

PURPOSE

Escort

Escorting is becoming a widely used method of risk management at various ports and harbors worldwide. It differs from the normal use of harbor tugs in which the escort tug is in attendance, and may be made fast (active or tethered escorting) for an extended distance with the escorted vessel making way at speeds of typically 5 to 12 knots.

In case of Mongstad / Sture Ports, authorities insist on two (2) escort tugs at USD 34,000 per call if the vessel is not equipped with the strong point. We believe the strong point can be retrofitted while the vessel is in service. If fitted, requirement is reduced to only one (1) tug with potential savings of USD 17,000 per call.

Pull-back (Station Keeping at Offshore Installations):

In most of offshore installations a standby tug is used at the stern of the off-take tanker to pull the ship back within limits and then hold it there against the weathervane or fishtailing phenomenon.

In case of spread moored F(P)SOs, the off-take tanker cannot weathervane and powerful “pull-back” tugs are essential to maintain an alignment between the vessels during the approach maneuver and during cargo transfer.

Single Point Mooring

When berthed to the SPM, tugs are connected to the stern of the tanker to maintain a tension in the mooring hawser and to keep the tanker bow clear of the SPM.

Berthing and Un-berthing at Piers and Sea Islands

In a port used by a variety of ship types and sizes, tugs sized to suit the largest vessels to be handled may well have implications for smaller vessels.

REQUIREMENTS

A chock and strong point:
20,000 < DWT < 50,000 : 100T SWL
50,000 ≤ DWT : 200T SWL

DESIGN CONSIDERATIONS

- OCIMF guidelines
- Compatibility with existing mooring equipment
- Compatibility with normal mooring operation
- Position of chock and strong point for efficient transfer of load to ship-structure
- Steel quantity and steel work
- Ease of installation

CLASS APPROVAL

Approval is required for the stiffening provided for the installations. The required approval from the respective classification society shall be obtained.

The final installation shall be verified by the onsite class surveyor.

PROCUREMENT

The respective Chock & Bollard shall be procured from the reputed supplier, (if requested in advance).

SUPERVISION DURING INSTALLATION

A Naval Architect or Engineer can be provided onsite to assist during the installations which shall be arranged by the client/dry dock/ workshop.

Plan View (Poop Deck)
SHIP'S COPY APPROVED
4.885.026
YABS
Deck Glider - 590x10 = 150 x 16 (T)
Deck Leng. - 150 x 90 x 9.1A
F.S - 650 L.S - 700

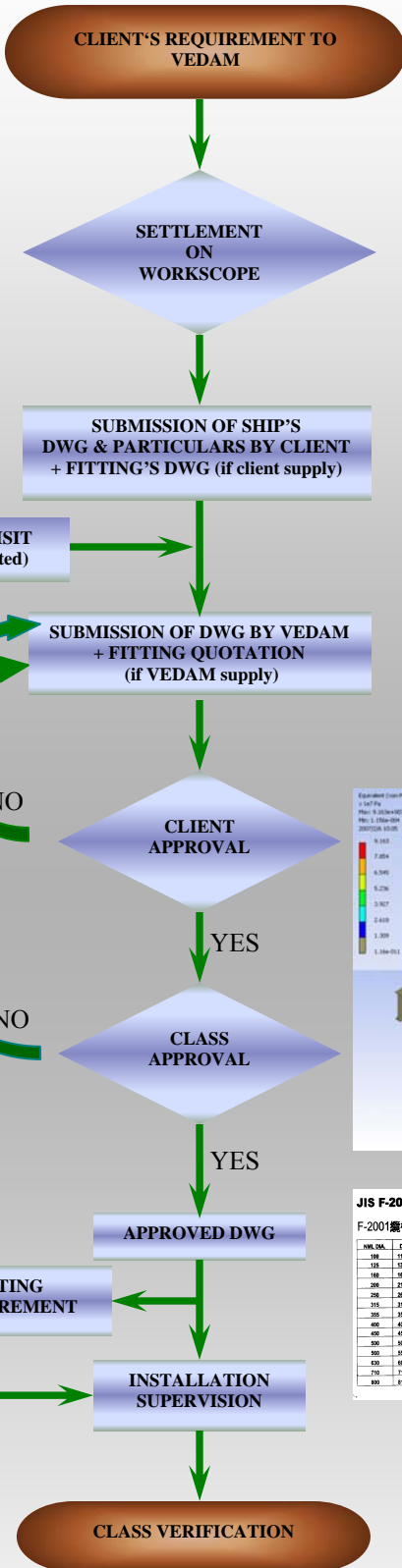
View A - A
Dk Camber (1000 / 24000)
UPPER DECK
L4 CL

View B - B
Fr 1 Fr 5
UPPER DECK
150x20 F.(T)

| | | | |
|-----|---------------------|---|-----|
| 1 | BRACKET B4 | 1 | 201 |
| 2 | BRACKET B3 | 2 | 201 |
| 3 | LONGER BRACKET L2 | 1 | 201 |
| 2.1 | FRONT PLATE | 2 | 201 |
| 1 | STRONG BTT (SINGLE) | 1 | 201 |

