEMEMT OF SELF-CHECKOUT COUNTERS (SCO's) AND CUSTOMER SERVICE KIOSKS

- 1. SCO's shall be placed so that they are the first checkout opportunity for customers at the end of the shopping pattern. Typically this is nearest the frozen food department.
- 2. The determination on whether or not a particular store will have SCO's, and how many SCO's are required, will be determined during Project Definition.
- 3. In facilities with a counter-clockwise shopping flow, the SCO's will be on the left-hand side. In facilities with a clockwise shopping flow, the SCO's will be on the right-hand side.
- 4. Customer Service Kiosks will be provided in facilities with seven or more standard checkout counters. Typically, a 15' x 17' Customer Service Kiosk will fit in a space occupied by three standard checkouts.
- 5. In facilities with less than seven standard checkout counters, the determination on whether or not to provide a designated customer service counter will be determined during Project Definition. In certain facilities, a customer service counter located in the office line-up at the front of the checkout area might be required. In very small facilities, often times customer service functions are handled at the cashier's window or admin office.
- 6. When required, the Customer Service Kiosk will always be located between the SCO's and the standard checkout counters.
- 7. In facilities with a counterclockwise shopping flow, there will be two checkout counters facing each other. It will be necessary to provide a cart rail between them in order to define and maintain clear access to each.
- 8. Customer Service Kiosks will not be provided in commissary facilities that do not sell tobacco products (typically commissary facilities located on Navy and Marine Installations). This should be verified during Project Definition.
- 9. In facilities **without** customer service kiosks, the DeCA standard cashier office configurations, identified in Design Standard Plates 13 25 00-01, 03, 03, and 04 shall be used.
- 10. A stand-alone cashier's window shall be provided in wall between Cashier's Office (RM. 4) and Checkout Area (RM. 81), regardless of whether or not a separate customer service area or customer service kiosk is provided. Refer to Design Standard Plates 13 25 00-01 and 13 25 00-02.

END OF SECTION

DeCA COMMISSARY DESIGN GUIDANCE 13 25 00 CASH ROOMS

DESIGN CRITERIA

1. CASHIER'S OFFICE (RM. 4)

In accordance with DeCA Directive 30-18, dated 01 AUG 2003, construction of the Cashier's Office shall comply with the following:

Interior wall surfaces facing room will be constructed of 5/8" gypsum wallboard on top of 3/4" fireretardant-treated plywood. Opposite surface of partition may be 5/8" gypsum wallboard.

Ceiling will be constructed of 1/2" gypsum wallboard on top of 3/4" fire- retardant-treated plywood, unless interior wall surfaces extend to underside of metal roof deck, in which case a standard suspended gypsum wallboard or acoustical tile ceiling may be installed.

Note that it is common to have extensive quantities of HVAC ductwork above the ceiling of this room. Security bars will be required on any large duct work penetrating this secure partition. For that reason, constructing a secure gypsum wallboard ceiling as described above is recommended.

All windows within this room shall be constructed of shatter resistant, composite, or wire mesh reinforced glass. Laminated glass is recommended.

Cashier and cash tray windows shall be constructed to prevent individuals outside the window from reaching funds or door locks inside the Cashier's Office.

Customer service windows shall be designed in accordance with the ABA Accessibility Standard for Department of Defense Facilities as adopted by the Deputy Secretary of Defense memorandum dated October 31, 2008. Refer also to Advisory 904.6 Security Glazing for assistive listening device options to help facilitate voice communication with patrons.

Refer to Division 11 Section 11 17 00 Teller and Service Equipment for design responsibilities and additional requirements for equipment associated with these rooms.

Windows located in exterior walls are typically not permitted by DeCA criteria. However, should an exterior window be required, DeCAD 30-18 requires that "Windows which open to the exterior of the building greater than 96 square inches, where the smallest dimension is greater than six inches, e.g. 7 " by 14", will be protected by a steel rod-and-bar grid. Grid ends should be embedded in the structure or welded to a frame that is securely attached to the structure from the inside".

Door options identified in DeCAD 30-18 include "... a minimum 1-3/4" -thick, solid wood door with 12gauge metal plate securely attached to the outside face; or standard 1-3/4" -thick hollow metal industrial type door (minimum thickness of skin plate 14-gauge)". It is recommended that a security grade 14gauge hollow metal door be provided.

Door shall be equipped with a viewer or window that will permit personnel to be viewed and identified prior to entry. If a viewing window is installed, it will be no larger than 24" by 24", constructed of shatter resistant glass, composite, or wire mesh reinforced glass. It is recommended that a 12" by 12" laminated glass window be installed in the Cashier's Office door.

DeCAD 30-18 also requires that this door shall be equipped with an automatic, secondary latchbolt lock which cannot be left unlocked and which cannot be opened from the outside without a key. The locking mechanism will be installed and adjusted so that when the door is closed the latch bolt is fully extended

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DeCA COMMISSARY DESIGN GUIDANCE 13 25 00 CASH ROOMS

into the strike plate and the auxiliary dead latch is fully retracted to prevent "shimming" or slipping the lock open with a plastic card or other device. If the locking bolt is visible from outside when the door is closed, it will be further protected with a metal shield of at least 12-gauge, extending at least one inch beyond the edge of the door frame and three inches above and below the bolt. It is recommended that a mortise lock, with storage room function, be provided in addition to door closer.

IMPORTANT - Width of Cashier's Office door shall be 42" (or wider as required) to allow safe to be moved through door opening. Hinges shall be 5" ball bearing type.

2. CASH COUNTING ROOM (RM. 5)

IMPORTANT - Width of Cash Counting Room door shall be 42" (or wider as required) to allow safe to be moved through door opening. Hinges shall be 5" ball bearing type. Door shall be solid core wood with no vision window.

END OF SECTION









Division 21 – Fire Suppression

DeCA COMMISSARY DESIGN GUIDANCE 21 13 00 FIRE -SUPPRESSION SPRINKLER SYSTEMS

PART 1 - GENERAL

1.01 Requirements

A. <u>General</u>. The fire protection system shall be an automatic wet pipe sprinkler system. Fire protection design requirements shall be per the Unified Facilities Criteria UFC 3-600-01 Fire Protection Engineering for Facilities except as noted below. Comply with NFPA 101 <u>Life Safety Code</u>) and NFPA 13, Latest Edition, except where Unified Facilities Criteria UFC 3-600-01 is indicated. The following table shows commodity class, hazard class, densities and areas to be used for the various parts of the building. Per UFC 3-600-01 Tables 9-3 and 9-4, are used for non-storage hazards and NFPA 13 is used for storage and miscellaneous storage areas.

Area	Hazard classification	Min K Factor	Commodity Classification	Design Density	Design Area	Hose Stream
Sales	Ordinary	8.0		0.20 gpm/sf	2500	250 for 60 min.
Administration	Light	5.6		0.10 gpm/sf	1500	250 for 60 min.
Common Areas	Light	5.6		0.10 gpm/sf	1500	250 for 60 min.
Staging ≤ 5'-0" (Bulk or Rack)	NFPA 13 Table 13.2.1 – OH2	8.0	Class I-IV / Cartoned and Exposed Group A Plastics	0.20 gpm/sf	1500	250 for 90 min.
Storage and Staging (≤12'-0" High, Bulk or Rack, 32' maximum ceiling)	NFPA 13 Table and Figure 13.2.1 – EH1	11.2	Class I-IV	0.30 gpm/sf	2500	500 for 120 min.
Storage and Staging (≤8'-0" High, Bulk Only, 28' maximum ceiling)	NFPA 13 Table and Figure 13.2.1 – EH2	11.2	Cartoned and Exposed Group A Plastics	0.40 gpm/sf	2500	500 for 120 min.

*DeCA's policy is that storage height in staging areas will not exceed 12'-0". If storage height exceeds 12'-0", the system shall be designed in accordance with NFPA 13 taking into account the height and conditions of storage. This may entail higher densities, higher flow rates, in rack sprinklers, and other expensive modifications to the design which can be avoided by limiting storage to 12'-0" for Class I-IV and 8'-0" for plastics.

B. The Receiving/Staging area will conform to UFC and NFPA 13, latest edition, Commodity Class I-IV, non-encapsulated product and the design requirements indicated in the table above. No racks will be provided in the remaining Staging/Receiving Area. For Add/Alter projects, all rack storage will be limited in height to a maximum of 8' high top shelf and the entire area will be protected to Commodity Class I-IV protection standards. In-rack sprinklers will not be required.

DeCA COMMISSARY DESIGN GUIDANCE 21 13 00 FIRE -SUPPRESSION SPRINKLER SYSTEMS

- C. Commodities stored on pallets shall conform to NFPA 13 5.6.2. Commodities stored on plastic pallets that cannot be documented as equivalent to wood must be treated as Group A plastics and stored no higher than 8'-0".
- D. Sprinkler the entire building interior excluding concealed spaces exempted by NFPA 13, latest edition.
- E. Canopies shall have sprinkler protection if they are large enough to store materials beneath them. Canopies that are in place for weather protection over doors do not need sprinkler protection if they are of wholly non-combustible construction and meet the exceptions of NFPA 13. Canopies and covered docks at the rear of the store and the front of the store where materials may be stored for special sales or temporary staging must have sprinkler protection. Canopy sprinklers shall be dry pendant, sidewall dry pendant, or where mains are not in heated areas, dry pipe systems.
- F. Rooftop Mechanical Centers need sprinkler protection, fire alarm notification, and detection.
- G. Sprinkler protection for walk-in freezers and coolers, where unit cooler discharge temperature is below 32 deg F, shall be per NFPA 13, latest edition, with dry pendent heads.
 - 1. Insulate sprinkler drops into freezer and cold storage rooms per design plate.
- H. <u>Design Drawings</u>. At a minimum, indicate the service entrance, proposed design approaches, sprinkler densities and hazards, and type of sprinkler and finish for the different areas.
- I. Verify that no wet pipe sprinkler lines pass through unheated soffitts, canopies, etc. Where this is unavoidable provide a dry pipe zone or antifreeze loop.
- J. Verify that no mains or branch lines are run above electrical panels or gear.
- K. Locate inspectors test stations and drains in utility or unfinished areas, not in public areas or offices. Drains shall discharge to floor sinks when located within the building. Floor drains are not acceptable.
- L. Clearly delineate on the drawings those areas to be protected with wet pipe systems, with dry pipe systems, and by dry pendent heads. Show approximate area by square feet protected by each system riser. If systems are existing, identify type and design (hydraulically designed with appropriate information or "pipe schedule").
- M. Do not locate risers on the exterior of the building. (Force Protection Requirements.)
- N. <u>Construction Type</u>. The construction type and fire areas shall be Type IIB, Noncombustible, Mercantile Occupancy as described by the <u>International Building Code</u> (IBC).
- O. Fire Flow Test: Per UFC 3-600-01 Section 4-1.3, the Fire Protection Engineer of Record must perform or witness a Fire Flow Test prior to the first submission. This information must be presented as an appendix in the Design Analysis in order to determine the necessity of a fire pump or the viability of the existing sprinkler system.
 - 1. Document the following in the test report:
 - a. Address and GIS coordinates of the building or site.
 - b. Locations and GIS coordinates of the individual flow and gauge hydrants.
 - c. Static pressure at the gauge hydrant.
 - d. Residual pressure at the flow hydrant.
 - e. Calculated flow at the flow hydrant.
 - f. Calculated flow at 20psi (138kPa).
 - g. Date and Time of the test.

- h. Names of all persons performing and witnessing the test.
- i. Satellite map with the building/site and the hydrants labeled.

1.02. <u>New Store Concept:</u>

A. Current marketing trend eliminates suspended ceiling in Sales Area and renders ceiling structure visible. This impact on the fire-suppression system is immediate. The design Engineer shall provide guidance to the design Architect for appropriate visual appearance of the fire-suppression system. Accomplish this by camouflaging fire sprinkler systems and paralleling structural support runs with piping runs.

1.03. <u>Remodel Concept:</u>

- A. Incorporate new store concepts during major remodeling of existing facilities. Many will not apply. The design Engineer shall coordinate with the design Architect on those marketing concepts to include in the construction documents. The same requirements for new store projects shall apply for remodel projects to the extent feasible.
- B. Phasing of work to accomplish the desired changes will be an important consideration to incorporating the changes. Clearly discuss the effect of the work on the mechanical systems in the design analysis. Discuss any conflicts or problems with attempting to incorporate the new marketing concept application.

PART 2 - PRODUCTS

- 2.01. <u>Alarm Systems</u>. Comply with the requirements of Division 28 Section 28 31 76 28 39 00 Fire Alarm and Mass Notification Systems.
- 2.02. <u>Fire Extinguishing System</u>. Hydraulically calculated wet pipe automatic sprinkler system, with hose connections, that complies with NFPA 13, latest edition. Provide dry pendant sprinkler assembly with heads in rooms refrigerated to less than 4 deg C (40 deg F) per NFPA 13, latest edition, Chapter 8 (test dry-pendant automatic sprinklers per NFPA 25). Should the Contractor's investigation indicate adequate water supply is not available for the proposed system, provide a proposed method of correction, e.g. pressurization/pumping/holding system, as part of the proposal (do not consider an installation-wide correction of the system).
- 2.03. <u>Extinguisher Cabinets</u>. Comply with the requirements of Division 10, Section 10 44 00 Fire Protection Specialties.
- 2.04. High-Volume Low Speed (HVLS) Fans: Verify that HVLS fans are installed per NFPA 13 11.1.7 and 12.1.4.
 - A. Maximum fan diameter of 7.3m (24 feet)
 - B. Fan must be installed approximately centered between four adjacent sprinklers.
 - C. The distance between the fan blades and the sprinkler deflectors must be a minimum of 0.9m (3 feet).
 - D. Fans must shut down immediately upon the receipt of a water flow alarm. See section 28.31.76.

PART 3 - EXECUTION

END OF SECTION



Division 22 – Plumbing

1. GENERAL

1.1 Summary

A. The plumbing system shall include sanitary drainage, waste, and vent piping; roof drains and interior downspouts; domestic cold water, hot water, and hot water recirculating piping; plumbing fixtures, special fixtures, and floor drains; and, a domestic water heater. Plumbing work shall comply with The International Plumbing Code, NFPA Fuel Gas Codes 54 and 58, current editions, and Unified Facilities Criteria (UFC).

B. Plumbing Design Analysis.

- 1. Provide plumbing load analysis and calculations with all design submittals.
- 2. In the design analysis, include the following:
- 3. Plumbing calculations complete with all assumptions (i.e., water supply, future requirements, sewage estimate, etc.).
- 4. Provide records of available water pressures and hydrant flow tests.
- 5. Investigation results of the availability of heat source for heating the domestic hot water.
- 6. Design calculations to verify the hot water systems capacity to provide the water required in paragraph above will be specifically included in the design analysis.
- 7. Include an economic analysis on heat source in the design calculations.
- 8. No forced sewer mains shall pass below the building.

1.2 New Store Concept:

A. Current marketing trend eliminates suspended ceiling in Sales Area and renders ceiling structure visible. This impact on plumbing systems is immediate. The design Mechanical Engineer shall provide guidance to the design Architect for appropriate visual appearance of the plumbing systems. Accomplish this by protecting overhead exposed plumbing lines from excessive condensation by applying appropriate insulation (or other means of catching condensate) and by paralleling structural support runs with piping runs.

1.3 <u>Remodel Concept:</u>

- A. Incorporate new store concepts during major remodeling of existing facilities. Many will not apply. The design Mechanical Engineer shall coordinate with the design Architect on those marketing concepts to include in the construction documents. The same requirements for new store projects shall apply for remodel projects to the extent feasible.
- B. Phasing of work to accomplish the desired changes will be an important consideration to incorporating the changes. Clearly discuss the effect of the work on the plumbing systems in the design analysis. Discuss any conflicts or problems with attempting to incorporate the new marketing concept application.

1.4 Water Heater/Service:

- A. Domestic Hot Water
 - 1. In addition to normal domestic hot water requirements, provide adequate 140 degree F hot water for preparation room wash down and hose stations used for wash down purposes (Fish Market, Meat Processing, Meat Wrapping and Deli/Bakery Rooms).

- 2. Provide a source of heat available for domestic hot water system year round. Ensure any installation central system used for heat source is available throughout the year.
- 3. Equip the hot water system with adjustable, but automatic (thermostatically controlled) water mixing valve(s) that will meter water to supply 115 degree F hot water to all hose bibbs, lavatories and hand wash sinks.
- 4. For economy, consider using point-of-use water heaters for remote store areas such as restrooms, break rooms, Medical Food Inspector's office, etc. which require hot water service.
- 5. <u>Heat Reclaim</u>:
 - a. Domestic water supplied to the hot water heater shall be preheated with reclaimed waste heat from the low temperature refrigeration system(s).
 - b. Heat recovered from the refrigeration system for water preheating shall be 25 percent of the total heat of rejection of the compressor system.
 - c. For hot water systems with refrigerant heat reclaim units, see Design Standard 220500-7 Plate for piping schematic.
 - d. Do not credit heat recovery units to determine the required hot water heater capacity.
- 6. <u>Meat Processing/Wrapping Washdown Load</u>: In addition to normal building hot water requirements, incorporate the following meat processing/wrapping wash down load into the building hot water heater load:
 - a. On facilities of 60,000 SF and larger, use a meat prep wash down load of 400 gallons of 140 degree F water used during a two hour period in building hot water load calculations.
 - b. On facilities less than 60,000 SF, use a meat prep wash down load of 200 gallons 140 degree F water used during a two hour period in building hot water load calculations.
- 7. Water heater shall be sealed or separated combustion type with ducted combustion air and not utilizing a draft hood or barometric damper when located in refrigeration equipment rooms.
- 8. Small remote loads (i.e. toilet rooms, janitor's closets, etc.) may utilize instantaneous electric heaters where substantial reduction of piping installed cost would result.
- B. Water Meter. Provide one on building service.
- C. <u>Sanitary Drainage System</u>. Provide single grease trap outside building, except that in extremely cold climates locate indoors <u>with the concurrence of DeCA Project Manager</u>. Size as indicated in Design Standard Plate 22 05 00-04. Route discharge from plumbing fixtures in Meat Processing / Wrapping, and floor drains from Meat Department through grease trap. Install no plumbing below freezer walk-in boxes. Connect drains from other departments, as identified elsewhere in this criteria, to grease trap.
- D. Gas meter: Provide on building gas service.

2. PRODUCTS

- 2.1 Fixtures and Equipment. See Division 11 for detailed equipment information.
 - A. <u>Water Heater/Service</u>

- 1. Provide hot and cold water service at each lavatory, sink, and service sink. Also provide hot and cold wash down stations (WS) with hose racks, and hot and cold hose stations (HS) with hose racks.
- B. Lavatories and other areas as required below. Provide soap dispensers and paper towel dispensers at all locations that have hand-wash sinks as contractor-furnished contractor-installed (CF/CI) equipment.
- C. <u>Fixtures</u>. Commercial quality and equipped with water conserving devices. Provide water closets and urinals with battery powered, sensor activated flush valves. Provide lavatories with battery powered sensor activated faucet, fitted with devices to limit water discharge to 2L/s (0.5gpm). Provide work sinks with combination hot and cold mixing faucets without flow control devices.
- D. Plumbing Fixtures: The A/E shall develop fixture schedules meeting the following criteria:
 - 1. <u>WC-1 Water Closet</u>. Standard wall hung, elongated rim, low consumption, 1.28 gpf. Provide battery powered, sensor activated flush valves with override button for temporary use when sensor is inoperative. Provide standard trim.
 - 2. <u>WC-2 Water Closet</u>. Handicapped; same as P-1 except seat at 17" 19" above floor and over-ride button installed on wide side of stall.
 - 3. <u>UR-1 Urinal</u>. Standard, wall hung, flush valve, washout with rim 17" maximum above floor. Provide low consumption 0.5 gpf. Provide battery powered, sensor activated flush valves with override button for temporary use when sensor is inoperative. Provide standard trim. Note that typically only one urinal is provided in each of the men's restrooms within a Commissary facility. If more than one urinal is provided in any individual men's restroom, only one needs to be mounted for handicap accessibility. The other can be mounted at standard height of 24" above floor.
 - 4. <u>L-1 Wall Mount Lavatory</u>. Standard, wall hung, slab lavatory, concealed arms, 20" by 18". Mount rim 34" above floor for handicap accessibility and provide required clearance and insulation for drain piping. Specify sink with extra right hand hole for deck mounted soap dispenser. Equip lavatory with battery powered, sensor activated faucet and limit water flow to 0.5 gpm max. Provide faucet with sensor range adjustments, variable time-out settings (3 seconds min. to 20 minutes max.), back check valves for hot/cold mixing, thermostatic mixing valve and trim plates. Size transformer to operate specified number of fixtures within room. Provide note on Drawings that contractor shall locate control module for automatic faucet tight to underside side of lavatory and concealed from view when standing in front of lavatory. Connect all control modules using concealed wiring to single transformer that is located above ceiling or within wall construction with access panel. USE THIS LAVATORY IN SINGLE USER FAMILY RESTROOMS AND EMPLOYEE RESTROOMS.
 - 5. <u>L-2 Undercounter Mount Lavatory</u>. Universal access, 19-1/4" by 16-1/4" undercounter mount sink with drain outlet near back of bowl to allow use of standard p-trap. Equip lavatory with battery powered, sensor activated faucet and limit water flow to 0.5 gpm max. Provide faucet with sensor range adjustments, variable time-out settings (3 seconds min. to 20 minutes max.), back check valves for hot/cold mixing, thermostatic mixing valve and trim plates. Size transformer to operate specified number of fixtures within room. Provide note on Drawings that contractor shall locate control module for automatic faucet tight to underside side of counter and concealed from view when standing in front of lavatory. Connect all control modules using concealed wiring to single transformer that is located above ceiling or within wall construction with access panel. USE THIS LAVATORY IN SEPARATE GENDER MULTI-STALL CUSTOMER RESTROOMS.
 - 6. <u>Sinks:</u> Supply all sinks with both hot and cold water. Specific water temperature requirements for various sinks throughout the commissary are outlined below. Provide

domestic hot water system with thermostatically controlled mixing valve(s) to provide 115 degree F hot water to hand wash sinks and controls.

- a. Medical Food Inspection Office:
 - 1) <u>4CKT Sink</u>. Two compartment, stainless steel, kitchen counter type. Provide with cold and 120 degree F water.
- b. Janitor Closets:
 - Floor sinks: Stern-Williams Model Number HL-2100-BP or equal, with splashguard and manufacturer's mop rack. Provide with cold and 120 degree F water.
- c. Employee Breakroom:
 - 1) <u>4CKT Sink</u>. Two compartment, stainless steel, kitchen counter type. Provide with cold and 120 degree F water.
- Special Sinks: Supply all sinks with both hot and cold water. Specific water temperature requirements for various sinks throughout the commissary are outlined below. Provide domestic hot water system with thermostatically controlled mixing valve(s) to provide 115 degree F hot water to hand-wash sinks and controls. See the Guide Specification, Section 22 05 19 Plumbing Specialties.
 - a. Dairy Storage Room:
 - 1) <u>4S01 L or R as required Sink.</u>
 - a) One compartment stainless steel, drain board, self-standing.
 - b) Provide with cold and 140 degree F water.
 - c) Provide one faucet with pre-rinse spray assembly, centered on sink compartment.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.
 - b. Damage Merchandise Room:
 - 1) 4S02 D Sink.
 - a) Two compartment stainless steel, drain boards, self-standing,
 - b) Provide with cold and 120 degree F water.
 - c) Provide one faucet with pre-rinse spray assembly, centered on sink compartment divider.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.
 - c. Meat Processing Room:
 - 1) 4S03 D Sink.
 - a) Three compartment stainless steel, drain boards, self-standing.
 - b) Provide with cold and 140 degree F water.
 - c) Provide two faucets with pre-rinse spray assembly, centered on sink compartment dividers.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.
 - 2) <u>4S00 Sink</u>.
 - a) Hand wash sink, stainless steel, single compartment, single pedal foot controls, thermostatic mixing valve, and front operated temperature adjustment.

- b) Provide with cold and 115 degree F water.
- c) Furnish with integral paper towel, and liquid soap dispenser, and trash receptacle.
- d. Meat Wrapping Room:
 - 1) <u>4S00 Sink</u>.
 - a) Hand wash sink, stainless steel, single compartment, single pedal foot controls, thermostatic mixing valve, and front operated temperature adjustment.
 - b) Provide with cold and 115 degree F water.
 - c) Furnish with integral paper towel, liquid soap dispenser, and trash receptacle.
- e. <u>Produce Processing</u>:
 - 1) <u>4S03 D Sink</u>.
 - a) Three compartment stainless steel, drain boards, self-standing.
 - b) Provide with cold and 120 degree F water.
 - c) Provide two faucets with pre-rinse spray assembly, centered on sink compartment dividers.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.
- f. Deli/Bakery:
 - 1) <u>4S00 Sink</u>.
 - a) Hand wash sink, stainless steel, single compartment, single pedal foot controls, thermostatic mixing valve, and front operated temperature adjustment.
 - b) Provide with cold and 115 degree F water.
 - c) Furnish with integral paper towel, liquid soap dispenser, and trash receptacle.
 - 2) <u>4S03 D Sink for bakery.</u>
 - a) Three compartment stainless steel, two drain boards, self-standing.
 - b) Provide with cold and 140 degree F water.
 - c) Provide two faucets with pre-rinse spray assembly, centered on sink compartment dividers.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.
 - 3) 4S03 D Sink for deli.
 - a) Three compartment stainless steel, two drain boards, self-standing.
 - b) Provide with cold and 140 degree F water.
 - c) Provide two faucets with pre-rinse spray assembly, centered on sink compartment dividers.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.
 - 4) NOTE: Separate sink required in deli for processing chickens.
- g. Clerk Service Fish Market:
 - 1) <u>4S00 Sink.</u>

- a) Hand wash sink, stainless steel, single compartment, single pedal foot controls, thermostatic mixing valve, and front operated temperature adjustment.
- b) Provide with cold and 115 degree F water.
- c) Furnish with integral paper towel, liquid soap dispenser, and trash receptacle.
- 2) <u>4S03 D Sink</u>.
 - a) Three compartment stainless steel, two drain boards, self-standing.
 - b) Provide with cold and 140 degree F water.
 - c) Provide two faucets with pre-rinse spray assembly, centered on sink compartment dividers.
 - d) Provide floor sink beneath sink indirect connection to building sanitary system.

E. Special Drains:

- 1. All processing room drains shall be extra heavy duty with hinged grates strategically located for optimal water drainage.
- 2. Provide chrome finished strainer for drains at finished floors.
- 3. Slope all floors requiring drainage downward to floor drains with a minimum slope to drain of 1 percent, maximum slope of 2 percent.
- 4. Slope floors in all cold storage rooms, except freezers, to allow for positive drainage. Rim elevation of floor drains shall be set 1" to 1-1/2" below finish floor with drain spacing to provide an approximate floor slope of 1/8" per foot. Coordinate location and rim elevation of floor drains within each cold storage room. Provide cold storage rooms with indirect waste piping for all floor drains. Run separate waste pipes from each cold storage room, each with an indirect connection to the building sanitary drainage system incorporating an air gap to preclude the backflow of sewage into food storage areas. Provide a trap at each floor drain
- 5. Vent all traps.
- 6. Floor drains may be connected to separate drainage line discharging into an outside receptor, though an air gap. Maintain freeze protection in cold climates.
- F. Drain Types:
 - 1. FD-1 Floor Drain.
 - a. Provide at finished floors.
 - b. 5" diameter
 - c. Chrome finish strainer.
 - 2. FD-2 Floor Drain.
 - a. Provide at unfinished floors, Mechanical, Boiler, and Receiving Areas.
 - b. 9" diameter
 - c. Deep set tractor grate or ductile iron grate for light traffic.
 - 3. FD-3 Floor Drain.
 - a. Provide below cases.
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- b. Hub drain
- c. 4.94" minimum diameter hub
- d. Set flush with floor; see Design Standard Plate 22 05 00-03.
- e. 3" drain.
- 4. FD-4 Floor Drain.
 - a. Provide Near MHE Area.
 - b. 12" square top rated for tractor traffic.
 - c. Heavy duty grate
 - d. Sediment bucket.
- 5. FD-5 Floor Drain.
 - a. Provide at all walk-in coolers
 - b. 8" square top.
 - c. Heavy duty type hinged grate, epoxy finish.
 - d. 4" drain.
 - e. Provide drains in all Meat Department walk-in coolers with sediment buckets and run to grease trap.
- 6. FD-6 Floor Drain.
 - a. Provide for all walk-in condensate lines.
 - b. 7" diameter rim with 5" diameter strainer.
 - c. Secured slotted grate and extended rim.
 - d. See Design Standard Plate 22 05 00-01.
- 7. FD-7 Floor Sink.
 - a. 12" x 12".
 - b. A.R.E. interior.
 - c. Anti splash strainer.
 - d. 8" deep A.R.E. bucket.
 - e. ¾ Grate
- 8. RD-1 Roof Drain.
 - a. Cast iron integral gravel stop with sump and wide roof flange.
 - b. 9" high dome.
- 9. Overflow Roof Drain.
 - a. Same as RD-1 with 2" high raised rim.
- G. Locations and Specifics:
 - 1. Meat Processing and Meat Wrapping Rooms:
 - a. Provide FD-5 floor drains with 4" waste line each.
 - b. Provide drain lines with adequate slope to minimize fat build-up in the lines.

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- c. Ensure that all floor drains in meat processing, meat wrapping, and meat storage rooms lead to a grease interceptor located outside the building. [note to Specifier: sub artic locations may require interior grease interceptors].
- d. See Design Standard 22 05 00-04.
- e. Provide FD-6 condensate drains for unit coolers and locate to prevent damage to condensate lines.
- f. Provide FD-5 floor drains with 4" waste lines centrally located for drainage.
- 2. Dairy Storage:
 - a. Provide FD-5 floor drains with 4" waste lines centrally located for drainage.
 - b. Provide FD-6 condensate drains for unit coolers and locate to prevent damage to condensate lines.
 - c. Milk Roll-In Carts at 1G11 Glass Display Doors:
 - 1) Provide one FD-5 floor drain with 3" waste line at each end of 1G11 cart corrals. For 15 or more doors, provide 3 drains. Drains shall be centered on cart corral width and located to clear cart wheels.
 - 2) Floor around drains in roll in cart area shall be flat, not pitched to drain.
- 3. <u>Produce Processing</u>:
 - a. Provide FD-5 floor drains with 4" waste lines centrally located for drainage.
 - b. Provide FD-6 condensate drain with 3" waste line located next to ice flaker.
 - c. Provide FD-7 floor sink with 4" waste line located below the three compartment sink drain board.
- 4. Frozen Food Storage:
 - a. Provide FD-5 floor drain with 4" waste lines within 2' to 3' outside each door, and centered on door opening.
 - b. Locate drain out of traffic path.
- 5. Damaged Merchandise:
 - a. Provide FD-2 floor drain with 4" waste line, centrally located.
- 6. MHE Pad Area:
 - a. Provide FD-4 floor drain with 4" waste line near the eyewash.
- 7. <u>Receiving Area</u>:
 - a. Do not provide drains in the Receiving Area.
- 8. Deli/Bakery Area:
 - a. Deli Preparation Area, Bakery Preparation Area:
 - 1) Provide FD-1 floor drains with 4" waste lines, centrally located in each area.
 - Ensure all floor drains are connected to a grease interceptor located outside of the building. This is usually the same grease interceptor provided for the meat department.
 - 3) See Design Standard Plate 22 05 00-04.
 - b. Bakery Freezer, Bakery Cooler and Deli Cooler:

- 1) Provide FD-5 floor drain with 4" waste line, immediately outside door. Provide level floor within small coolers and freezers. Larger sized medium temperature chill storage may have interior floor drains with sloped floors.
- c. <u>Bakery Oven</u>: Provide FD-6 condensate drain with 4" waste line in front and to right side (facing oven) for condensate from steam system used for baking. Do not locate this drain beneath equipment.
- d. <u>Retarder / proofer</u>: Provide FD-6 condensate drain with 4" waste line in front and to right side (facing oven) for condensate from steam system used for baking. Do not locate this drain beneath equipment.
- 9. <u>Restrooms</u>:
 - a. Provide FD-1 floor drain with 3" waste line centered in each room.
- 10. Fish Market:
 - a. Clerk Service Area: Provide FD-1 floor drains with 4" waste lines centrally located for drainage.
 - b. Provide FD-6 condensate drain with 3" waste line, located next to the Ice Flaker.
 - c. Provide FD-6 condensate drain with 3" waste line, located next to the steamer.
- 11. Sales Area Refrigerated Display Case Area:
 - a. Provide one FD-3 hub drain for each two refrigerated display cases.
 - b. Place rim flush with finished floor.
 - c. Locate drains completely under the cases and do not extend them into aisles.
 - d. See details in Design Standards 22 05 00 03.

2.2 Wash down Stations/Hose Stations:

- A. Provide complete mixing unit with single valve controls.
- B. Provide with hot and cold water supply with thermostatic mixing valve for complete mixing of water to any desired temperature.
- C. Provide each station with check valve on hot and cold water supply line, easily accessible and an integral vacuum breaker at the hose connection.
- D. See Design Standard Plate 22 05 00-06 for details.
 - 1. Designer Note: Hose stations and wash down stations located on cold storage room wall panels must be located in areas where both sides of cold storage room wall panel is accessible.
- E. Provide hot and cold wash down stations (WS) with 50'-0" heavy duty hose with water gun and hose racks.
- F. Provide hot and cold hose stations (HS) with 50'-0" heavy-duty hose with water gun and hose racks.
- G. Locations and Specifics:
 - 1. Wash down Station with Stainless Steel Hose Rack (WS):
 - a. Provide hot (140 degree F) and cold water service at each Wash down station.
 - b. Provide 3/4" supply.

- c. Provide quantity specified at the following locations:
 - 1) One in Meat Processing (RM. 55) near door to Bulk Meat Storage (RM. 59).
- d. One in Meat Wrapping (RM. 56) near door to Bulk Meat Storage (RM. 59).
- e. Provide 7.5 gpm for Wash down stations (WS).
- 2. Hose Station with Stainless Steel Hose Rack (HS):
 - a. Provide hot (120 degree F) and cold water service at each hose station.
 - b. Provide 1/2" supply.
 - c. Provide quantity specified at the following locations:
 - 1) Provide one in Dairy Chill Storage adjacent to sliding cold storage room door at entrance to room and adjacent to stainless steel sink.
 - Provide one additional hose station in Dairy Chill storage when a single 50 foot hose cannot reach all locations within the room. Locate on opposite side of cold storage room.
 - 2) Provide one at Produce Chill Storage near door to Receiving Aisle.
 - 3) Provide one at Produce Processing near door to Produce Chill Storage.
 - d. Provide 3 gpm for hose stations (HS).

2.3 Miscellaneous:

- A. <u>HB Hose Bibbs, cold water only, except as noted, locate to provide coverage with 75' hose.</u>
 - 1. Provide 3 gpm for cold water supply.
 - 2. Provide at the following locations:
 - a. MHE Pad:
 - 1) Provide one, cold water supply only.
 - b. Sales Area:
 - 1) Provide one in recessed wall enclosure at end of type 1G02 cases (hot 120 degree F and cold water).
 - 2) Provide one at end of 1P02 cases (hot 120 degree F and cold water).
 - Provide one in recessed wall enclosure located to best serve the meat cases (hot 120 degree F and cold water).
 - 4) Provide in additional locations as required to enable wash down of all cases with 75' hose.
 - c. Exterior Front end and Trash Platform Areas:
 - 1) FPWH Freeze Proof Wall Hydrant:
 - a) Provide two hose bibbs, one at each end of the exterior of the front of the building, so as to best service it (to permit landscape watering).
 - b) Provide one hose bibb at the exterior to service the trash platform area.
 - c) Salient Features:
 - (1) Non-freeze cold water
 - (2) Josam #71050, Hydrasan 1, or equal.
 - (3) Cast bronze.
 - (4) Non-freeze.

- (5) "T" handle.
- (6) Polished nickel-alloy face.
- (7) Integral vacuum breaker.
- (8) Bronze wall casing.
- d. Exterior Roof:
 - 1) FPWH Freeze Proof Wall Hydrant:
 - a) Provide one hose bibb at each rooftop refrigeration mechanical center.
 - (1) Locate on exterior wall of mechanical center facing air cooled condensers.
 - b) Salient Features:
 - (1) Non-freeze cold water hose bibb.
 - (2) Josam #71050, Hydrasan 1, or equal.
 - (3) Cast bronze.
 - (4) Non-freeze.
 - (5) "T" handle.
 - (6) Polished nickel-alloy face.
 - (7) Integral vacuum breaker.
 - (8) Bronze wall casing.
- e. Produce Processing:
 - 1) Provide one with 1/2" cold water connection for Ice Flaker 1P04.
- f. Fish Market:
 - 1) Provide one with 1/2" cold water connection near the clerk-service fish case 1F00 for connection to case flushing system.
 - 2) Provide one each with 1/2" cold water connection for Ice Flaker 1F02.
 - 3) Provide a 1/2" cold water connection to the steamer 1F07.
- g. Exterior Ground Level Receiving:
 - 1) FPWH Freeze Proof Wall Hydrant:
 - a) Provide one hose bibb.
 - b) Salient Features:
 - (1) Non-freeze cold water hose bibb.
 - (2) Josam #71050, Hydrasan 1, or equal.
 - (3) Cast bronze.
 - (4) Non-freeze.
 - (5) "T" handle.
 - (6) Polished nickel-alloy face.
 - (7) Integral vacuum breaker.
 - (8) Bronze wall casing.

B. <u>Pressure Reducing Valve (PRV):</u>

1. Provide PRV and water piping to serve the water spray kits on the produce display cases.

- 2. Locate PRV behind an accessible wall panel.
- 3. PRV shall be adjustable 0-50psi.
- C. Eye/Face and Body Sprays:
 - Locate in vicinity of operations which pose potential for chemical eye injury (e.g., the battery charging area or the place where undiluted and corrosive degreasers, sanitizers, or other cleaning agents are drawn and mixed). Requirement may necessitate locating two eye hazardous operations adjacent to one another. If possible, allow use of single eyewash unit to satisfy requirement for both operations.
 - 2. Provide separate floor drain: Not required in existing facilities. Provide in new facilities.
 - 3. Place no further than 10 seconds travel distance from and on the same level as the hazardous location.
 - 4. When used to protect against strong acid or caustic chemicals, locate immediately adjacent to hazard.
 - 5. Path of travel to eyewash stations: Free of obstructions that may inhibit immediate use of equipment.
 - 6. Identify with highly visible sign positioned to be visible within area served.
 - 7. Lighting level at basin: 550lux (50fc).
 - 8. Features:
 - a. Hands-free operation.
 - b. Capable of delivering flushing fluid to both eyes simultaneously for duration of fifteen minutes continuously at rate not less than 3.0 gpm per minute.
 - 9. Water Temperature: Water delivered should be tepid. Tepid is defined to be between 60 and 100 degrees F
 - 10. If potential for larger splashes or spills exists: provide body drenching and flushing apparatus. Capability may be afforded with drench hose and nozzle attached to unit to allow low water pressure in copious quantities.
 - 11. Types:
 - a. 2M06 Eyewasher.
 - 1) Locate 39" above finished floor, next to hand-wash sink.
 - 2) Locations:
 - a) Meat Processing Area.
 - b) Produce Processing Area.
 - c) Deli/Bakery Prep Area.
 - b. 2R05 Eyewasher.
 - 1) Floor mounted.
 - 2) Stainless steel receptor.
 - 3) Twin eye wash heads.

- 4) Drain: 1-1/4".
- 5) Location: Battery Charging Area.
- c. Provide a thermostatic mixing value to maintain the water discharged at 75 degrees F.
- d. See the Guide Specification Section 22 05 19 Plumbing Specialties.

D. EWC-1 Drinking Fountains:

- 1. Provide one each standard wall-mounted drinking fountain (high type) and one each wheel chair type (low type).
- 2. Supply: 7 gph at 50 degree F.
- 3. Locations:
 - a. Customer restrooms.
 - b. Employee restrooms not contiguous with or adjacent to a break room.
 - c. Each employee breakroom.

E. Condensate Floor Drains:

- 1. Provide quantity as required and type shown by Design Standard Plate 22 05 00-01.
- F.Locate drains outside the rooms when temperatures below 32 degree F are expected, unless otherwise directed in Para. 2.1G.
- G. <u>WH-1 Water Heater:</u>
 - 1. Heater: Powered gas burner, separated combustion type.
 - 2. Provide water heater and storage tank to meet building hot water load based on 100 degree F temperature rise, 140 degree F output water temperature.
- H. Grease Interceptor.
 - 1. Cast-in-place or pre-cast reinforced concrete.
 - 2. 1,500 gallon capacity.
 - 3. Refer to Design Standard Plate 22 05 00-04.
 - 4. Locate outside the building. [sub artic locations may require interior grease interceptors]
 - 5. Waste from meat wrapping, meat processing, and the Deli shall go to the grease interceptor.
 - 6. All sink and floor drains in the meat and deli/bakery departments including floor drains in meat storage rooms shall go to the grease interceptor. See also 2.1.D.7 for air gap requirements.
- 2.4 Hot & Cold Water Fittings. Wrought copper.
 - A. Hot & Cold Water Pipe.
 - B. Above Ground. Type L copper, hard drawn.

C. Below Ground. Type K copper, hard or soft drawn.

2.5 Waste & Vent

- A. 2" and Larger. "ABS" plastic pipe and fittings above grade in concealed locations, Service weight cast iron pipe and fittings in exposed locations and below grade. Use only hubless joint above grade.
- B. 1-1/2 " and Smaller. "ABS" plastic pipe and fittings above grade in concealed locations and hard tempered "DWV" copper with cast brass drainage fittings in exposed locations and below grade.
- C. ABS and PVC may be used below grade where corrosive soils are present only with the concurrence of DeCA.

2.6 Water Meters

- A. Water meters shall conform to American Water Works Association (AWWA) C700.
- B. Meters shall be positive displacement, oscillating piston, or disc nutation type.
- C. Features:
 - 1. Magnetic drive, with magnetic shielding.
 - 2. Straight reading sealed register graduated in cubic feet.
 - 3. All bronze split case.
 - 4. Integral strainer.
 - 5. Threaded ends.
 - 6. Pulse switch initiator.
 - 7. Meter shall be suitable for accurately measuring and handling water at pressure, temperatures, and flow rates to be encountered.
 - 8. Pulse initiator shall provide maximum number of pulses up to 500 per minute that is obtainable from the manufacturer.
 - 9. It shall not provide less than 1-pulse per 100-gallons.

2.7 Gas Meters:

- A. Gas meters shall conform to Federal Specification GG-M-2802, Style B.
- B. Meters shall be suitable for accurately measuring and handling gas at pressures, temperatures and flow rates to be encountered.
- C. Meters shall have a pulse switch initiator capable of operating up to speeds of 500-pulses per minute with no false pulses and shall require no field adjustments.
- D. Initiators shall provide the maximum number of pulses up to 500 per minute that is obtainable from the manufacturer.
- E. It shall not provide less than 1-pulse per 100ft³ of gas.

3. GENERAL

- 3.1 Do not locate plumbing within pre-fabricated cooler panel walls. Provide surface-mounted plumbing in walk-in refrigerated rooms.
- 3.2 Do not locate sewer, storm or water lines below slabs in following rooms and Equipment:
 - A. Frozen Food storage.
 - B. Bakery Freezer storage.
 - C. Bakery Oven.
 - D. Bakery Retarder/Proofer.
- 3.3 Coordinate gas and water meter connections to RMCS, see Section 23 09 16.
- 3.4 Contract Documents check list:
 - A. At lavatories with automatic low flow faucets, the HWR piping shall connect to the HW within 18" of the faucet.
 - B. Coordinate roof overflow with site work to prevent erosion.
 - C. Do not use AGA draft hoods on water heaters unless the heater is in a room by itself with combustion air makeup and no exhaust.
 - D. Coordinate roof mounted equipment mounting with Architect and Structural engineer to assure structural adequacy and adequate detailing of structure and roof flashing.
 - E. Where possible in new and add/alter projects consolidate the mechanical equipment into a single equipment room unless space availability, line length or other factors make this impractical.
 - F. Coordinate size of sinks with available countertop dimensions.
 - G. In replacement projects, insure that hot water will be continuously available by providing an alternate location for the new heater and leaving the existing heater in place until the new heater is operational.
 - H. Detail janitor's sink to prevent water accumulation below sink and wicking up walls.
 - I. Water heaters shall be separated combustion type with ducted combustion air when located in Refrigeration Equipment Rooms to satisfy codes.
 - J. Where load on existing under floor drains is to increase with the add/alter program, conduct video survey of line before reusing.
 - K. Be certain that vents are 10' or more from air intakes.
 - L. Install water hammer arrestors at all fixtures, groups of fixtures, and quick closing valves.
 - M. Verify that counter mounted sinks will fit within cabinet.

- N. Where sump pumps or lift stations are required, connect discharge to the building sewer outside the building.
- O. Locate grease trap on exterior of building. (Exception: arctic locations).

END OF SECTION













Division 23 – Mechanical

DeCA COMMISSARY DESIGN GUIDANCE 23 01 00 MAINTENANCE AND REPAIR FOR HVAC AND REFRIGERATION

GENERAL

1.01 DeCA maintains lists of existing equipment in commissaries at Ft. Lee. Obtain these lists and include them in this Section.

END OF SECTION

1. GENERAL

1.1. <u>Related Sections.</u> See Division 23 Sections 23 90 00 Product Refrigeration Systems and 23 09 16 Refrigeration Monitoring and Control Systems (RMCS).

1.2. <u>New Store Concept:</u>

- A. Ensure mechanical systems incorporated into new store compliment and encompass current marketing strategies resulting in a pleasing, efficient, and energy saving system. Identify appropriate mechanical systems early in the design to achieve both the desired appearance and energy savings. Coordinate design concept with DeCA Project Manager prior to commencing design.
- B. Current marketing trend eliminates suspended ceiling in Sales Area and renders ceiling structure visible. This impact on air conditioning systems and other mechanical systems is immediate. The design Mechanical Engineer shall provide guidance to the design Architect for appropriate visual appearance of the mechanical systems. Accomplish this by incorporating spiral ductwork (insulation as required), protecting overhead exposed refrigeration lines from excessive condensation by applying appropriate insulation (or other means of catching condensate), and paralleling structural support runs with piping runs. Also, recent trends of varying lighting levels require the design to properly account for heat generated by the new schemes into the different projects. Incorporate these and other energy saving initiatives into the construction documents.
- C. The sections comprising Division 23 address air conditioning of the various functional areas. The design Mechanical Engineer shall work closely with DeCA Project Manager during the development of the construction documents. Constant changes in marketing trends require flexibility in the designs of the mechanical systems. The attached air conditioning Design Standards Plates, 230500 series, provide guidance in the general layout of the air conditioning systems. Anticipate variations of these layouts as new marketing trends are incorporated into the different projects.

1.3. <u>Remodel Concept:</u>

- A. Incorporate new store concepts during major remodeling of existing facilities. Many will not apply. The design Mechanical Engineer shall coordinate with the design Architect on those marketing concepts to include in the construction documents. The same requirements for new store projects shall apply for remodel projects to the extent feasible. For example, exposed structure will require spiral ductwork. Installation of a new suspended ceiling will allow the use of rectangular sheet metal ductwork. Other remodel or addition/alteration information is in other sections of Division 23. Ensure mechanical systems incorporated into remodeled store result in an efficient and energy saving system. Identify and provide appropriate mechanical systems calculations early in design to achieve desired energy savings.
- B. Phasing of work to accomplish the desired changes will be an important consideration to incorporating the changes. Clearly discuss the effect of the work on the mechanical systems in the design analysis. Discuss any conflicts or problems with attempting to incorporate the new marketing concept application. (For example, removing the suspended ceiling will require additional insulation at the roof deck. Incorporating the new concept of exposed structure will require extensive roof work.) Clearly discuss the approach to replacing the existing mechanical systems.
- 1.4. Applicable Codes:
 - A. The International Code Council family of codes, current editions, shall govern DeCA construction. These codes include: International Building code (IBC), International Mechanical (IMC), and International Energy Conservation Code (IECC), Federal Energy Reduction Mandates including Executive Order 13514 and 13423 with Guiding Principles,

EISA 2007 (Energy Independence and Security Act of 2007), EPACT 2005 (Energy Policy Act of 2005) and 10 CFR Part 433.

- B. Unified Facilities Criteria (UFC).
- 1.5. Design Analysis:
 - A. Include the following:
 - 1. Engineering weather data showing design temperatures for the installation.
 - 2. Investigation results of the availability of heat source.
 - 3. Descriptions of all systems (new and existing), proposed changes, and phasing work if applicable.
 - 4. HVAC load analysis and calculations with all design submittals.
 - a. Detailed psychometric analysis of each air handling system with schematic showing points and conditions with reference to psychometric chart.
 - b. Design calculations for each piece of air moving equipment to verify the HVAC equipment selections.
 - 5. Energy analysis to verify compliance with codes and federal guidelines.
 - a. (**new construction**) Comply with requirements to design and build to "Energy performance standards applicable to Federal residential and commercial in 10 CFR part 435". See Division 01 Section 01 33 29 Sustainable Design Reporting and Computer Energy Analysis.
 - b. Summary table of all product type selections based on Efficiency Recommendation Tables from DOE/FEMP's Buying Energy Efficient Products.
 - 6. Air flow ductwork schematic for air handling units.
- 1.6. Design Review:
 - 1. Provide comprehensive HVAC control design review to insure that the RMCS and conventional controls are properly integrated, complete, and coordinated.
 - 2. Review to ensure that all Specification Sections and Construction Drawings clearly reflect all control requirements and specifications.
 - 3. Review to ensure that all Specification Sections and Construction Drawings are consistent and cohesive in the control requirements that they indicate.
- 1.7. <u>System Design:</u>
 - A. See Section 23 05 00 for general requirements. Comply with the requirements of the Design Standard Plates as applicable. Provide building [EDIT OUT FOR TROPICS: heating and] cooling load calculations, [EDIT OUT FOR TROPICS: heating and cooling equipment, duct sizing calculations by a professional mechanical engineer licensed to practice that discipline in any one of the states or possessions of the United States, Washington D.C., or Puerto Rico.
 - B. Indoor Design Conditions:
 - 1. Summer:

SPACE	TYPICAL	
Sales Area	75 deg F DB;	52 Deg F dew point

Offices, CISIC Room, Alcove, Rest Rooms, Locker Rooms and Breakrooms	15 deg F less than the1% outside dry bulb (DB) weather condition not to exceed 78 deg F DB or be less than 75 deg FDB	50% RH min +/- 10%
Delivery, dry storage, and Mechanical equipment rooms	fan forced ventilation	

2. Winter: [NOT IN TROPICS]

SPACE	TYPICAL
Sales Area	70 deg F DB 52 deg F dew point (maximum)
CISIC Room, Offices, Rest Rooms, Locker Rooms and Breakrooms	70 deg F DB
Delivery, Dry Storage and Mechanical Rooms	55 deg F DB
Entry/Exit, Cart Return Vestibules	55 deg F DB, unless otherwise directed

C. Outside air volumes:

a. <u>Sales/Checkout Area</u>: In accordance with ASHRAE Standard 62.1-2016.

7.5 CFM per occupant + 0.06 CFM per SF.

The number of people for Sales/Checkout Area calculations will be based on 125 $\rm ft^2$ per person of <u>net area</u>.

Provide at a minimum a surplus of outside air to make-up exhaust air and keep the sales area positively pressurized with respect to the outdoors.

b. Other areas comply with ASHRAE 62.1-2016.

D. <u>HVAC Design Considerations:</u>

- 1. General for all areas:
 - a. Zone building to allow optimal use of setback thermostats in intermittent use areas.
 - b. No variable air volume systems without prior approval from DeCA CIED.
 - c. Refrigerant: R410A shall be used in all HVAC systems. Alternate refrigerants with lower GWP (Global Warming Potential), such as R-32 (HFC-32), shall be considered when available from the manufacturer.
 - d. Design heating, mechanical ventilation, and air-conditioning per the ASHRAE HVAC <u>Applications Handbook</u> and SMACNA standards.
 - e. Except for refrigeration, identify all piping by color codes and symbols.
 - f. Compute heating and air-conditioning load calculations per procedures of the latest ASHRAE <u>Fundamentals Handbook</u>.
 - g. Outside Design Temperatures: Use the latest version of UFC 3-400-02 Engineering Weather Data:

Summer: 1% Occurrence

3

Winter: 99% Occurrence

- 2. Sales and Checkout Area:
 - a. Coordinate heating, ventilation, and air conditioning design with refrigeration design to provide an integrated, cost effective system.
 - b. <u>Cooling and Heating Load Profiles for Sales Area</u>: Cooling and heating load profiles shall be provided for the sales area by the Architect/Engineer.
 - c. Economizer Cycle: Do not use for Sales Area cooling.
 - d. Design air volumes for the Sales Area:
 - 1) See Design Standard 230500-03 for general layout and diffuser preference.
 - e. Discharge Air and Return Air: Base on following:
 - 1) 0.75 CFM/ft² (3.81 L/s/m²) of Sales Area floor area.
 - f. Credits and Losses (see refrigeration schedules):
 - 1) Sales Area Cooling Design:
 - a) Total Open Refrigerated Display Case Load Credit: 60% sensible, 0 latent.
 - b) <u>Total Glass Door Refrigerated Display Case Load Credit</u>: 40% sensible, 0 latent.
 - 2) Sales Area Heating Design:
 - a) <u>Total Open And Glass Door Refrigerated Display Case Load Penalty</u>: 90% (sensible).
 - g. <u>Return Air Duct Layout:</u>
 - Do not design the return air duct system to draw air from beneath and/or behind the refrigerated cases. <u>Exception</u>: In an existing commissary that uses return air from beneath and/or behind the refrigerated cases, continue using this method based on the following:
 - (See Design Standard 230500-01and 03).Return air at 75 cfm/ft (116 lps/m) unless noted otherwise. Utilize as many cases as required to provide the required return air CFM in the following order:
 - a) Dairy: 1G02.
 - b) Meat Multi-deck:
 - (1) 1M02.
 - (2) 1M04.
 - (3) 1M07
 - c) Deli:
 - (1) 1D01.
 - (2) 1D02.
 - d) Ice Cream:
 - (1) 1B08.
 - (2) 1G12.
 - (3) 1G28 Use if available for designs with underfloor return ducts.

- e) Frozen Juice: 1G13
- f) Frozen Food:
 - (1) 1G06. 150 CFM/ft (230 L/s/m)
 - (2) 1G07. 150 CFM/ft (230 L/s/m)
 - (3) 1G10.
 - (4) 1G27 Use if available for designs with underfloor return ducts.
- g) Produce:
 - (1) 1P02.
 - (2) 1P03.
 - (3) 1P07.
- h. <u>Return air duct layout</u>: (See Design Standard 23 05 00-03).
 - 1) Under floor tunnels shall not be used without express direction from DeCA.
 - Conceal ductwork above the ceiling where ceiling is proposed. Where no ceiling is proposed (open to structure) coordinate type, design, and location of ductwork with design Architect.
 - 3) <u>Do not use</u> the space between the roof and ceiling as supply or return air plenum. Provide ductwork.
- i. Sales Area HVAC Air Distribution:
 - 1) Do not use a variable air volume system for the sales checkout area.
 - 2) Direct 2/3 of volume to checkout and queuing area and 1/3 to display area.
 - 3) Do not locate diffusers over or near any open or multideck refrigerated display case area.
 - 4) Select diffuser types and locations to direct air toward loads, particularly at front of the sales area (slotted diffusers preferred).
 - 5) On larger stores, consider two zones (checkout/sales). However, direct 2/3 of total HVAC air distribution volume to Checkout and Queuing Areas and 1/3 to display area with common return for both zones. Indicate in Design Analysis proposed zoning of sales area (checkout/sales) at [35] [50/100] percent progress review.
 - 6) Provide nozzle type destratification fans over refrigerated isles where return air is not drawn beneath and/or behind the refrigerated cases. Fans shall be controlled by a single variable speed controller with RMCS interface.
- j. Air Handler(s):
 - Sales Area Air Handler: Sales Area shall be served by a dual path dehumidifiers or a combination of multiple package desiccant dehumidifiers and single zone package air handling unit. System type shall be determined utilizing life cycle cost analysis (LCCA) and evaluation of structure. Phasing will also need to be considered for any sustainment project or add alter project.
 - a) Dual Path Dehumidifiers
 - (1) When utilizing Dual Path Dehumidification units the designer shall consider using two units on larger stores. When using two units the unit

serving the Checkout Area shall deliver 2/3s of the total airflow and the unit serving the Sales Floor shall deliver 1/3 of the total airflow.

- (2) Indirect gas fired heating units shall provide all of the heating.
- (3) Heat reclaim coil shall be considered when parallel rack compressors systems are utilized (See heat reclaim section)
- (4) Unit shall be controlled by the building RMCS system. (See RMCS section).
- (5) Air distribution should be ducted with linear diffuser utilized for distribution over the Sales Area & Checkout Area.
- b) Packaged Desiccant Dehumidifiers
 - (1) When utilizing Packaged Desiccant Dehumidifiers the designer shall located these units over the sales floor. Multiple units should be utilized and zoned to provide proper air distribution utilizing plenum distribution system with high velocity drum type diffusers.
 - (2) Packaged Desiccant Dehumidifiers shall provide 1/3 of the total air flow in the sales floor.
 - (3) The desiccant units will provide all of the ventilation air to the space and provide both temperature and humidity control to the sales floor area.
 - (4) Designer should avoid locating these units over the frozen food area.
 - (5) Indirect gas fired heating units shall provide all of the heating.
 - (6) Unit shall be controlled by the building RMCS system. (See RMCS section).
- c) Single Zone Packaged Air Handling Unit
 - (1) Provide single zone package air handling unit over the checkout area.
 - (2) Single zone package air handling unit shall provide 2/3 of the total air flow in the checkout area.
 - (3) No ventilation air shall be provided with this unit. All of the ventilation is provided in the Packaged Desiccant Dehumidifiers.
 - (4) Air distribution should be ducted with linear diffuser utilized for distribution over the checkout area.
- d) Heat Reclaim System: See Design Standard 23 84 16-01.
 - (1) <u>General</u>: Heat reclaim in commissary facilities refers to the utilization of the heat rejected by the display and perishable storage refrigeration to supplement the Sales Area, Administration Area and Warehouse heating and the heating of domestic hot water. It will not supplement the store heating and dehumidification control system as a means of meeting the overall building energy budget. Provide heat reclaim by equipping the refrigeration system with a second condenser (heat recovery coil) located in the facility AHU. Divert compressor discharge gas to heat reclaim coil as required by the space thermostat. Connect heat reclaim coil in series with remote condenser. Depending upon the geographic location, reclaimed heat can provide from 45% to 100% of heating requirements. Heat reclaim used in conjunction with air conditioning provides economical reheat for dehumidification control. Heat available

for heat reclaim is proportional to refrigeration load. In cold weather, refrigeration load can decrease and reduce heat of rejection to 50% of summer design value.

- (2) <u>Heat Reclaim Coil(s)</u>:
 - (a) Mount in air-handling unit or duct mount.
 - (b) Located as close to refrigeration compressors as practicable to minimize heat loss and refrigerant use. Allow maximum of 75'-0" from refrigeration compressors to heat recovery coil.
- (3) <u>Sizing</u>:
 - (a) Do not exceed approximately 40% of design heat of rejection of each compressor system.
- (4) <u>Design Temperature Differential at Coil</u>: 125 deg F.
 - (a) Divert compressor discharge gas to the heat coil as required by the RMCS. Connect the heat recovery coil in series with the remote condenser.
 - (b) Locate the heat reclaim coil as close to the refrigeration machinery as practicable to minimize heat loss and refrigerant use. Limit piping to a maximum of 75'-0" from refrigeration units to the heat recovery coil.
 - (c) Provide a DEC "Thermastore," Paul Mueller Co. "Pre-Heater" or equivalent 119 gallon storage type heat reclaim systems for heating domestic hot water on each low temperature system.
 - (d) Provide low condensing pressure heat reclaim lockout through the RMCS for all heat reclaim systems.
- 3. <u>Other air conditioned areas</u> (See Design Standard 23 05 00-03 thru 23 05 00-07 for additional information).
 - <u>Cashier's Office and Cash Counting Room HVAC</u> (See Design Standard 23 05 00-04) consider following:
 - Provide a packaged rooftop HVAC unit or, where local regulations will not permit or local conditions make outdoor heating equipment impractical, split system air conditioning equipment. Provide gas fired or heat pump heating sections as fuel cost economics or building constraints suggest.
 - 2) Equipment heat load:
 - a) 1500 w. (sensible).
 - b) 88 Watts (300 BTUH) (latent).
 - c) Three (3) personnel. In large stores, two (2) in mid-size stores, and one (1) in small stores.
 - 3) Provide adequate air circulation in Cash Counting.
 - b. <u>CISC and/or Communication Room HVAC:</u>
 - Provide a ductless split system heat pump with wall mounted or ceiling cassette evaporator section and wall mounted, hard wired 7 day programmable thermostat with diagnostic display and locking guard.
 - 2) Equipment heat load:
 - a) 1-5 check stands 3,000 w. (sensible).

- b) 6+ check stands 6,200 w.
- c) Two (2) personnel.
- d) Provide 30 cfm from a ventilation kit or from an adjacent system to provide for the occasional occupant.
- c. Communication Closet (Sub Hub):
 - 1) Provide a 200 cfm exhaust fan and a means of introducing makeup air from an adjacent air conditioned space. The fan shall run continuously.
- d. <u>Administrative Areas, Break rooms, and Training Rooms</u> (See Design Standard 23 05 00-6):
 - Provide a packaged rooftop HVAC unit or, where local regulations will not permit or local conditions make outdoor heating equipment impractical, split system air conditioning equipment. Units over 6 tons shall be 2 stage. Provide gas fired or heat pump heating sections as fuel cost economics or building constraints suggest.
 - 2) Administrative Office:
 - a) Account for general office equipment and occupancy as shown on the concept floor plan in the Design Analysis.
 - b) Do not provide VAV control units. Instead, provide VAV diffusers heating/cooling changeover type - in private offices to modulate less than 10% of the total system cfm.
 - 3) Break Room and Training Rooms:
 - a) Provide dedicated air conditioning equipment for each room except that adjacent, connected Training room with folding door to make area into one room may share an HVAC unit if an electric reheat coil and thermostat is provided for the training room.
 - b) Assume normal equipment (vending machines, projector) and occupancy loads in the Design Analysis.
- e. Employee Break Room and Locker Area:
 - Provide a packaged rooftop HVAC unit or, where local regulations will not permit or local conditions make outdoor heating equipment impractical, split system air conditioning equipment. Units over 6 tons shall be 2 stage. Provide gas fired or heat pump heating sections as fuel cost economics or building constraints suggest.
 - 2) Assume normal equipment (vending machines, projector) and occupancy loads in the Design Analysis.
- f. <u>Meat Manager's Office/Produce Manager's Office Staging/Receiving Manager's</u> <u>Office</u>:
 - 1) Provide a ductless split system heat pump with ceiling cassette evaporator section, ventilation kit, and wall mounted, hard wired 7 day programmable thermostat with diagnostic display and locking guard.
 - In climate zones where the winter design temperature falls below the heat pump heating capabilities, provide supplemental electrical heat. (i.e. electric baseboard heater or wall heater).

- 3) Where offices are located within refrigerated spaces, the ductless split system may be omitted. Provide supplemental electric heat as required. (i.e. ceiling mounted forced air electric heater or wall heater).
- g. Medical Food Inspection Office:
 - 1) Provide a ductless split system heat pump with ceiling cassette evaporator section, ventilation kit, and wall mounted, hard wired 7 day programmable thermostat with diagnostic display and locking guard.
- h. <u>Bakery/Deli Area</u> (See Design Standard 23 05 00-05):
 - Provide a packaged rooftop HVAC unit or, where local regulations will not permit or local conditions make outdoor equipment impractical, split system air conditioning equipment. Provide gas fired or heat pump heating sections as fuel cost economics or building constraints suggest.
 - 2) Do not provide outside make-up air.
 - 3) Consider following internal heat loads:
 - a) Equipment: 15,000 to 30,000 BTU/HR.
 - b) Lights: 2.5 Watts/ft².
 - c) Four (4) 4 personnel.
 - 4) Provide ceiling exhaust fan to discharge return air and aroma of baked goods from bakery work room into the sales area for full size, bake off bakeries only.
 - Provide Type 1 hoods in accord with NFPA 96 (latest edition) and the IMC. All hoods shall have fire suppression systems in accord with NFPA 96, IFC, and the IMC. Provide hoods at:
 - a) Rotisserie oven.
 - b) Kombi oven.
 - c) Bakery oven (this hood may be integral. Verify that fire suppression is provided.)

The Hoods shall be compensating or makeup air type when exhaust air quantity exceeds 5% of the total circulated air quantity in the Sales Area. Stainless steel splash panels, if required, shall be furnished under Division 05 Metals.

- 6) Provide a flue exhaust fan for the oven in accord with manufacturer's instructions.
- 7) Note the access requirements, construction requirements, and grease trap requirements in the IMC and NFPA 96.
- E. Facility Space Heating System:
 - Design to ensure adequate heating will be available to the facility. Clearly identify operating sequence reset requirements for operation of the heating system when ambient conditions are at or below 55 deg F with full heat available at 35 deg F. Provide space heating equipment to heat all portions of the facility. In extreme climates and only at the direction of DeCA, provide a boiler to supply hot water to all HVAC equipment handling 800 cfm or more.
 - 2. Boiler Types: [NOTE TO SPECIFIER: PROVIDE BOILER ONLY IN EXTREME CLIMATES WITH CONCURRENCE OF DeCA.]

- 1) Coordinate with the installation preference of boiler types. Only separated combustion type boilers with ducted combustion air from out of doors shall be installed in refrigeration machinery rooms.
- b. Identify available fuel sources for use in area.
- c. Supply design water temperature to equipment 120 deg F to 180 deg F by reset controls.
- d. Provide two hot water pumps. Pumps shall be controlled in a lead/lag operation with an automatic alternator rotating the pumps which are lead and lag based on a predetermined schedule.
- e. Service connection for [SITE SPECIFIC: natural gas / LPG] service for this project shall be the Contractor's responsibility.
- f. Provide adequate expansion tank.
- g. Justify the use of a boiler by economic analysis and include in design calculations.
- h. Provide all drawing details pertaining to the facility space heating system on the construction drawings.
- i. All loads greater than 5000 Btu/hr shall be met by the boiler/Hydronic system, lesser loads shall utilize electric heat.
- 3. [NOTE TO SPECIFIER: this paragraph not applicable to D/B RFPs Ensure Geotechnical Report includes this info].
- 4. [NOTE TO SPECIFIER: Provide Central or district heat only in EXTREME CLIMATES WITH CONCURRENCE OF DeCA. When heat source is from an installation central heating plant, verify with installation year-round availability and provide in the design analysis results of the investigation.]
 - a. Provide meters as indicated below:
 - 1) Steam Meters:
 - a) If facility is supplied steam from central steam plant, and if a considerable amount of steam or condensate will be consumed within the facility, provide steam meters.
 - b) If only a relatively small amount of steam or condensate will be lost, provide condensate meters in lieu of steam meters.
 - c) Provide meters that have capability for local readouts and Electronic Monitoring and Control Systems (EMCS) connections.
 - d) Connect meters to the RMCS.
 - e) Do not use turbine type steam meters.
 - 2) <u>Steam Condensate Meters:</u>
 - a) Steam and steam condensate meters shall conform to Unified Facilities Criteria (UFGS) Section 25 10 10 Advanced Utility Metering System for its respective duty.
 - b) Design meters for 120EC (250EF) condensate and flow rates from 2 to 10gallons per minute.
 - c) Provide meters with a pulse switch initiator capable of operating up to speeds of 500-pulses per minute with no false pulses, and requiring no field adjustments.
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- d) Initiators shall provide the maximum number of pulses, but not less than 1pulse per 10-gallons, up to 500 per minute that is obtainable from the manufacturer.
- e) Connect meter to the RMCS.
- 3) High Temperature Water HTW Meters:
 - a) If facility is supplied HTW from a central plant, provide a "BTU" meter.
 - b) Meter shall be suitable for temperatures and pressures incurred with HTW.
 - c) Provide meters that have the capability for local readouts and EMCS connections.
 - d) Connect meter to the RMCS.
- 4) Areas of the building to be heated:
 - a) <u>Staging/Receiving Area</u>: When winter design temperature is below 32 deg F, provide high intensity gas fired radiant heaters at all overhead doors. Remainder of area shall be heated with separated combustion gas fired unit heaters. Design calculations shall account for infiltration through the overhead doors. Account for a minimum of 1.05 cfm/ft² of staging/receiving area as infiltration through overhead doors).
 - b) Entrance and Exit Vestibules: Where winter design temperature is 32 deg F or lower, provide supplemental heating with a gas fired rooftop or indoor packaged gas fired unit with discharge air ducted to each vestibule and return air from each vestibule, or if a large area, with a low intensity infra red hater.
 - c) <u>Blind attics above freezers where outdoor air design temperature is less than</u> <u>20 deg F</u>: Heat to 50 deg F.
- F. Ventilation Systems:
 - 1. Provide a schedule of exhaust fan controls indicating which fans are controlled by the RMCS, and which by conventional controls (Division 23 Section 23 09 13 Instrumentation and Control Devices for HVAC) and which by manual (Division 26) controls.
 - 2. Fish Market:
 - a. Provide an exhaust system for the work area in the fish market sized at 2 cfm per square foot. Additionally, exhaust 100 cfm per square foot with a linear register above the display case. Include this air volume in the Sales area makeup air calculation.
 - 3. <u>Mechanical Room for Refrigeration Compressors (Not required for Self contained</u> <u>Mechanical Centers)</u>:
 - a. Provide ventilation system consisting of a combination of exhaust fans, inlet fans, and dampers.
 - b. Design ventilation system such that the airflow is across the machinery.
 - c. Control and monitor each fan and inlet damper through the RMCS.
 - d. Provide fixed intake louvers unless design ambient temperature is below 20 deg F in which case motor operated louvers or dampers behind the louvers shall be required.
 - e. Design ventilation systems to limit the temperature rise to 10 deg F above ambient.
 - f. Refrigeration compressors and motors radiate a sufficient amount of heat that ventilation is required both summer and winter.

- 1) Provide two (2) exhaust fans and inlet dampers and locate so that air flow is across refrigeration equipment.
- 2) [add/alter projects] Stage separate thermostat and thermostat set points if no RMCS exists.
- 3) For compressor systems with remote condensers, provide the following:

A. For summer 1% ambient over 90 deg F, provide ventilation of 100 CFM/HP of refrigeration compressor motors.

B. For summer 1% ambient of 90 deg F or lower, provide ventilation of 75 CFM/HP of refrigeration compressor motors.

C. For condensing unit compressor systems with compressor and condenser in mechanical room, provide 1000 CFM/HP.

- 4) <u>Noise Control in Mechanical Equipment Rooms</u>. Comply with OSHA Standards. Use AMCA-300, ARI 575, and ASTM E477 for guidance.
- 4. <u>Staging/Receiving and Warehouse Areas:</u>
 - a. Heat and vent Staging/Receiving and Warehouse Areas. Do not cool except if evaporative coolers are warranted per subparagraph below.
 - b. Provide forced ventilation at the rate of 2cfm/sf. Exhaust air through rooftop ventilators.
 - c. Use curb mounted exhaust fans. Locate air intakes louvers with motorized dampers 10' above grade at north or west walls. Provide bars at 16" spacing in both plan directions on the exterior side of the motorized dampers in both the exhaust and intake openings. Create cross-flow ventilation pattern. Introduce make-up air through vandal-proof security grilles. Interlock motorized louver dampers with exhaust fans.
 - d. Provide high volume low speed fans (HVLS) in climate zones1A, 1B, 2A, 2B, and 3A.
 - e. Heat Staging/Receiving and Warehouse areas per Division 23 Section 23 05 50 Common Work Results for HVAC criteria.
 - f. In desert climates where forced ventilation alone cannot provide tolerable ambient temperature, provide evaporative cooling systems (direct or indirect option) throughout the staging/receiving and warehouse areas. As an alternative, provide a life cycle cost analysis to compare the options of using evaporative cooling systems or using a roof spray cooling system with forced ventilation.
 - g. Controls:
 - 1) For exhaust fans: Monitor status and control through the RMCS.
 - 2) For HVLS fans: Control all fans with a single control panel capable of group and individual control of fans; monitor and allow overrides of fan status, speed, and direction through the RMCS. Monitor fire alarm status and interlock fans with operation. Allow local user override with a timeout function.
 - 3) Temperature sensor: provide at 72" AFF.
 - 4) See Division 23 Section 23 09 13 Instrumentation and Control Devices for HVAC.
- 5. <u>Suspended Slab Floor Ventilation</u>:
 - a. If all or any portion of building should employ a suspended slab floor system and thus creating a void or crawl space, provide a forced ventilation system to produce air movement in the space between the suspended slab floor and the finished grade at rate of 0.10cfm/sf.

- b. Place exhaust fans on one end of building and louvered grilles on opposite end.
- c. Base control on separate thermostat for required number of exhaust fans and stage thermostat set points on outside temperatures.
- d. Make fans operate when under slab temperature exceeds 55 deg F.
- e. Provide forced ventilation system to produce air movement in the space between the suspended slab floor at a rate of 0.1 to 0.25 CFM/ft².
- 6. Freezer Floor Ventilations:
 - a. Provide a 250 cfm roof mounted exhaust fan connected to the ventilation piping shown in the drainage fill below the freezer floor. See details on the architectural/structural drawings.
 - b. The fan shall run continuously and its operation shall be monitored by the RMCS through a sail switch. The RMCS shall issue an alarm upon fan failure.
- 7. Kitchen Equipment Ventilation:
 - a. Review kitchen equipment manufacturer requirements and provide the necessary exhaust fan, ductwork and/or fire suppression kitchen hood for the following CEDs:
 - 1) 1B12-A
 - 2) 1B12-B
 - 3) 1B13-A
 - 4) 1B13-B
 - 5) 1D09
 - 6) 1D26
- 8. <u>Other Storage Room Ventilation</u> (Sensitive Storage, damaged merchandise room, Janitor Closet, Contractor Storage Room, Main Supply Room and Small Store Room):
 - a. Provide forced exhaust air ventilation at rate of 2 CFM/ft² of floor area.
 - b. Introduce make-up air through vandal proof grilles and exhaust through roof. (See Design Standard 23 05 00-13 for Sensitive Storage).
 - c. Controls:
 - 1) Monitor status and control through the RMCS.
 - 2) Temperature sensor: where more than one room is served, locate sensor in the largest room. Provide at 72" AFF.
 - d. See Division 23 Section 23 09 13 Instrumentation and Control Devices for HVAC
- 9. <u>Restroom Exhaust</u> (See Design Standards 23 05 00-5, 23 05 00-6 and 23 05 00-7):
 - a. Provide single exhaust fan to exhaust from both men's and women's restrooms at rate of 125 CFM per stall.
 - b. Introduce Make-up air through door grille.
 - c. Control exhaust fan by room occupancy sensor except where more than one room is served by a single fan. Where more than one room is served by a single exhaust fan, control fan with time-of-day schedule.
 - d. Monitor status and control through the RMCS.
- 10. <u>Telephone Sub Hub Rooms:</u>

- a. Provide single forced exhaust air ventilation fan (200cfm).
- b. Introduce make-up air from air conditioned space through door grille.
- c. The fan shall run continuously and its operation shall be monitored by the RMCS through a sail switch. The RMCS shall issue an alarm upon fan failure.
- 11. Electrical Rooms:
 - a. Provide single forced exhaust air ventilation fan.
 - b. Introduce un-conditioned make-up air though door grille from un-conditioned space or outdoor air louver.
 - c. Control from conventional thermostat.
- G. Control of HVAC Units:
 - Utilize the RMCS for control of all HVAC equipment including package rooftop units, split systems, ductless split systems, exhaust fans and unit heaters in the Staging/Receiving Area. Refer to Division 23 Section 23 09 16 Refrigeration Monitoring and Control Systems (RMCS).
 - 2. Emergency HVAC shut down must be incorporated with the RMCS system to enable all applicable HVAC equipment to be shut down in the event of a hazardous emergency. Refer to UFC-4-010-01, Section B-4.3.
 - 3. Smoke detectors are a part of the fire alarm and detection system and shall not be connected to or monitored by the RMCS.
- H. Wall Heaters, Vestibule Heaters, Radiant Heaters:
 - 1. Control from wall mounted conventional thermostats.
 - 2. Provide wiring schematic drawing detail which clearly indicates that fan is hard wired in series with wall and bonnet thermostat. (This will keep the fan "off" during the summer).
 - 3. See Division 23 Section 23 09 13 Instrumentation and Control Devices for HVAC criteria.

1.8. Insulation:

- A. Insulate all supply and return air ducts with R-6 blanket (where concealed) or rigid (where exposed in finished space or Mechanical Room) insulation with continuous vapor barrier.
- B. Where dew point exceeds 72 deg F, use rigid polyisocyanurate board applied as described in the specification provided.
- C. Insulate all piping in accordance with Section 435.112 of Title 10cFR, Part 435. Provide a 26 gauge aluminum jacket on outdoor insulation with longitudinal joints at the bottom of the pipe and all joints sealed watertight.
- D. All materials shall have flame spread / smoke developed rating of 25/50 or less.
- 1.9. Penetrations:
 - A. Where ducts penetrate walls, floors, etc. or where pipes penetrate duct, seal airtight and to prevent access by rodents or insects.
- 1.10. <u>Access:</u>
 - A. Provide adequate access space, catwalks, and service platforms for all equipment.
 - B. Do not install cooling coils above finished ceilings.
 - C. Provide secondary drain pans and moisture sensors for suspended equipment.
- 2. PRODUCTS (NOT USED

3. EXECUTION

3.1. Environmental Compliance Responsibilities:

- A. General:
 - 1. Detail in specifications contractor's responsibility for compliance with environmental laws, rules, procedures and guidelines as they apply to construction and maintenance of commissary facility equipment.
 - 2. Provide all relative EPA documents for compiling of environmental data by contractor to support project and assure compliance.
 - 3. Detail in specifications the following items.
 - a. Service Practice Requirements: Observe EPA required service practices that minimize emissions of ozone-depleting refrigerants.
 - b. Equipment Certification: Compliance with certification program for recovery and recycling equipment.
 - c. Refrigerant Handling Records: Compliance with recording procedures addressing refrigerant releases during servicing and disposal of air-conditioning and refrigeration equipment. Include in specifications requirement for recording and submitting to the Government Authorized Technical Representative quantity and type of refrigerant added or removed from any air-conditioning or refrigeration equipment either existing or new during startup, servicing or maintenance procedures.
 - d. Mandatory Technician Certification: Include requirement for mandatory technician certification prior to working on systems.
 - e. Reclaimer Certification: Include requirement for certification if reclaimed refrigerant is being used. Require compliance with ARI 700 purity levels.
 - f. Safe Disposal Requirements: Include requirement for proper handling of equipment that enters waste stream with charge intact.

3.2. <u>Refrigerant Handling:</u>

- A. <u>General</u>: Accomplish all work per current regulatory requirements established by the Environmental Protection Agency, including final regulations to implement the <u>Clean Air Act</u> Amendments.
- B. <u>Refrigerant Added to Equipment</u>: Contractor-furnished, Contractor-installed, new non-recycled.
- C. <u>Refrigerant Log Book</u>: Furnish and maintain for recording refrigerant transfers.
 - 1. Log book shall itemize services performed, actions taken, and amount of refrigerant added to or removed from each and every system installed or affected by the Work.
 - Log Book shall be a three-ring loose-leaf binder and shall contain a table of contents and a separate Refrigerant Logging Form for each piece of refrigeration or HVAC equipment (see sample refrigerant log form).
- D. Execution of Record Keeping for Refrigerant Transfers:
 - 1. <u>Duration</u>: Establish at the start of construction and continuously maintain and keep current during construction and during the warranty period.
 - 2. <u>Location of Refrigerant Log Book</u>: During the construction period, keep the log book protected at the construction site. Upon completion of construction and during the warranty period, keep the log book in the Store Manager's Office.

DeCA COMMISSARY DESIGN GUIDANCE 23 05 00 COMMON WORK RESULTS FOR HVAC

- 3. <u>Project Closeout</u>: Upon completion of construction, provide two updated copies of the Refrigerant Log Book to DeCA/CIEDM and turn over original to the Government Authorized Technical Representative's custody.
- 3.3. Contract Documents Check List:
 - A. Specify testing adjusting and balancing by an independent contractor.
 - B. AGA draft hoods shall not be used except on vented infra red heaters in the Receiving Area. In the case of heating boilers (only to be used with express agreement of DeCA) draft hoods shall only be used if the boiler is in a dedicated boiler room and positive pressure (not exhaust) is provided.
 - C. Pipes, pumps, compressors, and other equipment subject to freezing shall not be located near combustion air intakes. Provide supplementary heat at combustion air intakes.
 - D. In add / alter projects insure continuous availability of heat and air conditioning by providing a location for the new heating and cooling equipment separate from the old equipment location so that occupied areas will always be heated and cooled adequately.
 - E. Verify that space and structural support are adequate for replacement equipment, particularly large dual path units.
 - F. Show location of floor drains for all condensate producing equipment.
 - G. Gas fired equipment located in refrigeration equipment rooms, occupied spaces, or in equipment spaces other than properly ventilated and protected boiler rooms shall be of the separated combustion type with combustion air ducted from out of doors.
 - H. Verify that air intakes maintain minimum separation distance from exhaust discharges and plumbing vents as required by the current version of ASHRAE 62.1 and maintain minimum separation above ground level as required by the current ATFP standards.
 - I. Coordinate with structural design to provide supplementary steel at all roof curbs for exhaust fans, rooftop HVAC units, etc.
 - J. Specify aluminum jacket on all exterior insulation.
 - K. Large bakery oven B12 and 13 require field supplied exhaust fan. See DeCA equipment data on the DeCA website.
 - L. Type 1 exhaust hoods and grease ducts serving them shall be provided for all grease or smoke producing appliances including ovens (IMC 2003 2012, Para. 507.2.1.) Provide fire suppression systems for all Type 1 hoods (IMC 2003 2012, Para 509) including "built in" eyebrow hoods on large bakery ovens.
 - M. Mount hoods with bottom 6'-8" or more above floor. Coordinate with cooking equipment to assure that hood will clear equipment.
 - N. Coordinate with plumbing and electrical to assure that kitchen appliances under hoods have fuel shutoff devices (furnished under Division 23 Section 23 38 13 Commercial Kitchen Hoods) installed and that fire alarm system connections to hoods and fire extinguishers are covered.
 - O. Work with the Structural Engineer to determine whether seismic restraint or wind restraint is needed for items of mechanical equipment based on ASCE 7-05.
 - P. Locate all rooftop equipment a minimum 10' 0" from roof edge. When serviceable equipment cannot be placed at least 10' 0" from the roof edge, provide fall protection railing in accordance with the International Mechanical Code and OSHA.

END OF SECTION

June 2022

















DATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	DESIGN STANDARD
	TITLE REF. DUAL PATH DEHUMIDIFIER SCHEDULE REV.	





DeCA COMMISSARY DESIGN GUIDANCE 23 09 13 INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

GENERAL

- 1.01 <u>SCOPE:</u>
 - A. <u>Non-RMCS controlled devices:</u> On HVAC devices not controlled by the RMCS, provide as necessary: control power, power wiring, valves, actuators, conduit, wiring, circuit boards, thermostats, labor, etc, for a complete and operation system.
 - B. <u>RMCS controlled devices:</u> On HVAC devices controlled by the RMCS, provide all: control power supply, [valves, boiler reset controls,] power wiring, actuators, conduit, wiring, HVAC interface boards, etc, as necessary to connect to RMCS dry control contacts as shown on Design Standard Plates 23 09 16-42 through 46. Make final connection to RMCS dry contacts. Section 23 09 16 shall provide all temperature sensing probes and condition monitor wiring and conduit. Section 23 90 00 shall provide heat reclaim valves.

1.02 <u>Related Sections</u>: 23 05 00, 23 09 16.

PRODUCTS

2.01 HVAC control parameters

- A. All equipment not controlled by the RMCS shall have controls as described herein. These controls shall be specified in Section 23 09 13 or specified with the equipment with installation and wiring specified in this Section.
- B. <u>DX cooling</u>: On air handlers with more than 6 tons DX cooling capacity, provide control of two stages of cooling and banked evaporator.
- C. <u>Chilled water cooling</u>: On air handlers with more than 6 tons Chilled water cooling capacity, provide control of two control valves in parallel.
- D. <u>Heat Reclaim</u>: Heat reclaim valves shall be provided by 23 90 00 contractor.
- E. <u>Staging and Receiving heaters</u>: Shall be controlled by the RMCS.
- F. Control parameters
 - 1. Do not provide pneumatic controls.
 - 2. Do not use DDC controls.
 - 3. Use only two position, on-off, controls. Do not use modulating or proportional except in the case of boiler or cooling tower/evaporative cooler bypass valves.
 - 4. Do not use economizer cycles.
 - 5. Do not use variable volume controls.

EXECUTION

- 3.01 Carefully coordinate the specification of this Section with Section 23 09 16.
- 3.02 Require a conference between the HVAC and RMCS subcontractors to coordinate the interface of their work.
- 3.03 See the guide specification Section 23 09 16 for specific items to be controlled by the RMCS. All other equipment shall be controlled by this section.

END OF SECTION

GENERAL

1.01 Applicable Sections: Division 01 applies.

1.02 <u>AE Responsibility</u>: [EDIT SPECIFICATION AS INDICATED BELOW].

- A. Provide overall control design which clearly, completely, and concisely reflects all control requirements of the project. Edit this specification and DeCA standard details as necessary to achieve required result. Notes to AE are italicized and entered in brackets, e.g. <*****>, throughout this Section to assist AE in editing this Specification.
- B. Enter appropriate drawing sheet numbers at insert points indicated by "<sheet number>" to indicate HVAC items controlled by RMCS. (See Section 23 05 00 for HVAC items requiring RMCS control). For HVAC equipment not controlled by the RMCS, delete references to such equipment from this specification section.
- C. Also enter appropriate drawing sheet numbers at insert points indicated by "*<sheet number>*" to indicate lighting requiring RMCS control. (See also Design Criteria Division 26 for lighting requiring RMCS control). Controlled lighting shall include:
 - 1. Display Case Lighting Design Standard Plate 23 90 00-28.
 - 2. Sales Area Lighting Control Detail Design Standard Plate 23 90 00-08, 26 51 00 -01.
 - 3. Exterior Lighting Control Detail Design Standard Plate 26 56 00-02.
- D. Provide all necessary additional control specifications to ensure that control requirements are clearly indicated.
- E. Provide comprehensive control design review:
 - 1. Review complete design to ensure that HVAC control requirements contained in this section are consistent and cohesive with those indicated in Division 23 Construction Specifications and the Construction Drawings.
 - 2. Review complete design to ensure that product refrigeration control requirements contained in this Section are consistent and cohesive with those indicated in Division 23 Construction Specifications and the Construction Drawings.
 - Review complete design to ensure that lighting control requirements contained in this Section are consistent and cohesive with those indicated in Division 26 Construction Specifications and the Construction Drawings
 - 4. Refer to the current DeCA guide specification for further direction.
 - 5. Coordinate the switching and monitoring of lighting power and the monitoring of HVAC and refrigeration power with Division 26.
 - 6. Show locations of manual ventilation stop stations and all controlled units including exhaust fans, dampers, etc. on the drawings.
- 1.03 Salvage Requirements of RMCS Equipment for Existing Facility:
 - A. Indicate the following salvage requirement on drawings and specifications:
 - The existing Remote Control Management Systems (RCMS) shall be demolished with care and equipment components salvaged. Clearly mark damaged salvaged components as "Damaged". Package all components sufficiently to protect from damage during shipment, mark packages as fragile where applicable and ship with package tracking capability. <u>Ship to:</u> Defense Commissary Agency Headquarters 2250 Foulois Street JBSA Lackland, TX 782336 Attention: Division Chief of Facility Sustainment

END OF SECTION








- RMCS HVAC / LIGHTING 2. FRONT END CONTROL UNIT. MOUNTED NEARBY OR ON MOUNT SECURELY TO WALL DOOR OF ENCLOSURE. DO NOT MOUNT INSIDE A 3. REPRESENTATIVE ONLY, NOT CONTROL ENCLOSURE. INDICATIVE OF ACTUAL LAYOUT 4. 5. MAX PROVIDE A MAINTENANCE / 4 0"1 SERVICE PORT ON FRONT OF DOOR ENCLOSURE FOR ANY H ******** MANUFACTURER'S DIAGNOSTIC 6. TOOLS INSTALL CONTROL 5.0" WIRING TO EXPANSION 125 VAC QUADPLEX GFI MODULES IN CABLE RECEPTACLE WITH 20 AMP DUCT 7. BREAKER 0.0 Ħ FINISHED FLOOR LEVEL-2 0 8. 9. RMCS CONTROL ENCLOSURES 10. NO SCALE
- 1. PROVIDE FACTORY CONSTRUCTED IP21 ENCLOSURE WITH HINGED ACCESS DOOR AND LATCH. INSTALL DIN RAIL AS NEEDED FOR EQUIPMENT MOUNTING AND UTILIZE CABLE DUCT AND PANDUIT FOR ORGANIZATION AND NEATNESS. ENCLOSURE BAYING IS ACCEPTABLE; HOWEVER, DOORS SHOULD NOT EXCEED 2-0" WITHOUT COORDINATING AVAILABLE CLEARANCE.
 - PROVIDE ALL CONNECTIONS FOR INSTALLED EQUIPMENT. REFERENCE HVAC CONTROL DIAGRAMS AND ELECTRICAL LIGHTING PANELS TO DETERMINE AND INCORPORATE ENTIRE SCOPE OF CONTROL WORK.
 - SUBMIT ENCLOSURE LAYOUT AND ROOM LAYOUT WITH RMCS SUBMITTAL.
 - LABEL CONTROL ENCLOSURE WITH LOGICAL NAME
 - ROUTE WIRES NEATLY UTILIZING WIRE DUCTS/PANDUIT WITHIN THE CONTROL CABINET AND WITHOUT PERMANENT MEANS OF BUNDLING CABLES TOGETHER. I.E. HOOK AND LOOP STRAPS, WAXED LACE STITCHING, PLASTIC SPIRAL WRAPS, ETC.
 - TERMINATE WIRES INTO TERMINALS WITH APPROPRIATE INSULATED WIRE FERRULES, COMPRESSION LUGS, FORK ENDS, ETC. CRIMP AND LABEL WIRE ENDS WITH POINT NUMBER AND LOGICAL NAME. MAINTAIN CONSISTENT WIRE COLOR CODING AND LABELING.
 - INSTALL DIN RAILS WITH EXCESS ROOM FOR EXPANSION WHERE POSSIBLE.
 - WHEN A NETWORK CABLE (RJ45, CAT5E, CAT6 ETC) LANDS IN A CONTROL CABINET INCLUDE A FEMALE CONNECTION POINT FOR LOCAL MAINTENANCE.
 - LABEL ALL INPUT AND OUTPUTS ON INSTALLED CONTROLLERS WITH POINT NUMBER AND LOGICAL NAME.
 - 10. PROVIDE CORRESPONDING LAMINATED ELECTRICAL AND CONTROL DIAGRAMS WITHIN THE CONTROL PANEL.

DATE JUN 2022	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		DESIGN STANDARD	
	TITLE		REF.	230910-03
		TYPICAL RMCS CONTROL ENCLOSURES	REV.	



PRESSURE TRANSDUCER		
TYPICAL SHUT-OFF VALVE & PRESSURE TRANSDUCER		
DATE DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		DESIGN STANDARD
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TRA	NSDUCER LOCATIONS FOR PARALLEL (MULTIPLEX) SYSTEMS		
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PRESSURE TRANSDUCER LOCATIONS FOR SINGLE COMPRESS	SOR
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PRESSURE TRANSDUCER
ANGLE SHUT-OFF VALVE
DISCHARGE LINE
SUCTION FILTER



SUCTIC DISCH/ MOUNT WHERI WHEN HOT G/ WHENI RETUR ELECT THE C/ TEMP, ELECT OUTPL WHEN I/O POI EV/	<image/> <text><text></text></text>		
DATE JUN 2022	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS TITLE EVAPORATOR AND CONTROLLER SCHEMATIC	REF. REV.	DESIGN STANDARD 230916-09

NOTES: 1. PROBE ASSEMBLIES ARE TO BE MOUNTED IN DISCHARGE (SUPPLY) GRILLE AND RETURN GRILLE. PROBE MUST BE LOCATED IN CENTER LINE OF CASE ADJACENT TO THE INSTALLED TEMPERATURE INDICATOR. 2. ENSURE THAT PROBE ASSEMBLY WIRING IS SECURELY FASTENED AWAY FROM DEFROST HEATERS. TEMPERATURE PROBE PLACEMENT IN DISPLAY CASES NO SCALE	DESIGN
PLASTIC WIRE TIES OR WAXED LACE (TYP.) CONNECTION IN WIRE RACEWAY TYPICAL CASE DISCHARGE HONEYCOMB CONNECTION IN WIRE RACEWAY PLASTIC WIRE TIES OR WAXED CONNECTION IN WIRE RACEWAY PLASTIC WIRE TIES OR WAXED CONNECTION IN WIRE RACEWAY PLASTIC WIRE TIES OR WAXED TYPICAL CASE DISCHARGE GRILE	

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MOUNT SIDE O SENSC "CINCH	TEMP SENSOR TO HORIZONTAL F PIPE, NOT TOP OR BOTTOM.STRAP R TIGHT TO PIPE WALL. DO NOT INSULATION.		
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	ITPICAL KINGS TEMPERATURE SENSORS	REV.	
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	300-450mm (12-18") CABLE LOOP FOR PROBE REMOVAL		
	DISCHARGE AIR + 5"±1"		
	TEMPERATURE PROBE		
DISC	CHARGE AIR STREAM TEMP SENSOR MOUNTING NO SCALE		
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UN 2022 -	FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	REF.	230916-1
	DISCHARGE AIR STREAM PROBE MOUNTING METHOD	REV	

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JUN 2022	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	REF.	STANDARD 230916-13
	CASE TEMPERATURE PROBE PLACEMENTS	REV.	



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JUN 2022	TITLE CASE TEMPERATURE PROBE PLACEMENTS	REF.	230916-15

TEMPE MOUNT REMOT DISPLA ALTER PROBE IN COL PRESS SENSC REMOT MOUNT COMMI RETUR SMB (C CAS	ATURE PROBE ED ON GRILLE. E CASE CONTROLLER AND INTERFACE ATE TEMPERATURE LOCATION MOUNTED AR DUCT. RE AND EMPERATURE B CONTROLLER E CASE CONTROLLER INCATION WIRE TO RINGS AND WIRE TO RINGS INCATION WIRE TO		
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	TITLE CASE TEMPERATURE PROBE PLACEMENTS	REF. REV.	230910-10
L		1	1

REFRIGERANT GAS SENSOR:

MONITOR THE PRESENCE OF REFRIGERANT GAS (INDICATION OF A LEAK) WITHIN THE CONFINES OF THE PIPE TUNNEL, WALK-IN FREEZER, WALK-IN COOLERS, AND REFRIGERATION ROOM. INSTALL SAMPLING PORTS PER MANUFACTURER'S INSTRUCTIONS. CLEARLY IDENTIFY SAMPLING PORT AND ALARM IN PROTECTED SPACES. USE CONSISTENT COLOR SCHEME FOR SAMPLING TUBES.

SAFETIES:

IF A SENSOR DETECTS AN UNSAFE LEVEL OF GAS, ANNOUNCE AN ALARM LOCALLY IN THE SPACE AND LOG AT THE SYSTEM'S PANEL.

OVERRIDE OPERATION OF EF-?? TO RUN DURING ALARM CONDITION.

RESET THE ALARM MANUALLY AT THE AFTER THE UNSAFE CONDITION IS INSPECTED.

DETECTION SYSTEM'S CONTROL PANEL





CO₂ / REFRIGERANT DETECTION























RMCS

(REFRIG)

WORKSTATION.

RMCS

(REFRIG)

<u>_____</u>

MOUNT COMBINATION BLUE STROBE AND HORN (72"A.F.F) ABOVE DOOR INSIDE AND OUTSIDE. LABEL PURPOSE CLEARLY FOR OCCUPANTS.

COMMUNICATION TRUNK TO

LEAK DETECTION END FILTER OR SENSOR. MOUNT LESS THAN 18" A.F.F. LABEL PURPOSE CLEARLY AND POINT OF CONTACT IF DAMAGED. LABEL POINT ID FOR ALARM.

COLOR CODED AIR SAMPLING TUBING BACK TO HEAD UNIT

NO SCALE

RMCS

(HVAC)

Æ

ALARM SIGNAL TO

RMCS HEAD UNIT(S)

AIR SAMPLING LEAK

DETECTION HEAD UNIT.

DATE DESIGN DEFENSE COMMISSARY AGENCY STANDARD DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS JUN 2022 230916-17 TITLE REF. GAS DETECTION FOR COLD STORAGE ROOMS LEAK DETECTION SCHEMATIC REV.

D



RMCS CONTROL NOTES:

- 1. CASE CONTROL: CONTROL CASE TEMPERATURE LOCALLY AT EACH EVAPORATOR THROUGH AN APPLICATION SPECIFIC CASE CONTROLLER. UTILIZE DISCHARGE (SUPPLY) TEMPERATURE, THE RETURN TEMPERATURE, THE EVAPORATOR TEMPERATURE, THE SUCTION LINE TEMPERATURE, AND SUCTION PRESSURE TO OPTIMIZE THE ELECTRONIC EXPANSION VALVE OPERATION AND CONCURRENTLY THE OPERATION OF THE EVAPORATOR FAN. UTILIZE THE INPUTS TO OPTIMIZE OPERATION OF THE DEFROST (TIME, ELECTRIC, OR HOT GAS) AND RAIL HEAT AT THE CASE CONTROLLER. CREATE DEFAULT CASE LIGHTING SCHEDULES AT THE RMCS (USER ADJUSTABLE) AND UTILIZE THE CASE CONTROLLER TO ACCEPT AND EXECUTE THE LIGHTING SCHEDULES RESIDING ON THE CONTROL NETWORK LOCALLY. GENERATE ALARMS ON SUPPLY AND RETURN TEMPERATURE FALLING OUT OF THE CASE'S SPECIFIC CONTROL LIMITS AND SET CONTROLLERS IN ALARM TO CONTINUE OPERATION WITH DEFAULT POINTS.
- 2. UNIT COOLER CONTROL: CONTROL UNIT COOLER TEMPERATURE LOCALLY AT EACH EVAPORATOR THROUGH AN APPLICATION SPECIFIC CASE CONTROLLER. UTILIZE DISCHARGE (SUPPLY) TEMPERATURE, THE RETURN TEMPERATURE, THE EVAPORATOR TEMPERATURE, THE SUCTION LINE TEMPERATURE, AND SUCTION PRESSURE TO OPTIMIZE THE ELECTRONIC EXPANSION VALVE OPERATION AND CONCURRENTLY THE OPERATION OF THE EVAPORATOR FAN. UTILIZE THE INPUTS TO OPTIMIZE OPERATION OF THE DEFROST (TIME, ELECTRIC, OR HOT GAS). GENERATE ALARMS ON SUPPLY AND RETURN TEMPERATURE FALLING OUT OF THE CASE'S SPECIFIC CONTROL LIMITS AND SET CONTROLLERS IN ALARM TO CONTINUE OPERATION WITH DEFAULT POINTS.
- 3. COMPRESSOR RACK CONTROL: OPTIMIZE COMPRESSOR OPERATION THROUGH THE RMCS UTILIZING THE SUCTION PRESSURE INPUTS. AS THE PRESSURE RISES ABOVE THE TARGET SETPOINT, PLUS A BIAS, THE CONTROLLER WILL ENERGIZE THE FIRST STAGE AFTER A STAGE ON DELAY HAS EXPIRED IF THE PRESSURE REMAINS ABOVE THE SETPOINT, PLUS A BIAS, AND THE FIRST STAGE DELAY HAS EXPIRED FOR A SECOND TIME THE CONTROLLER WILL ENERGIZE THE NEXT STAGE AND WILL CONTINUE THE SEQUENCE THROUGH ALL OF THE RACK'S AVAILABLE STAGES. THE REVERSE OCCURS WHEN THE PRESSURE FALLS BELOW THE SETPOINT ININS A BIAS. THE CONTROLLER WILL STEP DOWN THE STAGES USING A STAGE OFF DELAY TIMER UNTIL ALL STAGES ARE OFF.
- 3.1. WHEN USING A VARIABLE OUTPUT AS THE PRESSURE RISES ABOVE TARGET SETPOINT, PLUS A BIAS, THE VARIABLE SPEED OUTPUT WILL RAMP UP FROM THE EQUIPMENT'S MINIMUM OUTPUT % TO 100% WITHOUT FOLLOWING A STAGE ON DELAY. IF THE PRESSURE STAYS ABOVE THE TARGET SETPOINT AND THE VARIABLE OUTPUT IS AT 100% AND THE STAGE ON DELAY HAS TIMED OUT THEN THE CONTROLLER WILL ENTER THE FIRST STAGE AND THE VARIABLE OUTPUT WILL RESET FROM THE EQUIPMENT'S MINIMUM OUTPUT % AND BEGIN RAMPING UP AGAIN TOWARDS 100%. IF THE PRESSURE STAYS ABOVE THE TARGET SETPOINT AND THE VARIABLE OUTPUT IS AT 100% AND THE STAGE ON DELAY HAS TIMED OUT THEN THE CONTROLLER WILL ENTER THE FIRST STAGE AND THE VARIABLE OUTPUT WILL RESET FROM THE EQUIPMENT'S MINIMUM OUTPUT % AND BEGIN RAMPING UP AGAIN TOWARDS 100%. IF THE PRESSURE STAYS ABOVE THE TARGET SETPOINT AND THE VARIABLE OUTPUT IS AT 100% AND THE STAGE ON DELAY HAS TIMED OUT THEN THE CONTROLLER WILL ENTER THE NEXT STAGE. AS THE PRESSURE DROPS BELOW THE SETPOINT, MINUS A BIAS, THE VARIABLE OUTPUT WILL RAMP FROM 100% DOWN TO THE EQUIPMENT'S MINIMUM OUTPUT %, ONCE THE STAGE OFF DELAY EXPIRES THE CONTROLLER WILL STAGE DOWN THROUGH THE RACK'S AVAILABLE STAGES. IF THE VARIABLE OUTPUT REACHES 100% AND THE STAGE ON DELAY HAS NOT EXPIRED THE OUTPUT WILL REMAIN AT 100% UNTIL THE STAGE ON DELAY HAS NOT EXPIRED THE OUTPUT WILL REMAIN AT 100% UNTIL THE STAGE ON DELAY HAS NOT EXPIRED THE OUTPUT WILL REMAIN AT 100% UNTIL THE STAGE ON DELAY HAS NOT EXPIRED THE OUTPUT WILL REMAIN AT 100% UNTIL THE STAGE ON DELAY HAS NOT EXPIRED THE OUTPUT WILL REMAIN AT 100% UNTIL THE STAGE ON DELAY HAS NOT EXPIRED THE OUTPUT WILL REMAIN AT 100% UNTIL THE STAGE ON DELAY HAS EXPIRED.
- 3. CONDENSER CONTROL: OPTIMIZE CONDENSER FAN OPERATION THROUGH THE RMCS UTILIZING THE CONDENSING HEAD PRESSURE INPUT. AS THE PRESSURE RISES ABOVE THE TARGET SETPOINT, PLUS A BIAS, THE CONTROLLER WILL ENERGIZE THE FIRST STAGE OF CONDENSER FAN(S). IF THE PRESSURE REMAINS ABOVE THE SETPOINT, PLUS A BIAS, THE CONTROLLER WILL ENERGIZE THE NEXT STAGE OF FANS AND WILL CONTINUE THE SEQUENCE THROUGH ALL OF THE CONDENSER'S AVAILABLE FANS. THE REVERSE OCCURS (BEGINNING WITH THE FIRST STAGE FANS TO MAXIMIZE RUN-TIME) WHEN THE PRESSURE FALLS BELOW THE SETPOINT MINUS A BIAS.
- 3.1. WHEN USING A VARIABLE OUTPUT AS THE HEAD PRESSURE RISES ABOVE TARGET SETPOINT, PLUS A BIAS, THE VARIABLE SPEED OUTPUT WILL RAMP UP FROM THE FAN'S MINIMUM OUTPUT % TO 100% WITHOUT FOLLOWING A STAGE ON DELAY. IF THE PRESSURE STAYS ABOVE THE TARGET SETPOINT AND THE VARIABLE OUTPUT IS AT 100% THEN THE CONTROLLER WILL ENERGIZE THE FIRST STAGE OF CONDENSER FAN(S) AND THE VARIABLE OUTPUT WILL RESET FROM THE FAN'S MINIMUM OUTPUT % AND BEGIN RAMPING UP AGAIN TOWARDS 100%. IF THE PRESSURE STAYS ABOVE THE TARGET SETPOINT AND THE VARIABLE OUTPUT WILL RESET FROM THE FAN'S MINIMUM OUTPUT % AND BEGIN RAMPING UP AGAIN TOWARDS 100%. IF THE PRESSURE STAYS ABOVE THE TARGET SETPOINT AND THE VARIABLE OUTPUT IS AT 100% THEN THE CONTROLLER WILL ENERGIZE THE NEXT STAGE OF FANS. AS THE PRESSURE DROPS BELOW THE SETPOINT, MINUS A BIAS, THE VARIABLE OUTPUT WILL RAMP FROM 100% DOWN TO THE FAN'S MINIMUM OUTPUT %, AND WILL CONTINUE TO STAGE DOWN (BEGINNING WITH THE FIRST STAGE OF FANS TO MAXIMIZE RUN-TIME) THROUGH THE CONDENSER'S AVAILABLE FANS.
- 3.2. HEAT RECLAIM CONTROL: UTILIZE ANY HEAT RECLAIM CIRCUIT AVAILABLE IN THE SYSTEM AS THE FIRST STAGE OF CONDENSER WHEN AVAILABLE FOR UTILIZATION.

