



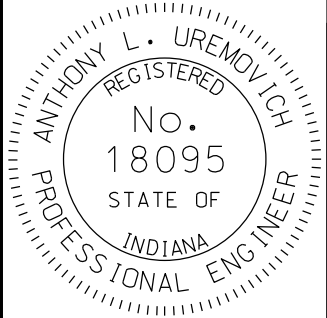




**NOTE:**

1. The tabulated cover depths shall be measured from the bottom of the asphalt or concrete pavement to the top of the pipe.

3" x 1" CORRUGATED ALUMINUM ALLOY PIPE (LOCK SEAM) HEIGHT OF COVER LIMITS (ft.)											
AREA (sft)	DIAMETER (in.)	THICKNESS (in.)									
		0.060		0.075		0.105		0.135		0.164	
		MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
4.9	30	1.0	71.2	1.0	89.4	1.0	100.0	1.0	100.0		
5.9	33	1.0	59.3	1.0	74.5	1.0	100.0	1.0	100.0		
7.1	36	1.0	59.3	1.0	74.5	1.0	100.0	1.0	100.0		
9.6	42	1.0	50.8	1.0	63.8	1.0	89.1	1.0	100.0		
12.6	48	1.0	44.5	1.0	55.9	1.0	78.0	1.0	100.0	1.0	100.0
15.9	54	1.0	39.5	1.0	49.6	1.0	69.3	1.0	92.8	1.0	90.7
19.6	60	1.0	35.6	1.0	44.7	1.0	62.4	1.0	83.5	1.0	81.6
23.8	66	1.0	32.3	1.0	40.6	1.0	56.7	1.0	75.9	1.0	74.2
28.3	72			1.0	37.2	1.0	52.0	1.0	69.6	1.0	68.0
33.2	78			1.0	34.4	1.0	48.0	1.0	64.2	1.0	62.8
38.5	84					1.0	44.5	1.0	59.6	1.0	58.3
44.2	90					1.0	41.6	1.0	55.6	1.0	54.4
50.3	96					1.0	38.1	1.0	51.3	1.0	51.0
56.7	102							1.1	46.3	1.1	48.0
63.6	108							1.1	41.8	1.1	45.3
70.9	114									1.2	42.9
78.5	120									1.3	40.1

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS	
STANDARD DRAWING NO. E 715-PHCL-04	
	JANUARY 1998
	DETAILS PLACED IN THIS FORMAT ON 11/15/99
	/s/ Anthony L. Uremovich 11/15/99
	DESIGN STANDARDS ENGINEER DATE
/s/ Firooz Zandi 11/15/99	
DESIGN STANDARDS ENGINEER	CHIEF HIGHWAY ENGINEER DATE

























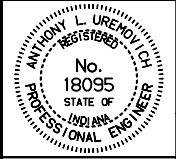




NON-REINFORCED CONCRETE PIPE CLASS 3 HEIGHT OF COVER LIMITS (ft.)		
DIAMETER (in.)	MINIMUM (ft.)	MAXIMUM (ft.)
12	1.3	14.1
15	1.4	13.1
18	1.5	12.8
21	1.5	13.4
24	1.5	13.5
27	1.6	12.1
30	1.8	10.7
33	1.9	9.8
36	2.1	9.0

**NOTE:**

1. The tabulated cover depths shall be measured from the bottom of the asphalt or concrete pavement to the top of the pipe.

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS	
JANUARY 1998	
STANDARD DRAWING NO. E 715-PHCL-17	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 1-02-98

**CORRUGATED POLYETHYLENE PIPE, TYPES  
HEIGHT OF COVER LIMITS (ft.)**

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft.)	MAXIMUM (ft.)
12	12	2.0	11.0
15	15	2.0	11.0
18	18	2.0	11.0
21	21	2.0	11.0
24	24	2.0	11.0
30	30	2.0	11.0
36	36	2.0	11.0

**RIBBED POLYETHYLENE PIPE  
HEIGHT OF COVER LIMITS (ft.)**

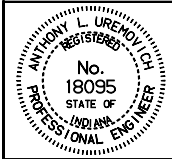
PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft.)	MAXIMUM (ft.)
18	18	2.0	18.0
21	21	2.0	22.0
24	24	2.0	21.0
27	27	2.0	24.0
30	30	2.0	22.0
33	33	2.0	23.0
36	36	2.0	25.0

