[illegible]: (10.9 million

[illegible]: 1.9 million

MAJOR ROADWAYS: 7.0 million

SERVICE ROADS: 7.5 million

[illegible]: [illegible] million

TOTAL: [illegible] million

[illegible]

1. [illegible]

2. Cable Tunnel [illegible] 1.5 [illegible]
[illegible]
Columbia [illegible]

[illegible] million

*Including 25% [illegible]
[illegible] to be [illegible]

3. Cable Tunnel [illegible] 2.5 million

4. Ramps: [illegible]

5. Centers:

a) [illegible]
(20.5 [illegible]
[illegible] million) 2.8 million

b) [illegible]
times [illegible]

c) [illegible]
times [illegible]

d) [illegible]
times [illegible]

[illegible]

3

5

25

Fair '75 8/26/66

1. Site Preparation

a) Land Fill

(1.) Acreage Covered --- 650 acres
(2) Volume of Fill ---34,500,000 Cu. Yds.
(3) Excavation in Lagoon (Sec. Good) --1,500,000 Cu. Yds.
(4.) Total Cost --- $27,800,000.
(5.) Cost per square foot --- $0.98

15,
13,
34,
11,625,000
1,
14,250,000
27,775,

b) Riprapping outer banks of land fill for protection against tidal action (50,000 l.f. @ $50.) $5,000,000.

c) Roadways (Complete)

(1) Columbia Creek to Bridge
(±6000' @ 400 per foot) $2,400,000.
Morningside to Squaw Pond
(±6000' @ 400 per foot) 2,400,000.
Sub Total - $4,800,000.

(2) Service Roads

15,500'-Col. Point
13,000'-Thistle.

7 [illegible] (600,000) Col. 3,000,000
1 - [illegible] (600,000) 600,000
2 - [illegible] (300,000) 600,000
Misc. Service (Sub-divisions, Bulkheads) 500,000
4,700,000.

[illegible] (15,000 @ [illegible]) 3,000,000.
Misc. [illegible] (and U) [illegible]
3,[illegible]

Thompson Poland 8/26/66

Columbia Pt. — Thompson Viaduct & Bridge
MBTA on median strip.
3,000' @ $4,000. per ft. = $12,000,000.
(Same length as for tunnel below for comparison)

3 Tunnels

Assume 2 Highway tubes and 1 MBTA tube
From Engineering Brochure
Baltimore Harbor Tunnel (2 Tubes) was built by Pre-Fab method-offshore
9,220 feet long, costing 65,000,000.
or ± $7,000. per foot.

Depth of channel required is unknown, as is foundation conditions in Boston Harbor.
For general estimate, we should use a conservative figure of $5,000 to $6,000 per ft. for the cost for 2 tubes.
MBTA Tunnel must be added also.
Assume therefore

Three tubes at ± $8,000. per ft

Call length of tubes = 4,000 feet ± allow for portals and bulk heading.

4,000' @ $8,000 per ft. = $32,000,000.

Thompson Bridge

Thompson Island 8/26/58

Land Fill

Original Figures 11,664,000 CY
Additions (Columbia, etc) 1,306,000 CY
(30A)

1 Thompson Isl. Area
A 3,840,000 Sq. Ft.
B 8,000,000 Sq Ft
C 128,000 Sq. Ft.
D 384,000 Sq. Ft.
12,372,000 Sq. Ft. = 304 Acres

Av. Depth (27') - To El. 18.0 = 27' × 12,372,000 = 334,044,000 CF
Add 25% (Consolidation of Fill) 83,511,000
417,555,000 CF

= 15,500,000 C.Y.
@ 0.75 p.c.y. = $11,625,000.

Excavation in Lagoon (1,500,000 C.Y.) Add'l.
@ 1.25 p cy = $1,875,000.
Call 1,900,000.

