

Compliments of  
**THE UNITED NEW YORK  
SANDY HOOK PILOTS  
BENEVOLENT ASSOCIATION**  
and  
**THE UNITED NEW JERSEY  
SANDY HOOK PILOTS  
BENEVOLENT ASSOCIATION**

201 Edgewater Street  
Staten Island, N.Y. 10305  
[www.sandyhookpilots.com](http://www.sandyhookpilots.com)



**Masters and Agents are requested to provide 24-hours notice of arrival and advise Pilots of any change no less than 6 hours in advance of scheduled ETA**

New York Pilots .....	718.448.3900
New Jersey Pilots .....	718.448.3900
Hell Gate Pilots .....	718.448.3900
Long Island Sound Pilots .....	718.448.3900
Hudson River Pilots .....	718.815.4316
Dispatch Email .....	Dispatchers@sandyhookpilots.com
General Info Email .....	Info@sandyhookpilots.com
Fax .....	1.718.442.2190

**ORDERS CANNOT BE ACCEPTED BY EMAIL**

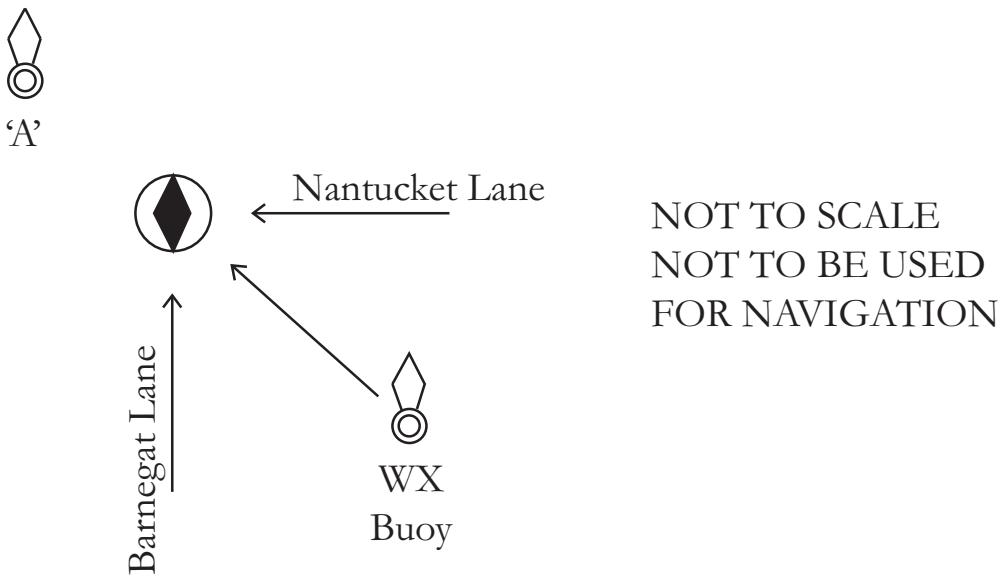
# Contents

	<b>Page</b>
Arrival and Embarkation Information .....	3
Pilot Ladder Requirements .....	4 - 5
Useful Telephone Numbers and Websites .....	6 - 7
Nautical Distances in the Port of NY/NJ .....	8
Principal Bridges in the Port of NY/NJ .....	9
East River and Long Island Sound Information .....	10 - 11
Hudson River Information .....	12 - 13
Increase in Draft due to pitch, heel or squat .....	14
Squat Table .....	15
Determining Air Draft .....	16
Principal Light and Fog Signals in the Port of NY/NJ ...	18
Ranges and Bearings in the Port of NY/NJ .....	19
Anchorages and Anchorage Regulations .....	20 - 23
Chartlets w/Terminal Information .....	24 - 36
Common Conversion Factors and Metric Tables .....	37
Percautionary Statement .....	38
Height of Tide at Any Time .....	39
Velocity of Current at Any Time .....	40
Tidal Differences and Constants .....	41 - 43
Sandy Hook and Battery Tides .....	44 - 67
Current Differences and Constants .....	68 - 69
Narrows and Hell Gate Current Tables .....	70 - 93
Albany Tides .....	94 - 105
Metric Conversion Tables .....	107 - 108
2022 & 2023 Calendar .....	130 - 131
Sunrise & Sunset Predictions for 2022 .....	132 - 133

## **Arrival and Pilot Embarkation at Ambrose Pilot Station**

The Sandy Hook Pilots maintain a pilot vessel on station year round. Either the Pilot Boat New York or Pilot Boat New Jersey will be “On Station” and monitoring VHF channels 13, 16 and 73. Both vessels are equipped with AIS. Using a 53ft (16m) aluminum launch, the pilot will be embarked from this vessel. The pilot launch carries the same lights as the pilot boats on station.

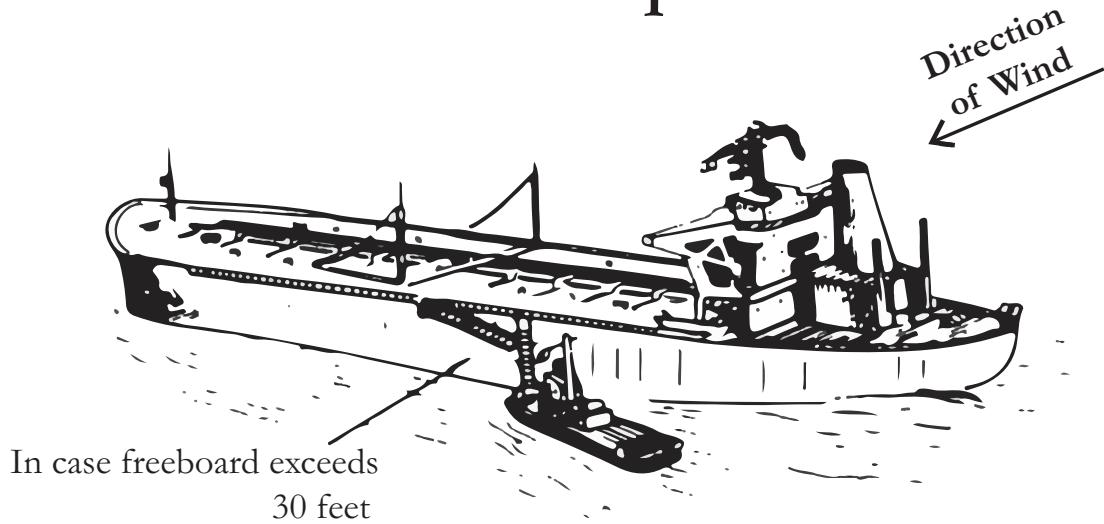
Vessels approaching the Ambrose Pilot Station from sea should give the pilot boat a minimum of three hours advance notice. Vessels should make a second call to the pilot boat when they are one hour from the sea buoy. Pilot boarding side will be given at that time.



## **Important Information Your Pilot Will Need**

It is imperative that you brief your pilot about any automatic engine monitoring systems that could potentially shut down or would significantly reduce the power of the main propulsion engine system without substantial warning. If possible, these systems should be overridden for transiting New York Harbor pilotage waters. Please advise your pilot if any unusual problem with the ship's control or navigational systems have occurred in the last month.

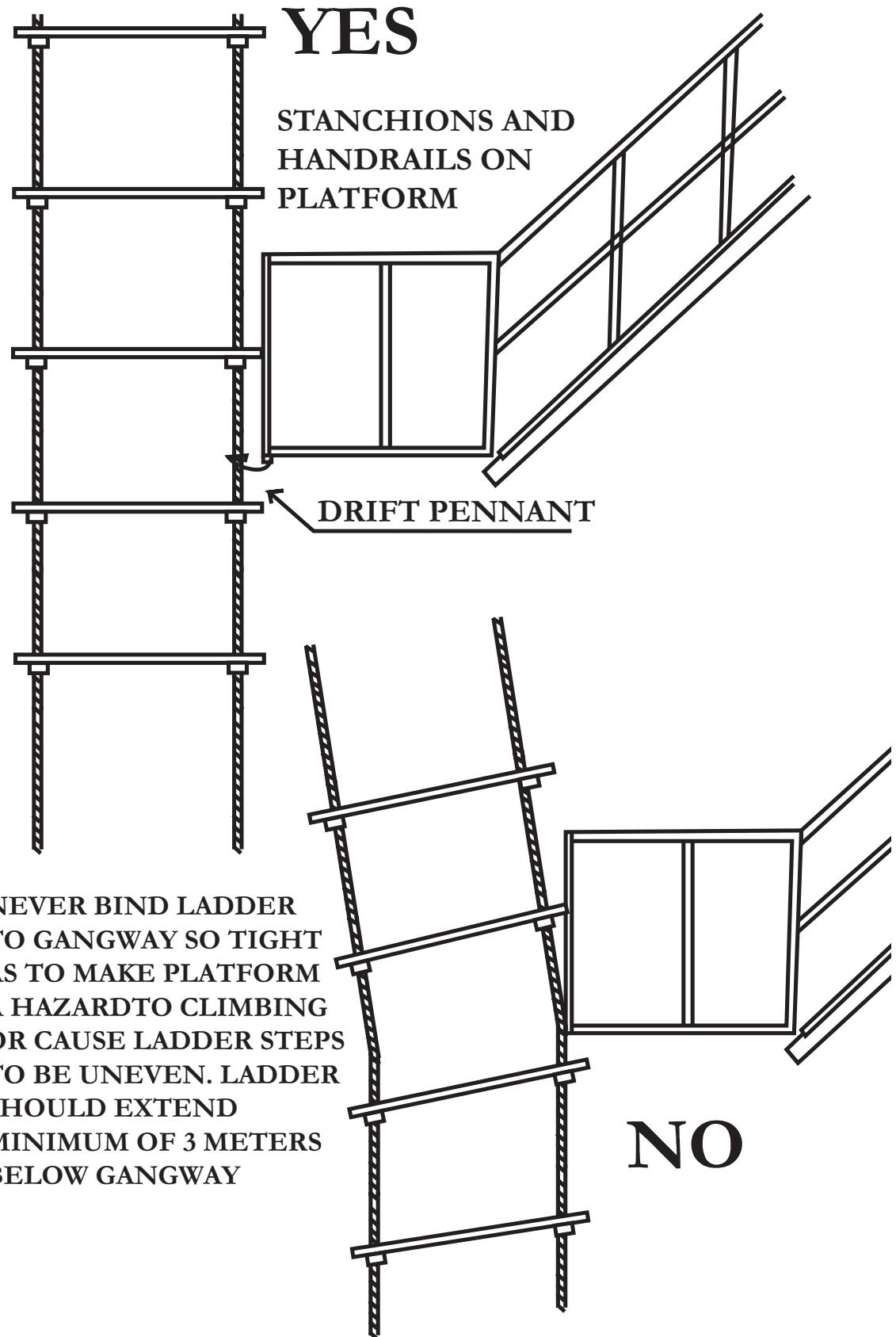
# Pilot Ladder Requirements



## Requirements:

- 1 - Rigging of the ladder, along with embarking and disembarking of pilot, must be under the supervision of a licensed officer.
- 2 - The ladder must be made in one length and not consist of two lengths shackled or lashed together, and should be equipped with spreaders about 10 feet (3m) apart.
- 3 - The area of the deck where the pilot boards must be well lighted and must be clear of obstructions to ensure a safe passage for the pilot.
- 4 - Trailing lines or retrieving lines should not be attached to the lower ends of the ladder.
- 5 - Ladders must be rigged well clear of water and discharge outlets and at a place near midship.
- 6 - Vessels must comply with the new SOLAS Chapter V regulations.
- 7 - Rig the ladder 1.5 meters above the water. A heaving line must be available.

# Pilot Ladder Requirements



# Useful Telephone Numbers

## Pilots

## Tug Companies

Moran Towing (VHF Ch. 7A).....	(203) 442-2825
McAllister Towing and Transportation (VHF Ch. 10).....	(718) 273-6300
Hornbeck Offshore .....	(718) 625-0743
Reinauer (VHF Ch. 80A).....	(718) 816-8167
Bouchard Transportation (VHF Ch. 10).....	(631) 390-4900
Henry Marine Services (VHF Ch. 74).....	(718) 966-6193
Weeks Marine.....	(908) 272-4010
Harley Marine Services (VHF Ch. 79A).....	(718) 875-7000
Kirby Marine (VHF Ch. 18A).....	(718) 720-7207

## Launch Services

Miller's Launch ..... (718) 727-7303  
Reynold's Launch..... (718) 981-2804

## United States Coast Guard

Vessel Traffic Service (VTS) ..... (718) 354-4088  
VTS Fax ..... (718) 354-4096  
First USCG District Bridges ..... (212) 668-7021

## **Regulatory/Governmental**

NYPD Harbor Unit ..... (718) 765-4100  
National Weather Service ..... (516) 924-0517  
Physical, Oceanographic Real Time System (PORTS) ..... (718) 815-9668

# US Army Corp of Engineers

To report dangerous debris ..... (201) 333-1170

## Linehandlers

Bayonne Line Boat Service .....(201) 436-8109

## **Bridge Phone Numbers**

Lehigh Valley RR Bridge .....	(973) 690-2344
Lincoln Highway .....	(973) 589-5143
Path Control .....	(201) 216-6552
Triple Bridges .....	(973) 690-2609
Witt Penn Bridge .....	(201) 795-0631
Lower Hackensack Bridge .....	(201) 714-2958
Lower Hack Bridge Superintendent .....	(973) 879-2967
Raritan River Railroad Bridge .....	(973) 690-2344

## **Useful Websites**

USCG Sector NY.....	<a href="http://homeport.uscg.mil/newyork">http://homeport.uscg.mil/newyork</a>
Port Authority:.....	<a href="http://www.panynj.gov">www.panynj.gov</a>
Notice to Mariners.. <a href="http://navcen.uscg.gov/?pagename=lnmDistrict&amp;region=1">navcen.uscg.gov/?pagename=lnmDistrict&amp;region=1</a>	
NY Marine Weather.....	<a href="http://www.erh.noaa.gov/okx.marine.shtml">www.erh.noaa.gov/okx.marine.shtml</a>

## **Tides and Currents**

PORTS.....	<a href="http://tidesandcurrents.noaa.gov/ports/index.shtml?port=ny">tidesandcurrents.noaa.gov/ports/index.shtml?port=ny</a>
Maritime Center.....	<a href="http://hudson.dl.stevens-tech.edu/maritimeforecast/">hudson.dl.stevens-tech.edu/maritimeforecast/</a>

## **Bridge Air Gaps**

Verrazano and Bayonne Bridge:

<http://www.tidesandcurrents.noaa.gov/ports.html>

## **Seaman's Institute**

118 Export St., Newark, NJ 07114  
(973) 589-5828  
[www.seamanschurch.org](http://www.seamanschurch.org)

## **Seafarers and International House**

123 East 15th St., New York, NY 10003  
(212) 677-4800  
[www.sihnyc.org](http://www.sihnyc.org)

# Distances North Way from Ambrose Sea Buoy

## UPPER BAY & HUDSON RIVER

Name	Distance
Verrazano Bridge.....	13.6M
26 Buoy.....	15.5M
off Pier #1 Brooklyn Army Base.....	16.2M
off 35th Street Gowanus .....	17.5M
Bayonne Terminal Dock.....	17.5M
#28 Buoy Abeam .....	17.9M
off Entrance Atlantic Basin .....	19.3M
Channel junction off Battery .....	19.3M
Pier #40 Abeam .....	21.3M
Turn off Bethlehem Steel, Hoboken.....	23.9M
Passenger Ship Terminal.....	24.5M
George Washington Bridge.....	29.4M
Pilot Station, Yonkers Abeam .....	35.1M

### **KILL VAN KULL & ARTHUR KILL**

off IMTT Con Hook.....	17.6M
off Exxon Bayonne.....	18.7M
Howland Hook Container Terminal.....	22.5M
Bayway.....	23.6M
Tremley Point C/S & BP Docks.....	25.5M
Rahway River.....	26.1M
Tuft's Point.....	28.3M

### **NEWARK BAY**

Bergen Point junction.....	21.0M
Port Eliz. Entrance.....	22.9M
Port New'k. Entrance.....	23.7M
Tenaco Newark.....	25.0M
Koppers Koke.....	28.5M

### **Distances South Way from Sandy Hook Scotland Buoy**

S.W. Spit Buoy Junction Chapel Hill .....	07.0M
Leonardo Dock.....	07.5M
Princess Bay.....	15.0M
Beacon #9.....	16.3M
Anaconda Dock Raritan River.....	19.3M
Hess Reserve Raritan River .....	20.0M
Titanium Dock Raritan River .....	21.3M
Perth Amboy Anchorage.....	17.5M
off 6 Buoy Sewarren.....	20.6M
off Beacon 14 Hess Pt. Reading.....	21.7M
Tuft's Point.....	23.0M
Rahway River.....	25.3M
Bayway.....	27.5M

