

# Municipal Concrete QUICK Reference Guide for OPSS 1350 MUNI

Construction Element	OPSS #	CSA Exposure Class	Maximum W/CM	Minimum Compressive Strength (MPa @ Age)	Aggregate Size (mm)	Plastic Air Content (%)	Concrete Curing Type (CSA A23.1 Table 20)			Chloride Ion Penetrability Test (Coulombs @ Age)
							Normal Concrete	HVSCM 1	HVSCM 2	
Concrete Pavement & Base	350	C – 2	0.45	32 @ 28d	37.5	4 – 7	2	2	2	--
Concrete Sidewalk	351	C – 2	0.45	32 @ 28d	19.0	5 – 8	2	2	2	--
Concrete Curb & Gutter	353	C – 2	0.45	32 @ 28d	19.0	5 – 8	2	2	2	--
Full Depth Concrete Pavement Repair	360	C – 2	0.45	32 @ 28d	37.5	4 – 7	2	2	2	--
Fast Track Full Depth Pavement Repairs	362	C – 2	0.45	15 @ opening 32 @ 28d	37.5	4 – 7	2	2	2	--
Partial Depth Concrete Pavement Repair	364	C – 2	0.45	32 @ 28d	19.0	5 – 8	2	2	2	--
Concrete Barrier – Standard Height <sup>1</sup>	553	C – 2	0.45	32 @ 28d	19.0	5 – 8	2	2	2	--
Concrete Barrier – Tall Wall <sup>1</sup>	553	C – 2	0.45	35 @ 28d	19.0	5 – 8	2	2	2	--
Concrete Patches	930	C – 1	0.40	35 @ 28d	13.2	6 – 9	2	3	2	< 1,500 @ 56d
Reinforced Concrete	904	C – 1	0.40	35 @ 28d	19	5 – 8	2	3	2	< 1,500 @ 56d
High Performance Concrete	904	C – XL	0.37	50 @ 56d	19	5 – 8	3	3	2	< 1,000 @ 56d
Unshrinkable Fill	1359	N/A	OPSS 1359 utilizes a prescriptive concrete specification: Maximum 25 kg/m <sup>3</sup> cement, a minimum slump of 150 mm and a maximum strength of 0.70 MPa 28 days.							

## Notes:

- Note <sup>1</sup> = Concrete barrier walls are typically not reinforced. If the barrier wall contains reinforcement (such as at transitions and light standards) the CSA exposure class changes to C – 1 with the concrete requirements of reinforced concrete.
- Miscellaneous concrete applications such as sound barrier fence posts, and other concrete applications that are located a sufficient distance from the roadway to avoid chloride exposure, are typically classified as an F -1 concrete (0.50 W/CM ratio, 30 MPa @ 28d, 5 – 8% air, etc.)
- HVSCM 1 = High Volume of Supplementary Cementing Materials 1 = Slag replacement above 45% or Fly Ash replacement above 40%
- HVSCM 2 = High Volume of Supplementary Cementing Materials 2 = Slag replacement above 35% or Fly Ash replacement above 30%
- Table values based on the most stringent of CSA A23.1 (as per OPSS 1350 MUNI) or the applicable OPSS standard for the concrete element
- CSA A23.1 Table 20 – Curing requirements:
  - Type 1 = Basic Curing = 3 d at ≥ 10°C or for a time necessary to attain 40% of specified strength
  - Type 2 = Additional Curing = 7 d at ≥ 10°C **and** for a time necessary to attain 70% of specified strength
  - Type 3 = Extended Curing = **Wet curing** for 7 d at ≥ 10°C