SECTION 22 14 26.19

FACILITY TRENCH DRAINS

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\*\* NOTE TO SPECIFIER \*\* U-drain; commercial and residential trench drains.
This section is based on the products of U-drain, which is located at:Box 119 R.R.1Morris, MB, Canada R0G 1K0Toll Free Tel: 855-746-8200Tel: 204-746-8200Fax: 204-746-8074Email: [request info (curtis@norstarmfg.com)](https://arcat.com/rfi?action=email&company=U-drain&message=RE%253A%2520Spec%2520Question%2520(02600udr)%253A%2520&coid=47269&spec=02600udr&rep=&fax=204-746-8074)
Web: <https://www.u-drain.ca>
 [ [Click Here](https://arcat.com/company/u-drain-47269) ] for additional information.
Commercial U-Drain: Features easy installation and handling, comes in 3m lengths that simply bolt together. Aesthetically pleasing to the eye, one straight channel in the floor. Maintenance is a breeze, a silt strainer basket pulls out of the main sump where debris is collected and water drains away.
Residential U-Drain: Features easy installation and handling, comes in 60 inch (1524mm) lengths that simply bolt together. Open slot concept which blends in nicely with a garage floor. No grates to clean or remove and debris collects in a sump for later removal.

1. GENERAL
	1. SECTION INCLUDES
		1. U-shaped, non-grated, pre-engineered slot trench drains.
	2. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 33 46 13.13 - Foundation Drainage Piping.
		2. Section 33 44 13.13 - Catchbasins.
		3. Section 03 15 00 - Concrete Accessories.
		4. Section 05 53 00 - Metal Gratings.
		5. Section 10 28 16 - Bath Accessories.
		6. Section 13 11 13 - Below-Grade Swimming Pools.
		7. Section 13 17 13 - Hot Tubs.
		8. Section 23 20 00 - HVAC Piping and Pumps.
		9. Section 22 14 26.13 - Roof Drains.

\*\* NOTE TO SPECIFIER \*\* Delete if flushing valve option not required.

* + 1. Section 22 05 00 - Common Work Results for Plumbing.
	1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. Americans with Disabilities Act (ADA).
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data: Manufacturer's data sheets on each product to be used, including:
			1. Preparation instructions and recommendations.
			2. Storage and handling requirements and recommendations.
			3. Installation methods.
		3. Shop Drawings:
			1. Layout and numbering of drain sections, pit, and accessories.
			2. Details of installation in and finishing of concrete floor.
		4. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product.
	2. QUALITY ASSURANCE

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Manufacturer Qualifications: Minimum 5 years manufacturing drainage products.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Installer Qualifications: Minimum 2 years' experience installing similar systems.
	1. DELIVERY, STORAGE, AND HANDLING
		1. Store products in manufacturer's unopened packaging until ready for installation.
	2. PROJECT CONDITIONS
		1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.
	3. WARRANTY
		1. Provide manufacturer's limited one year warranty against material and fabrication defects and errors.
1. PRODUCTS
	1. MANUFACTURERS
		1. Acceptable Manufacturer: U-drain, which is located at:Box 119 R.R.1Morris, MB, Canada R0G 1K0Toll Free Tel: 855-746-8200Tel: 204-746-8200Fax: 204-746-8074Email: [request info (curtis@norstarmfg.com)](https://arcat.com/rfi?action=email&company=U-drain&message=RE%253A%2520Spec%2520Question%2520(02600udr)%253A%2520&coid=47269&spec=02600udr&rep=&fax=204-746-8074);Web: <https://www.u-drain.ca>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
		2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. COMMERCIAL TRENCH DRAINS
		1. Drain Type: Single slot-style mouth on top of a formed, U shaped base.
			1. Product: U-drain Commercial Slot Trench Drain as provided by U-drain.
		2. Performance Characteristics:
			1. Flow: The computed flow capacity of a 1 inch (25 mm) slot opening is 0.040 ft/s or 18 gallons per minute (per foot of slot).
			2. Structural: The structural capabilities of the drain system are in direct relation to the strength of the concrete the U-drain is supported by.
			3. Special Duty on ASME A112.6.3 - Special Duty: When the safe live load is equal to or greater than 1000 lbs (453.6 kg)
			4. Extra-Heavy Duty (X) Per CSA B79-08 - Extra-Heavy Duty (X): Heavy Trucks 33.84 (7,607.5) - 67.68 (15,215.1)
			5. Equal to Class F: 202,320 lbs (91,770.8 kg).
			6. Durability: U-Drain structural durability & life span is in direct relation to concrete pad structural and climate. Standard Industrial life expectancy is 70+ years with proper maintenance.
			7. Sanitary: A stainless steel U-drain system is sanitary and durable complying with the food and beverage industry stringent sanitary regulations. The only parts of the drain exposed shall be the surface angles, which are made of stainless steel.
			8. Standards Compliance: FDA (CFDA) - CFIA - ACIA approved.
		3. Design:
			1. Pre-engineered, single-slotted drains with a U-shaped base.

