



Safety Instructions for Unloading and Handling Contech Corrugated Metal Pipe



Preface

This instruction book is for your crews. Distribute it to help them unload and handle Contech Corrugated Metal Pipe safely.

Don't assume that experienced workers know all the answers. Review these instructions with your supervisors and crews. It can mean a safer and better job for you and your customer.

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This safety alert symbol indicates important safety messages.

When you see this symbol, be alert to the possibility of personal injury, and be sure you understand the message that follows.

Terms you should know



WARNING

Alerts you to hazards or unsafe practices that

CAN result in severe personal injury or property damage.

**SAFETY
INSTRUCTIONS**

Messages about procedures or actions that must be followed

for safe handling of corrugated metal pipe.



WARNING

Falling or rolling pipe can cause severe personal injury or death.

Read and follow all safety instructions before unloading pipe.



Notwithstanding the instructions contained in this booklet, it is the responsibility of the consignee or consignee's agent to devise safe unloading and handling procedures.

Unloading and Handling

The following equipment is recommended for unloading pipe or pipe bundles:

- Forklift
- Front-end loader with fork adapters
- Backhoe with fork adapters
- Cranes
- Non-metallic slings

Other unloading methods such as chains, wire rope, cinching, or hooks in the end of the pipe should not be used.



Do not stand or ride on the load of pipe while it is being unloaded.

General

1. Contech recommends the use of slings for all pipe handling requirements.
2. Hooks, chains or wire rope may damage the pipe.

3.



WARNING Do not push bundles off the trailer or permit pipe to drop to the ground.

SAFETY INSTRUCTIONS


Failure to follow these instructions can result in serious injury or death and/or damage to pipe.



1. Only trained and authorized equipment operators are to be permitted to unload the pipe.
2. Wear approved safety hat and shoes, gloves, and eye protection.

3.  **Pipe ends may be sharp. Workers handling pipe must wear gloves made from cut-resistant materials.**

4. Park the truck and trailer on level ground before you start unloading. It is the responsibility of the consignee to direct the driver to level ground for parking the truck.
5. Keep all unauthorized persons clear of the area when the driver releases the binders from the trailer and during unloading.

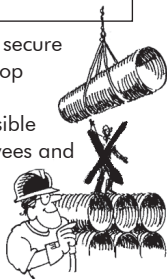
6.  **Sometimes pipes are bundled together on the truck with steel straps. Do not cut the steel strapping around the bundles until the bundles have been placed on level ground, blocked or secured, and will not be moved again as a unit. It is recommended that the steel strapping be cut with appropriate sized cutting tools. Stand to the side when cutting a strap. Always be aware that pipe may move, roll, or fall when a strap is cut.**

7. **⚠️ WARNING** Do not lift bundles or sections of pipe by the steel strapping around the bundles.

8. Know the capabilities and rated load capacities of your lifting equipment. Never exceed them.

9. **⚠️ WARNING** Do not stand or ride on the load of pipe while it is being unloaded. Do not stand beneath or near the pipe while it is being unloaded.

10. If unloading at multiple points, secure the remaining load between drop off points.
11. The contractor shall be responsible for the safety of his/her employees and agents. Adequate safety indoctrination is his responsibility and shall be given to all personnel employed by his firm.
12. Safe practices on construction work as outlined in the latest edition of the "Manual of Accident Prevention in Construction," published by the Associated General Contractors, shall be used as a guide and observed.
13. The contractor shall comply with all applicable city, state, and federal safety codes in effect in the area where he is performing the work. This conformance shall include the provisions of the current issue of the "OSHA Safety and Health Standards (29 CFR 1926/1910)" as published by the U.S. Department of Labor.



Handling Weights

Contech Corrugated Steel Pipe

Approximate weight (pounds/lineal foot). These are estimated average weights and are not for specification use.

Table 1.
Handling weights for CSP⁽¹⁾ with 2²/₃" x 1¹/₂" corrugation

Inside Diameter (Inches)	Weight (Pounds/Lineal Foot)		
	Gage	Specified Thickness (Inches)	Galvanized & ALUMINIZED ²
12	18	0.052	8
	16	0.064	10
	14	0.079	12
15	18	0.052	10
	16	0.064	12
	14	0.079	15
18	18	0.052	12
	16	0.064	15
	14	0.079	18
21	18	0.052	14
	16	0.064	17
	14	0.079	21
	12	0.109	29
24	18	0.052	15
	16	0.064	19
	14	0.079	24
	12	0.109	33
30	18	0.052	20
	16	0.064	24
	14	0.079	30
	12	0.109	41
36	18	0.052	24
	16	0.064	29
	14	0.079	36
	12	0.109	49
	10	0.138	62

(1) Helical lockseam pipe only. Annular riveted pipe weights will be higher.

