

Plan Review Guide Alaska Department of Environmental Conservation Division of Environmental Health Food Safety and Sanitation Program



PLAN REVIEW GUIDE

INTRODUCTION

This booklet lists out some basic instruction for filling out the different components of the plan review application including:

- Facility Plot Plan, pg 1
- Facility Floor Plans, pg 3
- Plumbing Schematic, pg 5
- Calculating Storage Capacity, pg 9
- Equipment Listing, pg 11
- Plan Review Checklist, pg 13

FACILITY PLANS

PLOT PLAN

A facility plot plan is a miniature representation of the outside of your facility as seen from an aerial view. These plans can be drawn by either the owner/operator or a professional. However, the plans must be legible and to scale, which means that everything must be in the correct proportions.

What to include:

- All buildings (including sheds, storage warehouses, employee housing, etc).
- Outside walk-in cooler(s)/freezer(s)
- Refuse storage site

- Outside storage areas
- Potable water supply
- Oil/Fuel tanks
- Access for deliveries
- Sewage disposal system
- Identify nearby roads, streets, other landmarks, and/or give GPS coordinates



FLOOR PLANS

A floor plan is a measured drawing that is an exact miniature representation of your establishment as seen from an overhead view. These plans can be drawn by either the owner/operator or a professional. However, the plans must be legible and to scale, which means that everything must be in the correct proportions. If your establishment does not yet exist or if you have not decided upon the exact equipment, your measurements will be estimates.

What to Include

- Layout and purpose of each room
- Location of fixed equipment and plumbing features
- Location of restrooms, including the number of toilets and handwash sinks
- Type and location of lighting
- Type and location of ventilation, both building and local systems
- Size, construction, and design of fixed equipment

How to draw a floor plan

- For facility in an existing building, begin by measuring, with a tape measure, the length and width of your establishment as well as the lengths and widths of all interior rooms including kitchens, dining rooms, bars, store rooms, walk-in coolers, etc.
- Next measure the length and width of all sinks, tables, worktables, counter tops, and other equipment throughout the establishment.
- Write down all your measurements for future reference.
- Draw the plan on graph or quad paper that is at least 8.5" x 11" with a minimum scale of ¼ inch=1 foot. Draw all interior rooms, walls, hallways and doorways according to your measurements.
- Include all the equipment, sinks, and tables, etc., positioned accurately on the plan.
- Identify each piece of equipment with a number. (This includes all sinks.)
- Create a list identifying each number to the item depicted.

An example of a facility floor plan is shown on the next page.

EXAMPLE FACILITY FLOOR PLAN



Equipment (make and model #)

- Cheese Melter (ABC #123) 1.
- Microwave (XYZ #34) 2.
- Steamtable (HOT #A1) 3.
- Stove (AOK #22) 4. Griddle (AOK #Q17)
- 5. Fryer (ABC #55) 6.
- Fryer (ABC #55) 7.
- 8. Charbroiler (HOT #A7)
- 9. Handsink
- 10. Hood, type I (Ezair #99)
- 11. Refrigerator/freezer Maketable unit with pass thru and shelf. (Cold #10)
- 12. Stainless Steel Table
- 13. Sliding 3 door Refrigeration unit (Cold #12)
- 14. Shelving unit
- 15. Mixer (XYZ #q23)

- 16. Shelving Unit
- Bread Shelving Racks 17.
- **Dining** Area 18.
- Coffee maker (ABC #16) 19.
- Tea Maker (ABC #87) 20.
- Soda Machine (PDQ #2A) 21.
- Expresso Machine (ABC #5) 22.
- 23. Undercounter Refrigeration Unit (COLD #A3)
- Bakers Table 24.
- 25. **Bakers** Table
- 26. Shelving Unit
- Bake Oven (JAM #33) 27.
- Hood, type II (Ezair #35) 28.
- Proof Cabinet (ABC #T2) 29.
- 30. Proof Cabinet (ABC #T2)
- Vegetable Prepsink & 18" 31.
 - drainboard

- 32. Stainless prep table
- Walk-in cooler (COLD #AZ1) 33.
- Walk-in freezer (COLD #AZ3) 34.
- 35. Drying Shelf
- Clean drainboard 36.
- Dishmachine (Magic #15) 37.
- Hood, type II (Ezair #17) 38.
- Dirty drainboard w/ sprayhose, & 39. garbage disposal
- 40. Dirty dish rack
- 41. Drying shelf
 - 3-comp. sink w/ 36" drainboards 42.
 - Mop sink 43.
 - Chemical storage shelf 44.
- 45. Shelving
- Floor Sink
 - Floor Drain

PLUMBING SCHEMATIC

A plumbing schematic is a basic drawing that illustrates where your hot and cold water lines and wastewater lines would go. Be sure to include if a drain line is directly or indirectly connected.