# Principal Bridges in the Port of New York

Dis-tance	Name or Location	Type of Bridge	Horisontal Clearance	Vert Clearance at Mean H.W.
EAST RIVER				
1.2	Brooklyn	Sus.	1350'	38.71M - 127'
1.5	Manhattan	Sus.	1200'	40.84M - 134'
2.5	Williamsburg	Sus.	1536'	40.54M - 133'
5.3	Queensborough	F. West Span	900'	39.93M - 131'
5.6	Roosevelt Island	V. L. E. Chan.	403'	12.19M-30.18M 40'-99' open
7.3	Triborough	Sus.	Unobstructed	42.06M - 138'
7.5	Hell Gate	Sus.	830'	40.84 - 134'
12.4	Whitestone	Sus.	2265'	41.15M - 135'
--	Throgsneck	Sus.	1711'	42.06M - 138'
HUDSON RIVER AND NEW YORK HARBOR				
9.6	Geo. Washington	Sus.	3169'	64.92M - 213' East 59.44M - 195'
11.5	Narrows	Sus.	4000'	60.35M - 198' Mid 2000'
Note: Bridge can flex substantially based upon temperature and load. Clearance observations available at <a href="http://www.tidesandcurrents.noaa.gov/ports/index.shtml?port=ny">http://www.tidesandcurrents.noaa.gov/ports/index.shtml?port=ny</a>				
KILL VAN KULL AND ARTHUR KILL				
3.5	Bayonne	F.	800'	215'- 65.5M
6.2	B. & O. R.R.	V. L.	500'	9.44 - 41.15M - 31' - 135' open
6.3	Goethals	F.	617'	140' - 42.6M
14.6	Outerbridge Crossing	F.	675'	43.59M - 143'
Newark Bay				
3.5	N.J. Turnpike	F.	550'	41.15M - 135'
3.7	Lehigh Valley R.R.	V. L.	300'	10.67 - 41.15M - 35' - 135' open
PASSIC RIVER				
5.2	Conrail	Sw.	100'	7.62M - 25'
5.8	Lincoln Highway	V. L.	300'	12.19 - 41.15M - 35'-135' open
6.0	Pulaski Skyway	F.	520'	41.15 - 135'
6.4	Point No Point	Sw.	103'	4.87M - 16'
6.5	N.J. Turnpike	F.	319'	30.4M - 100'
HACKENSACK RIVER				
5.7	Lincoln Highway	V. L.	200'	10.67 - 41.15M - 35' - 135' open
6.1	Pulaski Skyway	F.	300'	41.15M - 135'
6.8	Penn Passenger	V. L.	168'	12.19 - 41.15M - 40'-135' open
6.8	Penn Freight	V. L.	158'	3.35 - 41.14M - 11' - 135' open
6.8	Route 10 H'way	V. L.	158'	10.67 - 41.15M - 35' - 135' open
7.1	D.L. & W. R. R.	V. L.	150'	12.19 - 41.15M - 40' - 135' open
RARITAN RIVER				
2.6	C.R.R. of N.J.	Sw.	N.S. 124'	2.43M - 8'
			S.S. 125'	
2.6	Victory Bridge	Sw.	140'	8.53M - 28'
4.0	Thomas Edison	F.	200'	41.15M - 135'
	Garden State Pkwy.	F.	200'	41.15M - 135'

SYMBOLS: F - FIXED / SUS. - SUSPENSION / SW - SWING / V.L. - VERTICAL LIFT

\*\*(TRAVELING PLATFORM REDUCED CLEARANCE BY 15 FEET)

## SPECIAL NOTATION

Vessels navigating in the Vicinity of Rikers Island with a mast height of over 125 ft. should use caution when crossing La Guardia Airport flight approaches. # 718-779-1220/nite 718-779-7901.

This is a listing of the various marine terminals, bridges and landmarks in relationship to each other, which a vessel will pass in transiting the East River. The mileage given is the distance for west-bound vessels from Execution Rocks to the Battery and for east-bound vessels from the Battery to Execution Rocks.

Vessels navigating in the vicinity of Rikers Island with a mast height of over 125' should use caution when crossing LaGuardia Airport flight approaches.

West Bound Mileage	LONG ISLAND SOUND	Vertical Clearance	Width	East Bound Mileage
00.0	Execution Rocks - Sands Point			20.0
03.3	City Island -Stepping Stones LT - Kings Pt.			16.7
05.5	Throgs Neck Bridge - Fort Schuyler	138'	1711'	14.5
07.2	Bronx Whitestone Bridge	135'	2265'	12.8
09.2	Hunts Pt. - LaGuardia Airport			10.8
11.0	Castle Oil & Orion Power - Astoria			11.0
10.1	Oak Pt. - Castle Oil Bronx Tiffany St.			09.9
10.5	149th St., Cirillo Bros.- Cibro			09.5
10.7	138th St., Metropolitan Oil			09.3
11.8	Wards Island Sewer Treatment Plant			08.2
12.0	Hell Gate Railroad Bridge	134'	830'	08.0
12.3	Triborough Bridge	138'	Unlimited	07.7
12.7	Hell Gate - Harlem Riv - Mill Rk. - Hallets Pt.			07.3
14.3	Queensborough (59th St.) Bridge	131'	900'	05.7
15.9	National Concrete, Long Island City			04.6
16.3	Pepsi Cola, Long Island			05.0
16.1	Green St. Lumber Term., Green Point			03.9
16.9	Nepco Oil Terminal, North 1st St.			03.1
17.1	Amstar Sugar House, South 2nd St.			02.9
17.3	Williamsburg Bridge	133'	1536'	02.7
17.7	Brooklyn Navy Yard			02.3
18.0	Con Edison, Hudson Ave.			02.0
18.1	Piers 42 & 36, East River			01.9
18.4	Manhattan Bridge	134'	1200'	01.6
18.7	Brooklyn Bridge	127'	1350'	01.3
18.9	Piers 1 to 5, Brooklyn			01.1
20.0	BATTERY			00.0

## East River and Long Island Sound Distance from Junction off Battery

<b>Location</b>	<b>Distance</b>	<b>Location</b>	<b>Distance</b>
Bkly'n Navy Yard.....	02.6	Northport.....	42.0
Poor House Flats.....	3.75	Bridgeport Entrance Buoys.....	49.7
Pepsi Cola L. I. C.....	05.2	Port Jefferson Sea Buoy.....	52.8
Hell Gate.....	07.5	New Haven Sea Buoy.....	65.3
Oak Point.....	10.0	Northville.....	72.0
Throgs Neck.....	15.0	New London Entrance Buoys...	101.7
City Island.....	17.5	Montauk Channel.....	116.0
Execution Rocks.....	20.4	Point Judith.....	127.0

### Times of High & Low Water Off Battery

	<b>H.W.</b>	<b>L.W.</b>	<b>Mean</b>	<b>Spring</b>
Battery	0:00	0:00	4.5	5.4
Bklyn. Navy Yard	+0:50	+0:35	4.1	4.9
Hell Gate - Hallets Pt.	+2:00	+2:04	5.1	6.1
Port Morris - Stoney Pt.	+3:23	+3:46	6.3	7.4
Hunts Point	+3:18	+3:45	6.9	8.1
Willets Point	+3:10	+3:30	7.1	8.3
Execution Rocks	+3:04	+3:22	7.3	8.6
Bridgeport	+2:52	+2:50	6.7	7.7
Port Jefferson	+2:58	+2:53	6.6	7.6
New Haven (City Dock)	+2:54	+2:47	6.0	6.9
New London (State Pier)	+1:09	+1:15	2.6	3.1

### Times of High & Low Water Slack Off Narrows

	<b>H.W.</b>	<b>L.W.</b>	<b>Mean</b>	<b>Spring</b>
Narrows	0:00	0:00	1.7	2.0
Hell Gate	+0:16	- 0:17	3.4	4.6
Throgs Neck	+0:02	- 1:24	0.6	0.8
The Race	+1:55	+1:30	2.9	3.5

# Hudson River Drafts

Maximum Air Draft - 132'

## Upper Hudson River North of Kingston

Maximum Draft - 30' (Fresh Water Draft)

Vessels transiting the Upper Hudson River with drafts of 27' to 30' must be set up for the correct stage of a rising tide. Daylight transits only north of Kingston.

## Lower Hudson River South of Kingston

Maximum Draft- 33' (Salt Water Draft)

Vessels transiting the Lower Hudson River with drafts of 31 ' to 33' must be set up for the correct stage of a rising tide. Daylight transits only north of Kingston.

Vessels with a draft of 31' or less may transit the Lower River any time.

All vessel draft information is subject to existing weather conditions at the time of transit.

Please call our Dispatchers for assistance in setting Hudson River transits or with any other questions.

Hudson River Pilots - 718-815-4316.

[www.HudsonRiverPilots.com](http://www.HudsonRiverPilots.com)

---

## Distance From Junction off Battery to Locations on the Hudson River

---

Location	Distances	Location	Distances
Yonkers	15.5	Hess Roseton	55.5
Hastings	18.5	Milton	64.0
Irvington	21.5	Poughkeepsie	65.5
Grassy Pt.	33.0	Kingston	78.5
Tompkins Cove	35.5	Saugerties	86.5
Peekskill	38.0	Hudson	100
Texaco Newburgh	52.5	Albany & Rensselaer	124

**Distances from New York  
to Points on the Hudson River**

<b>Location</b>	<b>Nautical</b>	<b>Statute</b>
	<b>Miles</b>	<b>Miles</b>
Yonkers	15.5	18.0
Tarrytown and Nyack	24.0	27.5
Ossining	28.5	32.5
Haverstraw	32.5	37.0
Stony Point	35.0	40.0
Peekskill	38.0	43.5
West Point	45.0	52.0
Cold Spring	47.0	54.0
Cornwall	49.5	57.0
Hyde Park to Albany	52.0	
Newburgh and Fishkill	52.5	60.5
Yonkers to Hyde Park	56.0	
Poughkeepsie	65.5	75.5
Kingston	78.5	90.5
Saugerties	86.5	99.5
Catskill	96.0	110.5
Hudson and Athens	100.0	115.0
Coxsackie	105.5	121.5
Stuyvesant	108.0	124.0
New Baltimore	111.5	128.5
Coeymans	113.0	130.0
Castleton	116.5	134.0
Albany & Rensselaer	124.0	142.5
Troy & Watervliet	129.5	149.0
Troy Lock	131.0	151.0

**Note: Distances are measured to and between  
points in midchannel abreast the various towns.**

# **SQUAT**

$$S(\text{FEET}) = C_b \times \frac{V^2}{30}$$

**S** = SINKAGE IN FEET  
**C<sub>b</sub>** = BLOCK COEFFICIENT  
**V** = SPEED IN KNOTS

In Shallow / Confined Waters Sinkage - 2 x S

## **INCREASE IN DRAFT DUE TO PITCH (IN FEET)**

<b>Length</b>	<b>0.5°</b>	<b>1.0°</b>	<b>2.0°</b>
500'	2.18	4.36	8.72
600'	2.62	5.23	10.46
700'	3.05	6.10	12.21
800'	3.49	6.98	13.96
900'	3.92	7.85	15.70
1000'	4.36	8.73	17.45

Table assumes tipping center is at mid-point

## **INCREASE IN DRAFT DUE TO HEEL (IN FEET) (BEAM/2 X Sine of Angle)**

<b>Beam</b>	<b>5°</b>	<b>10°</b>
40'	1.74	3.47
60'	2.61	5.21
80'	3.48	6.95
100'	4.35	8.68
150'	6.54	13.02
200'	8.72	17.36

# BLOCK SQUAT IN FEET

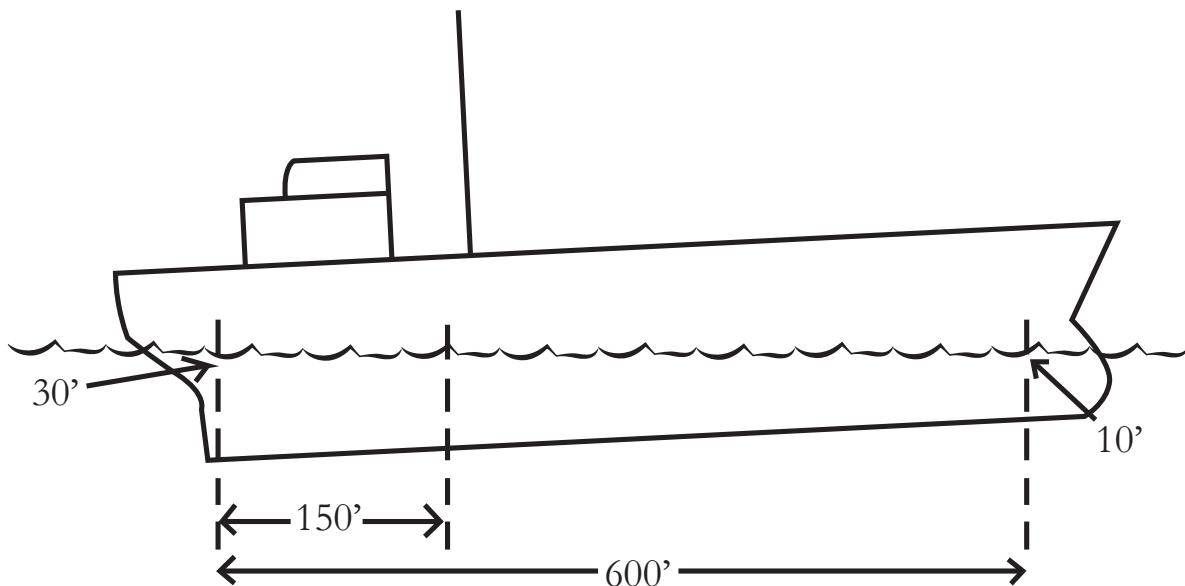
CO - EF	5k.	6k.	7k.	8k.	9k.	10k.	11k.	12k.	13k.	14k.	15k.
0.50	0.8	1.2	1.6	2.1	2.7	3.3	4.0	4.7	5.5	6.4	7.4
0.55	0.9	1.3	1.8	2.3	2.9	3.6	4.4	5.2	6.1	7.1	8.1
0.60	1.0	1.4	1.9	2.5	3.2	3.9	4.8	5.7	6.7	7.7	8.9
0.65	1.1	1.5	2.1	2.7	3.5	4.3	5.2	6.1	7.2	8.4	9.6
0.70	1.1	1.7	2.3	2.9	3.7	4.6	5.6	6.6	7.8	9.0	10.3
0.75	1.2	1.8	2.4	3.1	4.0	4.9	6.0	7.1	8.3	9.6	11.1
0.80	1.3	1.9	2.6	3.4	4.3	5.2	6.4	7.6	8.9	10.3	11.8
0.85	1.4	2.0	2.7	3.6	4.5	5.6	6.7	8.0	9.4	10.9	12.5
0.90	1.5	2.1	2.9	3.8	4.8	5.9	7.1	8.5	10.0	11.6	13.3
0.95	1.6	2.2	3.1	4.0	5.0	6.2	7.5	9.0	10.5	12.2	14.0
1.00	1.6	2.4	3.2	4.2	5.3	6.6	7.9	9.4	11.1	12.9	14.8

## Determining the Air Draft of a Ship Not on Even Keel

HEIGHT OF THE MAST is the distance from the keel to the top of the mast.

AIR DRAFT is the distance from the waterline to the top of the mast.

To determine the air draft of a ship not on even keel take the difference in draft fore and aft, DIVIDE by the Length Between Perpendiculars, TIMES the Distance from the deepest perpendicular to the mast. This is the increase in Air Draft above that determined by subtracting the deepest draft from the height of the mast.



$$\frac{20}{600} \times \frac{150}{1} = 5$$

---

**OR**

---

$$30 - 10 = 20$$

$$(20 / 600) \times 150 = 5 \text{ FEET}$$

Actual air draft is 5 feet more than if using deepest draft



## Principal Light and Fog Signals in the Port of New York

Name	Light	Fog Signal
Scotland Lighted.....	Morse "A".....	1 Bl. ev. 30 sec.
Horn Buoy S.....		Racon Signal M.
Sandy Hook Pt. Lt.....	Iso., W. 6 sec.....	1 Str. ev. 10 sec.
Sandy Hook Lt.....	FW	
Romer Shoal Lt.....	Fl. (2) W. 15 sec.....	1 Bl. ev. 15 sec.
	Emerg. Lt. - Fl. W. 6 sec.	
	when main Lt. exting.	
West Bank Front Lt.....	Iso., W. sector, 6 sec.....	2 Bl. ev. 20 sec.
Coney Island Lt.....	Fl. R. 5 sec	
Verrazano Narrows Br .....		1 Bl. ev. 15 sec.
Robbins Reef Lt.....	Fl. G. 6 sec .....	1 Bl. ev. 10 sec.
Gov. Is. Ext. Lt.....	FR.....	1 Bl. ev. 15 sec.
Gov. Is. Lt.....	2 FR.....	2 Bl. ev. 20 sec.
Outerbridge Crossing.....		1 Bl. ev. 15 sec.
Hell Gate Lt. 15.....	Fl. G. 2.5 sec	
N. Brothers Is. N. Lt. 9.....	Fl. G. 4 sec	
Whitestone Pt. Lt. 1.....	F. G.	
Throgs Neck Lt.....	F. R	
Throgs Neck Bridge.....		2 Bl. ev. 20 sec.
Stepping Stones Lt.....	Oc. G. 4 sec.....	1 Bl. ev. 15 sec.
Hart Island Lt. 46.....	Fl. R. 4 sec	
Execution Rock Lt.....	Fl. W. 10 sec.....	1 Bl. ev.15 sec.

