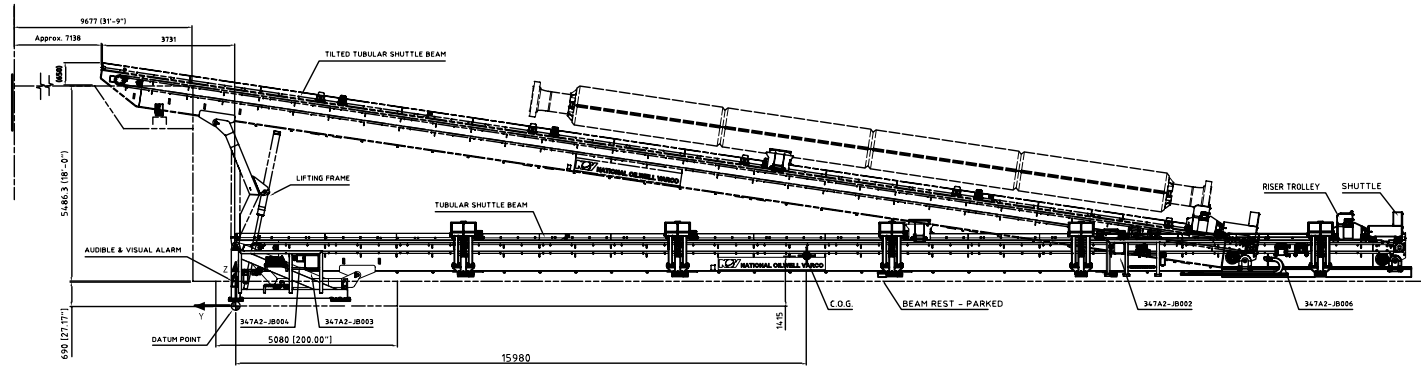


TS-PR



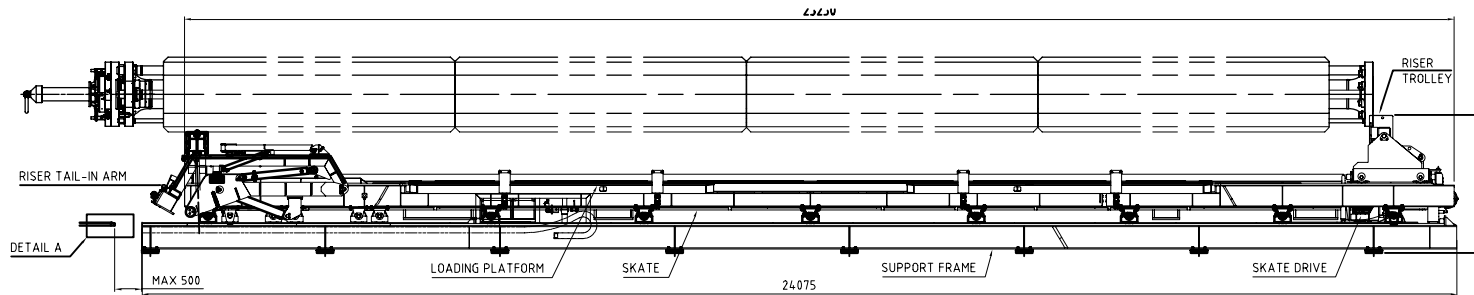
The Tubular Shuttle Machine (TS) is designed to transfer tubular between the pipe-deck and the drill-floor. Tubular can be removed from or landed onto the Tubular Beam using the elevator in combination with the front mounted Pipe Tail-in Arm. The design of the machine is basically very simple and utilizes tried and tested solutions. The design philosophy is intended to achieve minimum complexity, provide safe and reliable operation, and simplify maintenance requirements. It includes a modular

design for simple installation and replacement of component parts when needed. Installation is made easier due to generous tolerances and simple interfaces between modules.

Technical Specifications

Service	Pipe, Casing & Riser Handling Singles and Stands	Maximum hydraulic flow rate (l/min)	220
Tubular range	2 7/8" - 20"	Minimum working pressure (barg.)	180
Design code / standard	F.E.M. / NS 3472	Maximum operating pressure (barg.)	210
Area classification	Safe area	Weight, dry (kg)	33,000
Design temperature	-20°C to +45°C	Skate traveling speed (m/s)	0 - 0.5
Operating temperature	-20°C to +45°C	Skate driving force (N)	70,000
SWL (kg)	20,500	Equipment shipment size (L x W x H) (mm)	32,800 x 3,760 x 2,800

