

HELIDECK

**KAPP ALUMINIUM
TRETUM OFFSHORE**

Aluminium Helideck

- **Low weight**

Due to clever use of the extrusion technique the weight savings compared to steel decks are substantial, up to 70 %

- **No maintenance**

Seawater resistant aluminium alloys are used. All details are engineered to avoid corrosion traps. Only marking painting is required

- **Friction surface sufficient**

Serrated surface provides a friction that meets the requirements from authorities and class, i. e. no friction paint.

- **Easy assembly**

Clever design, special tools and excellent supervisor/assembly crew from Kapp Aluminium will assure cost efficient assembly.

- **Approvals - no problem**

Approvals from class and authorities will be taken care of by our engineering staff.

- **Heat tracing**

The deck can be delivered with electrical heating cables if it shall be in operation far north or on a hospital roof, where it is imperative to have the deck available at any time and the use of rope net should be avoided.

- **Top fire safety**

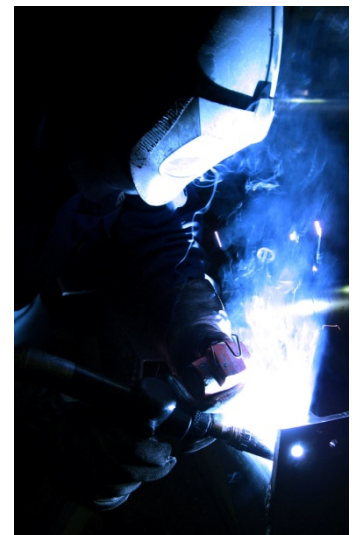
The deck can be delivered with Deck Integrated Fire Fighting System as strongly recommended in the CAP 437. A number of pop-up nozzles in the deck surface will deliver water/foam mixture that extinguishes fuel fires in less than 15 seconds, as recommended. Fire monitors and hose reels will not be required.



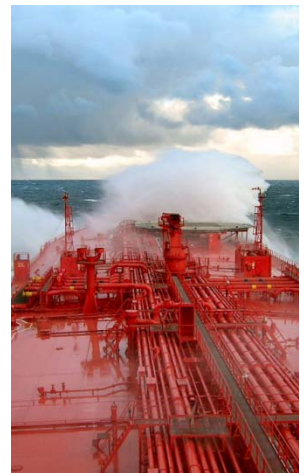
KAPP ALUMINIUM TRETUM OFFSHORE

- Kapp Aluminium Tretum Offshore is well known as a supplier of aluminium structures for the ship and offshore market.
The company is small, well managed and financially sound.
We have production facilities, certified welders and engineering capacity.

- Our staff have long experience in the production of helideck components, helideck assembly and helideck installation, first for Hydro Raufoss, later for Maritime products.
Through recruitment from Raufoss the engineering part has been taken care of.
Reference list is attached.



- Our goal is to meet the requirements and specifications of class, authorities and ship/rigowners in the most cost efficient way. Component are produced in our production line at Kapp, and the assembly is done at the coast, preferably at client's yard, thus saving the high transport cost for an assembled helideck. Assembly could be done by a crew from Kapp or by the yard's own people with a supervisor from us.



- The attached sketches show some design details. The standard pancake consist of extruded deck planks and beams, gutter, safety net, tie-downs and miscellaneous brackets. In addition we can deliver access/escape routes, platforms, fire fighting and rescue equipment, drainage piping, support structure and lights.



Scope of supply, standard helideck pancake

- **Deck planks**
Extruded aluminium profiles joint together by a tongue and groove connection and 2,5 mms high serration to provide sufficient friction on the landing surface
- **Support girders**
One layer of large extruded aluminium H-girders to support the deck planks
- **Safety net frames**
Prefabricated with netting and in sizes suitable for transport and mounting.
- **Safety net supports**
Prefabricated from aluminium profiles
- **Drainage gutter all around**
Size 200 x 200 mms with 50 mms high edge to retain water and foam, brackets for flood and perimetry lights and rope net tensioners, grating at access points and short, flanged tubes for connection to the drainage piping.
- **Tie down fittings**
Prefabricated from aluminium profiles
- **Connection to the steel structure**
Steel plates bolted underneath the girders for connection to the support by welding, with neoprene sheet inbetween for insulation
- **Fasteners etc**
Bolts, nuts, washers, etc, all in stainless steel. Sealing rail for the central joint, sealing compound
- **Class approval**
included in Kapp Aluminium's delivery
- **Assembly assistance**
Supervision or entire assembly crew from Kapp Aluminium, with special tools and long experience



