

開発調査技術英語集 V

(河川舟航)

昭和40年5月

海外技術協力事業団

開発調査部



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V

河川舟航



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文

開発調査技術英語集 V

(河川舟航)

開発途上諸国の各種開発調査業務遂行に当り、部職員の業務参考に資するため河川舟航に関連す英語語句をエカフエ諸資料、参考図書、雑誌から収集整理して本資料を作成しました。

編集は次の方針に基づいて行いました。

1. 海外で刊行された冊子、図書、雑誌から語句を収集する。
2. 見出し語は原則として名詞とし、冠詞を省略し単数形とする。
3. 見出し語の文例は冠詞、単数形、複数形はオリジナルそのままとする。ただし動詞は原則として現在形とする。
4. 語句の配列順序は A B C 順とする。

以上

編集注

編者の浅学非才、主として夜間の仕事のため生理的、物理的
条件に制約され不十分な結果となりましたが、後日語学
に堪能な技術者により本資料を踏み台として質量ともに充
実したより良きものの刊行を望むものであります。

山田 和 男

Words and Phrases for River Navigation

May, 1965

Development Survey Division, OTCA

General Bibliography

Names	Abbreviations
"Water Resources Engineering" by R.K. Linsely and J.B. Franizi, McGraw-Hill Book Co.	(WE)
Various bulletins printed by ECAFE	(EC)

alignment

an alignment without sharp bends	(WE)
alignment of channel	(WE)
a highly irregular alignment	(WE)
a satisfactory alignment	(WE)
all-weather highway connection	(EC)
all-weather road	
a new heavy duty all-weather road	(EC)
alluvial	(EC)
alluvial river	(EC)
anchor	(WE)
anchor cable	(WE)
annual volume	
annual volume of flow	(WE)

baffle	
dentated baffles	(WE)
bank	
the banks of concave bends	(WE)
bank protective works	(EC)
caving banks	(EC)
the concave bank	(EC)
the high river bank	(EC)
mid-bank height	(WE)
mud banks	(EC)
the right bank for four kilometers downstream	
from	(EC)
the river banks	(EC)
a relatively stable reach of bank	(EC)
sand banks and bars	(EC)
the top of the bank	(WE)
bank caving	
bank caving due to river action	(EC)
bank paving	(WE)
bank protection	
bank-protection structures	(WE)
a method of bank protection	(WE)
bank stabilization	(WE)
bar	
..... to clear bars	(WE)
the controlling depth over the bar	(EC)
the formation of bars	(WE)
middle bars	(EC)
a middle bar forms at the confluence	
of the Tonle Sap and Mekong	(EC)
point bar	
a relatively stable bar	
the removal of bars	(WE)
sand bars	(EC)
bar-building action	
..... to curtail or eliminate the bar-building action	(EC)
bar formation	
a solution of the problem of bar formation	(EC)
bar-run	
bar-run sand and gravel	(WE)

barge		
one arrangement of barges in a tow		(WE)
barge tonnage per tug		(WE)
charges for tugs and barges		(WE)
a colliding barge		(WE)
derrick barges		(WE)
diesel-driven, screw propeller barges		(WE)
the loading of barges		(WE)
a long tow of heavily loaded barges		(WE)
modern barge tows		(WE)
mooring barges		(EC)
motor barges with capacities from 50 to 350 tons		(EC)
the number of barges in a tow		(WE)
tugs and barges		(WE)
barge tow		
..... by barge tows consisting of 1 to 10 more barges		(WE)
a complete barge tow		(WE)
the speed of most barge tows in still water		(WE)
barge traffic		
be passed by barge traffic		(WE)
beacon		
concrete beacons		(EC)
construction of masonry beacons		(EC)
bear-trap gate		(WE)
bed		
bed and bank materials		(WE)
the bed and banks of a ^r steam		(WE)
the channel bed		(WE)
a mobil bed		(EC)
a rocky bed		(EC)
bed load		(EC)
bed-load movement		(EC)
bed movement		(EC)
the rate of changes in bed movement and discharge		(EC)
belt conveyor		(WE)
pend		
the banks of concave bends		(WE)
channel bends		(WE)
the cross section in the bend		(WE)
excessively sharp bends		(WE)
natural elimination of sharp bends		(WE)
the neck of the bend		(WE)
the old bend		(WE)
sharp bends (be eliminated by)		(WE)
a straighter route across old bends		(WE)
the upstream bend		(WE)

bifurcation		
	the bifurcation of the Mekong and Bassac Rivers	(EC)
blade		(WE)
blasting		
	blasting and river training	(WE)
block		
	precast blocks	(EC)
boat		
	..... in boats of various type	(EC)
	..... to boats with drafts of 6 to 7 meters	(EC)
bottom material		(EC)
boulder		
braided stream		(EC)
break-even point		
	..... in the vicinity of the break-even point	(WE)
buckt		
	an endless chain of buckets	(WE)
bulk		
	bulk commodities	(EC)
	bulk transport	(EC)
	heavy bulk materials	(WE)
	low-cost bulk transport for materials	(EC)
buoy		
	bamboo buoys	(EC)
buoy station		
	privately-owned buoy stations	(EC)