## **Ranges and Bearings in the Port New York / New Jersey**

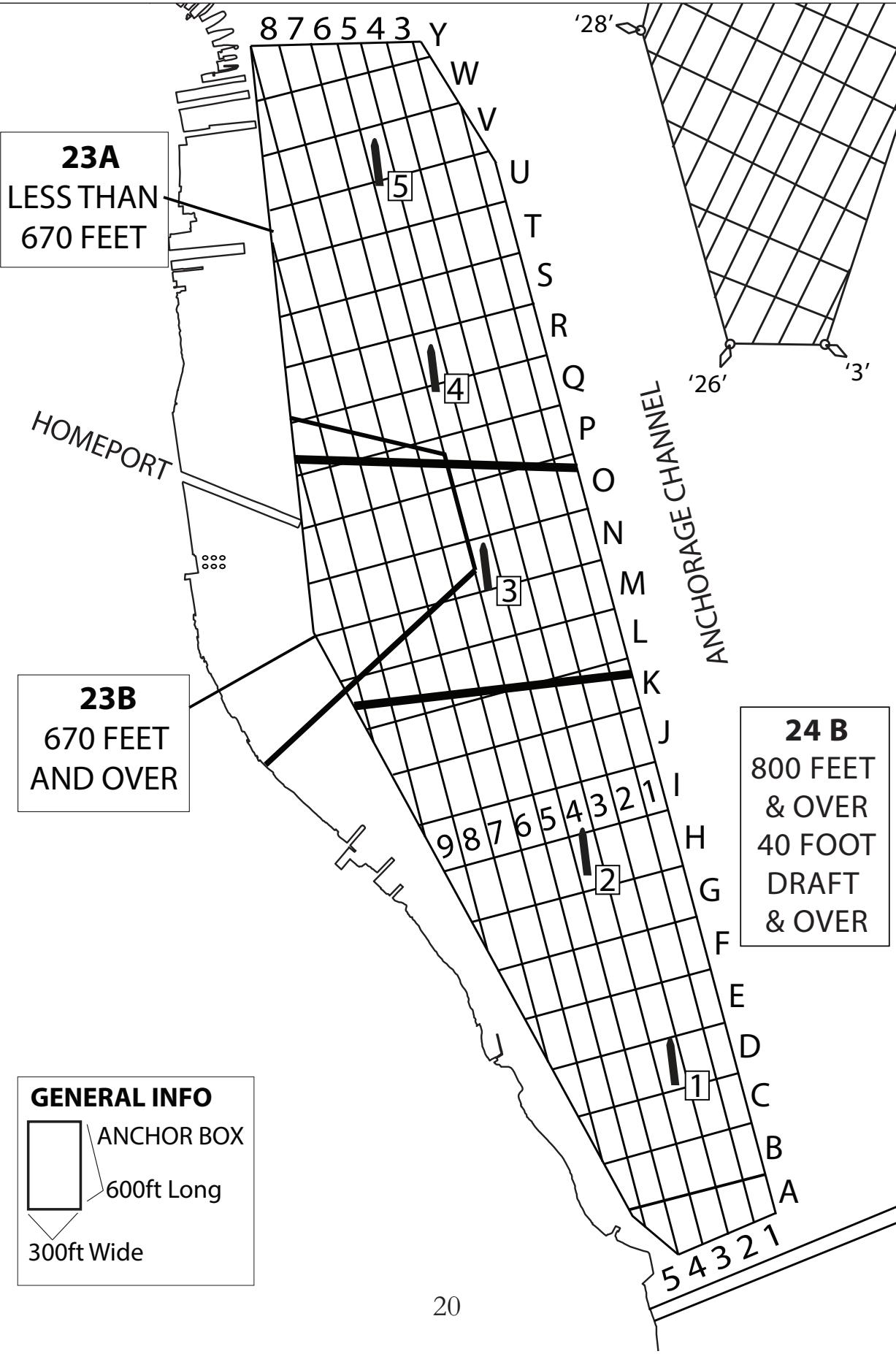
<b>Range</b>	<b>Bearing</b>
Poorhouse Flats Range.....	341.0
Buttermilk.....	069.0
Romer with Main Hook.....	170.5
Ambrose Channel.....	297.0
Swash Channel.....	305.0
Leonardo Range.....	207.5
Constable Hook.....	290.0
Pralls Island.....	185.0
Outerbridge Reach.....	351.5
Sandy Hook Channel (East).....	308.0
Sandy Hook (West).....	067.5

## **RACON Buoys in the Port of New York / New Jersey**

Ambrose Lighted Whistle Buoy A:	—●
Scotland Light Whistle Buoy S:	---
Sandy Hook Channel Front Range Light:	—●—●
KVK Channel Junction LWB KV:	—●—
Center of Outerbridge Crossing:	----

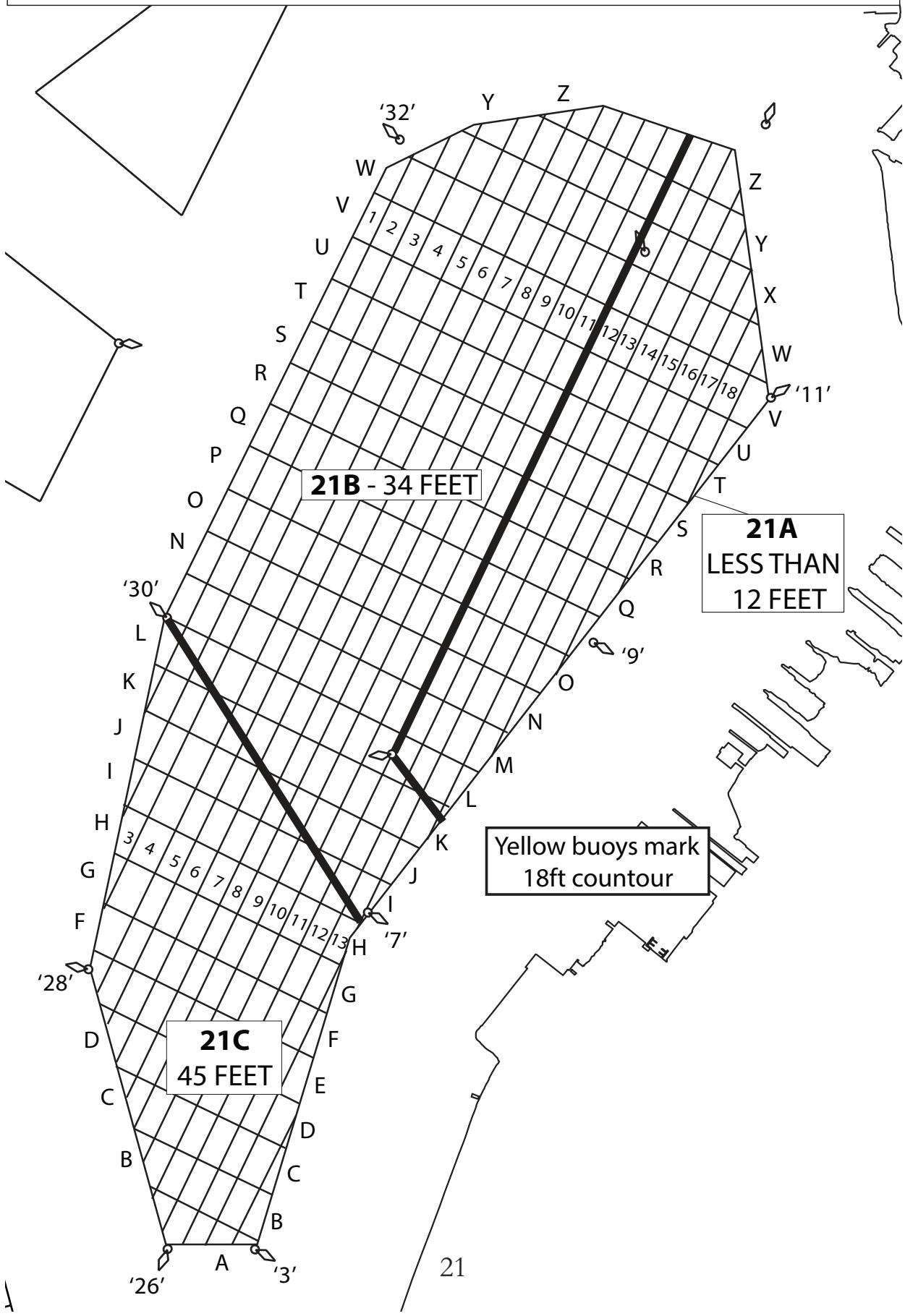
# STAPLETON ANCHORAGE

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12334



# BAY RIDGE FLATS ANCHORAGE

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12334

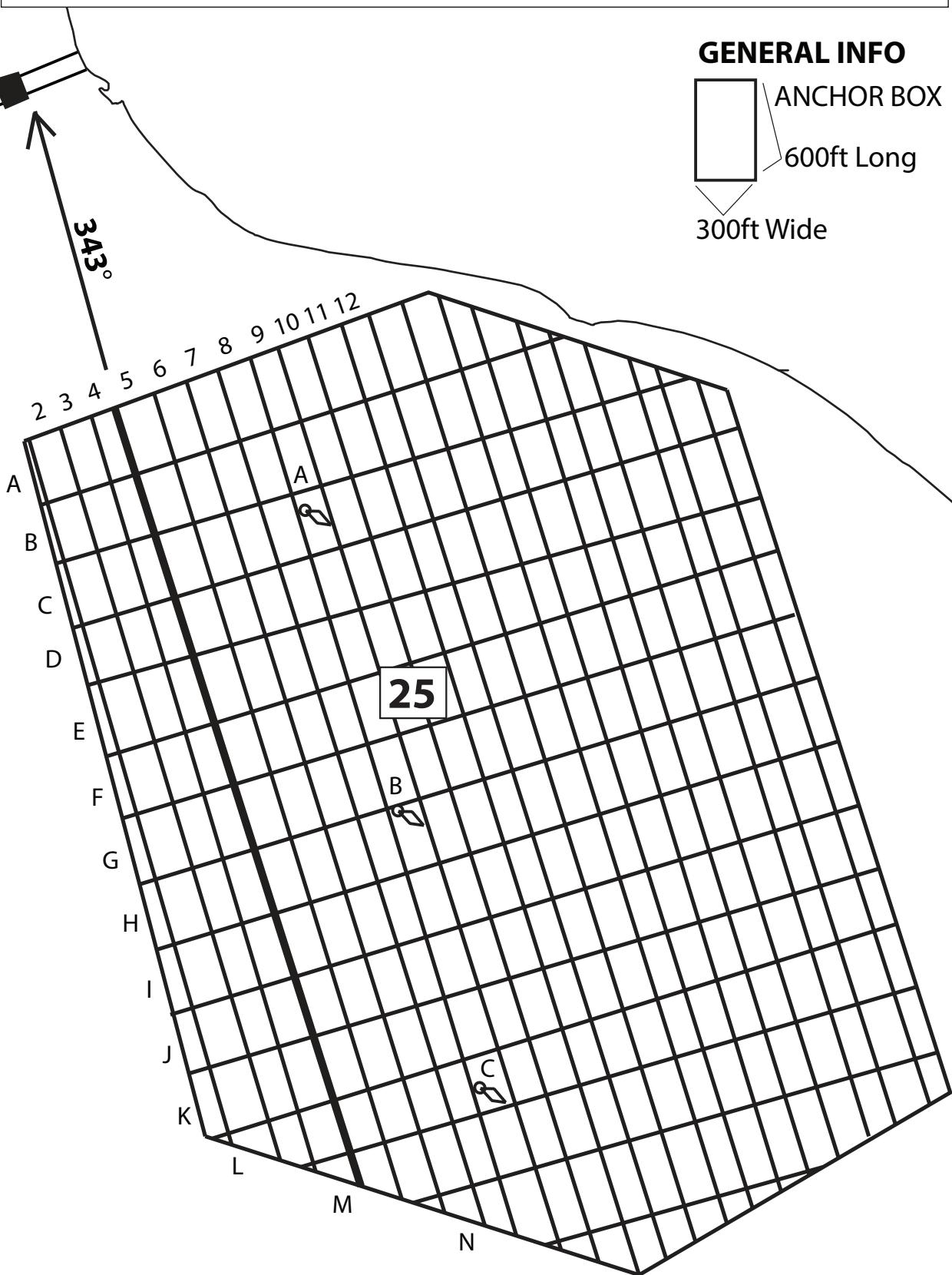
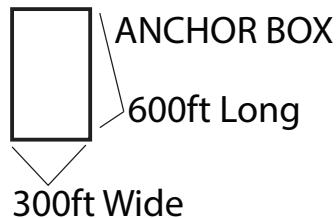


# GRAVESEND BAY ANCHORAGE

NOT FOR NAVIGATIONAL USE - PLEASE REFRENCE NOAA CHART 12402



## GENERAL INFO



## **Anchorages**

<b>Number</b>	<b>Locations</b>
19	Hudson River Naval Anchorage
20 - A	Liberty
20 - B	North Side Bayonne Naval Terminal
21 - B	Red Hook Flats
23	Staten Island
24	Quarantine
25	Gravesend Bay (Eastern Part)
27	Sandy Hook
44	Perth Amboy
49 - C	Gravesend Bay (Western Part)
49 - G	Leonardo

## **Anchorages Regulations**

WHEN ANCHORED IN FEDERAL ANCHORAGE 20-A  
THROUGH 20-G, 21-A, 21-B, 21-C, 23-A AND 23-B, 24  
OR 25 MUST COMPLY WITH THE FOLLOWING  
REQUIREMENTS:

- MAINTAIN A BRIDGE WATCH.
- GUARD AND ANSWER CHANNEL 16 FM AND  
MAINTAIN AN ACCURATE POSITION PLOT.
- NOTIFY THE COAST GUARD ON CHANNEL 12 WHEN  
COMMENCING AND COMPLETING THE  
TRANSFERRING OF PETROLEUM PRODUCTS.
- NOTIFY THE COAST GUARD ON CHANNEL 12 WHEN  
ANCHORED AND WHEN LEAVING THE ANCHORAGE.

