

# Retail Food Establishment Plan Review Application

Colorado Revised Statutes require plans and specifications be submitted to the Health Department for review and approved **prior** to starting construction or remodeling of any restaurant, grocery store, concession stand or any other type food service operation. Plan review by the Health Department is required to verify the proposed establishment or remodeling work will meet the requirements of the Colorado Retail Food Establishment Rules and Regulations. These Rules and Regulations can be accessed at: <http://www.cdphe.state.co.us/regulations/consumer/index.html>

Detailed plans and supporting specifications must be submitted along with the attached plan review application to Larimer County Department of Health & Environment, 1525 Blue Spruce Drive, Fort Collins, Colorado 80524. A \$100 application fee must accompany the submitted plans.

Submitted plans will be reviewed within ten working days. A review fee, in addition to the \$100 application fee, will be assessed at a rate of \$44 per hour for review time. To keep review costs to a minimum it is recommended that preliminary plans, consisting of a proposed establishment floor plan showing the location of equipment, sinks, and fixtures and the operation's proposed menu, be checked by one of the Department's Environmental Health Specialists at a pre-plan submittal meeting. To set up a pre-plan submittal meeting contact the Department at 970-498-6775.

Once the submitted plans are approved by the Health Department a building permit may be obtained from the Building Department. The Health Department will conduct construction checks to verify the establishment is being constructed in compliance with the Rules and Regulations and in accordance with the approved plans. Once construction is complete and prior to food preparation, an opening inspection will be conducted by the Health Department. A Retail Food Establishment License Application, license fee and any outstanding plan review fees must be submitted to the Health Department at the time of the opening inspection.

Please be advised starting construction or remodeling of a retail food establishment prior to obtaining Health Department approval or preparing food for service to the public in a domestic kitchen or unlicensed facility may result in the Department assessing a Civil Penalty of not less than \$250 and not more than \$1000.

Please contact the Department at 970-498-6775 with any questions concerning requirements or the plan review process.

## OFFICE USE ONLY BELOW THIS LINE

Date Plan Submitted & Fee Collected: \_\_\_\_ / \_\_\_\_ / 20\_\_\_\_ Fee Collected: \$ \_\_\_\_\_

Payee: \_\_\_\_\_ Receipt # \_\_\_\_\_

Enter into tracking by: \_\_\_\_\_ EHS Assigned to Review: \_\_\_\_\_

# OWNERSHIP ADVISORY

## **House Bill 06-1023**

In 2006, the Colorado Legislature passed House Bill 06-1023. This law requires Larimer County Department of Health and Environment to verify citizenship or lawful presence in the United States of individuals that will obtain a Colorado Retail Food Establishment License.

## **This law does not apply to you if:**

This law does **not** apply to establishments where the retail food license is to be issued to a corporation, foundation, trust, association, non-profit agency, company or partnership registered with the Colorado Secretary of State, such as a LLC or LLP.

## **If you are going to apply for a Colorado Food License as an individual or sole proprietor:**

If you are going to apply for a Colorado Retail Food Establishment License as an individual, two or more individuals, or a sole proprietor you are required to complete an affidavit affirming you are: a United States citizen, a permanent resident of the United States or are lawfully present in the United States.

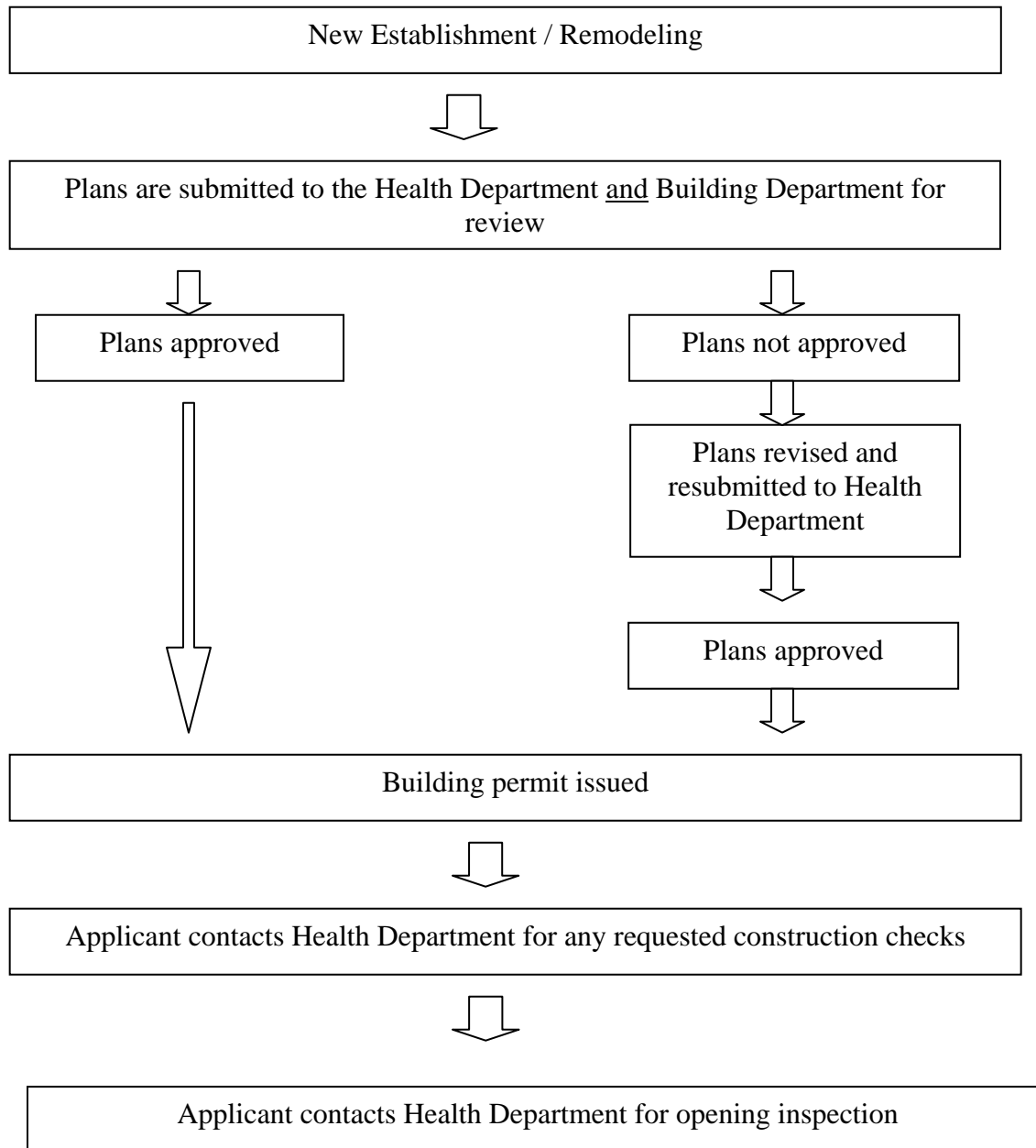
The required Affidavit and Colorado Retail Food Establishment License Application will be provided to you by the Health Department prior to final inspection of the operation of your establishment. Operation of a retail food establishment without completing the required Affidavit or obtaining a Colorado Retail Food Establishment License is a violation of Colorado law, CRS 24-76.5-101-103 and 25-4-1610(b).