**SMOOTH WALL POLYETHYLENE PIPE  
HEIGHT OF COVER LIMITS (ft.)**

PAY ITEM DIA. (in.)	NOMINAL DIA. (in.)	DIMENSION RATIO (NOM. DIA./WALL THICKNESS)							
		26		21		17		11	
		MIN.	MAX. (ft.)	MIN.	MAX. (ft.)	MIN.	MAX. (ft.)	MIN.	MAX. (ft.)
12	13	2.0	40.0	2.0	57.0				
12	14					2.0	81.0		
15	18	2.0	40.0	2.0	57.0	2.0	81.0		
18	20	2.0	40.0	2.0	57.0	2.0	81.0		
18	22					2.0	81.0	2.0	100.0
21	24	2.0	40.0	2.0	57.0	2.0	81.0		
24	28	2.0	40.0	2.0	57.0	2.0	81.0		
27	32	2.0	40.0	2.0	57.0	2.0	81.0		
30	34	2.0	40.0	2.0	57.0	2.0	81.0		
36	42	2.0	40.0	2.0	57.0	2.0	81.0		

**NOTE:**

1. The tabulated cover depths shall be measured from the bottom of the asphalt or concrete pavement to the top of the pipe.
2. The pay item diameter reflects the minimum required inside diameter.
3. Because the nominal size of smooth wall polyethylene pipe is based on the outside diameter, different dimension ratios may require different nominal diameters to satisfy the pay item diameter requirements.

INDIANA DEPARTMENT OF TRANSPORTATION	
<b>PIPE HEIGHT OF COVER LIMITS</b>	
JANUARY 1998	
STANDARD DRAWING NO. E 715-PHCL-18	
	DETAILS PLACED IN THIS FORMAT 11-15-99  /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 1-02-98

**PROFILE WALL POLYVINYL CHLORIDE PIPE  
HEIGHT OF COVER LIMITS (ft.)**

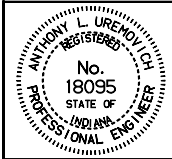
DIAMETER (in.)	MINIMUM (ft.)	MAXIMUM (ft.)
12	2.0	35.3
15	2.0	34.2
18	2.0	34.0
21	2.0	33.0
24	2.0	31.0
27	2.0	30.0
30	2.0	29.0
36	2.0	27.0

**SMOOTH WALL POLYVINYL CHLORIDE PIPE  
HEIGHT OF COVER LIMITS (ft.)**

PAY ITEM DIAMETER (in.)	NOMINAL DIAMETER (in.)	MINIMUM (ft.)	MAXIMUM (ft.)
12	12	2.0	64.0
15	15	2.0	64.0
18	18	2.0	61.0
21	21	2.0	61.0
24	24	2.0	61.0
27	27	2.0	61.0

**NOTE:**

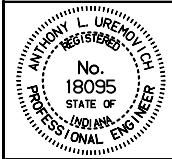
1. The tabulated cover depths shall be measured from the bottom of the concrete or asphalt pavement to the top of the pipe.
2. The pay item diameter reflects the minimum required inside diameter.

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS	
MAY 1999	
STANDARD DRAWING NO. E 715-PHCL-19	
	DETAILS PLACED IN THIS FORMAT 11-15-99 /s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
DESIGN STANDARDS ENGINEER	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE ORIGINALLY APPROVED 5-03-99

VITRIFIED CLAY PIPE, EXTRA STRENGTH HEIGHT OF COVER LIMITS (ft.)		
DIAMETER (in)	MINIMUM (ft.)	MAXIMUM (ft.)
12	1.2	16.0
15	1.4	14.0
18	1.4	13.0
21	1.4	14.0
24	1.4	15.0
27	1.5	14.0
30	1.6	13.0
33	1.5	13.0
36	1.5	14.0

**NOTE:**

1. The tabulated cover depths shall be measured from the bottom of the asphalt or concrete pavement to the top of the pipe.

