Building Inspection and Water Utility Departments

DATE: January 1, 2011

TO: Water and Sewer Customers

FROM: Steve O'Neal, CBO, Chief Building Official
Industrial Waste Monitoring and Pretreatment Officers

SUBJECT: **Grease Interceptor Regulations**

The City of Lubbock has two separate regulations that govern the need for and the installation of grease traps and interceptors. Section 1003 of the 2006 International Plumbing Code provides prescriptive requirements for grease traps and Chapter 22 of the Code of Ordinances ("Wastewater Regulations") prohibits the introduction, and mandates the pretreatment of wastewater that contains certain substances, including concentrations of fats, oils and greases ("FOG") of greater than 250 mg/L by weight.

The attached material provides a prescriptive design document that enables compliance with all applicable City ordinances. Pretreatment devices as set forth in the attached document, or any pre-approved equivalent that will eliminate the prohibited discharge, must be installed any time there are (1) new installations of pretreatment devices; or (2) repairs or replacements of existing pretreatment devices. The City Building Inspection Department will require compliance any time that the Plumbing Code requires a permit for related construction or remodeling.

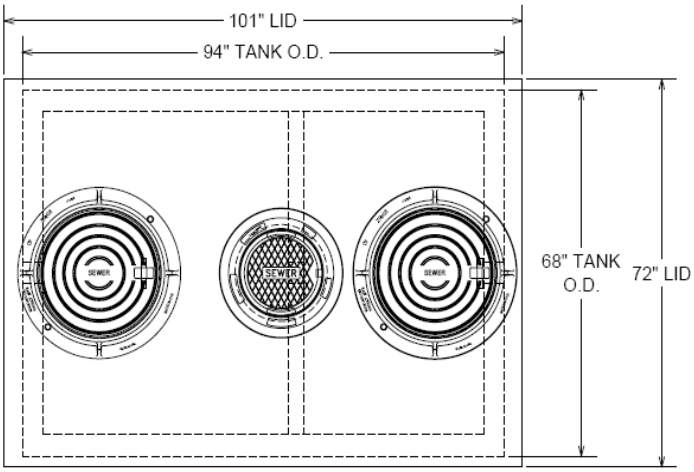
Additionally, please note that the Wastewater Regulations require compliance with the discharge regulations set forth therein at all times. Although you may be inspected at any time to assure compliance with the Wastewater Regulations, you will likely be inspected in the event (1) there is a change in ownership or tenancy of a facility, or (2) there is a related construction or remodeling project that requires a permit from the City. You will also be inspected in the event the City has reason to believe that illegal discharges are occurring.

The Wastewater Regulations require a higher level of compliance to control the amount of FOG in the discharge in order to minimize damage to the collection system which contributes, among other things, to accidental wastewater discharges in violation of state and federal regulations.

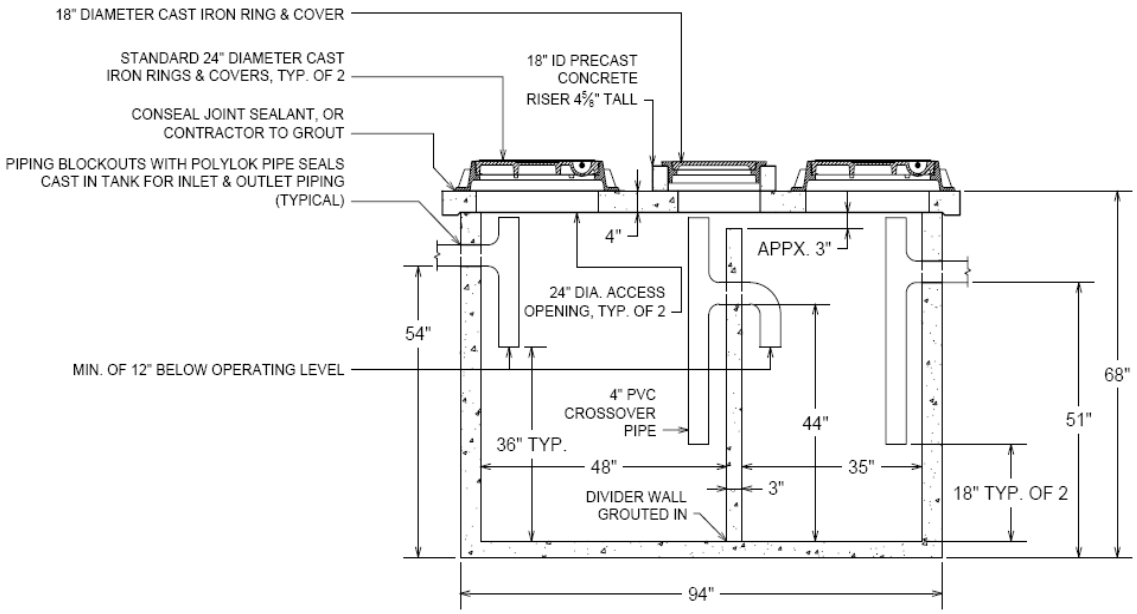
Your compliance with these regulations is required by law and very much appreciated by the City. In addition to achieving compliance with all applicable ordinances, a system designed and maintained as per these standards should minimize potentially significant wastewater surcharges and fines to the owner/operator. Please call the following numbers for more information or if we can assist in answering questions.