Canal

a canal capable of passing modern vessels	(WE)
delta-type navigation over the network of canals in the delta	(EC)
an extensive system of canals and natural waterways	(EC)
the very extensive canal system	(EC)
navigable canals	(EC)
the numerous navigation and irrigation canals	(EC)
a relatively short leading canal	(EC)
small port sites along these canals	(EC)
canal system	
navigation over the canal system	(EC)
canalization	
(C.) be feasible	(WE)
cantilever	(WE)
channel	
an adequate but tortuous channel	(WE)
alignment of channel	(WE)
an appropriate channel for	(EC)
(C.) be improved for navigation by	(WE)
(C.) be improved by drilling rock ledges to depth of $\frac{1}{2}$ to 1 meter. -	(EC)
the channel in the reach	(EC)
channel survey data	(EC)
controlling depths of channel	(EC)
the deep channel of the Mekong River	(EC)
the depth of the channel	(WE)
divided channel	(EC)
a fairly wide channel	(WE)
a full channel	(EC)
a good channel	(WE)
the improved channel	(WE)
the largest channel with depths varying from 2.8 to 7.0 meters	(EC)
the limited depth of access channel	(EC)
low-water channels	(EC)
maintenance dredging of channels	(EC)
the medium and low water channels	(EC)
a narrower and deeper channel	(WE)
natural channels	(WE)
navigable channels	(EC)
a number of channels	(EC)
the present navigable channel	(WE)

proposals for major channel regulation works	(EC)
the secondary channels	(EC)
a totally new channel	(WE)
a wide shallow channel	(WE)
a wider channel	(WE)
channel bed	(WE)
channel bend	(WE)
channel bottom	(WE)
channel cross section	(WE)
channel improvement	
the channel improvements by limited dredging	(EC)
the major channel improvements	(EC)
channel section	(WE)
channel slope	
steeper channel slopes	(WE)
channel storage	(WE)
channel straightening	(WE)
channel width	(WE)
circuitry	(WE)
clearance	
10-ft clearance at all points	(WE)
clump	
(C.) be spaced 15 to 20 ft apart in rows	(WE)
parallel rows of pile clumps	(WE)
pile-clump dike	(EC)
the terminal clump	(WE)
coarse-grained material	(WE)
concrete	
asphalt or monolithic concrete	(WE)
concrete sills	(WE)
concrete block	
20 concrete blocks 4 ft long, 14 in. wide, and	
3 in. thick spaced about 1 in. apart on	(WE)
conduit	
expanding conduits	(WE)
the filling conduits	(WE)
confluence	
..... at the confluence of the Tonle Sap and Mekong	(EC)
consequence	
the only design load of consequence	(WE)
consolidated material	(WE)
contraction works	(WE)
controlling depth	
a controlling depth of about 7 meters at high tide	(EC)
conveyor	
a stacker conveyor	(WE)
cost	
the annual cost of providing the facilities	(WE)

the cost of the added height	(WE)
the cost of a dam	(WE)
the cost of lockage	(WE)
the cost per ton-mile	(WE)
the cost for a trip	(WE)
the cost of waterborne transport	(WE)
fuel cost	(WE)
the sum of the fuel cost and wages, fixed charges, and other operating expenses	(WE)
low ton-mile costs	(WE)
the per mile cost	(WE)
the power cost	(WE)
the transportation costs	(WE)
craft	
bottlenecks for river craft	(EC)
motor-propelled small craft	(EC)
the river craft plying on the different reaches of the Mekong	(EC)
crane	
a mobile crane	(EC)
power cranes	(EC)
a wharf with crane	(EC)
criteria	
absolute criteria of navigability	(WE)
actual criteria for depth, width, and alignment	(WE)
economic criteria control	(WE)
the governing criteria	(WE)
crossbar	
..... with crossbars formed by the deposition of material	(WE)
current velocity	
current velocities on the order of 3 or 4 ft/sec.	(WE)
cut	
a series of parallel cuts	(WE)
..... in shallow cuts	(WE)
cutterhead	(WE)
cutterhead dredge	(WE)
cutoff	
artificial cutoffs	(WE)
(C.) be formed by	(EC)
" " " as	(EC)
(C.) result in	(WE)
cutoff channel	(WE)

dam		
	concrete gravity dams	(WE)
	the construction of the dams	(WE)
	the dams of the TVA system	(WE)
	the effect of the dam on flood flows	(WE)
	fixed dams	(WE)
	fixed and movable dams	(WE)
	the height of the dam	(WE)
	high dams	(WE)
	higher dams	(WE)
	movable dams	(WE)
	movable navigable dams	(WE)
	the navigable type of dam	(WE)
	navigation dams	(WE)
	the nonnavigable dam	(WE)
	the number of dams for a stream	(WE)
	the pool above the dam	(WE)
	a very low dam	(WE)
dam height		
	the selection of dam height	(WE)
dam site		
	suitable dam sites	(WE)
damming surface		
	damming surfaces up to 30 ft high	(WE)
deep sea vessel		(EC)
deepening		
	() encourage deepening of the channel	(WE)
delta		
	delta navigation system	(EC)
	Delta-Type Navigation	(EC)
	..... for the maintenance and improvement of the delta navigation system in Viet-Nam	(EC)
	the rich deltas of the Mekong	(EC)
delta area		
	the Delta Area	(EC)
	the Mekong Delta area	(EC)
	the Mekong River delta area	(EC)
	..... for navigation in the delta area	(EC)
delta-type navigation		
	delta-type navigation over the network of canals in the delta area	(EC)
deposition		
	deposition of sediment	(WE)
	the deposition of material	(WE)

