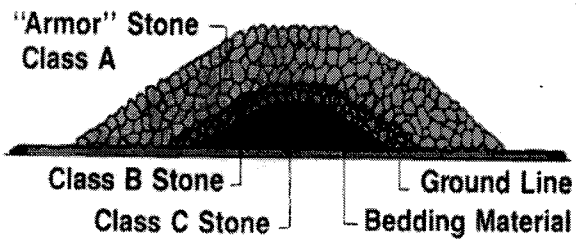
Understanding Coastal jetties

They are unique structures. Just as bridges provide safe passage over rivers, gorges or other depressions, jetties help ocean-going vessels move between coastal rivers and the Pacific Ocean. These navigational aids are invaluable to the shipping industry, but pose hidden dangers for others.

Where rivers empty into the ocean water moves slowly. Within these slow moving currents sand bars develop, causing great peril for ships trying to navigate through an ever-changing channel. The U.S. Army Corps of Engineers stepped in during the late 19th century with a solution – jetties. Jetties create concentrated and accelerated flows at the mouth of the river to scour out the shallow sand deposits.

Jetties are simple, yet complex, structures. Simply put, jetties are rock fingers which stretch out into the ocean from the beaches, essentially extending the mouths of rivers well into the sea. But there is more to them than just a pile of rocks.



Jetty construction starts with a bed of rocks being placed on the ocean floor. Larger boulders are placed on top of this bed to form the main body of the jetty. Progressively larger boulders are added in layers to form the outer "armor" shell of the structure. The largest of the boulders (weighing 30 tons to 40 tons each) are used toward the jetty's seaward side where wave action is most powerful. These boulders are intended to resist the constant onslaught of the sea. Despite their massive weight, strong waves and ocean currents can cause these stones to shift with seemingly little effort.

Hidden dangers

The Corps began building jetties along Oregon's coast more than 100 years ago. Over the years, additional work has been performed on them – strengthening them, making them longer, adding spurs. Despite these moves to prolong their life and usefulness, the structures are not immune to the effects of nature.

Over time water erodes rock. Waves remove even the largest boulders from the jetties, but underwater currents – which penetrate the structure – remove smaller rocks and sand from the inside of the jetty. And that can create dangers -- some visible, others hidden:

- **Open crevasses** between large boulders create stepping hazards
- **Sinkholes,** caused by drifting sand pushed up against the jetty being eroded by moving water inside the structure, can give way unexpectedly
- **Caverns** within the structure, caused by the eroding of stones and sand, could be hidden below a thin surface and suddenly collapse
- **Slippery rock surfaces** caused by sea spray
- **Sudden larger waves,** even in calm weather, can knock a person off balance or into the water
- **Waves and strong currents** near the jetty can prevent safe recovery after a fall into the water

Jetties were constructed to aid ships traveling between rivers and the ocean, and were never intended to be used for recreational purposes. For this reason, jetties should be admired for their complexity and contributions to the region from a distance.

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