\*\* NOTE TO SPECIFIER \*\* Delete layout not required.

* + - 1. Layout: System to be a single continuous flow drain connected to a single triple inlet sump.
				1. Section Length: 9.842 ft (3 m) standard.
				2. Section Length: 1 ft (305 mm).
				3. Section Length: 3 ft (914 mm).
				4. Section Length: 5 ft (1524 mm).
				5. Maximum Sloped Length: 120 ft (36.6 m).

No limit to non-continuous slopped lengths is possible by inserting a 118 inches (3 m) neutral section in a single run on either side of a sump.

U-Drain runs of 300 ft (91.4 m) are possible with a single sump.

Greater than 300 ft (91.4 m) drain runs are available by configuring layout with multiple sumps.

* + - 1. Layout: System to be a double continuous flow drain connected to a triple inlet sump.
				1. Section Length: 9.842 ft (3 m) standard.
				2. Section Length: 1 ft (305 mm).
				3. Section Length: 3 ft (914 mm).
				4. Section Length: 5 ft (1524 mm).
				5. Maximum Sloped Length: 240 ft (73.2 m).

Sloped length of 300 ft (91.4 m) is possible by inserting a 118 inches (3 m) neutral section at both sides of sump.

\*\* NOTE TO SPECIFIER \*\* Delete type not required.

* + - 1. Opening: Single slot opening of 1 inch (25 mm).
			2. Opening: Single slot opening of 1-1/2 inches (38 mm).

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* + - 1. Material: 16-gauge (1.5 mm), hot dipped galvanized steel.
			2. Material: 16-gauge (1.5 mm), stainless steel.
			3. Slope: Metal pre-engineered slotted drains shall be modular sections that are pre-sloped 0.05 percent.
			4. Joints: Mechanically locking joints, or bolt- together flanges.
			5. Sump Pits: U-drain bolts directly to sump pit.

\*\* NOTE TO SPECIFIER \*\* The volume of liquid being moved is the most important factor to consider when selecting a sump pit design. Custom sizing to accommodate larger volumes of liquid is available. Delete pit size not required.

* + - * 1. Sump: 18 by 18 by 24 inches deep (457 by 457 by 610 mm).
				2. Sump: 24 by 24 by 24 inches deep (610 by 610 by 610 mm).
				3. Sump: 36 by 36 by 36 inches deep (914 by 914 by 914 mm).

\*\* NOTE TO SPECIFIER \*\* Delete sump type not required.

* + - * 1. Triple Inlet Sump: A single inlet style of sump connects one line of the U-drain and contains a drain exit pipe. Rotate sump as necessary to achieve discharge on preferred side.

\*\* NOTE TO SPECIFIER \*\* Silt strainers are not standard; however, they are often included due to the vast amount of labor it saves the user in not having to dig it out. Delete if not required.

* + - * 1. Silt Strainer: Used for quick removal of debris, as well as acting as a screen to the out-take line. Steel material as specified for the trench sections.

\*\* NOTE TO SPECIFIER \*\* The oil separator pits work like a skimmer: oil floats to the top and water flows through the elbow of the primary sump into the secondary discharge sump pit leaving the floating debris and oil in the primary sump pit. Delete if not required.

* + - 1. Oil Separator Pits:
				1. Provide primary sump pit attached to the U-drain which contains the solids and the oil.
				2. Provide a secondary pit for the overflow, from the primary sump pit, which is mostly clean water collected and is then discharged to sanitary/storm pipes.

\*\* NOTE TO SPECIFIER \*\* Lids are not "standard" on larger sump pits, although checker-plated or grated lids are offered as options. Checker-plated lids are the primary option used as they do meet CSA Special Duty spec rating Grated sump pit lid covers are often used in heavy machine shops or in high flow situations such as car washes or in storm drain applications.

* + - 1. Sump Cover:
				1. Provide covers at sump pits. Provide attachment to prevent cover from shifting off sump pit opening.
				2. Provide flat plate cover.
				3. Provide checker-plated cover of sufficient strength to support road vehicles and forklifts.
				4. Provide grated sump pit lid cover. Pit shall be placed to allow cover to be flush with flow to accept wash down of floor directly into pit.