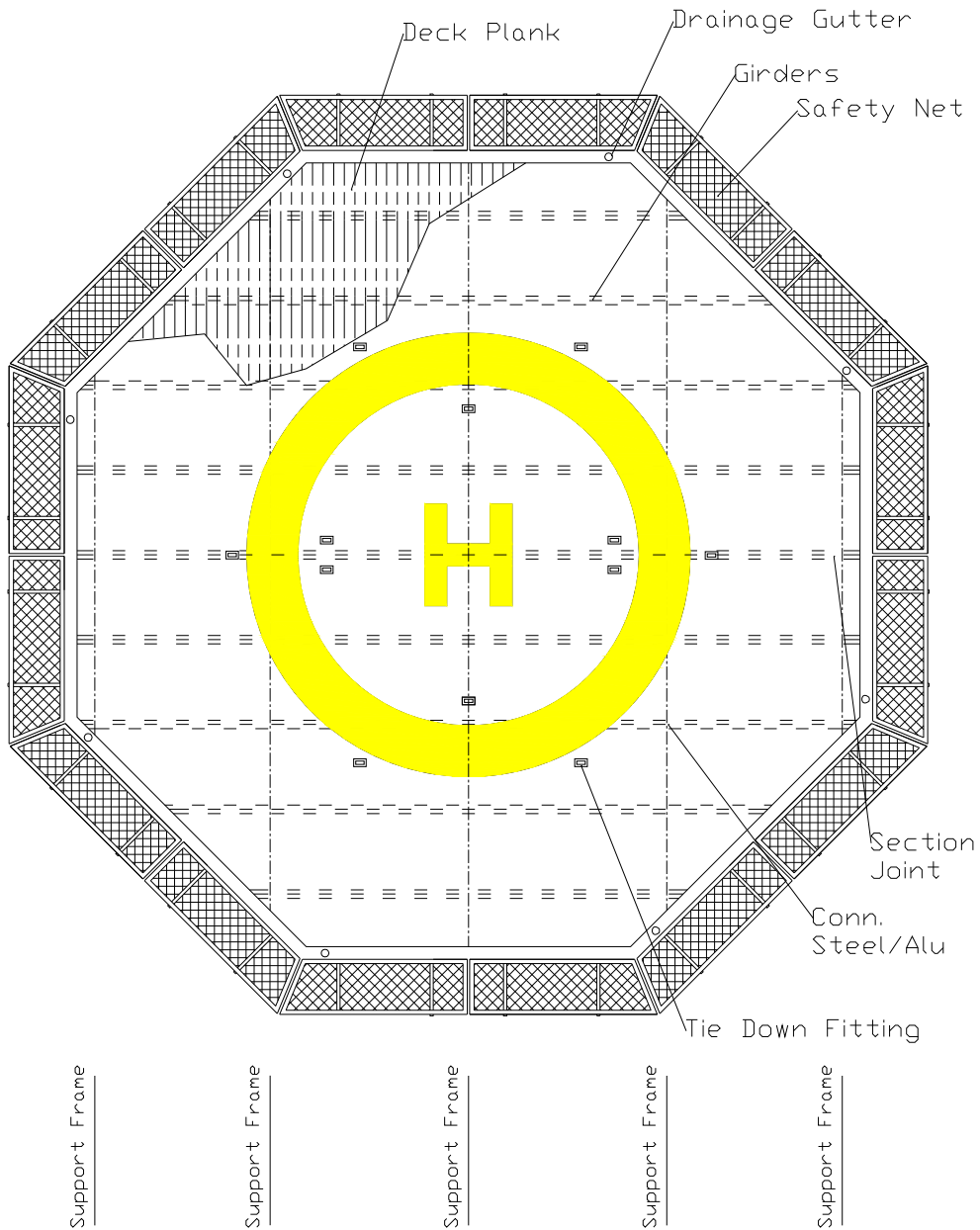
Additional equipment and services, deliverable upon agreement

- **Lightening**
Perimetry lights, flood lights and illuminated illuminated wind sock, ex or strd as required.
- **Assembly**
Due to extreme transport costs on assembled helidecks it is advantageous to do the assembly at the client's yard. Kapp Aluminium can provide a supervisor or the entire assembly crew. The assembly will normally take no more than 3 weeks.
- **Firefighting equipment**
Monitors, extinguishers, deck integrated fire fighting systems. and rescue equipment as required by client and actual regulations.
- **Piping for firefighting equipment**
Prefabricated
- **Piping for drainage**
Piping from the gutter to an agreed point
- **Platforms etc**
Platforms for firefighting equipment, stairs, ladders and walkways for helideck access and escape routes
- **Support structure design**
Design and class approval for fabrication by client
- **Support structure**
Prefabrication of support structure to plane frames. The element size is limited to fit road transport. Assembly at customer's yard.



