

T.D.O.T. Geopak Drainage Nodes

- Names for nodes indicate inside length & width dimensions of square structures or inside diameter of circular structures.
- All values are from T.D.O.T. Standard Roadway Drawings based on concrete pipe.
- For use with "Min Fixed Drop" option.... Minimum Depth of Cover = Minimum Depth of Node - (Pipe Size + Drop Across Bottom of Structure) with both inlet & outlet pipes of the same size. **When node has outlet pipe only or the outlet pipe is larger than the inlet pipe, increase the minimum depth of cover by the drop across bottom of structure value.**
- If no values are entered under a pipe size this indicates that pipe size is not valid with that node.
- Any pipe size which includes a "W" with the minimum depth of cover value indicates the pipe size can only be used in the wide side of the structure.

Table A Pipe Sizes 15" - 42"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					15		18		24		30		36		42	
Type: Grate					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
CB#10 32"X26"	Lowered 6-30 Curb & Grate Inlet	CB32X26S	0.12	5.08		2.12	3.74	2.12	4.28	2.16						
CB#10 4X3	6" NonMount. Curb & Grate Inlet	CB4X3S	0.17	20.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33		
CB#10 4' DIA	6" NonMount. Curb & Grate Inlet	CB4DIAS	0.17	20.00			3.88	2.21	4.42	2.25						
CB#10 4X4	6" NonMount. Curb & Grate Inlet	CB4X4S	0.17	28.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33		
CB#12 32"X32"	6" NonMount. Curb & Grate Inlet	CB32X32	0.12	4.58			3.74	2.12	4.28	2.16						
CB#12 4X3	6" NonMount. Curb & Grate Inlet	CB4X3	0.17	20.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33		
CB#12 4' DIA	6" NonMount. Curb & Grate Inlet	CB4DIA	0.17	20.00			3.88	2.21	4.42	2.25						
CB#12 4X4	6" NonMount. Curb & Grate Inlet	CB4X4	0.17	28.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33		
CB#12 5' DIA	6" NonMount. Curb & Grate Inlet	CB5DIA	0.21	40.00			3.92	2.21	4.46	2.25	5.00	2.29	5.55	2.34	6.09	2.38
CB#12 5'2"X5'2"	6" NonMount. Curb & Grate Inlet	CB62X62	0.22	28.00			4.13	2.41	4.67	2.45	5.22	2.50	5.76	2.54	6.30	2.58
CB#12 6' DIA	6" NonMount. Curb & Grate Inlet	CB6DIA	0.25	40.00			3.97	2.22	4.51	2.26	5.05	2.30	5.59	2.34	6.13	2.38
CB#12 7' DIA	6" NonMount. Curb & Grate Inlet	CB7DIA	0.29	40.00			4.34	2.55	4.88	2.59	5.42	2.63	5.97	2.68	6.51	2.72
CB#12 7X7	6" NonMount. Curb & Grate Inlet	CB7X7	0.29	28.00			4.17	2.38	4.72	2.43	5.26	2.47	5.80	2.51	6.34	2.55
CB#12 8' DIA	6" NonMount. Curb & Grate Inlet	CB8DIA	0.33	40.00			4.38	2.55	4.92	2.59	5.46	2.63	6.00	2.67	6.54	2.71
CB#12 9' DIA	6" NonMount. Curb & Grate Inlet	CB9DIA	0.38	40.00			4.42	2.54	4.96	2.58	5.50	2.62	6.04	2.66	6.58	2.70
CB#12 9X9	6" NonMount. Curb & Grate Inlet	CB9X9	0.38	28.00			4.25	2.37	4.79	2.41	5.33	2.45	5.88	2.50	6.42	2.54
CB#12 10' DIA	6" NonMount. Curb & Grate Inlet	CB10DIA	0.42	40.00			4.46	2.54	5.00	2.58	5.54	2.62	6.08	2.66	6.63	2.71
CB#13 4X3	6" NonMount. Curb & Grate Inlet	CB4X3	0.17	20.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.83		
CB#13 4' DIA	6" NonMount. Curb & Grate Inlet	CB4DIA	0.17	20.00			3.88	2.21	4.42	2.25						
CB#13 5' DIA	6" NonMount. Curb & Grate Inlet	CB5DIA	0.21	40.00			3.92	2.21	4.46	2.25	5.00	2.29	5.55	2.34	6.09	2.38

