

# **FATS, OILS AND GREASES (FOG) BEST MANAGEMENT PRACTICES FOR FOOD SERVICE ESTABLISHMENTS**

**How to successfully navigate the  
world of FOG compliance**

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**City of Phoenix**

**WATER SERVICES DEPARTMENT  
ENVIRONMENTAL SERVICES DIVISION**

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## INTRODUCTION

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**Fats, oil, and grease (FOG)** can have serious consequences when introduced to the sewer system. FOG entering the sewer system from food preparation and dishwashing can and will harden and build up eventually leading to a blockage in the city sewer or your own line. When a blockage occurs, the sewage coming from upstream backs up and finds another way out. It could exit through a manhole then run down the street or through a drain or clean out in your home or business.

The purpose of this manual is to give specific guidance for **Food Service Establishments (FSEs)** in the City of Phoenix to understand and comply with City Code Chapter 28 (Sewers). This document should be used in conjunction with Chapter 28 and City of Phoenix Amended Uniform and International Plumbing Codes. Users of the City's **Publicly Owned Treatment Works (POTW)** are required by Chapter 28 to comply with pretreatment requirements which enable the City to comply with the **Clean Water Act (CWA)**, (33 United States Code §§ 1251 et seq.), the General Pretreatment Regulations (40 Code of Federal Regulations, Part 403), and all other applicable federal and state laws. Chapter 28 prohibits all users of the city sewer system from discharging wastewater containing pollutants that will interfere with the operation and efficient functioning of the sewer including FOG. The City Environmental Services Division administers the pretreatment program.

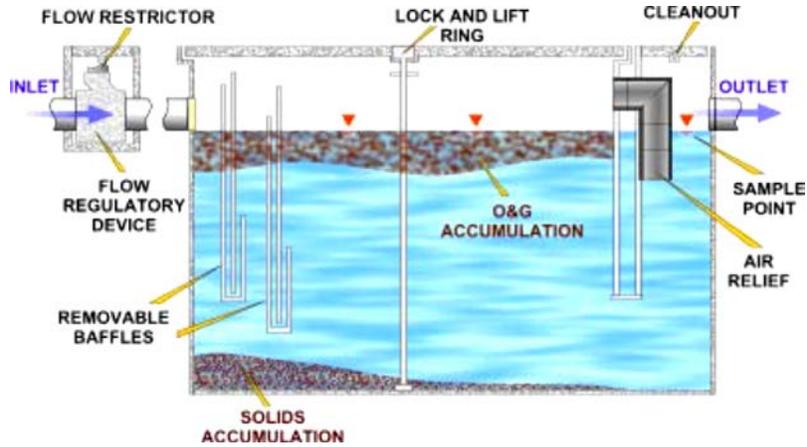
## GREASE INTERCEPTORS

All Food Service Establishments that prepare food on site in the City of Phoenix are required to have a grease interceptor to prevent FOG from discharging to the city sewer. There are two types of grease interceptors that are accepted by the City of Phoenix to comply with city code and although they are both interceptors they are very different.

### **HYDROMECHANICAL GREASE INTERCEPTORS**

Hydromechanical Grease Interceptors are also commonly known as grease traps. These units are usually small and installed indoors. They are approved for use in the City of Phoenix for food service establishments with up to four plumbing fixtures. A typical layout for a restaurant with a hydromechanical interceptor would be a three-compartment sink, prep sink, and mop sink all routed to a hydromechanical grease interceptor. No food waste disposal units (garbage disposals) or dishwashers can discharge to a hydromechanical grease interceptor, they must be routed to a gravity grease interceptor.

