



STURDA WEIR

OPERATOR MANUAL

Revision Date: August 21st, 2022

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WHAT IS THE STURDA WEIR?

The Sturda Weir is a patented product that uses a Geotextile membrane to separate fines from mine water. This results in cleaner water being delivered to the sumps, minimizing wear on the pumps.



HOW DOES IT WORK:

- Dirty water is discharged into a drift behind the Weir
- As the drift fills, larger particles settle along the dirty sump
- The dirty water that reaches the Weir face is decanted through the Geotextile membrane, trapping the fines, and allowing cleaner water to pass through
- Once the drift is full, the fines are left to dry
- The Weir gates are then opened, and the fines are removed using a scoop.

BENEFITS:

- Limits wear on pumps, reducing the labour and cost to repair damaged pumps
- Allows for process water to be recycled and reused in mine workings
- The Sturda Weir is simple to install and can be completed in one shift
- Reduction in cost of ownership of dewatering system



PRE-OPERATION CRITERIA

Prior to commissioning the Sturda Weir, verify that all pre-operation criteria are met to ensure safety and optimal productivity

Pre-Operation Checklist:

- Are all the necessary materials and tools present on site and in working order
- Have all personnel been trained in installing the Weir
- Has a grade of between -3% and -5% been created to promote the flow of water towards the Weir face as well as towards the clean water sump
- Is ventilation installed to allow for a sweeping flow from the back of the sump area towards the Weir.
- Is the ground outside the Weir compact and free of all loose aggregate, (concrete floor is recommended)
- Is the influent water being introduced at the back of the dirty sump
- Have both ends of the Geotextile been pinned inside the hinges to ensure leakage does not occur
- Have the protruding ends of the Dywidag bolts on the outside of the Weir face been cut to allow for the hinges to swing open
- Have sandbags or a similar weight been added along the inside of the Weir to pin the excess Geotextile to the ground
- Is a system in place to ensure the Geotextile membrane is being tended to, (if the spray nozzle has not been purchased a worker will need to be designated to monitor the Weirs)



If you are unable to meet all the requirements above, stop and correct prior to installing the Sturda Weir.

INSTALLATION PROCEDURE

- 1) Complete workplace inspection.
- 2) Have survey install grade line at an elevation of 6-7 ft. from sill survey to put center line for wall hitches.
- 3) Using a tape measure find the center of the drift.
- 4) Measure back 14'-6" from the center line of the hitch to center of drift, mark this line with paint, repeat on opposite side of drift.
- 5) Once these lines have been marked paint a line 90 degrees to arch line. This will be the angle to drill and install the Dywidags.
- 6) Once lines have been marked up hang template and paint collar locations on the wall. Repeat on opposite side.
- 7) Drill and install eight #6 Dywidags ensuring minimum 3' embedment and repeat on opposite side.
- 8) Install Dywidag nuts. Allow enough room to adjust hinge. At least 1' of play is recommended.
- 9) Hang hinge from Dywidags and secure with second Dywidag nut. Check to make sure the hinge and wall bracket are plumb.
- 10) Assemble one section of the girders, ensuring the shortest girder is in the center, and measure the horizontal distance from end to end.
- 11) Adjust hinges to securely fit all the girders and allow for a tight fit.
- 12) The Dywidag closest to the hinge will need to be cut close to the nut to allow for the Weir to close.
- 13) This can be adjusted after the first row of girders have been installed and once the fit has been properly adjusted.
- 14) Once all girders have been installed, Install both center posts on either side of the middle girders.
- 15) Use the provided clips to lock the center posts into place
- 16) Form and pour concrete or place shotcrete in the void between the wall and hinge support channels.
- 17) Shotcrete/concrete must reach a minimum 20 MPa strength before Weir can be put into service
- 18) Install Layflats on a slight angle so that the end of the Layflats exit beneath the Weir face, (see attached instructions).

- 19) Using 50lbs-rated tie wraps, secure wire mesh screen along the inside of the weir, tying off on the girders. Ensure the screen is cut large enough to cover the entire face of the weir.
- 20) Install the Geotextile membrane using 50lbs-rated tie wraps with the grommets side running along the width of the Weir. The extra material is to be secured using sandbags or a similar weight. Allow room for the Layflats to protrude beneath the membrane and out the front of the Weir. Secure the excess Geotextile along either side of the Weir by folding this fabric into this hinge to ensure seepage does not occur.
- 21) Commission Weir by introducing the influent water. Monitor the flow of water out of the Geotextile and customize a maintenance plan as needed.