Table A Pipe Sizes 15" - 42"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					15			18			24			30		
					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
Type: Gate																
CB#13 6' DIA	6" NonMount. Curb & Gate Inlet	CB6DIA	0.25	40.00			3.97	2.22	4.51	2.26	5.05	2.30	5.59	2.34	6.13	2.38
CB#13 7' DIA	6" NonMount. Curb & Gate Inlet	CB7DIA	0.29	40.00			4.34	2.55	4.88	2.59	5.42	2.63	5.97	2.68	6.51	2.72
CB#13 8' DIA	6" NonMount. Curb & Gate Inlet	CB8DIA	0.33	40.00			4.38	2.55	4.92	2.59	5.46	2.63	6.00	2.67	6.54	2.71
CB#13 9' DIA	6" NonMount. Curb & Gate Inlet	CB9DIA	0.38	40.00			4.42	2.54	4.96	2.58	5.50	2.62	6.04	2.66	6.58	2.70
CB#13 10' DIA	6" NonMount. Curb & Gate Inlet	CB10DIA	0.42	40.00			4.46	2.54	5.00	2.58	5.54	2.62	6.08	2.66	6.63	2.71
CB#14 8X3	6" NonMount. Curb & Gate Inlet	CB8X3	0.33	20.00			4.05	2.22	4.59	2.26	5.13	W 2.30	5.67	W 2.34	6.21	W 2.38
CB#14 8' DIA	6" NonMount. Curb & Gate Inlet	CB8DIA	0.33	40.00			4.38	2.55	4.92	2.59	5.46	2.63	6.00	2.67	6.54	2.71
CB#14 9X9	6" NonMount. Curb & Gate Inlet	CB9X9	0.38	28.00			4.42	2.54	4.96	2.58	5.50	2.62	6.04	2.66	6.58	2.70
CB#16 8X4	6" NonMount. Curb & Gate Inlet	CB8X4	0.33	20.00			4.05	2.22	4.59	2.26	5.13	2.30	5.67	2.34	6.21	W 2.38
CB#17 8X5'2"	6" NonMount. Curb & Gate Inlet	CB8X62	0.33	20.00			4.22	2.39	4.76	2.43	5.30	2.47	5.84	2.51	6.38	2.55
CB#25 32"X32"	6" Mountable Curb & Gate Inlet	CB32X32	0.12	4.58			3.74	2.12	4.28	2.16						
CB#25 4X3	6" Mountable Curb & Gate Inlet	CB4X3	0.17	20.00			3.88	2.21	4.42	2.25	4.96	W 2.29	5.50	W 2.33		
CB#25 4' DIA	6" Mountable Curb & Gate Inlet	CB4DIA	0.17	20.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33		
CB#25 4X4	6" Mountable Curb & Gate Inlet	CB4X4	0.17	28.00			3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33		
CB#25 5' DIA	6" Mountable Curb & Gate Inlet	CB5DIA	0.21	40.00			3.92	2.21	4.46	2.25	5.00	2.29	5.55	2.34	6.09	2.38
CB#25 5'2"X5'2"	6" Mountable Curb & Gate Inlet	CB62X62	0.22	28.00			4.13	2.41	4.67	2.45	5.22	2.50	5.76	2.54	6.30	2.58
CB#25 6' DIA	6" Mountable Curb & Gate Inlet	CB6DIA	0.25	40.00			3.97	2.22	4.51	2.26	5.05	2.30	5.59	2.34	6.13	2.38
CB#25 7' DIA	6" Mountable Curb & Gate Inlet	CB7DIA	0.29	40.00			4.34	2.55	4.88	2.59	5.42	2.63	5.97	2.68	6.51	2.72
CB#25 7X7	6" Mountable Curb & Gate Inlet	CB7X7	0.29	28.00			4.17	2.38	4.72	2.43	5.26	2.47	5.80	2.51	6.34	2.55
CB#25 8' DIA	6" Mountable Curb & Gate Inlet	CB8DIA	0.33	40.00			4.38	2.55	4.92	2.59	5.46	2.63	6.00	2.67	6.54	2.71
CB#25 9X9	6" Mountable Curb & Gate Inlet	CB9X9	0.38	28.00			4.25	2.37	4.79	2.41	5.33	2.45	5.88	2.50	6.42	2.54
CB#26 8X3	6" Mountable Curb & Gate Inlet	CB8X3	0.33	20.00			4.05	2.22	4.59	2.26	5.13	W 2.30	5.67	W 2.34	6.21	W 2.38
CB#27 8X4	6" Mountable Curb & Gate Inlet	CB8X4	0.33	20.00			4.05	2.22	4.59	2.26	5.13	2.30	5.67	2.34	6.21	W 2.38
CB#28 32"X32"	4" Mountable Curb & Gate Inlet	CB32X32	0.12	4.58			3.74	2.12	4.28	2.16						
CB#28 4X3	4" Mountable Curb & Gate Inlet	CB4X3	0.17	20.00			3.88	2.21	4.42	2.25	4.96	W 2.29	5.50	W 2.33		
CB#28 4' DIA	4" Mountable Curb & Gate Inlet	CB4DIA	0.17	20.00			3.88	2.21	4.42	2.25						