# UPPERBAY - WEST PART



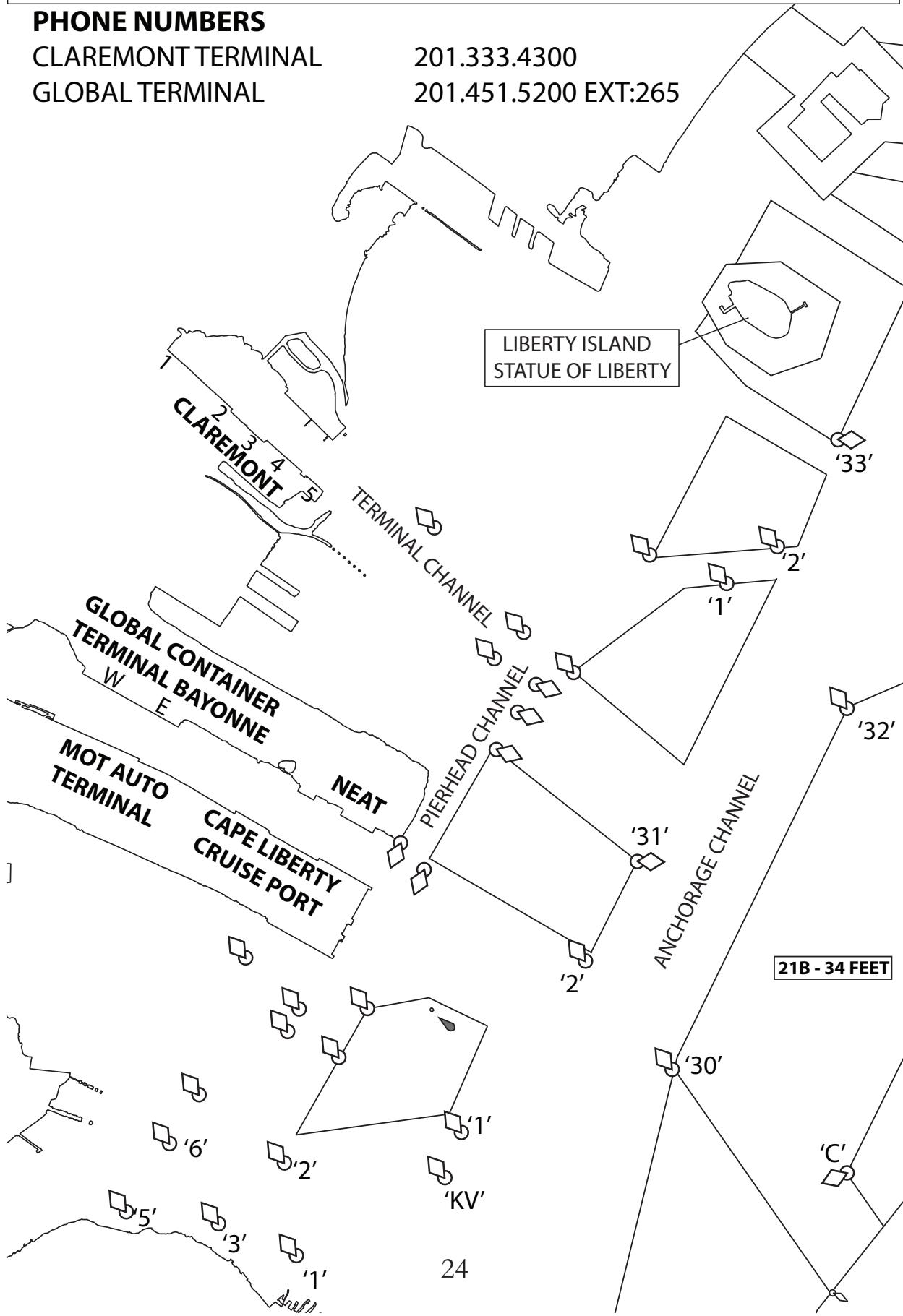
NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12334

## PHONE NUMBERS

CLAREMONT TERMINAL  
GLOBAL TERMINAL

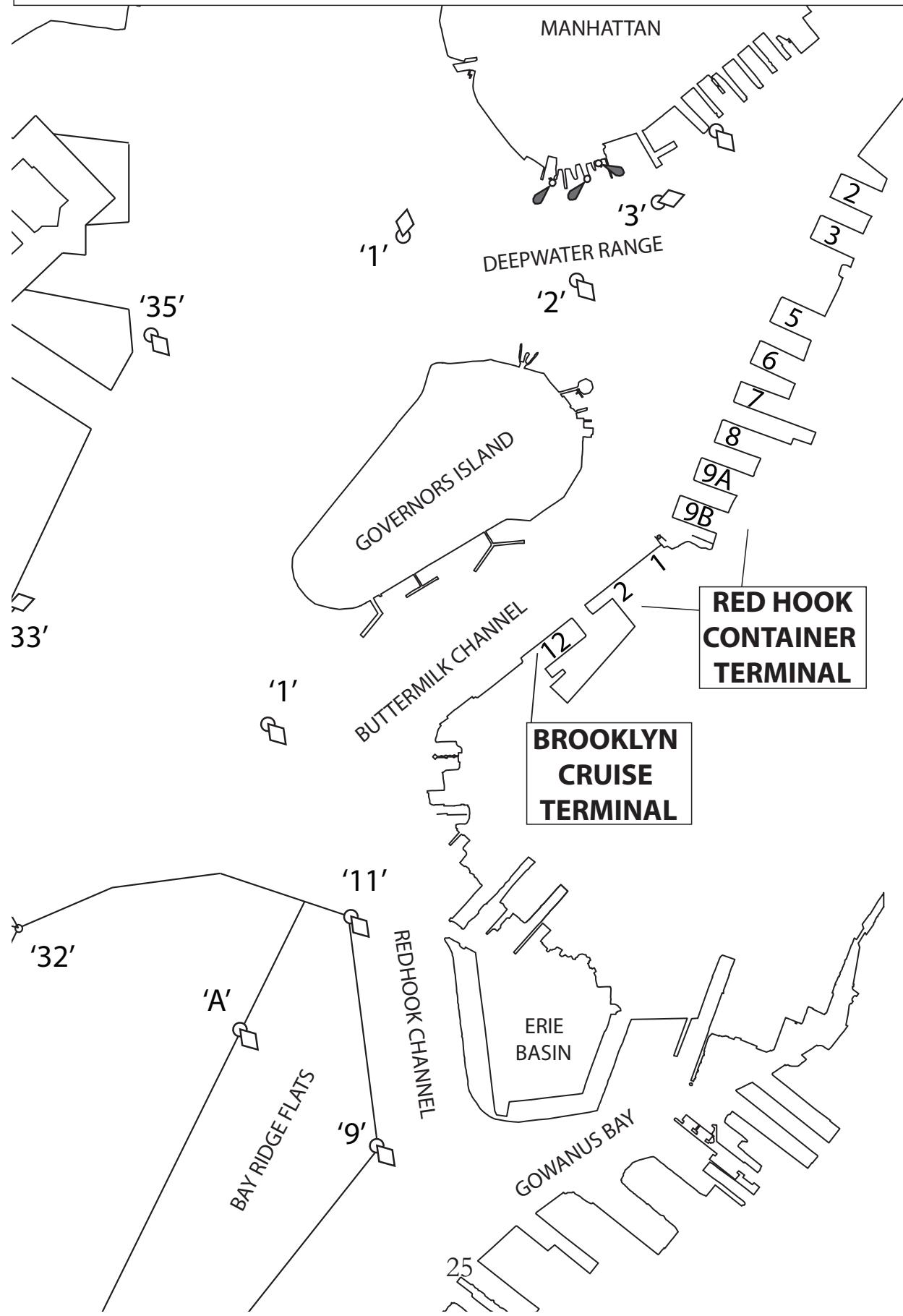
201.333.4300

201.451.5200 EXT:265



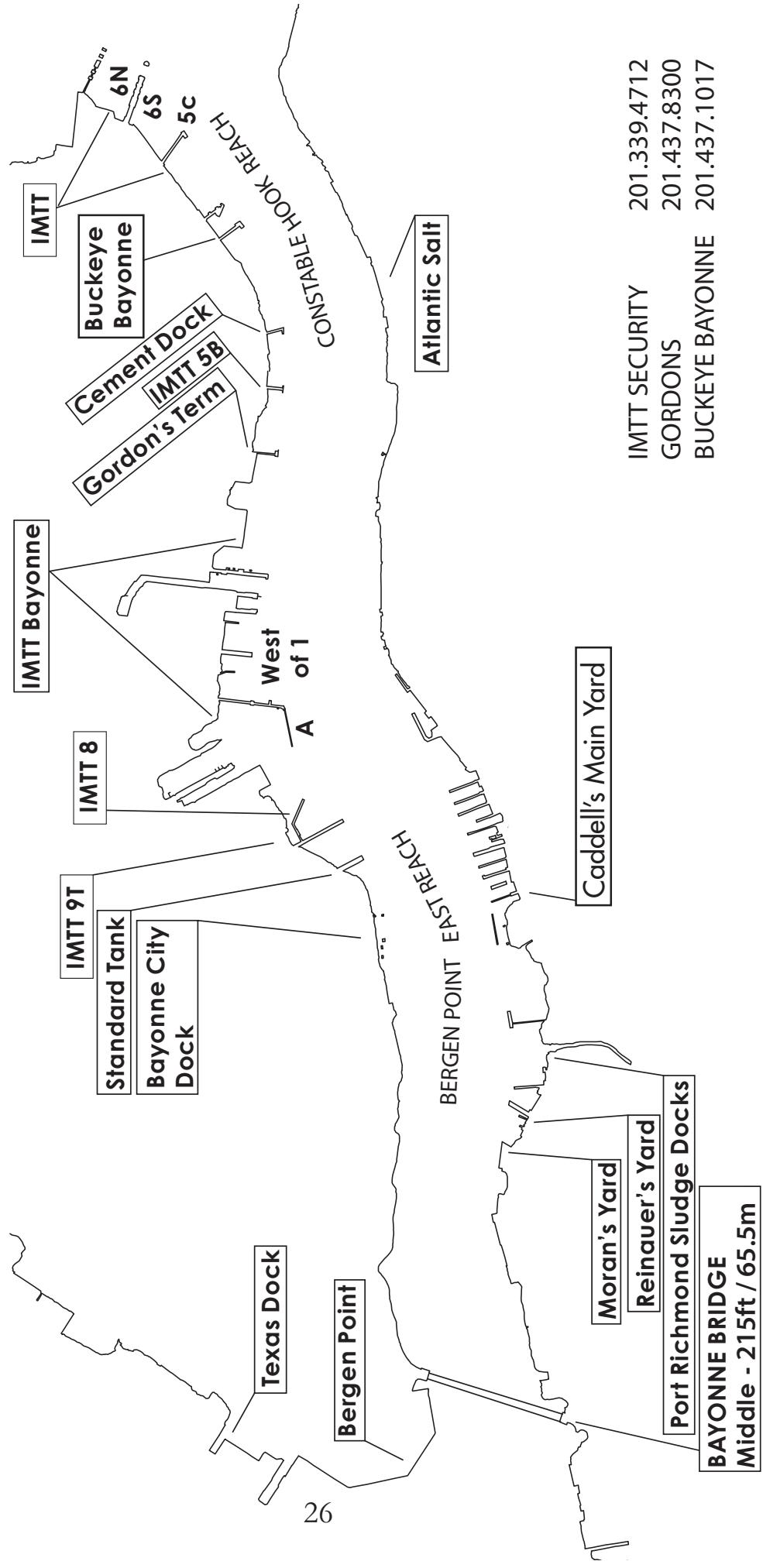
# UPPERBAY - EAST PART

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12334



# KILL VAN KULL

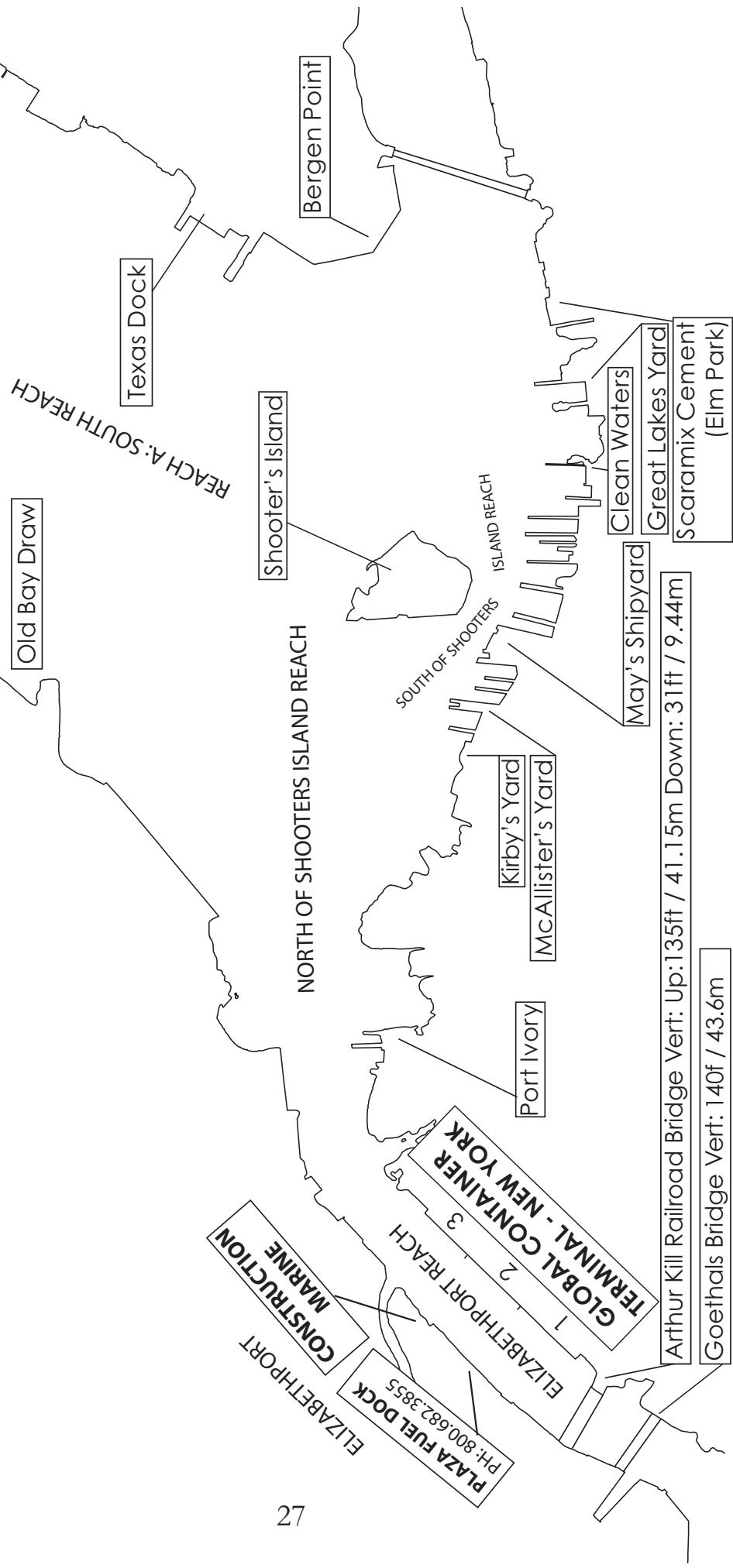
NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12333



IMTT SECURITY 201.339.4712  
GORDONS 201.437.8300  
BUCKEYE BAYONNE 201.437.1017

# NORTHERN PART OF ARTHUR KILL

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12333

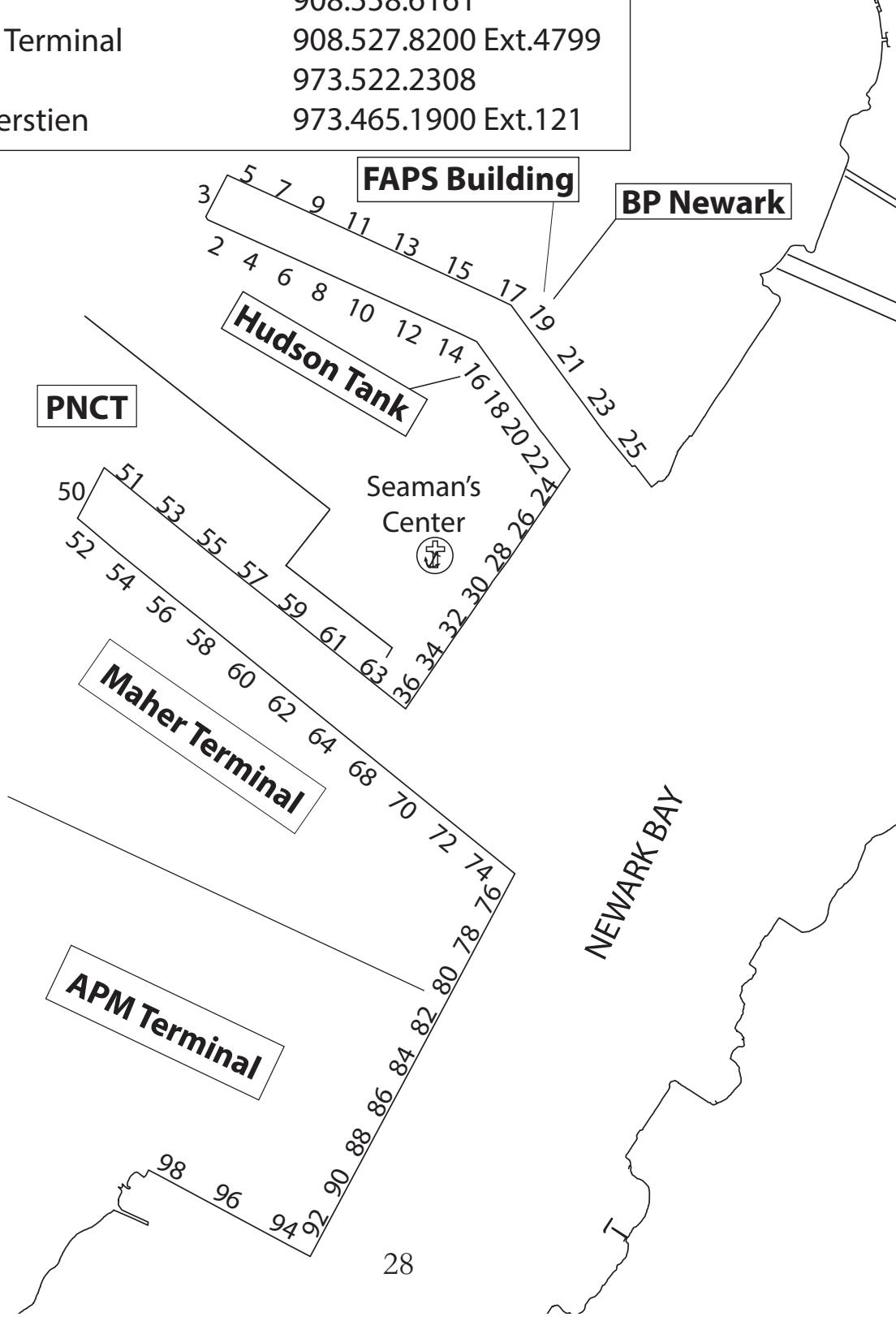


# NEWARK BAY

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12333



Hudson Tank	201.803.1166
APM Terminal S/L Bus	908.558.6138
APM Terminal S/L Security	908.558.6163
	908.558.6161
Maher Terminal	908.527.8200 Ext.4799
PNCT	973.522.2308
Van Iderstien	973.465.1900 Ext.121



