CONTECH®
ENGINEERED SOLUTIONS

Metric Sheeting

Tomorrow's Environments Engineered

Metric Sheeting: Contech Metric Sheeting

A unique steel sheeting with the industry's best strength-to-weight ratio

CONTECH Metric Sheeting uses a unique profile (see drawing at bottom of page) that gives it a higher degree of stiffness and results in the best strength-to-weight ratio in the industry.

- **Greater laying width**– 21⅝" net laying width means more coverage per section driven.
- **Higher stiffness**–translates into less driving effort.
- **ALUMINIZED STEEL** Type 2 coating–provides improved durability versus galvanizing for applications requiring longer life or when aesthetics are a concern.

Contech Metric Sheeting, fabricated from ALUMINIZED STEEL Type 2 for added corrosion resistance, will check erosion along this lake shore in a county park.

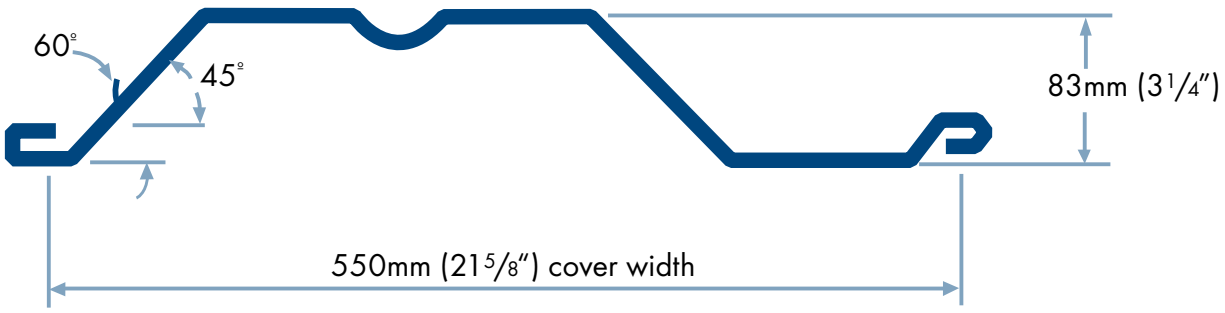
Physical Properties			
Thickness		**Weight****	
Gauge	Inches	Lb./Lin. Ft. of Pile	Lb./Sq. Ft. of Wall
5	0.2092	21.1	11.7
7	0.1793	17.9	9.9
8	0.1644	16.4	9.1
10	0.1345	13.4	7.4
12	0.1046	10.4	5.8

**Weights shown are approximate

Steel cut-off wall located on a large minerals mine site formed with Contech Metric Sheeting.

Section Properties				
	Section Modulus (In.³)		**Moment of Inertia (In.⁴)**	
Gauge	Per Section	Per Foot	Per Section	Per Foot
5	6.28	3.48	11.04	6.12
7	5.39	2.99	9.44	5.23
8	4.95	2.75	8.65	4.79
10	4.07	2.25	7.05	3.91
12	3.18	1.76	5.46	3.02

*Note: All dimensions and properties are subject to manufacturing variances and tolerances



Wide range of applications

Contech Metric Sheeting speeds work provides safer working conditions, reduces cost and provides many types of temporary and permanent structures. As a medium-weight sheeting, Contech Metric Sheeting serves where heavy hot-rolled sheeting is impractical, and where wooden sheeting is expensive, cumbersome or structurally inadequate.

Applications include checkdams, cut-off walls, core walls, wingwalls, shore protection, trench protection, low retaining walls, ditch checks, jetties, and lagoon baffles.

Availability

Contech Metric Sheeting is available in 5-, 7-, 8-, 10- or 12-gage steel. Lengths vary from 4 to 40 feet. Net laying width is 550mm (21⅝ inches), and depth is 83mm (3¼ inches).

Sheeting is normally fabricated from black steel. For additional corrosion protection, galvanized coatings are available. 10- and 12-gage sheeting is available in ALUMINIZED STEEL Type 2 for improved durability.

Strict quality control

Contech Metric Sheeting is cold-rolled on a continuous forming line for maximum economy. Contech follows strict quality control standards throughout fabrication.

Fast, economical driving

Contech Metric Sheeting often can be handled by only two laborers and pushed into the ground with a backhoe. In more difficult driving conditions, it can be driven with conventional drop hammers, vibratory drivers, and diesel hammers. A light duty driving head is available from Contech. Installations across the United States have proven that Contech Metric Sheeting can withstand many varied driving conditions.