(d.) promote deposition	(WE)
depth	
the actual criteria for depth	(WE)
controlling depths of channel in the reach	(EC)
the controlling depth over the bar	(EC)
a controlling depth of about 7 meters at hightide	(EC)
the controlling depth for navigation	(EC)
depth of channel	(WE)
the depth at low water	(EC)
depths at Saigon	(EC)
depths over the bar	(EC)
an equal depth	(EC)
..... to be the largest channel with depths varing from 2.8 to 7.0 meters	(EC)
the limited depth of access channel	(EC)
12-ft minimum depths (be projected in	(WE)
the navigable depth	(EC)
a perennial depth of 6 m	(EC)
derrick barge	(WE)
detailed survey	
the need for detailed surveys	(EC)
dike	
a basaltic dike	(EC)
dikes and groins	(WE)
..... in the dike area	(WE)
a permeable dike	(WE)
the pile-clump dike	(WE)
the upstream dike	(WE)
(d.) be placed in	(WE)
dipper	(WE)
dipper dredge	(WE)
discharge range	
(d.r.) should be located at	(EC)
discharge-stage relationship	
a discharge-stage relationship during rapidly rising or falling stages	(EC)
disposal	(WE)
distributary	
..... on the Bassac distributary of the Mskong	(EC)
() be located at the beginning of the Mekong distributaries	(EC)
dock	
downstream	
..... at the downstream end of the lock	(WE)
the downstream termin	
the righ bank for four kilometers downstream from	(EC)

draft		
	boats with drafts of 6 to 7 meters	(EC)
	extreme low water draft	(EC)
	the proposed deep draft port	(EC)
	the required draft plus freeboard	(WE)
	a shallow draft river tug	(WE)
	small shallow draft boats	(EC)
drag		
	the increased drag	(WE)
drawback		
	the drawback in the use of piling	(WE)
dredge		
	a cutterhead dredge	(WE)
	a dipper dredge	(WE)
	dredge boat	(WE)
	the dustpan dredge	(WE)
	hopper dredges	(WE)
	ladder dredges	(WE)
	large dredges	(WE)
	..... at the rear of the dredge hull	(WE)
	suction dredge	(WE)
	three basic types of dredges	(WE)
dredging		
	annual maintenance dredging	(EC)
	dredging of the channel	(EC)
	extensive dredging	(WE)
	limited dredging	(EC)
	maintenance dredging of channels	(EC)
	() be improved by dredging	(EC)
drift		
	..... by littoral drift	(EC)
drop		
	a drop of 22 m during low water and 17 m during high water	(EC)
dugout		
	dugouts and rafts of logs	(EC)
	motor dugouts with loads up to 40 tons	(EC)
	native dugouts	(EC)
	various types of dugouts and rafts	(EC)
dustpan		
	the dustpan dredge	(WE)

E

earth pressure
 water or earth pressure with the lock empty (WE)

emptying system
 the lock-emptying system (WE)

entrance
 a single entrance (WE)

evaporation
 ... for evaporation and seepage en route to the
 reach (WE)

evaporation loss
 evaporation losses from the pools (WE)

F

fall	
the falls and rapids in the lower section	(EC)
the total fall	(EC)
... to pass these rapids and falls at any stage of the river	(EC)
ferry	
an adequate ferry	(EC)
ferry crossings	(EC)
a highway and ferry connection with Vientiane	(EC)
() be provided at	
filling conduit	(WE)
filling mechanism	(WE)
filling operation	
... during the filling operation	(WE)
the entire filling operation	(WE)
filling system	
the design of the filling and emptying systems	(WE)
filling time	(WE)
flashboard	(EC)
flash flood	
... to permit the passage of a flash flood	(WE)
floating dock	(EC)
floating power shovel	(WE)
floating wharf	
the construction of a floating wharf	(EC)

flood

a flash flood (EC)

Flood control (EC)

flood flow

... to permit free escape of flood flows (WE)

flood stage

... in the effect on flood stages (EC)

flow

actual and required flows (WE)

annual volume of flow (WE)

the concentration of flow in the narrow section (WE)

the delivered flows (WE)

the depth of flow (EC)

fissure flows (EC)

flood flows (WE)

flows from Ft. Peak Dam (WE)

high flows (WE)

low natural flows (WE)

the low water flow (EC)

the minimum flow of the stream (WE)

moderate velocities of flow into lock chamber (WE)

... in natural flow without waste (WE)

a regulated flow of approximately 2,000 m³/sec. (EC)

a small initial rate of change of flow (WE)

sufficient flow (WE)

