

## SUPPLEMENTAL MATERIALS

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# Application of Particle Densimetric Froude Number for Evaluating the Maximum Culvert Scour Depth

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Compilation of NTU data

Source	Type	Shape	$d_o$ (mm)	$b$ (mm)	Side slope	$d_{50}$ (mm)	$\sigma_g$	$H$ (mm)	$U_o$ (m/s)	Duration (hr)	$d_{sc}$ (mm)
Tay (1996)	F	Circular	15.0	-	-	8.7	1.11	200	8.05	94	100
	F	Circular	15.0	-	-	8.7	1.11	200	8.46	72.75	91
	F	Circular	15.0	-	-	8.7	1.11	200	6.59	95	95
	F	Circular	15.0	-	-	8.7	1.11	200	5.41	73	76
	F	Circular	15.0	-	-	8.7	1.11	200	6.10	-	89
	F	Circular	15.0	-	-	8.7	1.11	200	5.62	-	76
	F	Circular	15.0	-	-	8.7	1.11	200	3.42	49	57
	F	Circular	15.0	-	-	8.7	1.11	100	4.01	74	66
	F	Circular	15.0	-	-	8.7	1.11	100	2.70	48.75	30
	F	Circular	15.0	-	-	8.7	1.11	100	5.08	49.75	87
	F	Circular	15.0	-	-	8.7	1.11	100	3.40	68.5	53
	F	Circular	15.0	-	-	8.7	1.11	100	5.70	53	95
	F	Circular	15.0	-	-	8.7	1.11	100	4.40	51.5	75
	F	Circular	15.0	-	-	8.7	1.11	100	7.91	48	111
	F	Circular	15.0	-	-	8.7	1.11	50	3.78	49.5	68
	F	Circular	15.0	-	-	8.7	1.11	50	4.72	72	89
	F	Circular	15.0	-	-	8.7	1.11	50	5.30	50	74
	F	Circular	15.0	-	-	8.7	1.11	50	6.34	66.5	99
	F	Circular	15.0	-	-	8.7	1.11	50	2.90	48	50
	F	Circular	15.0	-	-	8.7	1.11	50	3.42	72	60
F	Circular	15.0	-	-	8.7	1.11	50	7.03	48	102	
F	Circular	15.0	-	-	8.7	1.11	18	3.58	48.5	70	
F	Circular	15.0	-	-	8.7	1.11	18	3.83	49.5	73	

	F	Circular	15.0	-	-	8.7	1.11	18	4.92	49.5	81
	F	Circular	15.0	-	-	8.7	1.11	18	4.31	48	85
	F	Circular	15.0	-	-	8.7	1.11	18	5.71	48.5	95
	F	Circular	40.0	-	-	8.7	1.11	270	2.05	60 - 90	59
	F	Circular	40.0	-	-	8.7	1.11	270	2.54	60 - 90	80
	F	Circular	40.0	-	-	8.7	1.11	270	2.87	60 - 90	99
	F	Circular	40.0	-	-	8.7	1.11	270	3.22	60 - 90	106
	F	Circular	40.0	-	-	8.7	1.11	270	3.55	60 - 90	120
	F	Circular	40.0	-	-	8.7	1.11	270	4.30	60 - 90	137
	F	Circular	40.0	-	-	8.7	1.11	350	1.38	36 - 60	25
	F	Circular	40.0	-	-	8.7	1.11	350	1.71	36 - 60	36
	F	Circular	40.0	-	-	8.7	1.11	350	2.05	36 - 60	57
	F	Circular	40.0	-	-	8.7	1.11	350	2.35	36 - 60	71
	F	Circular	40.0	-	-	8.7	1.11	350	2.85	36 - 60	92
Seah (1997)	F	Circular	40.0	-	-	8.7	1.11	350	3.44	36 - 60	102
	F	Circular	40.0	-	-	8.7	1.11	350	4.00	36 - 60	118
	F	Circular	40.0	-	-	8.7	1.11	350	4.39	36 - 60	127
	F	Circular	40.0	-	-	8.7	1.11	500	2.06	36 - 60	52
	F	Circular	40.0	-	-	8.7	1.11	500	2.47	36 - 60	75
	F	Circular	40.0	-	-	8.7	1.11	500	2.95	36 - 60	82
	F	Circular	40.0	-	-	8.7	1.11	500	3.49	36 - 60	112
	F	Circular	40.0	-	-	8.7	1.11	500	3.94	36 - 60	126
	F	Circular	40.0	-	-	8.7	1.11	500	4.47	36 - 60	139
	F	Circular	40.0	-	-	8.7	1.11	20	1.35	36 - 60	59
	F	Circular	40.0	-	-	8.7	1.11	20	1.99	36 - 60	84
	F	Circular	40.0	-	-	8.7	1.11	20	2.18	36 - 60	90
	F	Circular	40.0	-	-	8.7	1.11	20	2.75	36 - 60	117