Lengths of sheeting have a tight, metal-to-metal interlock that keeps the soil behind the sheeting wall. The unique design resists pull-apart, yet the available pulling holes allow easy extraction in soft soils for salvaging.

Easy handling and storage

Medium-weight Contech Metric Sheeting simplifies transportation and handling and speeds installation. The sheeting is nestable, so large quantities can be stored at the job site or in a contractor's yard.

For additional information, see Contech's Anchor Wall brochure.

The nestabilility of Contech Metric Sheeting facilitates shipping and handling.

Long sections of Contech Metric Sheeting will be used as trench shoring for this sanitary sewer installation in New York.

Design and Specifications

Specifications for CONTECH black and galvanized Metric Sheeting

This specification covers steel sheeting of the continuous interlock type in the 5-gage through 12-gage range.

Steel sheeting shall be made in accordance with ASTM A 857 from steel meeting the requirements of ASTM A 1011, Grade 30. When required, the sheeting shall be hot-dipped galvanized per ASTM A 123 at a rate of two ounces per square foot total both sides.

Pre-galvanized steel is available only in 8-, 10-, and 12-gage and shall conform to ASTM A 929, Grade A (minimum yield strength 30 ksi) and galvanized per ASTM A 653 with a class of G 210 coating.

The sides of each piece of sheeting shall be furnished with an interlock that is continuous for the full length of the sheeting. The interlock shall have an opening of sufficient width to allow free slippage of the adjoining sheet.

The minimum gage and section modulus shall be as shown on the plans or bid proposal.

Wale beam and strut (tie rod) design

Soil pressures vary with types of earth, moisture content, and depth. The contractor or construction crew generally uses the wale and strut sizes that are available and spaces them to fit local soil and operating conditions.

The following method of figuring size and spacing of wales and struts for CONTECH Metric Sheeting is approximate. *For an exact design, the engineer should use accepted criteria.*

Load distribution on wales

The load per foot of wale (W) is computed as follows:

Let: p = Equivalent Fluid Pressure

d = Depth below surface to wale (in feet)

Then: (1st Wale) $W_1 = p/8\ (d_1 + d_2)^2$

(2nd Wale) $W_2 = p/4\ (d_3 + d_1)\ d_3 - d_1)$

Succeeding wales are figured similar to W_2 substituting d_4 for d_3, d_2 for d_1, and so on. (Subnumbers refer to number of wales from surface).

The allowable total uniform load for any size of wale (wood or steel) and for any strut spacing may be obtained from standard beam tables available in most engineering handbooks. Shear values often determine the maximum allowable load. The allowable total load divided by the load per foot of wale will give spacing of the struts in feet. The column load on each strut is the load per foot of wale multiplied by the spacing of the struts. The required size of struts can be obtained from the column tables in engineering handbooks.

Typical Values of Unit Weights, Eqivalent Fluid

Classification	Fiction Angle (Degree)	Density or Consistancy	Unit Soil Weight, (lb./Cu. ft.)	Unit Wt. of Equivalent Fluid (w) (lb./cu.ft.)*	
				Active	Passive
Coarse Sand or Sand and Gravel	45	Compact	140	24	820
	38	Firm	120	29	510
	32	Loose	90	28	290
Medium Sand	40	Compact	130	28	600
	34	Firm	110	31	390
	30	Loose	90	30	270
Fine Sand	34	Compact	130	37	460
	30	Firm	100	33	300
	28	Loose	85	31	280
Fine, Silty Sand or Sandy Silt	32	Compact	130	40	420
	30	Firm	100	33	300
	28	Loose	85	31	280
Fine, Uniform Sand	30	Compact	135	45	400
	28	Firm	110	38	300
	26	Loose	85	33	220
Clay-Silt	20	Medium	120	59	245
		Soft	90	44	183
Silty Clay	15	Medium	120	71	204
		Soft	90	53	153
Clay	10	Medium	120	84	170
		Soft	90	63	153
Clay	0	Medium	120	120	120
		Soft	90	90	90

Note: *Accompanying table extracted from the book "Basic Soils Engineering" by B. K. Hough, Professor of Civil Engineering, Cornell University, Page 249, 2nd Edition, published 1969. *Based on Rankine earth pressure.*

Example: A trench is to be dug 25 feet in a compacted sandy silt (equivalent fluid pressure is 40 pounds per square foot). Wales are to be spaced for equal stress in the sheeting with the first wale placed below ground level.

(1) Find depth of wales below ground surface. In the graph on the right ("Equal Stress in Sheeting"), locate intersection of 40 lb. fluid pressure and 10-gage line. Drop a vertical line from this point down to chart below ("First wale below ground line"). The depths of the wales are shown as 8 feet, 17 feet, and 23.5 feet below ground surface.