# PASSAIC & HACKENSACK RIVERS

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12337



Witt Penn Bridge  
Ph: 201.795.0631

Triple Bridges  
H: 158ft  
V: 7 - 135ft / 2.13 - 41.5M  
Ph: 973.690.2609

Penn Pass. - Path Control  
H: 168ft  
V: 40 - 135ft / 12.19 - 41.15M  
Ph: 201.216.6552

Pulaski Highway  
H: 300ft  
V: 135ft / 41.15M

Lower Hack  
H:150ft / V40ft-135ft  
Ph: 201.714.2958

Lincoln Highway  
H:200ft / V: 35ft-135ft  
ph: 201.332.2779  
973.589.5143

DEP Dock

Van Iderstien / Darling Int'l  
Ph: 973.465.1900x121

Lehigh Valley RR - H300ft  
V:35 - 135ft / 10.67 - 41.15M  
PH: 973.690.2344

NJ Turnpike - H:550ft  
- V:135ft / 41.15M

19  
21  
23  
25  
16  
18  
20  
22  
24  
32  
30  
26  
28

72  
74

# ARTHUR KILL NORTH

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12333



**PHILLIPS 66 TERMINAL**  
PH: 908.523.6385/5000

**BAYWAY BARGE DOCK**

**LINDEN POWERHOUSE**

**GRASSELLI TERMINAL**

**GULFPORT RACKS**

**GRASSELLI HIGHWIRES**  
165ft AT MAIN CHAN

**NuSTAR LINDEN**  
PH: 908.862.5740

**CITGO LINDEN**  
Dock: 908.523.2309  
OPS: 908.523.2316

**TREMLEY POINT**

**TREMLEY POINT REACH**

**PRALLS ISLAND REACH**

**PRALLS ISL**

'38'

'36'

'34'

'32'

'30'

'24'

**VISY PAPER PLANT**

**KMI CARTERET**  
Ph: 732.541.5161

**FRESH KILLS REACH**

**ISL OF MEADOWS**

**CEDER POINT**  
30

# ARTHUR KILL SOUTH

NOT FOR NAVIGATIONAL USE - PLEASE REFERENCE NOAA CHART 12331



**BUCKEYE PORT READING**  
PH: 732.692.5265

**MOTIVA SEA WARREN**  
Security: 732.855.3397  
Pump: 732.855.3267

**BUCKEYE  
PERTH AMBOY**  
PH: 732.738.2000

**KMI OUTERBRIDGE**  
PH: 732.826.1456

**KMI STATEN ISLAND**  
PH: 718.966.2002

**OUTERBRIDGE CROSSING**  
V: 143ft / 43.59M

**FERRY  
POINT**

WARD POINT BEND (WEST)