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Overlook Octagonal Deck

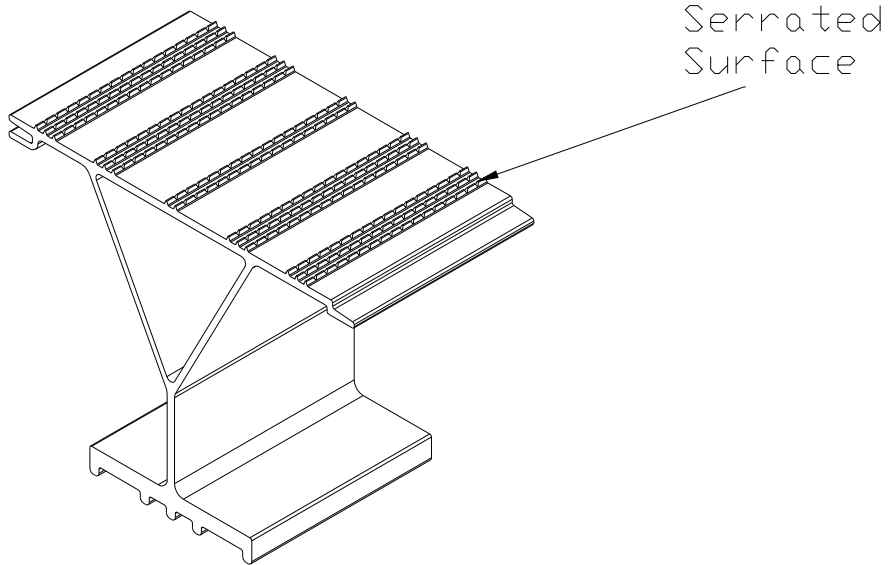
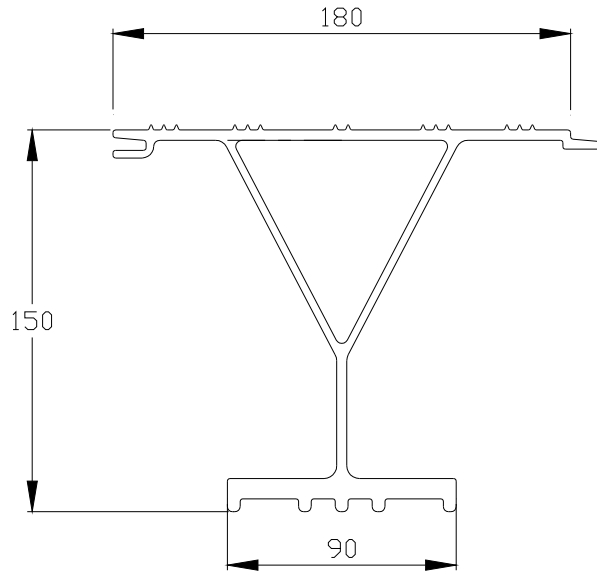