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					15			18			24			30		
					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
Type: Grate																
CB#28 5' DIA	4" Mountable Curb & Grate Inlet	CB5DIA	0.21	40.00		3.92	2.21	4.46	2.25	5.00	2.29	5.55	2.34	6.09	2.38	
CB#28 6' DIA	4" Mountable Curb & Grate Inlet	CB6DIA	0.25	40.00		3.97	2.22	4.51	2.26	5.05	2.30	5.59	2.34	6.13	2.38	
CB#28 7' DIA	4" Mountable Curb & Grate Inlet	CB7DIA	0.29	40.00		4.34	2.55	4.88	2.59	5.42	2.63	5.97	2.68	6.51	2.72	
CB#28 8' DIA	4" Mountable Curb & Grate Inlet	CB8DIA	0.33	40.00		4.38	2.55	4.92	2.59	5.46	2.63	6.00	2.67	6.54	2.71	
CB#29 8X3	4" Mountable Curb & Grate Inlet	CB8X3	0.33	20.00		4.05	2.22	4.59	2.26	5.13	2.30	5.67	2.34	6.21	2.38	
CB#31 7' DIA	Med. Barrier Curb & Grate Inlet	CB7DIAC	0.29	40.00		4.34	2.55	4.88	2.59	5.42	2.63	5.97	2.68	6.51	2.72	
CB#31 7X7	Med. Barrier Curb & Grate Inlet	CB7X7C	0.29	28.00		4.34	2.55	4.88	2.59	5.42	2.63	5.97	2.68	6.51	2.72	
CB#31 9X9	Med. Barrier Curb & Grate Inlet	CB9X9C	0.38	28.00		4.42	2.54	4.96	2.58	5.50	2.62	6.04	2.66	6.58	2.70	
CB#32 32"X80"	Med. Barrier Curb & Grate Inlet	CB32X80C	0.12	6.00		3.74	2.12	4.28	2.16							
CB#38 32"X32"	Median Ditch Grate	CB32X32M	0.12	4.58		2.96	1.34	3.50	1.38							
CB#38 4X4	Median Ditch Grate	CB4X4M	0.17	28.00		3.80	2.13	4.34	2.17	4.88	2.21	5.42	2.25			
CB#38 5' DIA	Median Ditch Grate	CB5DIAM	0.21	40.00		3.84	2.13	4.38	2.17	4.92	2.21	5.46	2.25	6.00	2.29	
CB#38 5'2"X5'2"	Median Ditch Grate	CB62X62M	0.22	28.00		4.05	2.33	4.59	2.37	5.13	2.41	5.67	2.45	6.22	2.50	
CB#38 6' DIA	Median Ditch Grate	CB6DIAM	0.25	40.00		3.88	2.13	4.42	2.17	4.97	2.22	5.51	2.26	6.05	2.30	
CB#38 7' DIA	Median Ditch Grate	CB7DIAM	0.29	40.00		4.26	2.47	4.80	2.51	5.34	2.55	5.88	2.59	6.42	2.63	
CB#38 8' DIA	Median Ditch Grate	CB8DIAM	0.33	40.00		4.29	2.46	4.83	2.50	5.38	2.55	5.92	2.59	6.46	2.63	
CB#39 4X4	Median Ditch Grate	CB4X4M	0.17	28.00		2.96	1.29	3.50	1.33	4.04	1.37	4.58	1.41			
CB#39 5'2"X5'2"	Median Ditch Grate	CB62X62M	0.22	28.00		4.13	2.41	4.67	2.45	5.22	2.50	5.76	2.54	6.30	2.58	
CB#39 7' DIA	Median Ditch Grate	CB7DIAM	0.29	40.00		4.29	2.50	4.83	2.54	5.38	2.59	5.92	2.63	6.46	2.67	
CB#39 7X7	Median Ditch Grate	CB7X7M	0.29	28.00		4.13	2.34	4.67	2.38	5.22	2.43	5.76	2.47	6.30	2.51	
CB#39 8' DIA	Median Ditch Grate	CB8DIAM	0.33	40.00		4.42	2.59	4.96	2.63	5.50	2.67	6.04	2.71	6.58	2.75	
CB#39 9X9	Median Ditch Grate	CB9X9M	0.38	28.00		4.21	2.33	4.75	2.37	5.29	2.41	5.83	2.45	6.38	2.50	
CB#40 8X4	Median Ditch Grate	CB8X4M	0.33	20.00		3.13	1.30	3.67	1.34	4.21	1.38	4.75	1.42	5.29	1.46	
CB#40 9X9	Median Ditch Grate	CB9X9M	0.38	28.00		4.38	2.50	4.92	2.54	5.46	2.58	6.00	2.62	6.54	2.66	
CB#41 32"X32"	Med. Barrier Curb & Grate Inlet	CB32X32B	0.12	4.58		3.74	2.12	4.28	2.16							
CB#41 4X3	Med. Barrier Curb & Grate Inlet	CB4X3B	0.17	20.00		3.88	2.21	4.42	2.25	4.96	2.29	5.50	2.33			