RMCS REFRIGERATION CONTROL SCHEME

NO SCALE

DATE JUN 2022	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		
	TITLE REFRIGERATION CONTROLS: CONTROL NOTES FOR REF. REFRIGERATION SYSTEMS REV.	230916-19	
POWER MOUNT ELECTR EXPANS ALARMS RAIL HE DEFROS EVAPOR CASE LIC WIRE I/C TERMIN MANUFA APPLIC/ WITH I/C OPERAE			
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DATE JUN 2022	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		DESIGN STANDARD
	TITLE RMCS CONNECTION REFRIGERATED CASE (TYPICAL)	REF. REV.	









DESIGN CRITERIA – PRODUCT REFRIGERATION MICRO-DISTRIBUTED SYSTEMS

GENERAL

1.01 <u>Related Sections</u>

- A. See Division 13 Section Cold Storage Rooms and Division 23 Section Refrigeration Monitoring and Control Systems (RMCS) for additional information.
- B. See Division 23 Product Refrigeration Systems for projects not utilizing micro-distributed system criteria.

1.02 <u>Summary</u>

A. Product refrigeration includes all display cases, associated condensing units, fluid coolers, circulation pumps, evaporators (unit coolers for insulated cold storage rooms), condensing medium water piping, refrigerant piping, refrigerant controls, monitoring systems or Refrigeration Monitoring and Control System (RMCS), associated controls, and all wiring including that not indicated on Drawings required for a complete, functional and usable system. Refrigeration condensing units with all controls, fluid coolers and associated controls, circulation pumps and associated controls, unit coolers, display cases and RMCS shall be furnished by a single display case or compressor system manufacturer. The only exception to this is that the self-contained display cases can be a different manufacturer than the other cases.

1.03 Design, Furnishing and Installation

A. The Product System Refrigeration System Provider (Provider) shall be either the primary refrigeration equipment manufacturer or the primary display case manufacturer. The entire refrigeration system shall be furnished by the Provider who shall be singly responsible for the design, furnishing, installation, testing, and satisfactory operation of the total system, including both high and low side components. The installation shall be supervised by a field engineer employed by the refrigeration equipment manufacturer or display case manufacturer. The design shall use the most energy efficient combination and arrangement of condensing units for the self-contained cases, consistent with operational reliability. Prior to acceptance, the manufacturer shall submit a letter stating that the total refrigeration system has been inspected and approved by the manufacturer and that it meets the manufacturer's installation requirements. Provide registered engineering seal and signature on each Drawing. All contractor design and installation not specifically addressed in this RFP shall meet or exceed ASHRAE recommendations/guidelines and recommendations of the equipment manufacturer(s).

1.04 <u>Coordination</u>

A. The Provider shall coordinate the installation of the total refrigeration systems as delineated, and shall prepare complete shop Drawings, submittals, and design analysis of the entire refrigeration system.

PRODUCTS

- 2.01 <u>Self-Contained Refrigeration Cases (Water Cooled)</u>
 - A. The designer shall evaluate between both air-cooled self-contained refrigeration cases and water-cooled self-contained refrigeration cases. A life cycle cost analysis (LCCA) shall be done to justify the system selection.
 - B. The designer shall evaluate the use of adiabatic fluid coolers in desert or hot climates versus drycoolers. A life cycle cost analysis (LCCA) shall be done to justify the system selection.

2.02 Unit Coolers

- A. General: Size unit coolers in the preparation areas to meet or exceed the load upon the room at suction temperatures no greater than 20 deg F below room temperatures. Size unit coolers in all other storage rooms to meet or exceed the load upon the room at suction temperatures no greater than 10 deg F below room temperatures. Size unit coolers in frozen food storage rooms to meet or exceed the load upon the room at a suction temperature no greater than 8 deg F below room temperatures. Unit coolers operating in rooms at or below 28 deg F shall have maximum fin spacings of 4 fins per inch. Unit coolers operating in rooms above 28 deg F shall have maximum fin spacings of 6-8 fins per inch. Condensate drain lines in rooms operating at or below 32 deg F shall have 1" unicellular insulation and heat tape. Run refrigerant piping to condensing units located above respective rooms.
- B. Suspension: Suspend unit coolers located in insulated cold storage rooms. Do not use ceiling support columns within the cooler panels. Suspension system shall consist of all members, including fasteners and attachments, required to support unit coolers. Suspension system shall be of steel materials. Design of suspension system shall be in accordance with AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.
- C. Provide unit cooler fans with motors.
- D. Required product temperatures to be maintained in walk in boxes and freezers is:

Unit	Temperature Range
Dairy Storage	34 to 37 deg F
Ice Cream Storage	-10 deg F or below
Freezer Vestibule	46 to 50 deg F
Frozen Food Storage	-6 to 0 deg F
Meat Storage	28 to 32 deg F
Meat Holding	28 to 32 deg F
Meat Processing/Wrapping	46 to 50 deg F
Deli Storage	34 to 37 deg F
Ambient Produce Storage	60 to 65 deg F
Produce Storage	38 to 42 deg F
Produce Processing	60 to 65 deg F
Fish Storage	28 to 32 deg F
Poultry Storage	28 to 32 deg F
Frozen Bakery	-6 to 0 deg F
Bakery Storage	34 to 37 deg F
	· · · · · ·
Pre Pak Meat Storage	34 to 37 deg F

- E. See Design Standard Plates for Division 23 Product Refrigeration Systems.
- F. Walk-in Coil Control Requirement: All walk-in coils will require a field installed control panel which will house the case controller (controlling an EEV for temperature control) and all electrical distribution blocks. All temperature sensors required for operation (discharge air, return air, suction temperature) will be field installed and wired. Each refrigeration 'circuit' will get a single electrical feed each for fans/lights/anti-sweats and a single electrical feed for defrost (as required). Specify case controller location on plans and include mounting height requirement of no less than 60" and no more than 70".
- G. Each unit cooler shall have a dedicated condensing unit, installed on the top of the respective walk-in space. Coordination with structural engineer for support from the roof level joists. Each unit cooler condensing unit will have fully engineering controls included.

2.03 <u>Refrigerated Display Cases</u>

- A. Locate refrigerated display cases in sales area per the [Concept] Floor Plan.
- B. Commissary Refrigerated Display Case Equipment Descriptions for the types of equipment currently used in DeCA commissaries will be provided in the DeCA Guide Spec.
- C. Required product temperatures, corresponding suction temperatures, coil types and defrost method for all types of display cases shall be as follows: [NOTE TO SPECIFIER: Check against Commissary Equipment List in Appendix A and edit out any inapplicable pieces of equipment:]
- D. Air-cooled self-contained cases require excessive maintenance and energy. The advantage of air-cooled self-contained cases is flexibility of movement, no need to tear up floor slabs to install piping or to have condensing medium pipe risers at the case visible on the sales floor, and requirement for drains. Avoid use of air-cooled self-contained cases when it is reasonable to select a water-cooled self-contained case. Placing piping under floor is as long as it is not cost prohibitive to do so. If there is any question of water-cooled or air-cooled self-contained cases, the designer should seek guidance from the DeCA project manager.
- E. Display case item descriptions: Refer to Equipment Descriptions for specific requirements.
- F. Condenser medium and refrigerant piping layout:
 - 1. Consolidate condenser medium and refrigerant line risers into shafts at column where they can be run overhead, above the sales area ceiling, to the circulation pumps / fluid coolers (condensing medium piping) or unit coolers (refrigerant piping).
 - 2. Condenser medium and refrigerant piping must be routed above sales area, where possible, route above shopping aisles, and not above soffits. This will allow for easier access for maintenance of the piping, electrical and condensate pans.
 - 3. Consider placement of chases to avoid obtrusive views or interference with overall sales area decor and appearance.
 - 4. Condensate pans under refrigerant piping:
 - a. Condensing medium piping does not require condensate pans.
 - b. For piping routed: Provide condensate pans under piping operation at 0 deg SST and lower if store is located where 2.5% design wet bulb exceeds 74 deg F.
 - c. For piping routed above Walk-in Storage or Processing Rooms and overhead in Warehouse: Provide condensate pans under piping operation at 0 deg SST and lower if store is located where 2.5% design wet bulb exceeds 78 deg F.
 - d. Slope drain pans to drain fitting. Pipe drain fitting to floor drain.
 - 5. Under floor tunnels shall not be used without express direction from DeCA/END.
- G. Refrigerated Case / Walk-in Coil Control Requirement: All refrigerated cases will be provided with factory installed case controllers (one per case), which will control an EEV (electronic expansion valve) for temperature control. All temperature sensors required for operation (discharge air, return air, suction temperature) will be factory installed and wired. Each refrigeration 'circuit' will get a single electrical feed each for fans/lights/anti-sweats and a single electrical feed for defrost (as required).

2.04 Product Refrigeration System

- A. Comply with requirements of refrigeration system Design Standards Plates.
- B. The product refrigeration system includes self-contained refrigerated cases, circulation pumps, fluid coolers, evaporators (unit coolers for insulated cold storage rooms), refrigerant

piping, refrigerant controls, head pressure controls, defrost systems, and a refrigeration monitoring and control system (RMCS). When water-cooled self-contained systems are utilized provide two completely redundant pumps and either a multi-cell fluid cooler or multiple fan adiabatic fluid coolers. Summer design ambient temperature shall be the 0.4% ASHRAE dry or wet bulb design temperature for the area. Fluid cooler capacity shall meet or exceed condenser water loop heat of rejection. Use refrigerant R-448A on all self-contained condensing unit systems.

- C. Refrigeration Defrost Methods
 - 1. On display cases with operating discharge air temperature (DAT) at greater than 32 deg F, the defrost shall be off cycle, or as required in the Equipment Descriptions.
 - 2. On walk-in boxes with operating discharge air temperature (DAT) greater than 32 deg F, the defrost shall be off cycle.
 - 3. Off cycle defrost shall be time-initiated and time-terminated.
 - 4. All other refrigeration defrost shall be electric. Electric defrost shall be time-initiated and temperature-terminated with time fail safe.
 - 5. Defrost shall be controlled through the RMCS.
- D. Pumping Systems:
 - 1. Locate parallel pumping systems [in mezzanine] [or] [in mechanical centers [or] distributed package units] with a condensing water loop system to the condensing units for cases, unit cooler condensing units, and remote fluid coolers. For each pump, provide a VFD for varying the speed of the pump in response to load demand reduction. For each condensing unit on each case or unit cooler, provide replaceable core suction filter/drier, crankcase heater, high pressure safety switch with manual reset and low pressure cut in/out with automatic reset, braided steel lines to controls, electronic oil pressure safety control, and compressor isolation valves. All condensing unit compressors or approved equal. Each condensing unit shall have a replaceable core liquid line filter drier and liquid receiver with visual and RMCS level indication. Compressors shall be staged on and off through the case provided RMCS system.
- E. Fluid Coolers
 - Roof or Grade mounted Condensers shall be water cooled type with ECM fan motors and all motors shall be direct drive type. Control shall be through the RMCS and shall provide for staging of each fan set to control condenser medium temperature. [SITE SPECIFIC: Include following sentence if condensers will be installed within 30 miles of salt water:] [Provide VFD control VFD panel in [mezzanine] [mechanical center].
- 2.05 <u>Prefabricated Walk-in Refrigerators and Freezers</u>
 - A. Refer to Division 13 Section Cold Storage Rooms.
- 2.06 Electrical
 - A. Provide grounding conductors in all refrigeration electrical conduit runs.
 - B. Provide duplex receptacles in the kick plates, 3' from the end of each side of each island case lineup. See Design Standard Plate Product Refrigeration Systems-50.
 - C. Provide electrical panel schedules and refrigeration electrical drawings showing wiring requirements for refrigeration circuits.
 - D. Show location of all walk-in cooler / freezer case controller enclosures. Add a keyed note on plan to indicate mounting height of no less than 60" and no more than 70" A.F.F.

EXECUTION

3.01 <u>Refrigerant Handling and Recovery</u>

- A. Division 01 Section Environmental Procedures for Refrigerants applies.
- 3.02 Display Cases
 - A. Seal as required to floor, walls and to each other with sheet metal parts and caulking per Design Standards Division 23 Sections Common Work Results for HVAC and Product Refrigeration Systems.
 - B. Include details of case sealing on construction Drawings.

3.03 Electrical

- A. Show on the Refrigeration Drawings:
 - Provide a weatherproof disconnect and enclosure for a permanent plug-in receptacle for power to a temporary refrigeration trailer. The trailer provider will provide a receptacle to match the NEMA configuration of the trailer plug. Provide conductors and circuit breaker for 208V/3Ø/70 ampere load.
 - 2. Provide a duplex outlet at each end and each side of the island case runs. Locate the receptacle in the toe/space of the cases 5' ± from each end of each case run except that it shall not be below doors at glass door cases.
 - 3. Provide electrical panel schedules and refrigeration electrical drawings showing wiring requirements for refrigeration circuits.
- 3.04 Pumping Systems and Fluid Coolers Locations
 - A. Mechanical mezzanines shall only be used if existing for pumping systems.
 - B. In smaller stores, pumping systems and fluid coolers may be located on Grade. If line lengths exceed practical limits (300'), locate pumping systems and fluid coolers on the roof.
 - C. Locate Roof mounted pumping systems and fluid coolers above walk-in coolers to minimize noise in the Sales Area.

3.05 Contract Documents Check List

- A. Layout unit cooler drain lines on Drawings, such that lines do not cross door openings.
- B. In add / alter projects ensure continuous availability of refrigerated cases and walk-ins by providing a location for new equipment separated from the old equipment location so that new and existing refrigerated cases and walk-ins can be operated simultaneously.
- C. Verify that space and structural support are adequate for replacement equipment.
- D. Show location of condensate piping and floor drains for all condensate producing equipment.
- E. Gas fired equipment located in refrigeration equipment rooms, occupied spaces, or in equipment spaces other than properly ventilated and protected boiler rooms shall be of the separated combustion type with combustion air ducted from out of doors.
- F. Work with the Structural Engineer to determine whether seismic restraint or wind restraint is needed for items of mechanical equipment based on ASCE 7-02.
- G. All unit heaters in machinery rooms shall be sealed combustion type.

END OF SECTION

DESIGN CRITERIA – PRODUCT REFRIGERATION SYSTEMS

GENERAL

1.01 <u>Related Sections</u>

- A. See Division 13 Section Cold Storage Rooms and Division 23 Section Refrigeration Monitoring and Control Systems (RMCS) for additional information.
- B. See Division 23 Product Refrigeration Micro-Distributed Systems for projects utilizing microdistributed system.

1.02 Summary

A. Product refrigeration includes all display cases, compressors, condensers, heat recovery coils, evaporators (unit coolers for insulated cold storage rooms), refrigerant piping, refrigerant controls, monitoring systems or Refrigeration Monitoring and Control System (RMCS), associated controls, and all wiring including that not indicated on Drawings required for a complete, functional and usable system. Refrigeration compressor units with all controls, heat recovery coils, heat reclaim hot water heaters, diverting valves for heat recovery, condensers, unit coolers, display cases and RMCS shall be furnished by a single display case or compressor system manufacturer. The only exception to this is that the self-contained display cases can be a different manufacturer than the other cases.

1.03 Design, Furnishing and Installation

A. The Product System Refrigeration System Provider (Provider) shall be either the primary compressor system manufacturer or the primary display case manufacturer. The entire refrigeration system shall be furnished by the Provider who shall be singly responsible for the design, furnishing, installation, testing, and satisfactory operation of the total system, including both high and low side components. The installation shall be supervised by a field engineer employed by the compressor system manufacturer or display case manufacturer, as the case may be. The design shall use the most energy efficient combination and arrangement of compressors for the compressor systems, consistent with operational reliability. Prior to acceptance, the manufacturer shall submit a letter stating that the total refrigeration system has been inspected and approved by the manufacturer and that it meets the manufacturer's installation requirements. Provide registered engineering seal and signature on each Drawing. All contractor design and installation not specifically addressed in this RFP shall meet or exceed ASHRAE recommendations/guidelines and recommendations of the equipment manufacturer(s).

1.04 <u>Coordination</u>

A. The Provider shall coordinate the installation of the total refrigeration systems as delineated, and shall prepare complete shop Drawings, submittals, and design analysis of the entire refrigeration system.

PRODUCTS

2.01 <u>Compressor Systems</u>

- A. The designer shall large, central evaluate Parallel Rack Compressor systems vs. smaller, point of use packaged Outdoor Distributed Refrigeration System options. A life cycle cost analysis (LCCA) shall be done to justify the system selection.
- B. The designer shall evaluate the use of adiabatic condensers in desert or hot climates. A life cycle cost analysis (LCCA) shall be done to justify the system selection.
- C. Parallel Rack Compressor System
 - 1. Parallel Rack Compressor systems shall be installed in mechanical center(s) which shall be installed either at grade or on the roof. Air cooled condensers shall be installed on the

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roof of the mechanical center when centers are at grade. When centers are on the roof, use horizontal receivers and elevate condensers above roof sufficiently to drain to the receivers by gravity. The centers shall also contain water heaters, electrical equipment and such other equipment as required by Section Product Refrigeration Systems. The centers shall be located so as to minimize the length of suction and liquid piping to the various cases and coolers as well as the length of hot gas piping to the air handling unit coil.

- D. Outdoor Distributed Package Refrigeration System
 - 1. Distributed Package Systems shall be installed on the roof and shall be zone to minimize pipe runs and maximize efficiency. These units shall be located so as to minimize the length of the suction and liquid piping to the various cases and coolers. These units shall not have integrated air cooled condensing units. Air cooled condensers shall be stand alone.

2.02 Unit Coolers

- A. General: Size unit coolers in the preparation areas to meet or exceed the load upon the room at suction temperatures no greater than 20 deg F below room temperatures. Size unit coolers in all other storage rooms to meet or exceed the load upon the room at suction temperatures no greater than 10 deg F below room temperatures. Size unit coolers in frozen food storage rooms to meet or exceed the load upon the room at a suction temperature no greater than 8 deg F below room temperatures. Unit coolers operating in rooms at or below 28 deg F shall have maximum fin spacings of 4 fins per inch. Unit coolers operating in rooms above 28 deg F shall have maximum fin spacings of 6-8 fins per inch. Condensate drain lines in rooms operating at or below 32 deg F shall have 1" unicellular insulation and heat tape. Run refrigerant piping to compressor units in located in mechanical centers.
- B. Suspension: Suspend unit coolers located in insulated cold storage rooms. Do not use ceiling support columns within the cooler panels. Suspension system shall consist of all members, including fasteners and attachments, required to support unit coolers. Suspension system shall be of steel materials. Design of suspension system shall be in accordance with AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings.
- C. Provide unit cooler fans with motors.
- D. Required product temperatures to be maintained in walk in boxes and freezers is:

Unit	Temperature Range
Dairy Storage	34 to 37 deg F
Ice Cream Storage	-10 deg F or below
Freezer Vestibule	46 to 50 deg F
Frozen Food Storage	-6 to 0 deg F
Meat Storage	28 to 32 deg F
Meat Holding	28 to 32 deg F
Meat Processing/Wrapping	46 to 50 deg F
Deli Storage	34 to 37 deg F
Ambient Produce Storage	60 to 65 deg F
Produce Storage	38 to 42 deg F
Produce Processing	60 to 65 deg F
Fish Storage	28 to 32 deg F
Poultry Storage	28 to 32 deg F
Frozen Bakery	-6 to 0 deg F
Bakery Storage	34 to 37 deg F
Pre Pak Meat Storage	34 to 37 deg F

- E. See Design Standard Plates for Division 23 Product Refrigeration Systems.
- F. Walk-in Coil Control Requirement: All walk-in coils will require a field installed control panel which will house the case controller (controlling an EEV for temperature control) and all electrical distribution blocks. All temperature sensors required for operation (discharge air, return air, suction temperature) will be field installed and wired. Each refrigeration 'circuit' will get a single electrical feed each for fans/lights/anti-sweats and a single electrical feed for defrost (as required). Specify case controller location on plans and include mounting height requirement of no less than 60" and no more than 70".

2.03 <u>Refrigerated Display Cases</u>

- A. Locate refrigerated display cases in sales area per the [Concept] Floor Plan.
- B. Commissary Refrigerated Display Case Equipment Descriptions for the types of equipment currently used in DeCA commissaries will be provided in the DeCA Guide Spec.
- C. Required product temperatures, corresponding suction temperatures, coil types and defrost method for all types of display cases shall be as follows: **[NOTE TO SPECIFIER:** Check against Commissary Equipment List in Appendix A and edit out any inapplicable pieces of equipment:]
- D. Self contained cases require excessive maintenance and energy. The advantage of self contained cases is flexibility of movement, no need to tear up floor slabs to install piping or to have pipe risers at the case visible on the sales floor, and requirement for drains. Avoid use of self contained cases when it is reasonable to place a case on a remote rack. Placing piping under floor is as long as it is not cost prohibitive to do so. If there is any question of remote or self contained the designer should seek guidance from the DeCA project manager.
- E. Display case item descriptions. Refer to Equipment Descriptions for specific requirements.
- F. Refrigerant line layout:
 - 1. Consolidate refrigerant line risers into shafts at column where they can be run overhead, above the sales area ceiling, to the mechanical center(s) and/or distributed package systems.
 - 2. Refrigerant piping must be routed above sales area, where possible, route above shopping aisles, and not above soffits. This will allow for easier access for maintenance of the piping, electrical and condensate pans.
 - 3. Consider placement of chases to avoid obtrusive views or interference with overall sales area decor and appearance.
 - 4. Condensate pans under refrigerant piping:
 - a. For piping routed: Provide condensate pans under piping operation at 0 deg SST and lower if store is located where 2.5% design wet bulb exceeds 74 deg F.
 - b. For piping routed above Walk-in Storage or Processing Rooms and overhead in Warehouse: Provide condensate pans under piping operation at 0 deg SST and lower if store is located where 2.5% design wet bulb exceeds 78 deg F.
 - c. Slope drain pans to drain fitting. Pipe drain fitting to floor drain.
 - 5. Under floor tunnels shall not be used without express direction from DeCA/END.
- G. Refrigerated Case / Walk-in Coil Control Requirement: All refrigerated cases will be provided with factory installed case controllers (one per case), which will control an EEV (electronic expansion valve) for temperature control. All temperature sensors required for operation (discharge air, return air, suction temperature) will be factory installed and wired. Each

refrigeration 'circuit' will get a single electrical feed each for fans/lights/anti-sweats and a single electrical feed for defrost (as required).

2.04 <u>Product Refrigeration System</u>

- A. Comply with requirements of refrigeration system Design Standards Plates.
- B. The product refrigeration system includes compressors, condensers, recovery systems, evaporators (unit coolers for insulated cold storage rooms), refrigerant piping, refrigerant controls, head pressure controls, defrost systems, and a refrigeration monitoring and control system (RMCS). When parallel rack compressor systems are utilized provide two low temperature system and three medium temperature systems in stores larger than 80,000 SF. On projects less than 80,000 SF in size, provide with two separate low temperature systems and two separate medium temperature systems. On projects 30,000 SF in size, provide with one low temperature system and one medium temperature systems. When distributed package refrigeration systems are utilized provide a zoned approach locating each system near the cases served to minimize refrigerant charge and maximize efficiency. Each system shall be a multiplex compressor system. Remote condensers shall be air cooled types. Summer design ambient temperature shall be the 1% ASHRAE dry bulb design temperature for the area. Condenser capacity shall meet or exceed compressor heat of rejection at a condensing temperature 10 deg F above design entering air temperature for low temperature systems and 15 deg F above the design entering air temperature for medium temperature systems. Use refrigerant R-407A on all systems.
- C. Refrigeration Defrost Methods.
 - 1. On display cases with operating discharge air temperature (DAT) at greater than 32 deg F, the defrost shall be off cycle, or as required in the Equipment Descriptions.
 - 2. On walk-in boxes with operating discharge air temperature (DAT) greater than 32 deg F, the defrost shall be off cycle.
 - 3. Off cycle defrost shall be time-initiated and time-terminated.
 - 4. All other refrigeration defrost shall be electric. Electric defrost shall be time-initiated and temperature-terminated with time fail safe.
 - 5. Defrost shall be controlled through the RMCS.
- D. <u>Compressor Systems</u>. Locate multiplex compressor systems [in mezzanine] [or] [in mechanical centers [or] distributed package units] with refrigerant to cases, coolers, heat reclaim, and remote condensers. Install an evaporator pressure regulator at each circuit to provide temperature control of fixtures and rooms. For each compressor provide replaceable core suction filter/drier, crankcase heater, high pressure safety switch with manual reset and low pressure cut in/out with automatic reset, braided steel lines to controls, electronic oil pressure safety control, and compressor isolation valves. When parallel rack compressor systems are utilized compressors shall be high efficiency, semi-hermetic, "Copeland discus" or approved equal. When distributed package refrigeration systems are utilized provide high efficiency scroll or semi-hermetic compressors. Each compressor system shall have an oil separator, replaceable core liquid line filter drier and liquid receiver with visual and RMCS level indication. Compressors shall be staged on and off through the RMCS.
- E. <u>Condensers</u>. Roof Condensers shall be air cooled type with fan motors shall be direct drive type. Control shall be through the RMCS and shall provide for staging of each parallel fan set to control condensing pressure. [SITE SPECIFIC: Include following sentence if condensers will be installed within 30 miles of salt water:] [Provide VFD control VFD panel in [mezzanine] [mechanical center].

2.05 <u>Heat Reclaim Water Heaters</u>

- A. Provide domestic water heating for the building with heat rejection of product refrigeration system.
- 2.06 Prefabricated Walk-in Refrigerators and Freezers
 - A. Refer to Division 13 Section Cold Storage Rooms.

2.07 <u>Electrical.</u>

- A. Provide grounding conductors in all refrigeration electrical conduit runs.
- B. Provide duplex receptacles in the kick plates, 3' from the end of each side of each island case lineup. See Design Standard Plate Product Refrigeration Systems-50.
- C. Provide electrical panel schedules and refrigeration electrical drawings showing wiring requirements for refrigeration circuits.
- D. Show location of all walk-in cooler / freezer case controller enclosures. Add a keyed note on plan to indicate mounting height of no less than 60" and no more than 70" A.F.F.

EXECUTION

- 3.01 Refrigerant Handling and Recovery
 - A. Division 01 Section Environmental Procedures for Refrigerants applies.

3.02 Display Cases

- A. Seal as required to floor, walls and to each other with sheet metal parts and caulking per Design Standards Division 23 Sections Common Work Results for HVAC and Product Refrigeration Systems.
- B. Include details of case sealing on construction Drawings.

3.03 Electrical

- A. Show on the Refrigeration Drawings:
 - 1. Provide a weatherproof disconnect and enclosure for a permanent plug-in receptacle for power to a temporary refrigeration trailer. The trailer provider will provide a receptacle to match the NEMA configuration of the trailer plug. Provide conductors and circuit breaker for 208V/3Ø/70 ampere load.
 - 2. Provide a duplex outlet at each end and each side of the island case runs. Locate the receptacle in the toe/space of the cases 5' ± from each end of each case run except that it shall not be below doors at glass door cases.
 - 3. Provide electrical panel schedules and refrigeration electrical drawings showing wiring requirements for refrigeration circuits.

3.04 Compressor Systems Locations

- A. Mechanical mezzanines shall only be used if existing.
- B. In smaller stores, Mechanical Centers may be located on Grade. If line lengths exceed practical limits (300'), locate centers on the roof.
- C. Locate Roof mounted Mechanical Centers above walk-in coolers to minimize noise in the Sales Area.
- D. Locate the air cooled condensers no more than 75 feet from the mechanical systems to facilitate heat recovery.
- E. Located distributed package systems near to cases being served.

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3.05 Contract Documents Check List

- A. Layout unit cooler drain lines on Drawings, such that lines do not cross door openings.
- B. In add / alter projects insure continuous availability of refrigerated cases and walk-ins by providing a location for new equipment separated from the old equipment location so that new and existing refrigerated cases and walk-ins can be operated simultaneously.
- C. Verify that space and structural support are adequate for replacement equipment.
- D. Show location of condensate piping and floor drains for all condensate producing equipment.
- E. Gas fired equipment located in refrigeration equipment rooms, occupied spaces, or in equipment spaces other than properly ventilated and protected boiler rooms shall be of the separated combustion type with combustion air ducted from out of doors.
- F. Work with the Structural Engineer to determine whether seismic restraint or wind restraint is needed for items of mechanical equipment based on ASCE 7-02.
- G. All unit heaters in machinery rooms shall be sealed combustion type.
- H. Show a detector in the refrigeration machinery room(s) or mechanical center(s).

END OF SECTION



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DATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS		DESIGN STANDARD
JUN 2022	TITLE REFRIGERATION PIPING CONDENSATE DRAIN PAN DETAIL	REF. REV.	
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DATE	DATE DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS				
JUN 2022		REF.	239000-10		
		REV.			



PIPE SLEEVE
SEALANT
0 TO 1/4"
INSULATION - 3/8-
APPLY OUTDOOR WEATHER RESISTANT COATING ON INSULATION PER MANUFACTURER'S DIRECTIONS
BACK UP MATERIAL
PIPE SLEEVE
SEALANT
PIPE
0 TO 3/8"

DATE DEFENSE COMMISSARY AGENCY		NOTES: 1. INSTALL EACH LIQUID AND SUCTION LINE THROUGH CEILING PANEL INDEPENDENTLY. DO NOT COMBINE. 2. INSTALL HEAT EXCHANGER HORIZONTALLY BEHIND COIL WITHOUT OBSTRUCTING AIRFLOW. 3. INSTALL BALL VALVE UPSTREAM OF EXPANSION VALVE AND SOLENOID VALVE. 4. INSTALL EXPANSION VALVE WITH REMOVABLE FILTER SCREEN. 5. HEAT EXCHANGERS TO BE FROM SAME MANUFACTURER AS REFRIGERATION EQUIPMENT. 6. FIELD INSTALL HEAT EXCHANGERS WHERE REQUIRED. VERIFY REQUIREMENT WITH OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF ANY BIDDING, ORDERING, OR INSTALLATION. 7. THIS DETAIL IS NOT INCLUSIVE OF SEISMIC REQUIREMENTS. PROVIDE SEISMIC EQUIPMENT SUPPORT IN ACCORDANCE WITH ALL APPLICABLE CODES AND		
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		REV.			

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JUN 2022	TITLE	REF.	239000-11
	TYPICAL UNIT COOLER MOUNTING DETAIL		

FILL ENCLOSURE WITH EXPANDING FOAM INSULATION -

GALVANIZED SHEET METAL ENCLOSURE 4"

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	NO SCALE		
DATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	REF.	DESIGN STANDARD 239000-12
	REQUIRED ELEVATION FOR AIR COOLED CONDENSERS	REV.	





NOTES: (FOR "REFRIGERATION ELECTRICAL ONE-LINE DIAGRAM")

- 1. ALL EQUIPMENT AND COMPONENTS TO BE PER CURRENT NATIONAL ELECTRIC CODE.
- 2. ALL CONDUCTORS SHALL BE STRANDED COPPER.
- 3. FURNISH AND INSTALL PANELS CP, DP, CLF, AND STEP-DOWN TRANSFORMER (TR1) AS PART OF THE REFRIGERATION SYSTEM. REFRIGERATION CASE EQUIPMENT SUPPLIER TO PROVIDE ELECTRICAL DESIGN AND SUBMIT WITH REFRIGERATION PRODUCT SUBMITTAL.
- LOCATE CP, TR1, DP, AND CLF [ON MECHANICAL MEZZANINE] [IN THE MECHANICAL CENTER] AS SHOWN ON THE DRAWINGS.
- 5. VERIFY QUANTITY OF EQUIPMENT WITH REFRIGERATION PLAN

KEY NOTES (FOR "REFRIGERATION ELECTRICAL ONE-LINE DIAGRAM")

SIM. 1 NOT USED.

- 2. NOT USED.
- 3. PANEL CP PROVIDES MOTOR POWER TO COMPRESSOR SYSTEMS, CONDENSERS, AND TR1.
- PANEL DP PROVIDES DEFROST POWER, UNIT COOLER FAN POWER, CONTROL POWER TO COMPRESSOR SYSTEM DEFROST, AND CONTROL PANELS
- PANEL CLF PROVIDES DISPLAY CASE FAN POWER, DISPLAY CASE LIGHT POWER, ANTI-SWEAT HEATER POWER, CONDENSATE DRAIN HEATER POWER, DOOR HEATER POWER AT FROZEN FOODS AND BAKERY FREEZER, AND POWER TO RMCS.
- 6. PROVIDE A DEDICATED CIRCUIT TO EACH RECEPTACLE SHOWN AT THE END OF THE ISLAND CASE LINES.
- 7. RMCS MICROPROCESSOR(S) AND MODEM POWER.
- 8. AS A GENERAL OUTLINE REFRIGERATION POWER IS AS FOLLOWS IN ADVANCE OF ENGINEERED DESIGN BY PRODUCT REFRIGERATION MANUFACTURER:
 - FOR STORES LESS THAN 40,000 SQUARE FEET (GROSS) PROVIDE 600 AMP SERVICE WITH TWO (2) SETS, EACH SET 3#500 MCM WITH 1#1/0 GROUND IN SINGLE 3-1/2" CONDUIT.
 - FOR STORES BETWEEN 40,000 S.F. AND 70,000 S.F. (GROSS) PROVIDE 800 AMP SERVICE WITH TWO (2) SETS, EACH SET 4#500 MCM WITH 1 #1/0 GROUND IN SINGLE 3-1/2" CONDUIT.
 - FOR STORES BETWEEN 70,000 S.F AND 100,000 S.F. PROVIDE 1,200 AMP SERVICE WITH THREE (3) SETS, EACH SET 4#600 MCM WITH 1 3/0 GROUND IN SINGLE 3-1/2" CONDUIT.
 - FOR STORES LARGER THAN 100,000 S.F. (GROSS) PROVIDE 1,600 AMP SERVICE WITH FOUR (4) SETS, EACH SET 4#600 MCM WITH 1 #4/0 GROUND IN SINGLE 3-1/2" CONDUIT.
- 9. REPLACEMENT PROJECTS ONLY: REMOVE EXISTING FEEDER TO EXISTING REFRIGERATION EQUIPMENT DISTRIBUTION PANEL AFTER NEW REFRIGERATION EQUIPMENT IS INSTALLED AND OPERATING.

NOTES FOR REFRIGERATION ELECTRICAL ONE LINE DIAGRAM

NO SCALE

	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	NRY AGENCY NGINEERING KLAND AFB, TEXAS			
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JUN 2022	TITLE REFRIGERATION RISER DETAIL (PIT UNDER WALL)	REF. REV.	239000-17





REFRIGERATION BRANCH SUCTION AND LIQUID LINE CONNECTIONS

NO SCALE

DATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS						
JUN 2022	TITLE REFRIGERATION BRANCH SUCTION REF. AND LIQUID LINE CONNECTIONS REV.	239000-19					


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Division 26 – Electrical

DeCA COMMISSARY DESIGN GUIDANCE 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

DESIGN CRITERIA

- 1. Related Sections: Division 01 and Sections 11 13 00, 23 90 00, 28 16 00, 28 23 00, and 28 31 76.
- Reference Standards: Basic requirements for design are set forth in NFPA-101 Life Safety Code, NFPA-70 <u>National Electrical Code</u>, ANSI C2 <u>National Electrical Safety Code</u>, and in OSHA Regulations.
- Electrical Systems: Electrical systems for large motors, compressors, and lighting for new commissaries: 277/480 volt, 3-phase. Receptacles, small motors, equipment loads and lighting not suitable for 277v: connect to 120/208V, 3-phase system.
- One Line Electrical Diagram: Include detailed One Line Electrical diagram in the project drawings; <u>not</u> a Riser diagram. As a minimum, ensure the one line electrical diagram includes sizing information for the following:
 - A. Panelboards/switchboards.
 - B. Overcurrent protection.
 - C. Feeders/conductors.
 - D. Conduit.
 - E. Transformers.
 - F. Disconnects.
 - G. Transfer switches.
 - H. Generators.
 - I. Type of transformer winding.
- 5. Wire Sizes: Show in American Wire Gauge (AWG). Show conduit sizes in inches.
- 6. Refrigeration System: Provide with separate electrical feeder. Refer to Section 23 90 00 and Design Plates 23 90 00-14/14A.
- 7. Project Refrigeration System Electrical Circuits: The Contractor and its display case manufacturer shall design and provide electrical circuits for the project refrigeration system (feeder from the load side of the manual transfer switch, refrigeration panelboards, case-to-case wiring for fans, lights, defrost control and power, Refrigeration Monitoring Control System, etc.). Electrical defrost for the product refrigeration system shall be rated for 208 Volt operation. Refer to Section 23 90 00 and Design Plate 23 90 00-14/14A.
- Provide a manual transfer switch and generator connection box (example Berthold Electric #W12-5S-S28W9) mounted on the exterior of the commissary as a connection point for a Government furnished portable generator as an alternate source to the manual transfer switch. Location to be determined during design, considering availability of space for portable generator.
- 9. Electrical Metering: Provide as described in Section 26 51 00 Interior Lighting and 26 56 00 Exterior Lighting. Verify installation metering requirements and edit specification accordingly.
- 10. Electrical and communications distribution should be run overhead rather than under the floor for loads in the sales and checkout areas and in the processing rooms. Items impractical to feed overhead, such as wide island display cases that have no suitable place to attach overhead conduits, may be fed via the shortest underfloor conduit route available. Other exceptions may be approved by DeCA in special circumstances.
- 11. Electrical feeders and branch circuits in conduit should not exceed 9 current-carrying conductors in a conduit, except for conduit nipples 24 inches or less in length.
- 12. Security Alarm, Video Surveillance, and Fire Alarm/Mass Notification Systems design criteria are found in Division 28.

June 2022

26 05 00

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DeCA COMMISSARY DESIGN GUIDANCE 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

- 13. Electrical Wiring for Point of Sale and LAN Equipment: Special isolated-ground feeders, panels, circuits and wiring devices and standby engine-generator are required. These requirements are detailed in Section 26 05 26.
- 14. Commissary Operational Equipment Electrical Circuits: Provide electrical circuits for the commissary operational equipment, other than refrigeration electrical provided under Division 23, including balers, battery chargers for the material handling equipment (MHE) (walkie-stackers, pallet jacks, etc). Space battery chargers 48 inches apart horizontally to permit simultaneous recharging of MHE. Provide circuits for CFCI, GFCI, and GFGI equipment shown in the Equipment List or Equipment Descriptions for the individual project, and for any relocated or reused existing equipment.
- 15. Electrical Circuit Breaker Panels: Do not install electrical circuit breaker panels in any refrigerated storage or processing room due to requirements for wash-down cleaning. Do not attach panelboards to either side of any insulated cooler panel wall.
- 16. Interlocking Controls:
 - A. Provide on all electrically operated dock levelers to prevent raising the dock leveler against a closed overhead door. Refer to Section 11 13 00.
- 17. Grounding Wire: Provide feeders and branch circuits with separate grounding wire sized in accordance with <u>National Electric Code</u>.
- 18. Rebates: Research power company rebate opportunities and incorporate design features when practicable that will avail DeCA of such monetary and financing incentives. Initiate rebate/incentive agreements with power company and host installation serving the project location and following through to assure a signed rebate agreement is made part of the final 100 percent design submittal or a waiver of rebate is signed by the DeCA Director of Facilities. The A-E shall include as a part of the construction specifications and bid schedule the requirement that the Contractor complete the power company request for payment in order that payment be made to DeCA or the host installation as applicable. Typical power company rebate opportunities are as follows:
 - A. High Efficiency Lighting Systems.
 - B. High Performance Building Envelopes.
 - C. High Efficiency Packaged Air-Conditioners and Heat Pumps.
 - D. High Efficiency Chillers.
 - E. High Efficiency Motors.
 - F. HVAC Controls.
 - G. High Efficiency Water Heating.
 - H. High Efficiency Refrigeration.
 - I. Day Lighting Measures.
 - J. Electric Cooking.
 - K. Cogeneration.
 - L. Power Conditioning.
- 19. Electric Motors: One horsepower and larger, polyphase induction motors: NEMA MG1 Premium Efficiency (current edition), energy-saver design type and power factor corrected to a nominal 95 percent, where possible. Locate capacitors near and switched with motor. Other motors not covered under MG1 Premium Efficiency standards shall be of the highest efficiency rating available for the application.
- 20. Corrosion Resistance: All exterior electrical equipment shall be corrosion resistant designs adequate for tropical marine, coastal, or wet atmospheres, as applicable to the project location.
- 21. Exposed Electrical: Paint electrical devices (raceways, boxes, etc.) exposed to view in the Sales Area of the Commissary. Install conduits and other devices in a neat and orderly fashion.
- 22. Construction Phasing: For renovation projects, analyze phasing requirements and provide adequate phasing notes in the construction documents to assure appropriate electrical support and timely incremental work completion during demolition and construction phases. Require timely coordination conferences between Contractor, Store Operator, Construction Inspector, Authorities Having

June 2022

DeCA COMMISSARY DESIGN GUIDANCE 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

Jurisdiction, and Suppliers of critical equipment. Require timely investigation by the Contractor of the phase site before construction starts, to insure that critical clearances are correct (example: clearance above ceiling height for recessed light fixtures), and to determine and document existing conditions (example: existing inoperative or damaged electrical outlets, or items that will require temporary electrical service).

- 23. Design Analysis:
 - A. Provide a Design Analysis that illustrates by narrative, calculations and cut sheets the basis of the electrical design. Provide calculations to support design decisions on sizes and ratings of electrical distribution elements; i.e., NEC load, ampacity, voltage drop, fault currents, arc flash levels, and illumination intensity. On Add/Alter projects, illustrate selective tripping coordination of new overcurrent protective devices with existing upstream protective devices and all load side protective devices, down to the branch panel feeder breaker level, using time/current graphs for the existing and proposed new breakers. On New Facility projects, include in the electrical narrative a discussion of protective devices selected to assure the possibility of selective tripping coordination. Provide in the Design Analysis or require the New Facility Construction Contractor to submit a complete coordination study including time/current graphs. Edit and use Guide Specification 26 28 01 for New Facility Projects, and for major Remodel projects, refrigeration replacement/ upgrade projects, and electrical replacement/upgrade projects that add or significantly change overcurrent protective devices above the small branch circuit level. For New Facility projects, provide or require the Construction Contractor to provide a complete arc flash study including location specific labels applied to gear. In major renovation projects, refrigeration replacement/upgrade projects, and electrical replacement upgrade projects, provide or require the Construction Contractor to submit an arc flash study including location specific labels applied to all replaced electrical gear and existing to remain distribution panels over 800 amps. All arc flash labels shall be of the location specific type, based on site specific calculations, indicating the voltage, PPE category, arc flash boundary, etc. Labels with only a generic message are not acceptable.
 - B. Include in the design analysis a summary table of all product type selections based on Efficiency Recommendation Tables from DOE/FEMP's <u>Buying Energy Efficient Products</u>.
- 24. Design Plates: Edit any Design Plates incorporated in the project drawings to coordinate appropriately with individual project conditions. Do not include Design Plates that are not applicable to the project. Remove from these details any notes and instructions intended only for the designers.
- 25. Guide Specifications: Use DeCA guide specifications where available. Where DeCA guide specifications are not available for a needed item, use appropriate MasterSpecs or other commercial specs. Edit any guide specifications used to conform to individual project guidance and conditions, and to these design criteria. Edit each section used to remove any superfluous requirements; for example, delete seismic bracing, testing, and qualification requirements if the site zone does not require seismic considerations. Editing notes and suggestions are included in the Guide Specifications as "Hidden Text". Edit any text from these Design Criteria incorporated by the A-E into the design or construction specifications, to coordinate appropriately with individual project conditions and requirements and to remove instructions and notes intended only for designers. Do not include sections that are not applicable to the project in the Project Specifications.



DeCA COMMISSARY DESIGN GUIDANCE 26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

DESIGN CRITERIA

- 1. Related Sections: Section 26 05 00 applies.
- 2. Wire Size: Use AWG and KCMil sizes, except for international projects requiring metric design.
- 3. Low Voltage Conductors (Secondary): Copper. Rated 600-volt, 140 deg F or higher for No. 10 and No. 12 and 167 deg F or higher for No. 8 and larger. No. 8 conductors and larger shall be stranded; conductors smaller than No. 8 shall be solid. Aluminum shall be permitted for feeders only.
- 4. Medium Voltage Conductors (Primary): Single conductor shielded copper with cross-linked polyethylene (XLP) or ethylene-propylene rubber (EPR) insulation. [Verify insulation and shielding requirements with installation and edit specification accordingly.] Provide a 133 percent insulation level for primary conductors, based on the actual primary voltage available at the site. Most military installations have primary systems of 12470 to 13800 volts line-to-line; verify with utility source.
- 5. Power and Lighting Branch Circuits: No. 12 AWG minimum for interior; No. #10 AWG minimum for exterior. Medium voltage primary: #2 AWG minimum or larger size required for load demand ampacity or compatibility with the existing primary system conductors and overcurrent protection.
- 6. Pull cables using approved methods and in a manner complying with workmanship standards set forth by applicable trade and contractor associations. Do not exceed pulling force or bending radius limitations of the selected cables.
- 7. Refer to Section 27 15 00 for telecommunications and data wiring requirements.
- 8. Indicate wire sizes and insulation types for circuits shown on Drawings. Identify unusual circuit parameters that are not readily apparent, such as adjustments made to accommodate voltage drop, high ambient temperatures, or nonlinear loads. Require contractors to submit proposed deviations of insulation type or wire size for approval, including all related changes of ampacity, conduit size or overcurrent protection, etc.

- 1. Related Sections: Section 26 05 00 applies.
- 2. Minimum Size: 1/2 inch except as indicated elsewhere in applicable Design Plates and other sections of this DeCA Commissary Design Guidance. 1 inch for telephone and data wiring.
- 3. Damp Locations: Use in damp locations; i.e., in concrete and in earth. In refrigerated storage and processing rooms, place PVC conduit minimum 48" AFF.
- 4. Electrical metallic tubing (EMT): Use in areas where rigid conduit is not required, except refrigerated storage and processing rooms. Use compression type fittings for 1/2" through 2". For sizes greater than 2", use rigid conduit. Do not use indenter type fittings. All fittings shall be steel; cast fittings are not allowed.
- 5. Intermediate Metal Conduit: IMC is permitted in all areas except refrigerated storage and processing rooms. Sizes shall be 1/2" through 4".
- 6. Rigid Metal Conduit: RMC is permitted in all areas except refrigerated storage and processing rooms. Sizes shall be 1/2" through 6". For power feeders inside buildings, size should normally not exceed 4". Higher ampacity circuits should be paralleled.
- 7. Rigid Polyvinyl Chloride Conduit: Use only in ground or in concrete with metal elbows, and exposed in refrigerated storage and processing cooler boxes. Size per <u>NEC</u>.
- 8. Flexible Conduit: Use to connect all motors and moving/vibrating electrical equipment.
- 9. Exposed conduits and boxes in finished areas shall be painted to match surroundings.
- 10. Conduit penetrations through insulated prefab cooler panels require sealing to prevent moisture migration through or around the conduit. The penetration should be a PVC nipple (to deter condensation at the outside end due to thermal conduction) with an access fitting (LB fitting or J-box) outside the cooler. Seal around the nipple to the cooler panel skin outside and inside of the cooler with silicone sealant. Fill the inside of the nipple around the wires with silicone sealant after the wiring is installed. Lay out conduit systems to minimize the number of cooler panel penetrations required. Refer to Design Plate # 26 27 26-1. For each system type, only penetrate the cooler panel one time and utilize surface PVC conduit in the cooler.
- 11. Conduit penetrations through fire walls require approved firestopping materials to preserve the fire rating of the wall.
- 12. Conduit penetrations through a vapor barrier wall must be sealed to prevent moisture-laden air from passing through the opening or the conduit. Consult with the architect for location of any vapor barrier walls.

- 1. <u>Applicable Sections</u>. Section 26 05 00 applies. Refer to Design Standard 26 27 26-02, 26 27 26-03, 27 15 00-03, 27 15 00-09, 27 15 00-10, 27 15 00-11, 27 15 00-12. Select standards that apply.
- 2. <u>Provide Tele-Power Poles</u>:
 - A. Rough-in cables for overhead power and communications wiring from cable trays to checkout stands. (Using Tele-Power poles to be furnished, installed and wired by the government via contract with IBM.)
 - B. For connecting to overhead cable trays where used for flexible overhead interior power and communications wiring at gondola shelving, as an alternative to wiring in conduit or under floors. Consider this method for connecting other free-standing equipment or modular office furniture located away from walls.
- 3. Size and Type.
 - A. <u>Select</u> tele-power pole size in accordance with NEC for the conductors required. Include all size information on the construction documents.
 - B. <u>Type:</u> Steel or aluminum, single- or double-compartment, with required communications and/or electrical receptacle outlets or other fittings. Select or specify painting a color that is complimentary to the surroundings.
 - C. <u>Fittings:</u> Provide ceiling trim, end J-boxes, scuff boots, cable tray connectors, flexible conduit connectors, etc., as required for a complete power and/or communications drop.
 - D. <u>Provide</u> products that are U.L. listed, with housing approved as a grounding conductor.
 - E. <u>Typical Product</u> for use at commissary check stands: Wiremold 25DTP-4 Series, length as required (10', 12', or 15'), or equal.
- 4. Install tele-power poles in accordance with the NEC, NECA, and manufacturer's instructions. Support and anchor the equipment solidly. Maintain separation of power and communication cables throughout the system.
- 5. Specifications: Guide Spec Section 26 27 26, Wiring Devices, covers this equipment under "service poles". Edit to suit project conditions.

- 1. Related Sections: Section 26 05 00 applies.
- 2. Provide cable tray systems:
 - A. For overhead power and communications wiring at checkout stands and gondola shelving. Reference Design Standards 26 27 26-02, 26 27 26-03, 27 15 00-03, 27 15 00-09, 27 15 00-10, 27 15 00-11, 27 15 00-12. Select standards that apply.
 - B. For flexible overhead interior power and communications wiring, where appropriate and economical, as an alternative to wiring in conduit or under floors. Consider cable trays for wiring to other moveable fixtures in addition to gondola shelving where appropriate and economical.
- 3. Size and Location:
 - A. Select cable tray size in accordance with NEC 392, based on ultimate anticipated conductor fill (e.g., considering future checkout stands) plus 25%. Minimum width of the cable tray must allow for a minimum-bending-radius 180 degree bend in any cable, so that cable slack may be looped back within the tray. Use dimensions for NEC approved multi-conductor power tray cables and data cables. Where divided cable tray is used to provide separate channels for communication and power wiring, determine the required size of each channel for proper placement of the longitudinal tray barrier. Include all tray size information on the construction documents.
 - B. Locate cable trays as inconspicuously as possible, no lower than the bottom of lighting luminaires. Cable trays must be accessible for their entire length. If there is no possible cable tray route that maintains accessibility over the entire length, it is permissible to transition to electrical conduit raceways for the inaccessible portion of the run. The raceways in this portion should maintain separation of power and communications cables, and include one spare 2" conduit with pull cord for each class of service. Where cable trays are visible in customer areas or office environments, paint to match surroundings. Mounting height at checkout stands: If a lay-in ceiling is available, locate the cable tray above the ceiling; if the ceiling is an open type, locate the cable tray high as possible while avoiding conflicts with HVAC ductwork.
 - C. Locate cable tray perpendicular to checkout counter line-up and above register locations as indicated in Design Standard Plates. Extend cable tray to self-checkout and monitor stations.
- 4. Drop Take-Off Arrangement:
 - A. Since drops are used to connect with relocatable equipment and fixtures, provide take-off points on the cable tray that can be changed or abandoned and sealed without losing the integrity or appearance of the tray.
 - B. Drops may consist of tele-power poles, conduits, vertical cable tray sections, or other approved electrical raceways, as appropriate for the use and location, or as directed.
- 5. Provide cable tray meeting NEMA Standard VE-1, U.L. listed, and approved as a grounding conductor.
 - A. Customer areas with exposed structure ceilings: Solid bottom, non-ventilated, steel; with hinged latching cover, ventilated, steel. Divider barriers shall be steel.
 - B. Customer and other areas with accessible ceilings, and non-customer areas with exposed structure ceilings: Basket type cable tray.
 - C. Fittings: Provide all fittings required for a complete cable tray installation. Provide vertical and horizontal bends, tees, wyes, reducers, end blanks, cabinet connectors, splice plates, hangers, etc., as required. Bend radii shall support the minimum bending radii of cables installed. Provide C-shape cable tray support hangers to facilitate lay-in placement of wiring in the cable trays.
- 6. Install cable trays in accordance with the NEC, NECA, Cable Tray Institute <u>Installation Guidelines</u>, and manufacturer's instructions. Configure the cable trays to afford accessibility for adding, removing, or replacing cables. Maintain separation of power and communication cables throughout the system, including at take-off points.

DeCA COMMISSARY DESIGN GUIDANCE 26 05 36 CABLE TRAYS FOR ELECTRICAL SYSTEMS

- 1. Related Sections: Section 26 05 00 applies.
- 2. Nameplates: Provide nameplates to adequately describe the function or use of all disconnect switches, switchboards, panelboards, and the like. Nameplates shall be laminated phenolic plastic with engraved lettering. Provide nameplates for light switches when the controlled circuit is not obvious.
- 3. Fasten nameplates with screws.
- 4. Use DeCA Guide Specification 26 05 53 for identification products and methods.

END OF SECTION

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DeCA COMMISSARY DESIGN GUIDANCE 26 22 00 LOW-VOLTAGE TRANSFORMERS

DESIGN CRITERIA

- 1. Related Sections: Section 26 05 00 applies.
- 2. Location: Install in accessible utility locations near to the load served. If suspended above ceiling, provide access panels. Provide bollards to protect from forklift / pallet jack traffic as needed. Provide for proper ventilation.
- 3. Dry-type transformers: Dry-type transformers shall have 220 deg C (Class "H") insulation, 80 deg C rise and four ±2-1/2 percent taps (2 above and 2 below normal). Delta-Wye connection unless otherwise noted.
- 4. Provide shielded and/or power conditioning type transformers for sensitive loads (e.g., POS) where directed in individual project requirements, or where required by existing power supply conditions.

- 1. Related Sections: Division 01 and Division 26 Section 26 05 00 apply.
- 2. O&M Manuals: O&M Manuals shall include complete published data and shop drawings of each switchboard.
- 3. Fault Ratings: The integrated equipment fault ratings and selection of individual overcurrent protective device ratings shall be determined on the basis of the Fault Current and Overcurrent Protection Coordination Study (see 26 05 00, paragraph 22A).
- 4. Switchboard: The switchboard shall consist of a fusible bolted contact or high pressure contact main switch or circuit breaker; a number of feeder overcurrent-protective devices fused quick-make, quick-break feeder switches or circuit breakers; a meter section consisting of a voltmeter and ammeter with selector switches, a kilowatt-hour meter, and associated current- and potential-transformers. Verify specific metering requirements with installation and edit specification accordingly. Include provisions for continuous monitoring of power and phase currents by the Refrigeration Monitoring and Control System (RMCS). Coordinate with the RMCS supplier.
- 5. The main switchboard shall have SPD protection.
- 6. Bussing: Bussing shall be silver plated copper. Provide full height bussing in each switchboard section.
- 7. Housekeeping Pad: Provide housekeeping pad for the switchboard sized to permit expanding one additional future section of switchboard.
- 8. Alteration / Remodeling Projects: When it is necessary to revise an existing switchboard on an alteration project, consult with the switchboard manufacturer to ensure that switchboard ratings and approvals are maintained in the revised state of the switchboard, and that the materials and equipment specified for the revision are appropriate for the application. Be especially cognizant of possible series-rated interrupting combinations used in the switchboard design, and maintain these ratings in the revised condition.
- 9. Arc Flash: Site specific arc flash labels shall be provided on all new switchboards 800 amps or larger on any project. On New Facility projects, major renovations, electrical replacement/upgrades, and refrigeration replacement/upgrades an arc flash study is required(see 26 05 00, paragraph 22A).

- 1. Related Sections: Division 01 and Sections 26 05 00, 26 05 33, and 11 40 00.23 apply.
- 2. Circuit Breaker Panelboards: Provide full size bolted-connection panels as required to serve all branch circuits and provide 20 percent spares. Load centers are not acceptable. Install in utility spaces near to the loads served, to the extent practicable. When installed in occupied, finished spaces, make the panelboards as inconspicuous as possible by selecting location thoughtfully and providing enamel paint finish of exposed panel fronts to match color of surrounding surfaces. Do not place electrical panels in any areas potentially exposed to moisture and wash down operations such as processing areas, janitor's closets etc.
- 3. Refrigeration Equipment Loads: Provide a separate power panel under Division 23 to serve refrigeration equipment loads.
- 4. Bus Bars: Provide copper bus bars in all panelboards.
- 5. Required Features:
 - A. Dead front construction, flush- or surface- type as required. Flush trims with no exposed screws or hinges. Latch with lock (all keyed alike). Circuit directory under plastic inside door, neatly typed with final circuit designations. Directory shall be specific as to load served; e.g., "Lights – Sales Row 5" rather than "Lights"; use room names, not numbers.
 - B. Plated copper bussing fully rated with sequentially phased branch distribution. Fully-rated neutral bar in mains compartment. Equipment ground bar in each panelboard. Additional isolated ground bar where specified. Provide all bus links and accessories required for ultimate full utilization of spaces for future breakers.
 - C. Breakers: Thermal-magnetic trip calibrated at 40 deg C, in each pole of multi-pole breakers, fully common-trip. Thermal trip elements to be ambient-compensating above 40 deg C. Breaker trip ratings to be visible without removing panel cover. Breakers to have single trip-free operating handle with clearly distinct "closed", "open" and "tripped" positions.
- 6. Ensure that walls have sufficient depth to conceal the panelboard tub where flush mounted panels are intended. Provide full NEC "working space" clearance at panelboards.
- 7. Provide spare conduits to an accessible space for spares at all flush panelboards.

DeCA COMMISSARY DESIGN GUIDANCE 26 24 19 MOTOR-CONTROL CENTERS

DESIGN CRITERIA

- 1. Related Sections: Section 26 05 00 applies.
- 2. Summary:
 - A. Provide manual motor starters on all 1/2 HP and smaller motors unless indicated otherwise by applicable Design Standard plates.
 - B. Starters and control equipment for non-refrigeration motors larger than 1/2 HP are furnished under Division 26
 - C. Connect automatic control and protective devices furnished under Division 26.
 - D. Starters: NEMA rated, utilizing class 20 overloads.

- 1. Related Sections: Division 01 and Section 26 05 00 apply.
- 2. Reference Standards: NFPA 70, NEC.
- 3. General: Provide general purpose convenience receptacles throughout all areas of the facility. In addition, provide the outlets specifically required herein below. Provide ground fault circuit protection for receptacle circuits in all areas where required by the <u>National Electrical Code</u>.
- 4. Sales and Checkout Areas: Provide ground-type duplex receptacles connected to 20-amp branch circuits throughout.
 - A. Provide receptacles at each end of every row (alternating sides) of the sales gondola shelving, located in the side toe space of the last section of gondola (not in the end cap), for floor maintenance and demonstration use. Locate to ensure that floor buffers and scrubbers with 50' 0" cords can reach all floor areas. Provide electrical receptacles throughout the store for cleaning, maintenance, and general purpose use. Reference Design Standard Plate 26 27 26-02 and 26 27 26-03.
 - B. Receptacles are required within the gondola shelving for refrigerated merchandisers, and special displays requiring power. Verify the number and approximate location with DeCA Project Manager. The construction electrical contractor must coordinate the exact final locations of these receptacles with store operations personnel after the planograms are completed in the final phases of construction. Note this coordination requirement on the project drawings. Reference Design Standard Plate 26 27 26-02 and 26 27 26-03.
 - C. Wiring for gondola receptacles shall be installed within EMT conduit where run through the gondola shelving concealed spaces behind the back-of-shelf panels and under the base shelf. Conduit is to be supported above the floor under the base shelf by running through the holes in the support brackets. Run wiring homeruns from gondolas up to the overhead cable tray in power poles. Use liquid-tight flexible conduit for final receptacle connection at base of gondola. Reference Design Standard Plate 26 27 26-02 and 26 27 26-03 (Power poles, receptacles, and connections by contractor).
 - D. Provide a 20A branch circuit for an electrical receptacle on the power pole at each checkout stand for refrigerated merchandisers. Leave the conductors coiled, labeled and tie-wrapped to the cable tray or ceiling support, in sufficient length to reach the floor plus ten feet. (Power pole, receptacle and connection by others)
 - E. Through Section 23 90 00 refrigeration, provide two each separately circuited 20-amp receptacles at the base of each row end of island reach-in or coffin frozen food cases for use in food demonstrations. Do not duplicate the receptacles on cases directly across the aisle, however.
 - F. In addition to the power required for equipment, provide a minimum of two each separately circuited 20-amp duplex receptacles at the sushi station.
 - G. Provide a dedicated circuit for each dock leveler.
 - H. In addition to the power required for equipment, provide a minimum of two each separately circuited 20-amp duplex receptacles in the deli/bakery area. If the deli and bakery areas are separate, provide two each separately circuited 20-amp duplex receptacles in the deli and the bakery.
 - I. Provide a 20-amp duplex convenience power outlet for the take-a-number display approximately 80" above finished floor cenetered on the wall behind the deli/bakery clerk service cases. Coordinate exact location.
- 5. Meat Wrapping and Processing Areas: Provide ceiling drop cords with strain relief bushings, flexible cords, and suitable water-tight connectors (Daniel Woodhead matched receptacle and connection cap, or equal) in meat wrapping and processing areas for meat saws, wrappers, and grinders (Ref.: Design Standard 26 27 26-01). Other outlets for equipment locations near walls may be installed on walls at 48" AFF. Fit all wall-mounted receptacles with "in-use" weatherproof covers (ensure that the specified matching plug will fit under the cover). In addition to the power required for equipment,

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DeCA COMMISSARY DESIGN GUIDANCE 26 27 26 WIRING DEVICES

provide a minimum of two receptacles with "in-use" weatherproof enclosures in each meat wrapping and processing area (for convenience or future equipment) circuited together to a 20 amp circuit.

- Refrigerated Walk-in Boxes and Meat Wrapping and Processing Areas: Provide "in-use" weatherproof enclosures (NEC 406.9(B)) over receptacles designated for unattended electrical equipment connections (see Concept Floor Plan).
- 7. Commissary Exterior: Provide four each 20A GFCI duplex electrical receptacles on the building's exterior near the Customer Entry and Exit. Provide a 20A GFCI duplex electrical receptacle on the building's exterior at each exterior door other than the Customer Entry, Customer Exit, and overhead doors at the dock. All exterior receptacles shall have weatherproof while in use covers.
- 8. Roof: Provide appropriate weatherproof exterior exposure type GFCI duplex receptacles at roof locations per <u>NEC</u> for maintenance purposes.
- 9. Stub-ups: Do not install stub-ups within the commissary sales or traffic areas.
- 10. Scales/Labelers: Provide 20-amp electrical receptacles, at all electronic scales, scale/labelers and at the platform scale in the staging/receiving area (RM. 37 / 37).
- 11. Ground-type Duplex Receptacle at Commissary Ice Merchandiser: Provide at each Ice Merchandiser location at front of Commissary. Verify quantity with Store Director.
- 12. Fax and Photocopy Machines: Provide dedicated electrical duplex receptacles for photocopy and fax machines located within the admin area.
- 13. Offices and Administrative Areas: Provide at least four general-purpose duplex receptacles in the wiring channel at each work station where modular work stations are provided. Provide a junction box and circuits for furniture whips where furniture is to be prewired. [Provide filtered power at two receptacles should conditions warrant, i.e. in geographical areas where power quality is very poor.] Where work stations are not next to a permanent wall, provide power poles to connect electrical. Provide wall-mounted receptacles not more than 10' apart nor more than 5' along the floor line from any accessible wall area more than 2' wide. Provide not less than one duplex receptacle on each wall of any office. Do not count dedicated receptacles in satisfying the requirements of this paragraph.
- 14. Provide power connections for time clock(s). Coordinate locations during design.
- 15. Provide power connection for key storage equipment (key control cabinet) from nearest 120 volt circuit. Locate connection directly behind key control cabinet, so that it is concealed within the key control cabinet. Key control cabinets have internal battery back-up and are not required to be on the generator.
- 16. Mechanical Rooms and Utility Areas: Provide duplex receptacles sufficient for maintenance operations, such that any point can be reached with a 25' extension cord.
- 17. Break Rooms: Provide dedicated GFCI receptacles for vending machines and for microwave, refrigerator, and coffee service in addition to minimum general purpose receptacles.
- 18. Training Room: Provide receptacles for audiovisual device connections (overhead projectors, videotape machines/TV, slide projectors, etc.), in addition to minimum general purpose receptacles. Where a central table is provided, provide one or two drop cord receptacles at 7' AFF over the table (depending on table dimensions).
- 19. Light Switches: Provide local control of lighting in each room. Provide light switches to control lights at each entry to the room inside the room and opposite the hinge side of the door, except as otherwise indicated for refrigerated processing rooms. Provide 3-way and 4-way switches, as appropriate, for spaces with more than one entry. Where multiple entrances would require a large number of 3- and 4-way switches, consider pilot control using relays. Provide multi-level control of lighting in the Training Room and Conference Room to facilitate use of audio-visual presentations; use separate switching of lamps or fixtures, or use dimmer controls for multi-level control. Use occupancy sensors in offices, breakrooms, training rooms, and rest rooms. Occupancy sensors can be considered in staging/receiving. It is not permitted to use occupancy sensor control in meat processing area(s). Refer to Section 26 51 00 for further details.

DeCA COMMISSARY DESIGN GUIDANCE 26 27 26 WIRING DEVICES

- 20. Loading Docks: Provide exterior receptacle at each loading dock for refrigerated trailers where directed by DeCA. [note: This item is not generally needed at most stores. Trailers don't sit at the dock very long. Exceptions: where deliveries are infrequequent and trailers may sit a long time.]
- 21. General Purpose Receptacles: 20-amp, 125 volt, single-phase, 3-wire, duplex Specification Grade grounded type. Grey color to match stainless steel device plates unless otherwise indicated.
- 22. Waterproof Electrical Receptacles and Switches: Electrical receptacles and switches outdoors and in the preparation areas shall be waterproof. Protect receptacle circuits by GFI breakers located in the panel or with individual GFCI type receptacles (feed-through type not permitted). Surface mounted junction boxes located in processing areas subject to hot water wash down shall be a sealed type conforming to the NFPA classification for wet areas.
- 23. Light Switches: Specification grade, 20-Amp, A.C. only, voltage rating and pole configuration per application. Grey color to match stainless steel device plates unless otherwise indicated.
- 24. Isolated Ground Receptacles: Provide orange faced isolated ground duplex receptacles for all POS system equipment and other outlets served from the POS system isolated ground panelboard. Receptacles to be rated 20 Amp, 125 volt, single phase, 3 wire.
- 25. Special Purpose Receptacles: Provide appropriate specification grade receptacles for equipment requiring ratings or pole configurations other than those addressed above. Grey color to match device plates unless otherwise indicated.
- 26. Multi-Outlet Assemblies (Plugmold): Provide where indicated. Aluminum or steel body with receptacle outlets as indicated in the drawings or in other sections of this DeCA Commissary Design Guidance. Unless otherwise indicated, receptacles shall be duplex grounding type 125V 15A receptacles, spaced on 12" centers.
- 27. Device Plates: Stainless Steel, brushed finish, in finished areas. Galvanized steel, for flush or surface mount as appropriate, in unfinished areas. Where cast metal boxes are used, plates to match box. Weatherproof covers in wet locations. Screws to match in all cases.
- 28. Mounting height of devices: Unless otherwise noted or required for special purposes, mount all devices of like kind at the same height throughout the facility, and with sensitivity to ABA requirements.
 - A. Light Switches: 48" AFF
 - B. Duplex Receptacles
 - 1). Above Countertops 8" Above Counter but coordinate with architectural features
 - 2). For Refrigerators 8" higher than adjacent countertop, or 48" AFF if no countertop
 - 3). In Processing Coolers 48" AFF
 - 4). Other Locations 12" to 18" AFF; coordinate with adjacent communications. Coordinate with Design Standard Plate 10 26 00-01.






DeCA COMMISSARY DESIGN GUIDANCE 26 27 73 PROCESSING AREA SIGNALING SYSTEMS

DESIGN CRITERIA

- 1. Related Sections: 26 05 00, 27 15 00 and Division 10 Section: Signage.
- 2. Low-voltage Switches, Buzzers, and Signs: See Division 10 Section: Signage. Provide in the following locations:

SWITCH	BUZZER	SIGN AT SWITCH
Exterior wall adjacent to personnel door that joins the Receiving Loading Dock Ramp (84) and the Receiving Area 36. *	Wall adjacent to the door to the Receiving Manager's Office (35).	RING FOR DELIVERIES
Exterior wall adjacent to personnel door that provides the most direct access for meat delivery personnel.*	In Meat Wrapping Area (55) on wall near door to Meat Manager's Office (57).	RING FOR MEAT DELIVERIES
Exterior wall adjacent to Carryout/Return Vestibule (3).*	Location 1: Rear wall within Customer Service Room (6) Location 2: In Sales Area on wing wall for Vestibule (65B).	RING FOR SERVICE
Exterior wall adjacent to personnel door that provides the most direct means of access for produce delivery personnel.*	In Produce Processing Area (44) on wall next to door to Produce Manager's Office (45).	RING FOR PRODUCE DELIVERIES
In Sales Area, on meat case end panel nearest door utilized by meat service personnel entering sales area.	In Meat Wrapping Room (56), above door leading to Meat Processing (55).	RING FOR CUSTOMER SERVICE
In Sales Area, Produce Sales Area (42), adjacent to service door leading to Produce Processing (44).	In Produce Processing Room (44), above door leading to Produce Chilled Storage (43).	RING FOR CUSTOMER SERVICE

* Use weatherproof switches in these areas.

NOTE: Where more than one buzzer is located in the same room, provide different sounding units. Delivery buzzers shall have a distinctly different sound from customer service buzzers.

DeCA COMMISSARY DESIGN GUIDANCE 26 27 73 PROCESSING AREA SIGNALING SYSTEMS

END OF SECTION

DESIGN CRITERIA

- 1. Related Sections: Section 26 05 00 applies.
- Applications: Disconnecting devices as required by the NEC for HVAC and other equipment. Do not use surface mounted disconnect switches in public areas of the commissary, or in finished spaces such as offices, conference rooms, etc. If a disconnect is unavoidable in public or finished spaces, use a flush mounted, enclosed circuit breaker or manual motor switch with stainless steel cover (non-automatic breaker if disconnect does not require overcurrent protection).
- 3. Disconnect Switches: Heavy duty type, quick-make, quick-break, and horsepower rated. Switches shall have a cover interlock with a defeat device. Switch cover shall be lockable; operating handle shall be lockable in the open or closed positions.
- 4. Corrosion Protection: Enclosures exposed to coastal, tropical marine or corrosive atmosphere shall be of corrosion resistant stainless steel.

END OF SECTION

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DeCA COMMISSARY DESIGN GUIDANCE 26 36 00 TRANSFER SWITCHES

DESIGN CRITERIA

- 1. Related Sections: Division 01 and Section 26 05 00 apply.
- 2. Manual Transfer Switch: Provide for connecting an emergency generator for operation of the entire store. For ratings up to 800A, a manual 4-pole double throw enclosed switch is acceptable; for higher ratings use an electrically operated non-automatic transfer switch. See Section 26 05 00. Locate generator connection lugs at store back dock at suitable generator connection point.
- 3. Automatic Transfer Switch: Provide with associated generator servicing CISIC Room and Cash Registers. See Section 26 05 00.
- 4. Use DeCA Guide Specification 26 36 00 to specify equipment and methods. All transfer switches shall be 4 pole. All transfer switches shall have a connection to building ground per NEC.

END OF SECTION

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DESIGN CRITERIA

- 1. Related Sections: Section 26 05 00 applies.
- 2. Summary: Cathodic protection is required for all buried or submerged ferrous structures (piping, valves, fittings, tanks, and the like).
 - A. If extensive cathodic protection is required, the construction contractor shall retain the services of a qualified individual who is either a) a Professional Engineer Licensed in Corrosion Engineering, or b) accredited by the National Association of Corrosion Engineers as a Corrosion Specialist or Corrosion Technologist in cathodic protection. The qualified individual shall design and oversee the installation and testing of the cathodic protection systems, and certify at the conclusion of the work that the systems are installed and operating properly. The qualified individual shall also evaluate and mitigate any cathodic interferences that may arise on either existing or new utility lines or other metallic structures on the project site as a result of this construction.
 - B. If only minor cathodic protection is required, the construction contractor shall provide the cathodic protection using packaged anodes, applied along with the installation of the protected structures.
- 3. Structures to receive cathodic protection must be coated with an electrically insulating coating resistant to the environment in which it is to be installed. Specifiers should include the coating requirement in the specifications for each structure to be protected.
- 4. Structures to receive cathodic protection must be electrically continuous over their entire length. Mechanical joints such as unions, flanges and dresser couplings do not ensure electrical continuity, and so will require bonding jumpers. Specifiers should include the bonding requirements in the specifications for each structure to be protected.
- 5. Structures to receive cathodic protection must also be electrically isolated from other conductive structures in contact with the earth or water, unless the other structures are also cathodically protected. Specifiers should include this requirement in the specification for each structure, using insulated couplings, unions or flanges, or insulating saddles, etc., to accomplish the required isolation.
- 6. Identify the structures that are to be cathodically protected on the Construction Documents. Edit DeCA Guide Specification 26 42 13, Cathodic Protection, as required for the individual project scope and materials included in the design. Follow the editing notes included as "hidden text" in the guide specification in determining whether the "minor" or "extensive" specification paragraphs are to be used. Do not include Section 26 42 13 if there is no underground utility work in the project, or if it is certain that there will be no ferrous materials subject to underground or underwater corrosion.

END OF SECTION

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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. 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

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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

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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	TYPE	REMARKS
28		20 (220)		NOTE 13
20		30 (320)		NOTE 13
20	STORAGE	00 (020)		
30	CONTRACT STOCKER	50 (550)	LED	NOTES 7, 13
	STORAGE			
31		30 (320)	LED	NOTE 13
31B		50 (550)		NOTE 13
32		30 (320)		NOTES 7, 13
33	STORAGE	30 (320)		NOTES 7, 13
34	MEDICAL FOOD INSPECTION	50 (550)	LED	NOTE 7
-	OFFICE (VET)			
35	RECEIVING MANAGER'S	50 (550)	LED	NOTE 7
	OFFICE			NOTE 42
30		30 (320)		
37		30 (320)		
38		30 (320)		
39		75 (810)		
40		75 (810)		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)
				ISLAND PRODUCE
				DISPLAY NOTES 2 3
				4, 12, 13
43	PRODUCE CHILLED	30 (320)	LED	NOTES 8, 10, 11, 12
	STORAGE			
44	PRODUCE PROCESSING/	50 (550)	LED	NOTES 9, 11, 12
45	PRODUCE MANAGER'S	50 (550)	LED	NOTE 7
-10	OFFICE	00 (000)		
46	FISH DISPLAY	75 (810)	LED	NOTES 2, 3, 4
47	MEAT/PROD OP	30 (320)	LED	NOTES 7, 13
19		20 (220)		NOTE 12
40		30 (320)		NOTE 13
4 9 50		30 (320)		NOTE 13
50	(MEAT/PROD)	20 (220)		NOTE 13
51	MEN'S RESTROOM	20 (220)	LED	50 FC (550 LUX)
	(MEAT/PROD)			ACCENT OVER
				LAVATORIES, NOTES
52		20 (220)		7, 13 NOTE 15
52	(MEAT/PROD)	20 (220)		NOTE 15
53	WOMEN'S RESTROOM	20 (220)	LED	50 FC (550 LUX)
	(MEAT/PROD)	20 (220)		ACCENT OVER
				LAVATORIES, NOTES
54		20 (220)		7, 13
55		30(320)		NOTES 1, 13
56		70 (750)		NOTES 9, 11, 12
50		10(150)		INUTED 9, 11, 12

MINIMUM COMMISSARY ILLUMINATION STANDARDS

RM. NO.	ROOM NAME	FC	TYPE	REMARKS
57				
58		50 (550)		
50	MEAT REGIOORING AIGEE	50 (550)		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	30 (320)	LED	NOTES 8, 10, 11, 12
62		20 (220)		NOTES 8 10 11 12
63	MECH CHASE TO MEZZ	10 (110)		
64	VESTIBULE-	20 (220)	LED	NOTE 14
	RECEIVING/FROZEN FOOD /			
	DAIRY			
65	AISLE (RECV'G TO SALES)	20 (220)	LED	NOTE 13
66	DAIRY SALES	75 (810)		NOTES 2, 3, 13
69		30 (320)		NOTES 8, 10, 11, 12
60	PROZEN FOOD STORAGE	30 (320)		NOTES 10, 11, 12, 14
69	SALES	75 (810)		EC ON VERTICAL
				PLANE AT 30" AFF AT
				GONDOLA FACINGS
				SHALL BE NOT LESS
				HORIZONITAL EC
				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)		NOTE 13
74		50 (550)		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		50 (550)	LED	NOTES 7, 13
85	SEAFOOD CHILL STORAGE	30 (320)		NOTES 8, 11, 12
80		30 (320)		
0/ 00		50 (550)		
00	MANAGER	50 (550)		
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)	ТҮРЕ	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

	L1 L2 CONTROL VOLTAGE						
	$\begin{array}{c c} & & & \\ \hline \\$						
KEYED NOTES:							
RMCS NORMALLY CLO AS INDICATED ON THE	DSED CONTACTS. CONTACTS CYCLED BASED ON USER PROGRAMMABLE SCHEDULE. TYPICAL, NUMBER E CONTACTOR SCHEDULE.	ł					
LIGHTING CONTACTOR(S) WITH ELECTRICALLY HELD CONTACTS. CONTACTOR'S SHALL NOT BE LOCATED IN SALES AREA, ADMIN., NOR BREAK ROOM. SEE DRAWINGS/SCHEDULE FOR FEEDERS OR CIRCUITS DESIGNATED FOR CONTROL. TYPICAL, NUMBER AS INDICATED ON THE CONTACTOR SCHEDULE.							
3 OFF-ON-AUTO SWITCH IN CONTACTOR COVER. TYPICAL, NUMBER AS SALES LIGHTING CONTACTORS.							
DESIGNER: SHOW CONTACTORS AND SWITCHES LOCATIONS ON PLANS. DO NOT LOCATE CONTACTORS WHERE HUM AND NOISE WILL BE OBJECTIONABLE, SUCH AS SALES AREA, ADMIN., OR BREAKROOM. PROVIDE A LIGHTING CONTACTOR SCHEDULE (SEE D.S. 265100-02)							
DATE	DEFENSE COMMISSARY AGENCY	DESIGN					
	DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS	STANDARD					
JUN 2022	SALES AREA LIGHTING CONTROLS	265100-01					

EDULE	DEVICE CONTROLLED	SALES AREA 50%	SALES AREA 50%	CHECKOUT AREA	SALES AREA TRACK, MASS DISPLAY, PRODUCE, DAIRY	EXTERIOR SECURITY	EXTERIOR PATRON PARKING	EXTERIOR EMPLOYEE PARKING	EXTERIOR RECEIVING POLE LIGHTS				
	CONTRACTOR LOCATION												
	TOR SCH	CONTROL SOURCE	-	-	Ē	Ē	$\langle 2 \rangle$	$\langle 2 \rangle$	$\langle 2 \rangle$	5	EAKROOM NOR SALES AREA	AREA	
	CON TAC ⁻	COIL VOLTAGE										EAKROOM NOR SALES	
LIGHTING	CONTACT VOLTAGE									NTROL DETAIL	JUNTED IN ADMIN, BF		
	CONTACT AMP RATING									S AREA LIGHTING CO ROL DETAIL	S DR'S SHALL NOT BE M		
		NO. OF POLES									NTROLLED, SEE SALE RIOR LIGHTING CONT	ALLY HELD CONTACT IZE NOISE, CONTACTC	
		MARK	LC-1	LC-2	[C3	LC 4	rcxs	LCXP	LCXE	LCXR	KEYED NOTES: (1) RMCS CO (2) SEE EXTE	3 ELECTRIC 4 TO MINIM	
)ATE	DEFENSE COMMISSARY AGENCY DIRECTORATE OF ENGINEERING FORT LEE, VIRGINIA - LACKLAND AFB, TEXAS						DES STANI	IGN DARD				
JUN 2022 TITLE REF. LIGHTING CONTACTOR SCHEDULE REV.						265100-0							

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 05 00, and Design Standard Plate 26 56 00-01 apply.
- 3. Lighting Intensities: Maintained average lighting intensities shall comply with foot-candle (FC) levels stipulated by the Minimum Commissary Illumination Standards (attached). Design to the FC (average) levels shown, within +15 percent / -0 percent. Use point-to-point method of analysis, on a 10'x10' grid, for all exterior lighting.
- 4. The designer may recommend light sources other than the type 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. 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 provide cutoff angle to prevent spill light into adjacent areas. Coordinate with landscaping for tree locations and account for trees in lighting calculations. Coordinate with other site utilities and features for pole/fixture locations and underground conduit routing.
 - A. General:
 - 1). Control Diagram: See Design Standard Plate 26 56 00-01, "Exterior Lighting Controls Details".
 - 2). Photoelectric Control: Provided by RMCS.
 - 3). Timer: Timing functions provided through RMCS.
- 6. Customer Parking, Employee Parking, Receiving Area Pole Lights: Provide auto-dimming LED lights; luminaires utilizing other light sources may be considered based on life cycle cost analysis.
 - A. Control Circuiting: Provide four separate control circuits: One circuit for Security Lighting; one for Employee Parking; one for Customer Parking; and one for Receiving Area pole lights. Each circuit shall be controlled "on" by photocell, and "off" by time switch with manual over-ride, all provided through RMCS. See Design Standard Plate 26 56 00-02, "Exterior Lighting Controls Details".
 - B. Light customer parking, employee parking, front sidewalk and grade level receiving areas within 150 feet of the building to 5.0 FC (average). Beyond 150 feet from the building, illuminate all on-site paving (including depressed receiving docks) and sidewalk areas to 1.5 FC (average). The lighting for these areas shall be connected to and metered by the commissary watt-hour meter.
 - C. Provide service area lights with timer type switch with manual switching override all provided through RMCS.
 - D. Poles: anodized aluminum, concrete, or other durable, low-maintenance material that will not require painting. Protect light pole bases from damage by vehicles.
 - E. Security Lighting: Provide security lighting around the entire perimeter of the commissary building for a distance of 25 feet from the face of building. This lighting will normally be provided by building mounted fixtures. The minimum security lighting level shall be 0.3 FC.
 - F. Lamps: LED fixtures are the preferred light source. Do not use Low Pressure Sodium (LPS). Other light sources may be used to match existing lighting in the area. Deviations requested by the Host Military Installation will be considered on a case-by-case basis by DeCA.

END OF SECTION

Attachments:

1. Minimum Commissary Exterior Illumination Standards

AREA DESCRIPTION	AVERAGE FC LEVEL	MINIMUM FC LEVEL	UNIFORMITY RATIO (Max. to Min.)
Parking/Sidewalk within 150 feet of the Building	5.0 FC	1.0 FC	15:1
Parking/Sidewalk more than 150 feet from Building	1.5 FC	0.5 FC	15:1
Grade-level Receiving	5.0 FC	0.5 FC	20:1
All Other On-Site Paving	1.5 FC	0.3 FC	20:1
Building Security (25' Perimeter around the Building)	N/A	0.3 FC	N/A

End of Table

L1	CONTROL VOLTAGE L2	L1 CI	NTROL VOLTAGE	► L2
L1 🔫	CONTROL VOLTAGE	L1 CON	ITROL VOLTAGE	► L2
Ē	EGEND 1 NOT USED 2 LIGHTING CONTACTOR(S) WITH ELECTRICALLY HELD CONTACTOR SCHEDULE FOR FEEDERS OR CIRCUITS DESIGNATED FOR CONUMBER AS INDICATED ON THE CONTACTOR SCHEDULE. 3 THREE POSITION MANUAL CONTROL SWITCH. LABEL POSITION 4 RMCS CONTACTS 5 LOCATE SWITCH IN RECEIVING AREA.	ts. See drawings/ Ntrol. Typical, DNS AS: "Test" - "Off" - "I	NORMAL"	
DES NOI SCH	SIGNER: SHOW CONTACTORS AND SWITCHES LOCATIONS ON PLANS. SE WILL BE OBJECTIONABLE, SUCH AS SALES AREA, ADMIN., OR BRI IEDULE (SEE D.S. 265100-02)	DO NOT LOCATE CONT. EAKROOM. PROVIDE A LI	ACTORS WHERE HUM AI GHTING CONTACTOR	ND
DATE	DEFENSE COMMISSAR) DIRECTORATE OF ENG FORT LEE, VIRGINIA - LACKLA	' AGENCY INEERING IND AFB, TEXAS		DESIGN STANDARD
JUN 2022	TITLE REF. REF. REF.			

Division 27 – Communications

DESIGN CRITERIA

- 1. Related Sections: Division 01, Section 26 05 00, Design Standards 27 15 00-01 through 27 15 00-05, and Section 27 15 00 Communications Horizontal Cabling.
- 2. Point-of-Sale (POS) Support:
 - A. Abbreviations and Acronyms:
 - 1). ADP Automated Data Processing; general term including all electronic data systems.
 - 2). BICSI a telecommunications industry association; ref.: <u>www.bicsi.org</u>.
 - 3). CFCI Contractor Furnished, Contractor Installed.
 - CISIC <u>Capital Investment System Integration Center</u>; DeCA's ADP room; also used to identify the DeCA organizational element responsible for the ADP equipment and related systems.
 - 5). GFGI Government Furnished, Government Installed.
 - 6). IG Isolated Ground.
 - 7). ISP In-Store Processor (Central).
 - 8). LAN Local Area Network; cabling systems for voice and data networks.
 - 9). LIU Lightguide Interconnection Unit.
 - 10). NCR National Cash Register, DeCA POS equipment subcontractor.
 - 11).NIC Not in Contract (Construction).
 - 12).HHT Hand Held Terminal; Radio-frequency hand-held terminal communicates via wireless LAN with the ISP. (Formerly "PDED").
 - 13). POS Point-of-Sale electronic equipment and systems.
 - 14). SCO Self Checkout.
 - 15). RAS Remote Attendant Station (used with SCO's).
 - B. Layout of Datacom and POS Equipment:
 - 1). Data networks for POS and PC LAN are to be Category 6 networks, using 4 pair 23 AWG UTP Type CMP plenum cable.
 - 2). DeCA (Store Director and Operations Specialist) will identify exact locations of outlets and equipment not shown on the definitive floor plan nor described herein, no later than the 50% design review meeting. Contact the DeCA Project Manager for information.
 - 3). No underfloor ductwork shall be used; all data and telephone lines shall be run overhead.
 - 4). Default locations of POS data outlets (All outlets are dual cable, dual RJ45 jack):
 - a. Each checkout stand 1 (Full Service & Self Checkout; RJ45 by others).
 - b. Remote Attendant Station (SCO) 2 (RJ45 by others).
 - c. Cashier's Office 4 4 (2 above back counter, 2 above front counter).
 - d. CISIC Room 31B 3
 - e. Admin Office 15 2
 - f. Wireless LAN Access Points (Wavepoint Controllers) locations (dual RJ45 jack) must have a clear "line-of-sight" view of the area covered, Coordinate exact locations with DeCA IT during design. Locations shall be as follows:

- (1). Sales Floor, Aisle Area 4 drops.
- (2). Install on columns if possible (on walls if no columns), .two at front of sales floor and two at rear of sales floor (equal distance from the walls and each other), at 10' AFF.
- (3). Sales Floor, Produce/Deli Area (if separate area from the main sales floor) 1 drop: Install on wall in central location, 10' AFF.
- (4). Sales Floor, Bread Section (if separate area from main sales floor) 1 Drop: Install on wall or pole in central location, 10' AFF.
- (5). Warehouse, Main Receiving Aisle 2 drops: Install one on each end (equal distance from the walls and each other), 10' AFF. Other Receiving Aisle (if separate from main receiving aisle) 1 drop: Install at 10' AFF.
- (6). Warehouse, Open Area (if present) 3 drops. Install on wall and/or post in central locations (equal distance from the walls and each other, 10' AFF). If steel warehouse racks will be present, install 1 drop at each end of each aisle.
- (7). Administrative area 1 drop: Install in central location of offices, 10' AFF.
- (8). Front End cash register area 1 drop for small store, 2 drops for medium store, 3 drops for large store: install in a central location near the store exit, equal distance from the walls and from each other, 10' AFF.
- (9). All walk-in freeze and chill storage locations, including but not limited to the following: Frozen Foods, Meat Wrapping, Meat Processing, Meat Holding, Produce Prep, Produce Dry and Produce Chill, Bakery/Deli freeze/chill, Pre-Packaged Meat/Poultry Chill, and Dairy Chill. Each requires a data outlet within 65' cable distance, located outside the refrigerated room, with provision for a remote antenna inside the room. One dual data drop can cover four rooms if all within 65' of cable distance, that is one access point connected to the data drop can have up to four antenna cables connected to it. (Renovations: if a data outlet does not exist within 65', provide a new one) The remote antenna inside the rooms requires a coaxial cable (Hyperlink 400-Style, 50-Ohm Coax Cable, with RP-TNC connectors) terminated in a 4" weatherproof Type FSE junction box with a blank cover. The box should be located 2' to 4' from the corner of the room that has the closest access to a data drop location. This coaxial cable will run continuous without splice inside/outside of walls and 3/4" conduit to the closest data drop and connect to a mounted splitter (2, 3, or 4 way depending on number of antenna cables to be connected). A moisture-impervious seal is required inside and outside of the nipple through the insulated cooler panel. See Figures 1, 2, and 3 at the end of this section for further details. Refer to Section 26 05 33 Raceways and Boxes for Electrical Systems.
- (10). Outdoor building antenna provisions (One or two as indicated for wireless register outdoor sales locations): Install on wall at front corner(s) or front center of store, depending on number and location of parking area(s). Store Director and Technical inspector on site will identify the location for the outside building antenna. Each location requires a data outlet within 50' cable distance (not more than 40' conduit), located inside the building, with provision for a remote building antenna outside the building. The remote antenna requires a coaxial cable to a weatherhead fitting at the proposed antenna location. Provide the coaxial cable to the data outlet location: Hyperlink 400-Style, 50-Ohm Coax Cable, RP-TNC connectors. This coaxial cable will run continuous without splice inside/outside of walls and 3/4" conduit. Coil slack cable in an inconspicuous manner near the antenna location.
- g. One POS data outlet and one isolated ground duplex receptacle in a weatherproof flush box with a gasketted cover, located directly below each outdoor remote antenna provision at the front of the store. Mounting height 84" AFF to discourage tampering.
- h. One POS data outlet at the Deli-Bakery cash register, mounted below the countertop.
- 5). Default Locations of PC LAN Outlets. (All outlets are dual cable, dual RJ45 jack unless noted otherwise):
 - a. Cashier's Office (Room 4):

3 ea. 3 ea.

b. Store Director's Office (Room 12):

DeCA COMMISSARY DESIGN GUIDANCE 27 15 00 - COMMUNICATIONS HORIZONTAL CABLING

c. d. e. f.	Customer Service Office (Rooms 6): Store Administrator Office (Room 18): Store Manager's Office (Room 19): CISIC Room 31B:	3 ea. 3 ea. 3 ea. 3 ea.
g. h	Administrative Area (Room 15): Training Room (Room 17):	3 ea., plus 1 per work station
i.	Contract Stocker Storage (Room 30):	3 ea.
j.	Receiving Manager's Office (Room 35):	3 ea.
k.	Produce Manager's Office (Room 45):	3 ea.
I.	Meat Manager's Office (Room 57):	3 ea.
m.	Vendors Room (Room 84):	3 ea.
n.	Perishable Manager's Office (Room 87):	3 ea.
0.	Semi-Perishable Manager's Office (Room 88):	3 ea.
р.	Zone Manager's Office (Room 89):	3 ea.
q.	Management Support Center (Room 90):	3 ea.
r.	Medical Food Inspection Office (Room34):	3 ea.
s.	Receiving (Room 36):	3 ea.
t.	Receiving Doors:	1 at ea. door
u.	Other Offices:	3 ea.
٧.	RMCS Terminal location:	1 ea.
w.	Key Control Cabinets (Usually Two in a Store)	1 ea
Х.	Time Clock(s) (verify location and qty)	1 ea.

- 3. ADP Cabinets
 - A. Main ADP Cabinet in CISIC Room 31A, to house the ISP and Cisco Routers. Free-standing with doors, 84" high, 24" wide, 30" deep; single cabinet for small stores, double cabinet for medium to large stores.
 - B. Sub Hub Cabinet(s) If commissary size and configuration result in some data outlets exceeding the 300' CAT6 cable length limitation to the Main ADP Cabinet, one or more Sub Hub cabinets will be required to serve the more distant outlets with less than 300' of cable. Cabinet is wall-mounted, 48" high, 23" wide, 20" deep. One Sub Hub is usually enough. A Sub Hub room will be necessary to provide security and environmental conditions for the Sub Hub equipment.
 - C. Refer to Design Standards 27 15 00-06, 27 15 00-07, 27 15 00-08 for CISIC and Sub Hub Room layouts.
- 4. GF/GI Equipment: (NIC not in the construction contract)
 - A. In-lane Terminal (cash registers) with Dyna Keys, Customer Displays, Magnetic Strip Readers, Scanner-Scales, Receipt Printers, UPS, and Customer-Activated Terminals.
 - B. Checkstands.
 - C. Power poles and lane lights associated with checkstands.
 - D. Associated POS equipment (Network Printers and Data Entry Terminals DETs).
 - E. In-Store Processors (ISPs 1 and 2) with UPS.
 - F. Wireless LAN Wavepoint Controllers and Air Defense Sensors.
 - G. PC LAN equipment.
 - H. Processors.
 - I. Routers and Electronic Switches.
- 5. <u>CF/CI Systems and Equipment</u>: (included in the construction contract)
 - A. Building electrical service.
 - B. Generator/transfer switch.
 - C. Panels.
 - D. Conduit.
 - E. Cable Tray Systems.
 - F. Power Poles except at Checkstands and Remote Attendant Stations.
 - G. Receptacles.
 - H. Cash register power.
 - I. Cables for PC LAN and POS data.
 - J. ADP Equipment Rack Cabinets.
- 6. Standby Electrical Generator and Power Distribution:

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- A. Provide diesel-driven standby generator. Refer to Design Standard 27 15 00-01. Provide with suitable weather enclosure, fuel tank sized for at least 48 hours at full load fuel supply (72 hours in remote areas with unreliable power), and residential exhaust silencer.
- B. Provide a power conditioning type transformer with voltage regulation if utility conditions provide poor incoming voltage regulation, or if long feeders in an existing commissary being remodeled would result in poor regulation. Size generator to serve following loads during power failures:
 - 1). POS equipment:
 - a. Cash register/scanner-scales equipment.
 - b. In-Store Processors (ISPs).
 - c. Printers.
 - d. POS and LAN signal-handling devices.
 - e. Data Entry Terminals (DETs).
 - f. Switches/Hubs (when required).
 - 2). PC LAN central equipment.
 - 3). Front doors in sales area, i.e. front automatic entry and exit doors (1 circuit per vestibule).
 - 4). Communications, i.e. telecommunications systems:
 - a. Telephone.
 - b. Intercom.
 - c. Paging.
 - 5). Checkout stands, full service:
 - a. Conveyor belts (1 checkout stand per circuit).
 - b. Lane lights on Tele-Power Poles at checkout counters: Provide circuit(s) in accordance with load, separate from the conveyor belt circuit.
 - 6). Emergency lighting fixtures and exit signs. Connect to line side of standby ballast or battery.
- C. Fire Alarm, Mass Notification, and Security Alarm systems. Connect to line side of standby battery charger.
- 7. <u>Dedicated Feeder for POS System Panel:</u> extend from emergency service (on load side of the automatic transfer switch) through a dedicated step-down transformer located close to load. Provide Surge Protective Device at the head end of this feeder.
 - A. Secondary: 120/208 volt, three-phase, 8-wire (three phase conductors, three AC neutral conductors, one insulated and isolated ground conductor, and one conventional green equipment ground conductor).
 - B. Insulated/isolated ground conductor: Connect solidly to ground at step-down transformer and also bond to service ground at main switchboard. (See Design Standard 27 15 00-02).
 - C. Conventional equipment ground: Solidly connect to ground at step-down transformer.
 - D. Feeder: Run in conduit or wire duct that contains no other wiring. Size in accordance with National Electrical Code except insulated and isolated ground shall be stranded #2 AWG (minimum) for feeder lengths up to 300' and #1/0 AWG (minimum) for feeders over 300' long.
- 8. POS System Panel (clean power):
 - A. Provide power to:
 - Checkout POS equipment (registers, printers, scanner/scales) prewired J-box on checkstand. (Label wires to be connected by checkstand installers. Leave coiled and tiewrapped at the cable tray above each location, sufficient length to reach the floor plus 10'.)
 - 2). POS Equipment at Deli-Bakery, and at Outdoor Sales locations(s).
 - 3). CISIC Main ADP Cabinet.
 - 4). Sub Hub ADP cabinet (if provided).
 - 5). Printer.
 - 6). Data entry terminals.
 - 7). Cashier's terminal.
 - 8). File maintenance terminal(s).

