



## 東京港の地震・津波・高潮対策について ... Measures against earthquake, tsunami and storm surge at the Port of Tokyo

東京港は、南西向きに開いた閉鎖性が高く水深の浅い東京湾の湾奥に位置するため、高潮の影響をきわめて受けやすい地域になっています。

また、東京港の背後には、首都中枢機能や業務・商業等の都市機能が極めて高度に集積しています。

さらに東京都東部には、満潮面以下のゼロメートル地帯が広がり、ひとたび浸水すれば甚大な被害を及ぼす浸水危険度の高い地域が存在しています。

このため、津波や高潮から都民の生命・財産を守り、都民が安全で安心して暮らせるよう、防潮堤、内部護岸、水門、排水機場などの海岸保全施設の整備に取り組んでいます。

東京港の海岸保全施設は、国内最大級であった伊勢湾台風級の台風による高潮からの防護を目的として昭和36年（1961年）より本格的な事業として整備が進められ、高潮などから国土を守る防潮堤、水門、排水機場は概成しています。

東日本大震災の発生後は、想定地震の規模が見直されたことから、平成24年12月に「東京港海岸保全施設整備計画（平成24年度～令和3年度）」を策定し、最大級の地震を想定した耐震対策・耐水対策に取り組んできました。今後、気候変動への対応を検討し、より一層整備を推進し、東京港の安全性の向上に努めていきます。

また、水門や陸こう等の操作体制の迅速性・確実性を確保するなど、防災機能の一層の強化にも取り組んでいます。



防潮堤 Tide Embankment

The Port of Tokyo is located deep within the Bay of Tokyo, which is highly isolated to the southwest and has very shallow waters. As such, the area is highly susceptible to the effects of storm surge.

Also, to the rear of the Port of Tokyo is a high concentration of municipal functions, including core metropolitan functions, operations, and businesses.

Furthermore, in the eastern area of Tokyo is a vast "zero meter zone" where the ground is below sea level at high tide, meaning that there are areas of the city facing a high level of flood risk that would cause massive damage in the event of flooding.

As such, we continue to work on the development of coastal protection facilities including tide embankments, interior embankments, floodgates, and drainage pump stations in order to protect the lives and assets of our residents from tsunami and storm surge as well as provide a secure, worry-free living environment.

Serious development of the Port of Tokyo's coastal protection facilities began in 1961, with the goal of providing protection from storm surges equivalent to those caused by a typhoon on the scale of the Ise Bay Typhoon (Typhoon Vera, in 1959), one of the largest typhoons to ever hit Japan. Facilities that were more or less completed during this period included tide embankments, floodgates, and drainage pump stations designed to protect the national territory from storm surges.

Following the Great East Japan Earthquake of 2011, the magnitude of the most serious earthquake that Tokyo was likely to experience was adjusted, and in December 2012 the Port of Tokyo Coastal Protection Facility Preparation Plan (FY 2012-FY 2021) was formulated, incorporating new earthquake countermeasures and flooding countermeasures based on the largest-magnitude anticipated earthquake. Going forward, we will be considering how best to respond to the impact of climate change, and we will be striving to implement further improvements to enhance the safety of the Port of Tokyo.

We are also working to further strengthen disaster prevention functions, for example by ensuring rapid, reliable operation of floodgates, inland locks, etc.



高浜運河（内部護岸） Takahama Canal (Interior embankment)

## 防潮堤、水門、排水機場、陸こう ... Tide embankments, Floodgates, Drainage Pump Stations, and Inland Locks

東京港臨海部には、津波や高潮から都民を守るため、海岸保全施設を整備しています。防潮堤は干潮面から高さ4.6～8.0mの高さで設置し、運河部には水門を設け潮位の上昇により浸水のおそれがある時には閉鎖します。排水機場は水門を閉じた後、降雨による水門内側の運河の水位上昇を抑えるため、ポンプを運転し海水を外水側に強制排水する施設です。防潮堤や水門の内側にある埋立地には、水辺への親しみやすさ等にも配慮し、防潮堤より低い高さで内部護岸が整備されています。防潮堤と道路が交差する箇所や、港湾貨物を扱う埠頭の出入口など、防潮堤を連続させられない箇所には防潮機能を有する開閉式の門扉（陸こう）を設けています。通常は車両などの通行を確保するため開放し、潮位の上昇により浸水のおそれがある時には門扉を閉鎖します。

これらの海岸保全施設がそれぞれの機能を果たすことによって、津波や高潮による水害から市街地を守っています。

In the Port of Tokyo coastal region, coastal protection facilities have been set up in order to protect the populace from tsunamis and storm surge. The tide embankment is built at a height of 4.6-8.0m from the low tide water level, and a floodgate is built in the canal part which closes when there is a danger of flooding due to rising tide levels. The drainage pump station is designed so that after the floodgate is closed, a pump can be operated to forcibly drain the seawater into the outside water in order to prevent canal water levels from rising on the inside of the floodgate due to rainfall. With consideration for approachability toward the waterfront as well, in the interior embankment located inside the tide embankment and floodgate there is an internal shore bank constructed at a height which is lower than the tide embankment. In places where the tide embankment intersects with roads or the tide embankment is blocked its continuity such as gateways in cargo handling berths, openable gates (inland locks) are installed. Such gates are opened so that vehicles and other traffic can pass at normal times, and they are closed when there is a risk of flood due to rising tide levels.

By fulfilling their respective functions, these coastal protection facilities protect the town areas from flood damage due to tsunami and storm surge.



## 高潮対策センター ... Storm Surge Management Center

地震、津波、高潮などの非常事態に迅速に対応するため、東京港には水門の操作等を統括する高潮対策センターが設けられています。東京港の水門には昭和54年から「遠隔制御システム」を順次導入し、情報の集中管理、指揮・命令系統の一元化及び水門操作等の迅速化を図ってきました。

さらに、危機管理体制の強化を図るため、第二高潮対策センターを配置し、両センターから、廃止予定の港南4水門を除く全水門を遠隔操作ができるようになりました。これにより、相互にバックアップ可能な体制を整えています。

また、全ての海岸保全施設が確実に機能するよう、日々の施設管理・維持点検並びに機器の動作確認を行っています。

To ensure rapid response to earthquake, tsunami, storm surge and other emergency situations, a Storm Surge Management Center, which controls the operation of floodgates and other facilities, has been established in the Port of Tokyo. For floodgates in the Port of Tokyo, "Remote Control System" has been introduced sequentially since 1979 to ensure uniform management of information gathering and centralization of chain of command as well as speed up of operations such as floodgate control.

Moreover, in order to work toward strengthening the crisis management system, 2nd Storm Surge Management Center was set up. This Center together with the abovementioned Storm Surge Management Center enables remote operation of all floodgates excluding deprecated 4 floodgates in Kounan Zone. In this way, a system which enables mutual back-up is set up.

Furthermore, to ensure all coastal protection facilities function properly, we conduct daily facility maintenance, inspections, and equipment operational checks.



第二高潮対策センター Second Storm Surge Management Center