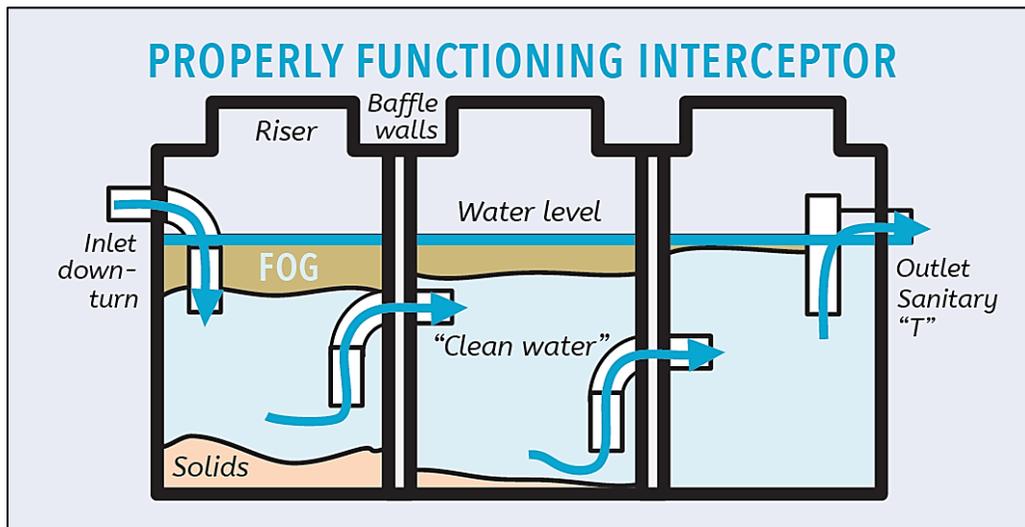
### Typical Hydromechanical Grease Interceptor



### GRAVITY GREASE INTERCEPTORS

Gravity Grease Interceptors are generally much larger than hydromechanical grease interceptors. These units are installed outdoors. They are required for use in the City of Phoenix for food service establishments with more than four plumbing fixtures. They are also required for any food service establishment with a food waste disposal unit (garbage disposal) or dishwasher regardless of the number of fixtures.

### Typical Gravity Grease Interceptor



## **MAINTENANCE OF GREASE INTERCEPTORS**

Routine maintenance is necessary to ensure proper operation of any interceptor. For an interceptor to work efficiently it needs to be completely pumped out and cleaned periodically. Most types of interceptors stop working effectively when fats, oils, and solids reach 25% of the device's capacity. If the FOG and solids occupy greater than 25% of the interceptor's capacity, the FSE is required to perform a full cleaning of the interceptor. Cleaning must be performed by a licensed pumper. The interceptor must be left completely empty upon completion of the pumping operation. The FOG mat, liquids, sludge and scrapings from the interior walls must be removed and disposed of at a licensed waste disposal facility. Under no circumstances, may the pumper reintroduce the removed water or materials into the interceptor or the sanitary sewer. The use of chemicals, enzymes, proteins, bacteria, grease solvents, or emulsifiers to temporarily dissolve fats, oils, and grease is prohibited.

### ***HOW OFTEN SHOULD I PUMP OUT MY INTERCEPTOR?***

1. Hydromechanical interceptors must be fully pumped out and cleaned every 30 days unless granted a variance by the Director. No hydromechanical interceptor may be allowed to go more than 90 days without maintenance.
2. Gravity interceptors at food service establishments that capture FOG must fully pump out and clean the interceptor at a frequency of not less than once every 3 months unless granted a variance by the Director.

Once open a new facility should monitor the interceptor with the help of their pumping company or an Environmental Services Inspector and adjust the frequency to the actual amount of FOG accumulated. Depending on the actual rate of grease accumulation the interceptor may need to be pumped more frequently.

Maintenance of grease interceptors is the sole responsibility of the user, or in the case of multiple user interceptors, the property owner. All records documenting maintenance activities, including invoices provided by third-party service contractors, need to be available on site for three years per PCC Chapter 28. Upon request, the user or owner must be able to provide the City with any documentation necessary to demonstrate that the maintenance requirements and frequencies are being met.

## **KITCHEN BEST MANAGEMENT PRACTICES (BMPS)**

The best and easiest way to prevent FOG related problems is to keep FOG from entering your facilities plumbing to begin with. Best Management Practices or BMPs are simple steps that can be taken to prevent grease from entering the drainage plumbing. Implementing BMPs can also save you money by reducing the pumping frequency needed for your grease interceptor and reducing the risk that a clogged sewer line could force your business to close temporarily.

- The less FOG that enters the grease interceptor the less the interceptor needs to be pumped and less money spent on pumping and disposal fees.
- Keeping FOG out of the plumbing from the start reduces the likelihood of a grease blockage in or downstream from your facility reducing the need for the routine jetting of the sewer lines, the possibility of having to shut down during business hours for an emergency overflow, or the possibility of causing damage downstream that you could be back billed to remediate.

