Working with our community
to ensure a safe and healthy environment

PLAN REVIEW CONSTRUCTION GUIDE

Guide to Constructing Permitted Establishments • 2017

Plan Review Today for Success Tomorrow!

Maricopa County Environmental Services Department
Environmental Services Division | Permitting Services
Plan Review & Construction Program
1001 N. Central Ave. Suite #300, Phoenix 85004
(602) 506-6980
esd.maricopa.gov

This document serves only as a guide.
Please refer to current applicable health, building, plumbing, and safety codes.

CONTENTS

PREFACE 4
I. PLANS, INSPECTIONS, FEES, LOCATIONS, AND DOWNLOADS 16
A. Plan Review | Plan Review Process 16
B. Inspections 18
C. Plan Review Fees (Plan Review Fee Only; Operating Fee Schedule) 18
D. Locations 19
E. Forms/Document Downloads 19
II. EQUIPMENT 20
A. Materials and Design 20
B. Specialty Equipment 20
C. Equipment Installation Directions 22
III. REFRIGERATION 23
A. General Storage 23
C. Reach-in Refrigerators 24
D. Freezers 24
E. Blast Chillers 24
F. Refrigerated Worktables 24
G. Refrigerated Processing Rooms 24
H. Display Storage Refrigerators 25
I. Customer Service Display Units 25
J. Cold Buffet Units 25
K. Ice Machines 25
IV. STORAGE 25
A. Dry Storage 25
B. Wet Storage 25
C. Storage Locations 27
D. Shelving 27
V. EMPLOYEE AREAS, RESTROOMS, LOCKER ROOMS, DRESSING ROOMS, AND HAND WASH SINKS 28
A. Employee Areas 28
B. Restrooms 28
C. Hand Wash Sinks 30
VI. PLUMBING 31
A. Water Supply 31
B. Sewage Disposal 31
C. Grease Interceptors/Grease Traps 31
D. Janitorial Stations, Service (Mop), Can Wash, Utility Sinks 32

E. Overhead Sewer Lines 33
F. Potable Water Backflow Protection 34
G. Indirect Waste Connections 36
H. Floor Drains 36
VII. WATER SOFTENERS, AND REVERSE OSMOSIS (RO) SYSTEMS 37
VIII. SANITIZING EQUIPMENT 37
A. Hot Water System 37
B. Manual Warewashing 37
IX. LIGHTING 39
A. Food Service Areas 39
B. Walk-in Refrigerators and Freezers 39
C. Storage, Warewashing and Restrooms 39
D. Bars 39
E. Protective Light Shielding 39
X. LAUNDRY 39
A. Location 39
B. Clothes Dryer 40
C. Linen and Clothes Storage 40
XI. FINISHES 40
A. Walls 40
B. Floors 41
C. Ceilings 42
D. Coving 42
E. Shelving, Woodwork, Millwork & Countertops 42
F. Laminate Countertop Surfaces and Shelving 43
G. Walk-in Refrigerator and Freezer Units 43
H. Dining Room 43
I. Multiple Use Areas 44
J. Outdoor Areas 44
K. Summary of Finishes and Additional Recommendations 44
XII. INSECT AND RODENT CONTROL 45
A. Building 45
B. Fly Protection Methods 45
C. Delivery, Customer, and Restroom Doors 46
D. Windows 46
XIII. GARBAGE, REFUSE, and RECYCLABLES 46
A. Garbage Containers 46

B. Garbage Areas 47
XIV. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) 47
A. Exhaust Plan Submittal 47
B. Exhaust Hood Requirements 47
XV. OUTDOOR BAR AREAS, OUTDOOR FOOD SERVICE, OUTDOOR FACILITIES, CATERING, AND INDOOR PLAY AREAS 49
A. General 49
B. Outdoor Bar Areas 49
C. Outdoor Food Operations 50
D. Proposed Outdoor Food Operation Menu 53
E. Outdoor Facilities 54
F. Catering Facilities 54
G. Indoor Play Areas 56
XVI. SPECIAL EVENTS, TEMPORARY FOOD SERVICE, SEASONAL FOOD SERVICE, MOBILE FOOD ESTABLISHMENTS, COMMISSARIES, VENDING MACHINES, MOBILE PET GROOMERS, FARMERS MARKETS, AND SWAP MEETS 56
A. Commissary 56
XVII. PUBLIC SCHOOL GROUNDS, PET SHOPS AND GROOMERS 57
A. Public School Grounds 57
B. Pet Shops and Groomers 57
XVIII. BOTTLED WATER, BEVERAGE PLANTS, ICE MANUFACTURING, AND WATER OUTLET STORES 58
XIX. RESIDENCE ACCOMMODATIONS 59
XX. SERVICE KITCHENS, FOOD BANKS, CONTINENTAL BREAKFASTS, AND ANIMALS IN FOOD ESTABLISHMENTS 60
A. Service Kitchens 60
B. Food Banks 60
C. Continental Breakfast 60
D. Animals in Food Establishments 61
APPENDIX B – Conditional Direct Connection Warewashing Equipment Plan 65
APPENDIX C – Licensing Timeframes 66

PREFACE

History | Background

For more than 50 years, the Maricopa County Environmental Services Department (MCESD) has been working with our community to ensure a safe and healthy environment. Currently, the Department serves the most populous county in Arizona, and is the fourth most populous county in the nation with a 2013 United States Census Bureau estimated population of over 4 million people. Currently, Maricopa County is more populous than 23 states. Many of the fastest-growing cities in the nation are located within the Phoenix metropolitan area (Census Bureau Quick Facts). Over 50 communities, including cities, towns, and census designated places are located within the jurisdictional boundaries of Maricopa County. Maricopa County has a total area of 9,224.27 square miles, of which 1,441 square miles are incorporated (15.6 percent) and 7,785 square miles are unincorporated (84.4 percent). It is the fifth largest of Arizona's 15 counties, and the 15th largest county in total area the United States. Currently, Maricopa County is more populous than twenty three states and the District of Columbia. The county measures 132 miles from east to west and 103 miles from north to south.

The Maricopa County urban area has a highly developed travel, sports, and tourism industry consisting of numerous amusement and recreational opportunities, and public accommodations. The travel, sports and tourism industry consists of lodging, youth/amateur/professional sporting events, Cactus League Spring Training, business events, entertainment, recreation, special events, and other related tourism oriented activities; otherwise known as the "sports and tourism industry" and is one of the most important industries within Maricopa County. Annually, more than 37 million domestic and international overnight travelers visit Arizona with a large portion of these visitors staying in overnight lodging in the Maricopa County metropolitan area. The Maricopa County "sports and tourism industry" is a leading national industry that directly impacts the County, MCESD, our economy, and our community's quality of life.

Quality plan review, process improvement, customer outreach, and the dedication to providing excellent customer service are high priorities for MCESD. Plan review assists in providing greater uniformity, technical assistance, and is essential for customer success and avoiding future establishment problems. Poor design, repair, and maintenance will compromise the functionality of the physical facilities and its operations. Plan review is intended to ensure physical facilities and proposed operational processes are properly designed and sanitary practices implemented in order to serve their intended purposes.

Plan review is an essential and effective evaluation component that allows MCESD the ability to ensure:

1. Minimum standards are met for the protection of environmental health and safety of the public and citizens of Maricopa County pursuant to the authority granted to the Department.
2. Prevention of environmental health related illness and promote public health.
3. Minimum standards are met for the sanitary design, facility layout, operational/product flow, menus, construction, operation and maintenance of regulated establishments, premises, and surroundings.
4. Establishments are built or renovated according to current regulations or rules.
5. Code violations are eliminated prior to construction or implementation.
6. Conditions are corrected and prevented that may adversely affect persons utilizing regulated establishments.
7. Technical assistance is provided to industry in establishing organized and efficient operations.
8. Maricopa County meets consumer expectations for the safe operation of permitted establishments.

The plan review process presents a unique opportunity to discuss and prepare a proper foundation that will enable a proposed operation to be successful, remain in compliance over time, and protect public health.

The function of plan review, construction inspections, pre-operational inspections, and the permit approval process is to provide a comprehensive overview of proposed operations with an emphasis on contents of plans, equipment specifications, architectural design, and operational procedures. The end goal of the plan review process is to reduce environmental illness resulting from poor sanitary facility design and/or floor plans, and, where applicable, when the process is based on menu, food preparation, and food product flow.

The proper sanitary design and construction of a permitted facility is as important as the operation of the business. The facility itself is the foundation of the business. Proper design and construction will lend itself to the control of public health issues and general sanitation. With well-thought-out planning, a business operation can be created that is not only safe, but easy to maintain and efficient. In doing so, your business operation is more likely to be successful and profitable. When that happens, everyone wins; the owners/operators, employees, regulators, and of course, the customers.

Using innovative methods, Plan Review & Construction Program professionals take proactive steps to evaluate establishments and work with stakeholders to minimize environmental health related risks. The mission and vision of MCESD is to protect public health by assuring safety and advancing public health by assisting our customers in achieving these purposes.

In conjunction with the Conference for Food Protection (CFP) Plan Review committee, the U.S. Food & Drug Administration (FDA) participated in developing a document that is intended to assist regulators in reviewing food establishment plans, and industry in understanding what is expected in the plan review process. For several years, this FDA/CFP Food Establishment Plan Review Guide-2000 has been used to assist local, state, and federal regulatory authorities as a foundation for plan review and construction programs.

With the aim of improving customer service and advancing public health, the Plan Review & Construction Program developed and implemented a comprehensive Plan Review Construction Guide specific to Maricopa County requirements for both food and non-food establishments that was initially published in 2003. Subsequently, a revised construction guide was published on June 18, 2008. The previous revision of the construction guide had remained the same since 2008. Recent plan review guide revision efforts first began in the spring of 2012 and over the course of several years led to the publication and implementation of this current edition. Substantive content review and effort went into the construction guide in an effort to create a more readable and customer friendly guide for all users. This current edition is based upon updated and adopted versions of the FDA Food and International Plumbing Codes, and offers a greater degree of uniformity regarding public health and consumer safety policy.

The comprehensive revision efforts by Plan Review & Construction Program representatives and management identified and evaluated code requirements and regulatory components which would effectively promote and protect public health by assisting customers with uniform criteria and guidelines that they may require related to the design, construction, and final permitting of establishments.

Adopted codes and applicable provisions under authority vested in MCESD were evaluated, including codes and guidelines that have been developed to assist state, county, and local governments in initiating and maintaining effective programs for the prevention of environmental health related illnesses.

This current Plan Review Construction Guide edition represents the best cumulative efforts to provide uniform standards and criteria, assists in the proper design and construction of permitted establishments, promotes fair dealing and shared responsibility with our customers, and recommendations that will help ensure that business operations are successful while making Maricopa County a better place to live.

MCESD Plan Review & Construction representatives are experienced and properly trained professionals who have a working knowledge of applicable code requirements, contributing factors associated with environmental illnesses, and the necessary control measures. These representatives apply requirements, identify hazards, review operating procedures, and make corrective recommendations related to menus, practices, layout, equipment, finishes, plumbing, lighting, ventilation, storage, etc. During the plan review stage, regulatory representatives discuss scope of operations and develop options in tandem with establishments. They provide written stipulations, recommendations, and communicate hazards and expectations to facilities by applying MCESD requirements and regulations to ensure that definitive practices and expectations are met in order for establishments to safely conduct permitted operations.

Public Health and Consumer Expectations

It is the shared responsibility of customers, permitted establishments, and the Maricopa County Environmental Services Department that all permitted establishments are sufficiently designed and constructed to meet minimum requirements to operate in order to ensure that the consumer is safe and to prevent disease outbreak, or the transmission of communicable disease. This shared responsibility extends to ensuring that consumer expectations are met and that establishments are safe, clean, and honestly represented to the public and citizens of Maricopa County.

Under the Maricopa County Environmental Service's Department Mission Statement the agency is responsible for: *Providing safe food, water, waste disposal, and vector borne disease reduction controls to the people of Maricopa County, so that they may enjoy living in a health and safe community.*

The Department's vision statement: *As the recognized regional environmental leader, we will develop and foster innovative environmental protection programs for the safety of our residents and their environment.*

The requirements and recommendations included in this construction guide outline criteria expected of a modern permitted establishment to meet the safety and security needs expected by the public, MCESD, and our customers. Safe facilities and the promotion of environmental health require the dedicated effort of knowledgeable professionals. While safe operations are the hallmark of modern establishments, responsibility, transparency, proper attitude & effort, and active managerial control are essential to assuring successful operations. Reliable active managerial control systems with disciplined and knowledge management and staff that fully understand both safety and consistent quality are necessary to compete and be successful in today's marketplace. The expectations and criteria are considered essential to meeting these goals on a consistent basis to ensure reliable, safe, secure, high quality operations.

Advantage of Uniform Standards and Fairness with Customers

The goal of the Department is to protect public health by assuring safety and advancing public health by assisting our customers with uniform criteria and guidelines they may require related to the design, construction, and permitting of establishments. The provisions of codes and guidelines adopted by the Maricopa County Environmental Health Department provide a system of prevention and safeguards, and minimum requirements for permitted establishments; and promote fair dealing with our customers.

The advantages of uniform standards, codes, and guidelines have long been recognized by industry and Department officials. Industry conformance with acceptable guidelines and practices is what is necessary to protect public health, and why it is important for compliance to be accepted. Standards and codes provide a guide for establishments and what is required to operate in a safe and efficient manner. They are useful to industry in that they provide acceptable standards that can be applied in business. In addition, they are helpful to local governmental bodies such as the Maricopa County Environmental Services Department in developing, implementing, or revising their own codes and guidelines.

The construction guide provides for the general design, construction, and fair dealing that can be uniformly applied to permitted establishments within Maricopa County. This guide is the cumulative result of efforts

and recommendations of many contributing individuals, agencies, codes, and organizations with years of experience in assessing minimum requirements for the safe operation of permitted establishments.

Establishments inspected by this regulatory authority demonstrate compliance with adopted performance standards, codes, and guidelines by ensuring that their facilities adhere to minimum criteria, adequately designed and constructed facilities, procedures, and implement active managerial control.

It is utilized by the Department for compliance with regulatory requirements, ensuring fairness to customers, increasing public health protection and is intended to ensure the clear, concise, and fair minimum standards for permitted establishments and to convey useful criteria to our customers and permit holders.

Purpose

The Plan Review & Construction Program of the Maricopa County Environmental Services Department has developed a construction guide and policy for design and construction requirements to ensure food/beverage related establishments, and other permitted facilities, operations, premises, and surroundings within Maricopa County are provided with the minimum requirements to qualify for a permit at both new and existing facilities. Many existing facilities do not have optimum sanitary design and construction. Certain sanitary adjustments and/or renovations, where feasible, may be necessary.

Proper design and construction of sanitary establishments are essential to minimize harborages, eliminate the entrance of pests and other sources of environmental related contamination, protect food/beverage, and non-food/beverage related facilities from contamination. Sanitary design features are critical to an establishment and should be the goal of designers, operators, and regulators to prevent contamination and motivate employees to use proper sanitary practices in the establishment. Proper evaluation consideration should be given to the entire premises and surroundings, exterior building design and construction features; interior equipment and building design, construction elements; and operational flow and overall establishment layout.

The purpose of the guide is to provide uniform standards in assisting both regulatory and industry representatives with the intent to provide criteria that will assist architects, designers, contractors, owners, and operators in the proper design and construction of permitted establishments. An individual does need not be an expert to effectively complete the plan review process.

Proper establishment plan review is recognized as very important and effective public health program component that allows the "Regulatory Authority" to ensure that establishments are built or renovated according to current regulations or rules.

The plan review process helps to avoid future problems and assists an establishment in setting up for success. Proper plan review submittal with equipment listed and located on floor plans as well as specifications for finish and plumbing schedules will highlight potential problems on paper while allowing for modifications to be made before costly purchases, installations, and construction are performed.

The Environmental Services Department wants to help ensure your business is successful, while making Maricopa County a better place to live. Plan Review Today for Success Tomorrow!

The Plan Review & Construction Program is here to assist you. If you have any questions or require assistance please contact the Maricopa County Environmental Services Department's Plan Review & Construction Program at 602-506-6980 or by e-mail at ESPlanReview@mail.maricopa.gov.

Mobile Food establishments and Special Events operations have specific requirements. Please contact the Department's Mobile Food/Special Events Program for additional information regarding specific requirements for mobile food establishments including temporary events, swap meets, and farmers markets.

Legal Authority
Conformance with the following requirements or similar requirements shall be adhered to for the determination of compliance with the Maricopa County Environmental Health Code, adopted plumbing codes, and similar codes for permitted premises. If necessary, the legal authority may impose specific requirements and provisions in addition to the requirements contained in codes that are authorized by law that are necessary to protect against public health hazards or nuisances. The legal "Regulatory Authority", Maricopa County Environmental Services Department, shall document the conditions that necessitate the imposition of additional requirements and the underlying public health rationale. Inspection report documentation shall be provided to the permit applicant or permit holder and a copy shall be maintained in the regulatory authority's file for the establishment. Individual inspection reports may be made available to the public for review in accordance with the Freedom of Information criteria.

The Maricopa County Environmental Health Code is adopted under authority vested in the Maricopa County Board of Health and the Maricopa County Board of Supervisors pursuant to the Arizona Revised Statues § 36-136, 36-183.02, 36-601, 36-184.B4, 36-187.C, 11-251 paragraphs 17 and 31, 49-106, and 49-107. The provisions of this Code are applicable to the unincorporated areas lying within the boundaries of Maricopa County, and the incorporated areas lying within the boundaries of Maricopa County, and the incorporated cities and towns whose governing bodies specifically request the services of the Maricopa County Environmental Services Department.

The regulations and requirements of the Maricopa County Environmental Health Code and the Plan Review & Construction Program adopted and contained herein and the enforcement thereof by the Department are designed and intended to provide minimum standards for the protection of the health of the people of Maricopa County by preventing illness, and shall be liberally construed to accomplish those objectives.

Applicable Codes
The Maricopa County Environmental Health Code and applicable provisions under authority vested in the Maricopa County Board of Health and the Maricopa County Board of Supervisors pursuant to the Arizona Revised Statues.

Effective December 10, 2010, the Maricopa County Environmental Services Department incorporated by reference the U.S. Food and Drug Administration (2013 FDA Food Code). For purposes of this guideline, references to "Regulatory Authority" in the U.S. Food and Drug Administration 2013 Food Code mean the Maricopa County Environmental Services Department.

No establishment shall be constructed and no major alteration or addition shall be made thereto until detailed plans and specifications for such construction, alteration or addition have been submitted to and approved by the Department. Any construction, alteration, or addition shall be made in accordance with plans and specifications approved by the Department. The owner, operator or his authorized agent shall certify in writing that the plan documents comply with these regulations.

All plumbing systems shall be designed, constructed, installed, operated, maintained and repaired in accordance to law and applicable codes. Conformance with the following requirements or similar requirements shall be adhered to for the determination of Maricopa County Environmental Health Code compliance with health and plumbing codes.

The 2009 International Plumbing Code (IPC), as adopted by the Maricopa County Board of Supervisors on August 18, 2010 and as amended by Section 301 of Chapter 3 of the Maricopa County Planning & Development Department's Local Additions & Addenda dated October 2010, shall be adhered to for code compliance.

Establishments located in an unincorporated area of Maricopa County shall adhere to the 2012 International Plumbing Code (IPC), as adopted by the Maricopa County Board of Supervisors on August 7, 2013 and as amended by Section 301 of Chapter 3 of the Maricopa County Planning & Development Department's Local Additions & Addenda, for code compliance.

Concerning schools, the following provisions of the Arizona Administrative Code (A.A.C.), including all revisions, technical corrections, and supplements published as of March 31, 2010 are incorporated by reference: Title 9, Chapter 8, sections 701 through 711. For the purpose of this code, references to "Department" in Title 9, Chapter 8, means the Maricopa County Environmental Services Department.

Responsibilities to Qualify for a Permit
Prior to approval of a permit to operate, the establishment and operator must demonstrate sufficient compliance with all applicable regulations. A permit for an establishment may not be approved if establishments are not designed, constructed, operated, maintained and repaired in accordance to law, applicable codes, and conformance with these construction guide requirements or similar requirements.

Department staff may discover inadequate conditions, deviations from codes, regulations, unapproved plans, alterations, modifications, or other violations that may result in unsafe conditions or risks for the establishment or the public. Responsibilities to qualify for permits to operate are not all inclusive and do not guarantee that permits will be issued by the Department.

All facilities, systems, processes, and menus when applicable will be evaluated on an individual basis to determine minimum operational requirements. Additional regulations and requirements adopted by the Maricopa County Environmental Services Department may be required to prevent the creation, or maintenance of unhealthy, or unsanitary conditions.