- 9). Courtesy desk terminal.
- 10). Credit terminal.
- 11). PC LAN equipment.
- 12). Electronic scales in preparation, service and staging areas.
- B. Rating: 100 amperes, 120/208 volts, three phase.
- C. Features:
 - 1). 6-wire.
 - 2). Insulated solid neutral.
 - 3). Insulated isolated ground bar.
 - 4). Conventional equipment ground bar (not insulated).
 - 5). Flush mounted (Ensure wall thickness sufficient to accommodate flush panel).
 - 6). Cash register sub panel of same type may be located closer to cash registers (if desirable) and fed from POS system panel.
 - 7). <u>Coordination</u>: Carefully design and install electrical support for cash registers and POS equipment items to ensure proper operation of this sophisticated system. Provide close coordination of design with the POS equipment manufacturer (NCR) and rigorous construction inspection. Connect ONLY the items listed below to the POS system panel. For each, provide a 20 ampere, 120 volt, 4 wire isolated ground branch circuit and isolated ground (IG) duplex receptacle(s) as indicated (Reference: Hubbell IG5362).
 - a. <u>Cash register, receipt printer, scanner/scale unit</u>: Provide one circuit for each installed and future check stand (full service or self-checkout) for "clean" power to cash registers and peripherals (<u>NOT</u> to include conveyors or lane lights). For full-service checkout stands, self-checkout (SCO) "Fast Lane" checkout stands and Remote Attendant station (RAS), leave the branch circuit conductors coiled and labeled, tie-wrapped to the cable tray or ceiling supports directly above the drop point. The coil must include sufficient length to reach the floor plus 10'. Leave approximately 10' additional slack conductors in the cable tray to allow for minor relocations of all checkout stands of either type.
 - b. <u>Provide one isolated ground receptacle at the Deli-Bakery cash register, mounted below</u> <u>the countertop.</u>
 - c. <u>CISIC Main ADP Cabinet</u>: Provide one receptacle inside each cabinet, for the rackmounted In-Store Processors, monitors, hubs, modems, and communication bridges. Where the Main ADP Cabinet consists of two cabinets bolted together, provide two receptacles.
 - d. <u>Sub Hub Cabinet.</u> For each Sub Hub cabinet required, provide one receptacle inside the cabinet.
 - e. <u>Laser Printer.</u> Provide one receptacle on a dedicated circuit (usually adjacent to the CISIC Main ADP cabinet).
 - f. <u>Data Entry Terminals.</u> Provide one circuit for each two units (2 receptacles). (Generally 1 to 3 data entry terminals are provided verify with DeCA project manager.)
 - g. <u>Cashier's Terminal.</u> Provide one for cashiers' terminal in Cashier's Office. May be connected to cash register sub panel, if one is provided in Cashier's Office.
 - h. <u>Cash Management System.</u> Provide one circuit with two receptacles for coin counter, bill counter, MICR encoder, and processor equipment at Cash Management System location in Cashier's Office.
 - i. <u>Wireless Cash Register.</u> Provide two or 3 receptacles, one at each "remote" location used for outdoor sales and one at "in-store" management support center location designated for wireless register. "In-store" receptacle may share circuit with not more than one other terminal or similar POS device connected. Outdoor remote locations shall have weatherproof-while-in-use cast-metal flush box and cover [see paragraph 2.B.4.g, above].
 - j. <u>Courtesy Desk Terminal</u>. Provide one receptacle. May be on common branch circuit with one other equivalent POS terminal or device.

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- k. <u>Electronic Scales in Service/Preparation Areas.</u> Provide one or more circuits as needed to provide power to electronic scales.
- I. <u>Miscellaneous Additional POS Equipment Items.</u> Provide receptacles as required. May be on common branch circuit with one other equivalent POS terminal or device.
- 9. <u>Miscellaneous Emergency Circuit Panel (dirty power)</u>:
 - A. Provide 100 ampere, 120/208 volt, three phase 5-wire panel to provide power to branch circuits supplying:
 - 1). Automatic entry/exit doors.
 - 2). Check stand conveyor belts and fans.
 - 3). Check stand lane lights.
 - 4). Emergency lights.
 - 5). Telephone PABX Switching Unit.
 - 6). Intercom equipment.
 - 7). Paging amplifier.
 - B. Provide separate feeder from transfer switch to panel through step down transformer, with three phase conductors, insulated neutral conductor, and green equipment ground conductor.
 - C. Panel shall not require isolated insulated grounding, or shielded transformer.
 - D. Provide circuit breakers as required for the listed loads, and 25% spares.
 - E. Do not connect equipment or services, other than those listed above or specifically identified by the DeCA Project Manager to this panel.
 - F. Refer to Design Standards 27 15 00-03 for check stand power circuit information, and design Standard 27 15 00-02 for Emergency Power system configuration.
 - G. Check stands are Government Furnished and Government Installed (via contract with IBM). Installed in conjunction with major and minor construction projects.
 - H. Full-service check stand conveyor and fan branch circuits shall serve one check stand each, based on a 12.0-ampere load for each stand. Wiring must be left coiled and labeled, tie-wrapped to the cable tray or ceiling supports, for connection by the checkstand installers. Coiled length must be sufficient to reach the floor plus 10'. Leave additional slack of approximately 10' in the cable tray for future relocations. Diversity load factor with multiple stands: generally on the order of 0.50. SCO "Fast Lane" stands and RAS do not require a "dirty power" circuit, as they have no conveyor belts.
 - Install all wiring for all installed and future check stands in the cable tray. Leave the wiring coiled and labeled, tie-wrapped to the cable tray or ceiling supports, sufficient length to reach the floor plus 10'. Leave approximately 10' additional slack conductors in the cable tray to allow for minor relocations. Tape, identify, and secure conductors for future check stands at each end for future use.
- 10. <u>Power construction plans and specifications</u>: Show the locations and connections for all the required electrical power outlets, panelboards, transformers, generator, contactors and switches on the drawings, as well as any details clarifying the methods and scope of the work. If Design Standards from this DeCA Commissar Design Guidance are used in the drawings, revise and adapt them to the site-specific job requirements and remove all general design guidance intended for designers. Provide specifications to establish the kind and quality of all components and wiring, based on current DeCA guide specifications edited to include specific requirements of this project.
- 11. <u>Data and Telecomm Cables.</u> Construction contractor shall furnish, install and terminate all data and telecomm cables.
 - A. POS System: CAT6, color blue. Terminate on CAT6 patch panel in ADP Cabinet; RJ45 jack at remote outlet end.
 - B. Wireless LAN Access Point System: CAT6, color yellow. Terminate on CAT6 patch panel in ADP Cabinet; RJ45 jack at remote outlet end.
 - C. PC LAN System: CAT6, color green. Terminate on CAT6 patch panel in ADP Cabinet; RJ45 jack at remote outlet end. User terminal outlet should be combined with a telephone outlet under one cover plate, where they occur at the same location. Color code shall identify the jack type.
- D. Telephone System: CAT6, color gray. Terminate on punch down blocks at telephone terminal cabinet; RJ45 jack at instrument outlet. User terminal outlet should be combined with a PC LAN outlet under one cover plate, where they occur at the same location. Color code shall identify the jack type.
- E. Scale System: Scales shall have wireless connections.
- F. Maximum length of CAT6 data cable to any outlet shall be 295'. Any outlet more than 295' cable length from the CISIC Main ADP Cabinet must be run to a Sub Hub Cabinet located within the 295' limit. Telephone CAT6 cable shall similarly be limited to 295' from outlet to telephone main board or sub-distribution board.
- G. Each Sub Hub Cabinet shall be connected to the CISIC Main ADP Cabinet by 12-strand Multi Mode fiber optic cables installed inside an orange inner duct terminated with LIU's, and an additional two CAT6 cables. Provide RJ-45 jack outlets for CAT6 inside ADP cabinet at each end.
- H. The CISIC Main ADP Cabinet shall be connected to the main telephone board by 12-strand Indoor Multi-Mode/Single-Mode fiber optic cable installed inside a yellow inner duct terminated with LIU's, and an additional three CAT6 cables. Provide RJ-45 jack outlets for CAT6 inside ADP cabinet and terminate on main telephone backboard with a 10' coil.
- 12. Cable Trays:
 - A. Provide suspended cable trays above the checkout stands, self-checkouts, and monitor stations for checkout stand power, intercom, telephone, alarm, and data wiring. Use separate cable trays, or divided cable tray, for power and communications If a lay-in ceiling is available, locate the cable tray above the ceiling; if the ceiling is an open type, locate the cable tray high as possible while avoiding conflicts with HVAC ductwork Extend data cable tray to the CISIC room and turn tray down to the top of the Main ADP Cabinet. Extend telephone/voice cable tray to the CISIC room and turn tray down to the top of the Main Telephone Back Board. Size each tray (or portion of a multi-compartment tray) per NEC for the conductor load (based on a separate MC cable per branch circuit) plus 25%.
 - 1). Specify solid-bottom non-ventilated steel cable trays with ventilated hinged cover, to provide magnetic and electrostatic shielding.
 - 2). Specify "C" shaped hanger brackets to permit lay-in wiring.
 - 3). Specify steel divider barrier between power and communications part of cable trays.
 - B. Provide suspended cable trays running perpendicular to and above gondola shelving for power (and communication wiring if required) within gondola shelving. Refer to Design Standard Plate 26 27 26-02 and 26 27 26-03.
 - C. Cable trays may optionally be used elsewhere throughout the building for power, alarm, data and telephone wiring, where it is economical to do so.
- 13. <u>Power Poles:</u> The checkstand installer will provide a dual-service power pole at each check stand to conduct power and communication cables from the cable tray to the check stand, install the conductors in the power pole, and connect devices in the checkstand. Connections at the cable tray shall maintain separation between power and communications cables.
- 14. Data Outlets.
 - A. Each data outlet shall consist of two RJ45 jacks fed by two runs of CAT6 cable to the ADP Cabinet. The jacks shall be flush mounted in the wall, vertically oriented; except at checkstands jacks may be mounted in a power pole (or floor stub-up where underfloor ducts are used).
 - B. Mounting heights (AFF), unless noted otherwise:
 - 1). POS:
 - a. Between 6" 30" above floor on power poles.
 - b. 12" 16" above floor on walls; or 8" above counter tops; match height of adjacent duplex receptacles; or in modular furniture signal wireway.
 - c. Wireless LAN: 10' in Sales Area; 10' in Receiving/Staging.

- 2). PC LAN: 12" 16" above floor on walls; or 8" above counter tops; or in modular furniture signal wireway. Match height of adjacent duplex receptacles. Where Telephone outlet occurs at the same location, combine the PC LAN and telephone outlets on one box cover plate. Color code the jacks to distinguish the two types.
- 15. <u>Signal Reference Ground</u>: Provide copper wire in conduit from the CISIC Room (and Sub Hub Room if provided) to the main building grounding electrode, for signal system isolated grounding. Follow National Electric Code, including Articles 800.100 and 770.93, in sizing the ground conductors.
- 16. <u>Systems Construction Plans and Specifications:</u> Show the locations and connections for all the required data and telephone outlets, terminal panels, ADP cabinets, backboards, conduits, cable trays, and cables on the drawings, as well as any details clarifying the methods and scope of the work. Include a project-specific one-line schematic diagram of data and telephone wiring systems. If Design Standards from this DeCA Commissary Design Guidance are used in the drawings, revise and adapt them to the site-specific job requirements and remove all general design guidance intended for designers. Provide specifications to establish the kind and quality of all components and wiring.
- 17. <u>Wall Shelf with Outlet Strip</u>: Provide to accommodate storing and recharging HHTs (PDEDs) in the CISIC room.
 - A. Provide shelf 12" deep by 4'-0" long at 54" AFF
 - B. Provide outlet strip (Multi-outlet Assembly, single receptacles, spaced 6" O.C.) full length of shelf at 60" AFF on single 20-ampere 120-volt circuit.
- 18. Building Service cables:
 - A. Size of telephone service copper cable and fiber optic cable according to store size.
 - 1.) 10,000 sf 25 pair, 12 strands of single mode fiber.
 - 2.) 20,000 sf 50 pair, 12 strands of single mode fiber.
 - 3.) 30,000 sf 50 pair, 12 strands of single mode fiber.
 - 4.) 40,000 sf and larger 100 pair, 12 strands of single mode fiber.
 - B. Provide one 4" conduit for copper cable, one spare 4" conduit, and one4" conduit with 4 inner ducts for fiber optic cables.
 - C. A pull box may be required where the main service conduits enter the building footprint. Provide an interior 48" x 48" x 8" deep, double-door cabinet as a pull box for all conduits, just inside the building in a dry accessible space. The cables shall pass-through the box without splice, making one 360 degree loop in the box. Provide this pull box if the CISIC room is on the second floor, or if the conduit path inside the building is more than 75 LF or would require more than one 90 degree ell to reach the telephone terminal board.
 - D. Provide all telephone system backboards, cabinets, conduits, j-boxes, wire, jacks, and cover plates for GF/GI telephone system. Provide data systems cabinets, conduits, j-boxes, wire, jacks, and cover plates for POS and PC LANS. Provide facility pre-wiring. Coordinate Work of this Section with the Facility telephone switch, telephone instrument, workstation, and local area network (LAN) equipment suppliers. Coordinate the service entrance arrangement with the local exchange carrier.
 - E. Locate the main telephone backboard in the main CISIC Room (typically RM 31A) for installation (NIC) of GF/GI telephone PBX equipment. Terminate the telephone building service conduits and cables at this board. Terminate the main building service cable on a protected terminal. Provide terminals to terminate all telephone branch wiring (except as may be run to a sub terminal) at this board. Provide two duplex receptacles on emergency generator power at this board. Run a #6 AWG minimum dedicated signal reference ground wire from this board to connect to the main electrical service grounding point. The total impedence of this ground conductor must be less than 0.25 ohm. Additionally, the main single-point ground for the building must have less than 5 ohms resistance to remote earth. If a Sub Hub is provided, provide a telephone sub terminal in the Sub Hub Room. Refer to Design Standard Plates.

FIGURE 1: FSE junction box with a 12" long by 3/4" NSF Plain End PVC conduit (gray) installed from the outside (attic) of the freezer/chill storage to the inside (ceiling) Only 2" of the PVC conduit will be



DeCA COMMISSARY DESIGN GUIDANCE CATIONS HORIZONTAL CABLING

exposed above the outside (attic). The remaining 10" will be fastened securely to the inside wall of the freezer/chill storage and will terminate inside a 3/4" two gang Type FSE box.



FIGURE 2: Each freezer and chill storage requires a 400-Series Cable with a RP-TNC plug on one end and a RP-TNC jack installed on the other end. The RP-TNC jack connector end of the 400-series cable will be installed into the 12" long by 3/4" NSF Plain End PVC conduit and terminate inside the 3/4" two gang Type FSE box installed in the freezer/chill storage. No more than 3" of the 400-Series Cable will be exposed inside the Type FSE box.



FIGURE 3: The RP-TNC Plug connector end of the 400-series cable will terminate at the closest wireless data outlet as indicated on the floor plan. No more then 1-1/2' of the 400-Series Cable will be exposed at the wireless data outlet location. The cable will be installed above the freezer, fastened down at 12" intervals and any excess cable will be coiled above the entry point into the freezer. The 400-series cable will not be installed in conduit, except the 12" conduit length through the cooler ceiling. A moisture-impervious seal is required inside

and outside of the conduit installed in the freezer/chill storage.

END OF SECTION





























MODEL 152



REV.

Division 28 – Electronic Safety

DESIGN CRITERIA

- 1. Related Sections: Section 26 05 00 applies.
- 2. Summary: Provide commercial grade Intrusion Detection System (IDS) with duress (hold-up) switches. Detection devices shall include duress (hold-up) switches, magnetic switches at all accessible perimeter doors, windows, and roof hatch; motion detectors, and a vibration-sensing device for the cash safe. Coordinate complete design with Host Military Installation security, communications, and engineering personnel to ensure that all requirements unique to the Military Installation are considered. System operation shall be operator-programmable so as to selectively activate or de-activate specific system alarm points. Alarm annunciation shall identify each reporting alarm point separately at the monitoring office. Provide an alarm transmission interface with the Host Military Installation's municipal-type alarm network; or, if the Host Military Installation does not monitor alarms from tenant facilities, provide a one-year monitoring contract with a local commercial alarm monitoring service provider. All circuits shall be electronically supervised. Contractor shall be responsible for coordinating the complete installation.
- 3. Source: Compatible with the Host Installation security monitoring systems.
- 4. Zoning at Funds Storage Areas: Install alarms on funds storage rooms (typically the cashier's office), safes and vaults on separate zones which can be activated or deactivated separately from other IDS zones in the alarm system. Locate access control for this zone in the funds storage area.
- 5. Perimeter: Magnetic switches on all exterior doors, hatches, and operable windows. Include roof hatch and trash compactor access. Provide a magnetic switch on the Cashier's Office door (on the funds storage zone).
- 6. Motion detectors: Cover the interior of the cashier's office and safe room.
- 7. Vibration-sensing switch: Provide at the funds storage safe.
- 8. Duress (Holdup) Switches: Provide guarded pushbuttons at the following locations:
 - A. Every second check stand, but not less than two total.
 - B. Cashier's Office near front desk.
 - C. Cashier's Office at cash safe.
 - D. Cash Counting Room.
 - E. Customer Service Counter.
- 9. Access keypads: Provide at eye level, with self-closing cover, at two locations:
 - A. Main employee entrance.
 - B. Cashier's Office door within Cash Counting Room, not in Checkout Area.
- 10. Coordination: Coordinate with the Host Military Installation's security organization. Determine the brand and model of central alarm monitoring panel in use, and the method of transmission required; i.e., telephone dialer, radio transmitter, or dedicated signal circuit, etc. Ensure that the commissary security system alarm will properly activate the Host Military Installation's municipal type central security alarm system, and transmit to it compatible and properly coded signals. Determine whether the Host Military Installation has an alarm service contract that will cover the commissary, or if the commissary might advantageously use the same contractor for alarm service. Specify the commissary alarm transmitter to be 100% compatible with the Host Military Installation's central alarm system panel.
- 11. Intrusion Alarm Control Unit: Provide at environmentally controlled (40 deg 86 deg F, R.H. below 50%) CISIC Room [or other location as designated by the Government]. Connect transmitter to the designated signal circuit (or set radio frequency, for radio type) determined in coordination with the Host Military Installation.
- 12. Deviations from the above criteria may be considered, on request of the DeCA Region Director after coordination with Region security specialists.
- 13. Emergency Exit Door Day Alarm (independent of IDS system): Refer to Criteria Section 08 71 00. Electrical must provide 120 volt branch circuit and 120:12 volt transformer at each location to power the Detex alarm units. For renovations/expansions where existing devices are not in good condition and/or not being properly maintained, replace with 120 volt unit(s) and provide power to unit(s).

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- 14. Alert Klaxons: Do not provide.
- 15. Project Drawings: Show on the systems floor plan proposed locations of all panels, motion detectors, magnetic switches, vibration detectors, duress switches, access keypads and other components of the IDS system, as well as telephone and/or data connection points if needed for alarm transmission. Include a schematic diagram to identify proposed connections and zoning (or partitioning) of the system.
- 16. Project Specifications: Edit the DeCA Guide Specification Section 28 16 00, Intrusion Detection, to suit Host Installation requirements and specific details and conditions of this project.

END OF SECTION

DESIGN CRITERIA

- 1. Related Sections: Sections 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL and 27 51 16 PUBLIC ADDRESS AND MUSIC SYSTEMS.
- 2. Summary: When required by individual project guidance, provide a video surveillance system with cameras, monitoring station, and connecting wiring to provide surveillance of the locations identified. The monitoring station is to have recording capability, and ability to display multiple camera views simultaneously. Provide fixed public monitors at other locations than the monitoring station as required in individual project guidance.
- 3. Project Drawings: Show on the systems floor plan proposed locations of all cameras, monitors, monitoring station and other components of the video surveillance system. Include a schematic diagram to identify proposed connections of the system. The designer shall obtain specific guidance on cameral locations from the DeCA security manager. The designer is responsible to coordinate camera locations with other obstructions including hanging Décor elements.
- 4. Project Specifications: Edit the DeCA Guide Specification Section 28 23 00, Video Surveillance, to suit specific details and conditions of this project.

END OF SECTION

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DESIGN CRITERIA

- 1. Related Sections:
 - A. Division 08 Section Door Hardware for Delayed Exit Door Alarm/Lock
 - B. Division 21 Fire Suppression Sprinkler Systems
 - C. Division 23 Section Heating Boilers
 - D. Division 26 Section Common Work Results for Electrical
- Scope: This section covers a complete fully-addressable Fire Alarm/Mass Notification System with a reporting system compatible with the base-wide network in accordance with Referenced Standards with system and equipment listed by U.L. and with approvals by Factory Mutual. Per UFC 3-600-01 Section 5-5.1, Non-Addressable fire alarm systems are to be replaced when a project includes fire alarm work.
- Referenced Standards: NFPA 70 National Electrical Code, NFPA 72 National Fire Alarm Code, NFPA 90A Installation of Air-Conditioning and Ventilating Systems, NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations, NFPA 101 Life Safety Code, UFC 3-600-01 Fire Protection Engineering for Facilities, UFC 4-021-01 Design and O&M: Mass Notification Systems, UL 2572, ABA Accessibility Standard for Department of Defense Facilities as adopted by the Deputy Secretary of Defense memorandum dated October 31, 2008.
- 4. Design shall coordinate with the Host Military Installation fire and security, communications, and engineering personnel to ensure system is compatible with the existing system and that any requirements unique to the Military Installation are considered. Determine the identity of the site Authority Having Jurisdiction (AHJ), and ensure that the design is acceptable to the AHJ.
- 5. Fire Alarm/Mass Notification Systems use a combination of synchronized strobe lights and speakers for voice messages to alert occupants of any emergency or threat condition. See the most recent version of UFC4-021-01 and Guide Specification 28 39 00 for additional details. Read the UFC for Mass Notification carefully and coordinate design with local authorities. Each military service has unique requirements noted in the UFC. Each installation may have particular requirements for interface and testing with local mass notification systems which must be complied with. Unless the installation specifically prohibits this, the Fire Alarm and Mass Notification functions shall be a combined system controlled by a single panel.
- 6. New commissaries must include a Mass Notification System in accordance with UFC4-021-01, providing an emergency announcement capability to the entire interior and near exterior of the store.
- 7. System shall be connected to the existing Installation-Wide fire reporting system and provide interface thereto. If the Host Military Installation has an Installation-wide mass notification system, the commissary mass notification system shall be connected to it.
- 8. Commissary remodel projects shall include a mass notification system only when identified in the individual project guidance or if the value of the project exceeds 50% of the value of replacement.
- Major add / alter projects and new commissaries require Fire Alarm/Mass Notification systems to be designed by a registered Fire Protection Engineer (FPE). The FPE must be involved in the design process from the beginning. Minor modifications to existing Fire Alarm/Mass Notification systems such

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as refrigeration upgrade projects may, with prior approval of the AHJ, be designed by a registered Electrical Engineer experienced in the design of such systems. See requirements listed in UFC 3-600-01.

- 10. The Fire Alarm/Mass Notification System for all projects shall be arranged to distribute emergency messages to all commissary areas. Speakers shall be provided at all locations in the building and also around the building at entrances/exits and other outdoor areas (such as courtyards) commonly used by the building occupants.
- 11. Design Modeling: The Mass Notification shall be designed for audio intelligibility to comply UFC 4-021-01 and NFPA 72, whichever is more stringent. Analysis shall be provided to demonstrate compliance and submitted during design review.
 - A. Minimum CIS for Army and Air Force projects to be 0.8. Minimum CIS for Navy and Marine projects to be 0.7.
 - B. Per NFPA 72, Places of Assembly and Business Occupancies have an Ambient SPL of 55dBA. SPL shall be 70dBA at the minimum and no higher than 110dBA as an absolute maximum at the minimum hearing distance.
- 12. The Fire Alarm/Mass Notification System shall be interfaced with the PA / Music System so that messages initiated by the mass notification system will have priority over all other PA / Music system programs, and will automatically mute any other music, pages or announcements that might be in progress. The location of the Fire Alarm/Mass Notification Panel (FMCP) shall be coordinated with the AHJ for each project.
- 13. Fire Alarm/Mass Notification messages shall sound based on a hierarchy of message priority. Verify the message priority and voice direction that shall be programmed into the panel with the Installation or Fire Department. Messages that have a higher priority will override those of a lower priority. Non-Fire messages shall last until manually ended, or shall automatically cease after 10 minutes. Fire messages shall latch. If different colored strobes are used to differentiate fire messages and mass notification messages, the fire strobes shall remain active if a fire signal has been received. If a fire and non-fire signal is received at the panel, both strobes shall then be active and synchronized. If a non-fire message has overridden a fire message due to priority and that message has ended, manually or automatically, the fire message shall resound. Fire messages shall never automatically end.
- 14. Determine if the Host Military Installation has or is developing an Installation-wide mass notification system and the type of emergency message transmission it uses (telephone line, radio transmitter, fiber optic, etc). Include provisions for connecting to the Installation-wide system in the drawings and specifications for the mass notification system. If there is no Installation-wide system in place or in planning, make general provisions for adding the connection in the future, including an input point at the main control panel.
- 15. Fire Alarm/Mass Notification Control Panel (FMCP):
 - A. Install in an environmentally controlled room. Maintain 40°F to 86°F with Relative Humidity below 50%. Show the locations of the main panel, power supplies, strobes, and PA/Music system panel on the drawings.
 - B. Features:
 - 1). Audible and visual signals.

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- 2). Red alarm and amber trouble lights.
- 3). When alarm is activated, emits audible signal.
- 4). Permits separate manual turn-off of any audible or visual signal in store.
- 5). Resetting of the control panel must not clear the memory from being retrieved on the integral LCD display.
- 6). Back-up battery in separate enclosure.
- 7). Fully supervised circuits and devices.
- 8). Non-volatile programming.
- 9). Standby battery power:
 - a. Combined FA/MNS Both conditions must be satisfied separately:
 - (1). 48 hours under supervisory condition, plus 15 minutes in alarm.
 - (2). 60 minutes of alarm at the maximum connected load.
 - b. Fire Alarm System only: 48 hours under supervisory condition, plus 10 minutes in alarm.
- 10). RS-232-C output for remote CRTs and/or printers.
- 11). History logging: 400 events.

16. Local Operating Console:

- A. Features:
 - 1). Indicates addresses activated.
 - 2). Supervised.
 - 3). Test and drill capability.
 - 4). Microphone for live voice paging as well as a minimum of eight buttons for prerecorded voice announcements.
 - 5). Protective cover shall be transparent safety glazing, such as Lexan.
 - 6). Door shall be secured with a thumb latch or lock depending on Installation preference.
- B. Locate inside commissary near front entrance and as per UFC 4-021-01, unless otherwise directed by the Host Military Installation Fire Marshall or other AHJ.
- 17. Smoke Detectors: Use as required by NFPA 72, NFPA 101 and UFC 3-600-01, (e.g. at FMCP, Elevator Lobbies, etc.), and in certain HVAC ducts as required by NFPA 90A. Be aware of UFC 3-600-01 section 5-4.6 that cautions against detectors in non-required locations.

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- 18. Heat Detectors: Use in areas such as the top of elevator shafts and elevator machine rooms if required, and areas that require detection, do not have wet-pipe sprinklers, and the environment is not appropriate for smoke detectors.
- 19. Water Flow Switches:
 - A. Connect to FA/MNS as an alarm signal.
 - B. Provide a separate address for each flow switch.
- 20. Valve Supervisory Switches:
 - A. Connect to FA/MNS as a supervisory signal.
 - B. Provide a separate address for each supervisory switch.
- 21. Manual Pull Stations:
 - A. Readily recognizable and readily accessible.
 - B. Provide hinged covers made of clear, unbreakable plastic in areas accessible to the public. Covers shall have the word "FIRE" factory imprinted in red letters. Covers shall not have audible sounders when lifted as this may give the impression that a fire alarm has sounded when it has not.
 - C. Provide at exit doors and space throughout the store as required by UFC or NFPA standards.
- 22. Wireless interior fire alarms are not normally permitted. Special situations that would benefit from wireless devices this must have prior authorization from the DeCA Project Manager. Devices used must use a "Mesh Net" or a "Class A" style network where the loss of one device does not prevent communication with downstream devices.
- 23. Audible and Visual Notification:
 - A. Comply with NFPA 72 for spacing and audibility requirements.
 - B. Use Clear strobes, marked "ALERT" with an integrated speaker.
 - C. Strobes shall be synchronized if they are in the same field of view.
- 24. Interlock exhaust hood fire suppression systems with fire alarm, hood fan, electrical equipment below hood, and fuel source per NFPA 96.
- 25. Fan Shut-Down Relays: Provide shut-down relays for HVAC Air Handling Units per NFPA 72.
- 26. High-Volume Low Speed (HVLS) Fans: The FMCP shall stop all HVLS fans immediately upon receipt of a water flow alarm. A Class "D" circuit or Output Modules shall interlock the fan controller with the fire alarm.
- 27. Delayed Egress Locks: Provide contacts and wiring to Delayed Egress Locks on emergency exit doors to bypass the delay when the Fire Alarm system is in alarm status.

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- 28. Contractor shall test complete Fire Alarm/Mass Notification system in the presence of, and to the satisfaction to, the Host Military Installation Fire Marshall or other AHJ. Demonstrate system operation at final inspection.
- 29. Training on system operation for commissary and fire department personnel by installing contractor is required.
- 30. Project Drawings: Show on a dedicated floor plan proposed locations of all panels, detection devices, notification devices and other components of the fire alarm system and Mass Notification System (if provided or existing); show telephone and/or data connection points for alarm transmission if applicable.
- 31. Project Specifications: Edit DeCA Guide Specification 28 31 76, Mass Notification Systems, for the requirements and conditions of the individual project.



Division 31 – Earthwork

DeCA COMMISSARY DESIGN GUIDANCE 31 00 00 EARTHWORK

DESIGN CRITERIA

- 1. Related Sections: See related Division 31 Design Criteria.
- 2. Earthwork Observation and Testing: The Contractor is required to employ the services of a qualified geotechnical testing consultant to ensure that the work performed is in accordance with the Contract Plans, Specifications, and Project geotechnical report. (This differs from the IBC requirement that the inspectors be engaged by the Government or the Designer.)
- 3. Prepare Contract Documents in accordance with the project geotechnical report recommendations, and identify earthwork anticipated to be necessary to construct the project. Include soil boring logs from the geotechnical report in the contract plans. Should the designer wish to vary from the recommendations in the geotechnical report, the proposed variation must be submitted to the project geotechnical engineer for review and comment, and approved by DeCA prior to incorporation into the Contract Documents.
- 4. The contract documents should accurately reflect any phasing required in the execution of the earthwork operations to allow for installation and maintenance of proper erosion control measures or requirements that limit disturbance to specific areas during various phases of the project.
- 5. If actual field conditions require additional excavation (beyond what is indicated in the Contract Documents) due to the presence of unsatisfactory subgrade material, this work shall be treated as a differing site condition in accordance with specifications.
- 6. The designer shall ensure that the Earthwork specification accurately reflects the use of locally available materials and construction practices. The State Department of Transportation Specifications and design guides are a readily available source of local information which can be used by the designer should the project geotechnical report not fully address a specific situation or required material.
- 7. Areas disturbed by earthwork operations shall be stabilized as soon as possible after the area is brought to finished grade. No untreated runoff from disturbed areas should ever be allowed to leave the site.

DESIGN CRITERIA

- 1. Related Sections: See related Division 31 Design Criteria.
- 2. Site Clearing Specification needs to be supplemented with a construction staging plan when existing buildings and structures, parking facilities, roadways, pedestrian facilities, etc., that are impacted by the proposed construction need to remain in service during construction.
- 3. This Section includes details regarding existing utilities to be taken out of service. Contract Documents need to specifically indicate if these utilities are to be removed, otherwise the contractor has the option to remove them or abandon them in place.
- 4. The A/E is required to prepare a site specific soil erosion and sedimentation control plan in accordance with local agency policies and requirements. This plan should be submitted to the reviewing agency during design for review and comment. It shall remain the responsibility of the Contractor to obtain approval of the erosion control plan, and any modifications which the Contractor chooses to make to the plan.
- 5. Because of the time required to obtain certain site construction related environmental permits required on projects, it is critical that the A/E initiate all discussions involving Installation personnel, as well as other review entities having permitting jurisdiction, during the design phase. Whenever possible, permits should be submitted during project design, rather than waiting for the Contractor, because of the time often required for the permit approval process. In some cases this will not be possible when the permit applications require Contractor information that is unknown until the construction contract is awarded. Additionally, many permit applications have fees associated with them, which cost should be included in the Construction Contract and paid by the Contractor.

DeCA COMMISSARY DESIGN GUIDANCE 31 31 16 TERMITE CONTROL

DESIGN CRITERIA

- 1. Related Sections: See related Division 31 Design Criteria.
- 2. This Section specifies treatments to prevent future termite infestations by applying chemical termitcides to the soils under and around susceptible structures during construction.
- 3. This Section specifies only non-repellent type termiticides.
- 4. This Section does not specify sheet metal termite shields, borates, bait-station systems, metal mesh barrier system, or wood preservative treatment.
- 5. This Section also does not specify treatment for termite-infested existing structures, except where additions are made to existing structures.
- 6. Edit application requirements to suite project conditions.

Subterranean Termite Zones of North America



Division 32 – Exterior Improvements

DESIGN CRITERIA

- 1. The Design Criteria is applicable for Division 32 Sections Hot Mix Bituminous Pavement, Concrete Paving, and Concrete Paving Joint Sealants.
- 2. The following Regulatory Requirements shall be utilized in the design:
 - a. U.S. Department of Transportation, Manual on Uniform Traffic Control Devices (MUTCD).
 - b. Applicable state and local authority standards and design guidelines.
 - c. Comply with ABA Accessibility Standard for Department of Defense Facilities as adopted by the Deputy Secretary of Defense memorandum dated October 31, 2008.
 - d. Department of Defense Antiterrorism Minimum Construction Standards for Buildings, UFC 4-010-01 which includes minimum standoff distances.
 - e. Civil Engineering, UFC 3-201-01.
- 3. Internal Roads and Parking Lots. The number of parking spaces shall be as required by DeCA Parking Analysis.
- 4. Parking Space Dimensions:
 - a. 9'-0" wide, nominal.
 - b. 18'-6" depth, nominal.
 - c. 16'-0" depth on perimeter spaces where overhang does not encroach on sidewalk.
- 5. Parking and Circulation Aisle Geometry:
 - a. 90 degree parking spaces with two-way parking aisles are preferred. Centerline to centerline width for a double loaded parking bay with two-way aisles shall be 63'-0" minimum.
 - b. 60 degree angle parking with one-way parking aisles shall be allowed only where specific site conditions make angle parking preferable. Centerline to centerline width for a double loaded parking bay with one-way aisles shall be 53'-0" minimum. Conditions which may warrant inclusion of angle spaces include:
 - 1. Existing adjacent parking lots where angle spaces are utilized, especially if the lots are to be connected.
 - 2. Previous satisfactory experience with angled parking spaces at existing retail facilities on the Installation.
 - 3. Site specific conditions that would result in better utilization by use of angled parking spaces.
 - 4. A significant number of older patrons that may have less difficulty maneuvering in and out of angled spaces.
 - c. Add at least 2'-0" to width of end rows adjacent site obstructions such as buildings.
- 6. Locate customer parking spaces such that a maximum number of spaces lie within a 300-foot radius of the main customer entrance.
- 7. If possible, provide a separate parking lot for employees, located proximate to the building's Administrative Entrance. Provide a sidewalk connection from the lot to the Administrative Entrance.

- 8. Provide striping and signage in accordance with applicable criteria. Traffic control signs shall conform to the requirements of the U.S. Department of Transportation, Manual on Uniform Traffic Control Devices and applicable state and local authorities.
- 9. Control drainage with gentle swales and an underground drainage system.
 - a. Locate water receiving structures no closer than 100'-0" from front of store.
- 10. The minimum standoff distance provided from the face of building to the installation perimeter shall be 20 ft. Where there is no clear zone outside the installation perimeter, the minimum standoff distance is 50 ft. (UFC 4-010-01 latest edition, Standard 1).
- 11. Compliance with the standoff distance requirements for parking and roadways in Appendix B and C of UFC 4-010-01 (latest edition) and UFC 4-020-01 shall be required if one of the following is true:
 - a. The facility has an identified Design Basis Threat (DBT) and a level of protection (LOP). The ATFP planning team for the installation and the building being designed/renovated shall determine if the facility has an identified DBT and LOP, and notify the AE of their findings. When a project has an identified DBT and LOP, the building shall be designed to specifically counter the identified DBT(s) and provide the required LOP, as well as the baseline requirements of the current version of UFC 4-010-01, whichever is more stringent. The building is not required to comply with additional requirements in UFC 4-010-01 Appendix B, (latest edition) and UFC 4-020-01 that are unrelated to countering the identified DBT.
 - b. The facility is located outside the Installation Perimeter as defined in UFC 4-010-01. Installation Perimeter is now defined as "any demarcation identifying the limit of DoD property and directly or indirectly indicating that unauthorized access is prohibited".

It will be critical for projects that fall within either of these categories to have a clear assessment and determination established of the DBT and LOP for the facility prior to design start.

- 12. Sidewalks:
 - a. Provide walkways for pedestrian access to and from parking areas and roadways adjacent to the site.
 - b. Make street walks minimum 4'-0" wide when not located directly adjacent to a roadway or curb. When placed continuous with curb or roadway, increase the sidewalk width to a minimum of 6'-0". The maximum curb height is 6" where a sidewalk placed along the back-of-curb.
 - c. Typical Sidewalk Cross Section: 5" non-reinforced concrete placed on 2" aggregate bedding. Provide a minimum cross slope of 1.0% and a maximum 2.0%.
- 13. Front Entry Pedestrian Access:
 - a. Provide continuous curbless concrete pedestrian transition ramp along the entire pickup/drop-off lane to allow the smooth transition of grocery carts. Slope pedestrian area immediately in front of the store sufficiently for positive drainage and feather to join the parking surface with flush joint.
 - b. Provide additional points of curbless access along the entire front of the building in order to accommodate strollers and shopping carts to all parking spaces within the customer parking area, which may include depressing significant lengths of curb. Bollards or some other form of delineation should be provided to restrict vehicles from driving onto the sidewalk where no barrier curb is provided.
 - c. Provide appropriately designed, properly spaced precast decorative concrete site bollards 14" diameter by 24" high to provide definition for the front area from traffic full along the transition ramp. Space bollards at 6'-0" o.c. and locate the face of the bollard a minimum of 12" behind the back of

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curb. An alternative bollard design can be used if requested by the Installation and approved by DeCA.

- 14. Provide clear pedestrian orientation and direction, utilizing variance in pavement texture and/or color, strategic location of planters and bollards, and appropriately designed signage.
- 15. Accessibility:
 - a. Provide appropriately marked barrier-free access to the building.
 - b. Locate required number of accessible parking spaces on the shortest accessible route of travel from adjacent parking to an accessible entrance.
 - c. Provide post-mounted signs designating accessible parking spaces. Mount signs such that the bottom of the sign is a minimum of 5'-0" above the ground surface.
 - d. Provide a minimum of one van-accessible spaces for every six accessible parking spaces provided.
 - e. Size and Layout: To maximize uniformity within large retail parking lots, it is recommended that all handicap spaces be designed as van accessible. Spaces should be 11'-0" wide with 7'-0" access aisles to maintain dimensional similarity with standard parking. Depending on parking lot configuration, another layout option would be to provide 9'-0" wide van-accessible spaces with a shared 9'-0' wide access aisle between two spaces. Both configurations are permissible in ADA/ABA Guidelines, reference Chapter 5.
 - f. Provide ADA accessible route for pedestrians that does not exceed 2% cross slope or 5% longitudinal slope consistent with ADA/ABA guidelines.
 - g. Do not exceed 2% slope in any direction outside the Commissary vestibule entry and exit locations. Provide a minimum of 1% slope for positive drainage.
 - h. Do not exceed 2% cross slope in any direction within accessible parking or accessible loading areas, or anywhere along the accessible route to the building. Maintain a minimum of 1% slope for positive drainage.
- 16. Access Roads and Roadways:
 - a. Make the access road between the commissary facility and the customer parking area wide enough to accommodate two-way traffic and allow for a vehicle stopped along the curb. A width of 30'-0" is recommended (24'-0" minimum).
 - b. Lane widths: Thru lanes 12'-0" minimum. Turn lanes 11'-0" minimum.
 - c. Provide perimeter road to allow two-way customer traffic circulation around the perimeter of the parking lot as well as entry/exit and access to the front of the store.
 - d. Service area depth shall be a minimum of 140'-0". If this depth is not possible due to specific site limitations, a lesser dimension may be proposed, subject to DeCA approval, by providing more separation between the dock doors. See Design Standard 111300-01 for additional information.
 - e. Provide continuous concrete curbs and gutters along pavement edges where necessary to integrate with adjacent roads and parking systems. Do not use curbs for internal islands, unless required for proper control and treatment of stormwater. Pavement markings are the preferred method of defining islands within the parking areas.
 - f. Provide a paved access route between the commissary receiving area and the front customer parking lot that will structurally accommodate forklift traffic. Commissary facilities typically have Case Lot Sales in the customer parking area, and forklift vehicles are used to transfer product from the receiving area to the front customer parking lot. It is not desirable or practical to transport this

product through the interior Sales Area. Access should be provided using site circulation drive aisles, not perimeter streets. If a circulation drive is not available, a paved connection will need to be provided that will connect the receiving area with the front customer parking lot. This paved access route is not required to be added to an existing commissary as part of a restoration project.

- g. Provide adequate fire lane access to Commissary as approved by governing Fire Marshal. Obtain information from Fire Marshal regarding the size of equipment used on the Installation. Paint the face of curb along the fire lane red.
- 17. Pavements:
 - a. Base pavement design on soil data and CBR or k value obtained at the proposed site and recommended by the Geotechnical Survey Report.
 - b. Design access roads and internal site roads to accommodate minimum 6,000 lb. wheel load.
 - c. Design parking area pavements to accommodate minimum 4,000 lb. wheel load.
 - d. Rear service area pavement:
 - 1. Distance of 80'-0" back from the building receiving docks: minimum 6" thick, reinforced concrete.
 - 2. Remaining 60'-0" of service area pavement: Heavy Duty Bituminous or concrete.
 - 3. Design service area and access thereto for heavy truck traffic (WB-67 Design Vehicle).
 - 4. When sizing service areas, consider the type, size, and weight of the tractor trailers and trucks used for collecting, transporting, and disposing trash, as well as delivery-type vehicles.
 - 5. Minimum depth of maneuvering area required for trash operation must accommodate outside turning radius of trash trucks and distance required to pull lifting forks clear of container.
 - 6. Provide minimum radius returns of 50'-0" areas for heavy truck traffic movements. Confirm all truck movements can be accommodated (using Auto-Turn or similar software) in service area utilizing a WB-67 Design Vehicle. Encroachment into oncoming traffic lanes shall only be permitted on driveways and in service road areas. No encroachment into oncoming traffic lanes shall be allowed on public streets. Use of three-centered curves should be considered for turning radii serving heavy truck movements, where necessary to avoid encroachment.
 - 7. Determine whether local conditions include deliveries by double semi-trailers and incorporate all criteria necessary to accommodate them, if applicable.
 - 8. Confirm dumpster dimensions and lid operation, if any, used at the Installation during design. Design the trash docks and fencing to properly accommodate the dumpsters used at the specific project. Check slope on the pavement in the area of the dumpster gates to ensure gates do not bind on pavement.









DeCA COMMISSARY DESIGN GUIDANCE 32 31 13 CHAIN LINK FENCES AND GATES

DESIGN CRITERIA

- 1. Related Sections: See related Division 31 Section Earthwork for filling and grading work, Division 03 Section Cast-In-Place Concrete for concrete equipment bases/pads for gate operators, drives and controls, and Division 26 Design Criteria for electrical service and connections for motor operators, controls, limit switches, and other powered devices and system disconnect switches.
- 2. This Section specifies galvanized steel chain-link fabric and framework, barbed wire, and gate operator.
- 3. Chain-link fences are used to secure the commissary receiving area, grade mounted mechanical / electrical equipment, and trash containers when required by the Installation and UFC 4-010-01 DoD Minimum Antiterrorism Standards for Buildings. The requirement to secure these areas shall be determined during the Design Charrette process.
- 4. Check slope on the pavement in the area of the dumpster gates to ensure gates do not bind on pavement.

DeCA COMMISSARY DESIGN GUIDANCE 32 84 00 PLANTING IRRIGATION

DESIGN CRITERIA

- 1. Related Sections: See related Division 32 Section Planting.
- 2. Current LEED Credits and Federal Energy Reduction Mandates may necessitate reduction or complete elimination of lawn irrigation systems. Coordinate with DeCA Project Manager and Installation, during Project Definition to confirm the level of irrigation required for the specific project.
- 3. Indicate that the Contractor will be required to provide any temporary irrigation necessary to establish plant materials due to elimination or limiting of a permanent irrigation system.
- 4. The design of the irrigation system is the responsibility of the Contractor and needs to be submitted for review as a shop drawing.
- 5. Site Landscape plan needs to indicate limits of irrigation for Lawn Areas. Use conventional automatic irrigation system incorporating low precipitation rate pop-up heads to achieve 100% coverage of all lawn areas.
- 6. Site Landscape plan needs to indicate limits of irrigation areas for Trees, Shrubs and other Landscape Plantings.
- 7. When reviewing the design of the irrigation system, verify that the Contractor has not mixed head types or valve type on a single watering circuit.
- 8. Controllers: Solid-state. Program conventional systems to operate in a series of closely spaced shorter cycles rather than long single cycles to aid deep water penetration into the soil and to avoid surface water runoff. Drip irrigation systems have low precipitation rates and should operate for longer time periods. Periodic deep watering with long cycles should be performed to leach salt build-up from the plant root zones.

DeCA COMMISSARY DESIGN GUIDANCE 32 90 00 PLANTING

DESIGN CRITERIA

- 1. Related Sections: See Division 01 Design Criteria Section Temporary Tree and Plant Protection, Division 31 Design Criteria Section Earthwork, and Division 32 Design Criteria Section Planting Irrigation.
- 2. Landscape should enhance and supplement the architectural design and integrate the structure into the site. Utilize "urban", "hard landscaping" strategies to provide a maximum of customer convenience and comfort with a minimum of maintenance labor. The Site Landscaping plan should conform to the following criteria:
 - A. Grass and ground cover: Provide to allow mowing by riding or tractor-towed type mower.
 - B. Do not place trees or shrubs that preclude observation of store interior by military or security police patrols, or create blind corners at entries and exits to parking areas.
 - C. Be sensitive to existing natural vegetation and site configuration, and use local vegetation in accordance with Installation guidelines if applicable.
 - D. Ensure low maintenance and convenient upkeep.
 - E. Orient customer by focusing on and highlighting store entrance.
 - F. Address mass and scale of building by breaking up large expanses of walls and by complementing architectural material.
 - G. Employ discretionary use of vegetation to reduce solar heat gain or loss on building surfaces.
 - H. Use vegetation to control heat gain or transfer from large expanses of asphalt near building surfaces.
 - I. Consider use of landscaping to create acoustical barriers in areas of high traffic and industrial noise.
 - J. The preferred design for Commissary parking lots islands is for them to be painted, in lieu of being curbed. Generally, planting materials will not be allowed within the parking area. When curbs presently exist and will be expanded as part of Project, low maintenance planting may be considered within these islands. However, it may also become necessary to provide landscape islands within parking areas to meet local requirements for control and treatment of stormwater runoff. This should be done only after all other cost effective measures for stormwater treatment have been considered.
 - K. Parking lot and building landscape must be designed to provide clear visual approaches and line of sight for vehicular traffic.
 - L. Limit the use of bermed areas to locations where excess excavated materials can be economically used to form visual landscape barriers.
 - M. Use landscaping to visually screen service areas.
 - N. Limit landscaping to areas adjacent to the building and site. Localize to facility perimeter and where necessary to provide essential screening.
 - O. Follow the requirements for landscaping contained in the Department of Defense Antiterrorism Minimum Construction Standards for Buildings: UFC 4-010-01.
- 3. Provide complete integrated landscaping design to include groundcover, trees, and shrubs (emphasize trees over extensive quantities of shrubs). Use plants indigenous to area to minimize maintenance costs. Clearly indicate limits of sod areas and seed areas on the Contract Documents.
- 4. Building setbacks should be provided to permit landscaping on all sides of the building.
- 5. The planting design shall specify plant materials by local common names as well as Latin equivalents. Coordinate planting with local seasonal practice and require contractor to maintain the landscaping for

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60 days, minimum, after project completion, or landscaping completion, and until a vigorous growing state is established.

- 6. Budget no more than one percent of the project cost for project landscaping. This amount shall include planting material and irrigation system.
- 7. At a minimum, extend landscaping out 25' from access lanes, paved areas, and the building perimeter.
- Energy Efficiency and Water Conservation at Federal Facilities: Reference Presidential memorandum: Environmentally and Economically Beneficial Practices on Federal Landscape Grounds, April 26, 1994: DUSD (ES)/PP Memorandum of September 23, 1994, same subject. Accordingly, consider following mandated requirements:
 - A. Design and construct facilities to minimize life-cycle costs of facility by utilizing energy efficient, water conservation, or solar or other renewable energy technologies.
 - B. Increase environmentally and economically beneficial landscape practices. Where cost effective, and to the extent practicable, incorporate the following:
 - 1. Design, use, or promote construction practices that minimize adverse effects on natural habitat.
 - 2. Seek to prevent pollution by reducing fertilizer and pesticide use, using integrated pest management techniques, recycling green waste, and minimize runoff.
 - 3. Implement water efficient practices, such as use of mulches, efficient irrigation systems, audits, use of recycled or reclaimed water, and selecting and siting plants in a manner to conserve water and control soil erosion. Landscape practices, such as use of native shade trees around buildings to reduce air conditioning loads are encouraged.
 - 4. Outdoor demonstrations that encourage native plants and pollution prevention and water conserving techniques are also encouraged to promote awareness of the environmental and economic benefits of implementation of the directive.
Division 33 – Site Utilities

DeCA COMMISSARY DESIGN GUIDANCE 33 11 00 WATER DISTRIBUTION

DESIGN CRITERIA

- 1. Related Sections: See related Division 22 Design Criteria for piping inside and outside the building, and Division 26 Design Criteria for required cathodic protection.
- 2. The water utility has been privatized at a number of Installations. If this is the case, all work to the water system must be in strict accordance with the requirements of the private utility company. The private utility company's details and specifications should be included, in their original form, in the solicitation documents. Additional specifications and details may be added by the designer to further clarify the intent of the design, but care must be taken to ensure that the additional details do not conflict with those of the private utility provider.
- 3. PVC and ductile iron watermain materials are listed in the standard specification. PVC should be the preferred alternate based on the cost savings. In the case where an Installation will not allow PVC watermain and fittings, ductile iron should be used. If ductile iron is used, there are also provisions in the standard specifications for CORROSION PROTECTION PIPING ENCASEMENT where required based on local conditions. The A/E should delete the sections of the specifications that do not apply.
- 4. Two types of water valves are included within the guide specification. They are non-rising stem metal seated gate valves, and non-rising stem resilient seated gate valves. The A/E should evaluate which type should be used based on the local standards and modify the guide specification accordingly.
- Specification for precast concrete valve vaults is included in the guide specification, in the event they
 are required by the Installation. Delete this specification item if not required. Standard installation for
 DeCA projects should include valve boxes. Pressure connections to existing watermain must be made
 in valve vaults.
- 6. Verify that the Installation does not have any special watermain chlorination or testing requirements that are not covered in the guide specification. Any unique requirements should be added to the specification.
- 7. Determine minimum utility ground cover requirements of local jurisdictional agency and clearly indicate in specification or on drawings.
- 8. A/E shall investigate if the Installation will allow the existing water main to be shut down during connection of the new water main required for the Project. Further determine what the extent of any restrictions placed on the Contractor will be, such as duration of shutdown and time restrictions. This should be specified in the Contract Documents so the Contractors know if pressure connections are required or not.
- 9. If local agencies having jurisdiction have standard drawings for watermain construction, include them in the Contract Documents. Confirm that no conflicts exist between local standard drawings and Project Specifications.

DeCA COMMISSARY DESIGN GUIDANCE 33 30 00 SANITARY SEWERS

DESIGN CRITERIA

- 1. Related Sections: See related Division 22 Design Criteria for piping inside and outside the building.
- 2. The sanitary sewer utility has been privatized at a number of Installations. If this is the case, all work to the sanitary sewer system must be in strict accordance with the requirements of the private utility company. The private utility company's details and specifications should be included, in their original form, in the solicitation documents. Additional specifications and details may be added by the designer to further clarify the intent of the design, but care must be taken to ensure that the additional details do not conflict with those of the private utility provider.
- 3. Guide specification includes both pre-cast and cast-in-place manholes. The preferred option (which is typically available) is pre-cast manholes, because they tend to be easier to construct and less costly. In the case where pre-cast manholes are not available, the contractor has the option to install cast-in-place manholes.
- 4. Piping materials include PVC, SDR 26 and ductile iron pipe. The Contract Documents should clearly identify which material to use for each individual pipe. Ductile iron pipe should only be used when cover over pipe is less than 2' from finished grade to top of pipe, assuming that agencies having jurisdiction will allow pipe to be installed with only this amount of cover. Also use ductile iron when required by local agencies having jurisdiction to address sewer and watermain separation requirements.
- 5. If local agencies having jurisdiction have standard drawings for sanitary manholes, include them in the Contract Documents. Confirm that no conflicts exist between local standard drawings and Project Specifications.

DeCA COMMISSARY DESIGN GUIDANCE 33 40 00 STORM DRAINAGE UTILITIES

DESIGN CRITERIA

- 1. Related Sections: See related Division 33 Design Criteria and Division 22 Design Criteria for piping inside the building.
- Guide specification includes both pre-cast and cast-in-place structures. The preferred option (which is typically available) is pre-cast structures, because they tend to be easier to construct and less costly. In the case where pre-cast structures are not available, the contractor has the option to install cast-in-place structures.
- 3. Piping materials include reinforced concrete pipe (RCP), PVC, SDR 26, HDPE, and ductile iron pipe (DIP). The contract documents should clearly identify which material to use for each individual pipe. If possible, RCP or PVC pipe should be used when allowed on local standards for storm sewer construction. Ductile iron pipe should only be used when cover over pipe is less than 2' from finished grade to top of pipe, assuming that agencies having jurisdiction will allow pipe to be installed with only this amount of cover. Also use ductile iron when required by local agencies having jurisdiction to address sewer and water main separation requirements. Delete any specifications that do not apply.
- 4. If local agencies having jurisdiction have standard drawings for the construction of storm drainage related items, include them in the Contract Documents. Confirm that no conflicts exist between local standard drawings and Project Specifications.
- 5. The stormwater system should consider the design guidance provided in "Technical Guidance for Implementing Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act" (EISA 2007). It is now a requirement that all federal projects be designed to meet the requirements of EISA 2007 Section 438.
- 6. Design criteria for design of stormwater management and storm drainage systems shall follow local or Installation criteria whenever possible. In the absence of local criteria, the following design guidelines should be followed:

Design Storm:	10-year event (piped flow) 100-year event (overland flow)
Initial Time of Concentration:	15 minutes
Flow Velocity (piped) :	2 fps min/10 fps max.

DeCA COMMISSARY DESIGN GUIDANCE 33 51 00 NATURAL-GAS DISTRIBUTION

DESIGN CRITERIA

- 1. Related Sections: See related Division 31 Design Criteria for utility trenching and Division 22 Design Criteria for piping inside the building.
- 2. A/E shall determine if local natural gas utility providers will provide service to building, or if the extension of the existing gas main will be the responsibility of the DeCA Construction Contract. Regardless of who is responsible for physically extending gas service to the building, the cost of this work shall be included in the Construction Contract, and the Contract Documents need to clearly define this requirement. If the local utility provider is responsible for bringing gas service to the building, this Specification will not apply and should be omitted.

DESIGN CRITERIA

- 1. Related Sections: Division 01 and Division 33 Section 33 71 02 apply.
- Summary: In addition to the construction of the commissary, provide all necessary site work to provide for utilities connections, relocation of existing utilities as required, the extension of utilities to service the building and site to the point of connection, and drainage. Provide all utilities from connection points to building and site.
- 3. Exterior Electrical Distribution System: Provide new underground electrical distribution system, transformers, and connections to the utility system, using connection points established by the utility operator. Coordinate all utility lines, transformers, and metering with the local utility operator. Most military installations own and operate the primary electrical distribution system, although some commissary sites obtain utilities direct from a civilian utility company. Determine the proper utility provider, and conform to its requirements. Install all underground utilities with marking tape.
 - A. Installation shall conform to latest applicable rules of the National Electrical Code, NFPA No. 70, the National Electrical Safety Code and IEEE/ANSI C2. Do not exceed 470' between manholes in straight runs of underground primary distribution, nor 150' from a pole riser or pad-mount transformer riser to the nearest manhole.
 - B. Provide a radial system fed through a fused type switch. Verify with Host Installation whether pad mount transformer must be connected in delta or wye configuration. Bury high voltage feeder 36" below finished grade and provide appropriately labeled cable markers and tape 12" below finished grade. Design shall ensure that the estimated peak on each transformer shall not exceed the rated capacity of the transformer.
 - C. Transformer. See Section 33 71 02. Transformer pad and cable vault shall be concrete. Transformers will be contractor-furnished and -installed when the military installation operates the primary distribution. Civilian utility companies generally provide their own transformers on a contractor-built pad; follow the utility company's standards and requirements.
 - D. Electrical Conduit. Leave pull rope in each empty utility conduit.
 - Electrical Primary. Provide in 4" min. PVC conduit and provide one spare 4" min. PVC conduit for future use unless directed otherwise by Host Installation or utility company. Encase in concrete. Encase in steel reinforced concrete under paved areas and building foundations. Concrete envelope coverage over conduit shall be minimum 3".
 - Building Service. Provide 4" min. PVC conduits in quantities required by <u>NEC</u>. Encase in steel reinforced concrete duct bank. See Division 26 for conductor specifications. Provide two spare 4" min. PVC conduits for future use. Concrete envelope coverage over conduit shall be minimum 3".
 - E. Telephone Conduit. Provide one 4" PVC conduit for telephone cable and one 4" PVC conduit for spare for future use. One additional 4" conduit with 4 inner ducts will be required where a fiber optic network is used, for fiber optic building service. Encase conduit in steel reinforced concrete under paved areas. Concrete envelope coverage over conduit shall be minimum 3". Route conduits in location different from that of electrical power.
 - F. Underground Conduits. Refer to Guide Specification 33 71 02, Underground Electrical Distribution.
- 4. Communication Cable. Refer to Division 27 Section 27 15 00.

DESIGN CRITERIA

- 1. Applicable Sections: Division 26 Section 26 05 00 applies.
- 2. Related Sections: See Division 33 Section 33 71 01.
- Building Electrical Primary Service: Underground; verify exact actual primary voltage with the Host Military Installation engineer. Usually 15 KV nominal class. Provide insulated copper cables with insulation type preferred by the Host Military Installation engineer. Default insulation: cross-linked polyethylene (XLP) or ethylene-propylene rubber (EPR). Edit Guide Specification 26 05 13, Medium-Voltage Cables, and 33 71 02, Underground Electrical Distribution (covers electrical and communications ducts) for the project.
- 4. Splices and Terminations: Molded type approved for use with cable to be installed.
- 5. Pad Mounted Transformer: Completely dead-front, metal enclosed compartmental transformer per ANSI Standard C57.12.26, oil-insulated, self-cooled, delta-wye or wye-wye as required by Host Installation, primary voltage to match Installation primary distribution voltage (verify with Installation engineer), with primary load-break bushings and elbows. Tested per ANSI C57.12.90. Low-loss, normal-impedance design. Provide surge protection and proper overcurrent protection on primary. Provide with full accessories, including oil drain valve and fill plug, liquid level gage, pressure-vacuum gage, dial thermometer with maximum temperature indicator, lifting lugs, provision for jacking under base. Mount on concrete pad, provide protective bollards. Install exterior transformers above grade. Do not install in recessed loading dock areas or other areas subject to flooding. Edit Guide Specification 26 12 19, Medium-Voltage Transformers, for the project.
- 6. Electrical metering shall consist of a voltmeter and ammeter (configured to measure line-to-line and phase-to-neutral voltage and line current) and a watthour meter with demand register and pulse initiator at the main switchboard unless required otherwise by Host Installation or commercial electric utility company. All facility electrical loads, including parking lot and street lighting, shall be metered by the watthour meter. Display the meter multiplier (if applicable) on face of each meter installed. Make provision for electronic power monitoring for the building service by the Refrigeration Monitoring and Control System (RMCS); coordinate with the RMCS supplier. The utility distribution systems are usually Government-owned. Accordingly, design to provide an additional revenue watthour meter of the type and at the location standard with the Host Military Installation Engineer, and incorporate design details required by the Installation Engineer in the design of primary electrical service and transformer.
- 7. In exceptional instances where the power is provided by a local public utility company, coordinate and make provisions for primary service, transformer, secondary service and revenue metering as required by the utility company.
- 8. Splices and Terminations: Use only experienced qualified installer to make.

Appendix A – Schedules and Tables

DeCA COMMISSARY DESIGN GUIDANCE GUIDANCE FOR MEASURING FACILITY AREA

1. GENERAL GUIDANCE FOR MEASURING FACILTIY AREA (SQUARE FOOTAGE)

- A. The following is a brief description for measuring facility area. For more information see Department of Army Pamphlet 415-28, section 2-5 Facility measurements.
- B. Definitions:
 - 1. Facility: Building, structure, or utility system.
 - 2. Building: Real property facility that is completely enclosed by a roof, walls, and usually flooring. It normally serves the purpose of occupancy, such as a headquarters, dwelling, office, storehouse, factory, laboratory, or hospital.
 - 3. Structure: Real property facility that is not classified as a building. Typical examples are parking pavements, roads, sidewalks, fences, open storage, open sheds, bus shelters, and athletic fields.
 - 4. Utility: Distribution system, commodity source, or commodity collection point that provides a service or commodity to more than one building or structure. Utilities are measured in capacity measurements.
- 2. GROSS AREA (SQUARE FOOTAGE) OF A FACILITY
 - A. For buildings, calculate the gross area by measuring the dimensions to the outside face of the building exterior enclosure walls and multiplying the length by the width by the number of full floors. For partial floors, multiply the length times the width, and add the result to the full floor gross area (square footage).
 - B. Include the following spaces in the gross area calculation:
 - 1. Basements
 - 2. Above-grade floors
 - 3. Mezzanines
 - 4. Service and equipment rooms
 - 5. Boiler plant and heater rooms
 - 6. Penthouses
 - 7. Covered and raised loading platforms/facilities
 - 8. The following if enclosed: passages, walkways, porches, balconies, and stairs. Allocate half of the gross area taken up by stairs and elevator shafts to each floor they serve.
 - C. Calculate the following exterior spaces as half areas:
 - 1. Covered but not enclosed walkways, breezeways, corridors, ramps, porches, and balconies
 - 2. Covered and uncovered open stairs
 - 3. Uncovered raised loading platforms
 - 4. Covered, ground level, and covered/uncovered below-grade loading facilities

DeCA COMMISSARY DESIGN GUIDANCE GUIDANCE FOR MEASURING FACILITY AREA

- 5. Measure exterior covered areas from the face of the enclosure wall to the edge of the covered area served.
- D. Exclude the following spaces from gross area:
 - 1. Roof overhangs and soffits for weather protection
 - 2. Exterior uncovered walks, ramps, and paved terraces
 - 3. Enclosed crawl spaces, utility tunnels, raceways, catwalks, and platforms
 - 4. Attic areas with an average ceiling height of less than 7 feet (2.1 meters). Regardless of whether the structure is under a roof or not, the area is the product of its length times its width.

3. GROSS AREA (SQUARE FOOTAGE) OF THE SALES FLOOR AREA

- A. The Sales Area is defined at that area to which customers have access. Measurements are taken to the inside face of the perimeter walls.
- B. Include the following:
 - 1. Check out, queuing, Grab-N-Go, and grocery cart storage areas
 - 2. Produce, Bakery, Deli, and Meat sales areas
 - 3. Display cases
 - 4. The area behind display cases up to the solid wall behind the cases
 - 5. Hallways if there is no door or doorway at the sales area end of the hallway. Include the hallway up to a door or doorway
 - 6. If the dairy display cases have doors and are open to the dairy cooler. Include the area up to the backside of the dairy case, shelving, or cart that is displaying the product
 - 7. If the dairy display cases do not have doors and are open to the dairy cooler. Include the area to the thermal partition separating the display case or product from the cooler.
 - 8. If the customer service area has a service counter. Include the space to the backside edge of the counter.
 - 9. If the customer service area has a window. Include the space up to the sales area side of the glass.
- C. Exclude the following:
 - 1. Bakery and Deli Prep areas
 - 2. Vestibules
 - 3. Meat packing, wrapping, storage or preparation areas
 - 4. Cashier office

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- 5. Customer service area
- 6. Baggers break area
- 7. Restrooms
- 8. Janitor closets
- 9. Mechanical or electrical closets
- 10. "Extended Sales Area" into the warehouse

DeCA COMMISSARY DESIGN GUIDANCE

ROOM ASSIGNMENT BY FUNCTIONAL AREA

Room #	Room Name	Sales Area	Administration	Walk-in	Support	Receiving / Storage
1	ENTRY VESTIBULE				X	
2					X	
3			X		X	
4			X			
5		v	<u> </u>			
6A		^	v			
6B	CUSTOMER SERVICE OFFICE	×	X			
/	CUSTOMER WAITING	X				
8		X			Y	
9	FAMILY RESTROOM & UNISEX RESTROOM				X	
10					× ×	
12			v		^	
12	ADMINISTRATIVE ENTRY VESTIBILIE		A X			
13			A X			
14	ADMINISTRATIVE ORIGIDAR		× X			
164	EMPLOYEE BREAKROOM - ADMIN AREA		× X			
16B			× ×			
17			X			
18			X			
19	STORE MANAGER		X			
20	JANITOR'S CLOSET		~		Х	
21	VESTIBULE (RECEIVING/STAGING TO SALES AREA)				X	
22	ADMINISTRATIVE STORAGE		Х			
23	DAMAGED MERCHANDISE				Х	
24	DAMAGED MERCHANDISE SALES NICHE	Х				
25	LOCKER ROOM (WOMEN)				Х	
26	EMPLOYEE RESTROOM (WOMEN)				Х	
27	EMPLOYEE RESTROOM (MEN)				Х	
28	LOCKER ROOM (MEN)				Х	
29	CONTROLLED TEMPERATURE STORAGE					X
30	CONTRACT STOCKER STORAGE / OFFICE					Х
	MECHANICAL AREAS (COMMUNICATION CLOSET/ROOM,					
31	MECHANICAL ROOMS, ELECTRICAL ROOMS, SPRINKLER				x	
51	ROOM, GENERATOR ROOM, FIRE SUPPRESSION ROOM,				^	
32	SENSITIVE STORAGE					Х
33	OPERATING SUPPLY STORAGE					Х
34	MEDICAL FOOD INSPECTION OFFICE		X			
35	RECEIVING MANAGER		Х			
36A	RECEIVINGAREA					Х
37	STAGING AREA					Х
38	MHE CHARGING AREA					Х
39	MASS DISPLAY	Х				
40	HBC SALES	Х				
41	PLANT DISPLAY AREA	Х				
42	PRODUCE SALES	Х				
43A	PRODUCE CHILLED STORAGE			X		
43B	PRODUCE CHILLED STORAGE (GAS)			X		
44A	PRODUCE PROCESSING			X		
44B	PRODUCE AMBIENT STORAGE			X		
45	PRODUCE MANAGER		X			
46	SEAFOOD DISPLAY AREA (including sushi display area)	Х				
47	MEAT/PRODUCE OPERATING SUPPLY STORAGE					X
48	MEAT/PRODUCE BREAK ROOM		X			

DeCA COMMISSARY DESIGN GUIDANCE

ROOM ASSIGNMENT BY FUNCTIONAL AREA

Room #	Room Name	Sales Area	Administration	Walk-in	Support	Receiving / Storage
49	NOT USED					
50	MEAT/PRODUCE MEN'S LOCKER				X	
51	MEAT/PRODUCE MEN'S RESTROOM				Х	
52	MEAT/PRODUCE WOMEN'S LOCKER				Х	
53	MEAT/PRODUCE WOMEN'S RESTROOM				Х	
54	RECEIVING AISLE					Х
55	MEAT PROCESSING			Х		
56	MEATWRAPPING			Х		
57	MEAT MANAGER (includes Seafood Manager)		Х			
58	MEAT RESTOCKING AISLE	Х				
59	MEAT CHILL STORAGE			Х		
60	FAT AND BONE STORAGE			Х		
61	PREPACKAGED MEAT CHILL STORAGE			Х		
62	POULTRY CHILL STORAGE			Х		
63	MECH CHASE TO MEZZANINE (EXCLUDE)					
64	VESTIBULE RECEIVING/FF/DAIRY				X	
65	AISLE RECEIVING TO SALES				X	
66	DAIRY SALES	Х				
67	DAIRY CHILL STORAGE			X		
68	FROZEN FOOD STORAGE			X		
69	SALES AREA	Х				
70	DELI SERVICE/SALES AREA ²	Х			X	
71	BAKERY/DELI DISPLAY ²	Х			Х	
72	BAKERY SERVICE/SALES AREA ²	Х			Х	
73	DELI PREPARATION AREA				Х	
74	BAKERY PREPARATION AREA				Х	
75	BAKERY CHILL STORAGE			Х		
76	BAKERY FREEZER			Х		
77	DELI CHILL STORAGE			Х		
78	BAKERY/DELI DRY STORAGE & ADMINSTRATIVE					Х
79	BAG STORAGE					Х
80	BAGGER BREAKROOM		Х			
81	CHECKOUT	Х				
82	CUSTOMER CHECKOUT QUEUING	Х				
83	MECHANICAL MEZZANINE				Х	
84	VENDORS ROOM		Х			
85	SEAFOOD CHILL STORAGE			Х		
86	BAGGER RESTROOM				Х	
87	PERISHABLE MANAGER		X			
88	SEMI-PERISHABLE MANAGER		X			
89	ZONEMANAGER		X			
90	REGIONMGMT SUPPORT		X			
91	REGION MGMT SUPPORT STORAGE		X			
92	CONFERENCE ROOM		X			
93	CASHIER LOCKER / BREAK RM		X			
94	CASHIER RESTROOM				X	

Notes:

1 Customer Service Desk (kiosk) also serves as a checkout register and a sales area and is located in line with other checkout registers. Customer Service Office is normally located along the outer walls of the store and is not a checkout location.

2 Support if room is behind service display cases (patrons do not have access). Sales Area if on Sales Area side of the service display cases (patrons do have access to the area).





BETWEEN ROOM NUMBERS:

ROOM	I	AND	DOOR TYPE	ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
1	Entry Vestibule	Sales Area	A		1200mm (48")	Aluminum and Glass	 Emergency breakaway feature Automatic door operator Provide standard 10'-0" 10'-8" wide door package with operable sidelights (105" 110" egress width) Consider fixed sidelights if required egress can be obtained and acceptable to DeCA Project Manager (note that at least one door shall remain full breakout type) Position doors for compliance with UFC 4-010-01 requirements If door is required to be blast rated, verify design with PDC
2	Exit Vestibule	81 Checkout	A		1200mm (48")	Aluminum and Glass	 Emergency breakaway feature Automatic door operator Provide standard 10'-0" 10'-8" wide door package with operable sidelights (105" 110" egress width) Consider fixed sidelights if required egress can be obtained and acceptable to DeCA Project Manager (note that at least one door shall remain full breakout type). Provide protection posts Position doors for compliance with UFC 4-010-01 requirements If door is required to be blast rated, verify design with PDC
3	Cart Return Vestibule	81 Checkout	A		1200mm (48")	Aluminum and Glass	 Emergency breakaway feature Automatic door operator Provide standard 10'-0" 10'-8" wide door package with operable sidelights (105" 110" egress width) Consider fixed sidelights if required egress can be obtained and acceptable to DeCA Project Manager (note that at least one door shall remain full breakout type). Provide protection posts Position doors for compliance with UFC 4-010-01 requirements If door is required to be blast rated, verify design with PDC
4	Cashier's Office	5 Cash Counting Room	Н		1100mm (42")	Steel	 12" x 12" laminated vision window Security grade 14 GA. steel door

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Door Schedule

BETWEEN ROOM NUMBERS:

ROOM		AND		DOOR TYPE	ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
								 Security grade 14 GA. steel frame Storeroom Function Mortise Lockset with key side in RM. 5 Kick plate (push side) Increased door width required to accommodate passage of safe
5	Cash Counting Room	81	Checkout	С		1100mm (42")	Steel or Solid Core Wood	 Storeroom Function Mortise Lockset with key side in RM. 81 with electric door strike controlled from Cashier's Office Security grade 14 GA. steel door Security grade 14 GA. steel frame Kick plate (push side) Increased door width required to accommodate passage of safe No vision window into this room (cash counting)
6A	Customer Service	5	Cash Counting Room	С		900mm (36")	Steel or Solid Core Wood	 Storeroom Function Mortise Lockset with key side in RM. 6 Kick plate (push side) No vision window into this room (cash counting) Security grade 14 GA. steel door Security grade 14 GA. steel frame
6B	Customer Service Office	81	Checkout	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
9	Family Restroom	69	Sales Area	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (both sides)
10	Customer Restroom (Men)	69	Sales Area	CL		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side) Door Louver
11	Customer Restroom (Women)	69	Sales Area	CL		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side) Door Louver
12	Store Director's Office	15	Administrative Area	CSL		900mm (36")	Steel or Solid Core Wood	 12" wide sidelight w/ horizontal blinds
13	Administrative Entry Vestibule		Exterior	В		900mm (36")	Aluminum and Glass	
13	Administrative Entry Vestibule	14	Administrative Corridor	В		900mm (36")	Aluminum and Glass	
14	Administrative Corridor	15	Administrative Area	D		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
14	Administrative Corridor	69	Sales Area	B or D		900mm (36")	Aluminum and Glass Or Steel or Solid Core Wood	 Kick plate (push side)
16	Employee Break Room	14	Administrative Corridor	D		900mm (36")	Steel or Solid	 Kick plate (push side)
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BETWEEN ROOM NUMBERS:

ROOM	ROOM		AND		ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
							Core Wood	
17	Training Room	15	Administrative Area	D		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
18	Store Administrator's Office	15	Administrative Area	CSL		900mm (36")	Steel or Solid Core Wood	 12" wide sidelight w/ horizontal blinds
19	Store Manager	81	Checkout	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
20	Janitor's Closets	69 21	Sales Area Vestibule (Staging to Sales)	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
21	Vestibule (Staging to Sales)	37	Staging Area	FF		1800mm (72")	Traffic Door	 94" –96" Tall Doors Steel Channel Door Frame
21	Vestibule (Staging to Sales)	69	Sales Area	FF		1800mm (72")	Traffic Door	 94" –96" Tall Doors Steel Channel Door Frame or security grade 14 GA. steel frame w/ ¼" steel plate at hardware attachment points
22	Administrative Storage	37	Staging Area	С		900mm (36")	Steel	 Kick plate (push side)
23	Damaged Merchandise	21	Vestibule (Staging to Sales)	CL		900mm (36")	Steel	 Kick plate (push side) Door Louver Security grade 14 GA. steel door Security grade 14 GA. steel frame
25	Locker Room (Women)	48	Employee Break Room	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
26	Employee Restroom (Women)	25	Locker Room (Women)	CL		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side) Door Louver
27	Employee Restroom (Men)	28	Locker Room (Men)	CL		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side) Door Louver
28	Locker Room (Men)	48	Employee Break Room	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
29	Controlled Temperature Storage	21	Vestibule (Staging to Sales)	J		1200mm (48")	Insulated Swing Door	 Safety Release Lock
30	Contract Stocker Storage	37	Staging Area	CC		1800mm (72")	Steel	 Kickplates (push side) Security grade 14 GA. steel door Security grade 14 GA. steel frame Use chain link gates if room is enclosed with chain link partition
31A	Communications Room (CISIC)	15	Administrative Area	D		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side) Storeroom Function Mortise Lockset Security grade 14 GA. steel door Security grade 14 GA. steel frame
31B	Communications Closet (CISIC)	48	Employee Break Room	CCL		1800mm (72")	Steel or Solid Core Wood	 Storeroom Function Mortise Lockset Security grade 14 GA. steel door Security grade 14 GA. steel frame
31	Mechanical Room	69 21	Sales Area Vestibule (Staging to Sales)	С		900mm (36")	HM	 Kick plate (push side)
32	Sensitive Storage	37	Staging Area	CC		1800mm (72")	Steel	 Kick plates (push side)

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Door Schedule

BETWEEN ROOM NUMBERS:

ROOM	ROOM			DOOR TYPE	ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
								 Security grade 14 GA. steel door Security grade 14 GA. steel frame Use chain link gates if room is enclosed with chain link partition
33	Operating Supply Storage	37	Staging Area	CC		1800mm (72")	Steel	 Kick plates (push side) Security grade 14 GA. steel door Security grade 14 GA. steel frame Use chain link gates if room is enclosed with chain link partition
34	Medical Food Inspection Office	37	Staging Area	E		900mm (36")	Steel	 Kick plate (push side) Horizontal Blinds on Door Vision Window
35	Receiving Manager's Office	37	Staging Area	E		900mm (36")	Steel	 Kick plate (push side) Horizontal Blinds on Door Vision Window
36A	Receiving (Grade Level)		Exterior Overhead Door	OCD1		2400mm (96")	Steel or Aluminum	 10'-0" Tall Door with Canopy Above Insulated Door
36A	Receiving (Recessed Dock)		Exterior Overhead Door	OCD2		2400mm (96")	Steel or Aluminum	 9'-0" or 9'-4" Tall Door with Dock Leveler and Dock Seal Insulated Door
36A	Receiving		Exterior Personnel Door	D		900mm (36")	HM	 Kick plate (push side) Insulated Door
36A	Receiving		Exterior Trash Platform	OCD2		1800mm (72")	Steel or Aluminum	 9'-0" or 9'-4" Tall Door with Canopy Above Insulated Door
36B	Controlled Temperature Receiving Area	21	Vestibule (Staging to Sales)	к	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock
37	Staging Area		Exterior Personnel Door	D		900mm (36")	HM	 Kick plate (push side) Insulated Door
43A	Produce Chilled Storage	21	Vestibule (Staging to Sales)	к	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock
43B	Produce Chilled Storage (Gas)	43A	Produce Chilled Storage	GG		1800mm (72")	Gasketed Traffic Doors	
44A	Produce Processing	21	Vestibule (Staging to Sales)	GG		1800mm (72")	Gasketed Traffic Doors	
44B	Produce Ambient Storage	44A	Produce Processing	GG		1800mm (72")	Gasketed Traffic Doors	
45	Produce Manager's Office	44A	Produce Processing	E		900mm (36")	Steel	 Kick plate (push side) Insulated Door Horizontal Blinds on Door Vision Window Provide door threshold
46	Seafood Display Area	69	Sales Area	D		1100mm (42")	Steel or Solid	 48" High Kick plate (both sides)

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Door Schedule

BETWEEN ROOM NUMBERS:

ROOM	ROOM			DOOR TYPE	ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
							Core Wood	
47	Meat/Produce Operating Supply Storage	37	Staging Area	CC		1800mm (72")	Steel	 48" High Kick plate (both sides) Security grade 14 GA. steel door Security grade 14 GA. steel frame
48	Employee Break Room (Meat/Produce)	37	Staging Area	D		900mm (36")	Steel	 Kick plate (push side)
51	Employee Restroom	14	Administrative Corridor	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
53	Employee Restroom	14	Administrative Corridor	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
54	Receiving Aisle Grade Level)		Exterior Overhead Door	OCD1		2400mm (96")	Steel or Aluminum	 10'-0" Tall Door with Canopy Above Insulated Door
54	Receiving Aisle (Recessed Dock)		Exterior Overhead Door	OCD2		2400mm (96")	Steel or Aluminum	 9'-0" or 9'-4" Tall Door with Dock Leveler and Dock Seal Insulated Door
54	Receiving Aisle		Exterior Personnel Door	D		900mm (36")	HM	 Kick plate (push side) Insulated Door
55	Meat Processing	37	Staging Area	K	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock
55	Meat Processing	56	Meat Wrapping	GG		1800mm (72")	Gasketed Traffic Doors	
56	Meat Wrapping	58	Meat Restocking Aisle	GG		1800mm (72")	Gasketed Traffic Doors	
56	Meat Wrapping	59	Bulk Meat Storage	GG		1800mm (72")	Gasketed Traffic Doors	
57	Meat Manager's Office	57	Meat Wrapping	E		900mm (36")	Steel	 Kick plate (push side) Insulated Door Horizontal Blinds on Door Vision Window Provide door threshold
59	Bulk Meat Storage	21	Vestibule (Staging to Sales)	K (see note)	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock Openings from Bulk Meat Storage to Sales Area (RM. 69), Meat Preparation (RM. 55), and Meat Wrapping (RM. 56) are to have both type K and type GG doors
61	Prepackaged Meat Chill Storage	21	Vestibule (Staging to Sales)	К	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock

BETWEEN ROOM NUMBERS:

ROOM	ROOM			DOOR TYPE	ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
62	Poultry Chill Storage	21	Vestibule (Staging to Sales)	К	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock
67	Dairy Chill Storage	21	Vestibule (Staging to Sales)	К	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock
68	Frozen Food Storage	36B	Controlled Temperature Receiving Area	К	Plastic Strip Curtain	1800mm (72")	Insulated Sliding Door	 Safety Release Lock
69	Sales Area		Exterior Emergency Exit Door	С		900mm (36")	HM	 Exit Lock with Alarm Insulated Door
69	Sales Area		Exterior Emergency Exit Door	CC		1800mm (72")	HM	 Exit Lock with Alarm Insulated Door
72	Bakery Service Area	69	Sales Area	FF		1800mm (72")	Traffic Door	 Steel Channel Door Frame or security grade 14 GA. steel frame w/ ¼" steel plate at hardware attachment points
75	Bakery Chill Storage	21	Vestibule (Staging to Sales)	J		1200mm (48")	Insulated Swing Door	 Safety Release Lock
76	Bakery Freezer	21	Vestibule (Staging to Sales)	J		1200mm (48")	Insulated Swing Door	 Safety Release Lock
77	Deli Chill Storage	21	Vestibule (Staging to Sales)	J		1200mm (48")	Insulated Swing Door	 Safety Release Lock
78	Bakery/Deli Dry Storage	72	Bakery Service Area	С		900mm (36")	Steel	 Kick plate (push side) Security grade 14 GA. steel door Security grade 14 GA. steel frame
80	Bagger Break Room	81	Checkout	D		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
83	Mechanical Mezzanine	37	Staging Area	OCD4		1800mm (72")	Steel or Aluminum	 At Mezzanine Floor Level Provide Safety Chain Across Door Opening
83	Mechanical Mezzanine		Exterior Personnel Door	С		900mm (36")	HM	 Kick plate (push side) Insulated Door At Grade Level
84	Vendors Room	14	Administrative Corridor	D		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
85	Seafood Chill Storage	46	Seafood Display Area	J		1200mm (48")	Insulated Swing Door	 Safety Release Lock
86	Bagger Restroom	81	Checkout	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
87	Perishable Manager	81 37	Checkout or Staging Area	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
88	Semi-Perishable Manager	81 37	Checkout or Staging Area	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
89	Zone Manager	81 37	Checkout or Staging Area	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window

Door Schedule

BETWEEN ROOM NUMBERS:

ROOM		AND		DOOR TYPE	ADD. DOOR	NOM. OPN'G	MATERIAL	REMARKS
90	Region Management Support Office	81 37	Checkout or Staging Area	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
91	Region Management Support Office	81 37	Checkout or Staging Area	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
92	Conference Room	15 37	Administrative Area or Staging Area	E		900mm (36")	Steel or Solid Core Wood	 Horizontal Blinds on Door Vision Window
93	Cashier Locker / Break Room	81	Checkout	D		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)
94	Cashier Restroom	81 14	Checkout or Administrative Corridor	С		900mm (36")	Steel or Solid Core Wood	 Kick plate (push side)

Notes:

Provide 8'-0" min. height doors at Vestibules from Staging/Receiving to Sales.

All doors with MHE traffic to be 8'-0" min. in height.

Single swing doors that are visible from customer areas shall be solid core wood.

Door sizes and types contained in this Schedule are standard for the various areas within a Commissary. The number of doors and types may vary with size of the facility.

When there is an identified DBT and LOP, or the Commissary is located outside the Installation Perimeter, design the entrance, exit, and cart return vestibules utilizing B-3.2.3 and B-3.2.4 in Appendix B of UFC 4-010-01 so that automatic sliding doors are not required to be blast rated. When the doors are required to be blast rated, or for assistance in utilizing UFC 4-010-01, contact the Omaha District Corps of Engineers PDC (Protective Design Center) at https://www.nwo.usace.army.mil/pdc/home/.

Refer to Design Standard Plate 08 10 00-01 and 08 10 00-02 "STANDARD DOOR TYPES" for door type information.

Brief Description of Door Types:

- A Sliding Automatic Entrance Doors
- B Aluminum and Glass Swing Door
- C Flush Door
- CC Flush Double Door
- CL Flush Door with Louver
- CCL Flush Double Door with Louver
- CSL Flush Door with Sidelight
- D Flush Door with View Glass

- E Flush Door with Half Glass
- FF Traffic Door
- GG Traffic Door (Gasketed)
- H Cashier's Door
- J Swinging Cold Storage Room Door
- K Sliding Cold Storage Room Door
- OCD Overhead Coiling Door

DeCA DESIGN CRITERIA HANDBOOK STANDARD COMMISSARY ROOM AND FINISH SCHEDULE

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
r		T	Γ	1	1	1	
1	Entry Vestibule	Entrance Carpet Tile	Resilient Base	See Remarks	Moisture Resistant Gypsum Wallboard or Cement Plaster	10'-0" (3000mm)	 Moisture resistant gypsum wallboard with wall surface protection, aluminum and glass storefront system with wall surface protection, or match exterior building materials. Provide wall-to-wall entrance carpet tile.
2 A 2 B	Exit Vestibule	Polished Concrete or Solid Vinyl Tile	Resilient Base	See Remarks	Moisture Resistant Gypsum Wallboard or Cement Plaster	10'-0" (3000mm)	 Moisture resistant gypsum wallboard with wall surface protection, aluminum and glass storefront system with wall surface protection, or match exterior building materials. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.
3 A 3 B	Cart Return Vestibule	Entrance Carpet Tile	Resilient Base	See Remarks	Moisture Resistant Gypsum Wallboard or Cement Plaster	10'-0" (3000mm)	 Moisture resistant gypsum wallboard with wall surface protection, aluminum and glass storefront system with wall surface protection, or match exterior building materials. Provide wall-to-wall entrance carpet tile.

DeCA DESIGN CRITERIA HANDBOOK STANDARD COMMISSARY ROOM AND FINISH SCHEDULE

ROOM		FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
r	[[[
4	Cashier's Office	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Gypsum Wallboard or Acoustical Panel Ceiling See Remarks	8'-0" (2400mm)	 This is a Secure Room. Design to comply with DeCA Directive 30-18 as indicated in Chapter 1 Design Requirements. Perimeter walls and ceiling of room shall have ¾" fire retardant treated plywood beneath gypsum wallboard facing interior of this room. If perimeter walls of room extend to underside of structure above, an acoustical panel ceiling may be used. Consider overhead duct placement to avoid penetration of secure enclosure. Provide horizontal blinds on all windows in this room. Provide counters and base cabinets in accordance with Design Standard Plate for Customer Service, Cashier's Office, and Cash Counting Room.
5	Cash Counting Room	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room. Provide counters and base cabinets in accordance with Design Standard Plate for Customer Service, Cashier's Office, and Cash Counting Room. Access to this room is controlled by electric door strike from Cashier's Office.
6 A	Customer Service	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Gypsum Wallboard	10'-0" (3000mm)	 Provide counters and base cabinets in accordance with Design Standard Plate for Customer Service, Cashier's Office, and Cash Counting Room.
6 B	Customer Service Office	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 If Customer Service area is open to Checkout Area, consider increasing ceiling height to match décor soffit band (i.e., 10'-0").
7	NOT USED						

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ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
				1			
8	Cart Storage	Polished Concrete or Solid Vinyl Tile	Resilient Base	See Remarks	Exposed Structure or Acoustical Panel Ceiling See Remarks	Same Height as Sales Area	 Provide cart rails to identify limits of Cart Storage. Provide cart bumpers to protect wall surfaces in Cart Storage Area. Provide exposed roof structure (Painted) on new construction projects. Provide acoustical panel ceiling on addition/alteration projects, unless directed otherwise by DeCA PM. Ceiling height shall be as determined during Design Charrette, using DeCA Décor Package, as directed by DeCA Project Manager. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.
9	Family Restroom	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A.
10	Customer Restroom (Men)	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A.
11	Customer Restroom (Women)	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A.
12	Store Director	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm) or 10'-0" (3000mm)	 Provide horizontal blinds on all windows in this room. Provide higher ceiling height if required to coordinate with exterior windows.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
13	Administrative Entry Vestibule	Solid Vinyl Tile	Resilient Base	See Remarks	Moisture Resistant Gypsum Wallboard or Cement Plaster	8'-0" (2400mm) or 10'-0" (3000mm)	 Moisture resistant gypsum wallboard with wall surface protection, aluminum and glass storefront system with wall surface protection, or match exterior building materials. Provide entrance carpet tile as appropriate for location of project.
14	Administrative Corridor	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Gypsum Wallboard or Acoustical Panel Ceiling	8'-0" (2400mm)	
15	Administrative Area	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	10'-0" (3000mm)	
16A	Employee Break Room (Admin Area)	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm) or 10'-0" (3000mm)	 Provide kitchen counter with sink in accordance with Design Standard Plate 06 40 23-04 and space for refrigerator (CED 2A04), microwave (CED 2A26), and 4 seat table with chairs (CED 2A27). Provide rigid wall covering (RWC) wainscot on all exposed wall surfaces.
16B	Employee Break Room (Warehouse Area)	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm) or 10'-0" (3000mm)	 Provide kitchen counter with sink in accordance with Design Standard Plate 06 40 23-04 and space for refrigerator (CED 2A04), microwave (CED 2A26), and 4 seat table with chairs (CED 2A27). Provide rigid wall covering (RWC) wainscot on all exposed wall surfaces.
17	Training Room	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm) or 10'-0" (3000mm)	 Provide counter with base cabinets and open shelving, marker board, and tack boards in accordance with Design Standard Plate for Training Room Cabinets. Provide accent lighting above conference table controlled by dimmer switch.

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Standard Commissary Room and Finish Schedule

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
	1					1	
18	Store Administrator	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm) or 10'-0" (3000mm)	 Provide horizontal blinds on all windows in this room. Provide higher ceiling height if required to coordinate with exterior windows.
19	Store Manager	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room. Provide higher ceiling height if required to coordinate with exterior windows.
20 A 20 B 20 C	Janitor's Closet	Concrete - See General Notes	Resilient Base	Moisture Resistant Gypsum Wallboard	Moisture Resistant Gypsum Wallboard	8'-0" min. (2400mm)	 Provide storage shelving on adjustable wall standards. Provide 48" high fiberglass reinforced panels (FRP) wainscot on wall surfaces above mop basin. Provide mop rack above mop basin.

						STANDA	DeCA DESIGN CRITERIA HANDBOOK RD COMMISSARY ROOM AND FINISH SCHEDULE
ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
21 A 21 B 21 C	Vestibule (Receiving/Stag- ing to Sales Area)	Concrete - See General Notes	None Concrete Curb	Gypsum Wallboard / Prefabricated Insulated Panel	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Gypsum wallboard exposed to Vestibule shall be protected with full height fiberglass reinforced panels (FRP) and 6" high concrete curb. Prefabricated insulated wall panels exposed to Vestibule shall be protected with 6" high concrete curb.
22	Administrative Storage	Concrete - See General Notes	Resilient Base	Gypsum Wallboard	Gypsum Wallboard	8'-0" min. (2400mm)	

ROOM		FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
23	Damaged Merchandise	Concrete - See General Notes	None	Gypsum Wallboard	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	
24	Damaged Merchandise Sales Niche	Polished Concrete or Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Gypsum Wallboard	8'-0" min. (2400mm)	 Provide wall surface protection on all wall surfaces. Provide cased opening between rooms 23 and 24 for fixture 1R09 Damaged Merchandise Display Case. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.
25	Locker Room (Women)	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A. Wall tile is not required behind lockers. Provide double tier metal lockers with sloped tops. Set lockers on raised concrete base. Cover exposed fronts and sides of concrete base with finish base material matching that used elsewhere in room. Provide benches for use with lockers.
26	Employee Restroom (Women)	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A.
27	Employee Restroom (Men)	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A.

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Standard Commissary Room and Finish Schedule

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ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
		1	l	1	1		
28	Locker Room (Men)	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A. Wall tile is not required behind lockers. Provide double tier metal lockers with sloped tops. Set lockers on raised concrete base. Cover exposed fronts and sides of concrete base with finish base material matching that used elsewhere in room. Provide benches for use with lockers.
29	Controlled Temperature Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces.
30	Contract Stocker Storage	Concrete - See General Notes	None	Gypsum Wallboard or Wire Mesh Partition	Exposed Structure	10'-0" min. (3000mm)	
31 A	Communications Room (CISIC)	Concrete - See General Notes	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	10'-0" min. (3000mm)	 Design room in accordance with Design Standard Plate "CISIC ROOM FLOOR PLAN" for large, medium, and small stores. Provide ¾" thick fire treated plywood on all gypsum board wall surfaces as indicated in Design Standard Plate. Ceiling height shall be approximately 2'-0" above adjacent ceilings to allow cable tray to penetrate wall instead of ceiling.
31 B 31 C	Communications Closet (CISIC)	Concrete - See General Notes	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	10'-0" min. (3000mm)	 Design room in accordance with Design Standard Plate "CISIC SUB HUB ROOM FLOOR PLAN". Provide ¾" thick fire treated plywood on all gypsum board wall surfaces as indicated in Design Standard Plate. Ceiling height shall be approximately 2'-0" above adjacent ceilings to allow cable tray to penetrate wall instead of ceiling.

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ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
		1	1	1	1	-	
31 D 31 E	Mechanical Room	Concrete - See General Notes	Resilient Base See Remarks	Gypsum Wallboard or CMU	Exposed Structure	8'-0" min. (2400mm) or As Required	 Use CMU wall construction unless room is located in area containing all gypsum wallboard construction. Provide specific room name as appropriate (i.e., Mechanical Room, Electrical Room, Sprinkler Room, etc.). Resilient base not required at CMU walls. Extend perimeter walls of room to underside of structure above.
32	Sensitive Storage	Concrete - See General Notes	None	Gypsum Wallboard or Wire Mesh Partition	Gypsum Wallboard or Exposed Construction	12'-0" min. (3600mm) or 17'-0" min. (5180mm) min * clear height	 Ceiling not required if perimeter walls of room extend to underside of structure above. Ceiling height shall be determined based on storage racks to be located within this room.
33	Operating Supply Storage	Concrete - See General Notes	None	Gypsum Wallboard or Wire Mesh Partition	Gypsum Wallboard or Exposed Construction	12'-0" min. (3600mm) or 17'-0" min. (5180mm) min * clear height	 Ceiling not required if perimeter walls of room extend to underside of structure above. Ceiling height shall be determined based on storage racks to be located within this room.
34	Medical Food Inspection Office	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room.
35	Receiving Manager	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard or CMU	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room. Provide concrete filled bumper posts on outside exposed corners.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
36 A	Receiving Area	Concrete - See General Notes	None	CMU, Gypsum Wallboard, or Concrete	Exposed Structure	17'-0" min. (5180mm)	 A clear height of 17'-0" minimum shall be maintained from finished floor to any obstruction or structural member. Pallet storage racks shall be bolted to floor slab with corner guard protection at each upright frame. All walls facing Receiving Area shall be full height to underside of roof structure and sealed air tight. Any gypsum wallboard or prefabricated insulated wall panels exposed to Receiving Area shall be protected with a 30" high concrete curb.
37	Staging Area	Concrete - See General Notes	None	CMU, Gypsum Wallboard, or Concrete	Exposed Structure	17'-0" min. (5180mm)	 A clear height of 17'-0" minimum shall be maintained from finished floor to any obstruction or structural member. Pallet storage racks shall be bolted to floor slab with corner guard protection at each upright frame. All walls facing Staging Area shall be full height to underside of roof structure and sealed air tight. Any gypsum wallboard or prefabricated insulated wall panels exposed to Staging Area shall be protected with a 30" high concrete curb.
38	MHE Charging Area	Concrete - See General Notes	None	CMU, Gypsum Wallboard, or Concrete	Exposed Structure	17'-0" min. (5180mm)	 A clear height of 17'-0" minimum shall be maintained from finished floor to any obstruction or structural member. Pallet storage racks shall be bolted to floor slab with corner guard protection at each upright frame. All walls facing MHE Charging Area shall be full height to underside of roof structure and sealed air tight. Any gypsum wallboard or prefabricated insulated wall panels exposed to MHE Charging Area shall be protected with a 30" high concrete curb.

DeCA DESIGN CRITERIA HANDBOOK STANDARD COMMISSARY ROOM AND FINISH SCHEDULE ROOM NAME ROOM FLOOR FINISH **BASE FINISH** WALL FINISH **CEILING FINISH** CEILING HT. REMARKS **Resilient Base** 39 Mass Polished See Remarks Exposed Structure or Same Height Provide cart rails to identify limits of Mass Display **Display Area** Concrete Acoustical Panel as Sales Area if appropriate. or Solid Vinyl Tile . Provide cart bumpers or wood bumper rails to protect Ceiling See Remarks Area wall surfaces in Mass Display Area if appropriate. . Provide exposed roof structure (painted) on new construction projects. Provide acoustical panel ceiling on addition/alteration . projects. Ceiling height shall be as determined during Design . Charrette, using DeCA Uniform Décor Package, as directed by DeCA Project Manager. • Provide accent lighting as directed by DeCA Project Manager. Provide polished concrete floor finish on new • construction projects. . Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required. NOT USED 40

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
41	Plant Display Area	Polished Concrete or Solid Vinyl Tile	Resilient Base	See Remarks	Exposed Structure or Acoustical Panel Ceiling See Remarks	Same Height as Sales Area	 Provide cart rails to identify limits of Plant Display Area if appropriate. Provide cart bumpers or wood bumper rails to protect wall surfaces in Plant Display Area if appropriate. Provide exposed roof structure (painted) on new construction projects. Provide acoustical panel ceiling on addition/alteration projects. Ceiling height shall be as determined during Design Charrette, using DeCA Uniform Décor Package, as directed by DeCA Project Manager. Provide accent lighting as directed by DeCA Project Manager. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.
42	NOT USED						
43 A	Produce Chilled Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
43 B	Produce Chilled Storage (GAS)	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected.
							with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
44 A	Produce Processing	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30° high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6° high concrete curb.
44 B	Produce Ambient Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
45	Produce Manager	Solid Vinyl Tile	Resilient Base	Moisture Resistant Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide observation window into Produce Processing area. Provide horizontal blinds on all windows in this room. Provide floor threshold and perimeter gasket on door frame to minimize moisture migration into office from adjacent refrigerated space.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
				•	·		
46	Seafood Display Area	Resinous Flooring	Unglazed Porcelain Tile	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Slope floor to drain. Provide full height ceramic wall tile in accordance with the DeCA Standard Décor Package. Terminate resinous floor finish beneath display case line-up.
47	Meat/Produce Operating Supply Storage	Concrete - See General Notes	None and Concrete Curb	Gypsum Wallboard and Prefabricated Insulated Panel	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Prefabricated insulated wall panels exposed to room shall be protected with 6" high concrete curb.
48	NOT USED						
49	NOT USED						
50	NOT USED						
51	Employee Restroom	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A. See Design Criteria Division 10 "SIGNS" for required signage.
52	NOT USED						
53	Employee Restroom	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A. See Design Criteria Division 10 "SIGNS" for required signage.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
		1	1	1	1	I	
54	Receiving Aisle	Concrete - See General Notes	None	CMU, Gypsum Wallboard or Concrete	Exposed Structure	17'-0" min. (5180mm)	 A clear height of 17'-0" minimum shall be maintained from finished floor to any obstruction or structural member. All walls facing Receiving Aisle shall be full height to underside of roof structure and sealed air tight. Any gypsum wallboard or prefabricated insulated wall panels exposed to Receiving Aisle shall be protected with a 30" high concrete curb.
55	Meat Processing	Resinous Flooring	Resinous Flooring on Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide red colored resinous flooring. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
56	Meat Wrapping	Resinous Flooring	Resinous Flooring on Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide red colored resinous flooring. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
57	Meat Manager	Resinous Flooring	Resilient Base	Moisture Resistant Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide observation window into Meat Processing area. Provide horizontal blinds on all windows in this room. Provide floor threshold and perimeter gasket on door frame to minimize moisture migration into office from adjacent refrigerated space.
June	2022					Standard Con	nmissary Room and Finish Schedule 15

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
58	Meat	Resinous Flooring	Resinous Flooring	Unpolished	Gypsum Wallboard	8'-0" min.	 Cover cold storage room insulated wall panels with
	Restocking Aisle		on Concrete Curb	porcelain Tile		(2400mm)	 gypsum wallboard on metal studs. Do not adhere gypsum wallboard directly to cold storage room insulated wall panels. Refer to Design Criteria Section "BUILDING INSULATION". Coordinate ceiling height with DeCA standard décor package.
59	Meat Chill Stor- age	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
60	NOT USED						
61	Prepackaged Meat Chill Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
62	Poultry Chill Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
63	NOT USED						
64	NOT USED						
65	NOT USED						
66	NOT USED						
67	Dairy Chill Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
68	Frozen Food Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. See Division 3 "INSULATING CONCRETE FREEZER FLOORS" for required floor construction. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
69	Sales Area	Polished Concrete or Solid Vinyl Tile	Resilient Base	See Remarks	Exposed Structure or Acoustical Panel Ceiling See Remarks	18'-0", 16'-0", 14'-0", 12'-0" See Remarks	 Provide protection posts, case corner guards, and cart bumpers as appropriate for protection of display fixtures. Provide wood bumper rails to protect exposed wall surfaces in Sales Area. Provide exposed roof structure (painted) on new construction projects. Provide acoustical panel ceiling on addition/alteration projects. Ceiling height shall be as determined during Design Charrette, using DeCA Uniform Décor Package, as directed by DeCA Project Manager. Provide accent lighting as directed by DeCA Project Manager. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.
70	Deli Service Area	Resinous Flooring	Resinous Coved Base	Porcelain Tile	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Provide full height ceramic wall tile in accordance with the DeCA Standard Décor Package. Terminate resinous floor finish beneath display case line-up.
71	NOT USED						

June 2022

Standard Commissary Room and Finish Schedule

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
72	Bakery Service Area	Resinous Flooring	Resinous Coved Base	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Provide full height ceramic wall tile in accordance with the DeCA Standard Décor Package. Terminate resinous floor finish beneath display case line-up.
73	Deli Preparation Area	Resinous Flooring	Resinous Coved Base	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Provide full height ceramic wall tile in accordance with the DeCA Standard Décor Package. Terminate resinous floor finish beneath display case line-up.
74	Bakery Prepara- tion Area	Resinous Flooring	Resinous Coved Base	Unglazed Porcelain Tile	Moisture Resistant Gypsum Wallboard	10'-0" (3000mm)	 Provide full height ceramic wall tile in accordance with the DeCA Standard Décor Package. Terminate resinous floor finish beneath display case line-up.
75	Bakery Chill Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
76	Bakery Freezer	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. See Division 3 "INSULATING CONCRETE FREEZER FLOORS" for required floor construction. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
		Γ		I			
77	Deli Chill Storage	Concrete - See General Notes	Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed to staging area and receiving area shall be protected with a 30" high concrete curb. Prefabricated insulated wall panels exposed to corridors and other high traffic areas shall be protected with 6" high concrete curb.
78	Deli / Bakery Dry Storage	Resinous Flooring	Resilient Base	Gypsum Wallboard	Gypsum Wallboard	10'-0" (3000mm)	
79	NOT USED						
80	Bagger Break Room	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide space for 4 seat table with chairs (CED 2A27) as determined appropriate during Design Charrette. Provide rigid wall covering (RWC) wainscot on all exposed wall surfaces. Provide double tier metal lockers with sloped tops. Set lockers on raised concrete base in rooms with permanent locker configuration. Set lockers on built-up wood base in rooms where locker configuration could be revised. Cover exposed fronts and sides of locker bases with finish base material matching that used elsewhere in room.