If you have any questions, please call (970) 498-6775.

# Larimer County Department of Health & Environment Plan Review Application

The submitted application must be complete and accurate; plans must be drawn to scale and must include details as outlined in the application, supporting specifications and required schedules for the Department to conduct the required review. **Failure to provide complete plans drawn to scale with accurate information will delay review and approval of the plans.**

## Plan Review Process Flow Chart



Application Date: \_\_\_\_\_

Name of Establishment: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_  
STREET

Cell: \_\_\_\_\_

\_\_\_\_\_  
CITY STATE ZIP

E-mail: \_\_\_\_\_

FAX: \_\_\_\_\_

Name of Operator (owner): \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_  
STREET

Cell: \_\_\_\_\_

\_\_\_\_\_  
CITY STATE ZIP

E-mail: \_\_\_\_\_

FAX: \_\_\_\_\_

Name of Local Contact: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_  
STREET

Cell: \_\_\_\_\_

\_\_\_\_\_  
CITY STATE ZIP

E-mail: \_\_\_\_\_

FAX: \_\_\_\_\_

Name of Architect: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_  
STREET

Cell: \_\_\_\_\_

\_\_\_\_\_  
CITY STATE ZIP

E-mail: \_\_\_\_\_

FAX: \_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Phone: \_\_\_\_\_

Address: \_\_\_\_\_  
STREET

Cell: \_\_\_\_\_

\_\_\_\_\_  
CITY STATE ZIP

E-mail: \_\_\_\_\_

FAX: \_\_\_\_\_

Check boxes for individuals to receive copies of Health Department plan review letters and other correspondence.

Date Construction is to Start: \_\_\_\_\_ Date of Planned Opening: \_\_\_\_\_

Have plans for this project been submitted to the Building Department? YES / NO

If yes, name of Building Department: \_\_\_\_\_

Date they were submitted: \_\_\_\_/\_\_\_\_/\_\_\_\_

New Establishment: YES / NO

Remodel: YES / NO

Type of Establishment (check all that apply):

\_\_\_\_ Full Service

\_\_\_\_ Bar

\_\_\_\_ Convenience Store

\_\_\_\_ Deli

\_\_\_\_ Caterer

\_\_\_\_ School

\_\_\_\_ Fast Food

\_\_\_\_ Senior Living

\_\_\_\_ Coffee Shop

\_\_\_\_ Market (Grocery)

\_\_\_\_ Fish Market

\_\_\_\_ Meat Market

\_\_\_\_ Concession

\_\_\_\_ Specialty Shop

\_\_\_\_ Manufacture with Retail Sales

Other (please specify): \_\_\_\_\_

Seating Capacity:

Indoor: \_\_\_\_\_ Outdoor: \_\_\_\_\_

Total Square Feet of the Establishment: \_\_\_\_\_

Total Square Feet of the Kitchen Area: \_\_\_\_\_

Linear Feet of Dry Storage Shelving: \_\_\_\_\_

If multiple food or beverage outlets, such as cabanas, snack areas, bars, grills and coffee shops, are to be operated in multi-story buildings or in large buildings, arenas or on the grounds of the establishment, please list the location of each outlet as well as the locations of support facilities such as storage rooms and ice making area. Include plans drawn to scale and details as outlined in the application, supporting specifications and required schedules for each area.

| NAME                    | LOCATION                 | SERVICE TYPE                     |
|-------------------------|--------------------------|----------------------------------|
| <i>Pool Side Cabana</i> | <i>Outdoor Pool Area</i> | <i>Grill and Cold Sandwiches</i> |
|                         |                          |                                  |
|                         |                          |                                  |
|                         |                          |                                  |
|                         |                          |                                  |

Have plans for this operation been submitted or do you intend to submit plans to other counties in the State of Colorado? YES / NO If yes, which counties: \_\_\_\_\_

Days and Hours of Operation: \_\_\_\_\_  
days hours

If Operation is Seasonal, List the Months of Operation: \_\_\_\_\_

Projected Daily Maximum Number of Meals to be Served: \_\_\_\_\_ Breakfast  
\_\_\_\_\_ Lunch  
\_\_\_\_\_ Dinner

Projected Number of Employees: \_\_\_\_\_ Management  
\_\_\_\_\_ Kitchen and Dishwashing  
\_\_\_\_\_ Wait Staff

**THE FOLLOWING DOCUMENTS ARE NECESSARY AND MUST BE INCLUDED IN ORDER TO COMPLETE THE PLAN REVIEW. LACK OF COMPLETE INFORMATION MAY DELAY REVIEW AND PLAN APPROVAL.**

- I. Menu and Food Handling ..... Page 9
  - A. Proposed menu, procedure manuals, standard operating procedures (SOPs) and a description of how food and equipment temperatures will be monitored.
  - B. Descriptions of specialized operations including cooling of hot foods, reheating and hot holding procedures, thawing of frozen foods.
  - C. Employee hygiene plan. Include sick employee policies, glove use, and wound care.
  - D. Consumer advisory for service of uncooked or lightly cooked animal foods.
  - E. Catering operations, produce preparation and handling.
  - F. Vacuum packaging, sous vide packaging, reduced oxygen packaging.
  