Please refer to the Responsibilities to Qualify for a Permit document for a full list of responsibilities.

Notice: A "grandfather" clause or provision is not provided for in Maricopa County Environmental Health Code. All establishments under new ownership, newly built, or remodeled shall meet current construction, equipment, facility, and operational regulations as adopted and provided for in the Maricopa County Environmental Health Code, guidelines, and procedures, and policy statements. A permit shall not be issued to a facility for which a permit is required, and shall not be allowed to operate until the applicant demonstrates to the Department full compliance with applicable provisions of the Maricopa County Environmental Health Code. Any construction, alteration, or addition shall be made in accordance with specifications approved by the Department. The owner, operator, or authorized agent shall certify in writing that the establishment will comply with these regulations. On-site inspections of the facilities and premises with equipment in place and operating will be necessary to determine compliance with the Maricopa County Environmental Health Code.

If you have any questions during the planning or construction of your establishment, please contact the Maricopa County Environmental Services Plan Review Office at 602-506-6980 or ESPlanReview@mail.maricopa.gov

HACCP | Specialized Plan Review Processes

The concept of HACCP (Hazard Anlysis Critical Control Point) was first created when the National Aeronautics and Space Administration (NASA) first asked the Pillsbury Company to ensure a safe food safety system in order to avoid foodborne illness for U.S. manned space flights. Internationlly, HACCP is recognized as a proactive science based risk management tool to prevent hazards in food safety systems. A HACCP system focuses on three areas of food safety hazards: physical, biological, and chemical. Regulations and recommendations have been developed for safe food practices relating to personnel, buildings and facilities, equipment, production, and process controls.

HACCP is considered a vital role in proper food establishsment design. However, the risk management tool is not considered a "stand-alone" food safety system. Design and construction are essential pre-requistes and must be put in place prior to the implementation and operation of effective food production practices. The purpose of quality plan review is to ensure that food establishments are safe, sanitary, and efficient. Proper design, construction, and HACCP principles work to achieve these purposes and minimize the aforementioned hazards.

Effective HACCP principles are essential to a successful food establishment and begin with the design and layout of the facility, monitoring the food flow throught the establishment, from delivery, storage, preparation, cooking, service and consumption. A well-designed progressive straight-food flow system will minimize cross-contamination and maximize efficiency in an establishment.

Good manufacturing policies or practices, standard operating procedures (SOPs), and documentation are essential to an establishment's HACCP-based food safety program and control over potential hazards. HACCP policies specifically address requirements set out in the FDA Food Code. Additional standards or good retail practices are required as foundation for food safety and are detailed in the FDA Food Code. Examples include employee hygiene, employee restriction or exclusion, general sanitation, design, etc. HACCP/Variance under the Plan Review & Construction Program is responsible for the review of HACCP procedures and variance applications in order for establishments to conduct specialized operations outside the Maricopa County Environmental Health Code (MCEHC), application review for exemptions from the MCEHC, and to provide technical, scientific or investigational assistance to both internal and external customers.

The FDA Food Code §8-201.14(B) (2) requires that an establishment utilizing a HACCP-based food safety program provide a food flow diagram by specific food or category and information on the following: ingredients, materials, equipment, formulations or recipes that delineate methods and procedural control measures that address the food safety concerns involved. An establishment shall provide as much information as required to inform this regulatory authority that the equipment or supplies will not increase the hazards and, in fact, will function to minimize hazards.

Establishments that produce foods that use specialized processes may be required to obtain variance approval prior to conducting operations that require a variance. Specialized processes that require a variance or HACCP plan review are listed in §3-502.11 in the 2009 FDA Food Code. These include but are not limited to the following: the rendering of Time/Temperature Control for Safety Food (TCS) shelf stable, reduced oxygen packaging of TCS foods, curing of foods, smoking of foods to render TCS foods shelf stable, use of live molluscan shellfish tanks, and the sprouting of beans and seeds. Also, any establishment that slaughters seafood at retail must obtain a fish slaughtering variance.

For questions on variance requirements contact the Department Specialized Process reviewer at (602) 506-6972, or by email at ehvariance@mail.maricopa.gov or ecarlson@mail.maricopa.gov, or by visiting the website.

At times, the FDA Food Code requires an approved HACCP Plan to be in place for some specialized processes not listed under §3-502.11. A formal HACCP Plan review is required and needs to be approved prior to conducting these operations. For information on creating a HACCP plan, contact the Plan Review Specialized Process reviewer or visit one of these informational hyperlinks: FDA Guidance to Implement HACCP Systems, or USDA HACCP Guidelines.

Food Defense | FDA Food Security Preventive Measure Guidance

The FDA has developed food security preventive measure guidance for industry that is designed as an aid to operators of a very diverse set of food establishments. This guidance is relevant to all sectors of the food system from both very large and very small facilities, and includes firms that; produce, process, store, pack, repack, re-label, distribute, or transport food or food ingredients, and operators of food importing establishments, storage warehouses, food brokers; to bakeries, bars, bed-and-breakfast operations, cafeterias, camps, child and adult day care providers, church kitchens, commissaries, community fund raisers, convenience stores, fairs, food banks, grocery stores, interstate conveyances, meal services for home-bound persons, mobile food operations, restaurants, and vending machine operators.

The FDA's Food Defense preventive measure guidance documents do not establish legally enforceable responsibilities and should be viewed only as recommendations, unless specific regulatory or statutory requirements are cited.

Food establishments within Maricopa County are strongly encouraged to review their current procedures and controls to identify the kinds of food defense preventive measures and individual components of a food related system that are within their control. Establishments should consider taking the necessary steps to minimize the risk of food that may be subject to tampering, malicious acts, criminal or terrorist actions at each segment in the food system, and make appropriate improvements. To be successful, implementing enhanced food defense preventive measures requires responsible proactive managerial control, and the commitment of both management and staff. Accordingly, the FDA recommends that both management and staff participate in the development and review food defense preventive measures.

Not all of the guidance contained in the guidance documents may be appropriate or practical for every food establishment, particularly smaller facilities and distributors. The FDA recommends that operators review the guidance that relates to a component of their operation, and assess which preventive measures are suitable. Example approaches are provided for many of the preventive measures listed in the guidance documents. These examples should not be regarded as minimum standards. Nor should the examples provided be considered an inclusive list of all potential approaches to achieving the goal of the preventive measure. The FDA recommends that operators consider the goal of the preventive measure, assess whether the goal is relevant to their operation, and, if it is, design an approach that is both efficient and effective to accomplish the goal under their conditions of operation.

Protecting the Nation's Food Supply | Food Safety Modernization Act (FSMA)

The food industry is responsible for the production of safe food. Government and regulatory agencies are responsible for establishing food safety standards, conducting inspections, ensuring that standards are met, and maintaining a strong enforcement program to address operations that do not comply with implemented standards.

The Food Safety Modernization Act (FSMA) was signed into law on January 4, 2011 and enables the FDA to better protect public health by strengthening the food safety system. It allows the FDA to focus more on preventing food safety problems, rather than reacting to problems after they occur. For additional resources about keeping food safe and protecting the nation's food supply visit Foodsafety.gov

According to the Centers for Disease Control and Prevention (CDC), each year 1 in 6 Americans or (48 million people) become ill and thousands die every year from foodborne diseases. Tracking cases of foodborne illness, investigating outbreaks, and assisting in the prevention of disease are critical public functions in which the CDC is deeply involved.

An effective food safety relies on strong cooperative partnerships. Industry, FDA, USDA, CDC, state and county regulatory agencies play complementary and critical roles in all aspects our nation's food safety effort. The CDC provides a vital link between illness in people, industry, and regulatory agencies. For more information about food safety efforts, visit CDC and Food Safety.

Tobacco Free Arizona

In November 2006 Arizona passed the Smoke-Free Arizona Act A.R.S. §36-601.01. The Smoke-Free Arizona act rules went in to effect on May 1, 2007. The main purpose of the act is to protect workers, customers, and the general public from the harmful effects of secondhand smoke in most enclosed public places and places of employment. The state statute prohibits smoking in most enclosed public places and places of employment including, but not limited to restaurants, bars, grocery stores, or any establishment that serves food; enclosed common areas in hotels and motels; lobbies, elevators, restrooms, reception areas, halls, stairways, and any other enclosed common-use areas in public and private buildings. Smoking is allowed outdoors, but must be at least 20-feet away from entrances, open windows, and ventilation systems of enclosed public places and places of employment where smoking is prohibited, unless defined differently by a local ordinance. Business proprietors may designate outdoor areas as non-smoking. The Smoke-Free Arizona Act does not prevent a political subdivision of the state from adopting ordinances or regulations that are more restrictive than the act, nor does the act repeal any existing ordinance or regulation that is more restrictive than the act. For more information on Tobacco-Free Arizona and what you must to do to comply with the law please visit the Arizona Department of Health Services website.

Active Managerial Control

To effectively reduce the occurrence of foodborne illness risk factors, operators of retail and food service establishments must focus their efforts on achieving active managerial control. The term "active managerial control" is used to describe industry's responsibility for developing and implementing food safety management systems to prevent, eliminate, or reduce the occurrence of foodborne illness risk factors. Active managerial control means the purposeful incorporation of specific actions or procedures by industry management into the operation of their business to attain control over foodborne illness risk factors. It embodies a preventive rather than reactive approach to food safety through a continuous system of monitoring and verification.

There are many tools that can be used by industry to provide active managerial control of foodborne illness risk factors. Regulatory inspections and follow-up activities must also be proactive by using an inspection process designed to assess the degree of active managerial control that retail and food service operators have over the foodborne illness risk factors. In addition, regulators must assist operators in developing and implementing voluntary strategies to strengthen existing industry systems to prevent the occurrence of foodborne illness risk factors. Elements of an effective food safety management system may include the following:

- Certified food protection managers who have shown a proficiency in required information by passing a test that is part of an accredited program
- Standard operating procedures (SOPs) for performing critical operational steps in a food preparation process, such as cooling
- Recipe cards that contain the specific steps for preparing a food item and the food safety critical limits, such as final cooking temperatures, that need to be monitored and verified
- Purchase specifications

- Equipment and facility design and maintenance
- Monitoring procedures
- Record keeping
- Employee health policy for restricting or excluding ill employees
- Manager and employee training
- On-going quality control and assurance
- Specific goal-oriented plans, like Risk Control Plans (RCPs), which outline procedures for controlling foodborne illness risk factors.

A food safety management system based on Hazard Analysis and Critical Control Point (HACCP) principles contains many of these elements and provides a comprehensive framework by which an operator can effectively control the occurrence of foodborne illness risk factors.

The Cutting Edge| Food Safety Management Partnership

The Maricopa County Environmental Services Department has developed an innovative program that promotes food safety practices and recognizes industry for their food safety systems. All county food-related establishments have the opportunity to partner with Maricopa County in implementing a proactive approach to reducing foodborne illness risk factors. Guidance materials are provided as resources for developing and implementing a successful food safety management plan, as well as developing an "Active Managerial Control Program" to fit your operation. Join now and sharpen your food safety management plan! Click here to find out how you can participate in The Cutting Edge.

Working with our community
to ensure a safe and healthy environment

Environmental Services Department

Acknowledgements
This construction guide is the cumulative result of efforts and recommendations of many contributing individuals, agencies, codes, and organizations with years of experience in assessing minimum requirements for the safe operation of permitted establishments within Maricopa County. Plan Review & Construction Program staff and management spent considerable time and effort in addressing concerns and developing recommendations that are included in this construction guide. Maricopa County Environmental Services acknowledges with gratitude the contributions of many public health representatives, agencies, regulators, companies, professional groups, industry representatives, and the FDA whose substantial knowledge contributed to the current edition of the MCESD construction guide.

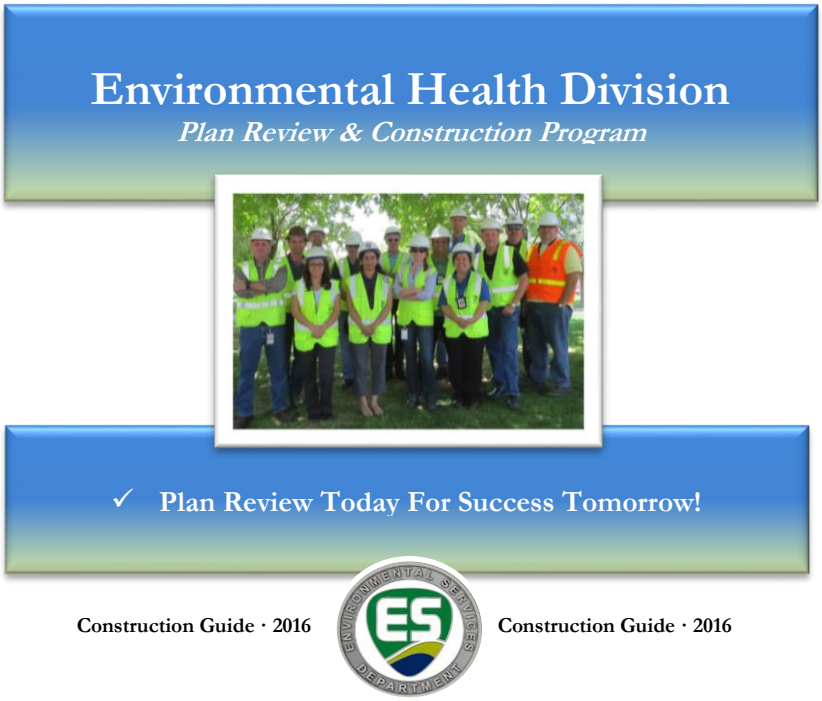
The following individuals, organizations, and references are to be recognized for their valuable contributions to the original development and/or revision of this Plan Review and Construction Guide:

- Maricopa County Environmental Health Department: *James Back, Gary Baker, Daenon Brewer, Eric Carlson, Ben DiSalvo, Carl D'Acosta, Bill Francis, Rafael Garcia, Blaise Grismer, Bryan Hicks, Vas Hofer, Michael Jacques, Rodney Klein, Brian Knisley, Mike LaGrow, Mike Miller, Hans Moesbergen, Dan Queen, Cesar Sanchez, Cynthia Salazar, Alyssa Spradley, Robert Stratman, Matt Sytsma, Trevor Vanderplaats, Steve Wille, Katie Zingsheim, and Scott Zusy.*
- United States Food and Drug Administration (FDA), Food Establishment Plan Review Guide 2000
- Conference for Food Protection, Conference-Developed Guides and Documents, Plan Review for Food Establishments 2016
- Southwest Gas Corporation, Food Demonstration Center 1600 E. Northern Avenue Phoenix, Arizona 85020
- University of Florida, Institute of Food and Agricultural Sciences Extension, Electronic Data Information Source, Sanitary Design and Construction of Food Processing and Handling Facilities, Ronald H. Schmidt and Daniel J. Erickson, Publication #FSHN0408
- Minnesota Department of Health, Environmental Health-Food, Pools, and Lodging Services Section, St. Paul, Minnesota 55164-0975, Food Service Construction Guide
- Southern Nevada Health District-Food Establishment Plan Review, Las Vegas, Nevada 89107
- Pinal County Environmental Health Department, Florence, AZ 85132
- On-line open source industry educational reference materials

Suggestions
We welcome your feedback. The Plan Review & Construction Program is focused on continuous process improvement. Suggestions for changes will be taken into consideration and are welcomed from all users. Revisions to the construction guide and related plan review guidance documents are made periodically as needed. Thank you for taking the time to submit your ideas.

Please submit suggestions to: ESPlanReview@mail.maricopa.gov

Plan Review & Construction Program Stats:
Welcome to Maricopa County! The MCESD Plan Review & Construction Program is recognized as a regional environmental health leader that provides excellent customer service, technical assistance, and quality plan review, develops and fosters greater uniformity for sanitary establishments, and thus enhancing the safety of our residents and their environment. Monthly, the program receives an average of 100+ new construction and/or remodel permit submittals and an average of 130+ new owner requests, not including numerous monthly internal and external customer service requests for technical assistance.



DID YOU KNOW?

- The Plan Review & Construction Program is responsible for the technical and construction review related activities of all environmental health permitted establishments, consisting of food/beverage operations, outdoor food operations, HACCP, variance review, specialized processes, school grounds, pet shops & pet groomers, public accommodations and jails.
- A team of 11 plan review professionals and 2 supervisors comprise the program within Maricopa County, the fourth most populous county in the nation and 15th largest county in total area in the United States.
- Plan Review inspectors are experienced staff and are considered subject matter experts in their field.

Stay Connected:
Visit esd.maricopa.gov or scan the QR code to obtain additional information or news.

I. PLANS, INSPECTIONS, FEES, LOCATIONS, AND DOWNLOADS

A. Plan Review | Plan Review Process

Notice: If construction has begun prior to plan submittal to this Department or if completion is expected within 15-business days of submitting plans, or if the establishment is already open, expedited plan review is required and all associated fees (fees doubled per permit) shall be paid. To ensure a streamlined plan review process we recommend applying at least 6 to 8 weeks prior to the commencement of construction or remodeling in order to obtain the proper permits. Failure to submit an application with plans and meet all Department requirements may result in delay of approval to open and operate the establishment. Construction shall not commence unless the required plans have been approved. It shall be the full responsibility of the business/project owner that construction is in conformance with the approved plans and specifications. Permit application and the plan review process do not guarantee the issuance of a permit.

All applications and plan submittals shall be reviewed in accordance with Arizona statues regarding licensing timeframes. See **Appendix-C** for specific and overall licensing timeframes.

AN INCOMPLETE PLAN REVIEW SUBMITTAL MAY BE REJECTED!

Complete a Plan Review Application and submit with:

1. One (1) complete set of plans (minimum size 8.5" x 11" or larger). Plans shall be drawn to a scale, e.g. 1/4" = 1 foot, if no scale is included, provide all pertinent dimensions. Architectural drawings are preferred, but hand-drawn plans are acceptable if they are easily readable and contain all essential information. Plans must reflect actual scale. Minimum font size is 12. Unreadable plans will be rejected. At this time, electronic submittals are only accepted on a case-by-case.

2. Plan Review fee (required for each permit). See current fee schedule.

3. If your establishment is on a well or septic system, it may be subject to additional permitting by the Maricopa County Environmental Services Water and Waste Management Division. More information can be obtained by calling (602)506-6666 or (602)372-1364.

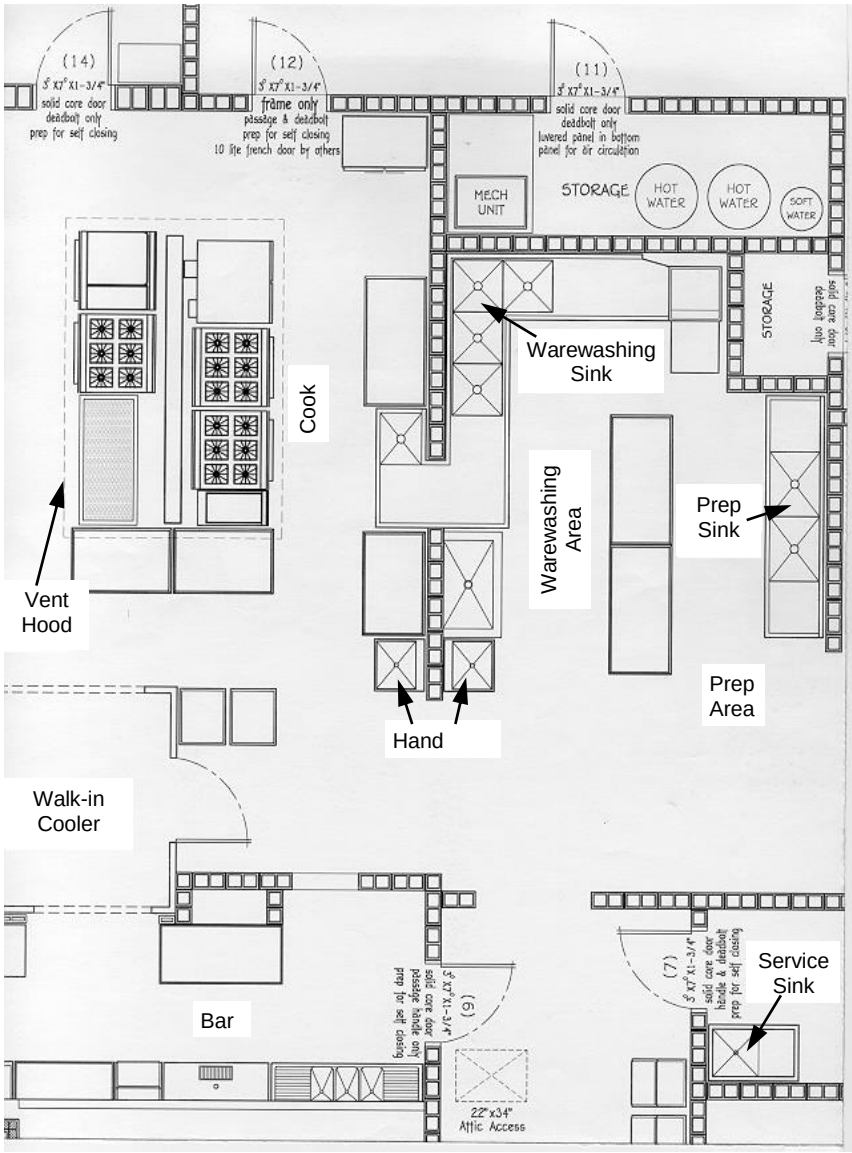
4. Complete plan submittals shall include the following for approval:
   a. Proposed menus (breakfast, lunch, dinner, children's, seasonal, off-site, catering, banquet, etc.) are required, including all types of food, cooking style, consumer advisory (if applicable), the number of customers expected, and the time and frequency of food operations. See FDA Plan Review Guideline commentary, pages 29-30.
      ***Tip*:** Successful plan review in food establishments first begins with a well-designed menu and HACCP principles. The menu is an integral part of the plan review process. Plans should be based upon HACCP principles; anticipated needs and service demands of the operation. The establishment layout should reflect efficient food flow and processes.
   b. Complete floor plan - **See Figure 1.**
   c. Food equipment schedule, including "cut sheets", make and model numbers and listing of equipment that is certified or classified for sanitation by an ANSI accredited certification program (when applicable) or equivalent.
   d. Shop drawings of all custom-built equipment.
   e. Finish schedule of complete interior finishes for each room including floors, walls, ceilings, countertops and coved juncture bases.
   f. Plumbing schedule to include: location, size and type of water heater(s), overhead waste water lines, floor drains and floor sinks, waste water line connections, and backflow prevention devices.
   g. Lighting schedule.

h. Complete exhaust ventilation plan (HVAC), including restroom ventilation.
i. Site plan showing the location of outdoor bars, refrigeration, any other outdoor food operations, restrooms, mop basin, smoking patios, dog patios, alleys, streets, vacant lots, adjacent businesses, and outside equipment (dumpsters, well, septic system, etc.). All exterior openings shall be properly identified with type of door/window.