(2) Weights for TRENCHCOAT® polymer-coated pipe are 1% - 4% higher, varying by gage.

Weight (Pounds/Lineal Foot)			
Full Coated	Coated & PAVED-INVERT	SMOOTH-FLO	SmoothCor
10	13		
12	15		
14	17		
13	16	26	
15	18	28	
18	21	31	
16	19	31	
19	22	34	25
22	25	37	28
18	23	36	
21	26	39	29
25	30	43	33
29	33	47	41
20	26	41	
24	30	45	30
29	33	47	38
38	44	59	47
26	32	51	
30	36	55	42
36	42	60	48
47	53	72	59
31	39	50	
36	44	65	51
43	51	75	58
56	64	90	71
69	77	100	

Table 1 continued on next page

Table 1 continued . . . ⁽¹⁾

Table 1.
Handling weights for CSP⁽¹⁾ with 2²/₃" x 1¹/₂" corrugation

Inside Diameter (Inches)	Weight (Pounds/Lineal Foot)		
	Gage	Specified Thickness (Inches)	Galvanized & ALUMINIZED ²
42	18	0.052	28
	16	0.064	34
	14	0.079	42
	12	0.109	57
	10	0.138	72
	8	0.168	88
48	16	0.064	38
	14	0.079	48
	12	0.109	65
	10	0.138	82
	8	0.168	100
54	14	0.079	54
	12	0.109	73
	10	0.138	92
	8	0.168	112
60	12	0.109	81
	10	0.138	103
	8	0.168	124
66	12	0.109	89
	10	0.138	113
	8	0.168	137
72	10	0.138	123
	8	0.168	149
78	8	0.168	161
84	8	0.168	173

(1) Helical lockseam pipe only. Annular riveted pipe weights will be higher.

(2) Weights for TRENCHCOAT[®] polymer-coated pipe are 1% - 4% higher, varying by gage.

Weight (Pounds/Lineal Foot)

Full Coated	Coated & PAVED- INVERT	SMOOTH- FLO	SmoothCor
36	45	71	
42	51	77	60
50	59	85	68
65	74	100	82
80	89	115	
96	105	131	
48	57	85	67
58	67	95	77
75	84	112	94
92	101	129	
110	119	147	
65	76	105	87
84	95	124	106
103	114	143	
123	134	163	
92	106	140	117
114	128	162	
135	149	183	
101	117	160	129
125	141	180	
149	165	210	
137	154	210	(2)
163	180	236	
177	194	260	(2)
190	208	270	(2)

Weight (Pounds/Lineal Foot)

Inside Diameter (Inches)	Gage	Specified Thickness (Inches)	Galvanized & ALUMINIZED²
48	16	0.064	44
	14	0.079	54
	12	0.109	74
54	16	0.064	50
	14	0.079	61
	12	0.109	83
	10	0.138	106
	8	0.168	129
60	16	0.064	55
	14	0.079	67
	12	0.109	92
	10	0.138	118
	8	0.168	143
66	16	0.064	60
	14	0.079	74
	12	0.109	101
	10	0.138	129
	8	0.168	157
72	16	0.064	66
	14	0.079	81
	12	0.109	110
	10	0.138	140
	8	0.168	171
78	16	0.064	71
	14	0.079	87
	12	0.109	119
	10	0.138	152
	8	0.168	185
84	16	0.064	77
	14	0.079	94
	12	0.109	128
	10	0.138	164
	8	0.168	199

(1) Helical lockseam pipe only. Annular riveted pipe weights will be higher.

(2) Weights for TRENCHCOAT[®] polymer-coated pipe are 1% - 4% higher, varying by gage.