- II. Floor Plan ..... Page 12
  - A. Plan must be drawn to scale.
  - B. Plan must show the locations of all rooms and locations of equipment and fixtures.
  - C. Finish schedule for each room in the establishment.
  
- III. Equipment Specifications..... Page 13
  - A. Specifications for equipment and fixtures, shop drawing of custom made or fabricated equipment and cabinets.
  - B. Refrigeration and hot food holding equipment.
  - C. Specifications for food display equipment.
  - D. Specifications for dump sinks, food preparation sinks, garbage disposals and dish washing equipment.
  - E. Description of how equipment is to be installed.
  
- IV. Plumbing, Mechanical and Electrical Plans and Schedules..... Page 18
  - A. Plumbing plans showing locations of floor sinks and drains, hand sinks, dishwashing sinks, preparations sinks, dump sinks, mops sinks, water heaters and how equipment is plumbed for water and gas. Grease traps, grease interceptor and solids interceptor **if** required by the waste water authority.
  - B. Details as to how sinks, fixtures and equipment are to be drained to sewer.
  - C. Backflow protection.
  - D. Water heating systems specifications including BTU / KW ratings, recovery rate and piping diagrams.
  - E. Mechanical plans showing all exhaust hoods, exhaust vents and all supply air diffusers.
  - F. Electrical plans including a reflected ceiling plan showing types and locations of lighting fixtures.
  
- V. Premises Plan ..... Page 21
  - A. Indicates location of the business in the building and the location of the building on site including alleys, streets and the location of any outside facility such as dumpsters, walk-in units and grease interceptors.

- B. Details as to how water is to be supplied to the establishment, including wells and water disinfection systems.
- C. Details as to how sewage from the establishment is to be disposed of including specifications of septic systems.

VI. Location of Chemical and Personal Belongings Storage ..... Page 22

VII. Appendix D-Worksheet for Calculating Minimum Hot Water Requirements ..... Page 23

**I. MENU AND FOOD HANDLING PROCEDURES:**

- A. Submit a menu. Include appetizers, entrees, lunches, dinners, sides, salads, beverages and children's menus. Include food to be served off site such as dinner rides and packed lunches.
- B. Are there SOPs, a Hazard Analysis Critical Control Point (HACCP) plan or a Food Handling Procedure Manual available that describes preparation, cooling, reheating, cooking of foods and the handling of leftovers? YES / NO If yes, please submit with plans.
- C. Please describe how the temperature of potentially hazardous foods will be monitored. Detail frequency of temperature checks, what foods and/or equipment will be monitored. If used, please provide copies of logs that will be used to help manage proper food temperatures.
- D. List the potentially hazardous foods that will be prepared more than four hours in advance of service. Include foods that are made from scratch such as soups, sauces, potato salad, pasta salads, chili, pasta noodles, roasts, casseroles, etc.
- E. Will potentially hazardous foods prepared in advance require rapid cooling to 41°F (5°C) or below? YES / NO If yes, please explain how they will be cooled:
- Methods used:
  
  
  
  
  
  
  
  
  
  
  - Indicate the size of and the material of the containers that food will be placed in during cooling.
  
  
  
  
  
  
  
  
  
  
  - Are foods covered during the cooling process? YES / NO
  
  
  
  
  
  
  
  
  
  
  - Please describe how cooling processes are going to be monitored.

- F. Will potentially hazardous foods be reheated and then held hot before being served?  
YES / NO. If yes, please explain how the food will be reheated to 165°F (74°C) and above:
- List the equipment that will be used for reheating:
  - Please describe how reheating processes are going to be monitored.
  - Please list the foods that are to be held hot at or above 135°F (57°C).
- G. Describe how frozen foods will be thawed. In a refrigerator, under running water, cooking process, or microwave?
- H. Attach copies of policies or describe procedures that will be used to exclude or restrict workers who are ill. The policies or procedures need to describe when ill workers will be excluded or restricted due to illness or infection, need to outline when exclusions and restrictions are to be lifted and the controls that will be implemented when workers return to work.
- I. Attach copies of policies or describe procedures that will be used to address restrictions and management of workers that have cuts, burns or other open sores on their hands and arms.
- J. Attach copies of policies or describe procedures that will be used to prevent bare hand contact with ready to eat foods.

K. Will animal foods such as beef, pork, fish, eggs, etc. be served raw or lightly cooked such as ceviche, carpaccio, sushi, fish, hamburgers, steaks, etc? YES / NO

- Please list the menu items that will include these foods:
- Describe how customers will be advised of the health risks associated with eating raw or lightly cooked animal foods. Include an example of the proposed advisory to be placed on menu:

L. Will catering be conducted? YES / NO

If yes, please provide a menu.

M. Will food be transported or delivered to another location? YES / NO

If yes, please list the equipment that will be provided to maintain food at proper temperatures during transport.

N. Will foods such as Caesar salads, Steak Diane, or desserts be prepared tableside in dining areas?

YES / NO

If yes please list the foods that are intended for table-side preparation.

O. Will a salad bar, buffet line, omelet station, sauté station, beverage bar or customer self service areas be operated? YES / NO

If yes please indicate location(s) on floor plan.