MCESD requires all food establishments handling open, time/temperature control for safety foods to have at least one licensed Certified Manager who has undergone more extensive food service training. New establishments must meet the requirement within 90-days of opening.

Food Employee Training: For requirements, please refer to our website.

Figure 1. Kitchen Floor Plan Sample



B. Inspections

During construction, the Maricopa County Environmental Services Department will conduct inspections to assess construction and equipment installation. Typically, three inspections are required during the timeline of the project. Please call (602)506-6980 or schedule online to request an inspection (online form) at the following stages:

1. Plumbing stub-out (20%)
   Note: Local municipality or County Plumbing Code requirements determine the number and size of grease traps, grease interceptors or catch basins. If required, refer to the local municipality for installation requirements. If the establishment is located outside a municipality on county land, contact the Maricopa County Environmental Services Water and Waste Management Division for current code requirements.
2. Equipment placement (75%)
3. Final construction (100% complete in conjunction with Certificate of Occupancy "C of O").

Please allow 7-10 business days to schedule inspections. Inspections are conducted Monday through Friday, between 8am and 5pm. It is the responsibility of the owner, operator, or contractor to schedule inspections. All water, plumbing, electrical, gas, vent hoods, coolers, walk-ins, and other equipment shall be operational at time of the final inspection. The establishment will not be issued a permit to operate until it passes a Final Construction Inspection. If the establishment opens to the public prior to obtaining final approval from this department, the owner may be subject to County legal action.

The Department's approval of plans and specifications shall expire at the end of one year, unless the construction, alteration or addition contemplated in the approved plans and specifications is substantially under construction by that time. If the owner makes any material change to the approved plans and specifications, revised plans and specifications shall be submitted to the Department for review and approval before the work affected by the change begins. Structural changes and minor revisions not affecting health and sanitation are allowed during construction without further approval. The approval will be effective for one year from the date of expiration. An approval of plans and specifications can be renewed for one year if an application for renewal is submitted within 180-days of expiration, and a fee equal to one-half (1/2) of the initial plan review fee is paid.

C. Plan Review Fees (Fee Schedule)

Plan Type	Amount
Restaurant 0-9 seating	$545.00
All Other Food Establishments	$615.00
School Facilities Food Service	$480.00
Public accommodations	$680.00
Pet shop and Groomers	$520.00
School grounds - No kitchen	$640.00
Other Minor Review	$245.00
New Business Owner	$315.00

EXPEDITE FEE: 2x fee amount
Plan extension fee: ½ original fee(s)

After plans are submitted to the Department the plan review process typically begins. If a quicker response time is desired, an expedited plan review process may be requested at a cost of twice the standard fee. The expedited process will approximately cut the review time in half. Expedited fees only speed up the review process, and not inspections. Inspections will still be scheduled based on availability.

If construction has begun prior to plan submittal or if completion is expected within 2-3 weeks of applying, expedite plan review is required and all associated fees shall be paid. Legal action may be requested for locations that do not obtain proper approvals prior to operating. Permit application and the plan review process do not guarantee the issuance of a permit.

After final inspection, to complete the issuance of a permit and begin operation, the applicant must first submit payment of the annual operational permit fee to the Department's Administrative Services Office or (602) 506-6160 prior to operating.

After an establishment has demonstrated sufficient compliance to proceed with the issuance of the permit, and in order to complete the issuance of the permit and begin operation, the applicant must first submit payment of the annual permit fee to the Department Business Services Office.

The establishment shall be in an organized, clean, sanitary condition with sanitation supplies and safe practices implemented prior to opening to the public. The first operational health inspection will soon be conducted by the district health inspector.

D. Locations

Plan Review Office:	1001 N. Central #300, Phoenix, AZ 85004 Phone Number: (602) 506-6980
Central Region:	1001 N. Central #301, Phoenix, AZ 85004 Phone Number: (602) 506-6272
Eastern Region:	106 E. Baseline Rd., Mesa, AZ 85210 Phone Number: (602) 372-3000
Northern Region:	15023 N. 75th St., Scottsdale, AZ 85260 Phone Number: (480)483-4703
Western Region:	16140 N. Arrowhead Fountain Center Dr. Ste 105 Peoria, AZ 85382 Phone Number: (623) 939-5788
Mobile Food/Special Events:	1645 E. Roosevelt St., Phoenix, AZ 85006 Phone Number: (602) 506-6872

E. Forms/Document Downloads

For any additional forms or documents, please visit our website.

II. EQUIPMENT

A. Materials and Design

All food service equipment shall be commercial grade and meet the standards of design and construction in accordance with the American National Standards Institute (ANSI) , National Sanitation Foundation or NSF International (NSF), or equivalent standards including Intertek Testing and Certification (ETL) , Underwriters Laboratory (UL-EPH), Canadians Standards Association Sanitation (CSA), Baking Industry Sanitation Standards Committee (BISSC), and Water Quality Association (WQA), as meeting applicable ANSI international standards for sanitation. Equipment "cut-sheets" are required. Shop drawings are required for custom fabricated equipment.

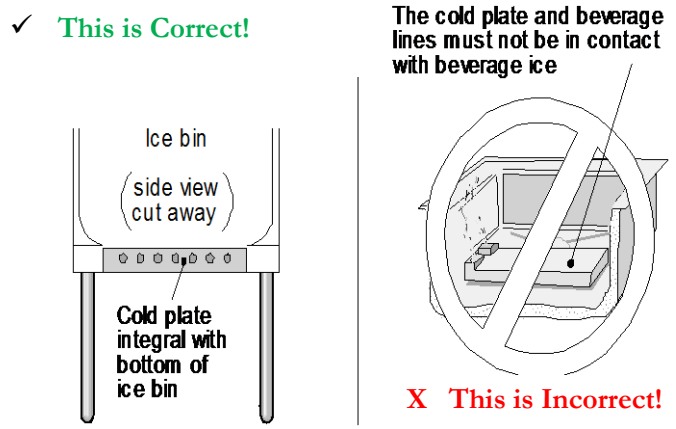
Only qualified equipment which is designed and constructed in accordance with the applicable standard may be installed as new or replacement equipment. Equipment sanitation marks generally indicate that the equipment is approved and includes a distinctive sanitation indicator to demonstrate compliance.

All equipment, including custom fabricated equipment intended for food service must be commercial grade or equivalent, meet ANSI standards, or deemed acceptable by the Department. Household listed equipment will not be permitted.

B. Specialty Equipment

Cold Plates: When installed in ice bins, the cold plates must be an integral part of the ice bin or jockey box. Drop-in cold plates are not approved. **See Figure 2.**

Figure 2. Integral Cold Plate



Custom Fabricated Equipment: Shop drawings are required; field evaluation necessary, shall meet ANSI/NSF standards, or Department approval, and final on-site approval is required. Custom equipment shall bear the name of the fabricator or manufacturer.

Dipper Wells: Provide dipper wells with running water where you dispense bulk ice cream. Utilize dipper wells with dispensing utensils for other bulk foods such as cooked rice, whipped butter, etc. An indirect drain line with an approved air gap (min. 1-inch) is required.

Drive-Through and Walk-Up Windows: These types of windows must be self-closing and/or have air curtains installed with micro-switches.

Dump Sink/Rinse Sink/Blender Station: A separate properly plumbed dump sink may be required in beverage areas. The sink drain line shall discharge to a dedicated indirect drain line with an approved air gap (min. 1-inch).

Equipment Directly Connected to Water Supply: Approved backflow protection is required; the type of backflow device shall be determined by the level of hazard.

Evaporative Pans: When condensate drain lines are precluded from drainage by gravity to an approved drain, properly sized evaporative pans may be utilized. Prior approval must be obtained.

Filtration Equipment: Filtration systems shall be NSF approved.

Food Contact Surfaces: Install work surfaces made of solid surfaces (i.e. stainless steel, Corian®, granite, quartz, engineered stone, etc.). NSF approved cutting surfaces are acceptable in food preparation areas.

Food Preparation Sink: Install separate NSF approved sink(s) solely for the purpose of produce or other food washing, thawing, or preparation in the food production area. The food preparation sink must be indirectly drained to a floor sink with an approved air gap (min. 1-inch). Depending on the menu items, other factors may warrant the installation of a food preparation sink. It is recommended that the food preparation sink have an integral drainboard(s). Do not install garbage grinders on food preparation sinks.

Food Shield Design: Salad bars, buffets, serving lines, and sneeze guards shall comply with the standards (standard #2) of an ANSI accredited certification program and/or meet Department approval. Sneeze guards shall be constructed of approved durable materials such as tempered glass, plexi-glass, plastic, stainless steel or other finished metal. There are three common installation types of food shields and each has different design criteria. **See Appendix A.**

Garbage Grinders: Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments. Grinders are not permitted on 3-compartment sinks or food prep sinks and will only be approved on a case-by-case basis.

Grease Traps: Local municipality or County adopted plumbing code requirements determine the number and size of grease traps, grease interceptors, or catch basins. If required, refer to the local municipality for installation requirements. If the establishment is located outside a municipality on county land, contact the Maricopa County Environmental Services Water & Waste Management Division for current code requirements.

Induction Plates: Approved on a case-by-case basis and may require the use of a vent hood.

Knockbox: It is recommended that a knockbox is provided for emptying coffee grounds. Trash cans may not be used as a knockbox.

Ovens/Cooking Equipment: Shall be NSF approved commercial grade or meet ANSI equivalent. Domestic type cooking equipment is not approved.

Self-contained Bulk Grease Recycling System: When installed, it shall be properly spaced to allow for convenient and easy cleaning. Junctures to the floor shall be sealed and caulked. Note: This is not a grease trap.

Sushi Cases: Sushi cases shall be NSF approved or equivalent. Rigid drain lines shall be provided and shall be indirectly drained to a floor sink with an approved air gap (min. 1-inch).

Sump Pumps: Sump pumps are not allowed, except in rare on-site assessments. In such a case that a sump pump is deemed acceptable by the Department, an alarm system with audiovisual signals may be required.

Vacuum Evacuation Systems: Vacuum evacuation systems that are certified to ANSI standards require approval prior to installation.

C. Equipment Installation Directions

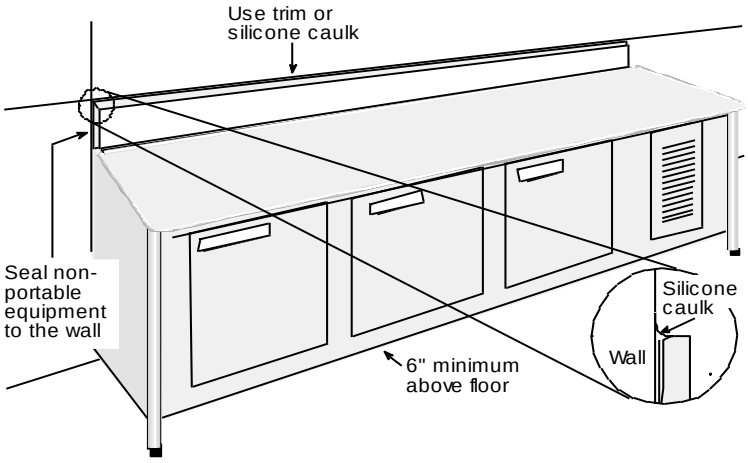
Floor-Mounted Equipment: The preferred method of installation is to place equipment on casters, gliders, or rollers. Use coated steel, commercial grade, NSF approved, utility connections that are smooth and flexible with quick disconnects. The connections should be long enough to move the equipment so the area around and behind can be cleaned.

Equipment may be elevated on legs, as long as a minimum 6-inch clearance between the floor and equipment is provided. Floor mixers may be elevated to provide for at least a four-inch clearance between the floor and equipment. Install stationary equipment with sufficient space between adjacent equipment, floors, walls, cabinets and ceilings to facilitate proper cleaning.

If sufficient space is not possible between, behind, and above each piece of fixed equipment, or if the spaces between such equipment are greater than 1/32 inch, the spaces shall be sealed. Use silicone caulk or cleanable trim/flashing to seal ovens, proofers, walk-ins, sinks spaces, etc. Seal all gaps, cracks, penetrations, voids, and protrusions using silicone caulk or trim that meets the finish material standard. The silicone bead must be smooth and coved.

Table-Mounted Equipment: Install table-mounted equipment on 4-inch legs, or seal the equipment to the table using silicone caulk, unless it is easily movable. Easily movable/portable equipment must: a) be less than 30 lbs. (14 kg.) or on casters, gliders, or rollers; b) have no utility connection or have a quick disconnect utility connection. It is suggested to maintain pieces of table-mounted equipment at least 6 inches apart to facilitate cleaning access. ***Tip:*** If you can place a business/credit card in the gap or crack. Seal it! **See Figure 3**.

Figure 3. Immovable Equipment Sealant



Conceal all plumbing, electrical, and gas lines in walls and ceilings, whenever possible. Otherwise keep all exposed lines at least 6-inches above floor level and at least 1/2 inch away from walls and ceilings. Conduits or pipes shall not be installed across any drains or ice bins.

Walk-in Units: Walk-in refrigerators, freezers, or other large equipment, with spaces 24-inches or less between the top surfaces of the equipment and the ceiling require flashing or closing off in a clean, tight, and vermin proof manner (recommended to add flashing when space is 36-inches or less). Flash, trim, or caulk spaces between walk-in refrigerators and adjacent walls. Penetrations must be sealed smooth with ceiling & wall panels.

III. REFRIGERATION

A. General Storage

Refrigerators and freezers are required to maintain time/temperature control for safety (TCS) food at or below 41°F and 0°F (frozen) respectively. It is recommended that refrigerators be maintained between 36°F and 38°F. These units must be commercial grade and meet NSF/ANSI Standards. Domestic-style refrigerators and freezers are not approved. Sufficient refrigeration and freezers shall be provided to support the intended menu. Consideration must be taken with the placement and installation of refrigeration units to allow for adequate ventilation.

Additional equipment may be required by the Department to provide safe cold holding, cooling, and display. Glass door type or display refrigeration merchandisers and similar refrigeration units that are NSF/ANSI rated for this intended use may only be used for the storage of pre-packaged food items and/or canned or bottled beverages and are not approved for open or prepared food items, or for cooling purposes.

Refrigeration and freezer storage involves six major areas:

1. Storage for short-term holding of perishable and TCS food.
2. Long-term storage.
3. Storage space for quick chilling of foods.
4. Space for assembling and processing of TCS food.
5. Display storage for customer service.

Calculating the amount of refrigeration and freezer space should be based on the menu and expected food volume. The amount and location of refrigeration and freezer equipment should complement the food flow of the operation from receiving, storage and food processing, to the point of service. See FDA Formulas pages 31-32.

When assessing the refrigeration needs, shelving space within the refrigeration and freezer units should be designed to prevent the cross-contamination of foods. Separate raw meats and poultry from ready-to-eat foods such as produce and prepared food items. Thermometers must be conspicuously located in all units. Thermometer sensing elements should be located near the door(s).

Reach-in and walk-in refrigerators and freezers should be located within an enclosed establishment. Any refrigerator or freezer unit located outside an establishment should contain only pre-packaged food items.

B. Walk-in Cooler/Freezer Units

Walk-in units shall meet NSF International standards or equivalent, or deemed acceptable by the Department. A walk-in beverage or beer cooler is not recommended for food storage. Approved

flooring and integral cove bases shall be provided. Quarry tile, ceramic, and galvanized flooring are not recommended flooring materials for walk-in units. An integral cove base with a minimum cove of 3/8" radius is required at all floor/wall junctures. Vinyl or rubber top set bases are not acceptable. A vinyl screed base provided by the manufacturer is acceptable. All gaps, cracks, penetrations, seams, and plug holes shall be sealed smooth and flush with the surface material.

Walk-in units should be installed when there is a need for long-term storage of perishable and TCS food or when cooling space is needed for prepared and cooked foods. These coolers should be located near delivery or receiving areas. Easily cleanable curtain strips are recommended at walk-in doors. This not only helps in maintaining the temperature of the walk-in but also leads to an energy cost savings.

Exterior walk-in unit locations shall be properly designed for exterior installation and consideration given varied environmental concerns. Walk-in units should be designed with a roof. Approved overhead waterproof protection and walkways shall be provided for the transportation of food items. Walk-in units shall be approved by the local building official and are evaluated and approved on a case-by-case by the Department.

Condensate lines from walk-in units shall drain to approved floor drains or alternative method approved by the Department. Condensate drain lines may not run onto the open ground or pavement. Without prior approval floor sinks or floor drain sinks shall not be installed in walk-in units. All walk-in units shall be properly flashed off and sealed to the ceiling and side walls. The areas above walk-in units shall not be used for storage, unless prior approval is granted.

Shelving shall meet NSF standards for cold storage usage and corrosion resistance. Chrome-plated, zinc, and galvanized shelving are not recommended for use inside walk-in coolers or walk-in freezers.

Walk-in units are not to be confused with refrigerated food processing rooms. Please refer below to Item G-Refrigerated Processing Rooms.

C. Reach-in Refrigerators

These units are for short-term storage of perishable and TCS foods. These units should be considered to meet the daily storage demands of the kitchen operation. They are to be conveniently located at points of food preparation and food assembly. These units are not to be considered for the quick chilling of cooked and prepared foods. Glass door units are typically designed for soda and prepackaged foods only.

D. Freezers

Freezers are for long-term storage. They are not designed to be used as quick-chill units. These units should be located near delivery and dry storage areas.

E. Blast Chillers

These units are recommended for use when handling large volumes of food that require quick chilling. A blast chiller is an efficient cooling mechanism for any amount of food to be chilled, and where refrigeration cooling space is limited.

F. Refrigerated Worktables

These units are suggested when the menu includes assembling TCS foods. These units provide easy access of foods from the top of the unit. These units are not designed for long-term storage of food or cooling.

G. Refrigerated Processing Rooms

These areas (e.g. meat cutting rooms) should be considered when there is extensive handling of cold TCS food. Approved hand sinks are required in these areas. These rooms shall meet all applicable Department requirements.

H. Display Storage Refrigerators

These units are designed to display TCS food under refrigeration. Examples of these units are deli display, fresh fish, and meat and poultry cases.

I. Customer Service Display Units

These units are designed for holding food under refrigeration for customer access. They are designed for short-term display and are not designed for the cooling of food. Beverage display coolers are not approved for storing open TCS food.

J. Cold Buffet Units

Cold buffets and salad bars are designed for short-term display. They should be mechanically refrigerated, and have approved sneeze guards with side panel protection.