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Deck Plank

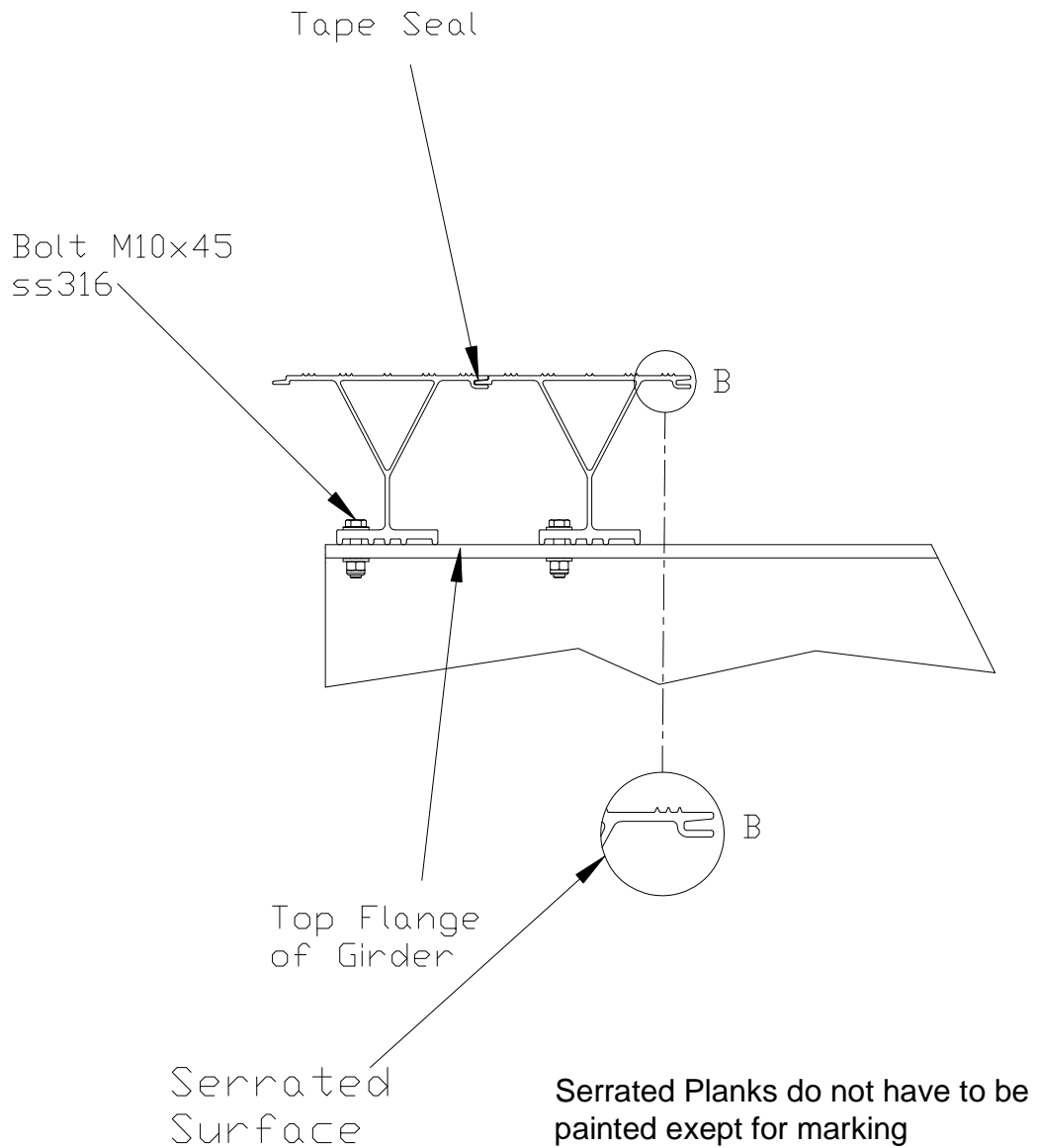


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Deck Planks, Standard

