



ENGINEERING DEPARTMENT
6101 SE Johnson Creek Blvd
Milwaukie OR 97206

INSPECTIONS: 503-786-7575
PHONE: 503-786-7606
FAX: 503-774-8236
E-MAIL: engineering@ci.milwaukie.or.us

Residential/Light Traffic Drywell Requirements

AUTHORIZATION:

City of Milwaukie Municipal Code Section 13.12.060(B) authorizes the use of drywells for the disposal of runoff water from roof rain drains and parking areas. **The City may require percolation tests** as proof that soil conditions are suitable for drywells.

INSTALLATION:

The installation of drywells shall meet or exceed the requirements of Chapter 11 of the Oregon Plumbing Specialty Code (OPSC) as authorized by ORS 447.020(2), April 1, 2000. Installation shall further be in accordance with City of Milwaukie standard drawing ST-7 for drywells and shall meet all specifications and requirements stated in this outline.

SIZES:

Drywells are intended to handle a known capacity of water based on the area in square feet being drained. The OPSC, Chapter 11, Section 1107, requires that reinforced concrete rings have a **minimum inside diameter** of twenty-eight (28) inches and a **minimum depth** of five (5) feet. Sizes larger than the minimum are determined by calculations for a specific drainage area. Larger sizes of rings for specific areas to be drained are shown on City of Milwaukie Drywell Size Chart CH-7.

MATERIALS:

Drywells within the city of Milwaukie shall be reinforced concrete rings, constructed to the dimensions and specifications shown on standard drawing ST-7. All other materials shall meet the sizes and specifications shown on drawing ST-7. The City **may require certification** by an independent testing laboratory as proof that all drywell materials meet the stated specifications.

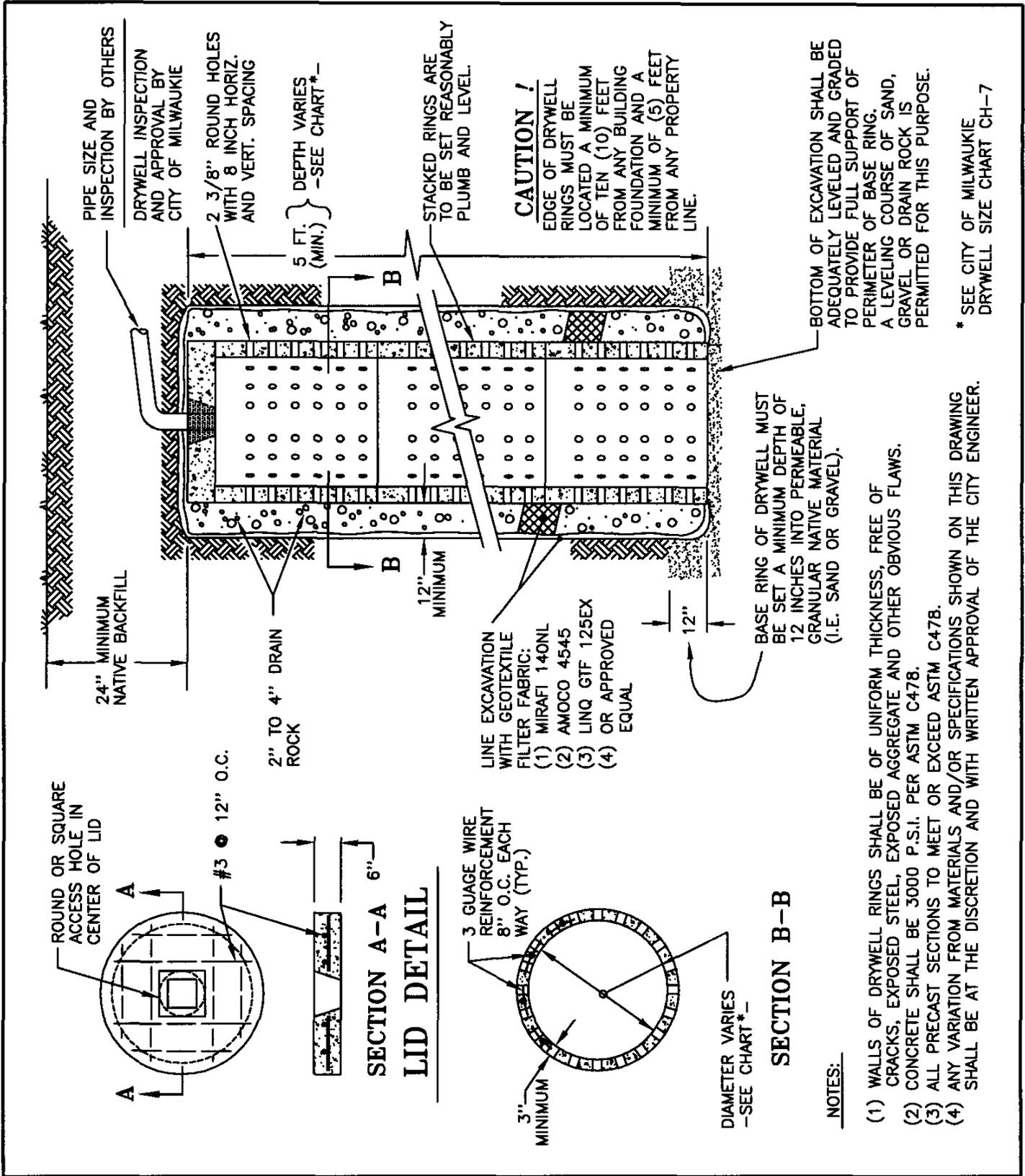
PERMITS:

Property owners may install drywells on their own property if they do all of their own work. All contractors must provide proof that they are licensed by the State of Oregon and that they have a City of Milwaukie or Metro business license and a certificate of liability insurance. Any person seeking to install a drywell within the city of Milwaukie must first obtain a permit from the Building Department and pay all fees pertaining to such permit. Installation of a drywell without a permit is a violation of City Ordinance and may result in fines, additional fees, and the added expense for removal and disposal of unacceptable materials from the site.

INSPECTIONS:

Inspection and final approval of drywell installation and materials shall be by personnel of the City of Milwaukie Building Department. To avoid delays, **requests for inspection must be made before 7:30 a.m. of the day inspection is desired. Call 503-786-7565.**

Two inspections are required: (1) when excavation is complete, **before** placing drywell rings or any other materials, and (2) when filter fabric and drywell rings are in place, **prior** to placing drain rock.



<p>CITY OF MILWAUKIE</p>	CITY OF MILWAUKIE, OREGON - PUBLIC WORKS DEPT.			
	RESIDENTIAL/LIGHT TRAFFIC DRYWELL			
APPROVED CITY ENGINEER	NO.	REVISIONS	DATE	BY
DATE 6/27/95				
DRAWING NO.				ST-7
				06/27/95 JB



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Drywell Sizes

DRAINAGE AREA (square feet)	2.33' Diameter* (28 inches) Depth shown in feet	2.5' Diameter (30 inches) Depth shown in feet	3.0' Diameter (36 inches) Depth shown in feet	4.0' Diameter (48 inches) Depth shown in feet
<550	5.00*	5.00*	5.00*	5.00*
550	5.16	"	"	"
600	5.63	"	"	"
700	6.57	5.70	"	"
800	7.50	6.52	"	"
900	8.44	7.33	5.09	"
1000	9.38	8.15	5.66	"
1100	10.32	8.96	6.22	"
1200	11.26	9.78	6.79	"
1300	12.20	10.59	7.36	"
1400	13.13	11.41	7.92	"
1500	14.07	12.22	8.49	"
1600		13.04	9.05	5.09
1700		13.85	9.62	5.41
1800		14.66	10.18	5.73
1900		15.48	10.75	6.05
2000			11.32	6.36
2100			11.88	6.68
2200			12.45	7.00
2300			13.01	7.32
2400			13.58	7.64
2500			14.14	7.96
2600			14.71	8.27
2700			15.28	8.59
2800			15.84	8.91
2900			16.41	9.23
3000			16.98	9.55
3100			17.54	9.87
3200			18.11	10.19
3300				10.51
3400				10.83
3500				11.15

The above chart indicates the depth of drywell required to serve a specified drainage area. Diameters shown are those generally available from suppliers.

	DEPTH	=	$\frac{(A \times 0.04 \text{ feet})}{[(\frac{1}{2} \text{ diameter})^2 \times \pi]}$	NOTE:
Depth	=		depth, in feet, of drywell excluding thickness of cover	Preferred Maximum depth to diameter ratio is 6:1
A	=		total drainage area in square feet	
0.04	=		constant for depth of water covering the drainage area	
diameter	=		the diameter, in feet, of the drywell to be installed	
π	=		3.1416	

Oregon P.S.C. requires minimum **inside** diameter of 28" and min. depth of 5.0 ft of reinforced concrete rings.