Chief Building Official, (806) 775-2080
Industrial Waste Monitoring and Pretreatment (806) 775-2626

GUIDANCE DOCUMENT
FOR SIZING AND INSTALLATION
OF GREASE INTERCEPTORS



PLAN VIEW



SECTION VIEW

City of Lubbock Water, Utilities, Industrial Waste Monitoring and Pretreatment
(806) 775-3221

Part I: Guidance for Grease Interceptor Sizing and Design Criteria

A. Introduction:

Information contained within this document is based on standard industry practices and guidance found in both the 1997 International Plumbing Code (IPC) Commentary and the Uniform Plumbing Code (UPC), Appendix H. Size, type, and location of grease traps shall be in accordance with the manufacturers instructions, City of Lubbock Plumbing Codes Section, and Code of Ordinance, 22.04, Wastewater System, Division 5, Section 173.

B. Applicability:

These requirements are applicable to all commercial food service establishments, including those that are undergoing:

1. New construction.
2. Interior remodeling to accommodate expansion or operational modifications.
3. Changes of ownership/occupancy.
4. Any facility which may be experiencing difficulty achieving compliance with maintenance and/or wastewater discharge limitations.

C. Sizing Requirements:

Sizing methods described herein are intended as guidance in determining grease trap/interceptor sizes that will afford the City's sanitary sewer system a minimum degree of protection against grease and other obstructing materials. In approving a customer's plumbing or grease interceptor design, the City does not accept liability for the failure of a system to adequately treat wastewater to achieve effluent quality requirements specified under City Of Lubbock, Code of Ordinance 22.04, Wastewater System, Division 3, Section 083 (2). It is the responsibility of the generator and/or contractors to insure the appropriate level of treatment necessary for compliance with wastewater regulations.

Minimum acceptable grease interceptor sizing shall be accomplished as follows:

a. Sizing according to formulas found in Section D below.

b. Where sizing formulas result in determination of a grease interceptor less than 750 gallons in capacity, this minimum size is required wherever possible.

c. In the circumstance of "single service kitchens" with no food preparation (heat/serve only), and which use only paper service items, a minimum 50 gallon per minute (gpm) flow rated, or 100 pound grease retention, mechanical grease trap may be used. In these instances, the grease trap is to be installed in an area separate from food handling area, and the trap must be readily accessible for cleaning and maintenance. (See Section F, below)

D. Grease Interceptor Sizing Formulas:

It is the responsibility of the generator and his/her contractors to ensure that the wastewater discharged from their facility is in compliance with the City's discharge limitations. For the purpose of plans review, a general assessment of grease trap/interceptor design and size will be performed using the following formulas. (These formulas have been demonstrated as industry standards capable of achieving the City's discharge criteria when systems are maintained in proper condition.)

Method 1: Uniform Plumbing Code, Appendix H (Grease Interceptor Sizing Worksheet Available)

Number of meals Per peak hour (1)	x	waste flow rate (2)	x	retention time (3)	x	storage factor (4)	=	Size Requirement (liquid capacity)

Factors:

1) Number of meals served at peak operating hour (Seating Capacity) x Peak Factor
    a. Where Peak Factor for Fast Food Restaurant is……...1.33
    b. And, Peak Factor for all other food service types is….1.00

2) Waste Flow Rate:
    a. With Dishwasher……6 gallon flow
    b. Without Dishwasher……...5 gallon flow
    c. Single Service kitchen……..……. 2 gallon flow
    d. Food waste disposer…….. 1 gallon flow
3) Retention Times
    a. Commercial kitchen waste/dishwasher……2.5 hours
    b. Single service kitchen/single serving……1.5 hours
4) Storage Factors
    a. Fully equipped commercial kitchen …..8 hr operation…1
    b. ……..16 hr operation…2
    c. ……..24 hr operation…3
    d. Single Service Kitchen…….……1.5

The Uniform Plumbing code includes a built-in safety factor that can yield very large grease interceptor size specifications. At this time, the City is not requiring interceptors larger than 2,000 gallons. However, the decision to use a trap smaller than that specified by the formula and calculations above is to be addressed in the plan submission.