Columbia Isl. Area
F 8,704,000 S.F.
G 5,568,000 SF
Add'l Fill (20A) H 871,000 SF
15,143,000 S.F. @ Av. D = 27' = 408,861,000 CF
Add 25% (Consol. of Fill)
102,215,000
511,076,000 CF

= 19,000,000 CY.
@ 0.75 p cy = $14,250,000.

Sand Rocks @ $4.00 per foot
Stone to be dumped @ 5.00 " "

Total to be [illegible]

[illegible] CATION

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

1. [illegible] Island [illegible]	[illegible] acres
2. [illegible]	[illegible] acres
	302 acres

[illegible]

[illegible] = [illegible] acres

3. [illegible] fill to [illegible] [illegible]	7,269,052 CY
4. [illegible] to [illegible] [illegible]	23,111 SY
5. Dredging boat channel [illegible]	1,090,133 CY
6. [illegible] (double rip-rap) 5,600 LF x 2 x 40 [illegible] = [illegible],000 SF	33,777 SY
7. [illegible] & Locks	Use previous estimate
8. Roadway - 100' ROW	5,550 LF
9. Roadway - 60' ROW	No length

[illegible]

[illegible] fill @ $0.70/CY	5,0[illegible]
Riprap @ $15.00/SY	347,000
Dredging boat channel @ [illegible]/CY	[illegible]2,000
[illegible] (double rip-rap) @ [illegible]/SY	507,000
[illegible] Locks	20,000,000
Roadway 100' ROW @ [illegible]/LF	5,550,000
Roadway 60' ROW @ [illegible]/LF	

INTER-OFFICE COMMUNICATION

TO Martin Auler

AT

FROM Vincent K. Cates

AT

DATE: May 1[illegible], 1965

ATTENTION:

SUBJECT THOMPSON ISLAND EXPANSION - 1[illegible] WORLD'S FAIR SITE

---

1. The following are very preliminary estimates of the Thompson Island scheme which you presented to Engineering on May 18, 1965.

2. It is called to your attention that in order to arrive at an accurate estimate of the work involved a very complete engineering study would be necessary. This study should be performed by a Consulting Engineering Firm well acquainted with waterfront work and hydraulic dredging. Borings would have to be made and a complete study of the feasibility of this Thompson Island expansion included.

3. Engineering does not have sufficient data or expert engineering knowledge to attempt any estimate of the extension of the MBTA by tunnel or bridge to the site and no estimate could be made relative to the traffic route or flow to the site.

4. The following estimates were based on dredge operation to remove the muck overlay and barge to sea and dredging the fill from nearby areas to the site.

5. Maximum Scheme
Site

a.	Thompson Island Existing	166 acres
b.	Mud flats around this island and Moon Island (north face) causeway	1[illegible]5 acres
	TOTAL AREA	371 acres
c.	Muck Excavation (5' average depth)	5,6[illegible] C.Y.
d.	Dredged Fill to 17' above mean low water 31,876,000 C.Y. plus 25% for shrinkage and compaction	39,845,000 C.Y.
e.	Rip-Rap facing assume 28 ft. vertical height - 40 ft. slope 26,700 LFx40 = 1,068,000 S.F. =	11[illegible] C.Y.

PRELIMINARY ESTIMATE

Muck Excavation & Barging 5,700,000 @ 0.85	4,845,000
Dredged Fill 40,000,000 C.Y. @ 0.70	28,000,000
Rip-Rap 120,000 S.Y. @ 15.00	1,800,000
	34,645,000

USE $34,[illegible]

6. Minimum Scheme
Site

a.	Thompson Island	166 acres
b.	Mud flats around this island and Moon Island (north face) causeway	703 acres
	TOTAL AREA	869 acres
c.	Muck Excavation (5' average depth)	5,670,000 C.Y.
d.	Dredged Fill to 17' above mean low water 27,217,800 plus 25% for shrinkage & compaction	34,022,250 C.Y.
e.	Rip-Rap facing assume 25 ft. Verticle height - 40 ft. slope 15,400x40 = 616,000 S.F.	68,444 C.Y.