(2) To determine sizes of wales, compute loads per foot of wale.

$$W1 = \frac{40}{4}(8 + 17)^2 = 3{,}125 \text{ lb.}$$

$$W2 = \frac{40}{4}(23.5 + 8)(23.5 - 8)$$

$$= 4{,}880 \text{ lb.}$$

$$W3 = \frac{40}{4}(29 + 17)(29 - 17)$$

$$= 5{,}520 \text{ lb.}$$

With these loads known, it is possible to determine the required size of wales, and size and spacing of struts (tie rods).

Specifications for Contech Metric Sheeting produced from Aluminized

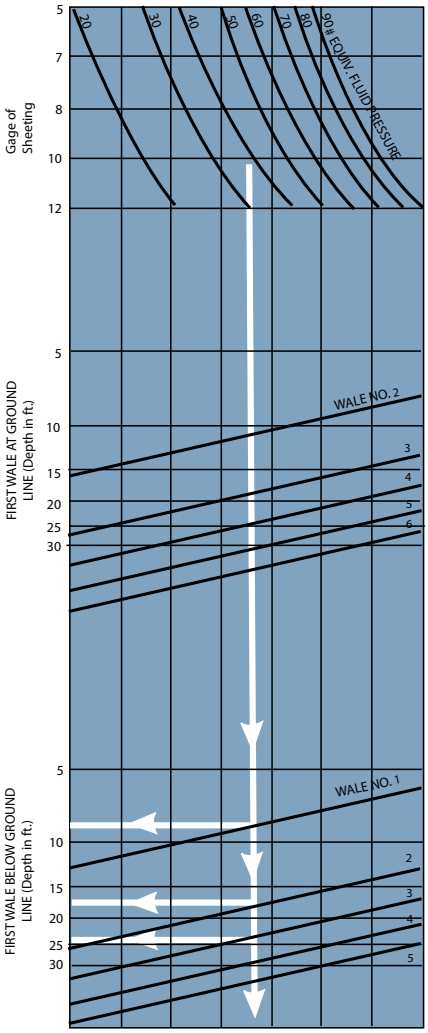
This specification covers aluminum-coated steel sheeting of the continuous interlock type in 10- and 12-gage steel.

The base metal for the sheeting shall be of commercial quality and in conformance with ASTM A 929 and with ALUMINIZED STEEL Type 2 coating per AASHTO M274. Coating shall be prior to fabrication on a continuous line by the hot-dip process. The coating bath shall be produced from commercially pure aluminum. Weight of coating shall be one ounce per square foot minimum total both sizes as measured by the triple-spot test (described in ASTM A 428).

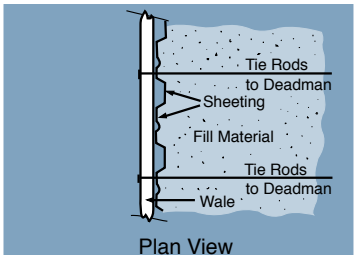
The sides of each piece of sheeting shall be furnished with an interlock that is continuous for the full length of the sheeting. The interlock shall have an opening of sufficient width to allow free slippage of the adjoining sheet.

The minimum gage and section modulus shall be as shown on the plans or bid proposal.

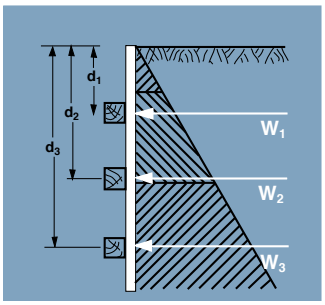
EQUAL STRESS IN SHEETING



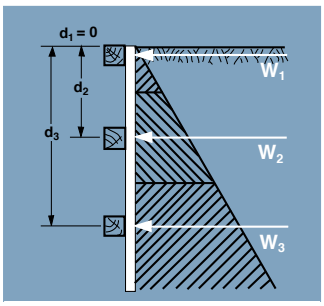
WALE ON OUTSIDE FACE OF SHEETING



FIRST WALE BELOW GROUND LINE



FIRST WALE AT GROUND LINE



Driving recommendations

Contech Sheeting may be installed either by driving it with hammers or by pushing it into place in trenches with light equipment.

A hand maul or a light pneumatic hammer is satisfactory for pushing sheeting in a trench where the bottom can be excavated ahead of driving, and when the earth loads on the sheeting are light.