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE HEIGHT OF COVER LIMITS	
JANUARY 1998	
STANDARD DRAWING NO. E 715-PHCL-20	
	DETAILS PLACED IN THIS FORMAT 11-15-99
	/s/ Anthony L. Uremovich 11-15-99 DESIGN STANDARDS ENGINEER DATE
	/s/ Firooz Zandi 11-15-99 CHIEF HIGHWAY ENGINEER DATE
DESIGN STANDARDS ENGINEER	ORIGINALLY APPROVED 1-02-98

**NOTE:**

1. The tabulated cover depths shall be measured from the bottom of the bituminous or concrete pavement to the top of the pipe.

**REINFORCED CONCRETE CIRCULAR PIPE  
HEIGHT OF COVER LIMITS (ft.)**

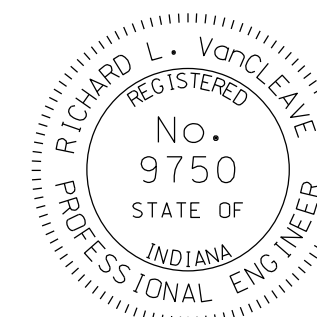
DIAMETER (in.)	Strength Class/D-load Rating											
	Class II: D <sub>0.01</sub> = 1000		Class III: D <sub>0.01</sub> = 1250		Class III: D <sub>0.01</sub> = 1350		Class IV: D <sub>0.01</sub> = 1500		Class IV: D <sub>0.01</sub> = 1750		Class IV: D <sub>0.01</sub> = 2000	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12	1.4	6.0	1.1	10.0	1.1	12.0	1.0	15.0	1.0	24.0	1.0	100.0
15	1.1	8.0	1.0	12.0	1.0	14.0	1.0	19.0	1.0	35.0	1.0	100.0
18	1.0	9.0	1.0	14.0	1.0	17.0	1.0	22.0	1.0	52.0	1.0	100.0
21	1.0	10.0	1.0	15.0	1.0	18.0	1.0	24.0	1.0	84.0	1.0	100.0
24	1.0	11.0	1.0	17.0	1.0	20.0	1.0	26.0	1.0	85.0	1.0	100.0
27	1.0	10.0	1.0	13.0	1.0	15.0	1.0	19.0	1.0	26.0	1.0	42.0
30	1.0	10.0	1.0	14.0	1.0	16.0	1.0	20.0	1.0	28.0	1.0	44.0
33	1.0	10.0	1.0	15.0	1.0	17.0	1.0	20.0	1.0	29.0	1.0	45.0
36	1.0	11.0	1.0	15.0	1.0	17.0	1.0	21.0	1.0	29.0	1.0	45.0
42	1.0	11.0	1.0	16.0	1.0	18.0	1.0	22.0	1.0	30.0	1.0	44.0
48	1.0	12.0	1.0	17.0	1.0	19.0	1.0	22.0	1.0	30.0	1.0	43.0
54	1.0	12.0	1.0	17.0	1.0	19.0	1.0	23.0	1.0	31.0	1.0	42.0
60	1.0	10.0	1.0	13.0	1.0	14.0	1.0	17.0	1.0	21.0	1.0	26.0
66	1.0	10.0	1.0	14.0	1.0	15.0	1.0	17.0	1.0	21.0	1.0	26.0
72	1.0	11.0	1.0	14.0	1.0	15.0	1.0	18.0	1.0	22.0	1.0	27.0
78	1.0	11.0	1.0	14.0	1.0	16.0	1.0	18.0	1.0	22.0	1.0	27.0
84	1.0	11.0	1.0	15.0	1.0	16.0	1.0	19.0	1.0	23.0	1.0	28.0
90	1.0	11.0	1.0	15.0	1.0	16.0	1.0	19.0	1.0	23.0	1.0	28.0
96	1.0	11.0	1.0	15.0	1.0	17.0	1.0	19.0	1.0	23.0	1.0	28.0
102	1.1	12.0	1.1	15.0	1.1	17.0	1.1	19.0	1.1	24.0	1.1	29.0
108	1.2	12.0	1.2	15.0	1.2	17.0	1.2	20.0	1.2	24.0	1.2	29.0
114	1.2	12.0	1.2	16.0	1.2	17.0	1.2	20.0	1.2	24.0	1.2	29.0
120	1.3	12.0	1.3	16.0	1.3	17.0	1.3	20.0	1.3	24.0	1.3	29.0
126	1.4	12.0	1.4	16.0	1.4	18.0	1.4	20.0	1.4	24.0	1.4	29.0
132	1.4	12.0	1.4	16.0	1.4	18.0	1.4	20.0	1.4	25.0	1.4	29.0
138	1.5	12.0	1.5	16.0	1.5	18.0	1.5	20.0	1.5	25.0	1.5	29.0
144	1.5	12.0	1.5	16.0	1.5	18.0	1.5	20.0	1.5	25.0	1.5	29.0