PRELIMINARY ESTIMATE

Muck Excavation & Barging 5,700,000 C.Y. @ 0.85	4,845,000
Dredged Fill 34,000,000 C.Y. @ 0.70	23,800,000
Rip-Rap 68,000 S.Y. @ $15.00	1,020,000
	29,665,000

USE $30,000,000

7. The above estimates cover only the land fill. To this must be added roads, transportation facilities, Public and Private utilities.

Vincent K. Cates, P. E.
Assistant Chief Engineer

VKC/r

INTER-OFFICE COMMUNICATION

TO Martin Adler

AT

FROM Francis C. J. Collins, Engineering Division

AT

May 25, 1966

ATTENTION:

SUBJECT FREEDOM '75: CONFERENCE AT ARMY CORPS. OF ENGINEERS (NOTES TO SUPPLEMENT MR. HARRISON'S REPORT)

Salient points brought out:

1. Corps of Engineers responsible for all construction problems outside (Seaward) of established U. S. Pier and Bulkhead lines. The State, through the Waterways Division of their D. P. W., is responsible for all items landward from said lines. Included are granting of all licenses for construction or usage.

2. Corp of Engineers' primary concern is waterways, channels for navigation and appurtenant features affecting them such as bridges, tunnels, roads, dams, etc., which might affect such waterways.

3. The Corp of Engineers can participate up to 50% in:

a.) Public Beach and adjoining breakwaters costs.
b.) Possible elimination or relocation of existing sewer outlets or similar items affecting the beach safety and Public Health.
c.) Inland Marina and new channel costs, but not bulkheads, riprap, or other structures bordering it.
d.) New beach adjoining new highway along Squantum West shore line.

Our plans were considered by Mr. Fogarty with the following observations:

1. Defined fill reclamation areas should not affect or be affected by tidal actions.

2. Velocities of tidal flow will not materially increase by encroachment of the filled areas and the new shore lines are adequate in contour.

3. Heavy riprapping need be required only on northerly or northwesterly sides of filled areas. Shores on East or South portions of Thompson Island appear best suited for beach purposes due to their sheltered locations.

4. At Squaw Head, a 200 foot channel should be adequate. A bridge at this point need not be over 25'-30' vertical clearance.

5. Proposed highway along Squantum shore line, next to East Squantum Street would simply move the present shore line and beach area westerly two or three hundred feet without impairing the view appreciably. The new beach cost could be participated in by the Corps. Also some additional land for building could be made available to Quincy, if desired by them.

6. The bridge clearances from Columbia Point to Thompson's Island and/or the bridge from Squantum Point to the mainland will be governed by final disposition of Boston Edison land and usage as it will affect the size of shipping or boating which will use the Dorset Bay and/or Neponset River channels.

Francis C. J. Collins
Engineering Division

FCJC:ac

[illegible]

[illegible] - [illegible] 5/12/66

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]
[illegible]	[illegible]
	[illegible]

[illegible]: [illegible] million [illegible]
two million [illegible] 1500 rip-rap

[illegible]: $[illegible]

[illegible]: [illegible] $1.00/cubic yard
$[illegible]/sq. ft. for [illegible]
.60/sq. ft. for bulkheads

[illegible]: Mahoney - Grupe Engineers
Bascule Bridges
are figured at $1.00/1.50/sq. ft.
roadway should be 4 lanes;
approach to the bascule part might be
"bridgework" rather than on land.

[illegible]: Mahoney feels that an 80'-100' opening
is necessary for boats - even small boats,
due to any currents, bad handling, etc.

Under these circs a bascule bridge might
cost $6 plus millions; with a smaller
opening 60'-80' this would drop consider-
ably.

FREEDOM 75
10 High Street
Boston

MEMORANDUM

TO: Wally Orpin
BRA Engineering

FROM: Martin Adler

RE: Boring Data in the Area Around Thompson Island

I would like to obtain a complete file on available boring and sub-soil information around the Thompson Island site for the Bicentennial.