() baffle the flow (WE)

flow characteristic

the flow characteristics of the river for some distance (EC)

flow condition

... to meet varying flow conditions (WE)

fluvial condition

the fluvial condition of the river (EC)

fluvial water

the outflow of fluvial water (EC)

gage

gage record

... based on the historical gage records (EC)

gate

a bear-trap gate (WE)

a crest gate (WE)

the inner face of the gate leaves (WE)

the lock gate (WE)

the rate of gate opening (WE)

the roller gate (WE)

the Tainter gate (WE)

the use of a gate (WE)

vertical-lift gates (WE)

(g) be employed for movable dams (WE)

gorges

a number of deep, narrow gorges (EC)

the rocky gorge walls (EC)

steep-walled rocky gorges (EC)

gravel

articulated mattress on a 4-in. gravel blanket (WE)

bar-run sand and gravel (WE)

groin

impermeable groins or jetties (WE)

a relatively impremeable groin (WE)

() be placed at (WE)

guide wall

guide walls of steel or timber piling (WE)

the landward guide wall (WE)

the structural design of the lock guide walls (WE)

() be protected by guide walls

harbor

the alternate entrance to the Saigon harbor (EC)

the choice of entering or leaving the harbor at Saigon (EC)

harbors and ports for ocean-going vessels (EC)

the new port and harbor being built at (EC)

Saigon Harbor (EC)

head

... with the head describing an arc up to 250 ft radius (WE)

the moderate-head range (WE)

a wide suction head (WE)

() be designed for a total head of 30 ft (WE)

headwater

high water

... during high water (EC)

the extreme high water and low water records (EC)

high water in the Mekong at Phnom Penh (EC)

high water period

... during the high water period (EC)

highwater season

... in the highest part of the highwater season (EC)

highway

a highway and ferry connection with Vientiane (EC)

hoisting machinery

hopper

(WE)

hopper dredges	(WE)
houseboat	
the construction of houseboats	(EC)
hydraulic capacity	
the hydraulic capacity of the distributaries	(EC)
hydrographic study	(EC)

impassible obstruction	(WE)
improvement	
ambitious improvements	(EC)
channel improvements	(EC)
moderate-size improvements	(EC)
navigation improvements	(EC)
port improvements	(EC)
inflow	
change of inflow in the lock	(WE)
inland navigation	(EC)
inland navigation marker	(EC)
island	
islands and sand bars	(EC)

junction

... at the junction of the Tonle Sap and the Mekong River (EC)

junk

2,600 junks with a capacity of over 16 tons (WE)

L

ladder	(WE)
ladder drudge	(WE)
land	
a narrow neck of land	(WE)
the neck of land	(WE)
landing wharf	
light landing wharves	(EC)
small public and private landing wharves	(EC)
lateral port	(WE)
launch	
steam launches	(WE)
sturdy launches	(EC)
launching barge	(WE)
leakage	
the leakage through such materials	(WE)
lift	
the lift of the lock	(EC)
a lift of less than 5ft above the water	(WE)
... for lifts under 15ft water	(WE)
loading platform	
a 45-degree angle with loading platforms	(EC)
lock	
cost of locks and dams	(WE)
the downstream end of the lock	(WE)
the height of the lock	(WE)
the length of the lock	(WE)

the lift of the lock	(WE)
navigation locks	(WE)
the plan area of the lock	(WE)
the rate of change of inflow in the lock	(WE)
the river with locks and dams	(EC)
a series of locks and dams	(WE)
a ship lock	(EC)
the size of the lock in plan	(WE)
a staff of operating personnel at the lock	(WE)
the time required for the tow to pass through locks	(WE)
the use of locks and dams	(WE)
... on the vessel in the lock	(WE)
(1.) be filled ...	
() be required for a lock whose chamber is by 110 by 100 ft in plan	(WE)
lock approach	(WE)
lock chamber	
the disturbances in the lock chamber	(WE)
the elevation of the bottom of the lock chamber	(WE)
... for filling lock chambers	(WE)
moderate velocities of flow into the lock chamber	(EC)
the overall height of the lock chamber	(WE)
lock-and-dam construction	(WE)
lock-and-dam method	
() be developed by lock-and-dam methods	(WE)
lock facilities	(WE)
lock-filling system	(WE)
the lock-filling and-emptying system	(WE)

lock gate	
the main lock gates	(WE)
lock guide wall	(WE)
lock wall	
concrete lock walls	(WE)
lock walls of piling	(WE)
longitudinal conduits in the lock walls	(WE)
lockage	
the cost of lockage	(WE)
... to provide for water for lockages	(WE)
locking	
... to provide water for locking	(WE)
the time lost in locking	(WE)
locking time	
low dam	
the low dams with navigable passes	(WE)
a very low dam	(WE)
low flow season	(WE)
low flow velocity	(WE)
low natural flow	(EC)
low tide	
... to be about 4 meters at low tide	(EC)
low water	
the depth at low water	(EC)
... at extreme low water	(EC)
low-water closure of secondary channels	(EC)
... at medium low water	(EC)
normal low water	(WE)

low water channel (EC)

low water flow (EC)

low water period
... during the low water period (EC)

low water season
... during low water seasons (WE)

low-water stage (EC)

maintenance

maintenance and rehabilitation work (EC)

the maintenance and restoration work (EC)

the proceodution of maintenance work (EC)

manifold (WE)

manifold system (WE)

map

maps for navigation (EC)

maritime

the maritime Mekong (EC)

maritime transporation (EC)

marker

bamboo markers (EC)

navigation markers (EC)

material

the bottom material (WE)

coarse-grained material (WE)

cohesive material (WE)

consolidated material (WE)

the deposition of material (WE)

fine-grained, soft material (WE)

fine materials (WE)