ROOM		FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
81	Checkout	Polished Concrete or Solid Vinyl Tile	Resilient Base	See Remarks	Exposed Structure or Acoustical Panel Ceiling (See Remarks)	Same Height as Sales Area	 Provide cart rails to identify limits of Checkout Area. Provide exposed roof structure (painted) on new construction projects. Provide acoustical panel ceiling on addition/alteration projects.
							 Projects. Ceiling height shall be as determined during Design Charrette, using DeCA Uniform Décor Package, as directed by DeCA Project Manager. Provide accent lighting as directed by DeCA Project Manager. Provide wood bumper rails to protect exposed wall surfaces. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.
82	Customer Checkout Queuing	Polished Concrete or Solid Vinyl Tile	Resilient Base	See Remarks	Exposed Structure or Acoustical Panel Ceiling See Remarks	Same Height as Sales Area	 Provide protection posts with bumpers are jambs of customer exit doors and carry-out return doors. Provide cart bumpers as appropriate to protect storefront systems. Provide wood bumper rails to protect exposed wall surfaces. Provide exposed roof structure (painted) on new construction projects. Provide acoustical panel ceiling on addition/alteration projects. Ceiling height shall be as determined during Design Charrette, using DeCA Uniform Décor Package, as directed by DeCA Project Manager. Provide polished concrete floor finish on new construction projects. Provide acount lighting as directed by DeCA Project Manager. Provide polished concrete floor finish on new construction projects. Provide solid vinyl tile (SVT) floor finish on addition/alteration projects or match existing if only partial replacement is required.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
83	Mechanical Mezzanine	Concrete	None and Resilient Base	CMU and Moisture Resistant Gypsum Wallboard	Exposed Structure	8'-0" min. (2400mm) or As Required	 Provide resilient base on gypsum wallboard partitions. Provide sound attenuation blankets within gypsum wallboard partitions to minimize sound transmission. Seal penetrations in floors, walls, and ceilings to minimize sound transmission.
84	Vendors Room	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide 24" deep x 30" high work counter.
85	Seafood Chill Storage	Resinous Flooring	Resinous Flooring on Concrete Curb	Prefabricated Insulated Panel	Prefabricated Insulated Panel	10'-0" (3000mm)	 Refrigerated cold storage room. Slope floor to drain. Provide red colored resinous flooring. Provide concrete curb on all exposed wall surfaces. Prefabricated insulated wall panels exposed high traffic areas shall be protected with 6" high concrete curb.
86	Bagger Restroom	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A. See Design Criteria Division 10 "SIGNS" for required signage.
87	Perishable Manager	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room.
88	Semi-Perishable Manager	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room.
89	Zone Manager	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room.

ROOM	ROOM NAME	FLOOR FINISH	BASE FINISH	WALL FINISH	CEILING FINISH	CEILING HT.	REMARKS
					·		
90	Region Management Support Office	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room.
91	Region Management Support Storage	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	
92	Conference Room	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide horizontal blinds on all windows in this room.
93	Cashier Locker / Break Room	Solid Vinyl Tile	Resilient Base	Gypsum Wallboard	Acoustical Panel Ceiling	8'-0" (2400mm)	 Provide space for 4 seat table with chairs (CED 2A27) as determined appropriate during Design Charrette. Provide rigid wall covering (RWC) wainscot on all exposed wall surfaces. Provide double tier metal lockers with sloped tops. Set lockers on raised concrete base in rooms with permanent locker configuration. Set lockers on built-up wood base in rooms where locker configuration could be revised. Cover exposed fronts and sides of locker bases with finish base material matching that used elsewhere in room.
94	Cashier Restroom	Unpolished porcelain tile	Unpolished porcelain tile	Unpolished porcelain tile	Moisture Resistant Gypsum Wallboard	8'-0" (2400mm)	 Provide full height porcelain wall tile as indicated in Appendix D – UNIFORM DÉCOR PACKAGE, ID8.1A. See Design Criteria Division 10 "SIGNS" for required signage.

GENERAL NOTES

June 2022

				DEMADING
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- (1) Room numbers indicated in Schedule are typical for a commissary facility. All room types listed may or may not be required on a particular project. During development of the concept floor plan, the need for each room type should be addressed for applicability. Provide documentation in project file of reason that any room type is not required on project.
- (2) See "General Design Information" for additional guidance relating to materials and finishes on new construction projects and addition/alteration projects.
- (3) Exposed concrete floors in building (other than polished concrete finish in customer areas) shall have 2 coats of acrylic liquid floor sealing treatment, applied in accordance with Division 3 "CAST-IN-PLACE CONCRETE". Clarify this construction requirement on Room Finish Schedule.
- (4) Do not paint exposed CMU walls in non-customer areas, except in occupied office areas. On addition / alteration projects, paint all existing and new CMU to match.
- (5) All exposed gypsum wallboard shall be finish painted. Non-exposed gypsum wallboard shall be taped, sanded, and primed. Gypsum wallboard behind non-permanent (i.e. movable) display fixtures shall be finish painted.
- (6) Do not paint exposed roof structure (including utilities) in non-customer areas. Paint exposed roof structure (including utilities) in customer areas. AE NOTE: Confirm that metal primer specified is compatible with finish coat applied on metal surfaces to be painted.

24

Appendix B – Product Data Sheets

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CED 1A03-N





1A03-N - ACCELERATE

Drawing: Not to Scale

NOTE: The customer is ultimately responsible for the accuracy and correctness of component counts and measurements. The customer is also responsible for the space planning and all design work of projects. Customer shall verify and confirm all site conditions, dimensions, and suitability of products and applications consistent with published guidelines and applicable codes. Liability of The HON Company shall be limited to the amount charged for the Specification Services rendered and in no event shall The HON Company be responsible for any consequential or incidental damages. HON

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CED 1A03-R





1A03-R - ACCELERATE

Drawing: Not to Scale

NOTE: The customer is ultimately responsible for the accuracy and correctness of component counts and measurements. The customer is also responsible for the space planning and all design work of projects. Customer shall verify and confirm all site conditions, dimensions, and suitability of products and applications consistent with published guidelines and applicable codes. Liability of The HON Company shall be limited to the amount charged for the Specification Services rendered and in no event shall The HON Company be responsible for any consequential or incidental damages. HON

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CED 1A03-U





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N

Date:

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Drawing: Not to Scale

NOTE: The customer is ultimately responsible for the accuracy and correctness of component counts and measurements. The customer is also responsible for the space planning and all design work of projects. Customer shall verify and confirm all site conditions, dimensions, and suitability of products and applications consistent with published guidelines and applicable codes. Liability of The HON Company shall be limited to the amount charged for the Specification Services rendered and in no event shall The HON Company be responsible for any consequential or incidental damages.



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CED 1B02

HUSSMAnn®

Specialty



SHVS

Multi-Deck Service Merchandiser with Curved Glass for Bakery Applications

- Refrigerated or Dry

CED 1B02 Hussmann Multi-Deck Service Merchandiser for Bakery Applications - Refrigerated or Dry



Remote Lengths: 48", 57 1/2", 75 1/2", and 96" **Non-Refrigerated Lengths:** 48", 57 1/2", 75 1/2", and 96"



Plan View



HUSSMANN®

Features and Benefits:

- Tempered, double curved, lift-up front glass
- One 20" and two 26" glass, lighted shelves
- Thermostat
- White interior
- Rear sliding doors
- Please reference color chart for choice of standard Hussmann paint and finish options (www.hussmann.com)

Options Include:

- Non-glare glass
- LED lighting for shelves and canopy †
- Clear top glass †
- End panels (solid or view end)
- Solid, view or mirrored ends
- Mirror rear sliding doors
- Silver, black or brass hardware
- Solid metal or wire shelves
- Stainless steel interior
- Custom lengths and options*
- (consult your Hussmann sales representative)

Additional Information:

- Multi-Deck Self-Service Bakery Case: $\ensuremath{\mathsf{SHVSS}}$
- Self-Service Low Temp Case: SFG/SGNG



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DDE 2012 energy efficiency standards.

- Some optional features may need to be certified by UL, NSF, and/or other 3rd party certification agencies. Contact Hussmann for verification or questions for availability.
- + Only lighting configurations that are compliant with the U.S. Dept. of Energy (DOE) 2012 regulation are available for sale for use in the U.S.A.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H. We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.

Note.

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.



Hussmann Specialty 13770 Ramona Avenue Chino, California 91710-5423 Ph: 800.395.9229

www.hussmann.com



REFRIGERATION DATA:

		*** CAPACITY			TEMPERATURE (°F)								COL
CASE	CASE	(BTU/HR	TOTAL)	EVAPORATOR		UNIT SIZING*		DISCHARGE AIR			CHRG.	REQUIREMENTS	
LENGIN	ODAGE	PAR	CONV	PAR	CONV	PAR	CONV	PAR	CONV	(FT/MIN)	(LBS)	GPM	PSI
48" (4')	BAKERY	2100	2415	22	22	20	20	30	30	450	1.2	0.8	2.3
57.5" (5')	BAKERY	2825	3249	22	22	20	20	30	30	450	1.5	1	3.3
75.5" (6')	BAKERY	3390	3899	22	22	20	20	30	30	450	1.8	1.2	5.2
8'	BAKERY	4520	5198	22	22	20	20	30	30	450	2.4	1.6	2.8
12'	BAKERY	6780	7797	22	22	20	20	30	30	450	3.6	2.4	5.9

END P/	ANEL W	IDTH KEY									
# OF END PNLS	END PNL WIDTH	Total added Length (IN.)									
1	1.125	1.125									
2	2 1.125 2.25										
LEGE	ND										
PAR-	PARALL	EL									
CONV-	CONV- CONVENTIONAL										
N/A -	N/A - NOT AVAILABLE										
TBD -	TBD - TO BE DETERMINED										
A/S-	AIRSWE	EP									

*2º F less than evaporator for pressure loss in refrigerant lines

REFRIGERATION DATA CONTINUED:

ELEC.	THERMOST	AT / AIR	50		109	CONVEN. COMPRESS. SETTINGS						
SEM	SENSOR SETTINGS		El II del I II del			R22		R404A		R407A		
USAGE	USAGE CUT IN CUT OUT (°F) (°F)		R22 (PSIG)	R404A (PSIG)	R407A (PSIG)	CUT IN (PSI)	CUT OUT (PSI)	CUT IN (PSI)	CUT OUT (PSI)	CUT IN (PSI)	CUT OUT (PSI)	
BAKERY	32	28	45	58	TBD	40	10	40	10	40	10	

REFRIGERATION NOTES:

DEFROST DATA:

48" (4') OFF TIME

57.5" (5') OFF TIME

75.5" (6') OFF TIME

12' OFF TIME

DEFROST

TYPE

OFF TIME

CASE

LENGTH

8'

1) BTU'S INCLUDE 1 ROW FLOURESCENT CANOPY LIGHTS BUT NO SHELF LIGHTS 2) ADD 20 BTU'S PER FOOT/PER SHELF FOR FLOURESCENT SHELF LIGHTS

3) ADD 10 BTU'S PER FOOT/PER SHELF FOR OPTIONAL LED SHELF LIGHTS

4) DEDUCT 10 BTU'S PER FOOT FOR OPTIONAL LED CANOPY LIGHTS

TERM

TEMP

(ºF)

COIL ONLY

54º

54º

54º

54º

54º

TIME

(MIN.)

30

30

30

30

30

DRIP

TIME

(MIN.)

TBD

TBD

TBD

TBD

TBD

DEFROST PER DAY

6

6

6

6

6

ELECTRICAL DATA:

	FANS AND	HEATERS	(120 VOLT)			LIGHTIN	G: T5 WIT	H ELECTR	RONIC BA	LLASTS 1	20V INPL	JT VOLTA	GE							
CASE LENGTH	# OF FANS PER CASE	** TOTAL EVAPORATOR + AIR SWEEP FANS		T5 CANOPY LIGHTS (1 ROW)		LED CANOPY LIGHTS (OPTIONAL)		T5 SHELF LIGHTS (OPTIONAL)		LED SHELF LIGHTS (OPTIONAL)		TOTAL T-5 LIGHTS		TOTAL LED LIGHTS		ANTI-SWEAT HEATERS (On Fan Circuit)		LEDGE LIGHTS (OPTIONAL)		
		AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# SHLVS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
48" (4')	5	0.99	69	0.26	28	0.075	7.5	2	0.52	56	0.2	20	0.78	84	0.275	27.5	1.04	120	N/A	N/A
57.5" (5')	5	0.99	69	0.32	35	0.1	10	2	0.64	70	0.25	25	0.96	105	0.35	35	1.03	123	N/A	N/A
75.5" (6')	6	1.22	89	0.39	42	0.13	13	2	0.78	84	0.29	30	1.17	126	0.42	43	1.38	165	N/A	N/A
8'	10	1.98	138	0.52	56	0.15	15	4	1.04	112	0.4	40	1.56	168	0.51	55	2	240	N/A	N/A
12'	15	2.97	207	0.78	84	0.225	22.5	6	1.56	168	0.6	60	2.33	252	0.78	84	3.13	360	N/A	N/A
	** ENERGY EFFICIENT EVAP FANS ARE NOT AVAILABLE																			

ELECTRICAL DATA CONTINUED:

CASE	CONDENS VOLTS	SING UNIT	DRAIN EV 240V 1	/AP PAN PHASE	CONVENIENCE OUTLETS (Optional)				
LENGTH	208/1	240/1		r			AMPS		
	AMPS	AMPS	AMPS	WATTS	# OUTLETS	VOLTS			
48" (4')	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
57.5" (5')	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
75.5" (6')	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
8'	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
12'	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

OPTIONS/NOTES:

DEFROST

TBD

TBD

TBD

TBD

TBD

ATER (LB/DAY)

PNLS	WIDTH	LENG
1	1.125	1.
2	1.125	2
LEGE	ND	
PAR-	PARALL	EL.
CONV-	CONVE	NTIONA
NI/A	NOT A	
	PNLS 1 2 LEGE PAR- CONV- N/A -	PNLS WIDTH 1 1.125 2 1.125 LEGEND PAR- PARALL CONV- CONVEI N/A - NOT A)

ELECTRICAL

DEFROST

208V 1 PHASE

N/A N/A

N/A

N/A

N/A

N/A

AMPS WATTS

N/A

N/A

N/A

N/A

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CED 1B06

HUSSMAnn®

Specialty



SHVS

Multi-Deck Service Merchandiser with Curved Glass for Bakery Applications

- Refrigerated or Dry

CED 1B06 Hussmann Multi-Deck Service Merchandiser for Bakery Applications - Refrigerated or Dry



Remote Lengths: 48", 57 1/2", 75 1/2", and 96" **Non-Refrigerated Lengths:** 48", 57 1/2", 75 1/2", and 96"



Plan View



HUSSMANN®

Features and Benefits:

- Tempered, double curved, lift-up front glass
- One 20" and two 26" glass, lighted shelves
- Thermostat
- White interior
- Rear sliding doors
- Please reference color chart for choice of standard Hussmann paint and finish options (www.hussmann.com)

Options Include:

- Non-glare glass
- LED lighting for shelves and canopy †
- Clear top glass †
- End panels (solid or view end)
- Solid, view or mirrored ends
- Mirror rear sliding doors
- Silver, black or brass hardware
- Solid metal or wire shelves
- Stainless steel interior
- Custom lengths and options*
- (consult your Hussmann sales representative)

Additional Information:

- Multi-Deck Self-Service Bakery Case: SHVSS
- Self-Service Low Temp Case: SFG/SGNG



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DDE 2012 energy efficiency standards.

- Some optional features may need to be certified by UL, NSF, and/or other 3rd party certification agencies. Contact Hussmann for verification or questions for availability.
- + Only lighting configurations that are compliant with the U.S. Dept. of Energy (DOE) 2012 regulation are available for sale for use in the U.S.A.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H. We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.

Note.

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.



Hussmann Specialty 13770 Ramona Avenue Chino, California 91710-5423 Ph: 800.395.9229

www.hussmann.com


REFRIGERATION DATA:

		*** CA	PACITY		TEMPERA	TURE (ºF)				VELOCITY		GLY	COL
CASE	CASE	(BTU/HR	TOTAL)	EVAPOR	ATOR	UNITS	SIZING*	DISCHA	RGE AIR		CHRG.	REQUIRE	MENTS
LENGTH	00/102	PAR	CONV	PAR	CONV	PAR	CONV	PAR	CONV	(FT/MIN)	(LBS)	GPM	PSI
48" (4')	BAKERY	2100	2415	22	22	20	20	30	30	450	1.2	0.8	2.3
57.5" (5')	BAKERY	2825	3249	22	22	20	20	30	30	450	1.5	1	3.3
75.5" (6')	BAKERY	3390	3899	22	22	20	20	30	30	450	1.8	1.2	5.2
8'	BAKERY	4520	5198	22	22	20	20	30	30	450	2.4	1.6	2.8
12'	BAKERY	6780	7797	22	22	20	20	30	30	450	3.6	2.4	5.9

ENI	END PANEL WIDTH KEY											
# (EN PN	DF ND LS	Total added Length (In.)										
1	1 1.125 1.125											
2	2	1.125	2.25									
	EGE	ND										
P	AR-	PARALL	EL									
CO	NV-	CONVE	NTIONAL									
N	N/A - NOT AVAILABLE											
TE	TBD - TO BE DETERMINED											
	A/S- AIRSWEEP											

*2º F less than evaporator for pressure loss in refrigerant lines

REFRIGERATION DATA CONTINUED:

ELEC.	THERMOST	AT / AIR	50		109	CONVEN. COMPRESS. SETTINGS								
SEM	SOR SETT	INGS	Lr		105	R	R22 R404A R407A				07A			
USAGE	CUT IN (ºF)	CUT OUT (ºF)	R22 (PSIG)	R404A (PSIG)	R407A (PSIG)	CUT IN (PSI)	CUT OUT (PSI)	CUT IN (PSI)	CUT OUT (PSI)	CUT IN (PSI)	CUT OUT (PSI)			
BAKERY	32	28	45	58	TBD	40	10	40	10	40	10			

REFRIGERATION NOTES:

DEFROST DATA:

48" (4') OFF TIME

57.5" (5') OFF TIME

75.5" (6') OFF TIME

12' OFF TIME

DEFROST

TYPE

OFF TIME

CASE

LENGTH

8'

1) BTU'S INCLUDE 1 ROW FLOURESCENT CANOPY LIGHTS BUT NO SHELF LIGHTS 2) ADD 20 BTU'S PER FOOT/PER SHELF FOR FLOURESCENT SHELF LIGHTS

3) ADD 10 BTU'S PER FOOT/PER SHELF FOR OPTIONAL LED SHELF LIGHTS

4) DEDUCT 10 BTU'S PER FOOT FOR OPTIONAL LED CANOPY LIGHTS

TERM

TEMP

(ºF)

COIL ONLY

54º

54º

54º

54º

54º

TIME

(MIN.)

30

30

30

30

30

DRIP

TIME

(MIN.)

TBD

TBD

TBD

TBD

TBD

DEFROST PER DAY

6

6

6

6

6

ELECTRICAL DATA:

	FANS AND	HEATERS	(120 VOLT)			LIGHTIN	G: T5 WIT	H ELECTR	RONIC BA	LLASTS 1	20V INPL	JT VOLTA	GE							
CASE FA LENGTH PI	# OF FANS PER	F ** TOTAL NS EVAPORATOR + AIR R SWEEP FANS		T5 CANOPY LIGHTS (1 ROW) LIGHTS (0PTIONAL)		T5 SHELF LIGHTS (OPTIONAL) LED SHELF LIGHTS (OPTIONAL)			TOTAL T-5 LIGHTS		TOTAL LED LIGHTS		ANTI-SWEAT HEATERS (On Fan Circuit)		LEDGE LIGHTS (OPTIONAL)					
	CASE	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# SHLVS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
48" (4')	5	0.99	69	0.26	28	0.075	7.5	2	0.52	56	0.2	20	0.78	84	0.275	27.5	1.04	120	N/A	N/A
57.5" (5')	5	0.99	69	0.32	35	0.1	10	2	0.64	70	0.25	25	0.96	105	0.35	35	1.03	123	N/A	N/A
75.5" (6')	6	1.22	89	0.39	42	0.13	13	2	0.78	84	0.29	30	1.17	126	0.42	43	1.38	165	N/A	N/A
8'	10	1.98	138	0.52	56	0.15	15	4	1.04	112	0.4	40	1.56	168	0.51	55	2	240	N/A	N/A
12'	15	2.97	207	0.78	84	0.225	22.5	6	1.56	168	0.6	60	2.33	252	0.78	84	3.13	360	N/A	N/A
	** ENERGY EFFICIENT EVAP FANS ARE NOT AVAILABLE																			

ELECTRICAL DATA CONTINUED:

CASE	CONDENS VOLTS	sing unit / Phase	DRAIN EV										
LENGTH	208/1	240/1	240 1 1	PHASE	(Optional)								
	AMPS	AMPS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS						
48" (4')	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
57.5" (5')	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
75.5" (6')	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
8'	N/A	N/A	N/A	N/A	N/A	N/A	N/A						
12'	N/A	N/A	N/A	N/A	N/A	N/A	N/A						

OPTIONS/NOTES:

DEFROST

TBD

TBD

TBD

TBD

TBD

ATER (LB/DAY)

END F		
# OF END PNLS	END PNL WIDTH	TOTAL ADD LENGTH (I
1	1.125	1.125
2	1.125	2.25

IRD -	TO BE DETERMINED
A/S-	AIRSWEEP

ELECTRICAL

DEFROST

208V 1 PHASE

N/A N/A

N/A

N/A

N/A

N/A

AMPS WATTS

N/A

N/A

N/A

N/A

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HUSSMAnn®

Specialty



Multi-Deck Self-Service Merchandiser for Bakery Application

- Refrigerated or Dry

Hussmann Multi-Deck Self-Service Merchandiser for Bakery Applications - Refrigerated or Dry

SHVSS



Quality Fit and Finish This self-service unit can be placed in line with a SHVS service bakery case to give a clean transition between service and self-service.



Remote Lengths: 48", 57 1/2", 75 1/2", 96", and 144" **Non-Refrigerated Lengths:** 48", 57 1/2", 75 1/2", 96", and 144"

SHVSS Self-Service Bakery



SHVSS Plan View



HUSSMANN

Features.

- LED shelf and canopy lighting $\ensuremath{^{\ddagger}}$
- One 16", one 20", and one 22" metal, LED lighted shelf
- Black interior
- Impact bumper
- Standard Hussmann colors
- Please reference color chart for choice of standard Hussmann paint and finish options (www.hussmann.com)

Options.

- End panels (solid or view end)
- White interior
- Glass or wire shelves
- Stainless steel interior
- Custom lengths and options*
- (consult your Hussmann sales representative)
- Special interior and exterior finishes*
- (consult your Hussmann sales representative)

Additional Information.

- Multi-Deck Self-Service Bakery Case: SHVS
- Self-Service Low Temp Case: SFG/SGNG



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

- * Some optional features may need to be certified by UL, NSF, and/or other 3rd party certification agencies. Contact Hussmann for verification or questions for availability.
- + Only lighting configurations that are compliant with the U.S. Dept. of Energy (DDE) 2017 regulation are available for sale for use in the U.S.A.

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Hussmann Specialty

13770 Ramona Avenue Chino, California 91710-5423 Ph: 800.395.9229

www.hussmann.com

04/28/17



SERVICE CAKE HUSSMANN - SHVSS (CHINO)

DOE 2017

Energy Efficiency Compliant

Intertek Intertek

SHVSS Self-Service Bakery





Russmann refrigerated metchandisers configured for sale for use in the United States meet or surpass the requirements of the DDF 2017 energy efficienty standards



REVISION DATE

REFRIGERATION DATA:

CASE LENGTHS	CASE LISAGE	CAPA (BTU	(CITY *** //HR/FT)		TEMPERAT	URE (°F)	VELOCITY (FT/MIN)	
(iN)		RATING	CONDITION	EVAP	ORATOR	DISCHARGE AIR ** (°F)		
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7	
48, 57.5, 75.5, 96, 144	57.5, 75.5, BAKERY 725 725		24	24	30~32	300~350		

CASE	EST. REFG. CHRG.	20°F GLYCOL 6° RISE				
	404A (LBS)	GPM	PSI			
48"	0.50	0.80	1.9			
57.5**	0.70	1,06	2.7			
75.5"	9.00	1.31	4.4			
96"	1.10	1.55	6.2			

FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB *REFRIGERATION NOTES:

1) BTU'S INCLUDE CANOPY LIGHTS. ADD 10 BTUS/SHELF/FT FOR EACH SHELF (LIGHT)

2) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY

3) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT, ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SHOWN.

4) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

									EN	ID PANEL	WIDTH KEY	
REFRIGERATION DATA CONTINUED: ELEC. THERMOSTAT / AIR SENSOR SETTINGS			UED:		DEFROST	TERM,	0010		# OF END			
USAGE	CUTIN		TYPE	TIME (MIN)	FREQUENCY	TEMP (°F) COIL	TIME	(LBS/DAY/FT)	PNLS	(IN.)		
	(°F)	(°F)			(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ONLY			1	1.125	1.125	
BAKERY	32	28	OFF TIME	30	6	48	N/A	4.2	2	1.125	2.25	

ELECTRICAL DATA:

STANDARD FANS, LED LIGHTS (115 VOLT)

CASE LENGTH		E	VAPORATO	OR FANS		AIRSWEEP FANS			CANOPY LIGHTS LED		OPTIONAL LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)	
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH	AMPS	WATTS	# OF FANS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
48"	3	4	N/A	0.1	14	N/A	N/A	N/A	0.09	10	0.27	31	0.36	41
57.5"	3	4	N/A	0.1	14	N/A	N/A	N/A	0.09	10	0.27	31	0.36	41
75.5"	4	4	N/A	0,2	19	N/A	N/A	N/A	0.13	15	0,40	46	0.53	61
96"	6	4	N/A	0,2	28	N/A	N/A	N/A	0.18	21	0.54	62	0.72	82
144"	9	4	N/A	0.4	42	N/A	N/A	N/A	0,27	31	1.08	93	1,35	124

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY H.O	Y LIGHTS . LED	OPTION	AL SHELF	MAX. H.O. LED LOAD			
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS		
48"	0,13	15	0.40	46	0,53	61		
57.5"	0.13	15	0.40	46	0.53	61		
75.5"	N/A	N/A	N/A	N/A	N/A	N/A		
96"	0.26	30	0.79	91	1.06	122		
144"	0.26	30	1,59	183	1,85	213		

Standard Heaters, Optional outlets

ANTI-S HEATERS CIRC	WEAT (ON FAN UIT)	CONVENIENCE OUTLETS (OPTIONAL)					
AMPS	WATTS	# OUTLETS	VOLTS	AMPS			
N/A	N/A	1	115	15			
N/A	N/A	1	115	15			
N/A	N/A	1	115	15			
N/A	N/A	1	115	15			
N/A	N/A	1	115	15			

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HUSSMAnn®



RLN, RMN

Narrow Reach-In Merchandisers for Frozen Food, Ice Cream, and Medium Temperature Applications

> - Available with Hussmann "Innovator", "Innovator II" or "Innovator III" Glass Doors.

Hussmann Narrow Reach-In Merchandisers for Frozen Food, Ice Cream, and Medium Temp Applications

RLN - Low Temp Narrow Reach-In RMN - Medium Temp Narrow Reach-In

Available in 1, 2, 3, 4, and 5 door models.



Plan View



A 31 1/2 (800) 62 (1575) 92 1/2 (2350) 122 7/8 (3121) 153 3/8 (3896)

Notes:

Overall case length without ends or partitions. Contact your sales representative for information on possible availability of additional case lengths.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.



The RLN and RMN are 4-inch narrower, bumper to back, than our standard RL reach-in, saving you a full 4-inch of floor space down each of your reach-in line-ups.

Same Product Capacity.

The product capacity per door in the RLN is actually the same as the capacity of the standard depth RL, even though the RLN is built on a narrower platform. Maximum shelf depth of 22-inch is the same in both cases.

Greater Energy Efficiency.

Innovator III doors are 43% more efficient than Innovator doors and provide 13% total case energy savings compared to a case with Innovator doors. Innovator III is a lower energy heated door that can be used in all climate conditions. For even more energy savings, Innovator II is a no-heat door that offers 32% case energy savings.

Standard LED Lighting.

EcoShine II LED lighting is standard. The lights are optimized for uniform brightness and substantially lower energy costs compared to fluorescents.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DDE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed $75^{\circ}F$ and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

www.hussmann.com

									CEI) 1 B 1	0-2
2001 East Terra Lan Fax (636)272-2408 • T Parts Dept. (800)424-TRU	e • O'Fallon, Mi oll Free (800)32 E • Parts Dept. I	TRUE EQU ssouri 63366- 5-6152 • Intl Fax# (636)272	FOO UIPMI 4434 • (6 Fax# (001 2-9471 • v	D SER ENT, IN 36)240-24)636-272-1 vww.truer	VICE IC. 00 7546 nfg.com	Pro Lo Ite M	oject Name: _ cation: m #: odel #:		Qty:		SIS #
Model: T-49F-HC	T-Se Reach	ries: n-In Solid	l Swin	g Door	· Freez	er wi	th Hydrocarb	on Ref	rigeran	t	
								 True with long Destination Destination Destination Pactor Factor capering Factor capering Factor Factor	T-4 es solid doo o enduring c g term inves igned using erials and ca with colder er utility cos ty and the b ice marketp ory enginee lillary tube sy ironmentall [®] , on refrigera- letion poter bal warming h capacity, fr geration sys .3°C) tempe en foods an nless steel s r finest stain ngth for few ustable, hea ves. tive seal sel- ranteed doc ure system. opmatic defros perature-te sumption ar sible defrost n mounted stoop" lowe rage on top pressor per ase free area ly accessible ning.	9F-HC r reach-in's are quality that pro- timent. the highest qu omponents to r product temp sts, exceptional best value in to blace. ered, self-conta ystem using y friendly R290 ant that has zer intial (ODP), & til potential (GW factory balance stem that main ratures. Ideal for d ice cream. olid doors and less with high ver dents and s vy duty PVC co f-closing doors for hinges and t ost system time rminated. Savund provides sh t cycle. I units featur er shelf. of cabinet. rforms in coole a of kitchen. e condenser co	designed tects your lality provide the leratures, food day's food ined, hydro o (0) ozone pree (3) P). d tains -10°F or both front. The er tensile cratches. ated . Lifetime porsion type e-initiated, es energy portest e: st, most il for
ROUGH-IN DAT	A			Chart dim	ensions ro	ounded	up to the nearest 1/8"	Specificati	ons subjec	t to change w	ithout notic
Model	Doors	Shelves	Cabin W	et Dime (inches) (mm) D	nsions H*	HP	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
	- I	1	1	1			5	1		1 · · · · · · · · · · · · · · · · · · ·	

* Height does not include 5" (127 mm) for castors or 6" (153 mm) for optional legs.

▲ Plug type varies by country.

	APPROVALS:	AVAILABLE AT:
3/16 Printed in U.S.A.		

Model:

T-49F-HC

T-Series: *Reach-In Solid Swing Door Freezer with Hydrocarbon Refrigerant*



STANDARD FEATURES

DESIGN

 True's commitment to using the highest quality materials and oversized refrigeration systems provides the user with colder product temperatures, lower utility costs, exceptional food safety and the best value in today's food service marketplace.

REFRIGERATION SYSTEM

- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydro carbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains -10°F (-23.3°C) temperatures. Ideal for both frozen foods and ice cream.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Bottom mounted condensing unit positioned for easy cleaning. Compressor runs in coolest and most grease free area of the kitchen. Allows for storage area on top of unit.
- Automatic defrost system time-initiated, temperature-terminated. Saves energy consumption and provides shortest possible defrost cycle.

CABINET CONSTRUCTION

- Exterior Stainless steel front. Anodized quality aluminum ends, back and top.
- Interior attractive, NSF approved, clear coated aluminum liner. Stainless steel floor with coved corners.

PLAN VIEW

- Insulation entire cabinet structure and solid door are foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with 4" (102 mm) diameter stem castors locks provided on front set.

DOORS

- Stainless steel exterior with clear aluminum liner to match cabinet interior. Doors extend full width of cabinet shell. Door locks standard.
- Lifetime guaranteed recessed door handles. Each door fitted with 12" (305 mm) long recessed handle that is foamed-in-place with a sheet metal interlock to ensure permanent attachment.
- Positive seal self-closing doors. Lifetime guaranteed door hinges and torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING

- Six (6) adjustable, heavy duty PVC coated wire shelves 24 % "L x 22 % "D (624 mm x 569 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on ½" (13 mm) increments.

LIGHTING

• LED Interior lighting - safety shielded. Lights activated by rocker switch mounted above doors.

MODEL FEATURES

- Exterior temperature display.
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- Rear airflow guards prevent product from blocking optimal airflow.
- NSF-7 compliant for open food product.

ELECTRICAL

• Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



OPTIONAL FEATURES/ACCESSORIES

Upcharge and lead times may apply. 230 - 240V / 50 Hz.

- □ 6" (153 mm) standard legs.
- \square 6" (153 mm) seismic/flanged legs.
- Alternate door hinging (factory installed).
- Novelty baskets.
- Additional shelves.
- □ Half door bun tray racks. Each holds up to eleven 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately) (airflow guards need to be removed).
- □ Full door bun tray racks. Each holds up to twenty-two 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately) (airflow guards need to be removed).

Back



TRUE FOOD SERVICE EQUIPMENT

2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400 • Fax (636)272-2408 • Toll Free (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com

) 1B1	0-3
Image: Construction of the systemImage: Construction of the system2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400Fax (636)272-2408 • Toll Free (800)325-6152 • Intl Fax# (001)636-272-7546Parts Dept. (800)424-TRUE • Parts Dept. Fax# (636)272-9471 • www.truemfg.com						Pr Lo Ito M	roject Name: _ ocation: em #: lodel #:		Qty:_		ATA #
Model: T-72F-HC	T-Se Reach	ries: n-In Solia	Swing	g Dooi	r -10°F	Free	zer with Hydr	ocarbo	n Refri	gerant	
				Chart dim	ensions ro		up to the nearest 1%"	 True with long Des mat user low safe serv Fact cap env carb dep glol Higl refri (-23 froz Stai very stre Adjusted Posi gua clos Aut tem con pos Botton "No Stor Con grea Easi clear 	T-7 e's solid doo n enduring o g term invess igned using erials and co- g term invess ity and the b vice marketp tory enginee illary tube s ironmentall con refrigera- letion poter bal warming h capacity, f igeration sy alletion	2F-HC r reach-in's are quality that pro- timent. the highest que omponents to r product temp its, exceptional best value in to place. ered, self-contar ystem using y friendly R290 ant that has zer that (ODP), & tl p otential (GW actory balance stem that main ratures. Ideal for d ice cream. olid doors and less with high ver dents and s vy duty PVC co f-closing doors for hinges and t ost system time rminated. Save nd provides sh t cycle. I units featur er shelf. of cabinet. rforms in coole a f kitchen. e condenser co t to change w up to next wh	designed tects your ality provide the peratures, food day's food ined, hydro o (0) ozone tree (3) P). d tains - 10°F or both front. The er tensile cratches. ated . Lifetime portest e-initiated, s energy portest e: st, most il for
			Cabin	et Dime	nsions	anacu				Canal	Create al
Model	Doors	Shelves	W	(inches) (mm) D) H*	ΗР	Voltage	Amps	NEMA Config.	Cord Length (total ft.) (total m)	Crated Weight (lbs.) (kg)
T-72F-HC	3	9	781⁄8	291⁄2	78¾	3⁄4	115/60/1	14.0	5-20P	9	650

* Height does not include 5" (127 mm) for castors or 6" (153 mm) for optional legs.

MADE IN WEAR COLUMN CO	APPROVALS:	AVAILABLE AT:
12/16 Printed in U.S.A.		

1991

N/A

1985

750

N/A

2.74

295

Model:

T-72F-HC

T-Series: Reach-In Solid Swing Door -10°F Freezer with Hydrocarbon Refrigerant



STANDARD FEATURES

DESIGN

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- Automatic defrost system time-initiated, temperature-terminated. Saves energy consumption and provides shortest possible defrost cycle.

CABINET CONSTRUCTION

Exterior - Stainless steel front. Anodized guality aluminum ends. Corrosion resistant GalFan coated steel back.

- Interior attractive, NSF approved, clear coated aluminum liner. Stainless steel floor with coved corners.
- Insulation entire cabinet structure and solid doors are foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with 4" (102 mm) diameter stem castors - locks provided on front set.

DOORS

- Stainless steel exterior with clear aluminum liners to match cabinet interior. Doors extend full width of cabinet shell. Door locks standard.
- Lifetime guaranteed recessed door handles. Each door fitted with 12" (305 mm) long recessed handle that is foamed-in-place with a sheet metal interlock to ensure permanent attachment.
- Positive seal self-closing doors. Lifetime guaranteed door hinges and torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING

- Nine (9) adjustable, heavy duty PVC coated wire shelves 24 1/8 "L x 22 3/8 "D (613 mm x 569 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on 1/2" (13 mm) increments.

LIGHTING

 LED Interior lighting - safety shielded. Lights activated by rocker switch mounted above doors.

MODEL FEATURES

- Exterior temperature display.
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- Rear airflow guards prevent product from blocking optimal airflow.
- NSF/ANSI Standard 7 compliant for open food product.

ELECTRICAL

Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 20 amp dedicated outlet. Cord and plug set included.



OPTIONAL FEATURES/ACCESSORIES

- Upcharge and lead times may apply.
- G" (153 mm) standard legs.
- □ 6" (153 mm) seismic/flanged legs.
- □ Alternate door hinging (factory installed).
- Novelty baskets.
- Additional shelves.
- Half door bun tray racks. Each holds up to eleven 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately) (airflow guards need to be removed).
- Full door bun tray racks. Each holds up to twenty-two 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately) (airflow guards need to be removed).



TRUE FOOD SERVICE EQUIPMENT

2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400 • Fax (636)272-2408 • Toll Free (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com

PLAN VIEW

Project: __





OV500E1 Rotating Single Rack Oven - Electric

STANDARD FEATURES

- Stainless steel construction
- Patented self-contained spherical cast steam system
- Halogen lighting in the bake chamber provides better visibility with better bulb life in high temperature environments
- Programmable digital control with 99 programmable menus
 - Four stage baking
 - Auto on/off control
 - Cool-down mode
- Energy saving idle mode
- Hood with plenum and single point vent connection for Type II installations
- Heavy duty rack lift with "soft start" rotation and rack jam warning system
- Field reversible bake chamber door
- Three pane viewing window provides safe to touch exterior
 - Dual panes of glass & a low-E coating on the interior of the window reduce the oven's energy use
 - Single exterior pane is hinged to allow cleaning access to both sides
 - Airwash gap within the door decreases exterior temperatures
- Flush floor with patented adjustable construction provides easy access no ramp required
- Built-in rollers & levelers for easy installation
- Oven body shipped whole (hood, steam system & floor are field installed)
 Minimum intake: 55" x 104.5" x 56.3" (uncrated)
- Holds 1 single oven rack

OPTIONS & ACCESSORIES

- UL Listed, Type I hood with grease filters. Listed to UL 710 standard and meets requirements of NFPA-96.
- Manual back-up control
- Oven body shipped split
 - Minimum intake: 27.5" x 104.5" x 51" (uncrated)
- Floor extender package
- Kosher package
- Prison package



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CED 1B12-A



OV500E1 Rotating Single Rack Oven - Electric



UTILITIES & NOTES

Water: 1/2" NPT connection @ 94" AFF. Cold water @ 30 psi minimum @ 3.0 GPM flow rate. Max water usage 4.0 GPH.

- Note: Water supply must have the proper hardness, pH & Chloride concentration. Consult your local water company and/or water conditioner dealer before installation.
- Recommended water hardness range: 2-4 grains per gallon
- Recommended pH range: 7.0 to 8.0.
- Acceptable range for chloride concentration: 0-30 ppm.
- **Orain:** Choose either rear or front drain and plug the connection not in use. Route to air-gap drain.
 - Front drain: 1/2" NPTM @ 6.5" AFF
 - Rear drain: 1/2" NPTM @ 7.0" AFF

• Power: 2 supplies required:

1. Heating Circuit - Choose one:

2. Co	ontrol Circuit:		
	440-480V/60/3	40.2-43.0 amps	28.7-34.2kW heating circuit
	208-240V/60/3	75.4-86.2 amps	25.7-34.2kW heating circuit
	208V/60/3	99.4 amps	34.2kW heating circuit

120V/60/1 15 amp dedicated circuit. 20 amp max.

Hood vent: 8" dia. connection collar. Min. 690 cfm req. with 0.6" w.c. static pressure drop through hood. Customer to supply duct and ventilator fan per local code. Oven provided relay with max. 10.0 amp 1/2 H.P. @ 120V output for fan operation.

Ventilator fan is required. Consult local authorities to determine whether Type I (grease) or Type II (vapor) duct will be required. Hood connection suitable for connection to single wall vent, except when products of baking are grease laden.

INSTALLATION

Floor must be level within \mathcal{V}_8'' per foot for proper installation. Slope must not exceed \mathcal{Y}_4'' in all directions under the unit. Floor anchors require minimum of 1" thick solid floor substrate. Caution – To reduce the risk of fire, the appliance must be mounted on floors of non-combustible construction with non-combustible flooring and surface finish and with no combustible material against the underside thereof, or on non-combustible slabs or arches having no combustible material against the underside. Refer to ANSI/UL 197 for further clarification.

Important: • Do not route utilities (wiring, plumbing, etc.) in or under the non-combustible

- (floor beneath the oven.)
- 115" AFF required for oven tilt-up.
 130" AFF recommended for service access.

The purchaser is responsible for all installation costs and for providing: Disposal of packing materials, labor to unload oven upon arrival, installation mechanics, and all local service connections including electricity, gas, water, vents and drain per local code. A factory authorized installation technician must supervise and approve any installation. In order to validate the warranty, start-up must be performed by an authorized service company. All services must comply with federal, state, and local codes.

Minimum clearances to combustible construction:

• 0 inches from sides and back. • 18 inches from top.

SHORT SPECIFICATION

The oven shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The footprint shall be no larger than 55.0"W x 51.0"D x 104.5"H and shall have an integral hood with a minimum of 31.0" overhang to ensure proper vapor capture. The Type I hood must be UL710 Listed and have a single point exhaust. Control panel shall have programmable settings with auto on/off feature and 4-step bake/roast setting.

The oven's heating system shall be designed with a nominal power rating of 34.2kW and shall utilize a bank of 12 tubular Incoloy®-sheathed elements. Elements shall be sized to maximize life, with a maximum watt density of 32W/in² and shall be individually removable for ease of service. The oven shall also include a patented self-contained spherical cast steam system which shall convert 1.0 gallon of water into steam within 20 seconds at a temperature of 400°F or better. The oven door shall be field reversible and must utilize three panes of glass in the viewing window to ensure a safe to the touch exterior. A patented adjustable flush floor shall be used for easy access without a ramp. The oven shall be equipped with a diagnostic center with status indicator lights and be equipped with built-in levelers.

The oven will bear the following agency approvals: UL for safety, sanitation, and gas for the U.S. & Canada, UL710 for the hood. The exhaust hood shall meet construction requirements of IMC section 507 and NFPA-96.

Manufacturer reserves the right to make changes in sizes and specifications.

BAXTER

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Project: ____





OV500G1-EE Rotating Single Rack Oven – Energy Efficient Gas

STANDARD ENERGY SAVING FEATURES

- Halogen lighting in the bake chamber provides better visibility and better bulb life in high temperature environments
- Efficient 180k BTU/Hr. in-shot burner system provides high-impact results with less gas
- Improved airflow design maximizes heat exchanger use and reduces energy consumption
- Programmable digital control with Auto on/Auto off controls
- Energy saving idle mode reduces oven to stand-by temperature when left idle. Idle time and stand-by temperature can be customized to maximize energy savings in your operation.
- Three pane viewing window provides safe to touch exterior
 - Low-E coated glass on the interior of the window reflects heat inward, saving energy
 - Airwash gap within the door decreases exterior temperatures
 - Single exterior pane is hinged to allow cleaning access to both sides

STANDARD FEATURES

- Stainless steel construction
- Weldless heat exchanger with 10 year warranty
- Patented self-contained cast steam system
- Hood with plenum and single point vent connection for Type II installations
- Field reversible bake chamber door
- Flush floor with patented adjustable construction no ramp required
- 99 programmable recipes
- Oven body shipped whole (hood, steam system & floor are field installed)
 Minimum intake: 55" x 104.5" x 56.3" (uncrated)

OPTIONS & ACCESSORIES

- UL Listed, Type I hood with grease filters. Listed to UL 710 standard and meets requirements of NFPA-96.
- Manual back-up control
- Oven body shipped split
 - Minimum intake: 27.5" x 104.5" x 51" (uncrated)
- Floor extender package
- Kosher package
- Prison package



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BAXTER

OV500G1-EE

CED 1B12-B

Rotating Single Rack Oven – Energy Efficient Gas



UTILITIES & NOTES

• Water: 1/2" NPT connection @ 94" AFF. Cold water @ 30 psi minimum @ 3.0 GPM flow rate. Max water usage 4.0 GPH.

- Water supply must have the proper hardness, pH & Chloride concentration. Note: Consult your local water company and/or water conditioner dealer before installation.
- Recommended water hardness range: 2-4 grains per gallon.
- Recommended pH range: 7.0 to 8.0.
- Acceptable range for chloride concentration: 0-30 ppm.
- 2 Drain: Choose either rear or front drain and plug the connection not in use. Route
 - to air-gap drain.
- Front drain: 1/2" NPTM @ 6.5" AFF
 Rear drain: 1/2" NPTF @ 7.0" AFF

• Power: 2 supplies required:

- 1. Heating Circuit Choose one: 220V/60/1 8.6 amps
 - 208-240V/60/3 4.2-4.4 amps 2.2-2.4 amps
- □ 440-480V/60/3
- 2. Control Circuit:

V/60/1 15 amp dedicated circuit. 20 amp max.

Gas: 1" NPT connection @ 102" AFF.

Natural gas (std): 180k BTU/hr @ 5-14"w.c.

- Propane (opt): 180k BTU/hr @ 10-14"w.c.
- Note: Input rates will be reduced when oven is installed at elevations above 3000' (915m). Consult factory for elevation correction.

6 Hood vent: 8" dia. connection collar. Min. 690 cfm req. with 0.6" w.c. static pressure drop through hood. Customer to supply duct and ventilator fan per local code. Airflow proving switch is factory installed and integrated with burner system operation. Oven provided relay with max. 10.0 amp 1/2 H.P. @ 120V output for fan operation.

Ventilator fan is required. Consult local authorities to determine whether Type I (grease) or Type II (vapor) duct will be required. Hood connection suitable for connection to Type B vent, except when products of baking are grease laden.

INSTALLATION

Floor must be level within 1/8" per foot for proper installation. Slope must not exceed 3/4" in all directions under the unit. Floor anchors require minimum of 1" thick solid floor substrate. Caution - To reduce the risk of fire, the appliance must be mounted on floors of non-combustible construction with non-combustible flooring and surface finish and with no combustible material against the underside thereof, or on non-combustible slabs or arches having no combustible material against the underside. Refer to NFPA 54 for further clarification.

- Important: Do not route utilities (wiring, plumbing, etc.) in or under the non-combustible floor beneath the oven.
 - 115" AFF required for oven tilt-up.
 - 130" AFF recommended for service access.

The purchaser is responsible for all installation costs and for providing: Disposal of packing materials, labor to unload oven upon arrival, installation mechanics, and all local service connections including electricity, gas, water, vents and drain per local code. A factory authorized installation technician must supervise and approve any installation. In order to validate the warranty, start-up must be performed by an authorized service company. All services must comply with federal, state, and local codes.

Minimum clearances to combustible construction:

- 0 inches from sides and back
- 18 inches from top

SHORT SPECIFICATION

The oven shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The footprint shall be no larger than 55.0"W x 51.0"D x 104.5"H and shall have an integral hood with a minimum of 31.0" overhang to ensure proper vapor capture. The Type I hood must be UL710 Listed and have a single point exhaust. Oven shall have independent electrically interlocked air safety switches for the draft inducer and hood. Control panel shall have programmable settings with auto on/off feature and 4-step bake/roast setting.

The oven shall include an in-shot burner system with a heat exchanger consisting of 18 independent high-temperature, stainless steel tubes. The in-shot burners will have no moving parts. The oven shall also include a patented self-contained spherical cast steam system which shall convert 1.0 gallon of water into steam within 20 seconds at a temperature of 400°F or better. The field reversible oven door shall utilize three panes of glass in the viewing window to ensure a safe to the touch exterior. A patented adjustable flush floor shall be used for easy access without a ramp. The oven shall be equipped with a diagnostic center with status indicator lights and be equipped with huilt-in levelers

The oven will bear the following agency approvals: UL for safety, sanitation, and gas for the U.S. & Canada, UL710 for the hood. The exhaust hood shall meet construction requirements of IMC section 507 and NFPA-96.

Manufacturer reserves the right to make changes in sizes and specifications.



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Project: __





OV500E2 Rotating Double Rack Oven - Electric

STANDARD FEATURES

- Stainless steel construction
- Patented self-contained spherical cast steam system
- Halogen lighting in the bake chamber provides better visibility with better bulb life in high temperature environments
- Programmable digital control with 99 programmable menus
 - Four stage baking
 - Auto on/off control
 - Cool-down mode
- Energy saving idle mode
- Hood with plenum and single point vent connection for Type II installations
- Heavy duty rack lift with "soft start" rotation and rack jam warning system
- Field reversible bake chamber door
- Curved handle utilizes smooth action operation and protects viewing window
- Three pane viewing window provides safe to touch exterior
 - Dual panes of low-E glass on the interior of the window reduce the oven's energy use
 - Single exterior pane is hinged to allow cleaning access to both sides
 - Airwash gap within the door decreases exterior temperatures
- Flush floor with patented adjustable construction provides easy access no ramp required
- Built-in rollers & levelers for easy installation
- Oven body shipped split
 - Minimum intake: 37" x 104.5" x 62" (uncrated)
- Holds 2 single or 1 double oven rack

OPTIONS & ACCESSORIES

- UL Listed, Type I hood with grease filters. Listed to UL 710 standard and meets requirements of NFPA-96.
- Manual back-up control
- Oven body shipped whole (hood, steam system & floor are field installed)
 Minimum intake: 72" x 104.5" x 68.5" (uncrated)
- Floor extender package
- Kosher package
- Prison package



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OV500E2 Rotating Double Rack Oven - Electric



UTILITIES & NOTES

- Water: ½" NPT connection @ 94" AFF. Cold water @ 30 psi minimum @ 3.0 GPM flow rate. Max water usage 6.0 GPH.
 - Note: Water supply must have the proper hardness, pH & Chloride concentration. Consult your local water company and/or water conditioner dealer before installation.
 - Recommended water hardness range: 2-4 grains per gallon.
 - **Recommended pH range:** 7.0 to 8.0.
 - Acceptable range for chloride concentration: 0-30 ppm.
- Drain: Choose either rear or front drain and plug the connection not in use. Route to air-gap drain.
 - Front drain: 1/2" NPTM @ 6.1" AFF
 - Rear drain: $\frac{1}{2}$ " NPTM @ 6.3" AFF. Kit supplied to extend drain to either side of oven.

• Power: 2 supplies required:

1. Heating Circuit - Choose one:

 □ 208V/60/3
 146.4 amps
 51.3kW heating circuit

 □ 2082/40V/60/3
 111.4-127.2 amps
 38.5-51.3kW heating circuit

 □ 440-480V/60/3
 59.2-64.0 amps
 43.0-51.3kW heating circuit

 2. Control Circuit:
 43.0-51.3kW heating circuit

120V/60/1 15 amp dedicated circuit. 20 amp max.

④ Hood vent: 10" dia. connection collar. Min. 900 cfm req. with 0.6" w.c. static pressure drop through hood. Customer to supply duct and ventilator fan per local code. Oven provided relay with max. 10.0 amp ½ H.P. @ 120V output for fan operation.

Ventilator fan is required. Consult local authorities to determine whether Type I (grease) or Type II (vapor) duct will be required. Hood connection suitable for connection to single wall vent, except when products of baking are grease laden.

INSTALLATION

Floor must be level within $\frac{1}{8''}$ per foot for proper installation. Slope must not exceed $\frac{3}{4''}$ in all directions under the unit. Floor anchors require minimum of 1" thick solid floor substrate. Caution – To reduce the risk of fire, the appliance must be mounted on floors of non-combustible construction with non-combustible flooring and surface finish and with no combustible material against the underside thereof, or on non-combustible slabs or arches having no combustible material against the underside. Refer to ANSI/UL 197 for further clarification.

k swing diameter: 49.9 • Freight Class: 70

- Important: Do not route utilities (wiring, plumbing, etc.) in or under the non-combustible
 - floor beneath the oven.
 - 115" AFF required for oven tilt-up.
 130" AFF recommended for service access
 - 130 AFF recommended for service access

The purchaser is responsible for all installation costs and for providing: Disposal of packing materials, labor to unload oven upon arrival, installation mechanics, and all local service connections including electricity, gas, water, vents and drain per local code. A factory authorized installation technician must supervise and approve any installation. In order to validate the warranty, start-up must be performed by an authorized service company. All services must comply with federal, state, and local codes.

Minimum clearances to combustible construction:

- 0 inches from sides and back
 18 inches from top

SHORT SPECIFICATION

The oven shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The footprint shall be no larger than 72.0"W x 62.0"D x 104.5"H and shall have an integral hood with a minimum of 31.0" overhang to ensure proper vapor capture. The Type I hood must be UL710 Listed and have a single point exhaust. Control panel shall have programmable settings with auto on/off feature and 4-step bake/roast setting.

The oven's heating system shall be designed with a nominal power rating of 51.3kW and shall utilize a bank of 18 tubular Incoloy®-sheathed elements. Elements shall be sized to maximize life, with a maximum watt density of $32W/in^2$ and shall be individually removable for ease of service. The oven shall also include a patented self-contained spherical cast steam system which shall convert 1.0 gallon of water into steam within 20 seconds at a temperature of 400° F or better. The field reversible oven door shall utilize three panes of glass in the viewing window to ensure a safe to the touch exterior. A patented adjustable flush floor shall be used for easy access without a ramp. The oven shall be equipped with a diagnostic center with status indicator lights and be equipped with built-in levelers.

The oven will bear the following agency approvals: UL for safety and sanitation for the U.S. & Canada, UL710 for the hood. The exhaust hood shall meet construction requirements of IMC section 507 and NFPA-96.

Manufacturer reserves the right to make changes in sizes and specifications.

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OV500G2-EE Rotating Double Rack Oven – Energy Efficient Gas

STANDARD ENERGY SAVING FEATURES

- Halogen lighting in the bake chamber provides better visibility and better bulb life in high temperature environments
- Efficient 275k BTU/Hr. in-shot burner system consumes less gas, but provides high-impact results
- Improved airflow design maximizes heat exchanger use, reduces energy consumption and reduces cook time by up to 5%
- Energy saving idle mode reduces oven to a stand-by temperature when left idle. Idle time and stand-by temperature can be customized to maximize energy savings in your operation
- Programmable digital control with Auto on/Auto off controls
- Three pane viewing window provides safe to touch exterior
 - Dual panes of low-E glass on the interior of the window reflects heat inward, saving energy
 - Airwash gap within the door decreases exterior temperatures
 - Single exterior pane is hinged to allow cleaning access to both sides

STANDARD FEATURES

- Stainless steel construction
- Heat exchanger with weldless construction for longer life. Tubes carry an additional 9 year extended parts and labor warranty
- Patented self-contained spherical cast steam system
- Hood with plenum and single point vent connection for Type II installations
- Field reversible bake chamber door (left or right hinged to fit your needs)
- Patented flush floor no ramp required
- 99 programmable recipes
- Oven body shipped split
 - Minimum intake: 37" x 104.5" x 62" (uncrated)
- Holds 2 single or 1 double oven rack

OPTIONS & ACCESSORIES

- UL Listed, Type I hood with grease filters. Listed to UL 710 standard and meets requirements of NFPA-96.
- □ Manual back-up control
- Oven body shipped whole (hood, steam system & floor are field installed)
 Minimum intake: 72" x 104.5" x 68.5" (uncrated)
- Kosher package
- Prison package
- Floor extender package



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OV500G2-EE

Rotating Double Rack Oven – Energy Efficient Gas



UTILITIES & NOTES

- **O** Water: 1/2" NPT connection @ 94" AFF. Cold water @ 30 psi minimum @ 3.0 GPM flow rate. Max water usage 6.0 GPH.
 - Water supply must have the proper hardness, pH & Chloride concentration. Note: Consult your local water company and/or water conditioner dealer before installation.
 - Recommended water hardness range: 2-4 grains per gallon. •
 - Recommended pH range: 7.0 to 8.0.
- Acceptable range for chloride concentration: 0-30 ppm. 2 Drain: Choose either rear or front drain and plug the connection not in use. Route to
 - air-gap drain.
 - Front drain: 1/2" NPTM @ 6.1" AFF
 - **Rear drain:** 1/2" NPTM @ 6.3" AFF. Kit supplied to extend drain to either side of oven.

• Power: 2 supplies required:

1. Heating Circuit - Choose one: □ 208-240V/60/1 8.6 amps

Ì	208-240V/60/3	4.2-4.4 amps
ì	440-480V/60/3	2.2-2.4 amps

- 2. Control Circuit:
- 120V/60/1 15 amp dedicated circuit. 20 amp max.
- Gas: 1-¼" NPT connection @ 102" AFF.
 - Natural gas (std): 275k BTU/hr @ 5-14"w.c.
 - Propane (opt): 275k BTU/hr @ 10-14"w.c.
 - Input rates will be reduced when oven is installed at elevations above 3000' Note: (915m). Consult factory for elevation correction.

6 Hood vent: 10" dia. connection collar. Min. 900 cfm req. with 0.6" w.c. static pressure drop through hood. Customer to supply duct and ventilator fan per local code. Airflow proving switch is factory installed and integrated with burner system operation. Oven provided relay with max. 10.0 amp 1/2 H.P. @ 120V output for fan operation.

Ventilator fan is required. Consult local authorities to determine whether Type I (grease) or Type II (vapor) duct will be required. Hood connection suitable for connection to Type B vent, except when products of baking are grease laden.

INSTALLATION

Floor must be level within $1/8^{\circ}$ per foot for proper installation. Slope must not exceed $3/4^{\circ}$ in all directions under the unit. Floor anchors require minimum of 1" thick solid floor substrate. Caution - To reduce the risk of fire, the appliance must be mounted on floors of non-combustible construction with non-combustible flooring and surface finish and with no combustible material

against the underside thereof, or on non-combustible slabs or arches having no combustible material against the underside. Refer to NFPA 54 for further clarification.

- Important: Do not route utilities (wiring, plumbing, etc.) in or under the non-combustible floor beneath the oven.
 - 115" AFF required for oven tilt-up.
 - 130" AFF recommended for service access.

The purchaser is responsible for all installation costs and for providing: Disposal of packing materials, labor to unload oven upon arrival, installation mechanics, and all local service connections including electricity, gas, water, vents and drain per local code. A factory authorized installation technician must supervise and approve any installation. In order to validate the warranty, start-up must be performed by an authorized service company. All services must comply with federal, state, and local codes.

Minimum clearances to combustible construction:

- 0 inches from sides and back
- 18 inches from top

SHORT SPECIFICATION

The oven shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The footprint shall be no larger than 72.0"W x 62.0"D x 104.5.0"H and shall have an integral hood with a minimum of 31" overhang to ensure proper vapor capture. The Type I hood must be UL710 Listed and have a single point exhaust. Oven shall have independent electrically interlocked air safety switches for the draft inducer and hood. Control panel shall have programmable settings with auto on/off feature and 4-step bake/roast setting.

The oven shall include an in-shot burner system with a heat exchanger consisting of 18 independent high-temperature, stainless steel tubes. The in-shot burners will have no moving parts. The oven shall also include a patented self-contained spherical cast steam system which shall convert 1.0 gallon of water into steam within 20 seconds at a temperature of 400°F or better. The field reversible oven door shall utilize three panes of glass in the viewing window to ensure a safe to the touch exterior. A patented adjustable flush floor shall be used for easy access without a ramp. The oven shall be equipped with a diagnostic center with status indicator lights and be equipped with built-in levelers

The oven will bear the following agency approvals: UL for safety, sanitation, and gas for the U.S. & Canada. UL710 for the hood. The exhaust hood shall meet construction requirements of IMC section 507 and NFPA-96.

Manufacturer reserves the right to make changes in sizes and specifications

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Project: ____





OV310E Mini Rotating Rack Convection Oven – Electric

STANDARD FEATURES

- Rotating interior rack
 - 8 pan, end load with 4.0" slide spacing
- Interior rack is easily removable for cleaning and routine maintenance
 Patented removable rack bottom for spot cleaning bake chamber floor
- Self-contained patented steam system
- Programmable digital control
- Easy to open independent doors
- Large dual-pane viewing window in each door
- Space saving 48.0"w x 38.1"d footprint
- Stainless steel construction
- Cable restraint kit
- Shipped assembled

OPTIONS & ACCESSORIES

- Removable interior rack, one included with oven, use accessory code to order additional racks:
 - □ 310RCK-6EL: 6-pan capacity with 5.3" slide spacing, end load
 - □ 310RCK-6SL: 6-pan capacity with 5.3" slide spacing, side load
 - □ 310RCK-6STP: 6-pan capacity with 5.3" spacing and stepped slides, end load
 - □ 310RCK-8EL: 8-pan capacity with 4.0" slide spacing, end load
 - □ 310RCK-8SL: 8-pan capacity with 4.0" slide spacing, side load
 - □ 310RCK-8STP: 8-pan capacity with 4.0" spacing and stepped slides, end load
 - □ 310RCK-12EL: 12-pan capacity with 2.8" slide spacing, end load
- □ Vent guard package adds 2" to overall width
- □ (MB300: 34"h proofing cabinet base)
- □ STAND: 27"h stand base with 12 pan capacity
- □ Slide bridge kit allows oven to accommodate pans smaller than 18" x 26"
- □ Aluminum tray set for artisan baking includes 4 trays
- Peelkit includes 4 each wooden peels 14" long used with aluminum trays
- Note: Capacities based on a standard 18"x26" pan





Area Reserved For Consultant & Contractor Approvals



19220 State Route 162 East Orting, WA 98360 www.baxtermfg.com

Factory (360) 893-5554 Customer Care (800) 777-2828 or (800) 333-7447

BAXTER

CED 1B15-A

OV310E

Mini Rotating Rack Convection Oven – Electric



UTILITIES

Water Connect Point: $\frac{1}{2}$ " NPT. Cold water @ 30-75 psi. min. @ 1.5 G.P.M. flow rate. 3.0 G.P.H. maximum water usage.

- **NOTE:** Water supply must have the proper hardness, pH & chloride concentration. Consult your local water company and/or water conditioner dealer before installation.
- Recommended hardness range: 2-4 grains per gallon.
- **Recommended pH range:** 7.0 to 8.0.
- Acceptable range for chloride concentration: 0-30 ppm.

Drain Fitting: 1/2" NPT. Route to air-gap drain.

Vent: Oven may need to be installed under a Type I (grease) or Type II (vapor) exhaust hood. Consult local code.

Power - 2 supplies required:

1. Heating Circuit - Choose one:

208V/60/3/50A	18.0kW
240V/60/3/43A	18.0kW
480V/60/3/22A	18 0kW

2. Control Circuit:

120V/60/1 15 amp max. dedicated circuit. 6' cord and NEMA 5-15P Plug supplied.

- Oven Control: 4.4 amps
- Exhaust Fan Connect Point: 5.0 amps max.
- Contact factory for 50Hz.

INSTALLATION

The mini-rack oven is shipped assembled for easy installation. All components are factory tested before shipment. This oven must be installed so that the top of the oven is located above 6' AFF.

The purchaser is responsible for proper installation, including all utility connections. In order to validate the warranty, the start-up must be performed by an Authorized Baxter Servicer.

The OV310 unit will fit through a standard 36" doorway with doors, control panel and trim package removed.

UL Listed for use only on level, noncombustible floor/surface. Access to right side needed (24" min.) for service access. A vent guard is required if the right side of the oven is within 30" of a radiant heat or grease vapor source.

SHORT SPECIFICATION

The oven shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The unit footprint shall be no wider than 48.0" and shall be capable of fitting through a standard 36" doorway. The standard digital control panel shall have 99 programmable settings with auto on/off feature and 4-step bake/roast setting. As a standard feature, the oven shall incorporate "sleep" settings to save energy when not in use.

The heating system shall be designed with a nominal power rating of 18.0KW and shall utilize a bank of 6 tubular incoloy[®]-sheathed elements. Elements shall be sized to maximize life and shall be individually removable for ease of service. The oven shall have an interior carrier that rotates while in operation to ensure even baking. The interior carrier shall be easily removable for cleaning and routine maintenance, no tools required.

The oven will bear the following agency approvals: UL for safety and sanitation for the U.S., Canada, and Commonwealth of MA. The oven shall be listed for zero clearance to walls from by UL.

The oven shall be offered with several different base options to ensure a combination best suited to site, production and operator's needs.

Manufacturer reserves the right to make changes in sizes and specifications.

BAXTER

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Factory (360) 893-5554

ier Care
77-2828
or
33-7447

Project: __



BAXTER

MB300 Proofing Cabinet Base

STANDARD FEATURES

- For use with OV310 series oven
- Stainless steel construction
- Holds 16 18" x 26" pans with 3" spacing
- 34" height provides optimum working height for OV310 above
- Easy to operate digital controls
- Doors open independently
- Heavy duty 4" casters (2 locking)

OPTIONS & ACCESSORIES

LEG-KIT: Conversion kit replaces casters with stainless steel legs

MB300-COVER: Finished stainless steel top



5-20P plug provided.

2 Water: 1/4" NPT cold water @ 30-80 psi at 30"AFF

- **NOTE:** Water supply must have the proper hardness, pH & chloride concentration. Consult your local water company and/or water conditioner dealer before installation.
- Water hardness range: 2-4 grains per gallon.
- **pH range:** 7.0 to 8.0.
- Range for chloride concentration: 0-30 ppm.
- **3 Drain:** ¹/₂" NPT rear drain at 4.5"AFF. Route to air-gap drain.





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Project: _

CED 1820-A C.S.I. Section 11400



PW1E Single Wide Proof Box

STANDARD FEATURES

- Patented air flow system
- Easy access heat and humidity system
 - Internally mounted
 - No flushing required
- Field reversible door
- Eye-level digital control panel
 - Set heat/humidity system
 - Four independent timers
- Stainless steel interior and exterior
- Modular panel construction with cam lock attachment
- Field assembled shipped knocked down
- Open floor no ramp required
- **99.5**" overall height to match rack oven

OPTIONS & ACCESSORIES

- □ Low profile, 94" overall height
- □ Stainless steel floor no ramp required
- Interior light
- Prison package
- □ Upper side trim 1 or 2 sides

MODEL CONFIGURATION

- □ **34.0"D** (may be shipped assembled)
 - One Single End or Side Load Rack
- 🗆 60.5"D
 - Two Single End or Two Single Side Load Racks
- 🗆 80.5"D
 - Two Single End or Two Single Side Load Racks
- □ 100.5"D
 - Three Single End or Three Single Side Load Racks
- 🗆 120.5"D
 - Four Single End or Four Single Side Load Racks





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Factory (360) 893-5554

Customer Care (800) 777-2828 or (800) 333-7447

BAXTER

CED 1B20-A

PW1E Single Wide Proof Box



Physical Data	Model 34.0"D	Model 60.5"D	Model 80.5"D	Model 100.5" D	Model 120.5"D
Interior Dimensions	31.3"D x 26.1"W x 74.5"H	57.8"D x 26.1"W x 74.5"H	77.8"D x 26.1"W x 74.5"H	97.8"D x 26.1"W x 74.5"H	117.8"D x 26.1"W x 74.5"H
Exterior Dimensions	36.8"D x 35.5"W	63.3"D x 35.5"W	83.3"D x 35.5"W	103.3"D x 35.5"W	123.3"D x 35.5"W
Net Door Opening Height	74.5"	74.5"	74.5"	74.5"	74.5"
Net Door Opening Width	24.5"	24.5"	24.5"	24.5"	24.5"
Power Input with	208-240V/60/1/18-21A or	208-240V/60/1/18-21A or	208-240V/60/1/37-41A or	208-240V/60/1/37-41A or	208-240V/60/1/37-41A or
Heat Wattage (KW)	3 3-4 4	200-240V/00/3/10-21A 3 3-4 4	6 6-8 8	6 6-8 8	6 6-8 8
Water Flow Rate (GPM)	0.5	0.5	1.0	1.0	1.0
Max. Water Usage (GPH)	1.0	1.0	2.0	2.0	2.0

UTILITIES & NOTES

- Water: 1/2" FNPT cold water 30-80 psi at 85" (215.9 cm) AFF. Max. water usage varies by depth. See chart above for specific information.
 - NOTE: Water supply must have the proper hardness, pH & chloride concentration. Consult your local water company and/or water conditioner dealer before installation.
 - Water hardness range: 2-4 grains per gallon.
 - pH range: 7.0 to 8.0.
 - Range for chloride concentration: 0-30 ppm.
- **Orain:** ¹/₂" FNPT, front or rear drain at 5" (12.7 cm) AFF. Rte to air-gap drain
- **Power:** Provide connection(s) at 85" (215.9 cm) AFF. See chart above for specific information.

Neutral wire circuitry needed to provide 110-120V for control components. A separate line may be run or a transformer will be required if 110 -120V is not available.

Installation: Floor should be level within $\mathcal{V}_8^{"}$ per foot for proper installation. Slope should not exceed $\mathcal{V}_4^{"}$ in all directions under the unit. Proofers without the floor option must be installed on a corrosion resistant and cleanable surface.

B Shipping: Contact factory for shipping information.

Important:

- Do not route utilities (wiring, plumbing, etc.) in or under the non-combustible floor beneath the proofer.
- A minimum of 1" airgap between proofer and oven recommended to ensure proper proofer operation.
- 10' ceiling height is recommended for proper airflow and service access.

SHORT SPECIFICATION

The proofer shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The unit footprint shall be no wider than 35.5"W. Built using modular panel construction with cam lock attachment, the proofer shall incorporate foam insulation and gaskets to form a strong, energy efficient encloser. Nonmetallic interior bumpers shall protect the interior on all sides.

The proofer shall include eye level, digital controls in the door and a patented air flow system. No ramp is required for this unit The controls will independently set the temperature and humidity for precise proofing control.

Four individual count-down timers for products with different time requirements shall be provided. The air flow system will include an internally mounted humidifier. No flush cleaning is required. The proofer door shall be field reversible.

The proofer will bear the following agency approvals: UL for safety and sanitation for the U.S. and Canada.

Manufacturer reserves the right to make changes in sizes and specifications.



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Factory (360) 893-5554 Customer Care (800) 777-2828 or (800) 333-7447

Project: _





PW2E Double Wide Proof Box

STANDARD FEATURES

- Patented air flow system
- Easy access heat and humidity system
 - Internally mounted
 - No flushing required
- Eye-level digital control panel
 - Set heat/humidity system
 - Four independent timers
- Stainless steel interior and exterior
- Modular panel construction with cam lock attachment
- Field assembled shipped knocked down
- Open floor no ramp required
- 99.5" overall height to match rack oven

OPTIONS & ACCESSORIES

- □ Low profile, 94" overall height
- □ Stainless steel floor no ramp required
- Interior light
- □ Upper side trim 1 or 2 sides
- Prison package

MODEL CONFIGURATIONS

- 40.5"D May be shipped assembled)
 Two Single End or Three Side Load Racks or One Double Rack
- 🖵 60.5"D
 - Four Single End or Side Load Racks or Two Double Racks
- 🖵 80.5"D
 - Five Single End or Six Side Load Racks or Two Double Racks
- □ 100.5"D
 - Six Single End or Eight Side Load Racks or Three Double Racks

🗆 120.5"D

• Eight Single End or Ten Side Load Racks or Three Double Racks





Area Reserved For Consultant & Contractor Approvals



19220 State Route 162 East Orting, WA 98360 www.baxtermfg.com

Factory (360) 893-5554 Customer Care (800) 777-2828 or (800) 333-7447

CED 1B20-B



PW2E Double Wide Proof Box



• 74" max. Rack Height • Freight Class: 85

Physical Data	Model 40.5"D	Model 60.5"D	Model 80.5"D	Model 100.5" D	Model 120.5"D
Interior Dimensions	37.8"D x 52.6"W x 74.5"H	57.8"D x 52.6"W x 74.5"H	77.8"D x 52.6"W x 74.5"H	97.8"D x 52.6"W x 74.5"H	117.8"D x 52.6"W x 74.5"H
Exterior Dimensions	43.3"D x 62.0"W	63.3"D x 62.0"W	83.3"D x 62.0"W	103.3"D x 62.0"W	123.3"D x 62.0"W
Net Door Opening Height	74.5"	74.5"	74.5"	74.5"	74.5"
Net Door Opening Width	51.0"	51.0"	51.0"	51.0"	51.0"
Power Input with Neutral 🙆	208-240V/60/1/18-21A or 208-240V/60/3/18-21A	208-240V/60/1/37-41A or 208-240V/60/3/32-36A	208-240V/60/1/37-41A or 208-240V/60/3/32-36A	208-240V/60/1/37-41A or 208-240V/60/3/32-36A	208-240V/60/1/37-41A or 208-240V/60/3/32-36A
Heat Wattage (KW)	3.3-4.4	6.6-8.8	6.6-8.8	6.6-8.8	6.6-8.8
Water Flow Rate (GPM)	0.5	1.0	1.0	1.0	1.0
Max. Water Usage (GPH)	1.0	2.0	2.0	2.0	2.0

UTILITIES & NOTES

- Water: ½" FNPT cold water 30-80 psi at 85" (215.9 cm) AFF. Max. water usage varies by depth. See chart above for specific information.
 - **NOTE:** Water supply must have the proper hardness, pH & chloride concentration. Consult your local water company and/or water conditioner dealer before installation.
 - Water hardness range: 2-4 grains per gallon.
 - pH range: 7.0 to 8.0.
 - Range for chloride concentration: 0-30 ppm.
- **Orain:** 1/2" FNPT, front or rear drain at 5" (12.7 cm) AFF. Rte to air-gap drain.
- **Power:** Provide connection(s) at 85" (215.9 cm) AFF. See chart above for specific information.
- Neutral wire circuitry needed to provide 110-120V for control components. A separate line may be run or a transformer will be required if 110-120V is not available.

Installation: Floor should be level within $\frac{1}{8}$ per foot for proper installation. Slope should not exceed $\frac{3}{4}$ in all directions under the unit. Proofers without the floor option must be installed on a corrosion resistant and cleanable surface.

B Shipping: Contact factory for shipping information.

Important:

- Do not route utilities (wiring, plumbing, etc.) in or under the non-combustible floor beneath the proofer.
- A minimum of 1" airgap between proofer and oven recommended to ensure proper proofer operation.
- 10' ceiling height is recommended for proper airflow and service access.

SHORT SPECIFICATION

The proofer shall be of stainless steel construction, manufactured in the United States by Baxter Mfg. The unit footprint shall be no wider than 62.0" and have two height options to meet the needs of the site and the project. Built using modular panel construction with cam lock attachment, the proofer shall incorporate foam insulation and gaskets to form a strong, energy efficient enclosure. Nonmetallic Interior bumpers shall protect the interior on all sides.

The proofer shall include eye level, digital controls in the door and a patented air flow system. No ramp is required for this unit. The controls will independently set temperature and humidity for precise proofing control. Four individual count-down timers for products with different time requirements shall be provided. The air flow system will include an internally mounted humidifier. No flush cleaning is required. The door shall be hinged so as not to require a center jamb: giving maximum access to the proofer interior.

The proofer will bear the following agency approvals: UL for safety and sanitation for the U.S. and Canada.

Manufacturer reserves the right to make changes in sizes and specifications.

BAXTER

19220 State Route 162 East Orting, WA 98360 www.baxtermfg.com

Factory (360) 893-5554 Customer Care (800) 777-2828 or (800) 333-7447

CED 1B22-B

Model Specified:



Standard Product Features

- R-Series: Stainless Steel Exterior & Interior
- A-Series: Stainless Steel Exterior/Anodized Aluminum Interior
- INTELA-TRAUL[®] Microprocessor Control System
- Balanced, Self-Contained Refrigeration System Using R-134a
- Scroll Blower Type Evaporator Fan
- Biased Return Air Duct
- Full Length Stainless Steel Doors With Locks
- Self-Closing Doors With Stay Open Feature At 120 Degrees
- Guaranteed For Life Cam-Lift Hinges
- Guaranteed For Life Horizontal Work Flow Door Handle(s)
- Standard Door Hinging: 132H = Right, 232H = Left/Right, 332H = Left/Right/Right (other hingings available)
- · Automatically Activated Incandescent Lights
- Stainless Steel Breaker Caps
- Accommodates Roll-In Racks Up To 72" High (provided by others)
- Automatic Non-Electric Condensate Evaporator
- Magnetic Snap-In EZ-Clean Door Gasket(s)
- Gasket-Protecting Metal Door Liner
- Controllable Anti-Condensate Door Perimeter Heaters
- Thermostatic Expansion Valve Metering Device
- Stainless Steel One-Piece Louver Assembly
- Stainless Steel Interior Rack Guides & Threshold Ramp(s)
- 9' Cord & Plug Attached
- Three Year Parts And Labor Warranty
- Five Year Compressor Warranty



The R & A Series represent Traulsen's Top-of-the-Line product offering. The "H-Height" roll-in refrigerator models are all designed to offer convenient interior storage for 72" high racks. Each is supplied standard with such high quality features as easy to operate microprocessor controls, balanced refrigeration systems and stainless steel exteriors. Additionally, they offer the widest range of optional accessories to choose from, and can be specified for use with many different applications, including: Foodservice, Correctional, Institutional, Export, etc.

Options & Accessories

- Stainless Steel Finished Back With Rear Louvers
- Re-Hinging Feature For Door(s)
- Wire Shelf Package For Roll-In Models (includes three wire shelves per section)
- · Additional Wire Shelves For Above
- Stainless Steel Shelf Package For Roll-In Models (includes three stainless steel shelves per section)
- Additional Stainless Steel Shelves For Above
- Locking Hasps (padlocks supplied by others)
- Export 220/50/1 Voltage
- Kool Klad Exterior Laminate Decor
- Clear Glass Door(s) In Place Of One Or More Solid Door(s)
- Fluorescent Lights
- · Remote Applications (see form TR35837 for more details)
- Remote For Use With 20°F Glycol System
- Recessed Installation
- Prison/Correctional Facilities Options
- Remote Monitoring (monitoring supplied by E-Control)



* Noted models are ENERGY STAR[®] listed. Please refer to www.energystar.gov to view the most up-to-date product listing and performance data.



Listed by Underwriters Laboratories Inc., to U.S. and Canadian safety standards and Listed by NSF International.

Approval:



TRAULSEN 4401 BLUE MOUND RD. PHONE 1 (800) 825-8220 Website: www.traulsen.com

FT. WORTH, TX 76106 FAX-MKTG. 1 (817) 624-4302 Project

Quantity

Item #

CSI Section 11400

<u>D 1R22-</u>R

Model Specified:

Specifications

Construction, Hardware and Insulation

Cabinet exterior front, one piece sides, louver assembly and doors are constructed of 20 gauge stainless steel with #4 finish. Cabinet interior and door liners are constructed of stainless steel (anodized aluminum in the A-Series). The exterior cabinet top, back and bottom are constructed of heavy gauge aluminized steel. The interior floor is constructed of stainless steel and insulated with $\frac{3}{4}$ of resilient cork. A readily attachable stainless steel ramp is provided to facilitate loading/unloading.

Doors are equipped with a heavy-duty, extruded wiper gasket for sealing to bottom ramp, removable plug cylinder locks and guaranteed for life cam-lift, gravity action, self-closing metal, glide hinges with stay open feature at 120 degrees. Hinges include a concealed switch to automatically activate the interior incandescent lighting. Guaranteed for life, work flow door handles are mounted horizontally over recess in door which limits protrusion from door face into aisleways. Doors have seamless, polished metal corners.

Gasket profile and Santoprene® material simplify cleaning and increase overall gasket life. Both the cabinet and door(s) are insulated with an average of 2" thick high density, non-CFC, foamed in place polyurethane.

DIMENSIONAL DATA	R/ARI132HUT	R/ARI232HUT	R/ARI332HUT			
Net capacity cu. ft.	39.0 (1104 cu l)	79.5 (2252 cu l)	120.5 (3414 cu l)			
Length - overall in.	35½ (90.2 cm)	68 (172.7 cm)	100½ (255.3 cm)			
Depth - overall in.	35 [%] 16 (90.3 cm)	35 [%] 16 (90.3 cm)	35 [%] 16 (90.3 cm)			
Depth - over body in.	32 (81.3 cm)	32 (81.3 cm)	32 (81.3 cm)			
Depth - door open 90° in.	63¼ (160.7 cm)	63¼ (160.7 cm)	63¼ (160.7 cm)			
Clear door width in.	271/8 (68.8 cm)	271/8 (68.8 cm)	271/8 (68.8 cm)			
Clear door height in.	72¾ (183.4 cm)	72¾6 (183.4 cm)	72¾6 (183.4 cm)			
Height - overall in.3	891/8 (226.4 cm)	891/8 (226.4 cm)	891/8 (226.4 cm)			
RRI Net Wt. lbs.	480 (218 kg)	785 (356 kg)	1075 (488 kg)			
ARI Net Wt. lbs.	410 (186 kg)	685 (311 kg)	1000 (454 kg)			
Rack Capacity - 72" High	1	2	3			
ELECTRICAL DATA						
Voltage	115/60/1	115/60/1	115/60/1			
Feed wires with Ground	3	3	3			
Full load amperes	10.6	11.4	12.8			
REFRIGERATION DATA						
Refrigerant	R-134a	R-134a	R-134a			
BTU/HR H.P. ¹	2220 (¹ / ₃ HP)	4200 (½ HP)	5120 (¾ HP)			

NOTES

For approximate remote weights deduct 40 lbs. from respective net or gross weight. For other information on remote models, please refer to form TR35837.

12" Top clearance preferred for optimum performance and service access

Refrigeration System

A top mounted, self-contained, balanced refrigeration system using R-134a refrigerant is conveniently located behind the one piece louver assembly. It features an easy to clean front facing condenser, thermostatic expansion valve, air-cooled hermetic compressor, plenum effect blower coil, large, high humidity evaporator coil located outside the food zone and a top mounted non-electric condensate evaporator. Biased return air duct protects against introduction of warm kitchen air, promoting even temperature maintenance and efficient operation. A 9' cord and plug is provided. Standard operating temperature is 34 to 38°F.

Controller

The easy to use water resistant INTELA-TRAUL® microprocessor control system is supplied standard. RS485 data port enables data communications for remote monitoring such as NAFEM Data Protocol, E-Control Systems® and others. It includes a 3-Digit LED Display and Fahrenheit or Celsius Temperature Scale Display Capability, In addition it includes audio/visual alarms for: Hi/Lo Cabinet Temperature, Door Open, Clean Condenser, Evaporator Coil and Discharge Line Sensor Failures, and Power Supply Interruption.

Interior

Readily removable, interior-mounted, stainless steel guides for rack are provided for protection. Maximum rack size with wheels inboard of frame is 27" wide by 29" deep by 72" high. Racks supplied by others.

Warranties

Both a three year parts and labor warranty and a five year compressor warranty (self-contained models only) are provided standard.









2= 3=

> One & Two Section Models Equipped With One NEMA 5-15P Plug

> Three Section Models Equipped With One NEMA 5-20P Plug

NOTE: Full load amps and plug style may vary depending on electrical options chosen and condensing unit employed.

NOTE: Figures in parentheses reflect metric equivalents. 1= Based on a 90 degree F ambient and 20 degree F evaporator

Section - All Models



NOTE: When ordering please specify: Voltage, Hinging, Door Size, Options and any additional warranties.

Continued product development may necessitate specification changes without notice.

Part No. TR35768 (REV. 02-19-14)

TRAULSEN 4401 BLUE MOUND RD. PHONE 1 (800) 825-8220 Website: www.traulsen.com

FT. WORTH, TX 76106 FAX-MKTG. 1 (817) 624-4302



		ITEM NO: PROJECT	CED 1830
EIICOI e		DATE:	
Refrigerated Self-Service	Case	/38RSS	Lengths include 1" end panels 40"L x 42"D x 51-1/4"H
		/48RSS	50"L x 42"D x 51-1/4"H
		/56RSS /74RSS	58"L x 42"D x 51-1/4"H 76"L x 42"D x 51-1/4"H
	ST	ANDARD FEATURES	
		Breeze™ w/EnergyWise s/c ref	frigeration
		Clear glass shelves, lighted (LE Compressor air rear intake, froi blocked Condensate nan (self-containe)	ED 3500K) nt discharge. Toe kick cannot be d refrig. only)
	∎G ■F	Flat front panel	u reing. only)
	■ Ir	ntegrated average product tem	perature of 40°F or less
		Dine year parts & labor: 5 year	compressor warranty
M		Dpen reach-in front	
		Shelving removable and adjust	able on 1" centers
Features	■ Standard	Ontions	
EXTERIOR COLOR	 Laminated (non-premium) Confirm pattern/grain direction 	Laminated (premium) Co Stainless steel (includes)	onfirm pattern/grain direction rear of case)
INTERIOR COLOR	Black	 Stainless steel White 	
REAR EXTERIOR COLOR	Painted - White	□ Painted - Black	
		Stainless steel (w/stainless)	ess ext. only)
BASE		□ Casters (n/a with remote	.)
END PANEL LEFT	Full end panel w/mirror interior	□ Case to case glass end	,
		Cutaway w/ glass	
		No end panel (for same)	case to case connect)
	Full end panel w/mirror interior	□ Case to case glass end	
		□ No end panel (for same	case to case connect)
ELECTRICAL CONNECT	□ 6' straight blade power cord	□ 6' locking power cord (se	elf-cont.)
REFRIGERATION	□ Breeze™ w/EnergyWise s/c	 Note: Remote doesn't in 	cl Conds unit. Floor drain reqd.
MISCELLANEOUS	reirigeration	 Remote w/tnermostat, so Second year parts & lab 	or warranty (excludes
		compressor)	
ACCESSORIES		 Night curtain, retractable Removable wire security 	e, non-locking / cover, locking



Encore® Product Specifications

CED 1B30



					Model Te	chnical s	Speci	ficati	ons						
Model	L"	L1"	L2"	System C	ircuit Volts		Phs	Freq	Amps ***	Watts	Wires	NEMA Plug	SST	втин	Est Wt
HV38RSS	38.00	40.00	4.75	Remote(Type I)	Circuit #1	110-120	1	60	2.06	212	2+G	Leads Multiple	24.00	4226	850
				Self-Contained	Circuit #1	110-120	1	60	14.82	1,540	2+G	5-20P or L5-20P	N/A	N/A	
HV48RSS	48.00	50.00	4.75	Remote(Type I)	Circuit #1	110-120	1	60	2.16	223	2+G	Leads Multiple	24.00	5350	950
				Self-Contained	Circuit #1	110-120	1	60	16.00	1,646	2+G	5-20P or L5-20P	N/A	N/A	
HV56RSS	56.00	58.00	4.75	Self-Contained	Circuit #1	120/230V	1	60	12.00	1,976	3+G	14-20P or L14-20P	N/A	N/A	1,200
HV74RSS	74.00	76.00	4.75	Remote(Type I)	Circuit #1	110-120	1	60	3.07	296	2+G	Leads Multiple	24.00	8010	1,300
				Self-Contained	Circuit #1	120/230V	1	60	15.23	2,345	3+G	14-20P or L14-20P	N/A	N/A	
*** Doos not include	aloctric (dofroct c	n froozo	r models			-								

*** Does not include electric defrost on freezer models

 Regulatory Approvals:

 All Models
 Accordance with AHRI Std 1200

ETL Listed to UL 471

ETL Listed to CAN/CSA 22.2 No. 120 ETL Sanitation to NSF 7

.∰..(†)

NSF 7	
In Accordance with AHRI Std 1200	DOE 2017 Energy Efficiency Compliant

Important Notes:

1) ELECTRICAL NOTE: If GFCI is required, a GFCI breaker MUST be used in lieu of a GFCI receptacle

2) 43" Minimum door entry clearance required (Without shipping skid).

3) Compressor air rear intake, front discharge. Toe kick cannot be blocked.

4) Units are supplied with levelers. They must be adjusted during installation to ensure the unit is level and plumb. Dimensions reflect levelers extended 1 1/4".



CED 1D00

HUSSMANN[®]



SMB

Excel Service Merchandiser with Curved Glass and Blower Coil for Meat and Deli

- NSF Certified

SMB - Single Pane Curved Glass Case with Blower Coil

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.



Plan View



 Dimensions
 8 FI
 12 FI

 A
 96 3/8 (2448)
 144 1/2 (3670)

Notes:

Overall case length without ends or partitions. Contact your sales representative for information on possible availability of additional case lengths.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Advanced Design.

The SMB and related SM models incorporate advanced features and benefits, including modular coils, superior energy efficiency, modular case design, durable bumper, factory pre-adjusted expansion valves, and seamless polystyrene "bathtub" bottoms for quick, easy cleaning.

Reduced Refrigerant, Fewer Leaks.

Patented Hussmann modular coils require 50% to 60% less refrigerant. Also, all return bend solder joints have been eliminated, which greatly reduces the possibility of refrigerant leaks.

Merchandising with Style.

One look tells the story. Sleeker, cleaner exterior to enhance product display. Attractive molded end design. Excellent lighting and product visibility for "high impact" merchandising that sells. Up to two lighted mezzanine shelves can be added to increase merchandising capacity. 30°, 45° and 90° inside and outside wedges available.

Easy to Work.

Front glass tilts up for easy stocking and cleaning. 10¹/2" stainless flat non-movable top is standard. A large 20" rear door opening has an increased angle to improve reach and ergonomics. Options include mezzanine shelves, display racks, scale stands, thermometers and wrapping boards.

NSF Certified.

The SMB has been NSF Certified to ANSI/NSF standard 7.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

www.hussmann.com

CED 1D00



Item	Part #	Description	Wiring Item	#	Item	Part #	Description	Wiring Item #
FAN A:	SSEMBLIES AN	D THERMOSTATS			E.	Electronic	Ballast (CONTINUED)	(5)
Α.	0392457	Fan Motor, Evapoi	rator - 120V (1)		0440215	2 lamps 230V 50-60 Hz	
	0409512	Fan Blade - 120V (0428652	3 lamps 230V 50-60 Hz	
		embossing towar	d motor			0385104	Ballast Transformer	
	0436517	Fan Motor, Evapoi	ator - 230V				230V 50-60 Hz, per b	allast
	0409513	Fan Blade - 230V			F.		Fluorescent Lamp	(6)
		embossing towar	d motor				Replace with like fixtu	ures
В.	0522287	Fan Motor, Ambier	nt - 120V (2	2)			- 0	
	0404552	Fan Motor, Ambier	nt - 230V		LED I	FIXTURES AND	POWER SUPPLY	
С.	0382028	Standard Non-adju	stable (3	3)	G.	0501213	Power Supply	(7)
		Defrost Thermos	tat		Н.		LED Canopy Fixture	(8)
D.	0137880	Optional Adjustabl	e (4	I)			Replace with like fixture	\$
		Refrigeration The	ermostat		J.		LED Shelf Fixture	(9)
							Replace with like fixture	s
LAMPS	AND BALLAST	s			К.		LED Rail Fixture	(10)
E.	Electronic	Ballast	(4	5)			Replace with like fixture	\$
	0355716	2 lamps 120V						
	0355398	3 Jamps 120V						

Data sheet-Excel-SMB

Note: Revision E: April 2017. Updated LED energy values. Other changes marked with a bar, circle or underline.

CED 1D00

PHYSICAL DATA Merchandiser Drip Pipe (in.) $1^{1/2}$ Merchandiser Liquid Line (in.) 3/8 Merchandiser Suction Line (in.) 5/8

32 1/4

(819)

•-- 12 ¹/8 (307)

(203)

ŢĽ

L

Water Sc.

Waste Outlet

33 1/8

(841)

447/8 (1140)

Plan Views

Water Sea

Waste Outlet

Engineering

05-2011 Dimensions shown as in. and (mm). D С 45³/8 43 43 SMB (1153)(1092) (1092)SMG 1 7/8 (47) 2 3/4 (70) -**5 ¹/**2 (140) SSG Electrical 24 5/8 Ϋ́́ (See Note*) 27 **4 ³/**4 (120) (625) | | Refrigeration Outlet 8 (686)

		1			
a	,	4 ft	6 ft	8 ft	12 ft
Gene	ral				
(A)	Case Length	48 1/4 (1226)	72 1/4 (1835)	96 3/8 (2448)	144 1/2 (3670)
	Maximum O/S dimension of case back to front (Note: Includes bumper)	44 7/8 (1140)	44 7/8 (1140)	44 7/8 (1140)	44 7/8 (1140)
	Back of case to front of splashguard	33 1/8 (841)	33 1/8 (841)	33 1/8 (841)	33 ¹ /8 (841)
	Center of rear legs to center of front legs	23 1/2 (598)	23 1/2 (598)	23 1/2 (598)	23 1/2 (598)
Each	End and Partition adds 1 1/2 in. (38 mm) to the leng	gth of the lineu	ıp.		
	1000000				
Elect	rical Service				
(B)	RH end of case to Electrical raceway right edge	3 7/8 (98)	3 7/8 (98)	3 7/8 (98)	3 ⁷ /8 (98)
(C)	RH end of case to Electrical raceway left edge	41 3/8 (1051)	32 3/4 (831)	40 1/8 (1019)	44 1/2 (1131)
	Back of case to center of knockout	1 7/8 (47)	1 7/8 (47)	1 7/8 (47)	1 ⁷ /8 (47)
* Ele	ctrical Field Wiring Connection Point				
Wast	e Outlet 🔘				
(D)	RH End of case to the center of LH waste outlet	36 1/4 (921)	60 1/4 (1530)	84 3/8 (2143)	132 1/2 (3366)
	RH End of case to the center of RH waste outlet	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)
	Back O/S of case to center of waste outlets	32 1/4 (819)	32 1/4 (819)	32 1/4 (819)	32 1/4 (819)
	Schedule 40 PVC drip pipe	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)
** Fi	eld installed water seal outlets, tees, and connectors	are shipped w	ith the mercha	ndiser.	~ /
Refri	geration Outlet				
	Back of case to center of refrigeration outlet	27 (686)	27 (686)	27 (686)	27 (686)
	RH end of case to center of refrigeration outlet	8 (203)	8 (203)	8 (203)	8 (203)
	Outside diameter of the liquid line	3/8 (9.5)	3/8 (9.5)	3/8 (9,5)	3/8 (9.5)
	Outside diameter of the suction line	5/8 (16)	5/8 (16)	5/8 (16)	5/8 (16)

11

28 3/4

(730)

FRONT

Meat & Delicatessen

Splashguard

SMB Technical Data Sheet
Double Curved Hinged Glass, 3 Display Level



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.





PHYSICAL DATA

Estimated Charge (lb)**

4 ft	0.75 lb	12 oz	0.35 kg
6 ft	1.0 lb	16 oz	0.5 kg
8 ft	1.5 lb	24 oz	0.7 kg
12 ft	2.0 lb	32 oz	0.9 kg

**This is an average for all refrigerant types. Actual refrigerant charge may vary by approximately 0.5 lb (8 oz / 0.2 kg).

Length Added to Lineup by:Each Plastic End w/ Bumper (in.)3 1/2Each End/Partition (in.)1 1/2

NSF Certification

This merchandiser model is manufactured to meet NSF/ANSI (National Sanitation Foundation) Standard #7 requirements for construction, materials & cleanability.

Excel SMB Meat & Delicatessen

REFRIGERATION DATA

Note: This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H.

	SMB§
Discharge Air (°F)	24
Evaporator (°F)	18
Unit Sizing (°F)	16
S Average evaporator temp	erature shown.

9 Average evaporator temperature shown. Use dew point for high glide refrigerants for unit sizing. Care should be taken to use the dew point in PT tables for measuring and adjusting superheat. Adjust evaporator pressure as needed to maintain discharge air temperature shown.

Btulhrlft	SMB
Parallel	420
Conventional	450

DEFROST DATA

	SMB
Frequency (hr)	12
Defrost Water (lb/ft/day)	0.20
(± 15% based on case configu product loading).	ration and

Offtime	SMB
Temp Term (°F)	43°
Failsafe (minutes)	90

ELECTRIC OR GAS Not Recommended

Standard Defrost Thermostat

Close on rise: close 43°F — open 33°F

CONVENTIONAL CONTROLS

Low Pressure Backup Control

SMB

CI/CO (Temp °F)* 11°F / 1°F Indoor Unit Only, Pressure Defrost Termination (Temp °F)*

Not Recommended

*Use a Temperature Pressure Chart to determine PSIG conversions.

Meat & Delicatessen

Electrical Data

Number of Fans	4 ft	6 ft	8 ft	12 ft					
Refrigeration (120V 60Hz) – 4W	1	2	2	3					
Ambient Air Wipe – 4.5W	2	4	4	6					
Export Refrigeration (230V 50Hz) - 4W	1	2	2	3					
Export Ambient Air Wipe – 15W	2	4	4	6					
		Am	neres			w	affs		
Merchandiser	4 ft	6 ft	8 ft	12.ft	4 ft	6 ft	8 ft	12 ft	
Evaporator Fans		0.00	0.1			0.11	011	1411	
Standard (120V 60Hz)	0.31	0.62	0.62	0.93	24	48	48	72	
Export: 230V 50Hz	0.18	0.36	0.36	0.54	27	54	54	81	
Ambient Air Wipe Fans	****	0100	0100	0101		0.	21	01	
Standard High Efficiency (120V 60Hz)	0.2	0.4	0.4	0.6	9	18	18	27	
Export: 230V 50Hz	0.3	0.6	0.6	0.9	50	100	100	150	
	012	0.0	0.0	0.7	50	100	300	150	
Constant On Anti-sweat Heaters	NA	NA	NA	NA	NA	NA	NA	NA	
Cycling Anti-sweat Heaters	NA	NA	NA	NA	NA	NΛ	NA	NA	
Minimum Circuit Ampacity									
With Standard Fans (120V 60Hz)	0.64	1.28	1.28	191					
With Export Fans (230V 50Hz)	0.6	1.2	1.2	1.83					
Maximum Over Current Protection 120V	20	20	20	20					
Electric Defrost Heaters (208V)	NA	NA	NA	NA	NA	NA	NA	NA	
Gas Defrost Heaters (208V)	NA	NA	NA	NA	NA	NA	NA	NA	
ONLY LIGHTING CONFIGURATIONS THAT ARE COMPL	IANT WITH	THE U.S. E	DEPT. OF EN	NERGY (DOE)	2017 REGULAT	TON ARE A	VAILABLE I	OR SALE FOR	2
USE IN THE U.S.A.									
Standard Lighting (T8 Finorescent)	4 ft	6 ft	8 ft	12 ft	4 ft	6 ft	8 ft	12 ft	
2 Row Canopy	0.49	0.80	0.98	1 42	58	92	116	170	
1 Row Rail	0.26	0.40	0.49	0.71	30	46	50	85	
	0.20	0.10	0,47	0.71	50	40	57	05	
Ontional Lighting (T8 Fluorescent)									
1 Row Ledge	0.26	0.40	0.49	0.71	30	46	50	85	
2 Row Shelves	0.40	0.40	0.42	1.40	50	00	336	170	
2 Row billives	0.49	0.80	0.98	1.42	20	92	110	170	
Ecoshine II									
Canopy 2 Row Front	0.16	0.23	0.33	0.49	19.8	28.2	39.5	59.3	
Canopy 2 Row Front HO	0.28	0.39	0.56	0.84	33.4	46.4	66.8	100.2	
1 Row Rail	0.08	0.12	0.16	0.25	9.9	14.1	19.8	29.7	
1 Row of Shelves	0.08	0.12	0.16	0.25	9.9	14.1	19.8	29.7	
2 Row of Shelves	0.16	0.23	0.33	0.49	19.8	28.2	39.5	59.3	

115V Lighting Circuit Total = Standard Lighting + Total Optional Lighting + Optional Shelf Lighting
120V LED Lighting Circuit Total = Canopy Lighting + Shelf Lighting + Rail Lighting
230V Lighting Circuit Total = Multiply 115V Lighting Circuit Total by 0.52

Please note: some combinations of fluorescent lights on this case model may not be compliant with DOE 2017 and may not be available to order in the US and Canada. More lighting options are available with LED lights. The Hussmann Product Configurator will not allow lighting options that do not comply with the DOE 2017 standards.