	F	Circular	40.0	-	-	8.7	1.11	20	3.32	36 - 60	117
	F	Circular	40.0	-	-	8.7	1.11	20	3.89	36 - 60	127
	F	Circular	5.0	-	-	2.68	1.33	150	12.61	>18	60
	F	Circular	5.0	-	-	2.68	1.33	150	9.41	>18	55
	F	Circular	5.0	-	-	2.68	1.33	150	8.15	>18	48
	F	Circular	5.0	-	-	2.68	1.33	150	6.08	>18	30
	F	Circular	5.0	-	-	2.68	1.33	150	6.71	>18	39
	F	Circular	5.0	-	-	2.55	1.45	150	10.98	>18	64
	F	Circular	5.0	-	-	2.55	1.45	150	10.42	>18	58
	F	Circular	5.0	-	-	2.55	1.45	150	10.21	>18	58
	F	Circular	5.0	-	-	2.55	1.45	150	8.57	>18	42
	F	Circular	5.0	-	-	2.55	1.45	150	7.36	>18	38
	F	Circular	5.0	-	-	2.55	1.45	150	6.35	>18	32
	F	Circular	5.0	-	-	2.57	1.66	150	10.42	>18	57
Lau (1998)	F	Circular	5.0	-	-	2.57	1.66	150	12.42	>18	65
	F	Circular	5.0	-	-	2.57	1.66	150	7.93	>18	41
	F	Circular	5.0	-	-	2.57	1.66	150	8.95	>18	53
	F	Circular	5.0	-	-	2.57	1.66	150	7.57	>18	37
	F	Circular	5.0	-	-	2.37	1.77	150	7.45	>18	37
	F	Circular	5.0	-	-	2.37	1.77	150	9.89	>18	59
	F	Circular	5.0	-	-	2.37	1.77	150	11.82	>18	65
	F	Circular	5.0	-	-	2.37	1.77	150	12.49	>18	66
	F	Circular	5.0	-	-	2.37	1.77	150	6.85	>18	29
	F	Circular	5.0	-	-	2.37	1.77	150	8.87	>18	43
	F	Circular	5.0	-	-	2.35	2.16	150	7.68	>18	43
	F	Circular	5.0	-	-	2.35	2.16	150	9.38	>18	55
	F	Circular	5.0	-	-	2.35	2.16	150	10.72	>18	63

	F	Circular	5.0	-	-	2.35	2.16	150	12.58	>18	70
	F	Circular	5.0	-	-	2.35	2.16	150	8.58	>18	55
	F	Circular	5.0	-	-	2.35	2.16	150	9.78	>18	63
	F	Circular	5.9	-	-	3.97	4.09	200	12.83	>24	59
	F	Circular	5.9	-	-	3.97	4.09	200	9.87	>24	47.5
	F	Circular	5.9	-	-	3.97	4.09	200	8.48	>24	39.5
	F	Circular	5.9	-	-	3.97	4.09	200	6.23	>24	23.5
	F	Circular	5.9	-	-	3.97	4.09	200	4.37	>24	11.5
	F	Circular	9.7	-	-	3.97	4.09	200	6.76	>24	60.5
	F	Circular	9.7	-	-	3.97	4.09	200	6.31	>24	60
	F	Circular	9.7	-	-	3.97	4.09	200	5.57	>24	46
	F	Circular	9.7	-	-	3.97	4.09	200	5.06	>24	41
	F	Circular	9.7	-	-	3.97	4.09	200	4.64	>24	39
	F	Circular	9.7	-	-	3.97	4.09	200	3.93	>24	26.5
	F	Circular	9.7	-	-	3.97	4.09	200	3.17	>24	20
Chia (2000)	F	Circular	13.4	-	-	3.97	4.09	200	3.78	>24	50
	F	Circular	13.4	-	-	3.97	4.09	200	3.66	>24	50
	F	Circular	13.4	-	-	3.97	4.09	200	3.24	>24	41.5
	F	Circular	13.4	-	-	3.97	4.09	200	2.93	>24	35.5
	F	Circular	13.4	-	-	3.97	4.09	200	2.43	>24	33
	F	Circular	13.4	-	-	3.97	4.09	200	2.25	>24	26.5
	F	Circular	17.0	-	-	3.97	4.09	200	4.03	>24	64
	F	Circular	17.0	-	-	3.97	4.09	200	3.44	>24	52
	F	Circular	17.0	-	-	3.97	4.09	200	3.11	>24	45
	F	Circular	17.0	-	-	3.97	4.09	200	2.79	>24	32
	F	Circular	17.0	-	-	3.97	4.09	200	2.53	>24	26.5
	F	Circular	17.0	-	-	3.97	4.09	200	2.33	>24	24