What to Include

- Plumbing schematic showing each hot, cold, and wastewater line
- The hot water capacity
- If the connections to the sewer are direct or indirect connections.

An example of a Plumbing Schematic is illustrated below



INDIRECT CONNECTIONS

A direct connection may not exist between the sewage system and any drains originating from equipment in which food or drink is stored, prepared, or served. This includes refrigerators, steam kettles, ice storage bins, and food preparation sinks.

An example of an indirect connection to the wastewater lines is shown below.



DETERMINING HOT WATER DEMAND

An adequate supply of hot water for washing hands, utensils, equipment, and for cleaning the facility is required. A properly sized water heater will ensure that a sufficient amount of hot water is available at all times.

The hourly hot water demand in Gallons Per Hour (GPH) for a food establishment is calculated by adding together the estimated hot water demands for all sinks and other equipment that use hot water. Please use the Hot Water Heater Calculation Worksheet to help determine what size hot water heater you will need. A note about different types of hot water heaters:

• Instantaneous water heaters must be sized to provide hot water of at least 110°F at a rate of at least 2 Gallons Per Minute (GPM) to each non-hand wash sink and fixture that

uses hot water. Hand wash sinks need at least ½ GPM each. (Note: Most instantaneous hot water heaters only provide 2-3 gallons/minute).

• Gas water heaters

BTU input = <u>GPH x Temperature rise * x 8.33 lb/gallon of water</u> Thermal Efficiency **(.75)

• Electric water heaters

KW input = <u>GPH x Temperature rise * x 8.33 lb/gallon of water</u> Thermal Efficiency *** (.98) x 3412 BTU/KW

* **Temperature Rise**: the average temperature of tap water varies throughout the state depending upon the location, elevation, and time of year. For example to provide hot water at 110°F with a tap water temperature of 35°F, the required rise would be 75°F.

** **Thermal Efficiency (Gas)**: The thermal efficiency for gas water heaters will be assumed to be 75%, unless otherwise listed by NSF International or other nationally recognized testing laboratories.

*** **Thermal Efficiency (Electric)**: The thermal efficiency for electric water heaters will be assumed to be 98%, unless otherwise listed by NSF International or other nationally recognized testing laboratories.

Sample Problem For Sizing Water Heaters

An operator proposes to open a new foodservice establishment with a full service menu using multi-service utensils. There will be a three-compartment sink, 3 hand wash sinks (2 in restrooms and 1 in preparation area), and a utility sink.

Using the Hot Water Heater Calculation Worksheet, the total gallon per hour (GPH) comes to 85. (60 for one three compartment sink, $5 \times 3 = 15$ for the hand wash sink, and 10 for one utility sink).

• For a gas water heater:

BTU input = $\underline{85 \text{ GPH x } 75^\circ \text{F x } 8.33 \text{ lb/gallon of water}}_{.75 \text{ Thermal Efficiency}} = \underline{53103.75}_{.75} = 70805.0$

• For electric water heaters:

KW input = <u>85 GPH x 75°F x 8.33 lb/gallon of water</u> = <u>53103.75</u>= 15.88 .98Thermal Efficiency x 3412 BTU / KW 3343.7

• Instantaneous water heaters must be sized to provide hot water of at least 110°F at a rate of at least 2 Gallons Per Minute (GPM) to each non-hand wash sink and fixture that uses hot water. Hand wash sinks need at least ½ GPM each.

1 three compartment sink	2.0 GPM
3 hand wash sinks	1.5 GPM
1 mop-sink	<u>2.0 GPM</u>
-	5.5 GPM

Use table on the next page to calculate your gallons per hour hot water needs. Show calculations below for determining size of water heater:

HOT WATER HEATER CALCULATION WORKSHEET

Items noted in bold below are required equipment, all others are optional. However, you must list out all sinks and equipment in your facility to calculate the proper hot water demand.