K. Ice Machines

If ice is to be used as a cooling medium for food and beverage items the unit should be adequately designed and sized to meet all operational needs in an approved location. Ice machines designed for outdoor dispensing with proper National Automatic Merchandising Association (NAMA) certification may be approved by the Department.

IV. STORAGE

A. Dry Storage

Adequate and suitable floor space shall be provided for the storage of food and beverages. In addition to working storage (i.e., wall-mounted shelves and cabinets over food preparation equipment or under counter storage) additional dry-storage space shall be provided.

Storage space should consist of 25% of the food preparation area, or one square foot per seat, whichever is greater, but not less than a total of 100-square feet of floor space.

At least 32-linear feet of approved shelving units, a minimum of 18-inches deep, should be installed in the minimum 100-square feet of floor space provided. All shelving shall be at least 6-inches above the floor with a clear unobstructed area below or an upper shelf surface above a completely sealed minimum four-inch base.

B. Wet Storage

Storage of packaged food in contact with water of un-drained ice is prohibited. Wrapped food items shall not be stored in direct contact with ice or water if the food is subject to entry of water. All equipment and containers used for the storage of packaged food items in contact with ice shall be designed to allow gravity drainage only of melted ice to a floor sink with an approved air gap.

Live Aquatic Animals: Each wet storage site, facility and operation shall be evaluated and approved by this Department.

General Requirements:

Materials: Use NSF approved acrylic or tempered glass for display aquariums. Fiberglass covered wooden holding tanks with FDA approved resins and gel coats are acceptable. All raw wood must be pressure treated, sealed and or painted with marine type sealers/ paints. All material

must be light in color, smooth and easily cleanable. All metal or steel supports shall be sealed and maintained to prevent rust and water damage.

Source Water:

1. The quality of the source water prior to treatment, at a minimum, shall be from an approved supply and meet bacteriological standards as required by law.
2. Disinfection or other water treatment such as the addition of salt cannot leave residues unless they are Generally Recognized as Safe (GRAS) and do not interfere with the shellstock's survival, quality or activity during wet storage.
3. Disinfected/treated process water entering wet storage tanks shall have no detectable levels of total coliform bacteria under normal operating conditions.

Filtration:

1. Biological filtration:
   Use only high quality 100% usable crushed corals.
2. Chemical filtration:
   Activated carbon to remove color and odor-producing contaminants. Use high quality bituminous coal.
3. Mechanical Filtration:
   a) Use only high quality polyester foam filter pads that are washable, odorless and non-allergenic. This filter is used as the first defense against solids and other non-desirable materials before entering the pump and other filter components.
   b) Install high quality high-rate sand filters fabricated of durable, corrosion-proof materials to provide crystal clear water.
4. Ultra-Violet (U. V.) Filtration:
   a) For water receiving U. V. filtration (required for molluscan shellfish only), the water turbidity shall be minimal. U. V. sterilizers reduce disease transmission by destroying disease-causing microorganisms as they pass through the unit. Each shellfish tank shall be equipped with its own U. V. filter.
   b) For water that is disinfected by U. V. treatment, turbidity shall not exceed 20 nephelometric turbidity units (NTUs) measured in accordance with the *Standard Methods for the Examination of Water and Wastewater, APHA*.
   c) The facility shall be required to demonstrate that disinfection for the recirculation system functions and consistently produces approved water under normal operating conditions.
   d) The water should be sampled weekly to demonstrate that the disinfected water is negative for total coliform bacteria.
   e) Each time a U.V. bulb change is required, either to replace a burned out bulb or for servicing, a new U.V. bulb shall be installed and the old bulb discarded, and the weekly disinfected process water sample should be collected and analyzed.

Recommended Water Changes:

1. The disinfection unit(s) for the process water supply shall be cleaned and serviced as frequently as necessary to assure effective water treatment.
2. It is recommended that 1/2 of the tank water should be changed once weekly.

Plumbing:

Approved back flow prevention measures and devices are required and shall be installed according to code. Plumbing material should be constructed of PVC.

Holding Temperatures:

Molluscan Shellfish: Live and culled molluscan shellfish shall be held at 41°F or below. Other Live Aquatic Animals: Do not require refrigeration below 41F but should be held at the optimal water temperature for that animal. Examples: Crab: 50°F, Lobster: 40°F to 50°F, Catfish 75°F to 85°F, Tilapia 82°F to 86°F, Striped Bass 66°F to 72°F.

Water Balancing:
Use high quality water balancing rocks/stones from approved sources or approved chemicals to balance the water.

For additional information please refer to NSSP Guide for the Control of Molluscan Shellfish: 2013 Revision.

C. Storage Locations

Chemicals: Designate an area for toxic material storage that is away from food and clean utensils. These include detergents, sanitizers, related cleaning or drying agents and caustics, acids, polishes and other chemicals. Install cabinets, cages, or physically separate shelves for storing chemicals.

Pesticides and herbicides are NOT allowed inside a permitted food or beverage related establishment. Pest control shall be provided by a properly certified pest control applicator.

Cooking utensils: Designate areas for clean cooking utensils, cutting boards, glassware and dishware. Store them at least 6-inches off the floor in a clean, dry location where they will be protected from dust and splash.

Clean Linen: Designate an area, separate from soiled linens to store and protect clean linen from contamination.

Firewood: If firewood is used, it is recommended that an area for firewood is designated separate from food service and storage areas. Special measures should be made to ensure insect and rodent control. Interior/exterior firewood storage areas shall be elevated on metal racks at least 6-inches above flooring or the ground.

Laundry Facilities: A mechanical clothes washer may be utilized for laundering washing cloths. A dryer is not required if wiping cloths are the only items to be washed on-site. The wiping cloths shall be air dried in an area where there is no exposed food or beverage, clean equipment, utensils, linens or unprotected food contact surfaces. Mechanical washers and dryers shall be located in approved areas. Liquid detergent may be utilized and adequate ventilation to the exterior shall be provided. Doors or approved closures shall be provided to prevent contamination.

Maintenance Equipment: Designate an area, away from food or dishware, for storing maintenance equipment and cleaning supplies. Supply adequate broom racks to keep brooms, dust pans, etc., off the floor. Install heavy-duty mop hooks that can support wet mops over the janitorial sink so that wet mops may drip dry into the sink basin. Provide open wire or solid metal shelving at each janitorial station for a working supply of cleaning items. The use of peg-board is not approved.

Soiled Linens: Specify the location of covered, non-absorbent containers or washable laundry bags designated for holding damp or soiled linens, soiled uniforms, aprons, etc.

D. Shelving

Kitchen shelving shall meet NSF standards. Shelves should be constructed of metal or material which has been finished to provide durable smooth, easily cleanable, non-absorbent surfaces. Shelves

subject to heat or moisture must be of rust-resistant metal or plastic. Shelving not approved by NSF may be used for dry storage, provided the area used is a separate room isolated from other food service operations and does not contain open foods. All shelving requires final on-site approval.

All refrigerator and freezer shelving must meet NSF standards. In addition, shelving installed in refrigerators must be made of rust-resistant metal or other impervious material. The minimum height of a bottom shelf above the floor of a walk-in refrigerator or freezer is 6-inches.

V. EMPLOYEE AREAS, RESTROOMS, LOCKER ROOMS, DRESSING ROOMS, AND HAND WASH SINKS

A. Employee Areas

A coat rack, coat hooks or other suitable facilities for employees to store their clothing and other personal belongings should be provided. If employees change clothes on-site, provide a dressing room where they may change and store their personal, non-working garments. This cannot be in areas used for storing, preparing or serving food, or for washing or storing utensils.

If employees are not allowed to eat in the dining room a designated separate break room or area away from food preparation and utensil washing areas is suggested. It is recommended that an employee beverage station be provided such as a speed rack, shelf, or similar container holder for employee beverages in the kitchen and/or food preparation areas. **See Figure 4**. It is recommended that disposable gloves be kept in racks or on shelving at all hand wash stations and not throughout the food establishment. This will facilitate proper glove changes and hand washing when necessary. **See Figure 5**.

Figure 4. Employee Beverage Station

Figure 5. Glove Rack

Personal medications and first aid kits should not be stored in food storage, preparation or service areas. They may be placed in an employee locker or office.

B. Restrooms

Access: Public access to restrooms through food preparation or utensil washing areas is prohibited.

Americans with Disabilities Act (ADA): This Department does not have enforcement authority or jurisdiction over ADA regulations. Contact the local building department for requirements.

Diaper Changing Stations: If diaper-changing tables are provided, you must provide covered waste containers. We recommend the container have a tight-fitting lid**.**

Dispensers: Each hand wash sink must have a supply of hand cleansing soap and disposable paper towels. Approved heated-air hand drying devices or air-knife systems are acceptable, but are not recommended in food preparation, service, or bar areas due to increased bacterial aerosolization when drying hands. Dispensers must be conveniently located near each hand wash sink. If employees share restrooms, provide dispensed, disposable paper towels. It is recommended that dispensed disposable paper towels be provided in restrooms specifically provided for employees.

Fly-Control: A toilet room located on the premises shall be completely enclosed and provided with a tight-fitting and self-closing door or approved air-curtain. This requirement does not apply to a toilet room that is located outside a food related establishment and does not open directly into a related food establishment, such as a toilet room that is provided by the management of a shopping mall.

Hand Wash Signs: Hand wash signs are required in all restrooms used by employees.

Lockers: Consider installing lockers in a designated area away from food production and storage locations. It is recommended that, when provided, lockers shall be set on a solid base or raised 6-inches above the floor. E.g. lockers set on sealed concrete bases in a high school locker room.

Location: Restrooms for employees must be conveniently located as determined by this Department. Toilet facilities that meet all Health Code standards and are readily accessible must be located within 300-feet in covered malls or similar covered facilities, 500-feet in occupancies other than covered malls of the food preparation and/or utensil washing location areas. A written legal use agreement for the shared use of restrooms is required, if restrooms are shared with other facilities. Advisory: Some municipalities require separate men's and women's restrooms where dine in seating is available. Separate men's and women's restroom facilities are recommended. Contact the local building department for current requirements.

Number: A minimum of one (1) restroom is required for employee use. In facilities that allow the onsite consumption of alcohol, separate men's and women's public restrooms are recommended. Restroom facilities shall meet the requirements of Chapter 4, Table 403.1 of the 2009 International Plumbing Code.

Refuse Containers: Provide smooth containers for the disposal of paper towels conveniently located near hand sinks. All waste containers shall be durable, cleanable, insect and rodent resistant, leak proof, and non-absorbent.

Sanitary Containers: Provide covered sanitary containers for the disposal of feminine hygiene products. Recommend sanitary containers to be located in each toilet stall.

Ventilation: Mechanically vent restrooms to the outside of the building or provide a properly screened window to the exterior.

Water Supply: Provide each hand wash sink with hot and cold, or tempered water by means of a mixing valve or combination faucet. Any self-closing, slow closing, or meter-faucet used shall provide a pressurized flow of water for at least 15-seconds without the need to reactivate the faucet. For proper hand-washing per code, adjusting a metered faucet to provide a pressurized water flow for 20-seconds is recommended. Hot or tempered water must be provided within 45-seconds to the faucet.

C. Hand Wash Sinks

Dispensers: Provide disposable paper towels at each kitchen and bar hand wash sink. A waste receptacle should be located near the sink. The use of common towels is not allowed. Approved heated-air hand drying devices or air-knife systems are acceptable. Hand drying devices using air, are not recommended in food preparation, service, or bar areas due to the potential for increased aerosolization of bacteria when drying hands. Hand sanitizers or gloves may be used in addition to conventional hand washing, but never as a substitute. Sanitizers and gloves shall be dispensed at your hand wash sinks or Point-of-sale (POS) area. Latex gloves are prohibited with direct contact with food. Gloves should be located at/near the hand sink location.

Location: Provide a sufficient number of hand wash sinks. Hand sinks shall be easily accessible with no barriers or obstructions restricting their accessibility. A hand sink shall be located within 25-feet of all work stations, food preparation, food service, in bars, wait stations, ice machines and ware washing areas without obstruction (i.e. a door) and directly accessible. A sticker, sign, or poster is required to remind food employees to wash their hands. ***Tip:*** If the hand sink is out of sight, it is out of mind!

Splash Protection: Splash guards are needed when a hand wash sink is within 24-inches of a food contact surface, food/utensil storage shelves, food service areas, vegetable preparation sink or dish washing sink. Install a waterproof splashguard at least as high as the faucet (apex of faucet neck) and as deep as the hand sink, between the sink and food/dish related areas. Provide metal splash guards with a rounded edge. We recommend the use of stainless steel with a bullnose edge. Securely fasten splashguards to the wall, counter top, or sink. Seal the seam created by the splashguard with silicone. Fabricated stainless steel, rounded and polished hand sinks are available from manufacturers with integral splash guards are highly recommended. **See Figure 6.**

Figure 6. Hand Sink with Splash Guards

Water Supply: Provide each hand wash sink with hot and cold water under pressure by means of a mixing valve, combination faucet, or tempered water to the faucet for at least 15-seconds. Hot or cold water should be available within 45-seconds. It is recommended that faucets equipped with automatic shut-off should run for at least 20-seconds. Tempered water in all food related facilities shall be 110°F. Tempered water in non-food related facilities may be 85°F to 110°F at hand wash sinks.

VI. PLUMBING

All plumbing systems shall be designed, constructed, installed, operated, maintained and repaired in accordance to law and applicable codes. Conformance with the following requirements or similar requirements shall be adhered to for the determination of Maricopa County Environmental Health Code compliance with health and plumbing codes.

Potable water supply piping shall be constructed of approved rigid materials or PEX type and fittings. All drain lines shall be of approved rigid materials and fittings and shall properly slope to drain to the sanitary sewer.

As of December 10, 2014, the Maricopa County Environmental Services Department incorporated by reference the U.S. Food and Drug Administration 2013 Food Code (2009 FDA Code). For purposes of this guideline, references to "Regulatory Authority" in the U.S. Food and Drug Administration 2013 Food Code, means the Maricopa County Environmental Services Department.

The 2009 International Plumbing Code (IPC), as adopted by the Maricopa County Board of Supervisors on August 18, 2010 and as amended by Section 301 of Chapter 3 of the Maricopa County Planning & Development Department's Local Additions & Addenda dated October 2010, shall be adhered to for code compliance.

Establishments located in an unincorporated area of Maricopa County shall adhere to the 2012 International Plumbing Code (IPC), as adopted by the Maricopa County Board of Supervisors on August 7, 2013 and as amended by Section 301 of Chapter 3 of the Maricopa County Planning & Development Department's Local Additions & Addenda, for code compliance.

A. Water Supply

Provide an adequate supply of potable water, under pressure, to satisfy the needs of the food service establishment. Water must be from an approved public water supply source or from a source approved (i.e. wells) by the Maricopa County Environmental Services Water & Waste Management Division or the Arizona Department of Environmental Quality. Plans may need to be submitted to Maricopa County Environmental Services Water & Waste Division for approval.

B. Sewage Disposal

All sewage must go to an approved sewage system. Plans may need to be submitted to the Water & Waste Division for septic system approval. Construction sites that meet certain criteria are required to obtain permit coverage and have a stormwater management plan (SWMP). Sump pumps are not allowed, except in very rare on site assessments. In such a case that a sump pump is deemed acceptable by the Department, an alarm system with audio-visual signals may be required. With prior approval, when condensate drain lines are precluded from drainage by gravity to an approved drain, properly sized evaporative pans may be utilized. Vacuum evacuation systems that are certified to ANSI standards require approval prior to installation.

C. Grease Interceptors/Grease Traps

Local municipalities determine the number and size of grease traps, grease interceptors or catch basins. If required, refer to the local municipality for the installation requirements.

If the establishment is located outside a municipality on county land, contact the Water & Waste Division for Independent Sewage Disposal Systems (ISDS) inspections or current code requirements. If installed, grease traps shall be installed properly spaced so they are easily accessible for servicing and cleaning. When an above ground grease trap is installed close to a wall the gap shall be trimmed and closed.

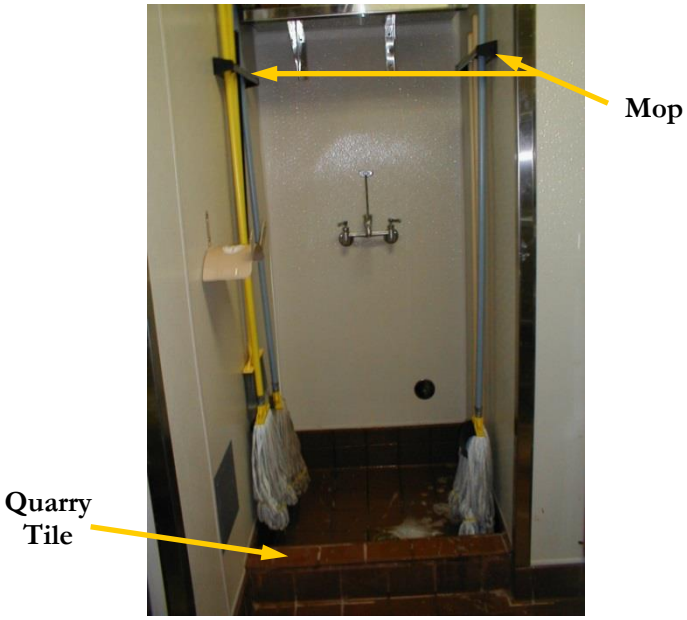
D. Janitorial Stations, Service (Mop), Can Wash, Utility Sinks

Mop water and similar liquid wastes are contaminated with microorganisms and other filth. Waste water must be disposed of in a sanitary manner that it will not contaminate food or food equipment. A service sink or curbed cleaning facility with a sanitary sewer drain allows for such disposal. Toilets and urinals may not be used as a service sink for the disposal of mop water and similar liquid waste.

At least one service/mop/utility sink or one curbed cleaning facility equipped with a floor drain shall be provided and conveniently located for the cleaning of mops or similar wet floor cleaning tools and for the disposal of mop water and similar liquid waste.

Waste/wash water at exterior service (mop) and can wash areas shall properly discharge into a sanitary sewer drain and not into a stormwater drain.

Figure 7. Quarry Tile Service (Mop) Sink / Janitorial Station



Additional Equipment: Stationary equipment, such as water softeners or water filter systems, may not obstruct the mop basin or sink. Allow for space adjacent to the mop basin/sink for storage of mop buckets. Place approved chemical dispensing systems so they do not interfere with maintenance equipment storage or use. If you suspend a water heater over the mop basin, we recommend maintaining a minimum clearance of 80-inches to provide adequate space for the storage of wet mops. Ceilings in the service (mop) or utility sink area shall be smooth and easily cleanable.

Chemical Dispensers: It is recommended to provide an additional water line at the mop sink/ utility area to supply chemical dispensers. Valves of any type are not permitted downstream of a mop sink faucet with an atmospheric vacuum breaker. Please refer to the Environmental Services Department's handout.

Installed chemical dispenser backflow preventers shall be ASSE 1055-A compliant or shall be equipped with an air gap fitting. Appropriate backflow protection shall be installed for those chemical dispensers that do not comply with the aforementioned standards.

Design: Provide service sinks or janitorial stations for general cleanup activities in all permitted establishments. Include either a floor basin, leg-mounted mop sink, or a concrete or ceramic tile curbed basin.

Connect the basin or sink, with a drain, to the sanitary sewer. Provide hot and cold water, under pressure, with a mixing faucet and approved backflow protection. Wall surfaces shall be smooth durable, stainless steel, tile, FRP, etc. CMU (unpainted or painted) is not acceptable. **See Figure 7**.

Location: Janitorial stations, service (mop), utility sinks shall be within 300-feet of the establishment. Sinks should be installed so not to cause any contamination of equipment, food contact surfaces and single service items etc. The janitorial station must be accessible for use during operation.

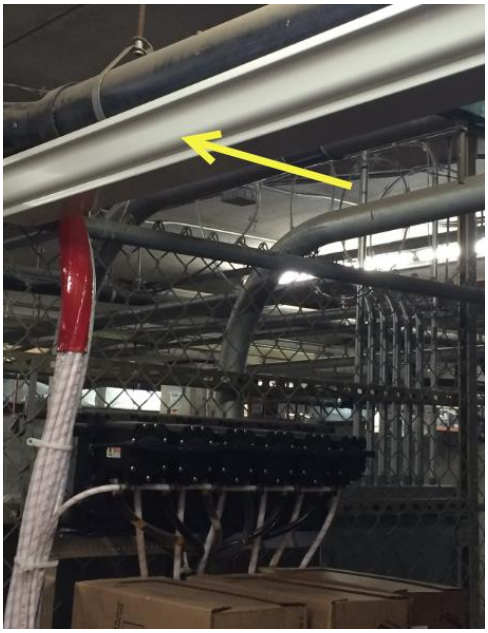
E. Overhead Sewer Lines

Location: Waste lines and roof drains should not be located directly above food preparation areas, ice bins, jockey boxes, food display, food and equipment storage, utensil washing areas, or over food receiving areas, transport corridors or routes, unless separated by an acceptable method approved by the Department. All overhead waste, sewer lines, fire suppression lines, beer/soda lines, including water lines shall be properly identified and labeled. Overhead waste lines shall be properly troughed as deemed necessary. Sewer and waste lines shall not run above potable water or beverage lines. Approved vacuum evacuation system lines are not considered overhead waste lines.