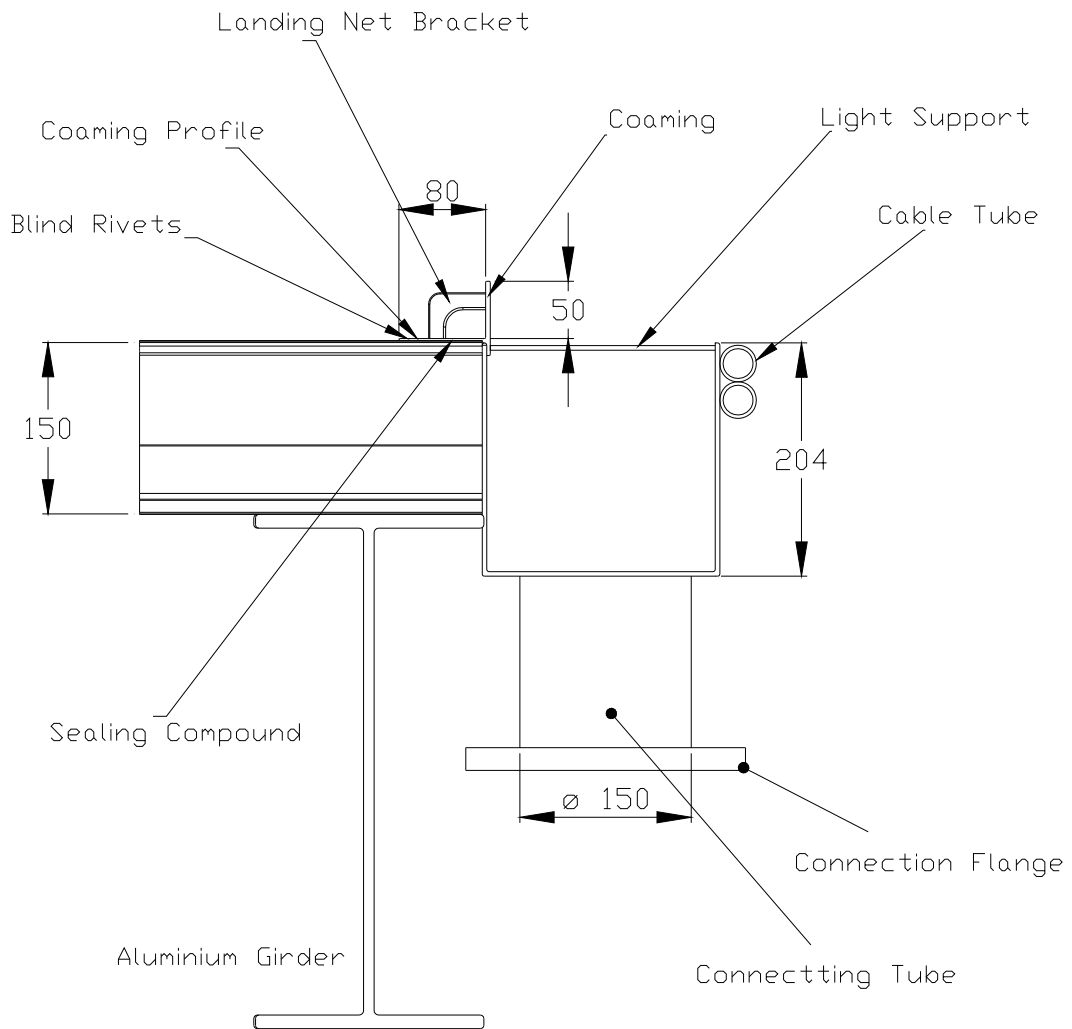


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Drainage Gutter

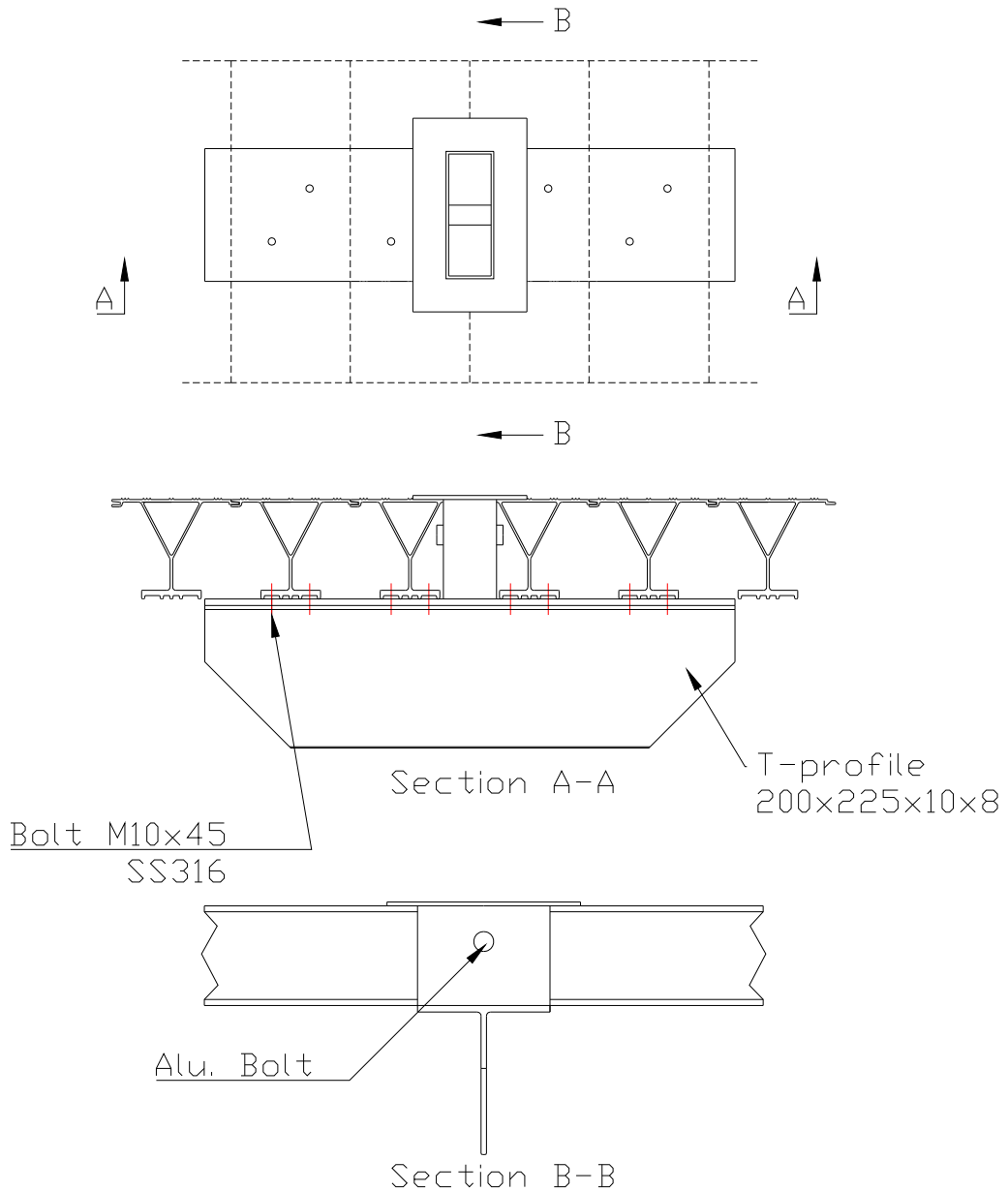