If the sheeting is to be driven in advance of excavation, or the side pressures are heavy, then heavier equipment such as a drop hammer, a pneumatic or steam pile driver or vibratory driver will be needed. Under these conditions the use of heavy driving equipment will make for faster driving with less injury to the sheeting for any given condition. Light equipment for this type driving tends to batter the top edge and slow down the driving.

The driving equipment must be capable of supplying ample energy to move the sheeting easily. A driver that strikes a heavy blow with a low velocity at impact will do the most work with the least damage to the sheeting. A long sheet pile requires more energy to start it moving than does a light, short section.

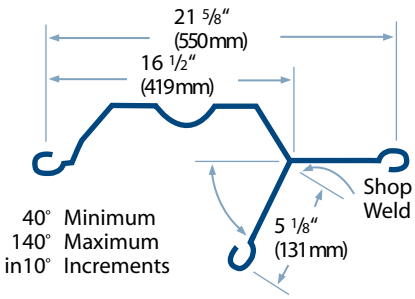
Soil friction on the sheeting surfaces and the force required for penetration of the leading edge are factors hard to evaluate. Knowledge of local conditions and experience with various types of equipment in driving in the soil formations that will be encountered are required to select the proper driving equipment.

Driving heads are used when driving with hand tools or the light pneumatic or gasoline drivers with narrow driving edge. For difficult driving conditions, a driving head with a wood cushion will improve driving performance and minimize damage to the sheeting.

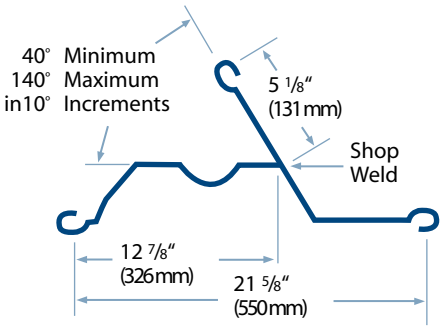
Relative low-cost, attractive appearance and proven durability of medium-weight Contech Metric Sheeting have made it a popular choice for waterfront installations like this.

Twin rows of Contech Metric Sheeting used as trench shoring. Increased stiffness means that lighter than normal gages of sheeting can be used.

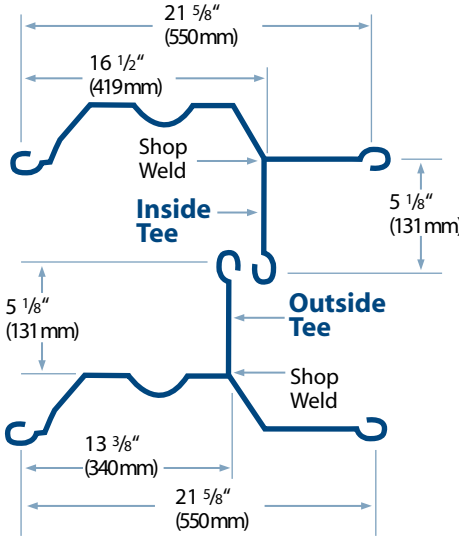
Contech Metric Sheeting offers a tight, metal-to-metal interlock on this cut-off wall under a dike.