CWS-PR



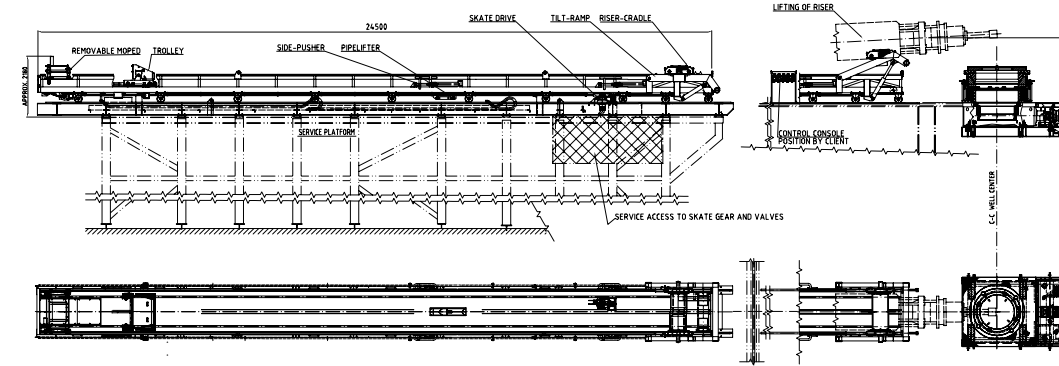
The Catwalk Shuttle (CWS) is a Riser & Pipe Handling System designed for the rapid handling of tubular and risers both running in- and out of hole and to ensure maximum safety for operating personnel. The CWS gives an almost "hands-free" operation of the tubular. On the riser/pipe-deck, operation of the CWS is to be co-ordinated with the riser/pipe-handling crane. On the drillfloor the operation is to be coordinated with the horizontal-to-vertical riser/pipe-handler system. It is designed for operation with gripper or riser yokes. The tubulars are supported in a

stable, horizontal position when transported with the shuttle. The CWS has two distinct modes of operation. (1) Tubulars less than 20" diameter utilize a "loading platform" with a feeding system; this allows either automatic, semi-automatic, or manual control. (2) Tubulars and riser 20" and greater in diameter are handled with the trolley and cradle operating under manual control; the CWS can be run between pipe deck and drill floor with semi-automatic or manual control.

Technical Specifications

Service	Pipe and Riser Handling	Maximum hydraulic flow rate (l/min)	160
Tubular range	3 1/2" - 30"	Minimum working pressure (barg.)	180
Design code / standard	"F.E.M. "Rules for the design of Hoisting Appliances" + NS 3472"	Maximum operating pressure (barg.)	207
Area classification	Zone 1	Weight, dry (kg)	40,500
Design temperature	-20°C to +45°C	Skate traveling speed (m/s)	0 - 0.4
Operating temperature	-10°C to +45°C	Skate driving force (N)	90,000
SWL (kg)	40,000	Equipment shipment size (L x W x H) (mm)	31,735 x 2,660 x 2,400

CWM-PR



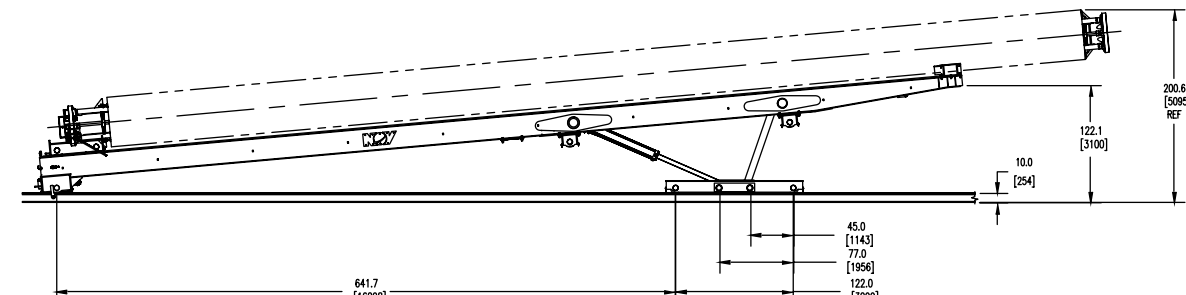
The Catwalk Machine (CWM) is a horizontal pipe and Marine riser handling system for safely transport of tubulars, risers, slip-joint and miscellaneous equipment in and out of the Drill-floor. On the pipe and riser deck the operation is to be co-ordinated with a pipe and riser handling unit. On the drillfloor the operation is to be coordinated with a horizontal to vertical pipe and /riser handling system. The tubular, typically drill-pipe, drill-collar or casing tubular is transported in or out of the drillfloor resting horizontally in

a skate – part of the Catwalk machine. This secures the tubular in a steady state, when transported with the CWM. All the functions are remotely controlled from a Control stand placed close to the V-door, typically on the drill-floor. In case of a remote control failure, local operation of the functions is handled directly on the control valves, located on the support structure of the CWM.

Technical Specifications

Service	Pipe and Riser Handling	Maximum hydraulic flow rate (l/min)	150
Tubular range	2 7/8" - 36"	Minimum working pressure (barg.)	180
Design code / standard	FEM/NS4372/EC3	Maximum operating pressure (barg.)	210
Area classification	Zone 2	Weight, dry (kg)	27,000 including structure
Design temperature	-20°C to +45°C	Skate traveling speed (m/s)	0 - 0.33
Operating temperature	-20°C to +45°C	Skate driving force (N)	75,000
SWL (kg)	40,000	Equipment shipment size (L x W x H) (mm)	26,000 x 3,700 x 2,130

RHS-2



The Riser Handling System (RHS) uses a hydraulically powered trolley-on-a-trolley to accomplish two tasks. (1) Transporting horizontal riser joints from the riser deck to the well center. (2) Safely tailing the riser section while it is hoisted by the drawworks from a horizontal to vertical position. The system can accommodate various requirements of riser length, diameter, and riser spider/gimbal height.

Technical Specifications

Service	Riser Handling Skate - Generation 2
Riser Length Capacity	90'
Riser Diameter Capacity	52"
Riser weight capacity (lbs)	100,000
Hydraulic Requirements (psi)	2,500
Weight of trolley (lbs)	60,000
Trolley speeds (ft/sec)	104