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Tie Down Fitting

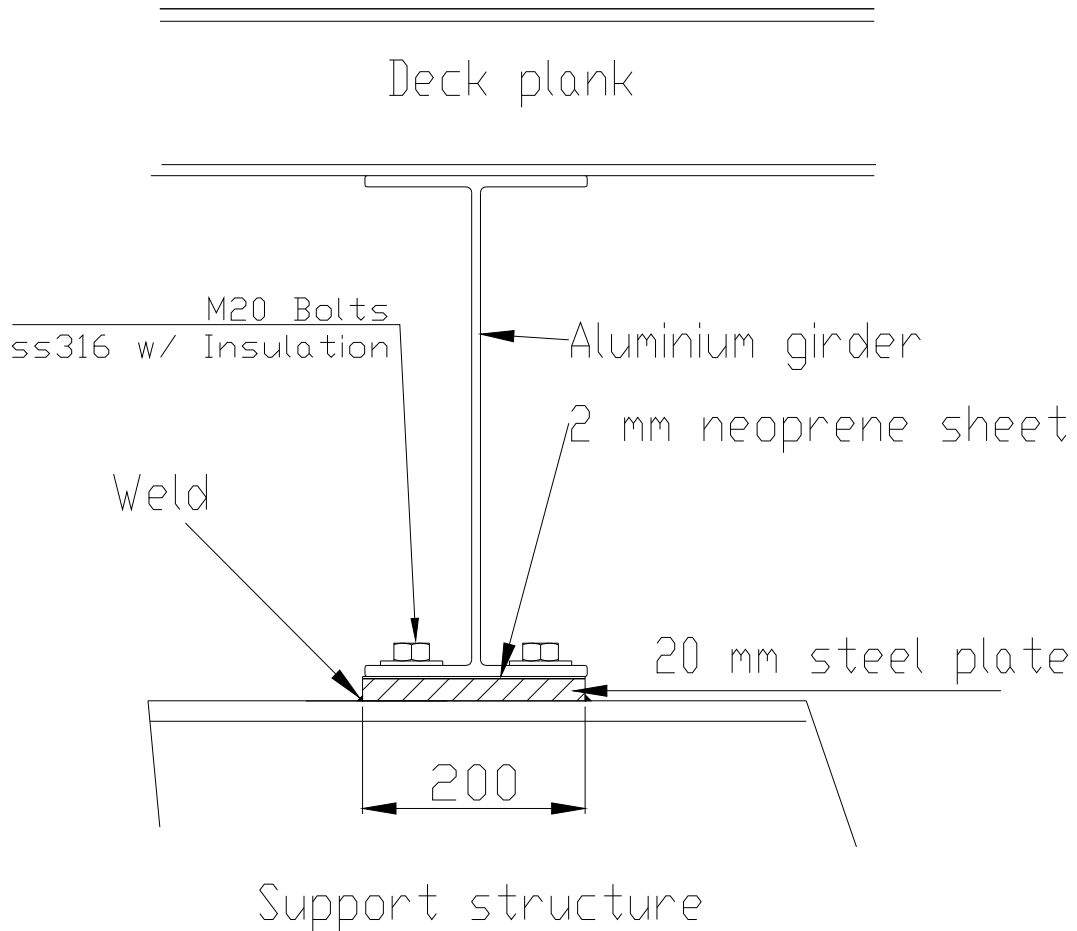


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Connection Aluminium - Steel