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					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
Type: Junction																
MH#3 4' DIA	Manhole	MH4DIA	0.17	40.00			3.54	1.87	4.08	1.91						
MH#3 5'DIA	Manhole	MH5DIA	0.21	40.00			3.54	1.83	4.08	1.87				1.92	1.96	
MH#3 5'2"x5'2"	Manhole	MH62X62	0.22	28.00			4.19	2.47	4.73	2.51				5.27	5.81	6.35
MH#3 6' DIA	Manhole	MH6DIA	0.25	40.00			3.63	1.88	4.17	1.92				5.25	2.00	5.79
MH#3 7' DIA	Manhole	MH7DIA	0.29	40.00			3.63	1.84	4.17	1.88				5.25	1.96	5.79
MH#3 7X7	Manhole	MH7X7	0.29	28.00			4.40	2.61	4.94	2.65				6.02	2.73	6.56
MH#3 8' DIA	Manhole	MH8DIA	0.33	40.00			3.71	1.88	4.25	1.92				5.33	2.00	5.88
MH#3 9' DIA	Manhole	MH9DIA	0.38	40.00			3.71	1.83	4.25	1.87				5.33	1.95	5.88
MH#3 9X9	Manhole	MH9X9	0.38	28.00			4.40	2.52	4.94	2.56				6.02	2.64	6.56
MH#3 10' DIA	Manhole	MH10DIA	0.42	40.00			3.71	1.79	4.25	1.83				5.33	1.91	5.88
JB#1 32"x32"	Junction Box*	JB32X32	0.12	50.00			3.29	1.67	3.83	1.71						
JB#2 4X4	Junction Box*	JB4X4	0.17	50.00			3.29	1.62	3.83	1.66				4.92	1.75	
JB#3 5'2"x5'2"	Junction Box*	JB62X62	0.22	50.00			3.63	1.91	4.17	1.95				5.25	2.03	5.79
JB#4 7X7	Junction Box*	JB7X7	0.29	30.00			3.83	2.04	4.38	2.09				5.46	2.17	6.00
JB#5 9X9	Junction Box*	JB9X9	0.38	30.00			4.17	2.29	4.71	2.33				5.79	2.41	6.33
JB#6 4' DIA	Junction Box*	JB4DIA	0.17	20.00			3.88	2.21	4.42	2.25						
JB#6 5' DIA	Junction Box*	JB5DIA	0.21	40.00			3.92	2.21	4.46	2.25				5.55	2.34	6.09
JB#6 6' DIA	Junction Box*	JB6DIA	0.25	40.00			3.97	2.22	4.51	2.26				5.59	2.34	6.13
JB#6 7' DIA	Junction Box*	JB7DIA	0.29	40.00			4.34	2.55	4.88	2.59				5.97	2.68	6.51
JB#6 8' DIA	Junction Box*	JB8DIA	0.33	40.00			4.38	2.55	4.92	2.59				6.00	2.67	6.54
JB#6 9' DIA	Junction Box*	JB9DIA	0.38	40.00			4.42	2.54	4.96	2.58				6.04	2.66	6.58
JB#6 10' DIA	Junction Box*	JB10DIA	0.42	40.00			4.46	2.54	5.00	2.58				6.08	2.66	6.63
Stub	Stub into Culvert	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Maximum Depth for use in Geopak equals tabulated depth (to top of structure) + Minimum Depth based on pipe size.
Add an additional 2 feet for minimum cover over structure to Minimum Depth of Cover if junction box is within the clear zone.

Type: Outlet																
Endwall	Endwall for outlet pipe(generic)	EW	0.00	Pipe Size*	1.25	0.00	1.50	0.00	2.00	0.00	2.50	0.00	3.00	0.00	3.50	0.00
Outlet Stub	Stub into existing structure	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Outlet	Special ditch end	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* During initial design, set the Maximum Depth to a value greater than the expected pipe size and the Minimum Depth of Cover to 0.00. Once pipe size is determined, reset the Maximum Depth to the designed pipe size + the distance to the top lip of the endwall to be used with the pipe and reset the Minimum Depth of Cover to the distance to the top lip of the endwall.

Table A Pipe Sizes 15" - 42"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					15			18			24			30		
Type: Other					Min. Depth	Min. Depth of Cover	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth of Cover
EW Inlet	Endwall inlet into drainage system	EW	0.00	Pipe Size*	1.25	0.00	1.50	0.00	2.00	0.00	2.50	0.00	3.00	0.00	3.50	0.00
Ditch Begin	Begin special ditch	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Change	Special ditch shape change	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* During initial design, set the Maximum Depth to a value greater than the expected pipe size and the Minimum Depth of Cover to 0.00. Once pipe size is determined, reset the Maximum Depth to the designed pipe size + the distance to the top lip of the endwall to be used with the pipe and reset the Minimum Depth of Cover to the distance to the top lip of the endwall.

Type: Headwall

Culvert Endwall	Pipe Culvert Endwall(generic)	EW	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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Type: Grate - Bridge Drains

BD 2'X8'7"	Bridge End Drain	BD2X8	0.00	3.50			3.50	2.00								
BD 4'X8'7"	Bridge End Drain	BD4X8	0.00	3.50			3.50	2.00								
					6		9									
BD 2'X9"	Bridge Deck Drain	BD9X2	0.00	1.50	1.25	0.75	1.50	0.75								

Type: Curb - Bridge Drains

BD-PRPT	Bridge Deck Drain - Parapet	BDPRPT	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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Type: Slotted Drain

SD 12"	Slotted Drain	SLOT12	0.00	1.50	1.50	0.50										
SD 15"	Slotted Drain	SLOT15	0.00	1.75		1.75	0.50									
SD 18"	Slotted Drain	SLOT18	0.00	2.00			2.00	0.50								
SD 24"	Slotted Drain	SLOT24	0.00	2.50						2.50	0.50					
SD 30"	Slotted Drain	SLOT30	0.00	3.00								3.00	0.50			
SD 36"	Slotted Drain	SLOT36	0.00	3.50										3.50	0.50	