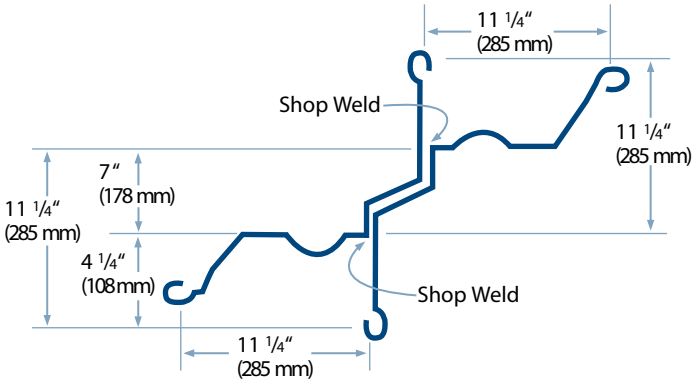
Wye Section Inside



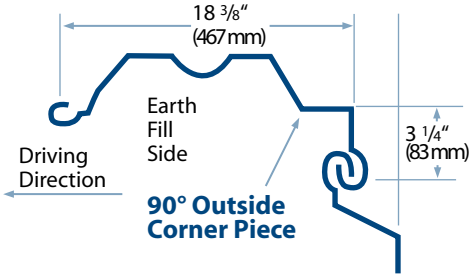
Wye Section Outside



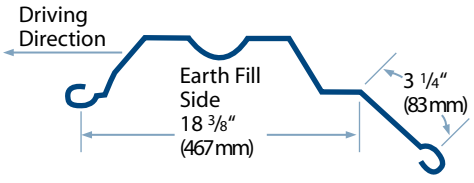
Tee Connection



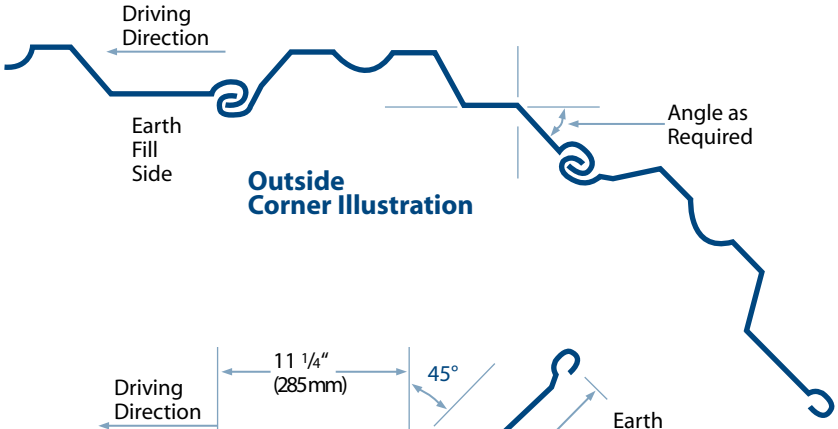
Cross Section



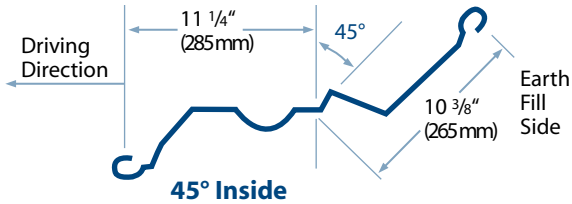
90° Outside Corner Piece



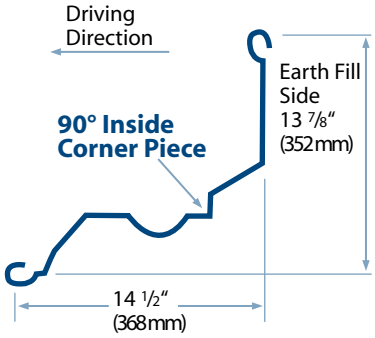
45° Outside Corner Piece

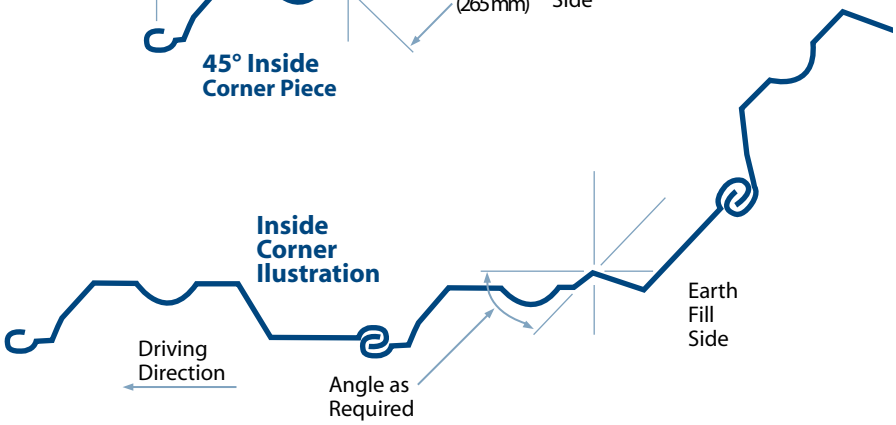


Outside Corner Illustration



45° Inside Corner Piece





NOTE: THE MAXIMUM LENGTH OF ANY CORNER, TEE, OR WYE SECTION IS 20'(6.1M)
NOTE: ALL DIMENTIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

CONTECH®
ENGINEERED SOLUTIONS

Contech Engineered Solutions LLC is the nation's leading provider of site solutions products and services for the Civil Engineering industry.

With more than 45 manufacturing facilities across the United States and around the world, Contech has the resources to support every site development need.

For more information, call one of Contech's Regional Offices located in the following cities:

Ohio — Corporate Office (Cincinnati)	**513-645-7000**
California (Roseville)	800-548-4667
Colorado (Denver)	720-587-4667
Florida (Orlando)	321-348-3520
Maine (Scarborough)	207-885-9830
Maryland (Baltimore)	410-740-8490
Oregon (Portland)	503-258-3180
Texas (Dallas)	972-590-2000

Visit us at www.ContechES.com or call 800.338.1122

Get Social With Us!