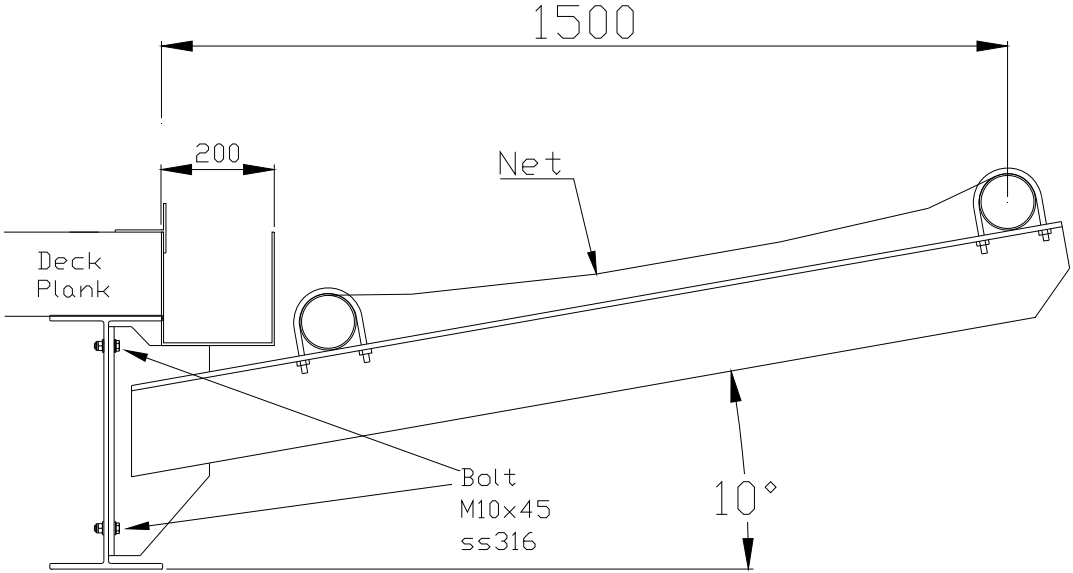


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Safety Net



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References

P/E = Project Management / Engineering

PC = Production of component

A/I = Assembly / Installation

KA= Kapp Aluminium Tretum Offshore deliveries

No	Name	Host	Class	Year	P/E	PC	A/I	KA
1	"Statfjord A"	Loading Buoy	DNV	1976	X			
2	"Arctic Seal"	Service vessel	DNV	1977	x			
3	"Tender Contest"	Diving support vessel	DNV	1977	x			
4	"Lance"	Service vessel	DNV	1978	x			
5	"Northern Installer"	Service vessel	ABS	1978	x			
6	"Pacific Installer"	Service vessel	ABS	1978	x			
7	"Skau-shore 1"	Drilling platform	ABS	1979	x			
8	"Safe Astoria"	Accomod. Platform	DNV	1979	x			
9	"Wildrake"	Service vessel	DNV	1980	x			
10	"Cheveron"	Prod. Platform	Lloyd`s	1980	x			
11	"Nortroll"	Drilling platform	DNV	1980	x			
12	"Ragno Due"	Service vessel	DNV	1980	x			
13	"Safe Gothia"	Accomond. Platform	DNV	1981	x			
14	"Arctic Surveyor"	Sevice vessel	DNV	1980	x			
15	"Amatista"	Accomond. platform	DNV	1981	x			
16	"Stad Troll"	Diving support vessel	DNV	1981	x			
17	"BOS 300"	Working barge	BV	1981	x			
18	"Statfjord B"	Loading buoy	DNV	1982	x			
19	"Beryl B"	Loading buoy	Lloyd`s	1982	x			
20	"Safe Industria"	Accomond. platform	BV	1982	x			
21	"Safe Holmia"	Accomond. Platform	DNV	1982	x			
22	"Drilling Star"	Drilling platform	DNV	1982	x			
23	"Ross Isle"	Drilling platform	DNV	1982	x			
24	"Treasure Sage"	Drilling platform	DNV	1982	x			
25	"Flexservice 3"	Sevice vessel	DNV	1982	x			
26	"Dyvi Omega"	Drilling Platform	DNV	1982	x			
27	"Geco Tau"	Service vessel	DNV	1982	x			

References

No	Name	Host	Class	Year	P/E	PC	A/I	KA
28	"Ferder"	Drilling vessel	DNV	1983	x			
29	"Seaway Labrador"	Service vessel	DNV	1983	x			
30	"Comex 1"	Service vessel	Lloyd`s	1983	x			
31	"Stad Flex"	Service vessel	DNV	1983	x			
32	"Statfjord C"	Loading buoy	DNV	1983	x			
33	Univ. Of Chicago	Hospital roof		1984	x			
34	W.Jones Hospital	Hospital roof		1984	x			
35	"Sgt Matej Kocak"	Rapid deployment V	ABS	1984	x			
36	"PFC Eugene Obrigon"	Rapid deployment V	ABS	1984	x			
37	"Maj Stephen W Pless"	Rapid deployment V	ABS	1984	x			
38	"Polar Pioneer"	Drilling platform	DNV	1984	x			
39	"Port of Singapore"	Rooftop		1984	x			
40	"Univ. Of Cincinnati	Hospital roof		1985	x			
41	"Slidell Hospital"	Hospital roof		1985	x			
42	"St Francis Hospital"	Hospital roof		1986	x			
43	"Flexservice 1"	Service vessel	Lloyd`s	1986	x			
44	"St Louis Univ. Hospital	Hospital roof		1987	x	x		
45	"Stephaniturm"	Service vessel	GermLloyd`s	1988	x	x		
46	"Veslefrikk"	Production platform		1988	x	x		
47	"Westmoreland Hosp."	Hospital roof		1988	x	x		
48	"Sleipner A"	Production platform		1990	x	x		
49	"Petroland"	Production platform		1991	x	x		
50	"Tiffany"	Production platform		1991	x	x		
51	"Polymariner"	Drilling platform		1991	x	x		
52	"Castoro Sei"	Pipelying vessel	ABS	1992	x	x		
53	"Spirit of Colombus"	Production platform	RINA	1992	x	x		
54	"Yale University"	Hospital roof		1992	x	x		
55	"Hibernia"	Production platform	Lloyd`s	1994	x	x		

References

No	Name	Host	Class	Year	P/E	PC	A/I	KA
56	"Sleipner Vest"	Wellhead platform		1994	x	x		
57	"Solitaire"	Pipelaying vessel	Lloyd`s	1994	x	x		
58	"Dicto Oslo"	Shuttle tanker	DNV	1994	x	x		
59	Ashtart"	Production platform	BV	1995	x	x		
60	"Petrojarl 4"	Production vessel	DNV	1995	x	x		
61	"Berge Hugin"	Production vessel	DNV	1996	x	x		
62	"Berge Munin"	Production vessel	DNV	1996	x	x		
63	"Aberdeen"	Shuttle tanker	ABS	1996	x	x		
64	"Seaway commander"	Seismic vessel	DNV	1996	x	x		
65	"Njord B"	Production vessel	DNV	1996	x	x		
66	"Elisabeth Knutsen"	Shuttle tanker	DNV	1996	x	x		
67	"Åsgaard A"	Production vessel	DNV	1996	x	x		
68	"Maersk Dorset"	Production vessel	Lloyd`s	1996	x	x		
69	"Odin"	Production vessel	DNV	1997	x	x		
70	"P-31"	Production platform	ABS	1997	x	x		
71	"Key Gibraltar"	Jack- up	ABS	1997	x	x		
72	"P-33"	Production platform	ABS	1997	x	x		
73	"P-35"	Production platform	ABS	1997	x	x		
74	"SHI1220"	Drilling vessel	ABS	1997	x	x		
75	"SHI 1189"	Shuttle tanker	ABS	1997	x	x		
76	"Mattea"	Shuttle tanker	ABS	1997	x			
77	"Daewoo 5109"	Shuttle tanker	Lloyd`s	1997	x	x		
78	"Laminaria"	Production vessel	Lloyd`s	1997	x			
79	"Deepwater Frontier"	Drilling vessel	ABS	1998	x	x		
80	"West Future II"	Drilling platform	DNV	1998	x	x		
81	"Siri"	Production platform	Lloyd`s	1998	x	x		
82	"Vicksburg"	Jack-up	ABS	1998	x	x		
83	"Seaway Kingfisher"	Seismic vessel	DNV	1998	x	x		
84	"Ocean Explorer"	Seismic vessel	DNV	1998	x	x		