Table B Pipe Sizes 48" - 78"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					48			54			60			66		
					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
Type: Grate																
CB#10 32"X26"	Lowered 6-30 Curb & Grate Inlet	CB32X26S	0.12	5.08												
CB#10 4X3	6" NonMount. Curb & Grate Inlet	CB4X3S	0.17	20.00												
CB#10 4' DIA	6" NonMount. Curb & Grate Inlet	CB4DIA S	0.17	20.00												
CB#10 4X4	6" NonMount. Curb & Grate Inlet	CB4X4S	0.17	20.00												
CB#12 32"X32"	6" NonMount. Curb & Grate Inlet	CB32X32	0.12	4.58												
CB#12 4X3	6" NonMount. Curb & Grate Inlet	CB4X3	0.17	20.00												
CB#12 4' DIA	6" NonMount. Curb & Grate Inlet	CB4DIA	0.17	20.00												
CB#12 4X4	6" NonMount. Curb & Grate Inlet	CB4X4	0.17	28.00												
CB#12 5' DIA	6" NonMount. Curb & Grate Inlet	CB5DIA	0.21	40.00	6.63	2.42										
CB#12 5'2"X5'2"	6" NonMount. Curb & Grate Inlet	CB62X62	0.22	28.00	6.84	2.62										
CB#12 6' DIA	6" NonMount. Curb & Grate Inlet	CB6DIA	0.25	40.00	6.67	2.42										
CB#12 7' DIA	6" NonMount. Curb & Grate Inlet	CB7DIA	0.29	40.00	7.05	2.76	7.59	2.80	8.13	2.84	8.67	2.88	9.22	2.93	9.76	2.97
CB#12 7X7	6" NonMount. Curb & Grate Inlet	CB7X7	0.29	28.00	6.88	2.59	7.42	2.63	7.97	2.68	8.51	2.72				
CB#12 8' DIA	6" NonMount. Curb & Grate Inlet	CB8DIA	0.33	40.00	7.08	2.75	7.63	2.80	8.17	2.84	8.71	2.88	9.25	2.92	9.79	2.96
CB#12 9' DIA	6" NonMount. Curb & Grate Inlet	CB9DIA	0.38	40.00	7.13	2.75	7.67	2.79	8.21	2.83	8.75	2.87	9.29	2.91	9.83	2.95
CB#12 9X9	6" NonMount. Curb & Grate Inlet	CB9X9	0.38	28.00	6.96	2.58	7.50	2.62	8.04	2.66	8.58	2.70	9.13	2.75	9.67	2.79
CB#12 10' DIA	6" NonMount. Curb & Grate Inlet	CB10DIA	0.42	40.00	7.17	2.75	7.71	2.79	8.25	2.83	8.79	2.87	9.33	2.91	9.88	2.96
CB#13 4X3	6" NonMount. Curb & Grate Inlet	CB4X3	0.17	20.00												
CB#13 4' DIA	6" NonMount. Curb & Grate Inlet	CB4DIA	0.17	20.00												
CB#13 5' DIA	6" NonMount. Curb & Grate Inlet	CB5DIA	0.21	40.00	6.63	2.42										
CB#13 6' DIA	6" NonMount. Curb & Grate Inlet	CB6DIA	0.25	40.00	6.67	2.42										
CB#13 7' DIA	6" NonMount. Curb & Grate Inlet	CB7DIA	0.29	40.00	7.05	2.76	7.59	2.80	8.13	2.84	8.67	2.88	9.22	2.93	9.76	2.97
CB#13 8' DIA	6" NonMount. Curb & Grate Inlet	CB8DIA	0.33	40.00	7.08	2.75	7.63	2.80	8.17	2.84	8.71	2.88	9.25	2.92	9.79	2.96
CB#13 9' DIA	6" NonMount. Curb & Grate Inlet	CB9DIA	0.38	40.00	7.13	2.75	7.67	2.79	8.21	2.83	8.75	2.87	9.29	2.91	9.83	2.95
CB#13 10' DIA	6" NonMount. Curb & Grate Inlet	CB10DIA	0.42	40.00	7.17	2.75	7.71	2.79	8.25	2.83	8.79	2.87	9.33	2.91	9.88	2.96
CB#14 8X3	6" NonMount. Curb & Grate Inlet	CB8X3	0.33	20.00	6.75	2.42	7.30	2.47	7.84	2.51						