Shielding: If you have overhead sewer or drain lines over any of these areas, provide seamless and sealed gutters under the piping that will divert leakage away from the food or utensil zone. Gutters shall drain to the sanitary sewer or be sealed at the ends. Label all piping as required. **See Figures 8a and 8b**.

Figure 8a. Overhead Plumbing -Labeled

Figure 8b. Overhead Drains Line with Sealed Trough/Gutter



F. Potable Water Backflow Protection

Carbonators: Provide an approved reduced pressure backflow preventer, or other approved testable, continuous pressure, backflow device. The backflow preventer shall be installed between the water supply line and the carbonator for carbonated beverage systems. Conduit and fittings between the backflow preventer and the carbonator should be flex line or stainless steel, do not use copper or brass. Provide an approved funnel drain assembly with an approved air gap plumbed to a floor sink to provide drainage for the relief valve of the backflow device. Install water filters on the upstream (water supply side) of the backflow preventer. These units shall meet all other plumbing code requirements. The Department recommends the use of a stainless steel backflow preventer. Certify the backflow preventer and provide copy of the backflow preventer test certification.

An ASSE 1022 or approved device is the minimum level of protection required for carbonator systems. These devices are not testable; therefore if these devices are used as the only level of protection, a written maintenance policy must be in place that requires the annual inspection of these devices. It is highly recommended an approved testable reduced pressure backflow preventer be installed between the water supply line and the carbonator. (Backflow Assembly Document). Conduit and fittings between the backflow preventer and the carbonator should be flex line or stainless steel. Do not use copper or brass downstream of the backflow preventer. These units should also meet all other plumbing code requirements. The Department recommends the use of a stainless steel

backflow preventer. Check with your local building department or local plumbing backflow/cross-connection specialist for current requirements. They may have more stringent regulations. **See Figure 9.**

Figure 9. RPZ on Carbonator Supply Line

Inlets: All water inlets (faucets, etc.) must have an air gap between the water inlet and the fixture it is serving. The air gap must be at least twice the diameter of the water inlet or faucet. Any water inlet, faucet, etc., that does not meet this requirement is a submerged inlet and will require approved backflow protection. A water faucet that can have a hose attached to it may be considered a submerged inlet.

Non-Carbonated Beverage Machines: The water supply connection to beverage dispensers shall be protected against backflow by a backflow preventer conforming to ASSE 1022, or by an approved air gap.

Special Conditions: Provide approved double check valves with atmospheric vents, pressure vacuum breakers, or reduced pressure backflow preventers on water inlets where you cannot install an atmospheric vacuum breaker after the last shut-off valve or solenoid switch (i.e., pressure spray hoses).

Vacuum Breakers: Provide approved vacuum breakers on submerged water inlets such as; warewashing machines, wok cook table, garbage grinders and any threaded water outlets.
See Figure 10. Atmospheric vacuum breakers (AVB) must be installed at least 6-inches above the highest outlet and cannot have a valve installed downstream

Figure 10. Atmospheric Vacuum Breaker (AVB) with Submerged Inlet

Water Supplied Equipment: All equipment and fixtures connected to a water supply shall be equipped with an approved backflow prevention device or air gap to prevent backflow. Certify the backflow preventer and provide a copy of the backflow preventer test certification.

G. Indirect Waste Connections

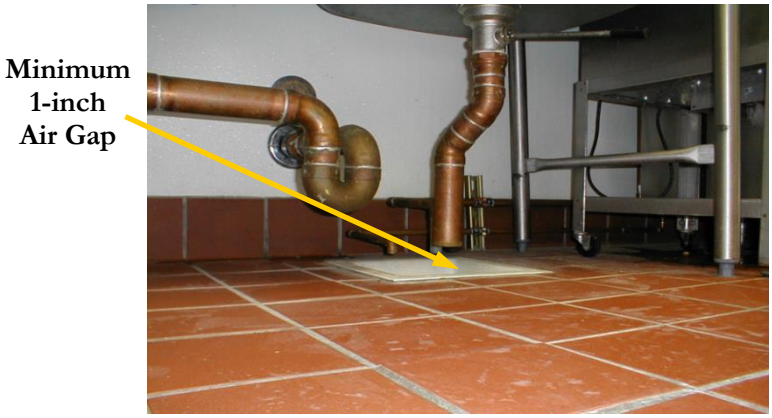
Provide indirect waste lines with an air gap for all ware washing sinks, dish wash machines, soda fountains, prep sinks, potato peelers, ice machines, steam tables, steam cookers, ice bins, salad bars, dipper wells, walk-in refrigerator or freezer condensate drain lines, and other similar fixtures.

Indirect waste lines require a minimum 1-inch air gap above the flood level of an approved floor sink or drain. **See Figure 11.** Indirect drain lines should not exceed 10-linear feet to an approved floor sink or drain.

All indirectly drained fixtures must discharge to receptors (floor sinks, etc.) that have a vented trap placed as close as possible to the fixture and in the same room. To avoid cross connections, each fixture will require a separate rigid drain line. Install receptors in accessible and ventilated areas. Design and size drain lines & receptors to prevent overflows and splashing.

Food service equipment sinks or service (mop) sinks cannot receive the discharge of an indirect waste pipe. E.g. A food preparation sink drain line discharging into a mop sink.

Figure 11. Air Gap off a Food Prep Sink Drain Line



See **Appendix B** for instructions on how to plumb warewashing sinks when a local jurisdiction restricts an indirect waste line.

H. Floor Drains

Location: Floor drains/floor sinks are to be located in areas that require frequent water flushing to clean the floor or equipment. Floor drains/sinks shall not be installed inside walk-in refrigeration units except under the following condition:

Trough-type floor drains may be located in refrigerated processing rooms or high moisture storage areas, such as produce coolers or meat/poultry coolers, provided that the doors to the area or room have been undercut or are swing doors.

A direct connection may not exist between the sewerage system and any drains originating from equipment in which food, portable equipment or utensils are placed, except if otherwise required by applicable plumbing code.

Number: A sufficient number of floor drains and/or floor sinks should be located throughout the establishment to facilitate cleaning. Floor drains are required in school restrooms, locker rooms, and shower areas.

VII. WATER SOFTENERS, AND REVERSE OSMOSIS (RO) SYSTEMS

Due to the presence of hard water in Maricopa County it is recommended that a quality water softener or filter be installed to reduce problems typically associated with hard water such as lime scale, mineral buildup, etc. A water softeners or filters will help in maintaining clean faucets, fixtures, drain lines, dishwashers, ice machines, and other similar equipment.

An approved testable high-hazard continuous pressure backflow preventer shall be provided immediately upstream from any RO system (e.g., RPZ backflow preventer).

Copper or copper alloy such as brass may not be used in contact with a food that has a pH of less than 6, such as vinegar, fruit juice, wine, or water originating from an RO system.

VIII. SANITIZING EQUIPMENT

A. Hot Water System

Refer to the Department's Guideline to Sizing Water Heaters, Water Temperature and Potable Water Supply Requirements.

B. Manual Warewashing

Design: Food and beverage related establishments shall provide a NSF approved 3-compartment, stainless steel sink with two integral drain-boards where pots, pans or multi-use utensils are washed by hand. The 3-compartment sinks must have tubs of equal size and have rounded corners. The drain-boards should be of a size equal to each tub or larger. All three compartments should be drained indirectly to a floor sink with an air gap. See Appendix B for instructions on how to plumb warewashing sinks when local jurisdictions restrict an indirect waste line. A warewashing machine cannot be a substitute for a 3-compartment sink. Meat markets, sushi bars, and oyster bars and other locations that prepare and serve raw animal products for consumption by the consumer should have a separate dedicated 3-compartment sink.

Install the 3-compartment sink to minimize cross-contamination to or from your mop sink, hand sink, or food/utensil related areas. Garbage grinders are not approved to be installed on 3-compartment sinks. Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments. Chemical dispensers with built-in backflow prevention or air gap supplied to 3-compartment sinks shall meet code. Chemical test strips shall be provided for appropriate chemicals in use. A 3-compartment sink is required in retail grocery stores that prepare/display cut produce and is required in all food service facilities.

Size: Each compartment must be large enough to submerge the largest item to be washed by 50%. Each drain board must be equal to the area of the largest compartment. With prior approval an approved drying rack or roller cart may be substituted for one drain board only.

C. Mechanical Warewashing

General Requirements:

All warewashing machines must comply with NSF/ANSI standards. A dish-table of adequate size is needed to handle soiled utensils before washing. The soiled dish-table must not drain into the washing compartment of the warewash machine. Warewashing machines should have both an

integral dirty and clean side drain-board landing of adequate size. The installation of a table scupper across the entire flat section of the table to prevent soiled water and debris from draining into the wash tank may be required. A pre-wash dump sink or pre-rinse scrapping station is recommended or may be necessary, so that larger food particles can be rinsed off before entering the warewashing machine. All warewashing equipment, including dish-tables and drain-boards shall drain to a sanitary sewer.

A dish table or drain board must be provided for clean dishware to properly drain and air dry. This installation must provide room for the temporary storage of utensils and racks immediately after being removed from warewashing machines. It must be at least the size of the soiled dish- table.

Easily readable, numerically scaled indicating thermometers are required. They must be accurate to ± 2°F and show the water temperature in each tank of the machine, including the temperature of the final rinse water as it enters the manifold.

Mechanical exhaust ventilation is needed above high temperature sanitizing machines to remove steam and vapors effectively. Type II hoods may be required over high temperature warewashing machines. A maximum relative humidity (RH) of 65% is recommended. Adequate ventilation shall be provided to remove excess steam, vapor, and prevent condensation.

Additional drain boards, dish tables, or shelving for air drying utensils will be needed after being washed in a low-temperature machine.

Garbage grinders shall be connected and trapped separately from any other fixtures or sink compartments. Grinders are not permitted on 3-compartment sinks and will only be approved on a case-by-case basis.

Chemical Sanitizing Machines:
A sanitizer alert system is required, which includes a visual or audible alarm, designed and approved for the specific machine installed, to notify the employee when the sanitizer supply has depleted.

Chemical sanitizing machines shall meet current code requirements and meet manufacturer specifications. Chlorine sanitizers are approved for general warewash use only. NSF approved glass washers for use at bars that use iodine are approved. Chemical sanitizing warewashing machines shall provide not less than 120°F wash solution. Chlorine sanitizer must be maintained between 50-100 ppm and iodine at 12.5 ppm.

Hot Water Sanitizing Machines:
A booster heater is needed to supply at least 180°F water for the final rinse at the manifold. The rinse demand of the machine will determine the heater capacity. Final plate temperature must be at least 160°F.

A temperature gauge is recommended on the service line just before the booster heater.
Installation of the water heater and the booster heater should be as close as possible to the warewash machine to avoid heat loss in the lines. A pressure regulator is needed on the final rinse line. The flow pressure needs to be 15psi to 25psi (pounds per square inch). All mechanical warewashers shall be provided with a manufacturer supplied data plate.

IX. LIGHTING

A. Food Service Areas

Food preparation and utensil washing areas must be well lit. The light intensity shall be at least 20-foot candles (220 lux), measured 30-inches above the floor. This requirement also applies to surfaces where food is provided for consumer self-service, such as buffets and salad bars, and where fresh produce or packaged foods are sold or offered for consumption. Intermittent light is not acceptable. The inside of equipment, such as reach-in and under counter refrigerators, shall have a light intensity of 20-foot candles.

It is required that the light intensity be at least 50-foot candles (540 lux) at a surface where an employee is working with food, utensils or equipment such as grinders or saws where employee safety is a factor.

B. Walk-in Refrigerators and Freezers

The light intensity shall be at least 10-foot candles (110 lux) measured 30-inches above the floor. It is recommended that fluorescent lights with cold-tolerant ballasts and vapor-proof fixtures be installed. All corners shall be illuminated to meet the lighting requirements.
Tip: Install lights to avoid obstruction by food stored on shelves. It is recommended to install fluorescent tube lights or multiple fixtures. The utilization of Light Emitting Diode (LED) light is recommended.

C. Storage, Warewashing and Restrooms

The light intensity shall be at least 10-foot candles (110 lux) measured 30-inches above the floor in storage rooms and 20-foot candles (220 lux) in the restrooms and warewashing areas.

D. Bars

Adequate shielded lighting must be provided under the bar counter, directly above bar sinks, jockey boxes, ice bins, and glass chillers. Dimmer switches, on general lighting, are acceptable as a suitable alternative for use in bar areas. Provide at least 20-foot candles of task lighting for dishwashing and clean-up purposes.

E. Protective Light Shielding

Provide shielded light fixtures above all food preparation, service, display, food storage and utensil washing areas. This includes all refrigerators, food display cases, bar equipment, coffee, soda and condiment stations, and under vent hoods. Protective tubes/lenses, plastic sleeves with end caps, or coated shatterproof bulbs may be used. Protect heat lamps against breakage with a shield surrounding and extending beyond the bulb, leaving only the face of the bulb exposed. Including all can lights & compact fluorescent lights.

X. LAUNDRY

A. Location

Laundry facilities in a food service establishment shall be restricted to the washing and drying of linens, clothes, uniforms and aprons necessary to the operation. Such operations may be conducted in an approved separate storage room or enclosure containing pre-packaged foods or pre-packaged single-service articles. An approved separate room or enclosure with doors is recommended to be provided for washing and drying laundry facilities in all food and non-food related establishments. Utilize liquid laundry detergent to minimize powdered airborne detergent.

B. Clothes Dryer

If linens or uniforms are laundered on the premises, a mechanical clothes washer and dryer shall be provided and used. Dryers must be vented to the outside. The use of wet vent traps is not allowed. A washing machine can be used for wiping cloths without a dryer or separate room if cloths are intended for moist use or are air dried.

C. Linen and Clothes Storage

Clean clothes and linens shall be stored in a clean place and protected from contamination until used. Storage surfaces and area must meet current finish requirements.

XI. FINISHES

A. Walls

Provide a smooth, durable nonabsorbent, easily cleanable wall surface. A heavy textured skip trowel finish is not acceptable. Raw wood or unfinished studded walls are not permitted. Exposed wood studs are not allowed. Walls shall be constructed with material that leaves a smooth finish such as stainless steel, approved FRP (fiberglass-reinforced-panels), ceramic tile, painted dry wall (orange peel), etc. All splash areas must be finished smooth with durable and waterproof materials such as FRP or stainless steel. Painted dry wall and exposed block in splash and moisture related areas, wet zone areas, such as 3-comp, service (mop) sink, can wash, dishwashers, prep sinks are not acceptable.

Painted wall surfaces in all food service and warewashing, storage and restroom areas shall be smooth. Use quality semi-gloss or high-gloss type paint. Dark colors are not recommended and require more lighting.

Wainscoting in all establishments must meet the same requirements as kitchen areas. Grout shall be smooth and finished flush with the surface of all tiles.

Wall finishes behind cook lines and under vent hoods shall be of stainless steel or its equivalent, from the lower edge of kitchen exhaust hoods to the floor surface. Wall/floor junctures shall be finished with coved metal, coved ceramic tile, or other similar durable, easily cleanable materials. All gaps, cracks and penetrations shall be sealed and/or flashed off to the ceiling and wall.

Construction masonry units (cmu) or "block", brick and other masonry units installed as a finish material shall be free of pits, voids, cracks, depressions, and shall be smooth and easily cleanable. CMU, block, or brick wall surfaces are not allowed in can wash areas to the height of the splash zone. Light colored Astra-glaze® or similar masonry units are recommended. Block walls or similar material where allowed shall have an acceptable finish. Exposed, rough, unfinished wood is typically not considered an approved wall finish.

FRP (fiberglass-reinforced-panels) should be light in color and easily cleanable (Pebble surface or Smooth surface). Grooved and/or factory painted FRP panels are not approved. Do not install FRP behind cooking equipment or under hoods.

Finish faced medium-density-fiberboard panels (MDF) are acceptable in non-moisture related areas only. However, the material is not recommended and not approved in moisture related areas due to durability concerns.

It is recommended to use marine grade plywood, backer board or moisture resistant dry wall in moisture related areas.

Apply a clean, smooth, raised bead of silicone caulk on all gaps or seams between immovable equipment and walls. Seal all gaps, seams, and cracks. Seal spaces around pipes or conduit at all wall penetrations.

Wall finish samples may need to be submitted for consideration of approval.

Exposed vertical or horizontal utility run piping and lines should be kept to a minimum and at least 6-inches off the floor and a ½ inch form the wall and adjacent piping to facilitate cleaning. Utilize stand-off anchors to allow for cleaning around utility conduit and piping. All openings and penetrations shall be properly sealed flush. Syrup and beverage lines shall run through cleanable rigid conduit, and must be sealed and properly capped at each end to prevent the accumulation of debris and preclude the harborage of vermin.

B. Floors

Floor finishes shall be commercial grade, durable, smooth, non-slip, nonabsorbent, grease-resistant, and easily cleanable, such as quarry tile, ceramic tile, porcelain tile, granite, marble, concrete, terrazzo, commercial grade vinyl composite tile (vct) etc. Smooth, bare concrete floors are approved and must have an appropriate resilient concrete sealer applied (not just a water sealer). Tile grout widths should not exceed ¼ wide and shall be sealed with a water-resistant sealer. All flooring including tile and grout shall be sealed according to manufacturer's recommendations.

The use of poured monolithic floors may require specific approval for kitchen applications. An integral minimum 4-inch coved base should be troweled up the wall. The coving installation should be consistent with the flooring material. Carpet is not allowed in any area relating to food prep, food storage, food service, beverage stations, food refuse, restrooms, buffet/salad bar, food expo, utensil washing, or related areas. This includes retail areas where floors may be exposed to food or liquid related spills. Carpeting material approved by this office may be permitted in customer areas on a case-by-case basis.

Concrete floors shall be finished smooth, sealed, and have all expansion joints, saw cuts, and cracks properly filled. Provide at least 3-feet of approved flooring or commercial grade vinyl composite tile (vct) or washable surface around perimeter of retail reach-in cooler units and any other areas where moisture may be present such as salad bars, buffets, and soda towers. Grout shall be smooth and finished flush with the surface of all tiles.

Rubber flooring shall be smooth, easily cleanable, meet all applicable commercial product standards, and be resistant to heat, abrasion, staining, and chemicals. Minimize the number of seams and locate seams in inconspicuous and low traffic areas. All seams shall be tight and heat welded or chemically bonded with no gaps, overlays, or excess bonding compound on flooring surfaces. Rubber flooring shall have an integral cove base and run a minimum of 4-inches up onto the vertical surface. Rubber flooring shall be supported at horizontal and vertical junctions with a cove strip. The top edge of the flooring shall be butted against a cap strip or butted neatly and tightly to vertical surfaces, door frames, and built in equipment. Rubber flooring that does not meet all performance standards and MCESD Health Code requirements over the lifetime of the product must be removed and replaced with an approved flooring material.

Flooring samples may need to be submitted for consideration of approval prior to installation. The Department does not recommend the installation of vinyl composite tile (vct) for kitchens, delis, food preparation, warewashing, or janitorial areas unless it is recommended for the intended use and meets Department standards.

C. Ceilings

Provide smooth, durable, non-absorbent, easily cleanable, and light-colored ceiling surfaces that can withstand frequent cleaning. Exposed joists, rafters, beams, trusses, or other support structures will not be accepted. Exposed plumbing and conduit are not acceptable. Acoustical fissured/perforated ceiling tiles are not permitted in restrooms, kitchens, service (mop) sink areas, or high moisture related areas. Vinyl faced tiles or a smooth painted drywall hard lid are acceptable. Open structure ceilings with approved sealed finishes or scrim sheeting may be approved on a case-by-case basis.

D. Coving

Provide a smooth, coved base (3/8 inch radius or greater) at the juncture of walls and floors. Cove bases are also required at the juncture of cabinets and floors. Examples of acceptable materials for cove base are 4-inch vinyl or rubber, ceramic or quarry tile, and stainless steel. The cove base should be of the same material as the flooring. Slant cove base installations must receive approval prior to installation.

Ceramic tile used as coving shall <u>not</u> be installed on top of floor tiles "top set" at floor/wall junctures. The floor/wall juncture shall be a true flush cove base with at least a 3/8-inch radius or greater. **See Figure 12**.