References

No	Name	Host	Class	Year	P/E	PC	A/I	KA
85	"Geco Triton"	Seismic vessel	DNV	1998	x	x		
86	"Atlantic Challenger"	Seismic vessel	DNV	1998	x	x		
87	"Umoe Sterkoder 198"	Seismic vessel	DNV	1998	x	x		
88	"P-47"	Production platform	ABS	1998		x		
89	"Geobay"	Seismic vessel	DNV	1998		x		
90	"SHI 1256"	Drilling vessel		1999		x		
91	"SHI 1300"	Drilling vessel		1999		x		
92	"Sestao H317"	Shuttle tanker		1999		x		
93	"Sestao H318"	Shuttle tanker		1999		x		
94	"Cajun Express"	Drilling platform		1999		x		
95	"Skandi Inspector"	Service vessel		1999		x		
96	"Nordic Torinita"	Shuttle tanker		2000		x	x	
97	"Seisranger"	Seismic vessel		2001		x	x	
98	"Edda Freya"	Service vessel		2002		x	x	
99	"Edda Fjord"	Service vessel		2002		x	x	
100	"Alma"	Production platform		2002		x		
101	"South Venture"	Production platform		2002		x		
102	"Skandi Bergen"	Service vessel		2003		x	x	
103	"Basker Spirit"	Shuttle tanker		2005		x	x	
104	"Neva"	Accomod. vessel		2005		x	x	
105	"Western Monarch"	Seismic vessel		2005		x	x	
106	"P50"	Production platform		2006		x		
107	"P51"	Production platform		2006		x		
108	"Finnmarken"	Accomod. vessel		2006		x	x	
109	"Discover Sevan Seas"	Drilling vessel		2006		x		
110	"Normand Installer"	Service vessel		2007		x	x	
111	"Terminal Adriatic LNG"	LNG Terminal		2007		x	x	
112	"Island Pioneer"	Service vessel		2007		x	x	
113	"Normand Seven"	Service vessel		2007		x	x	

References

No	Name	Host	Class	Year	P/E	PC	A/I	KA
114	"Munin Explorer"	Seismic vessel		2007		x	x	
115	"Island Constructor"	Service vessel		2008		x	x	
116	"Olympic Triton"	Service vessel		2008		x		
117	"Bourbon Pearl"	Service vessel		2008		x		
118	"Ohm Leder"	Seismic vessel		2008		x		
119	"Stril Herkules"	Standby vessel		2008		x	x	
120	"Lorelay"	Pipelaying vessel	Loyd`s	2010				x
121	"Seamec I"	Diving supp. vessel	DNV	2010				x
122	"H 3016"	DESV	DNV	2010				x
123	"Eide Intervention I"	Intervention vessel	DNV	2012				x
124	"Eide Intervention II"	Intervention vessel	DNV	2012				x
125	"Y295"	IMR vessel	DNV	2012				x

Pictures from earlier project.



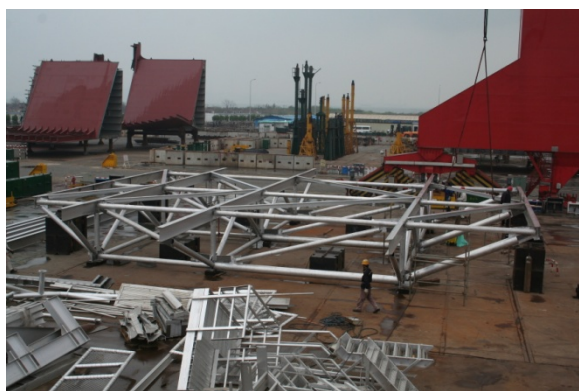
Picture from recent project:



Over: From assembly helideck "Lorelay", MVHE Yard, Malaysia.
Under: "Lorelay" from Keppel Yard in The Netherlands (photo by Keppel)



Under: From assembly helideck, HPS3016, CSSC Guangzhou Huangpu Shipbuilding, China



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