

20231-685231 Area Drain Calculations - The Saw Whet

AREA DRAIN	FLOW RATE (L/S)	Q (GPM)	Cd	g	high point elev.	AD Elev	h (m)	h (FT)	sq		REQUIRED A (SF)	REQUIRED A (SQ IN)	PROVIDED GRATE OPEN AREA (SQ IN)	Notes
TD-1	25	396.26	0.6	32.2	128.54	128.45	0.09	0.30	4.36	1172.68	0.338	48.66	1734.00	Grate has an open area of 86.7 sq. in per ft ~ Grate is 20ft long
AD-2	32	507.21	0.6	32.2	130.25	130.10	0.15	0.49	5.63	1513.92	0.335	48.24	80.00	2 Area drains provided
AD-3	42	665.71	0.6	32.2	130.34	130.20	0.14	0.46	5.44	1462.59	0.455	65.54	80.00	2 Area drains provided
AD-4	17	269.46	0.6	32.2	130.16	130.06	0.10	0.33	4.60	1236.11	0.218	31.39	40.00	
AD-5	8	126.80	0.6	32.2	130.48	130.44	0.04	0.13	2.91	781.79	0.162	23.36	40.00	
AD-6	4	63.40	0.6	32.2	129.47	128.46	1.01	3.31	14.61	3928.43	0.016	2.32	40.00	
AD-7	2	31.70	0.6	32.2	129.06	129.04	0.02	0.07	2.06	552.81	0.057	8.26	40.00	
AD-8	3	47.55	0.6	32.2	129.57	129.55	0.02	0.07	2.06	552.81	0.086	12.39	40.00	
AD-9	1	15.85	0.6	32.2	130.29	129.27	1.02	3.35	14.68	3947.83	0.004	0.58	40.00	
CB-12	3	47.55	0.6	32.2	129.64	128.44	1.20	3.94	15.92	4282.02	0.011	1.60	40.00	
AD-13	3	47.55	0.6	32.2	130.50	130.30	0.20	0.66	6.50	1748.13	0.027	3.92	350.00	Grate has an open area of 86.7 sq. in per ft ~ Grate is 4ft long
AD-14	0	0.00											40.00	
AD-15	0	0.00											40.00	





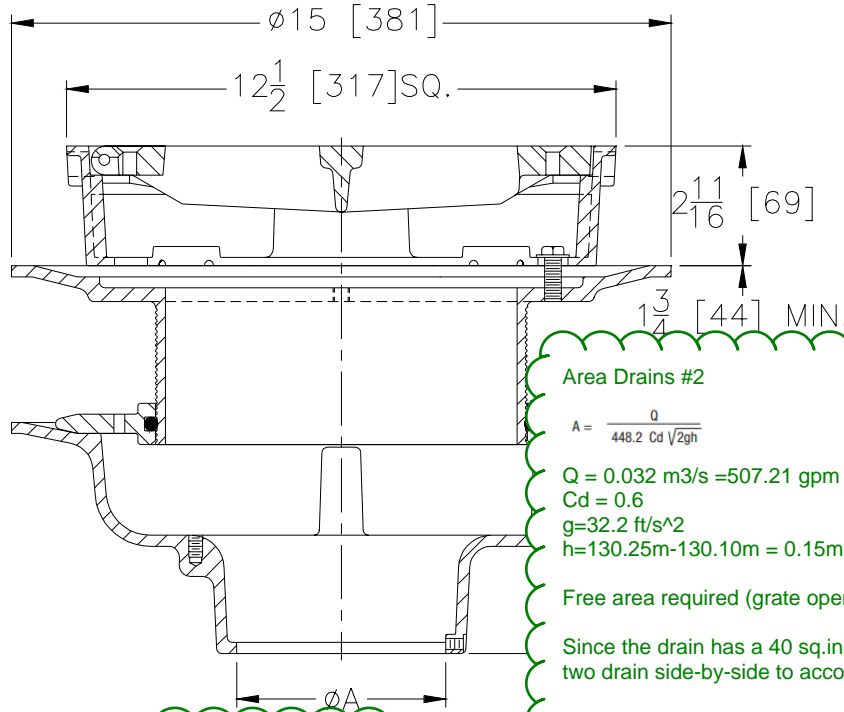
Z-610-H-ADJ
12" [305] HEAVY-DUTY ADJUSTABLE DRAIN

SPECIFICATION SHEET

TAG _____



Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice



Area Drains #2

$$A = \frac{Q}{448.2 Cd \sqrt{2gh}}$$

$Q = 0.032 \text{ m}^3/\text{s} = 507.21 \text{ gpm}$
 $Cd = 0.6$
 $g = 32.2 \text{ ft/s}^2$
 $h = 130.25\text{m} - 130.10\text{m} = 0.15\text{m} = 0.49\text{ft}$

Free area required (grate open area) = 0.335 sf = 48.24 sq.in

Since the drain has a 40 sq.in grate open area, we provided two drain side-by-side to accommodate the flow.