## **THE FOLLOWING BMP'S SHOULD BE IMPLEMENTED IN ALL BUSINESSES WITH A KITCHEN:**

1. Train employees on the following BMPs and document the training.
2. Scrape or dry-wipe excess food and grease from pots, pans, fryers, utensils, screens and mats, then dispose of it in the trash instead of putting it down the drain.
3. Install screens on all kitchen drains to keep food scraps from going down the drain. Screens should be removable for frequent cleaning
4. Witness the Grease Interceptor Cleaning to ensure the pumping company is completely cleaning the interceptor. This is also a good time to inspect for damaged or missing parts.
5. Recycle waste cooking oil. There are many companies who specialize in taking waste cooking oil from fryers and other types of equipment to make fuels like biodiesel from it. Some companies pay for or offer discounts on interceptor pumping in exchange for used fryer oil.
6. Use "Spill Kits" to clean up grease and oil spills using dry methods prior to mopping. You can make your own spill kits with absorbent material such as absorbent pads or kitty litter.

## **ROUTINE INSPECTIONS**

The City of Phoenix Environmental Services Division Commercial Inspection Sections primary function is to educate and inspect Commercial facilities to ensure compliance with City Code and the Clean Water Act.

### **WHAT TO EXPECT FROM AN INSPECTION**

Commercial inspections are unannounced as the point of the inspection is to observe how a FSE is operating day to day rather than at the time of a scheduled inspection. For FSEs Commercial Inspectors try to come in off hours to have as little impact on the business as possible. All Commercial Inspectors will be in uniform, have City of Phoenix issued identification, and drive a City of Phoenix vehicle.

Upon arrival, the Commercial Inspector will present identification, explain the purpose of the inspection, and make the facility management/owner aware of the following rights:

- I may accompany the inspector(s) on the premises, except during confidential interviews.
- I have the right to copies of any original document(s) taken from the premises by the inspector(s) if the City is permitted by law to take the original document(s) (***The Commercial Inspection Section does not take original documents from facilities.***)
- I have the right to have a split or duplicate of any sample taken by the inspector(s) if the split or duplicate of the sample, where appropriate, would not prevent the City from conducting an analysis of the sample or render that analysis inconclusive (***The Commercial Inspection Section rarely takes samples.***)
- I have the right to copies of any analysis performed on samples taken by the inspector(s).
- Each person whose conversation with the inspector(s) is tape-recorded will be informed that their conversation is being recorded. (***The Commercial Inspection Section does not tape record interviews.***)

- Each person interviewed by the inspector(s) will be informed that their statements may be included in the inspection report.
- An appeal of a final decision by the City based on the result of the inspection may be brought in accordance with the applicable right of appeal provisions set forth in the Phoenix City Code and/or by way of a special action lawsuit in Maricopa County Superior Court.

**DURING THE INSPECTION, THE INSPECTOR WILL WANT TO SEE THE FOLLOWING:**

**GREASE INTERCEPTOR MAINTENANCE RECORDS**

- The maintenance records show the Inspector the frequency of interceptor maintenance. City code requires these records be kept on site for three years.

**THE GREASE INTERCEPTOR**

- The inspector will check the grease Interceptor to see if any parts are missing or if the interceptor itself has rotted out and needs to be replaced. The inspector will also check how much grease is in the interceptor to establish if the current maintenance schedule is adequate to keep the interceptor operating efficiently.

**THE KITCHEN AREA**

- The inspector will document how many grease bearing fixtures are in the facility. This includes sinks, floor sinks, floor drains, garbage disposals, mop sinks, dishwashers, etc. Counting the fixtures is necessary to determine if the current grease interceptor is properly sized.