Table B Pipe Sizes 48" - 78"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes																
					48		54		60		66		72		78						
					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover					
Type: Grate																					
CB#14 8' DIA	6" NonMount. Curb & Grate Inlet	CB8DIA	0.33	40.00	7.08	2.75	2.80	7.63	2.80	8.17	2.84	8.71	2.88								
CB#14 9X9	6" NonMount. Curb & Grate Inlet	CB9X9	0.38	28.00	7.13	2.75	2.79	7.67	2.79	8.21	2.83	8.75	2.87			2.91	9.29	9.83			2.95
CB#16 8X4	6" NonMount. Curb & Grate Inlet	CB8X4	0.33	20.00	6.75	2.42	2.47	7.30	W	7.84	W	2.51									
CB#17 8X5.2"	6" NonMount. Curb & Grate Inlet	CB8X62	0.33	20.00	6.92	2.59	2.64	7.47	W	8.01	W	2.68									
CB#25 32"X32"	6" Mountable Curb & Grate Inlet	CB32X32	0.12	4.58																	
CB#25 4X3	6" Mountable Curb & Grate Inlet	CB4X3	0.17	20.00																	
CB#25 4' DIA	6" Mountable Curb & Grate Inlet	CB4DIA	0.17	20.00																	
CB#25 4X4	6" Mountable Curb & Grate Inlet	CB4X4	0.17	28.00																	
CB#25 5' DIA	6" Mountable Curb & Grate Inlet	CB5DIA	0.21	40.00	6.63	2.42	2.46	7.17	2.46	7.71	2.50	8.25	2.54								
CB#25 5'2"X5'2"	6" Mountable Curb & Grate Inlet	CB62X62	0.22	28.00	6.84	2.62															
CB#25 6' DIA	6" Mountable Curb & Grate Inlet	CB6DIA	0.25	40.00	6.67	2.42	2.47	7.22	2.47	7.76	2.51	8.30	2.55								
CB#25 7' DIA	6" Mountable Curb & Grate Inlet	CB7DIA	0.29	40.00	7.05	2.76	2.80	7.59	2.80	8.13	2.84	8.67	2.88								
CB#25 7X7	6" Mountable Curb & Grate Inlet	CB7X7	0.29	28.00	6.88	2.59	2.63	7.42	2.63	7.97	2.68	8.51	2.72								
CB#25 8' DIA	6" Mountable Curb & Grate Inlet	CB8DIA	0.33	40.00	7.08	2.75	2.80	7.63	2.80	8.17	2.84	8.71	2.88								
CB#25 9X9	6" Mountable Curb & Grate Inlet	CB9X9	0.38	28.00	6.96	2.58	2.62	7.50	2.62	8.04	2.66	8.58	2.70			2.75	9.13	9.67			2.79
CB#26 8X3	6" Mountable Curb & Grate Inlet	CB8X3	0.33	20.00	6.75	2.42	2.47	7.30	W	7.84	W	2.51									
CB#27 8X4	6" Mountable Curb & Grate Inlet	CB8X4	0.33	20.00	6.75	2.42	2.47	7.30	W	7.84	W	2.51									
CB#28 32"X32"	4" Mountable Curb & Grate Inlet	CB32X32	0.12	4.58																	
CB#28 4X3	4" Mountable Curb & Grate Inlet	CB4X3	0.17	20.00																	
CB#28 4' DIA	4" Mountable Curb & Grate Inlet	CB4DIA	0.17	20.00																	
CB#28 5' DIA	4" Mountable Curb & Grate Inlet	CB5DIA	0.21	40.00	6.63	2.42	2.46	7.17	2.46	7.71	2.50	8.25	2.54								
CB#28 6' DIA	4" Mountable Curb & Grate Inlet	CB6DIA	0.25	40.00	6.67	2.42	2.47	7.22	2.47	7.76	2.51	8.30	2.55								
CB#28 7' DIA	4" Mountable Curb & Grate Inlet	CB7DIA	0.29	40.00	7.05	2.76	2.80	7.59	2.80	8.13	2.84	8.67	2.88								
CB#28 8' DIA	4" Mountable Curb & Grate Inlet	CB8DIA	0.33	40.00	7.08	2.75	2.80	7.63	2.80	8.17	2.84	8.71	2.88								
CB#29 8X3	4" Mountable Curb & Grate Inlet	CB8X3	0.33	20.00	6.75	2.42	2.47	7.30	W	7.84	W	2.51									
CB#31 7' DIA	Med. Barrier Curb & Grate Inlet	CB7DIAC	0.29	40.00	7.05	2.76	2.80	7.59	2.80	8.13	2.84	8.67	2.88								

Table B Pipe Sizes 48" - 78"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					48			54			60			66		
					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
Type: Grate																
CB#31 7X7	Med. Barrier Curb & Grate Inlet	CB7X7C	0.29	28.00	7.05	2.76	7.59	2.80	8.13	2.84	8.67	2.88				
CB#31 9X9	Med. Barrier Curb & Grate Inlet	CB9X9C	0.38	28.00	7.13	2.75	7.67	2.79	8.21	2.83	8.75	2.87	9.29	2.91	9.83	2.95
CB#32 32"X80"	Med. Barrier Curb & Grate Inlet	CB32X80C	0.12	6.00												
CB#38 32"X32"	Median Ditch Grate	CB32X32M	0.12	4.58												
CB#38 4X4	Median Ditch Grate	CB4X4M	0.17	28.00												
CB#38 5' DIA	Median Ditch Grate	CB5DIAM	0.21	40.00	6.55	2.34	7.09	2.38	7.63	2.42	8.17	2.46				
CB#38 5'2"X5'2"	Median Ditch Grate	CB62X62M	0.22	28.00	6.76	2.54										
CB#38 6' DIA	Median Ditch Grate	CB6DIAM	0.25	40.00	6.59	2.34	7.13	2.38	7.67	2.42	8.22	2.47				
CB#38 7' DIA	Median Ditch Grate	CB7DIAM	0.29	40.00	6.97	2.68	7.51	2.72	8.05	2.76	8.59	2.80				
CB#38 8' DIA	Median Ditch Grate	CB8DIAM	0.33	40.00	7.00	2.67	7.54	2.71	8.08	2.75	8.63	2.80				
CB#39 4X4	Median Ditch Grate	CB4X4M	0.17	28.00												
CB#39 5'2"X5'2"	Median Ditch Grate	CB62X62M	0.22	28.00	6.84	2.62										
CB#39 7' DIA	Median Ditch Grate	CB7DIAM	0.29	40.00	7.00	2.71	7.54	2.75	8.08	2.79	8.63	2.84				
CB#39 7X7	Median Ditch Grate	CB7X7M	0.29	28.00	6.84	2.55	7.38	2.59	7.92	2.63	8.47	2.68				
CB#39 8' DIA	Median Ditch Grate	CB8DIAM	0.33	40.00	7.13	2.80	7.67	2.84	8.21	2.88	8.75	2.92				
CB#39 9X9	Median Ditch Grate	CB9X9M	0.38	28.00	6.92	2.54	7.46	2.58	8.00	2.62	8.54	2.66	9.08	2.70	9.63	2.75
CB#40 8X4	Median Ditch Grate	CB8X4M	0.33	20.00	5.83	1.50	6.38	1.55	6.92	1.59						
CB#40 9X9	Median Ditch Grate	CB9X9M	0.38	28.00	7.08	2.70	7.63	2.75	8.17	2.79	8.71	2.83	9.25	2.87	9.79	2.91
CB#41 32"X32"	Med. Barrier Curb & Grate Inlet	CB32X32B	0.12	4.58												
CB#41 4X3	Med. Barrier Curb & Grate Inlet	CB4X3B	0.17	20.00												
CB#41 4X4	Med. Barrier Curb & Grate Inlet	CB4X4B	0.17	28.00												
CB#41 5' DIA	Med. Barrier Curb & Grate Inlet	CB5DIAB	0.21	40.00	6.63	2.42	7.17	2.46	7.71	2.50	8.25	2.54				
CB#41 5'2"X5'2"	Med. Barrier Curb & Grate Inlet	CB62X62B	0.22	28.00	6.84	2.62										
CB#41 6' DIA	Med. Barrier Curb & Grate Inlet	CB6DIAB	0.25	40.00	6.67	2.42	7.22	2.47	7.76	2.51	8.30	2.55				
CB#41 7' DIA	Med. Barrier Curb & Grate Inlet	CB7DIAB	0.29	40.00	7.05	2.76	7.59	2.80	8.13	2.84	8.67	2.88				
CB#41 7X7	Med. Barrier Curb & Grate Inlet	CB7X7B	0.29	28.00	6.88	2.59	7.42	2.63	7.97	2.68	8.51	2.72				

