

NCDOT Drainage Box Depth (English)

4/24/2026

Catch Basin (CB) Max Depth = 16.0'		
Std. No.:	840.01, .02	840D02
Type:	Std.	Min. Depth <sup>δ</sup>
Min. Cover <sup>α,β,ζ</sup> =	1.75' <sup>γ</sup>	1.0' - 1.5'
Pipe DIA	Depth <sup>ε</sup>	Depth <sup>ε</sup>
(in)	(ft)	(ft)
12	2.75	2.00
15	3.00	2.25
18	3.25	2.50
24	3.75	3.00
30	4.25	4.00
36	4.75	4.50
42	5.25	5.00
48	5.75	5.50
54	6.25	6.00

**Notes:**

(α) Box minimum cover is measured from inside crown of pipe.

(β) Box minimum cover requirements do not ensure that pipes meet minimum cover structural requirements outside of the box. Refer to [Pipe Material Selection Guide](#) instead.

(γ) Assumes typical pavement depth ≤ 11". Adjust accordingly for Interstate and other atypical pavements > 11" thick.

(δ) Do not use when piping under pavement.

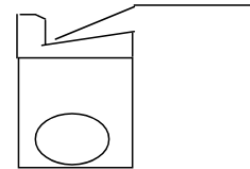
(ε) Depth of Box and the Elevation for the Drainage Summary Sheets are taken from the Face of Curb - 0.17' (2" depression).

(ζ) Minimum Cover is referenced to Face of Curb. Use a Constant Offset or Vertical Offset of -0.17' from source elevation to account for 2" depression in GEOPAK Drainage and ORD Drainage & Utilities.

(η) Pipes up to 42" may be used w/ std. no. 840.45.

(θ) Pipes up to 54" may be used w/ std. no. 840.46.

(ι) Pipes up to 48" may be used up to 30.0' deep w/ std. no. 840.52.



Open Throat Catch Basin (OTCB) Max Depth = 16.0'			
Std. No.:	840.04, .05	6" Opening	8" Opening
Type:	Std.	Orifice Opening	
Min. Cover =	0.83'	1.8-2.5 sq. ft.	2.3-3.3 sq. ft.
Pipe DIA	Depth	Inlet Capacity per Open (sag)*	
(in)	(ft)	(cfs)	(cfs)
12	1.83	6.86	8.62
15	2.08	6.86	8.62
18	2.33	7.84	9.85
24	2.83	7.84	9.85
30	3.33	7.84	9.85
36	3.83	8.82	11.1
42	4.33	9.80	12.3
48	4.83	9.80	12.3

\*Based on 50% blockage.

Grate Std. No.: 840.03 Type E / F / G

Total Clear Area Orifice Opening = 3.1 sq. ft. (Type E)

Drop Inlets (DI) <sup>η</sup> Max Depth = 12.0'			
Std. No.:	840.14	840.14,.15	840D14, D15
Type:	Under Pavement	Yard Inlet <sup>δ</sup>	Min. Depth <sup>δ</sup>
Min. Cover <sup>α,β</sup> =	1.92' <sup>γ</sup>	1.0'	0.67'
Pipe DIA	Depth	Depth	Depth
(in)	(ft)	(ft)	(ft)
12	2.92	2.00	1.67
15	3.17	2.25	1.92
18	3.42	2.50	2.17
24	3.92	3.00	2.67
30	4.42	3.50	3.17

1) 36" and above requires special detail.

2) 24" and above cannot tie into narrow side of Std. DI. Use a Type A 2GI with narrow slot grates in this case.

Driveway Drop Inlet (DDI)	
Std. No.:	840.30
Type:	Std. <sup>δ</sup>
Min. Cover <sup>α,β</sup> =	1.5'-2.5'
Pipe DIA	Depth
(in)	(ft)
12	3.50
15	3.50
18	3.50
24	3.50

1) 30" and above requires special detail.

2) 18" and above cannot tie into narrow side of DDI.

Grate Inlet (GI, 2GI, 3GI, 4GI) Max Depth <sup>ι</sup> = 12.0'					
Std. No.:	840.17	840D17	840.18	840.19	840.18, .35, .36
Type:	A	Min. Depth A	B <sup>δ,η</sup>	D <sup>δ,η</sup>	B Under Pavement, TB <sup>θ</sup>
Min. Cover <sup>α,β</sup> =	2.75'	3/4GI - 2.17'	1.5'	0.67'	1.92' <sup>γ</sup>
Pipe DIA	Depth	Depth	Depth	Depth	Depth
(in)	(ft)	(ft)	(ft)	(ft)	(ft)
12	3.75	2.67 / 3.17	2.50	1.67	2.92
15	4.00	2.92 / 3.42	2.75	1.92	3.17
18	4.25	3.17 / 3.67	3.00	2.17	3.42
24	4.75	3.67 / 4.17	3.50	2.67	3.92
30	5.25	4.17 / 4.67	4.00	3.17	4.42
36	5.75	4.67 / 5.17	4.50	3.67	4.92
42	6.25	5.17 / 5.67	Use Type "A" for 3GIs, etc., for 42" and above, and/or 24" or larger coming into Dim. B (narrow side).		
48	6.75	5.67 / 6.17			
54	7.25	6.17 / 6.67			
60	7.75	6.67 / 7.17			
66	8.25	7.17 / 7.67			
72	8.75	7.67 / 8.17			

Grate Std. No.:	Total Clear Area	Weir Length	Inlet Capacity
	Orifice Opening	(sag)*	(sag)*
840.20, .22	4.4 sq. ft.	9.2 ft.	6.2 cfs
840.24	4.1 sq. ft.	9.2 ft.	5.6 cfs
840.37	5.8 sq. ft.	9.3 ft.	9.4 cfs
840.39	5.1 sq. ft.	9.3 ft.	7.7 cfs

Junction Box (JB) Max Depth <sup>ι</sup> = 12.0'			
Std. No.:	840.31, .32	840.34	
Type:	w/ slab lid	MH lid	TB <sup>θ</sup> w/ MH lid, Under Pavement
Min. Cover <sup>α,β</sup> =	1.75'	2.38'	2.88'
Pipe DIA	Depth	Depth	Depth
(in)	(ft)	(ft)	(ft)
12	2.75	3.38	3.88
15	3.00	3.63	4.13
18	3.25	3.88	4.38
24	3.75	4.38	4.88
30	4.25	4.88	5.38
36	4.75	5.38	5.88
42	5.25	5.88	6.38
48	5.75	6.38	
54	6.25	6.88	
60	6.75	7.38	
66	7.25	7.88	

\*Based on 50% blockage and weir flow on three sides.

Grate Std. No.:	Total Clear Area	Weir Length	Inlet Capacity
	Orifice Opening	(sag)*	(sag)*
840.16	3.7 sq. ft.	8.6 ft.	5.0 cfs

\*Based on 50% blockage and weir flow on three sides.