... in material containing large stones
and boulders (WE)

removal of material from ... (WE)

mattress

(m.) be ballasted with ... (WE)

(m.) be assembled ... (WE)
articulated mattress (WE)
the articulated concrete mattress (WE)
lumber mattress 80 to 100ft wide (WE)
mattresses woven of willow branches or lumber (WE)
meandering
excessive meandering of the low water channel (EC)
meandering of channel (WE)
... to prevent further meandering (WE)
middle water
... during middle waters (EC)
mobile bed
... at sections with a mobile bed (EC)
model test
mooring
mooring barges (EC)
mooring hawsers (WE)
... for mooring at the different stages of the river (EC)
mooring rings (EC)
mouth
... at the mouth of the Bassac (EC)

natural channel (WE)

natural flow

..... to augment low natural flows (WE)

navigability

the navigability of the Mekong (EC)

navigable

() be navigable for vessels of 1.75 meters draft (EC)

() be navigable for boats (EC)

() be made navigable throughout the year (EC)

navigable channel

the navigable channels, beacons, and markers (EC)

navigable dam

high navigable dams (WE)

movable navigable dams (WE)

navigable depth

the navigable depth during the low-water period (EC)

some storage capacity in the pool above navigable depth (WE)

navigable pass

the advantage of the navigable passes (WE)

the low dams with navigable passes (WE)

navigable portion	
the navigable portion of the river	(WE)
navigable reach	
..... at the head of a relatively short navigable reach	(WE)
navigable waters	(EC)
navigable waterway	(WE)
navigation	
() be available for navigation on the Mekong	(EC)
() be developed for navigation	(EC)
(n.) be limited by the rapids	(EC)
(n.) be limited to vessels	
(n.) be feasible	
the controlling depth for navigation	(WE)
data on existing navigation	(EC)
delt navigation system	(EC)
delta-type navigation	(EC)
the effective head of navigation on the Tonle Sap	
the head of navigation for ocean-going vessels	(EC)
improved navigation above a Pa Mekong project	(EC)
improvement of navigation by reservoir	(WE)

inland navigation	(EC)
the main obstacles to navigation from to	(EC)
maps for navigation	(EC)
..... for navigation in the delta area	(EC)
navigation facilities	(WE)
navigation on the Mekong River and Tonle Sap River	(EC)
navigation in the Mekong River and Basin	(EC)
navigation in the reach	(EC)
navigation over the canal system	(EC)
navigation on the upper reaches of Mekong River above Phnom Penh	(EC)
the numerous navigation and irrigation canals	(EC)
ocean navigation	(EC)
the possibility of improving the Mun river in north-eastern part of Thailand for navigation	(EC)
river navigation	(EC)
river-type navigation	(EC)
the routes of navigation	(EC)
a tabulation of restrictions to navigation	(EC)
the viewpoint of navigation	(WE)
navigation benefit	

navigation canal system

navigation channel

navigation dam

 the general features of structural design of navigation dams (WE)

 the precise type of navigation dam (WE)

navigation development

 navigation developments relating to the Mekong (EC)

navigation improvement

 the form of navigation improvements (WE)

 the longer view navigation improvement (EC)

 navigation improvement on the Mekong (EC)

 navigation improvement by locks and dams (EC)

 in planning navigation improvements of the Mekong River (EC)

navigation lock

 the design of navigation locks (WE)

navigation map

 navigation maps covering the Mekong (EC)

navigation markers

 (n.m.) be installed along the Mekong (EC)

navigation project

 () be employed in navigation project (WE)

the economics of navigation projects (WE)
navigation purpose (WE)
navigation release
the water requirement for navigation releases (WE)
nonnavigable dam (WE)
nonnavigable type
the nonnavigable type of dam (WE)

obstruction

channel obstructions (WE)

an impassible obstruction (WE)

physical obstructions to navigation (WE)

ocean-borne commerce (EC)

ocean-going vessel (EC)

ocean navigation (EC)

ocean port (EC)

the ocean port at Saigon (EC)

open-channel improvement (WE)

open-channel method (WE)

open-channel procedure (WE)

open-channel project (WE)

orifice

an orifice with coefficient C as in
Table 17 (WE)

oscillation

() have a total oscillation of about 8
meters at Phnom Penh (EC)

overflow weir

a simple overflow weir with a fixed crest (WE)

overhead bridge (WE)

passage

..... to permit the passage of vessels (WE)

path

a path up to 30-ft wide through a bar (WE)

paving

bank paving (WE)

uncompacted asphalt paving (WE)

permeable dike

a common form of permeable dike (WE)

the function of a permeable dike (WE)

pier

massive piers (WE)

pile

the pile-clump dike (WE)

a tripod of piles (WE)

pile clump

(WE)

pile driving

(WE)

pile stringer

(WE)

piling

the drawback in the use of piling (WE)

lock walls of piling (WE)

steel or timber piling (WE)

pilot cut

the line of the pilot cut (WE)

a small pilot cut (WE)

pool

the downstream pool (WE)

evaporation losses from the pools (WE)

the height of the pool (WE)