**OUTSIDE**

- The inspector will look at the tallow bin and trash areas to ensure that the areas are clean and that no cooking oil or garbage is on the ground and that the dumpsters are closed when no one is adding trash to them. Oil and debris on the ground will be washed off the property into the storm drain system during rain events and end up in the environment which is a violation of Phoenix City Code Chapter 32C

At the end of the inspection the Inspector will review the findings with ownership/management. The Inspector can provide educational material and advice on how to better manage FOG. If there is an issue that needs correction; interceptor needs to be cleaned, broken or missing part, etc., the Inspector will issue a requirement to clean, replace, repair or anything that is needed to correct the problem. The Inspector will prescribe a time frame for the requirement to be completed. The time frame is based on the impact it will have on the sewer system and how much work it will take to complete. The Environmental Services Division goal it to gain compliance through cooperation. Extensions can be granted based on business needs if the request is in writing. Granting this extension does not preclude the City of Phoenix from taking enforcement action during the interim should a sewer blockage or any other violation of Phoenix City Code Chapter 28 occur.

## **INSTALLATION AND REPLACEMENT OF INTERCEPTORS**

Per plumbing code all grease interceptors installed and replaced in the City of Phoenix must go through plan review. Plans must be submitted with Planning and Development Division located on the 2<sup>nd</sup> floor at 200 W Washington Street. The reason plan review is important is it ensures that the grease interceptor that is being installed is sized correctly, approved for use in the City of Phoenix, and that all grease bearing fixtures are plumbed to the interceptor. Click [here](#) or see Appendix A for a list of City of Phoenix approved grease interceptors. Like for like replacements of hydromechanical interceptors can be submitted over the counter click [here](#) for details or see Appendix B. More information on plans submittal can be found on the Planning and Development Department website.

<https://www.phoenix.gov/pdd/development/permits/commercial/construction-plan-review>

### **SIZING FOR GREASE INTERCEPTORS**

Sizing for gravity and hydromechanical grease interceptors is based on City of Phoenix Amended International and Uniform Plumbing Codes and can be found on the City of Phoenix website at <https://www.phoenix.gov/pddsite/Pages/buildingcodeindex.aspx>.

### **HYDROMECHANICAL GREASE INTERCEPTOR SIZING**

Hydromechanical grease interceptor sizes are based on flow rate and grease capacity. A size 50/100 Hydromechanical grease interceptor would have maximum flow rate of 50 gallons per minute and can hold 100 gallons of FOG.

The sizing criterion for hydromechanical grease interceptors is strictly based on the number of grease bearing fixtures as shown in the table below.

**HYDROMECHANICAL GREASE INTERCEPTOR SIZING BASED ON FIXTURE COUNT**

Total Number of Grease Retention Fixtures Connected	Total Flow-Through Rating (gpm)	Grease Retention Capacity Equal to or Greater Than (pounds)
1	20	40
2	25	50
3	35	70
4	50	100

All hydromechanical interceptor must be constructed of a corrosion resistant material (stainless steel or polymer). All approved hydromechanical grease interceptors must be Plumbing and Drainage Institute (PDI) certified or UPC/IAPMO certified.

### **GRAVITY GREASE INTERCEPTOR SIZING**

Gravity grease interceptor sizes are based on capacity in gallons. The minimum size allowed in the City of Phoenix is 500 gallons. Gravity grease interceptors are sized adding together the Drainage Fixture Units (DFUs) for each grease bearing fixture multiplied by 3 gallons per minute and multiplied by a 12- or 17-minute retention time; 17 minutes if there is a garbage disposal 12 if there is not. DFUs for each type of fixture can be found in Phoenix Amended Plumbing code. Example below:

Given: A restaurant with the following fixtures and equipment.

One food preparation sink; three floor drains – one in the food prep area, one in the grill area, and one receiving the indirect waste from the ice machine and mop sink.

Kitchen Drain Line DFU Count:

3 floor drains at 2 DFUs each = 6 DFUs

Mop sink at 3 DFUs each = 3 DFUs

Food prep sink at 3 DFUs each = 3 DFUs

Total = 12 DFUs

12 DFUs x 3 GPM x 12 minute retention time = 432 gallons. The interceptor will be sized at 500 gallons (1893 L).

Click [here](#) or see Appendix C for a printable gravity interceptor sizing worksheet.

## **APPLICABLE REGULATIONS**

The (CWA) is the primary federal law in the United States governing water pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters by preventing point and nonpoint pollution sources, providing assistance to POTW for the improvement of wastewater treatment, and maintaining the integrity of wetlands and other waters of the United States. Its implementing regulations are codified at 40 Code of Federal Regulations (CFR).