\*\* NOTE TO SPECIFIER \*\* Not all applications require that a sump pit be placed at the end of the drain line. Delete if not required.

* + - 1. Direct Discharge: (Sump pit alternative).
				1. By custom fitting, provide end cap direct flow pipe can be placed to drain liquid directly from the slot drain into a pipe drain.
				2. End caps are available for all flange types with 3 inches (76 mm) OD stubs for easy tie into ABS lines with Furnco fittings.
		1. Components/Fabrication:
			1. Modular Trench Section: Un-sloped sections placed as required matching design and length indicated on the drawings.
				1. Metal sections in 118 inches (3 m) sections shall be pre-sloped 0.05 percent - 1/2 inch (13 mm) placed as required matching design and length indicated on the Drawings. .
				2. Section Length: 1 ft (305 mm).
				3. Section Length: 3 ft (914 mm).
				4. Section Length: 5 ft (1524 mm).
			2. Sump Pits: Constructed as follows.
				1. Constructed of 14 ga (1.9 mm) material.
				2. Cover type as specified and in same material as sump pit.
				3. Foam seal around rim below cover. Field supplied and installed.
				4. 1.5 inches (38 mm) schedule 40 stub on pit for direct vent to outside.
				5. Mounting tabs to secure pit prior to placement of concrete.
				6. Standard 4.5 inches (114 mm) discharge outlet, adaptable to smaller sizes.
				7. Rebar weldments for structural integrity and tie-in to floor reinforcement mat.
				8. Sump pits are fitted with an "L" flange mounted on the intake, and an adaptor plate is bolted to the corresponding mounting end of the drain section.
				9. The adaptor plate has the outside diameter of the "L" flange and the corresponding inside diameter of the end of the drain section.
				10. All flanges shall be laser cut for easy matching and assembly.
				11. Sumps shall have three inlets as scheduled and as required by design.
				12. Sumps to be rotated to accommodate most efficient draining.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Cleaning: System is provided with the following cleaning methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Manual: A drain cleaning paddle shaped to fit the bottom of the slot drain.

\*\* NOTE TO SPECIFIER \*\* Custom option. Delete if not required.

* + - 1. Flushing: Installed Flush Nozzle to the closed ends of the trench to attach flush valve piping.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* 1. RESIDENTIAL TRENCH DRAINS
		1. Drain Type: Single slot-style mouth on top of a formed, U shaped base.
			1. Product: U-drain Residential Slot Trench Drain as provided by U-drain.
		2. Performance Characteristics:
			1. Flow: The computed flow capacity of a 1/2 inch (13 mm) slot opening is 0.026 ft/s or 11.4 gallons per minute (per foot of slot).
			2. Structural: The structural capabilities of the drain system are in direct relation to the strength of the concrete the U-drain is supported by.
			3. Special Duty on ASME A112.6.3 - Special Duty: when the safe live load is equal to or greater than 10,000 lbs (4,500 kg).
			4. Extra-Heavy Duty (X) Per CSA B79-08 - Extra-Heavy Duty (X): Heavy Trucks 33.84 (7,607.5) - 67.68 (15,215.1)
			5. Equal to Class F: 202,320 lbs (91,770.8 kg).
			6. Durability: U-Drain structural durability & life span is in direct relation to concrete pad structural and climate. Standard Industrial life expectancy is 70 plus years with proper maintenance.
		3. Design:
			1. Pre-engineered, single-slotted drains with a U-shaped base:
			2. Layout: System shall be a single continuous flow drain connected to a single or dual inlet sump.
			3. Opening: Single slot opening of 1/2 inches (13 mm).

\*\* NOTE TO SPECIFIER \*\* Delete material not required.

* + - 1. Material: 16 gauge (1.5 mm), hot dipped galvanized steel.
			2. Material: 16 gauge (1.5 mm), stainless steel.
			3. Slope: Metal pre-engineered slotted drains shall be modular sections that are not pre-sloped.
			4. Joints: Mechanically locking joints, or bolt- together flanges.
			5. Sump Pits:
				1. A U-drain system bolts directly to a sump pit.

\*\* NOTE TO SPECIFIER \*\* The volume of liquid being moved is the most important factor to consider when selecting a sump pit design. Custom sizing to accommodate larger volumes of liquid is available.

* + - * 1. Sump: 12 by 12 by12 inches deep (305 by 305 by 305 mm) sump pit with a checker-plated cover.

\*\* NOTE TO SPECIFIER \*\* Delete sump type not required.