**WARD  
POINT**

# NORTH RIVER

NOT FOR NAVIGATIONAL USE - PLEASE REFRENCE NOAA CHART 12335



## LINCOLN HARBOR YACHT CLUB

VHF CH 74 & 9 - PH: 201.309.5100

Weehawken Cove

Castle Point

Lackawanna Canal

## NEWPORT MARINA

VHF CH 16  
PH: 201.626.5550

Morris Canal Basin

LIBERTY LANDING  
MARINA  
VHF 72  
PH: 201.985.8000

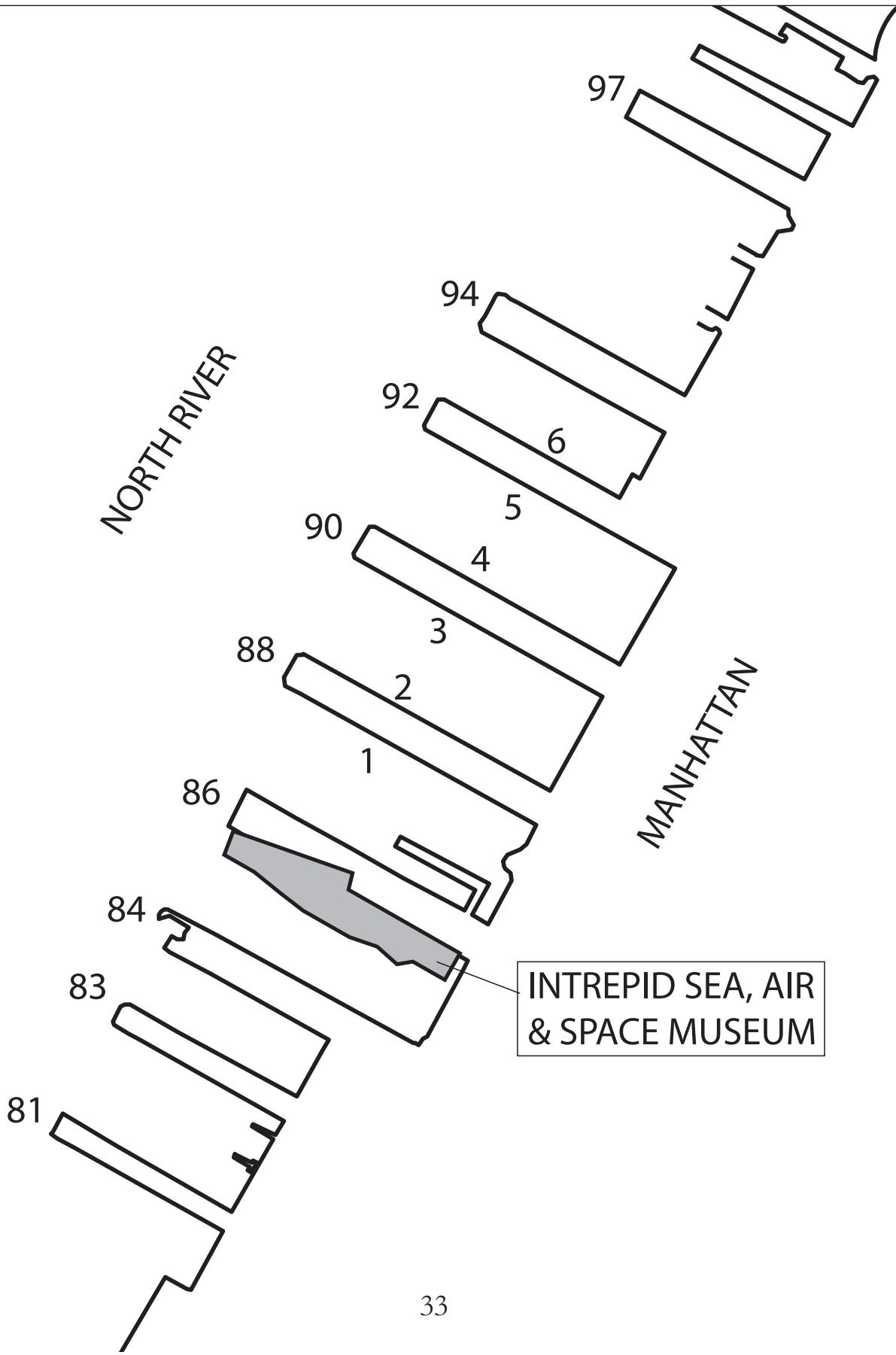
## NORTH COVE MARINA

VHF CH 69 - PH: 212.786.1200

SOUTH COVE MARINA

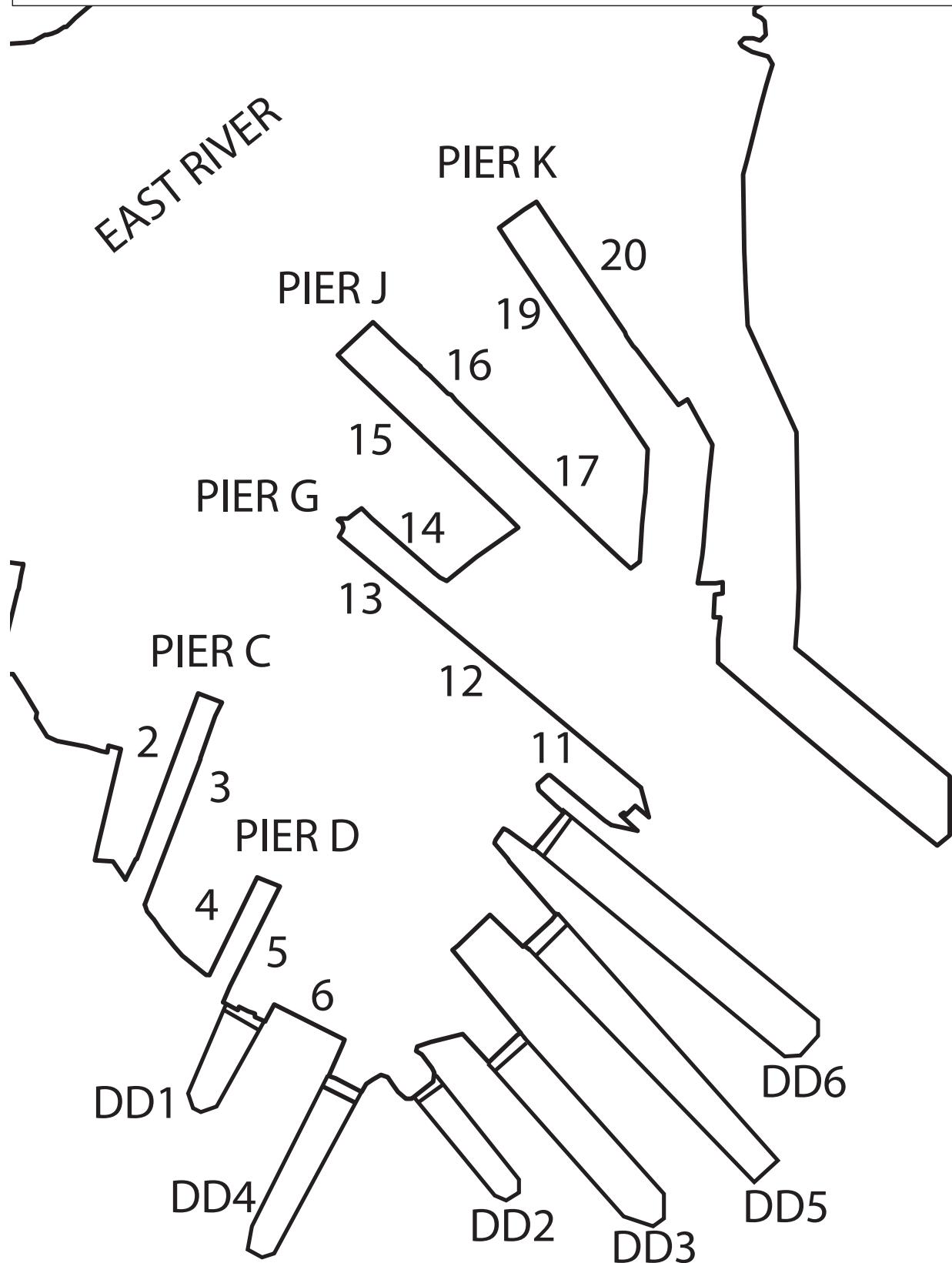
# N. RIV. - PASSENGER TERMINAL

NOT FOR NAVIGATIONAL USE - PLEASE REFRENCE NOAA CHART 12335



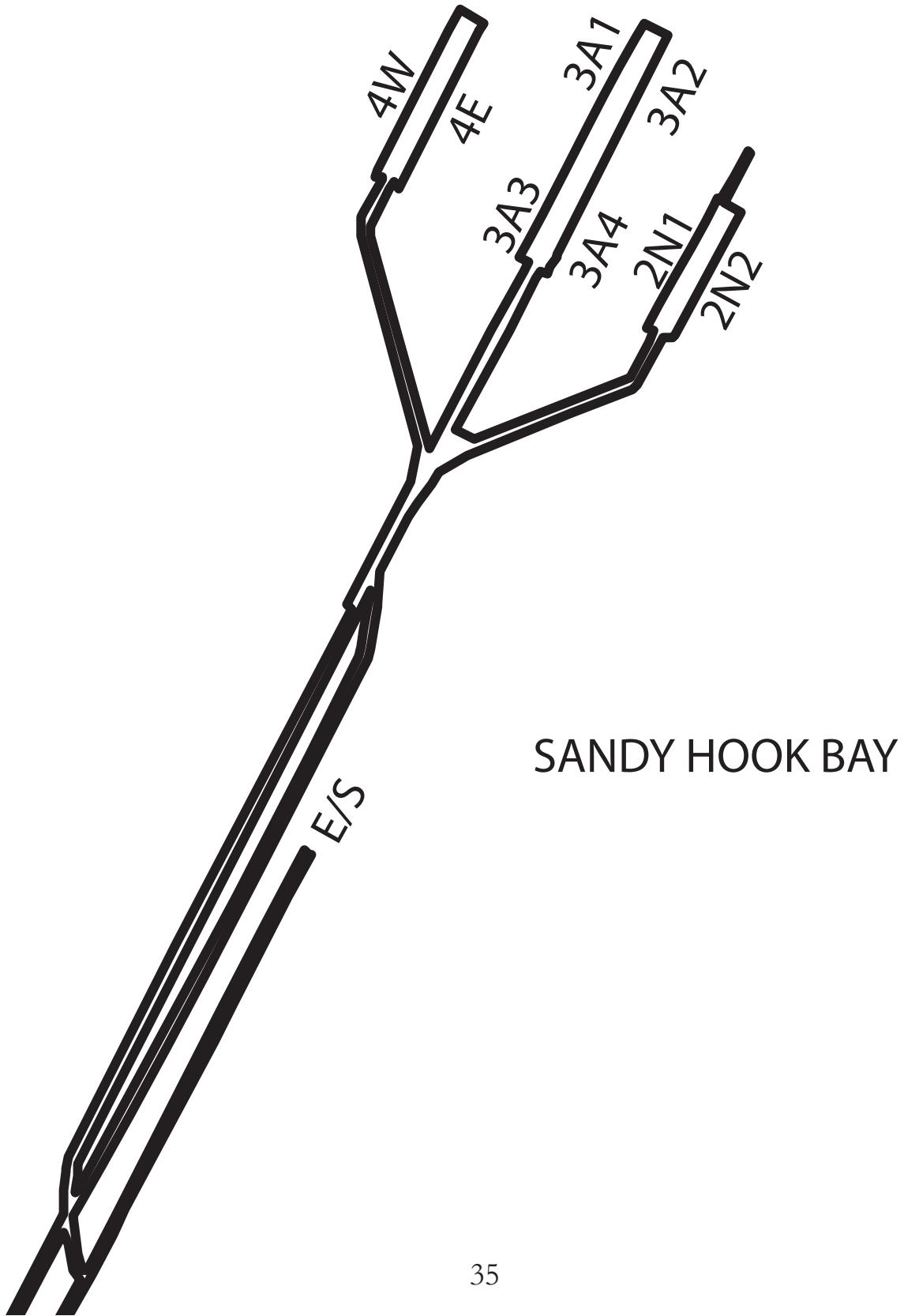
# OLD BROOKLYN NAVY YARD

NOT FOR NAVIGATIONAL USE - PLEASE REFRENCE NOAA CHART 12335



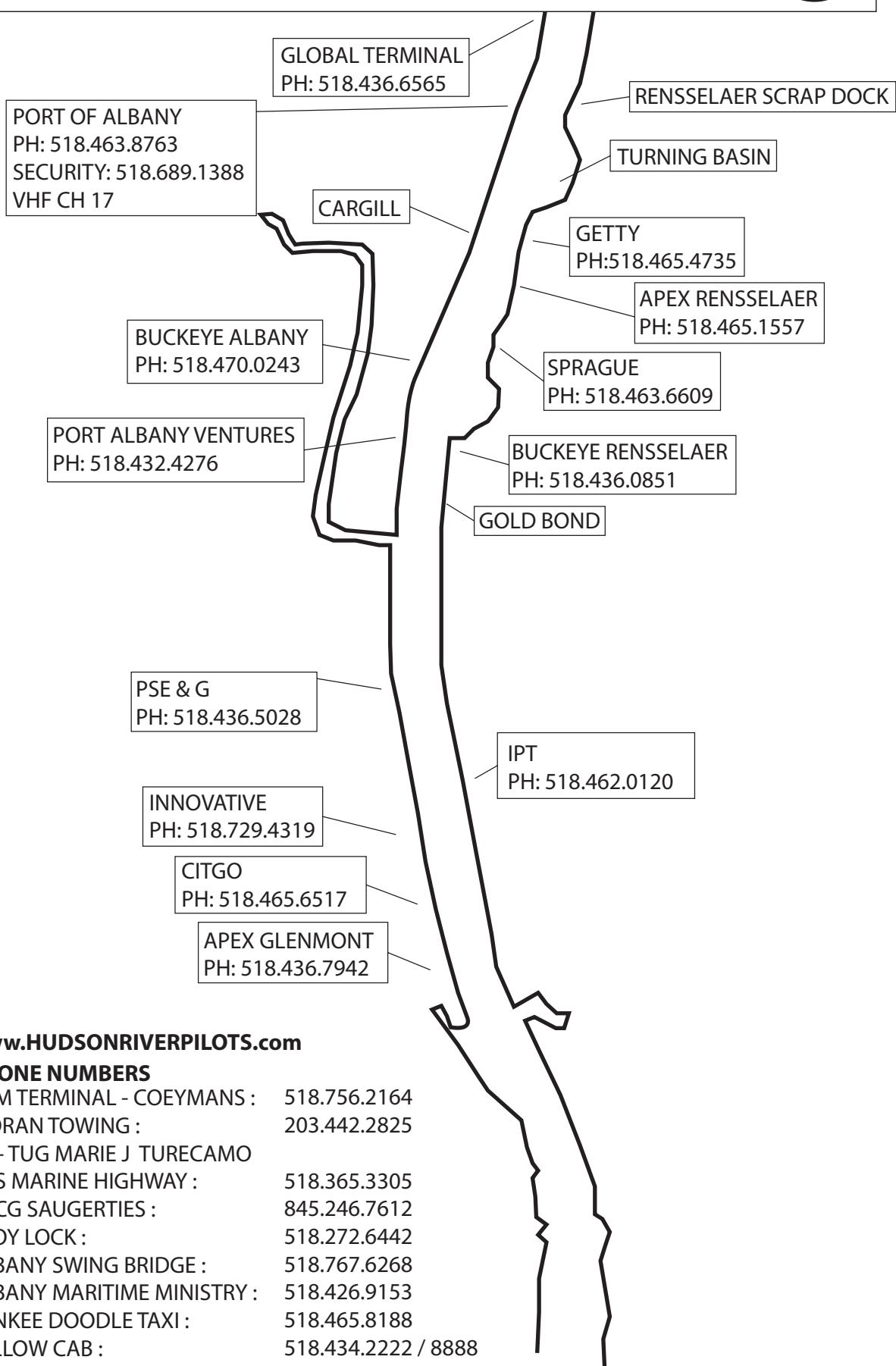
# LEONARDO, EARLE, NJ

NOT FOR NAVIGATIONAL USE - PLEASE REFRENCE NOAA CHART 12



# ALBANY

NOT FOR NAVIGATIONAL USE - PLEASE REFRENCE NOAA CHART 12348



## Common Conversion Factors and Metric Tables

Barrels (fuel oil).....	42.	Gallons (fuel oil)
British Gallon .....	1.20094	U.S. Gallons
Cable .....	600.0	Feet
Centimeters .....	00.3937	Inches
Cubic Feet .....	1728.0	Cubic Inches
Cubic Feet (fresh water) ....	62.5	Pounds Fresh Water
Cubic Feet (sea water) .....	64.0	Pounds Sea Water
Feet .....	0.3048	Meters
Gallons .....	3.78533	Liters
Gallons of Water .....	8.33	Pounds of Water
Inches .....	2.54	Centimeters
Kilograms .....	35.274	Ounces
Kilograms (KG) .....	2.20462	Pounds
1000 KG (1 metric ton) .....	0.98421	Long Tons
IGlometers .....	3281.0	Feet
Knots .....	1.152	Miles Per Hour
Liters .....	0.2642	Gallons
Meters .....	3.281	Feet
Meters .....	1.0936	Yards
Miles .....	1.609	Kilometers
Miles (land) .....	5280	Feet
Miles (nautical) .....	6080	Feet
Tons (long) 2,240 lbs. ....	1.016047	Metric Tons
Tons (short) 2,000 lbs .....	0.90718486	Metric Tons
Tons (long) Fresh Water .....	35.84	Cubic Feet Fresh Water
Tons (long) Sea Water .....	35	Cubic Feet Sea Water
Yards .....	0.9144	Meters
Fahrenheit = 9/5 Centigrade + 32°		
Centigrade = (Fahrenheit - 32°) x 5/9		

To find diameter of a circle, multiply circumference by .31831.  
 To find circumference of a circle, multiply diameter by 3.1416.  
 To find area of a circle, multiply square of diameter by .7854.  
 To find surface of a ball, multiply square of diameter by 3.1416.  
 To find cubic inches of a ball, multiply cube of diameter by .5236.  
 Doubling the diameter of a pipe increases its capacity four times.  
 Double riveting is from 16 to 20 percent stronger than single.

### METRIC CAPACITIES

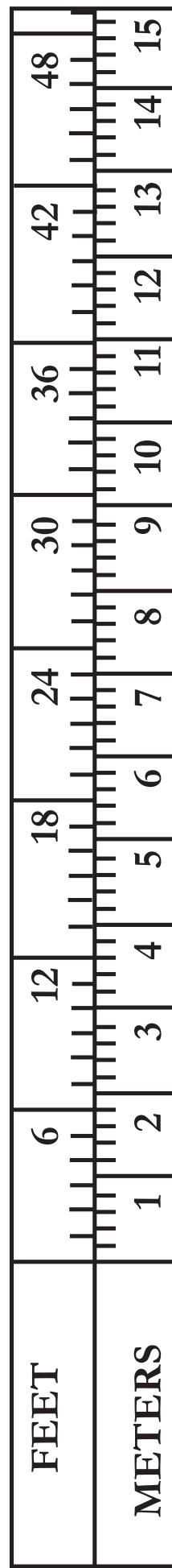
1 Milliliter	= 0.001 Liters
1 Centiliter	= 0.01 Liters
1 Deciliter	= 0.1 Liters
1 Dekaliter	= 10 Liters
1 Hectoliter	= 100 Liters
1 Kiloliter	= 1000 Liters

### METRIC LENGTHS

1 Millimeter	= 0.001 Meters
1 Centimeter	= 0.01 Meters
1 Decimeter	= 0.1 Meters
1 Dekameter	= 10 Meters
1 Hectometer	= 100 Meters
1 Kilometer	= 1000 Meters

### BOW THRUSTER CONVERSION

KW. X 1.361 = Horsepower



## **PRECAUTIONARY STATEMENT**

The tide figures used herein are based upon the National Oceanic and Atmospheric Administration tables, and we believe them to be accurate. They cannot, however, be guaranteed because tides tend to vary with the weather conditions.

Other information herein is based upon sources deemed to be reliable and is believed to be correct but it is likewise not guaranteed.

Effective October 28, 1991, the National Ocean Service (NOS) Tidal current charts - New York Harbor will be officially withdrawn from distribution. A recent evaluation shows that tidal currents determined from the New York Harbor charts, last revised in 1976, are not as accurate as those determined from more recent information published in the NOS Tidal Current Tables - Atlantic Coast of North America including Greenland. NOS plans no further revisions of the tidal current chart series.

## **PRECAUTIONARY NOTE - TIDAL CURRENT PREDICTIONS FOR NEW YORK HARBOR**

Tidal currents at The Narrows, and at Hell Gate have been reported to deviate significantly from official predictions published by the National Ocean Service (NOS). Tidal currents in Arthur Kill and Kill Van Kull have also been reported to deviate significantly from prediction computed from table 2 values in the NOS Tidal Current Tables - Atlantic Coast of North America. Such reports cannot, at this time, be either confirmed or dismissed. Until NOS conducts a Quality Assurance Study for these locations, mariners should exercise caution and discretion in the use of published tidal current predictions for these locations.

Enter the table with the duration of rise or fall which most nearly agrees with the actual value and on that horizontal line find the time from the nearest high or low water which agrees most nearly with the corresponding actual difference. The correction sought is in the column directly below, on the line with the range of tide.

HEIGHT OF TIDE AT ANY TIME											
Time from the nearest high water or low water											
Duration	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
5 30	0 11	0 22	0 33	0 44	0 55	1 06	1 17	1 28	1 39	1 50	2 01
6 00	0 12	0 24	0 36	0 48	1 00	1 12	1 24	1 36	1 48	2 00	2 12
6 20	0 13	0 25	0 38	0 51	1 03	1 16	1 29	1 41	1 54	2 07	2 19
6 30	0 13	0 26	0 39	0 52	1 05	1 18	1 31	1 44	1 57	2 10	2 23
6 40	0 13	0 27	0 40	0 53	1 07	1 20	1 33	1 47	2 00	2 13	2 27
7 00	0 14	0 28	0 42	0 56	1 10	1 24	1 38	1 52	2 06	2 20	2 34
Duration	Correction to height										
Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.	Ft.
2.5	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0
3.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0
3.5	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0
4.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.2
4.5	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.1	1.3
5.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.8	1.0	1.2	1.5
5.5	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9	1.1	1.4	1.6
6.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.0	1.2	1.5	1.8
6.5	0.0	0.1	0.2	0.3	0.4	0.6	0.8	1.1	1.3	1.6	1.9
7.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.2	1.4	1.8	2.1
7.5	0.0	0.1	0.2	0.3	0.5	0.7	1.0	1.2	1.5	1.9	2.2
8.0	0.0	0.1	0.2	0.3	0.5	0.8	1.0	1.3	1.6	2.0	2.4
8.5	0.0	0.1	0.2	0.4	0.6	0.8	1.1	1.4	1.8	2.1	2.5
9.0	0.0	0.1	0.2	0.4	0.6	0.9	1.2	1.5	1.9	2.2	2.7

- Enter from the top of the proper table with the time interval between slack and maximum current encompassing the time for which the velocity is desired.
- Enter from the side of the proper table with the interval between slack and the desired time.
- Multiply factor corresponding to above intervals, by maximum current from daily predictions.

## VELOCITY OF CURRENT AT ANY TIME

Places except Hell Gate, Cape Cod Canal, C & D Canal. Interval between slack and maximum current											
hrs. mins.	1 20	1 40	2 00	2 20	2 40	3 00	3 20	3 40	4 00	4 20	4 40
0 20	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
0 40	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2
1 00	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.3
1 20	1.0	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4	0.4
1 40	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.4
2 00	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.5
2 20	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6
2 40	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.7
3 00	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.7
3 20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.8
3 40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
4 00	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
4 20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
4 40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Interval bet. slack & desired time

Hell Gate, Cape Cod Canal, C & D Canal. Interval between slack and maximum current											
hrs. mins.	1 20	1 40	2 00	2 20	2 40	3 00	3 20	3 40	4 00	4 20	4 40
0 20	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
0 40	0.8	0.7	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3
1 00	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4
1 20	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5
1 40	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.6
2 00	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.7	0.7	0.6
2 20	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.7
2 40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
3 00	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
3 20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
3 40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
4 00	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
4 20	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
4 40	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Interval bet. slack & desired time

# Tidal Differences & Other Constants on New York, NY

PLACE	POSITION		DIFFERENCES			
	LAT.	LONG.	TIME		HEIGHT	
			High water	Low water	High water	Low water
<b>NEW YORK</b> Time meridian, 75° W.	• N.	• W.	h. m.	h. m.	feet	feet
<b>East River</b>						
Hell Gate, Ward's Island	40 47	73 55	+ 2 59	+ 3 45	+ 1.4	0.0
Hell Gate, Hallets Point	40 47	73 56	+ 2 04	+ 2 07	+ 0.5	0.0
Horns Hook, E. 90th Street	40 47	73 56	+ 1 52	+ 1 34	+ 0.1	0.0
Roosevelt Island, north end	40 46	73 56	+ 1 49	+ 1 28	+ 0.2	0.0
37th Avenue, Long Island City	40 46	73 57	+ 1 34	+ 1 13	- 0.1	0.0
East 41st Street, New York City	40 45	73 58	+ 1 07	+ 0 48	- 0.3	0.0
Hunters Point, Newtown Creek	40 44	73 57	+ 1 22	+ 0 56	- 0.5	0.0
English Kills Ent., Newtown Creek	40 43	73 55	+ 1 34	+ 1 07	- 0.4	0.0
East 27th Street, Bellevue Hospital	40 44	73 58	+ 1 12	+ 1 06	- 0.4	0.0
East 19th Street, New York City	40 44	73 58	+ 1 06	+ 1 01	- 0.5	0.0
North 3rd Street, Brooklyn	40 43	73 58	+ 0 59	+ 0 45	- 0.5	0.0
Williamsburg Bridge	40 43	73 58	+ 0 56	+ 0 41	- 0.5	0.0
Wallabout Bay	40 42	73 58	+ 0 32	+ 0 22	- 0.3	0.0
Brooklyn Bridge	40 42	74 00	+ 0 17	+ 0 10	- 0.3	0.0
<b>NEW YORK and NEW JERSEY</b>						
<b>New York Harbor</b>						
Bay Ridge	40 38	74 02	- 0 20	- 0 21	0.0	0.0
St. George, Staten Island	40 39	74 04	- 0 17	- 0 15	- 0.1	0.0
Bayonne, New Jersey	40 41	74 06	- 0 15	- 0 05	- 0.1	0.0
Gowanus Bay	40 40	74 01	- 0 15	- 0 12	- 0.2	0.0
Governors Island	40 42	74 01	- 0 07	- 0 03	- 0.2	0.0
NEW YORK (The Battery)	40 42	74 01		Daily Predictions		
<b>Hudson River*</b>						
Jersey City Con. Rail. RR. Ferry, N.J.	40 43	74 02	+ 0 11	+ 0 10	- 0.2	0.0
New York, Desbrosses Street	40 43	74 01	+ 0 14	+ 0 13	- 0.2	0.0
New York, Chelsea Docks	40 45	74 01	+ 0 21	+ 0 19	- 0.3	0.0
Hoboken, Castle Point, N.J.	40 45	74 01	+ 0 21	+ 0 19	- 0.3	0.0
Weehawken, Days Point, N.J.	40 46	74 01	+ 0 28	+ 0 26	- 0.4	0.0
New York, Union Stock Yards	40 47	74 00	+ 0 31	+ 0 29	- 0.4	0.0
New York, 130th Street	40 49	73 58	+ 0 41	+ 0 38	- 0.6	0.0
George Washington Bridge	40 51	73 57	+ 0 50	+ 0 46	- 0.7	0.0

\* Values for the Hudson River above the George Washington Bridge are based upon averages for the six months May to October period, when the fresh-water discharge is a minimum.