	F	Circular	17.0	-	-	3.97	4.09	200	2.14	>24	21
	F	Circular	17.0	-	-	3.97	4.09	200	1.91	>24	18
	F	Circular	17.0	-	-	3.97	4.09	200	1.60	>24	14.5
Tan (2003)	F	Circular	25.4	-	-	1.6	1.13	250	1.16	67	62
	F	Circular	25.4	-	-	1.6	1.13	250	1.51	72	96
	F	Circular	25.4	-	-	1.6	1.13	250	1.83	92	109
	F	Circular	25.4	-	-	1.6	1.13	250	1.91	69	110
	F	Circular	25.4	-	-	1.6	1.13	250	2.00	93	112
	F	Circular	25.4	-	-	1.6	1.13	250	2.47	69	120
Zaihan (2014)	F	Circular	4.0	-	-	1.55	1.2	120	1.76	24	23
	F	Circular	4.0	-	-	1.55	1.2	90	2.11	24	24
	F	Circular	4.0	-	-	1.55	1.2	90	1.50	22	15
	F	Circular	4.0	-	-	1.55	1.2	60	2.12	19	24.8
	F	Circular	4.0	-	-	1.55	1.2	60	1.50	25	17.5
	F	Circular	4.0	-	-	1.55	1.2	30	2.11	21	26
	F	Circular	4.0	-	-	1.55	1.2	30	1.50	25	19
	F	Circular	4.0	-	-	0.77	1.15	90	2.13	20	33
	F	Circular	4.0	-	-	0.77	1.15	90	1.52	20	27.4
	F	Circular	4.0	-	-	0.77	1.15	60	2.15	22	34.9
	F	Circular	4.0	-	-	0.77	1.15	60	1.51	23	26.4
	F	Circular	4.0	-	-	0.77	1.15	30	2.15	23	33.8
Pee (2016)	F	Circular	4.0	-	-	0.77	1.15	30	1.52	20	27.3
	F	Circular	16.0	-	-	0.77	1.165	240	0.61	46.83	27.7
	F	Circular	16.0	-	-	0.77	1.165	240	0.80	43.83	37.8
	F	Circular	16.0	-	-	0.77	1.165	240	0.61	44.5	27.5
	F	Circular	16.0	-	-	0.77	1.165	240	1.01	47.25	45.7
	F	Circular	16.0	-	-	0.77	1.165	240	1.10	46.5	51.1