LAYFLAT SPECIFICATIONS AND INSTALLATION

The Sturda Layflat aids in the decanting process of the dirty water resulting in quicker turnaround times and reduced water pooling

Sturda Layflat Specifications

Length (ft.)	100
Width (in.)	12
Flow Rate (GPM/ft.)	130
Compressive Strength (PSF)	8,000

Installation Procedure

- 1) Roll out Layflats to full length of 100 ft.
- 2) Bring one end of the Layflat to the face at the far end of the dirty sump.
- 3) Install one Hilti Eye Bolt in the middle of the face ensuring it is located below the height of the Weir, (should be no higher than 6ft.)
- 4) Tie the end of the Layflat to the Eye Bolt using yellow rope or carry strap
- 5) Install Hilti Eyes Bolts every 6' – 10' at a decreasing grade from the face to the Sturda Weir
- 6) Tie the Layflat off to each of the Hilti Eye Bolts until you reach the Sturda Weir gate
- 7) Complete Steps 1-6 for the second Layflat.
- 8) Slide the loose ends of both Sturda Layflats underneath the excess Geotextile liner on the floor
- 9) Ensure that both ends of the Sturda Layflats extend out the front the Sturda Weir

Note: The layout of the Layflats is customizable and can be installed and positioned in whichever manner benefits the drainage of your dirty sump.

Layflat Schematic

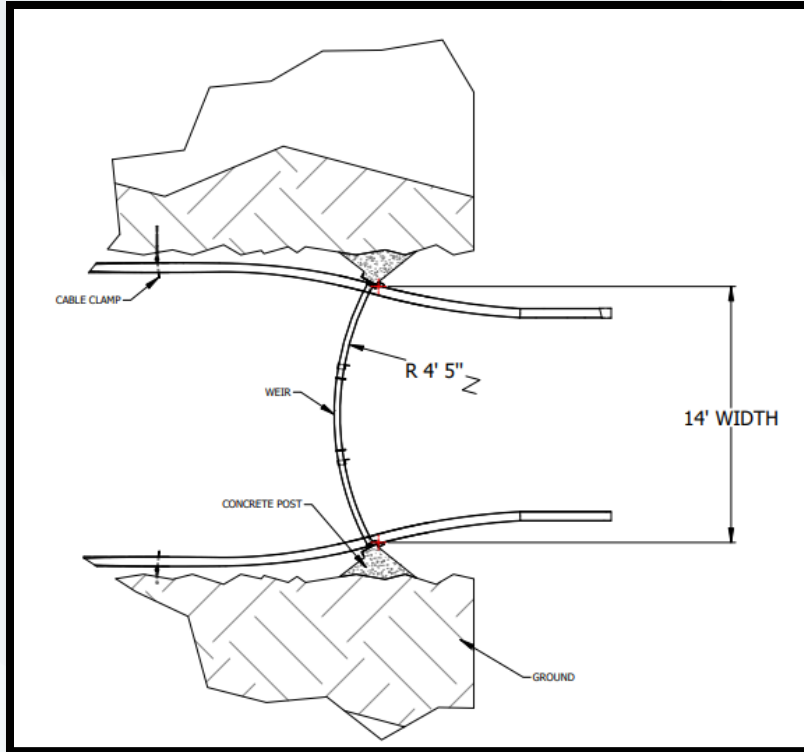


Figure 1: Sturda Layflat Installation - Aerial View

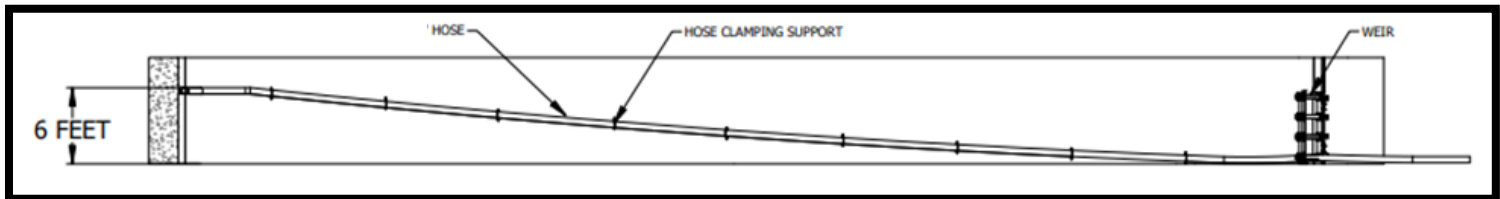


Figure 2: Sturda Layflat Installation - Side View

POLICIES AND PRECAUTIONS

To optimize success and worker safety while assembling and installing the Sturda Weir, the following policies are to be followed