Table B Pipe Sizes 48" - 78"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					48			54			60			66		
					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth	Min. Depth of Cover	Min. Depth of Cover
Type: Gate																
CB#41 8' DIA	Med. Barrier Curb & Grate Inlet	CB8D1AB	0.33	40.00	7.08	2.75	7.63	2.80	8.17	2.84	8.71	2.88				
CB#41 9X9	Med. Barrier Curb & Grate Inlet	CB9X9B	0.38	28.00	6.96	2.59	7.50	2.63	8.04	2.67	8.58	2.71	9.13	2.76	9.67	2.80
CB#42 32"X32"	Drop Inlet Grate	D32X32	0.12	5.08												
CB#42 4X4	Drop Inlet Grate	D4X4	0.17	28.00												
CB#42 5' DIA	Drop Inlet Grate	D5DIA	0.21	40.00	6.55	2.34	7.09	2.38	7.63	2.42	8.17	2.46				
CB#42 52"X5'2"	Drop Inlet Grate	D62X62	0.22	28.00	6.76	2.54										
CB#42 6' DIA	Drop Inlet Grate	D6DIA	0.25	40.00	6.59	2.34	7.13	2.38	7.67	2.42	8.22	2.47				
CB#42 7' DIA	Drop Inlet Grate	D7DIA	0.29	40.00	6.97	2.68	7.51	2.72	8.05	2.76	8.59	2.80				
CB#42 7X7	Drop Inlet Grate	D7X7	0.29	28.00	6.97	2.68	7.51	2.72	8.05	2.76						
CB#42 8' DIA	Drop Inlet Grate	D8DIA	0.33	40.00	7.00	2.67	7.54	2.71	8.08	2.75	8.63	2.80				
CB#43 8X4	Drop Inlet Grate	D8X4	0.33	20.00	6.59	W	2.26	W	2.30	7.67	W	2.34				
CB#43 8X5'2"	Drop Inlet Grate	D8X62	0.33	20.00	6.84	2.51	7.38	W	7.92	W	2.59					
CB#43 8' DIA	Drop Inlet Grate	D8DIA	0.33	40.00	7.00	2.67	7.54	2.71	8.08	2.75	8.63	2.80				
CB#44 9X9	Drop Inlet Grate	D9X9	0.38	28.00	7.04	2.66	7.58	2.70	8.13	2.75	8.67	2.79	9.21	2.83	9.75	2.87
CB#45 8X4	Med. Barrier Curb & Grate Inlet	CB8X4B	0.33	20.00	6.75	W	2.42	W	2.47	W	2.51					
CB#46 9X9	Med. Barrier Curb & Grate Inlet	CB9X9C	0.38	28.00	7.13	2.75	7.67	2.79	8.21	2.83	8.75	2.87	9.29	2.91	9.83	2.95
CB#51 52"X5'2"	Retaining Wall Curb & Grate Inlet	CB62X62R	0.22	28.00	6.84	2.62										
CB#51 7X7	Retaining Wall Curb & Grate Inlet	CB7X7R	0.29	28.00	7.05	2.76	7.59	2.80	8.13	2.84	8.67	2.88				
CB#51 9X9	Retaining Wall Curb & Grate Inlet	CB9X9R	0.38	28.00	7.29	2.92	7.83	2.96	8.38	3.01	8.92	3.05	9.46	3.09	10.00	3.13
CB#52 9X9	Retaining Wall Curb & Grate Inlet	CB9X9R	0.38	28.00	7.29	2.92	7.83	2.96	8.38	3.01	8.92	3.05	9.46	3.09	10.00	3.13