..... to lift the vessels from one pool to the next (WE)

the pool above the dam (WE)

..... in the pool above navigable depth (WE)

the reduced velocity in the larger pools (WE)

a series of slackwater pools (WE)

pool elevation

..... in pool elevations plus the required draft plus freeboard (WE)

pool level

the minimum pool level in the downstream pool (WE)

pool levels at low flows (WE)

..... to regulate the pool level (WE)

the selected upstream and downstream pool levels (WE)

..... at desirable port locations (EC)

port operation (EC)

port projection (EC)

major port projections (EC)

port site

the proposed port site (EC)

small port sites along these canals (EC)

port traffic

portage

portage for about 80 days (EC)

profile

profile of the Mekong River (EC)

prop

the fulcrum of the prop (WE)

..... by props at both ends (WE)

propulsion

(p.) be achieved by (WE)

port

- in the design of ports along the river (EC)
- the establishment of a port at (EC)
- harbors and ports for ocean-going vessels (EC)
- lateral ports (EC)
- minor ports (EC)
- the new port and harbor being built at ... (EC)
- the port at Saigon (EC)
- the proposed deep draft port (EC)
- the relative amounts of traffic in the ports (EC)
- the selection of the port to be used (EC)
- small ports being developed along the Mekong (EC)
- smaller ports on the Gulf (EC)
- (p.) be operated on the river (EC)
- () be desired to locate the new port (EC)
- port arrangement (EC)
- port development (at Saigon) (EC)
- port facilities
 - port facilities at the cities and towns (EC)
 - additional and new port facilities for both Phnom Penh and Can Tho (EC)
- port improvement (EC)
- port location

quay

5 kilometers of walls on the quay

(EC)

the public quay at

(EC)

R

raft

- dugouts and rafts of logs (EC)
- various types of dugouts and rafts (EC)

rail

- 27 per cent carried by rail (WE)

railway building

(EC)

ramp

- appropriate ramps (EC)
- appropriate ramps with loading cranes (EC)
- the earthen ramps observed at several locations (EC)
- length of the ramp (EC)
- a new earth ramp (EC)
- ramps for minor ports and ferry crossings (EC)
- a short length of ramp (EC)
- to use of the ramps (EC)

rapid

- the falls and rapids in the lower section (EC)
- the Kemmarat rapids (six rapids over rocky bed) between Pakse and Savannakhet during the low water period (EC)
- minor rapids (EC)
- rapids and sandbars (WE)

the rapids over rocky bed between ... and ... (EC)
 the river throughout most sections of rapids (EC)
 seasonally impassible rapids (EC)
 rapid section (EC)
 rating curve
 to establish approximate rating curves (EC)
 reach
 (r.) be navigable for vessels (EC)
 (r.) flow into and through the upper portion
 of the Delta Area (EC)
 () be move through the reach (EC)
 by-pass non-navigable reaches of the river (EC)
 the channel in the reach (EC)
 navigation in the reach (EC)
 a relatively short navigable reach (WE)
 a relatively stable reach of bank (EC)
 in the reaches above Pnom-Penh (EC)
 the remainder of the reach (EC)
 in the upper reaches of the river (EC)
 release
 navigation releases (WE)
 sanitary releases (WE)
 relief (WE)

removal

the removal of bars (WE)

removal of material from navigable channels (WE)

the removal method (WE)

the removal of rocks (WE)

snag removal (WE)

repair shop (EC)

reservoir

improvement of navigation by reservoirs (WE)

storage reservoirs (WE)

reservoir operation

the ideal reservoir operation (WE)

revetment

the most effective revetment (WE)

the portion of the revetment (WE)

the use of revetments (WE)

riprap

..... with rock riprap (WE)

river

(r.) flow for a distance of 305 kilometers
to the South China Sea (EC)

(r.) enter the Mekong above X Rapids at Y (EC)

(r.) be unobstructed for about 470 kilometers (EC)

blasting and river training	(EC)
a complete hydrographic and topographic survey of the river	(EC)
the entire river below Luang Prabang	(EC)
the flow characteristics of the river	(EC)
the height of the river during the year	(EC)
the navigable portion of the river	(WE)
non-navigable sections of the river	(EC)
physical conditions on the river	(EC)
physical forces of the river	(EC)
the possibilities of canalizing sections of the river with locks and dams	(EC)
the produce transported by river	(EC)
..... at reasonably stable sections of the river	(EC)
the river throughout most sections of rapids	(EC)
river works	(EC)
river action	
bank caving due to river action	(EC)
river bank	(WE, EC)
riverbank	(WE)
river boat	(EC)
river commerce	(EC)
river craft	(EC)

river cross-section area (EC)

river development

..... to make adequate river development plans (EC)