	F	Circular	20.0	-	-	0.77	1.165	300	0.60	47.17	27.3
	F	Circular	20.0	-	-	0.77	1.165	300	0.80	44.83	40.9
	F	Circular	20.0	-	-	0.77	1.165	300	0.99	43.92	53.7
	F	Circular	20.0	-	-	0.77	1.165	300	0.50	42.67	21.9
	F	Circular	12.0	-	-	0.77	1.165	180	0.60	47.5	20
	F	Circular	12.0	-	-	0.77	1.165	180	0.80	48	29.1
	F	Circular	12.0	-	-	0.77	1.165	180	1.00	48	40.7
	F	Circular	12.0	-	-	0.77	1.165	180	1.20	45.25	46.8
	F	Circular	12.0	-	-	0.77	1.165	180	0.80	46.33	31.9
	F	Circular	12.0	-	-	0.77	1.165	180	0.60	45.5	23
	F	Circular	8.0	-	-	0.77	1.165	120	2.10	47	54
	F	Circular	8.0	-	-	0.77	1.165	120	1.50	43.83	43.7
	F	Circular	8.0	-	-	0.77	1.165	120	1.20	47.5	39.2
	F	Circular	8.0	-	-	0.77	1.165	120	1.00	46.67	35.1
	F	Circular	27.5	-	-	0.5	1.45	28	0.75	47.5	73.5
	F	Circular	27.5	-	-	0.5	1.45	14	0.73	47.5	49.6
	F	Circular	27.5	-	-	0.5	1.45	110	0.82	44.5	54.3
	F	Circular	27.5	-	-	0.5	1.45	55	0.83	47.8	51.3
	F	Circular	27.5	-	-	0.5	1.45	28	0.83	44.2	78.5
	F	Circular	27.5	-	-	0.5	1.45	14	0.80	47.2	48.7
	F	Circular	27.5	-	-	0.5	1.45	110	0.99	47.5	67.5
	F	Circular	27.5	-	-	0.5	1.45	55	1.03	47.5	82.5
	F	Circular	27.5	-	-	0.5	1.45	28	0.99	47.5	90
	F	Circular	27.5	-	-	0.5	1.45	14	0.99	47.5	65.2
	F	Circular	27.5	-	-	0.5	1.45	110	1.14	44.5	83.1
	F	Circular	27.5	-	-	0.5	1.45	55	1.16	47.2	94.4
	F	Circular	27.5	-	-	0.5	1.45	28	1.16	47	87.4

Salam  
(2016)

	F	Circular	27.5	-	-	0.5	1.45	14	1.04	45	68.5
	F	Circular	27.5	-	-	0.5	1.45	110	1.26	45	88
	F	Circular	27.5	-	-	0.5	1.45	55	1.26	47.5	94.3
	F	Circular	15.0	-	-	1.65	2.5	35	2.87	91.3	62
	F	Circular	15.0	-	-	1.65	2.5	50	2.87	75.5	72
	F	Circular	15.0	-	-	1.65	2.5	100	2.87	99	52
	F	Circular	15.0	-	-	1.65	2.5	150	2.87	68	55
	F	Circular	15.0	-	-	1.65	2.5	15	2.87	43	61
	F	Circular	15.0	-	-	1.65	2.5	75	2.87	47.5	57.5
	F	Circular	15.0	-	-	1.65	2.5	60	2.87	114	56
	F	Circular	15.0	-	-	1.65	2.5	6	2.87	-	73
	F	Circular	15.0	-	-	1.65	2.5	50	2.87	-	54
	F	Circular	25.4	-	-	0.25	1.44	25	1.51	-	92
	F	Circular	25.4	-	-	0.25	1.44	25	1.59	-	95
	F	Circular	25.4	-	-	0.25	1.44	50	1.59	-	92
Current data	F	Circular	25.4	-	-	0.25	1.44	100	1.60	-	115
	F	Circular	25.4	-	-	0.25	1.44	100	1.51	-	100
	F	Circular	25.4	-	-	0.25	1.44	100	1.54	-	103
	F	Circular	25.4	-	-	0.25	1.44	150	1.52	-	96
	F	Circular	25.4	-	-	0.25	1.44	150	1.60	-	130
	F	Circular	15.0	-	-	1.65	1.25	33	2.87	-	75
	F	Circular	15.0	-	-	1.65	1.25	90	2.87	-	85
	F	Circular	15.0	-	-	1.65	1.25	50	2.87	-	98
	F	Circular	15.0	-	-	1.65	1.25	75	2.87	-	89
	F	Circular	15.0	-	-	1.65	1.25	95	2.87	-	87
	F	Circular	15.0	-	-	1.65	1.25	7	2.87	-	73
	F	Circular	15.0	-	-	1.65	3.26	200	2.16	66	26