### **40 CFR 403.5 - NATIONAL PRETREATMENT STANDARDS: PROHIBITED DISCHARGES:**

is the collection of federal regulations limiting pollutants that can be discharged to a POTW. It includes solid or viscous pollutants that are able to cause obstruction to the flow in the POTW, this includes FOG.

### **CITY OF PHOENIX CITY CODE CHAPTER 28**

28-8 General user prohibitions and effluent limits.

It is unlawful for any user to discharge or cause to be discharged to the POTW any of the following:

- (3) Solid or viscous pollutants, **FOG**, petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin that can cause interference or pass-through or that can cause obstruction to the flow in sewers or other damage to the POTW;

28-12 Interceptors—Required.

Interceptors must be installed and operated by laundries, food service establishments, service stations, auto repair shops, carwashes, commissaries, and other facilities when the Director determines they are necessary for the proper handling of liquid wastes containing grease or oil in excessive amounts, or any flammable wastes, solids, or other harmful ingredients.

28-13 Interceptors—Type; capacity; location.

Interceptors must be of a type and capacity approved by the Director. The Director will maintain a list of approved interceptors, which will be published by the Department. Additional type and capacity requirements are established in policy and the current adopted plumbing code, and will be published by the Department. All interceptors must be located as to be free from obstructions, and readily and easily accessible for cleaning and inspection. If an interceptor is located in a potentially hazardous location, such as active traffic locations, the Director reserves the right to temporarily close the area to traffic to allow inspection of the device.

28-15 Interceptors—Maintenance.

Interceptors must be maintained by the user in continuously effective operating condition at all times, which minimally requires the following: (1) periodic removal of all accumulated grease, lint, oil, sand, sludge, solids, wastewater, and other materials; (2) thorough cleaning of the pretreatment device interior; and (3) necessary repairs to internal structures. Records and documentation must be available at the facility or site for a minimum of 3 years from the date created and be made available to the Director upon request.



## City of Phoenix

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### City of Phoenix approved gravity interceptors:

1. Jensen Precast
2. Highland Tank
3. Green Turtle
4. Xerxes\*
5. Olson Precast of Arizona
6. Oldcastle Infrastructure
7. Shier GGI-500\*
8. Striem OT-500 thru 1500\*\*

\* Food Service only

\*\*Sand/Oil Separator not for Food Service use

**CITY OF PHOENIX APPROVED GRAVITY INTERCEPTORS 500-GALLONS SHALL HAVE A MINIMUM OF TWO MAN-WAYS AND TWO COMPARTMENTS. GRAVITY INTERCEPTORS 750-GALLONS AND LARGER SHALL HAVE A MINIMUM THREE MAN-WAYS AND A MINIMUM OF 2 COMPARTMENTS. ALL GRAVITY INTERCEPTORS SHALL BE DESIGNED BY A REGISTERED ENGINEER AND IAPMO CERTIFIED.**

### City of Phoenix approved hydromechanical grease traps:

1. 20gpm/≥40lb
2. 25gpm/≥50lb
3. 35gpm/≥70lb
4. 50gpm/≥100lb

**All hydromechanical interceptor must be constructed of a corrosion resistant material (stainless steel or polymer). All approved hydromechanical grease interceptors must be Plumbing and Drainage Institute (PDI) certified or UPC/IAPMO certified.**



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## Environmental Services Division (ESD)

### **REQUIREMENTS FOR OVER-THE-COUNTER INTERCEPTOR/TRAP REPLACEMENT. LIKE FOR LIKE ONLY.**

**Over the counter reviews for a permit. To submit plans Over-The-Counter for plan review the following must apply:**

- 1) The Business/Location must have a Certificate of Occupancy for a restaurant or Development Services Department will not accept the plans.
- 2) The job is small and involves PLUMBING ONLY.