P. Will the produce used in the operation be washed in the establishment? YES / NO

Q. Will vacuum packaging or sous vide, cook/ chill packaging, or other forms of reduced atmospheric packaging be conducted in the establishment? YES / NO

If yes, please provide specifications sheets for the equipment that will be used and a copy of the required HACCP plan for each category of food to be processed in this manner.

R. Will the establishment prepare foods that will be sold wholesale? YES / NO

If yes please list the foods that are intended for wholesale.



**III. EQUIPMENT SPECIFICATIONS:**

- A. Submit equipment specification sheets, including make and model numbers of the equipment. If the specification sheet lists more than one piece of equipment, identify the specific equipment to be used. **If there is no specification sheet available, the equipment will only be accepted upon a field inspection to determine if it meets commercial and ANSI sanitation design criteria.** *All food service equipment must be of commercial design that is certified or classified for sanitation by an ANSI accredited certification program such as NSF, ETL Sanitation, UL Sanitation, or BISSC Certified. Custom made and used equipment requires visual inspection for final approval.*
- B. Submit shop drawings of all custom fabricated equipment and cabinetry. Drawn to scale.
- C. Refrigeration/Freezer Capacities - Complete the following table:

| TYPE OF UNIT             | # OF UNITS PROVIDED | TOTAL CUBIC FEET |
|--------------------------|---------------------|------------------|
| Walk-in Refrigeration    |                     |                  |
| Walk-in Freezer          |                     |                  |
| Reach-in Cooler          |                     |                  |
| Open Top Sandwich Cooler |                     |                  |
| Reach-in Freezer         |                     |                  |
| Blast Chiller            |                     |                  |
| Retail Display           |                     |                  |
| Other                    |                     |                  |

- D. Hot Food Holding Capacities:

| TYPE OF UNIT      | # OF UNITS PROVIDED | TOTAL CUBIC FEET |
|-------------------|---------------------|------------------|
| Steam Tables      |                     |                  |
| Hot Box           |                     |                  |
| Cook & Hold Units |                     |                  |
| Other             |                     |                  |

- E. Displayed Food Items:

- Will bulk food items such as candy, bread, trail mix, etc. be sold in a retail manner to the public? YES / NO If yes, submit equipment specifications for bulk food bins. Indicate location of bulk food sales on floor plan. Include all vendor-provided bulk dispensing equipment. (See Appendix I, Colorado Retail Food Establishment Rules and Regulations) for bulk food dispensing criteria). *Potentially hazardous foods such as seed sprouts and seafood can not be bulk dispensed. Bulk food dispensers must have self closing lids or doors. Dispensing utensils must be protected and tethered. Openings on bulk food bins must be at least 30 inches up off the floor.*
- Food shields and sneeze guards. Submit the type and location(s). If custom design, please submit shop drawings. *Food shields or sneeze guards are required over open foods such as buffets, soup warmers, salad bars, continental breakfast, hot dog rollers, etc. Utensils and dishware must also be protected from customer contamination.*

F. Indicate the location(s) of drink dump sink(s) and/or knock boxes(s) installed in bars, coffee bars, wait and bus stations where soiled drink glasses, cups and coffee ground baskets will be dumped and pre-scraped prior to dishwashing. The first compartment of a 4-compartment bar sink may be utilized as a dump sink.

G. Is a food preparation sink provided? YES / NO

If yes, please attach a specification sheet for the sink(s) and provide the following information. *A food preparation sink is required if any produce needs to be washed. Food preparation sinks must be equipped with a minimum of one 18" drain board and must be indirectly drained to sewer.*

|                     |                           |   |                            |            |
|---------------------|---------------------------|---|----------------------------|------------|
| _____               | _____ in.                 | _____ in.                                       | _____ in.                  | Yes / No   |
| ID or code on plans | length of left drainboard | length x width x depth of each sink compartment | length of right drainboard | Spray hose |

|                     |                           |   |                            |            |
|---------------------|---------------------------|---|----------------------------|------------|
| _____               | _____ in.                 | _____ in.                                       | _____ in.                  | Yes / No   |
| ID or code on plans | length of left drainboard | length x width x depth of each sink compartment | length of right drainboard | Spray hose |

|                     |                           |   |                            |            |
|---------------------|---------------------------|---|----------------------------|------------|
| _____               | _____ in.                 | _____ in.                                       | _____ in.                  | Yes / No   |
| ID or code on plans | length of left drainboard | length x width x depth of each sink compartment | length of right drainboard | Spray hose |

H. Is a garbage disposal provided? YES / NO

If yes, indicate number to be provided and the location(s):

*Garbage disposals must not be installed in the basin of a food preparation or dishwashing sink. Garbage disposals can be installed in the drainboard of a food preparation sink or dishwashing sink and will require a scupper drain to be installed in the drainboard between the disposal and the sink basin and an additional 18" drainboard is required to be provided on the food preparation sink.*

I. Equipment and utensil dishwashing information:

*All food establishments handling open, unpackaged food or beverages must install a 3-compartment dishwashing sink for washing, rinsing, and sanitizing equipment and utensils regardless of whether a dish machine is provided. The sink basins must be large enough to accommodate all equipment used in food preparation and storage and must be indirectly drained to sewer. The sink must be equipped with drainboards on each end of the sink.*

*Minimum drainboard requirements:*

| <u>Facility</u>   | <u>Clean Drainboards</u> | <u>Soiled Drainboards</u> |
|-------------------|--------------------------|---------------------------|
| Bar Sink          | Eighteen Inches (18")    | Eighteen Inches (18")     |
| Single Service    | Twenty-four Inches (24") | Twenty-four Inches (24")  |
| Multi-use Service | Thirty-six Inches (36")  | Thirty-six Inches (36")   |
| Dishwasher        | Forty-eight Inches (48") | Forty-eight Inches (48")  |

- Manual Dishwashing- Indicate the size of each compartment (length x width x depth) for each 3- compartment dishwashing sink that will be provided in the establishment. Also indicate the length of the drainboards attached to the 3-compartment sink, and if a pre-rinse spray hose will be installed at each sink.