F	Circular	15.0	-	-	1.65	3.26	200	2.87	71	43	
F	Circular	15.0	-	-	1.65	3.26	200	3.48	160	56	
F	Circular	15.0	-	-	1.65	3.26	200	4.55	89	73	
F	Circular	15.0	-	-	1.65	3.26	200	5.09	167	101	
F	Circular	25.4	-	-	8.7	1.11	13	3.10	36	73	
F	Circular	25.4	-	-	8.7	1.11	13	3.64	36	84	
F	Circular	25.4	-	-	8.7	1.11	13	1.86	36	59	
F	Circular	25.4	-	-	8.7	1.11	13	2.38	36	60	
F	Circular	25.4	-	-	8.7	1.11	13	1.42	36	41	
F	Circular	25.4	-	-	8.7	1.11	13	2.67	36	71	
F	Circular	25.4	-	-	8.7	1.11	200	3.59	36	88	
F	Circular	25.4	-	-	8.7	1.11	200	2.74	36	50	
F	Circular	25.4	-	-	8.7	1.11	200	2.05	36	44	
F	Circular	25.4	-	-	8.7	1.11	200	2.35	36	50	
F	Circular	25.4	-	-	8.7	1.11	200	2.57	36	52	
F	Circular	25.4	-	-	8.7	1.11	200	3.14	36	69	
F	Circular	25.4	-	-	4.9	1.17	13	2.72	36	107	
F	Circular	25.4	-	-	4.9	1.17	13	1.01	36	43	
F	Circular	25.4	-	-	4.9	1.17	13	1.50	36	65	
F	Circular	25.4	-	-	4.9	1.17	13	3.35	36	114	
F	Circular	25.4	-	-	4.9	1.17	13	1.21	36	57	
F	Circular	25.4	-	-	4.9	1.17	13	2.55	36	94	
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Leow (2006)	NF	Rectangular	29.0	78	-	1.76	1.13	17	0.66	46	89
	NF	Rectangular	26.0	78	-	1.76	1.13	17	0.59	45.5	68
	NF	Rectangular	28.0	78	-	1.76	1.13	17	0.63	47.33	73
	NF	Rectangular	18.0	78	-	1.76	1.13	17	0.46	44	27
	NF	Rectangular	19.0	78	-	1.76	1.13	17	0.52	46	37
	NF	Rectangular	21.0	78	-	1.76	1.13	17	0.54	46.5	53

	NF	Rectangular	29.0	78	-	1.76	1.13	17	0.67	48.6	98
	NF	Rectangular	25.0	78	-	1.76	1.13	12	0.71	47	115
	NF	Rectangular	24.0	78	-	1.76	1.13	12	0.61	47	89
	NF	Rectangular	21.0	78	-	1.76	1.13	12	0.58	47	45
	NF	Rectangular	18.0	78	-	1.76	1.13	12	0.57	48	38
	NF	Rectangular	24.0	78	-	1.76	1.13	12	0.61	44	88
	NF	Rectangular	17.0	78	-	1.76	1.13	12	0.53	47.25	32
	NF	Rectangular	25.0	78	-	1.76	1.13	12	0.67	46.6	102
	NF	Rectangular	25.0	78	-	3.8	3.28	12	0.71	44.6	43
	NF	Rectangular	24.0	78	-	3.8	3.28	12	0.68	46	39
	NF	Rectangular	19.0	78	-	3.8	3.28	12	0.61	45.3	17
	NF	Rectangular	21.0	78	-	3.8	3.28	12	0.61	47	26
	NF	Rectangular	23.0	78	-	3.8	3.28	12	0.64	44	27
	NF	Rectangular	24.0	78	-	3.8	3.28	12	0.66	48	36
	NF	Rectangular	24.0	78	-	3.8	3.28	12	0.66	45	33
	NF	Rectangular	33.5	160	-	3.1	3.56	26	1.01	29	70.6
	NF	Rectangular	35.0	160	-	3.1	3.56	28	0.97	28	69.6
	NF	Rectangular	36.0	160	-	3.1	3.56	31	0.93	28.5	74.5
	NF	Rectangular	37.0	160	-	3.1	3.56	38	0.91	29	85.6
	NF	Rectangular	36.5	160	-	3.1	3.56	35	0.92	29	81.6
Peh (2007)	NF	Rectangular	36.0	160	-	3.1	3.56	38	0.87	29	57.8
	NF	Rectangular	37.0	160	-	3.1	3.56	38	0.86	29.3	46.1
	NF	Rectangular	36.0	160	-	3.1	3.56	38	0.82	29	46.1
	NF	Rectangular	34.0	160	-	3.1	3.56	27	0.98	29	77.9
	NF	Rectangular	34.0	160	-	3.1	3.56	25	0.97	29	72.6
	NF	Rectangular	34.0	160	-	3.1	3.56	27	0.95	29	76.7
	NF	Rectangular	33.0	160	-	3.1	3.56	25	0.91	29	63.4