Section 1107.0 Dry Wells; Construction, Use and Limitations

1107.0 Dry Wells; Construction, Use and Limitations

1107.1 Construction. Where permitted by the Administrative Authority, dry wells may be used. The Administrative Authority may require soil percolation tests. When authorized, dry wells may be of reinforced concrete rings with an inside diameter of not less than twenty-eight (28) inches (0.7 m) with a minimum depth of five (5) feet (1.5 m), measured from the bottom to the top of the reinforced concrete cover and set on undisturbed soil. All dry wells shall be covered with at least two (2) feet (0.6 m) of compacted earth when measured from the top of the lid to the finished grade. When first approved by the Administrative Authority, dry wells may be constructed of brick or other approved material in of not less than four (4) inches (0.1 m) thickness. Brick or block may be assembled with or without openings, provided the openings on the outside of the dry well are not greater than three (3) inches (7.5

cm). This type of dry well shall have a brick arched top or an arched top of other approved materials.

1107.2 Location. No dry well shall be located closer than five (5) feet (1.5 m) of a property line nor closer than ten (10) feet (3 m) to any building unless approved by the Administrative Authority. Each drainage connection to a dry well shall be made at the top center of the lid by the use of an approved ninety (90) degree waste fitting. Support of piping shall be as required by Chapter 3 of this Code. Special permission may be granted to enter the side of the dry well when grade and structural conditions make top entrance impractical.

1107.3 Backfill. The particle size of the backfill surrounding a dry well shall be of sufficient size to prevent its incursion into the interior of the dry well. The backfill shall form a continuous layer around the dry well not less than six (6) inches (150 mm) in thickness and shall extend to the full height of the dry well.

Exception: When the dry well is installed in sandy-type soil an approved filter material shall be placed around the exterior of the liner to prevent infiltration of sand. The backfill shall be of native soil properly compacted.

1107.4 Abandonment. When required by the Administrative Authority, every drywell which has been abandoned or has been otherwise discontinued from further use shall be completely filled with earth, sand, gravel, concrete, or other approved material.



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Drywell Materials Specifications & Suppliers

Specifications

Geotextile Filter Fabric

The following geotextile filter fabrics are approved "equals" for use in drywells within the city of Milwaukie. Fabrics manufactured by other suppliers, which meet or exceed the quoted specifications, are also acceptable **if the City receives verifiable written specifications prior to installation.**

	LINQ GTF 125EX	MIRAFI 140NL	AMOCO 4545
Grab	95	90	90
Elongation	50	50	50
Puncture	55	55	55
Tear	45	35	40
Mullen burst	215	185	185
AOS	70	70	70
Permitivity	2.0	2.0	2.1

All three of the above fabrics meet ODOT requirements for Type I drainage geotextile.

Suppliers:

The following are lists of local suppliers who carry some or all of the required materials for drywells. These lists are provided as **information only, and do not constitute recommendations.**

Geotextile Filter Fabric

Note: Some suppliers will cut fabric to size, while others sell only full rolls. **Ask before you buy!**

ACF West Inc.

Geosynthetic Products

8951 SE 76th Dr.
Portland OR 97206
ph) 503-771-5115 fax) 503-771-1161
1-800-878-5115

ADS Advanced Drainage Systems Inc

3695 Truman St
Washougal WA 98671
ph) 1-360-835-8522 fax) 1-360-835-3822
1-800-733-8523

CSI Geosynthetics

3500 SE Columbia Way
Bldg 44 Suite 100
Vancouver WA 98661
ph) 1-360-699-1426 fax) 1-360-699-1344
1-800-426-7976

Familiar Northwest Inc

Clackamas Showroom
14600 SE 82nd Dr
Clackamas OR 97015
ph) 503-655-1911

Fowler HD Co Inc

15632 SE 102nd
Clackamas OR 97015
ph) 503-656-3900

Oregon Culvert Co

Tualatin Sherwood Rd
ph) 503-692-0410

United Pipe & Supply Co Inc

7600 SE Johnson Creek Blvd
Portland OR 97206
ph) 503-788-8813 fax) 503-788-9747
1-800-933-8813

Drywell Rings

Johnson Cement Products

6500 SE Johnson Creek Blvd
Portland OR 97206
ph) 503-774-2351

Others may be available

Drain Rock

Many suppliers—listed in yellow pages under "Rock"