Table B Pipe Sizes 48" - 78"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					48		54		60		66		72		78	
Type: Junction					Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth	Min. Depth of Cover
MH#3 4' DIA	Manhole	MH4DIA	0.17	40.00												
MH#3 5' DIA	Manhole	MH5DIA	0.21	40.00												
MH#3 5'2"X5'2"	Manhole	MH62X62	0.22	28.00	6.90	2.68										
MH#3 6' DIA	Manhole	MH6DIA	0.25	40.00	6.33	2.08										
MH#3 7' DIA	Manhole	MH7DIA	0.29	40.00	6.33	2.04	6.88	2.09	7.42	2.13						
MH#3 7X7	Manhole	MH7X7	0.29	28.00	7.10	2.81	7.65	2.86	8.19	2.90	8.73	2.94				
MH#3 8' DIA	Manhole	MH8DIA	0.33	40.00	6.42	2.09	6.96	2.13	7.50	2.17	8.04	2.21				
MH#3 9' DIA	Manhole	MH9DIA	0.38	40.00	6.42	2.04	6.96	2.08	7.50	2.12	8.04	2.16	8.58	2.20		
MH#3 9X9	Manhole	MH9X9	0.38	28.00	7.10	2.72	7.65	2.77	8.19	2.81	8.73	2.85	9.27	2.89	9.81	2.93
MH#3 10' DIA	Manhole	MH10DIA	0.42	40.00	6.42	2.00	6.96	2.04	7.50	2.08	8.04	2.12	8.58	2.16	9.13	2.21
JB#1 32"X32"	Junction Box*	JB32X32	0.12	50.00												
JB#2 4X4	Junction Box*	JB4X4	0.17	50.00												
JB#3 5'2"X5'2"	Junction Box*	JB62X62	0.22	30.00	6.33	2.11										
JB#4 7X7	Junction Box*	JB7X7	0.29	30.00	6.54	2.25	7.08	2.29	7.63	2.34	8.17	2.38				
JB#5 9X9	Junction Box*	JB9X9	0.38	30.00	6.88	2.50	7.42	2.54	7.96	2.58	8.50	2.62	9.04	2.66	9.58	2.70
JB#6 4' DIA	Junction Box*	JB4DIA	0.17	20.00												
JB#6 5' DIA	Junction Box*	JB5DIA	0.21	40.00	6.63	2.42										
JB#6 6' DIA	Junction Box*	JB6DIA	0.25	40.00	6.67	2.42										
JB#6 7' DIA	Junction Box*	JB7DIA	0.29	40.00	7.05	2.76	7.59	2.80	8.13	2.84	8.67	2.88	9.22	2.93	9.76	2.97
JB#6 8' DIA	Junction Box*	JB8DIA	0.33	40.00	7.08	2.75	7.63	2.80	8.17	2.84	8.71	2.88	9.25	2.92	9.79	2.96
JB#6 9' DIA	Junction Box*	JB9DIA	0.38	40.00	7.13	2.75	7.67	2.79	8.21	2.83	8.75	2.87	9.29	2.91	9.83	2.95
JB#6 10' DIA	Junction Box*	JB10DIA	0.42	40.00	7.17	2.75	7.71	2.79	8.25	2.83	8.79	2.87	9.33	2.91	9.88	2.96
Stub	Stub into Culvert	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* Maximum Depth for use in Geopak equals tabulated depth (to top of structure) + Minimum Depth based on pipe size.
 Add an additional 2 feet for minimum cover over structure to Minimum Depth of Cover if junction box is within the clear zone.

Type: Outlet																	
Endwall	Endwall for outlet pipe(generic)	EW	0.00	Pipe Size*	4.00	0.00	4.50	0.00	5.00	0.00	5.50	0.00	6.00	0.00	6.50	0.00	0.00
Outlet Stub	Stub into existing structure	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Outlet	Special ditch end	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* During initial design, set the Maximum Depth to a value greater than the expected pipe size and the Minimum Depth of Cover to 0.00. Once pipe size is determined, reset the Maximum Depth to the designed pipe size + the distance to the top lip of the endwall to be used with the pipe and reset the Minimum Depth of Cover to the distance to the top lip of the endwall.

Table B Pipe Sizes 48" - 78"

Drainage Node Name	Node Description	Cell Name	Drop Across Bottom of Structure	Max. Depth	Pipe Sizes											
					48			54			60			66		
					Min. Depth	Min. Depth of Cover	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth of Cover	Min. Depth	Min. Depth of Cover	Min. Depth of Cover
Type: Other																
EW Inlet	Endwall inlet into drainage system	EW	0.00	Pipe Size*	4.00	0.00	0.00	4.50	0.00	0.00	5.00	0.00	0.00	5.50	0.00	6.00
Ditch Begin	Begin special ditch	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ditch Change	Special ditch shape change	STUB	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

* During initial design, set the Maximum Depth to a value greater than the expected pipe size and the Minimum Depth of Cover to 0.00. Once pipe size is determined, reset the Maximum Depth to the designed pipe size + the distance to the top lip of the endwall to be used with the pipe and reset the Minimum Depth of Cover to the distance to the top lip of the endwall.

Type: Headwall																
Culvert Endwall	Pipe Culvert Endwall(generic)	EW	0.00	none	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Type: Grate - Bridge Drains																
BD 2'X8'7"	Bridge End Drain	BD2X8	0.00	3.50												
BD 4'X8'7"	Bridge End Drain	BD4X8	0.00	3.50												
BD 2'X9"	Bridge Deck Drain	BD9X2	0.00	1.50												

Type: Curb - Bridge Drains																
BD-PRPT	Bridge Deck Drain - Parapet	BDPRPT	0.00	none												