EQUIPMENT	QUANTITY OF	Multiplied	GALLONS (GI	PER HOUR PH)	EQUALS GPH
	EQUIPMENT	бу	HIGH*	LOW**	
Food Prep Sink		Х	15	15	
Three Compartment Sink		Х	60	45	
Pre-Rinse Spray Hose Sink		Х	45	45	
Commercial Dish wash Machine		Х	Varies w	ith Unit***	
Bar Three Compartment Sink		Х	20		
Chemical Sanitizing Glass Washer		Х	60		
Hand Sink-Kitchen & Restroom		Х	5	5	
Bain Marie		Х	10	10	
Utility Sink		Х	10	10	
Garbage Can Wash Station		Х	30	30	
Clothes Washer		Х	45	45	
Employee Shower		Х	20	20	
				TOTAL	

*High-to be used when multi-use eating utensils are used.

**Low-to be used when single service eating utensils are used.

**Refer to manufacturer's specifications for gallons per cycle times cycles per hour

STORAGE CAPACITY

Two types of storage are found in food establishments: refrigerated storage and dry storage. Adequate storage space is dependent on the frequency of deliveries, the volume of business, and the menu type. Below are some examples of how to calculate the amount of refrigerated storage and dry storage you food establishment will need.

You will note the amount of storage space in Section C of the Plan Review Supplement Application.

CALCULATING REFRIGERATED STORAGE

At a minimum a food service should consider having enough space to handle the supplies needed over a weekend (i.e., three days). Also take into consideration how many and what items a typical meal on the menu takes. A meal of a soup and sandwich would be less than a meal that consists of appetizers, salad, soup, main course with vegetable and potato, and dessert.

To first plan refrigeration storage these items need to be taken into consideration:

Days between deliveries:

Meals per day:_____

Typical volume per meal- 0.037 to 0.085 cubic feet average for typical meal Taken from the estimated typical meal volumes for:

Meat, Poultry & Seafood=.010-.030 Cu. ft. per mealDairy=.007-.015 Cu. ft. per mealVegetables & fruits=.020-0.40 Cu ft. per meal

The following is a suggested formula to establish required reserve refrigeration storage:

Cubic Feet Storage=	EXAMPLE:
Volume per meal X number of meals X Days between deliveries .40 Usable space in refrigeration unit	Volume per meal = .085 The menu consists of dinner meals with appetizers, salad or soup, main course and potato. Therefore the higher value of 0.85 is being used.
 Number of meals = This is the number of meals served per day Days between deliveries= This is the days between deliveries Useable space in refrigeration unit = .40 Only 40% of refrigeration space such as a walk-in provides usable space 	Number of meals = 300 Days between deliveries= 7 Useable space in refrigeration unit = .40 $\frac{.085 \times 300 \times 7}{.40} = \frac{.178.5}{.40} = .40 = 446.25$ Cubic Ft.

To calculate the interior space (in square feet) required divide the volume (Cu. Ft.) by the height of the unit.	
<u>Cubic Ft.</u> Height of Unit = Interior Storage Space (sq. ft.)	446.25 7 ft. = 63.75 Square feet
Then multiply by 1.25 to convert the interior space to exterior floor area	63.75 x 1.25=79.69 sq. ft. of exterior floor area
Square Feet needed x 1.25 = Exterior floor areas in square feet needed.	needed

CALCULATING DRY STORAGE

There are two suggested formulas shown below. Volume per meal is estimated at 0.025 to 0.050 cubic feet per meal. Consideration in determining which value to use would depend on whether single service utensils (i.e. paper plates, cups, and tableware) are used. Also to take into consideration for caterers is storage area for the portable catering equipment used.

Example 1

Formula #1-Linear feet of shelving for storage (feet)=	EXAMPLE:
Volume per meal x number of meals x days between deliveries DxHxC	Volume per meal = 0.050 (Because the example facility is take out and has a good supply of single service items the higher value will be used.)
D=Depth of shelves in feet H=Height of clearance between shelves in feet (usually this will be at least 1 to 1.5 feet (12" to 18") C=80% effective capacity of shelf height	Meals per day = 300 Days between deliveries =7 D=1.5 or 18 inch shelves H=1.5 C=80%
	$\frac{0.050 \text{ x } 300 \text{ x } 7}{1.5 \text{ x } 1.5 \text{ x } 80\%} = \frac{105}{1.8} = 58.33 \text{ linear feet of shelving}$

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Example 2

Formula # 2- Required Storage Area (sq. ft.) =	EXAMPLE:
Volume per meal x number of meals x days between deliveries Average height x fraction of usable storeroom	Volume per meal = 0.050 (Because the facility is take out and has a good supply of single service items the higher value will be used.)
arca	Meals per day = 300
Average height usually ranges from 4 to 7 feet depending on height of shelving or if products are stored on pallets. Lower range would be used for those items that would be on pallets.	Days between deliveries = 7 Average Height = 7 feet Fraction of useable storeroom floor area = .4
Fraction of useable storeroom floor area – 3 to 6	$\frac{.050 \times 300 \times 7}{7 \times 4} = \frac{105}{2.8} = 37.5$ sq. ft of storage required
Things that must be taken into consideration here is	7 A .T 2.0
how wide it is will be between shelves, how far away from the wall shelves are located. etc.	