Excel SMB Meat & Delicatessen

Product Data

Recommended Usable Cube ¹ (Cu FtlFt)	2.61 ft ³ /ft (0.24 m ³ /m)
AHRI Total Display Area ² (Sq Ft/Ft)	3.34 ft ² /ft (1.02 m ² /m)
Shelf Area ³ (Sq FtlFt)	4.22 ft²/ft (1.29 m²/m)

¹ AHRI Refrigerated Volume less shelving and other unusable space: Refrigerated Volume/Unit of Length, ft³/ft [m³/m]

² Computed using AHRI 1200 standard methodology: Total Display Area, ft² [m²]/Unit of Length, ft [m]

³ Shelf surface area is composed of bottom deck plus standard shelf complement, as shown in the Hussmann *Product Reference Guide*. The standard shelf complement for this model is one 7-inch shelf and one 10-inch shelf.

ESTIMATED SHIPPING WEIGHT 4						
_						Glass /
Case					Solid End	Plastic End
	4 ft	6 ft	8 ft	12 ft	(each)	(each)
lb(kg)	700 (318)	800 (363)	900 (408)	1300 (590)	70 (32)	100 (45)



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

- Circled numbers = Parts List Item Numbers
- Grayed components in 12 foot models only.

R = Red G = Green BL = Blue LB = Light Blue DB = Dark Blue BK = Black

• = 120V Power \bigcirc = 120V Neutral $\stackrel{\perp}{=}$ = Field Ground $\stackrel{\perp}{=}$ = Case Ground



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. Circled numbers = Parts List Item Numbers Grayed components in 12 foot models only. R = Red G = Green BL = Blue BK = Black W = White • = 120V POWER O = 120V NEUTRAL = FIELD GROUND = CASE GROUND

Optional LED Lighting

EcoShine II LED Canopy Lighting - 1 Row



EcoShine II LED Rail Lighting - 1 Row



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. Circled numbers = Parts List Item Numbers Grayed components in 12 foot models only. R = Red G = Green BL = Blue BK = Black W = White • = 120V POWER O = 120V NEUTRAL $\frac{1}{200}$ = FIELD GROUND $\frac{1}{100}$ = CASE GROUND

Optional LED Lighting



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

Circled numbers = Parts List Item Numbers

Grayed components in 12 foot models only. BL = Blue

BK = Black W = White

h = CASE GROUND= 120V Power O = 120V Neutral. = FIELD GROUND

G = Green

R = Red

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HUSSMANN®



D5X

Excel Multi-Deck Dairy/Deli Display Merchandiser

Hussmann Excel Multi-Deck Display for Dairy and Deli Applications

D5X-E D5X-LE D5X-HE **D5NX-LE** D5X-EP D5X-LEP D5X-HEP **D5NX-LEP**

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.



Plan View -

D5X-E, D5X-LE, D5X-LEP, D5X-HE, D5X-HEP



Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

4 3/4 (120)

Superior Merchandising.

The D5X family was designed to help you merchandise and sell. Superior display features include full vision glass ends, illuminated canopy signs, improved ledge lighting, greater shelf placement flexibility and more. Streamline and contour styling available.

Lower Energy Costs.

Excel D5X cases come with energy efficient "E" coils as standard on "E" models. The super efficient E-Plus coils on "EP" models reduce energy costs by about 18% compared to standard Impact dairy. Night curtains can be added to help trim about 12.6% more off your energy costs for this case.

E = Energy Efficient Coil **EP =** E Plus, Extra High **Efficiency Coil**

L = Low Front H = High Front **N=Narrow Footprint**



Plan View -D5NX-LE, D5NX-LEP



Notes:

Case-to-case electrical connections are made in front of splashguard. Overall case length without ends or partitions

Superior Shelf Life.

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures. Modular defrost (optional) can further stabilize temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2012 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

www.hussmann.com

CED 1D02GD

HUSSMANN®





Excel Multi-Deck Dairy/Deli Merchandiser with Glass Doors

www.hussmann.com

CED 1D02GD Hussmann Excel Multi-Deck Merchandiser with Glass Doors for Dairy and Deli Applications



Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Features and Benefits:

- EcoVision glass doors provide excellent product visibility and reduce refrigeration energy use up to 82%.
- Narrow 24" french doors preserve aisle space.
- No heat required in doors or frames.
- Narrow footprint models reduce required floor space.
- Rear sliding doors on DD5X-LR model allow easy loading from a cooler adjacent to back of case.
- Energy efficient coils standard.
- 5 year modular coil warranty.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2012 energy efficiency standards.

Options Include:

- Various shelves, racks, lighting, paint and bumper colors.
- Door frames, trim and handles available in gray and black.
- Streamline or contour styling.
- Illuminated canopy signs.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed $75\,^{\circ}\text{F}$ and $55\,^{\circ}$ R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

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www.hussmann.com



Item Part #

Description

Wiring Item #

n # Item Part #

Description

Wiring Item

FAN ASSEMBLIES

4 Ft, 8 Ft & 12 Ft

A.	12W Standard	Energy Efficient Fan Assembly	(1)
	0477655	Fan Motor, Evaporator	
		(MO.4410546)	
	0461805	Fan Blade (FB.4780446)	

6 Ft Only

A.	7W Standard	Energy Efficient Fan Assembly	(1)
	0477654	Fan Motor, Evaporator	
		(MO.4410545)	
	0142780	Fan Blade (FB.0142780)	

THERMOSTATS

B. Optional Adjustable Refrigeration Thermostat (2)

LAMI	PS AND B ALLA	STS	
SE	IELF LIGHTING I	S NOT AVAILABLE WITH ECOVISION DOOR	<i>s.</i>
C.	Ballast, Ele	ectronic	(3)
	0480130	2 lamps (BA.4481676)	
	0480131	3 lamps (BA.4481654)	
	0480132	4 lamps (BA.4481677)	
D.		Fluorescent Lamp	(4)
		Replace with like fixtures	
LED	FIXTURES AN	D POWER SUPPLY	
Ε.	0501213	Power Supply (EP.4481861)	(5)
F.		LED Canopy Fixture	(6)
		Replace with like fixtures	

G. LED Mullion Fixture (7) Replace with like fixtures

NOTE: For LED lighting parts contact your Hussmann service representative at 1-800-922-1919. Please have your model and serial number available. Descriptions including size and color are at WWW.HUSSMANN.COM/SERVICEANDPARTS.

Note: Revision E removes discontinued LED data. Other changes marked by bar, underline or circle.



CED 1D02GD

Engineering Plan Views

PHYSICAL DATAMerchandiser Drip Pipe (in.)1 1/4Merchandiser Liquid Line (in.)3/8Merchandiser Suction Line (in.)7/8

Dairy & Delicatessen



NOTE: Case-to-Case Electrical Connections are made IN FRONT OF SPLASHGUARD.

```
FRONT
```

		4 ft	6 ft	8 ft	12 ft
Gen	eral				
(A)	Case Length (without ends or partitions)	48 3/8 (1229)	72 3/8 (1838)	96 3/8 (2448)	144 1/2 (3670)
	(Each end and insulated partition adds 1 $^{1/2}$ in. (38 mm) to case line up.)				
	Maximum O/S dimension of case back to front (includes bumper)	42 (1064)	42 (1064)	42 (1064)	42 (1064)
	Back of case to front of splashguard	33 1/2 (851)	33 1/2 (851)	33 1/2 (851)	33 1/2 (851))
	Back of case to O/S edge of front leg	30 1/4 (768)	30 1/4 (768)	30 1/4 (768)	30 1/4 (768)
	Distance between edges of external legs and center legs	NA	29 1/2 (750)	41 1/2 (1054)	41 1/2 (1054)
	Distance between edges of center legs	NA	NA	NA	43 7/8 (1114)
	Distance between front legs and splashguard	2 3/4 (70)	2 3/4 (70)	2 3/4 (70)	2 3/4 (70)
Elec	trical Service (Electrical Field Wiring connection point)				
(B)	RH End of case to center of stub up area	36 1/4 (921)	60 1/4 (1530)	84 1/4 (2140)	132 3/8 (3363)
	Back of case to center of stub up area	24 (612)	24 (612)	24 (612)	24 (612)
	Length of electrical wireway Wireway	26 1/2 (673)	26 1/2 (673)	26 1/2 (673)	26 1/2 (673)
(C)	RH End of case to LH end of wireway	42 1/8 (1070)	66 1/8 (1680)	90 1/8 (2289)	138 1/4 (3511)
Was	te Outlets (One each end)				
(D)	RH End of case to the center of LH waste outlet	36 1/4 (921)	60 1/4 (1530)	84 1/4 (2140)	132 3/8 (3363)
	RH End of case to the center of RH waste outlet	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)
	Back O/S of case to center of waste outlets	31 5/8 (804)	31 5/8 (804)	31 5/8 (804)	31 5/8 (804)
	Schedule 40 PVC drip pipe	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)
Refr	igeration Outlet				
	Back of case to center of refrigeration outlet	26 1/4 (665)	26 1/4 (665)	26 1/4 (665)	26 1/4 (665)
	RH end of case to center of refrigeration outlet	8 (203)	8 (203)	8 (203)	8 (203)

Multi-deck with Doors, 5 Display Levels, Low Front

DOE 2012 Energy Efficiency Compliant

Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2012 energy efficiency standards.

Dimensions shown as in. and (mm).



NSF Certification

This merchandiser model is manufactured to meet NSF/ANSI (National Sanitation Foundation) Standard #7 requirements for construction, materials & cleanability.

CED 1D02GD Excel DD5X-LP Dairy & Delicatessen

REFRIGERATION DATA

Note: This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H.

DD5X-LP	DAIRY DELI						
	Unlit	LIT*	Peg**				
Discharge Air °F	39	37	37				
Evaporator °F	34	32	32				
Unit Sizing °F	32	30	30				
DD5X-LP	Fresh Unlit	Meat Lit‡					
Discharge Air °F	35	33					
Evaporator °F	30	28					
Unit Sizing °F	28	26					

* Lit data is for canopy and mullion lighting.
Hussmann recommends against using lit shelves with EcoVision Doors.
** Hussmann Peg Shelves (Deli only)

 Btulhrlft ‡
 UNLIT

 DD5X-LP
 UNLIT
 PEG*
 MEAT

 PARALLEL
 261
 292
 300

 CONVENTIONAL
 269
 301
 309

 ‡ Add 10 Btu/hr/ft for lit.

DEFROST DATA

Frequency Hr	24
Defrost Water (lb/ft/day)	1.0
(± 15% based on case confi	guration and
product loading).	
OFFTIME	DD5X-LP
Time (minutes)	60

ELECTRIC OR GAS Not Recommended

CONVENTIONAL CONTROLS

 Low Pressure Backup Control

 CI/CO***
 DD5X-LP

 35°F / 25°F

Indoor Unit Only, Pressure DefrostTermination***40°F****Use a Temperature Pressure Chart to
determine PSIG conversions.

Estimate	d Charge****	DI	D5X-LP
4 ft	1.9 lb	30 oz	0.9 kg
6 ft	2.8 lb	45 oz	1.3 kg
8 ft	3.7 lb	59 oz	1.7 kg
12 ft	5.1 lb	82 oz	2.3 kg
****This	is an average f	or all refrig	gerant types

****This is an average for all refrigerant types. Actual refrigerant charge may vary by approximately half a pound (8 oz/0.2 kg).

CED 1D02GD

Excel DD5X-LP

Dairy & Delicatessen

Electrical Data

		4 ft	6 ft	8 ft	12 ft				
Number of	of Fans – 12W	1		2	3				
Number of	of Fans – 7W	_	2	—	_				
			Amp	eres			Wat	tts	
		4 ft	6 ft	8 ft	12 ft	4 ft	6 ft	8 ft	12 ft
Evaporate	or Fans								
120V	50/60Hz Standard Energy Efficient	0.30	0.38	0.60	0.90	18	28	36	54
230V	50/60Hz Standard Energy Efficient	0.15	0.20	0.30	0.45	18	28	36	54
230V	60Hz Export	0.33	0.50	0.66	0.99	50	78	100	150
230V	50Hz Export	0.38	0.56	0.76	1.14	57	84	114	171
Minimum	1 Circuit Ampacity								
120V	50/60Hz Standard Energy Efficient	0.50	0.58	0.80	1.10				
230V	50/60Hz Standard Energy Efficient	0.35	0.40	0.50	0.65				
230V	60Hz Export	0.53	0.70	0.86	1.19				
230V	50Hz Export	0.58	0.76	0.96	1.34				
Maximur	n Over Current Protection 120V	20	20	20	20				
Maximur	m Over Current Protection 230V	15	15	15	15				
Standard	Lighting (T-8 fluorescent)	0.00	0.51	0.51	0.77	20	50	50	0.5
I Row	Canopy	0.26	0.51	0.51	0.77	30	59	59	85
ONLY LIG	HTING CONFIGURATIONS THAT ARE COMPLIA	NT WITH TI	HE U.S. DI	ept. of En	NERGY (DOF	E) 2012 regu	LATION AI	RE AVAILAI	BLE FOR
SALE FOR	USE IN THE U.S.A.								
Optional	Lighting (T-8 fluorescent)								
2 Row	Canopy	0.51	1.02	1.02	1.54	59	118	118	170
LED Eco	shine II Canopy								
1 Row	Ecoshine II	0.26	0.37	0.51	0.77	30.8	44.2	61.6	92.4
1 Row	Ecoshine II Plus	0.23	0.35	0.46	0.70	27.8	41.4	55.6	83.4
1 Row	Ecoshine II Plus HO	0.28	0.42	0.56	0.84	34.0	50.5	67.2	100.8
Rail									
None									
Shelf									
None									
Mullion									
Ecoshi	ne II 51-in.	0.14	0.26	0.26	0.37	17.0	30.7	30.7	44.4
Ecoshi	ne II Plus 51-in.	0.29	0.54	0.54	0.79	35.0	65.1	65.1	95.2

120V Lighting Circuit Total = Standard Lighting + Total Optional Lighting

120V EcoShine LED Lighting Circuit Total = Total Canopy Lighting + Optional Mullion Lighting

230V Lighting Circuit Total = Multiply 120V Lighting Circuit Total by 0.52

Product Data

Recommended Usable Cube¹ (Cu Ft|Ft) AHRI Total Display Area² (Sq Ft|Ft) Shelf Area³ (Sq Ft|Ft) 9.39 ft³/ft (0.87 m³/m) 4.46 ft²/ft (1.36 m²/m) 9.89 ft²/ft (3.02 m²/m)

¹ AHRI Refrigerated Volume less shelving and other unusable space: Refrigerated Volume/Unit of Length, ft³/ft [m³/m]

² Computed using AHRI 1200 standard methodology: Total Display Area, ft² [m²]/Unit of Length, ft [m]

³ Shelf surface area is composed of bottom deck plus standard shelf complement, as shown in the Hussmann *Product Reference Guide*. The standard shelf complement for this model is (4) rows of 22-inch shelves.

ESTIMATED SHIPPING WEIGHT 4							
Case					Solid End		
	4 ft	6 ft	8 ft	12 ft	(each)		
lb (<i>kg</i>)	860 (390)	1070 (485)	1310 (594)	1560 (708)	100 (45)		
⁴ Actual weights will vary according to optional kits included.							

Fan Wiring Offtime Defrost

1, 2 & 3 Fans



Fluorescent Canopy Light Circuits



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS $R = Red \quad Y = Yellow \quad G = Green \quad BL = Blue \quad BK = Black \quad W = White$ • = 120V Power \bigcirc = 120V NEUTRAL \downarrow = FIELD GROUND $mma = CASE \quad GROUND$

CED 1D02GD

Optional Canopy Lighting

LED Fixtures





WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

- R = Red Y = Yellow G = Green BL = Blue BK = Black W = White
- = 120V Power \bigcirc = 120V Neutral

AL $\frac{1}{2}$ = FIELD GROUND $\frac{1}{1000000}$ = Case Ground

P/N 0511298_E HUSSMANN CORPORATION • BRIDGETON, MO 63044-2483 U.S.A. • WWW.HUSSMANN.COM 7 of 7

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]]]] []	4-7
17		TRUE	FOO		VICE	Pr	oject Name: _				ATA #
				-IN I, IF	NC.	Lc	cation:				<u> </u>
2001 East Terra l Fax (636)272-2408	Lane • O'Fallon, Mi • Toll Free (800)32	ssouri 63366- 5-6152 • Intl	∙4434 • (6 Fax# (001	36)240-24)636-272-	100 7546	Ite	em #:		Qty:		5/5 #
Parts Dept. (800)424-T	TRUE • Parts Dept. F	ax# (636)272	-9471 • v	www.true	mfg.com	М	odel #:				
Model: T-49-HC	T-Se Reach	ries: n-In Solia	l Swin	g Dooi	r Refri	gerat	or with Hydro	ocarboi	n Refrig	gerant	
									Ţ-2	19-HC	
ST TOTAL	3	0.0						Tru des tha inv	e's solid d signed wit it protects estment.	oor reach-in h enduring your long te	's are quality erm
								De qua to pro cos and ser	signed usi ality mater provide th oduct tem sts, except d the best vice marke	ng the high rials and con e user with o peratures, lo ional food sa value in tod etplace.	est nponents colder wer utility afety ay's food
								Fac cap env hyo zer (OI po	tory engin billary tube vironment dro carbor o (0) ozon OP), & thre tential (GV	neered, self- e system usin cally friendly n refrigerant e depletion re (3) global VP).	contained, ng R290 that has potential warming
								Hig refi cat 38° foc	yh capacity rigeration Dinet temp YF (.5°C to 2 Dd preserve	y, factory ba system that peratures of 3 3.3°C) for the ation.	lanced maintains 33°F to e best in
								Adj she	justable, h elves.	ieavy duty P	VC coated
								Pos Life and	sitive seal : etime guar d torsion t	self-closing ranteed doo ype closure	doors. r hinges system.
			-					Botto	m moun	ted units fe	eature:
-								▶ ″No	o stoop" lo	wer shelf.	
73						-		Sto	orage on to	op of cabine	t.
					-			Co	mpressor	performs in	coolest,
					U			Eas	ily accessi	ible condens	er coil for
								cle	anıng.		
ROUGH-IN DA	ATA		ć	Chart dim	ensions re	ounded	up to the nearest $\frac{1}{2}$ "	Specificat	ions subjec	t to change w	ithout notic
			Cabin	et Dime (inches) (mm)	ensions)					Cord Length	Crated Weight
Model	Doors	Shelves	W	D	H*	HP	Voltage	Amps	Config.	(total ft.) (total m)	(IDS.) (kg)
Г-49-НС	2	6	541⁄8	29½	78¾	1⁄2	115/60/1	5.4	5-15P	9	400

* Height does not include 5" (127 mm) for castors or 6" (153 mm) for optional legs.

▲ Plug type varies by country.

182

2.74

1001

	APPROVALS:	AVAILABLE AT:
6/16 Printed in U.S.A.		

1991

1⁄3

230-240/50/1

2.4

1375

750

Model:

T-49-HC

T-Series: Reach-In Solid Swing Door Refrigerator with Hydrocarbon Refrigerant



STANDARD FEATURES

DESIGN

 True's commitment to using the highest quality materials and over sized refrigeration systems provides the user with colder product temperatures, lower utility costs, exceptional food safety and the best value in today's food service marketplace.

REFRIGERATION SYSTEM

- Factory engineered, self-contained, capillary tube system using environmentally friendly R290 hydro carbon refrigerant that has zero (0) ozone depletion potential (ODP), & three (3) global warming potential (GWP).
- High capacity, factory balanced refrigeration system that maintains cabinet temperatures of 33°F to 38°F (.5°C to 3.3°C) for the best in food preservation.
- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Bottom mounted condensing unit positioned for easy maintenance. Compressor runs in coolest and most grease free area of the kitchen. Allows for storage area on top of unit.

CABINET CONSTRUCTION

- Exterior Stainless steel front. Anodized quality aluminum ends, back and top.
- Interior attractive, NSF approved, clear coated aluminum liner. Stainless steel floor with coved corners.

- Insulation entire cabinet structure and solid door are foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with 4" (102 mm) diameter stem castors locks provided on front set.

DOORS

- Stainless steel exterior with clear aluminum liner to match cabinet interior. Doors extend full width of cabinet shell. Door locks standard.
- Lifetime guaranteed recessed door handles. Each door fitted with 12" (305 mm) long recessed handle that is foamed-in-place with a sheet metal interlock to ensure permanent attachment.
- Positive seal self-closing doors. Lifetime guaranteed door hinges and torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING

- Six (6) adjustable, heavy duty PVC coated wire shelves 24% "L x 22% "D (624 mm x 569 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on ½" (13 mm) increments.

LIGHTING

 LED Interior lighting - safety shielded. Lights activated by rocker switch mounted above doors.

MODEL FEATURES

- Exterior temperature display.
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- NSF-7 compliant for open food product.

ELECTRICAL

• Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



OPTIONAL FEATURES/ACCESSORIES

Upcharge and lead times may apply.

- □ 230 240V / 50 Hz.
- □ 6" (153 mm) standard legs.
- □ 6" (153 mm) seismic/flanged legs.
- Alternate door hinging (factory installed).
- Additional shelves.
- □ Half door bun tray racks. Each holds up to eleven 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately).
- □ Full door bun tray racks. Each holds up to twenty-two 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately).



TRUE FOOD SERVICE EQUIPMENT

2001 East Terra Lane • O'Fallon, Missouri 63366-4434 • (636)240-2400 • Fax (636)272-2408 • Toll Free (800)325-6152 • Intl. Fax# (001)636-272-7546 • www.truemfg.com

			CEI	<u>) 1D(</u>	4-3
	TRUE FOOD SERVICE	Project Name:			ATA #
DLLE	EQUIPMENT, INC.	Location:			
2001 East Terra Lane • O'Fallon, Miss	souri 63366-4434 • (636)240-2400	Item #:	Otv:		SIS #
Parts Dept. (800)424-TRUE • Parts Dept. Fa	-6152 • Inti Fax# (001)636-272-7546 ax# (636)272-9471 • www.truemfg.com	Model #:	、 / _		
Model: T-Ser	ies				
-72-HC Reach	-In Solid Swing Door Refrig	erator with Hydroca	rbon Refrig	gerant	
			T-7	72-HC	
Prost Tofella					1 : 1
	· · · · · ·		True's solid doc with enduring long term investion	or reach-in's are quality that pr stment.	e designed otects your
			Designed using materials and c provide the use temperatures, l exceptional foc best value in to marketplace.	the highest c components to er with colder ower utility co od safety and t day's food ser	uality product sts, he vice
٦Г	Г		 Factory engine capillary tubes environmentall carbon refriger ozone depletio (3) global warm 	ered, self-cont ystem using y friendly R29 ant that has ze n potential (O ning potential	ained, 0 hydro ero (0) DP), & three (GWP).
	L		 High capacity, f refrigeration sy cabinet temper (.5°C to 3.3°C) for preservation. 	factory balanc stem that mai ratures of 33°F or the best in f	ed ntains to 38°F ood
			 Stainless steel s finest stainless tensile strength scratches. 	olid doors and available with n for fewer der	d front. The higher its and
			Adjustable, hea shelves	avy duty PVC c	oated
			 Positive seal se guaranteed do type closure sy 	lf-closing door or hinges and stem.	rs. Lifetime torsion
			Bottom mounted	d units featu	re:
			No stoop" low	er shelf.	
4.2	T NP		Storage on top	of cabinet.	
		U.	Compressor pe	rforms in cool a of kitchen.	est, most
		U	 Easily accessibl cleaning. 	e condenser c	oil for
OUGH-IN DAIA	Chart dimensions rou	Spe unded up to the nearest ½" (mil	cifications subject	t to change w	vithout notic
	Cabinet Dimensions			Cord	Crated

			Cabine	et Dime (inches) (mm))				ΝΕΜΔ	Cord Length (total ft)	Crated Weight (lbs)
Model	Doors	Shelves	W	D	H*	HP	Voltage	Amps	Config.	(total m)	(kg)
T-72-HC	3	9	781⁄8	291⁄2	78¾	3⁄4	115/60/1	6.9	5-15P	9	575
			1985	750	1991	N/A	N/A	N/A		2.74	261

* Height does not include 5" (127 mm) for castors or 6" (153 mm) for optional legs.

ADE IN ADE IN SADE USA SADE USADE USA SADE		APPROVALS:	AVAILABLE AT:
12/16	Printed in U.S.A.		

Model:

T-72-HC

T-Series: Reach-In Solid Swing Door Refrigerator with Hydrocarbon Refrigerant



STANDARD FEATURES

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- State of the art, electronically commutated evaporator and condenser fan motors. ECM motors operate at higher peak efficiencies and move a more consistent volume of air which produces less heat, reduces energy consumption and provides greater motor reliability.
- Bottom mounted condensing unit positioned for easy maintenance. Compressor runs in coolest and most grease free area of the kitchen. Allows for storage area on top of unit.

CABINET CONSTRUCTION

- Exterior Stainless steel front. Anodized quality aluminum ends. Corrosion resistant GalFan coated steel back.
- Interior attractive, NSF approved, clear coated aluminum liner. Stainless steel floor with coved corners.

- Insulation entire cabinet structure and solid doors are foamed-in-place using a high density, polyurethane insulation that has zero ozone depletion potential (ODP) and zero global warming potential (GWP).
- Welded, heavy duty steel frame rail, black powder coated for corrosion protection.
- Frame rail fitted with 4" (102 mm) diameter stem castors - locks provided on front set.

DOORS

- Stainless steel exterior with clear aluminum liners to match cabinet interior. Doors extend full width of cabinet shell. Door locks standard.
- Lifetime guaranteed recessed door handles. Each door fitted with 12" (305 mm) long recessed handle that is foamed-in-place with a sheet metal interlock to ensure permanent attachment.
- · Positive seal self-closing doors. Lifetime guaranteed door hinges and torsion type closure system.
- Magnetic door gaskets of one piece construction, removable without tools for ease of cleaning.

SHELVING

- Nine (9) adjustable, heavy duty PVC coated wire shelves 24 ¹/₈"L x 22 ³/₈"D (613 mm x 569 mm). Four (4) chrome plated shelf clips included per shelf.
- Shelf support pilasters made of same material as cabinet interior; shelves are adjustable on 1/2" (13 mm) increments.

LIGHTING

• LED Interior lighting - safety shielded. Lights activated by rocker switch mounted above doors

MODEL FEATURES

- Exterior temperature display.
- Evaporator is epoxy coated to eliminate the potential of corrosion.
- NSF/ANSI Standard 7 compliant for open food product.

ELECTRICAL

• Unit completely pre-wired at factory and ready for final connection to a 115/60/1 phase, 15 amp dedicated outlet. Cord and plug set included.



OPTIONAL FEATURES/ACCESSORIES

- Upcharge and lead times may apply.
- □ 6" (153 mm) standard legs.
- □ 6" (153 mm) seismic/flanged legs.
- □ Alternate door hinging (factory installed).
- □ Additional shelves.
- □ Half door bun tray racks. Each holds up to eleven 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately).
- □ Full door bun tray racks. Each holds up to twenty-two 18"L x 26"D (458 mm x 661 mm) sheet pans (sold separately).



TRUE FOOD SERVICE EQUIPMENT

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CED 1D07 (S/C)

Combination Prep/Refrigerated Self-Service Case w/ Rear Storage



NOTE: INTERIOR PANS NOT PROVIDED W/CASE GP441RR HOLDS (2) FULL SIZE 4"D PANS GP641RR = (3) PANS - GP841RR = (4) PANS

□ GP441RR □ GP641RR □ GP841RR



STANDARD FEATURES

- Breeze[™] w/EnergyWise s/c refrigeration
- Compressor air intake from rear and out front panel at toe kick. Front panel cannot be blocked.
- Condiment pan support rails
- Integrated average product temperature of 40°F or less
- LED 4000K top light(s)
- NOTE: Pans not supplied with case.
- NOTE: Remote only available w/rail base w/shims. N/A w/ levelers, casters or legs.
- One year parts & labor; 5 year compressor warranty
- Shelving removable and adjustable on 1" centers
- Stainless steel rear exterior

	Johons
d (non-premium) Confirm	Laminated (premium) Confirm pattern/grain direction
rain direction	Stainless steel
	Stainless steel
	White
Black 🗆	Stainless steel
v/ levelers (n/a w/ remote	□ 6"H legs (n/a w/ remote ref.)
,	3 ()
banel w/mirror interior	No end panel w/ synchronized defrost
banel w/mirror interior	No end panel w/ synchronized defrost
gerated rear storage (w/o	Non-refrigerated rear storage (w/doors)
	Refrigerated rear storage (w/doors)
nalite®	Stainless steel
	∃ Silver
ss with top serving shelf	No sneeze guard (to be supplied by others in the field)
t blade power cord	6' locking power cord (self-cont.)
.)	Electrical leads (remote)
w/EnergyWise s/c	NOTE: Remote only available w/rail base w/shims. N/A
ion	w/ levelers, casters or legs.
	Note: Remote doesn't incl Conds unit. Floor drain regd.
	Remote w/thermostat, solenoid & TXV
	Rear door lock
	Second year parts & labor warranty (excludes
	compressor)
	Additional non-lighted metal shelf
	Clean Sweep® coil cleaner (n/a w/remote)
	Night curtain, retractable, non-locking
	Removable wire security cover locking
	a (non-premium) Conirm rain direction



Fusion Product Specifications

CED 1D07 (S/C)



*** Does not include electric defrost on freezer models



ETL Listed to CAN/CSA 22.2 No. 120 ETL Sanitation to NSF 7 Important Notes:

1) ELECTRICAL NOTE: If GFCI is required, a GFCI breaker MUST be used in lieu of a GFCI receptacle

2) 52" minimum door entry clearance required (without shipping skid).

3) Units are supplied with levelers. They must be adjusted during installation to ensure the unit is level and plumb. Dimensions reflect levelers extended 1 1/4".



n to NSF 7	
In Accordance with AHRI Std 1200	DOE 2017 Energy Efficiency Compliant



20029101

QUANTITY

ITEM NO

Rotisserie



SCR 8 countertop 8-spit rotisserie



SCR 16 stacked 16-spit rotisserie

The sight, smell and taste of rotisserie chicken can add significant impact and sales to your store. With such a powerful appeal to the senses, choosing your equipment is critical.

But why choose Henny Penny rotisseries? You'll get more of those delicious whole birds, ribs, pork roasts and other center-of-the plate items every day because the Henny Penny rotisserie simply cooks faster.

THERMA-VEC[®] Even Heat Process combines cross-flow convection cooking with radiant heat. The result is thorough, even cooking with uniform browning in a lot less time than other rotisseries.

The single cabinet SCR 8 countertop rotisserie saves on floor space while cooking up to 40 whole birds in a single load! The stacked SCR 16 doubles that production-a massive 80 whole birds per load-from the same footprint, while providing the flexibility of two independently operated rotisseries.



SCR 8 8-spit Countertop **SCR 16** 16-spit Stacked

CED 1D09

With 9 available cook cycles (per cabinet) and choice of browning level, chefs can dial up just the right color and crispness for seasoned and marinated meats, fish and poultry... every time!

Easy-to-use controls feature LED displays and probe cooking. Units can be configured with various features on control side and customer side.

Spits, rotor disks, drive tube and drip trays remove easily for cleaning and are made with coated surfaces for easy cleanup.

Henny Penny offers a host of accessories including mobile loading stands, product display units, and merchandising bases that increase productivity and impulse sales.

Standard Features

- THERMA-VEC[®] Even Heat Process cooks full loads quickly and evenly:
 - Gentle, cross-flow convection for

 Interchangeable spits, racks or

 even cooking throughout cabinet
 - Radiant heat for uniform browning and crisp texture
- Easy-to-use touch key controls with Drive assembly, drip trays and large LED simultaneous time and temperature display
- 9 programmable cook cycles for each cabinet, 18 total for SCR 16
- Programmable browning and texture control
- Food temperature probe
- Tempered clear glass doors with black matrix shaded borders

- Rotation stops automatically when doors open
- Spit rotation switch for easy loading
- baskets
- · Simple three-piece drive tube and rotor assembly
- drain pans disassemble easily for quick cleanup
- Coated spits and interiors for easy cleaning
- Stainless steel construction for easy cleaning and long life

Please choose configuration

- \square 8 or \square 16 angled spits OR
- \square 8 or \square 16 piercing spits OR
- □ 8 or □ 16 solid bottom baskets OR
- \square 8 or \square 16 wire baskets
- Cabinet style

□ Solid back

- □ Pass-through
 - Customer side door handle \Box with \Box without Customer side rotation switch \Box with \Box without
- \Box 4 casters 3 in (76 mm)
- □ SCR 16 low profile caster mounting
- □ Adjustable leveling legs
- □ SCR 8 no casters or leveling legs

NOTE: Each cabinet in a stacked unit must be configured identically. Stacking Kit 02665 shipped with order.



□ APPROVED □ APPROVED AS NOTED □ RESUBMIT

AUTHORIZED SIGNATURE

DATE

ITEM NO

Rotisserie

SCR 8 8-spit Countertop **SCR 16** 16-spit Stacked



	SCR 8		SCR 16 Stacked		
Dimensions					
Height	38.25 in	(972 mm)	80.25 in	(2039 mm)	
Width	40.63 in	(1032 mm)	40.63 in	(1032 mm)	
Depth	29.88 in	(759 mm)	29.88 in	(759 mm)	
Crated					
Length	48 in	(1220 mm)			
Depth	37 in	(940 mm)	2 crates SCR 8		
Height	48 in	(1220 mm)	_	_	
Volume	49.3 ft ³	(1.40 m ³)	98.6 ft ³	(2.80 m ³)	
Weight	471 lb	(214 kg)	942 lb	(428 kg)	
Capacity 2.5 lb (1.1 kg) whole chickens					
	8 spits		16 spits		
Angled spits	32 chickens 4 per spit		64 chickens 4 per spit		
Piercing spits	40 chickens 5 per spit		80 chickens 5 per spit		
Basket	32 chickens 4 per spit		64 chickens 4 per spit		

Electrical

	Wire	Amps	kW	Hertz	Phase	Volts
Power cord and plug includ	2+G	50.5	11.1	50/60	1	208
with 3 phase 208 V and 24 units for USA and Canada	2+G	46.0	11.1	50/60	1	240
	3+G	33.6	11.1	50/60	3	208
NEMA 15-50P (3+G	29.1	11.1	50/60	3	240
	3NG	19.3	11.1	50	3	400

Laboratory certifications



Continuing product improvement may subject specifications to change without notice.

24 Hour Technical Support: Henny Penny Technical Service 800.417.8405 technicalservices@hennypenny.com

Henny Penny Corporation PO Box 60 Eaton OH 45320 USA

+1 937 456.8400 800 417.8417 +1 937 456.8434 Fax 800 417.8434 Fax

Required clearances Left 2 in (50 mm) air flow Right 20 in (500 mm) service, power cord

Heating

Lighting

		(000) 00. 1.00, ponor 0
Back	2 in	(50 mm) air flow
	<u> </u>	

3 in (76 mm) when stacked

Electric convection and radiant heat

4 tungsten halogen lamps 150 W

- 28 in (711 mm) pass-through door open
- Front 28 in (711 mm) door open

Bidding Specifications

Provide Henny Penny electric rotisserie model SCR 8 countertop with 8 spit capacity or SCR 16 stacked with 16 spit capacity. When stacked to form SCR 16 both SCR 8 cabinets must be configured alike.

Unit shall incorporate:

- THERMA-VEC® Even Heat Process combines crossflow convection heat with radiant heat
- Programmable cooking programs with programmable browning and texture settings
- Large LED displays for time and temperature ٠
- Food probe and probe cooking capability •
- Pass-through or solid back design •
- Removable coated spits, rotor disks, drive tube, drip tray ٠
- High-quality stainless steel and tempered glass
- Choice of handle and rotation switch for customer • side and service side
- Choice of 8 angled or piercing spits, or baskets for each cabinet

HENNY PENNY

Engineered to Last

Choice of casters or leveling legs for single or bottom unit, or low profile casters for SCR 16

www.hennypenny.com

© 2006 Henny Penny Corporation, Eaton, OH 45320 USA Revised 08/04/2014

PROJECT

Rotisserie mobile stand

MODEL SCT-800



SCT-800 rotisserie work table/mobile stand

General Information

This sturdy work table is designed specifically as a base for mounting the Henny Penny SCR-6 or SCR-8 countertop Rotisseries when built-in countertops are not available.

QUANTITY

Henny Penny mobile rotisserie stands provide foodservice operators a safe, sanitary surface to place rotisseries while making it easy to relocate them at any time.

Standard Features

- Sturdy, welded stainless steel frame construction.
- Four heavy-duty casters; two locking.

ITEM NO

• Convenient lower storage shelf.



Dimensions

 Height:
 35 5/8 in. (905 mm)

 Width:
 40 in. (1018 mm)

 Depth:
 34 in. (864 mm)

Floor space: 10 sq. ft. (1m³)

Crated dimensions: Contact Henny Penny

Net weight: N/A Crated weight: Contact Henny Penny

Bidding Specifications

- Provide Henny Penny rotisserie work table model SCT-800 and mobile stand for SCR-6 or SCR-8 countertop rotisserie.
- Unit shall be constructed of welded stainless steel and shall consist of a top surface and lower storage surface.
- Unit shall include (4) 5-inch heavy duty casters, two locking.

Laboratory certifications



Continuing product improvement may subject specifications to change without notice

	APPROVED AS NOTED	C RESUBMIT		
AUTHORIZED SIGNATURE		DATE		
© 2006 Henny Penny Corporation, Eaton, OH 45320 USA Revised 03/04/11				

Henny Penny Corporation PO Box 60 Eaton OH 45320 USA

+1 937 456.8400 800 417.8417 +1 937 456.8434 Fax 800 417.8434 Fax



Engineered to Last"

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ITEM NO. CED 1D14-B



ITM2-72 ISLAND TAKEOUT MERCHANDISER



- Freestanding, self-service merchandiser designed to provide quality hot packaged foods with minimum labor costs.
- Lighted display maximizes visual merchandising — promotes impulse sales.
- Heat source radiates from the base and the upper canopy with adjustable temperature settings.
- Concealed power and temperature switches are easily accessible to the operator.
- Angled canopy on two sides adds to the clean streamlined look.
- Bumpers on two sides of the unit provide extra protection against damage from shopping carts.
- Available as standard with stainless steel base, black side panels, and black shelving.

20 gauge stainless steel island base features bumpers on two sides, comes standard with two (2) black painted side panels and two (2) black painted adjustable shelves. An easy to clean hard coat anodized heat plate is surrounded by 2-1/2" (64mm) removable heat guards. The overhead canopy is supported by two (2) side supports, enclosing eight (8) flood lamps and is surrounded by four (4) removable tinted lexan heat guards. Two (2) toggle switches located beneath the canopy control the power (ON/OFF) and the heat plate temperature (LOW/MEDIUM/HIGH). The base is furnished with four (4) 5" (127mm) casters, 2 rigid, and 2 swivel with brake.

Deluxe model features black formica end panels and black painted canopy, four (4) wooden adjustable shelves, and two removable wooden end baskets.

□ **MODEL ITM2-72/STD:** Island Take-out Merchandiser, 72" wide

□ **MODEL ITM2-72/DLX:** Deluxe Island Take-out Merchandiser, 91" wide







- Panel Color Choices
- Specify color choice:
 □ Black, standard
 □ Stainless Steel, optional
 □ Custom Color, optional
- Full Side Guards, Lexan



 W164 N9221 Water Street
 P.O. Box 450
 Menomonee Falls, Wisconsin 53052-0450
 U.S.A.

 PHONE: 262.251.3800
 800.558.8744 U.S.A./CANADA
 FAX: 262.251.7067
 800.329.8744 U.S.A. ONLY

www.alto-shaam.com







DIMENSIONS: H x W x D

HEATED SURFACE DIMENSIONS: (L x W)

PHASE CYCLE/HZ

HEATED PRODUCT CAPACITY*

60

50

1

1

60-1/2" x 72" x 28-5/16" (1536mm x 1829mm x 719mm)

60-1/2" x 91" x 31-3/16" (1536mm x 2311mm x 792mm)

66-3/4" x 19-15/16" (1695mm x 505mm)

AMPS

16.0

8.7

63 lb (29 kg) MAXIMUM

Twenty-one (21) chicken boats with dome cover

DOME PACKAGE SIZE: APPROX. 7" x 10" (178mm x 254mm)

kW

1.90

2.00

(,_)

STANDARD:

ELECTRICAL

VOLTAGE

120

230

DELUXE:

 WEIGHT

 ITM2-72/STD
 ITM2-72/DLX

 NET
 355 lb (161 kg) EST.
 375 lb (170 kg)

 SHIP
 590 lb (268 kg) EST.
 610 lb (277 kg)

 CRATE DIMENSIONS: (LXWXH)
 500 lb (268 kg) EST.
 500 lb (277 kg)

84" x 38" x 68"

(2134mm x 965mm x 1727mm)

INSTALLATION REQUIREMENTS

Unit must be installed level, and must not be installed in any area where it may be affected by steam, grease, dripping water, high temperatures, or any other severely adverse conditions.

CLEARANCE REQUIREMENTS

NO CLEARANCE REQUIRED



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www.alto-shaam.com

*FOR USE WITH PRE-PACKAGED ITEMS ONLY

CORD & PLUG

NEMA 5-20P

20A - 125V Plug

CORD INCLUDED

NO PLUG





Combination Prep/Refrigerated Self-Service Case w/ Rear Storage



NOTE: INTERIOR PANS NOT PROVIDED W/CASE GP441RR HOLDS (2) FULL SIZE 4"D PANS GP641RR = (3) PANS - GP841RR = (4) PANS

□ GP441RR □ GP641RR □ GP841RR

Lengths include end panels 51"L x 51-3/4"D x 43"H 75-3/8"L x 51-3/4"D x 43"H 99-3/4"L x 51-3/4"D x 43"H

STANDARD FEATURES

- Breeze[™] w/EnergyWise s/c refrigeration
- Compressor air intake from rear and out front panel at toe kick. Front panel cannot be blocked.
- Condiment pan support rails
- Integrated average product temperature of 40°F or less
- LED 4000K top light(s)
- NOTE: Pans not supplied with case.
- NOTE: Remote only available w/rail base w/shims. N/A w/ levelers, casters or legs.
- One year parts & labor; 5 year compressor warranty
- Shelving removable and adjustable on 1" centers
- Stainless steel rear exterior

E				
Features	Standard	Options		
EXTERIOR COLOR	Laminated (non-premium) Confirm	Laminated (premium) Confirm pattern/grain direction		
	pattern/grain direction	Stainless steel		
INTERIOR COLOR	□ Black	□ Stainless steel		
		□ White		
	- Dointod Blook			
LOWER FRONT PANEL COLOR				
BASE	Casters w/ levelers (n/a w/ remote	□ 6"H legs (n/a w/ remote ref.)		
	ref.)			
END PANEL LEFT	Full end panel w/mirror interior	No end panel w/ synchronized defrost		
END PANEL RIGHT	Full end panel w/mirror interior	No end panel w/ synchronized defrost		
REAR STORAGE	Non-refrigerated rear storage (w/o	Non-refrigerated rear storage (w/doors)		
	doors)	 Refrigerated rear storage (w/doors) 		
REAR WORK LEDGE	White Sanalite®	Stainless steel		
SNEEZE GUARD POSTS	Black	□ Silver		
SNEEZE GUARD	Clear glass with top serving shelf	No sneeze guard (to be supplied by others in the field)		
ELECTRICAL CONNECT	6' straight blade power cord	6' locking power cord (self-cont.)		
	(self-cont.)	 Electrical leads (remote) 		
REFRIGERATION	□ Breeze™ w/EnergyWise s/c	NOTE: Remote only available w/rail base w/shims. N/A		
	refrigeration	w/ levelers, casters or legs.		
	-	□ Note: Remote doesn't incl Conds unit. Floor drain read.		
		Remote w/thermostat. solenoid & TXV		
MISCELLANEOUS		Rear door lock		
		Second year parts & labor warranty (excludes)		
		compressor)		
		- Additional non-lighted metal shalf		
ACCESSORIES				
		□ Clean Sweep® coll cleaner (n/a w/remote)		
		Night curtain, retractable, non-locking		
		Removable wire security cover, locking		



Fusion Product Specifications

CED 1D17 (Remote)



*** Does not include electric defrost on freezer models Regulatory Approvals:

All Models Accordance with AHRI Std 1200 ETL Listed to UL 471

ETL Listed to CAN/CSA 22.2 No. 120 ETL Sanitation to NSF 7

Important Notes:

1) ELECTRICAL NOTE: If GFCI is required, a GFCI breaker MUST be used in lieu of a GFCI receptacle

2) 52" minimum door entry clearance required (without shipping skid).

3) Units are supplied with levelers. They must be adjusted during installation to ensure the unit is level and plumb. Dimensions reflect levelers extended 1 1/4".



n to NSF 7	
AHRI Std 1200	DOE 2017 Energy Efficiency Compliant



20029101

ESZ5-HO-HMB SLINGSHOT™ Face to Face Slicer Mounting System® ★ Saves 54 - 87 hours cleaning time per slicer annually

STANDARD FEATURES:

- 2 Axis Adjustable Type 304 Stainless Steel Slicer **Suspension Mounting Beams and High Polish** Saddles With Offset Beam That Adjusts to Symmetrical and Asymmetrical Footprints
- Easy to Wipe Concave Downward Type 304 Stainless Steel Pan
- **3** 4 Outboard & 2 "Center Pivot" Retractable Wheels The Front (2) Swivel Casters Are Stainless Steel
- 4 Heavy Gauge Type 304 Stainless Steel **Tubular Frame Construction**

- Heavy Duty Type 304 Stainless Steel Height Adjustable Feet with 7.5^o Angular Misalignment And High Coefficient Friction 3.5" Diameter Slotted Puck
- 6 Heavy Duty Type 304 Stainless Steel Lower Shelf With Splash Guard Kick Plate To Cover Front Wheels
- ⑦ Slide Out Removable Polsan™ Mid Shelf With **Cleaning Bottle Holder**
- 8 Left Handle Grip
- ① Tall Ergo-Style Right Handle
- XZ-CT Type 304 Stainless Steel Closed Coved Corner Slide Out Crumb Tray
- Antimicrobial Rubber Boots That Cover Slicer Feet and Mounting Saddles
- X50 Removable/Height Adjustable S/S Scale Shelf with Vibration Isolation



Keep Your Customers Close

- 13 X50SMBH (2 Axis) Front or Side Scale Shelf Mounted Deli Bag Holder (Removable)
- Removable Polsan[™] **Cutting Board with Drain** Channels
- **(B)** X-8 Slim Width Knife Rack
- X-DR-ESZ5 Debris Receptacle Accessorv
- **17** XZ-22 Combination Width Adjustable Poly Bag and Tissue / Glove Box Holder With (4) Position Height Adjustable Reversible (3) Axis Pole

NOTE: This model includes special beams for use with Hobart Slicer Model 1712 and 1912 which have an exposed operating mechanism underneath. Consult our factory if another model of slicer is to be used which has an exposed operating mechanism underneath.

visit --> www.facetofaceequipment.com



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CED 1D22

HUSSMAnn®



CW2UGE, CW2EGE, CW2GE

Excel Low Profile Multi-Deck Unitized Convertible Island Merchandiser

Hussmann Excel Low Profile Multi-Deck Unitized Convertible Island Merchandiser

CW2U90GE - Unitized, 48" Height, 90" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 138" Length, Glass Front, High Efficiency CW2U138GE - Unitized, 48" Height, 48

CW2GE - Center Case CW2EGE - End Case





Plan View

CW2UGE





Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Shop Around, Convertible Merchandising

Use with high margin items to help boost sales. This low height, convertible multi-deck island can be used for any medium temperature application. Great for prepared foods or other grab-n-go items. High visibility and easy access increase merchandising appeal.

Unitized Construction

Printed in U.S.A. ©2017 Hussmann Corporation

The end and center portions of the "U" models are constructed as a single, unitized case. By connecting two unitized cases together at a single joint, adding an end case, or including additional center cases, you can have a complete shop around island of almost any length. The unitized design greatly simplifies installation.

Shelving Flexibility

Shelves are available in 12", 14", 16" and 18" depths. Shelves can be used for excellent display flexibility.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed $75^\circ F$ and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

www.hussmann.com

CW2UGE_CW2GE_CW2GE_030317

CED 1D24

HUSSMANN®



C2X-XEP, C2X-XGE, C2X-XGEP, C2X-XLGE, C2X-XLE, C2X-XLEP, C2X-XLGEP

Excel Multi-Deck Convertible Merchandisers for All Medium Temperature Applications

CED 1D24

Hussmann Excel Multi-Deck Convertible Merchandisers for Prepared Sandwiches, Salads and Pizza Applications

> + 15 7/8 (403)

C2X-XEP	C2X-XGE	C2X-XGEP
C2X-XLE	C2X-XLEP	C2X-XLGEP

Extra-height (55³/₄") models available.

GEP C2X-XLGE

E = Energy Efficient Coil EP = E Plus, Extra High Efficiency Coil L = Low Front

G = Glass Front

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.









Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Superior Merchandising.

The C2X-X family (55-3/4" tall) provides about 7 additional inches of height compared to the C2X (48-1/2" tall) for additional merchandising capacity. Ideal for grab-n-go meals or other high margin prepared food selections such as sandwiches, prepared salads, pizza, etc.

Lower Energy Costs.

All Excel C2X-X cases come with energy efficient "E" coils or super efficient E-Plus coils as standard.

Superior Shelf Life.

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DDE 2017 energy efficiency standards.



Dimensions		8 FT	12 FT
A		96 3/8 (2448)	144 1/2 (3670)

*C2X-XEP is not available in 12-foot length. **C2X-XGEP is not available in 8-foot length.

Notes:

Case-to-case electrical connections are made in front of splashguard. Overall case length without ends or partitions.

Lower Labor Costs.

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom with no coil in the bottom of the case, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability.

Our five-year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

QUANTITY

ITEM NO

Pressure Fryers

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PFE 500 electric pressure fryer with Computron[™] 8000 control

Henny Penny first introduced commercial pressure frying to the foodservice industry more than 50 years ago. Frying under pressure enables lower cooking temperatures for longer oil life, and faster cooking times to meet peak demand. Pressure also seals in food's natural juices and reduces the amount of oil absorbed into product.

Today,Henny Penny pressure fryers continue to lead the industry in performance, durability and innovation.

The Henny Penny PFE 500 remains one of the most popular and reliable pressure fryers on the market. Operators can choose either low or high wattage immersed heating elements that generate fast temperature recovery and welcome energy savings.

Henny Penny pressure fryers have a patented lid lock and color-keyed spindle that make it easy to create a perfect pressure seal every time.

A built-in filtration system filters and returns hot frying oil in minutes. No separate pumps and pans, no handling hot oil.

The Computron[™] 8000 control features automatic, programmable operation, as well as energy-saving, filtration and cook management functions.

The Computron[™] 1000 control offers programmability in a simple, easy to use digital control panel with LED display.

Standard Features

- Patented lid-lock system keeps lid locked until pressure reaches 1 psi
- Color-keyed locking spindle
 engages pressure seal
- Heavy-duty stainless steel fry pot with 7-year warranty
- High-efficiency heating elements generate fast recovery and energy savings
- Rectangular fry pot design promotes turbulence for even cooking
- Cold zone below heating elements helps extend oil life
- High-limit temperature protection
- Built-in filtration system
- Cast aluminum alloy lid is strong but light for easy handling
- Channel under lid directs condensation away from pot when lid is up
- Raised edge on deck reduces spills

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- Stainless steel construction for easy-cleaning and long life
- Narrow footprint saves floor space and cookline frontage
- 4 heavy-duty casters, 2 locking
- Computron[™] 8000 control (additional charge)
 - 10 programmable cook cycles
 - Melt mode
 - Idle mode
 - Clean-out mode
 - Water detection alert
 - Load compensation
 - Proportional control
 - Optional filter prompt and customizable filter tracking
 - 16-character digital display with multiple language settings
- Computron[™] 1000 control
 - Programmable

DATE

- LED Time/Temp display
- Simple UP/DOWN arrows

Accessories shipped with unit

Max filter screen with standard filter media (2 PHT filter envelopes)

Accessories and options available separately

- □ Direct Connect shortening disposal □ 4-tiered basket
- □ Locking basket handle
- □ Full-size basket and handle
- Crumb pan and handle
- □ Filter rinse hose attachment
- □ Filter pan dolly
- □ Supersorb filter pad

□ APPROVED □ APPROVED AS NOTED □ RESUBMIT

AUTHORIZED SIGNATURE



PFE 500 Electric

CED 1D26

ITEM NO

Pressure Fryers

PFE 500 Electric

CED 1D26



Crated

oracoa		
Length	45 in	(1143 mm)
Depth	22 in	(559 mm)
Height	56 in	(1420 mm)
Volume	32 ft ³	(0.91 m ³)
Weight	340 lb	(154 kg)

Required clearances

Тор	14 in	(356 mm) lid up
Sides	6 in	(152 mm) air flow
Back	6 in	(152 mm) air flow
Front	30 in	(762 mm) remove filter pan

Electrical

Volts	Phase	Hertz	11.25 kW Amps	13.50 kW Amps	Wire*
190–208	1	50 or 60	54.0	65.0	2+G
190–208	3	50 or 60	32.0	38.0	3+G
208	1	60	54.0	65.0	2+G
208	3	60	32.0	38.0	3+G
220-240	1	50 or 60	47.0	58.0	2+G
220–240	3	50 or 60	27.0	33.0	3+G
220/380	3	50 or 60	17.1	20.5	4+G
240/415	3	50 or 60	15.6	18.8	4+G
380-415	3	50	17.1	18.8	3NG
480	3	60	14.0	16.0	3+G

Laboratory certifications



*Power cord and plug must be installed on site by a qualified electrician.

Continuing product improvement may subject specifications to change without notice.

24 Hour Technical Support: Henny Penny Technical Service 800 417.8405 technicalservices@hennypenny.com

Heating

3 immersed elements 3.75 kW each/11.25 kW total 4.50 kW each/13.50 kW total

Capacity

Product 14 lb (6.4 kg) Oil 48 lb or 25 L

- Unit shall incorporate: Computron[™]1000 simple digital control OR Computron[™] 8000 control system (additional charge) with programmable or manual operation, LED digital display, idle and melt modes, load compensation, filtration tracking and 7-day history
- Fry pot of heavy duty stainless steel with 7-year warranty
- Color-keyed locking spindle and lid-lock system to seal and create and maintain 12 psi pressure in cooking chamber
- 4 heavy-duty casters, 2 locking
- Starter kit with choice of filter media

plug can be supplied for 3 phase 208 V and 220-240 V units only **NEMA 15-50P**



Henny Penny Corporation PO Box 60 Eaton OH 45320 USA

+1 937 456.8400 800 417.8417 +1 937 456.8434 Fax 800 417.8434 Fax www.hennypenny.com





Quick Queue Retractable Belt Stanchion

	Techn	nical Specifications
Dimensions	Unit Height:	40" (1016mm)
	Base Width:	14" (356mm)
Function	The Quick Queue is queuing.	a portable, Retractable Belt stanchion providing effective and reliable
Materials	Quick Queue	Four (4) connecting points and retractable belt allow for the Quick Queue to be lined up in any series or configuration to provide queuing solutions.
	Post	The post is a 2.5" OD tube made from 20-gauge (Black finish) or 22-gauge (Mirror, Satin, and Brass finish) cold rolled steel.
	<u>Base Cover and</u> Weight	The base cover is made of stamped cold rolled steel. The base weight is made of cast iron with a weight of 11 lbs.
	Retractable Belt	The Retractable belt is a 2" wide wear resistant nylon and extends approximately 7'. Belt features anti-tamper belt locking to minimize accidental release.
Available Finishes	<u>Black</u>	All external materials are coated with a satin black finish.
	Mirror	All external materials are polished to a mirror finish.
	Satin	All external materials are polished to a satin (#201) finish.
	<u>Brass</u>	All external materials are plated with a brass finish.
Weight	Approximately 26 lbs	s. (11.79 kg).
Shipping Details	The Quick Queue is world.	shipped ready for assembly. Alvarado ships products throughout the
Installation Details	All Quick Queue Sta performed by a skille	Inchions must be installed on level concrete. Installation should be ed installer following the manufacturer's instructions (included).

Options

Belt Colors

Standard belt colors are Black, Red, and Blue. Custom colors are available.

Belt Imprints

Belts can be ordered with imprinted messages.

Rotational Sign Frames

11" x 7" portrait or landscape frames are available in Black or Mirror finishes.

Sign Messages

A variety of stock message signs are available to fit our Rotational Sign Frames. Custom messaging is available. Standard colors are **Black**, Red, and Blue.

Warranty Alvarado Manufacturing Co., Inc. warrants the Quick Queue Stanchion from defects in material or workmanship, for the period of one (1) year from the date of shipment. Complete details of the warranty are available from Alvarado by request.

QUEUING AND PUBLIC ENTRY

CALVARADO protecting assets and controlling the flow of people

GUICK GUEUE RETRACTABLE BELT STANCHIONS

Alvarado's **Quick Queue** line of portable, retractable belt stanchions are incredibly versatile, andcan be used anywhere that requires line management or crowd control.

Quick Queue stanchions can be moved at a moments notice to keep lines organized or to restrict access and protect products.

Our wall mounted Quick Queue allows for even more configurations, and work seamlessly with Quick Queue stanchions.

To keep shipping costs down, all stanchions are sold in pairs.



TYPICAL INSTALLATION SITES

- Stadiums and Arenas
- Shopping Centers
- Amusement Parks
- Theaters and Museums

Why Alvarado?

Alvarado is the leading manufacturer of queuing and public entry products. Since its founding in 1956, Alvarado equipment has been installed in thousands of locations throughout the world. Our superior product quality, integration expertise and industry leading service and support are just a few reasons that many of the world's most respected companies use our products again and again.

OALVARADO QUICK QUEUE

CED 1E06

QUEUING AND PUBLIC ENTRY

PROTECTED

Alvarado can customize any Quick Queue belt with your logo

QUICK QUEUE STANCHION EKS-01



AVAILABLE MODELS*

EKS-01 (Black post)EKS-03 (Satin post)EKS-02 (Chrome post)EKS-04 (Brass post)*All Quick Queue Stanchions are sold in pairs.

AVAILABLE BELT COLORS



Our Quick Queue belts are available in yellow, green, burgundy, red, black and blue. Available lengths may vary.

WALL MOUNTED QUICK QUEUE





Our Wall Mounted Quick Queue is available in a chrome or matte black finish. A receiver plate and attachment hardware is included.

ALVARADOMFG.COM information@alvaradomfg.com

SIGN FRAMES



OPTIONS

or message.

ROTATIONAL SIGN FRAMES

Rotational Sign Frames attach securely to the top of the Quick Queue, rotate to one of 8 positions and lock in place. The 11" x 7 " frame is available in horizontal or vertical configuration and chrome or black finish.

PLEASE WAIT TO BE SEATED



CLOSED

Alvarado has a number of standard vertical and horizontal signs to fit our Rotational Sign Frames. Custom signs are also available.

LARGE SIGN FRAMES

Our large sign frame can hold even bigger signs, and attach tightly over our Quick Queues without interfering with connection points. Sign frame comes with two pieces of acrylic that sandwich the purchaser's own 8.5" x 11" thick sign. The large frame is 11.875" x 8.25", and available in a chrome or brass finish.

12660 Colony Street • Chino, CA 91710 USA +1.909.591.8431 • Toll Free: 800.423.4143



QUEUING AND PUBLIC ENTRY

CALVARADO protecting assets and controlling the flow of people PIVOTING SIGNFRAME

Our sign frames can pivot to any of eight pre-set positions and click firmly into place. Each frame has a slotted top opening and accept signs up to 1/4" thick. The addition of signage to any stanchion results in fewer questions, shorter lines and an improved visitor experience.

Available in vertical or horizontal orientation and in either bright chrome or black powder coat finish. Please note that these sign frames are designed for our 7' belt stanchions only and do not fit on stanchions with 13' belts.





FEATURES

- Frame pivots to eight different positions to accommodate any viewing angle, then locks securely into place.
- Sign holder attaches snugly over the stanchion top and does not interfere with connection points.
- Frames are available in vertical (11" H x 7" W) or horizontal (7" H x 11" W) orientation.
- Available in bright chrome and black powder coat

12660 Colony Street • Chino, CA 91710 USA +1.909.591.8431 • Toll Free: 800.423.4143

express





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CED 1E08



Can't Find a Particular Safe?

	TL-30 Models			
Model	Exterior H x W x D	Interior H x W x D	Weight	Capacity
FR2018	23 x 21 x 23 3/4	21 x 19 x 17	848	3.9
FR3018	23 x 21 x 23 1/4	21 x 19 x 17	1103	3.9
FR3624	39 x 27 x 27 3/4	37 x 25 x 21	1745	11.2
FR4524	48 x 27 x 27 3/4	46 x 25 x 21	2065	14.0
FR5024	53 x 27 x 27 3/4	51 x 25 x 21	2240	15.5
FR5030	53 x 33 x 27 3/4	51 x 31 x 21	2580	19.2

46 x 25 x 21

51 x 25 x 21

51 x 31 x 21

61 x 31 x 21

73 x 35 x 27

73 x 35 x 27

1940

2105

2420 2790

3672

5890

14.0

15.5

19.2

39.9

<mark>23.0</mark> 39.9

SSIF/

<mark>63 x 33 x 2</mark>7 FR7234 75 x 37 x 33 1/4 Dimensions are given in inches. Outside depth does not include handle and dial. Weight is approx. empty weight in pounds.

48 x 27 x 26 3/4

53 x 27 x 26 3/4

53 x 33 x 26 3/4

63 x 33 x 26 3/4

75 x 37 x 31 3/4

Capacity is in cubic feet. TL-15 and TL-30 models are UL Rated

ER4524

ER5024

ER5030

ER6030

ER7234

FireKing Office Products - File Cabinets • Storage Cabinets • Data • Records Safes • Gary by FireKing Safes ImageVault (CCTV — Digital Video Recorders • Cameras & Accessories • Point of Sale Integration Safes — NKL Cash Handling • Perfect Cash • EXL • McGunn • Adesco • Meilink Support — Sales • Marketing • Training • Files • CCTV • Safes

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CED 1E10



Can't Find a Particular Safe?

TL-30 Models Model Exterior H x W x D Interior H x W x D Weight Capacity FR2018 23 x 21 x 23 3/4 21 x 19 x 17 848 3.9 FR3018 23 x 21 x 23 1/4 21 x 19 x 17 1103 39 37 x 25 x 21 FR3624 39 x 27 x 27 3/4 1745 11.2 FR4524 48 x 27 x 27 3/4 46 x 25 x 21 2065 14.0 53 x 27 x 27 3/4 FR5024 51 x 25 x 21

51 x 25 x 21

51 x 31 x 21

61 x 31 x 21

73 x 35 x 27

51 x 31 x 21

61 x 31 x 21

73 x 35 x 27

FR723475 x 37 x 33 1/4Dimensions are given in inches.Outside depth does not include handle and dial.

ER5024

ER5030

ER6030

ER7234

FR5030

FR6030

Weight is approx. empty weight in pounds.

53 x 27 x 26 3/4

53 x 33 x 26 3/4

63 x 33 x 26 3/4

75 x 37 x 31 3/4

53 x 33 x 27 3/4

63 x 33 x 27 3/4

Capacity is in cubic feet. TL-15 and TL-30 models are UL Rated

FireKing Office Products — File Cabinets • Storage Cabinets • Data • Records Safes • Gary by FireKing Safes ImageVault CCTV — Digital Video Recorders • Cameras & Accessories • Point of Sale Integration Safes — NKL Cash Handling • Perfect Cash + 6XL • MGCunn • Adesco • Mellink Support — Sales • Marketing • Training • Files • CCTV • Safes

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15.5

19.2

39.9

2105

2420 2790

3672

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think inside the box KeyWatcher® key management system

KeyWatcher is the modular, scalable, integrated key control and management solution designed for interoperability with access control systems. Access to the box and to individual keys is under your complete control. You decide who has permission to remove each key, and with KeyWatcher's advanced communications capabilities, you always know who removed a key and when it was taken. Modular design means you can configure the exact components you need like card slots and lockers, with the ability to change modules where and when you need to. And KeyWatcher can grow as your needs grow.



think inside the box.

the integrated access control solution



KeyPro III Key Management Software

Smart Keys

- Enhances programming and reporting
- Email Alerts help track Smart Keys

· Track users and key movements

via identification chip

Illuminated Key Slots

Makes retreiving and returning keys easier

Identity Access Options

• Include hand readers, swipe cards, fingerprint readers and standard touchpads

Single Locker Module

 Provides more capacity for weapons and other larger items which need to be secured with controlled access

KeyWatcher is ideal for:

- casino and gaming industries
- correctional facilities
- healthcare facilities
- hotels and resorts
- conference centers
- government agencies

- multifamily buildings
- control rooms

think inside the box.

- corporate buildings
- educational institutions
- automotive businesses













keys

8-Key Module

Great for key rings and larger keys

6-Key Module

• Ideal for Folger Adam and large key rings

Card Module

• Thin slots are ideal for credit, debit, gas and proximity cards

Dual Locker Module

• For items such as prescriptions, tools, wallets, wireless phones and more



6-module KeyWatcher with 3 cabinets (linear configuration)



MORSE WATCHMANS



16-Key ModuleHolds the largest number of

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CED 1F00

HUSSMANN®

Specialty



Q-Series Family

Q3-MC, <mark>Q3-FC</mark>

Multi-Deck Service Merchandiser with Curved Glass for Meat and Seafood Applications

CED 1F00

Hussmann Q-Series Multi-Deck Service Merchandiser with Curved Glass for Meat and Seafood Applications

Q3-MC, Q3-FC



Quality Fit and Finish Designed for ease of installation. Simplified glass adjustment has special alignment design to assure fit. Does not require unsightly joint trim. Matches sleek design elements of the Q-Series family.



Merchandising Flair Optimized visibility -Full view of display deck. Standard lighting produces a balanced . spectrum of light with superior color definition and low glare.

Ergonomics

Large rear door opening and angled back improves product access

Product Shelf Life Dual refrigerated systems to reduce product dehydration and shrink.



Remote Lengths: 4', 6', 8', and 12' Wedges: 22.5° inside and outside wedges Q3-FC Service Fish







Contact your sales representative for information on possible availability of additional case lengths.



125/ (321)

47 1/2

Intertek Intertek

Note.

Use Hussmann's technical data

sheets to get precise dimensions

for all store layout purposes.

22.5° Outside Wedge

HUSSMAN

23



- Gravity/conduction coil (Meat)

Features and Benefits:

- Gravity coil, ice pans with stops (Fish)
- Stainless steel interior pans
- Adjustable deck for flexible merchandising
- Adjustable stainless steel legs
- Stainless steel top cover
- Black matrix on the glass to cover the coil
- Black powder-coated coil cover
- Solar digital thermometer
- Front glass air sweep (Meat)
- Front glass heated air sweep (Fish)
- Double row LED canopy lighting †
- Electronic ballast
- Thermostat and suction stop installed
- Black vinyl cart bumper
- Please reference color chart for choice of standard Hussmann paint and finish options (www.hussmann.com)

Options Include:

- Coil corrosion protective coating (Q3-FC)
- LED ledae lights †
- Tempered, non-glare, lift-up curved front clear glass - Automatic or manual water flush (reduces the need for
- manual case cleaning)
- Corian[®], granite or other solid surface front and/or top ledge (NSF approved material)
- Mirrored rear doors
- Thermoplastic wrapping boards with adjustable riser
- View or solid ends
- Mirror bright stainless steel inside end panels
- Stainless steel pedestals
- Top mounted scale stand extensions with dedicated scale outlet and Cat 5 scale connections
- Liquid line shut-off hand valve
- 15 amp GFCI duplex outlet
- Custom trim and decor
- Custom lengths and options*
- (consult your Hussmann sales representative) - Special exterior finishes*
- (consult your Hussmann sales representative)

Additional Information:

- Q-Series Entire Family: Q-Series Family
- Single-Deck Service Deli Curved Glass: Q1-DC
 Single-Deck Self-Service Deli: Q1-SS
- Service Hot Curved Glass: Q-HC
- Multi-Deck Service Bakery Curved Glass: Q3-BC
- Multi-Deck Service Deli Curved Glass: Q3-DC
- Multi-Deck Self-Service Deli: Q3-SS or Q4-SS
- Multi-Deck Self-Service with Service Top Deli: Q3-SP



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

- Some optional features may need to be certified by UL, NSF, and/or other 3rd party certification agencies. Contact Hussmann for verification or questions for availability.
- + Only lighting configurations that are compliant with the U.S. Dept. of Energy (DOE) 2017 regulation are available for sale for use in the U.S.A.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H. We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.

Hussmann Specialty

13770 Ramona Avenue Chino, California 91710-5423 Ph: 1-800.395.9229

www.hussmann.com

Adjustable deep deck with conduction coil for meat.

10 (254

CED 1F01

HUSSMAnn®



M1X-E, M1X-EP, M1X-GE, M1X-GEP

Excel Single-Deck Display Merchandisers for Fresh Meat Applications

M1X-E - Single-Deck M1X-EP - Single-Deck, High Efficiency M1X-GE - Single-Deck, Glass Front M1X-GEP - Single-Deck, Glass Front. High Efficiency

M1X-E, M1X-EP



Available in 8' and 12' lengths.

Contact your sales rep for information on possible availability of additional case lengths.



Plan View



Dimension	8 FT	12 FT
Α	96 3/8 (2448)	144 1/2 (3670)

Notes:

Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Excellent Merchandising

Easy reach and a wide open deck create an effective M1X merchandising platform in applications requiring single-deck meat display. A glass front option increases the visibility of your fresh meat products.

Superior Shelf Life

Modular coils and off-time defrost reduce thermal shock and stabilize meat temperatures, resulting in fresher meats and longer shelf life. Modular defrost can be optionally included to further stabilize temperatures.

Lower Labor Costs

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability

Our five year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



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D5X-E, D5X-EP, D5X-LE, D5X-LEP, D5X-HE, <mark>D5X-HEP</mark>

Excel Multi-Deck Dairy/Deli Display Merchandiser for Dairy and Deli Applications

Hussmann Excel Multi-Deck Display for Dairy and Deli Applications

D5X-E D5X-LE D5X-HE D5X-EP D5X-LEP D5X-HEP

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.

D5X-E, D5X-EP







E = Energy Efficient Coil

L = Low Front H = High Front



Plan View -

D5X-E, D5X-LE, D5X-LEP, D5X-HE, D5X-HEP



Notes:

Case-to-case electrical connections are made in front of splashguard.

Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Superior Merchandising

The D5X family was designed to help you merchandise and sell. Superior display features include full vision glass ends, improved ledge lighting, greater shelf placement flexibility and more. Streamline and contour styling available.

Lower Energy Costs

Excel D5X cases come with energy efficient "E" coils as standard on "E" models. The super efficient E-Plus coils on "EP" models reduce energy costs by about 18% compared to standard Impact dairy. Night curtains can be added to help trim about 12.6% more off your energy costs for this case.

Superior Shelf Life

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures. Modular defrost (optional) can further stabilize temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com



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CED 1G02GD

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<mark>DD5X-LP,</mark> DD6X-LP, DD5NX-L, DD6NX-L

Excel Multi-Deck Dairy/Deli Merchandisers with Glass Doors

DD5X-LP - Glass Doors, Low Front, Plus Coil DD5NX-L - Glass Doors, Narrow Footprint, Low Front DD6X-LP - Glass Doors, Extra Tall, Low Front, Plus Coil DD6NX-L - Glass Doors, Extra Tall, Narrow Footprint, Low Front

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.





DD6X-LP



Plan Views

DD5X-LP, DD6X-LP



Note: Case-to-case electrical connections are made in front of splashguard. Overall case length without ends or partitions.

.....

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Features and Benefits:

- EcoVision glass doors provide excellent product visibility and reduce refrigeration energy use up to 82%.

- Narrow 24" french doors preserve aisle space.
- No heat required in doors or frames.
- Narrow footprint models reduce required floor space.
- Energy efficient coils standard.
- 5 year modular coil warranty.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

Options Include:

- Various shelves, racks, lighting, paint and bumper colors.

DD5NX-L, DD6NX-L

- Door frames, trim and handles available in gray and black.
- Streamline or contour styling.
- Illuminated canopy signs.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed $75^\circ\mathrm{F}$ and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



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www.hussmann.com DD5XLP DD6XLP DD5NXL DD6NXL 030317

HUSSMAnn[®]



F-L, FG-L, FI-L, FIG-L, FN-L, FNG-L, FW-L, FWG-L, FWGHL, FWE-L, FWEG-L, FWEGHL

Island and Well Cases with Sliding Glass Lids - Save up to 60% in case energy costs

Closing the Lid on High Energy Costs



Annual kWh Comparison: Open Cases vs Cases with Lids



Note: Assuming 12 ft case length.

Hussmann is now offering sliding glass lids for single deck island merchandisers. These lids save up to 60% in case energy costs, while enhancing merchandising appeal with sleek, curved glass design. The scratch resistant glass helps stabilize product temperatures, resulting in better product integrity.

For field installed upgrades or on original equipment

Upgrade and original equipment lids are available and have been designed to fit all Excel single deck islands for frozen food, ice cream and medium temp applications, including FW, FWG, FWE, FWEG, FI, FIG, FN, FNG, F, and FG. Rebates or incentives may be available from your local utility company for upgrading existing equipment.

Full access to all products

Easy sliding push-pull glass lid system allows all products to be shopped at the same time, on both sides of the case. Smart multi-pane design allows full access to all merchandise for shopping and stocking.

Excellent merchandise visibility

The sleek, curved glass design is an attractive addition to the case and provides excellent visibility of all food items.

LED lighting optionally available for retrofit applications only.

NOTE: Optional price tag molding comes in one or three levels and is mounted above the lids.

Hussmann Island and Wall Merchandisers with Sliding Glass Lids

F-L, FG-L, FI-L, FIG-L, F = Frozen **N** = Narrow Island FN-L, FNG-L, L = Lids W = Wide Island FW-L, FWG-L, FWGHL, **G** = Glass Front **GH =** High Glass Front FWE-L, FWEG-L, FWEGHL I = Island E = End Case 58 3/8 (1483) F-L FG-L FI-L 35 5/8 35 5/8 7/8 15 1/4 33 3/ 5 1/2 5 1/2 (140) **26** 3 ŧ Ŧ t t t 33 1/2 (851) **46 1/4** (1175) 42 (1067) 42 58



















NOTE: Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Enabling excellence in food retailing.



Plan Views -

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.









FWGHL



Dimensions	8FT	12 FT
A	96 1/4 (2445)	144 3/8 (3667)

FWE-L, FWEG-L, and FWEGHL



Note: Overall case length without ends or partitions.

Printed in U.S.A. ©2016 Hussmann Corporation

NOTE: Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

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NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped. For additional resources, contact your representative or visit www.hussmann.com.



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000



J. LED Fixture (10)

Data sheet-Excel-FWE-L

Note: Revision C: Added high glide refrigerant note. Other changes marked by bar, underline or circle.

Engineering **Plan Views**

Low / Medium Temperature Wide Island End case

PHYSICAL DATA	
Merchandiser Drip Pipe (in.)	1 1/4
Merchandiser Liquid Line (in.)	3/8
Merchandiser Suction Line (in.)	5/8

Dimensions shown as inches & (mm).



\square **Refrigeration Outlet** Back of case to center of refrigeration outlet

RH end of case to center of refrigeration outlet

26 1/4 (665)

18 1/2 (470)

Single Level End Display with Solid Front and Lids

DOE 2017 Hussmann refrigerated merchandisers configured for sale for use in the United States Energy Efficiency Compliant meet or surpass the requirements of the DOE 2017 energy efficiency standards.

Dimensions shown as inches & (mm).



Estimated Charge ****

End 1.5 lb 24 oz 0.7 kg

****This is an average for all refrigerant types. Actual refrigerant charge may vary by approximately half a pound (8 oz/0.2 kg).

Length Added to Lineup: 42 (1064)

This End Case is used in place of an End Assembly. Partitions do not apply.

Excel FWE-L Low / Medium Temperature

34.00

1282

REFRIGERATION DATA**§

Note: This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H.

	IATED	L U	IC.
Discharge Air (°F)	+32	-10	19
Evaporator (°F)	+25	15	
Unit Sizing (°F)	+23	18	27

§ Average evaporator temperature shown. Use dew point for high glide refrigerants for unit sizing. Care should be taken to use the dew point in PT tables for measuring and adjusting superheat. Adjust evaporator pressure as needed to maintain discharge air temperature shown.

Btu/hr/case*	Med	FF	IC
Parallel	488	922	974
Conventional	498	962	1016
	TIM PLAN		

* Add 60 Btu/hr/case for LED lighting.

**Dual temperature operation kits are not suitable for ice cream temperature applications.

DEFROST DATA

	MED	\mathbf{FF}	IC
Frequency (hr)	24	24	24
Defrost Water (lb/case/da	ay) 2.6	2.3	2.0
(± 15% based on case cont	figuration	and pro	duct
loading)			

Electric	MED	FF	IC
Temp Term (°F)	48	48	48
Failsafe (minutes)	30	50	60
GAS			
Duration (minutes)	NÁ	15	18

OFFTIME Not Recommended

Standard Defrost Thermostat

Close on rise: close 48°F - open 33°F

CONVENTIONAL CONTROLS

Low Pressure Backup Control --- CI/CO **

Med	+28°F/+16°F
FF	–15°F/–27°F
IC	21°F/33°F

Indoor Unit Only, Pressure Defrost Termination***

Not Recommended ***Use a Temperature Pressure Chart to determine PSIG conversions.

NSF Certification

This merchandiser model is manufactured to meet NSF/ANSI (National Sanitation Foundation) Standard #7 requirements for construction, materials & cleanability.

Excel **FWE-L** Low / Medium Temperature

Electrical Data

			Standard End		
Number of Fans – 4W Evaporator		1			
			Amperes	Watts	
			End	End	
Evaporat	tor Fans				
120V	50/60Hz	Standard Energy Efficient	0.12	8	
230V	50/60Hz	Standard Energy Efficient	0.06	8	
230V	60Hz	Export	0.15	24	
230V	50Hz	Export	0.18	27	
Anti-swe	at Heaters	(on fan circuit)			
120V	50/60Hz	Standard	0.20	24	
230V	50/60Hz	Export	0.10	24	
Minimun	n Circuit Ai	mpacity			
120V	50/60Hz	Standard Energy Efficient	0.52	0.92	
230V	50/60Hz	Standard Energy Efficient	0.36	0.57	
230V	60Hz	Export	0.45	0.66	
230V	50Hz	Export	0.48	0.69	
Maximu	m Over Cur	rent Protection 120V	20	20	
Maximu	m Over Cu	rrent Protection 230V	15	15	
208V Eld	ectric Defro	st	6.54	1360	
230V Ex	port Electri	e Defrost	5.91	1360	
120V Ko	olgas Defro	st	1.33	160	

ONLY LIGHTING CONFIGURATIONS THAT ARE COMPLIANT WITH THE U.S. DEPT. OF ENERGY (DOE) 2017 REGULATION ARE AVAILABLE FOR SALE FOR USE IN THE U.S.A.

Standard None	Lighting			
Optional	Lighting			
LED	120V	50/60Hz	0.28	34
LED	230V	50/60Hz	0.15	34

Please note: some combinations of fluorescent lights on this case model may not be compliant with DOE 2017 and may not be available to order in the US and Canada. More lighting options are available with LED lights. The Hussmann Product Configurator will not allow lighting options that do not comply with the DOE 2017 standards.
Excel **FWE-L** Low / Medium Temperature

Product Data

Recommended Usable Cube¹ (Cu Ft/Ft) AHRI Total Display Area² (Sq Ft/Ft) Shelf Area³ (Sq Ft/Ft) 3.54 ft³/ft (0.33 m³/m) 2.60 ft²/ft (0.79 m²/m) 2.79 ft²/ft (0.85 m²/m)

- ¹ AHRI Refrigerated Volume less shelving and other unusable space: Refrigerated Volume/Unit of Length, ft³/ft [m³/m]
- ² Computed using AHRI 1200 standard methodology: Total Display Area, ft² [m²]/Unit of Length, ft [m]

³ Shelf surface area is composed of bottom deck plus standard shelf complement, as shown in the Hussmann *Product Reference Guide*. The standard shelf complement for this model is NONE.

ESTIMATED SHIPPING WEIGHT 4						
Case						End
lb (kg)	NA (NA)	NA (NA)	NA (<i>NA</i>)	NA (NA)	NA (<i>NA</i>)	590 (269)
⁴ Actual weights will vary according to optional kits included.						

		Glass Lid Replacement Parts
S. T. U.	0524250 0524251 0524252	Top Glass B00159 (GL.4998354) Middle Glass B00160 (GL.4998355) Bottom Glass with Handle B00161 (GL.4998356)

Electric Defrost – Standard



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. Circled Number = Parts List Item Numbers



Gas Defrost – Optional

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. Circled Number = Parts List Item Numbers



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HUSSMAnn®



F-L, FG-L, FI-L, FIG-L, FN-L, FNG-L, <mark>FW-L</mark>, FWG-L, FWGHL, FWE-L, FWEG-L, FWEGHL

Island and Well Cases with Sliding Glass Lids - Save up to 60% in case energy costs

Closing the Lid on High Energy Costs



Annual kWh Comparison: Open Cases vs Cases with Lids



Note: Assuming 12 ft case length.

Hussmann is now offering sliding glass lids for single deck island merchandisers. These lids save up to 60% in case energy costs, while enhancing merchandising appeal with sleek, curved glass design. The scratch resistant glass helps stabilize product temperatures, resulting in better product integrity.

For field installed upgrades or on original equipment

Upgrade and original equipment lids are available and have been designed to fit all Excel single deck islands for frozen food, ice cream and medium temp applications, including FW, FWG, FWE, FWEG, FI, FIG, FN, FNG, F, and FG. Rebates or incentives may be available from your local utility company for upgrading existing equipment.

Full access to all products

Easy sliding push-pull glass lid system allows all products to be shopped at the same time, on both sides of the case. Smart multi-pane design allows full access to all merchandise for shopping and stocking.

Excellent merchandise visibility

The sleek, curved glass design is an attractive addition to the case and provides excellent visibility of all food items.

LED lighting optionally available for retrofit applications only.

NOTE: Optional price tag molding comes in one or three levels and is mounted above the lids.

Hussmann Island and Wall Merchandisers with Sliding Glass Lids

F-L, FG-L, FI-L, FIG-L, F = Frozen N = Narrow Island FN-L, FNG-L, L = Lids W = Wide Island FW-L, FWG-L, FWGHL, **G** = Glass Front **GH =** High Glass Front FWE-L, FWEG-L, FWEGHL I = Island E = End Case 58 3/8 (1483) F-L FG-L FI-L 35 5/8 35 5/8 7/8 15 1/4 33 3/ 5 1/2 5 1/2 (140) **26** 3 ŧ Ŧ t t t 33 1/2 (851) **46 1/4** (1175) 42 (1067) 42 58

FIG-L

FN-L







USSMA

nn"

FW-L FWG-L FWGHL 15 15 1/4 15 7/8 15 7/8 15 1/ 5 1/2 (140) 5 3/4 (146) 40 5 1/2 42 3/4 18 1/2 26 3/ 24 3/ + ীন্ 7d /p 68 7/8 (1749) t 1 3/4 68 7/8 (1749) 11 3/4 . 68 7/8 (1749) 80 5/8 80 5/8 (2046) 80 5/8



NOTE: Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Enabling excellence in food retailing.

Plan Views -

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.









FWGHL



Dimensions	8FT	12 FT
A	96 1/4 (2445)	144 3/8 (3667)





Note: Overall case length without ends or partitions.

NOTE: Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

.....

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped. For additional resources, contact your representative or visit www.hussmann.com.



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J. LED Fixture (10)

Data sheet-Excel-FWE-L

Note: Revision C: Added high glide refrigerant note. Other changes marked by bar, underline or circle.

Engineering **Plan Views**

Low / Medium Temperature Wide Island End case

10-2004

PHYSICAL DATA	
Merchandiser Drip Pipe (in.)	1 1/4
Merchandiser Liquid Line (in.)	3/8
Merchandiser Suction Line (in.)	5/8
· · ·	

Dimensions shown as inches & (mm).



Distance between front legs and splashguard	3 1/8 (82)
Electrical Service 🗵 (Electrical Field Wiring connection point)	
RH End of case to center of stub up area	52 3/8 (1653)
Back of case to center of stub up area	24 (612)
Length of electrical wireway Wireway	26 1/2 (673)
RH End of case to LH end of wireway	69 (1755)
Waste Outlets (One each end)	
RH End of case to the center of LH waste outlet	65 (1653)
RH End of case to the center of RH waste outlet	15 1/2 (393)
Back O/S of case to center of waste outlets	31 ⁵ /8 (804)
Schedule 40 PVC drip pipe	1 1/4 (32)
Refrigeration Outlet	
Back of case to center of refrigeration outlet	26 1/4 (665)
RH end of case to center of refrigeration outlet	18 1/2 (470)

Single Level End Display with Solid Front and Lids

DOE 2017 Hussmann refrigerated merchandisers configured for sale for use in the United States Energy Efficiency Compliant meet or surpass the requirements of the DOE 2017 energy efficiency standards.

Dimensions shown as inches & (mm).



Estimated Charge ****

End 1.5 lb 24 oz 0.7 kg

****This is an average for all refrigerant types. Actual refrigerant charge may vary by approximately half a pound (8 oz/0.2 kg).

Length Added to Lineup: 42 (1064)

This End Case is used in place of an End Assembly. Partitions do not apply.

Excel FWE-L Low / Medium Temperature

Men

1212

10

.

REFRIGERATION DATA**§

Note: This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H.

	IATED	L U	IC.
Discharge Air (°F)	+32	-10	19
Evaporator (°F)	+25	15	
Unit Sizing (°F)	+23	18	27

§ Average evaporator temperature shown. Use dew point for high glide refrigerants for unit sizing. Care should be taken to use the dew point in PT tables for measuring and adjusting superheat. Adjust evaporator pressure as needed to maintain discharge air temperature shown.

Btu/hr/case*	Med	FF	IC
Parallel	488	922	974
Conventional	498	962	1016
* A 11 (0 Dec /1			

* Add 60 Btu/hr/case for LED lighting.

**Dual temperature operation kits are not suitable for ice cream temperature applications.

DEFROST DATA

	Med	\mathbf{FF}	IC
Frequency (hr)	24	24	24
Defrost Water (lb/case/da	ay) 2.6	2.3	2.0
(± 15% based on case conf	Iguration	and pro	duct
loading)			

Med	FF	- IC
48	48	48
30	50	60
NA	15	18
	MED 48 30 NA	MED FF 48 48 30 50 NA 15

OFFTIME Not Recommended

Standard Defrost Thermostat

Close on rise: close 48°F --- open 33°F

CONVENTIONAL CONTROLS

Low Pressure Backup Control --- CI/CO **

Med	+28°F/+16°F
FF	–15°F /–27°F
IC	21°F/33°F

Indoor Unit Only, Pressure Defrost Termination***

Not Recommended ***Use a Temperature Pressure Chart to determine PSIG conversions.

NSF Certification

This merchandiser model is manufactured to meet NSF/ANSI (National Sanitation Foundation) Standard #7 requirements for construction, materials & cleanability.

Excel **FWE-L** Low / Medium Temperature

Electrical Data

Number of Fans – 4W Evaporator		Standard End		
		1		
			Amperes	Watts
			End	End
Evaporat	tor Fans			
120V	50/60Hz	Standard Energy Efficient	0.12	8
230V	50/60Hz	Standard Energy Efficient	0.06	8
230V	60Hz	Export	0.15	24
230V	50Hz	Export	0.18	27
Anti-swe	at Heaters	(on fan circuit)		
120V	50/60Hz	Standard	0.20	24
230V	50/60Hz	Export	0.10	24
Minimun	n Circuit Ai	mpacity		
120V	50/60Hz	Standard Energy Efficient	0.52	0.92
230V	50/60Hz	Standard Energy Efficient	0.36	0.57
230V	60Hz	Export	0.45	0.66
230V	50Hz	Export	0.48	0.69
Maximu	m Over Cur	rent Protection 120V	20	20
Maximu	m Over Cu	rrent Protection 230V	15	15
208V Elc	ectric Defro	st	6.54	1360
230V Ex	port Electri	c Defrost	5.91	1360
120V Ko	olgas Defro	st	1.33	160

ONLY LIGHTING CONFIGURATIONS THAT ARE COMPLIANT WITH THE U.S. DEPT. OF ENERGY (DOE) 2017 REGULATION ARE AVAILABLE FOR SALE FOR USE IN THE U.S.A.

Standard None	Lighting			
Optional	Lighting			
LED	120V	50/60Hz	0.28	34
LED	230V	50/60Hz	0.15	34

Please note: some combinations of fluorescent lights on this case model may not be compliant with DOE 2017 and may not be available to order in the US and Canada. More lighting options are available with LED lights. The Hussmann Product Configurator will not allow lighting options that do not comply with the DOE 2017 standards.

Excel FWE-L

Low / Medium Temperature

Product Data

Recommended Usable Cube¹ (Cu Ft/Ft) AHRI Total Display Area² (Sq Ft/Ft) Shelf Area³ (Sq Ft/Ft) 3.54 ft³/ft (0.33 m³/m) 2.60 ft²/ft (0.79 m²/m) 2.79 ft²/ft (0.85 m²/m)

- ¹ AHRI Refrigerated Volume less shelving and other unusable space: Refrigerated Volume/Unit of Length, ft3/ft [m³/m]
- ² Computed using AHRI 1200 standard methodology: Total Display Area, ft² [m²]/Unit of Length, ft [m]

³ Shelf surface area is composed of bottom deck plus standard shelf complement, as shown in the Hussmann *Product Reference Guide*. The standard shelf complement for this model is NONE.

ESTIMATED SHIPPING WEIGHT 4									
Case						End			
lb (kg)	NA (<i>NA</i>)	NA (NA)	NA (NA)	NA (NA)	NA <i>(NA)</i>	590 (269)			
⁴ Actual weights will vary according to optional kits included.									

		Glass Lid Replacement Parts
S. T. U.	0524250 0524251 0524252	Top Glass B00159 (GL.4998354) Middle Glass B00160 (GL.4998355) Bottom Glass with Handle B00161 (GL.4998356)

Electric Defrost – Standard



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. Circled Number = Parts List Item Numbers



Gas Defrost – Optional

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. Circled Number = Parts List Item Numbers



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CED 1G10, 1G12, 1G13

HUSSMANN®



<mark>RLN</mark>, RMN

Narrow Reach-In Merchandisers for Frozen Food, Ice Cream, and Medium Temperature Applications

> - Available with Hussmann "Innovator", "Innovator II" or "Innovator III" Glass Doors.

CED 1G10, 1G12, 1G13

Hussmann Narrow Reach-In Merchandisers for Frozen Food, Ice Cream, and Medium Temp Applications

RLN - Low Temp Narrow Reach-In

RMN - Medium Temp Narrow Reach-In

Available in 1, 2, 3, 4, and 5 door models.



Plan View



A 31 1/2 (800) 62 (1575) 92 1/2 (2350) 122 7/8 (3121) 153 3/8 (3896)

Notes:

Overall case length without ends or partitions. Contact your sales representative for information on possible availability of additional case lengths.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.



The RLN and RMN are 4-inch narrower, bumper to back, than our standard RL reach-in, saving you a full 4-inch of floor space down each of your reach-in line-ups.

Same Product Capacity.

The product capacity per door in the RLN is actually the same as the capacity of the standard depth RL, even though the RLN is built on a narrower platform. Maximum shelf depth of 22-inch is the same in both cases.

Greater Energy Efficiency.

Innovator III doors are 43% more efficient than Innovator doors and provide 13% total case energy savings compared to a case with Innovator doors. Innovator III is a lower energy heated door that can be used in all climate conditions. For even more energy savings, Innovator II is a no-heat door that offers 32% case energy savings.

Standard LED Lighting.

EcoShine II LED lighting is standard. The lights are optimized for uniform brightness and substantially lower energy costs compared to fluorescents.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed $75^{\circ}F$ and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000



GLASS OPTIONS

Solid Panel or Tinted (in lieu of regular glass)	Consult factory
2-Pane NT Heated	\$200.74 per door
3-Pane NT Non-Heated	Consult factory

101 Series

Net Opening Sizes – Standard Door (with Mullions)

Actual 101 Net Opening Heights: 67" 75" and 79"

DOORS	NO. FRAME SECTIONS	24	mm	26	mm	28	mm	30	mm
1	1	2' 1-1/8"	638	2' 4-5/16"	719	2' 6-5/16"	770	2' 7-13/16"	808
2	1	4' 7/8"	1241	4' 7-1/4"	1403	4' 11-1/4"	1505	5' 2-1/4"	1581
3	1	6' 5/8"	1846	6' 10-3/16"	2088	7' 4-3/16"	2240	7' 8-11/16"	2354
4	1	8' 3/8"	2448	9' 1-1/8"	2772	9' 9-1/8"	2975	10' 3-1/8"	3172
5	1	10' 1/8"	3051	11' 4-1/16"	3456	12' 2-1/16"	3710	12' 9-9/16"	3901
6	2	12' 1"	3683	13' 8-1/8"	4169	14' 8-1/8"	4474	15' 5-1/8"	4702
7	2	14' 3/4"	4286	15' 11-1/16"	4853	17' 1-1/16"	5209	17' 11-9/16"	5475
8	2	16' 1/2"	4890	18' 2"	5537	19' 6"	5944	20' 6"	6248
9	2	18' 1/4"	5493	20' 4-15/16"	6221	21' 10-15/16"	6679	23' 7/16"	7022
10	2	20'	6096	22' 7-7/8"	6096	24' 3-7/8"	7414	25' 6-7/8"	7795
11	3	22' 7/8"	6728	24' 11-15/16"	7618	26' 9-15/16"	8177	28' 2-7/16"	8596
12	3	24' 5/8"	7331	27' 2-7/8"	8303	29' 2-7/8"	8912	30' 8-7/8"	9369
13	3	26' 3/8"	7934	29' 5-13/16"	8987	31' 7-13/16"	9647	33' 3-5/16"	10143
14	3	28' 1/8"	8538	31' 8-3/4"	9671	34' 3/4"	10382	35' 9-3/4"	10916
15	3	29' 11-7/8"	9141	33' 11-11/16"	10355	36' 5-11/16"	11117	38' 4-3/16"	11689
16	4	32' 3/4"	9773	36' 3-3/4"	11068	38' 11-3/4"	11881	40' 11-3/4"	12490
17	4	34' 1/2"	10376	38' 6-11/16"	11752	41' 4-11/16"	12616	43' 6-3/16"	13264
18	4	36' 1/4"	10979	40' 9-5/8"	12437	43' 9-5/8"	13343	46' 5/8"	14037
19	4	38'	11582	43' 9/16"	13121	46' 2-9/16"	14086	48' 7-1/16"	14810
20	4	39' 11-3/4"	12186	45' 3-1/2"	13805	48' 7-1/2"	14821	51' 1-1/2"	15583

NOTE: Net Openings are based on Full-Flange Frame Architecture. For net openings of other Frame Architecture, please contact your local Anthony representative.

cannoncarts*

CED 1G11

10841-902



Bully Cart

80 Gallon, Five Shelf, Two Sided Cart



Distribution

□ Stocking





Superior design and exceptional construction enable this cart to stand up to the rigors of automated systems, over the road hauling and loading dock handling to ensure reliable service and delivery of your products to their final destination. Avoid serious injury, factory down time, and loss of productivity when you use CannonCarts[®] in your automated cart handling systems to quickly achieve operational efficiencies.1/2" diameter solid rear shelf support rod penetrates side frame tubes for extra shelf reinforcement. Additionally the side frames pass into the base frame for added strength. This stainless steel cart features a stainless steel bottom plate below the bottom wire shelf that covers the space between the caster plate and dairy grade casters.

- Dairy Capacity: 80 Gallons/180 ½ Gallons

Depth Width Height Shelving Number of Sides Construction Cart Weight FOB Point 25-11/16"" 26-5/8" 65-11/16" 5 2 Rigid 112 lbs Cannon Falls, MN Casters Caster Size Caster Type Finish Load Capacity Minimum Order Quantity Typical Lead Time

(4) Phenolic - Dairy Grade
6" x 2"
2 Rigid, 2 Swivel
Stainless Steel
800 lbs
50
8—10 weeks



cannoncarts[®]

83-9922-000C

In-Stock



Three Shelf, Three Sided Cart F-26



CED 1G11

This zinc plated, folding cart is equipped with 3 solid sheet metal shelves that are sloped 1-1/8" from front to back to provide optimal load handling stability and product retention. Shelf clearance is 19-3/4" between the top and middle shelf and 20-1/8" between the middle and bottom shelf, distance from the floor to the top front of the first shelf is 9-3/8". Folding to a depth of 8-1/2" this cart can be easily stored away in secured racks or nested in an L-frame configuration when not in use. With 2 swivel casters and 2 rigid casters, the operator is able to maintain total control of the cart.

-Egg Capacity: 240 Dozen

Depth Width Height Shelving Number of Sides Construction Cart Weight FOB Point 24-3/4" 26" 66-1/2" 3 3 Folding 122 lbs Cannon Falls, MN Casters Caster Size Caster Type Finish Load Capacity Minimum Order Quantity Typical Lead Time (4) Phenolic
5" x 2"
2 Rigid, 2 Swivel
Zinc Plated
500 lbs
None
Immediate Availability



cannoncarts D 1G11



Cart Coral Base Unit



Increase impulse sales with our Cart Corral unit. Used to merchandise beverages of various sizes, this unit is a secure and attractive method for ensuring products are always front-faced, fresh and ready for purchase. With floor anchor plates, our mobile 80 gallon / 180 1/2 gallon dairy carts rest securely inside the unit preventing the cart from rolling backward and injuring your staff. Combine the Cart Corral Add-On unit (#10114-901) to completely transform your dairy case into an attractive and consistent format.

Depth Width Height Shelving Number of Sides Construction Cart Weight FOB Point

23-3/8" 66" NA NA Rigid 58 lbs Cannon Falls, MN

30-1/2"

CastersNACaster SizeNACaster TypeNAFinishPowder CoatedLoad CapacityNAMinimum Order Quantity50Typical Lead Time8—10 weeks



cannoncarts 1G11



Cart Coral Base Unit





This multi-purpose, heavy duty, zinc plated cart is used to move product internally and externally. Featuring 2 slopped shelves with a 31" clearance and 1,200 pound total capacity this cart is able to handle transport and protect products of various sizes and shapes. Folding to a depth of 7-1/2", this cart can be stored away in racks or nested in an L-frame when not in use. With 2 swivel casters and 2 rigid casters, the operator is able to maintain total control of the cart. Additionally, this cart features a document pocket on the right hand side for easy identification.

Depth Width Height Shelving Number of Sides Construction Cart Weight FOB Point

44-3/8" 65" 2 3 Rigid 37 Ibs Cannon Falls, MN

30-1/2"

CastersNACaster SizeNACaster TypeNAFinishPowdLoad CapacityNAOptionsNATypical Lead Time4-6 w

NA NA Powder Coated NA NA 4-6 weeks



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HUSSMAnn®

Specialty



RGD24, RGD30

Refrigerated, Self-Service Merchandiser for Deli, Dairy, Sandwiches, Grab-n-Go, Beverage, Produce, and Floral Applications

- Stand Alone, End Cap or In-Line

CED 1G24 Hussmann Refrigerated, Self-Service Merchandiser for Deli, Dairy, Sandwiches, Grab-n-Go, Beverage, Produce, and Floral Applications





Ph: 800 395 9229

Chino, California 91710-5423





HUSSMANN - RGD-30-72 SELF-CONTAINED (CHINO)

Hussmann refrigerated merchandisers configured for sale DOE 2017 Lergy Efficiency for use in the United States meet or surpass the requirements of the DDE 2017 energy efficiency standards.

RGD 24, 30 Remote and Self Contained plan view







REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CONVENTIONAL CAPACITY ** (BTU/HR/FT)	AVERAGE DISCHARGE AIR* (°F) (SEE SETPOINTS BELOW)	VELOCITY (FT/MIN)
4',5',6',8'	SS DELI	2050	28~30	150~200

*FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

**REFRIGERATION NOTES:

1) CAPACITY FOR REFERENCE ONLY.
2) ALL CASES EQUIPPED WITH NIGHT CURTAINS.
3) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES
DUST DE MEDIOUS DE MEDIOUS DE DESENTED FOR MEASURING AND ADJUSTING SUPERHEAT. ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE

- DISCHARGE AIR TEMPERATURE SHOWN.
- 4) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REFRIGERATION DATA CONTINUED:

SETT		NSON		FAILSAFE	FRE	TERM.	DRIP	DEFROST
USAGE	CUT IN (°F)	CUT OUT (°F)	DEFROSTITIPE	(MIN)	QUENCY (#/DAY)	(°F) AIR	(MIN)	(LBS/DAY/FT)
TYPE 1	32	24	OFF TIME	25	4	48	NA	4.2

END PANEL WIDTH KEY								
# OF END PNLS	END PNL WIDTH (IN.)	TOTAL ADDED LENGTH (IN.)						
1	1.125	1.125						
2	1.125	2.25						

5) DEFROST IS BASED ON TERMINATION TEMP, WHICH UNDER NORMAL CIRCUMSTANCES, IS SHORTER THAN FAILSAFE TIME.