Weight (Pounds/Lineal Foot)

Full Coated	Coated & PAVED-INVERT	SMOOTH-FLO	SmoothCor
59	75	123	
69	85	132	
89	105	152	
66	84	138	84
77	95	149	95
100	118	171	118
123	140	194	
146	163	217	
73	93	153	93
86	105	165	105
110	130	190	130
136	156	216	
161	181	241	
80	102	168	102
94	116	181	116
121	143	208	145
149	171	236	
177	199	264	
88	111	183	112
102	126	197	127
132	156	227	157
162	186	257	
193	217	288	
95	121	198	120
111	137	214	136
143	169	246	168
176	202	279	
209	235	312	
102	130	213	130
119	147	230	147
154	182	264	181
189	217	300	
224	253	335	

Table 2 continued on next page

Table 2 continued . . . (1)

Table 2
Handling weights for CSP (1) with 3" x 1" or 5" x 1" corrugation

Weight (Pounds/Lineal Foot)			
Inside Diameter (Inches)	Gage	Specified Thickness (Inches)	Galvanized & ALUMINIZED²
90	16	0.064	82
	14	0.079	100
	12	0.109	137
	10	0.138	175
	8	0.168	213
96	16	0.064	87
	14	0.079	107
	12	0.109	147
	10	0.138	188
	8	0.168	228
102	16	0.064	93
	14	0.079	114
	12	0.109	155
	10	0.138	198
	8	0.168	241
108	14	0.079	120
	12	0.109	165
	10	0.138	211
	8	0.168	256
114	14	0.079	127
	12	0.109	174
	10	0.138	222
	8	0.168	271
120	14	0.079	134
	12	0.109	183
	10	0.138	234
	8	0.168	284
126	12	0.109	195
	10	0.138	247
	8	0.168	289
132	12	0.109	204
	10	0.138	259
	8	0.168	314
138	12	0.109	213
	10	0.138	270
	8	0.168	328
144	10	0.138	282
	8	0.168	344

(1) Helical lockseam pipe only. Annular riveted pipe weights will be higher.

(2) Weights for TRENCHCOAT® polymer-coated pipe are 1% - 4% higher, varying by gage.

Weight (Pounds/Lineal Foot)

Full Coated	Coated & PAVED- INVERT	SMOOTH- FLO	SmoothCor
109	140	228	139
127	158	246	157
164	195	283	194
202	233	321	
240	271	359	
116	149	242	148
136	169	262	168
176	209	302	208
217	250	343	
257	290	383	
124	158	258	158
145	179	279	179
186	220	320	222
229	263	363	
272	306	406	
153	188	295	189
198	233	340	235
244	279	386	
289	324	431	
162	199	312	200
209	246	359	248
257	294	407	
306	343	456	
171	210	329	211
220	259	378	260
271	310	429	
321	360	479	
233	274	400	276
285	326	452	
338	378	504	
244	287	419	289
299	342	474	
354	397	529	
355	300	438	300
312	357	495	
370	415	553	
336	373	517	(2)
388	435	579	

Contech ULTRA FLO Pipe

Table 3.

Handling Weight for **ALUMINIZED STEEL Type 2**
or **Galvanized Steel ULTRA FLO** with $\frac{3}{4}$ " x $\frac{3}{4}$ " x $7\frac{1}{2}$ "
corrugation

Diameter (Inches)	Weight (Pounds/Lineal Foot)			
	Specified Thickness and Gage			
	(0.064") 16	(0.079") 14	(0.109") 12	(0.138") 10
18	15	18		
21	17	21	29	
24	19	24	36	
30	24	30	42	
36	29	36	50	
42	33	42	58	
48	38	48	66	80
54	45	54	75	90
60	48	60	83	99
66		66	91	109
72		72	99	119
78		78	108	129
84			116	139
90			124	149
96			132	158
102			141	168
108				175
114				196
120				206

Table 4.
Handling Weight for ALUMINUM ULTRA FLO
 with $\frac{3}{4}$ " x $\frac{3}{4}$ " x $7\frac{1}{2}$ " corrugation

Diameter (Inches)	Weight (Pounds/Lineal Foot)			
	Specified Thickness and Gage			
	(0.060")	(0.075")	(0.105")	(0.135")
	16	14	12	10
18	5	6		
21	6	8	11	
24	7	9	13	
30	9	11	15	
36	11	13	18	23
42	12	15	21	26
48		17	24	30
54		19	27	34
60			30	37
66			33	41
72			36	45
78				49
84				52

Contech CORLIX Aluminum Pipe

Table 5.
Handling weights for corrugated aluminum pipe⁽¹⁾
with 2 $\frac{2}{3}$ " x 1" corrugation