- ❑ Materials provided with Weir package are not to be modified or replaced as this an engineered product. Sturda Inc. cannot guarantee the success of the Weir if the design has been altered
- ❑ Pieces are to be installed in accordance with the provided print
- ❑ A minimum of **(2)** workers will be present to assemble the Weir
- ❑ The Geotextile membrane is not to be modified or punctured under any circumstance
- ❑ The Geotextile membrane is to be replaced after every use and will be provided through Sturda Inc.
- ❑ The Weir will need to be monitored and tended to, either by installing a spray system or by designating a worker to ensure constant flow
- ❑ The fines must be fully dry before the Weir gates are opened
- ❑ There must be enough ventilation to accommodate for the scoop need to muck the fines
- ❑ Water must not be allowed to flow over the top of the Weir. If this occurs, turn off the influent source and allow for the water level to drop.
- ❑ Ensure all workers are aware of the following:
 - Pinch points
 - Correction installation procedure
 - Proper PPE

Failure to adhere to these policies and precautions increase the risk of workplace injury and diminish the efficacy of the Sturda Weir

STURDA WEIR SIZES

The tables below list the available sizes along with parts list and quantity for each Weir

6ft. Tall Weirs:

8 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	4
Girder 3 foot	8
Girder 4 foot	0
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

9 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 1 foot	4
Girder 3 foot	0
Girder 4 foot	8
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

10 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	4
Girder 3 foot	0
Girder 4 foot	8
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

11 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	4
Girder 4 foot	8
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

12 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	4
Girder 3 foot	0
Girder 4 foot	0
Girder 5 foot	8
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

13 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	4
Girder 4 foot	0
Girder 5 foot	8
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

14 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	0
Girder 4 foot	4
Girder 5 foot	8
Girder 6 foot	0
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

15 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	4
Girder 4 foot	0
Girder 5 foot	0
Girder 6 foot	8
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

16 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	0
Girder 4 foot	4
Girder 5 foot	0
Girder 6 foot	8
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

17 Foot Weir	
Part	Quantity
6ft. Center Post Assembly	2
6ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	0
Girder 4 foot	0
Girder 5 foot	4
Girder 6 foot	8
Angle Clips	8
Hinge Pins	4
Bolt Assemblies	56
GeoLiner	1

18 Foot Weir	
Part	Quantity
Center Post Assembly	3
Hinge Plate Assembly	2
Girder 2 foot	4
Girder 3 foot	0
Girder 4 foot	16
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	12
Hinge Pins	4
Bolt Assemblies	88
GeoLiner	1

8ft. Tall Weirs:

8 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	5
Girder 3 foot	10
Girder 4 foot	0
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

9 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 1 foot	5
Girder 3 foot	0
Girder 4 foot	10
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

10 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	5
Girder 3 foot	0
Girder 4 foot	10
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	10
Hinge Pins	5
Bolt Assemblies	70
GeoLiner	1

11 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	5
Girder 4 foot	10
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	10
Hinge Pins	5
Bolt Assemblies	70
GeoLiner	1

12 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	5
Girder 3 foot	0
Girder 4 foot	0
Girder 5 foot	10
Girder 6 foot	0
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

13 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	5
Girder 4 foot	0
Girder 5 foot	10
Girder 6 foot	0
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

14 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	0
Girder 4 foot	5
Girder 5 foot	10
Girder 6 foot	0
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

15 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	5
Girder 4 foot	0
Girder 5 foot	0
Girder 6 foot	10
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

16 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	0
Girder 4 foot	5
Girder 5 foot	0
Girder 6 foot	10
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

17 Foot Weir	
Part	Quantity
8ft. Center Post Assembly	2
8ft. Hinge Plate Assembly	2
Girder 2 foot	0
Girder 3 foot	0
Girder 4 foot	0
Girder 5 foot	5
Girder 6 foot	10
Angle Clips	10
Hinge Pins	8
Bolt Assemblies	70
GeoLiner	1