	NF	Rectangular	34.0	160	-	3.1	3.56	26	0.96	29	72.6
	NF	Rectangular	28.0	160	-	3.1	3.56	23	0.86	29	48.3
	NF	Trapezoidal	38.0	120	1.732	4.9	1.27	26	0.87	91	83
	NF	Trapezoidal	37.5	120	1.732	4.9	1.27	32	0.79	45	66
	NF	Trapezoidal	45.0	120	1.732	4.9	1.27	37	0.79	95	69
	NF	Trapezoidal	40.0	120	1.732	4.9	1.27	33	0.89	73	77
	NF	Trapezoidal	47.0	120	1.732	4.9	1.27	36	0.85	71	111
	NF	Trapezoidal	48.0	120	1.732	4.9	1.27	38	0.68	48	78
Tan (2009)	NF	Trapezoidal	39.0	120	1.732	4.9	1.27	39	1.01	48	70
	NF	Trapezoidal	44.0	120	1.732	4.9	1.27	27	0.89	48	101
	NF	Trapezoidal	39.0	120	1.732	4.9	1.27	25	0.81	41.83	91
	NF	Trapezoidal	36.0	120	1.732	4.9	1.27	23	0.79	45	74
	NF	Trapezoidal	39.0	120	1.732	4.9	1.27	23	0.86	44	87
	NF	Trapezoidal	40.0	120	1.732	4.9	1.27	30	0.87	48	86
	NF	Trapezoidal	47.0	120	1.732	4.9	1.27	31	0.80	85	106
	NF	Trapezoidal	33.0	120	1.732	5.2	1.26	32	0.92	26	70
Ma (2010)	NF	Trapezoidal	44.0	120	1.732	5.2	1.26	35	0.88	25	65
	NF	Trapezoidal	40.0	120	1.732	5.2	1.26	37	0.89	24	65
	NF	Trapezoidal	41.0	120	1.732	5.2	1.26	38	0.81	25	59
	NF	Triangular	58.0	-	1	1.63	1.19	51	0.65	48	100.6
	NF	Triangular	58.0	-	1	1.63	1.19	53	0.73	48.2	119.6
	NF	Triangular	58.0	-	1	1.63	1.19	51	0.60	48	79.2
Theodosius (2012)	NF	Triangular	58.0	-	1	1.63	1.19	52	0.60	49.5	96.6
	NF	Triangular	58.0	-	1	1.63	1.19	54	0.65	48.3	99.6
	NF	Triangular	58.0	-	1	1.63	1.19	56	0.69	50	121.6
	NF	Triangular	58.0	-	1	1.63	1.19	55	0.66	48	104.6
	NF	Triangular	63.0	-	1	1.63	1.19	55	0.78	48.8	130.2

	NF	Triangular	58.0	-	1	1.63	1.19	31	0.61	48	76.8
	NF	Triangular	58.0	-	1	1.63	1.19	40	0.72	48.2	118.2
	NF	Triangular	58.0	-	1	1.63	1.19	33	0.63	48	77.5
	NF	Triangular	50.0	-	1	1.63	1.19	34	0.71	48	106.4
	NF	Triangular	55.0	-	1	1.63	1.19	35	0.72	48.5	118.8
	NF	Triangular	58.0	-	1	1.63	1.19	23	0.73	48	102
	NF	Triangular	58.0	-	1	1.63	1.19	22	0.75	48	121
	NF	Triangular	58.0	-	1	1.63	1.19	19	0.60	48	61.7
	NF	Triangular	45.0	-	1	1.63	1.19	20	0.76	48.5	102.2
	NF	Triangular	58.0	-	1	1.63	1.19	19	0.57	48	58.4
	NF	Triangular	58.0	-	1	1.63	1.19	21	0.54	48.5	65
	NF	Triangular	58.0	-	1	1.63	1.19	23	0.68	48.2	92.4
	NF	Triangular	50.0	-	1	1.63	1.19	25	0.67	50	100.6
	NF	Rectangular	32.0	50	-	1.63	1.19	17	1.12	48	125
	NF	Rectangular	27.0	50	-	1.63	1.19	18	0.78	48	90
	NF	Rectangular	30.0	50	-	1.63	1.19	17	0.89	48	101
	NF	Rectangular	20.0	50	-	1.63	1.19	10	0.65	48	56
	NF	Rectangular	42.0	50	-	1.63	1.19	22	0.97	48	132
	NF	Rectangular	37.0	50	-	1.63	1.19	21	0.77	48	102
Tan (2013)	NF	Rectangular	32.0	50	-	1.63	1.19	20	0.77	48	88
	NF	Rectangular	28.0	50	-	1.63	1.19	17	0.61	48	58
	NF	Rectangular	42.0	50	-	1.63	1.19	30	0.52	48	63
	NF	Rectangular	44.0	50	-	1.63	1.19	31	0.55	48	72
	NF	Rectangular	45.0	50	-	1.63	1.19	32	0.65	48	89
	NF	Rectangular	47.0	50	-	1.63	1.19	32	0.77	48	105
	NF	Rectangular	50.0	50	-	1.63	1.19	37	0.43	48	48
	Akhtar (2014)	Rectangular	23.0	50	-	1.803	2.67	7	0.85	47	50
	NF	Rectangular	24.0	50	-	1.803	2.67	8	0.82	69	58

