

SAG CONDITION

JAKE GRATE (PLATE SEWR 1013)

DEPTH (ft)	1.1.14 (cfs)	CONDITION
0.01	0.06	WEIR
0.25	7.52	WEIR
0.50	21.26	WEIR
0.75	39.05	WEIR
1.00	60.12	WEIR
1.25	84.02	WEIR
1.50	110.45	WEIR
1.75	139.18	WEIR
2.00	170.05	WEIR

ALLEY GRATE (PLATE SEWR 2003)

DEPTH (ft)	2.1.04 (cfs)	CONDITION
0.01	0.02	WEIR
0.25	2.15	ORIFICE
0.50	3.04	ORIFICE
0.75	3.73	ORIFICE
1.00	4.30	ORIFICE
1.25	4.81	ORIFICE
1.50	5.27	ORIFICE
1.75	5.69	ORIFICE
2.00	6.08	ORIFICE

MINNEAPOLIS STANDARD GRATE WITH CURB BOX (PLATES SEWR 2008 & 2007)
FHWA VISUAL URBAN (HY-22)

DEPTH (ft)	2009 with 2008		FIXED CONDITIONS	
	(cfs)	CONDITION		
0.01	0.02	WEIR	PAVEMENT CROSS SLOPE	0.02
0.25	0.71	WEIR	GUTTER CROSS SLOPE	0.06
0.50	3.43	WEIR	MANNING'S COEFFICIENT	0.016
0.75	8.10	ORIFICE	GUTTER WIDTH (FT)	2.00
1.00	9.66	ORIFICE	LOCAL GUTTER DEPRESSION (IN)	1.00
1.25	11.05	ORIFICE	GRATE LENGTH, WIDTH (FT)	1.88
1.50	12.24	ORIFICE	CURB OPENING LENGTH (FT)	1.88
1.75	13.33	ORIFICE	CURB OPENING HEIGHT (IN)	4.60
2.00	14.33	ORIFICE	TYPE OF GRATE	VANE

<p>JAKE GRATE WEIR P = 20.04 (1013) ORIFICE FOA = 24.58 (1013)</p>	<p>ALLEY GRATE WEIR P = 6.7 (2003) ORIFICE FOA = 0.8 (2003)</p>
<p>CIRCULAR RETROFIT GRATE WEIR P = 6.7 (2009, 2010) ORIFICE FOA = 1.5 (2009, 2010)</p>	<p>MPLS. STANDARD GRATE WEIR P = 5.7 (2008) ORIFICE FOA = 1.3 (2008)</p>
<p style="text-align: center;">WEIR FLOW EQUATION</p> $Q_w = C_w P h^{1.5}$ <p>Q_w = WEIR CAPACITY OF GRATE (CFS) C_w = WEIR COEFFICIENT = 3 P = PERIMETER OF GRATE (FT) h = DEPTH OF WATER ABOVE GRATE (FT)</p>	<p style="text-align: center;">ORIFICE FLOW EQUATION</p> $Q_o = C_o A \sqrt{2gh}$ <p>C_o = ORIFICE OF GRATE (CFS) C_o = ORIFICE FLOW COEFFICIENT (0.67) A = CLEAR OPENING AREA (SQ FT) g = GRAVITY ACCELERATION (32.2 FT/S) h = DEPTH OF WATER ON GRATE (FT)</p>

REFERENCES:
FHWA VISUAL URBAN (HY-22) URBAN
DRAINAGE DESIGN PROGRAMS TEXAS
DOT HYDRAULIC DESIGN MANUAL

MINNEAPOLIS DESIGN REFERENCE
MNDOT DRAINAGE MANUAL; SECTION 8.7
1 OF 3; NOT TO SCALE

	DRW: DCD	DATE: 5/03	<p style="font-size: 1.2em; margin: 0;">INLET CAPACITY CHART</p>	<p style="font-size: 0.8em; margin: 0;">STANDARD PLATE NO. SEWR-6007</p>
	APP: HRS	DATE: 1/07		