EQUIPMENT

A list of equipment must be included with the plan review packet. This will help to determine that the equipment complies with menu needs and capacity. List on a separate sheet of paper all of the equipment in your kitchen.

What to Include

- Refrigeration equipment
- Freezers

- Hot holding units
- Hood systems

- Steam tables
- Any equipment that may be found in the equipment.

An example of an equipment list is illustrated below.

	EQUIPMENT LIST
1-	WALK-IN FREEZER
2-	WALK-IN REFRIGERATOR
3-	4 TIER STAINLESS STEEL SHELVING
4-	ENTRY DOOR
5-	HAND SINK
6-	3 COMPARTMENT POT SINK
7-	STAINLESS STEEL OVERSHELF
8-	ANSUL FIRE SYSTEM
9-	FULL SIZE FLOOR MODEL DEEP FRYER
10-	FLAT TOP 36" GRIDDLE
11-	O BURNER RANGE WITH OVEN BELOW
13	LITILITY DOOM FYHALIST FAN
14-	STAINLESS STEEL EXHAUST HOOD
15-	40 GALLON TILTING SKILLET
16-	DUAL STACK CONVENCTION OVEN
17-	36" CHARBROILER
18-	60X24 STAINLESS STEEL COUNTER WITH UNDERSHELF
19-	48X24 STAINLESS STEEL CLEAN DISH TABLE
20-	
21-	DRY STORAGE AREA
22-	UTILITY MOP SINK
23-	
25-	
26-	FREEZER COMPRESSOR
27-	REFRIGERATOR COMPRESSOR

PLAN REVIEW CHECKLIST

Below is a checklist to assist you with building your facility. Please refer to the Alaska Food Code (18 AAC 31) for further details.

EQ	UIPMENT SPECIFICATIONS	
	All sinks are self-draining. (Sink compartments drain completely, no pooling water.)	
	Dishwashing	
	Sink compartments are adequate for the complete immersion of most equipment and utensils.	
	Dishwashing machine (if provided)	
	□Heat sanitize rinse OR □Chemical sanitize rinse specify chemical	
	□Temperature gauges provided □Pressure Gauge provided	
	Self-draining drainboards on both sides of the machine	
	Template placard with operating specifications on dishwashing machine	
	Test kits/strips for verifying chemical or heat sanitizing rinse available	
	The operator of a bar or tavern shall ensure that a 4 th sink compartment, or separate handwash sink, is installed for	
	dumping drinks and handwashing.	
	Handwashing	
	At least one hand wash sink is provided in each food preparation area to be used exclusively for hand washing	
	Hand wash sink is accessible to mechanical ware washing equipment.	
	Hot and cold running water under pressure that can be tempered to a temperature of 100-120°F by a mixing valve or	
	combination faucet is provided	
	Soap provided	
	Individually dispensed paper towels are provided and mounted.	
	Trash receptacle provided	
	Sign posted directing employees to wash hands.	
	Utility Sink	
	At least one utility sink or curbed cleaning unit with a floor drain is provided.	
	Utility or curbed cleaning unit is not located in a preparation, processing, ware washing area or any other location	
	that could cause it to be a source of contamination to food, clean utensils, single serve items, or equipment.	
	Food Preparation Sink	
	A food preparation sink is provided for the frequent soaking, rinsing, culling or cleaning of raw ingredients or	
	produce, if needed.	
	Equipment Design and Location	
	Equipment, including ice makers and ice storage equipment, is not located under exposed sewer lines, non-potable	
	water lines, stair wells, or other potential sources of contamination.	
SANITATION AND PHYSICAL FACILITIES		
	Water Supply	
	Water is from a public water system that is constructed and operated as required by 18 AAC 80.	
	Potable water that is not piped to the food establishment, (haul and hold system) is transported, delivered, and	
	stored as required by 18 AAC 80.	
	If potable water tanks are used to hold water – has the water been tested for total coliform and E. coli? Are results	