NEW INSTALLATION IN RED COLOUR
ALL DIMENSIONS IN MM
TOLERANCE - JUMP IN T
STRONG POINT (SINGLE BTT) INSTALLATION DETAILS
4 OF 6

300T CHOCK INSTALLATION DETAILS
101



SERVICES OFFERED:

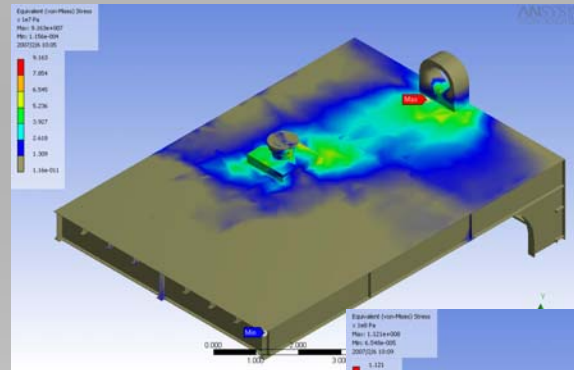
Vedam provides following services: (individually or in any combination)

- Feasibility study & design for Installation of Strong Point (Bit & Chock)
- Validation of design by Structural Analysis
- Obtaining approval from Classification society
- Procurement of Fittings
- Supervision & guidance during installation

SOFTWARE USED:

AutoCAD : For Layout Design and Construction drawings

ANSYS : For Structural Analysis

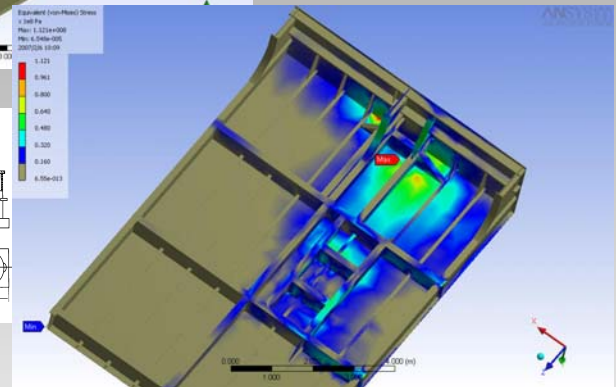


EU TYPE DECK MOUNTING
EU型甲板邊梁孔

| NOMINAL SIZE | A | B | C | D | E | H | MASS (KG) |
|--------------|-----|-----|------|------|-----|-----|-----------|
| 315X250 | 315 | 250 | 815 | 620 | 265 | 290 | 220 |
| 425X250 | 425 | 250 | 1075 | 785 | 450 | 300 | 370 |
| 600X215 | 600 | 215 | 1360 | 845 | 607 | 560 | 590 |
| 600X450 | 600 | 450 | 1360 | 1090 | 670 | 600 | 660 |
| 600X450 | 600 | 450 | 1660 | 1390 | 670 | 700 | 770 |

JIS F-2001 BOLLARD
F-2001 綱棒

| NOM. DIA. | D | H | S | B | L | W | MASS (KG) |
|-----------|-----|------|------|------|------|-----|-----------|
| 100 | 116 | 150 | 200 | 161 | 445 | 50 | 50 |
| 120 | 138 | 180 | 210 | 181 | 560 | 50 | 70 |
| 160 | 185 | 250 | 280 | 251 | 870 | 70 | 45 |
| 200 | 228 | 300 | 350 | 291 | 1090 | 100 | 80 |
| 250 | 280 | 380 | 450 | 360 | 1400 | 130 | 130 |
| 315 | 318 | 480 | 550 | 430 | 1700 | 150 | 200 |
| 350 | 360 | 530 | 600 | 480 | 1875 | 160 | 240 |
| 400 | 400 | 600 | 650 | 530 | 2030 | 180 | 300 |
| 450 | 447 | 680 | 710 | 610 | 2240 | 170 | 380 |
| 500 | 490 | 750 | 780 | 680 | 2440 | 190 | 470 |
| 550 | 538 | 830 | 850 | 750 | 2640 | 210 | 570 |
| 600 | 590 | 900 | 920 | 820 | 2830 | 230 | 680 |
| 700 | 715 | 1050 | 1080 | 940 | 3400 | 280 | 950 |
| 800 | 812 | 1200 | 1240 | 1040 | 3950 | 340 | 1300 |



PROJECTS UNDERTAKEN

| Vessel Type | No. of ships | Installation | Status |
|----------------------------|--------------|--------------|----------------------|
| 156k Dwt crude oil carrier | 1 | Sept, 05 | Approved & Installed |
| 47k Dwt oil/chem carrier | 6 | Oct, 05 | Approved & installed |
| 37k Dwt oil/chem carrier | 2 | Nov, 06 | Approved & Installed |
| 150k Dwt crude oil carrier | 1 | | Designed & Approved |
| 165k Dwt crude oil carrier | 2 | | Designed |