Method 2: Five (5) Hour Detention/Peak Flow

A. Gallons of water used per hour of operation
B. A x 0.75 = average "gray water" flow per hour
C. B x 1.9 peak flow factor
D. C x 5 hours detention = volume of trap

Required volume of trap = A x B x C x D

E. Alternate Sizing Formulas / Proposals

Food service establishments that propose the use of alternate sizing techniques and/or procedures that result in specifications that differ from calculated requirements (or are less than the MIMIMUM 750 gallon recommendation), must submit:

1. Alternate Sizing Worksheet - must be signed by a licensed plumbing contractor or professional engineer.
2. Alternate Sizing Letter – must be signed by the owner/operator of the facility.
3. Data to support the installation of the proposed alternate size grease interceptor and any documentation that demonstrates the facility's ability to meet effluent quality requirements.
4. Detailed specifications on the grease interceptor/trap being proposed.

Grease and oil interceptors/traps shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction, watertight and equipped with easily removable covers which, when bolted in place, shall be gastight and watertight. Proposed grease interceptors/traps shall not:

a. Warp, twist, become distorted or deformed when properly installed.
b. Be constructed of materials that are not easily corroded by wastewater and/or the gases associated with wastewater.

F. Construction/Installation: Modifications to this section in blue become effective September 1, 2011

All permitting, construction, and inspection activities must be completed in accordance with the City of Lubbock Plumbing Code. Additionally, the following specifications must be incorporated into grease interceptor design.

a. The grease interceptor shall be constructed with a minimum of one baffle.

b. Grease interceptors are to be installed at a minimum distance of 10 ft. from sinks and dishwashers to allow for adequate cooling of the wastewater. Water temperatures must be less than 120 degrees prior to entering grease interceptor.

c. All grease bearing waste streams should be routed through an appropriate grease interceptor, including: three-compartment sinks, pot/pan sinks, soup kettles, hand-washing sinks, dishwashers, mop sinks and floor drains.

   Notable Exceptions: Drains that receive "clear waste" only, such as from ice machines, and condensate from coils a may be plumbed to the sanitary system without passing through the grease interceptor with the condition that the receiving drain is a "hub" type that is a minimum of two inches above the finished floor.

d. All concrete grease interceptors will be equipped with two sets of twenty four inch diameter manhole type rings and lids, one on the primary side and one on the secondary side, to serve as maintenance access ports. Interceptors with a center inspection port shall install a minimum eighteen inch diameter cast iron ring and lid over the port.

e. Acceptable materials that can be used to construct risers for manholes and/or center inspection ports on concrete interceptors are as follows:

Traffic Rated locations:

1. Concrete Grade Rings- 4,000 PSI minimum
2. Reinforced Concrete Pipe (RCP) – 4000 PSI minimum

Non-Traffic locations:

1. Concrete Grade Rings - 4,000 PSI minimum
2. Reinforced Concrete Pipe (RCP) - 4000 PSI minimum
3. High Density Polyethylene (HDPE) Grade Rings
4. Black Double Wall Corrugated HDPE Pipe

Note: Bricks, cinder blocks, wood products, corrugated galvanized steel or aluminum pipe, PVC pipe and any other materials not listed above are not acceptable to construct manhole risers for concrete grease interceptors.

Grout & Sealants:

1. Ram-Nek or its equivalent must be used to seal between the grease interceptor lid, each grade ring and the manhole ring.
2. The first grade ring must also be grouted to the grease interceptor lid.

f. **Composite, Polyethylene, Fiberglass and Metal Grease Interceptors**
These interceptors may only use manufacture supplied manhole and inspection port risers. If located in traffic areas the interceptors, risers and lids must be H-20 rated.

g. All Grease Interceptors are to be installed with an Effluent Sampling Well. Sample wells will have a minimum10" diameter access cover and a minimum 6" drop from inlet to outlet piping through the sampling well. Sample wells must be located in areas that are protected from vehicle traffic, where they cannot be driven over or parked on. Mechanical Grease Traps and Interceptors that are installed above ground must be equipped with an influent flow regulator and an effluent valve assembly that allows for sample collection.