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE HEIGHT OF  
COVER LIMITS

SEPTEMBER 2009

STANDARD DRAWING NO. E 715-PHCL-21



*/s/ Richard L. VanCleave*      09/01/09  
DESIGN STANDARDS ENGINEER      DATE

*/s/ Mark A. Miller*      09/01/09  
CHIEF HIGHWAY ENGINEER      DATE

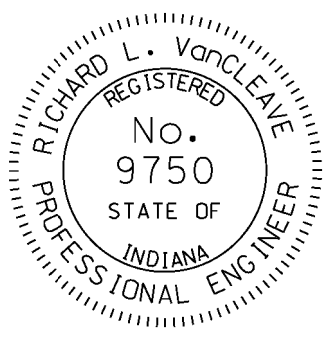
DESIGN STANDARDS ENGINEER

**REINFORCED CONCRETE CIRCULAR PIPE  
HEIGHT OF COVER LIMITS (ft.)**

DIAMETER (in.)	Strength Class/D-load Rating									
	Class V: D <sub>0.01</sub> = 2250		Class V: D <sub>0.01</sub> = 2500		Class V: D <sub>0.01</sub> = 2750		Class V: D <sub>0.01</sub> = 3000		Class Special: D <sub>0.01</sub> = 3250	
	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.
12	1.0	100.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
15	1.0	100.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
18	1.0	100.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
21	1.0	100.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
24	1.0	100.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
27	1.0	92.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
30	1.0	100.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
33	1.0	89.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
36	1.0	79.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
42	1.0	68.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
48	1.0	61.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
54	1.0	57.0	1.0	100.0	1.0	100.5	1.0	100.5	1.0	100.5
60	1.0	30.0	1.0	100.0	1.0	45.0	1.0	57.0	1.0	75.0
66	1.0	31.0	1.0	100.0	1.0	46.0	1.0	57.0	1.0	74.0
72	1.0	32.0	1.0	37.0	1.0	47.0	1.0	57.0	1.0	73.0
78	1.0	32.0	1.0	39.0	1.0	47.0	1.0	57.0	1.0	72.0
84	1.0	33.0	1.0	39.0	1.0	47.0	1.0	57.0	1.0	70.0
90	1.0	33.0	1.0	40.0	1.0	47.0	1.0	57.0	1.0	69.0
96	1.0	33.0	1.0	40.0	1.0	47.0	1.0	57.0	1.0	68.0
102	1.1	34.0	1.1	40.0	1.1	47.0	1.1	57.0	1.1	67.0
108	1.2	34.0	1.2	40.0	1.2	47.0	1.2	55.0	1.2	66.0
114	1.2	34.0	1.2	40.0	1.2	47.0	1.2	55.0	1.2	65.0
120	1.3	34.0	1.3	40.0	1.3	47.0	1.3	55.0	1.3	64.0
126	1.4	34.0	1.4	40.0	1.4	47.0	1.4	54.0	1.4	63.0
132	1.4	34.0	1.4	40.0	1.4	46.0	1.4	54.0	1.4	63.0
138	1.5	34.0	1.5	40.0	1.5	46.0	1.5	54.0	1.5	62.0
144	1.5	34.0	1.5	40.0	1.5	46.0	1.5	53.0	1.5	61.0

**NOTE:**

- The tabulated cover depths shall be measured from the bottom of the bituminous or concrete pavement to the top of the pipe.

<b>INDIANA DEPARTMENT OF TRANSPORTATION</b>	
<b>PIPE HEIGHT OF COVER LIMITS</b>	
<b>SEPTEMBER 2009</b>	
<b>STANDARD DRAWING NO. E 715- PHCL-22</b>	
	<i>/s/ Richard L. VanCleave</i> <b>09/01/09</b> <small>DESIGN STANDARDS ENGINEER      DATE</small>
DESIGN STANDARDS ENGINEER	<i>/s/ Mark A. Miller</i> <b>09/01/09</b> <small>CHIEF HIGHWAY ENGINEER      DATE</small>