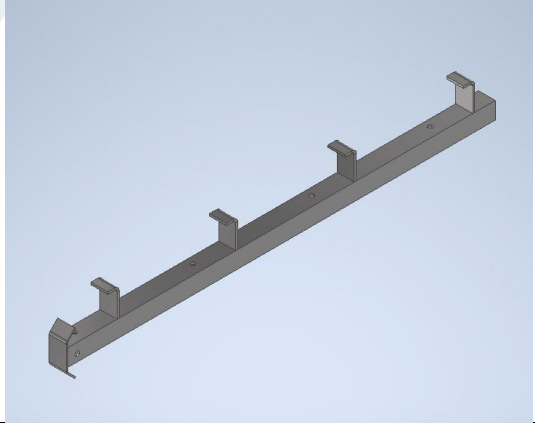
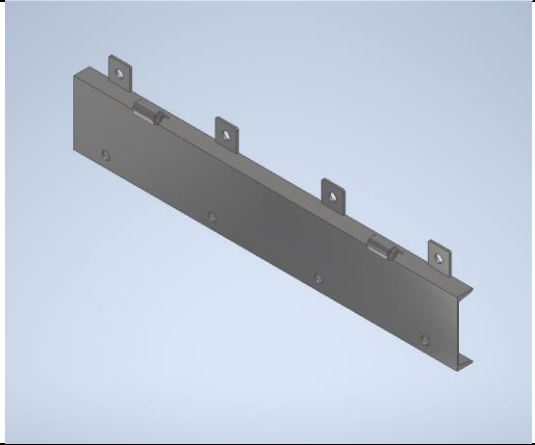
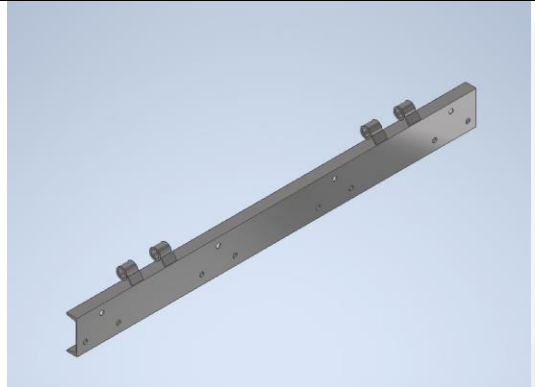
18 Foot Weir	
Part	Quantity
Center Post Assembly	3
Hinge Plate Assembly	2
Girder 2 foot	5
Girder 3 foot	0
Girder 4 foot	20
Girder 5 foot	0
Girder 6 foot	0
Angle Clips	15
Hinge Pins	8
Bolt Assemblies	105
GeoLiner	1



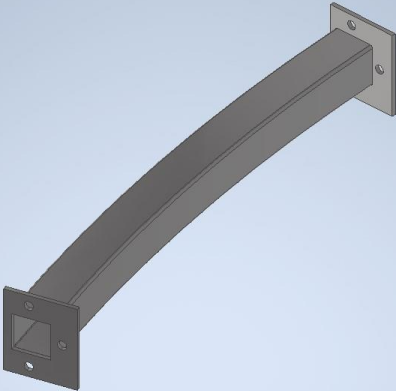
Tools

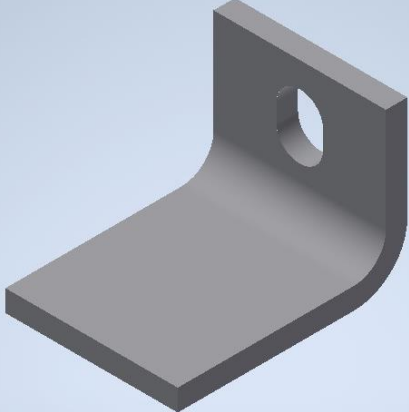
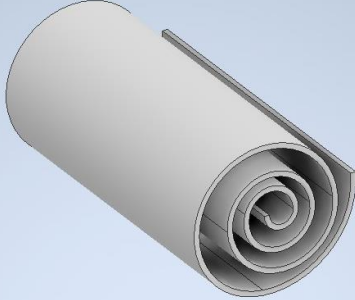
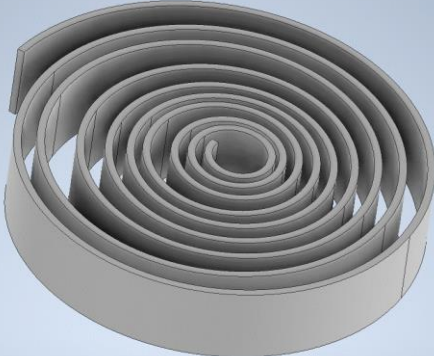
Below is a list of tools that will be needed for the installation of the Sturda Weir

- (16)** #6 Dywidag bolts in 3ft. lengths
- (1)** Impact drill with 1-1/4" socket
- (1)** Crescent wrench
- (1)** roll of wire mesh screen
- (1)** bag 50lbs-rated electrical tie wraps
- Measuring tape
- Hilti bolts: quantity dependent on length of drift
- Karri strap: quantity dependent on length of drift
- Sandbags or equivalent weight to pin excess Geotextile to ground
- (1)** Ladder of adequate height to climb over Weir

PARTS LIST

Sturda Weir Part List	
Part Name	Image
Center Post Assembly	
Outer Hinge Plate	
Inner Hinge Plate	

<p>Hinge Assembly</p>	
<p>Hinge Pins</p>	
<p>Girder</p>	

<p>Angle Cip</p>	
<p>Geotextile Liner</p>	
<p>Decanting Layflat</p>	

Contact Information:

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