



SAFETY INSTRUCTIONS FOR STRUCTURAL PLATE PRODUCTS

**UNLOADING
HANDLING
ASSEMBLING**



Preface

This instruction book is for your crews. Distribute it to help them safely unload and handle structural plate products.

Don't assume that experienced workers fully understand how to unload, handle, and assemble structural plate products. Review these instructions with your supervisors and crews. This will mean a safe and successful project for you and your customer.

Anytime a question or problem arises, contact your Contech representative before you proceed.

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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 structural plate products.



Notwithstanding the instructions contained in this booklet, the party responsible for unloading and handling of this material must devise safe procedures for managing this process.

WARNING



Falling structural plates and accessories can cause severe personal injury or death.

Read and follow all safety instructions before unloading structural plates and accessories.

Unloading and handling

The following equipment is recommended for unloading structural plates and accessories:

- 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 bundles should not be used.



Do not stand or ride on the load of structural plates and accessories while they are being unloaded.



SAFETY INSTRUCTIONS

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

1. Only trained and authorized equipment operators are to be permitted to unload the structural plates and accessories.
2. Wear approved safety hat and steel-toed shoes, gloves, and eye protection.
3. Park the truck and trailer on level ground before you start unloading. It is the responsibility of the receiver to direct the driver to level ground for parking the truck.
4. Keep all unauthorized people clear of the area when the driver releases the binders from the trailer and during unloading.

5. **⚠️ WARNING** Sometimes structural plates and accessories 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 structural plates and accessories may move, roll, or fall when a strap is cut.

6. **⚠️ WARNING** Do not lift bundles by the steel strapping around the bundles.

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

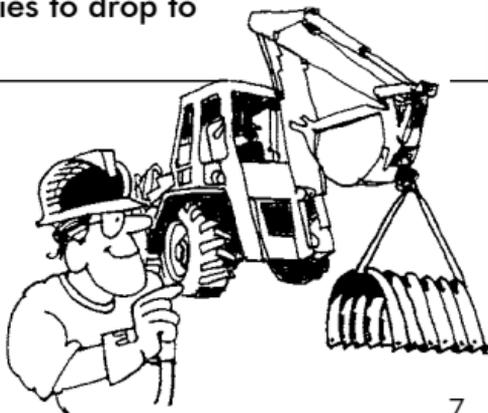
8. **⚠️ WARNING** Do not stand or ride on the load of structural plates and accessories while it is being unloaded. Do not stand beneath or near the structural plates and accessories while they are being unloaded.

9. If unloading at multiple site locations, make sure the truck driver secures the remaining load before proceeding to the next location.



10. The contractor shall be responsible for the safety of his/her employees and agents. Adequate safety indoctrination is the contractor's responsibility and shall be given to all personnel employed by his firm.
11. 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.
12. 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.
13. Contech recommends using slings for unloading all structural plates and accessory handling requirements.
14. Hooks, chains, or wire rope may damage the structural plates and accessories, and should not be used.

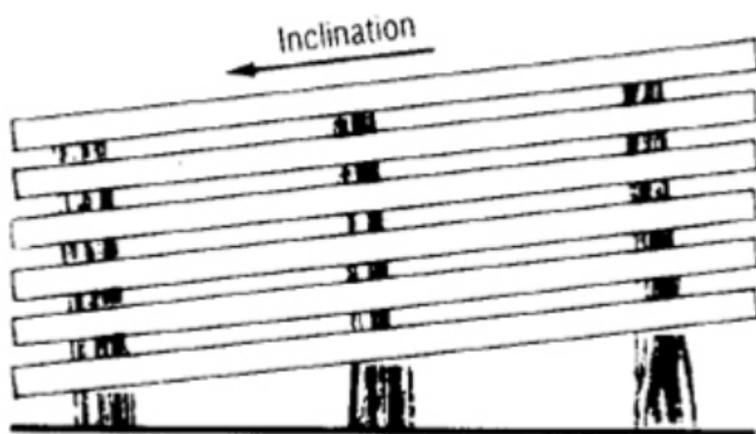
15. **▲WARNING** Do not push bundles off the trailer or permit structural plates and accessories to drop to the ground.