river elevation

annual range in river elevation (EC)

river flow

subsequent river flows (WE)

river gradient

the average river gradient in the area (EC)

river hydrography

an important part of river hydrography (EC)

river mouth (EC)

river navigation

river navigation from X to Y (EC)

the greatest obstacle to river navigation (EC)

river regimen (EC)

river slope (EC)

river stage

the changes in river stages (EC)

observations of river stages (EC)

river surface level (EC)

river tanker (EC)

river traffic

the trans-shipment of river traffic (EC)

river transportation

the only mode of river transportation above
Vientiane (EC)

river-type navigation (EC)

river velocity

river water

clay particles carried by the river water (EC)

riverward side (WE)

rock

dumped rock (WE)

isolated rocks (WE)

the removal of rocks (EC)

rock-filled timber cribs (WE)

..... with submerged rock weirs or sills (EC)

rock ledge (EC)

rock outcropping (EC)

rock removal (EC)

salt water

the mixing of the salt water (EC)

sand

bar-run sand and gravel (WE)

loose sand (WE)

sand bar

sandbar

sand bars at the mouth of the river (EC)

rapids and sandbars (WE)

scour

(WE)

secondary channel

low-water closure of secondary channels (EC)

sediment

() be formed by sediment carried by the river (EC)

deposition of sediment (WE)

a little sediment (WE)

sediment deposit

(EC)

sediment load

a heavy sediment load (WE)

little sediment load (WE)

streams carrying a heavy sediment load (WE)

sediment transport

low sediment transport (WE)

shallow stretch

shallow stretches below Kratie (EC)

ship

the ships with lengths less than 220 meters (EC)

ship construction

an expert in ship construction (EC)

ship lock

the construction of a ship lock (EC)

a low dam and a ship lock (EC)

shipment

trans-shipment (EC)

shipping

coastal shipping (EC)

shipping point

(EC)

shore

(EC)

shore pipe

(WE)

shutter

a wooden shutter (WE)

sill

concrete sills (WE)

a modification of the sill (WE)

silt	(EC)
silt-laden stream	
a heavy silt-laden stream	(EC)
silt-laden water	
tidal flows with the silt-laden water	(EC)
site	
..... for a given site	(WE)
() be made above and below the proposed sites	(EC)
the proposed port site	(EC)
the site for a new bridge across Tonle Sap	(EC)
the site requirements	(WE)
suitable dam sites	(WE)
slackwater	(WE)
slackwater pool	(WE)
slope	
() be graded to a stable slope	(WE)
a paved incline on a slope	(EC)
a slope in the order of 20%	(EC)
sloughing	
natural sloughing	(EC)
snag removal	(WE)
soil line	

a soil line under 1000 ft long (WE)

spoil

(s.) be discharged into barges (WE)

the desired spoil area (WE)

a long spoil pipe (WE)

the spoil stackers (WE)

suitable spoil area (WE)

spud

the second spud (WE)

stage

..... at all stages of the river (EC)

critical stages (EC)

a discharge-stage relationship (EC)

..... during rapidly rising or falling stages (EC)

the low-water stage (EC)

..... for mooring at the different stages of the river (EC)

the stage of the tide (EC)

stone

() be ballasted with about 15 lb of stone per square foot (EC)

lack of local sources for stone (WE)

storage capacity

a required storage capacity (WE)

some storage capacity in the pool above navigation depth	(EC)
storage reservoir	(WE)
storage shed	(EC)
stretch	
about 600 kilometers of this stretch of river	(EC)
long stretches of seasonally impassible rapids	(EC)
stretches of the river	(EC)
straightening	
channel straightening	(WE)
stream	
the bed and banks of the stream	(WE)
braided streams	(EC)
..... by commercially navigable streams	(WE)
the direction of flow in the stream	(EC)
a heavy silt-laden stream	(EC)
stream-bank facilities	(WE)
the undercutting action of the stream	(WE)
stump	(EC)
suction	
a roughly hemispherical rotating suction head	(WE)
suction dredges	(WE)

suction pipes

(WE)

a wide suction head

(WE)

surplus water

the passage of surplus water

(WE)

swing

(WE)

tailwater	(WE)
tanker	
river tankers	(EC)
tanker operation	(EC)
terminal	
the terminal facilities	(WE)
tide	
^{ebb} the ebb and flow of the tides	(EC)
the effect of tide at X	(EC)
the lowest dry-season tides	(EC)
tide range at Saigon	(EC)
the stage of the tide	(EC)
tidal flow	
tidal flows with the silt-laden water	(EC)
tidal water	
particles carried by the tidal water	(EC)
toe	
the toe of the underwater slope	(WE)
ton	
0.4 cent per ton-mile	(WE)
the domestic ton-miles of freight	(WE)

the product of the mileage and tons transported	(WE)
a ton-mile	(WE)
tonnage	
some idea of the tonnage carried on parts of the waterways	(EC)
the tonnage figures for 1937	(EC)
tow	
..... to accept the entire tow	(WE)
the length of tow	(WE)
a long tow of heavily loaded barges	(WE)
modern barge tows	(WE)
the number of barges in a tow	(WE)
the time required for the tow to pass through locks	(WE)
tractor	
tractors and winches on shore	(EC)
traffic	
an estimate of the traffic	(WE)
international river traffic	(EC)
local traffic	
the relative amounts of traffic in the ports	(EC)
river traffic	(EC)
a significant part of the traffic on navigable waters	(WE)