Some of this information is already on hand, some is easily obtainable, while others might involve some staff time. In the list that follows I have indicated what exists as far as I understand.

1. Columbia Point Boring Data (this exists in the report by John Stainton on the entire Columbia Point feasibility project).

2. Boston Edison Property (this can be obtained through myself or through your opposite numbers at Boston Edison, but I do understand they have made a substantial number of borings for the property especially the north face including some borings in the water as well).

3. The Boring Data Book that the Society of Civil Engineers put together.

4. The profile of the sewer tunnel from Columbia Point Pumping Station to Squaw Head (Paul Diaz has obtained this already).

5. Any borings that the MDC might have obtained for their work, especially the tunnel from the Columbia Road to Deer Island.

6. The M.I.T. Geology Department has, I understand, a complete analysis of the Dorchester Bay area, including knowledge of the geological strata and possible boring data done not by boring, but by electronic means (if you do not have any contact through MIT Geology, please refer back to me and we will try to obtain one through the Chamber of Commerce. I did speak with a Captain Peyson from the Oceanographic Section of the Geology Department on obtaining this information especially for us, but this might involve a contract and funds which

Wally Orpin March 16, 1966

Boring Data in the Area Around Thompson Island

we do not have, on the other hand, Captain Peyson did suggest that there is available data on Dorchester Bay at the MIT Geology Department.

With this information on hand, we should be able either in our own staff or by going to some consulting engineer to obtain a good idea of the bearing quality, refusal level and other information in the area that would be filled around the existing islands.

Martin Adler
Planning Coordinator

MA:v

[illegible]

To: [illegible] Date: October 20, 1966

cc: [illegible]

From: [illegible]

Re: Meeting on Harbor [illegible]

[illegible] representatives of the State [illegible] Resources, and the [illegible] Corps of Engineers, it was [illegible] agreed that before any [illegible] could be made [illegible] Hill contours and new or changed harbor lines [illegible] probably shown on [illegible] that they are [illegible] "Well, [illegible]," he [illegible] [illegible] but, [illegible] work. I [illegible] Highways (Paul [illegible]) [illegible] when it can be done, and how long it will take.

It is important [illegible] even when this added information is [illegible] for any of the agencies to [illegible] or legislative [illegible], until [illegible] on Beacon Hill, or a specific World's [illegible] Fair plan [illegible] out that, although legislation could be drawn establishing new or changing existing harbor lines contingent upon the realization of a World's Fair plan, it would not be desirable to legislate for new or changed harbor lines which the plan might well change. Therefore, although further meetings at this level should be held after the above-mentioned, now [illegible] further actions such as preliminary Hill [illegible], public hearings, etc., may not be advisable in the immediate future.

The State Department of Natural Resources and the U.S. Corps of Engineers in particular will want to know the locations and quantities of dredging for our proposed Hill.

Paul Allen of the Department of Commerce believes that the proposed Columbia Point Park Hill will create an acute pollution problem in the old harbor and Columbia Park. It was generally felt that despite new Federal and State water pollution legislation and increasing efforts to improve the quality of the environment in Boston, harbor and river pollution will still be with us in 1975.

These attendees also [illegible] were:

[illegible]

[illegible]
Paul [illegible]
[illegible]

[illegible]

[illegible] Conservation Service
[illegible] 175)

[illegible]

[illegible] (probably with Coastal
[illegible], Planning Branch)

[illegible] Section, Operations Branch
[illegible], Civil Engineer

DOW:bm

FREEDOM '75 LAND DEVELOPMENT
THOMPSONS ISLAND & COLUMBIA POINT

Pre-Preliminary Engineers Estimate

August 26, 1966

1. LAND FILL AREAS (NEW)

Existing "flats" range from 0' to 6' below Mean Low Water (Boston City Base).

Assume average finish fill elevation at Elevation + 18.00 (B.C.B.) to avoid maximum tid e and wave conditions.