Storage Recommendations for Unassembled Steel and Aluminum Structural Plate

When steel or aluminum bundles are exposed to moisture for extended time periods, a wet storage stain may occur. This phenomenon applies to Contech steel and aluminum structural plate. The purchaser should use reasonable handling and storage procedures for the materials to assure that a stain-free product is installed.

It is recommended that once material arrives at a storage location or the final destination, the plates should be separated onsite with strip spacers to provide free access of air to all parts. The material should also be inclined or positioned to maximize drainage. The material should also be stored under cover whenever possible.



It should be noted that a wet storage stain results from the exposure conditions and is not indicative of inferior or poor quality galvanizing, or a degradation of the steel or aluminum.

Assembly

1. Prior to installation, review and understand the engineer's project plans and specifications.
2. Thoroughly review and study the product catalog, assembly instructions, assembly drawings, and the bill of material prepared for your order and enclosed in the fastener containers by Contech with the shipment.
3. During assembly and installation, observe all OSHA safety regulations and guidelines.
4. Please consult project plans for site specific backfill guidelines. For manufacturer's typical backfill recommendations review the Contech Structural Plate Design Guide and/or contact your local Contech representative.

5.  **WARNING** During installation and prior to the construction of permanent erosion control and end treatment protection, special precautions may be necessary to avoid damage. 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.

6. 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 807 (Installing Corrugated Steel Structural Plate Pipe). For aluminum material reference ASTM B 789 (Installing Corrugated Aluminum Structural Plate Pipe).

Suggested Tool List

- ☑ Band cutters to cut packaging bands around bundled material.
- ☑ Cables with a safety hook or clevis for moving individual plates.
- ☑ 3lb. Engineering Hammer, Puller Hook, and Pry bar.
- ☑ Tapered aligning bars or drift pins for use in positioning plates, sheets, components or sections of material for bolting are necessary. The preferred material is tempered steel bar stock.
- ☑ Combination and Socket-wrench with appropriate sockets.
- ☑ Metered torque wrench. Many projects require inspection of the bolt torque.
- ☑ Come-along for use in pulling the plates, sheets, components, or sections together.
- ☑ Power source for bolting needs.
- ☑ Air hose. Universal quick-fit fittings are found on most compressors.
- ☑ Electric extension cords with proper ground provisions and adequate wire gage.
- ☑ Air impact wrench with adequate capacity for the torque ranges as noted.
- ☑ Scaffolding for larger structures as needed.

Note: Bolt torque remains the same for both 7/8" and 3/4" diameter bolts, namely, 100-300 ft-lbs for plain galvanized plates and 150-300 ft-lbs for seam sealant tape or asphalt coated (shop applied) plates. Torque levels are for installation, not residual, in -service requirements.

Handling Weights – MULTI-PLATE®

Bundle weights will vary, depending upon the thickness, width, length, and number of plates in a particular bundle. Approximate weights of individual steel structural plates are shown in Table 1. Reference to Table 1 and the total load weight shown on the bill of lading will help you determine bundle weights. Individual bundles may weigh as much as 10,000 pounds.

Table 1
Approximate Weight of Individual Steel Plates Galvanized,
in Pounds, without Bolts ^{(1) (2)}

Plate Width Pi ⁽⁴⁾	Overall Width Feet	Net Length Feet	Specified Thickness, Inches ⁽³⁾						
			0.111 12 Ga.	0.140 10 Ga.	0.170 8 Ga.	0.188 7 Ga.	0.218 5 Ga.	0.249 3 Ga.	0.280 1 Ga.
9	2.8	10	161	205	250	272	316	361	405
9	2.8	12	193	246	299	325	379	432	485
15	4.4	10	253	323	393	428	498	568	638
15	4.4	12	303	386	470	511	595	678	762
18	5.2	10	299	382	465	506	589	671	754
18	5.2	12	357	456	555	604	703	801	900
21	6.0	10	345	441	536	583	679	774	869
21	6.0	12	412	526	640	697	810	924	1038
24	6.8	10	396	504	613	667	775	886	995
24	6.8	12	473	603	732	797	927	1060	1190