	NF	Rectangular	22.0	50	-	1.803	2.67	10	0.85	45.5	52
	NF	Rectangular	23.0	50	-	1.803	2.67	15	0.81	47	49
	NF	Rectangular	18.0	50	-	1.803	2.67	15	0.76	47	40
	NF	Rectangular	28.0	50	-	1.803	2.67	17	0.82	49	56
	NF	Rectangular	29.0	50	-	1.803	2.67	17	0.85	44.5	65
	NF	Rectangular	29.0	50	-	1.803	2.67	18	0.82	94	63
	NF	Rectangular	37.0	50	-	1.803	2.67	17	1.00	71	82
	NF	Rectangular	26.0	50	-	1.803	2.67	23	0.68	43	50
	NF	Rectangular	33.0	50	-	1.803	2.67	24	0.88	47.5	70
	NF	Rectangular	31.0	50	-	1.803	2.67	23	0.79	45	62
	NF	Rectangular	38.0	50	-	1.803	2.67	26	0.91	70	86
	NF	Rectangular	40.0	50	-	1.803	2.67	35	0.77	45	68
	NF	Trapezoidal	35.2	100	2.5	1.622	3.71	34	0.51	49	34.3
	NF	Trapezoidal	30.6	100	2.5	1.622	3.71	23	0.67	45	60.2
	NF	Trapezoidal	33.9	100	2.5	1.622	3.71	24	0.70	71	60.4
	NF	Trapezoidal	35.5	100	2.5	1.622	3.71	26	0.73	46	64.8
	NF	Trapezoidal	28.5	100	2.5	1.622	3.71	21	0.63	45	52.5
	NF	Trapezoidal	26.6	100	2.5	1.622	3.71	21	0.60	44	29.4
	NF	Trapezoidal	54.0	100	2.5	1.622	3.71	43	0.72	45	102
	NF	Trapezoidal	48.5	100	2.5	1.622	3.71	46	0.70	45	97.1
	NF	Trapezoidal	25.7	100	2.5	1.686	3.83	18	0.59	48.67	46.2
	NF	Trapezoidal	25.0	100	2.5	1.686	3.83	19	0.73	48	53.3
	NF	Trapezoidal	29.1	100	2.5	1.686	3.83	24	0.70	48.75	56
Miao (2015)	NF	Trapezoidal	30.5	100	2.5	1.686	3.83	25	0.73	71.5	61.4
	NF	Trapezoidal	81.5	100	2.5	1.686	3.83	81	0.32	49.5	50
	NF	Trapezoidal	53.3	100	2.5	1.686	3.83	53	0.36	45.6	44.4
	NF	Trapezoidal	55.5	100	2.5	1.686	3.83	55	0.51	50	48.7