DEEDOOT

ELECTRICAL DATA:

	STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)															
	EVAPORATOR FANS				CANOPY LEI	LIGHTS D		IAL LED LIGHTS	MAX. LE (W/ ALL C	D LOAD	ANTI-S	ANTI-SWEAT CONVENIEN HEATERS OUTLETS (OPT			CE ONAL)	
CASE LENGTH	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
4'	1	8	25	0.3	8	0.23	27	0.45	51	0.68	78	N/A	N/A	1	115	15
5'	2	8	25	0.6	16	0.30	34	0.56	65	0.86	99	N/A	N/A	1	115	15
6'	2	8	25	0.6	16	0.34	39	0.67	77	1.01	116	N/A	N/A	1	115	15
8'	2	8	25	0.6	16	0.47	54	0.90	103	1.36	157	N/A	N/A	1	115	15

CONDENSING UNIT AND EVAPORATIVE PANS										
CONDENSING UNIT								EVAPORATIVE PAN		
CASE LENGTH	NOM. HP	REFRIG.	Hz/Ph	Volts	RLA	FUSE AMPS	NEMA PLUG	VOLTS	AMPS	WATTS
4'	1	R-404A	60 / 1	240	10.0	20	L14-30P	240	6.3	1500
5'	1 3/4	R-404A	60 / 1	240	12.6	25	L14-30P	240	6.3	1500
6'	1 3/4	R-404A	60 / 1	240	12.6	25	L14-30P	240	6.3	1500
8' *	1	R-404A	60 / 1	240	10.0	20	CS-6365-C 50A	240	12.5	3000

* 2 CONDENSING UNITS

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CAN LIG H.O.	iopy hts . Led	OPTIONAL	LSHELF	MAX. H.O. LED LOAD		
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	
4'	0.28	32	0.66	76	0.94	108	
5'	N/A	N/A	N/A	N/A	N/A	N/A	
6'	0.41	47	1.13	130	1.54	177	
8'	0.56 64		1.32	152	1.88	216	

ENGINS	(LBS)
4'	6.0
5'	10.3
6'	10.3
8'	12.0

CASE

LENGTHS

EST. REFG.

CHRG. 404A

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CED 1G27, 1G28, 1G30, 1G31

HUSSMAnn®



RLNI, RLNIE

The Ultimate Reach-In Merchandising Solution for Frozen Food Applications

- Available with Hussmann "Innovator", "Innovator II" or "Innovator III" Glass Doors.

CED 1G27, 1G28, 1G30, 1G31

Hussmann Ultimate Reach-In Merchandising Solution for Frozen Food Applications

RLNI - Back-to-Back Reach-In RLNIE - Back-to-Back Reach-In End Case

Available with 2, 3, 4, and 5 doors.

RLNI RLNIE



Plan Views

RLNI

Notes:

Overall case length without ends or partitions.



Overall case I

RLNIE





Less Floor Space Required.

Installing standard reach-ins back to back requires about 88-inch of floor space, from bumper to bumper. The RLNI is 72-inch wide, bumper to bumper, saving about 16-inch.

Reduced Installation Labor.

Because the RLNI and the RLNIE are unitized, there is no need to set and line up two rows of back-to-back cases or add separate end cases.

Perfect for Wide Island Replacement.

If you want to increase frozen food product facing, this is an ideal way to do it. Most wide islands are about 82-inch wide. You can replace them with the 72-inch RLNI and watch your product facing skyrocket.

Same Product Capacity as Standard Reach-Ins.

The product capacity per door in the RLNI is identical to the capacity of the standard depth RL. Maximum shelf depth of 22-inch is the same in both cases.

Greater Energy Efficiency.

Innovator III doors are 43% more efficient than Innovator doors and provide 13% total case energy savings compared to a case with Innovator doors. Innovator III is a lower energy heated door that can be used in all climate conditions.

For even more energy savings, Innovator II is a no-heat door that offers 32% case energy savings.

Standard LED Lighting.

EcoShine II LED lighting is standard. The lights are optimized for uniform brightness and substantially lower energy costs compared to fluorescents.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Hussmann Corporation 12999 St. Charles Rock Rd Bridgeton, MO 63044-2483 Ph: 314.291.2000



HUSSMANN®



FI, FIG Excel Intermediate Island Merchandiser with/without Glass Front

FI - Intermediate Island

FIG - Intermediate Island with Glass

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.





Plan View



Dimensions	8 FT	12 FT
Α	96 3/8 (2448)	144 1/2 (3670)

Notes:Overall case length without ends or partitions. Contact your sales representative for information on possible availability of additional case lengths.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

More Energy Efficient

The Excel FI and FIG models provide superior energy efficiency compared to Impact and competitive models.

13% to 16% More Merchandising Space

Compared with the standard Impact models, the Excel FI provides 13% more merchandising space and FIG provides a full 16% additional merchandising capacity.

Superior Shelf Life

Excellent temperature consistency and stability throughout the display zone due to Hussmann's proprietary discharge air louvers and continuous tube serpentine coils.

Lower Labor Costs

Labor saving features include greater clearance under the case, easier raceway access and simplified wiring.

Superior Reliability

Our five year coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.

Sliding Glass Lids Available

Sliding glass lids are available as a field installed upgrade or as original equipment for all single deck, open island display cases. Lids will reduce overall case energy from 40% to 60%, depending on case model.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

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F-L, FG-L, FI-L, FIG-L, FN-L, FNG-L, <mark>FW-L</mark>, FWG-L, FWGH-L, <mark>FWEL</mark>, FWEGL, FWEGHL

Island and Well Cases with Sliding Glass Lids - Save up to 60% in case energy costs

Closing the Lid on High Energy Costs



Annual kWh Comparison: Open Cases vs Cases with Lids



Note: Assuming 12 ft case length.

Hussmann is now offering sliding glass lids for single deck island merchandisers. These lids save up to 60% in case energy costs, while enhancing merchandising appeal with sleek, curved glass design. The scratch resistant glass helps stabilize product temperatures, resulting in better product integrity.

For field installed upgrades or on original equipment

Upgrade and original equipment lids are available and have been designed to fit all Excel single deck islands for frozen food, ice cream and medium temp applications, including FW, FWG, FWE, FWEG, FI, FIG, FN, FNG, F, and FG. Rebates or incentives may be available from your local utility company for upgrading existing equipment.

Full access to all products

Easy sliding push-pull glass lid system allows all products to be shopped at the same time, on both sides of the case. Smart multi-pane design allows full access to all merchandise for shopping and stocking.

Excellent merchandise visibility

The sleek, curved glass design is an attractive addition to the case and provides excellent visibility of all food items.

LED lighting optionally available for retrofit applications only.

NOTE: Optional price tag molding comes in one or three levels and is mounted above the lids.

Hussmann Island and Wall Merchandisers with Sliding Glass Lids

F-L, FG-L, FI-L, FIG-L, F = Frozen N = Narrow Island FN-L, FNG-L, L = Lids W = Wide Island FW-L, FWG-L, FWGH-L, **G** = Glass Front **GH =** High Glass Front FWEL, FWEGL, FWEGHL I = Island E = End Case 58 3/8 (1483) F-L FG-L FI-L 35 5/8 33 3/ 35 5/8 5 1/2 (140) **26** 3 ŧ t t t 33 1/2 (851) **46 1/4** (1175) 42 (1067) 42 58

FIG-L

FN-L







FW-L FWG-L FWGH-L 15 15 7/8 15 1/4 15 7/8 5 3/4 (146) 5 1/2 (140) 5 1/2 (140) 42 3/4 18 1/2 **24** 3 dل/ Ю. 7d 68 7/8 (1749) t 1 3/4 68 7/8 (1749) . 68 7/8 (1749) 80 5/8 80 5/8 (2046) 80 5/8



NOTE: Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Enabling excellence in food retailing.



Plan Views -

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.













Dimensions	8FT	12 FT
A	96 1/4 (2445)	144 3/8 (3667)





Note: Overall case length without ends or partitions.

NOTE: Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

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NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped. For additional resources, contact your representative or visit www.hussmann.com.



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CED 1G38

HUSSMANN®

Specialty



RGD24, RGD30

Refrigerated, Self-Service Merchandiser for Deli, Dairy, Sandwiches, Grab-n-Go, Beverage, Produce, and Floral Applications

- Stand Alone, End Cap or In-Line

CED 1G38

Hussmann Refrigerated, Self-Service Merchandiser for Deli, Dairy, Sandwiches, Grab-n-Go, Beverage, Produce, and Floral Applications





Chino, California 91710-5423

Ph: 800.395.9229 www.hussmann.com



SELF-SERVICE DELI HUSSMANN - RGD - 24 / 30 - 83 (CHINO)

Hussmann refrigerated merchandisers configured for sale DOE 2017 for use in the United States meet or surpass the requirements **Energy Efficiency** Compliant of the DOE 2017 energy efficiency standards.

RGD 24, 30 Remote and Self Contained plan view





REVISION DATE

01/26/17

REFRIGERATION DATA:

		CAPACI (BTU/H	TY *** R/FT)	Т	EMPERA	ſURE (°F)	VELOCITY
CASE LENGTHS	CASE USAGE	RATING CO	ONDITION	EVAPO	ORATOR	DISCHARGE AIR ** (°F)	(FT/MIN)
		NSF 7	AHRI 1200	NSF 7	AHRI 1200	NSF 7	NSF 7
3'9",4',5', 6'.8'.10'.12'	SS DELI	1550	1450	20	26	30~32	160~250

**FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

***REFRIGERATION NOTES:

1) BTU'S INCLUDE 1 ROW CANOPY LED LIGHTS AND NO SHELF LIGHTS 2) ADD 10 BTU'S PER FOOT/PER SHELF ROW FOR OPTIONAL LED SHELF LIGHTS

3) ADD 140 BTU/HR/FT TO AHRI TEST FOR 30" DEPTH OPTION

4) ALL CASES EQUIPPED WITH NIGHT CURTAINS

5) FOR AHRI TEST, NIGHT CURTAINS ARE PULLED DOWN FOR 6 HOURS AND ALL LIGHTS ARE TURNED OFF PER AHRI 1200 TEST PROCE 6) FOR NSF 7, THE LOAD LISTED IS WITHOUT THE NIGHT CURTAINS PULLED DOWN,

7) AHRI 1200 RATING POINT FOR ENERGY CONSUMPTION COMPARISON ONLY

8) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT. ADJUST EVAPORATOR PRESSURE AS NEEDED TO MAINTAIN THE DISCHARGE AIR TEMPERATURE SHOWN.

9) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REERIGERATION DATA CONTINUED

REFRIGERATION DATA CONTINUED:											END PANEL WIDTH KEY			
ELEC. THERM SENSOR S	IOSTAT /	AIR S	DEFROST	тіме	DEFROST	TERM. TEMP	DRIP	DEFROST		# OF END	END PNL WIDTH			
USAGE	CUT IN	CUT	TYPE	(MIN)	FREQUENCY	(°F) COIL	TIME			PNLS	(IN.)	LENGTH (IN.)		
USAGE	(°F)	(°F)			(#/DAT)	ONLY		(LBS/DAT/FT)		1	1.125	1.125		
SS DELI	31	28	OFF TIME	25	6	52	N/A	7.0		2	1.125	2.25		

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

		EV	APORATOR		CANOPY LE	LIGHTS D	OPTION SHELF	IAL LED LIGHTS	MAX. LE (W/ ALL (D LOAD	ANTI- HEATER CIR	SWEAT 5 (ON FAN CUIT)	CON OUTLET	VENIEN S (OPTI	CE ONAL)	
CASE LENGTH	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
3'9"	1	8	37	0.3	8	0.2	19	0.5	54	0.6	73	N/A	N/A	N/A	N/A	N/A
4'	1	8	37	0.3	8	0.2	27	0.6	72	0.9	99	N/A	N/A	N/A	N/A	N/A
5'	2	8	37	0.6	16	0.3	34	0.8	91	1.1	125	N/A	N/A	N/A	N/A	N/A
6'	2	8	37	0.6	16	0.3	39	0.9	108	1.3	147	N/A	N/A	N/A	N/A	N/A
8'	2	8	37	0.6	16	0.5	54	1.3	144	1.7	198	N/A	N/A	N/A	N/A	N/A
10'	4	8	37	1.2	32	0.6	68	1.6	182	2.2	250	N/A	N/A	N/A	N/A	N/A
12'	3	8	37	0.9	24	0.7	81	1.9	216	2.6	297	N/A	N/A	N/A	N/A	N/A

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CAN LIG H.O	IOPY HTS . LED	OPTIONA	L SHELF	MAX. H.O. LED LOAD				
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS			
3'9"	N/A	N/A	N/A	N/A	N/A	N/A			
4'	N/A	N/A	N/A	N/A	N/A	N/A			
5'	N/A	N/A	N/A	N/A	N/A	N/A			
6'	N/A	N/A	N/A	N/A	N/A	N/A			
8'	N/A	N/A	N/A	N/A	N/A	N/A			
10'	N/A	N/A	N/A	N/A	N/A	N/A			
12'	N/A	N/A	N/A	N/A	N/A	N/A			

	EST. REFG. CHRG.	20°F G 6° F	LYCOL RISE
LENGTHS	(R404A) (LBS)	GPM	PSI
3'9"	0.7	2.1	2.2
4'	1.0	2.2	2.9
5'	1.2	2.7	4.4
6'	1.4	3.2	2.6
8'	2.0	4.2	4.1
10'	2.5	5.2	5.9
12'	2.9	6.1	5.4

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Item # _____ Quantity _____

CED 1M00

C.S.I. Section 11400

HBR300-1 BENCH/RECEIVING DIGITAL SCALE

STANDARD FEATURES

- Easy-to-Read Display
- Legal for Trade
- Battery Power Supply (4) D Cell

HOBART

701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

- Energy Saver Setting Set Shutoff Time to Extend Battery Life
- Low Battery Indicator
- Check Weighing
- Batch Weighing
- Over and Under Weighing
- Adjustable Display Head for Easy Viewing
- Toggle Between (Lb./Kg.)
- Stainless Steel Platter
- Tare Indicator
- Preset Tare (Package Weight)
- Keyboard Tare
- Zero Key
- Stable Weight Indicator
- Automatic Zero Tracking
- AC/DC Adapter
- Leveling Leg Set
- Leveling Indicator

ACCESSORIES

- HBR-300 Stand, Moveable Cart with Swivel Casters, Rear Locks
- Batteries Sold Separately





MODEL:

HBR300-1

Specifications, Details and Dimensions on Back.



Page 1 of 2

HBR300-1 BENCH/RECEIVING **DIGITAL SCALE**



моо

SPECIFICATIONS

CONSTRUCTION:

- Food-safe polymer display. The HBR300 stands up to cleaning and sanitizing.
- Large LCD (1.5" x 0.8"), easy to read digits.
- 90° rotating display.



ROTATING DISPLAY

Platter is stainless steel, stamped construction design sheds juices and food particles.

SELLING FEATURES

- The HBR300 can be used on the bench, floor or moveable cart.
- Receiving scales prevent costly mistakes by accurately check weighing.

- The HBR300 can be used as a bench portion control scale to keep food costs in line.
- The scale tare feature can be set for package or bowl weight to protect profits.
- Easy to clean and sanitize.

TYPICAL LOCATIONS

Bakery - batching Institutional - portion packaging cold/dry storage Kitchen Bench - portion control Receiving Door - check weighing

DETAILS

Capacity: 300 lb./150 Kg Graduation: .1 lb/.05 Kg Platter size (W x D x H): 14" x 20" x 2.7" Operating Temperature Range: 23°F to 104°F -5°C to to 40°C

Humidity: 5% to 90% Non-Condensing Voltage Input: AC 120V 70 Hz 4.5 Transformer Output: DC 6V 20 MA Battery Life: (4) "D" Alkaline Cells 12 wks. Scale Height: 31" to 32" Scale Weight: Approximately 40 lbs. Shipping Weight: Approximately 47 lbs.



DETAILS AND DIMENSIONS



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HUSSMAnn®



M1X-E, <mark>M1X-EP,</mark> M1X-GE, M1X-GEP

Excel Single-Deck Display Merchandisers for Fresh Meat Applications

M1X-E - Single-Deck M1X-EP - Single-Deck, High Efficiency

MIX-GE - Single-Deck, Glass Front MIX-GEP - Single-Deck, Glass Front. High Efficiency

M1X-E, M1X-EP



Available in 8' and 12' lengths.

Contact your sales rep for information on possible availability of additional case lengths.

M1X-GE, M1X-GEP



Plan View



Dimension	8 FT	12 FT
Α	96 3/8 (2448)	144 1/2 (3670)

Notes:

Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Excellent Merchandising

Easy reach and a wide open deck create an effective M1X merchandising platform in applications requiring single-deck meat display. A glass front option increases the visibility of your fresh meat products.

Superior Shelf Life

Modular coils and off-time defrost reduce thermal shock and stabilize meat temperatures, resulting in fresher meats and longer shelf life. Modular defrost can be optionally included to further stabilize temperatures.

Lower Labor Costs

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability

Our five year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



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D5X-E, <mark>D5X-EP,</mark> D5X-LE, D5X-LEP, D5X-HE, D5X-HEP

Excel Multi-Deck Dairy/Deli Display Merchandiser for Dairy and Deli Applications

Hussmann Excel Multi-Deck Display for Dairy and Deli Applications

D5X-E D5X-LE D5X-HE D5X-EP D5X-LEP D5X-HEP

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.

D5X-E, D5X-EP







42

L = Low Front

H = High Front

Plan View -

D5X-E, D5X-LE, D5X-LEP, D5X-HE, D5X-HEP



Notes:

Case-to-case electrical connections are made in front of splashguard.

Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Superior Merchandising

The D5X family was designed to help you merchandise and sell. Superior display features include full vision glass ends, improved ledge lighting, greater shelf placement flexibility and more. Streamline and contour styling available.

Lower Energy Costs

Excel D5X cases come with energy efficient "E" coils as standard on "E" models. The super efficient E-Plus coils on "EP" models reduce energy costs by about 18% compared to standard Impact dairy. Night curtains can be added to help trim about 12.6% more off your energy costs for this case.

Superior Shelf Life

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures. Modular defrost (optional) can further stabilize temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

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www.hussmann.com

Efficiency Coil

E = Energy Efficient Coil

EP = E Plus, Extra High

CED 1M04GD

HUSSMANN®



<mark>DD5X-LP,</mark> DD6X-LP, DD5NX-L, DD6NX-L

Excel Multi-Deck Dairy/Deli Merchandisers with Glass Doors

CED 1M04GD Hussmann Excel Multi-Deck Merchandisers with Glass Doors for Dairy and Deli Applications

DD5X-LP - Glass Doors, Low Front, Plus Coil DD5NX-L - Glass Doors, Narrow Footprint, Low Front

DD6X-LP - Glass Doors, Extra Tall, Low Front, Plus Coil DD6NX-L - Glass Doors, Extra Tall, Narrow Footprint, Low Front

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.

23 3/4

33 1/2





Plan Views

DD5X-LP, DD6X-LP



Note: Case-to-case electrical connections are made in front of splashguard. Overall case length without ends or partitions.

.....

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Features and Benefits:

- EcoVision glass doors provide excellent product visibility and reduce refrigeration energy use up to 82%.

- Narrow 24" french doors preserve aisle space.
- No heat required in doors or frames.
- Narrow footprint models reduce required floor space.
- Energy efficient coils standard.
- 5 year modular coil warranty.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

Options Include:

- Various shelves, racks, lighting, paint and bumper colors.
- Door frames, trim and handles available in gray and black.
- Streamline or contour styling.
- Illuminated canopy signs.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.



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www.hussmann.com DD5XLP DD6XLP DD5NXL DD6NXL 030317

HUSSMAnn®



M5X-EP, M5X-GE, M5X-GEP

Excel Large Capacity Five-Deck Meat Display Merchandiser

M5X-EP - Five-Deck, Extra-High Efficiency

M5X-GE - Five-Deck with Glass Front M5X-GEP - Five-Deck, Glass Front, Extra-High Efficiency

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.







Dimensions	8 FT	12 FT
A	96 3/8 (2448)	144 1/2 (3670)

Notes:

Overall case length without ends or partitions. Contact your sales representative for information on possible availability of additional case lengths.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Superior Merchandising.

The M5X is our highest capacity multi-deck meat merchandiser. Excellent for high volume applications. Glass front and rail light options improve product visibility. Other superior merchandising features include full vision glass ends, illuminated canopy signs, improved ledge lighting and greater shelf placement flexibility.

Superior Shelf Life.

DOE 2017

nergy Efficiency Compliant

Modular coils and off-time defrost reduce thermal shock and stabilize meat temperatures. Modular defrost is optional and will further stabilize product temperatures.

Hussmann refrigerated merchandisers configured for sale

of the DOE 2017 energy efficiency standards.

for use in the United States meet or surpass the requirements

Lower Labor Costs.

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability.

Our five year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed $75\,^\circ\text{F}$ and $55\,^\circ\text{K}$ R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

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www.hussmann.com

M5X-EP_M5X-GE_M5X-GEP_030317

CED 1M07-F

HUSSMANN®



C2X-EP, C2X-LEP, C2X-LGE, C2X-LGEP

Excel Low Profile, Multi-Deck Convertible Merchandiser for All Medium Temperature Applications

CED 1M07-F

Hussmann Excel Low Profile, Multi-Deck Convertible Merchandiser for Prepared Sandwiches, Salads and Pizza Applications

C2X-EP C2X-LGE C2X-LEP C2X-LGEP

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths. E = Energy Efficient Coil

EP = E Plus, Extra High Efficiency Coil

- L = Low Front
- **G** = Glass Front



Dimensions 8 FT 12 FT A 96 3/8 (2448) 144 1/2 (3670)

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Superior Merchandising.

The C2X family provides quick, easy shopping access and merchandises a wide variety of refrigerated foods. Ideal for grab-n-go meals or other high margin prepared food selections such as sandwiches, prepared salads, pizza, etc.

Superior Shelf Life.

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures, resulting in better freshness and longer shelf life. Modular defrost (optional) can further stabilize temperatures.

Lower Labor Costs.

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom with no coil in the bottom of the case, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability.

Our five-year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

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www.hussmann.com

DOE 2017 Inergy Efficiency Compliant Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

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C2X-EP, <mark>C2X-LEP,</mark> C2X-LGE, C2X-LGEP

Excel Low Profile, Multi-Deck Convertible Merchandiser for All Medium Temperature Applications

Hussmann Excel Low Profile, Multi-Deck Convertible Merchandiser for Prepared Sandwiches, Salads and Pizza Applications

C2X-EP C2X-LGE C2X-LEP C2X-LGEP

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths. E = Energy Efficient Coil

EP = E Plus, Extra High Efficiency Coil

- L = Low Front
- G = Glass Front



Note

Α

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

144 1/2 (3670)

96 3/8 (2448)

Superior Merchandising.

The C2X family provides quick, easy shopping access and merchandises a wide variety of refrigerated foods. Ideal for grab-n-go meals or other high margin prepared food selections such as sandwiches, prepared salads, pizza, etc.

Superior Shelf Life.

DOE 2017

ergy Efficiency Compliant

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures, resulting in better freshness and longer shelf life. Modular defrost (optional) can further stabilize temperatures.

> Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements

of the DOE 2017 energy efficiency standards.

Lower Labor Costs.

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom with no coil in the bottom of the case, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability.

Our five-year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75 $^\circ\text{F}$ and 55 $^\circ\text{K.H.}$

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MODEL CB-0606 LOAF CONVEYOR

MOLD AND WRAP MEAT LOAVES - NON-STOP

Now, thanks to Model CB-0606 Loaf Conveyor, ground meats can be molded and wrapped non-stop, nostoop. This conveyor automatically elevates meat loaves from the Hobart Model 80 Loaf Molding machine to wrapping level – hand, semi-automatic, or automatic. Continuous flow operation from molder to wrapper, eliminates stopping to accumulate loaves, saves unnecessary handling, reduces temperature rise in the meat, helps color retention and extends case life. The CB-0606 conveyor boosts meat department morale and increases efficiency by eliminating the tiresome job of stooping to collect and platter loaves. Ask your Hobart man about the work saving model CB-0606 Loaf Conveyor.

Specifications, Details and Dimensions on Reverse Side

WORLD HEADQUARTERS, TROY, OHIO 45374

MODEL CB-0606 LOAF CONVEYOR

SPECIFICATIONS

CONSTRUCTION: Heavy steel inverted U-Channel conveyor bed with sanitary plated finish. Legs of conveyor are easily adjustable for just the right height. Crowned belt pulleys. Belt tension is automatically maintained. Motor and switch can be installed on either side of conveyor.

Conveyor Bed Width			-	÷.	 -		8	 34	71/8"
Conveyor Belt Width				100				 -	6"
Cleat Spacing, Center	to C	enter			 	10			51/2"
Width, Drive (High) En	d.				 				16 ⁹ /16"
Width, Idler (Low) End					 				101/6"

Height: Adjustable - Low End	
Overall Length at 33" Height*	76"
Overall Length at 41" Height* Belt Speed	
ELECTRICAL SUPPLY: 120/60	/1 - 15 Amp. Outlet.
MOTOR: 1/30 H.P.	
WEIGHT: Net weight - 95 lbs	s., Shipping weight - 175

CED 1M10

*Including 9% inch long roller conveyor section.

As continued product improvement is a policy of Hobart, specifications are subject to change without notice.



Item # ____ Quantity __

CED 1M14

C.S.I. Section 11400

HOBART

701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

4812 MEAT CHOPPER

STANDARD FEATURES

- ¹⁄₂ H.P. motor
- Manual ON/OFF or push button Stop/Start switch
- 6 foot cord & plug
- 174 RPM transmission
- Stainless steel housing
- Stainless steel legs with rubber feet
- Spiral-fluted chopping end
- Stay-Sharp knife
- Steel plate
- Plastic feed stomper

USDA Approved NSF.

MODEL

4812 – Meat Chopper

ACCESSORIES

- Corrosion-resistant chopping end with chromium plated finish
- □ Stay-Sharp knife & plate
- Plastic feed stomper

Specifications, Details and Dimensions on Inside and Back.



4812 MEAT CHOPPER

4812 MEAT CHOPPER

701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

HOBAR

LISTED BY: UNDERWRITERS LABORATORIES INC, NATIONAL SANITATION FOUNDATION AND USDA.

SPECIFICATIONS

MOTOR: ½ H.P., Hobart-designed, grease-paced ball bearings, expressly designed for this unit. Motor ventilation is provided through screened openings in the base, assuring cool operation. Single-phase is capacitor-start induction run type. Three phase is polyphase squirrel, induction type. Available in standard electrical specifications as shown below. Not available in direct current.

SWITCH: Conveniently mounted at back of machine (can be changed to front).

Standard switches:

- 1. A manual ON/OFF switch is furnished as standard equipment on all 60 Hz. and 115-50-1 machines.
- 2. A pushbutton stop—start switch with thermal overload protection and no-voltage release is furnished as standard equipment on all 50 Hz. machines except 115-50-1.

Optional switch:

1. A manual thermal overload switch is available at extra cost on 60 Hz. single phase machines only.

CORD AND PLUG: A 6 foot, flexible 3-wire cord and plug for grounding is furnished for 60 Hz., single-phase machines only. An I.E.C. cord is always furnished on 50 Hz. machines.

TRANSMISSION: Precision made gears and shafts mounted on ball bearings are fully enclosed in the transmission case, packed with a special grease at the factory. Smooth, quiet operation is assured for years of normal operation. Worm speed is 174 r.p.m.

CAPACITY: This unit will grind 8 pounds per minute through a $\frac{1}{3}$ " plate on first cutting, with a substantial increase in capacity when first cutting is through plates with larger holes. Operation is rapid,

with a minimum of meat remaining in the cylinder. Its exceptionally fine appearance, coupled with high capacity, adapts it to "on-demand" meat chopping.

FINISH: Standard finish is a stainless steel housing. An attractive stainless steel trim plate is provided at the attachment opening, and polished stainless steel legs, cushioned on the bottom with resilient neoprene rubber, provide clearance to keep the table clean under the chopping unit.

CHOPPING END: Hobart spiral-fluted type, with flutes of cylinder scientifically timed to speed and pitch of the chopping worm – providing the finest and cleanest cutting action yet developed. The protective type chopping end is heavily tinned. The large rectangular feed pan is stainless steel. A *Stay-Sharp* knife, heat treated steel plate and a plastic feed stomper are provided. Unit available at extra cost with corrosion-resistant Brite Metal chopping end with chromium-plated stain finish, *Stay-Sharp* knife and *Stay-Sharp* plate, and plastic feed stomper.

All parts which contact food, including cylinder, worm, knife, plate, adjusting wheel, and feed pan, are readily and quickly removable for cleaning. The entire end can be removed by simply loosening the holding screw extending from the corner of the housing.

DEVICE NO. 4812-1A: Includes the working unit with protective type tinned chopping end, stainless steel feed pan, plastic feed stomper, one knife, and one plate. The plate has ½-inch diameter holes.

1206a

WEIGHT: Net weight 118 lbs. Approx. shipping wt. 144 lbs.

DETAILS AND DIMENSIONS



As continued product improvement is a policy of Hobart, specifications are subject to change without notice.

HOLLY MEDC1M16



HOLLYMATIC MODEL 120 PRECISION BULKER... PRECISE, CONSISTENT, FAST AND EASY TO USE

It has what you want. The Hollymatic 120 Precision Bulker portions ground meat precisely and consistently from 8 to 32 ounces. And the 120 fits most grinders. Reliability and durability are insured by modern electronic controls and rugged construction.

The Precision Bulker produces a loaf with clean, squared corners on each meat portion for a neat, attractive, appearance which can easily be stacked in the meat case or freezer. Paper is automatically dispensed under each portion to greatly retard meat color change and extend shelf life.

The adjustable stand with conveyor easily matches with the output level of the grinder providing a comfortable working height for the operator. Another conveyor can be fed for further processing.

For more information contact your local authorized Hollymatic Dealer today!









No tools required for disassembly. Unclamp from the grinder and roll your bulker to the sink (or store it) on its convenient mobile stand. Large paper roll means less down time.

NO-TOOL ASSEMBLY

Just spin the adapter onto your grinder head and clamp the extrusion die to the adapter. The knife, conveyor, and power unit slide into place. That's it! The knife is automatically engaged by the power unit. There's no need for bolting or aligning.

HOLLYMATIC WARRANTY

Six (6) months from date of purchase. Refer to warranty certificate for terms and conditions

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Exact portions to the weight required. Simply slide the trigger to the desired ounce setting.

SIMPLE TO USE

Plug the Precision Bulker into your electrical outlet, drop the paper in place and switch the power on. You're ready! The foot-switch on your grinder controls the output and leaves both hands free for the meat portions.

EASY TO CLEAN

After you've unplugged the power and pulled off the power unit (an interlock switch is provided for safety), just slide out the conveyor and knife, unclamp the extruder, spin the adapter off and the unit is ready for the sink.

A CONTINUING PAY-OFF

The low price of the Precision Bulker will surprise you. The simple-to-use and easy to clean Model 120 is a valuable labor savings tool.

CONSISTENT, ACCURATE PORTIONS

Consistently accurate portions, longer shelf life and attractive appearence make your meat section more profitable.

SPECIFICATIONS

Power Unit-115V., 1PH., 60 Hz., 2.5 Amps
Portion Size-4-1/8" wide (105 mm) x 1-1/2" thick (39 mm); 4-3/8" (112 mm) to 9-5/8" (245 mm) long
Net weight-40 pounds (19 kg)
Paper roll-10" Dia. Roll will process over 4,000 pounds (1,820 kgs) of meat



Hollymatic Corporation, 600 E. Plainfield Road, Countryside, Illinois 60525 708/579-3700 Fax: 708/579-1057 Web Site: www.hollymatic.com

HOLLYMATIC MODEL 120 PRECISION BULKER AND OPTIONAL EQUIPMENT



HOLLYMATIC MODEL 120 PRECISION BULKER (8-32 Ounce Portions)

FURNISHED WITH MACHINE:

POWER UNIT: 115/60/1 2.5 amps (Standard) 230/50/1 1.2 amps

ADJUSTABLE STAND WITH CASTERS

CONVEYOR

KNIFE & GUIDE

CLAMPS

EXTRUSION DIE: Portion Size 4-1/8" wide, 1-1/2" thick, 2" to 9-5/8" long approx. 8 oz. - 32 oz. Portion Weight.

OPTIONAL EQUIPMENT:

(Note: Order Adapter Ring to Accommodate Input Grinder Head Size.)

	Adapter Ring-Hollymatic #42	120-0045
	Adapter Ring-Hollymatic #52	120-0046
*	Adapter Ring-Hollymatic 900E #42	T147-1068
	Adapter Ring-Butcher Boy #42	120-1105
	Adapter Ring-Butcher Boy #52	120-1106
	Adapter Ring-Biro #42	120-1107
	Adapter Ring-Biro #52	120-1108
	Adapter Ring-Hobart #42	120-1109
	Adapter Ring-Hobart #52	120-1110
*	Adapter Tube-Hobart Prime	120-1315
*	Extension Tube, Long	120-1128

* Required for use with Hobart Model MG 1532 and 2032.

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Item # _____

Quantity _____

CED 1M18

C.S.I. Section 11400

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HOBART

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6801 SERIES MEAT SAW

STANDARD FEATURES

- 3 H.P. Motor
- Direct Gear Drive Transmission
- Tri-Rail Carriage
- Open Frame Stainless Steel Construction
- Center Crown Pulley
- Removable Double Flanged Pulleys
- Split Rear Table
- Direction Grain Stainless Steel
- Pivoted Automatic Tension
- Adjustable Legs
- Stainless Steel Top Cover

OPTIONS

Maximum Security Prison Package

NS

MODEL

□ 6801 Series – Vertical Meat Saw

Specifications, Details and Dimensions on Inside and Back.



6801 SERIES MEAT SAW

6801 SERIES MEAT SAW

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HOBART

CED 1M18

MACHINE WILL PASS THROUGH A 33" OPENING WITH CARRIAGE AND CARRIAGE SUPPORTS REMOVED.

NET WEIGHT: 430 LBS. SHIPPING WEIGHT: APPROX. 570 LBS.

LEGEND:

E1-ELECTRICAL CONNECTION







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6801 SERIES MEAT SAW

CED 1M18

WARNING



SOLUTIONS / BENEFITS

3 H.P. Motor

- Durability and reliability
- Totally enclosed
- Flange mounted with grease-packed ball bearings
- Water resistant

Direct Gear Drive Transmission

Performance

- No belts to replace, slip, adjust or break
- Helical gear reduction
- Blade speed; 4150 fpm

Safety Features

Safety

- Upper and lower pulleys are completely enclosed
- Accessible blade is guarded above and below the cutting zone
- Pusher plate provided to eliminate handling items too close to blade

Cleanability

Labor savings, improved sanitation

- Total open construction and complete hose down capabilities
- Lower "lift-out" guide assembly has stainless steel blade guide
- Built-in tungsten carbide blade back-up block assembly is removable
- Enclosed bone dust system, with large lower scrap pan, keeps dust where it belongs
- No tools needed for part removal, including both pulleys, blade cleaners and guide assemblies
- Exclusive two-piece table and open frame design make sink washing or high pressure hose-down a cinch

Pivoted Automatic Tension

Productivity, ease of use

- Entire motor, transmission and lower pulley assembly is pivot mounted
- Blade tension control accessible just below right table
- Simple adjustment allows for broad blade length tolerance

User Friendly Controls

Ease of use

- Single pull-to-start, push-to-stop switch
- Heater provided with each control to prevent moisture condensation on electrical components

Integrated Pulley Design

- Durability, reliability
- Bright tinned cast iron upper and lower blade pulleys are easily removed
- True-running of the blade is assured by precision pulley balance
- Blade retaining double flanges and center crown give long life without loss of blade integrity

Movable Carriage Tray

Convenience, labor savings

- 16" D x 24¼" W
- Stainless steel, turned down edges provide reinforcements for rigidity
- Stepped front edge makes movement of carriage fast and easy
- Stainless steel ball bearings, mounted on underside of carriage
- Tri-rail carriage support assures stability and easy travel, even when operator leans heavily on carriage
- Carriage lock is provided as standard equipment

Rugged Gauge Plate

Durability, ease of operation

- Stainless steel plate on aluminum cast frame, 6³/₄" x 16³/₄"
- Adjustment gives quick, positive regulation of cut thickness with precision
- Easily disengaged for adjustment
- Exclusive design of gauge plate end permits quick removal of cuts for stacking

Stationary Cutting Table

Convenience, heavy duty

- Two piece, 21¹/₂" x 39⁵/₈", heavy stainless steel with turned down edges for rigidity
- Fully supported for heavy duty use
- Provides extensive stacking space and easy breakdown for cleaning

SPECIFICATIONS

Motor: 3 H.P.

Electrical: Available in 230/60/1, 200-230/60/3, 460/60/3. Also available in 220/50/3, 380-415/50/60/3, not submitted for U L listing.

Switch: Single pull-to-start, push-to-stop switch

Standard Leg Height: 2" (Std.) 1³/₄" to 2¹/₄"

Optional Leg Height: 4" 3³/₄" to 4¹/₄"

Saw Blade: %" wide x 142" long Capacity: Cutting clearance is $17\frac{1}{2}$ " H x $15\frac{3}{4}$ " W

Weight: Net 430 lbs. Shipping: approximately 570 lbs.

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CED 1M20-A



Known for Reliability Since 1921

The Biro Model AFMG-52 (Auto-Feed Mixer-Grinder) is the ideal workhorse for large supermarket meat rooms and medium sized processors and HRI plants. Its 7.5 hp (5.6 kW) motor (or optional 10 hp, 7.5 kW motor) provides a production output of up to 100 lbs. (45.5 kg) per minute to give you the productivity you need.

The heavy duty roller chain auger drive system with tapered roller bearing journal box is separate from the heavy duty mixer motor interface gear drive system. This more efficient design transfers maximum torque power to the auger. The heavy duty stainless steel 200 lb. (91 kg) hopper and frame resist corrosion and damage, even in an environment of harsh cleaners. Your mixer grinder lasts longer and gives you more return on your investment. Power, durability, and low maintenance make the Biro Model AFMG-52 Auto-Feed Mixer-Grinder a meat room workhorse.





<image>

MODEL AFMG-52 AUTO-FEED MIXER-GRINDER Shown with Optional (NC) Right Hand 35 ° Hopper Feed Inlet

3/8" (9.0 mm)





All specifications contained herein are subject to change without notification.

ITEM NO.: LIT-AFMG-52-231 FORM NO.: AFMG-52-231-6-14-12-B

Service is available from locations worldwide

Built to Perform Backroom Optimization



Operational Uptime

The 880 Auto Wrapper is built for the most demanding meat and seafood operations. The machine is robust and durable, easy to operate and easy to clean. To safeguard operational uptime, the 880 Auto Wrapper comes with fixed services during planned operational downtimes.

Total Cost of Ownership



The 880 Auto Wrapper is designed to control the total cost of ownership. The machine is easy to use, helping retailers avoid long training times. With a operational footprint of 20 ft² – one of the smallest footprints for a fully automated wrapper on the market – the 880 Auto Wrapper matches the highest demand.

Increased Productivity

The 880 Auto Wrapper produces the perfect wrap every time. The machine makes it fast and easy for every operator to control production runs with the tactile keypad and touchscreen. Operators can load trays quickly, as the wrapper automatically moves the tray into the proper position for wrapping.



Speed

Customer demand at the meat case determines how quickly meat must be cut, weighed, wrapped and labeled in the backroom. The 880 Auto Wrapper is equipped to wrap up to 35 packs-perminute, offering ample reserves for performance peaks in the mornings, late afternoons and during busy holiday seasons.



880 Auto Wrapper Automatic, integrated wrapper

The METTLER TOLEDO 880 Auto Wrapper is the perfect choice for grocery retailers looking for an efficient and robust system for automated weighing, wrapping and labeling in the backroom. Easy handling, comprehensive functionality and reliability – as well as a proactive service and maintenance offering – make the 880 Auto Wrapper the perfect machine for retailers who wish to optimize their operational uptime and total cost of ownership while easily keeping pace in the highest volume meat backrooms.



- Easy tray placement
- Intuitive user-interface: Touchscreen and tactile keyboard
- Easy cleaning with washable in-feed tables and lifts
- Simple and fast loading of label and film rolls
- Minimal footprint

The Ideal Choice for Total Backroom Optimization

The high-performance 880 Auto Wrapper is the ideal choice for food retail backroom operations. Robust, intuitive and efficient, the 880 Auto Wrapper supports weighing, wrapping and labeling for optimized backroom processes.



Technical data 880 Auto Wrapper

Speed 35 packs-per-minute

Tray sizes

1S, 2S, 17S, 20S, 4S, 8S, 9, 10S, 16S, 12S, 7, 25S, 10x14

Film

METTLER TOLEDO Certified Film CF-10 13.75" width; 19.65" width

Film select Programmable Accommodates two rolls

Footprint (ft²) 20 ft²

Configuration Exit right front standard

Machine weight 850 lb/390 kg

Operating Range 40°F–95°F (5°C–35°C)

PLU Presets 300

Label Sizes

(Auto Application) 1.1'' - 4.1'' length 1.4'' - 3.1'' width

Labeler Options

Single printer applicator Two printer applicator Security Tag applicator DayGlo applicator

Electrical 208 or 240 VAC, Single Phase, 50-60Hz, 3 kVA, 15 A

Controller

880 Auto Wrapper Weigh/Wrap/Label Controller, Embedded Linux OS, Compact Flash Memory

Network Interface

Wired ethernet Wireless upgrade available

Display/Keyboard LED wrapper panel

Color LCD touchscreen Tactile keypad

Dimensions in inches



www.mt.com/retail .

150 9001 ngitteet 14001 ngitteet ISO 9001 quality management certification ISO 14001 environmental management certification

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For more information
Item # _____ Quantity ____

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HOBART

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STANDARD FEATURES

- Small footprint to increase useable floor space
- Fully automatic operator places package into the NGW, weighing, wrapping and labeling is all done automatically.
- Integrated scale and label applier to reduce floor space requirements
- Auto off/on timer for heated sealer belt
- Hose-downable just like the meat saw or mixer grinder
- System automatically shuts down when not in use
- Swivel wand allows for label placement on all four corners of the meat package
- Intuitive operator diagnostics to reduce service calls
- Package range up to 10" L X 15" W X 6" H

ACCESSORIES

- NGWKIT-SHELF Fixed Stainless Side Shelf
- RBG-2 Rotary Bin Gravity with Casters
- HRT5-3 Roller Discharge Table
- GRVCON-1 4 ft. Discharge Roller Conveyor

MODELS

- NGW1-Li1LR (one roll) (Left to Right)
- NGW2-Li1LR (two rolls) (Left to Right)
- NGW1-Li1RL (one roll) (Right to Left)
 NGW2 Li1PL

NGW AUTOMATIC

WRAPPING SYSTEM

NGW2-Li1RL (two rolls) (Right to Left)

INCLUDED WITH PURCHASE

- □ EPP-3 Access Prepack Printer
- □ EPCP-5e HT Series Console Functionality with Linux OS with 14" screen

Specifications, Details and Dimensions on Inside and Back.





NGW AUTOMATIC WRAPPING SYSTEM

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HOBAR

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SPECIFICATIONS

WEIGHING

Capacity – 30 lbs. (Manual) 15 lbs. (Automatic mode) Weighing increments – dual range capable, 12 lb. x .005 and 30 lb. x .01 lb Minimum weight to print – .20 lb

LABELING

Label Width – 1.5", 2.25" and 3.0" **Label Length** – 1.5" up to 4.0" in .5" inch increments

WRAPPING

Package Size Width – 4.5" min, 15.0" max Length – 4.5" min, 10.1" max Height – .4" min, 6.0" max
Wrapping Speed – Maximum of 30 packages per minute
Type of Film Used – PVC
Film Thickness – 60 gauge min, 100 gauge max
Film Core Size – 3" I.D.
Film Maximum Diameter – 9.5" O.D.
Film Widths – 14" min, 20" max

ELECTRICAL

220 (4 wire-2 hot lines, neutral & ground) 60 cycle, 1 phase, 20 amps

SHIPPING WEIGHT

Approximately 1,300 lbs.



Film load area at rear of wrapper



NGW AUTOMATIC WRAPPING SYSTEM

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HOBAR

N28

DETAILS AND DIMENSIONS



Left to Right Operation – Top View



Left to Right Operation – Front View



Left to Right Operation – Side View



Right to Left Operation – Top View



Right to Left Operation – Front View



Right to Left Operation – Side View

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AW-4600AT combines high speed and dynamic film stretching for a superior backroom operation

After thorough research of stores' needs, the AW-4600AT was designed to meet the requirements of your weigh/wrap/label operations

-4600

The AW-4600AT uses the unique super-stretching technology of the AW-3600AT that established the international standard. DIGI further ensures this feature by improving the film transportation mechanism. The AW-4600AT accomplishes greater savings of film while speeding up the process.

In addition to the incredible wrapping capability, the AW-4600AT has a variety of label presentation options to meet various regulations or other information desired by the product conscious consumers.



An optional POP Labeller for a second eye-catching label totally rationalizes your backroom operations by saving time, labor, and cost of labels.



460GAT

CED 1M28

Compact yet full of features for increased productivity

Advanced super-stretching system

The improved film transportation mechanism allows you to easily produce an attractive wrapping finish that raises the commodity's value. Wrapping various sizes of commodities, up to 380mm/15 inches wide, with just one size of film makes managing film stock easy. While saving film, this also helps reduce waste for a better environment.



Large color TOUCH screen



The 10.4 inches sized color TFT display makes operation extremely simple. Total efficiency is possible with the numerous built-in functions, such as free-layout functional keys, easy PLU searching, built-in calculator, etc.

Accurate process control

The AW-4600AT automatically determines the optimum wrapping conditions by adjusting the degree of film stretching, depending on commodity size fed into the machine. In

addition to the regular styrene tray, the AW-4600AT can now detect dark or clear color trays. The AW-4600AT also corrects and controls the labelling position according to the location of the commodity placed at the infeed.





High productivity

The AW-4600AT provides superior wrapping performance at Max. 36 packs/min. This is a 20 percent increase in speed over the AW-3600AT for regular sized commodities to meet demand during peak store operation.



Easy film change

Film loading is done from the front of the machine with ease so film waste is very minimal. You can smoothly return to wrapping operation after only a minimum of downtime.



Easy-to-clean design

The built-in scale at the infeed is protected from debris. Some parts are detachable for easier cleaning.



Other features

- Wide(80mm) thermal head for printing
- Networking capability
- Trace-ability information programmable

wrapping operation after only a minimu is- of downtime. an-

CED 1M28

Specifications

Wrapping

Weighing range Package size	Please refer to the "Weighing" section Width: 130 - 380mm/5.1 - 15 inches
	Height. 10 - 130 mm/0.4 - 5.1 mones
	150mm as factory option
	Depth: 80 - 254mm/3.1 - 10 inches The maximum combination of the above dimen- sions is not available and the available package size depends on the film width.
Wrapping speed	Max. 36 packages/min.
Number of film rolls-	One roll
Film width	350 - 450mm/14 - 18 inches
Film length	Max.1,500m

Weighing

Interval type	Multi-interval		Single interval
Capacity	Max 6/15kg	Max 3/6kg	Max 30 lb
Scale interval	e=2/5g	e=1/2g	e=0.01 lb
Weighing range	40g - 15kg	20g - 6kg	0.20 - 30 lb
Max, wrapping capacity	5ka	5ka	11 lb

Labelling

Label type	Thermal paper
Labelling application -	Automatic label application
Label size	Width: 40 - 80mm/1.6 - 3.1 inches
	Length: 28 -105mm/1.1 - 4.1 inches

Console

Display panel	10.4 inches TFT color Pictogram or English
Programmable items-	PLU No., commodity name, ingredient, unit
	by-date, department name, barcode (UPC,
	EAN), target weight, special message,
	extra print format, wrapping conditions, etc.

General

Externals	Resin and stainless steel construction
Power source and -	208 - 240V, 3phase, 50/60Hz, 1.5KW
Power consumption	220 - 240V/380 - 415V, 1Ø or 3Ø/3Ø,
	50/60Hz, 6A, 1.5kVA
Net weight	Approx. 440kg
Operation humidity-	90%RH(max.)

Options

Sub	Labe	eller

- POP Labeller
- Bottom Labeller

AW-4600AT Multi-labelling System (integrated with optional POP and Bottom Labellers) performs all the labelling in one process

> Optional POP Labeller : prints and applies a POP label simultaneously with the main price label



Optional Bottom Labeller : prints and applies an addi-tional label onto the bottom of the package

*Specifications are subject to change without prior notice.

TER/JOK/J SEIKO CO., LTD.

5-13-12 Kugahara, Ohta-ku, Tokyo 146-8580 Japan TEL:+81-3-3752-0327 FAX:+81-3-3752-5814 http://www.digisystem.com e-mail:info@hq.digi.co.jp



CNO.AW-4600AT 0603005-3



Front View



Side View







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Item # Quantity

□ HWS-4-C – Hand-Wrap Station

Specifications, Details and Dimensions on Inside and Back.

MODEL

CED 1M30

C.S.I. Section 11400

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HOBART

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HWS-4-C HAND-WRAP STATION

STANDARD FEATURES

- Flexible Set-Up
- Easy to Load Film
- 20" Film Capacity
- Fingertip Film Selection
- Low Temperature Film Cut-Off System
- Angled Hot Plate
- Stainless Steel Element
- Heavy-Duty 300 Series Stainless Steel Stand Assembly
- Open Scale Area
- Operates in All Ambient Temperatures
- 12 Hour Timer for Hot Plate and Cut-off Rod to Save Electric
- Convenient Outlet Provided for Scale/Printer Power

ACCESSORIES

- **HWS-WRAPAD** Hand Wrap Station Aid
- □ ACCESS-HWSKIT HWS Post Assembly Plate for Printer, USB Cable and Power Cable for **Control Panel**
- **QUANTMP-HWSPST** HWS Single Printer Post, Bracket and Scale Support
- Description Post Assembly for Library Look Up
- □ LIBRARY-SUPPRT





HLXP-1 Hand-Wrap System with Color **Touch Screen**

Access Scale Hand-Wrap System with Color **Touch Screen**



Quantum Scale System Hand-Wrap Station

HWS-4-C HAND-WRAP STATION

HWS-4-C HAND-WRAP STATION

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M30

SPECIFICATIONS

CONSTRUCTION: Heavy-duty stainless steel frame. 36¹/₄" H x 27"W x 27"D. Shelf 12⁵/₈"W x 28"D.

HOT PLATE: 15" W x 6"D.

FILM HOLDERS: Two roll film selector. Capacity 10" diameter x 20" maximum.

ELECTRICAL: 120 Volts, 60 Hertz, single phase, 8.5 Amps. SHIPPING WEIGHT: HWS – approximately 90 lbs.; POST-LGSP – 4 lbs.; HWS-WRAPAD – 8 lbs. NOTE: SCALE, PRINTER AND POST MUST BE ORDERED SEPARATELY.

DETAILS AND DIMENSIONS





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DETAILS AND DIMENSIONS





CED 1M30 HOBART 701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

DETAILS AND DIMENSIONS



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Item # ____

Quantity _____

CED 1M34

403

C.S.I. Section 11400

HOBART

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TENDERIZER

ACCESSORY KNIVES

- Strip Cutter Knives cut flank steak, sirloin, chicken breast or pork for stir fry or fajitas; strip cut cooked ham, turkey and cheese for chef salads or garnishes. Each comes standard with a storage holder. Available in three sizes:
 - □ Extra Wide (³/₄")
 - □ Wide (³/₈")
 - □ Narrow (³/₁₆")
- Star Knives rollers use an 11 tooth pointed star blade. This produces a lighter, less dense tenderizing cut for more delicate meats.
- Chrome-plated lift-out finish (acceptable to USDA) is available at extra cost.

SOLUTIONS / BENEFITS

Lower Profile with Cut-Outs

Meat can be inserted closer to the blades; operation is easier and faster

Plastic Guides Inside Guard

Guides meat into knives, reduces unintentional folding

Larger Reinforced Magnet Mounting

Reduces breakage

Translucent Guard

□ Allows operator to view product processing

Variety of Knives Available

Versatility with meats and cheese

Interlock Systems

Won't feed if guard or motor housing not in place

Lift Out Unit Frame

□ Ease of cleaning, ease of use

Burnished Aluminum Housing

- Ease of cleaning
- Designed to accommodate pan for holding prepped product

MODEL

403-1 Tenderizer – Tenderizer with interlocks supplied with Knit-Knife stainless steel blades that cut meat and, at the same time, knit it so firmly together that it will cook as one solid steak.

Specifications, Details and Dimensions on Reverse Side.





SPECIFICATIONS

MOTOR: ¹/₂ H.P., totally-enclosed, fan-cooled, single-phase, capacitor-start, induction-run type.

ELECTRICAL: Furnished in electrical specification of 115/60/1, UL Listed. Also available in 220/60/1 and 220-240/50/1 – not submitted for UL Listing.

SWITCH: Manual 2 pole type.

SAFETY SYSTEM: (1) Safety interlocked on translucent guard and motor housing. Remote electro-magnetic sensing switches detect if guard or motor housing are not in place and prevent feed. Switches cannot be mechanically blocked. (2) Integral chute in translucent guard keeps hands at safe distance from tenderizing knives. (3) Pilot light warns when machine switch is ON even though machine is inoperable because translucent guard or motor housing is not in place.

CORD & PLUG: 6-foot, 3-wire cord and plug for grounding. Plug not furnished on export models.

TRANSMISSION: Hardened Steel Worm drives forged bronze worm gear in fluid grease bath. Counter-rotation of tenderizing knives obtained through spur gears mounted on hardened and ground alloy steel stub shafts. Gears sealed in cast transmission case. Motor, Worm and Gear Case are an integral unit for precision mount-in and easy cleaning. Bath lubricated needle and ball anti-friction bearings in transmission case. Grease-packed ball bearings in motor.

BLADES & SHAFT: Blades and shafts are made of heavy duty stainless steel.

CLEANING COMBS: Satin finish stainless steel, easily removable. Combs guide meat between rollers, automatically prevents any accumulation of meat between knives.

LIFT OUT UNIT FRAME: Cast aluminum with special bearings. Contains set of stainless steel shafts and cleaning combs hinged to swing free from blades for unit cleaning - combs can be removed easily. Automatic unit lock holds assembly in place.

HOUSING: Housing consists of cast aluminum gear case and motor housing and high impact plastic translucent guard. Lift out unit nested by cast aluminum support on stainless steel tie bars and shield. Unit designed to be quickly and easily cleaned.

FINISH: Burnished aluminum and translucent plastic.

WEIGHT & DIMENSIONS: Net wt. 56 lbs., shipping wt. 66 lbs. Height 217_{16} ", counter space $101/_{2}$ " x $195/_{6}$ ". Feed throat opening $13/_{6}$ " x $77/_{6}$ ".

STANDARD EQUIPMENT: Cleaning fork.

OPTIONAL KNIVES:

- Knit
- Star
- Strip Cutter 3 sizes

WARRANTY: Unit has full one-year warranty on parts, labor and mileage against manufacturer's defects. Service contracts are available.

DETAILS AND DIMENSIONS



D-69393

As continued product improvement is a policy of Hobart, specifications are subject to change without notice.

CED 1M37



Known for Reliability Since 1921

Slice whole muscle boneless product Accurately, Consistently, and Efficiently



The Model 109PC Electronic Model and the Model 109PCM Mechanical Model can slice up to 180 and 170 slices respectively per minute of Boneless Meat Products. These units can raise your slicing operation to a Higher Level of Productivity to help Lower Labor Cost and Increase Profits. The specially designed sickle-type curved smooth blade slices the product cleanly (no tearing) thus increases product shelf life and reduces shrink and waste.

The 109PC Electronic model operates by a 7 Programmable Keypad that controls a microprocessor. The programmable keypad allows the operator to tailor the microprocessor to your product thickness from 1/16" (1.5mm) indefinite thickness to 30" (762mm) max., reducing the time to change product thickness and operator training. Product pusher automatically returns to home position after the last slice.

The 109PCM Mechanical model can slice up to 170 fresh Boneless Meat Products per minute. This Mechanical version operates via a preset Indexing Thickness screw type Mechanism that produces a same slice thickness the full length of the product. The machine can be stopped in process and a different slice thickness from 1/16" (1.5mm) up to 1-1/8" (28.6mm) thick max. can be selected and then finish cutting the product at that different thickness. The product pusher is manually retracted just enough to accomodate the length of the next product.

Model 109PC Electronic Horizontal Slicer

w/ optional Take-away Conveyor shown



Mechanical Horizontal Slicer Optional Take-away Conveyor not shown

CED 1M37

SPECIFICATIONS

MODELS	109PC Horizontal Slicer-Electronic	109PCM Horizontal Slicer-Mechanical	
Construction	Stainless steel welded frame, panels, doors • casters (plated body) with 5" (127mm) diameter Prevenz anti-microbial wheels • stainless steel surplus tray		
Electrical	Certified Electrician verify power line source voltage and	l ground for proper machine operation	
Motors	Totally Enclosed Brake Motors: Totally Enclosed Brake Motors:		
	HP KW VTS/CY/PH AMPS	HP KW VTS/CY/PH AMPS	
	3 2.2 200-208/60/3 10.4-10.0	2 1.5 208-230/60/3 7.0-6.4	
	3 2.2 230/460/60/3 9.1/4.6	2 1.5 460/60/3 3.2	
	3 2.2 380-415/50/3 5.0-4.6	2 1.5 200/60/3 7.3	
		2 1.5 380-415/50/3 3.5-3.3	
Loading Chamber	9" (228mm)H x 10" (254mm)W x 30" (762mm)L, Textu	red finish Stainless Steel	
Receiving Chamber	9" (228mm)H x 10" (254mm)W x 35-1/2" (901mm)L, T	extured finish Stainless Steel	
Conveyorized Exit Chamber	Add 13" (330mm) to left side of Exit Chamber (See pict	ure and drawing)	
Product Type	Input Chamber will accommodate a max. of 50 lbs. (22.6 Products or up to 30 lbs. (13.6kg) max. of firm cheese pr	5kg) of Fresh or Frozen Tempered Boneless Meat oduct	
Cutting Blades	Two special hardened Stainless Steel sickle style Blades Select two blades - standard smooth edge or serrated edg	are supplied with each machine. e Blades	
Product Output	Up to 180 slices per minute at 1" (25.4mm) 170 slices per minute		
Slice Thickness	From 1/16" (1.5mm) infinite thickness to 30" (762mm) max		
Slice Controller	Electronic • splash proof • User friendly Key Pad (English or Metric) (tactile and audible) • up to 7 Programmable Programs • Auto transport return Main on/off Switch • Run or jog switch • Push button start switch • Manual transport return		
Safety Features	Magnetic Interlocks on all doors • Brake motors • Locking Casters • OSHA Lockout Power Switch • Emergency "E" Stop Button		
Standard Items Supplied	10' (3048mm) Size 12-4 wire Power Cord less plug • 2 pre-selected Cutting Blades - see above • Stainless Steel Surplus Catch Tray • Stainless Steel Product Guide Leaf Spring • Operating and Safety Manual		
Options (Extra Cost)	9" (228mm) or 11" (279mm) Stainless Steel Leg Extensions • Stainless Steel Casters with 5" (127mm) diameter Prevenz Anti-microbial Wheels • a 10" (254mm) W x 48-3/8" (1229mm) L Product Take-away Conveyor, Variable Speed from 0 to 55 feet (0 to 16.8 meters) per minute • Removable Food Grade Belt • Independent On-Off Switch • Conveyor belt discharge height from floor is adjustable from 27" (686mm) to 31" (787mm). The min. and max. conveyor belt discharge height dimensions change accordingly when either 9" (228mm) or 11" (279mm) optional leg extensions are used.		
Certifications	U.L., N.S.F., U.S.D.A.	N.S.F.	
Weight Less Conveyor	Uncrated- 660 lbs. (299kg) Crated- 1042 lbs. (472.7kg)	Uncrated- 621 lbs. (282kg) Crated- 970 lbs. (440kg)	
Weight w/ Conveyor	Uncrated- 795 lbs. (361kg) Crated- 1059 lbs. (480kg)	Uncrated- 756 lbs. (343kg) Crated- 1126 lbs. (511kg)	
Dimensions w/ or w/out Conv. (Conv. packed separately)	Uncrated- 77" (1956mm) L x 33-1/2" (851mm) W x 52-1/2" (1334mm) H Crated- 85" (2159mm) L x 40" (1016mm) W x 60" (1524mm) H	Uncrated- 79-11/16" (2024mm) L x 33-1/2" (851mm) W x 53-5/16" (1354mm) H Crated- 85" (2159mm) L x 40" (1016mm) W x 60" (1524mm) H	



Model 109PC w/ optional sliced product take-away conveyor (shown left)

Model 109PCM if product take-away conveyor is required, add 13" (330mm) to the left side receiving chamber (shown right)

Model 109PCM Right door open showing location of the thickness control gauge anna III a 35-3/16" 893.8mm RECEIVING CHAMBER LGT BIRD 13-13/16 350.8mm

53-135 T F) CASTERS OPTIONAL 26-13/16 681mm 42-11/16 1084.3r 3-1/2 79-11/16* 2024.1mm 37″. 940mm FLOOR

BIRO MANUFACTURING COMPANY Phone: (419) 798-4451 **1114 WEST MAIN STREET MARBLEHEAD, OH 43440-2099 U.S.A.**

Fax: (419) 798-9106

http://www.birosaw.com sales@birosaw.com

All specifications contained herein are subject to change without notification.

ITEM NO.: LIT-109PC/109PCM-358 FORM NO .: Md 109PC/109PCM-358-7-15-3-B

Service is available from locations worldwide

Model 109PC & 109PCM Fresh Product Pusher Gripper Assembly



Model 109PC & 109PCM Left door open showing a Sickle-type smooth Blade and the Surplus Catch Tray. The Stainless Steel Catch Tray allows the further use of the slicer's product's surplus pieces. Use pieces for stir fry, fajitas, and for further processing like ground meat. This advantage qualifies this machine to have a virtually zero waste operation.



CED 1MXX

HUSSMAnn®

Specialty



Q-Series Family

<mark>Q3-MC</mark>, Q3-FC

Multi-Deck Service Merchandiser with Curved Glass for Meat and Seafood Applications

www.hussmann.com

CED 1MXX Hussmann Q-Series Multi-Deck Service Merchandiser with Curved Glass for Meat and Seafood Applications

Q3-MC, Q3-FC



Quality Fit and Finish Designed for ease of installation. Simplified glass adjustment has special alignment design to assure fit. Does not require unsightly joint trim. Matches sleek design elements of the Q-Series family.



Merchandising Flair Optimized visibility -Full view of display deck. Standard lighting produces a balanced . spectrum of light with superior color definition and low glare.

Ergonomics

Large rear door opening and angled back improves product access

Dual refrigerated systems to reduce product dehydration and shrink.

52

25

5 7/8 (149)

Merchandising Flexibility Adjustable deep deck with conduction coil for meat.

Remote Lengths: 4', 6', 8', and 12' Wedges: 22.5° inside and outside wedges



Contact your sales representative for information on possible availability of additional case lengths.

HUSSMAN

for all store layout purposes.

Features and Benefits:

- Tempered, lift-up curved front clear glass
- Large clear glass sliding rear doors
- Gravity/conduction coil (Meat)
- Gravity coil, ice pans with stops (Fish)
- Stainless steel interior pans
- Adjustable deck for flexible merchandising
- Adjustable stainless steel legs
- Stainless steel top cover
- Black matrix on the glass to cover the coil
- Black powder-coated coil cover
- Solar digital thermometer
- Front glass air sweep (Meat)
- Front glass heated air sweep (Fish)
 Double row LED canopy lighting †
- Electronic ballast
- Thermostat and suction stop installed
- Black vinyl cart bumper
- Please reference color chart for choice of standard Hussmann paint and finish options (www.hussmann.com)

Options Include:

- Coil corrosion protective coating (Q3-FC)
- LED ledae lights †
- Tempered, non-glare, lift-up curved front clear glass
- Automatic or manual water flush (reduces the need for manual case cleaning)
- Corian[®], granite or other solid surface front and/or top ledge (NSF approved material)
- Mirrored rear doors
- Thermoplastic wrapping boards with adjustable riser
- View or solid ends
- Mirror bright stainless steel inside end panels
- Stainless steel pedestals
- Top mounted scale stand extensions with dedicated scale outlet and Cat 5 scale connections
- Liquid line shut-off hand valve
- 15 amp GFCI duplex outlet
- Custom trim and decor
- Custom lengths and options*
- (consult your Hussmann sales representative) - Special exterior finishes*
- (consult your Hussmann sales representative)

Additional Information:

- Q-Series Entire Family: Q-Series Family
- Single-Deck Service Deli Curved Glass: Q1-DC
 Single-Deck Self-Service Deli: Q1-SS
- Service Hot Curved Glass: Q-HC
- Multi-Deck Service Bakery Curved Glass: Q3-BC
- Multi-Deck Service Deli Curved Glass: Q3-DC
- Multi-Deck Self-Service Deli: Q3-SS or Q4-SS
- Multi-Deck Self-Service with Service Top Deli: Q3-SP



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

- Some optional features may need to be certified by UL, NSF, and/or other 3rd party certification agencies. Contact Hussmann for verification or questions for availability.
- + Only lighting configurations that are compliant with the U.S. Dept. of Energy (DOE) 2017 regulation are available for sale for use in the U.S.A.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H. We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.

Hussmann Specialty

13770 Ramona Avenue Chino, California 91710-5423 Ph: 1-800.395.9229

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Product Shelf Life

HUSSMANN®



P2X-EP

Excel Single or Multi-Deck Produce Merchandiser

P2X-EP - Single or Multi-Deck with E-Plus "Extra-High Efficiency" Coil

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.



Plan View



Notes:

Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.



Superior Merchandising.

The P2X-EP creates an appealing wall of produce in both single and two deck configurations. Superior display features include full vision glass ends, illuminated canopy signs, improved ledge lighting and more.

Lower Energy Costs.

The "highest efficiency" E-Plus coils are standard. Optional night curtains will further reduce energy by about 12%.

Superior Shelf Life.

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures. Modular defrost, optional, can further stabilize temperatures.

Lower Labor Costs.

Labor saving features include greater clearance under the case, easy-to-clean bathtub bottom, easier raceway access, 2-ft honeycomb sections and more.

Superior Reliability.

Our five year modular coil warranty is the best available. Pre-set adjustable expansion valves are designed to hold optimal temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com.

Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

www.hussmann.com



A. **4W Standard Energy Efficient** Fan Assembly (1) 0477653 Fan Motor, Evaporator (MO.4410545) 0382383 Fan Blade (FB.4780617)

THERMOSTATS

B. Optional Adjustable Refrigeration Thermostat (2)

D.	0480132	4 lamps (BA.4481677) Fluorescent Lamp <i>Replace with like fixtures</i>	(4)
LED	FIXTURES AN	D POWER SUPPLY	
E.	0501213	Power Supply (EP.4481861)	(5)
F.		LED Canopy Fixture	(6)
		Replace with like fixtures	
G.		LED Shelf Fixture	(7)
		Replace with like fixtures	

Data sheet-Excel-P2X-EP

Note: Revision J: April 2017. Updated LED energy values. Other changes marked with a bar, circle or underline.



NOTE: Case-to-Case Electrical Connections are made IN FRONT OF SPLASHGUARD.

FRONT

	6 ft	8 ft	12 ft
General			
(A) Case Length (without ends or partitions)	72 ³ /8 (1838)	96 ³ /8 (2448)	144 1/2 (3670)
(Each end and insulated partition adds 1 $^{1/2}$ in. (38 mm) to case line up.)			
Maximum O/S dimension of case back to front			
(includes bumper)	42 (1064)	42 (1064)	42 (1064)
Back of case to front of splashguard	33 1/2 (851)	33 ¹ /2 (851)	33 1/2 (851)
Back of case to O/S edge of front leg	30 1/4 (768)	30 1/4 (768)	30 1/4 (768)
Distance between edges of external legs and center legs	29 ¹ / ₂ (750)	41 1/2 (1054)	41 ¹ / ₂ (1054)
Distance between edges of center legs	NA	NA	43 7/8 (1114)
Distance between front legs and splashguard	2 3/4 (70)	2 3/4 (70)	2 ³ /4 (70)
Electrical Service (Electrical Field Wiring connection point)			
(B) RH End of case to center of stub up area	60 1/4 (1530)	84 1/4 (2140)	132 ³ /8 (3363)
Back of case to center of stub up area	24 (612)	24 (612)	24 (612)
Length of electrical wireway Wireway	26 1/2 (673)	26 1/2 (673)	26 1/2 (673)
(C) RH End of case to LH end of wireway	66 1/8 (1680)	90 1/8 (2289)	138 1/4 (3511)
Waste Outlets (One each end)			
(D) RH End of case to the center of LH waste outlet	60 1/4 (1530)	84 ¹ /4 (2140)	132 3/8 (3363)
RH End of case to the center of RH waste outlet	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)
Back O/S of case to center of waste outlets	31 5/8 (804)	31 ⁵ /8 (804)	31 ⁵ /8 (804)
Schedule 40 PVC drip pipe	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)
Refrigeration Outlet			
Back of case to center of refrigeration outlet	26 1/4 (665)	26 1/4 (665)	26 1/4 (665)
RH end of case to center of refrigeration outlet	8 (203)	8 (203)	8 (203)

P2X-EP Technical Data Sheet

Multi-deck, 2 Display Levels

DOE 2017 Energy Efficiency Compliant

Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

Dimensions shown as inches and (mm).



**This is an average for all refrigerant types. Actual refrigerant charge may vary by approximately half a pound (8 oz/0.2 kg).

NSF Certification

This merchandiser model is manufactured to meet NSF/ANSI (National Sanitation Foundation) Standard #7 requirements for construction, materials & cleanability.

Excel **P2X-EP** Bulk Produce

REFRIGERATION DATA

Note: This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H.

P2X-EP§	Unlit	Lır
Discharge Air °F	39	39
Evaporator °F	34	34
Unit Sizing °F	32	32

§ Average evaporator temperature shown. Use dew point for high glide refrigerants for unit sizing. Care should be taken to use the dew point in PT tables for measuring and adjusting superheat. Adjust evaporator pressure as needed to maintain discharge air temperature shown.

Btu/hr/ft — Unlit Shelves*

P2X-EP	Parallel	Conventional
Unlit	889	889
Add 10 Btu/	hr/ft per shelf row	for LED fixtures.
Add 20 Btu/hr	/ft ner shelf row f	or fluorescent lamos.

DEFROST DATA

	P2X-EP
Frequency (hr)	None
Defrost Water (lb/ft/da	y) 6
(± 15% based on case co product loading).	onfiguration and
OFFTIME	P2X-EP
Time (minutes)	None
Electric or Gas	Not Recommended

CONVENTIONAL CONTROLS

Low Pressure Backup Control

	P2X-EP		
CI/CO*	27°F / 17°F		

Indoor Unit Only, Pressure Defrost Termination* 48°F

*Use a Temperature Pressure Chart to determine PSIG conversions.

Excel P2X-EP

Bulk Produce

	6 ft	8 ft	12 ft			
Number of Fans—7W		2	3			
Number of Fans—4W	2					
		Amperes			Watts	
	6 ft	8 ft	12 ft	6 ft	8 ft	12 ft
Evaporator Fan						
120V 50/60Hz Standard Energy Efficient	0.24	0.38	0.57	16	28	42
230V 50/60Hz Standard Energy Efficient	0.12	0.20	0.30	16	28	42
230V 60Hz Export	0.30	0.50	0.75	48	78	117
230V 50Hz Export	0.36	0.56	0.84	54	84	126
Minimum Circuit Ampacity						
120V 50/60Hz Standard Energy Efficient	0.44	0.58	0.77			
230V 50/60Hz Standard Energy Efficient	0.32	0.40	0.50			
230V 60Hz Export	0.50	0.70	0.95			
230V 50Hz Export	0.56	0.76	1.04			
Maximum Over Current Protection 120V	20	20	20			
Maximum Over Current Protection 230V	15	15	15			
Standard Lighting (T-8 fluorescent)						
1 Row Canopy	0.51	0.51	0.77	59	59	85
ONLY LIGHTING CONFIGURATIONS THAT ARE COMPLIANT WITH 3	HELLS D	IEPT OF E	NERCY (DOE) 2	017 RECILIATION	ARF AVAII	ABLE FOR
SALE FOR USE IN THE U.S.A.	1112 (1101 12			UT REGENTION /	1032177113	
Ontional Lighting (T-8 fluorescent)						
Additional 1 Row Canony	0.51	0.51	0.77	54	50	85
Additional 2 Row Canopy	1.02	1.02	1.54	811	118	170
Additional 3 Row Canopy	1.53	1.53	2 31	177	177	255
1 Row Rail Light	0.51	0.51	0.77	59	59	85
1 Row of Shelves	0.51	0.51	0.77	59	59	85
2 Rows of Shelves	1.02	1.02	1 54	118	118	170
3 Rows of Shelves	1.53	1.53	2.31	177	177	255
EcoShine H Canopy						
EcoShine II	0.26	0.32	0.48	31.6	38.6	58.0
EcoShine II HO	0.33	0.44	0.66	39.5	53.0	79.4
EcoShine II Rail Light —1 Row	0.12	0.16	0.25	14.1	19.8	29.7
EcoShine II Shelves						
1 Row of Shelves	0.12	0.16	0.25	14.1	19.8	29.7
2 Rows of Shelves	0.23	0.33	0.49	28.2	39.5	59.3
3 Rows of Shelves	0.35	0.49	0.74	42.3	59.3	89.0

120V Lighting Circuit Total = Standard Lighting + Total Optional Lighting + Optional Shelf Lighting

120V LED Lighting Circuit Total = Canopy Lighting + Shelf Lighting

230V Lighting Circuit Total = Multiply 120V Lighting Circuit Total by 0.52

Please note: some combinations of fluorescent lights on this case model may not be compliant with DOE 2017 and may not be available to order in the US and Canada. More lighting options are available with LED lights. The Hussmann Product Configurator will not allow lighting options that do not comply with the DOE 2017 standards.

Excel P2X-EP Bulk Produce

Product Data

Recommended Usable Cube¹ (Cu Ft/Ft) AHRI Total Display Area² (Sq Ft/Ft) Shelf Area³ (Sq Ft/Ft) 6.69 ft³/ft (0.62 m³/m) 3.06 ft²/ft (0.93 m²/m) 3.87 ft²/ft (1.18 m²/m)

¹ AHRI Refrigerated Volume less shelving and other unusable space: Refrigerated Volume/Unit of Length, ft³/ft [m³/m]

² Computed using AHRI 1200 standard methodology: Total Display Area, ft² [m²]/Unit of Length, ft [m]

³ Shelf surface area is composed of bottom deck plus standard shelf complement, as shown in the Hussmann *Product Reference Guide*. The standard shelf complement for this model is (1) row of 16-inch shelf.

	ES	STIMATED SHIP	PING WEIGHT ⁴	
Case				Solid End
	6 ft	8 ft	12 ft	(each)
lb <i>(kg)</i>	800 (363)	1000 (454)	1200 (544)	75 (34)
⁴ Actual weights will v	ary according to optional kit	s included.		



Optional Shelf Lighting Fluorescent Fixtures



Optional Shelf Harness and Light Circuits for Two Rows of Shelves

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red	Y = Yellow	G = Green	BL = Blue	BK = Black	W = White
• = 120V Po	WER $\circ = 12$	OV NEUTRAL	🛓 = FIELD GRO	บND เกทัก	= CASE GROUND

Optional Canopy and Rail Light Circuits — LED Fixtures



WARNING

All components must have mechanical ground, and the merchandiser must be grounded.

CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = RedY = YellowG = Green BL = Blue BK = Black W = White • = 120V Power O = 120V NEUTRAL $\frac{1}{2}$ = FIELD GROUND mm = CASE GROUND

Optional Shelf Lighting LED Fixtures



Optional Shelf Harness and LED Light Circuits for 2 or 3 Rows of Shelves

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red	G = Green	BL = Blue	BK = Black	W = White
120V Power	O = 120V NEUTR	AL $\frac{1}{2} =$	FIELD GROUND	mm = Case Ground

9 of 9

Page 1 of 2 CED 1P03

Marco Perforated Clea Frontguard - 48"L x 6"	ar Acrylic Case W x 4"H		Price: \$76.19 Savings Available
Write a Review Ask a Question In Stock. Ready for delivery to Est. delivery Jun 08-11 if ordered toda	23831 ay. <u>Details</u> .		1 Add To Cart
	Stock No.: 54651 , Ven FGWH-118 4X6X48 Shop All: Marco	idor Part No.:	
	 Dividers can o display Material is dur resistant Frontguard ha holes for air ci 	rganize any able and break s perforation rculation	
	More product informa	ition	
	Length:		
	48"		
	Style:		
	Perforated		
	Add To Favorites Print Request A Quote May We S	Suggest	
Marco Perforated Clear Acrylic Case Frontguard - 24"L x	Marco Solid Clear Acrylic Case Frontguard - 48"L x	Marco Perforated Clear Acrylic Case Frontguard - 36"L x	Marco Solid Clear Acrylic Case Frontguard - 24"L x
	Customers Al	lso Bought	
	General Turis Chicken with Brown Rice		
Trion Ind WonderBar® Clear Plastic Display Fixture Label Holder -	Stainless Steel Sneezeguard Sign Holders - 3L x 6 1/4H	FFR Merchandising Product Divider System Clear Plastic Shelf	Clear PVC Shelf Divider with Magnetic Tape - 22L x 1 3/4W x

https://www.hubert.com/product/54651/Marco-Perforated-Clear-Acrylic-Case-Frontguard--... 6/6/2018



Product Information

Description

These acrylic shelf dividers provide a great way to stay organized. Line up your produce in neat rows or boxes with optional connector pieces. These acrylic shelf dividers are durably made and are break resistant. The 48" x 6" x 4" (L x W x H) separator is perforated to allow air to circulate reducing spoilage.



Specifications

51 rco WH-118 4X6X48 stic
rco WH-118 4X6X48 stic
WH-118 4X6X48
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Reviews

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Start typing your question and we'll check if it was already asked and answered. Learn More No questions have been asked about this item. Be the first!

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4.7 **** Google Customer Reviews



Case Pack	1
Material	Wire
Color	Black
Length	30"
Width	6"

Reviews

Powered by TurnTo Review More Purchases | My Posts There are no reviews for this item. Write Review

Q&A

Powered by TurnTo Questions that need answers | My Posts Have a question Start typing your question and we'll check if it was already asked and answered. Learn More No questions have been asked about this item. Be the first!

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HUSSMANN®



D5X-E, D5X-EP, D5X-LE, D5X-LEP, D5X-HE, D5X-HEP

Excel Multi-Deck Dairy/Deli Display Merchandiser for Dairy and Deli Applications

Hussmann Excel Multi-Deck Display for Dairy and Deli Applications

D5X-E D5X-LE D5X-HE D5X-EP D5X-LEP D5X-HEP

Available in 8' and 12' lengths. Contact your sales rep for information on possible availability of additional case lengths.

D5X-E, D5X-EP









Plan View -

D5X-E, D5X-LE, D5X-LEP, D5X-HE, D5X-HEP



Notes:

Case-to-case electrical connections are made in front of splashguard.

Overall case length without ends or partitions.

Note

Use Hussmann's technical data sheets to get precise dimensions for all store layout purposes.

Superior Merchandising

The D5X family was designed to help you merchandise and sell. Superior display features include full vision glass ends, improved ledge lighting, greater shelf placement flexibility and more. Streamline and contour styling available.

Lower Energy Costs

Excel D5X cases come with energy efficient "E" coils as standard on "E" models. The super efficient E-Plus coils on "EP" models reduce energy costs by about 18% compared to standard Impact dairy. Night curtains can be added to help trim about 12.6% more off your energy costs for this case.

Superior Shelf Life

Modular coils and off-time defrost work to reduce thermal shock and stabilize product temperatures. Modular defrost (optional) can further stabilize temperatures.



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DDE 2017 energy efficiency standards.

NOTE: These merchandisers are designed for use in stores when temperature and humidity do not exceed 75°F and 55% R.H.

NOTE: We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

For additional resources, contact your representative or visit www.hussmann.com



Hussmann Corporation 12999 St. Charles Rock Rd. Bridgeton, MO 63044-2483 Ph: 314.291.2000

www.hussmann.com
April 2017

D5X-LEP

NSF® Certified

DOE 2017

Technical Data Sheet

P/N 0463869 P



Energy Efficiency Compliant Scan QR code to access product information on your mobile device.

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Item	Part #	Description	Wiring Item #	Item	Part #	Description Wi	ring Item #
FAN A	ASSEMBLIES			LAM	PS AND BALL	ASTS	
4 Ft,	8 Ft, 10 Ft†	& 12 Ft		С.	Ballast, El	lectronic	(3)
Á.	12W Stand	ard Energy Efficient	Fan Assembly (1)		0480130	2 lamps (BA.4481676)	
	0477655	Fan Motor, Eva (MO 4410546)	porator		0480131 0480132	3 lamps (BA.4481654) 4 lamps (BA 4481677)	
	0461805	Fan Blade (FB.4	780446)	D.		Fluorescent Lamp Replace with like fixture	(4)
6 Ft 2	und 10 Ft† O	nly				2 5	
А.	7W Standa	rd Efficient Fan Ass	embly (1)	LED	FIXTURES AN	ND POWER SUPPLY	
	0477654	Fan Motor, Eva	porator	E.	0501213	Power Supply (EP.448	1861) (5)
		(MO.4410545)	*	F,		LED Canopy Fixture	(6)
	0142780	Fan Blade (FB.0	142780)		Replace wi	th like fixtures.	(0)

THERMOSTATS

В.	Optional Adjustable	
	Refrigeration Thermostat	(2)

†10 Ft uses both.

Data sheet-Excel-D5X-LEP

Note: Revision P: April 2017. Updated LED energy values. Other changes marked with a bar, circle or underline.

- Replace with like fixtures.
- LED Shelf Fixture (7)Replace with like fixtures.
- G.

Description Wiring Item #

1 1/4

3/8

7/8

PHYSICAL DATA

Merchandiser Drip Pipe (in.)

Merchandiser Liquid Line (in.)

Merchandiser Suction Line (in.)

Engineering Plan Views

Dairy & Delicatessen



FRONT

NOTE: Case-to-Case Electrical Connections are made IN FRONT OF SPLASHGUARD.

		4 ft	6 ft	8 ft	10 ft	12 ft
Gen	eral		1		,	
(A)	Case Length (without ends or partitions)	48 3/s (1229)	72 3/8 (1838)	96 ¥s (2448)	120 1/2 (3061)	144 1/2 (3670)
	(Each end and insulated partition adds 1 42 in. (38 mm) to case li	' ne up.)				
	Maximum O/S dimension of case back to front					
	(includes humper)	42(1064)	42 (1064)	42(1064)	42(1064)	42 (1064)
	Back of case to front of splashguard	33 1/2 (851)	33 1/2 (851)	33 1/2 (851)	33 1/2 (851)	33 1/2 (851))
	Back of case to O/S edge of front leg	30 1/4 (768)	30 1/4 (768)	30 1/4 (768)	30 1/4 (768)	30 1/4 (768)
	Distance between edges of external legs and center legs	NA	29 1/2 (750)	41 1/2(1054)	29 1/2(749)	41 1/2 (1054)
	Distance between edges of center legs	NA	NA	NA	43 7/s (1114)	43 7/8 (1114)
	Distance between front legs and splashguard	2 44 (70)	2 3/4 (70)	2 3/4 (70)	2 3/4 (70)	2 3/4 (70)
	السرام					
Elec	trical Service 🖾 (Electrical Field Wiring connection pol	int)				
(B)	RH End of case to center of stub up area	36 1/4 (921)	60 1/4 (1530)	84 1/4(2140)	108 1/4 (2750)	132 ¾ (3363)
	Back of case to center of stub up area	24 (612)	24 (612)	24 (612)	24 (612)	24 (612)
	Length of electrical wireway Wireway	26 1/2 (673)	26 1/2 (673)	26 1/2(673)	26 1/2 (673)	26 1/2 (673)
(C)	RH End of case to LH end of wireway	42 1/s (1070)	66 1/8 (1680)	90 1/8 (2289)	114 1/4 (2902)	138 1/4 (3511)
Was	te Outlets (One each end)					
(D)	RH End of case to the center of LH waste outlet	36 1/4 (921)	60 1/4 (1530)	84 1/4 (2140)	108 1/4 (2750)	132 3/8 (3363)
	RH End of case to the center of RH waste outlet	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)	12 1/8 (307)
	Back O/S of case to center of waste outlets	31 3/8 (804)	31 5/8 (804)	31 5/8 (804)	31 5/8 (804)	31 5 /s (804)
	Schedule 40 PVC drip pipe	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)	1 1/4 (32)
Refr	igeration Outlet					
	Back of case to center of refrigeration outlet	26 1/4 (665)	26 1/4 (665)	26 1/4 (665)	26 1/4 (665)	26 1/4 (665)
	RH end of case to center of refrigeration outlet	8 (203)	8 (203)	8 (203)	8 (203)	8 (203)
					1	

Multi-deck, 5 Display Levels, Low Front



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

Dimensions shown as in. and (mm).



Estimat	ed Charge ***	D5	X-LEP
4 ft	1.9 lb	30 oz	0.9 kg
6 ft	2.8 lb	45 oz	1.3 kg
8 ft	3.7 lb	59 oz	1.7 kg
10 ft	4.7 lb	75 oz	2.1 kg
12 ft	5.1 lb	82 oz	2.3 kg

***This is an average for all refrigerant types. Actual refrigerant charge may vary by approximately half a pound (8 oz/0.2 kg).

NSF Certification

This merchandiser model is manufactured to meet NSF/ANSI (National Sanitation Foundation) Standard #7 requirements for construction, materials & cleanability.

Excel D5X-LEP Dairy & Delicatessen

REFRIGERATION DATA

Note: This data is based on store temperature and humidity that does not exceed 75°F and 55% R.H.

D5X-LEP§	Unlit	Lit	Peg*
Discharge Air °F	32	30	30
Evaporator °F	28	26	26
Unit Sizing °F	26	24	24

§ Average evaporator temperature shown. Use dew point for high glide refrigerants for unit sizing. Care should be taken to use the dew point in PT tables for measuring and adjusting superheat. Adjust evaporator pressure as needed to maintain discharge air temperature shown.

Btulhrlft — Unlit Shelves [‡]					
D5X-LEP	Parallel	Conventional			
Unlit	1263	1338			
Peg*	1418	1503			
* Hussmann Pe	eg Shelves (Deli	only).			
[‡] Add 10 Btu/hr/ft per shelf row for LED fixtures.					
Add 20 Btu/hr/	Add 20 Btu/hr/ft per shelf row for fluorescent lamps.				

DEFROST DATA

Frequency Hr8Defrost Water (lb/ft/day)_____10.5(± 15% based on case configuration and product loading).

Offtime	D5X-LEP
l`ime (minutes)	30

ELECTRIC OR GAS Not Recommended

CONVENTIONAL CONTROLS

 Low Pressure Backup Control

 CI/CO**
 D5X-LEP

 19°F/9°F

Indoor Unit Only, Pressure Defrost

Termination** 48°F

**Use a Temperature Pressure Chart to determine PSIG conversions.

Excel D5X-LEP

Dairy & Delicatessen

N 1 N 1	6 F) -	A 11/	4 ft	6 ft	8 ft	10 ft	12 ft					
Number of Fans – 7W			-	2	2	1 2	3					
				_								
			A ft	6.84	Amperes	10.64	12.6	A 64	<i>.</i> .	Watts	10.64	13.6
Evaporat	tor Fans		4 11	on	on	1010	1211	411	0 H	811	10 10	1211
120V	60Hz	Standard Energy Efficient	0.30	0.38	0.60	0.68	0.90	18	28	36	46	54
230V	60Hz	Standard Energy Efficient	0.15	0.20	0.30	0.35	0.45	18	28	36	46	54
230V	60Hz	Export	0.33	0.50	0.66	0.80	0.99	50	78	100	128	150
230V	50Hz	Export	0.38	0.56	0.76	0.94	1.14	57	84	114	141	171
Minimun	n Circuit A	mpacity										
120V	60Hz	Standard Energy Efficient	0.50	0.58	0.80	0.88	1.10					
230V	60Hz	Standard Energy Efficient	0.35	0.40	0.50	0.55	0.65					
230V	60Hz	Export	0.53	0.70	0.86	1.00	1,19					
230V	50Hz	Export	0.58	0.76	0.96	1.14	1.34					
Maximu	m Over Cu	rrent Protection 120V	20	20	20	20	20					
Maximu	m Over Cu	rrent Protection 230V	15	15	15	15	15					
Standard	Lighting (T-8 fluorescent)										
l Row	Canopy	,	0.26	0.51	0.51	0.77	0.77	30	59	59	85	85
*Only li	IGHTING CO	ONFIGURATIONS THAT ARE COM	apliant	WITH THE	U.S. DE	pt. of En	ERGY (DC	DE) 2017	REGUI	ATION .	ARE AV/	ALABLE
FOR SALE	FOR USE I	N THE U.S.A.					``	,				
Optional	Lighting (I-8 fluorescent)										
Additi	onal I Rov	w Canopy	0.26	0.51	0.51	0.77	0.77	30	59	59	85	85
Additi	onal 2 Rov	w Canopy	0.51	1.02	1.02	1.54	1.54	59	118	118	170	170
Additi	onal 3 Rov	v Canopy	0.77	1.53	1.53	2.31	2.31	89	177	177	255	255
1 Row	Rail Light	Ľ	0.26	0.51	0.51	0.77	0.77	30	59	59	85	85
l Row	of Shelves	1	0.26	0.51	0.51	0.77	0.77	30	59	59	85	85
4 Row:	s of Shelve	S	1.02	2.04	2.04	3.08	3.08	118	236	236	340	340
5 Row	s of Shelve	S	1.28	2.55	2.55	3.85	3.85	148	295	295	425	425
6 Rows	s of Shelve	8	1.53	3.06	3.06	4.62	4.62	177	354	354	510	510
EcoShine	: II Сапору	,										
EcoShi	ine II		0.16	0.26	0.32	0.42	0.48	19.3	31.6	38.6	50.9	58.0
EcoShine II HO			0.22	0.33	0.44	0.55	0.66	26.5	39.5	53.0	66.0	79.4
EcoShine II Rail Light -1 Row		0.08	0.12	0.16	0.20	0.25	9.9	14.1	19.8	24.0	29.7	
EcoShine	11 Shelf											
1 Row	of Shelves		0.08	0.12	0.16	0.20	0.25	9.9	14.1	19.8	24.0	29.7
4 Rows	s of Shelve	s	0.33	0.47	0,66	0.80	0.99	39.5	56.4	79.1	95.9	118.6
5 Rows	s of Shelve	S	0.41	0.59	0.82	1.00	1 24	49.4	70.5	98.9	110.0	148 3
6 Rows	s of Shelve	s	0.49	0.70	0.99	1.20	1.48	59.3	84.5	118.6	143.9	178.0

120V Lighting Circuit Total = Standard Lighting + Total Optional Lighting + Optional Shelf Lighting 120V EcoShine LED Lighting Circuit Total = Total Canopy Lighting + Optional Shelf Lighting

230V Lighting Circuit Total = Multiply 120V Lighting Circuit Total by 0.52

Please note: some combinations of fluorescent lights on this case model may not be compliant with DOE 2017 and may not be available to order in the US and Canada. More lighting options are available with LED lights. The Hussmann Product Configurator will not allow lighting options that do not comply with the DOE 2017 standards.

4 of 10

Excel D5X-LEP Dairy & Delicatessen

Product Data

Recommended Usable Cube¹ (Cu FtlFt) AHRI Total Display Area² (Sq FtlFt) Shelf Area³ (Sq FtlFt) 9.39 ft³/ft (0.87 m³/m) 4.58 ft²/ft (1.40 m²/m) 9.89 ft²/ft (3.02 m²/m)

- ¹ AHRI Refrigerated Volume less shelving and other unusable space: Refrigerated Volume/Unit of Length, ft³/ft [m³/m]
- ² Computed using AHRI 1200 standard methodology: Total Display Area, ft² [m²]/Unit of Length, ft [m]
- ³ Shelf surface area is composed of bottom deck plus standard shelf complement, as shown in the Hussmann *Product Reference Guide*. The standard shelf complement for this model is (4) rows of 22-inch shelves.

ESTIMATED SHIPPING WEIGHT 4							
Case						Solid End	
	4 ft	6 ft	8 ft	10 ft	12_ft	(each)	
lb (kg)	800 (363)	1000 (454)	1200 (544)	1300 (590)	1400 (635)	100 (45)	
⁴ Actual weights will vary according to optional kits included.							



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

 $R = Red \quad Y = Yellow \quad G = Green \quad BL = Blue \quad BK = Black \quad W = White$ $\bullet = 120V \quad Power \quad \bigcirc = 120V \quad Neutral \quad \downarrow = Fleld \quad Ground \quad mm = Case \quad Ground$

6 of 10

Optional Shelf Lighting Fluorescent Fixtures



Optional Shelf Harness and Light Circuits for Five Rows of Shelves

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS R = Red Y = Yellow G = Green BL = Blue BK = Black W = White

 $\bullet = 120V$ Power O = 120V NEUTRAL $\frac{1}{2}$ = Field Ground mm = CASE GROUND

Optional Canopy and Rail Light Circuits — LED Fixtures



WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS

R = Red Y = Yellow G = Green BL = Blue BK = Black W = White

• = 120V Power \bigcirc = 120V NEUTRAL $\frac{1}{2}$ = FIELD GROUND $m\bar{m}$ = CASE GROUND

Optional Shelf Lighting LED Fixtures



Optional Shelf Harness and LED Light Circuits for 4 or 5 Rows of Shelves

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS R = Red G = Green BL = Blue BK = Black W = White $\bullet = 70V$ Power $\bigcirc = 70V$ NEUTRAL $\frac{1}{2} = FIELD$ GROUND mm = CASE GROUND

Optional Shelf Lighting LED Fixtures



Optional Shelf Harness and LED Light Circuits for 6 or 7 Rows of Shelves

WARNING

All components must have mechanical ground, and the merchandiser must be grounded. CIRCLED NUMBERS = PARTS LIST ITEM NUMBERS R = Red G = Green BL = Blue BK = Black W = White $\bullet = 120V$ POWER $\bigcirc = 120V$ NEUTRAL $\frac{1}{2} = FIELD$ GROUND mm = CASE GROUND BALER AND COMPACTION EQUIPMENT

Vertical Baler: V73HD

This unit is 72" wide to accommodate larger or more lengthy boxes or other materials. This unit is ideal for audio or television boxes and other larger cardboard cartons.

Call Today: (877) 506-BACE or visit us online at bacecorp.com

322 West 32nd StreetCharlotte, NC. 28206

Ideal For:

Grocery Stores

V73Hn

- Home Retailers
- Pharmacies
- Big Box Retailers
- National Accounts
- Commissaries
- Warehouses
- Distribution Centers
- Hospitals, Schools & Universities

GED 1R00-B

30

Recyclers









BACE Vertical Balers meet or exceed all existing ANSI & OSHA Safety Standards and are totally 100% ETL & CETL Approved.



Vertical Baler: V73HD

Our standard V73HD features a 10 HP High Efficiency-Power Unit.

Specifications				
Performance				
Nominal Bale Size	72" x 30" x 48"			
Bale Weight	Up to 1300 lbs OCC			
Bale Volume	60 cu. ft.			
No. of Bale Tie Slots	7			
Compact Force lbs - Based on Factory Set (psi)	62,203			
Platen Pressure	28 PSI			
Average Cycle Time	40 Seconds			
Loading Height	49.50″			
Ejector System	Semi-Automatic			
Full Bale Light	Standard			
Hydraulic / Electrical				
Motor HP	10			
Voltage 3 Phase	208V, 230V, 480V			
Full Load Amps (A = Amps)	32A, 28A, 14A			
Pump GPM	15			
Factory Set System Pressure PSI	2200			
Cylinder Bore x Stroke	6" x 48"			
Hydraulic Tank-Capacity Gallons	22			

ADDITIONAL HYDRAULIC/ELECTRICAL CONFIGURATIONS ARE AVAILABLE. PLEASE CALL BACE FOR MORE INFORMATION.

Available Options:

- Slotted Front Door
- Wire Guides (allows for front bale tie-off)
- Rear Feed Opening, Front Eject
- Feed Chute
- Counter Weighted Floppy Retainer Dogs
- Oil Heater
- Weather Proof Package



Due to continual product improvement BACE reserves the right to change specifications without notice. The information and pictures used in the document are for illustrative purposes only. Printed on recycled paper. January 2017



BALER AND COMPACTION EQUIPMENT

CED 1R00-B

Call Today: (877) 506-BACE or visit us online at bacecorp.com

Customer Order Form: V73HD

Bill To	Ship To
Company:	Company:
(Legal Name)	(Legal Name)
Address:	Address:
City / State / Zip:	City / State / Zip:
Attention:	Attention:
Phone:	Phone:
Fax:	Fax:

Order Details

Select HP / Voltage and Electrical Requirements - Standard Power Unit(s)					
	Motor HP	Voltage	Full Load Amps	Power Supply Required	
0	10HP-SUB-3PH	208V	32	60	
0	10HP-SUB-3PH	230V	28	60	
0	10HP-SUB-3PH	460/480V	14	30	
	Cu	istomer is required to supply a fus	ed disconnect and 12' pigtail		
	Paid Options - Call for Pricing		Choose Door Swing - Drawing sho	ws LEFT HAND	
	Optional Power V	Optional PowerVHZPHASE		layout based on side of hinge when facing the baler.	
	Slotted Door				
	Single Phase Power Unit		O LEFT HAND HINGE	O RIGHT HAND HINGE	
	Rear Wire Guides				
	Rear Feed Front Eject				
	Front Feed Chute				
	Floppy Retainer Dogs				
	Oil Heater			E	
	Weather Proof (outdoor use)				
	Wire (\$90 per bundle) #				
	Custom Color / Color Code:				
	Custom Logo / No charge		DIM. (in./mm) A B	C D E	
	Standard Colors / No Charge 🔲	Gray 🔲 Green 🔲 Blue	V73HD 49.5/1257 99/2515	43/1092 141.5/3594 104/2642	
DELIVERY DETAILS (If you require BACE to setup installation, please fill out Page 4 of this document).					
What is your required delivery date? // Do you require BACE to deliver? YES NO					
To process this order, we must receive a signed copy of this document along with a signed copy of the Estimate from BACE for this job.					
Signatur	e:	Date:	// P.O. #		
Please fax to: 704-394-2210 or email to SALES@BACECORP.COM					



BALER AND COMPACTION EQUIPMENT

CED 1R00-B

Call Today: (877) 506-BACE or visit us online at bacecorp.com

Customer Installation Details

Contact Information	Installation Questions	
Company:	Do you have a loading dock with an 8' wide door?	O YES O NO
Address:	What is your ceiling height?	
	Any obstacles (steps, grade change, overhead pipes, etc)	O YES O NO
City / State / Zip:	Do we need to remove an existing baler?	O YES O NO
Attention:	Do you have a forklift on site? (If no, a \$350 forklift fee will apply)	O YES O NO
Phone:	What is the capacity of your forklift?	O YES O NO
Fax:		

Provide a diagram for the proposed location of the baler similar to the drawing below.



To process this order, we must receive a signed copy of this document along with a signed copy of the Estimate from BACE for this job.

/

/

P.O. #

Please fax to: 704-394-2210 or email to SALES@BACECORP.COM

Date: _



ACCESSORY GUIDE

Damaged Merchandise Unit Height is 82"







EMPTY UNITS

FN 1R00

Times-2 Speed Files can be ordered without Adjustable, Reversible Shelves, Dividers, or Rollout Frames. These units can be specified by adding the suffix "E" to any model number. This "Empty" designation allows for the more experienced space planner or facilities manager to customize the interior for unique multimedia requirements.

Shown below is (1) 171SE Starter Unit Empty and (1) 171AE Add-on Unit Empty. As with all Times-2 Speed Files, Starter Units may be used as stand alone cabinets and the number of Add-on Units is only limited by the available floor space.



Empty Units Feature:

Same rugged construction as Standard Units without shelves or dividers. Custom design the interior to meet your multimedia requirements!

Positive Position Control

Cylinder Lock

Accessories are adjustable on $13\!\!4^{"}$ increments without tools.

Color coordinated, two-ply vinyl door strip mounted on reverse beveled post

Times-2 Lifetime Warranty

26 Standard Gloss-Tek Powder Coat Finishes

Compatible with all Times-2 Speed Files accessories.

Plus-Size Empty Units

Times-2 Plus-Size Units at the 5-, 6-, and 7-Tier height increase slightly in height to accommodate applications outside of the range of a regular unit. The extra louver space can be used for a Rollout Reference Shelf or to create any configuration that is needed.



TIMES-2 PLUS-SIZE				
	Extra Louvers	Total Louvers	Total Height	
5-Tier	3	34	661⁄8"	
6-Tier	3	40	765⁄8"	
7-Tier	4	47	89"	

Adjustable Reversible Shelf

#901 Letter-Size, #902 Legal/EDP/A4-Size

The Adjustable, Reversible Shelf is supplied with all standard or preconfigured Times-2 Speed Files. The shelf is slotted every 1" to accept any of the various sized Times-2 dividers. The shelf is also reversible. When placed with the "no lip" side forward, color coded or end tab folders can be filed or retrieved with great ease. If placed with ¼" high lip forward, then items such as fiche trays, boxes, or mailroom inserts can be stored with confidence. The color of the shelf matches the color of the unit.

Recessed Shelf

#901R Letter-Size, #902R Legal/EDP/A4-Size

The Recessed Shelf offers specific advantages over the Adjustable, Reversible Shelf in several applications. The Recessed Shelf creates cantilever-style storage to improve the visibility of documents in the lower tiers. Three-ring binders are stored more efficiently on this shelf. The most popular application for the recessed shelf is placing Letter-Size documents in a Legal/EDP/A4-Size Times-2 Speed File. The Recessed Shelf is slotted every 1" to accept all standard Times-2 dividers. The color of the shelf matches the color of the unit.

Rollout Reference Shelf #548 Letter-Size, #549 Legal/EDP/A4-Size

The Rollout Reference Shelf is the most popular Times-2 Speed File accessory. The Reference Shelf provides the perfect "at the task" work surface to make storage and retrieval more productive and efficient. All 4-, 5-, 6-, 7-, and 8-Tier units and Plus-Size 5-, 6-, and 7-Tier units are designed to accept the Reference Shelf without sacrificing any storage capacity when Adjustable, Reversible Shelves are specified. When coordinating the interior of Times-2, remember that when used with our Rollout Drawer with Hanging Folder Frame, the Reference Shelf will require 3 louvers (or $4\frac{3}{4}$ " in total height). The Rollout Reference Shelf is constructed of laminated particle board in champagne color.









ACCESSORIES



All Add-on Units can be converted into Starter Units with the addition of a simple Conversion Kit. The Conversion Kit includes all the necessary parts and hardware.