**To submit plans Over-The-Counter to replace a Grease interceptor/trap the plans must have following:**

#### The Business

- 3) Name of business
- 4) Address of business: Including the Number, Direction, Street Name, Street Type, and Zip Code (include the Suite Number if the business is one of several suites at the address).
- 5) Show all existing Grease Bearing Fixtures (GBF) within the restaurant.
- 6) The plans should show that ALL GBF are routed to appropriately sized Grease Trap or Grease Interceptor.
- 7) The plans must have an orientation mark of some form (and indication of North for example)

#### The Pretreatment Device

- 1) The name of the manufacturer of the pretreatment device.
- 2) The Model Number or size of the pretreatment device. Note that all pretreatment devices must be pre-approved by the City of Phoenix Environmental Services Division.
- 3) Gravity Grease Interceptor: The device must be an approved model from a City of Phoenix approved vender. The ESD can provide a list of approved devices and vendors. The smallest model Grease interceptor allowed by the Environmental Services Division is 2-compartment 2-man-way 500-gallon unit.
- 4) Hydromechanical Grease Trap: The device must be PDI, IAPMO (International Association of Plumbing and Mechanical Officials) approved or UPC (Uniform Plumbing Code) listed.

#### Other Considerations

- 1) If there is any re-piping involved, then the drawings must be submitted for review. A plumbing floor plan layout and an Isometric Drawing must be included in the submittal for review. (For example, a fixture that must be rerouted OR a new fixture added then an isometric drawing must be included that depicts the pipe size and venting. If all the plumbing is to remain the same with only a different pretreatment device, then an only plumbing floor plan layout will be required.
- 2) If the device is being installed because an Environmental Services Division inspector made a requirement that it be installed, please bring a copy of the Commercial Inspection Report.
- 3) **ALL DRAWINGS MUST BE LEGIBLE OR THE REVIEW WILL BE DENIED.**

**Please call (602) 495-0278 at least 24-hours in advance to schedule an appointment such that an Environmental Services Division inspector can be on hand to conduct the ESD portion of the review.**

GREASE BEARING FIXTURES include floor sinks, floor drains, mop sinks, trough sinks, trough drains, pre-wash sinks, prep sinks, pot sinks, can wash sinks, dishwashers, garbage disposals, etc. in the kitchen prep or wash area.

Hand wash sinks do not apply.



Date:

Food Service Establishment:

Address:

FIXTURETYPE	COMMENTS	TRAPARM SIZE	DFUs	No of FIXTURES	TOTALDFUs
FLOOR DRAIN		2",3" OR 4"	2		
FLOOR SINK	EXCLUDE FLOOR SINKS USED FOR FIXTURES ACCOUNTED FOR IN "SINKS W/FOOD WASTE"	2",3" OR 4"	3		
TROUGH DRAIN		2",3" OR 4"	2		
TROUGH DRAIN at Tilt or Soup Kettle	USE TRAP SIZE	2" x 2	4		
		3" x 2	6		
		4" x 2	8		
MOP / SERVICE SINK		1½" OR 2"	3		
SINKS W/ FOOD WASTE	ANY SCULLERY, FOOD PREP, OR PREWASH SINKS (hand sinks excluded)	1½" OR 2"	3		
FOOD WASTE DISPOSAL(S)		2"	3		
DISHWASHER(S)		2x the trap arm size			
		2" x 2	4		
		3" x 2	6		
		4" x 2	8		
<b>TOTALS</b>					
<b>GGI FORMULAS:</b> Gallons (capacity) = DFU * 3 * 12 w/o Disposal Gallons (capacity) = DFU * 3 * 17 w/ Disposal			<b>INTERCEPTOR SIZE =</b>		
FIXTURE TYPE	COMMENTS	TRAP ARM SIZE	FLOW RATE	No of PUMPS	TOTAL Flow Rate
GRINDER PUMP (for all fixtures)	Pump routed to gravity interceptor in lieu of solids interceptor	Pump Flow Rate (gpm)			
<b>GGI FORMULA:</b> Gallons (capacity) = Flow Rate * 17 w/ Grinder Pump			<b>INTERCEPTOR/TANK SIZE=</b>		

GGI - Gravity Grease Interceptor

Total No Fixtures Connected	Required Rate of Flow per Minute	Grease Retention Capacity (lbs.)
1	20	40
2	25	50
3	35	70
4	50	100

Gravity grease interceptors and hydromechanical grease traps are uniformly sized for International Plumbing Code and Uniform Plumbing Code

For more information or for a copy of this publication in an alternate format, contact Planning & Development at 602-262-7811 voice or TTY use 7-1-1.

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