	NF	Trapezoidal	56.3	100	2.5	1.686	3.83	55	0.56	72	51.3
	NF	Trapezoidal	36.9	100	2.5	1.686	3.83	36	0.59	48	61
	NF	Trapezoidal	36.7	100	2.5	1.686	3.83	36	0.54	48	61.4
	NF	Trapezoidal	36	100	2.5	1.686	3.83	36	0.56	46	52
Das (2015)	NF	Trapezoidal	18.0	50	1	0.49	1.47	17	0.50	69	51
	NF	Trapezoidal	41.5	50	1	0.49	1.47	42	0.36	72	63
	NF	Trapezoidal	41.0	50	1	0.49	1.47	42	0.33	47	51
	NF	Trapezoidal	41.0	50	1	0.49	1.47	42	0.36	51	56
	NF	Trapezoidal	41.0	50	1	0.49	1.47	40	0.34	48.5	63
	NF	Trapezoidal	20.0	50	1	0.49	1.47	20	0.44	48	76
	NF	Trapezoidal	21.0	50	1	0.49	1.47	21	0.51	45	77
	NF	Trapezoidal	20.0	50	1	0.49	1.47	13	0.69	45.5	129.1
	NF	Trapezoidal	52.0	50	1	0.49	1.47	49	0.44	19	81
	NF	Trapezoidal	50.4	50	1	0.49	1.47	49	0.37	46.5	81.3
	NF	Trapezoidal	48.5	50	1	0.49	1.47	48	0.35	43	67
	NF	Trapezoidal	17.0	50	1	0.49	1.47	10	0.63	45.75	74
	NF	Trapezoidal	18.0	50	1	0.49	1.47	11	0.67	46.75	86
	NF	Trapezoidal	22.0	50	1	0.49	1.47	22	0.59	47.5	80
	NF	Trapezoidal	41.0	50	1	0.49	1.47	41	0.31	47.25	48.5
	NF	Trapezoidal	50.0	50	1	0.49	1.47	50	0.30	43.5	49
	NF	Rectangular	41.2	50	-	0.49	1.47	41	0.37	43.5	63.5
	NF	Rectangular	39.6	50	-	0.49	1.47	40	0.34	47.83	53.2
NF	Rectangular	40.8	50	-	0.49	1.47	41	0.34	46.66	57.1	
NF	Rectangular	40.0	50	-	0.49	1.47	40	0.45	39.75	75.2	
Current data	NF	Rectangular	49.7	50	-	0.5	1.45	50	0.40	47	65
	NF	Rectangular	51.0	50	-	0.5	1.45	52	0.48	48	91.5
	NF	Rectangular	50.7	50	-	0.5	1.45	51	0.32	42	55

NF	Rectangular	51.1	50	-	0.5	1.45	51	0.35	49	59.3
NF	Rectangular	50.6	50	-	0.5	1.45	51	0.30	41	48.7
NF	Rectangular	50.5	50	-	0.5	1.45	51	0.53	44	96
NF	Rectangular	40.1	50	-	0.5	1.45	40	0.49	48	74
NF	Rectangular	41.8	50	-	0.5	1.45	42	0.56	44	94.5
NF	Rectangular	40.9	50	-	0.5	1.45	41	0.34	47	60
NF	Rectangular	41.0	50	-	0.5	1.45	41	0.38	43	67
NF	Rectangular	32.2	50	-	0.5	1.45	31	0.61	48	95.5
NF	Rectangular	31.3	50	-	0.5	1.45	31	0.51	47	75
NF	Rectangular	30.6	50	-	0.5	1.45	31	0.38	47	55.3
NF	Rectangular	31.7	50	-	0.5	1.45	32	0.45	51	72.4
NF	Rectangular	21.5	50	-	0.5	1.45	21	0.59	50	73
NF	Rectangular	20.4	50	-	0.5	1.45	21	0.49	48	63
NF	Rectangular	21.7	50	-	0.5	1.45	22	0.51	46	57.1
NF	Rectangular	23.9	50	-	0.5	1.45	22	0.60	41	81.4
NF	Rectangular	25.2	50	-	0.5	1.45	23	0.62	46.5	80
NF	Rectangular	26.8	50	-	0.5	1.45	23	0.68	44.5	100.5
NF	Rectangular	17.7	50	-	0.5	1.45	6	0.71	44	90.4
NF	Rectangular	19.8	50	-	0.5	1.45	7	0.72	44	105.8
NF	Rectangular	15.7	50	-	0.5	1.45	7	0.67	48	81.5
NF	Rectangular	101.0	50	-	0.5	1.45	101	0.29	120	71
NF	Rectangular	101.7	50	-	0.5	1.45	102	0.49	94	111
NF	Rectangular	100.7	50	-	0.5	1.45	101	0.39	87	83.5
NF	Rectangular	100.0	50	-	0.5	1.45	100	0.33	89.5	80.3
NF	Rectangular	80.2	50	-	0.5	1.45	80	0.31	92	62.3
NF	Rectangular	80.8	50	-	0.5	1.45	81	0.35	71	64.5
NF	Rectangular	80.3	50	-	0.5	1.45	81	0.41	70	78

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NF	Rectangular	80.5	50	-	0.5	1.45	81	0.45	64	88.5
NF	Rectangular	53.0	50	-	0.5	1.45	53	0.48	41	79

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