|                        |                              |  |                               |                            |
|------------------------|------------------------------|--|-------------------------------|----------------------------|
| ID or code<br>on plans | _____ in.                    | _____ in.  | _____ in.                     | Yes / No<br>Pre-rinse hose |
|                        | length of left<br>drainboard | length x width x depth of each sink<br>compartment | length of right<br>drainboard |                            |

|                        |                              |  |                               |                            |
|------------------------|------------------------------|--|-------------------------------|----------------------------|
| ID or code<br>on plans | _____ in.                    | _____ in.  | _____ in.                     | Yes / No<br>Pre-rinse hose |
|                        | length of left<br>drainboard | length x width x depth of each sink<br>compartment | length of right<br>drainboard |                            |

|                        |                              |  |                               |                            |
|------------------------|------------------------------|--|-------------------------------|----------------------------|
| ID or code<br>on plans | _____ in.                    | _____ in.  | _____ in.                     | Yes / No<br>Pre-rinse hose |
|                        | length of left<br>drainboard | length x width x depth of each sink<br>compartment | length of right<br>drainboard |                            |

|                        |                              |  |                               |                            |
|------------------------|------------------------------|--|-------------------------------|----------------------------|
| ID or code<br>on plans | _____ in.                    | _____ in.  | _____ in.                     | Yes / No<br>Pre-rinse hose |
|                        | length of left<br>drainboard | length x width x depth of each sink<br>compartment | length of right<br>drainboard |                            |

|                        |                              |  |                               |                            |
|------------------------|------------------------------|--|-------------------------------|----------------------------|
| ID or code<br>on plans | _____ in.                    | _____ in.  | _____ in.                     | Yes / No<br>Pre-rinse hose |
|                        | length of left<br>drainboard | length x width x depth of each sink<br>compartment | length of right<br>drainboard |                            |

- Mechanical - Include the make, model number, and attach specification sheet(s) of each dishwashing machine that will be provided in the establishment. Please indicate if the machine(s) is/are heat or chemical sanitizing. If a booster heater is provided with the machine, submit the make, model number, KW/BTU rating, and recovery rate of the heater, as well as the distance between the dishwashing machine and the heater. Also indicate the length of the drainboards attached to the dishwashing machine(s). A pre-rinse spray hose must be provided for all dishwashing machines with the exception of under counter models.

|                                   |                                     |                                     |                                     |
|-----------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Machine ID#                       | _____                               | _____                               | _____                               |
| Make:                             | _____                               | _____                               | _____                               |
| Model #                           | _____                               | _____                               | _____                               |
| How does<br>Machine<br>Sanitize?  | Heat / Chemical                     | Heat / Chemical                     | Heat / Chemical                     |
| Booster Heater<br>Provided?       | YES / NO                            | YES / NO                            | YES / NO                            |
| Make of Booster:                  | _____                               | _____                               | _____                               |
| Model #                           | _____                               | _____                               | _____                               |
| KW/BTU                            | _____                               | _____                               | _____                               |
| Distance from<br>Machine:         | _____ ft.                           | _____ ft.                           | _____ ft.                           |
| Length of Left<br>Drainboard:     | _____ in.                           | _____ in.                           | _____ in.                           |
| Length of Right<br>Drainboard:    | _____ in.                           | _____ in.                           | _____ in.                           |
| Pre-Rinse Spray<br>Hose Provided? | YES / NO                            | YES / NO                            | YES / NO                            |
| Utensil Soak Sink<br>Provided?    | YES / NO                            | YES / NO                            | YES / NO                            |
| If yes, Indicate:                 | _____ in.<br>length x width x depth | _____ in.<br>length x width x depth | _____ in.<br>length x width x depth |







- Attach specification sheets for each water heater to be installed.
- Number of water heaters or water heating systems to be installed: \_\_\_\_\_. If more than one water heater is to be installed indicate which fixtures each heater or system will service in the table below. A water heating system that is dedicated for supplying hot water to kitchens, bars and cafés in hotels and senior living facilities should be provided. Fixtures served by multiple hot water systems:

| WH # | Location | Fixtures Served by Heater / System |
|------|----------|------------------------------------|
|      |          |                                    |
|      |          |                                    |
|      |          |                                    |
|      |          |                                    |

- Water heating systems designed with multiple heaters plumbed together must be installed and plumbed to operate in a parallel configuration. Water heaters must have the same BTU / KW rating and the same tank capacities.
- Standard Tank Type Water Heater:

| WH # | Make & Model | BTU / KW Rating | Recovery Rate in GPH@100°F | Tank Capacity Gallons |
|------|--------------|-----------------|----------------------------|-----------------------|
|      |              |                 |                            |                       |
|      |              |                 |                            |                       |
|      |              |                 |                            |                       |
|      |              |                 |                            |                       |

- Instantaneous / Tankless Water Heaters:

| WH # | # Units | Make & Model | BTU / KW Rating | Flow Rate in GPM@100°F |
|------|---------|--------------|-----------------|------------------------|
|      |         |              |                 |                        |
|      |         |              |                 |                        |
|      |         |              |                 |                        |

- A storage tank is required for instantaneous/tankless systems when a dishwashing machine is installed in the establishment. The storage tank must be at least 25 gallons or 25% of the gallons per hour demand of the dishwashing machine, whichever is larger.
- Instantaneous/tankless systems storage tank capacity in gallons: \_\_\_\_\_

**E. Mechanical:**

- Provide a reflected ceiling plan that shows the location of exhaust hoods, exhaust vents and all supply air diffusers.
- Provide specification sheets, make and model numbers or shop drawing for each exhaust hood to be installed. Include the size (length x width), of each exhaust hood and proposed material the hood is to be constructed of. Include manufacturer’s recommended exhaust listings in CFM/linear foot of hood.
- Submit a complete ventilation schedule including exhaust capacities (CFM) for all hoods, exhaust fans, and indicate the volume of outside air each roof top unit and make up air unit will supply into the building. Include ventilation systems in restrooms.