Conversion Kits Include:	Conver fr	Conversion Kits: Creating St from Existing Add-On f	
Starter Canopy Top	Height	t Letter Size	Le
(2) Posts with vinul door strips	3-Tier	13CK	
	4-Tier	141CK	
(2) End Panels	5-Tier	15CK	
Raco Fillor	6-Tier	16CK	
DaseTillei	7-Tier	17CK	
	8-Tior	1904	

Conversion Kits: Creating Starter Units from Existing Add-On Units			
_	Height	Letter Size	Legal/EDP/A4
	3-Tier	13CK	23CK
	4-Tier	141CK	241CK
	5-Tier	15CK	25CK
	6-Tier	16CK	26CK
	7-Tier	17CK	27CK
	8-Tier	18CK	28CK

Closing Strips & Extended Canopy Tops

Sometimes referred to as "Wall Closing Strips" this accessory is used to cover the rotation space between your Times-2 Speed File and a wall, panel, or another Times-2 unit in a back-to-back layout. Three styles of Closing Strips are available: Single-Depth Closing Strips, Double-Depth Closing Strips, and Closing Strips for use with Extended Canopy Tops. The color of the Closing Strip matches the color of the unit.

Extended Canopy Tops cover the rotation space behind any Times-2. To order the Extended Canopy Top simply specify your choice in Letter or Legal/EDP/A4-Size.

Letter-Size Closing Strips			
Letter Size	Single Depth #	Double Depth #	
3-Tier	923	943	
4-Tier	9241	9441	
5-Tier	925	945	
6-Tier	926	946	
7-Tier	927	947	
8-Tier	928	948	

Extended Canopy Tops		
	Letter Size	Legal Size
Starter	1096	1086
Add-on	1098	1088



Legal-Size Closing Strips Legal/EDP/A4-Size Single Depth # Double Depth # 3-Tier 933 953 4-Tier 9341 9541 5-Tier 935 955 6-Tier 936 956 7-Tier 937 957 938 958 8-Tier

Closing strips for extended canopy tops can be ordered by using the same part numbers in the closing strip charts above. Simply preface the number with a "1".

1-800-277-1699 www.timestwo.com

Next-To-Wall or Panel

Capacity Application

Times-2, positioned next to traditionally-framed walls or open-office furniture systems, increases both capacity and access to stored information. Capacity will increase from a minimum of 40% to a maximum of 200% growth. Faster retrieval times are standard with Times-2. Half of all documents are immediately available to the operator. The other half, a gentle rotation away. To allow for full rotation of Times-2, a rotation space must be designed into each floorplan. The rotation space can be concealed with the addition of a wall closing strip. Rotation space along top can be concealed with the addition of an extended canopy top (as shown in the drawing).



Top View

7 1/4"

egal 76 1/2* (1943)

5 7/8



Back-To-Back

Capacity Application

Tier per tier, Times-2, when placed in a back-to-back configuration, delivers the maximum possible storage capacity in the defined floor space. The secret is the elimination of entire aisleways—yet access is never compromised. Half of the stored material is still available for immediate retrieval, and the other half remains a gentle rotation away.

The rotation space between back-to-back units may be planned as either single or double-depth. Appropriately sized wall closing strips are available for each dimension. Extended canopy tops

are also available to conceal the rotation space from above. In shorter heights, custom wood tops are also an attractive option.



v v i i i			
(137 mm) - (137 mm) - (138 mm) -	ON 2 ADD-ON 3		
(1), (1	ROTATION SPACE		
(1993) (1993)	N 1 STARTER		

1-800-277-1699 www.timestwo.com FN 1R

Room Divider

Access Application

In addition to filing and storage capacity gains, Times-2 delivers cost reduction and productivity benefits. When used as a room divider, Times-2 defines departmental space, eliminates the cost of construction or furniture panels, and still provides increased access to all stored materials. The dual foot pedal option must be specified in this application. The double-depth design of Times-2 means that both sides of the unit are accessible simultaneously when used as a room divider. When closed, access is denied to both sides.





Through-the-Wall or Panel

Access Application

Imagine having access to stored documents in another room without leaving the room you occupy. Times-2 Speed Files, when installed through a wall or furniture system, can do just that. With a gentle push, the rotating interior turns and delivers the documents from the other side. Times-2 is the filing system to specify when two offices must share information. When installed through a wall, between 10 to 13 inches of the Times-2 projects into each room (depending on whether Letter-size or Legal/EDP/A4-size units are used.) A dual pedal option must be specified when dual access is required.



38 1/8"

(968 mm)

30 ³/4" (781 mm)

legal 38 1/8" (968 mm)

letter 30 3/4"

(781 mm)

legal 45 1/4" (1149 mm)

letter 36 1/2"

(927 mm)

38 1/8"

(968 mm) 30 ³/4"

(781 mm)

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Built-In Alcove

Productivity Application

Floor plans are made more productive when high-capacity Times-2 units are built into an alcove. The alcove can be constructed of traditional dry wall materials, or in open office space plans the alcove can be created with modular partitions. This application allows the architect or engineer the freedom to position Times-2 directly over structural beams or between columns and still allow the designer to integrate high density and fast retrieval storage into any demanding environment. With custom finishes or decorative laminate door options, Times-2 can match any surrounding décor.



Work Top Unit

Productivity Application

Laminated work tops, mounted to 3-, 4-, and in some cases 5-Tier Times-2 Speed Files, provide essential work surfaces for a variety of sorting, collating, and paper flow purposes. Times-2 offers laminated work tops (particle board core) for single and multiple unit configurations. Times-2 will also supply all needed dimensions for your custom millwork for executive solid wood requirements, wood veneered, or artificial surface work tops. Specify if wood top should cover rotation space or be finished on all four sides.



Top View (shown with optional closed back) 7¼" Legal Rotation Space 5%" Letter Rotation Space



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Closed-Back Units

Security Application

Times-2 Speed Files can be specified with closed backs for security purposes when single-sided access is required. Closed backs can be covered by fabric panels to integrate the units into any office décor. Existing units can be retrofitted with closed backs as well. Closed backs are priced as an option to Starter and Add-on units. Closed backs are available in all heights and sizes including Plus-Size units.





Astragals

Security Application

When sensitive materials require extraordinary measures, the Times-2 Astragal offers our highest level of protection. In this application, the standard Times-2 post is replaced with an Astragal, or locking post. Hinged, heavy-duty steel strips swing over the space between the Times-2 door and post to securely lock the unit. The lock is user-supplied. Astragals are available for new and existing Times-2 Speed Files. Consult your authorized Times-2 Speed Files dealer or Richards-Wilcox about this security option.









SPECIFICATION GUIDE

Product Specifications

Times-2 Speed Files Dimensions



Manufacturer

System shall be a High Density, Multimedia Rotary Filing System manufactured by Richards-Wilcox, Inc., Aurora, Illinois, and known as Times-2 Speed Files[®]. No other manufacturers' product shall be accepted as an equal.





Product Specification

Components

1. Base and Rotor Bottom Assembly shall be constructed of 12 GA or greater Drawing Quality Cold Rolled Steel. Said Base and Rotor Bottom shall be connected with a minimum ½" diameter carriage bolt. A locknut shall secure assembly and an oil impregnated bronze bushing will provide permanent lubrication to carriage bolt rotation. Press-formed raceways in both Base and Rotor Bottom shall capture ball bearings and protect rotating components from excessive or unusual wear, burnishment and fatigue. All ball bearings shall be a minimum of 5%" diameter, fabricated from high carbon steel and maintained at equal spacing with a flanged ball cage. Letter-size units shall use a minimum of 22 ball bearings; Legal/EDP-size shall require a minimum of 44 ball bearings. Raceways and ball bearings shall be dynamically and permanently lubricated. Diameter of raceways shall be minimum 22" for letter-size and 28" for Legal/EDP-Size Units. Smaller diameter raceways shall not be acceptable due to their inability to provide stability of unit during unbalanced loading and/or rotation. No heat (welds) shall be applied to rotation surfaces of the Base and Rotor Bottom. Springs included in Base Design shall be capable of stopping a fully loaded unit without requiring tension adjustment at any time. Operator assistance shall not be required to stop or relocate the interior rotating cabinet.



Product Specification

- 2. Rotor Bottom shall have functional storage shelf integrated into its design. Four independently adjustable leveler glides shall be provided to allow for proper leveling of units. Any anchoring required by State, Local and National Codes shall be accomplished by securing cabinets to the floor with manufacturer provided anchoring system. Wall anchoring shall not be acceptable. Separate bases shall be available for Starter and Add-on units and such bases shall be secured to each other to eliminate racking of units during rotation. Further, the addition of units shall be possible on either the right or left sides.
- A Positive Position Control (Foot Pedal) system shall be utilized with each cabinet, delivering complete operator control of Spring-Loaded, Automatic Self-Centering Mechanism. A detent system shall not be acceptable. A Dual Foot Pedal option shall be available to allow access to the cabinet from both sides. Said foot pedal shall be one-piece cast aluminum designed to prevent pedal failure as well as slippage of operator's foot during operation.
 Oil Impregnated Bronze Bushings
- Doors, Center Panel and Rotor Top shall connect and lock together to form one monolithic, structurally sound cabinet.
 - a. Doors shall consist of an outer door free of projections, handles, bevels, allowing for decorative laminates or fabric finishes. Inner Door shall be slotted (louvers) in 134" increments to allow for the acceptance of acceptance required to store y



to allow for the acceptance of accessories required to store various media. Outer and Inner Door shall be welded together.

- b. Center Panel shall be triple-flanged to meet the Inner Doors and Rotor Bottom. The Door to Center Panel connection will be made with fasteners at the Inner Door and Rotor Bottom. Length of fastener shall be engineered as such to not emboss or perforate Outer Door during installation. Said fasteners shall be spaced 5½" on center.
- c. Rotor Top shall snap and lock into place with no visible fasteners. Rotor Top shall include an oil-impregnated bronze bushing allowing permanent stabilization and lubrication of cabinet.
- 5. Reverse Beveled Posts, Vinyl Door Strips and Standard Locks shall complement the appearance of the unit and be integrated into the unit. Vinyl Door Strips shall integrate into Posts without the use of fasteners and be available in matching and/or complementary colors. Posts shall function for either Starter or Add-on units. Locks shall be standard, keyed alike or different. Locks shall be upgradeable (at additional cost) to touch pad, badge swipe (with or without logging system) and other state-of-the-art security applications. Further, lock must be able to establish and maintain "free spin" position of Base and Rotor Bottom (ADA Compliance).
- 6. End panels shall attach to either Starter or Add-on Unit as may be required by configuration of units.
- 7. Canopy Top shall fasten securely to posts with bolt and/or project engineered fastener. Further, Canopy Tops must fasten to each other, when applicable, using appropriate fasteners. Fasteners shall be designed to eliminate movement of post during rotation of cabinet.

Product Specification

Fit and Finish

Painted surfaces shall be furniture quality epoxy-polyester hybrid powder coat finishes free of all volatile cure-reaction products. No air-dry paint of any type will be utilized. All vertical and horizontal seams shall meet highest fabrication standards and only highest quality steel shall be used in the fabrication of the cabinet and its components.

Accessories

There shall be an extensive offering of accessories available including, but not limited to the following:

Wall Closing Strips, Extended Canopy Tops, Closed Backs, High-Security Astragals, Rollout Reference Shelves, Rollout Hanging Folder Frames, Top Tab Rollout Drawers, Rollout CD/DVD/Microfiche/Film Drawers, Card Drawers, Adjustable Reversible Shelves, Recessed Shelves, Various Size Dividers and Magnetic Followers, Dual-Pedal Kits, Conversion Kits, Specialty Racks. (Shelf spacing shall be user-adjustable without the use of tools). Manufacturer shall be capable of creating new accessories reflecting storage requirements of user. Each accessory shall utilize four-point support to securely attach to rotating interior cabinet.

Materials

All steel used in the fabrication of the aforementioned Rotary Filing Systems shall meet ASTM A620 standards for all Cold-Rolled Drawing Quality Steel required in base components and ASTM A366 standards for all other steel parts. The following minimum steel grades (gauge) shall be utilized for the respective application:

Base and Rotor Bottom	12 GA
Base Cover	16 GA
Fixed Bottom Shelf	18 GA
Shelf Dividers	20 GA

Warranty

Manufacturer's Warranty shall include a minimum Limited Lifetime Warranty on the empty unit. For the balance of the equipment components, a warranty of seven (7) years applies. Lifetime shall be defined as "the length of time of owner-ship by the original purchaser."

Qualifications

Manufacturer must demonstrate participation in a minimum of five projects of similar size and scope within the past year. Further, manufacturer must document installations of projects of similar size and scope within the past five years. Manufacturer shall also have a minimum of 10 years experience manufacturing Multimedia Rotary Filing Systems meeting the specifications hereto ascribed.

TIMES-2 SPEED FILES DIMENSIONS

1-800-277-1699 www.timestwo.com





CED 1R09



AURORA from RICHARDS-WILCOX, INC. 600 South Lake Street • Aurora, Illinois 60506 Phone: 630-897-6951 • Fax: 630-897-6994 Toll Free: 800-277-1699 • www.timestwo.com

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CED 2A20

KOALA KARE PRODUCTS KB200 HORIZONTAL WALL MOUNTED BABY CHANGING STATION

KB200-00 CREAM

KB200-01 GREY KB200-05 WHITE GRANITE KB200-11 EARTH







KB200 TECHNICAL DATA SHEET

CED 2A20



MATERIALS:

FDA approved injection-molded polypropylene with Microban® antimicrobial additive embedded into the bed surface. Reinforced steel-on-steel hinge mechanism and metal mounting chassis with mounting hardware included. Labelled usage instructions and safety messages in four languages. Optional Braille label available. Contoured changing surface area is 450 sq. in (2903 sq. cm) and comes complete with nylon safety strap and bag hooks. Dual cavity liner dispenser holds approximately 50 KB150-99 bed liners.

OPERATION:

Concealed pneumatic cylinder and metal mounting chassis provides controlled, slow opening and closing of bed. Polypropylene is easy to clean and resists odors and bacterial growth. Complies with ASTM static load performance requirements when properly installed.

Warning: To ensure that the unit supports the intended loads, baby changing stations must be properly installed according to the manufacturer's instructions.

SPECIFICATION:

Baby changing station body shall be durable, injection-molded polypropylene. Design of unit shall be surface-mounted. Unit shall be equipped with a pneumatic cylinder for controlled opening and closing of bed. Bed shall be secured to metal mounting chassis with a concealed steel-on-steel hinge. No hinge structure shall be exposed on interior or exterior surfaces. Unit shall have mounting hardware included. Unit shall have Microban® antimicrobial embedded into plastic material on the changing surface. Unit shall comply with ADA regulations when properly installed. Bed shall have smooth concave changing area with a nylon safety strap and two hooks for bags or purses. The design and manufacture of Koala products Is intended to be compliant with the 2010 ADA Standards for Accessible Design and the 2009 ICC A117.1, Accessible and Usable Buildings and Facilities. Unit shall conform to ASTM F 2285-04 Standard Safety Performance Specification for Diaper Changing Tables for Commercial Use, ANSI Z535.4 Product Safety Signs and Labels, EN 12221:2008, ASTM G22 Antibacterial standards or local code if more stringent installation requirements are applicable for Barrier-Free accessibility.

Unit shall have a built-in Liner Dispenser for use with 3-ply chemical free biodegradable bed liners, instructional graphics and safety messages in 4 languages. Optional Braille label is available. Unit shall be backed by manufacturer's 5-year limited warranty on materials and workmanship and include a provision for replacement caused by vandalism. Unit shall be manufactured in the U.S.A.

INSTALLATION:

To ensure proper installation and compliance to building codes, it is recommended that a qualified person or carpenter perform the installation of the unit. The unit must be properly installed onto a permanent wall that is capable of supporting significant weight and can accommodate the supplied installation hardware. The Koala Baby Changing Station meets ADA regulations when properly installed. Installer should account for the space that a unit occupies when in the down position and with the caregiver (whether standing or seated) in front of the unit. Locate the unit so that paths of travel are maintained around it when being used.

Drilling holes and mounting the station:

1. Remove changing station from the shipping container and check for any freight damage. If damage is found, please call Koala Kare Products' Customer Service at 888.733.3456. Remove "Installation Kit" and "Operator Kit" from box. Please give "Operator Kit" to facility manager or operator. Box should contain two pieces: the bed and metal mounting chassis and the wall mount liner dispenser. Identify the best location for installing the unit.

2. Standard Installation- Remove the bed and chassis from the box and select the wall area where the unit will be installed. Make sure you have taken into consideration the operating clearance of $9\frac{1}{2}$ " (241 mm) on both sides of the exposed chassis and $23\frac{3}{16}$ " (589 mm) from wall surface when open. Measure from the floor $42\frac{1}{4}$ " (1073 mm) on stud center and mark the wall. The mounting holes are designed for 16" stud centers. Ensure the locations you have marked for the mounting holes are level before drilling. Drill pilot holes for keyhole mounting using a 1/8" regular drill bit.

Masonry or Tile over Stud Wall- Use a 7/32" (6 mm) masonry drill bit for the pilot hole until you hit the stud. Change bit to 1/8" (3 mm) regular drill bit.

Metal Stud or Concrete Block- If the wall has wood studs that are not on 16" (406 mm) centers, has metal studs or an underlying surface of concrete block, drill with a $\frac{1}{2}$ " (13 mm) masonry bit. (You may have to purchase toggles before installing.) You must allow a minimum of inside wall space for toggles to turn depending on toggles used. Insert and tighten toggles.

3. Screw two of the mounting screws into the pilot holes leaving ¼" (6 mm) exposed to allow keyhole slots to be easily mounted over the screw heads. Place chassis over screws. After securing the unit using the keyhole slots, verify that the unit is level. Tighten top two screws so that they are flush with the wall. Use the four lower holes as a guide to mark and drill pilot holes. Use remaining four screws and four washers to complete installation of bed and metal mounting bracket. Insert washers over lower four screws. All <u>SIX</u> screws and four washers must be mounted to the chassis.

4. Ensure liner dispenser is free from damage. Remove key, unlock, and open liner dispenser lid. This will expose liner dispenser mounting holes. Line up dispenser mounting holes onto chassis and secure with the four screws provided. Close and lock the liner dispenser door.

5. Clean work area and inspect unit to ensure it opens and closes smoothly. Give Operator Kit and key to the facility operator. Replacement parts and additional liners can be purchased from your local distributor or by calling Koala at 888.733.3456 or 303.539.8300.

The illustrations and descriptions herein are applicable to production as of the date of this Technical Data Sheet. The manufacturer reserves the right to, and does from time to time, make changes and improvements in designs and dimensions without notice.


CED 2D04



Take A Number Deluxe LED System For T90 Tickets

Stock No.: 71513, Vendor Part No: 3813837

- More economical than previous D80 Number System
- Many items are included in kit, cheaper than buying separately Number system helps provide excellent customer service

The Take A Number Deluxe LED Number System is used by Supermarkets and Delis everywhere to provide excellent customer service. The Number System provides line management, which helps reduce stress amongst customers waiting in line and the employees that are waiting on them. The Take A Number Deluxe LED Number system includes a 2-digit number display, Red/Gray Ticket Dispenser with sign, Counter Stand, 12 volt plug in set, Now Serving Decals and 6 rolls of T90 Tickets. The D90 Number System is more economical than the previous D80 Number System. The D90 Deluxe System and it's accessories are available at Hubert.com.

Product Specifications

Stock No.	71513
VPN#	3813837
Case Pack	1
Material	Plastic
Color	Black
Secondary Color	Red
Length	12"
Height	9.75"
Depth	2.75"
Sign Size	14"H x 8.25"L
Volts	12.0000 Volts
Warranty	One Year Limited

Deluxe L.E.D. Number System

- (1) Black with 2-digit number display, 12L x 2-3/4D x 9-3/4H,
- for the largest and most visible display
- (1) Red/Gray D90 ticket dispenser with sign
- (1) Counter stand
- (1) 12-volt transformer with plug-in set
- (3) Push-buttons with plu-in set
- (1) Set of "Now Serving" decals in 12 languages
- (6) Rolls of T90 tickets

CED 2D04



Take A Number Floor Stand Kit

Stock No.: 69818, Vendor Part No: 394902+394901

- ADA Compliant for handicapped customers
 Portable for Great Location
 5' in Height for better Customer Visibility
- · Get all pieces in one kit

The Take A Number Floor Stand Kit is for use with Turn-O-Matic Number System helps to ensure great customer service. This kit features all of the accessories needed for a floor stand which helps to provide better customer access for your Number System. The Take A Number Floor Stand Kit comes with a 5 foot post, dispenser bracket, metal sign back plate, plastic sign and a metal base. It is also ADA compliant. The Take A Number Floor Stand Kit is just one of the many accessories for the Turn-O-Matic Number System that is available at Hubert.com.

Product Specifications

Stock No.	69818
VPN#	394902+394901
Case Pack	1
Compatible With	Turn O Matic Take a Number System
Material	Metal
Color	Black
Height	60"
Warranty	One Year Limited

CED 2D04



Take A Number T90 Tickets White

Stock No.: 80666, Vendor Part No: T90004-WH

- Precut and numbered for easy use
 Helps provide effective line management
 Ticket shape makes them easy to load

These white take a number tickets are compatible with the Turn-O-Matic Number System. These slips are precut providing easy loading and dispensing. The take a number tickets are numbered 00-99 with an alpha character preceding the numbers. Each roll has 4,000 tickets and packaged 24 rolls per case. These take a number tickets help provide efficient customer service and line management.

Color: White



Product Specifications

Stock No.	80666
VPN#	T90004-WH
Case Pack	24
Case Pack Detail	4,000 Tickets per roll; 24 rolls per case, 96,000 tickets per case
Compatible With	94509, 89817, 71513, 96346, 32285
Material	Paper
Color	White
Width	1.25"



CED 2D26 Premier 1 Self-Contained Hand Washing Station Standard Height with Single Stainless Steel Basin

OzarkRiver.com • 1-866-663-1982 • Fax: 573-729-3846

Product Overview

Our flagship product the Premier is our standard height (38") NSF Listed Portable Hygienic Hand-Washing Station with hot water. This model features a single stainless steel basin mounted in a beautiful melamine top. Each Ozark River Portable Sink includes our On-Demand Pump/Heater System. Independent water reservoirs eliminate any cross-contamination. Mobile cabinet provides facilities with the flexibility of adding hand-washing right where they need it. Fully assembled.





Model Number	ADSTM-LM-SS1N
Model Name	Premier 1
Number of Basins	Single
Basin Material	Stainless Steel
Basin Dimensions	12" W x 10" L x 5.75" D
Top Material	Phthalates and Lead Free Melamine
Cabinet Dimensions	25.625" W x 17.625" D x 38.50 H
Cabinet Material	Phthalates and Free Melamine
Cabinet Color	Maple
Product Weight	88 lbs.
NSF Listed	Yes
GPM	0.50
Fresh Water Tank	5 Gallon
Waste Water Tank	6 Gallon
Approx Hand Washings	40 qty. 15 second hand washings
Electrical Requirements	110V, 20 AMP Dedicated Outlet and Breaker
Warranty	2 Years





Quick Facts/Standard Features

- Self-Contained Portable Sink
- NSF Listed Product
- Hot Water System
- Single Stainless Steel Basin
- Phthalates FREE Melamine Laminate Top
- Phthalates FREE Melamine Laminate Cabinet with 3 mil. Edgebanding
- Cabinet Available in Maple or Cherry
- Swivel Casters, Front Locking
- Locking Cabinet includes 2 keys
- Long Faucet Handles (ADA Compliant)
- GFCI Outlet Protection
- Exclusive Quick-Connect Tank

Standard Operating Requirements

- Each sink must have grounded, dedicated 110V, 20 AMP circuit breaker
- Dry, inside level surface.
- If extension cord is used, cord must be 12/3, rated at 20 AMPs or higher
- Water must meet EPA Standards with PH between 7.0 and 9.0.



CED 2E11-A

McCue Corporation

Cart**ParkBumper1**

Chipping a car door on a cart corral is not the way to begin a positive shopping experience. That's why the sides of CartPark Bumper are made of one big bumper. CartPark's brightly colored dual signs are situated at the front of the corral, high enough to be seen over shoppers' vans and SUVs. Like your store, it's friendly, easy to find and easy to use.

- HIGHLY VISIBLE: Colorful signage can be seen over any mini-van or SUV, increasing shopping cart return.
- SAFE: Patented top-lock construction stabilizes the unit overhead, eliminating the need for a ground frame. No more tripping hazards.
- SMART: Molded side bumpers protect car doors from dings an dents reducing damage claims.







CED 2E11-A

McCue Corporation

Cart**ParkBumper 1**



CartParkBumper 1S

Cart Width: 1 Cart Capacity: 11 Materials: Galvanized steel and plastic Available Colors: Red, Orange, Forest Green, Blue, Natural Graphics: Standard sign includes screened shopping cart graphic



CartParkBumper 1D

Cart Width: 2 Cart Capacity: 22 Materials: Galvanized steel and plastic Available Colors: Red, Orange, Forest Green, Blue, Natural Graphics: Standard sign includes screened shopping cart graphic



CartParkBumper 1T

Cart Width: 3 Cart Capacity: 33 Materials: Galvanized steel and plastic Available Colors: Red, Orange, Forest Green, Blue, Natural Graphics: Standard sign includes screened shopping cart graphic





McCue Corporation 35 Congress Street, Suite 150, Salem, MA 01970 USA Phone: (800) 800-8503 or (978) 741-8500 Fax: (978) 741-2542 Email: cservices@mccue.com

www.mccue.com

Placing an order:

There are five easy ways to order:

- 1) E-mail your order: cservices@mccue.com
- Phone our toll-free number: (800) 800-8503 or call (978) 741-2542
- 3) FAX in your order: (978) 741-2542
- 4) Mail in your purchase order
- 5) Online at www.mccue.com

CED 2E11-B

McCue Corporation Cart**Park 2X**

CartPark 2X with or without barriers is the ideal bi-directional cart corral for retailers looking to use motorized cart retrieval equipment. The simple design literally snaps together in minutes and allows entry from either side. Your parking lot looks great because more shopping carts are returned.

- **EFFICIENT DESIGN: Bi-directional** configurations are ideal for use with motorized cart retrieval equipment.
- **SMART: Molded side bumpers protect** car doors from dings an dents reducing damage claims.
- **HIGHLY VISIBLE: Colorful signage can** be seen over any mini-van or SUV, increasing shopping cart return.





CED 2E11-B

McCue Corporation

Cart**Park 2X**



CartParkStandard 2X

Cart Width: 2

Cart Capacity: 48

Materials: Galvanized steel pipe

Graphics: Standard sign includes screened text on two sides "Please Return Carts Here"; custom graphics are available



CartParkBumper 2X

Cart Width: 2

Cart Capacity: 48

Materials: Galvanized steel and plastic

Available Colors: Red, Orange, Forest Green, Blue, Natural

Graphics: Standard sign includes screened shopping cart graphic; custom graphics are available





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www.mccue.com

Placing an order:

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- 3) FAX in your order: (978) 741-2542
- 4) Mail in your purchase order
- 5) Online at www.mccue.com

CED 2E11-C

McCue Corporation

Cart**ParkCovered P**

CartPark Covered Peaked shopping cart return stations make that first impression count. Their colorful, friendly design extends a welcome to shoppers the minute they enter your parking lot - letting them know you care. CartPark Covered Peaked allows you to carry your store colors, signage and personality out into the parking lot.

- HIGHLY VISIBLE: Tri-glass panels and colored barriers offer retailers a space to extend their brand identity into the parking lot.
- INNOVATIVE: Barriers are ballasted with pea stone or sand - no more drilling holes in your parking lot.
- SMART: Molded side bumpers protect car doors from dings an dents reducing damage claims.









www.mccue.com

CED 2E11-C

McCue Corporation

Cart**ParkCovered P**



CartPark2 Covered Peaked Cart Capacity: 15 Available Colors: Red, Orange, Forest Green, Blue, and Natural

Tri-glass Panels: (2 included) does not include graphics



CartPark4 Covered Peaked Cart Capacity: 36 Available Colors: Red, Orange, Forest Green, Blue, and Natural Tri-glass Panels: (2 included) does not include graphics



CartPark8 Covered Peaked Cart Capacity: 72 Available Colors: Red, Orange, Forest Green, Blue, and Natural Tri-glass Panels: (2 included) does not include graphics



CartPark10 Covered Peaked Cart Capacity: 83 Available Colors: Red, Orange, Forest Green, Blue, and Natural Tri-glass Panels: (2 included) does not include graphics

Note: Optional side and end panels are available on all units.



McCue Corporation

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www.mccue.com

Placing an order:

There are five easy ways to order:

- 1) E-mail your order: cservices@mccue.com
- Phone our toll-free number: (800) 800-8503 or call (978) 741-2542
- 3) FAX in your order: (978) 741-2542
- 4) Mail in your purchase order
- 5) Online at www.mccue.com

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SE-582

Wall-Mounted Round Eyewash Bowl

FEATURES:

- (2) aerated yellow plastic spray outlets with integral flow control and flip-top dust caps
- Round stainless steel bowl
- Stainless steel push handle activation
- Chrome plated 1/2" NPT female brass valve
- 1/2" NPT female inlet
- 3.2 GPM (12.1 L/min) @ 30 PSI flow rate
- Cold-rolled steel, DuraJade™ powder coated mounting bracket for durability & enhanced corrosion resistance
- Universal emergency sign included

OPTIONS:

- FPV: Freeze Protection Valve
- HFO: Hand/Foot Operation
- HS: Hand held drench hose
- ILS: In-line strainer for 1/2" IPS piping
- PT: P-Trap
- SPV: Scald Protection Valve
- STW: Thermostatic Mixing Valve

STANDARDS:

• ANSI/ISEA Z358.1 certified

WARRANTY:

Visit www.speakman.com for full product warranty information • 3 Year Limited Warranty (commercial)





Information continues on next page





- STW OPTION: Add the -STW suffix to the part number, this product ships complete with the TMV
- **STW-370:** Thermostatic Mixing Valve (valve only)
- SE-TW-EW: Thermostatic Mixing Valve with necessary connections for eye and eye/ face wash products

All dimensions are in inches (millimeters) unless otherwise specified and are subject to change without notice.

Architect/Engineer Approval Space:

SPEAKMAN 400 ANCHOR MILL ROAD NEW CASTLE, DE 19720 P: 800-537-2107 F: 800-977-2747 W: WWW.SPEAKMAN.COM R: 01-AUGUST 2018

SPEAKMAN[®] CED 2M06 Wall-Mounted Round Eyewash Bowl



SPEAKMAN[®]

CED 2M06

All dimensions are in inches (millimeters) unless otherwise specified and are subject to change without notice.

Architect/Engineer Approval Space:	SPEAKMAN 400 ANCHOR MILL ROAD	P: 800-537-2107 F: 800-977-2747
	NEW CASTLE, DE 19720	W: WWW.SPEAKMAN.COM R: 01-AUGUST 2018



STEP DISPLAYS







RFD LAMINATE





Four-Step Octagonal Floral Table

- Shoppable on all sides of octagon
- Excellent spot merchandiser
- Lightweight heavy-duty ABS plastic
- Built-in ribs hold water and soil spills
- Removable top step inverts and holds water for cut flowers
- Casters provide mobility



181/

Laminate Floral Display

- Laminated for easy cleanup
- Available in round or oval
- Comes completely assembled
- Casters included provide mobility



RFD

Metal Floral Display

- Round shelves accommodate large baskets
- Mesh shelf allows good air flow
- Curved design works well as end cap or wall unit



ITEM

FDT-4 RFD LAMINATE OFD LAMINATE FEC-001 Please indicate color choice. DESCRIPTION

Four-step octagonal floral table Round floral display Oval floral display Half circle floral display



Valid to this order only!

Page 1 of 5

4343 ET06 O 4848 WW.SLDDRW



DATE		3209 Marquita Drive						
8-27-03		ARCO company Fort	Worth, Texas 76116 PH: (817) 244-8300					
8-27-03	ITEM(S)	ITEM(S) ET06 O 4848 WW						
	DWG TYPI	DWG TYPE: CONCEPT						
DATE	TITLE:	TITLE:						
DATE		ET-06 48X48 WW WITH 3 SIDES						
DATE			1					
	SIZE	^{DWG#} 4343	QUOTE#	REV.				
001PLUS	B	SCALE: 1:18	SHEET 1 OF 5	- A				
		2	1					

Valid to this order only!

ITEM NO.	QTY.	PART NO.	DESCRIPTION
1	1	OBA-CLS OAK BACK PANEL	47 7/8" X 30" PANEL
2	1	FRONT ASSEMBLY	WITH DOOR
3	2	OBA-CLS OAK SIDE PANEL	46 3/8" X 30" PANEL
4	1	PLYWOOD BOTTOM	3/4" X 44 1/4" X 44 1/4" HW PLYWOOD
5	8	2 1/2" BUTT HINGE (ZG010)	2 1/2" BUTT HINGE (ZG010)
6	1	VEG-10 A	48X48X2.5D PLASTIC LINER
7	1	4474-B OBA-CLS F&C	FRAME & CASTERS FOR OBA-CLS (DWG
8	1	DOUBLE TOUCH LATCH	DOUBLE BARREL MAGNETIC LATCH



										_			
А	С	TH	JVB	ADDED MAGNETIC LA	ADDED MAGNETIC LATCH, LOWERED INTERIOR PINE BY 3/4"				08-21-08				
	В	TN	SC SEE REDLINES, ADD BAG HOLDER OPTION			CJ	8-21-03						
	REV.	BY	CHECKED	CHECKED DESCRIPTION			APPROVED	DATE					
-		9		8	7			6		5	4		3

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В

1646-C OBA-CLS O BK.SLDDRW

	3209 M	ARCO arquita Drive
	Fort Wor	th, Texas 76116
	DWG#	RFV
	—16 4	
	ITEM(S)	
# 4474)		CLS O BK
	DWG TYPE:	
	PROE	DUCTION
	OBS-	CLS O BK
	W/STORAGI	e door & 2 1/2" Iner
	48" X	48" X 33"H
	MATERIAL:	D/PLASTIC
	FINISH:	
	PER C	
	DRAWN BY:	DAIE 8-4-03
	CHECKED BY:	DATE
		8-4-03
	CJ	8-4-03
	APPROVED BY:	DATE
	RELEASE FO PRODUCTIC	R date N
	USED ON: SCALE: 1:10	Sheet # 1 of 7
	SIZE: B	TITLE BLOCK: TB-2008
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	TOLERANCES ARE: FRACTIONS D ±1/16"	ECIMALS ANGLES X ± 060 ±1° X ± 030 X ± 035
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1 2		1

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С				STORAGE DOOR			1			
В				OBA-CLS F&C WB (DWG# 4428)						
A	C B	TN SC	JS HH	REPLACE THE 48X48 LINER AND THE PLATIC RESERVIOR WITH THE ITEM OBLR-48X48 BK LINER AND DRAIN SYSTEM CHANGE LINER PART NUMBER TO " VEG-OBA 6" LI "	DARYL K.	7-29-13 8-27-07	NOTE: 1" PLA THF B	ASTIC BUMP	ER WRAP- TOP SI AT	-A-ROU
·	REV.	BY CH	HECKED	DESCRIPTION REVISIONS	APPROVED	DATE				
l			9	8 7 6		5	4			3
ge	1 of	1		476	2-C OBA	-CLS IC.SL	LDDRW			

OBLR-48X48 BK LINER w/DRAIN SYSTEM

ITEM NO. QTY. PART NO. DESCRIPTION 1 OBA-CLS WOOD OBA-CLS WOOD NO BAG HOLDER (DRAWI 1 1 OBA-CLS F&C WB 2 OBA-CLS F&C WB (DRAWING#4428) 3 1 1" BUMPER ASSEMBLY 1" PLASTIC BUMPER WRAP-A-ROUND (CHOI 1 OBLR-48X48 LINER/RESERVOIR SYSTEM FOR OBA BINS (DV 4

4

ING#1646)			ARCO
ICE OF COLORS)		Fort Wor	th, Texas 76116
WG#7644)		DWG#	17) 244-8300 REV.
		476	52 C
			-CLS IC
		DWG TYPE: PROE	DUCTION
		OBA-CLS V	WITH STORAGE DOOR
		MATERIAL: WOOI FINISH: PER C	D/PLASTIC SUSTOMER
		DRAWN BY:	DAIE 12/5/2003
		CHECKED BY: SC	DATE 12/5/2003
		APPROVED BY:	DATE
		APPROVED BY:	DATE
		RELEASE FO PRODUCTIC	R DATE DN
		USED ON:	
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IND FLUSH FROM		THIS DOCUMENT CO PROPRIETARY AND C THE MARCO COMPA REPRODUCED, PUBLI IN ANY FORM OR DIS PART WITHOUT THE A THE MARCO COMPA COPYRIGHT 2007 TH	NTAINS INFORMATION CONFIDENTIAL TO ANY AND MAY NOT BE SHED, OR DISTRIBUTED SCLOSED IN WHOLE OR IN UTHORIZATION OF ANY. ALL RIGHTS RESERVED, E MARCO COMPANY.
	<u>ົ</u>	DO NOT SO	CALE DRAWING
I.	2	I	I

10/2/2013



2055 VEG-106 EC #5.SLDDRW

Valid to this order only!

4/26/2007

SPEAKMAN® SE-420

Pedestal Mounted Rectangular Eye/Face Wash Bowl

FEATURES:

- (6) brass chrome-plated aerated sprays
- Yellow polypropylene shrouds
- $\frac{1}{2}$ in. NPT female, chrome-plated valve
- Stainless steel push handle activator
- ½ in. NPT female inlet
- Brass, chrome-plated in-line strainer
- 9.3 gpm @ 30 PSI
- 1-1/4 in. NPT female waste
- Stainless steel bowl
- Universal emergency sign included



DuraJade Stainless Steel

COMPLIANCE:

• Certified to ANSI/ISEA Z358.1

OPTIONS:

Add suffix to model #	
• Freeze protection valve	-FPV
 Hand/foot operation 	-HFO
 SE-920 hand held drench hose 	HS
• P-Trap	🛛 -PT
 Scald protection valve 	-SPV
• $\frac{1}{2}$ in. stainless steel ball valve	-SSBV2

WARRANTY:

• 3 year limited





SPEAKMAN®

CED 2R05

DIMENSIONS: NOTE: 1. All dimensions are in inches (millimeters) unless otherwise specified and are subject to change without notice.



Architect/Engineer Approval Space:

P: 800-537-2107 F: 800-977-2747 W: WWW.SPEAKMAN.COM R: MARCH 2017









Pallet Rack Storage Systems



Ridg-U-Tier II Pallet Racks

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- Larger foot pad
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- Heavier bracing
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- Optional 3-pin connection
- Complete range of rack accessories
- Unique center reinforcing rib
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Vertical beam to beam spacing greater than 108" consult factory									

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410 L	10490	8360	6940	5930	5060	3990	3220	2650	2220
450S			10250	8760	7640	6260	5060	4170	3490
465 L			8480	7250	6320	5480	4420	3650	3060
500 S			11940	10200	8900	7890	6580	5420	4550
600 S			14750	12600	10990	9750	8750	7940	6670

Vertical adjustable pallet load stops

Optional

replaceable

automatic lock



Other Ridg-U-Rak Storage Systems



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COMPLEX STEEL & WIRE

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STREET E





EZ Wire Rack Decking

Greatly improves the safety and efficiency of new and existing pallet rack installations. The high strength steel construction provides an excellent surface for varying size loads. Easily installed, it requires minimum maintenance and is much more durable than wood.

The open mesh design has many unique features:

- Unrestricted visibility (especially useful for locating loads on upper and lower levels)
- Dust and small debris do not accumulate on shelves.
- Unrestricted heating and cooling
- Unrestricted light providing a brighter and safer storage area
- Economic
- Allows fire equipment to function more efficiently. (In many cases insurance cost may be substantially reduced)



Top wires run front to back to provide a smooth loading surface.



Decking shown here as a safeguard to prevent misaligned pallets and loose items from falling to lower levels.



Flared channel used for box and structural beams.

Standard channel provides support for step type beams.



Inverted channels available A for clean areas.

The standard waterfall helps decks remain in place.





Vertical dividers help organize areas with smaller items. They can be manufactured to run front to back or left to right. Non-waterfall and inside waterfall decks available for special applications.

Various size and gauge meshes available for different loads.

Decking for Light Duty Bulk Shelving



Options for Wire Rack Decking

- Flared Channels for Structural and Box Beams
- Inverted Channels for Clean Areas
- Surface Plates for Point Loads
- Cross Channels for Strip Loads
- Extra Heavy-Duty Mesh
- Hot-dipped Galvanized Finish
- Dividers
- Back Guards
- Inside Waterfalls

Distributed by:



36254 Annapolis · Wayne, MI 48184 Ph/ 734-326-1600 · Fax/ 734-326-7421

CATALOG NO. EZ199








Pallet Rack Storage Systems



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- Complete range of rack accessories
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108"	6,700	8,500	10,100	8,300	10,900	13,100	20,500
Vertical bea	m to bear	n spacing	greater t	han 108"	consult fa	actory	

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600 S			14750	12600	10990	9750	8750	7940	6670	

IGH PERFORMANCE & RIDG-U-TIER II ACCESSORI

CED 2R17



Other Ridg-U-Rak Storage Systems



Horizontal Pallet Transfer System

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SPECIFICATION & SUBMITTAL SHEET

JOB NAME

_____ ITEM_____









AMCO II[®] SHELVES

	LEN	IGTH	WIDTH		WEI	GHT
CAT. NO.	in.	mm	in.	mm	lbs.	kgs.
A1224*	237/8	610	12 ¹ /8	305	61⁄2	2.9
A1230*	297/8	760	12 ¹ /8	305	71⁄2	3.4
A1236*	357/8	915	12 ¹ /8	305	9	4.1
A1242*	41 ⁷ /8	1065	12 ¹ /8	305	10	4.5
A1248*	47 ⁷ /8	1220	12 ¹ /8	305	12	5.4
A1254*	53 ⁷ /8	1370	12 ¹ /8	305	13	5.9
A1260*	59 ⁷ /8	1525	12 ¹ /8	305	14	6.3
A1266*	65 ⁷ /8	1675	12 ¹ /8	305	14½	6.6
A1272*	71 ⁷ /8	1830	12 ¹ /8	305	15½	7.0
A1524*	237/8	610	15¹/s	380	71⁄2	3.4
A1530*	297/8	760	15 ¹ /8	380	81⁄2	3.9
A1536*	357/8	915	15 ¹ /8	380	10	4.5
A1542*	417/8	1065	15 ¹ /8	380	11½	5.2
A1548*	47 ⁷ /8	1220	15 ¹ /8	380	13½	6.1
A1554*	53 ⁷ /8	1370	15 ¹ /8	380	14½	6.6
A1560*	59 ⁷ /8	1525	15 ¹ /8	380	16	7.3
A1566*	657/8	1675	15 ¹ /8	380	17	7.7
A1572*	71 ⁷ /8	1830	15 ¹ /8	380	19	8.6
A1824*	237/8	610	18¹/s	455	81/2	3.6
A1830*	297/8	760	18¹/s	455	91⁄2	4.3
A1836*	357/8	915	18¹/s	455	11	5.0
A1842*	417/8	1065	18 ¹ /8	455	13	5.9
A1848*	47 ⁷ /8	1220	18 ¹ /8	455	15	6.8
A1854*	53 ⁷ /8	1370	18¹/s	455	16	7.5
A1860*	59 ⁷ /8	1525	18 ¹ /8	455	18	8.2
A1866*	657/8	1675	18 ¹ /8	455	20	9.1
A1872*	71 ⁷ /8	1830	18 ¹ /8	455	21½	9.7
SHELVIN ments bet	G-BY-THI ween 24"	E-INCH® - 72" long i	Lengths a n widths of	lso availa 12", 15",	ble in 1" 18", 21" a	incre- and 24"

ments between 24" - 72" long in widths of 12", 15", 18", 21" and 24" in all finishes except stainless steel and chrome plating.

AMCO II® POSTS

	HEI	GHT	WEIG	iHT	
CAT. NO.	in.	mm	lbs.	kgs.	
FOR STA	TIONARY	UNITS			
P08*	8	200	1	0.5	
P14*	14	355	2	0.9	
P33*	33	840	3	1.4	
P54*	54	1370	4	1.8	
P64*	64	1625	41/2	2.0	
P72*	72	1830	5	2.3	
P84*	84	2130	51/2	2.5	

- X Spacing interval of post notches = 2" on center.
- A Spacing interval as illustrated = 22".
- A1 Shelf clearance = 20³/₄" (always 1¹/₄" less than A).
- **B** Outside length of shelf = $47^{7}/\epsilon^{3}$ (always $1/\epsilon^{3}$ less than nominal).
- **B1** Clearance between posts = $45^{1/8}$ " (always $2^{7/8}$ " less than nominal).
- Outside width of shelf = 18¹/₈" (always ¹/₈" more than nominal).
- C1 Width clearance between posts = 15⁵/₁₆" (always 2¹¹/₁₆" less than nominal).
- Z Minimum clearance from bottom post notch to floor = 11/4"

To qualify for National Sanitation Foundation acceptance, the bottom shelf of stationary units should be installed in the sixth post notch from the bottom. For mobile units, install the bottom shelf in the lowest possible position.

For maximum strength of both stationary and mobile units, always use at least 3 shelves.

WIDTH

WEIGHT

I ENGTH

CAT. NO.	in.	mm	in.	mm	lbs.	kgs.
A2124*	23 ⁷ /8	610	21 ¹ /8	535	9	4.1
A2130*	29 ⁷ /8	760	21 ¹ /8	535	101⁄2	4.8
A2136*	357/8	915	21 ¹ /8	535	12	5.4
A2142*	41 ⁷ /8	1065	21 ¹ /8	535	15	6.8
A2148*	47 ⁷ /8	1220	21 ¹ /8	535	17	7.7
A2154*	53 ⁷ /8	1370	21 ¹ /8	535	191⁄2	8.8
A2160*	59 ⁷ /8	1525	21 ¹ /8	535	201⁄2	9.3
A2166*	65 ⁷ /8	1675	21 ¹ /8	535	22	10.0
A2172*	717/8	1830	21 ¹ /8	535	24	10.9
A2424*	237/8	610	24 ¹ /8	610	10	4.5
A2430*	29 ⁷ /8	760	24 ¹ /8	610	12	5.4
A2436*	357/8	915	24 ¹ /8	610	131⁄2	6.1
A2442*	41 ⁷ /8	1065	24 ¹ /8	610	16½	7.5
A2448*	47 ⁷ /8	1220	24 ¹ /8	610	18½	8.4
A2454*	53 ⁷ /8	1370	24 ¹ /8	610	21	9.5
A2460*	59 ⁷ /8	1525	24 ¹ /8	610	23	10.4
A2466*	65 ⁷ /8	1675	24 ¹ /8	610	25	11.3
A2472*	717/8	1830	24 ¹ /8	610	27	12.2
A3030*	297/8	760	30 ¹ /8	760	13	5.9
A3036*	357/8	915	30 ¹ /8	760	17	7.7
A3042*	41 ⁷ /8	1065	30 ¹ /8	760	21	9.5
A3048*	47 ⁷ /8	1220	30 ¹ /8	760	23	10.4
A3060*	59 ⁷ /8	1525	30 ¹ /8	760	29	13.1
A3072*	71 ⁷ /8	1830	30 ¹ /8	760	35	15.9
A3630*	29 ⁷ /8	760	36 ¹ /8	910	17	7.7
A3636*	357/8	915	36 ¹ /8	910	20	9.1
A3642*	41 ⁷ /8	1065	36 ¹ /8	910	23	10.4
A3648*	47 ⁷ /8	1220	36 ¹ /8	910	25	11.3
A3660*	59 ⁷ /8	1525	36 ¹ /8	910	31	14.0
A3672*	71 ⁷ /8	1830	36 ¹ /8	910	37	16.8

	HE	IGHT	WEIG	GHT	
CAT. NO.	in.	mm	lbs.	kgs.	
FOR MOE	BILE UNIT	S			
PC33*	33	840	3	1.4	
PC54*	54	1370	4	1.8	
PC64*	64	1625	41/2	2.0	
PC72*	72	1830	5	2.3	
PC84*	84	2130	51⁄2	2.5	
Cas Amas	® aatalaa	for costor on coil	finations and a		liet

See Amco[®] catalog for caster specifications and a complete list of accessories.

*Add the suffix of the desired finish or color to the catalog number when ordering: ZP = Zinc Protoxy, CP = Chrome Plated, PG = Polygard® coated, SS = Stainless Steel, BK = Black, W = White, GR = Gray, R = Red, Y = Yellow, G = Green, HS = Hammertone Silver. Shelves 30" and 36" wide are not available in Zinc Protoxy finish.



901 N. Kilpatrick Avenue, Chicago, IL 60651 Phone: 773-379-2100 • Toll Free: 800-621-4023 • Fax:773-379-5183

AMCO II[®] WIRE SHELVES

SPECIFICATIONS

Shelves to have #8 (.162") gauge crosswires spaced 1-1/16" on centers with cross-braces 5/16"(.3125") minimum of 6" on center and running perpendicular to crosswires. Cross braces welded at each end inside 5/8" leg of channel 9/16" x 1%" x .090" thick with legs of channel pointed to center of shelf A square tapered 1%" high steel collar is to welded at each corner. Additionally a suitable number of.262" rebrace wires are welded to the underside of 18", 21" and 24" wide shelves in lengths of 54" and longer. All contact points are welded.

AMCO II® POSTS

Posts are .065" thick (16 gauge), 1" O.D. square tubes notched every 2" on each corner of the post. A polypropylene post cap is installed on the top of each post. Installed on the bottom of each stationary post is a nylon housing for a steel leveler 3/8" - 16 x 1½". The leveler has a 7/8" hex head and a 3⁄4" threadless shoulder to eliminate deposits of mop strands or broom fibers.

FINISHES

ZINC PROTOXY

The ideal finish for most dry environment uses. Double protected: first with electro-zinc (chromate) plating, and then with Protoxy, a clear non-toxic epoxy. This protective finish fights rusting four times longer than simple plating.

CHROME PLATING

The same rust-fighting qualities of electro-zinc plating with a higher luster. Recommended when appearance is the highest importance.

POLYGARD® COATING

The finish of choice when shelving will be used in high moisture environments. First, electro-zinc plated. Then a rustinhibiting O.D. coat. Finally, blue plastic resin epoxy is electrostatically applied. Fully guaranteed ten years against corrosion.

EPOXY COATING

Choose from a wide choice of electrostatically applied epoxy coated shelving colors: black and gray. Also available not yet NSF accepted: white, red, yellow, green, and hammertone silver.

STAINLESS STEEL

The ultimate, all purpose material for both moist and dry storage conditions. Never a corrosion worry.

METHOD OF ASSEMBLY

Four nylon tapered collets are to be packed with each shelf. The collet may be installed onto any notched position on the post. Posts are installed into the



tapered shelf collars which mate with the tapered nylon collet to securely seat the shelf onto the post without the need for tools.

Item # _____ Quantity _____

CED 4HW1

C.S.I. Section 11400

U

HOBART

701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

625A TABLE TOP WRAPPER

STANDARD FEATURES

- Heavy Gauge Aluminum Base
- Aluminum and Stainless Steel Finish
- Stainless Steel Wrapping Surface
- Large Rubber Feet
- Solid State Controlled Hot Rod Cutoff Bar
- Hot Plate Covered with Non-Stick Cover
- Stretch Film 18" Maximum Width

MODEL

□ 625A Table Top Wrapper

Specifications, Details and Dimensions on Inside and Back.



625A TABLE TOP WRAPPER

625A TABLE TOP WRAPPER

CED 41 W1 HOBART 701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

SPECIFICATIONS

DIMENSIONS: 221/2" W x 26" D x 83/4" H

HOT PLATE: Generous 6" x 15" size with non-stick cover. Eliminates packages sticking, prevents film residue buildup. **ELECTRICAL:** 115/60/1, 6.5 amps; CUL approval **SHIPPING WEIGHT:** 28 lbs.

DETAILS AND DIMENSIONS



As continued product improvement is a policy of Hobart, specifications are subject to change without notice.



Gravity ice dispense eliminates scooping



Ice storage and transport system

with gravity dispense cart loading

Features

Designed with speed, safety and sanitation in mind

- elevated ice storage bin uses gravity to dispense ice through a chute 15 times faster than scooping
- one pull of the gate bar fills the SmartCART $^{\rm M}$ 240 ice cart with 200 lb (91 kg) of ice without any hand contact
- dispensing directly into cart eliminates scooping by hand to help prevent cross-contamination
- cart reduces the risk of back injuries by eliminating carrying containers of ice
- optional Totes[™] ice carriers may be ordered SmartCART 240 will hold 6 Totes for use in applications where the ice needs to be lifted out of the SmartCART 240
- industry exclusive SmartGATE^{*} ice shield controls the flow of ice to reduce spills and limit contact with ice

Fresher ice

- first ice in is first ice out

Ice compatibility

- Compatible with cube ice, flake ice and customer-preferred Chewblet[®] ice

Durable, user friendly construction

- full stainless bin exterior and base
- corrosion-resistant poly bin liner and custom-cut stainless steel top
- heavy duty "stay-open" PowerHinge™ door hinge easy one hand open and close without door catches

SmartCART 240 insulated all-poly carts

- cart drains to bin system when parked in bay

Includes:

- one, two or three SmartCART 240 ice transport cart(s) depending on model
- paddle with hanging bracket

Accessories

Set of 6 Totes ice carriers (Totes not standard) (item# ABICETOTP)

Additional carts and accessories (refer to form# 3435)

Job

Item

Follett Europe Polska Sp. z o.o. Mokry Dwór 26C 83-021 Wiślina, Poland +48 (58) 785-6140 | Fax: +48 (58) 785-6159 folletteurope.com





Specification

Maximum bin capacity ¹	see model table below
W1 Bin width	see model table below
D1 Bin depth ³	see model table below
D2 Bin depth with door closed	48.00" (121.9 cm)
D3 Bin depth with door fully extended	58.50" (148.6 cm)
H1 Bin height (adjustable) ⁴	see model table below
H2 Bin base height (adjustable)	38.75" (98.4 cm)
Required door access	see model table below
W2 Cart width	24.50" (62.2 cm)
D4 Cart depth	41.50" (105.4 cm)
H4 Cart height at front edge	35.83" (91.0 cm)
H5 Cart height at rear edge	28.74" (73.0 cm)
W3 Tote width	15.62" (39.7 cm)
D5 Tote depth	7.12" (18.08 cm)
H6 Tote height	15.00" (38.1 cm)
Temperature range	60 - 90 F (16 - 32 C)
C1 Drain ⁶	1.25" ID PVC female slip fit (reversible to opposite side)
Dispense rate	up to 5 lb (2.3 kg) per second
Ice compatibility	cube ice, flake ice and Chewblet ice
Shipping weight	see model table below
NOTE: For indoor use only	

SHORT FORM SPECIFICATION: Ice transport system to be Follett model ______equipped with SmartCART 240 ice transport cart(s). Elevated bin to hold approximately _______ Ib (kg) of ice. Exterior of bin and base to be full stainless steel. All bins (except ITS500NS) to have polyethylene ice access door assembly, polyethylene lift door with PowerHinge door hinge, and SmartGATE ice shield. Stainless steel bin top to be custom-cut for ice machine(s) to be used. Bin liner walls to be of non-corroding polyethylene and insulated with non-CFC foam polyurethane. Bin hopper to be of polyethylene with extra large opening(s) to facilitate ice flow. Base to have built-in drains for bins and carts, and insulated drain troughs, shutter door, and drain to minimize condensation. Cart(s) to be of insulated one-piece molded polyethylene, with plastic lid, four heavy-duty casters (two swivel with one step-on lock and two non-swivel). Carts and optional Totes ice carriers to store below bin when not in use and to drain when positioned in bay. All models to have adjustable flanged feet and paddle. NSF listed.

Warranty:

Follett Corporation warrants to the original purchaser that the cabinet exterior, including the top and trim, and the interior liner will be free of corrosion for 5 years from the date of installation. Date of installation shall not exceed 90 days from date of shipment. Parts and labor for corrosion repair within this 5 year period are covered under this warranty. All other integral components are covered against defects in material and workmanship under normal use and service for a period of 5 years from the date of installation. Date of installation shall not exceed 90 days from date of shipment. Parts and labor for repair within this 5 year period are covered under this warranty. Removal of ice machine to service bin and any labor costs incurred are expressly excluded from this warranty.

Dimensional drawing



PowerHinge, SmartCART and Totes are trademarks of Follett Corporation. Chewblet, Follett and SmartGATE are registered trademarks of Follett Corporation, registered in the US. Follett reserves the right to change specifications at any time without obligation. Certifications may vary depending on country of origin.

Model	Number of carts	Maximum bin capacity¹ lb (kg)	Maximum capacity with cart(s) ² lb (kg)	Cubic Volume cu ft (m)	Width - W1 in (cm)	Depth³ - D1 in (cm)	Height⁴ - H1 in (cm)	Required door access⁵ in (cm)	Approximate ship weight lb (kg)
ITS500NS-31	1	382 (174)	622 (283)	12.70 (0.36)	31.00 (78.7)5	40.00 (101.6)	60.00 (152.4)	32.00 (81.3)	371 (169)
ITS700SG-31	1	652 (296)	892 (405)	21.70 (0.61)	31.00 (78.7)5	40.00 (101.6)	75.00 (190.5)	32.00 (81.3)	398 (181)
ITS1350SG-60	2	1327 (603)	1567 (712)	44.20 (1.25)	60.00 (152.4)5	40.00 (101.6)	75.00 (190.5)	41.00 (104.1)	712 (323)
ITS2250SG-60	2	2133 (968)	2373 (1077)	71.10 (2.01)	60.00 (152.4)5	40.00 (101.6)	97.00 (246.4)	41.00 (104.1)	822 (373)
ITS1700SG-90	3	1716 (779)	1986 (901)	58.20 (1.65)	90.00 (228.6)5	40.00 (101.6)	70.00 (177.8)	41.00 (104.1)	978 (444)
ITS3250SG-90	3	3255 (1477)	3495 (1586)	108.50 (3.07)	90.00 (228.6)5	40.00 (101.6)	97.00 (246.4)	41.00 (104.1)	1145 (519)

Notes:

¹ Computed on cubic volume of bin. Does not reflect cart capacity or voids that can occur due to pyramiding.

² Each cart holds 240 lb (109 kg) without optional Totes ice carriers, 150 lb (68 kg) with Totes ice carriers.

³ Add 8.00" (20.32 cm) to depth (D) for lower door assembly (easily removed for installation access).

⁴ Special top required for ice machines weighing more than 1000 lb (454 kg). Add 2.12" (5.38 cm) to height. Contact factory.

⁵ Required clearance for installation access through doors (may require removal of door assembly).

⁶ Follett recommends installation of a floor drain with grate with all ice storage bins. Consider cart positioning when locating the drain. Clearance

required to pull cart from below bin — minimum 42.00" (106.7 cm), optimal 56.00" (142.2 cm).

Follett Europe Polska Sp. z o.o. Mokry Dwór 26C 83-021 Wiślina, Poland +48 (58) 785-6140 | Fax: +48 (58) 785-6159 folletteurope.com





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Gravity ice dispense eliminates scooping



Ice storage and transport system

with gravity dispense cart loading

Features

Designed with speed, safety and sanitation in mind

- elevated ice storage bin uses gravity to dispense ice through a chute 15 times faster than scooping
- one pull of the gate bar fills the SmartCART $^{\rm M}$ 240 ice cart with 200 lb (91 kg) of ice without any hand contact
- dispensing directly into cart eliminates scooping by hand to help prevent cross-contamination
- cart reduces the risk of back injuries by eliminating carrying containers of ice
- optional Totes[™] ice carriers may be ordered SmartCART 240 will hold 6 Totes for use in applications where the ice needs to be lifted out of the SmartCART 240
- industry exclusive SmartGATE^{*} ice shield controls the flow of ice to reduce spills and limit contact with ice

Fresher ice

- first ice in is first ice out

Ice compatibility

- Compatible with cube ice, flake ice and customer-preferred Chewblet[®] ice

Durable, user friendly construction

- full stainless bin exterior and base
- corrosion-resistant poly bin liner and custom-cut stainless steel top
- heavy duty "stay-open" PowerHinge™ door hinge easy one hand open and close without door catches

SmartCART 240 insulated all-poly carts

- cart drains to bin system when parked in bay

Includes:

- one, two or three SmartCART 240 ice transport cart(s) depending on model
- paddle with hanging bracket

Accessories

Set of 6 Totes ice carriers (Totes not standard) (item# ABICETOTP)

Additional carts and accessories (refer to form# 3435)

Job

Item

Follett Europe Polska Sp. z o.o. Mokry Dwór 26C 83-021 Wiślina, Poland +48 (58) 785-6140 | Fax: +48 (58) 785-6159 folletteurope.com





Specification

Maximum bin capacity ¹	see model table below
W1 Bin width	see model table below
D1 Bin depth ³	see model table below
D2 Bin depth with door closed	48.00" (121.9 cm)
D3 Bin depth with door fully extended	58.50" (148.6 cm)
H1 Bin height (adjustable) ⁴	see model table below
H2 Bin base height (adjustable)	38.75" (98.4 cm)
Required door access	see model table below
W2 Cart width	24.50" (62.2 cm)
D4 Cart depth	41.50" (105.4 cm)
H4 Cart height at front edge	35.83" (91.0 cm)
H5 Cart height at rear edge	28.74" (73.0 cm)
W3 Tote width	15.62" (39.7 cm)
D5 Tote depth	7.12" (18.08 cm)
H6 Tote height	15.00" (38.1 cm)
Temperature range	60 - 90 F (16 - 32 C)
C1 Drain ⁶	1.25" ID PVC female slip fit (reversible to opposite side)
Dispense rate	up to 5 lb (2.3 kg) per second
Ice compatibility	cube ice, flake ice and Chewblet ice
Shipping weight	see model table below
NOTE: For indoor use only	

SHORT FORM SPECIFICATION: Ice transport system to be Follett model ______equipped with SmartCART 240 ice transport cart(s). Elevated bin to hold approximately _______ Ib (kg) of ice. Exterior of bin and base to be full stainless steel. All bins (except ITS500NS) to have polyethylene ice access door assembly, polyethylene lift door with PowerHinge door hinge, and SmartGATE ice shield. Stainless steel bin top to be custom-cut for ice machine(s) to be used. Bin liner walls to be of non-corroding polyethylene and insulated with non-CFC foam polyurethane. Bin hopper to be of polyethylene with extra large opening(s) to facilitate ice flow. Base to have built-in drains for bins and carts, and insulated drain troughs, shutter door, and drain to minimize condensation. Cart(s) to be of insulated one-piece molded polyethylene, with plastic lid, four heavy-duty casters (two swivel with one step-on lock and two non-swivel). Carts and optional Totes ice carriers to store below bin when not in use and to drain when positioned in bay. All models to have adjustable flanged feet and paddle. NSF listed.

Warranty:

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Dimensional drawing



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ITS700SG-31	1	652 (296)	892 (405)	21.70 (0.61)	31.00 (78.7)5	40.00 (101.6)	75.00 (190.5)	32.00 (81.3)	398 (181)
ITS1350SG-60	2	1327 (603)	1567 (712)	44.20 (1.25)	60.00 (152.4)5	40.00 (101.6)	75.00 (190.5)	41.00 (104.1)	712 (323)
ITS2250SG-60	2	2133 (968)	2373 (1077)	71.10 (2.01)	60.00 (152.4)5	40.00 (101.6)	97.00 (246.4)	41.00 (104.1)	822 (373)
ITS1700SG-90	3	1716 (779)	1986 (901)	58.20 (1.65)	90.00 (228.6)5	40.00 (101.6)	70.00 (177.8)	41.00 (104.1)	978 (444)
ITS3250SG-90	3	3255 (1477)	3495 (1586)	108.50 (3.07)	90.00 (228.6)5	40.00 (101.6)	97.00 (246.4)	41.00 (104.1)	1145 (519)

Notes:

¹ Computed on cubic volume of bin. Does not reflect cart capacity or voids that can occur due to pyramiding.

² Each cart holds 240 lb (109 kg) without optional Totes ice carriers, 150 lb (68 kg) with Totes ice carriers.

³ Add 8.00" (20.32 cm) to depth (D) for lower door assembly (easily removed for installation access).

⁴ Special top required for ice machines weighing more than 1000 lb (454 kg). Add 2.12" (5.38 cm) to height. Contact factory.

⁵ Required clearance for installation access through doors (may require removal of door assembly).

⁶ Follett recommends installation of a floor drain with grate with all ice storage bins. Consider cart positioning when locating the drain. Clearance

required to pull cart from below bin — minimum 42.00" (106.7 cm), optimal 56.00" (142.2 cm).

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CED 4L01 service dependability excellence quality integrity

Specifications

Standard Lockers the industry benchmark Single, Double, Triple & Four Tier, Box, Two Person, Duplex and Double Door



PART 1- GENERAL

1.1 RELATED DOCUMENTS:

We suggest use of your standard office reference to drawing, general and special conditions, etc.

1.2 SCOPE:

Furnish and install new steel lockers, accessories and finish metal trim as shown or indicated on approved drawings. Concrete or masonry bases, wood furring, blocking or trim as may be required by drawings are included in other sections of this specification.

1.2.1 SUBMITTALS:

Shop Drawings: Submit drawings showing locker types, sizes and quantities, including all necessary details relating to anchoring, trim installation and relationship to adjacent surfaces.

Numbering: The locker numbering sequence shall be provided by the approving authority and noted on the approved drawings returned to the locker contractor.

Color Charts: Provide color charts showing manufacturer's available colors. If required by normal office procedures or in the event of non-standard color selection, request samples of paint on metal.

Lock Combination Listings and Master Keys: Use only when combination locks are

specified. Delivered directly to the owner's representative.

1.3 QUALITY ASSURANCE:

1.3.1 UNIFORMITY: Provide each type of metal locker as produced by a single manufacturer, including necessary accessories, fittings and fasteners.

1.3.2 JOB CONDITIONS: Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage during delivery, handling, storage and installation.

PART 2- PRODUCTS

2.1 MANUFACTURER:

Republic Storage Systems, LLC. Products by other manufacturers may be approved provided they meet the detailed specifications written below. Approval procedure shall be as specified in the General Conditions of these locker specifications.

2.2 LOCKERS:

Configuration:

- \bigcirc Single Tier \bigcirc Double Tier \bigcirc Triple Tier
- Four Tier Two Person Duplex
- \bigcirc Double Door \bigcirc Box

Size:

- Color:
- No. of Locker Frames:

No. of Locker Openings:





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Standard Lockers the industry benchmark

U			U			

	Single Tier	Double Tier	Triple Tier	Four Tier	3-High Box	Ski Locker	4-High Box	5-High Box	6-High Box	Two Person	Duplex	Double Door
W	р н	н	н	Н	н		н	Н	Н	Н	н	н
9 1	2 48, 54, 60, 72	30, 36			20, 24		15, 18					
9 1	5 48, 54, 60, 72	30, 36			20, 24							
9 1	8 60, 72	30, 36			20, 24							
9 2	1 60, 72	30, 36										
9 2	4 60, 72	30, 36										
12 1	2 36, 48, 54, 60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 1	5 36, 48, 54, 60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 1	8 36, 48, 60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 2	1 60, 72	30, 36										
12 2	60, 72	30, 36										
15 1	2 60, 72	30, 36			20, 24			12, 14.4	12	60, 72		
15 1	5 60, 72	30, 36			20, 24		15, 18	12, 14.4	12	60, 72	60, 72	
15 1	<mark>8</mark> 60, 7 <mark>2</mark>	30, 36			20, 24		15, 18	12, 14.4	12	60, 72	60, 72	
15 2	1 60, 72	30, 36								60, 72		
15 2	4 60, 72	30, 36										
18 1	2 60, 72	30, 36										
18 1	5 60, 72	30, 36								60, 72		
18 1	8 60, 72	30, 36								60, 72	60, 72	
18 2	1 60, 72	30, 36									60, 72	
18 2	4 60, 72	30, 36										
24 1	8 60, 72	30, 36										60, 72
24 2	1 60, 72	30, 36										60, 72
24 2	4 60, 72	30, 36										60, 72

CED 4L01

Specifications

Standard Lockers the industry benchmark Single, Double, Triple & Four Tier, Box, Two Person, Duplex and Double Door

2.3 FABRICATION - GENERAL:

2.3.1 MATERIAL: All major steel parts shall be made of mild cold rolled steel, free from imperfections and capable of taking a high grade baked enamel or powder coat finish.

-ALTERNATE: Specified locker components shall be manufactured from Galvannealed steel and finished by manufacturer's standard process.

2.3.2 FINISH: Surfaces of the steel shall be thoroughly cleaned, phosphatized and prepared for baked enamel or powder coat finish in accordance with paint manufacturer's instructions.

2.3.3 CONSTRUCTION: Lockers shall be built on the unit principle - each locker shall have an individual door and frame, an individual top, bottom, back and shelves with common intermediate uprights separating units.

2.3.4 DOOR FRAMES: Door frames shall be 16 gauge formed into 1" wide face channel shapes with a continuous vertical door strike, integral with the frame on both sides of the door opening. Double, triple or four tier locker cross frame members shall be 16 gauge channel shaped securely welded to vertical framing members to ensure a square and rigid assembly. Intermediate cross frame members are not required on box lockers.

2.3.5 DOORS: Shall be 16 gauge or 18 gauge steel for short or narrow doors as required by manufacturer's design, formed with a full channel shape on the lock side to fully conceal the lock bar, channel formation on the hinge side and right angle formation across the top and bottom. Single tier doors 60" and 72" in height and 18" and wider shall have a diagonal reinforcing angle welded to inner surface. Doors for Standard Box Lockers 3, 4, 5 and 6 openings high are 16 or 18 gauge steel and shall be formed with right angle flanges on all four sides. Locker doors shall be ventilated by louvers on the face of each door, top and bottom.

2.3.6 PRE-LOCKING DEVICE: All "tiered" lockers shall be equipped with a positive automatic pre-locking device, whereby the locker may be locked while door is open and then closed without unlocking and without damaging locking mechanism.

2.3.7 LATCHING: Latching shall be a one-piece, pre-lubricated spring steel latch, completely contained within the lock bar under tension to provide rattle-free operation. The lock bar shall be of pre-coated, double-channel steel construction. The lock bar shall be securely contained in the door channel by self-lubricating polyethylene guides that isolate the lock bar from metal-to-metal contact with the door. There shall be three latching points for

lockers over 42" in height and two latching points for all tiered lockers 42" and under in height. The lock bar travel is limited by contacting resilient high-quality elastomeric cushioning devices concealed inside the lock bar. Frame hooks to accept latching shall be of heavy gauge steel, set close in and welded to the door frame. Continuous vertical door strike shall protect frame hooks from door slam shall protect frame hooks from door slam damage. A soft rubber silencer shall be securely installed on each frame hook to absorb the impact caused by closing of the door. Box locker doors shall be equipped with a padlock hasp and a stainless steel strike plate with an integral handle pull. Box locker doors may also be equipped with built-in locks.

2.3.8 HANDLES: A non-protruding 14 gauge lifting trigger and slide plate shall transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel recessed pocket. This stainless steel pocket shall contain a recessed area for the various lock types available and a mounting area for the number plate.

2.3.9 HINGES: Hinges shall be 2" high, 5-knuckle, full loop, tight pin style, securely welded to frame and double riveted to the inside of the door flange. Locker doors 42" high and less shall have two hinges. Doors over 42" high shall have three hinges.

2.3.10 BODY: The body of the locker consists of 24 gauge upright sheets, backs, tops, bottoms and shelves. Tops, bottoms and shelves are flanged on all four sides; backs are flanged on two sides. Uprights shall be offset at the front and flanged at the rear to provide a double lapped rear corner. All bolts and nuts shall be zinc plated.

2.3.11 INTERIOR EQUIPMENT: Single tier lockers over 42" high shall have one hat/book shelf. Other tiered lockers do not require shelves. All single, double and triple tier lockers shall have one double prong rear hook (single prong in 9" width) and two single prong side hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets. Locker openings under 20" high are not equipped with hooks.

2.3.12 NUMBER PLATES: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2" high. Plates shall be attached with rivets to the lower surface within the recessed handle pocket.

2.3.13 COLOR: Doors and exposed body parts shall be finished in colors selected from Republic's collection of twenty-five baked enamel colors. Non-exposed body parts shall be finished in #83 Decorator Tan (baked enamel).

-ALTERNATE: Doors and exposed body parts shall be finished in colors selected from Republic's collection of nine powder coat colors. Non-exposed body parts shall be finished in #83 Decorator Tan (baked enamel).

-ALTERNATE: Entire locker shall be finished in colors selected from Republic's collection of nine powder coat colors.

-OPTION: Specifier may modify above paragraph if non-standard custom colors are selected.

2.3.14 ASSEMBLY: Assembly of all locker components shall be accomplished by the use of zinc plated, low round head, slotless, fin neck machine screws with hex nuts, producing a strong mechanical connection.

-OPTION: Keps nuts and bolts or rivets and washers may be used for assembly.

PART 3 - EXECUTION

3.1 INSTALLATION:

Lockers must be installed in accordance with manufacturer's approved drawings and assembly instructions. Installation shall be level and plumb with flush surfaces and rigid attachment to anchoring surfaces. Space fasteners at 36" O.C. or less, as recommended by manufacturer. Use fasteners appropriate to load and anchoring substratum. Use reinforcing plates wherever fasteners could distort metal. Various trim accessories where shown, such as sloping tops, fillers, bases, recessed trim, etc., shall be installed using concealed fasteners. Flush, hairline joints are provided at all abutting trim parts and at adjoining surfaces.

3.2 ADJUSTMENT:

Upon completion of installation, inspect lockers and adjust as necessary for proper door and locking mechanism operation.

3.3 QUALITY ASSURANCE:

Republic reserves the right to modify the design and/or change specifications or colors/finish consistent with our policy of product excellence.

NOTE: For user safety, all Republic lockers must be secured to the wall and/or floor prior to use.

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CED 4LO2 dependability service excellence quality integrity

Specifications

Standard Lockers the industry benchmark Single, Double, Triple & Four Tier, Box, Two Person, Duplex and Double Door



PART 1- GENERAL

1.1 RELATED DOCUMENTS:

We suggest use of your standard office reference to drawing, general and special conditions, etc.

1.2 SCOPE:

Furnish and install new steel lockers, accessories and finish metal trim as shown or indicated on approved drawings. Concrete or masonry bases, wood furring, blocking or trim as may be required by drawings are included in other sections of this specification.

1.2.1 SUBMITTALS:

Shop Drawings: Submit drawings showing locker types, sizes and quantities, including all necessary details relating to anchoring, trim installation and relationship to adjacent surfaces.

Numbering: The locker numbering sequence shall be provided by the approving authority and noted on the approved drawings returned to the locker contractor.

Color Charts: Provide color charts showing manufacturer's available colors. If required by normal office procedures or in the event of non-standard color selection, request samples of paint on metal.

Lock Combination Listings and Master Keys: Use only when combination locks are

Keys: Use only when combination locks are specified. Delivered directly to the owner's representative.

1.3 QUALITY ASSURANCE:

1.3.1 UNIFORMITY: Provide each type of metal locker as produced by a single manufacturer, including necessary accessories, fittings and fasteners.

1.3.2 JOB CONDITIONS: Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage during delivery, handling, storage and installation.

PART 2- PRODUCTS

2.1 MANUFACTURER:

Republic Storage Systems, LLC. Products by other manufacturers may be approved provided they meet the detailed specifications written below. Approval procedure shall be as specified in the General Conditions of these locker specifications.

2.2 LOCKERS:

Configuration:

- \bigcirc Single Tier \bigcirc Double Tier \bigcirc Triple Tier
- Four Tier Two Person Duplex
- \bigcirc Double Door \bigcirc Box

Size:

Color:

No. of Locker Frames:

No. of Locker Openings:





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Standard Lockers the industry benchmark

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	Single Tier	Double Tier	Triple Tier	Four Tier	3-High Box	Ski Locker	4-High Box	5-High Box	6-High Box	Two Person	Duplex	Double Door
WC	н	Н	Н	Н	Н		Н	Н	Н	Н	Н	Н
9 12	48, 54, 60, 72	30, 36			20, 24		15, 18					
9 1	5 48, 54, 60, 72	30, 36			20, 24							
9 18	60, 72	30, 36			20, 24							
9 2	60, 72	30, 36										
9 24	4 60, 72	30, 36										
12 12	2 36, 48, 54, 60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 1	5 36, 48, 54, 60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 18	36, 48, 60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 2	60, 72	30, 36										
12 2	4 60, 72	30, 36										
15 12	60, 72	30, 36			20, 24			12, 14.4	12	60, 72		
15 1	60, 72	30, 36			20, 24		15, 18	12, 14.4	12	60, 72	60, 72	
15 18	60, 72	30, <mark>36</mark>			20, 24		15, 18	12, 14.4	12	60, 72	60, 72	
15 2 ⁻	60, 72	30, 36								60, 72		
15 24	4 60, 72	30, 36										
18 12	60, 72	30, 36										
18 1	60, 72	30, 36								60, 72		
18 18	60, 72	30, 36								60, 72	60, 72	
18 2 ⁻	60, 72	30, 36									60, 72	
18 24	4 60, 72	30, 36										
24 18	60, 72	30, 36										60, 72
24 2	60, 72	30, 36										60, 72
24 24	60, 72	30, 36										60, 72

CED 4LO2

Specifications

Standard Lockers the industry benchmark Single, Double, Triple & Four Tier, Box, Two Person, Duplex and Double Door

2.3 FABRICATION - GENERAL:

2.3.1 MATERIAL: All major steel parts shall be made of mild cold rolled steel, free from imperfections and capable of taking a high grade baked enamel or powder coat finish.

-ALTERNATE: Specified locker components shall be manufactured from Galvannealed steel and finished by manufacturer's standard process.

2.3.2 FINISH: Surfaces of the steel shall be thoroughly cleaned, phosphatized and prepared for baked enamel or powder coat finish in accordance with paint manufacturer's instructions.

2.3.3 CONSTRUCTION: Lockers shall be built on the unit principle - each locker shall have an individual door and frame, an individual top, bottom, back and shelves with common intermediate uprights separating units.

2.3.4 DOOR FRAMES: Door frames shall be 16 gauge formed into 1" wide face channel shapes with a continuous vertical door strike, integral with the frame on both sides of the door opening. Double, triple or four tier locker cross frame members shall be 16 gauge channel shaped securely welded to vertical framing members to ensure a square and rigid assembly. Intermediate cross frame members are not required on box lockers.

2.3.5 DOORS: Shall be 16 gauge or 18 gauge steel for short or narrow doors as required by manufacturer's design, formed with a full channel shape on the lock side to fully conceal the lock bar, channel formation on the hinge side and right angle formation across the top and bottom. Single tier doors 60" and 72" in height and 18" and wider shall have a diagonal reinforcing angle welded to inner surface. Doors for Standard Box Lockers 3, 4, 5 and 6 openings high are 16 or 18 gauge steel and shall be formed with right angle flanges on all four sides. Locker doors shall be ventilated by louvers on the face of each door, top and bottom.

2.3.6 PRE-LOCKING DEVICE: All "tiered" lockers shall be equipped with a positive automatic pre-locking device, whereby the locker may be locked while door is open and then closed without unlocking and without damaging locking mechanism.

2.3.7 LATCHING: Latching shall be a one-piece, pre-lubricated spring steel latch, completely contained within the lock bar under tension to provide rattle-free operation. The lock bar shall be of pre-coated, double-channel steel construction. The lock bar shall be securely contained in the door channel by self-lubricating polyethylene guides that isolate the lock bar from metal-to-metal contact with the door. There shall be three latching points for

lockers over 42" in height and two latching points for all tiered lockers 42" and under in height. The lock bar travel is limited by contacting resilient high-quality elastomeric cushioning devices concealed inside the lock bar. Frame hooks to accept latching shall be of heavy gauge steel, set close in and welded to the door frame. Continuous vertical door strike shall protect frame hooks from door slam shall protect frame hooks from door slam damage. A soft rubber silencer shall be securely installed on each frame hook to absorb the impact caused by closing of the door. Box locker doors shall be equipped with a padlock hasp and a stainless steel strike plate with an integral handle pull. Box locker doors may also be equipped with built-in locks.

2.3.8 HANDLES: A non-protruding 14 gauge lifting trigger and slide plate shall transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel recessed pocket. This stainless steel pocket shall contain a recessed area for the various lock types available and a mounting area for the number plate.

2.3.9 HINGES: Hinges shall be 2" high, 5-knuckle, full loop, tight pin style, securely welded to frame and double riveted to the inside of the door flange. Locker doors 42" high and less shall have two hinges. Doors over 42" high shall have three hinges.

2.3.10 BODY: The body of the locker consists of 24 gauge upright sheets, backs, tops, bottoms and shelves. Tops, bottoms and shelves are flanged on all four sides; backs are flanged on two sides. Uprights shall be offset at the front and flanged at the rear to provide a double lapped rear corner. All bolts and nuts shall be zinc plated.

2.3.11 INTERIOR EQUIPMENT: Single tier lockers over 42" high shall have one hat/book shelf. Other tiered lockers do not require shelves. All single, double and triple tier lockers shall have one double prong rear hook (single prong in 9" width) and two single prong side hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets. Locker openings under 20" high are not equipped with hooks.

2.3.12 NUMBER PLATES: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2" high. Plates shall be attached with rivets to the lower surface within the recessed handle pocket.

2.3.13 COLOR: Doors and exposed body parts shall be finished in colors selected from Republic's collection of twenty-five baked enamel colors. Non-exposed body parts shall be finished in #83 Decorator Tan (baked enamel).

-ALTERNATE: Doors and exposed body parts shall be finished in colors selected from Republic's collection of nine powder coat colors. Non-exposed body parts shall be finished in #83 Decorator Tan (baked enamel).

-ALTERNATE: Entire locker shall be finished in colors selected from Republic's collection of nine powder coat colors.

-OPTION: Specifier may modify above paragraph if non-standard custom colors are selected.

2.3.14 ASSEMBLY: Assembly of all locker components shall be accomplished by the use of zinc plated, low round head, slotless, fin neck machine screws with hex nuts, producing a strong mechanical connection.

-OPTION: Keps nuts and bolts or rivets and washers may be used for assembly.

PART 3 - EXECUTION

3.1 INSTALLATION:

Lockers must be installed in accordance with manufacturer's approved drawings and assembly instructions. Installation shall be level and plumb with flush surfaces and rigid attachment to anchoring surfaces. Space fasteners at 36" O.C. or less, as recommended by manufacturer. Use fasteners appropriate to load and anchoring substratum. Use reinforcing plates wherever fasteners could distort metal. Various trim accessories where shown, such as sloping tops, fillers, bases, recessed trim, etc., shall be installed using concealed fasteners. Flush, hairline joints are provided at all abutting trim parts and at adjoining surfaces.

3.2 ADJUSTMENT:

Upon completion of installation, inspect lockers and adjust as necessary for proper door and locking mechanism operation.

3.3 QUALITY ASSURANCE:

Republic reserves the right to modify the design and/or change specifications or colors/finish consistent with our policy of product excellence.

 ${\rm NOTE:}$ For user safety, all Republic lockers must be secured to the wall and/or floor prior to use.

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CED 4L05 dependability service excellence quality integrity

Specifications

Standard Lockers the industry benchmark Single, Double, Triple & Four Tier, Box, Two Person, Duplex and Double Door



PART 1- GENERAL

1.1 RELATED DOCUMENTS:

We suggest use of your standard office reference to drawing, general and special conditions, etc.

1.2 SCOPE:

Furnish and install new steel lockers, accessories and finish metal trim as shown or indicated on approved drawings. Concrete or masonry bases, wood furring, blocking or trim as may be required by drawings are included in other sections of this specification.

1.2.1 SUBMITTALS:

Shop Drawings: Submit drawings showing locker types, sizes and quantities, including all necessary details relating to anchoring, trim installation and relationship to adjacent surfaces.

Numbering: The locker numbering sequence shall be provided by the approving authority and noted on the approved drawings returned to the locker contractor.

Color Charts: Provide color charts showing manufacturer's available colors. If required by normal office procedures or in the event of non-standard color selection, request samples of paint on metal.

Lock Combination Listings and Master

Keys: Use only when combination locks are specified. Delivered directly to the owner's representative.

1.3 QUALITY ASSURANCE:

1.3.1 UNIFORMITY: Provide each type of metal locker as produced by a single manufacturer, including necessary accessories, fittings and fasteners.

1.3.2 JOB CONDITIONS: Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage during delivery, handling, storage and installation.

PART 2- PRODUCTS

2.1 MANUFACTURER:

Republic Storage Systems, LLC. Products by other manufacturers may be approved provided they meet the detailed specifications written below. Approval procedure shall be as specified in the General Conditions of these locker specifications.

2.2 LOCKERS:

Configuration:

- \bigcirc Single Tier \bigcirc Double Tier \bigcirc Triple Tier
- Four Tier Two Person Duplex
- \bigcirc Double Door \bigcirc Box

Size:

Color:

No. of Locker Frames:

No. of Locker Openings:





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Standard Lockers the industry benchmark

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	Single T	lier	Double Tier	Triple Tier	Four Tier	3-High Box	Ski Locker	4-High Box	5-High Box	6-High Box	Two Person	Duplex	Double Door
W	D H		Н	Н	Н	Н		Н	Н	Н	Н	Н	Н
9 1	2 48, 54, 60	, 72	30, 36			20, 24		15, 18					
9 1	5 48, 54, 60	, 72	30, 36			20, 24							
9 1	8 60, 72	2	30, 36			20, 24							
9 2	1 60, 72		30, 36										
9 2	4 60, 72	2	30, 36										
12 1	2 36, 48, 54, 6	60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 1	5 36, 48, 54,	60, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 1	8 36, 48, 60	, 72	24, 30, 36, 42	20, 24	18	20, 24		15, 18	12, 14.4	12			
12 2	1 60, 72		30, 36										
12 2	.4 60, 72		30, 36										
15 1	2 60, 72		30, 36			20, 24			12, 14.4	12	60, 72		
15 1	5 60, 72		30, 36			20, 24		15, 18	12, 14.4	12	60, 72	60, 72	
15 1	<mark>8</mark> 60, 7 <mark>2</mark>		30, 36			20, 24		15, 18	12, 14.4	12	60, 72	60, 72	
15 2	1 60, 72	2	30, 36								60, 72		
15 2	4 60, 72		30, 36										
18 1	2 60, 72		30, 36										
18 1	5 60, 72		30, 36								60, 72		
18 1	8 60, 72		30, 36								60, 72	60, 72	
18 2	1 60, 72		30, 36									60, 72	
18 2	4 60, 72	2	30, 36										
24 1	8 60, 72		30, 36										60, 72
24 2	1 60, 72		30, 36										60, 72
24 2	4 60, 72	2	30, 36										60, 72

CED 4LO5

Specifications

Standard Lockers the industry benchmark Single, Double, Triple & Four Tier, Box, Two Person, Duplex and Double Door

2.3 FABRICATION - GENERAL:

2.3.1 MATERIAL: All major steel parts shall be made of mild cold rolled steel, free from imperfections and capable of taking a high grade baked enamel or powder coat finish.

-ALTERNATE: Specified locker components shall be manufactured from Galvannealed steel and finished by manufacturer's standard process.

2.3.2 FINISH: Surfaces of the steel shall be thoroughly cleaned, phosphatized and prepared for baked enamel or powder coat finish in accordance with paint manufacturer's instructions.

2.3.3 CONSTRUCTION: Lockers shall be built on the unit principle - each locker shall have an individual door and frame, an individual top, bottom, back and shelves with common intermediate uprights separating units.

2.3.4 DOOR FRAMES: Door frames shall be 16 gauge formed into 1" wide face channel shapes with a continuous vertical door strike, integral with the frame on both sides of the door opening. Double, triple or four tier locker cross frame members shall be 16 gauge channel shaped securely welded to vertical framing members to ensure a square and rigid assembly. Intermediate cross frame members are not required on box lockers.

2.3.5 DOORS: Shall be 16 gauge or 18 gauge steel for short or narrow doors as required by manufacturer's design, formed with a full channel shape on the lock side to fully conceal the lock bar, channel formation on the hinge side and right angle formation across the top and bottom. Single tier doors 60" and 72" in height and 18" and wider shall have a diagonal reinforcing angle welded to inner surface. Doors for Standard Box Lockers 3, 4, 5 and 6 openings high are 16 or 18 gauge steel and shall be formed with right angle flanges on all four sides. Locker doors shall be ventilated by louvers on the face of each door, top and bottom.

2.3.6 PRE-LOCKING DEVICE: All "tiered" lockers shall be equipped with a positive automatic pre-locking device, whereby the locker may be locked while door is open and then closed without unlocking and without damaging locking mechanism.

2.3.7 LATCHING: Latching shall be a one-piece, pre-lubricated spring steel latch, completely contained within the lock bar under tension to provide rattle-free operation. The lock bar shall be of pre-coated, double-channel steel construction. The lock bar shall be securely contained in the door channel by self-lubricating polyethylene guides that isolate the lock bar from metal-to-metal contact with the door. There shall be three latching points for

lockers over 42" in height and two latching points for all tiered lockers 42" and under in height. The lock bar travel is limited by contacting resilient high-quality elastomeric cushioning devices concealed inside the lock bar. Frame hooks to accept latching shall be of heavy gauge steel, set close in and welded to the door frame. Continuous vertical door strike shall protect frame hooks from door slam shall protect frame hooks from door slam damage. A soft rubber silencer shall be securely installed on each frame hook to absorb the impact caused by closing of the door. Box locker doors shall be equipped with a padlock hasp and a stainless steel strike plate with an integral handle pull. Box locker doors may also be equipped with built-in locks.

2.3.8 HANDLES: A non-protruding 14 gauge lifting trigger and slide plate shall transfer the lifting force for actuating the lock bar when opening the door. The exposed portion of the lifting trigger shall be encased in a molded ABS thermoplastic cover that provides isolation from metal-to-metal contact and be contained in a formed 20 gauge stainless steel recessed pocket. This stainless steel pocket shall contain a recessed area for the various lock types available and a mounting area for the number plate.

2.3.9 HINGES: Hinges shall be 2" high, 5-knuckle, full loop, tight pin style, securely welded to frame and double riveted to the inside of the door flange. Locker doors 42" high and less shall have two hinges. Doors over 42" high shall have three hinges.

2.3.10 BODY: The body of the locker consists of 24 gauge upright sheets, backs, tops, bottoms and shelves. Tops, bottoms and shelves are flanged on all four sides; backs are flanged on two sides. Uprights shall be offset at the front and flanged at the rear to provide a double lapped rear corner. All bolts and nuts shall be zinc plated.

2.3.11 INTERIOR EQUIPMENT: Single tier lockers over 42" high shall have one hat/book shelf. Other tiered lockers do not require shelves. All single, double and triple tier lockers shall have one double prong rear hook (single prong in 9" width) and two single prong side hooks in each compartment. All hooks shall be made of steel, formed with ball points, zinc-plated and attached with two bolts or rivets. Locker openings under 20" high are not equipped with hooks.

2.3.12 NUMBER PLATES: Each locker shall have a polished aluminum number plate with black numerals not less than 1/2" high. Plates shall be attached with rivets to the lower surface within the recessed handle pocket.

2.3.13 COLOR: Doors and exposed body parts shall be finished in colors selected from Republic's collection of twenty-five baked enamel colors. Non-exposed body parts shall be finished in #83 Decorator Tan (baked enamel).

-ALTERNATE: Doors and exposed body parts shall be finished in colors selected from Republic's collection of nine powder coat colors. Non-exposed body parts shall be finished in #83 Decorator Tan (baked enamel).

-ALTERNATE: Entire locker shall be finished in colors selected from Republic's collection of nine powder coat colors.

-OPTION: Specifier may modify above paragraph if non-standard custom colors are selected.

2.3.14 ASSEMBLY: Assembly of all locker components shall be accomplished by the use of zinc plated, low round head, slotless, fin neck machine screws with hex nuts, producing a strong mechanical connection.

-OPTION: Keps nuts and bolts or rivets and washers may be used for assembly.

PART 3 - EXECUTION

3.1 INSTALLATION:

Lockers must be installed in accordance with manufacturer's approved drawings and assembly instructions. Installation shall be level and plumb with flush surfaces and rigid attachment to anchoring surfaces. Space fasteners at 36" O.C. or less, as recommended by manufacturer. Use fasteners appropriate to load and anchoring substratum. Use reinforcing plates wherever fasteners could distort metal. Various trim accessories where shown, such as sloping tops, fillers, bases, recessed trim, etc., shall be installed using concealed fasteners. Flush, hairline joints are provided at all abutting trim parts and at adjoining surfaces.

3.2 ADJUSTMENT:

Upon completion of installation, inspect lockers and adjust as necessary for proper door and locking mechanism operation.

3.3 QUALITY ASSURANCE:

Republic reserves the right to modify the design and/or change specifications or colors/finish consistent with our policy of product excellence.

NOTE: For user safety, all Republic lockers must be secured to the wall and/or floor prior to use.

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7-PS-90





Please See Tankless Heater **Specification Sheet** for Details





NSF.)

7-PS-95



7-PS-18



Item #: _____ Otv #: ____

CED 4S00

Model #:__

Project #:__

Keyhole Bracket for easier installation and greater stability.



FEATURES:

One piece Deep Drawn sink bowl design.

Sink bowl is 10" x 14" x 5"*.

(*7-PS-18 sink bowl is 14" x 16" x 6")

All sink bowls have a large liberal radii with a minimum dimension of 2" and are rectangular in design for increased capacity.

Keyhole wall mount bracket.

Stainless steel basket drain 1-1/2" IPS.

Flush-to-wall unit.

"Hands Free" splash mounted gooseneck faucet furnished with aerator. Foot Pedal Valve for water operation.

Easy removable panel to access hidden plumbing.

Specific Features:

7-PS-95 towel dispenser with hinged towel box. Unit uses standard C-fold towels. Liquid Soap dispenser.

7-PS-99 towel dispenser & soap dispenser plus trash receptacle & cabinet storage.

CONSTRUCTION:

All TIG welded.

Welded areas blended to match adjacent surfaces and to a satin finish.

Die formed Countertop Edge with a No-Drip offset.

One sheet of stainless steel - No Seams.

MATERIAL:

Heavy gauge type 304 series stainless steel. Wall mounting bracket is galvanized and of offset design. All fittings are brass / chrome plated unless otherwise indicated.

MECHANICAL:

Spout supply is 1/2" IPS male thread.

Single pedal mixing valve with brass & rough chrome plated with built in check valve. Front operated temperature adjustment.

(Contractor on site must connect faucet to foot pedal operated valves.)

Standard Faucet conforms to NSF 61 Standard 9. Faucets Are AB1953 Lead Free Compliant.

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B-5a 200 Heartland Boulevard, Edgewood, NY 11717-8380



STAINLESS STEEL

REGALINE SINKS One Compartment - One Drainboard

(Specify Drainboard Location)



FEATURES:

Tile edge for ease of installation.

One piece **Deep Drawn** sink bowls with integral drainboards with splash.

Featuring the single bowl unit design.

All sink bowls have a large liberal 3" radius.

Placement of the welded leg assembly ensures stability and furnishes direct support of the column load requirement for the entire sink unit.

"940" series is supplied with adjustable front and rear cross brace featuring leg casting to secure left to right cross bracing.

CONSTRUCTION:

All TIG welded.

Welded areas blended to match adjacent surfaces and to a satin finish.

Gussets welded to a die-embossed reinforcing channel.

ltem #:	Qty #:
Model #:	
Project #:	

MATERIALS:

Spec-Line (940 Series):

11" High Splash.

Standard (930 Series): 16 gauge type 304 stainless steel 8" High Splash.

14 gauge type 304 stainless steel

CED 4S01L

- Super Saver (900 Series): 18 gauge type 304 stainless steel 8" High Splash.
- LEGS: 1 5/8" diameter tubular stainless steel.
 - Stainless steel gussets & channels.
 - Stainless Steel 1" adjustable bullet feet.

YES! It's SeaMLess!

STANDARD 930 Series SPEC-LINE 940 Series SUPER SAVER 900 Series 16 Ga. 304 S/S 14 Ga. 304 S/S 18 Ga. 304 S/S 12" Water Level 12" Water Level Water Level **O.A. LENGTH** DRBD. SIZE Approx. Wt. Approx. Wt. Approx. Wt. Cubic **BOWL SIZE** (inches) (mm) (inches) (mm) MODEL # MODEL # MODEL # (lbs.) (lbs.) (lbs.) Feet 93-1-24-18R or L 40" 1016 18" 457 94-1-24-18R or L 93 75 9-1-24-18R or L 65 20 16 x 20 93-1-24-24R or L 46' 1168 24" 610 94-1-24-24R or L 98 80 9-1-24-24R or L 73 24 (406 x 508) 58" 1473 *36" 914 94-1-24-36R or L 114 93-1-24-36R or L 90 9-1-24-36R or L 78 26 80 93-21-20-18R or L 44" 1066 18" 457 94-21-20-18R or L 98 9-21-20-18R or L 71 20 20 x 20 93-21-20-24R or L 86 9-21-20-24R or L 50" 1270 24" 610 94-21-20-24R or L 104 77 23 (508 x 508) 62" 1575 *36" 914 127 93-21-20-36R or L 107 9-21-20-36R or L 94-21-20-36R or L 91 31 84 18" 100 93-61-18-18R or L 42" 1051 457 94-61-18-18R or L 9-61-18-18R or L 75 24 18 x 24 93-61-18-24R or L 92 48" 1203 24" 610 94-61-18-24R or L 106 9-61-18-24R or L 84 27 (457 x 610) 60" 1508 *36" 130 93-61-18-36R or L 109 914 94-61-18-36R or L 9-61-18-36R or L 95 38 93-41-24-24R or L 105 **54**" 1372 <mark>24"</mark> 610 94-41-24-24R or L 126 9-41-24-24R or L 92 28 24 x 24 1676 *36" 149 93-41-24-36R or L 126 66" 914 110 (610 x 610) 94-41-24-36R or L 9-41-24-36R or L 42 93-81-20-18R or L 116 18" 94-81-20-18R or L 139 9-81-20-18R or L 44" 1066 457 107 36 20 x 28 122 50" 1270 24" 610 94-81-20-24R or L 146 93-81-20-24R or L 9-81-20-24R or L 113 46 (508 x 711) 62" 1575 *36" 93-81-20-36R or L 142 914 94-81-20-36R or L 170 9-81-20-36R or L 133 54 14" Water Level 17" Flood Level * Regalines with 36" Drainboards are Supplied 12" Water Level 12" Water Level 15" Flood Level 15" Flood Level with Two Sets of Legs for Support.



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> ______ C-2

DIMENSIONS and SPECIFICATIONS

TOL Overall: ± .500" Interior: ± .250"







(Left hand Drainboard Shown)

DESC	CRIPT	ION							940 SERIES 900 & 930 SER						SERI	IES	
BOWL (SIZE)	Overall Length	DRBD (SIZE)	Recommended Use	A	В	С	D	V	w	x	Y	Z	v	w	x	Y	z
16x20	40" 46" 58"	18" 24" *36"	DISH SINKS	20"	16"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
20x20	44" 50" 62"	18" 24" *36"	DISH & POT SINKS	20"	20"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
18x24	42" 48" 60"	18" 24" *36"	POT & PAN SINKS	24"	18"	15 5/8"	31"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
24x24	<mark>54")</mark> 66"	<mark>24"</mark> *36"	POT SINKS	<mark>24"</mark>	<mark>24"</mark>	15 5/8"	<mark>31"</mark>	38"	11"	14"	20"	<mark>45"</mark>	38"	8"	12"	22"	42"
20x28	44" 50" 62"	18" 24" *36"	PAN SINKS	28"	20"	17 5/8"	35"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"

* Regalines with 36" Drainboards are Supplied with Two Sets of Legs for Support.

PLUMBING ROUGH-IN



MECHANICAL:

- Supply is 1/2" IPS hot & cold.
- Faucet holes on 8" centers.Faucets are not included
- (see accessories).
- Waste drains are 1 1/2" IPS S/S basket type, located in center of sink bowl, and are included.







ADVANCE TABCO is constantly engaged in a program of improving our products. Therefore, we reserve the right to change specifications without prior notice. © ADVANCE TABCO, SEPTEMBER 2014


STAINLESS STEEL

REGALINE SINKS One Compartment - One Drainboard

(Specify Drainboard Location)



FEATURES:

Tile edge for ease of installation.

One piece **Deep Drawn** sink bowls with integral drainboards with splash.

Featuring the single bowl unit design.

All sink bowls have a large liberal 3" radius.

Placement of the welded leg assembly ensures stability and furnishes direct support of the column load requirement for the entire sink unit.

"940" series is supplied with adjustable front and rear cross brace featuring leg casting to secure left to right cross bracing.

CONSTRUCTION:

All TIG welded.

Welded areas blended to match adjacent surfaces and to a satin finish.

Gussets welded to a die-embossed reinforcing channel.

Item #:	Qty #:	
Model #:		
Project #:		

MATERIALS:

Spec-Line (940 Series):

11" High Splash.

Standard (930 Series): 16 gauge type 304 stainless steel 8" High Splash.

14 gauge type 304 stainless steel

CED 4S01R

- Super Saver (900 Series): 18 gauge type 304 stainless steel 8" High Splash.
- LEGS: 1 5/8" diameter tubular stainless steel.
 - Stainless steel gussets & channels.
 - Stainless Steel 1" adjustable bullet feet.

YES! It's SeaMLess!