upstream traffic	(WE)
traffic movement	
traffic movements on the Mekong	(EC)
traffic jam	
traffic jams for trucks	(EC)
transit time	
transit time for navigation	(WE)
transport	
hulk transport	(EC)
cheap local transport	(EC)
transport over the distributaries of the Mekong	(EC)
transport facilities	(EC)
water transport	(WE)
transportation	
the high cost of transportation	(EC)
a long-range regional transportation study	(EC)
maritime transportation	(EC)
transportation across the river from one bank to the other	(EC)
transportation cost	(WE)
transportation system	(WE)
transporting	

transporting heavy bulk materials (WE)
trans-shipment
trans-shipment to boats for movement (EC)
trans-shipment of river traffic (EC)
trapezoidal cross section (WE)
travel time
..... for the travel time to the reach (WE)
tributary
(t.) be used for transportation (EC)
tributary stream,
..... at locations where tributary streams
enter (EC)
truck
the size of boats and trucks (EC)
..... for transferring freight from boat
to truck (EC)
wasting space in the boat or truck (EC)
trucking
..... for heavy trucking (EC)
tug
charges for tugs and barges (WE)
a shallow-draft river tug (WE)
tugs and barges (EC)
turbulence (WE)

underwater edge

the ends of the underwater edge of the revetment (WE)

underwater slope

the toe of the underwater slope (WE)

uplift pressure

() be damaged by uplift pressures (WE)

upstream

the upstream bend (WE)

vaccum-cleaner nozzle	(WE)
valve	
the inlet valve	(WE)
the time required to open the valve	(WE)
a uniform rate of valve opening	(WE)
velocity	
moderate velocities of flow into the lock chamber	(WE)
low flow velocities	(WE)
velocity measurement	
(v.m.) be made at a number of gaging stations	(EC)
velocity pattern	
the velocity pattern of the river	(EC)
venturi-loop system	(WE)
vessel	
() be developed for ocean-type vessels to Phnom Penh	(EC)
coastal vessels	(EC)
deep sea vessels	(EC)
the effect of the vessel on the wave pattern	(WE)
..... to lift vessels from one pool to the next	(WE)
ocean vessels	(EC)

ocean-going vessels	(EC)
..... to permit the passage of vessels of 500 tons and 2.5 meters draft	(WE)
seagoing vessels	(EC)
sizeable vessels through the reach	(EC)
small river vessels	(EC)
unbalanced force on the vessel	(WE)
vessels of 2.50 meters draft	(EC)
vessels of not over 100 tons and 1.5 meters draft	(EC)
..... on the vessel in the lock	(WE)

W

washing

..... to avoid washing of fine materials (WE)

water

the elevation of the water (EC)

the extreme high water and low water records (EC)

fluvial water (EC)

high water in the Mekong at Phnom Penh (EC)

high waters, medium waters, and low waters (EC)

large volumes of water (EC)

low-water periods (EC)

navigable waters (WE)

the river water (EC)

the salt water (EC)

..... in shallow water (WE)

still water (WE)

the tidal water (EC)

the water front at Phnom Penh (EC)

the water requirement for navigation releases (WE)

water-borne commerce (EC)

waterborne transport (WE)

water level

() raise water level	(WE)
water load	
..... in position against the water load by a prop	(WE)
water pressure	
the lateral water pressure	(WE)
water or earth pressure with the lock empty	(WE)
water route	
the development of a water route	(EC)
water surface	
initial water surface	(WE)
water transport	
the actual comparative costs of rail and water transport	(WE)
the actual cost of water transport	(WE)
the average cost for water transport	(WE)
big disadvantages of water transport	(WE)
commercial inland water transport	(WE)
the role of water transport	(WE)
waterway	
a military benefits of a waterway	(WE)
natural waterways	(EC)
navigable waterways	(EC)
..... to open a long waterway to navigation	(EC)

a suitable waterway into the trade area of ... (EC)

waterway development (WE)

a waterways engineer (EC)

waterways improvement (WE)

waterway system

the Mississippi River waterway system (WE)

wave

an abrupt wave (WE)

initial wave (WE)

reflected wave (WE)

a loping wave (WE)

wave action (WE)

wave motion (WE)

wave pattern

the effect of the vessel on the wave pattern (WE)

wave wash

the wave wash of boats (EC)

wharf

a floating wharf (EC)

landing wharves (EC)

the private wharves (EC)

wicket

the Bebout wicket with the horse hinged	(WE)
the bottom end of the wicket	(WE)
the Chanoine-Pascaud wicket	(WE)
the Chanoine wicket	(WE)
the one- or two - position wickets	(WE)
steel wickets	(WE)
wicket-type barriers	(WE)
winch	(WE)
wire-mesh reinforcing	(WE)
woven willow	
a woven willow or lumber mattress 80 to 100 ft wide	(WE)