<u>Figure 12. Ceramic Tile Cove Base</u>

When applicable, "tool-in" siliconized grout caulk at floor/wall juncture to create an acceptable cove base. A 1/4 inch cove base is acceptable in metal floored/pre-fab walk-in units.

Concrete curbs in a walk-in cooler/freezer shall be finished smooth, properly coved, beveled away from the wall at the top edge, and thoroughly sealed. Rubber/vinyl cove base is not permitted inside walk-in cooler/freezer units. Provide a metal cove base inside walk-in units. Monolithic flooring, tile, or metal cove base is required under hoods.

E. Shelving, Woodwork, Millwork & Countertops

All wood shelving or millwork shall be sanded smooth, free of open gaps, cracks, and joints and sealed or painted to a smooth, final finish. Wood used for bar tops or countertops should be a hardwood (i.e. maple or oak) and shall be finished with a minimum of three coats of polyurethane or equivalent finish. All wood edges shall be smooth and easily cleanable. Raw exposed wood is not permitted. Countertops shall be smooth and durable, solid surface type materials, easily cleanable, impervious to moisture, and free of cracks or crevices. Food contact surfaces should be stainless steel or ANSI/NSF approved cutting surfaces. Stone or tile finished countertops or bar tops shall have

the grout finished flush with the tile and an approved sealer applied, so that the surface is impervious to liquids or grease. Formica, Melamine, and other laminated counter top surfaces are not permitted in ice, soda tower, food preparation, storage, restrooms, hand wash or warewashing areas. These laminated materials are acceptable only at point-of-sale (POS) stations. All countertop or bar top materials must be approved by the Department. Decorative wood that is sanded smooth and sealed may be approved in ancillary areas of an establishment if approved by the Department.

F. Laminate Countertop Surfaces and Shelving

All countertop and shelving surface materials shall meet Department standards and shall be approved prior to installation and/or utilization. Approved countertops and shelving shall be constructed of smooth, durable, nonabsorbent, grease-resistant and easily cleanable materials. All approved millwork shall also be smooth and sealed.

Laminate surfaces are considered non-durable for high temperature, wear, stain, and impact resistance. They are not approved in most areas of permitted establishments.

Laminate materials shall not be used on surfaces subject food contact and areas exposed to moisture during normal operations. Laminate materials are intended for use on non-work surfaces only.

Natural or man-made "solid" surface materials such as: stainless steel, smooth sealed metals, granite, marble, quartz, stone, soapstone, resin, engineered stone, cultured marble, re-enforced smooth sealed concrete, approved tile products, approved hardwoods, proprietary products known as Corian®, Silestone®, Zodiaq®, LG HI-MACS®, Pryolave®, FireSlate®, and other approved similar materials may be approved.

G. Walk-in Refrigerator and Freezer Units

Walk-in refrigerator and freezer walls, ceilings, and floor/wall junctures shall be metal and properly coved.

Flash, trim, or caulk spaces between walk-in refrigerators and adjacent walls. Spaces 24-inches or less in height between the top surfaces and the ceiling may require flashing or closing off in a clean, tight vermin proof manner. We recommend that all walk in coolers be flashed off to the ceiling and walls when the space is 30-inches or less.

We recommend the installation of screeds to create effective 3/8-inch radius cove on both the interior and exterior of the unit. Other approved methods include a grout radius as an integral part of the flooring material or corrosion-resistant metals.

Because of separation problems, installation of vinyl cove base is not acceptable in walk-in units. Due to breakage and separation concerns, we do not recommend the installation of ceramic or quarry tile as coving in walk-in units. Galvanized metal will rust when installed as a finish in a walk-in cooler; as such, it is also not recommended. Stainless steel is the preferred material.

H. Dining Room

Generally dining room finishes are not regulated. However, we recommend that if carpeting is used as a floor covering, it should be of durable, closely woven, stain resistant material, properly installed, cleaned and maintained in good repair.

Bars, Beverage Stations, Salad Bars, Buffets, Server & Wait Stations

***Ceilings*:** Due to the possibility for splash and moisture these areas require the installation of smooth, non-absorbent, and easily cleanable ceiling materials.

***Coving*:** A 3/8-inch base coving must be provided at the juncture of the floor and wall or cabinet base.

***Floors*:** The floor finishes must be of durable, waterproof, grease-resistant, and cleanable materials. They must extend sufficiently (usually a minimum of 3-feet) from the base of the beverage stations, salad bars, and buffets.

***Walls*:** The walls in these areas shall be smooth, non-absorbent, and easily cleanable. Heavy skip trowel finishes are not approved. The interior walls of radius wall sections (e.g. bar counters with radiuses) should be constructed straight to allow equipment to be sealed to the walls.

I. Multiple Use Areas

Multiple use areas must meet the more stringent of finish requirements imposed on that area. Clearly define the finishes in these areas for final approval by the Department.

J. Outdoor Areas

The outdoor walking and driving areas shall be surfaced with concrete, asphalt, or other materials that have been effectively treated to minimize dust, facilitate maintenance, and prevent muddy conditions.

K. Summary of Finishes and Additional Recommendations

Ceilings: Install smooth, washable, vinyl faced tiles in suspended ceilings. Drywall painted with a high-gloss, semi-gloss (quality) washable finish is acceptable. Perforated, fissured, or other textured surfaces are not allowed in food service areas.

Floors: Quarry or ceramic tile, poured epoxy, and sealed concrete is preferred flooring because of their durability. Commercial grade vinyl composite tile (vct) is acceptable but not recommended due to deterioration. The use of diamond-plate steel or corrosion-resistant aluminum as flooring under kegs, or where durability is essential, should be considered.

Walls: Stainless steel, FRP, and ceramic tile meet the standard for durability and non-absorbency in splash areas. High-gloss or quality semi-gloss paints are appropriate in food preparation areas. High-gloss paints work well in most other areas. We recommend stainless steel corner guards in high-traffic areas. Skip trowel finishes are not recommended. A wall surface shall be smooth, durable, and easily cleanable with no roughness or projections that render it difficult to clean. Wall surfaces in various areas of an establishment will be required to be sealed so that the surface is impervious to liquids or grease***.***

Tip: If a wiping cloth cannot clean the wall surface without snagging or being torn, if is not considered sufficiently smooth to clean. Chocolate Syrup Test - If a condiment such as chocolate syrup cannot be readily cleaned from the wall surface it is not considered smooth. Liquids or grease must readily bead on the surface in order to be easily wiped and cleaned from it.

XII. INSECT AND RODENT CONTROL

All openings to the outside shall be effectively protected against the entrance of insects, dust and rodents. Some examples of effective barriers include:

1. Solid, tight fitting, self-closing doors.
2. Fixed or self-closing screens of #16 mesh or finer.
3. Approved air curtains. See air curtain section for specifications.

All roller doors, nano-doors, sliding or bi-fold doors, or similar movable wall systems that are not self-closing and create a continuous opening to the exterior must have an approved air curtain installed across the entire opening provided with an approved micro-switch at the opening. This includes customer serve-out areas located in stadiums, ballparks, and snack bars/concession stands. This does not apply if a food establishment opens into a larger completely enclosed structure such as a coliseum, arena, warehouse, shopping mall, superstores, airport, or office building, where the outer openings from the larger structure are protected against the entry of insects and rodents. Air curtains will be evaluated on a case-by-case basis as to the effectiveness of protecting against pests. Please contact Plan Review Program Staff for consultation during the design process to ensure designs meet code requirements and regulations and to further ensure future success of your business.

A. Building

All masonry or cement foundations must be rodent proof. Seal all openings into the foundation and exterior walls, including openings & penetrations around wall and ceiling penetrations.

Cover all building vents with a minimum #16 mesh wire screen. Effectively seal all air ducts, skylight, transoms, and other openings to the outside.

B. Fly Protection Methods

Air Curtain: All air curtains must meet NSF Standard 37. Install an air curtain so that a layer of fast moving air is produced vertically downward and directed to blow outward. The flow of air must run parallel and within 1 inch, inside or outside, across the entire width of the opening. Minimum air velocities are a 3-inch column of air at 1600-feet per minute measured at 3-feet above the floor for service entrances, and an 8-inch column of air at 600-feet per minute at customer entrances. All air curtains shall be controlled by approved door-activated micro-switches. **See Figure 13**.

Figure 13. Air Curtain with Micro-Switch

Door Activated Micro-Switch

Self-closing: It is recommended to install serve-out windows with a self-closing device, such as a spring-loaded mechanism, bump pad, electronic opener, or gravity operated system.

C. Delivery, Customer, and Restroom Doors

Exterior doors: All outside doors shall be self-closing and tight fitting. Install a door sweep and weather stripping to prevent the entrance of insects and rodents. Note: Daylight shall not be visible around the perimeter of the door.

Garage Doors, Roller Doors, and Loading Docks: Garage and roller type delivery doors must be protected against pests. Loading docks shall have properly installed tight fitting dock seals at all loading bays. If the location of one of these doors exposes the kitchen or other food service, air curtains will be required.

Pest Control: All delivery doors must be self-closing and tight fitting. Air curtains are recommended over exterior doors located within 50-feet of garbage areas, grease containers, vacant land spaces or located in rural areas.

Restroom doors: All toilet rooms located in or adjacent to food related establishment shall be provided with tight fitting, self-closing doors or air curtains approved by an inspector. This requirement does not apply to a toilet room that is located outside a food establishment and does not open directly into the food establishment such as a toilet room that is provided by the management of a shopping mall. Restrooms are handled on a case-by-case basis.

D. Windows

Windows that open to the outside, which include serve out windows, must be properly protected with #16 mesh wire screen, except self-closing drive-up windows and properly protected serve-out windows.

E. Lighting

It is recommended that outside lighting around loading areas and entrances be sodium vapor rather than mercury vapor to decrease insect attraction.

F. Insect Control Devices, Design and Installation

Insect control devices that are used to electrocute or stun flying insects shall be designed to retain the insect within the device.

These devices should not be located above food preparation areas. Units should be installed so as to prevent the contamination of exposed food, clean equipment, utensils, and linens, from insect fragments.

XIII. GARBAGE, REFUSE, and RECYCLABLES

A. Garbage Containers

Number: Each establishment is to secure their own garbage. Remember to provide sufficient garbage containers that are sized to hold any garbage, refuse, or recyclables in a nuisance-free manner until it is picked up. Tight-fitting covers and drain plugs shall be provided.

Trash Compactors: The cleaning and proper disposal of the solid/liquid waste requirements may vary between municipalities. Liquid waste from compacting shall be disposed into a sewer drain.

Recyclables: Solid waste including recyclable materials shall be separated from food preparation

areas and storage areas. Recyclable "green waste materials" such as spent grain, food items, and compost materials shall be kept in tight fitting closed containers in an approved area.

B. Garbage Areas

Enclosures: If you propose a garbage enclosure it must be constructed of durable, non-absorbent materials with a washable interior finish able to withstand frequent washing. All outside garbage containers and grease bins/barrels must have tight-fitting lids and drain plugs. It is recommended that a hose-bib with backflow prevention and sewer trough drain be provided in or near the garbage enclosure area to wash out the enclosure as needed.

Outside Storage: Place outdoor refuse, grease containers, and compactor systems on smooth, sealed, non-absorbent surfaces such as concrete or machine-laid asphalt. Use a concrete or asphalt pad for storing grease containers. These areas should be as far as possible from the building's doors and windows. Outdoor refuse areas shall be constructed in accordance with law and shall be curbed and graded to drain in order to collect and dispose of liquid wastes that result from the refuse and from cleaning the area and waste receptacles.

Pest control: When outside refuse containers and grease containers are within 50-feet of a food establishment's exterior delivery/service door, an air curtain, in addition to a self-closure device on doors, is recommended.

XIV. HEATING, VENTILATION, AND AIR CONDITIONING (HVAC)

A. Exhaust Plan Submittal

Submit complete HVAC plans, including restroom ventilation. Indicate the type of equipment located under the exhaust hood.

B. Exhaust Hood Requirements

General: Commercial cooking or display equipment, which produces smoke, steam, grease, mists, particulate matter, condensation, vapors, fumes, odors, or create sanitation or indoor air quality problems, will require a hood. Hoods shall be designed and installed to prevent grease and condensation from collecting on walls, ceilings, and dripping into food or onto food contact surfaces. Canopy hoods must have at least a 6-inch overlap, over all cooking surfaces, on all open sides. All hoods shall be flashed solid to the ceiling or adjacent walls with approved solid material. All hoods should comply with the 2009-International Mechanical Code (IMC) and/or all local building and fire safety codes. Exhaust and makeup air fans shall be interlocked so they operate simultaneously, while being operated by a single switch. These units shall also be interlocked with the hood fire suppression system so that upon activation of the fire suppression system, the make-up air unit shuts down but the exhaust fans continue to operate. It is recommended that the lights be interlocked with the exhaust and make-up air switches. It is recommended that all vent hood/light switches be labeled.

A high temperature sanitizing dish wash machine will require an overlapping canopy or pant leg hood with forced ventilation to the outside air. The hood system must effectively remove steam, heat, and moisture to the outside air.

All hood systems shall be inspected and tagged for approval by the local municipality prior to a final inspection by this Department. Final field approval must be obtained from this Department. A smoke test may be performed. All hoods shall be tested & air balanced. An air balance report shall be provided upon request. Self-cleaning hoods shall be equipped with approved backflow protection.

The installation of fire suppression system piping in the unfiltered air space of exhaust hoods should be limited to vertical runs as much as possible to minimize grease collection. Exposed piping must be

cleanable. Fire suppression tanks must not be located over food storage or preparation areas.

Make-up Air: The amount of air to be exhausted must be in accordance with the 2009 IMC, where make-up air shall be balanced, tempered, and in the proximity of the exhaust system. The generally accepted minimum make-up air to replenish exhausted air shall be:

Minimum CFM (Cubic feet of air per minute, volume of air) = 80% x Hood Exhaust CFM.

Make-up air intakes must be screened and filtered to prevent the entrance of dust, dirt, insects, and other contaminating material.

Type I or Type II hood requirements: Every Type I or Type II hood shall be constructed of stainless steel, galvanized steel, copper or other material approved by the building official for the use intended and of minimum thickness as specified in the IMC. The interior of vent hoods are not allowed to be painted. We recommend not painting the exterior of the vent hood.

Examples of equipment that require installation under a hood include: Kettles, pasta cookers, hot plates, salamanders, Mongolian-style grills, gas cooking equipment, tableside cooking equipment, such as Teppanyaki-style cooking, Tandoori ovens, rotisserie units, Panini grills, etc. Type I hoods are required over equipment that produce grease, smoke, excessive steam, heat, condensation, particulate matter, odors, or create indoor sanitation or indoor quality problems. **See Figure 14**. Type II hoods shall be installed over equipment that produce steam, heat, mists, condensation, fumes, vapors, and non-grease laden foods. **See Figure 15**.

Figure 14. Type I Hood over Cook Line

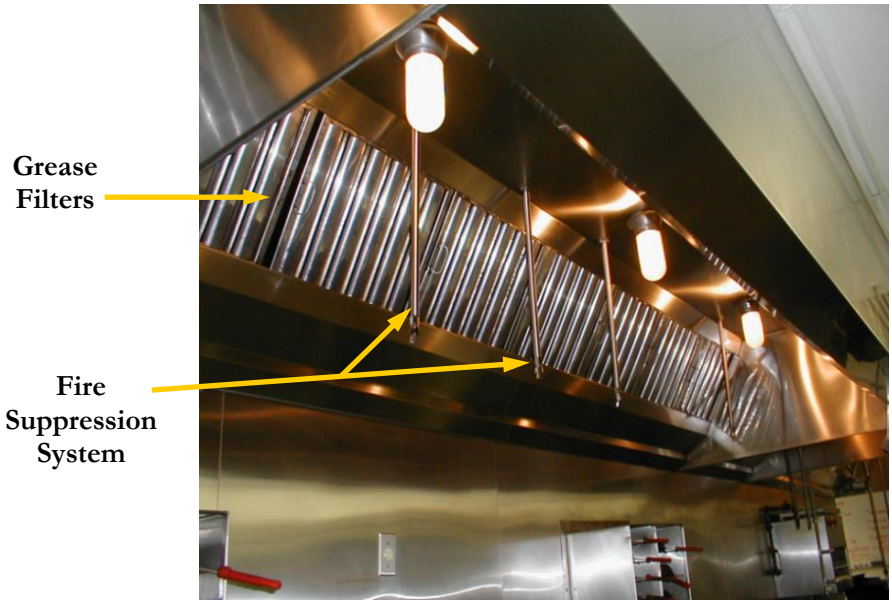


Figure 15. Type II Hood over Warewashing Machine

Exceptions: A commercial exhaust hood is required for each cooking appliance with the following exceptions:

1. Approved completely enclosed convection type ovens
2. Steam tables
3. Auxiliary cooking equipment that does not create a sanitation or indoor air quality problem, for example: Toasters, coffee makers, electric rice cookers, soup wells, special event set ups, temporary events, etc.

XV. OUTDOOR BAR AREAS, OUTDOOR FOOD SERVICE, OUTDOOR FACILITIES, CATERING, AND INDOOR PLAY AREAS

A. General

All food, drink, and equipment shall be stored and served; kept clean and free of dust, dirt, insects, vermin, rodents, birds, other animals, inclement weather and protected from all contamination, including overhead leakage, flooding, drainage, coughing, sneezing, etc. This includes but is not limited to small wares, dishware, utensils, single-service items, windows, counters, shelves, vats, tables, refrigerators, sinks, etc.

Effective environmental and physical controls shall be implemented including dirt and dust control measures in the vicinity of all outdoor food operations. Outdoor food/beverage operations shall cease during adverse or inclement weather conditions.

Adequate and convenient approved hand washing facilities and toilet facilities shall be provided. Effective insect, vermin, rodent, bird and animal control measures shall be implemented.

B. Outdoor Bar Areas

All food service establishments that want to have outdoor bar areas must submit plans for review. Bars associated with food service establishments that have facilities with approved external barriers may be installed in areas that are exposed to the outside environment as long as the following criteria are met:

1. Hand sinks shall be installed in all bars and be centrally located, visible, and directly accessible within 25-feet of all food and beverage work stations/areas. Waterproof metal splash guards, at

least as high and as wide as the hand sink, shall be installed between the hand sink and food/ beverage/ utensil related areas within 24-inches of the hand sink.

2. Approved waterproof overhead protection is required above bars, beverage and service station areas.
3. Food preparation is not permitted at outdoor bars or work stations. Beverage service only. Garnish preparation (e.g. limes) shall be done in an approved enclosed food preparation area. Garnish containers shall have hinged lids. Wait staff may deliver food directly to customers from the kitchen.
4. Warewashing sinks (2-compartment or 3-compartment) shall not be installed in outdoor bars. Warewashing is limited to approved, enclosed commercial glass-wash machines. Carousel warewashers are not approved for outdoor use.
5. Blended, mixed, and frozen drinks are only allowed if an approved warewashing machine is installed in the outdoor bar, and are approved on a case-by-case basis.
6. All glassware, utensils and portable equipment (e.g. blenders) shall be stored in an approved area during non-operational hours of operation.
7. The outdoor bar shall be supported by an approved enclosed warewashing/prep area with an approved 3-compartment sink and hand sink that is properly protected for the outdoor environment.
8. Only bottled and canned beverages may be served outside without approved enclosed warewashing machine. Blended, mixed and frozen drinks are allowed with approved small enclosed portable blenders or machines and if a warewashing machine is installed at the bar.
9. Only sealed drink gun and beer faucet/tap systems and chases are permitted for outdoor service. Soda towers are prohibited.
10. Soda towers and unapproved ice machines are prohibited in outdoor bars and work station areas. Properly installed remote sealed soda gun or soda faucet systems, sealed soda chases and jockey boxes with closing lids are acceptable. Provide a scupper drain in the bar top over each jockey box pour station, plumbed with a rigid drain line to a floor sink with an approved air gap.
11. All ice bins and condiment containers must be provided with tight fitting, sliding protective covers. Ice shall be melted off at the end of the day. All ice bins and jockey boxes shall be cleaned and sanitized prior to use each day, not just at the close of the business day.
12. It is recommended a hot water hose bib be installed above each ice bin/jockey box to facilitate the burning off of ice at close of the business day.
13. Ice machines are prohibited outside unless they are National Automatic Merchandising Association (NAMA) certified for outdoor operation. All exterior ice machines shall be approved on a case-by-case basis.
14. Insect and Vermin Control: Insect and rodent control measures shall be implemented to ensure adequate protection of the outdoor bar and work stations areas and equipment. The outdoor areas shall be properly protected from birds and other animals.