STANDARD 930 Series SPEC-LINE 940 Series SUPER SAVER 900 Series 16 Ga. 304 S/S 14 Ga. 304 S/S 18 Ga. 304 S/S 12" Water Level 12" Water Level Water Level **O.A. LENGTH** DRBD. SIZE Approx. Wt. Approx. Wt. Approx. Wt. Cubic **BOWL SIZE** (inches) (mm) (inches) (mm) MODEL # MODEL # MODEL # (lbs.) (lbs.) (lbs.) Feet 93-1-24-18R or L 40" 1016 18" 457 94-1-24-18R or L 93 75 9-1-24-18R or L 65 20 16 x 20 93-1-24-24R or L 46' 1168 24" 610 94-1-24-24R or L 98 80 9-1-24-24R or L 73 24 (406 x 508) 58" 1473 *36" 914 94-1-24-36R or L 114 93-1-24-36R or L 90 9-1-24-36R or L 78 26 80 93-21-20-18R or L 44" 1066 18" 457 94-21-20-18R or L 98 9-21-20-18R or L 71 20 20 x 20 93-21-20-24R or L 86 9-21-20-24R or L 50" 1270 24" 610 94-21-20-24R or L 104 77 23 (508 x 508) 62" 1575 *36" 914 127 93-21-20-36R or L 107 9-21-20-36R or L 94-21-20-36R or L 91 31 84 18" 100 93-61-18-18R or L 42" 1051 457 94-61-18-18R or L 9-61-18-18R or L 75 24 18 x 24 93-61-18-24R or L 92 48" 1203 24" 610 94-61-18-24R or L 106 9-61-18-24R or L 84 27 (457 x 610) 60" 1508 *36" 130 93-61-18-36R or L 109 914 94-61-18-36R or L 9-61-18-36R or L 95 38 93-41-24-24R or L 105 **54**" 1372 <mark>24"</mark> 610 94-41-24-24R or L 126 9-41-24-24R or L 92 28 24 x 24 1676 *36" 149 93-41-24-36R or L 126 66" 914 110 (610 x 610) 94-41-24-36R or L 9-41-24-36R or L 42 93-81-20-18R or L 116 18" 94-81-20-18R or L 139 9-81-20-18R or L 44" 1066 457 107 36 20 x 28 122 50" 1270 24" 610 94-81-20-24R or L 146 93-81-20-24R or L 9-81-20-24R or L 113 46 (508 x 711) 62" 1575 *36" 93-81-20-36R or L 142 914 94-81-20-36R or L 170 9-81-20-36R or L 133 54 14" Water Level 17" Flood Level * Regalines with 36" Drainboards are Supplied 12" Water Level 12" Water Level 15" Flood Level 15" Flood Level with Two Sets of Legs for Support.



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DIMENSIONS and SPECIFICATIONS

TOL Overall: ± .500" Interior: ± .250"







(Left hand Drainboard Shown)

DESC	CRIPT	ON		_				940 SERIES 900 & 930 SERIES									IES
BOWL (SIZE)	Overall Length	DRBD (SIZE)	Recommended Use	A	В	С	D	V	w	x	Y	z	v	w	x	Y	z
16x20	40" 46" 58"	18" 24" *36"	DISH SINKS	20"	16"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
20x20	44" 50" 62"	18" 24" *36"	DISH & POT SINKS	20"	20"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
18x24	42" 48" 60"	18" 24" *36"	POT & PAN SINKS	24"	18"	15 5/8"	31"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
24x24	<mark>54")</mark> 66"	<mark>24"</mark> *36"	POT SINKS	<mark>24"</mark>	<mark>24"</mark>	15 5/8"	<mark>31"</mark>	38"	11"	14"	20"	<mark>45"</mark>	38"	8"	12"	22"	42"
20x28	44" 50" 62"	18" 24" *36"	PAN SINKS	28"	20"	17 5/8"	35"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"

* Regalines with 36" Drainboards are Supplied with Two Sets of Legs for Support.

PLUMBING ROUGH-IN



MECHANICAL:

- Supply is 1/2" IPS hot & cold.
- Faucet holes on 8" centers.Faucets are not included
- (see accessories).
- Waste drains are 1 1/2" IPS S/S basket type, located in center of sink bowl, and are included.







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CED 4S02D STAINLESS STEEL **REGALINE SINKS**

Two Compartment - Two Drainboards



FEATURES:

Tile edge for ease of installation.

One piece Deep Drawn sink bowls with integral drainboards with splash.

All sink bowls have a large liberal 3" radius.

Placement of the welded leg assembly ensures stability and furnishes direct support of the column load requirement for the entire sink unit.

"94" Series is supplied with adjustable front and rear cross brace featuring leg casting to secure left to right cross bracing.

ltem #:	Qty #:	
Model #:		_
Project #: _		_



Recessed Bowl Surface Accommodates Poly-Vance Cutting Boards & Sink Covers



CONSTRUCTION:

All TIG welded.

Welded areas blended to match adjacent surfaces and to a satin finish.

Gussets welded to a die-embossed reinforcing channel.

MATERIALS: Spec-Line (94 Series):

	11" High Splash.
Standard (93 Series):	16 gauge type 304 stainless stee 8" High Splash.
Super Saver (9 Series):	18 gauge type 304 stainless stee

18 gauge type 304 stainless steel 8" High Splash.

14 gauge type 304 stainless steel

LEGS: • 1 5/8" diameter tubular stainless steel.

- Stainless steel gussets & channels.
- Stainless Steel 1" adjustable bullet feet.

STANDARD 93 Series

SPEC-LINE 94 Series SUPER SAVER 9 Series 0.A. DRBD. Cu. Model # WT. Model # WT. Model # WT. **Bowl Size** Length Size Ft. <u>16 Ga. 304 S/S</u> <u>18 Ga. 304 S/S</u> 14 Ga. 304 S/S 12" Water Level 12" Water Level 14" Water Lev 72" 18" 94-2-36-18RL 141 lbs. 93-2-36-18RL 118 lbs. 9-2-36-18RL 100 lbs. 40 16" x 20" 85" 94-2-36-24RL 93-2-36-24RL 9-2-36-24RL 24" 156 lbs. 130 lbs. 110 lbs. 46 109' 36"* 94-2-36-36RL 212 lbs. 93-2-36-36RL 169 lbs. 9-2-36-36RL 144 lbs. 58 81" 18" 94-22-40-18RL 176 lbs. 93-22-40-18RL 147 lbs. 9-22-40-18RL 125 lbs. 44 20" x 20" 93" 24" 94-22-40-24RL 220 lbs. 93-22-40-24RL 184 lbs. 9-22-40-24RL 162 lbs. 50 93-22-40-36RL 237 lbs. 36" 215 lbs. 117" 94-22-40-36RL 273 lbs. 9-22-40-36RL 72 77' 18" 94-62-36-18RL 247 lbs. 93-62-36-18RL 206 lbs. 9-62-36-18RL 181 lbs. 50 18" x 24" 94-62-36-24RL 93-62-36-24RL 9-62-36-24RL 226 lbs. 89" 24" 277 lbs. 241 lbs. 58 36"* 94-62-36-36RL 93-62-36-36RL 271 lbs. 113" 341 lbs. 297 lbs. 9-62-36-36RL 96 101' 24" 94-42-48-24RL 339 lbs. 93-42-48-24RL 295 lbs. 9-42-48-24RL 259 lbs. 65 24" x 24" 125" 36"* 94-42-48-36RL 391 lbs. 93-42-48-36RL 339 lbs. 9-42-48-36RL 314 lbs 96 81" 18" 94-82-40-18RL 251 lbs. 93-82-40-18RL 219 lbs. 9-82-40-18RL 194 lbs. 64 20" x 28" 93" 24" 94-82-40-24RL 294 lbs. 93-82-40-24RL 253 lbs. 9-82-40-24RL 228 lbs. 73 117" 36"* 94-82-40-36RL 333 lbs. 93-82-40-36RL 287 lbs. 9-82-40-36RL 261 lbs. 96 14" Water Level 12" Water Level 12" Water Level Regalines with 36" Drainboards are

Supplied with Two Additional Legs (per drainboard) for Support.

15" Flood Level Weights & Cubes Are Approximate



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17" Flood Level

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15" Flood Level

DIMENSIONS and SPECIFICATIONS

TOL Overall: ± .500" Interior: ± .250" ALL DIMENSIONS ARE TYPICAL







DESCRIPTION									94	SER	IES		9	& 9	3 SI	ERIE	S
BOWL (SIZE)	Overall Length	DRBD (SIZE)	Recommended Use	A	В	С	D	V	w	x	Y	Z	v	w	x	Y	Z
	72"	18"															
16x20	85"	24"	DISH	20"	16"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
	109"	*36"	SINKS														
	81"	18"	DIGU														
20x20	93"	24"	DISH &	20"	20"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
	117"	*36"	FUI SINKS														
	77"	18"															
18x24	89"	24"	POT & PAN	24"	18"	15 5/8"	31"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
10/12 1	113"	*36"	SINKS														
	(101 ["])	<mark>24"</mark>		0.41	0.4	15 5 (0"	04.		4.4.11		0.01		0.0.1	0.1	101		40.5
<mark>24x24</mark>	125"	*36"	POT SINKS	24	24"	15 5/6	31	38"		14″	20"	<mark>45″</mark>	38	8	12"	22	42
	81"	18"															
20x28	93"	24"	PAN SINKS	28"	20"	17 5/8"	35"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
LOXEO	117"	*36"															

* Regalines with 36" Drainboards are Supplied with Two Additional Legs (per drainboard) for Support.

PLUMBING ROUGH-IN



MECHANICAL:

- Supply is 1/2" IPS hot & cold.
- Faucet holes on 8" centers.Faucets are not included
- (see accessories).
- Waste drains are 1 1/2" IPS S/S basket type, located in center of sink bowl, and are included.









STAINLESS STEEL

REGALINE SINKS Three Compartments - Two Drainboards



FEATURES:

Tile edge for ease of installation.

One piece Deep Drawn sink bowls with integral drainboards with splash.

Featuring the single bowl unit design.

All sink bowls have a large liberal 3" radius.

Placement of the welded leg assembly ensures stability and furnishes direct support of the column load requirement for the entire sink unit.

"940" series is supplied with adjustable front and rear cross brace featuring leg casting to secure left to right cross bracing.

CONSTRUCTION:

All TIG welded.

Welded areas blended to match adjacent surfaces and to a satin finish.

Gussets welded to a die-embossed reinforcing channel.

ltem #:	Qty #:
Model #:	
Project #:	

MATERIALS:

Spec-Line (940 Series):

14 gauge type 304 stainless steel 11" High Splash.

8" High Splash.

Standard (930 Series):

16 gauge type 304 stainless steel

CED 4S03D

Super Saver (900 Series): 18 gauge type 304 stainless steel

- 8" High Splash.
- **LEGS:** 1 5/8" diameter tubular stainless steel.
 - Stainless steel gussets & channels.
 - Stainless Steel 1" adjustable bullet feet.

YES! It's SeaMLess!

	(SPEC-LINE 940 Series		STANDAR	930 Series	SUPER SAV				
					14 Ga. 304 S 14" Water Lev	S/S rel	16 Ga. 304 12" Water I	I S/S ₋evel	18 Ga. 304 12" Water L	S/S .evel	
BOWL SIZE	O.A. LE (inches)	NGTH (mm)	DRBD. (inches)	SIZE (mm)	MODEL #	Approx. Wt. (Ibs.)	MODEL #	Approx. Wt. (lbs.)	MODEL #	Approx. Wt. (lbs.)	Cubic Feet
	91"	2311	18"	457	94-3-54-18RL	230	93-3-54-18RL	189	9-3-54-18RL	182	49
16 x 20 (406 x 508)	103"	2616	24"	610	94-3-54-24RL	248	93-3-54-24RL	197	9-3-54-24RL	190	55
(400 x 000)	127"	3226	*36"	914	94-3-54-36RL	275	93-3-54-36RL	239	9-3-54-36RL	208	96
	103"	2616	18"	457	94-23-60-18RL	248	93-23-60-18RL	203	9-23-60-18RL	198	59
20 x 20	115"	2921	24"	610	94-23-60-24RL	276	93-23-60-24RL	220	9-23-60-24RL	195	65
(506 X 508)	139"	3531	*36"	914	94-23-60-36RL	408	93-23-60-36RL	387	9-23-60-36RL	364	89
	97"	2457	18"	457	94-63-54-18RL	323	93-63-54-18RL	289	9-63-54-18RL	226	62
18 x 24	109"	2762	24"	610	94-63-54-24RL	334	93-63-54-24RL	304	9-63-54-24RL	233	85
(457 X 010)	133"	3372	*36"	914	94-63-54-36RL	418	93-63-54-36RL	367	9-63-54-36RL	325	96
<mark>24 x 24</mark>	†127 "	3226	<mark>24"</mark>	610	94-43-72-24RL	390	93-43-72-24RL	331	9-43-72-24RL	318	98
(610 x 610)	[†] 151"	3835	*36"	914	94-43-72-36RL	448	93-43-72-36RL	393	9-43-72-36RL	345	110
	103"	2616	18"	457	94-83-60-18RL	358	93-83-60-18RL	315	9-83-60-18RL	277	83
20 x 28	115"	2921	24"	610	94-83-60-24RL	394	93-83-60-24RL	346	9-83-60-24RL	305	95
(500 x 711)	139"	3531	*36"	914	94-83-60-36RL	451	93-83-60-36RL	398	9-83-60-36RL	350	109
<mark>† Requires Tw</mark> * Regalines w with Two Se	<mark>o Faucets</mark> ith 36" Dr ts of Leas	ainboar for Sun	ds are Su port	pplied	14" Water 17" Flood	Level Level	12" Wat 15" Floo	er Level od Level	12" Wat 15" Floo		



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DIMENSIONS and SPECIFICATIONS 4503D

TOL Overall: ± .500" Interior: ± .250" ALL DIMENSIONS ARE TYPICAL



DESC	DESCRIPTION								940 SERIES 900 & 930 SERI								IFS
BOWL (SIZE)	Overall Length	DRBD (SIZE)	Recommended Use	А	в	С	D	v	W	X	Y	z	v	w	x	Y	z
16x20	91" 103" 127"	18" 24" *36"	DISH SINKS	20"	16"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
20x20	103" 115" 139"	18" 24" *36"	DISH & POT SINKS	20"	20"	13 5/8"	27"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
18x24	97" 109" 133"	18" 24" *36"	POT & PAN SINKS	24"	18"	15 5/8"	31"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"
24x24	* <mark>127"</mark> †151"	<mark>24"</mark> *36"	POT SINKS	<mark>24"</mark>	<mark>24"</mark>	15 5/8"	<mark>31"</mark>	38"	11"	14"	20"	<mark>45"</mark>	38"	8"	12"	22"	42"
20x28	103" 115" 139"	18" 24" *36"	PAN SINKS	28"	20"	17 5/8"	35"	38"	11"	14"	20"	45"	38"	8"	12"	22"	42"

† Requires Two Faucets

* Regalines with 36" Drainboards are Supplied with Two Sets of Legs for Support.

PLUMBING ROUGH-IN



MECHANICAL:

- Supply is 1/2" IPS hot & cold.
- Faucet holes on 8" centers.
- Faucets are not included (see accessories).
- Waste drains are 1 1/2" IPS S/S basket type, located in center of sink bowl, and are included.







Item # _____ Quantity _____

CED 4SMA

HS7/HS7N

SLICER

C.S.I. Section 11400

HOBART

701 S Ridge Avenue, Troy, OH 45374 1-888-4HOBART • www.hobartcorp.com

MODELS

- □ HS7 Automatic Slicer/Burnished Finish
- HS7N Automatic Slicer/Burnished Finish with Non-Removable Knife Feature

ACCESSORIES

- □ Full Fence
- Food Chute
- Debris Deflector

Specifications, Details and Dimensions on Inside and Back.





F40334 – HS7/HS7N Slicer

STANDARD FEATURES

KNIFE

- 13" CleanCut[™] Knife
- Removable Ring Guard Cover
- Zero Knife Exposure
- Heavy-Gauge Stainless Steel Knife Cover
- Top-Mounted Borazon Stone Sharpener

OPERATION

- ¹/₂ H.P. Knife Drive Motor
- Timing Belt for Automatic Drive System
- Variable Four-Speed Automatic Carriage with Front Mounted Controls
- Three Stroke Lengths

INTERLOCKS

- Home-Start Position
- No-Volt Release

HOUSING AND BASE

- Burnished Aluminum Base
- Machine Grooves on Gauge Plate and Knife Cover
- Exclusive Tilting, Removable Carriage System
- Electroless Nickel Plated Single Slide Rod with Reservoir Wick in Transport
- Double-Action Indexing Cam
- Lift Assist Cleaning Leg
- Ergonomic-Style Handle
- Rear-Mounted, Removable Meat/Vegetable Grip Arm



SOLUTIONS / BENEFITS

PRECISION SLICING

13" CleanCut[™] Knife

- Super alloy edge stays sharp longer
- Lasts two to three times longer than carbon coated or stainless steel knives

Top Mounted Borazon Stone Sharpener

- Single-action sharpens and hones in just 15 seconds
- Removable and warewasher safe for easy cleaning and sanitation – can be used wet or dry
- Lifetime guaranteed Borazon sharpening stones provide maximum performance with reduced maintenance costs

Machined Grooves on Gauge Plate and Knife Cover

Reduces drag for smoother slicing motion

Double-Action Indexing Cam

- The first full revolution of the indexing knob provides precise control of shaving, chipping and thin slicing
- The second revolution opens the gauge plate quickly for thicker slicing
- Gauge plate holds position for consistent, precision slicing

EASY TO USE

1/2 H.P. Knife Drive Motor

Reserve power runs at 430 rpm for optimum results

Timing Belt Automatic Drive System

- Extends belt life while producing optimum slicing results
- Quieter operating slicer
- Four carriage speeds including 28, 38, 48 and 58 strokes per minute

Three Stroke Lengths

■ Three stroke lengths ideal for a variety of products

Electroless Nickel Plated Single Slide Rod with Reservoir Wick in Transport

Smooth operation with continuous lubrication of carriage rod

Zero Knife Exposure*

- Knife edge is covered when sharpener is both mounted and removed, making cleaning easier
- Gauge plate remains closed during operation of sharpener

Home Start Position

Carriage must be in 'home position' before the slicer will start

No Volt Release

Slicer must be restarted if power fails or slicer is unplugged

EASY TO CLEAN

Removable Knife Option* – HS7

- Knife easily removes with patented removal tool
- Area within ring guard is open for faster cleaning
- Knife and tool are warewasher safe for easy cleaning and sanitation

Removable Ring Guard Cover*

- Catches product debris around the knife for easy removal during cleaning
- Reduces time to 'floss' during cleaning

Exclusive Tilting, Removable Carriage System*

- Tilt design allows for ease of mid-day cleaning
- Removable for complete cleaning and sanitation

Rear-Mounted, Removable Meat Grip Arm

- Opens up front of product tray for unobstructed loading
- Removable meat grip allows for easy cleaning

Lift Assist Cleaning Leg

Gas assisted leg helps operator easily lift machine for cleaning underneath

Sanitary Burnished Aluminum Base

- Limited cracks/crevices or bolt holes where product can lodge and bacteria may grow
- Easy clean up and durable finish

*Feature unique to Hobart

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SPECIFICATIONS

KNIFE

13" CleanCut Knife: The knife is approximately 13 inches, constructed of 304L stainless steel and high performance Stellite alloy. Knife cover is retained magnetically, and is quickly removed by pulling straight back on the top cover knob.

Removable Knife Option HS7: The patented knife removal tool covers the knife edge and safely removes knife from gauge plate to allow for thorough cleaning.

Removable Ring Guard Cover: Fits on top of ring guard to catch food debris. When removed, reveals a 0.12" space between knife and guard for easier flossing. Ring guard is made with Zytel[™] plastic and can be washed in warewasher or three compartment sink.

Zero Knife Exposure: Knife edge is not exposed during cleaning or sharpening procedures.

Top Mounted Borazon Stone Sharpener: Single action operation utilizing two Borazon stones to sharpen and hone in five seconds. Removable, top mounted and warewasher safe. When sharpener is removed for cleaning, knife edge is completely shielded. Borazon stones have a lifetime guarantee.

MOTOR

Poly V-Belt Knife Drive System: Knife is driven by a Hobart Poly V belt and runs at 430 rpm for optimal performance.

Four Stroke Speeds: Stroke speed can be set to 28, 38, 48 and 58 strokes per minute.

1/2 **H.P. Knife Drive Motor:** 1/2 H.P. permanently lubricated ball bearings. Single phase capacitor-start, induction run.

INTERLOCKS

Home Start Position: Home-start ensures carriage is in a convenient position before starting the slicer.

No Volt Release: In the event of a power loss, slicer must be restarted before operation can continue.

HOUSING AND BASE

Sanitary Burnished Aluminum Base: One-piece base has fewer places to harbor soil and is easier to clean. Limits holes or crevices in which food can lodge.

Finish: Stainless steel top cover, anodized aluminum product tray and gauge plate.

Exclusive Tilting, Removable Carriage System: Aluminum product tray tilts easily for mid-day cleaning and is removable for thorough cleaning and sanitation procedures. The carriage has 12.5" manual travel.

Electroless Nickel Plated Single Slide Rod with Reservoir Wick in Transport: Transport slide rod is E-Nickel electroless plated. Slide rod bearings feature an oil reservoir/oil wick.

Double-Action Indexing Cam: A solid construction index knob moves the gauge plate via a barrel cam ensuring consistent slice thickness across machine and over time. First revolution of index cam for precision slicing; second revolution for thicker slicing selection.

Lift Assist Cleaning Leg: Gas assisted leg helps operator easily lift machine for cleaning underneath.

Ergonomic Style Handle: Specially shaped and positioned for ease of use during manual operation.

Rear Mounted, Removable Meat Grip Arm: Rear mounted grip is high strength thermoplastic. Swings out of way when not in use.

Electrical Specification: 120/60/1; 5.6 Amps.

Switch: Moisture protected push button switch.

Cord & Plug: 6-foot, three-wire power supply cord and plug. Plug not furnished on export models.

Capacity: The carriage will take food up to $5\frac{3}{4}$ " x $10\frac{3}{4}$ " rectangle or 7.5" in diameter.

Gauge Plate: Gauge plate is a heavy aluminum extrusion with machined grooves for smooth feeding. Adjustable to cut any thickness of slice up to 1".

Warranty: All parts and service coverage for one year including knife. Lifetime guarantee on Borazon stones in the sharpening system.

Shipping Weight: 138 lbs.

HS7/HS7N SLICER

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DETAILS AND DIMENSIONS





ELECTRICAL AND GROUNDING CONNECTIONS MUST COMPLY WITH THE APPLICABLE PORTIONS OF THE NATIONAL ELECTRICAL CODE AND/OR OTHER LOCAL ELECTRICAL CODES.

E1 - ELECTRICAL CONNECTIONS





As continued product improvement is a policy of Hobart, specifications are subject to change without notice.

CED 4SPPM

Model UC-ST Compact Counter Scale with SmartTouch® Touchscreen.



Easy to Use Touchscreen Scale

For Your Counter Weighing and Printing Needs



CED 4SPPM

Model UC-ST SmartTouch® Counter Scale

The Smart Solution to Your Service Counter Applications

Eas	y to lean and o	perate Saves	on Training Costs
-----	-----------------	--------------	-------------------

- Standard Networking and Wireless Capability
- Bright Backlit Display, adjustable for easy viewing
- Fast label loading and high-definition printhead

Connecting to your **Customers** is made easy in the UC-ST. Easy to learn and use, the UC-ST offers features that are important elements to your employees and connecting with your customers.

The 19-character vacuum fluorescent display shows all relevant data during a transaction when your customer is purchasing product. The UC-ST can also display scrolling marquee messages, programmable at the scale or from host, that display when the scale is not being used in a transaction allowing for cross merchandising or promotional specials. Changing label formats is convenient and another way to connect to your customer.

Connecting to your **Employees** is enhanced by the intuitive user interface. The monochrome touchscreen makes operation easy to learn and reduces training time. Up to 350 preset keys on up to ten category pages are available for quick PLU access. The large display shows operators important information during a transaction and changes are easily done through pop-up screens and available options being obviously highlighted. Fast training and operations means increased profits – your Employees will learn quicker and make fewer mistakes with the UC-ST.

Connectivity to your **Data** is what this product is all about. You can connect the UC-ST scales to new or existing network infrastructures to provide remote updates and configurations to all of your scales, resulting in a lower Total Cost of Ownership for your scale investment.

The UC-ST scale works with current Item Management Solutions. METTLER TOLEDO SmartTouch® scale products provide you the flexibility to support today's network standards of Ethernet and RF while providing a migration path from existing scale networks. The expanded connectivity across your Local Area or Wide Area Network enhances the scales functionality by supporting Remote Store Administration not only for item management, but also for scale device management abilities. Remote Store Administration Tools offer the ability to download configuration settings of the scales (including presets, label formats, label styles) and also upgrade the software on the unit.

The UC scales offer a modern and sophisticated industrial design that is sure to match any store interior. The low profile unit was designed to insure that the emphasis is on the product while allowing for easy visual contact between your employees and customers. The new printer design boasts "no removable parts" that could be lost and the print mechanism slides in and out of the housing easily – making label changes quick and easy. The four-position operator display allows for placement of this unit anywhere in your operation – high countertops and production worktables – making it adaptable to most any workplace.

5	Specifications
Scale	30 lb x 0.01 lb
Capacity	15 kg x 0.005 kg
Base Dimensions	15.75 in/40 cm Wide 15.5 in/39 cm Deep 9 in/22.9 cm High
Customer	A 19-character with scroll-
Display	ing marquee.
Operator Dis-	Touchscreen with mono-
play/Keyboard	chrome LCD backlit display.
Network	Ethernet RJ11 Connector, Wireless Option.

Clear Lighted Customer Display is easy for customers to read. Scrolling marquees can be used for cross merchandising.

Stainless Steel Platter Easy to clean surfaces.

> Easy Access Wireless supports PCMCIA Radio

> > Sturdy Met Constructi



Sleek Low-Profile Design Fits on Any Type of Countertop



Connections - Convenient Power, Keyboard, Mouse, and Network Connections on the front simplify cabling.



Large Label Capacity - Up to a 5" supply roll means less labels changes.

2.621

SmartTouch

Adjusts to four postions to accomodate use on high or low counters.

Touchscreen -Easy to touch buttons for easy customer service applications. **CED 4SPPM**

al on

CED 4SPPM

Mettler-Toledo USA

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Internet: www.mt.com Specifications subject to change without notice. ©2004 Mettler-Toledo Inc. METTLER TOLEDO® and SmartTouch® are registered trademarks of Mettler-Toledo Inc. Printed in USA RT1128.0E Enhance Your Merchandising Opportunities with Custom Labels

The UC-ST easily prints your custom graphics and label formats.

For more information visit: www.mt.com/retail

Fresh Solutions for Retail

WIN-HOLT offers a full line of Stainless Steel products. If you do not see it listed in our Catalog, ask your WIN-HOLT representative for assistance. We would appreciate the opportunity to quote you.

Option

- Specify option by adding suffix to model numbers listed below.
- /M2LC Mobile Table 4 legs, 2 with locking casters
- /M3LC Mobile Table- 6 legs, 3 with locking casters
- /M4LC Mobile Table- 4 legs, 4 with with locking casters
- /M6LC Mobile Table- 6 legs, 6 with locking casters

Stainless Steel Work Tables with Backsplash



Ship Weight Number Number (in) (mm) (lb) (kg) 24" Width (610mm) DTB-2436 135642 36 914 59 27 DTB-2448 135651 48 1,219 71 32 DTB-2460 135669 60 1,524 82 37 DTB-2472 135677 72 1,829 94 43 DTB-2484 135685 84 2,134 110 50 DTB-2496* 135693 96 2,438 126 57 30" Width (762mm) DTB-3036 914 135714 36 65 29 **DTB-3048** 135722 48 1,219 78 35 DTB-3060 135731 60 1,524 91 41 DTB-3072 104 47 135749 72 1,829 DTB-3084 135757 84 2,134 120 54 DTB-3096* 135765 2,438 96 139 63 36" Width (914mm) DTB-3636 135781 36 914 70 32 79 **DTB-3648** 135790 48 1,219 36 DTB-3660 135802 60 1,524 90 41 DTB-3672 135811 1,829 105 48 72 135829 DTB-3684 84 2,134 125 57 DTB-3696* 135837 96 2,438 141 64

Length

Order

Model

Stainless Steel Work Tables with Backsplash and Undershelf



Model	Order	Len	igth	Approx. Ship Weight						
Number	Number	(in) (mm)		(lb)	(kg)					
24" Width (610	mm)									
DTSB-2436	135853	36	914	65	29					
DTSB-2448	135861	48	1,219	81	37					
DTSB-2460	135870	60	1,524	95	43					
DTSB-2472	135888	72	1,829	111	50					
DTSB-2484	135896	84	2,134	131	59					
DTSB-2496*	135909	96	2,438	147	67					
30" Width (762	mm)									
DTSB-3036	135925	36	914	73	33					
DTSB-3048	135933	48	1,219	90	41					
DTSB-3060	135941	60	1,524	109	49					
DTSB-3072	135950	<mark>72</mark>	1,829	126	57					
DTSB-3084	135968	84	2,134	142	64					
DTSB-3096*	135976	96	2,438	168	76					
36" Width (914n	nm)									
DTSB-3636	135992	36	914	81	37					
DTSB-3648	136004	48	1,219	95	43					
DTSB-3660	136012	60	1,524	111	50					
DTSB-3672	136021	72	1,829	132	60					
DTSB-3684	136039	84	2,134	151	68					
DTSB-3696*	136047	96	2,438	177	80					
Freight Class: 150										



ED 4TF

✓ HEAVY DUTY USE

✓ HACCP HELPER

LIFE WARRANTY

Approx.

AGAINST RUST

(NSF)

BEST

800.444.3595 | 516.921.0538 fax www.winholt.com

Stainless Steel Cabinets

CED 4TFPE-6

- Sanitary Stainless Steel Top are constructed of all welded 16 gauge stainless steel.
- All units have a 6" high stainless steel backsplash with 45 degree return angle and are 34" in height with stainless steel bullet feet that adjust 1".
- Heavy duty doors slide easily on stainless steel roll in track. Doors are easily removable for cleaning.
- TIG welded and shipped setup.
- Can be ordered without standard backsplash or with poly top (page 120).

Equipment Guide
BEST
HEAVY DUTY USE

LIFE WARRANTY AGAINST RUST

(NSF)



Medel	Order	C	Overall Di	Approx.									
Number	Number	Wie	dth	Ler	ngth	Ship Weight							
Humbor	Humber	(in)	(mm)	(in)	(mm)	(lb)	(kg)						
Stainless Steel Top and Cabinet with Backsplash													
STCT-BD2436	132839			36	914	104	47						
STCT-BD2448	162481			48	1,219	120	54						
STCT-BD2460	113611	24	610	60	1,524	140	63						
STCT-BD2472	113620	24		72	1,829	166	75						
STCT-BD2484	162499			84	2,134	190	86						
STCT-BD2496	113638			96	2,438	211	96						
STCT-BD3036	140126			36	914	118	54						
STCT-BD3048	113646			48	1,219	133	60						
STCT-BD3060	113662	30	762	60	1,524	156	71						
STCT-BD3072	113671		102	<mark>72</mark>	1,829	186	84						
STCT-BD3084	131967			84	2,134	205	93						
STCT-BD3096	113697			96	2,438	234	106						
and the second sec													

Freight Class: 150

Option: Specify options by adding suffix to Model Numbers
CORR Correctional Package

Stainless Steel Wood Top Tables

- Frame constructed of the highest quality all welded, 16 gauge, stainless steel. Tables are 34" in height.
- 1¾" Hard Laminated Maple Wood Top, with edge grain electronically bonded. 2" maple is available upon request.
- Bin Stops are optional.
- 30" available upon request.
- 96" Tables are equipped with six legs for added support.



Madal Order		(Overall Dimensions				rox.
Number	Number	Wi	dth	Length		Ship Weight	
litteringer		(in)	(mm)	(in)	(mm)	(lb)	(kg)
Maple Wood 1	op Stainless S	Steel Tabl	e - Open E	Bar Style			
WTS3648	162413			48	1,219	100	45
WTS3660	162421	36 014	60	1,524	120	54	
WTS3672	113902	50	30 314	72	1,829	140	64
WTS3696	113911			96	2,438	160	73
Maple Wood 1	op Stainless S	Steel Tabl	e with Un	dershelf			
WTSS3648	162456			48	1,219	120	54
WTSS3660	114067	36	014	60	1,524	140	64
WTSS3672	162464	50	514	72	1,829	160	73
WTSS3696	162472			96	2,438	200	91

Freight Class: 150





Custom stainless steel cabinet with, two draws, doors, poly top and coated black vinyl base.



Unit shown with optional overshelves and two undershelves.

PAGE 76

CED 4TMP-6

Stainless Steel Tables All Welded 16 Gauge 304 Series Stainless Steel

Specifications:

- All 16 gauge Series 304 Stainless Steel tops, shelves, legs and backsplash.
- All tig welded and shipped set up.
- High polish finish.
- Backsplashes are 6" high with 45 degree return angle.

WIN-HOLT backroom prep tables and processing tables for Food Service, Supermarket and Industrial applications.



- Adjustable height stainless steel bullet feet are standard.
- Legs and crossbracing are 1 ⁵/₈³" diameter 16 gauge Stainless Steel tubing.

WIN-HOLT offers a full line of Stainless Steel products. If you do not see it listed in our Catalog, ask your WIN-HOLT representative for assistance. We would appreciate the opportunity to quote you.



Model	Item	Ler	ngth	Approx. Ship Weight		List
Number	Number	(in)	(mm)	(lb)	(kg)	Price
24" Width	(610mm)					
DTR-2436	135191	36	914	54	24	\$479
DTR-2448	129146	48	1,219	64	29	\$509
DTR-2460	135247	60	1,524	74	34	\$567
DTR-2472	135255	72	1,829	84	38	\$624
DTR-2484	135263	84	2,134	94	43	\$664
DTR-2496*	135271	96	2,438	114	52	\$803
30" Width	(762mm)					
DTR-3036	135298	36	914	60	24	\$508
DTR-3048	135301	48	1,219	72	33	\$529
DTR-3060	135319	60	1,524	83	38	\$550
DTR-3072	135327	72	1,829	95	43	\$605
DTR-3084	135335	84	2,134	115	52	\$723
DTR-3096*	135343	96	2,438	126	57	\$862
36" Width	(914mm)					
DTR-3636	135360	36	914	69	31	\$536
DTR-3648	135378	48	1,219	79	36	\$595
DTR-3660	135386	60	1,524	92	42	\$653
DTR-3672	135394	72	1,829	105	48	\$714
DTR-3684	135407	84	2,134	116	53	\$781
DTR-3696*	135415	96	2,438	140	63	\$924

Prices subject to change without notice.

Freight Class: 125



with Stainless Steel Undershelf

Model	Item	Length		Approx. Ship Weight		List
number	number	(in)	(mm)	(lb)	(kg)	Price
24" Width	(610mm)					
DTS-2436	135431	36	914	60	27	\$491
DTS-2448	135440	48	1,219	73	33	\$547
DTS-2460	135458	60	1,524	86	39	\$594
DTS-2472	135466	72	1,829	100	45	\$667
DTS-2484	135474	84	2,134	120	54	\$701
DTS-2496*	135482	96	2,438	134	61	\$888
30" Width	(762mm)					
DTS-3036	135503	36	914	73	33	\$578
DTS-3048	135511	48	1,219	84	38	\$596
DTS-3060	135520	60	1,524	100	45	\$655
DTS-3072	135538	72	1,829	116	53	\$674
DTS-3084	135546	84	2,134	136	62	\$847
DTS-3096*	135554	96	2,438	155	70	\$1,000
36" Width	(914mm)					
DTS-3636	135571	36	914	82	37	\$618
DTS-3648	135589	48	1,219	94	43	\$708
DTS-3660	135597	60	1,524	113	51	\$788
DTS-3672	135600	72	1,829	131	59	\$885
DTS-3684	135618	84	2,134	150	68	\$941
DTS-3696*	135626	96	2,438	177	80	\$1,079

Freight Class: 125

*96" (2,438mm) long tables are standard with six legs.



CED 4TMP-6

Stainless Steel Tables All Welded 16 Gauge 304 Series Stainless Steel



- Mobile tables available with swivel stem casters (two locking) with 5" x 1¼" polyurethane wheels.
- Galvanized Hat channels deaden sound and reinforce the top to maintain a level work surface.
- Standard Sizes: 24", 30", or 36" wide by 3', 4', 5', 6', or 8' long.

Option

Specify option by adding suffix to model numbers listed below. /M Mobile Table Add \$162 Mobile units use Caster Model #800





Six legs on all 8' and longer tables.

are available upon request.

Custom tables and 14 gauge Stainless Steel tables

Stainless Steel Work Tables with Backsplash and Undershelf

Model	Item	Ler	gth	App Ship V	rox. Veight	List
Number	Number	(in)	(mm)	(lb)	(kg)	Price
24" Width	(610mm)					
DTB-2436	135642	36	914	59	27	\$504
DTB-2448	135651	48	1,219	71	32	\$551
DTB-2460	135669	60	1,524	82	37	\$601
DTB-2472	135677	72	1,829	94	43	\$664
DTB-2484	135685	84	2,134	110	50	\$710
DTB-2496*	135693	96	2,438	126	57	\$853
30" Width	(762mm)					
DTB-3036	135714	36	914	65	29	\$528
DTB-3048	135722	48	1,219	78	35	\$532
DTB-3060	135731	60	1,524	91	41	\$576
DTB-3072	135749	72	1,829	104	47	\$636
DTB-3084	135757	84	2,134	120	54	\$771
DTB-3096*	135765	96	2,438	139	63	\$910
36" Width	(914mm)					
DTB-3636	135781	36	914	70	32	\$571
DTB-3648	135790	48	1,219	79	36	\$635
DTB-3660	135802	60	1,524	90	41	\$701
DTB-3672	135811	72	1,829	105	48	\$784
DTB-3684	135829	84	2,134	125	57	\$842
DTB-3696*	135837	96	2,438	141	64	\$971

Freight Class: 125

*96" (2,438mm) long tables are standard with six legs.



Freight Class: 125



CED 4TMP-6 Stainless Steel Tables with Poly Top

All Welded 16 Gauge 304 Series Stainless Steel

Specifications:

- Poly top is ⁵/₈" thick and sectioned for easy removal for cleaning. Removable and replaceable clips hold poly top secure.
- Thicker ¾" poly tops also available. Welded corner tabs are standard on tables with ¾" poly top.

WIN-HOLT boning and trimming tables are designed for Food Service, Healthcare, Supermarket and Backroom applications. Tops are ⁵/₈" thick Polethylene. Poly tops are available ³/₈" thick, also. The poly tops are dishwasher safe and high-temperature safe to 180° F and may be steam cleaned.

NSF

All 16 gauge Series 304 Stainless Steel, backsplash, leg and undershelf.



Model	Item	Ler	ngth	Approx. Ship Weight		List
Number	numper	(in)	(mm)	(lb)	(kg)	Price
24" Width	(610mm)					
DPTR-2436	162763	36	914	54	24	\$522
DPTR-2448	162771	48	1,219	64	29	\$601
DPTR-2460	162798	60	1,524	74	34	\$735
DPTR-2472	162587	72	1,829	84	38	\$800
DPTR-2484	162801	84	2,134	94	43	\$812
DPTR-2496*	162579	96	2,438	114	52	\$970
30" Width	(762mm)					
DPTR-3036	162819	36	914	60	24	\$587
DPTR-3048	162835	48	1,219	72	33	\$641
DPTR-3060	162843	60	1,524	83	38	\$708
DPTR-3072	162851	72	1,829	95	43	\$791
DPTR-3084	162860	84	2,134	115	52	\$920
DPTR-3096*	162886	96	2,438	126	57	\$1,043
36" Width	(914mm)					
DPTR-3636	162894	36	914	69	31	\$660
DPTR-3648	162907	48	1,219	79	36	\$737
DPTR-3660	162915	60	1,524	92	42	\$818
DPTR-3672	162923	72	1,829	105	48	\$899
DPTR-3684	162931	84	2,134	116	53	\$1,017
DPTR-3696*	185105	96	2,438	140	63	\$1,146

Freight Class: 125

Prices subject to change without notice.



Model	Item	Length		App Ship V	rox. Veight	List
Number	Number	(in)	(mm)	(lb)	(kg)	Frice
24" Width	(610mm)					
DPTS-2436	162940	36	914	60	27	\$613
DPTS-2448	162958	48	1,219	73	33	\$715
DPTS-2460	162966	60	1,524	86	39	\$797
DPRS-2472	162982	72	1,829	100	45	\$891
DPTS-2484	162991	84	2,134	120	54	\$963
DPTS-2496*	163002	96	2,438	134	61	\$1,118
30" Width	(762mm)					
DPTS-3036	163011	36	914	73	33	\$603
DPTS-3048	163029	48	1,219	84	38	\$696
DPTS-3060	163037	60	1,524	100	45	\$713
DPTS-3072	<mark>163045</mark>	<mark>72</mark>	<mark>1,829</mark>	<mark>116</mark>	<mark>53</mark>	<mark>\$923</mark>
DPTS-3084	163053	84	2,134	136	62	\$1,119
DPTS-3096*	163096	96	2,438	155	70	\$1,351
36" Width	(914mm)					
DPTS-3636	163109	36	914	82	37	\$772
DPTS-3648	163117	48	1,219	94	43	\$888
DPTS-3660	163125	60	1,524	113	51	\$1,087
DPTS-3672	163133	72	1,829	131	59	\$1,150
DPTS-3684	163150	84	2,134	150	68	\$1,238
DPTS-3696*	172574	96	2,438	160	75	\$1,462

Freight Class: 125

*96" (2,438mm) long tables are standard with six legs.



CED 4TMP-6

NSF

Stainless Steel Tables with Poly Top

All Welded 16 Gauge 304 Series Stainless Steel

- All tig welded and shipped set up.
- Legs and crossbracing are 1⁵/₈" diameter 16 gauge Stainless Steel tubing. Frame for Poly top is 1¹/₄" square tubing.
- Backsplash are 6" high with 45 degree return angle.
- Undershelf surface is 10" above the floor.
- Hat Channels deaden sound and reinforce the top to maintain a level work surface.

- Adjustable height Stainless Steel bullet feet.
- Mobile tables available with swivel stem casters (two locking) with 5" x 1¼" polyolefin wheels.
- Six legs on all 8' and longer tables.
- Standard Sizes: 24", 30", or 36" wide by 3', 4', 5', 6', or 8' long.
- Custom tables and 14 gauge Stainless Steel tables are available upon request.

Option

Specify option by adding suffix to model number listed below. /MMobile TableAdd \$162

Mobile units use Caster Model #800



Model	Item	Length		App Ship V	rox. Veight	List	
Number	Number	(in)	(mm)	(lb)	(kg)	Price	
24" Width ((610mm)						
DPTB-2436	163176	36	914	59	27	\$552	
DPTB-2448	163184	48	1,219	71	32	\$633	
DPTB-2460	163192	60	1,524	82	37	\$743	
DPTB-2472	163205	72	1,829	94	43	\$793	
DPTB-2484	163213	84	2,134	110	50	\$880	
DPTB-2496*	163221	96	2,438	126	57	\$1,032	
30" Width ((762mm)						
DPTB-3036	163230	36	914	65	29	\$632	
DPTB-3048	163248	48	1,219	78	35	\$675	
DPTB-3060	163256	60	1,524	91	41	\$761	
DPTB-3072	163264	72	1,829	104	47	\$842	
DPTB-3084	163272	84	2,134	120	54	\$995	
DPTB-3096*	163281	96	2,438	139	63	\$1,187	
36" Width (914mm)						
DPTB-3636	163299	36	914	70	32	\$705	
DPTB-3648	163301	48	1,219	79	36	\$790	
DPTB-3660	163310	60	1,524	90	41	\$859	
DPTB-3672	163328	72	1,829	105	48	\$971	
DPTB-3684	163336	84	2,134	125	57	\$1,096	
DPTB-3696*	185148	96	2,438	135	61	\$1,305	
	Freight Class: 125						

*96" (2,438mm) long tables are standard with six legs.



with Poly Top, Backsplash and Undershelf

Model	Item	Ler	ngth	Approx. Ship Weight		List
Number	numper	(in)	(mm)	(lb)	(kg)	Price
24" Width ((610mm)					
DPTSB-2436	163344	36	914	65	29	\$610
DPTSB-2448	163352	48	1,219	81	37	\$721
DPTSB-2460	163361	60	1,524	95	43	\$814
DPTSB-2472	163379	72	1,829	111	50	\$920
DPTSB-2484	163387	84	2,134	131	59	\$991
DPTSB-2496*	163395	96	2,438	147	67	\$1,130
30" Width ((762mm)					
DPTSB-3036	163408	36	914	73	33	\$697
DPTSB-3048	163416	48	1,219	90	41	\$772
DPTSB-3060	163424	60	1,524	109	49	\$887
DPTSB-3072	163432	72	1,829	126	57	\$1,034
DPTSB-3084	163441	84	2,134	142	64	\$1,100
DPTSB-3096*	163459	96	2,438	168	76	\$1,244
36" Width (9	914mm)					
DPTSB-3636	163467	36	914	81	37	\$757
DPTSB-3648	163475	48	1,219	95	43	\$878
DPTSB-3660	163483	60	1,524	111	50	\$998
DPTSB-3672	163491	72	1,829	132	60	\$1,142
DPTSB-3684	163504	84	2,134	151	68	\$1,235
DPTSB-3696*	171897	96	2,438	162	73	\$1,426

Freight Class: 125











FULL HEIGHT LADDER SAFETY GATE BUILT TO LAST, IT WON'T LET YOU DOWN

The Full Height Ladder Safety Gate is an OSHA- and ANSI-compliant swing gate system that reduces the chance of falls on elevated platforms, mezzanines and ladder ways. Similar to our Ladder Safety Gate, this full-height version is self-closing to ensure that protection is in place when it is needed most. The Full Height Ladder Safety Gate provides a 42" top rail, mid-rail and 5" safety toeboard for increased personnel protection.

IMPROVES SAFETY:

- Provides safety coverage from the top rail to the floor
- 5" safety toeboard provides increased edge protection from falling objects
- . Engineered and tested to comply with the Ladder Safety Gate requirements in OSHA 1910.28 and 1910.29 as well as ANSI A1264.1-2007, A14.3-2008 and MH28.3-2009

EASY INSTALLATION:

- Designed to fit any existing railing system standard pipe, angle iron, flat bar or even an existing wall
- Installs in minutes with a ratchet and a 1/2" deep well socket
- · Ships fully assembled and includes standard mounting hardware for round pipe up to 2" outside dimension and square tubing up to 1.5" x 1.5" outside dimension

DURABLE AND CONVENIENT CONSTRUCTION:

- Adjustable to fit most openings from 18" to 36"
- · Swings left or right to fit your building requirements
- Stainless steel springs
- · Available in powder coat yellow (PCY), 304 stainless steel (SS) or hot dipped galvanized (GAL) finishes

ADDITIONAL OPTIONS:

- Ladder Safety Gate and Paired Ladder Safety Gate variations
- Stand-Off Mounting System creates a landing space for personnel to transition through the ladder safety gate

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Gate With Optional Stand-Off Mounting System



Ask About Our Material Handling Safety Gates!

Safety Gate





Horizontal Mezzanine Gate

Rev. 120116





LADDER SAFETY GATE

MEASURING GUIDE:

Min

16-3/4"

19-3/4"

22-3/4"

25-3/4"

28-3/4"

31-3/4"

34-3/4"

Opening Dimension

Product Number

LSGF-18

LSGF-21

LSGF-24

LSGF-27

LSGF-30

LSGF-33

LSGF-36

7-7/8"

41.5" 25-11/16" 20-13/16

-7/8"

Fits Opening Dimension

Max

20-1/2"

23-1/2"

26-1/2"

29-1/2"

32-1/2"

35-1/2"

38-1/2"

STANDARD TECHNICAL DATA

MATERIAL:

- Gate: 1-1/4" 16-gauge square tubing. Minimum dimension from top of gate arm to bottom of gate arm is 41.5".
- Hinge Plate: 10-gauge, full height of gate. Hinge plate provides for gate adjustment of 3-3/4" (-) 1-1/4" to (+) 2-1/2".
- Gate Operation: Allows for 180-degree travel. Gate swing direction reversible by inverting or rotating.
- Packaging: Carton includes gate, standard mounting hardware, 5" safety toeboard, support block kit and installation/O&M manual.

HARDWARE:

- Standard Hardware: U-bolts, flat washers, nuts and plastic thread protector cap.
- Springs: Torsion type, stainless steel. Quantity of two (2) springs per gate, housed within hinge pivot.

FINISHES:

- · Mild steel, powder coat yellow, hardware to be zinc-plated.
- Mild steel, hot dipped galvanized, hardware to be zinc-plated.
- · Stainless steel, 304, unpainted, hardware to be stainless steel type 316.

INSTALLATION (standard round pipe or square tube):

- If mounting to angle iron, flat bar or non-standard railing systems, install the gate by match drilling the hinge bracket and bolting directly to the railing system or by using no-drill adaptor bracket kits. Call PS DOORS for details.
- 1: Loosely attach gate to existing railing with U-bolts.
- 2: Align gate to the top of the railing and tighten U-bolts.







3: Adjust gate hoop and toeboard to fit opening.



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Rev. 120116





Pallet Gate Product Literature



Simply forklift your pallet of materials through this self-closing gate and back away. Pallet Safety Gates close up against your material, effectively protecting the mezzanine edge.

Pallet Gates are designed to meet OSHA safety requirements.

Ideal for material handling, mezzanine openings, pallet racking, warehousing and picking/packaging areas.

Product Features:

- Powder coat yellow finish with durable stainless steel torsion springs mounted within the hinge assembly.
- Three standard sizes to fit your opening width (see reverse).
- Vertical guide posts are 7' high.
- High-impact bumpers to protection your material from being damaged.
- Adjustable crossbar; provides stability and visual banner.
- Includes all hardware for installation.
- Designed to meets OSHA safety requirements.













PALLET GATE

Pallet Gate

Product Literature

Standard Opening Widths	Model #	Shipping Weight
60"	PLG-6084	200 lbs.
72"	PLG-7284	220 lbs.
96"	PLG-9684	250 lbs.

Overall unit width is opening width plus 5-3/4 inches.

Standard Technical Data: Material:

- Standard Dimensions: 60", 72" or 96" opening width and opening height up to 78".
- Gate: Formed 1-1/4" square, 11 gauge tubing, self-closing.
- Gate Columns: 2" square, 11-gauge tube.
- Teardrop Impact Bumpers: High-impact, ABS bumpers with 3" projection.
- Toeboard: ABS adjustable 4" toeboard.
- Gate Operation: Allows for 180 $^\circ$ travel.

Hardware:

• Hinge Bracket: Standard, Pivot Bracket.

Installation:

- Mounting Bracket: 7-gauge, formed 5" x 10" angle plate with integral support post connections.
- Hinge Springs: Torsion type, stainless steel. Includes three (3) springs per gate, housed within hinge pivot.

Finish:

• Finish on all exposed surfaces to be Powder Coat Yellow.

Performance Rating:

• Gate shall meet or exceed OSHA requirements, relative to dimensions and loads, at the time of manufacture.

Pallet Gate Measuring Guide



Toeboard



Mounting Bracket Detail









VERTICAL MEZZ. GATE Vertical Mezzanine Gate

Product Literature

Material handling is more efficient with PS DOORS Mezzanine Gates. Once installed on your mezzanine, this gate opens and closes as needed. Forklift materials to your elevated space and close the gate to protect employees from dangerous workplace falls.

Vertical Mezzanine Gate vertically opens by manual or automated operation. Activate your gate with the push of a button or a pull of a cord. Once material has been delivered to your mezzanine, the gate closes by timer or other activation device to quickly protect the mezzanine edge.

Designed to meet federal OSHA safety railing requirements.

Product Features:

- Ideal for material handling, mezzanine safety, pallet racking and loading docks
- Available in seven sizes to meet your opening width requirement
- Powder coat yellow finish, custom stainless steel finish available
- Manual, electric, pneumatic/pneumatic or pneumatic/electric operation available
- On-deck or off-deck mounting options
- 42" high gate with 4" toe board
- 120" tall vertical columns with 84" clear opening height











Shown: MGHEM144042







VERTICAL MEZZ. GATE Vertical Mezzanine Gate Product Literature

Standard Technical Data:

Material:

- Gate: 1-1/2" square, 11 gauge tube, factory welded. Solid horizontal top rail and mid-rail, 4" high toeboard, 42" overall height, and vertical members not to exceed 96" on center.
- Vertical Guide Column Assembly shall consist of tubular columns (120" standard length), prepped for the gate operating hardware and applicable mounting brackets. Guide assemblies shall be fabricated to allow gate to bypass idler sheaves to utilize full installation height.
- Gate Material: To be one of the following:
 Mild Steel
 - Stainless Steel, 304-2b (contact PS DOORS for stainless steel product numbers)

Hardware:

• Gate to have a minimum of four (4) non-corrosive guide bearings, which require no lubrication.

Finish:

- Mild Steel: Powder Coat Yellow on all unfinished exposed surfaces. (Standard)
- Stainless Steel: Mill Finish/Unpainted on all unfinished, exposed surfaces (Custom).

Performance Rating:

• Gate shall meet or exceed OSHA requirements, relative to dimensions and loads, at the time of manufacture.

Installation:

• Mounting Location: Deck Mount (Standard) or Face Mount available.





Opening Width	Operator Option	Product Number
48" (Made to order)	Manual	MGHMM048042
48" (Made to order)	Electric	MGHEM048042
48" (Made to order)	Electric/Pneumatic	MGVNM048042
48" (Made to order)	Pneumatic/Pneumatic	MGVPM048042
72" (Stocked Size)	Manual	MGHMM072042
72" (Stocked Size)	Electric	MGHEM072042
72" (Stocked Size)	Electric/Pneumatic	MGVNM072042
72" (Stocked Size)	Pneumatic/Pneumatic	MGVPM072042
96" (Stocked Size)	Manual	MGHMM096042
96" (Stocked Size)	Electric	MGHEM096042
96" (Stocked Size)	Electric/Pneumatic	MGVNM096042
96" (Stocked Size)	Pneumatic/Pneumatic	MGVPM096042
120" (Made to order)	Manual	MGHMM120042
120" (Made to order)	Electric	MGHEM120042
120" (Made to order)	Electric/Pneumatic	MGVNM120042
120" (Made to order)	Pneumatic/Pneumatic	MGVPM120042
144" (Made to order)	Manual	MGHMM144042
144" (Made to order)	Electric	MGHEM144042
144" (Made to order)	Electric/Pneumatic	MGVNM144042
144" (Made to order)	Pneumatic/Pneumatic	MGVPM144042
168" (Made to order)	Manual	MGHMM168042
168" (Made to order)	Electric	MGHEM168042
168" (Made to order)	Electric/Pneumatic	MGVNM168042
168" (Made to order)	Pneumatic/Pneumatic	MGVPM168042
192" (Made to order)	Manual	MGHMM192042
192" (Made to order)	Electric	MGHEM192042
192" (Made to order)	Electric/Pneumatic	MGVNM192042
192" (Made to order)	Pneumatic/Pneumatic	MGVPM192042

* Custom sizing and design available. Mild Steel product numbers shown.



ERTICAL MEZZ. GATE

Standard Technical Data for the Vertical Mezzanine Gate

- 1. Mezzanine Gate Operation to be one of the following;
 - a. Manual; counterweighted for ease of operation.
 - b. Electric; Electric drive system, 115 VAC, (24 VDC Secondary), 60 HZ, 1/3 HP. Operator control panel includes Timer-to-Close capability, Obstruction Sensing and one (1) threebutton (Open-Stop-Close) control panel mounted push button station, and one (1) remotely located wall mount 3-Button push button. Includes Amber color WARNING strobe light, activates when gate is in operation.
 - c. Pneumatic Operation/Electric Controls; Pneumatic Drive Cylinder requires 90-100 psi clean and dry air, provided by others. Operator control panel requires 115 VAC (24 VAC Secondary), 60 HZ, includes Timer-to-Close capability, and two (2) remotely located wall mount single push button. Includes Amber color WARNING strobe light, activates when gate is in operation.
 - d. Pneumatic Operation/Pneumatic Controls; Pneumatic Drive Cylinder requires 90-100 psi clean and dry air, provided by others. Includes two (2) remotely located two button (Open-Close) push button station.
- 2. Mounting Location on mezzanine to be one of the following;
 - a. Deck Mount
 - b. Face Mount
- 3. Gate Section; to be factory welded frame work with horizontal top rail. Includes mid-rail, 4" high toe board, 42" overall height, and vertical members not to exceed 8' on center. Gate to have a minimum of four (4) non-corrosive guide blocks, no lubrication required. Gate shall meet or exceed Federal OSHA standard for standard railings at the time of manufacture relative to dimensions and loading. To be fabricated from one of the following;
 - a. Mild Steel
 - b. 304-2b Stainless Steel
 - c. 316L Stainless Steel
- 4. Vertical Guide Column Assembly; shall consist of formed columns of the same material as gate section, 120" standard height, prepped for the gate operating hardware and applicable mounting brackets. Standard Vertical Guide Column assemblies shall be fabricated to allow gate to bypass idler sheaves providing for a standard Clear Opening Height of 84".
- 5. Finish to be;
 - a. Mild steel mezzanine gates; exposed surfaces to be Powder Coat Safety Yellow. Hardware/fasteners to be Zinc plated.
 - b. Stainless steel mezzanine gates (304-2b or 316L); mill finish, acid washed. Interfering welds ground smooth, not polished. Hardware/fasteners to be Stainless Steel.
- 6. Warranty to be One (1) Year from date of shipment, finish excluded.
- 7. Available Options:
 - a. Electric and Pneumatic Operation/Electric Controls: Remote Controls, includes one (1) Universal Co-Axial Receiver and one (1) keypad transmitter.

Exclusions:

- 1. All electrical wiring or airline piping to and between all components by others.
- 2. Structural Review of mezzanine to accept loading and anchor design by others.

NAME	ADDRESS	PHONE	PS DOORS	1150 S. 48TH STREET, PHONE 701 746 4519	GRAND FORKS, ND 58201
COMPANY	CITY, ST, ZIP	EMAIL		FAX 701.746.8340	WWW.PSDOORS.COM



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Appendix C – Commissioning Commissioning Plan

Commissioning documents can be downloaded from the DeCA Facilities Website:

www.decafacilities.com/decadesign/

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- 1. This is a master Commissioning Plan document.
- 2. This document must be revised to correctly reflect Project requirements; it is not useable without modification. Coordination is required between Drawings, Specifications, and the Commissioning Plan. Conflicts between Documents must be resolved. Text not required for the project must be removed. Additional required text must be added as necessary.
- 3. These notes must be removed prior to distribution of this document.
- 4. Removal of these notes indicates that the information contained herein has been verified as correct or modified as necessary to make it correct.



COMMISSIONING PLAN

DATE HERE

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DEFINITIONS

- A. Commissioning Authority (CxA): An independent party, not otherwise associated with the A/E team members or the Contractor. The CxA leads, plans, schedules, and coordinates the commissioning team to implement the Commissioning process.
- B. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.
- C. Commissioning Process: A quality-focused process for enhancing the delivery of a project. The process focuses upon verify and documenting that the facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet the project requirements.
- D. Commissioning Team: The individuals who through coordinated actions are responsible for implementing the commissioning process.
- E. Deferred Functional Tests: FPT's that are performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that disallow the test from being performed.
- F. Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents (that is, does not perform properly or is not complying with the design intent).
- G. Functional Performance Test (FPT): Test of the dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) is not functional testing. TAB's primary work is setting up the system flows and pressures as specified, while functional testing is verifying that which has already been set up. The CxA develops the functional test procedures in a sequential written form, coordinates, oversees, and documents the actual testing, which is usually performed by the installing contractor or vendor. FPT's are performed after prefunctional checklists, startup, TAB, controls are complete.
- H. Issues log: A formal and ongoing record of problems or concerns and their resolution that have been raised by members of the Commissioning Team during the course of the commissioning Process.
- I. Phased Commissioning: Commissioning that is completed in phases due to the size of the structure or other scheduling issues, in order to minimize the total construction time.
- J. Prefunctional Checklist (PFC): A list of items to inspect and elementary component tests to conduct to verify proper installation of equipment, provided by the CxA to the GC and Sub. Prefunctional checklists are primarily static inspections and procedures to prepare the equipment or system for initial operations (e.g., belt tension, oil levels OK, labels affixed, gages in place, sensors calibrated, etc.).
- K. Sampling: Functionally testing only a fraction of the total number of identical or near identical pieces of equipment.

- L. Seasonal Performance Tests: FPT that are deferred until the system(s) will experience conditions closer to their design conditions.
- M. Startup: The initial starting or activating of dynamic equipment, including executing prefunctional checklists.
- N. Trending: Monitoring control point data using the building control system.

ABBREVIATIONS:

The following are common abbreviations used in the Specifications:

- 1. A/E Architect and Design Engineers of Record
- 2. CxA Commissioning Authority
- 3. CC Controls Contractor
- 4. EC Electrical Contractor
- 5. FPT Functional Performance Test
- 6. GATR Government Authorized Technical Representative
- 7. GC General Contractor
- 8. MC Mechanical Contractor
- 9. PFC Pre-functional Checklist
- 10. RMCS Refrigerant Monitoring Control System
- 11. TAB Test and Balance

COMMISSIONING PLAN

(Edited from DeCA June 2022 Design Criteria)

1.1 Commissioning Objectives

The objective of commissioning is to provide documented confirmation that a facility fulfills the functional and performance requirements of the Government. To reach this goal, it is necessary for the commissioning process to establish and document the Government's criteria for system function, performance, and maintainability, as well as, to verify and document compliance with these criteria throughout design, construction, start-up, and the initial period of operation. In addition, the commissioning process ensures that Operation and Maintenance (O&M) Manuals are complete, thorough, and accurate, and that Government representatives are adequately trained in operation and maintenance of the building systems in order to ensure the systems continue to operate as intended.

The Commissioning Authority (CxA) will be involved in the project from the initial design phase through the warranty phase. The primary role during the design phase is to review the detailed commissioning specifications developed by the design team and review the design documents to ensure they include all the components required to meet the Government's commissioning objectives. During the construction phase, the CxA will monitor the execution of the commissioning plan. The CxA will observe and document the installation and performance of all systems to ensure they are functioning in accordance with the Government's objectives and the Contract Documents. During the warranty phase the CxA will observe the required opposite season or deferred testing and deficiency corrections and review the final testing documentation for the Commissioning Record and O&M Manuals.

1.2 Commissioning Overview

- A. Commissioning Process: The following narrative provides a brief overview of the typical commissioning tasks during construction and the general order in which they occur.
 - 1. Commissioning during construction begins with a meeting conducted by the CxA where the commissioning process is reviewed with the commissioning team members during a regularly scheduled monthly/biweekly Contractors' meeting. This is a onetime kick off type meeting. This meeting will occur prior to the completion of the first Prefunctional Checklist.
 - 2. Additional meetings will be required throughout construction, scheduled by the CxA with necessary parties attending, to plan, scope, coordinate, schedule future commissioning related activities, and resolve problems.
 - 3. Equipment documentation, including: Shop Drawings, installation instructions, detailed start up procedures are submitted to the CxA during the normal submittals process.
 - 4. The CxA will develop project specific prefunctional checklists and will issue these checklists to the installing contractors to execute. The prefunctional checklists may be paper, electronic, or web based format.
 - 5. The CxA will verify the information being entered on the PFC checklists during normal job site visits.
 - 6. Prior to commencement of functional testing, the Commissioning Team shall perform a systems activation inspection to ensure the systems are ready to be functionally tested.

- 7. The installing contractors will ensure all Pre-functional Checklists are completed. The Contractor shall identify any missing checklists and provide as necessary.
- 8. The CxA will verify all Pre-functional Checklists, TAB and startup are complete for systems to be Functionally Tested.
- 9. The CxA will prepare the Functional Testing protocols for execution with the assistance from the installing contractors.
- 10. The CxA will coordinate with the Contractor to schedule the Functional Testing after the Pre-Functional Checklists, TAB, and equipment startup are complete.
- 11. Items of non-compliance in material, installation or setup are noted for the Contractor to correct. Non-complying systems will then be retested and functional performance verified by the GC and the CxA.
- 12. The CxA will execute all Functional Performance Testing for the commissioned systems with the assistance from the appropriate installing contractors.
- 13. All functional performance tests are completed before Substantial Completion Date.
- 14. The CxA will review the O&M documentation for completeness and use in the Government Training sessions.
- 15. The GC and CxA will witness training session(s) to verify that acceptable training was provided.
- 16. The CxA with the assistance of the commissioning team will compile all the commissioning information into a final commissioning report.
- B. Commissioning Authority Limitation of Authority:
 - 1. The CxA is not authorized to modify, add or revoke the requirements of the Contract Documents.
 - 2. The CxA is not responsible for design concepts, design criteria or ensuring drawings and specifications comply with codes.
 - 3. The CxA is not responsible for verifying designers' calculations or drawing layouts in detail.
 - 4. The CxA is not responsible for construction or construction means and methods.
 - 5. The CxA is not responsible for providing testing equipment to contractors.

1.3 Systems to be Commissioned

- A. The following systems and assemblies will be commissioned:
 - 1. Division 08 Openings
 - 2. Division 11 Equipment
 - 3. Division 21 Fire Suppression

- 4. Division 22 Plumbing
- 5. Division 23 HVAC
- 6. Division 26 Electrical
- 7. Division 27 Communication Systems
- 8. Division 28 Electronic Safety and Security Systems
- 9. Division 32 Exterior Improvements
- 10. Division 33 Utilities
- B. Prefunctional and Functional checklists:
 - 1. Table 1.2 is a list of the prefunctional and functional checklists required, as a minimum, to commission the above systems. Table 1.2 may be modified depending upon shop drawing approvals and final commissioning plan development.

1.4 Commissioning Team Members Responsibilities

- A. Team Members contact information is listed in Table 1.1. It includes the name of the contact, company, address, and communication information. The contractor will amend as needed, as team members change or are added. This table will be provided to the Government in the Commissioning Manual.
- B. Government Authorized Technical Representative (GATR):
 - 1. Attend initial commissioning meeting and additional meetings as necessary.
 - 2. Provide firm direction to the commissioning team to address issues and concerns identified during the commissioning process.
 - 3. Provide written responses to all commissioning related review comments issued by the CxA.
 - 4. Review commissioning progress reports, Issue logs, and submittals throughout the project
 - 5. Participate in the resolution of deficiencies identified during commissioning process.
 - 6. Assist the GC in coordinating the training of Governments personnel.
- C. Commissioning Authority (CxA):
 - 1. Organize and lead the commissioning team.
 - 2. Coordinate the commissioning activities with the Installing Contractors and Government; help integrate commissioning activities into the Master Project Schedule.
 - 3. Plan and conduct commissioning team meetings as needed.
 - 4. Provide project-specific Prefunctional Checklist and Functional Performance Test procedures.

- 5. Reviews all completed Pre-Functional Checklists and verify a minimum of 10% in the field prior to Functional Performance Testing.
- 6. Prepare and maintain the commissioning issues log.
- 7. Review TAB procedures and reports. Sample actual readings to verify repeatability.
- 8. Execute all Functional Performance Testing of commissioned systems with the assistance from the appropriate installing contractors.
- 9. Review control point trending to verify stable system operation.
- 10. Verify the contractor has provided adequate training to the Government's personnel for the commissioned systems.
- 11. Develops and submit a final commissioning report at the end of project construction.
- D. Architect/Engineer of Record:
 - 1. Provide copies of all project documents including plans, specifications, addenda, RFI Responses, ASI, PR's, etc.
 - 2. Provide any design narrative and sequences documentation requested by the CxA. The designers shall assist in clarifying the operation and control of commissioned equipment in areas where the specifications, control drawings or equipment documentation is not sufficient for writing detailed testing procedures.
 - 3. Participate in the resolution of deficiencies identified during commissioning process.
- E. Installing Contractor:
 - 1. Include commissioning requirements and activities in each purchase order or subcontract as appropriate.
 - 2. Facilitate the coordination of the commissioning and incorporate commissioning activities into the Master Project Schedule.
 - 3. Ensure that all installing contractors execute their commissioning responsibilities according the contract documents and as indicated on the master project schedule.
 - 4. Provide copies of all submittals including all changes to the CxA as requested.
 - 5. Provide RFI documents related to the commissioned systems to the CxA as needed.
 - 6. Attend and participate in commissioning team coordination meetings.
 - 7. Complete Prefunctional Checklists as work is completed and provide to the CxA for review and verification.
 - 8. Document all equipment and system startup activities. Provide documentation to the CxA for review and incorporation into the commissioning report.
 - 9. Cooperate with the CxA for timely resolution of issues recorded in the issues log.

- 10. Notify the CxA when systems are ready for startup and functional testing including
- 11. Completing and submitting system readiness checks.
- 12. Provide assistance during the functional testing process including providing sufficient access to all equipment and components.
- 13. Collect, compile, and submittal the Operations and Maintenance Manuals for approval prior to scheduling the government training sessions.
- 14. Prepare a written training plan as indicated in the project specifications.

1.5 Commissioning Schedule

- A. Figure 1.1 contains a summary schedule of the commissioning activities.
 - 1. The CxA will plan and conduct site visits and commissioning meetings on a regular basis.
 - 2. Visits will be by Government Commissioning Representatives with the appropriate technical expertise. On some occasions, more than one Government Commissioning Representative will be on site.

1.6 Construction Phase Commissioning Activities

- A. COMMISSIONING COORDINATION/KICK-OFF MEETING
 - 1. Commissioning during the Construction Phase starts with a coordination/Kick-off meeting conducted by the Commissioning Authority wherein the commissioning process, activities, and each team member responsibilities are reviewed with the commissioning team members. Commissioning meetings will be conducted throughout construction to plan, coordinate, and schedule activities and address commissioning related issues.

B. SCHEDULING

1. The CxA will work with GC to plan and schedule the commissioning activities. The CxA will review the Construction Schedule and verify that commissioning activities are properly scheduled. The GC will integrate all commissioning activities and milestones into the master schedule.

C. SUBMITTAL REVIEW

- 1. The CxA will review Cx related submittals for quality and compliance with the Project Requirements. The CxA will indicate on the approved submittal schedule which submittals are considered to be Cx related. The Contractor will forward all necessary copies of the submittal package to the GATR. The GATR will be responsible for disseminating the submittals to all project team members including the CxA. The GATR will send one complete copy of the submittal package directly to the CxA, preferably in electronic format. The CxA will review the submittal package concurrently with the GATR performing their review. Any review comments generated by the CxA will be issued directly to the GATR. The GATR will then issue a comprehensive set of review comments as part of the stamped submittal package returned to the Contractor.
- 2. Data for Commissioning: The CxA will provide a list of submittal data needed for the Commissioning Process to the GC. The GC will provide the requested information to the

CxA as it becomes available. Typically submittal data required includes: detailed manufacturer installation instructions, start-up, operating, and troubleshooting procedures, fan and pump curves, and performance data. This information is required for development of the Pre-Functional checklists.

D. PREFUNCTIONAL CHECKLISTS

- 1. General: Pre-Functional checklists ensure that the equipment and systems are properly installed and operational before functional testing begins. Prefunctional checklists are static type inspections and procedures to prepare the equipment for initial operation.
- 2. Pre-Functional Checklist: The Commissioning Agent will develop specific prefunctional checklists for each piece of equipment included in the commissioning process. The CxA will issue the prefunctional checklist to the installing contractors.
- 3. Execution of Pre-Functional Checklists: The installing contractors will fill out the pre-functional checklists. The checklist format will be [Paper hard copies, electronic, a cloud based commissioning field tool]. Checklists should be completed as the equipment installation progresses. [Online access to the PFC forms will be provided by the CxA. The installing contractors will complete the forms on their own personal tablet device or one will be provided for them] The GC will manage the process and ensure all PFC forms have been completed & signed by the installing contractors. The CxA will verify 10 percent of the pre-function checklists shall be returned to the Contractor for corrections and resubmission. The GC will provide all completed prefunctional checklist to the CXA for inclusion in the final commissioning report. Only individuals that have direct knowledge and witnessed that a line item task on the pre-functional checklist was actually performed shall initial or check that item off.
- 4. Deficiencies: The installing contractor shall list any outstanding items of the initial start-up and pre-functional procedures that were not completed successfully, at the bottom of the procedures form or on an attached sheet. The procedures form and any outstanding deficiencies shall be provided to the GC and the CxA within 2 days of test completion. The GC and CxA will review and monitor outstanding deficiencies. The installing contractors shall correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Government.

E. EQUIPMENT START UP MEETING

- 1. General: This coordination meeting should occur well before start-up actually takes place to initiate preparations for both starting the equipment and maintaining it after start-up. The meeting should include key commissioning team members such as the followings: Installing contractors, equipment start up vendor representatives. The meeting should focus on discussing activities that must happen before equipment startup such as: electrical power availability, flushing and cleaning piping systems, indoor air quality maintenance, etc. The meeting should close by developing and submitting a start-up plan for executing equipment start up for each piece of equipment included in the Commissioning process.
- The startup plan must include these procedures: The plan should cover detailed start up procedures from equipment manufacturers and provide checkout procedures using standard filed checkout sheets. The documentation should include checklists and procedures with specific boxes or lines for recording and documenting inspections of each piece of equipment.

Maintenance procedures: include maintenance procedures to follow while the systems are operated prior to turnover to the Government. These procedures should include at least the following:

- Protection of the equipment from exposure to construction
- Cleaning of the equipment identify the parties responsible
- Monitoring of system during operation clearly identify responsible parties
- Schedule for servicing such as cleaning strainers and/or replacing filters
- A plan for addressing activated alarms such as high static or freeze stats that protect the equipment from damage. Procedure of notification and correction.
- 3. Startup plan submission. The startup plan will be submitted to the CXA and Government representative for review and approval prior to starting any equipment.
- 4. Once the startup plan has been approved the installing contractors executes equipment start up according to the start up plan and provides the sign and dated copies of all completed start up documents to the CxA for inclusion in the final commissioning report. All start up procedures must be satisfactorily executed before functional testing begins and before the equipment is operated, even temporarily.

F. COMMISSIONING ISSUES LOG

- 1. The Commissioning Agent will prepare and maintain a Commissioning Issues Log that describes Commissioning Issues and Commissioning Observations that are identified during the Commissioning process. These observations and issues include, but are not limited to, those that are at variance with the Contract Documents. The Commissioning Issues Log will identify and track issues as they are encountered, the party responsible for resolution, progress toward resolution, and document how the issue was resolved. The Master Commissioning Issues Log will also track the status of unresolved issues. The CxA will verify the corrected issue and provide the commissioning team with updated issues log on a routine basis.
- 2. Creating a Commissioning Issues Log Entry:
 - Identify the issue with unique numeric or alphanumeric identifier by which the issue may be tracked.
 - Assign a descriptive title for the issue.
 - Identify date of the issue.
 - Identify test number of test being performed at the time of the observation, if applicable, for cross reference.
 - Identify system, subsystem, and equipment to which the issue applies.
 - Identify location of system, subsystem, and equipment.
 - Include information that may be helpful in diagnosing or evaluating the issue.
 - Note recommended corrective action.
 - Identify commissioning team member responsible for corrective action.
 - Identify expected date of correction.
 - Identify person that identified the issue.

- 3. Documenting Issue Resolution:
 - Log date correction is completed or the issue is resolved.
 - Describe corrective action or resolution taken. Include description of diagnostic steps taken to determine root cause of the issue, if any.
 - Identify changes to the Contract Documents that may require action.
 - State that correction was completed and system, subsystem, and equipment are ready for retest, if applicable.
 - Identify person(s) who corrected or resolved the issue.
 - Identify person(s) verifying the issue resolution.

G. TAB REVIEW AND VERFICATION OF REPORT ACCURACY

- 1. General: The TAB contractor will provide the CxA with a preliminary TAB report for review. The CxA will review the TAB report to verify or assure the following:
 - TAB results for all equipment and systems covered in the specifications are included in the TAB report
 - Actual flow rates were adjusted to the design values plus or minus specified tolerances.
 - The report discusses any TAB activities that failed to produce the required results.
 - The report and process followed adheres to the TAB firms national organizations standard and project specifications.
- 2. Verification of Report Accuracy: The CxA and TAB contractor will verify the accuracy of the TAB report readings by randomly sampling the readings noted in the report in the field using the TAB contractors calibrated instruments.
- 3. The CxA will note any deviations greater than the tolerance specified in the TAB specifications (+/- 10%, for example)
- 4. Deviations noted should be corrected and documented by the TAB contractor.
- 5. If the total number of sampled readings that deviate beyond specified tolerances exceeds 10 percent, Additional sampling will be required.

H. PHASED COMMISSIONING

1. When startup and initial checkout are required to be executed in phases, this phasing will be planned and scheduled in a coordination meeting of the CxA, mechanical, plumbing, TAB, and controls contractor, and the GC. The GC shall modify the construction schedule as needed, to reflect phased commissioning.

I. FUNCTIONAL TESTING

1. The CxA directs comprehensive equipment and system testing and documents all testing performance. This testing is conducted using functional performance test procedures developed by the CxA.

- 2. The objective of functional testing is to demonstrate that each system is operating according to the Contract Documents. Functional testing facilitates bringing the systems to full dynamic operation. During the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.
- 3. In general, each system should be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load) where there is a specified system response. Verifying each sequence in the sequences of operation is required. Proper responses to such modes and alarm conditions as power failure, freeze conditions, low oil pressure, no flow, equipment failure, etc. shall also be tested.
- 4. Functional Performance testing will not be scheduled until all prefunctional checklists are completed and return to the CxA, the Certificate of Readiness has been provided to the CxA, TAB is complete and all control programming and check out is complete.
- 5. Documentation: The CxA will execute the functional testing with support from the appropriate installing contractors and document the results of all functional performance tests using the specific procedural forms developed for that purpose.
- 6. Non-Conformance: Systems or equipment for which 100 percent sample size are tested fail if one or more of the test procedures results in discovery of a deficiency and the deficiency cannot be resolved within 15 minutes during the test. Re-test to the extent necessary to confirm that the deficiencies have been corrected without negatively impacting the performance of the rest of the system. The CxA will record the results of the functional test on the procedure or test form. All deficiencies or non-conformance issues shall be noted on the commissioning issues log and functional test form. All deficiencies or non-conformance issues identified during the functional testing shall be corrected and retested at no additional cost to the Government.
- 7. Aborted Tests and Re-Testing: Abort functional performance test if any deficiency prevents successful completion of the test or if any required commissioning team member is not present for the test. Functional performance test may be aborted if the CxA determines the system is not sufficiently complete or ready for testing. The Contractor will reimburse the Government for all cost associated with the effort lost due to re-testing due to test failures and aborted tests. These costs must include salary, travel costs, and per diem for Government commissioning team members. Re-test only after all deficiencies identified during the original test have been corrected.

J. CONTROL POINT TRENDING

- 1. General: Following successful completion of functional performance testing the RCMS the installing contractor shall configure key control points to collect data at 15 minute time intervals over a 36 hour minimum period of time. The control point trends shall be used to confirm stable system control and operation.
- 2. The system shall be in full automatic mode during the entire trending period. Restart the trending if the equipment, systems or setpoints are overridden to manual mode at any time during the trend test period.
- 3. All alarm points shall be included in the trending.
- 4. The control RCMS installing contractor shall provide the trend data to the CxA at the end of the trending period for the CxA to review. Additional trending may be needed after the initial review.

K. OPERATIONS AND MAINTENANCE MANUALS

- 1. The commissioning process requires detailed O&M documentation to be provided.
- 2. The Contractor shall submit manuals to the GATR and CxA prior to scheduling training of the Governments personnel. The GATR and CxA shall review the O&M manuals and documentation; with redline as-builts, for systems that were commissioned to verify compliance with the specifications. The GATR and CxA will communicate any deficiencies in the manuals to the contractors. Upon a successful review the GATR will recommend approval and acceptance of these sections of the O&M manuals. The GATR will also review each equipment warranty and verify that all requirements to keep the warranty valid are clearly stated. The approved manuals will be provided to the Governments personnel prior to the training session so they can become familiar with the information the training session will cover.
- 3. The contractor shall compile O&M manuals for every piece of equipment and system being commissioned with the following format:
 - Quantity: 6 (Unless more are required by the technical specifications).
 - Format: 8-1/2 x 11 3-ring loose-leaf binders, 3-inch maximum, and electronic format that is compatible with Government's system. Each binder shall be clearly labeled on the spine. Use as many binders as required. Do not overload binders. Dividers with permanently marked tabs of card stock shall separate each section and sub section. Tab labels shall not be handwritten. A separate manual or chapter shall be provided for each applicable system.
 - There shall be a title page and table of contents in the front of each binder for each binder's contents. In each binder, there shall be a main tab for each specification section. Behind the section number tab there shall be the equipment ID tag sub-tab for each piece of major equipment (or group, if small or numerous). Behind each equipment name, tab shall be the following sections, in the given order, divided by a double weight colored sheet labeled with the title of the section.
 - Contractor. The first page behind the equipment tab shall contain the name, address and telephone number of the manufacturer and installing contractor and the 24-hour number for emergency service for all equipment in this section, identified by equipment.
 - Submittal and Product Data. This section shall include all approved submittal data, cut sheets, data base sheets and appropriate shop drawings. If submittal was not required for approval, descriptive product data shall be included.
 - Operation and Maintenance Instructions. These shall be the written manufacturer's data with the model and features of this installation clearly marked and edited to omit reference to products or data not applicable to this installation. This section shall include data on the following:
 - Model number, serial number and nameplate data for each piece of equipment and any subcomponent.
 - Installation, startup and break-in instructions.
 - All starting, normal shutdown, emergency shutdown, manual operation and normal and emergency operating procedures and data, including any special limitations.

- Step-by-step procedure for system startup, including a pre-start checklist. Refer to controls and indicators by nomenclature consistent with that used on panels and in control diagrams.
- Sequence of operation, with detailed instruction in proper sequence, for each mode of operation (i.e., day-night; staging of equipment.
- Emergency operation: If some functions of the equipment can be operated while other functions are disabled, give instructions for operations under these conditions. Include here only those alternate methods of operations (from normal) which the operator can follow when there is a partial failure or malfunctioning of components, or other unusual condition.
- Shutdown procedure: Include instructions for stopping and securing the equipment after operation. If a particular sequence is required, give step-by-step instructions in that order.
- O&M and installation instructions that were shipped with the unit.
- Preventative and corrective maintenance, with service procedures and schedules.
- Safety Precautions: This subsection shall comprise a listing of safety precautions and instructions to be followed before, during and after making repairs, adjustments or routine maintenance.
- Manufacturers' brochures (including controls): Manufacturers' descriptive literature covering devices and equipment used in the system, together with illustrations, exploded views and renewal parts lists. Manufacturers' standard brochures and parts list shall be corrected so that information applying to the actual installed equipment is clearly defined.
- Warranty and guarantee, which clearly lists conditions to be maintained to keep warranty in effect and conditions that, would affect the validity of the warranty.
- Any service contracts issued.
- Control Diagrams/Drawings. Include the as-built control diagrams/drawings for the piece of equipment and its components, including full points list, full print out of all schedules and set points after testing and acceptance of the system, and copies of all checkout tests and calibrations performed by the contractor (not commissioning tests).
- Specifications. This section is comprised of the component or system specification section copied and inserted complete with all addenda.

L. TRAINING OF GOVERNMENT PERSONNEL

 A training plan must be developed which identifies all training required by specification sections associated with commissioned systems. The General Contractor will submit the training plan to the CxA for review and approval prior to scheduling the training sessions. The General Contractor will be responsible for coordination and implementation of the training sessions after the training plan is approved.

- 2. The written training plan will include the following at a minimum:
 - Schedule and location of the training sessions
 - List of training instructors
 - Equipment included in the training
 - General purpose of systems
 - Training objectives
 - Use of O&M manuals
 - Startup, normal operation, shutdown, troubleshooting, interactions with other systems
 - Contact information and procedure for warranty issues
 - Special maintenance requirements
 - Suggested spare part to stock
- 3. Training session shall include hands-on training that includes startup, operation in all modes possible, including manual, shut-down, alarms, power failure, and any emergency procedures, and preventative maintenance for all equipment.
- 4. The RCMS installing contractor shall provide a separate training session that provides an overview of the intent of the system as well as the particular operation requirement. Operator interface, scheduling, alarms, trending and troubleshooting are included in the training session.
- 5. After all training is complete; the contractor is to provide an attendance list and proper documentation of the training that occurred to the CxA for the final commissioning report.

M. COMMISSIONING REPORT

- 1. The CxA will compile all the documentation from the commissioning process into a final commissioning report.
- 2. Final Commissioning Report Details: The Final Commissioning Report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope and a general description of testing and verification methods. For each piece of commissioned equipment, the report shall contain:
 - Commissioning Plan
 - Submittal Review Comments
 - Completed Pre-Functional Checklists
 - Site Observation Reports
 - TAB verification comments
 - Functional Test Reports
 - Control Point Trend Data
 - Final Commissioning Issues Log
 - Training Plan, training procedure, and documentation used to support training.
 - Commissioning Meeting Notes

 All outstanding non-compliance items shall be specifically listed. Recommendations for improvement to equipment or operations, future actions, commissioning process changes, etc. shall be listed. Each non-compliance issue shall be referenced to the specific functional test, inspection, trend log, etc. where the deficiency is documented. The functional performance and efficiency section for each piece of equipment shall include brief description of the verification method used (manual testing, BAS trend logs, data loggers, etc.) and include observations and conclusions from the testing.

N. DEFERRED TESTING

1. Unforeseen Deferred Tests: If any check or test cannot be completed due to the building structure, required occupancy condition or other deficiency, execution of checklists and functional testing may be delayed upon approval of the CxA.

Table 1.1 - Team Members Information

Company	Contact	Phone	Fax	Mobile	e-mail	Address	City/State,/Zip	Trade / Role
								Government Representative
								Project Manager
								Architect/Engineer Principal
								Mechanical Engineer
								Electrical Engineer
								Commissioning Authority
								General Contractor
								HVAC Contractor
								Plumbing Contractor
								Electrical Contractor
								Refrigerant Monitoring Control System Contractor
								Others:

	Pre-funct	tional	Functional	
System/Component	Testir	ng	Testing	
System/Component	Number	Modified Y / N	Number	Modified Y / N
Division 8 - Openings				
Overhead Coiling Doors	None	NΔ	FT-083323	
Sectional Overhead Doors	None	ΝΔ	FT-083613	
Automatic Entrance Doors	None	NA	FT-084229	
Windows	None	NA	FT-085000	
Door Hardware	None	NA	FT-087100	
Key Control Cabinet	PC-087913		None	
Division 11 – Equipment				
Refrigerated Display Cases	PC-110000-1	*	None	NA
Equipment, Generic	PC-110000-2	*	None	NA
Loading Dock Equipment	PC-111300	*	None	NA
Queuing System	PC-111400	*	None	NA
Pedestrian Control Equipment	None	NA	FT-111400	
Safes	PC-111616	*	None	NA
Bakery Equipment	PC-114000.13	*	None	NA
Deli Equipment	PC-114000.16	*	None	NA
Grocery Equipment	PC-114000.19	*	None	NA
Meat Department Equipment	PC-114000.23	*	None	NA
Produce Department Equipment	PC-114000.26	*	None	NA
Seafood Department Equipment	PC-114000.29	*	None	NA
Baler	PC-118236	*	None	NA
* Use generic form PC-11000, customize as	required by commission	ning work scop	е.	
Division 13 – Special Construction			1	
Cold Storage Rooms	PC-132126		None	NA
Division 04 Fire Oversee star				
Division 21 – Fire Suppression	DO 044000		FT 044000	
Fire Suppression	PC-211300		FT-211300	
Division 22 – Plumbing				
Sonitory Wasto and Vont Pining	BC 220000 1		Nono	ΝΔ
Storm Drainago Bining	PC 220000-1		None	
	PC-220000-2		None	
Domostic Water Piping	PC 220000-3		None	
Domestic Water Hosters	PC-220000-4			INA
Domestic Water Filtration	PC-220000-5		F1-220000-3	NIA
Dumps (Dlumbing)	PG-223200	ΝΑ	TT 220000 1	IN/A
Pumping Eiveurop	None	NA NA	FT-220000-1	
Plumbing Fixibles	None	INA	F1-220000-2	
Division 23 – Heating, Ventilating, and Air	Conditioning (HVAC)		1	1
Testing, Adjusting, and Balancing	PC-230593-1	•	FT-230593-1	
Calibration and Leak-By Test Procedure	PC-230593-2		FT-230593-2	
Control Devices for HVAC	PC-230913		FT-230913	
Refrigeration Monitoring Systems	PC-230916		FT-230916	
Hydronic Piping	PC-232113		None	NA
Pumps (HVAC)	PC-232223		FT-232223	
Ducts	PC-233113		None	NA

Table 1.2 - System Components to be Commissioned

<insert project name and location> COMMISSIONING PLAN

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	Pre-functi	ional a	Functional Testing	
System/Component	165111	y Modified	Testi	Modified
	Number	Y / N	Number	Y / N
Fans	PC-233423-1		FT-233423-1	
Air Curtains	PC-233423-2		FT-233423-2	
Makeup Air Units	PC-233423-3		FT-233423-3	
Diffusers Registers and Grilles	PC-233713		None	
Kitchen/Exhaust Makeup Air Unit	PC-233813		FT-233813	
Heat Pumps	PC-236213		FT-236213	
Packaged Water Chillers	PC-236400		FT-236400	
Split System Air Conditioners	PC-238126-1		None	NA
Split System Heat Pumps	PC-238126-2		None	NA
Fan Coil Units	None	NA	FT-238216	
Air Handling Units	PC-238416-1		FT-238416-1	
Dehumidifier	PC-238416-2		FT-238416-2	
Refrigeration Compressors	PC-239000-1		FT-239000	
Air Cooled Condenser	PC-239000-2		None	NA
Division 26 – Electrical	1			
Medium Voltage Cables	PC-260513		None	NA
Grounding and Bonding	PC-260526		FT-260526	
Transformers (Dry)	PC-261219-1		None	NA
Transformers (Liquid)	PC-261219-2		None	NA
Electric Metering	PC-261600		None	NA
Switchboards	PC-262300		FT-262300	
Panelboards	PC-262416		FT-262416	
Motor Control Centers	PC-262419		FT-262419	
Safety Switches	PC-262816		None	NA
Generator Assemblies	PC-263214		FT-263214	
Battery Equipment	PC-263343		None	NA
Cathodic Protection	PC-264213		None	NA
Emergency Lighting	PC-265100-1		FT-265100	
Interior Lighting	PC-265100-2		FT-265100	
Exterior Lighting	PC-265600		FT-265600	
Division 27 – Communications				
Voice and Data Communications Cabling	PC-271000-1		None	NA
Consoles	PC_271116		None	NA
Data Communication Systems	PC-272000		FT-272000	NA
Voice Communication Systems	PC-273000		FT-273000	
Public Address and Music Systems	PC-275116		FT-275116	
Processing Area Signaling Systems	PC-278000		None	NA
Division 28 - Electronic Safety and Security				
Intrusion Detection	PC-281600		FT-281600	
Video Surveillance	PC-282300		FT-282300	
Fire Detection and Alarm	PC-283100		FT-283100	
	10-205100		11-203100	
Division 32 – Exterior Improvements	<u> </u>	<u> </u>	·	
Irrigation Systems	PC-328400		FT-328400	
Division 33 - Utilities				
Water Distribution	PC-331100 1		None	ΝIΛ
Water Metering	PC_331100-1	1	None	
Sanitany Sewerage	PC_333000	1	None	
Samaly Sewelaye	10-333000		INDIE	INA

<insert project name and location>

COMMISSIONING PLAN

Sustem/Component	Pre-function Testing	onal J	Functional Testing	
System/Component	Number	Modified Y / N	Number	Modified Y / N
Storm Drainage	PC-334000		None	NA
Gas Metering	PC-335100		None	NA

Figure 1.1 – Commissioning Schedule



Appendix D – Uniform Décor Package Finish Schedule

Uniform Décor Package can be downloaded from the DeCA Facilities Website:

www.decafacilities.com/decadesign/

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APC-1	ARMSTROI FINE FISSL ANGLED TI WITH HUM ON FACE A WITH PREL	NG JRED #1732 (WHITE) EGULAR EDGE 2'X2'X5/8" SQUARE IGUARD PLUS AND BIOBLOCK PAIN' IND BACK LUDE 15/16" GRID - WHITE
PAINT	Benjamin Moore	Paint
ALL FIN	ISHES SATIN	UNLESS OTHERWISE NO
Reds	101	
Reds R-1	104	Sienna Clay
Reds R-1 R-2	104 105	Sienna Clay Terra Mauve
Reds R-1 R-2 R-3	104 105 2173-20	Sienna Clay Terra Mauve Tawny Rose
Reds R-1 R-2 R-3 R-4	104 105 2173-20 2172-20	Sienna Clay Terra Mauve Tawny Rose Mars Red
Reds R-1 R-2 R-3 R-4 Yellows	104 105 2173-20 2172-20	Sienna Clay Terra Mauve Tawny Rose Mars Red
Reds R-1 R-2 R-3 R-4 Yellows Y-1	104 105 2173-20 2172-20 182	Sienna Clay Terra Mauve Tawny Rose Mars Red Glowing Umber
Reds R-1 R-2 R-3 R-4 Yellows Y-1 Y-2	104 105 2173-20 2172-20 182 168	Sienna Clay Terra Mauve Tawny Rose Mars Red Glowing Umber Amber
Reds R-1 R-2 R-3 R-4 Yellows Y-1 Y-2 Greens	104 105 2173-20 2172-20 182 168	Sienna Clay Terra Mauve Tawny Rose Mars Red Glowing Umber Amber
Reds R-1 R-2 R-3 R-4 Yellows Y-1 Y-2 Greens G-1	104 105 2173-20 2172-20 182 168 532	Sienna Clay Terra Mauve Tawny Rose Mars Red Glowing Umber Amber Winding Vines

B-2	832	Blue Heron
Neutrals		
N-1	2155-60	Cream Yellow
N-2	188	Eye of the Tiger
N-3	187	Goldfinch
N-4	1147	Butterscotch Sundae
N-5	HC-71	Hasbrouck Brown
N-6	2106-10	Java
N-7	1615	Rock Gray
N-8	HC-41	Richmond Gold
N-9	2164-30	Rich Clay Brown

Kensington Blue

840

Akzo Nobel - Grip Gard EFX Miscellaneous

B-1

mocondino	700	
M-1	500-F4	Gray Black
M-2	Color Match	Benjamin Moore 1615 Rock Gray
M-3	359-E5	Silver Metallic (Gloss Finish)
M-4	417-E3	Match for PL-2
M-5	412-F3	Match for PL-1

VINYL (V)

V-1	3M TRANSLUCENT FILM
	3630-59 DARK BROWN (PMS4625C)
V-2	3M TRANSLUCENT FILM
	3630-20 WHITE
V-3	3M TRANSLUCENT FILM
	3630-63 RUST BROWN (PMS483C)

	<u>CERAMI</u>	C TILE (CT)
	CT-1	CROSSVILLE JAVA JOINT, JAV01 TWO SUGARS, HONED, 12" x 24"
	CT-2	CROSSVILLE JAVA JOINT, JAV05 FRENCH PRESS, HONED, 12" x 24"
	CT-3	AMERICAN OLEAN THEORETICAL, TH93 ABSOLUTE BROWN, HONED, 24" x 24"
	CT-4	AMERICAN OLEAN THEORETICAL, TH93 ABSOLUTE BROWN, HONED, 6" x 24"
	CT-5	AMERICAN OLEAN THEORETICAL, TH90 WHIMSICAL WHITE, HONED, 12" x 24"
	CT-6	AMERICAN OLEAN THEORETICAL, TH90 WHIMSICAL WHITE, HONED, 6" x 24"
	RESILIE	NT BASE (RB)
	RB-1	JOHNSONITE TRADITIONAL WALL BASE 4" #132 ESPRESSO
	<u>SOLID V</u>	INYL TILE (SVT)
	SVT-1	ARMSTRONG FLOORING, INC. NATURAL CREATIONS, EARTHCUTS, DIAMOND 10 TECHNOLOGY SOLID VINYL TILE VERONA, ROCK DUST NA350 SIZE: 18" x 18" GAUGE: 1/8"
	RESINO	US FLOORING (RES)
	RES-1	STONHARD, INC STONCLAD UT BRICK RED LIGHT TEXTURE FINISH
	RES-2	STONHARD, INC. STONCLAD GS, STONKOTE GS-4 BEACHWOOD TEXTURE #2 FINISH
\langle		ALL COVERING (RWC-1)
	RWC-1 SALES AREA	INPRO CORPORATION PALLADIUM RIGID VINYL SHEET COLOR: SADDLE 0121 TEXTURE: VELVET THICKNESS: 0.06"
Z	RWC-2 EMPLOYEE BREAKROOM	INPRO CORPORATION PALLADIUM RIGID VINYL SHEET COLOR: RIVER ROCK 0351 TEXTURE: VELVET THICKNESS: 0.06"
		\sim \sim $=$

<u>STAIN (S</u>	}	PL
S-1	COLOR TO MATCH PL-1	PL-1
		PL-2
<u>SOLID SC</u> SS-1	CORIAN	PL-3
SS-2	COCOA BROWN (SALES AREA COUNTERS) CORIAN NEUTRAL CONCRETE (RESTROOM COUNTERS)	PL-4

DECOR FINISHES (DF)

DF-1 BRUSHED ALUMINUM DF-2 PLEXIGLAS ACRYLIC RESIN .177" MILK WHITE



RESTROOM FINISHES

WALL GROUT: LATICRETE, 17 MARBLE BEIGE FLOOR GROUT: LATICRETE, 35 MOCHA



ASTIC LAMINATE (PL)

RENOLIT ALKOREN WILD CHERRY 9.3196.001-115000

RENOLIT ALKOREN HONEY MAPLE 9.3199.011-804300

NEVAMAR CHARCOAL MATRIX MR-6-2T

NEVAMAR CARMEL SAGAWOOD WM-8-350T



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PANTONES

Pantone Matching System - Solid Coated

Reds		
PR-1	7526C	
PR-2	7427C	
PR-3	1815C	
PR-4	1807C	
PR-5	1797C	
PR-6	484C	
PR-7	187C	
Oranges		
PO-1	715C	
PO-2	718C	
PO-3	713C	
PO-4	167C	
PO-5	7413C	
PO-6	7414C	
PO-7	471C	
PO-8	485C	
PO-9	158C	
PO-10	1595C	
PO-11	470C	
Yellows		
PY-1	157C	
PY-2	128C	
PY-3	127C	
PY-4	600C	
PY-5	100C	

Greens		
PG-1	5763C	
PG-2	5783C	
PG-3	5767C	
PG-4	5753C	
PG-5	350C	
PG-6	374C	
PG-7	360C	
PG-8	576C	
Blues		
PB-1	2758C	
PB-2	279C	
PB-3	653C	
PB-4	19-4118TPX	Dark Denim
PB-5	653C	
PB-6	654C	
Neutrals		
PN-1	4625C	
PN-2	1605C	
PN-3	7510C	
Miscellaneous		
PM-1	469C	
PM-2	7510C	
PM-3	7511C	
PM-4	BLACK C	
PM-5	WHITE C	

DISPLAY CASES	© COPYRIGHT 2012 THE DOCUMENT IS THE PROPERTY OF THE DEFENSE COMMISSION PACTOR OF ANT HEREIN SHALL BE USED WITHOUT THE COMMISSION OF THE DEFENSE COMMISSION AGENCY	
REFRIGERATED & NON-REFRIGERATED DISPLAY CASES (UNLESS OTHERWISE NOTED)		
CASE EXTERIOR (INCLUDING EXPOSED CASE CONTROLLER): 747 CHOCOLATE BROWN		
VINYL BUMPER: 701 SHADOW BLACK		
CASE INTERIOR: 700 INTERIOR WHITE		
NICK PLATE: BLACK DISPLAY DOOR TRIM FRAME: DOOR FRAME, TRIM AND HANDLES: BLACK		
(EQUIVALENT PAINT COLOR FOR CASE EXTERIOR IS N-6 BENJAMIN MOORE BM 2106-10 "JAVA")		
FROZEN FOOD DISPLAY CASES		
HUSSMANN CORPORATION CASE EXTEDIOR (INCLUDING EXPOSED CASE CONTROLLER): B-1 REN JAMIN, MOORE, BM 840 "KENSINGTON BLUE"		
VINYL BUMPER: 701 SHADOW BLACK		
CASE INTERIOR: 700 INTERIOR WHITE	Ð	
KICK PLATE: BLACK		
DISPLAY DOOR TRIM FRAME; DOOR FRAME, TRIM AND HANDLES: BLACK	lu	
PRODUCE DISPLAY CASES		
HUSSMANN CORPORATION CASE EXTERIOR /INCLUDING EXPOSED CASE CONTROLLERY: 747 CHOCOLATE REQUINM	JE I	
VINYL BUMPER' 701 SHADOW BLACK	<u> </u>	
CASE INTERIOR: 701 SHADOW BLACK	O	
KICK PLATE: BLACK		N
DISPLAY DOOR TRIM FRAME:BLACK		Ð
(EQUIVALENT PAINT COLOR FOR CASE EXTERIOR IS N-6 BENJAMIN MOORE, BM 2106-10 "JAVA")		ц Ц
DISPLAY CASES: 1D07 & 1D17	\mathbf{v}	Q
STRUCTURAL CONCEPTS	L .	
CASE EXTERIOR: TO MATCH HUSSMANN 747 CHOCOLATE BROWN	Υį	<u> </u>
CASE INTERIOR: WHITE		σ
KICK PLATE: BLACK	┝┷┷┥	
(EQUIVALENT PAINT COLOR FOR CASE EXTERIOR IS N-6 BENJAMIN MOORE, BM 2106-10 "JAVA"		
DISPLAY CASES: 1B30		
STRUCTURAL CONCEPTS		
CASE EXTERIOR: TO MATCH HUSSMANN 747 CHOCOLATE BROWN		
VINYL BUMPER: BLACK	age	
KICK PLATE: BLACK	acla	λ.
(EQUIVALENT PAINT COLOR FOR CASE EXTERIOR IS N-6 BENJAMIN MOORE, BM 2106-10 "JAVA")	ər P	gene
DISPLAY CASE: 1D14	Decc	ry A
ALTO-SHAAM	ш	ssaı
CASE EXTERIOR: STAINLESS STEEL	for	mis exas
CASE INTERIOR: STAINLESS STEEL	Jni	OM B, T ginië
KICK TRIM: STAINLESS STEEL KICK DLATE: STAINLESS STEEL	ve l	e C AF: Vir
NOR PLATE. STAINLESS STEEL	ÇA ₽ti	ens land Lee,
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