B. Water Supply and Wastewater Systems:

1. Water Supply:

- Community/Public: YES / NO

If yes, Name of District: \_\_\_\_\_

- Non-Community/Private: YES / NO

If yes, Public Water System Identification (PWSID) number: \_\_\_\_\_

Attach copy of most recent water sampling results if available.

Well: \_\_\_\_\_ Spring: \_\_\_\_\_

Depth: \_\_\_\_\_ ft.

Indicate location on sites plan.

Method of Disinfection: \_\_\_\_\_

Submit piping diagram of the disinfection system. Include size of holding tank(s), pressure tank(s), make and model number of treatment system, filter pore size, etc.

2. Sewage Disposal:

- Municipal/Public: YES / NO

If yes, Name of District: \_\_\_\_\_

- On site waste water treatment system: YES / NO

If yes indicate location on sites plan.

Attach copy of permit for the systems that will service the establishment.

**VI. CHEMICAL AND PERSONAL ITEM STORAGE:**

A. Submit the proposed locations where bulk supplies of cleansers, detergents, sanitizers, and other toxics will be stored. *Toxic materials and surplus cleaning supplies must be stored away from food operations, food storage, and utensil washing facilities.*

B. Submit the proposed location where employees' coats, hand bags, medications and other personal belongings will be stored. *Employee personal items must be stored away from food operations, food storage, and utensil washing facilities.*

## VII. APPENDIX D--WORKSHEET FOR CALCULATING MINIMUM HOT WATER REQUIREMENTS:

The following worksheet is provided to assist operators in calculating hot water usage and sizing of the water heater system required for the operation.

What is the distance between the water heating system(s) and the fixture that is farthest from the heating system?

Fixture: \_\_\_\_\_ Feet from water heating system: \_\_\_\_\_

### Standard Tank Type Systems:

#### I. Calculate Total Water Required By All Fixtures:

##### A Three compartment sink calculation of water usage:

1. Measure dimensions, in inches, of each compartment, if compartments are not the same dimensions see note below.

Length = \_\_\_\_\_ Width = \_\_\_\_\_ Depth = \_\_\_\_\_

2. Insert measurements into equation:

$$\left( \frac{\text{length}}{\text{length}} \times \frac{\text{width}}{\text{width}} \times \frac{\text{depth}}{\text{depth}} \times 3 \times 0.375 \right) \div 2.31 = \frac{\text{water usage}}{\text{water usage}} \text{ GPH}$$

Note: If all the compartment sizes of the sink are not the same, then 3 is taken out of the equation, and the above calculation is done for each compartment. The volumes are added to obtain the total gallons per hour of hot water used in the sink.

Enter number into "Table to Calculate Total Water Required By All Fixtures," found on page 26.

##### B Utensil soak sink

1. Measure dimensions, in inches, of the sink

Length = \_\_\_\_\_ Width = \_\_\_\_\_ Depth = \_\_\_\_\_ GPH

2. Insert measurements into equation:

$$\left( \frac{\text{length}}{\text{length}} \times \frac{\text{width}}{\text{width}} \times \frac{\text{depth}}{\text{depth}} \times .375 \right) \div 2.31 = \frac{\text{water usage}}{\text{water usage}}$$

Enter number into "Table to Calculate Total Water Required By All Fixtures," found on page 26.

C Dishmachine and conveyor pre-rinse water usage:

1. Use manufacturer's rating in gallons per hour. Enter number into "Table to Calculate Total Water Required By All Fixtures," found on page 26.
2. Clothes washer water usage.
  - Use manufacturer's rating: \_\_\_\_\_, or
  - 32 GPH for 9-12 pound washer, or
  - 42 GPH for 16 pound washer.

Enter number into "Table to Calculate Total Water Required By All Fixtures," found on page 26.

D "Calculate Total Water Required By All Fixtures" and the number of fixtures in the operation to determine maximum hourly usage for each type of fixture in the operation.

Total water (GPH) required by all fixtures: \_\_\_\_\_ GPH.

II. Calculate Maximum Hourly Hot Water Usage

If gas water heater is used go to Step A; if electric, Step B.

- A Gas Water Heater: If a gas water heater is to be used, calculate the maximum hourly hot water usage for the facility by adjusting the total water required by all fixtures for altitude. The altitude adjustment is 4% per 1000 feet of elevation, or 20% at 5000 feet.

Use the following equations to determine the maximum hourly hot water usage when a gas powered water heater is to be used:

$$(0.04 \times \frac{\text{elevation of facility}}{1000}) + 1 = \text{adjustment factor}$$

$$\frac{\text{adjustment factor}}{\text{total water required by all fixtures}} \times \text{total water required by all fixtures} = \text{maximum hourly hot water usage GPH}$$

Example, if the total gallon per hour usage for an establishment at an elevation of 5000 feet is 100 GPH, the adjustment factor is 1.2. Therefore, a water heater with 120 GPH recovery rate would be required.

Use this value in the equation on page 25 to calculate the minimum BTU rating of the water heater.

- B Electric Water Heater: If an electric water heater is to be used, the maximum hourly usage for the operation is the same as the total water required by all fixtures. Use this value in the equation on page 25 to calculate the minimum Kilowatt (KW) rating of the water heater.

- C The values determined in Step A or B is the minimum required recovery rate for the water heater for the facility.

III. Calculate the minimum BTU or Kilowatt rating of water heater:

A For gas water heater, calculate the minimum BTU rating:

$$\frac{(\text{max hourly usage as calculated above}) \times (100^{\circ}\text{F}^*) \times (8.33)}{.80 \text{ or use manufacturer's thermal efficiency}} = \text{minimum BTU rating}$$

B For electric water heater, calculate the minimum Kilowatt rating:

$$\frac{(\text{max hourly usage as calculated above}) \times (100^{\circ}\text{F}^*) \times (8.33)}{3412} = \text{minimum KW rating}$$

\*If there is no high temperature dishwashing machine or other fixtures requiring input water temperature of 140°F (100°F rise) or more, then 80°F rise can be used.

