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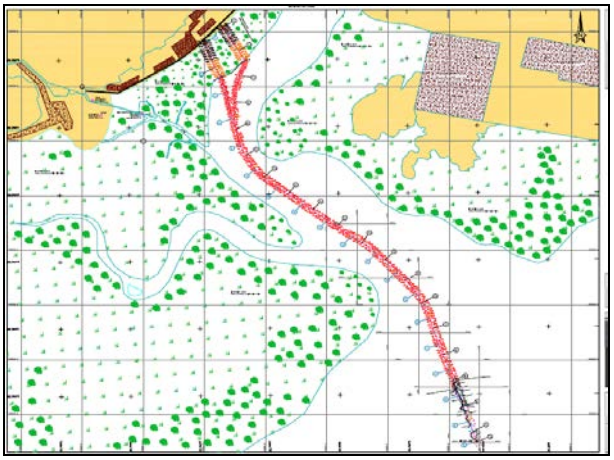
OFFSHORE OUTFALL PIPELAYING PROJECT AT TUNA-KANDLA, GUJARAT

25 MLD TREATED EFFLUENT FACTORY DISPOSAL OUTFALL OF 560 MM DIA HDPE OFFSHORE SUBSEA PIPELINE

The project consists of 8.92 km OFFSHORE sections for a 50 years of life span. The offshore pipe laying and Installation Methodology, Design and Engineering are done by M/S SB Marine Consultant, Mumbai.



Pipe laying plan at Gulf of Kutch as per survey

The offshore pipe laying starts at LFP via Nakti creek up to disposal point. Conventional pipe laying has been carried out on board of the pipe lay barge but in intertidal zone there was problem due to non-availability of water depth. Causeway with a side trench have been made to pipe make-up, joining, lifting and shifting to the trench for towing during high tide.

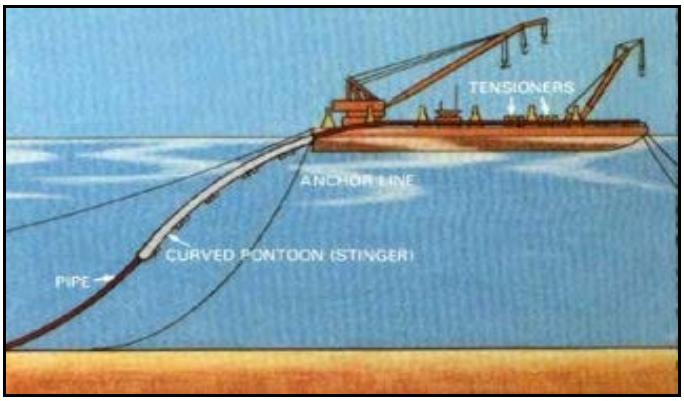
132m long String lanching from causeway to water

The launched string is being towed from LFP causeway point to offshore flange connection point by tug boat during high tide condition.

Once the string is reached offshore point the flange to flange connection will be done with the previous pipe section. For this flange to flange connection, the string mouths have to be lifted from water surface to the platform made at side of the barge where specially designed davits are fabricated and installed on deck barge. The lifting procedure is shown in below figures.

Once the flange to flange is completed the pipe section has to be prepared for lowering in the seabed. The string has to align in line with the trench. Side anchors and assistance of small boats have been taken for any lateral shift due to high current. One the pipes are submerged to the trench and buried, the stability at sea-bed has been ensured.

For string lowering on to seabed, float and sink method is followed, and the lowering operation is S-laying.

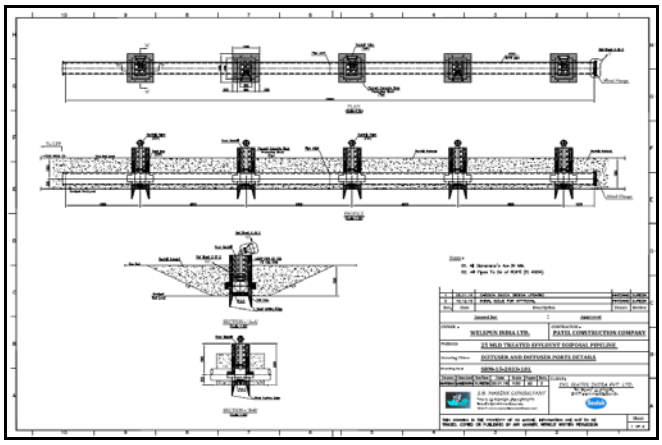


Conventional S-lay installation sketch

SB Marine has given each and every design and inspected the fabrication as well as entire process from concept, design, methodology and installation engineering.

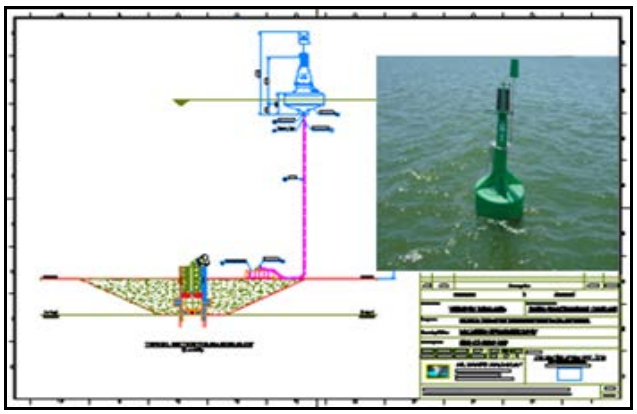
DIFFUSER DESIGN AND INSTALLATION

At disposal point after 8.92km pipe laying, the diffuser to be fitted has been designed by SB marine. This was to ensure the exit pressure, stability at sea-bed for the life span, no back flow and other risk factors. The diffuser design is done as per DNV-RP-F109 code and as per approval of NIO & IIT Madras.



The diffuser installation is a critical operation since the riser pipes can get damaged if the handling is hard. To avoid such damages, a lifting frame has been designed by SB Marine for safe installation at 60 ft water depth.

Diffuser lifting Frame for safe installation



Diffuser Marker Buoy

Marker buoy with anchoring blocks are provided to avoid any accidental access at the diffuser location.