# Tidal Differences & Other Constants on New York, NY

PLACE	POSITION		DIFFERENCES			
	LAT.	LONG.	TIME		HEIGHT	
			High water	Low water	High water	Low water
<b>NEW YORK</b>	• °	• °				
Time meridian, 75° W.	N.	W.	h. m.	h. m.	feet	feet
<b>Hudson River, continued</b>						
Spuyten Duyvil West of RR Bridge .	40 53	73 56	+ 1 02	+ 0 56	- 0.8	0.0
Riverdale .....	40 54	73 55	+ 0 49	+ 0 49	- 0.7	0.0
Yonkers .....	40 56	73 54	+ 1 13	+ 1 13	- 0.9	0.0
Dobbs Ferry .....	41 01	73 53	+ 1 33	+ 1 43	- 1.2	0.0
Tarrytown .....	41 05	73 52	+ 1 49	+ 1 57	- 1.4	0.0
Ossining .....	41 10	73 52	+ 1 57	+ 2 17	- 1.5	0.0
Haverstraw .....	41 12	73 58	+ 2 03	+ 2 28	- 1.7	0.0
Peekskill .....	41 17	73 56	+ 2 28	+ 3 03	- 1.4	+ 0.3
West Point .....	41 24	73 57	+ 3 20	+ 3 40	- 1.6	+ 0.3
Newburgh .....	41 30	74 00	+ 3 46	+ 4 03	- 1.6	+ 0.2
New Hamburg .....	41 35	73 57	+ 4 04	+ 4 28	- 1.6	+ 0.1
Poughkeepsie .....	41 42	73 57	+ 4 34	+ 4 46	- 1.4	+ 0.1
Hyde Park .....	41 47	73 57	+ 5 00	+ 5 12	- 1.4	0.0
Kingston Point .....	41 56	73 58	+ 5 20	+ 5 34	- 1.0	- 0.1
Tivoli .....	42 04	73 56	+ 5 50	+ 6 04	- 0.9	- 0.2
Catskill .....	42 13	73 51	+ 6 41	+ 6 58	- 0.8	- 0.3
Hudson .....	42 15	73 48	+ 6 58	+ 7 12	- 1.0	- 0.4
Albany .....	42 39	73 45	<b>DAILY PREDICTIONS</b>			
<b>The Kills and Newark Bay</b>						
Kill Van Kull						
Constable Hook .....	40 39	74 05	- 0 30	- 0 18	- 0.1	0.0
New Brighton .....	40 39	74 05	- 0 08	- 0 15	- 0.1	0.0
Port Richmond .....	40 38	74 08	+ 0 01	+ 0 08	- 0.1	0.0
Bergen Point .....	40 39	74 08	+ 0 07	+ 0 06	0.0	0.0
Shooters Island .....	40 39	74 10	+ 0 10	+ 0 21	0.0	0.0
Port Elizabeth .....	40 40	74 08	- 0 02	+ 0 15	+ 0.5	0.0
Port Newark Terminal .....	40 41	74 08	+ 0 03	+ 0 21	+ 0.5	0.0
Point No Point .....	40 44	74 07	0 00	+ 0 22	+ 0.7	0.0
Newark, Passaic River .....	40 44	74 10	+ 0 26	+ 0 55	+ 0.5	0.0
Belleville .....	40 47	74 09	+ 0 04	+ 0 43	+ 0.9	0.0
Passaic, Gregory Ave. Bridge .....	40 51	74 07	+ 0 53	+ 2 00	+ 0.5	0.0
Hackensack River						
Kearney Point .....	40 44	74 06	+ 0 13	+ 0 36	+ 0.4	0.0
Secaucus .....	40 48	74 04	+ 1 17	+ 1 12	+ 0.5	0.0
Uttle Ferry .....	40 51	74 02	+ 1 26	+ 1 17	+ 0.7	0.0
Hackensack .....	40 53	74 02	+ 1 37	+ 2 01	+ 0.7	0.0

## Tidal Differences & Other Constants on New York, NY

PLACE	POSITION		DIFFERENCES			
	LAT.	LONG.	TIME		HEIGHT	
			High water	Low water	High water	Low water
<b>NEW YORK</b> Time meridian, 75° W.	• N.	• W.	h. m.	h. m.	feet	feet
<b>The Kills and Newark Bay</b> Arthur Kill						
Elizabethport .....	40 39	74 11	+ 0 24	+ 0 41	+ 0.2	0.0
Chelsea .....	40 36	74 12	+ 0 23	+ 0 37	+ 0.3	0.0
Carteret .....	40 35	74 13	+ 0 22	+ 0 27	+ 0.6	0.0
Rossville .....	40 33	74 13	+ 0 16	+ 0 27	+ 0.6	0.0
Tottenville .....	40 31	74 15	+ 0 02	+ 0 15	+ 0.6	0.0
Perth Amboy .....	40 30	74 16	+ 0 12	+ 0 21	+ 0.5	0.0
<b>Lower New York Bay, Raritan Bay, etc.</b>						
New Dorp Beach .....	40 34	74 06	- 0 05	+ 0 15	+ 0.2	0.0
Great Kills Harbor .....	30 33	74 08	+ 0 06	+ 0 21	0.0	0.0
Princess Bay .....	30 31	74 12	0 00	+ 0 06	+ 0.2	0.0
Raritan River						
South Amboy .....	40 29	74 17	+ 0 04	+ 0 06	+ 0.3	0.0
Washington Canal .....	40 28	74 22	+ 0 33	+ 0 52	+ 0.9	0.0
South River Highway Bridge .....	40 27	74 22	+ 0 54	+ 1 04	+ 0.8	0.0
New Brunswick .....	40 29	72 26	+ 0 45	+ 1 28	+ 1.1	0.0
Keyport .....	40 26	74 12	+ 0 07	+ 0 21	+ 0.3	0.0
Keansburg .....	40 27	74 09	- 0 04	+ 0 01	+ 0.2	0.0
Port Monmouth .....	40 26	74 05	- 0 03	0 00	+ 0.1	0.0
Atlantic Highlands .....	40 25	74 02	- 0 02	+ 0 02	0.0	0.0
<b>SANDY HOOK</b> .....	40 28	74 01	<b>DAILY PREDICTIONS</b>			

## New Jersey Outer Coast & Long Island Sound

Abseson Channel .....	Sandy Hook	+ 0 11	- 0 09	*0.84	3.9	4.7
Cape May Harbor .....	Sandy Hook	- 0 03	- 0 14	*0.94	4.4	5.3
Coney Island .....	Sandy Hook	- 0 04	- 0 17	*1.01	4.7	5.7
Norton P1. J. Bay .....	Sandy Hook	+ 0 38	+ 0 45	*1.16	5.4	6.5
Rockaway Inlet .....	Sandy Hook	- 0 01	- 0 04	*1.07	5.0	6.0
Beach Chan. Bdge. ....	Sandy Hook	+ 0 37	+ 0 24	*1.09	5.1	6.2
E. Rkaway Inlet .....	Sandy Hook	- 0 07	- 0 14	*0.88	4.1	5.0
Fire Is. Inlet .....	Sandy Hook	- 0 39	- 0 27	*0.56	2.6	3.1

# Current Differences and Constants

## Reference Station - The Narrows

PLACE	TIME DIFFERENCES				AVG. SP. / DIR.		
	Min. Before Flood	Max. Flood	Min. Before Flood	Max. Ebb	Max. Flood	Max. Ebb	
	h.m.	h.m.	h.m.	h.m.	kts.	deg.	kts.
<b>New York Lower Bay and Raritan Bay &amp; River</b>							
Ambrose Entrance .....	- 0 57	- 1 10	- 0 25	- 0 07	1.6	303	1.7
Coney Is. Channel .....	- 1 21	- 0 44	- 0 24	- 0 48	1.1	293	1.2
The Narrows .....	<b>DAILY PREDICTIONS</b>						
off Sandy Hook Pt .....	- 1 51	- 1 55	- 1 30	- 1 50	2.0	235	1.6
S W Spit .....	- 1 45	- 2 00	- 1 50	- 1 42	0.6	263	0.6
Channel Seguine Pt. ....	- 2 02	- 2 50	- 0 48	- 2 08	0.7	281	0.3
Channel Seguine Pt. 34 .....	- 3 38	- 2 51	- 0 13	- 2 24	0.5	285	0.2
P. Amboy R.R. Br. ....	- 2 12	- 2 25	- 1 15	- 2 01	0.9	326	0.7
<b>Upper Bay &amp; Hudson River</b>							
Bay Ridge Channel 15' ....	- 0 58	- 1 26	+ 0 04	- 1 17	1.0	032	0.7
Bay Ridge Channel 36' ...	- 1 35	- 2 36	- 0 50	- 0 09	0.6	037	0.4
Red Hook Channel .....	- 1 03	- 0 44	- 0 08	- 0 30	1.0	353	0.7
E. of Robbins Reef .....	+ 0 16	+ 0 16	+ 0 02	+ 0 24	1.3	016	1.6
I mi. W of Red Hook ....	+ 0 41	+ 1 06	+ 0 47	+ 0 52	1.3	024	2.3
E. of Liberry .....	+ 0 57	+ 0 58	+ 0 56	+ 0 59	1.4	031	1.9
NW of Battery .....	+ 0 49	+ 1 12	+ 1 22	+ 2 18	1.4	009	1.4
Grant's Tomb 16' .....	+ 1 10	+ 0 46	+ 1 42	+ 2 06	1.6	024	1.9
Grant's Tomb 18' .....	+ 1 04	+ 1 18	+ 1 58	+ 1 27	1.8	025	1.8
G. Washington Br. ....	+ 1 41	+ 1 55	+ 1 50	+ 2 08	1.6	020	2.2
Riverdale .....	+ 2 11	+ 2 07	+ 2 02	+ 2 32	1.4	015	2.0
Haverstraw .....	+ 2 55	+ 3 08	+ 3 13	+ 3 26	0.8	355	1.3
Peekskill .....	+ 3 10	+ 3 24	+ 3 33	+ 3 42	0.8	000	1.2
West Point .....	+ 3 32	+ 3 47	+ 3 51	+ 4 04	1.0	010	1.1
Newburgh .....	+ 3 50	+ 4 06	+ 4 03	+ 4 21	0.9	005	1.1
Poughkeepsie .....	+ 4 26	+ 4 37	+ 4 21	+ 4 49	1.1	005	1.2
Kingston .....	+ 5 09	+ 5 09	+ 4 54	+ 5 19	1.3	005	1.6
Hudson .....	+ 6 23	+ 6 45	+ 6 20	+ 6 15	1.6	030	2.0
Albany .....	+ 8 29	+ 7 32	+ 6 46	+ 7 47	0.3	020	0.8
Troy .....							0.7

# Current Differences and Constants

## Reference Station - The Narrows

PLACE	TIME DIFFERENCES				AVG. SP. / DIR.		
	Min. Before Flood	Max. Flood	Min. Before Flood	Max. Ebb	Max. Flood	Max. Ebb	
	h.m.	h.m.	h.m.	h.m.	kts.	deg.	kts.
<b>Kill Van Kull &amp; Arthur Kill</b>							
W. New Brighton 15' .....	- 1 44	- 2 08	- 1 24	- 1 43	1.3	262	1.9
W. New Brighton 12' .....	- 2 00	- 2 19	- 1 38	- 1 14	1.3	259	1.4
Elizabeth port.....	+ 0 05	- 0 09	+ 0 32	+ 0 04	1.4	090	1.1
Carteret .....	- 0 18	- 0 54	+ 0 31	+ 0 29	0.9	015	0.8
Tufts Point .....	- 0 48	- 0 44	- 0 24	- 1 00	1.2	109	1.2
Tottenville 15' .....	- 1 14	- 1 25	- 0 33	- 1 23	1.0	023	1.1
Tottenville 32' .....	- 1 33	- 1 05	- 0 48	- 1 03	0.6	026	0.5
<b>Newark Bay, Hackensack &amp; Passaic Rivers</b>							
South Reach .....	- 0 56	- 1 45	- 0 51	- 1 06	0.7	031	0.7
Lincoln Hway. H. River .....	- 0 06	+ 0 12	+ 0 47	- 0 14	0.9	017	0.8
Lincoln Hway. P. River.....	- 0 31	- 0 19	- 0 12	- 0 20	0.6	009	0.5
<b>East River Reference Station Hell Gate</b>							
Buttermilk Channel .....	- 0 12	- 0 18	- 0 06	+ 0 18	1.8	050	2.4
(See Caution Note)							
Brooklyn Bridge .....	- 0 18	+ 0 08	- 0 04	- 0 07	2.9	046	3.5
Corlears Hook .....	- 0 05	+ 0 12	- 0 01	+ 0 10	2.7	020	2.9
Off Pier 67, 19th St. ....	- 0 08	+ 0 08	- 0 08	+ 0 07	1.8	355	1.9
Hell Gate .....	<b>DAILY PREDICTIONS</b>						
Port Morris .....	- 0 17	+ 0 04	- 0 06	- 0 12	1.5	054	1.2
Hunts Point SW of .....	+ 0 01	- 0 10	+ 0 01	- 0 05	1.7	108	1.3
Old Ferry Point .....	- 0 34	- 0 46	- 0 10	- 1 27	1.7	076	1.0

Caution: During the first 2 hours of flood in channel north of Governors Island, the current in the Hudson River is still ebbing, while during the first 1.5 hours of ebb in this channel the current in the Hudson is still flooding.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

## Changes of Meters into Feet and Inches

METERS	FEET	METERS	FEET	METERS	FEET	METERS	FEET
3.0	09 10	7.5	24 07	12.0	39 04	16.5	54 02
3.1	10 02	7.6	24 11	12.1	39 08	16.6	54 06
3.2	10 06	7.7	25 03	12.2	40 00	16.7	54 09
3.3	10 10	7.8	25 07	12.3	40 04	16.8	55 01
3.4	11 02	7.9	25 11	12.4	40 08	16.9	55 05
3.5	11 06			12.5	41 00		
3.6	11 10	8.0	26 03	12.6	41 04	17.0	55 09
3.7	12 02	8.1	26 07	12.7	41 08	17.1	56 01
3.8	12 06	8.2	26 11	12.8	42 00	17.2	56 05
3.9	12 09	8.3	27 03	12.9	42 04	17.3	56 09
		8.4	27 06			17.4	57 01
4.0	13 01	8.5	27 10	13.0	42 08	17.5	57 05
4.1	13 05	8.6	28 02	13.1	43 00	17.6	57 09
4.2	13 09	8.7	28 06	13.2	43 04	17.7	58 01
4.3	14 01	8.8	28 10	13.3	43 08	17.8	58 05
4.4	14 05	8.9	29 02	13.4	44 00	17.9	58 09
4.5	14 09			13.5	44 03		
4.6	15 01	9.0	29 06	13.6	44 07	18.0	59 01
4.7	15 05	9.1	29 10	13.7	44 11	18.1	59 05
4.8	15 09	9.2	30 02	13.8	45 03	18.2	59 09
4.9	16 01	9.3	30 06	13.9	45 07	18.3	60 00
		9.4	30 10			18.4	60 04
5.0	16 05	9.5	31 02	14.0	45 11	18.5	60 08
5.1	16 09	9.6	31 06	14.1	46 03	18.6	61 00
5.2	17 01	9.7	31 10	14.2	46 07	18.7	61 04
5.3	17 04	9.8	32 02	14.3	46 11	18.8	61 08
5.4	17 08	9.9	32 06	14.4	47 03	18.9	62 00
5.5	18 00			14.5	47 07		
5.6	18 04	10.0	32 10	14.6	47 11	19.0	62 04
5.7	18 08	10.1	33 02	14.7	48 03	19.1	62 08
5.8	19 00	10.2	33 06	14.8	48 07	19.2	63 00
5.9	19 04	10.3	33 09	14.9	48 11	19.3	63 04
		10.4	34 01			19.4	63 08
6.0	19 08	10.5	34 05	15.0	49 03	19.5	64 00
6.1	20 00	10.6	34 09	15.1	49 06	19.6	64 04
6.2	20 04	10.7	35 01	15.2	49 10	19.7	64 08
6.3	20 08	10.8	35 05	15.3	50 02	19.8	65 00
6.4	21 00	10.9	35 09	15.4	50 06	19.9	65 03
6.5	21 04			15.5	50 10		
6.6	21 08	11.0	36 01	15.6	51 02	20.0	65 07
6.7	22 00	11.1	36 05	15.7	51 06	20.1	65 11
6.8	22 04	11.2	36 09	15.8	51 10	20.2	66 03
6.9	22 08	11.3	37 01	15.9	52 02	20.3	66 07
		11.4	37 05			20.4	66 11
7.0	22 11	11.5	37 09	16.0	52 06	20.5	67 03
7.1	23 03	11.6	38 01	16.1	52 10	20.6	67 07
7.2	23 07	11.7	38 05	16.2	53 02	20.7	67 11
7.3	23 11	11.8	38 09	16.3	53 06	20.8	68 03
7.4	24 03	11.9	39 00	16.4	53 10	20.9	68 07

## Conversion Table - 1 m = 3.281 feet

Meters to Feet and Inches (Approximate Values)