C. Calculated recovery rate GPH and BTU or KW Rating:

Gas Heater: \_\_\_\_\_ GPH, \_\_\_\_\_ BTU

Electric Heater: \_\_\_\_\_ GPH, \_\_\_\_\_ KW

D. Select water heater based upon BTU or Kilowatt rating.

Make: \_\_\_\_\_ ; Model #: \_\_\_\_\_

BTU or Kilowatt Rating: \_\_\_\_\_

Recovery rate: \_\_\_\_\_ gallons per hour at 100°F rise at sea level.

Indicate the water heater proposed for the establishment in the Standard Tank Type Water Heater table on page 20 of the plan review application.

E. Heat reclaim systems:

Make: \_\_\_\_\_ ; Model #: \_\_\_\_\_

BTU Rating: \_\_\_\_\_

Recovery rate: \_\_\_\_\_ gallons per hour at 100°F rise at sea level.

Indicate the heat reclaim system specifications in the Standard Tank Type Water Heater table on page 20 of the plan review application.

Table to Calculate Total Water Required For All Fixtures.

| Plumbing Fixture   | Water Usage<br>(gallons per hour) | Number of<br>Fixtures | Maximum Hourly<br>Water Usage Per<br>Type of Fixture<br>(gallon per hour) |
|--|-----------------------------------|-----------------------|---|
| <i>example: dishwashing<br/>machine</i>  | <i>50</i>                         | <i>1</i>              | <i>50</i>   |
| <i>example: handsink(s)</i>  | <i>5</i>                          | <i>4</i>              | <i>(5 x 4 = ) 20</i>  |
|  |                                   |                       |   |
| 3-compartment sink   |                                   |                       |   |
| 3-compartment sink (bar)   |                                   |                       |   |
| Utensil soak sink  |                                   |                       |   |
| Dishmachine  |                                   |                       |   |
| Dishwashing machine<br>conveyor pre-rinse  |                                   |                       |   |
| Clothes washer   |                                   |                       |   |
| Hand operated pre-rinse<br>sprayer*  | 32                                |                       |   |
| Hand washing sinks<br>(including restrooms)*   | 5                                 |                       |   |
| Mop/utility sinks  | 7                                 |                       |   |
| Garbage can washer   | 35                                |                       |   |
| Showers*   | 14                                |                       |   |
| Hose bib used for cleaning   | 35                                |                       |   |
| Add the Maximum Hourly Water Usage Per Type of Fixture in the<br>right column to determine the total water (GPH) required: |                                   |                       |   |

\*A hot water use reduction can be calculated for water saving devices used on hand operated pre-rinse sprayers, hand washing sinks and showers by doing the following calculations.

A. Water savings device. Obtain manufacturer's flow rate for each device. The manufacturer's flow rate must be less than what is listed below to be considered:

1. Hand operated pre-rinse sprayers with flow rate less than 3.5 GPM standard flow rate.

Make: \_\_\_\_\_ ; Model #: \_\_\_\_\_

Manufacturer's Flow Rating: \_\_\_\_\_ GPM

2. Hand washing sink faucet or aerator with flow rate less than 2.2 GPM standard flow rate.

Make: \_\_\_\_\_ ; Model #: \_\_\_\_\_

Manufacturer's Flow Rating: \_\_\_\_\_ GPM

3. Shower head with flow rate less than 2.5 GPM standard flow rate.

Make: \_\_\_\_\_ ; Model #: \_\_\_\_\_

Manufacturer's Flow Rating: \_\_\_\_\_ GPM

B. Use the following equation to determine the reduced hourly hot water usage for each of the three types of fixtures:

$$\left( \frac{\text{manufacturer's flow rate}}{\text{rate}} \times \text{water use value from Table to Calculate Total Water Required for All Fixtures on page 26} \right) \div \frac{\text{GPM standard flow rate}}{\text{rate}} = \frac{\text{new water use value to be entered into Table to Calculate Total Water Required for All Fixtures on page 26}}{\text{rate}}$$

Example calculation for a hand washing sink that has an aerator with a manufacturer's flow rate of 0.5 gpm:

$$\left( \frac{0.5 \text{ GPM}}{\text{Manufacturer's flow rate}} \times 5 \text{ GPH} \right) \div \frac{2.2 \text{ GPM}}{\text{GPM standard flow rate}} = \frac{1.14 \text{ GPH}}{\text{new water use value to be entered into Table to Calculate Total Water Required for All Fixtures on page 26}}$$

1.14 GPH would be entered into the "Table to Calculate Total Water Required for All Fixtures," found on page 26 in place of the 5 GPH for hand washing sinks.

## Requirements for Dishwashing Machine Booster Heaters:

### I. Dishwashing Machine

Manufacturer: \_\_\_\_\_

Model Number: \_\_\_\_\_

Final Sanitizing Rinse Cycle Gallons Per Hour Water Consumption: \_\_\_\_\_ GPH

### II. Calculate the minimum BTU or Kilowatt rating of the booster heater:

#### A. For gas booster heater, calculate the minimum BTU rating:

$$\frac{(\text{Gallons Per Hour Water Consumption}) \times (40^{\circ}\text{F}) \times (8.33)}{.80} = \text{minimum BTU rating}$$

#### B. For electric water heater, calculate the minimum Kilowatt rating :

$$\frac{(\text{Gallons Per Hour Water Consumption}) \times (40^{\circ}\text{F}) \times (8.33)}{3412} = \text{minimum KW rating}$$

#### D Select booster heater based upon BTU or Kilowatt rating. The booster heater must have recovery rate greater than the dishwashing machine's final rinse water consumption.