Approximate new fill shore lines given by M. Adler's office, planimetered areas from 800 scale, blown up Coast and Geodetic Survey Plans.

Thompsons Island	18,800,000 Sq. Ft.	= 300
Columbia Point	15,500,000 Sq. Ft.	= 350
New Areas - Totals	28,300,000 Sq. Ft.	= 650 Acres

2. VOLUMES - NEW LAND FILL (Hydraulic Fill from Bay within 2 miles of site)

a) Thompsons Island

27' (Av. Depth) x 12,800,000 s.f.	= 335,000,000	C.F.
Add 25% (Consolidation of Fill)	= 83,750,000	
	418,750,000	C.F.
	= 15,500,000	C.Y.

b) Columbia Point

27' (Av. Depth) x 15,500,000 S.F.	= 420,000,000	C.F.
Add 25% (Consolidation of Fill)	= 105,000,000	
	525,000,000	C.F.
	= 19,500,000	C.Y.

c) Excavation in Thompson Marina, (Possible Gravel Deposit) and Lagoons

1,500,000 C.Y.

3. RIPRAP (Scaled), as necessary on new shore line for protection against channel tide currents.

50,000 linear feet

4. COSTS - LAND FILL

Thompsons Island Land Fill	
15,500,000 C.Y. @ $ .75 ----------	$11,625,000.
Columbia Point Land Fill	
19,500,000 C.Y. @ $ .75 ----------	$14,625,000.
Rip rap as needed	
50,000 L.F. @ $100. ----------	$ 5,000,000.
Excavation cost (item 2C)	
1,500,000 C.Y.	
(includes Haulage & Placing)----------	$ 1,875,000.
	$33,125,000.
Contingencies, Price increase, etc. 21%	$ 6,956,250.
LAND FILL TOTAL COST	$40,081,250. call $40,000,000.

5. Land Fill Cost per foot (based on above) For 28,300 sq. ft. = $1.40 psf

---

6. COSTS - BRIDGES

a) Thompsons Island to Columbia Point

Assume 100' width of Span with MBTA placed in median strip.
50' clearance to mean high water at channel.
$50. per square foot x 100' = 5,000. per linear foot of bridge
Figure 3,000 feet of elevated bridge and viaduct
3,000' @ $5,000 pf ---------- $15,000,000.

b) Thompsons Island to Squantum

Figure 1,500' of elevated bridge and viaduct
New Channel span - 25' clearance at M.H.W.
70' width x $40 psf = $2,800 per ft. bridge
1,500' Bridge @ $2,800 per ft. ---------- call ------- $ 4,000,000.

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7. COSTS - HIGHWAYS & STREETS

A figure of $400. per linear foot was used as unit price cost, (including contingencies), for major highways having:

Dual Roadways (lanes of 8'x12'x12' and 12'x12'x8')	= 64.0'
Median Strip	= 16.0'
Two Sidewalks at 8'	= 16.0'
Total Street Right of Way	96.0'

(Widths from M. Gruenbaum's Memo)

The figure above, of $400 plf, (equivalent to ± $2,000,000 per mile) should cover costs of thick gravel bases, roadways, landscaping, sewers, drains, water lines, highway lighting, fire and police alarm systems.

For minor service streets a unit cost of $200 plf, including all utilities, landscaping, etc. has been assumed.

8. COSTS - COLUMBIA POINT

a) Columbia North (Columbia Circle to Thompson Island Bridge)

6,000 feet @ $400 per ft. = $ 2,400,000.

b) Columbia South (Morrissey Boulevard northerly to Columbia North)

5,000 feet @ $400 per ft. = $ 2,000,000.

c) Extension of Columbia South, in a loop, to a cul-de-sac

3,000 feet @ $200 per ft. = $ 600,000.

