SECTION 22 13 00

FACILITY SANITARY SEWAGE

PART 1 - PART 1: GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 **LESSONS LEARNED AND DESIGN CONSIDERATIONS**

A. Provide floor drains in all restrooms placed a minimum of 7' from back of wet wall, janitor closets, and mechanical rooms.

B. Roof drains will have a detail on the drawings that is representative of the actual construction and not a generic detail. If there is more than one roof type on the project a detail for every roof type will be required. A roof drain design review will be held early in the project with the installing contractor, engineer and owner to determine if there are any design issues.

C. Extend cleanouts to finished floor or wall surface, with access covers installed flush to the finished surface.

D. Ensure clearance at cleanout for rodding of drainage system.

E. Coordinate cleanout locations with Architect.

F. Encase exterior cleanouts in concrete with access cover installed flush with grade.

G. Provide grease traps (interceptors) whenever there is the potential to discharge wastes containing fats, oils, greases, and/or settable solids into the sanitary sewer system.

H. Grease traps shall have two compartments, with the primary having a seven- minute retention time and the secondary having a 5 minute retention time. For cleaning and inspection purposes, traps shall be located in area accessible to appropriate grease recovery equipment. Manufactured traps that are properly sized may be used in lieu of on-site construction. When possible, the trap shall be installed outside the building. Note that all retention times shown are minimums.

I. Buried grease traps shall be constructed of concrete. All grease traps shall have traffic rated removable man-hole covers & frames.

J. Where grease trap is located exterior to building, all pipe and fittings shall be Schedule 40 PVC. Normally traps will be installed 3½" below grade, but in areas subject to vehicle traffic, shall be 8" below grade and equipped with traffic manhole frame and cover.

K. Traps inside building shall receive cast-iron pipe and fittings.

PART 2 - PRODUCTS

2.1 GENERAL

A. This product section is intended to inform the PSP on the minimum standard of quality that should be incorporated in new designs. The PSP should evaluate these standards and incorporate or make additional requirements per project specific requirements. Where the PSP considers any requirement

listed not to be applicable or incompatible with the project design intent should be discussed with UTA Office of Facilities Management.

2.2 ABOVE GROUND DRAINAGE AND VENT PIPE FITTINGS

A. Cast-Iron Soil Pipe: ASTM A74, service weight, hubless pipe and fittings.

B. Heavy Duty Couplings for Hubless Cast-Iron Soil Pipe: Hubless Clamps, heavy weight, stainless steel bands.

C. Clamps shall be constructed and tested per ASTM C-1277. For pipe sizes 1½" through 4" minimum 4 bands and for pipe 5" through 15" minimum 6 bands.

D. Polypropylene Pipe and Fuseal Fittings (or Engineer-approved equal)" use for acid waste and vent piping in laboratories.

2.3 UNDERGROUND DRAIN PIPE AND FITTINGS

A. Cast-Iron Soil Pipe: ASTM A74, Service weight, hub-and-spigot soil pipe and fittings. Pipe and fittings shall have a heavy coating of coal tar varnish or asphaltum on both inside and outside surfaces.

B. Neoprene Compression Gaskets: ASTM C564.

C. Sewer Pipe and Fittings: Conform to ASTM D2729 for pipe and fittings.

2.4 DRAINAGE PIPING SPECIALTIES

A. Expansion Joints: Cast-iron body with adjustable bronze sleeve, bronze bolts with wing nuts.

B. Cleanout Plugs: Cast-bronze or brass, threads complying with ANSI B2.1, countersunk head. All will have applied Anti-Seize copper based placed on all threads.

C. Floor Cleanouts: Cast-iron body and frame, with cleanout plug and adjustable round nickel bronze top.

D. Wall Cleanouts: Cast-iron body adaptable to pipe with cast-bronze or brass cleanout plug; stainless steel cover including screws.

2.5 FLOOR DRAINS

A. Floor drains shall be provided with deep seal "P" traps at all floor drains.

B. Floor Drain (Basement and air handler rooms) 12" x 12" floor sink with half-grate strainer, ty-seal or caulked outlet, dura-coated; similar to Zurn Z-567. There shall be adequate floor drains to provide drain for all equipment requiring same; one per piece of equipment, to eliminate excessive drain piping across floors.

C. Floor Drain (for boiler rooms): Cast-iron body and tractor grate, flashing flange and collar.

D. Floor Drain (corridors): Stainless steel body with flashing collar, ty-seal or caulked outlet and adjustable strainer head, stainless steel round strainer with satin finish.

E. Floor Drain (mechanical rooms, storage rooms and other remote areas) shall be provided with a central piped primer system which automatically primes traps building wide using a single timed valve for one minute every 24 hours (adjustable).

F. All valves must be identified by a numbered brass tag 1, 2, to infinity.

2.6 DEPRESSED AREA DRAINS

A. Floor Drain (depressed area drains): Cast-iron body for horizontal mounting secured grate.

B. Floor Drain (medium to heavy traffic and drainage): Cast-iron body and flashing collar with adjustable top and tractor grate.