Diameter Or Span (Inches)	Weight (Pounds/Lineal Foot)					
	Specified Thickness and Gage					
	(0.048")	(0.060")	(0.075")	(0.105")	(0.135")	(0.164")
	18	16	14	12	10	8
6 ⁽²⁾	1.3	1.3				
8 ⁽²⁾	1.7	2.1				
10 ⁽²⁾	2.1	2.6				
12		3.2	4			
15		4	4.9			
18		4.8	5.9			
21		5.6	6.9			
24		6.3	7.9	10.8		
27			8.8	12.2		
30			9.8	13.5		
36			11.8	16.3	20.7	
42				19	24.2	
48				21.7	27.6	33.5
54				24.4	31.1	37.7
60					34.6	41.9
66						46
72						50.1

Notes:

(1) Helical lockseam pipe only. Annular riveted pipe weights will be higher.

(2) 1 $\frac{1}{2}$ " x $\frac{1}{4}$ " corrugation.


Contech CORLIX Aluminum Pipe

**Table 6.
Handling weights for corrugated aluminum
pipe⁽¹⁾
with 3" x 1" corrugation**

Diameter Or Span (Inches)	Weight (Pounds/Lineal Foot) Specified Thickness and Gage				
	(0.060")	(0.075")	(0.105")	(0.135")	(0.164")
	16	14	12	10	8
30	9.3	11.5	15.8	20.2	
36	11.1	13.7	18.9	24.1	
42	12.9	16	22	28	
48	14.7	18.2	25.1	32	38.8
54	16.5	20.5	28.2	35.9	43.6
60		22.7	31.3	40	48.3
66		24.9	34.3	43.7	53
72		27.1	37.4	47.6	57.8
78		29.3	40.4	51.5	62.5
84			43.5	55.4	67.2
90			46.6	59.3	71.9
96			49.6	63.2	76.7
102				66.6	80.8
108				71	86.1
114					90.9
120					95.6

Installation precautions

1. Prior to assembly and installation, refer to the engineer's project plans and specifications.
2. For additional information on assembly and installation, reference the N.C.S.P.A. "Installation Manual for Corrugated Steel Pipe and Pipe-Arch" and ASTM A 798 for steel pipe or ASTM B 788 for aluminum pipe.
3. During assembly and installation, all OSHA safety regulations and guidelines must be observed.

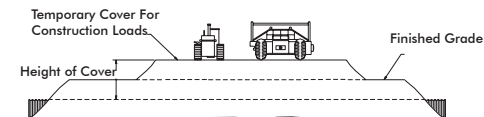
4.  **WARNING** During installation and prior to the construction of permanent erosion control and end treatment protection, special precautions may be necessary. The structure must be protected from unbalanced loads and from any structural loads or hydraulic forces that might bend or distort the unsupported ends of the structure. Flotation of the structure and erosion or wash-out of previously placed soil support must be prevented to ensure that the structure maintains its load carrying capacity.

Construction Loads

For temporary construction vehicle loads, an extra amount of compacted cover may be required over the top of the pipe. The Height-of-Cover shall meet minimum requirements shown in the table below. The use of heavy construction equipment necessitates greater protection for the pipe than finished grade cover minimums for normal highway traffic.

**Table 7.
Minimum Height of Cover Requirements for
Construction Loads On Corrugated Metal Pipe.**

Diameter/Span (Inches)	Axle Load (Kips)			
	18-50	50-75	75-110	110-150
Steel				
12-42	2.0'	2.5'	3.0'	3.0'
48-72	3.0'	3.0'	3.5'	4.0'
78-120	3.0'	3.5'	4.0'	4.5'
126-144	3.5'	4.0'	4.5'	4.5'
Aluminum				
12-42	3.0'	3.5'	4.0'	4.0'
48-72	4.0'	4.0'	5.0'	5.5'
78-120	4.0'	5.0'	5.5'	5.5'
ULTRA FLO - Steel $\frac{3}{4}'' \times \frac{3}{4}'' \times 7 \frac{1}{2}''$				
15-42	2.0'	2.5'	3.0'	3.0'
48-72	3.0'	3.0'	3.5'	4.0'
78-108	3.0'	3.5'	4.0'	4.5'
ULTRA FLO - Aluminum $\frac{3}{4}'' \times \frac{3}{4}'' \times 7 \frac{1}{2}''$				
15-42	3.0'	3.5'	4.0'	4.0'



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