<b>m</b>	<b>Ft</b>	<b>In</b>	<b>m</b>	<b>Ft</b>	<b>In</b>	<b>m</b>	<b>Ft</b>	<b>In</b>
1	3	03	150	492	01	300	984	03
5	16	05	155	508	06	305	1000	08
10	32	10	160	524	11	310	1017	01
15	49	03	165	541	04	315	1033	06
20	65	07	170	557	09	320	1049	10
25	82	00	175	574	02	325	1066	03
30	98	05	180	590	07	330	1082	08
35	114	10	185	606	11	335	1099	01
40	131	03	190	623	04	340	1115	06
45	147	08	195	639	09	345	1131	11
50	164	00	200	656	02	350	1148	03
55	180	05	205	672	07	355	1164	08
60	196	10	210	689	00	360	1181	01
65	213	03	215	705	05	365	1197	06
70	229	08	220	721	09	370	1213	11
75	246	00	225	738	02	375	1230	04
80	262	06	230	754	07	380	1246	09
85	278	10	235	771	00	385	1263	01
90	295	03	240	787	05	390	1279	06
95	311	08	245	803	10	395	1295	11
100	328	01	250	820	02	400	1312	04
105	344	06	255	836	07	405	1328	09
110	360	11	260	853	00	410	1345	02
115	377	04	265	869	05	415	1361	07
120	393	08	270	885	10	420	1377	11
125	410	01	275	902	03	425	1394	04
130	426	06	280	918	08	430	1410	09
135	442	11	285	935	00	440	1443	07
140	459	04	290	951	05	450	1476	04
145	475	09	295	967	10			

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---





---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---



---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

# 2022

## January

Su	Mo	Tu	We	Th	Fr	Sa
				01	02	
03	04	05	06	08	09	
09	10	12	13	14	15	
16	18	19	20	22	23	
24	25	26	28	29	29	
30	31					31

## July

Su	Mo	Tu	We	Th	Fr	Sa
				01	02	03
04	05	06	08	09	08	09
10	12	13	14	15	13	16
17	18	19	20	22	18	21
24	25	26	28	29	26	29
30	31					30

## February

Su	Mo	Tu	We	Th	Fr	Sa
	01	02	03	04	05	05
06	08	09	10	12	13	
14	15	16	18	19	20	
20	22	23	24	25	26	
28	28					

## August

Su	Mo	Tu	We	Th	Fr	Sa
	01	02	03	04	05	06
08	09	10	12	13	08	09
14	15	16	18	19	16	18
20	22	23	24	25	25	26
28	28					31

## March

Su	Mo	Tu	We	Th	Fr	Sa
	01	02	03	04	05	05
06	08	09	10	12	13	
14	15	16	18	19	19	
20	22	23	24	25	26	
28	28	29	30	31		

## September

Su	Mo	Tu	We	Th	Fr	Sa
	01	02	03	04	04	04
06	08	09	10	12	13	10
14	15	16	18	19	15	18
20	22	23	24	25	23	24
28	29	30	31			30

## April

Su	Mo	Tu	We	Th	Fr	Sa
			01	02	03	
04	05	06	08	09	09	
10	12	13	14	15	16	
18	19	20	21	23	24	
25	26	27	28	29	30	

## October

Su	Mo	Tu	We	Th	Fr	Sa
			01	02	03	
04	05	06	08	09	08	
10	12	13	14	15	12	
18	19	20	21	23	18	
25	26	27	28	29	26	
		30	31			

## May

Su	Mo	Tu	We	Th	Fr	Sa
	01	02	03	04	05	05
08	09	10	11	12	13	
09	10	11	12	13	14	
16	17	18	19	20	17	
23	24	25	26	27	24	
29	30	31				

## November

Su	Mo	Tu	We	Th	Fr	Sa
	01	02	03	04	05	05
06	07	08	09	10	12	
09	10	11	12	13	16	
16	17	18	19	20	17	
23	24	25	26	27	24	
29	30					

## June

Su	Mo	Tu	We	Th	Fr	Sa
		01	02	03	04	04
05	06	07	08	10	12	
13	14	15	16	18	18	
20	21	22	23	24	25	
26	27	28	29	30		

## December

Su	Mo	Tu	We	Th	Fr	Sa
			01	02	03	03
05	06	07	08	09	09	10
12	13	14	15	16	15	18
19	20	21	22	24	21	23
26	27	28	29	30	28	31

# 2023

## January

Su	Mo	Tu	We	Th	Fr	Sa
01	02	03	04	05	06	07
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## July

Su	Mo	Tu	We	Th	Fr	Sa
						01
02	03	04	05	06	07	08
09	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
	30	31				

## February

Su	Mo	Tu	We	Th	Fr	Sa
			01	02	03	04
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

## August

Su	Mo	Tu	We	Th	Fr	Sa
		01	02	03	04	05
06	07	08	09	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

## March

Su	Mo	Tu	We	Th	Fr	Sa
		01	02	03	04	
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

## September

Su	Mo	Tu	We	Th	Fr	Sa
		01	02			
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

## April

Su	Mo	Tu	We	Th	Fr	Sa
			01			
02	03	04	05	06	07	08
09	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

## October

Su	Mo	Tu	We	Th	Fr	Sa
		01	02	03	04	05
08	09	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

## May

Su	Mo	Tu	We	Th	Fr	Sa
		01	02	03	04	05
07	08	09	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

## November

Su	Mo	Tu	We	Th	Fr	Sa
		01	02	03	04	05
05	06	07	08	09	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

## June

Su	Mo	Tu	We	Th	Fr	Sa
			01	02	03	
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

## December

Su	Mo	Tu	We	Th	Fr	Sa
		01	02			
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

# Sunrise and Sunset Predictions for 2022

\*Cells with light grey color indicate when daylight savings time is in effect.

JANUARY				FEBRUARY				MARCH				APRIL				MAY				JUNE							
Rise	h m	Set	h m	Rise	h m	Set	h m	Rise	h m	Set	h m	Rise	h m	Set	h m	Rise	h m	Set	h m	Rise	h m	Set	h m				
Day	01	07:25	17:12	07:15	17:42	06:45	18:10	07:01	19:36	06:22	20:01	06:00	20:25	01	07:25	17:13	07:14	17:43	06:43	18:11	07:00	19:37	06:21	20:02	05:59	20:26	02
02	07:25	17:13	07:14	17:43	06:43	18:11	07:00	19:37	06:21	20:02	06:00	20:25	01	07:25	17:14	07:13	17:44	06:42	18:12	06:58	19:38	06:20	20:03	05:59	20:27	03	
03	07:25	17:14	07:13	17:44	06:42	18:12	06:58	19:38	06:20	20:03	06:00	20:25	01	07:25	17:14	07:12	17:45	06:41	18:12	06:57	19:39	06:19	20:04	05:59	20:27	04	
04	07:25	17:14	07:12	17:45	06:41	18:12	06:57	19:39	06:19	20:04	06:00	20:25	01	07:25	17:15	07:11	17:46	06:39	18:13	06:55	19:40	06:18	20:05	05:59	20:28	05	
05	07:25	17:15	07:11	17:46	06:39	18:13	06:55	19:40	06:18	20:05	06:00	20:25	01	07:25	17:16	07:11	17:47	06:38	18:14	06:54	19:41	06:17	20:06	05:59	20:28	06	
06	07:25	17:16	07:11	17:47	06:38	18:14	06:54	19:41	06:17	20:06	06:00	20:25	01	07:25	17:17	07:10	17:48	06:36	18:15	06:53	19:41	06:16	20:07	05:58	20:29	07	
07	07:25	17:17	07:10	17:48	06:36	18:15	06:53	19:41	06:16	20:07	06:00	20:25	01	07:25	17:18	07:09	17:49	06:35	18:16	06:51	19:42	06:15	20:07	05:58	20:29	08	
08	07:25	17:18	07:09	17:49	06:35	18:16	06:51	19:42	06:15	20:07	06:00	20:25	01	07:25	17:19	07:08	17:50	06:34	18:17	06:50	19:43	06:14	20:08	05:58	20:30	09	
09	07:25	17:19	07:08	17:50	06:34	18:17	06:50	19:43	06:14	20:08	06:00	20:25	01	07:25	17:20	07:07	17:51	06:32	18:18	06:48	19:44	06:13	20:09	05:58	20:30	10	
10	07:25	17:20	07:07	17:51	06:32	18:18	06:48	19:44	06:13	20:09	06:00	20:25	01	07:25	17:21	07:06	17:52	06:31	18:19	06:47	19:45	06:13	20:10	05:58	20:31	11	
11	07:25	17:21	07:06	17:52	06:31	18:19	06:47	19:45	06:13	20:10	06:00	20:25	01	07:25	17:22	07:05	17:53	06:30	18:20	06:46	19:46	06:12	20:11	05:58	20:31	12	
12	07:25	17:22	07:05	17:53	06:30	18:20	06:46	19:46	06:12	20:11	06:00	20:25	01	07:24	17:23	07:04	17:54	06:28	19:20	06:44	19:46	06:11	20:11	05:58	20:32	13	
13	07:24	17:23	07:04	17:54	06:28	19:20	06:44	19:46	06:11	20:11	06:00	20:25	01	07:24	17:24	07:03	17:55	06:27	19:21	06:43	19:47	06:10	20:12	05:58	20:32	14	
14	07:24	17:24	07:03	17:55	06:27	19:21	06:43	19:47	06:10	20:12	06:00	20:25	01	07:24	17:25	07:01	17:56	06:25	19:22	06:42	19:48	06:09	20:13	05:58	20:32	15	
15	07:24	17:25	07:01	17:56	06:25	19:22	06:42	19:48	06:09	20:13	06:00	20:25	01	07:24	17:26	06:59	17:58	07:22	19:24	06:39	19:50	06:08	20:15	05:58	20:32	16	
16	07:24	17:26	06:59	17:58	07:22	19:24	06:39	19:50	06:08	20:15	06:00	20:25	01	07:24	17:27	06:58	17:59	07:21	19:25	06:38	19:51	06:07	20:15	05:58	20:33	17	
17	07:23	17:26	06:59	17:58	07:22	19:24	06:39	19:50	06:08	20:15	06:00	20:25	01	07:23	17:29	06:57	18:00	07:20	19:26	06:37	19:51	06:06	20:16	05:58	20:33	18	
18	07:23	17:27	06:58	17:59	07:21	19:25	06:38	19:51	06:07	20:15	06:00	20:25	01	07:23	17:29	06:57	18:03	07:15	19:28	06:33	19:54	06:04	20:19	05:59	20:34	19	
19	07:23	17:29	06:57	18:00	07:20	19:26	06:37	19:51	06:06	20:16	06:00	20:25	01	07:22	17:30	06:56	18:01	07:18	19:26	06:35	19:52	06:06	20:17	05:59	20:34	20	
20	07:22	17:30	06:56	18:01	07:18	19:26	06:35	19:52	06:06	20:17	06:00	20:25	01	07:22	17:31	06:55	18:02	07:17	19:27	06:34	19:53	06:05	20:18	05:59	20:34	21	
21	07:22	17:31	06:55	18:02	07:17	19:27	06:34	19:53	06:05	20:18	06:00	20:25	01	07:21	17:32	06:53	18:03	07:15	19:28	06:33	19:54	06:04	20:19	05:59	20:34	22	
22	07:21	17:32	06:53	18:03	07:15	19:28	06:33	19:54	06:04	20:19	06:00	20:25	01	07:21	17:33	06:52	18:04	07:14	19:29	06:32	19:55	06:04	20:19	05:59	20:34	23	
23	07:21	17:33	06:52	18:04	07:14	19:29	06:32	19:55	06:04	20:19	06:00	20:25	01	07:20	17:34	06:51	18:05	07:12	19:30	06:30	19:56	06:03	20:20	06:00	20:35	24	
24	07:20	17:34	06:50	18:06	07:11	19:31	06:29	19:56	06:03	20:21	06:00	20:25	01	07:20	17:35	06:49	18:07	07:10	19:31	06:28	19:57	06:02	20:21	06:00	20:35	25	
25	07:20	17:35	06:49	18:07	07:10	19:31	06:28	19:57	06:02	20:22	06:00	20:25	01	07:18	17:37	06:47	18:08	07:08	19:32	06:27	19:58	06:01	20:23	06:01	20:35	26	
26	07:19	17:36	06:48	18:07	07:10	19:31	06:28	19:57	06:02	20:21	06:00	20:25	01	07:18	17:38	06:46	18:09	07:07	19:33	06:26	19:59	06:01	20:24	06:01	20:35	27	
27	07:18	17:37	06:47	18:08	07:08	19:32	06:27	19:58	06:02	20:22	06:00	20:25	01	07:18	17:39	06:46	18:09	07:05	19:34	06:25	20:00	06:01	20:24	06:00	20:35	28	
28	07:18	17:38	06:46	18:09	07:07	19:33	06:26	19:59	06:01	20:23	06:00	20:25	01	07:17	17:39	06:45	18:09	07:04	19:35	06:23	20:01	06:00	20:24	06:00	20:35	29	
29	07:17	17:39	06:45	18:09	07:05	19:34	06:25	20:00	06:01	20:24	06:00	20:25	01	07:16	17:40	06:44	18:10	07:04	19:35	06:23	20:01	06:00	20:24	06:00	20:35	30	
30	07:16	17:40	06:44	18:10	07:04	19:35	06:23	20:01	06:00	20:25	06:00	20:25	01	07:16	17:41	06:43	18:10	07:03	19:36	06:22	20:00	06:00	20:24	06:00	20:35	31	

# Sunrise and Sunset Predictions for 2022

\*Cells with light grey color indicate when daylight savings time is in effect.

Day	JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		DECEMBER	
	Rise h m	Set h m										
01	06:02	20:35	06:22	20:19	06:47	19:42	07:10	18:58	07:37	18:19	07:06	17:01
02	06:03	20:35	06:23	20:18	06:47	19:40	07:10	18:57	07:38	18:18	07:07	17:01
03	06:03	20:35	06:24	20:17	06:48	19:39	07:11	18:55	07:39	18:17	07:08	17:01
04	06:04	20:34	06:25	20:16	06:49	19:38	07:12	18:54	07:40	18:16	07:09	17:01
05	06:04	20:34	06:26	20:15	06:50	19:36	07:13	18:53	07:41	18:15	07:10	17:01
06	06:05	20:34	06:26	20:14	06:50	19:35	07:14	18:51	06:42	17:14	07:11	17:01
07	06:05	20:34	06:27	20:13	06:51	19:33	07:14	18:50	06:43	17:13	07:11	17:01
08	06:06	20:33	06:28	20:12	06:52	19:32	07:15	18:48	06:44	17:13	07:12	17:01
09	06:06	20:33	06:29	20:11	06:53	19:30	07:16	18:47	06:45	17:12	07:13	17:01
10	06:07	20:33	06:29	20:10	06:53	19:29	07:17	18:46	06:46	17:11	07:14	17:01
11	06:07	20:33	06:30	20:09	06:54	19:28	07:18	18:44	06:47	17:10	07:14	17:01
12	06:08	20:32	06:31	20:08	06:55	19:26	07:19	18:43	06:48	17:09	07:15	17:01
13	06:09	20:32	06:32	20:06	06:56	19:25	07:19	18:42	06:49	17:09	07:16	17:02
14	06:09	20:31	06:33	20:05	06:56	19:23	07:20	18:40	06:50	17:08	07:17	17:02
15	06:10	20:31	06:33	20:04	06:57	19:22	07:21	18:39	06:51	17:07	07:17	17:02
16	06:11	20:30	06:34	20:03	06:58	19:20	07:22	18:38	06:52	17:07	07:18	17:03
17	06:11	20:30	06:35	20:02	06:59	19:19	07:23	18:36	06:53	17:06	07:19	17:02
18	06:12	20:29	06:36	20:00	07:00	19:17	07:24	18:35	06:54	17:06	07:19	17:03
19	06:13	20:29	06:37	19:59	07:00	19:16	07:25	18:34	06:55	17:05	07:20	17:04
20	06:13	20:28	06:37	19:58	07:01	19:14	07:26	18:33	06:56	17:05	07:20	17:04
21	06:14	20:27	06:38	19:57	07:02	19:13	07:27	18:31	06:57	17:04	07:21	17:05
22	06:15	20:27	06:39	19:55	07:03	19:11	07:27	18:30	06:58	17:04	07:21	17:05
23	06:16	20:26	06:40	19:54	07:03	19:10	07:28	18:29	06:59	17:03	07:22	17:06
24	06:16	20:25	06:40	19:53	07:04	19:08	07:29	18:28	07:00	17:03	07:22	17:06
25	06:17	20:25	06:41	19:51	07:05	19:07	07:30	18:27	07:01	17:02	07:23	17:07
26	06:18	20:24	06:42	19:50	07:06	19:05	07:31	18:25	07:01	17:02	07:23	17:08
27	06:19	20:23	06:43	19:49	07:06	19:04	07:32	18:24	07:02	17:02	07:23	17:08
28	06:19	20:22	06:44	19:47	07:07	19:03	07:33	18:23	07:03	17:02	07:24	17:09
29	06:20	20:22	06:44	19:46	07:08	19:01	07:34	18:22	07:04	17:01	07:24	17:10
30	06:21	20:21	06:45	19:45	07:09	19:00	07:35	18:21	07:05	17:01	07:24	17:10
31	06:22	20:20	06:46	19:43	07:36	18:20	07:36	18:20	07:24	17:11	31	