Make: \_\_\_\_\_ ; Model #: \_\_\_\_\_

BTU or Kilowatt Rating: \_\_\_\_\_

Recovery rate: \_\_\_\_\_ gallons per hour at 40°F rise at sea level.

## Tankless or Instantaneous Systems

### I. Heater Specifications:

Manufacturer\*: \_\_\_\_\_

Model Number: \_\_\_\_\_

Flow Rate in Gallons Per Minute (GPM) at 100°F rise\*\* : \_\_\_\_\_ GPM

BTU Rating: \_\_\_\_\_ BTU\*\*\*

Indicated the water heaters proposed for the establishment into the Instantaneous / Tankless Water Heater table on page 20 of the plan review application.

\*Units must be designed for commercial use.

\*\* If there are no high temperature dishwashing machine or other fixtures requiring input water temperature of 140°F (100°F rise) or more, then 80°F rise can be used.

\*\*\*Electric units will only be approved as a dedicated hot water supply to hand washing sinks.

II. Calculate the total hot water demand flow rate in Gallons Per Minute (GPM) using this table.

| Plumbing Fixture                                      | Water Usage<br>(gallons per minute) | Number of<br>Fixtures | Water Demand<br>Flow Rate in<br>Gallons Per Minute |
|---|-------------------------------------|-----------------------|--|
| <i>example: dishwashing<br/>machine †Hobart AM 14</i> | <i>8.0</i>                          | <i>1</i>              | <i>(8.0 × 1) = 8.0</i>                             |
| <i>example: handsink(s)</i>                           | <i>0.5</i>                          | <i>4</i>              | <i>(0.5 × 4) = 2.0</i>                             |
|   |                                     |                       |  |
| 3-compartment sink*                                   | 2.0 for each faucet                 |                       |  |
| 3-compartment sink (bar)*                             | 2.0 for each faucet                 |                       |  |
| Utensil soak sink                                     | 1.0                                 |                       |  |
| Dishwashing machine†                                  |                                     |                       |  |
| Dishwashing machine<br>conveyor pre-rinse†            |                                     |                       |  |
| Clothes washer  | 2.0                                 |                       |  |
| Hand operated pre-rinse<br>sprayer†                   | 2.0                                 |                       |  |
| Food preparation sink(s)                              | 1.0                                 |                       |  |
| Hand washing sinks<br>(including restrooms) *         | 0.5                                 |                       |  |
| Mop/Utility sinks                                     | 2.0                                 |                       |  |
| Garbage can washer                                    | 1.0                                 |                       |  |
| Showers†  | 1.0                                 |                       |  |
| Hose bib used for cleaning                            | 5.0                                 |                       |  |
| Total water demand (GPM) required:                    |                                     |                       |  |

\*A flow rate reduction can be used for low flow water faucets installed on 3-compartment sinks, hand operated pre-rinse sprayers, food preparation sinks, hand washing sinks and showers by entering the manufacturer's flow rate listed for the faucet or faucet's aerator.

†Use manufacturer's flow rate in GPM for specific make and model of dishwashing machine or shower head.

III. Calculate the maximum flow rate for the establishment. The thermal efficiency of the water heating units must be adjusted for altitude. The altitude adjustment is 4% per 1000 feet of elevation, or 20% at 5000 feet.

Use the following equations to determine the establishment's maximum flow rate in GPM:

$$(0.04 \times \frac{\text{elevation of facility}}{\text{elevation of facility}} \div 1000) + 1 = \frac{\text{adjustment factor}}{\text{adjustment factor}}$$

$$\frac{\text{adjustment factor}}{\text{adjustment factor}} \times \frac{\text{total water demand for all fixtures calculated in II}}{\text{total water demand for all fixtures calculated in II}} = \frac{\text{maximum GPM hot water usage}}{\text{maximum GPM hot water usage}}$$

Use calculated maximum GPM hot water usage value in this equation to determine the minimum number of heating units that will be required in IV below.

IV. Determine the number of heating units that will be needed to meet the required flow rate.

$$\frac{\text{maximum demand (GPM) calculated in III}}{\text{maximum demand (GPM) calculated in III}} \div \frac{\text{manufacturer's flow rate in GPM @ 100°F in I}}{\text{manufacturer's flow rate in GPM @ 100°F in I}} = \frac{\text{number of heating units required*}}{\text{number of heating units required*}}$$

Enter the number of heating units to be installed into the Instantaneous/Tankless Water Heater table on page 20 of the plan review application.

\*Multiple units must be installed and plumbed to operate in a parallel configuration.

V. Storage Tank Sizing:

If a dishwashing machine(s) is to be installed the instantaneous water heating system must include a storage tank. The storage tank must be at least 25 gallons or at least 25% of the gallons per hour (GPH) demand of the dishwashing machine(s). The larger value of the two is the required storage tank size.

Dishwashing Machine\*

Manufacturer: \_\_\_\_\_

Model Number: \_\_\_\_\_

Gallons Per Hour Water Consumption: \_\_\_\_\_ x 0.25 = \_\_\_\_\_  
storage tank capacity  
in gallons

Calculated Storage Tank Capacity: \_\_\_\_\_ vs 25 Gallons Storage Tank

Enter the larger of the two: \_\_\_\_\_ Required Storage Tank Capacity\*\*

Enter the size of the proposed storage tank into the Instantaneous/Tankless Water Heater table on page 20 of the plan review application.

\*High temperature, heat sanitizing dishwashing machines must be provided with a separate booster heater. Use of an instantaneous unit is not allowed for use as a booster heater.

\*\*The storage tank must be installed in the hot water supply line located between the heater unit(s) and the hot water distribution line. A recirculation line, equipped with a recirculation pump and aquastat, (water thermostat) must be installed at the storage tank to assure the water in the tank remains at the appropriate temperature (120-140°F). The recirculation line must be connected between the storage tank and the cold water supply line at the heater unit(s).