G. Customer (Generator) Responsibilities:

It is the responsibility of the customer (waste generator) to insure compliance with the City of Lubbock's discharge limitations specified in City Of Lubbock, Code of Ordinance 22.04, Wastewater System, Division 3, Section 083 (2).

Hazardous wastes, such as acids, strong cleaners, pesticides, herbicides, paint, solvents, or gasoline shall not be disposed of where they would go through grease interceptors or grit traps. Care must be taken in system design when commercial dishwashers are discharged through a grease interceptor. Dishwashers use detergents and elevated water temperatures that will melt grease. If the interceptor is either too small or too close to the commercial dishwasher, grease may pass through the interceptor and into the collection system.

Generators are responsible for maintaining grease interceptors in continuous proper working condition, by removing the oil and grease buildup in the interceptor at sufficient intervals to insure compliance with, City Of Lubbock, Code of Ordinance, 22.04, Wastewater System, Division 5, Section 173 (c) (1). Further, generators are responsible for inspecting, repairing,

replacing, or installing apparatus and equipment as necessary to ensure proper operation and function of grease interceptors and compliance with discharge limitations at all times.

The City Of Lubbock and TCEQ require grease trap/interceptor maintenance records be maintained on site for three (3) years.

The City Of Lubbock, Industrial Waste Monitoring and Pretreatment (IWMP) section discourages the use of enzymes, solvents, and emulsifiers as they will only change the form of grease, allowing it to be carried out of the trap/interceptor with the wastewater and deposited in the collection system.

Part II: Other types of Interceptors and sizing requirements

Interceptors are required for oil, grease, sand and other substances harmful or hazardous to the building drainage system, the public sewer or sewage treatment plant. Design, size, and location of pretreatment devices must be submitted by a licensed plumbing contractor or professional engineer for review and approval.

A. Laundries

Commercial Laundries, Laundromats, and dry-cleaners shall be equipped with an interceptor in order to reduce the quantity of lint and silt that enter the collection system. The system must be of adequate size and design to allow for cool-down of wastewater so that separation can be more readily achieved. The interceptor must be installed with a wire basket or similar device, removable for cleaning that prevents passage into the drainage system of solids larger than1/4 inch in any dimension, string, rags, buttons or other materials detrimental to the public sewerage system.

Sizing must be in accordance with guidance found in the Uniform Plumbing Code (UPC), Appendix H, which uses the following formula:

(TGC) x (CPH) x (RT) x (ST) = Size of Lint Interceptor (gallons)

Where:
TGC = Total Gallons per Cycle
CPH = Cycles per hour
RT = Retention time
2.5 for Institutional Laundry
2.0 for Standard Commercial Laundry
1.5 Light Commercial Laundry
ST = Storage Factor, based on hours of operation;
1.0 for 8 hours of operation
1.5 for 12 or more hours

Currently, no effluent sample well is required for small commercial laundries. However, large and/or industrial laundries may be subject to Federal Pretreatment regulations. For more information please contact the, Industrial Waste Monitoring and Pretreatment Division, at (806) 775-2626.

B. Car Washes

Self service car washes shall have grit separators with a minimum capacity of 1000 gallons for the first bay, with an additional 500 gallons of capacity for every other bay.

Additionally, wash racks must be constructed to eliminate or minimize the impact of run-off from rain/storm events. Minimum requirements are roofed structures with at least two walls and appropriate grading to prevent stormwater infiltration into the sanitary sewer.

An effluent sampling well is required, per specifications listed in Part 1, Section F, Subsection e.

C. Automotive Repair Facilities (Garages and Service Stations)

Where automobiles are serviced, greased, or repaired or where gasoline is dispensed, oil/water separators shall have a minimum capacity of 500 gallons for the first 1000 square feet of area to be drained, plus 250 gallons for each additional 1000 square feet of area to be drained into the separator.

An effluent sampling well is required, per specifications listed in Part 1, Section F, Subsection e.

Note: Parking garages shall not require a grit separator unless vehicle servicing, repairing, washing or, gasoline dispensing occurs. Areas in commercial garages utilized only for storage of automobiles are not required to be drained through a grit separator.