available?		
Steam used in contact with food and food-contact surfaces is free from harmful substances and is from an approved		
source.		
Wastewater		
Wastewater from the establishment is discharged into a public sewer or a wastewater disposal system built and		
operated if required by 18 AAC 72.		
Plumbing		
Cross-connections between potable water and non-potable water supplies, chemical feed lines, or similar devices		
 die prominieu.		
Fixtures of equipment in which lood of drink is stored, prepared of served are indirectly connected to a drainage system.		
Non-potable water systems are used only for fire-protection, air-conditioning, heating, or flushing toilets. Pipes carrying non-potable water must be clearly labeled.		
Hot and cold running water under pressure provided to all plumbing fixtures with faucets, including hand wash,		
ware-washing, preparation, processing, and janitorial sinks.		
A floor drain is provided adjacent to the ware washing machine. Machine must be connected on the sewer side of the floor drain trap, provided that no other drainage line is connected between the floor drain waste connection and the fixture drain. The ware washing machine and floor drain must be trapped and vented properly.		
Grease traps, it used, thust be accessible for creating.		
I ollet facilities provided (if seating for patrons is provided, then separate facilities are needed for each sex.)		
Restrooms are mechanically vented to the outside.		
Self-closing device installed on restroom door.		
Hand soap available at all handwashing sinks.		
Hand drying facilities (dispense paper towels or hand-drying device that provides heated air) are available at all sinks.		
Handwashing signs provided at all handwash sinks used by employees.		
Hot and cold running water under pressure is available at each handwash sink. Hot water is tempered at 100-120° F by combination faucet or mixing valve.		
Self-closing metering faucets, if provided, have a flow of water for at least 10 seconds.		
Easily cleanable waste containers are provided; and in a toilet room used by females, a covered waste container is provided		
Toilet tissue in a wall-hung or protected container is provided at each toilet		
Entrances to toilet rooms are located so that access by the public does not require passing through a food		
preparation, handling or storage area.		
Garbage and Refuse		
Containers used to store garbage outside the food establishment must be easily cleanable, have tight-fitting lids		
doors, or covers, and must be kept reasonably clean.		
Rooms used to store garbage must be made of easily cleanable nonabsorbent washable insect-proof and rodent-		
proof materials		
Insect and Rodent Control		
Outside doors are self closing and rodent proof. (Tight fitting doors)		
ישנטועב מטטרא מרב אבוו-גוטאווע מווע דטעבות דוטטו. (דועדות וונוווע מטטרא)		

	Openable windows have a minimum #16 mesh screening		
	All pines 9, cleatricel conduit choose he cooled, wantilation systems subsystemd intel/connected		
	All pipes & electrical conduit chases be sealed; ventilation systems exhaust and intakes protected.		
	Area around building clear of unnecessary brush, litter, boxes and other harborage.		
	Lighting		
	Permanently installed artificial light sources are provided.		
	At least 50 food candles of light, evenly distributed on preparation, processing and warewashing		
	At least 20 foot candles of light, evenly distributed in other areas, dining areas must meet this standard		
	only during cleaning activities		
	Protective shielding provided.		
	□ a. over equipment used to hold or display food;		
	□b. in walk-in refrigerators or freezers		
	\Box c. over any area where food or food-contact surfaces are exposed such as preparation,		
	service, and display areas.		
	Ventilation		
	Fire prevention or extinguishing equipment installed in a hood does not obstruct cleaning or cause grease to collect.		
	Equipment that produces excessive heat, steam, condensation, vapors, noxious odor, smoke or fumes is		
	adequately vented to outside air through a hood and filter system.		
	Ventilation system prevents grease and other filth from collecting on walls and ceilings or from draining or dripping		
	on food or food contact surfaces.		
	Automated deep frying system with a ventless, hoodless design, if used, is approved by Underwriters Laboratories		
	(UL) and National Sanitation Foundation (NSF).		
	Commercial cooking equipment that produces grease-laden vapors is vented through a hood and grease collection		
	system designed and installed in accordance with the International Mechanical Code, 2003 edition, chapter 5,		
	sections 506-509, adopted by reference in 18 AAC31.011.		
Food Protection			
	Display shelving and equipment allows food to be stored at least 6 inches above the floor		
	Food in cases, or large containers of packaged foods, such as flour and sugar, are stored on dollies, skids, or open-		
	ended pallets if that equipment is easily moveable by hand or with the use of pallet-moving equipment that is		
	available on the premises at all times.		
	Food, food ingredients, utensils, equipment and packaging materials are not stored:		
	□ In a toilet room □ Under a refrigerator condenser prone to leaking		
	□ Under exposed sewer line □ Under a waterline prone to leaking		