* + - * 1. Single Inlet Sump: A single inlet style of sump connects one line of the U-drain and contains a drain exit pipe.
				2. Double Inlet Sump: A dual inlet style of sump connects both lateral lines of the U-drain and contains a drain exit pipe.

\*\* NOTE TO SPECIFIER \*\* Custom option. Silt strainers are not standard either; however, they are often included due to the vast amount of labor it saves the user in not having to dig it out. Delete if not required.

* + - * 1. Silt Strainer: Used for quick removal of debris, as well as acting as a screen to the discharge line. Steel material as specified for the trench sections.

\*\* NOTE TO SPECIFIER \*\* The oil separator pits work like a skimmer: oil floats to the top and water flows through the elbow of the primary sump into the secondary discharge sump pit leaving the floating debris and oil in the primary sump pit. Delete if not required.

* + - 1. Oil Separator Pits:
				1. Provide primary sump pit attached to the U-drain which contains the solids and the oil.
				2. Provide a secondary pit for the overflow, from the primary sump pit, which is mostly clean water, collected and that is then discharged to sanitary/storm pipes.

\*\* NOTE TO SPECIFIER \*\* Not available for residential sumps. Not all applications require that a sump pit be placed at the end of the drain line. Delete if not required.

* + - 1. Direct Discharge: (Sump pit alternative).
				1. By custom fitting, provide end cap direct flow pipe can be placed to drain liquid directly from the slot drain into a pipe drain.
				2. End caps are available for all flange types with 2.375 inches (60 mm) OD stubs for easy tie into ABS lines with Furnco fittings.
		1. Components/Fabrication:
			1. Modular Trench Section: 60 inches (1524 mm) lengths and not pre-sloped. Provide standard sections, and shorter sections if required, placed as required matching design and length indicated on the drawings.
			2. Sump Pits: Constructed as follows.
				1. Constructed of 14 ga (1.9 mm) material same as scheduled for trench sections.
				2. 1/4 inch (6 mm) checkered pate cover.
				3. Foam seal around rim below cover.
				4. 3 inches (76 mm) schedule 40 stub on pit for direct vent to outside.
				5. Mounting tabs to secure pit prior to placement of concrete.
				6. Standard 3.5 inches (89 mm) discharge outlet, adaptable to smaller sizes.
				7. Rebar weldments for structural integrity and tie-in to floor reinforcement mat.
				8. Sump pits are fitted with standard Residential flange on the intake, to be bolted to the corresponding mounting end of the drain section.
				9. All flanges shall be laser cut for easy matching and assembly.
				10. Sumps shall have single or dual inlets as scheduled and as required by design.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Cleaning: System shall be provided with the following cleaning methods.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + - 1. Manual: A drain cleaning paddle that is shaped to fit the bottom of the slot drain.

\*\* NOTE TO SPECIFIER \*\* Custom option. Delete if not required.

* + - 1. Flushing: Installed Flush Nozzle to the closed ends of the trench to attach flush valve piping.
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly prepared.
		2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
	2. PREPARATION
		1. Clean surfaces thoroughly prior to installation.
		2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
	3. INSTALLATION
		1. Install in accordance with manufacturer's instructions and in proper relationship with adjacent construction.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. Commercial System Installation
			1. System Piece Marking:
				1. The system begins with an "end" section (one with a sealed end) which slopes towards a sump pit (collector pit).
				2. Sloped sections are inserted to lengthen the drain to the required length.
				3. Each section has a coupling flange welded to it that is alphabetically coded to the depth of that end of section, i.e. a "B-C" section would start with a "B" flange, and over the course of the section it drops 1/2 inch (13 mm) and ends with a "C" flange.
				4. The next connecting piece would start with a "C" flange and slope towards a "D" flange at the other end.
				5. The flanges are bolted together in a four-bolt pattern.
			2. Rebar Tie-Ins:
				1. Alongside the trench, every 24 inches (610 mm), an 8 inches (203 mm) rebar section shall be welded, bent out 3 inches (76 mm) from the side of the trench.
				2. Provide a secure tie into the rebar grid in the concrete. Pre-formed Rebar "stir-ups" are available from U-Drain
			3. Leveling Brackets:
				1. Leveling bracket mounts shall be welded into place, and leveling brackets are bolted onto the side of the trench to ensure proper leveling of the drain.
				2. A rebar length, dependent on the thickness of the slab, shall be hammered into the ground through a slot in the bracket. The bracket's set screw shall be tightened to set the trench section at the proper height.
				3. The brackets shall accommodate either #4 (13 mm) or #5 (16 mm) rebar.
	1. PROTECTION
		1. Protect installed products until completion of project.

END OF SECTION