9. COSTS - THOMPSONS ISLAND

a) New highway from Boston Marina entrance on E. Squantum St. in Squantum to Squaw Rock at proposed bridge to Thompsons Island

6,000' @ $400 plf. $ 2,400,000.

b) Connecting road between bridges on Thompsons Island

2,500' @ $400 plf. $ 1,000,000.

c) Major Service Roads on Thompsons Island

14,200' @ $200 plf. $ 3,000,000.

d) Miscellaneous Structures, pedestrian bridges, etc. along service roads $ 1,700,000.

e) Sewage disposal facilities (for either an independent treatment plant or for pumping stations and force main to the mainland $ 500,000.

f) Water Supply system, indeterminate storm water and other utilities (unforeseen at this time), in the nature of contingencies $ 500,000.

TOTAL: $68,100,000.

INTER-OFFICE COMMUNICATION

TO Martin Adler

AT

FROM Paul J. Dias

AT

DATE: June 18, 1965

ATTENTION:

SUBJECT THOMPSON ISLAND - 1975 WORLD'S FAIR SITE - 300 ACRES OF FILL

As a follow up to the first memo sent to you with estimates for maximum and minimum schemes for a World's Fair Site on Thompson Island, the following is the estimate for the 300 acre fill scheme we discussed together in your office on Tuesday, June 15, 1965.

1. Thompson Island Existing		166 acres
2. Mud flats around the island and adjacent to Squantum		319 acres
	Total Area	485 acres
3. Muck excavation (5' average depth)		2,575,000 CY
4. Dredged fill to 17' above mean low water 11,811,000 CY plus 25% for shrinkage and compaction		14,764,000 CY
5. Rip-Rap facing assume 28 feet verticla height - 40 foot slope 15,150LF x 40 = 606,000 SF =		67,333 SY

PRELIMINARY ESTIMATE

Muck Excavation & Barging 2,575,000 CY @0.85	$ 2,188,750
Dredged Fill 14,764,000 CY @0.70	10,334,800
Rip-Rap 67,333 SY @$15.00	1,010,000
	$13,533,550

USE $13,534,000

Once again, the above estimate covers only land fill; to this must be added roads, transportation facilities and Public and Private utilities.

Paul J. Dias

Wallace B. Orpin

Wallace B. Orpin, P.E.
Chief Engineer and Director of Site Development

PJD:mg

INTER-OFFICE COMMUNICATION

TO Marty Adler
cc to: M. Wenniger

AT

FROM James Boland, Research Unit

AT

May 13, 1966

ATTENTION

SUBJECT PROPOSED BRIDGE FROM COLUMBIA POINT TO THOMPSON ISLAND

Ray Cady in his discussions with the Director of the Boston Harbor Marina in Squantum indicates that during summer months up to a dozen (12) sailing vessels approaching heights of 70 feet visit his facilities. Furthermore, a quick glance, by the Director, of boats presently utilizing his facilities indicate that about 25 boats exceed 30 foot heights.

The marina's present capacity is 500 boats with plans of expanding to approximately 700. The Director maintains that great numbers of boats exceeding 30 feet in height cruise the waters in the Northeast and would be using his marina if the "Freedom 75" should be situated on Thompson's Island. He also mentioned that the plans of the proposed "city within a city" on the site of the old Squantum Naval Air Base includes a bridge connecting the proposed city to Columbia Point.

RDC:ef

PRELIMINARY ESTIMATE BASED ON 1975 PRICES FOR SITE IMPROVEMENT

PROPOSED WORLD'S FAIR SITE

June 16, 1965

Estimate based on following assumptions:

Plot 800 ft. x 550 ft. = approximately 10 acres

One 60 ft. ROW - 800 ft.

Two 60 ft. ROW - 490 ft.