A Pipe Size Inches / [mm]	Approx. Wt. Lbs. / [kg]	Grate Open Area Sq. In. / [sq cm]
2-3-4-5-6 [51-76-102-127-152]	72 [33]	40 [258]
8 [203]		

ENGINEERING SPECIFICATION: ZURN Z-610-H-ADJ
 12" [305] square top adjustable floor drain, Dura-Coated cast iron bottom outlet body, clamping collar, adjustable leveling frame, with heavy-duty cast iron hinged slotted grate.

OPTIONS (Check/specify appropriate options)

PIPE SIZE

- 2-6,8 [50-152,203]
- 2,3,4,6 [50,75,100,152]
- 2-6,8 [50-152,203]
- 2-6,8 [50-152,203]
- 2,3,4 [50,75,100]

(Specify size/type) **OUTLET**

- _____ IC Inside Caulk
- _____ IG Inside Gasket
- _____ IP Threaded
- _____ NH No-Hub
- _____ NL Neo-Loc

E BODY HT. DIM.

- 5-1/4" [133]
- 5-1/4" [133]
- 3-3/4" [95]
- 5-1/4" [133]
- 4 5/8" [117]

PREFIXES

- _____ Z- D.C.C.I. Body with Grate*
 - _____ ZN- D.C.C.I. Body with Polished Nickel Bronze Top*
- *Add 3/16" [5] to Min./Max. Dimension

SUFFIXES

- | | |
|---|---|
| _____ -AR Acid-Resisting Epoxy Coated Cast Iron | _____ -S Secondary Strainer |
| _____ -DG Duresist Grate | _____ -VP Vandal-Proof Secured Top |
| _____ -DS Deep Sump Body | _____ -Y Sediment Bucket |
| _____ -G Galvanized Cast Iron | _____ -90 90° Threaded Side Outlet Body (IP or NH only) |
| _____ -HL Hinged Locking Grate | |
| _____ -P 1/2" [13] Trap Primer Connection | |

REV. A	DATE: 1/3/01	C.N. NO. 83378
DWG. NO. 63666	PRODUCT NO. Z-610-H-ADJ	

*REGULARLY FURNISHED UNLESS OTHERWISE SPECIFIED



Z712

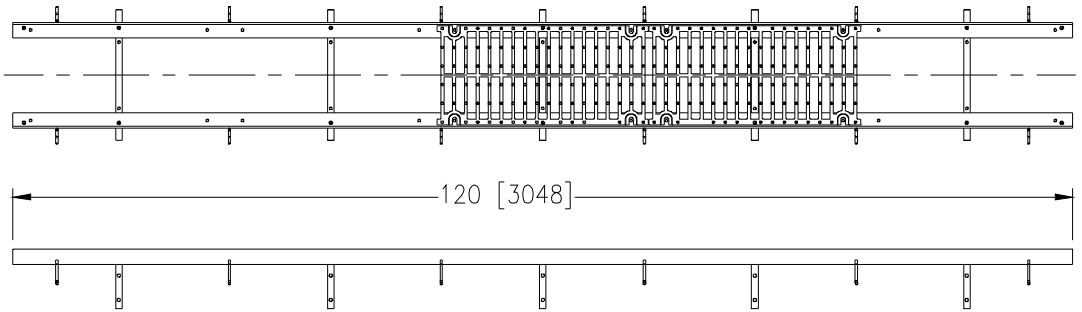
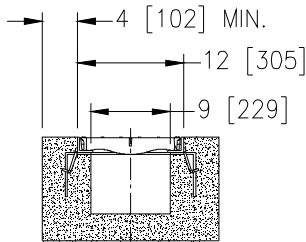
12 [305] WIDE REVEAL FRAME AND GRATE SYSTEM

SPECIFICATION SHEET

TAG _____

Dimensional Data (inches and [mm]) are Subject to Manufacturing Tolerances and Change Without Notice