C. Floor Drain (shower and restrooms): Cast-iron body and flashing collar with the following features: square nickel bronze adjustable strainer head with secured square hole grate.

2.7 TRENCH DRAIN

A. Cast-iron shallow hub body and grate with end plates and gaskets, assembled in standard lengths for total length and width as required for application.

B. Non-Metallic Trench Drains shall be polyester resin and quartz aggregate, pre-cast, interlocking design, with bottom radius and 0.6% slope.

C. Pre-cast Material: Load pressure of 14,500 psi, bending pressure of 2,900 psi, frost-proof, salt-proof, inert under dilute acid and alkali conditions, and less than 1.0% water absorption rate.

D. Grates: Cast-iron or steel as indicated, for heavy-duty truck traffic, with openings designed to prevent entry of bicycle or wheelchair tires.

2.8 ROOF DRAINS

A. Roof Drain (General Purpose): Cast-iron body with combined flashing collar and gravel stop, Cast-iron dome with adjustable flow rate control assembly.

B. Roof Drain (controlled flow): Cast-iron body, combined flashing collar and gravel stop, cast-iron dome with adjustable flow rate control assembly.

C. Roof Drain (parapet roofs): Cast-iron body, flashing device, loose set grate.

2.9 GREASE TRAPS

A. Size traps according to the following criteria:

Kind of Fixture	**Trap and Trap Arm Size**	**Fixture Unit**
3 compartment sink	2”	4
2 compartment sink	1½”	2
Dishwasher	2”	4
Garbage Grinder	2”	4
Wok Stove	2”	4
Floor Drains (3”, 4”)	3”, 4”	3, 4 (½ credit)
*Floor sinks (3”, 4”)	3”, 4”	3, 4*
Hand Sink		0*
Mop Sink		0*

*Notes: Hand sinks and mop sinks are not required to be plumbed to the Grease Trap. For indirect waste to Floor Sinks and Hub Drains used as receptors for dishwashers, 2 and 3 compartment sinks, etc., the fixture

unit count shall be two times (2x) the floor sink fixture count. Fixtures receiving non-grease bearing wastes may be drained through a trap, but shall not be included for the trap sizing.

Trap liquid holding capacity (gallons) = Total Fixture Count X Applicable retention time (minutes) X 3, as per the authority having jurisdiction.

PART 3 - EXECUTION

3.1 Pipe Applications - Above Ground, Within Building

A. Install hubless, service weight, cast-iron soil pipe and fittings for drainage and vent pipe.

3.2 Pipe Applications Below Ground, Within Building

A. Install hub-and-spigot, extra-heavy weight, cast-iron, soil pipe and fittings with gasketed joints for 15” and smaller drainage pipe.

3.3 Installation

A. Use fittings for all changes in direction and all branch connections.

B. Route exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated.

C. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.

D. Route piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Allow sufficient space above removable ceiling panels to remove panel.

E. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals. Pipe sleeves smaller than 6” shall be steel; pipe sleeves 6” and larger shall be sheet metal.

F. Fire Barrier Penetrations: Provide where pipes pass through fire rated walls, partitions, ceilings, and floors, maintain the fire rated integrity.

G. Make changes in direction for drainage and vent piping using appropriate 45° wyes, half-wyes, or long sweep quarter, sixth, eighth, or sixteenth bends. Sanitary tees or short quarter bends may be used on vertical stacks of drainage lines where the change in direction of flow is from horizontal to vertical, except use long-turn tees where 2 fixtures are installed back to back and have a common drain. Straight tees, elbows, and crosses may be used on vent lines. No change in direction of flow greater than 90° shall be made. Where different sizes of drainage pipes and fittings are connected, use proper size, standard increasers and reducers. Reduction of the size of drainage piping in the direction of flow is prohibited.

H. Install underground building drains in accordance with the Cast-iron Soil Pipe Institute Engineering Manual.

I. Provide underground building drains beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Provide bell ends of piping facing upstream. Provide required gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.

J. Provide building drain piping pitched per code requirements.

K. Provide sleeve and mechanical sleeve seal through foundation wall for watertight installation.

L. Provide 1” thick extruded polystyrene over underground building drain piping not under building. Width of insulation shall extend a minimum of 12” beyond each side of pipe.

3.4 Installation of Piping Specialties

A. Do not install backwater valves in sanitary building drain piping.

B. Install expansion joints on vertical risers as indicated, and as required by the plumbing code.

C. Above Ground Cleanouts: Install in above ground piping and building drain piping as indicated, and:

1. as required by plumbing code;

2. at each change in direction of piping greater than 45°;

3. at minimum intervals of 50' for piping 4" and smaller and 75' for larger piping.

4. at the base of each vertical soil or waste stack.

3.5 Installation of Floor Drains

A. Set drain grate depressed below finished slab elevation as listed below:

DEPRESSION IN INCHES	RADIUS OF AREA DRAINED - FEET
½	5
¾	10
1	15
1¼	20

END OF SECTION 22 13 00