Known Vendors:

Grease Interceptors, Grease Traps, Sample Test Wells, Drain Grates & Screens

Company	Phone	Products
C&M Supply Co. Lubbock, Texas	(806) 747-3557	Plastic Grease Traps, 50 & 70 GPM, Drain Grates & Screens
Ferguson Bath & Kitchen Lubbock, Texas	(806) 762-0241	Metal Grease Traps, Precast Concrete Interceptors, Sample Test Wells, Drain Grates & Screens
Morrison Supply Co. Lubbock, Texas	(806) 765-6888	Metal Grease Traps, Sample Test Wells, Drain Grates & Screens
Oberkampf Supply Lubbock, Texas	(806) 747-4481	Metal Grease Traps, Precast Concrete Interceptors, Sample Test Wells, Drain Grates & Screens
Vaughn Concrete Prods. Inc. Amarillo, Texas	(877) 827-8255	Precast Concrete Interceptors, Sample Test Wells
Consolidated Concrete Prods. Hewitt, Texas	(254) 666-4000	Precast Concrete Interceptors, Sample Test Wells
Drain Saver Lubbock, Texas	(888) 557-2837	Commercial & Residential Drain filters
Manville's Newbury Park, California	(805) 499-5565	Floor Sink Liners
Green Turtle Americas Charlotte, NC	(877) 428-8187	Grease & Solids Interceptors Oil & Sediment Interceptors, Sample Test Wells
Park USA Dallas, Texas	(866) 842-8801	Grease, Oil & Sand Interceptors Sample Test Wells Inlets / Acid Tanks
Schier Products Edwardsville, KS	(800) 827-7119	Grease, Oil & Sand Interceptors Sample Test Wells

The companies or vendors listed above are those currently known to the City of Lubbock as providing pretreatment devices, products or equipment. It is possible that other companies or vendors may manufacture and/or provide other acceptable pretreatment devices, products or equipment. In the event you would like to know whether the product, device or equipment you are considering installing is acceptable to the City of Lubbock or if you would like for your company to be added to this list, please contact the City Of Lubbock Industrial Waste Monitoring & Pretreatment Office at 775-2626.

Grease Interceptor Sizing Worksheet

The Uniform Plumbing Code Formula

Company		**Calculated By**		**Date**	
Project		**Location**			

Follow these six simple steps to determine grease interceptor size.

	No of Meals Per Peak Hours		Waste Flow Rate		Retention Time		Storage Factor		Calculated Interceptor Size		Grease Interceptor
Enter Calculations Here >		X		X		X		=			
	Step 1		Step 2		Step 3		Step 4		Step 5		Step 6

1

Number of Meals Per Peak Hour (Recommended Formula):

Seating Capacity		Meal Factor		Meals per Peak Hour
	X		=	

Establishment Type:	**Meal Factor**
Fast Food (45 min)	1.33
Restaurant (60 min)	1.00
Leisure Dining (90 min)	0.67
Dinner Club (120 min)	0.50

Notes:

2

Waste Flow Rate:

Condition	**Flow Rate**
With a Dishwashing Machine	6 Gallons
Without a Dishwashing Machine	5 Gallons
Single Service Kitchen	2 Gallons
Food Waste Disposer Only	1 Gallon

Notes:

3

Retention Time

Commercial Kitchen Waste Dishwasher	2.5 Hours
Single Service Kitchen Single Serving	1.5 Hours

Notes:

4

Storage Factor

Kitchen Type	**Storage Factor**
Fully Equipped Commercial	
Hours of Operation	
8 Hours	1.00
12 Hours	1.50
16 Hours	2.00
24 Hours	3.00
Single Service Kitchen	1.50

Notes:

5

Calculate Liquid Capacity

Multiply the values obtained from step 1, 2, 3 and 4. The result is the approximate grease interceptor size for this application

Notes:

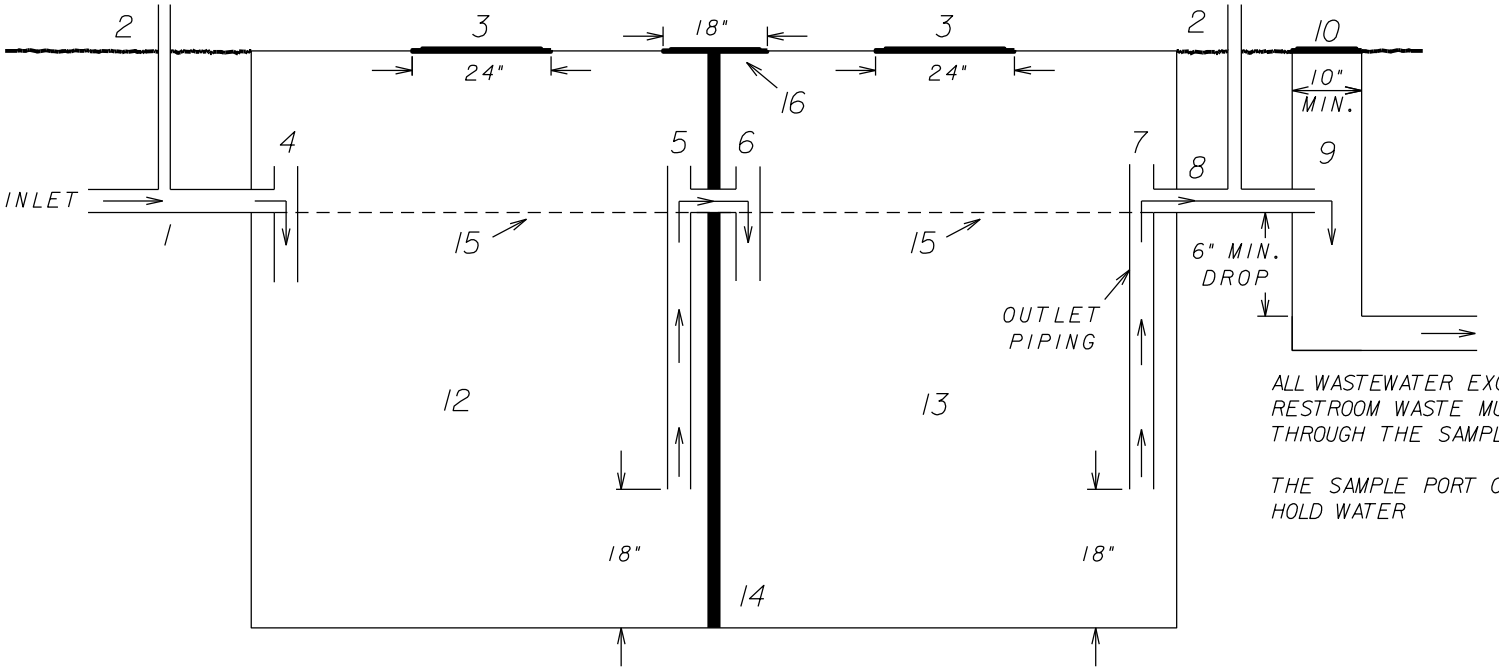
6

Select Grease Interceptor

Using the approximate required liquid capacity from step 5, select an appropriate size as recommended by the manufacturer.

Notes:

TYPICAL GREASE INTERCEPTOR & SAMPLE PORT INSTALATION



ALL WASTEWATER EXCEPT RESTROOM WASTE MUST FLOW THROUGH THE SAMPLE PORT.

THE SAMPLE PORT CANNOT HOLD WATER

SIDE VIEW
N.T.S.

1. INFLUENT LINE
2. VENT
3. MINIMUM 24 INCH OPENING WITH A RING & LID
4. PRIMARY CHAMBER INLET PIPING (MUST EXTEND 1 FOOT BELOW THE OPERATING LEVEL)
5. PRIMARY CHAMBER OUTLET PIPING (MUST BE EXTENDED TO 18 INCHES FROM THE BOTTOM OF THE CHAMBER)
6. SECONDARY CHAMBER INLET PIPING (MUST EXTEND 1 FOOT BELOW THE OPERATING LEVEL)
7. SECONDARY CHAMBER OUTLET PIPING (MUST BE EXTENDED TO 18 INCHES FROM THE BOTTOM OF THE CHAMBER)
8. GREASE INTERCEPTOR DISCHARGE LINE
9. SAMPLE PORT MINIMUM 10 INCH DIAMETER, PROVIDE AT LEAST A 6 INCH VERTICAL DROP FOR THE GREASE INTERCEPTOR DISCHARGE)
10. SAMPLE PORT RING & LID
11. SAMPLE PORT DISCHARGE LINE TO THE CITY SEWER
12. PRIMARY CHAMBER
13. SECONDARY CHAMBER
14. BAFFLE (MUST BE SEALED)
15. GREASE INTERCEPTOR OPERATING LEVEL
16. SOME GREASE INTERCEPTORS HAVE AN 18 INCH OPENING OVER THE CENTER PARTITION. IF SO IT MUST BE EXTENDED TO GRADE & HAVE A CAST IRON RING & LID INSTALLED

NOTES:

FOR MORE INFORMATION PLEASE CALL THE INDUSTRIAL WASTE MONITORING & TREATMENT OFFICE AT (806) 775-2626

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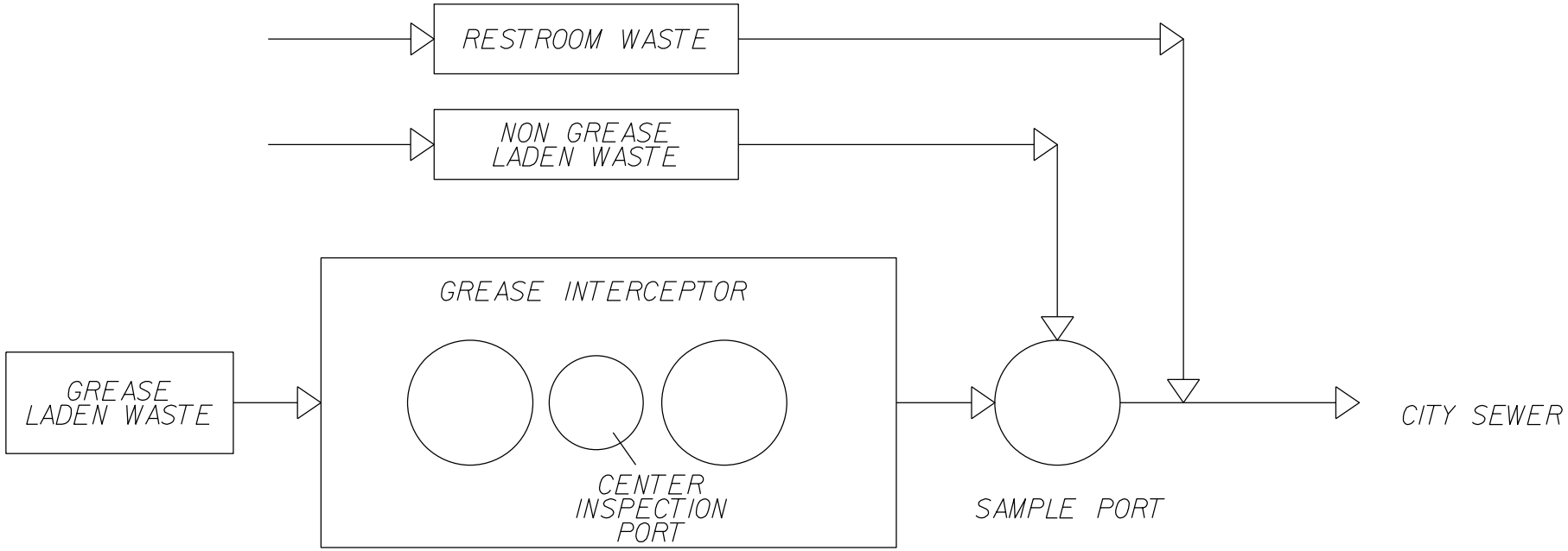
TYPICAL GREASE INTERCEPTOR & SAMPLE PORT PIPING LAYOUT



NOTES:

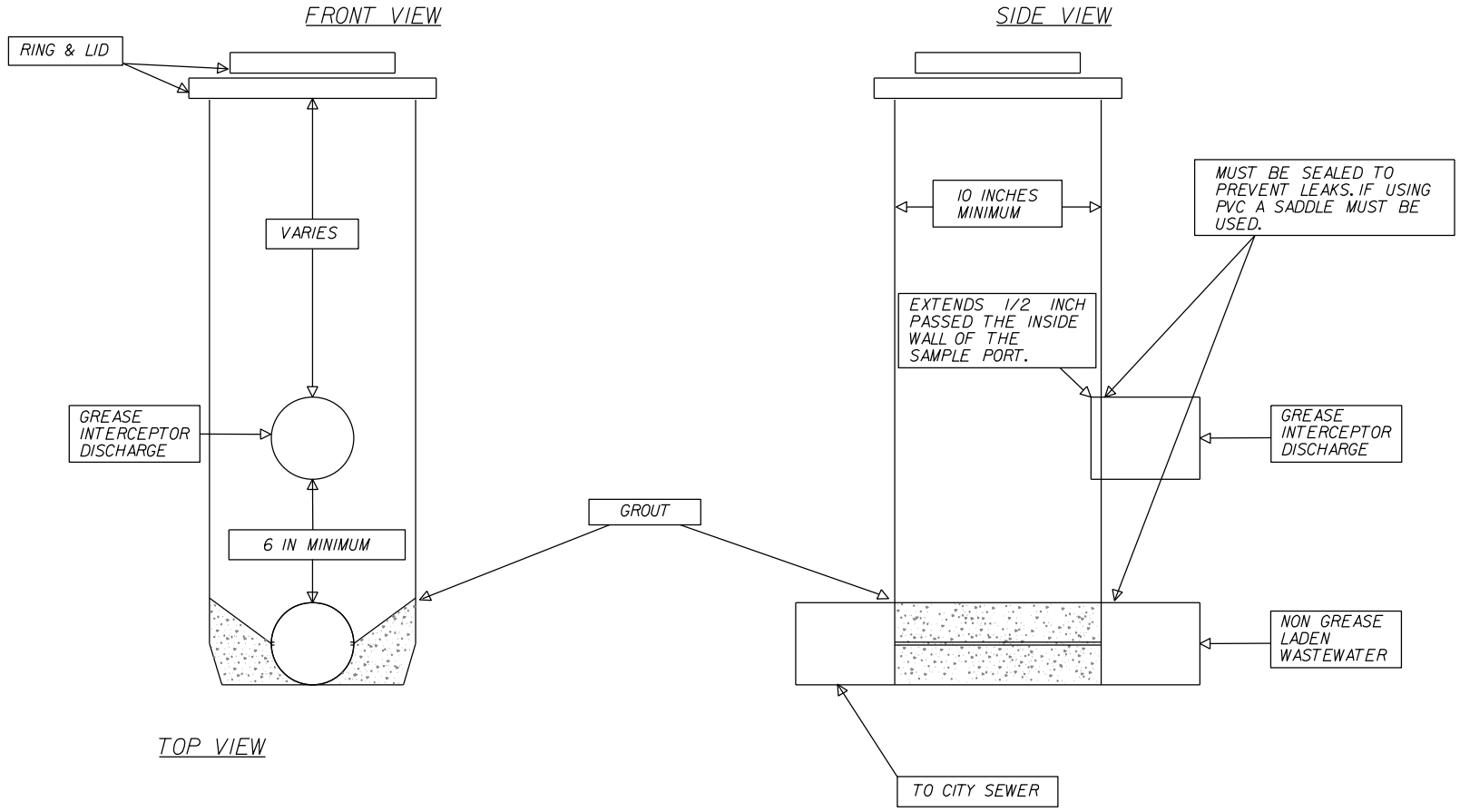
1. THE GREASE LADEN WASTEWATER LINE MUST INCLUDE A MINIMUM SIX INCH VERTICAL DROP IN THE SAMPLE PORT.
2. THE NON GREASE LADEN WASTEWATER LINE MUST FLOW THROUGH THE BOTTOM OF THE SAMPLE PORT.
3. ALL WASTEWATER EXCEPT RESTROOM WASTE MAY FLOW THROUGH THE GREASE INTERCEPTOR.
4. THE SAMPLE PORT CANNOT HOLD WATER.

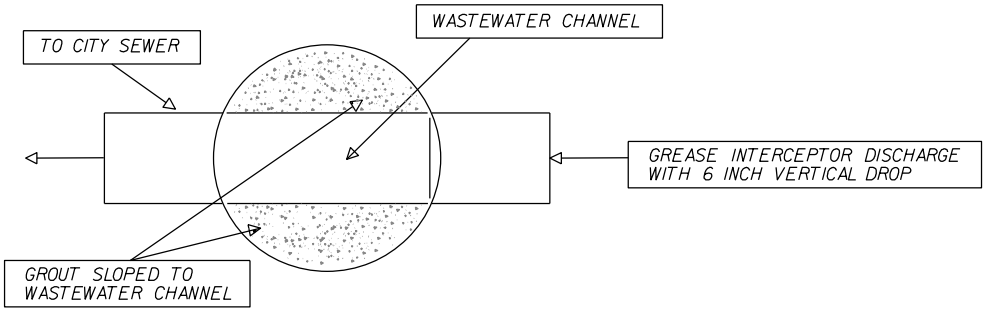
NOTES:

FOR MORE INFORMATION PLEASE CALL THE INDUSTRIAL WASTE MONITORING & TREATMENT OFFICE AT (806) 775-2626

city of lubbock TEXAS

TYPICAL SAMPLE PORT





NOTES:

1. SAMPLE PORTS MUST DRAIN COMPLETELY AND NOT HOLD WATER. SAMPLE PORTS HOLDING WATER WILL NOT BE APPROVED.

NOTES:

FOR MORE INFORMATION PLEASE CALL THE INDUSTRIAL WASTE MONITORING & TREATMENT OFFICE AT (806)775-2626

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