



# Technical Supplement

Two 2" Skookum Shackles, 15t Swivel - Assembly F | HDPE Pipe Handling FCX-HS12 | Release Date 1/18/2019

Attach all supporting documentation including but not limited to drawings, PE stamps, calculations, etc. For fabricated rigging a detailed drawing and PE stamp must be provided.

Date: 4/25/2016	Site: Company PSST	Division Manager: Company PSST
Description of Rigging: Two 2" Skookum Shackles, 15-Ton Swivel	Working Load Limit: 50,000 lbs	

**Engineering Review:**

The rigging described here is one of the six original rigging assemblies (Rigging Assembly "F")

Alternative rigging equipment and supplier may be substituted as long as they have:

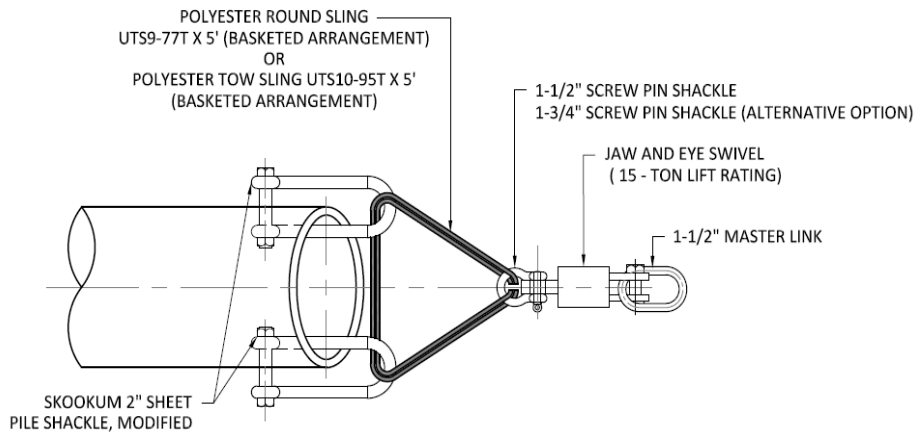
- Equivalent function
- Equivalent rating or higher (Working Load Limit must be based on a design factor of at least 1:3)

**Engineering Review Summary**

Pipe Diameter and SDR: See Attached Table	Pipe Length: 400-ft	Pipe Yield Strength: n/a
<b>When using a shackle to pipe assembly analysis must include the following:</b>		
Shackle's Working Load Limit: 100,000 lb	Shackles Attached to Pipe (number): 2	Shackle Pin Diameter, <i>Dp</i> (inches): 2.25"
Bushing Diameter, <i>Dp</i> (inches):	Hole Diameter in HDPE Pipe, <i>Dh</i> (inches): 2.5"	Shackle Gap Opening Width, <i>W</i> : 4"
Opening Length, <i>L</i> : 11.25"	Edge of Pipe to Center of Hole, <i>R</i> : 8"	

**Assembly Description/Diagram:**

(this must be listed below or attached on a separate sheet)



**Parts List:**

Include all parts such as: pulling head, swivel, nylon sling, shackle to equipment, master link, wire rope slings, flange break strength, rotational energy controls, etc.

Ref. #	Quantity	Item Description	Supplier	Part Number	Working Load Limit
n/a	2	Skookum 2" Sheet Pile Shackle, Modified	Certex	CX10-0778-HAG	100,000 lbs
n/a	1	Jaw and Eye Swivel, 15-Ton Lift Rating	Certex	CX05-0277	50,000 lbs
n/a	As Needed	1-1/2" Master Link	Certex	CX05-0712	50,000 lbs
A	As Needed	1-1/2" Screw Pin Shackle	Certex	CX10-0030	50,000 lbs
B	As Needed	1-3/4" Screw Pin Shackle (Alternative to Ref. A)	Certex	CX10-0031	50,000 lbs
C	1	Polyester Tow Sling (Basketed Arrangement) - UTS10-95T x 5-ft	Certex	CX08-0045-5	50,000 lbs
D	1	Polyester Tow Sling (Alternative to Ref. C) - UTS9-77T x 5-ft	Certex	CX08-0044-5	50,000 lbs

F) Two 2" Skookum Shackles, 15-ton swivel

		Pipe SDR Rating									
		32.5	26	21	19	17	15.5	13.5	11	9	7
Nominal Pipe Diameter (inches)	12	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	14	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	16	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	18	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	20	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	22	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	24	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
	26	Green	Green	Green	Green	Green	Green	Green	Green	Green	Red
	28	Green	Green	Green	Green	Green	Green	Green	Green	Green	Grey
	30	Green	Green	Green	Green	Green	Green	Green	Green	Green	Grey
	32	Green	Green	Green	Green	Green	Green	Green	Green	Red	Grey
	34	Green	Green	Green	Green	Green	Green	Green	Red	Grey	Grey
36	Green	Green	Green	Green	Green	Green	Green	Red	Grey	Grey	

Green	Rigging can be used on grades up to 25%
Yellow	Rigging can be used on grades up to 17.5%
Red	Rigging cannot be used

F) Two 2" Skookum Shackles, 15-ton swivel

		Pipe SDR Rating									
		32.5	26	21	19	17	15.5	13.5	11	9	7
Nominal Pipe Diameter (inches)	12	Black	X	X	X	X	X	X	X	X	X
	14	Black	X	X	X	X	X	X	X	X	X
	16	Black	X	X	X	X	X	X	X	X	X
	18	Black	X	X	X	X	X	X	X	X	X
	20	Black	X	X	X	X	X	X	X	X	X
	22	Black	X	X	X	X	X	X	X	X	X
	24	Black	X	X	X	X	X	X	X	X	X
	26	Black	X	X	X	X	X	X	X	X	Black
	28	Black	X	X	X	X	X	X	X	X	Black
	30	Black	X	X	X	X	X	X	X	X	Black
	32	Black	X	X	X	X	X	X	X	Black	Black
	34	Black	X	X	X	X	X	X	Black	Black	Black
36	Black	X	X	X	X	X	X	Black	Black	Black	

White	X - Rigging can be used on grades up to 25%
White	O - Rigging can be used on grades up to 17.5%
Black	Rigging cannot be used