SPECIFYING ENGINEER IS RESPONSIBLE FOR CONCRETE ENCASEMENT AND REINFORCING BASED UPON APPLICATION AND LOCAL CODES



ENGINEERING SPECIFICATION: Zurn Z712

Frame and Grate System are 120"[3048mm] long, 12"[305mm] wide reveal and have a 8-1/2"[216mm] clear opening. Shall mechanically lock into the concrete surround every 12" [305mm]. Provided with standard DGC grates that lock down to frame. Zurn 12" [305mm] wide reveal Ductile Iron Slotted Grate conforming to ASTM specification A536-84, Grade 80-55-06. Ductile Iron grate is rated class C per the DIN EN1433 top load classifications. Supplied in 24" [608mm] nominal lengths with 63/64" [25mm] wide slots, and 1-1/2" [38mm] bearing depth. Grate has an open area of 86.7 sq. in per ft. [183515 sq. mm per meter]. The 1/4" [6mm] thick Heavy-Duty Carbon Steel Frame Assembly conforms to ASTM specification A36 with 12 - 4" [102mm] long concrete anchors per 120" [3048mm]. Grate lockdown bars are to be integral to the frame. The frame is supplied with a powder coated finish. Frames produced in the U.S.A.

PREFIX OPTIONS (Check/specify appropriate options)

___ Z Ten-foot Heavy Duty Carbon Steel Frame *

SUFFIX OPTIONS (Check/specify appropriate options)

Frame Options

- ___ -CBF Black Acid Resistant Coated Top Frame
- ___ -CWF White Acid Resistant Coated Top Frame
- ___ -GFA Galvanized Frame Assembly
- ___ -SF Type 304 Stainless Steel Top Frame (316 By Request)

Grate Options (Load Classifications are per DIN EN1433)

- ___ -BG Galvanized Ductile Iron Bar Grate - Class D
- ___ -BG-L Galvanized Steel Bar Grate - Class C
- ___ -BDC Black Acid Resistant Ductile Grate - Class C
- ___ -BDE Black Acid Resistant Ductile Grate - Class E
- ___ -BDF Black Acid Resistant Ductile Grate - Class F
- ___ -DC Ductile Iron Solid Cover - Class E
- ___ -DC-G Galvanized Ductile Iron Solid Cover - Class E
- ___ -DGC Ductile Iron Slotted Grate - Class C *
- ___ -DGE Ductile Iron Slotted Grate - Class E
- ___ -DGF Ductile Iron Slotted Grate - Class F
- ___ -GDC Galvanized Ductile Slotted Grate - Class C
- ___ -GDE Galvanized Ductile Slotted Grate - Class E
- ___ -GDF Galvanized Ductile Slotted Grate - Class F
- ___ -GG Fiberglass Grate - Class A
- ___ -GHPD Galvanized Heel-Proof Ductile Slotted Grate - Class B
- ___ -GHPDE Galvanized Heel-Proof Ductile Slotted Grate - Class E
- ___ -HPD Heel-Proof Ductile Slotted Grate - Class B
- ___ -HPDE Heel-Proof Ductile Slotted Grate - Class E
- ___ -RFGC Reinforced Slotted Galvanized Grate - Class C
- ___ -RFSC Reinforced Slotted Stainless Steel Grate - Class C
- ___ -RPGC Reinforced Perforated Galvanized Grate - Class C
- ___ -RPGRC Reinforced Perforated Galvanized Reverse Punch Grate - Class C
- ___ -RPSC Reinforced Perforated Stainless Steel Grate - Class C
- ___ -RPSRC Reinforced Perforated Stainless Steel Reverse Punch Grate - Class C

MADE in the U.S.A

Trench Drain #TD-1

$$A = \frac{Q}{448.2 Cd \sqrt{2gh}}$$

Q = 0.025 m³/s = 396.26 gpm

Cd = 0.6

g = 32.2 ft/s²

h = 128.54m - 128.45m = 0.09m = 0.30ft

Free area required (grate open area) = 0.338 sf = 48.66 sq.in

Since the trench drain has a 86.0 sq.in grate open area per linear foot, it is large enough to accommodate the flow.

- ___ -RFG Reinforced Galvanized Slotted Grate - Class B
- ___ -RFS Reinforced Stainless Steel Slotted Grate - Class B
- ___ -RPG Reinforced Galvanized Perforated Grate - Class B
- ___ -RPGR Reinforced Galvanized Perforated Reverse Punch Anti-Slip ADA Grate - Class B
- ___ -RPS Reinforced Stainless Steel Perforated Grate - Class B
- ___ -RPSR Reinforced Stainless Steel Perforated Reverse Punch Anti-Slip ADA Grate - Class B
- ___ -SBG-L Stainless Steel Bar Grate - Class C
- ___ -SSCD Reinforced Stainless Steel Solid Cover - Class B

Miscellaneous Options

- ___ -RC Rebar Clip (Set of 2)
- ___ -VP Vandal-Proof Lockdown

* Regularly furnished unless otherwise specified.