C. Outdoor Food Operations

All food service establishments that want to have outdoor food operations must submit plans for review. MCESD recommends that all outdoor food operations first obtain compliance for zoning, building, electrical, fire, and plumbing codes, and property landlords prior to seeking approval from the Department. Outdoor food operations are permitted only on a case-by-case basis after thorough plan review.

Outdoor food at an eating and drinking establishment is considered secondary to the operation of the main, fixed food establishment. The purpose of this becomes apparent when faced with inclement weather, breakdown of equipment, or city ordinance that precludes outdoor food activity at certain hours or length of time.

The fixed permitted food establishment must be of sufficient size and have the capability to accommodate its own operation, as well as the support needs of the outdoor food operation. The outdoor food operation shall be conducted only during the "posted" operating hours of the fixed permitted support food establishment.

The minimum permit class requirement for a fixed permitted food establishment to conduct outdoor food operations shall be an Eating & Drinking Class-3 permit.

The fixed permitted establishment must be adequately equipped and capable of cooking and serving food on the outside in a safe and sanitary manner. Any exterior food preparation is prohibited at an outdoor food operation and must be completed within the fixed permitted support establishment. Example: The operation is not allowed to cook meat outside, cut it into smaller pieces outside, and then serve it to customers.

Dog friendly patios are not permissible at establishments permitted to conduct outdoor food operations.

Outdoor food operations shall comply with the following minimum standards:

1. Floors: Floor surfaces in an outdoor food operation shall be in good repair and graded to drain to an approved sewerage system. Approved flooring materials may be sealed concrete, sealed machine-laid asphalt, or sealed tile. All flooring materials shall be smooth, durable, non-absorbent, and easily cleanable. Effective dust control measures shall be implemented in the vicinity of the outdoor food site. All outdoor food site floor areas shall be washed daily. All flooring materials at outdoor food sites shall be durable to withstand daily steam cleaning or power washing with high pressure water.
2. Walls: If there is food service, storage, and/or hot or cold holding performed at the outdoor food site, consideration must be made to environmental conditions to provide adequate food protection. This may be accomplished through the use of waterproof tents with sides, screening, air curtains, block walls, or other approved effective barrier methods.
3. Overhead Protection: All outside areas in which food is stored or assembled are required to have approved overhead protection. Examples of acceptable overhead protection are waterproof tents, canopies, awnings, or permanent structures. Poly-material type sheet tarps would not be permitted for use as overhead protection.
4. Sneeze Guards, Shields and Barriers: All sneeze guards, shields, and effective barriers shall be of approved design, materials and construction. They must be of sufficient height to provide protection and be of sufficient strength to prevent collapse. A barrier shall be provided around the food area to prevent food contamination and customer access. The minimum distance between approved "open" type barriers (i.e. Ropes, chains, tables, etc.) and cooking/food contact surfaces shall at least 5-feet.
5. Ventilation and Fire Protection: If necessary, mechanical ventilation of sufficient capacity shall be provided to keep areas free of excessive heat, steam, condensation, vapors, obnoxious odors, smoke, and fumes. Notice: Approval from local/city authorities that govern ventilation and fire protection may be required.
6. Lighting: Adequate lighting for day and night operations shall be provided. The minimum lighting intensity requirements are 50-footcandles for food and assembly areas. Minimum lighting requirements are 20-foot candles for hand washing, equipment and utensil storage areas, including reach-in refrigeration units. All light bulbs shall be shatterproof or shielded. Consideration should be given at to the type of lighting used during night time hours of operation to reduce insect attraction to the outdoor food area.
7. Equipment and Food Contact Surfaces: All outdoor food equipment, including custom-made equipment shall meet construction designs and standards set forth by this Department. Surfaces shall be smooth, easily cleanable, free of rust, dents or pitting, and durable under normal outdoor use conditions. Permanent in-place food equipment shall be provided with lids or covers to

protect the equipment and food contact surfaces from insects, birds, animals, contaminants and inclement weather conditions.

8. Cooking/ Hot Holding Equipment: A continuous heat source such as electric, propane, or natural gas is preferred in an outdoor food operation. The use of wood or charcoal is acceptable if consistent temperatures can be achieved and/or maintained in accordance with the Maricopa County Environmental Health Code. Hot holding equipment is not to be used for reheating or cooking. Hot foods must be maintained at a temperature of 135°F or above. Wood or charcoal heat sources shall not be used for the hot holding of cooked food items.
9. Cold Holding Equipment: Refrigerators and freezers are required to maintain potentially hazardous foods at or below 41° F and 0°F respectively. The units shall be equipped with approved thermometers. These units must provide mechanical refrigeration and be commercial grade and meet NSF standards. Domestic-type refrigerators and freezers are not approved for food storage.

   Cold holding equipment must be capable of holding appropriate temperatures at the outdoor food site during extreme heat. Outdoor cold holding equipment is not to be used for the cooling of any cooked foods. The units are intended for the cold holding only of foods to be cooked outdoors. The use of ice for refrigeration of potentially hazardous foods is not permitted. Ice chests are prohibited. Ice machines are not permitted outside approved permanent structures, unless the machines are National Automatic Merchandising Association (NAMA) approved and meet Department criteria for installation and service.

   Note: It is strongly recommended that potentially hazardous food to be cooked outdoors should be brought out from the main kitchen and cooked immediately. This would eliminate the risk of potentially hazardous food reaching hazardous temperatures. (Above 41°F to 135°F)

   Refrigeration units, unless designed for such use, should not be located directly adjacent to cooking equipment or other high heat producing equipment which may tax the cooling system's operation. Refrigerators and freezers must maintain internal (cabinet) air temperature of 41°F and 0°F respectively at an ambient air temperature of 100°F or below, with no more than 70% compressor run time. Unless modified, most cold holding equipment is not intended or performance-evaluated to operate in ambient air temperatures in excess of 100°F.

10. Plumbing: Install and maintain plumbing according to the 2006- present International Plumbing Code and local requirements: If a well or septic is used, plans must be submitted to our Department (Water & Waste Management Division) for approval.
11. Backflow Prevention: All equipment and fixtures connected to a water supply shall be equipped with an approved backflow prevention device or air gap to prevent backflow. If the establishment serves carbonated beverages, an approved reduced pressure backflow preventer, or other approved testable, continuous pressure, backflow device, shall be installed between the water supply line and the carbonator. Conduit and fittings between the backflow preventer and the carbonator should be flex line and stainless steel, do not use copper or brass. Provide an approved funnel drain assembly with an approved air gap plumbed to a floor sink to provide drainage for the relief valve of the backflow device. Install water filters on the upstream (water supply side) of the backflow preventer. These units shall meet all other plumbing code requirements. The Department recommends the use of a stainless steel backflow preventer. Certify the backflow preventer and provide copy of the backflow preventer test certification.
12. Soda Systems and Ice: Soda towers and unapproved ice machines are prohibited. Properly installed soda gun systems and jockey boxes with closing lids are acceptable. Ice must be melted off at the end of the day and the jockey boxes cleaned and sanitized prior to use each day. NAMA outdoor approved ice machines are acceptable.
13. Restroom Facilities: Approved and accessible toilet facilities located inside the permitted establishment shall be located no more than 500-feet from the outdoor food site.

14. Hand Washing: Exterior hand washing facilities shall be provided within 25 feet of all exterior workstations and shall be centrally located and directly accessible. Provide hot and cold water or tempered running water (85°F to 110°F) under pressure to all hand sinks. All hand sinks must have mixing faucets or valves. Hot water or tempered water shall be provided within 45 seconds to all hand wash sinks. All hand wash sinks shall be NSF or equivalent, meet department standards and installed according to the 2006 International Plumbing Code (IPC). All waste water from the hand wash station shall be disposed of into an approved sanitary sewer.

    All new outdoor food operations shall be equipped with permanent approved hand washing facilities in the area where outdoor food operations are conducted. Outdoor food operations permitted prior to March 1, 2011 equipped with approved portable hand wash stations are still permissible. A minimum 5-gallon potable water-dispensing tank and a minimum 7 ½ gallon waste water holding tank are required. The sink must be provided with soap and disposable paper towels.

    Advisory: All hand washing facilities shall be operational and set-up at all times during operation. All outdoor food operations will require outdoor hand wash facilities as described above. Failure to maintain adequate hand washing facilities will result in the immediate suspension of the outdoor food operation.

15. Garbage/Refuse Disposal: An adequate number of non-absorbent, easily cleanable covered waste receptacles shall be provided at each outdoor food site.
16. Mop Basin, Water and Sewer Facilities: An approved mop basin/utility sink located inside the fixed permitted establishment shall be located no more than 500 feet from the outdoor food site.

    Wastewater from the site shall not be disposed of through storm drains. All liquid and solid wastes including the waste water from a holding tank shall be disposed of in an approved manner by the Department.

    Potable water components-tanks, hoses, connections, etc. shall meet the current requirements of the Department and all local regulatory authorities. Also, grease and waste disposal methods shall be approved by local regulatory authorities.

17. Equipment and Utensil Washing: Ware washing is not permitted outside. 3-compartment sinks installed outside are not permissible. All utensils and cooking equipment used in the outdoor cooking of food must be returned inside to the fixed permitted support establishment for proper cleaning; except that in place cleaning may be allowed for steam tables, grills, and other similar equipment. Sufficient quantities of clean utensils shall be provided to conduct the outdoor food activities.
18. Cooking/Grilling Equipment Cleaning: An approved location shall be provided for the cleaning and sanitizing of the outdoor food equipment.
19. Cooking/Grilling Equipment Storage: An approved location shall be provided for the storage of portable food equipment. The portable equipment shall be properly stored under an approved exterior canopy/enclosure or inside a storage room or receiving area. Proper consideration should be given to protecting the equipment from contaminants and inclement weather.
20. Insect and Vermin Control: Insect and rodent control shall be implemented to ensure adequate protection of the outdoor food area and equipment. The outdoor food area shall be properly protected from birds and other animals. Failure to provide adequate insect and vermin control will result in the immediate suspension of the outdoor food operation.

D. Proposed Outdoor Food Operation Menu

A copy of the proposed outdoor food operation menu is required upon initial plan submittal and must include all foods intended to be cooked or served at the outdoor food operation including the

cooking style, types of food, the number of customers expected, and the time and frequency of the outdoor food operations. At time of final inspection a copy of the approved final menu is required and will be kept on file by the Department.

Only the cooking, grilling and roasting of food will be allowed outside at permitted establishments. All menu items requiring preparation shall be completed within the fixed permitted support establishment.

All menus, food preparation, food assembly, food handling practices, cooking and food service methods will be evaluated and approved on an individual case-by-case basis.

Many food and beverage menu items may be restricted (i.e. Rotisserie type gyro and al pastor meat items, etc.) and food service methods will be limited at outdoor food operations.

In order to cook/grill/roast outside, the food service establishment must have equal or greater cooking and hot holding equipment inside the fixed permitted support establishment. All menu items, equipment, site set-up, and processes are evaluated on a case-by-case basis.

E. Outdoor Facilities

Any non-specific place or operation applicable to any establishment, place, or operation shall meet the same regulations noted elsewhere in this construction guide, including outdoor walk-in units, can wash, mop basins, restrooms, food and equipment storage units. Exterior walk-in units should be properly located and secured and may require overhead roof and walkway protection for the unit and transportation of food products.

F. Catering Facilities

All catering activities must be conducted from an approved and permitted food establishment/commissary.

Equipment used for the transport, storage, and service of food products shall be stored at the commissary constructed of approved materials and easily cleanable. A portable self-contained hand wash station must be provided, which includes a water tank, waste tank, pump, water heater, soap dispenser, and towel dispenser.

All food products requiring temperature control shall be transported and stored in equipment whose intended use is for such activities and must maintain food at safe temperatures as defined by the health code.

Any vehicle carrying food and food products shall be constructed equipped and maintained as to protect the purity and wholesomeness of the transported products and shall conform to the applicable general regulations found in the Maricopa County Health Code and this construction guide.

Approved vehicles used in transporting catering equipment and food shall be of a closed type, dust, and fly proof. Examples include enclosed trucks, delivery vans, modified vehicles, etc. All shelving used in such vehicles shall be readily removable and easily cleanable. Approved enclosed trailers may be used in conjunction with personal vehicles as long as all food and transport/service equipment stored inside the trailer and have received prior approval.

Personal vehicles may be approved on a case-by-case basis if the vehicle identification number is provided, vehicle is inspected, approved enclosed containers are provided, and the vehicle is maintained clean and in good repair.

Caterer - Including "Adventure Food Service"- A "Caterer" means and refers to a food establishment where a pre-arranged number of meals and/or food products are prepared at one permitted premise for immediate service and consumption at another pre-arranged location. Where the point-of-sale for these meals is to the individual consumer, caterers shall only sell individual meals to each consumer at a pre-approved temporary event, approved farmers' market, or high school athletic event.

Additional Requirements for Food Catering Food Establishments:

1. Must meet all current open food and drink service establishment requirements.
2. All catering activities must be conducted from an approved and permitted food establishment/commissary.
3. Equipment used for the transport, storage, and service of food products shall be constructed of approved materials and easily cleanable.
4. All food products requiring temperature control shall be transported and stored in equipment whose intended use is for such activities.

"Adventure Food Establishment" means and refers to a food establishment that operates in conjunction with a trail ride or similar type activity and prepares or serves food to participants.

Additional Requirements for Adventure Food Establishments:

1. All Adventure Food Establishments must operate in conjunction with an approved commissary.
2. All foods must be prepared for same meal service only. No hold over of heated foods from meal-to-meal or day-to-day is allowed. All leftovers shall be disposed of in an approved manner.
3. Only limited cooking and reheating of prepared foods will be allowed at the meal site. All food preparation must be accomplished at the approved commissary.
4. Transport and storage of food and utensils shall be conducted in a manner to prevent contamination.
5. All time/temperature control for safety food products shall be transported and stored in insulated equipment whose intended use is for such activities. Transport of hot, time/temperature control for safety food is prohibited without prior written approval from the Department
6. Raw animal products such as meat, poultry, fish, and eggs shall be stored in separate containers, away from other foods.
7. All utensils and other packaged food products shall be transported and stored in approved dust-free containers.
8. Ice for consumption shall be maintained separately and not be used to store any food or beverage.
9. All transport and storage equipment shall be fabricated to prevent the entrance of insects or animals when overnight use is required.
10. Enough potable water shall be made available for food preparation, cleaning and sanitizing utensils and equipment and for hand washing.
11. Defrosting or thawing of any time/temperature control for safety food at the meal site by means other than direct cooking is prohibited.
12. A hand washing facility shall be available for employee hand washing while meal preparation and service is occurring. This facility shall consist of, at least, tempered running water, soap and individual paper towels. In addition, a separate hand washing facility shall be provided for consumer hand washing prior to and during meal service.
13. Approved sanitizer shall be available at all times.

14. Approved ware washing facilities shall be provided for all operations where multiple meals are to be served.
15. All wastewater and garbage disposal shall be done in accordance with the Maricopa County Environmental Health Code.

G. Indoor Play Areas

An Indoor Play Area is defined in Chapter XIV of the MCESD Environmental Health Code as any indoor play components (manufactured or natural), designed and constructed for children including but not limited to ground level and elevated play structures, such as tunnels, slides, platforms, ladders, stairs, steps, nets, ropes, inflatables, trampolines, webbing, accessories and other soft contained play equipment. It is applicable to an Indoor Play Area on the premises of a permitted Food Establishment as defined in Chapter VIII Section 1 of this Code when the primary function of the business or facility is food service to the general public.

In addition, the operational cleaning procedures and requirements stated in code, a permanent sign shall be posted that is clearly visible to the public from the indoor play area. The sign shall state that customers are prohibited from taking food into, or eating food on structures in the indoor play area. An affixed station or kiosk with instant hand sanitizer or sanitized hand wipes must be provided within the immediate vicinity of the indoor play area.

XVI. SPECIAL EVENTS, TEMPORARY FOOD SERVICE, SEASONAL FOOD SERVICE, MOBILE FOOD ESTABLISHMENTS, COMMISSARIES, VENDING MACHINES, MOBILE PET GROOMERS, FARMERS MARKETS, AND SWAP MEETS

The Mobile Food/Special Events Program is responsible for overseeing all Mobile Food Establishments, which include the following:

1. Mobile Food Type I
2. Mobile Food Type II
3. Mobile Food Type III
4. Seasonal Food Establishments
5. A Event Food Establishments
6. Temporary Food Establishments

In addition, the program is also responsible for overseeing Commissary Food Establishments, Vending Machines and Mobile Pet Groomers/Shops.

For information on operating at Special Events, Farmers' Markets or Swap Meets or permitting requirements for Mobile Food Establishments, including Vending Machines, Micro Markets, and Mobile Pet Shops/Groomers please contact 602.506.6872.

A. Commissary

A commissary is referred to as a base of operations for a mobile food establishment, food vending establishment or an adventure food establishment. All support and servicing activities must be carried out at the approved commissary.

These activities include washing, rinsing, and sanitizing food equipment and utensils, wastewater disposal, portable hand sink washing, food storage, recharging the potable water tank, storage of food, and food preparation. These servicing activities cannot be done at a private residence.

A written agreement from an approved commissary must be provided to this department prior to

permit approval. In addition, the operator is required to maintain a commissary visits log that will be reviewed during each inspection**. City/Local jurisdiction approval may be required for utilizing a food establishment that is not listed on the Commissary Agreement for servicing activities.**

XVII. PUBLIC SCHOOL GROUNDS, PET SHOPS AND GROOMERS

These operations shall meet regulations stipulated in Title 9, Chapter 8, Article 7 of the Arizona Administrative Code and the Maricopa County Environmental Health Code.

A. Public School Grounds

Fixture counts shall be based on the 2013 International Plumbing Code and the Arizona Administration Code.

Provide hot and cold water under pressure to all hand wash sinks and utility sinks. Tempered water (85°F to 110°F) may be supplied to hand sinks. Hot water or tempered water should be supplied to hand sink faucets within 45-seconds. The installation of a recirculation pump may be necessary.

Hot water supply lines are not required to be provided at water bubbler/drinking fountains or rinse sinks inside of student classrooms.

All heat trace systems shall be properly installed and functioning.

Provide a large floor-mounted, wall hung or leg-supported utility sink with hot and cold water for mop use. It is recommended if a school has more than one level a mop sink be installed on each level.

Walls and ceilings should be, durable, smooth, non-absorbent and easily cleanable.

Floor surfaces in the toilet areas and shower rooms shall be commercial grade, smooth, nonabsorbent, easily cleanable, and slope to a floor drain (cove base required).

Play grounds, play areas and fields shall provide adequate drainage to prevent flooding and standing water.

Food service shall comply with Chapter VIII of the Maricopa County Environmental Health Code. Additional permits may be required for food service (e.g., cafeteria, snack bars concession stands, service kitchen, book stores, home economics or culinary programs.)

The water supply shall be from an approved supply system. Drinking water shall be dispensed by means of an approved angle jet sanitary fountain, sanitary cooler, or a system approved by the Department. The use of a vertical bubbler type fountains is prohibited. School grounds shall comply with current codes and Safe Water & Ice Handling Policies.

B. Pet Shops and Groomers

Provide a smooth, nonabsorbent, easily cleanable surface for the walls and ceilings of the grooming, pet holding, toilet rooms and mop basin area (skip trowel finish is not recommended). Walls around bathing areas shall be smooth, waterproof, and easily cleanable, to the level of splash. It is recommended to use ceramic tiles, FRP, plastic board, or similar material.

Floor surfaces in the bathing, grooming, pet holding, and toilet areas shall be smooth, non-slip, nonabsorbent, and easily cleanable. In areas where birds are on perches, floors shall be of impervious construction. No carpeting shall be allowed within 18-inches of the outer end of the perch.

Keep all plumbing and conduit at least 6-inches above the floor level. All back flow prevention devices must be visible for inspection and not hidden in walls or other equipment. Provide a removable hair strainer in the grooming tub basin drain line.

Provide adequate lighting. Minimum lighting requirements are 20-foot candles (220 lux) in all bathing, grooming, and toilet areas. At least 10-foot-candles (110 lux) shall be provided in all other areas.

Provide adequate ventilation to the outside air for toilet rooms, bathing and grooming areas, and any areas where animals and birds are kept. Bird and reptile areas including rodent breeding areas shall be ventilated on an isolated circuit to the outside.

All animal cages and grooming tables must be of approved materials which may be readily cleaned and disinfected.

Birds shall be housed at least 12-inches above the floor.
No portion of a pet shop or pet groomer, in which animals or birds are kept, caged, or boarded, shall be used for human habitation.

It is recommended that a separate service/mop sink be provided from the bathing sink.