- (1) Weights are based on a zinc coating of 3 Oz./Ft.² of double exposed surface.
- (2) All weights are subject to manufacturing tolerances.
- (3) Specified thickness is a nominal galvanized thickness. Reference AASHTO M 167.
- (4) Pi = 3.2 inches.
- (5) For 5/16 and 3/8 inch plate weights, contact your local Contech representative.

Handling Weights – BridgeCor®

Bundle weights will vary, depending upon the thickness, length, and number of plates in a particular bundle. However, the weight of a bundle of steel structural plates will not exceed 10,000 pounds. Approximate weights of individual steel structural plates are shown in Table 2. Reference to Table 2 and the total load weight shown on the bill of lading will help you determine bundle weights.

Table 2
Approximate Weight of Individual BridgeCor Plates Galvanized,
in Pounds, without Bolts ^{(1) (2)}

Plate Width S ⁽⁴⁾	Overall Width Feet	Net Length Feet ⁽⁵⁾	Specified Thickness, Inches ⁽³⁾						
			0.170 8 Ga.	0.188 7 Ga.	0.218 5 Ga.	0.249 3 Ga.	0.280 1 Ga.	0.318 5/16	0.380 3/8
4	6.1	3.75	219	242	280	321	361	285	339
5	7.4	3.75	267	295	342	391	440	347	414
6	8.8	3.75	315	348	404	461	519	409	489
7	10.1	3.75	363	401	465	531	598	471	563
8	11.4	3.75	411	454	527	602	677	534	638
9	12.8	3.75	459	507	588	672	756	596	712

- (1) Weights are based on a zinc coating of 3 Oz./Ft.² of double exposed surface.
- (2) All weights are subject to manufacturing tolerances.
- (3) Specified thickness is a nominal galvanized thickness. Reference AASHTO M 167.
- (4) S = 16 inches.
- (5) For 5/16 and 3/8 inch plate, the net length is 30 inches (2.5 feet).

Handling Weights - Aluminum

Bundle weights will vary, depending upon the thickness, length, and number of plates in a particular bundle. However, the weight of a bundle of aluminum structural plates will not exceed 5,000 pounds. Approximate weights of individual aluminum structural plates are shown in Table 3. Reference to Table 3 and the total load weight shown on the bill of lading will help you determine bundle weights.

Table 3
Approximate Weight of Individual Aluminum Plates,
in Pounds, without Bolts^{(1) (2)}

Plate Width N ⁽³⁾	Overall Width Feet	Net Length Feet	Nominal Thickness, Inches						
			0.100	0.125	0.150	0.175	0.200	0.225	0.250
8	6.5	4.5	56	69	85	99	112	125	140
9	7.2	4.5	63	77	95	111	125	140	157
10	8.0	4.5	69	85	105	122	138	155	173
11	8.8	4.5	76	93	115	134	152	169	190
12	9.6	4.5	82	102	125	145	165	184	206
13	10.4	4.5	89	110	135	157	178	199	223
14	11.2	4.5	96	118	145	169	191	213	239
15	12.0	4.5	102	126	155	180	204	228	256
16	12.8	4.5	109	134	165	192	217	242	272
17	13.6	4.5	115	142	175	204	231	257	288
18	14.4	4.5	122	150	184	215	244	272	305

- (1) All weights are subject to manufacturing tolerances.
- (2) Plates are fabricated from an aluminum alloy with material properties that conform to AASHTO M 219 and ASTM B209 specifications.
- (3) N = 9.625 inches.
- (4) Longer plate lengths may be furnished for specific structures.

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