XVIII. BOTTLED WATER, BEVERAGE PLANTS, ICE MANUFACTURING, AND WATER OUTLET STORES

Every bottled water and water dispensing establishment, in which the process of placing water from an approved source into a sealed or unsealed container, shall be operated and maintained in a clean and sanitary condition in compliance with the Chapter VIII, Section 7 of Maricopa County Environmental Health Code and Code of Federal Regulations, 21 CFR Chapter 1, subpart 129. This also includes beverage and ice establishments. Establishments selling more than water and ice will require additional permits to operate.

In addition to all general requirements for a food establishment, water bottling facilities must meet the following requirements:

1. The bottling room shall be separate from other plant operations or storage areas by tight walls, ceilings, and self-closing doors to protect from contamination. Conveyor openings shall not exceed the size required to permit passage of containers.

2. The washing and sanitizing of containers for bottled drinking water shall be performed in an enclosed room. The washing and sanitizing operation shall be positioned within the room so as to minimize any possible post-sanitizing contamination of the containers before they enter the bottling room.

3. Filling, capping, and closing of containers shall be done in a sanitary manner, using equipment and methods approved by the Department.

For unpasteurized juice bottling operations, please refer to Guidelines for Safe Juice Bottling Operations.

For establishments wishing to provide growler service, please refer to Growler Service General Guidelines.

XIX. RESIDENCE ACCOMMODATIONS

These establishments include any place such as a hotel, motel, motor hotel, tourist court, tourist camp, rooming house, boarding house, inn, and similar facility consisting of (2) or more dwelling units where sleeping accommodations are available. This includes any bed and breakfast, transient establishment, suite, cottage, bedroom or other unit established, maintained, held out or offered for occupancy. However, this does not include apartments and similar facilities if occupancy is on a permanent basis.

Bed and Breakfast or resident accommodations with less than (6) rooms do not require an Eating & Drinking permit if breakfast is the only meal offered and the consumer is informed by a written disclosure that the kitchen is not regulated or inspected by the local health authority.

Establishments with pools, spas, or providing food service, including continental breakfasts, will require additional permits. The public or residence accommodation shall comply with the Chapter X regulations of the Maricopa County Environmental Health Code and the same requirements noted elsewhere in this construction guide and the following stipulations.

The walls and ceilings of all bathrooms, bedrooms and living rooms shall be of a finish that will permit easy cleaning. Ceilings shall be smooth, durable, and washable. Popcorn ceilings and heavily textured surfaces are not acceptable. Existing surfaces will be evaluated on a case-by-case basis for compliance.

Rooms or dwelling units shall not be less than 100-square feet in floor area exclusive of bathrooms, closets, kitchens, and similar ancillary facilities.

Windows capable of being opened shall be effectively screened, with a minimum #16 mesh.

All units shall be adequately heated, cooled, lighted, and ventilated, including toilet rooms. Heaters and stoves, which use carbonaceous or gas fuels, shall be properly ventilated with continuous gas-tight vents discharging all gaseous products of combustion directly to the outside air.

An adequate and safe water supply shall be provided from an approved source. Ice shall be properly protected and dispensed. All ice machines located in an open air environment must be National Automatic Merchandising Association (NAMA) certified. All other ice machines must be located in an enclosed room protected from the environmental using approved methods described in this construction guide.

If private or connecting toilet rooms are not available for each dwelling unit, separate and plainly marked central toilets for each sex shall be provided and located within 200-feet of such units. Central toilets shall provide no less than one toilet, one hand sink, and one tub or shower, for each sex, for every 10 dwelling units. At least one urinal shall be provided in each central toilet room designated for men.

If there are rooms that include kitchenettes with multi-use dishware, the dishware shall be cleaned and sanitized at approved central location using approved commercial equipment and procedures as defined by the Code.

If residential dish machines in the units are used by employees to clean dishware between residents, a

written disclaimer must be placed in the room stating that the cleaning and sanitizing of all kitchen dishware is not regulated or inspected by the Environmental Services Department and that customers are advised to clean and sanitize the dishware using proper methods.

Approved linen rooms and storage areas shall be properly constructed, maintained clean, and in good repair.

XX. SERVICE KITCHENS, FOOD BANKS, CONTINENTAL BREAKFASTS, AND ANIMALS IN FOOD ESTABLISHMENTS

These establishments shall be operated and maintained in compliance with the appropriate provisions of the Maricopa County Environmental Health Code and meet the same regulations noted elsewhere in this construction guide. Detailed plans are required for service kitchens, food banks and continental breakfast kitchens. Commercially prepackaged, non-time/temperature control for safety foods are exempt from permitting.

A. Service Kitchens

Refers to a food service establishment that operates in conjunction with a central kitchen licensed by this Department.

Service kitchens are limited to the service of pre-prepared food. All food requiring extensive preparation, cooking, and cooling, etc., shall be produced in the central kitchen.

All time/temperature control for safety (TCS) food must be maintained at proper temperature and protected from contamination during transportation, storage, and service. An approved thermometer shall be provided and used to assure the attainment and maintenance of proper holding temperatures of all time/temperature control for safety food. Reheating equipment is recommended at central kitchens to reheat food if it is not delivered at proper temperatures and the duration of delivery is still within an acceptable timeframe.

Service kitchens shall be restricted to the onsite use of utensils only. Where utensils are limited in type to tongs, scoops, and similar articles, an NSF approved two-compartment sink will be the minimum required.

If dishes and flat ware is washed at the service kitchen location a three compartment sink will be required in addition to a conveniently located hand wash sink.

Hand wash sinks are required to be installed in all holding and service areas and must meet accessibility criteria described in this construction guide.

Refrigeration equipment for TCS foods shall always meet one of the following standards: the American National Standards Institute (ANSI), or National Sanitation Foundation (NSF) or Department equivalent (i.e., commercial grade).

B. Food Banks

A food bank is a food establishment that operates in conjunction with an organization such as a charity that provides food, which has been acquired through purchases or donations, and offers the food directly to a consumer. All food items must be wholesome, unadulterated, unspoiled, and not deteriorating.

C. Continental Breakfast

Continental breakfast kitchens shall meet retail food establishment guidelines when only pre-packaged foods are served. The eating and drinking establishment requirements must be met when any open foods such as milk and waffles are served.

Refrigeration equipment for TCS foods shall always meet one of the following standards: the American National Standards Institute (ANSI), or National Sanitation Foundation (NSF) or Department equivalent i.e. commercial grade.

D. Animals in Food Establishments

***Service Animals*:** Service Animal means any dog that is individually trained to do work or perform tasks for the benefit of an individual with a disability, including a physical, sensory, psychiatric, intellectual, or other mental disability. Other species of animals, whether wild or domestic, trained or untrained, are not service animals for the purposes of this definition. For further information, please refer to the ADA regulations.

***Dog Friendly Patios*:** No dogs shall be allowed on a food establishment premises unless the Department has issued a Dog Friendly Patio Permit to the food establishment. In addition to the operational conditions and standards stated in MCESD Health Code the following structural requirements apply:

1. A separate entrance shall be provided to the exterior of the food establishment to the outdoor patio so that the dog will have direct access to the patio without entering the interior of the food establishment.
2. The patio shall not be located within 7-feet from the entrance to the interior to the food establishment.
3. A sign with at least ½ inch letters shall be posted at the front entrance of the food establishment so that it is easily visible to the public. The sign shall state: "Dog Friendly Patio – Dog access only through outdoor patio". For violations, contact Maricopa County Environmental Services Department (602)506-6616 or file a complaint.
4. All patio surfaces shall be constructed of materials that are smooth, easily cleanable, and durable.
5. The food service establishment shall comply will all applicable local ordinances and rules.

The Dog Friendly Patio Permit Application can be found on our website.

APPENDIX A – Sneeze Guard/Food Shield Criteria

Type 1. Self-Service Food Shields

1. The maximum vertical distance between a counter top and the bottom leading edge of a food shield shall be 13 inches (330 mm).

2. The minimum horizontal distance between the front inside edge of displayed food and the bottom leading edge of a food shield shall be three-quarters of the maximum vertical distance (0.75 x maximum vertical distance) of item 1.

3. The sum of a food shield's protected horizontal plane (X) and its protected vertical plane (Y) shall be greater than or equal to 20 inches (508 mm). Either X or Y may equal 0 inches (0 mm).

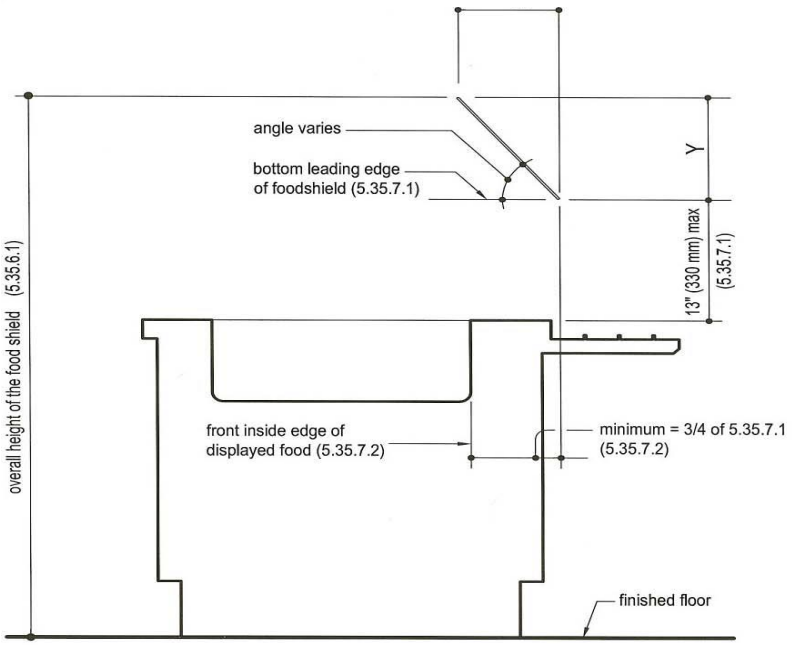
4. Food shields shall be designed and manufactured to minimize obstruction of a customer's view of the food.

5. The maximum horizontal distance between vertical, horizontal and angled panels at post and Framing member locations shall be 2 inches (51 mm).

Type 1. Self-service food shields

Compliance Criteria (5.35.7.3) : X + Y ≥ 20" (508 mm)
either x or y may = 0

Compliance Criteria: X + Y ≥ 20"; either X or Y may = 0



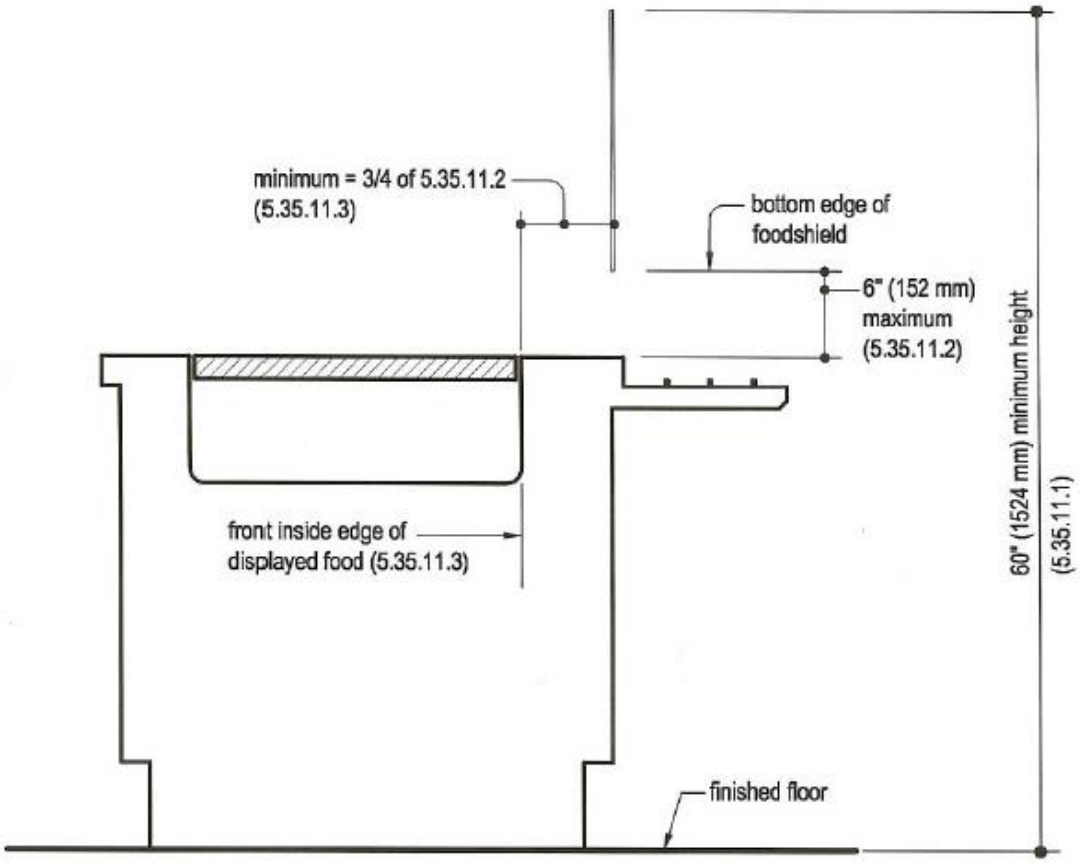
Type 2. Food shields for use on cooking and/or carving station operations

1. Food shields for use on cooking and/or carving stations shall include a vertical barrier to a minimum height of 60 inches (1524 mm) above the finished floor.

2. The maximum vertical distance from the bottom edge of the food shield and counter top shall be 6 inches (152 mm).

3. The minimum horizontal distance between the front, inside edge of displayed food and the front (customer side) face of the food shield shall be three-quarters of the vertical distance (0.75 inches x vertical distance) of item 2.

Type 2. Food shields for use on cooking and/or carving station operations



Type 3. Food shields for use on cafeteria counters.

1. The sum of a food shield's protected horizontal plane (X) and its protected vertical plane (Y) shall be greater than or equal to 32 inches (813 mm). When (X) equals 0 inches (0 mm), (Y) shall be a minimum of 60 inches (1524 mm).

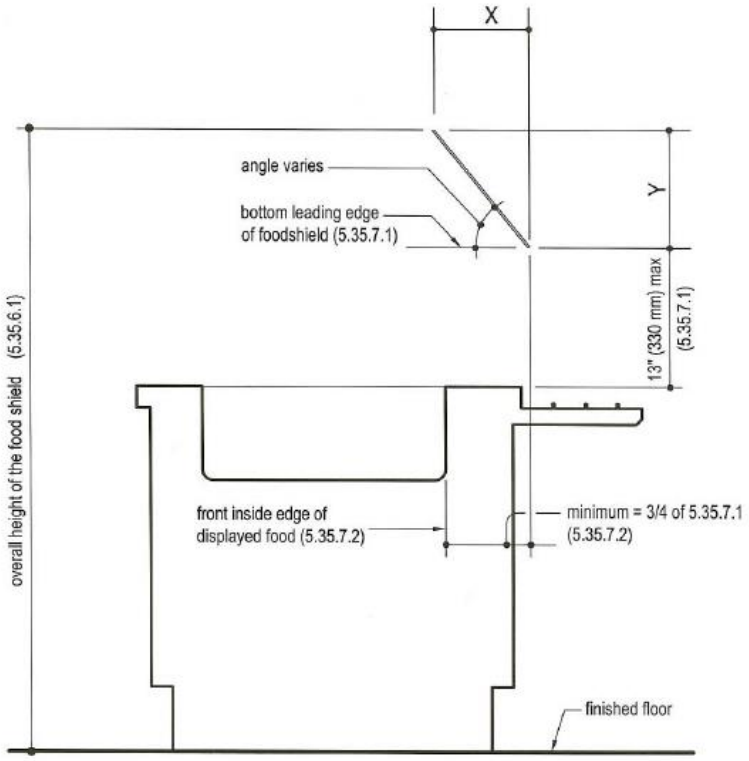
2. The maximum distance from the bottom edge of the front (vertical) glass and counter top shall be 1.5 inches (38 mm).

3. The maximum distance between the vertical glass and horizontal glass is 0.75 inches (19 mm).

4. The minimum horizontal distance between the front inside edge of displayed food and the bottom leading edge of a food shield is 1.5 inches (38 mm).

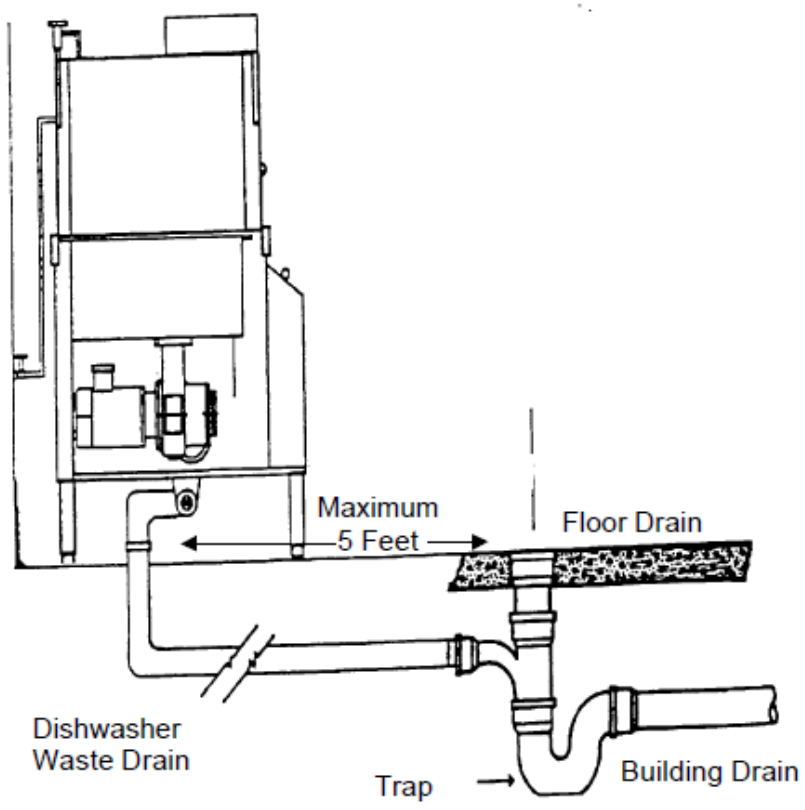
Type 3. Food shields for use on cafeteria counters

Compliance Criteria (5.35.7.3) : X + Y ≥ 20" (508 mm)
either x or y may = 0



APPENDIX B – Conditional Direct Connection Warewashing Equipment Plan

The following diagram demonstrates the acceptable plumbing schematic for a warewashing machine drainage connection if a local jurisdiction prevents the installation of an indirect waste line. This schematic applies to both warewashing machines and warewashing sinks.



Warewashing Machine With a Direct Waste Connection

APPENDIX C – Licensing Timeframes

Arizona law, A.R.S. §11-605, has established licensing timeframes for each permit type that Maricopa County Environmental Services Department (MCESD) reviews for permit issuance. The overall timeframe for each type of permit states separately the administrative completeness review timeframe and the substantive review timeframe. Applicable licensing time frames are defined in A.A.C. R9-8-104.

Once plans have been submitted, MCESD has up to 30-days to determine if the application and supporting information is administratively complete. If the application is determined to incomplete, a notice of deficiency will be sent to the applicant requesting additional information. At this time, the timeframe clock will be suspended until the applicant provides MCESD with the requested information.

Once administratively complete, MCESD will evaluate the submittal for compliance with applicable codes and requirements. For substantive completeness of an application, MCESD has up to 60-additional days to make a final determination on the status of the permit. If a comprehensive request for additional information is made by MCESD, the timeframe clock will be suspended until the applicant provides MCESD with the requested information.

In addition, review timeframes may be temporarily suspended for public hearings or suspended for state or federal license (permit) approvals. The licensing timeframes include MCESD's specific review times and do not include the time it takes for an applicant to respond to notices of deficiency for either the administrative and substantive review portions of the permit application process.

A number of factors may affect licensing timeframes, including workload, staffing, budgetary constraints, and the overall complexity of an application submittal. The timeframes may be subject to modification in accordance with state statues. Applications that have been inactive for more than one year since the date of suspension will be administratively closed.

If you have questions regarding the application process, plan review process, or require assistance, please contact a Development Services Technician with the Administrative Services Division at 602-506-6824.

You may receive clarification from MCESD of its interpretation or application of a statue, ordinance, regulation, delegation agreement, or authorized substantive policy as provided in A.R.S. §11-1609.

LICENSING TIMEFRAMES

Approval Type	Administrative Review Time (Working Days)	Substantive Review Time (Working Days)	Overall Time (Working Days)
Application & Plans	30	60	90
New Permit (Plans not Required)	30	30	60
Variance	30	60	90
HACCP	30	60	90