(Pavement 34 ft., Granite Curb, Grass Plot 5' with trees 40' OC, Concrete Sidewalk - 7')

Lighting standards approximately 120 ft. on centers-staggered

ESTIMATE

Excavation & Backfill - 70 ft. ROW = 70' x 1760' = 13,690 SY @ 2.00	27,380
Pavement-(8-4-2½)-New = 34' x 1832' = 6,920 SY @ 3.00	20,760
Curbing Straight - New = 3,320 @ 4.00	13,280
Curbing Curved - New = 200 + 10% = 220 @ 6.00	1,320
Tree Strip (Loamed & Seeded) = 3,320' x 5' = 1,845 SY @ 2.00	3,690
Trees - Medium @ 40' OC = 85 @ 150.00	12,750
Sidewalk - Concrete 3,320 x 7 + 110 x 8 = 2,680 SY @ 6.50	17,420
Lighting Standards (20,000 Lumens) @ Appr. 120' OC-Staggered-16@ 550.00	8,800
Lighting - Main in Conduit = 1,900' @ 7.00	13,300
Lighting - Laterals in Conduit = 1,020' @ 5.00	5,100
Manholes - Electrical - 8 @ 350.00	2,800
Police & Fire System (Estimated)	8,000
Subtotal	134,400
Sanitary Sewer (Average 15") = 1,900 @ 9.00	17,100
Sanitary Sewer Manholes = 10 @ 350.00	3,500
Storm Drain (Average 24") = 1,900 @ 11.00	20,900
Storm Drain Manholes = 10 @ 350.00	3,500
Storm Drain Catch Basins - (2 per Manhole) = 20 @ 300.00	6,000
Water (Cement Lined) - (Average 12") = 1,900 @ 16.00	30,400
Gate & Gate Box - 12" (4 per Intersection) = 8 @ 350.00	2,800
Hydrants - Fire = 10 @ 600.00	6,000
Subtotal	90,200
Grand Total	224,600
Contingencies 10%, Unit Cost Increase 30%, Engineering 5% (45%)	101,070
	325,670

USE $32,500 PER ACRE

NOTE: The cost of a sewer pumping station and force main (estimated at $500,000) must be added to the overall costs of streets, lighting and utilities.

Assume 200 Acres to be Improved

USE $32,500 plus $2,500 = $35,000 Per Acre

F R E E D O M 75

Meeting with Corps of Engineers

January 10, 1966

B. R. A.
M. Adler - Planner
W. Orpin - Engineering
W. Tikkanen -

U. S. Corps of Engineers
Frank W. Fogarty - Ch. River & Harbor
Edward Mullaney - Project Engineer

---

1. Any work more than 1/2 million dollars needs Congressional action.

2. Our work will not need Congressional activity even though outside of the Pierhead Line; only license to Fill, and for Dam and Locks.

This does mean that all possible claims, riparian rights, etc. will have to be taken care of.

3. Federal share 50-50; the "local" 50 might be:

State	25%
Boston	25%
or	
Boston	12½
Quincy	12½

4. Federal end in dam would be in part; and the part justified by the added Navigational benefits provided. Navigational meaning small boats as well as

If there's a resolution this session the money now, and the study in 2 years. Then, authorization for construction with appropriation to build.

5. Resolution of Congress needed to authorize Corps to abandon the previous resolution authorizing Dorchester Bay and Neponset River Channel study.

(Resolution requested by Committee on Public Works, U S Senate, October 15, 1957; Letter from Secretary of the Army transmitting Chief of Engineers, July 17, 1962, submitting the above report.)

6. Fish and Wildlife interests are strong in area. Clam areas exist off Squantum "Air Base".

At any hearings diggers will be heard from.

7. Mammoth dredges, Holland experience, etc.; talked to Port Authority; Atlantic, Gulf and Pacific Dredging Company, 15 Park Row, New York City.

Mr. DeWitt Barlow; Barclay 7-8370
Gahagan Dredging Company, 90 Broad Street

They had a joint venture in Florida.

INTER-OFFICE COMMUNICATION

TO Marty Adler - Planning Coordinator

AT

FROM Paul J. Dias - Civil Engineering Aide

AT

DATE: March 28, 1966

ATTENTION:

SUBJECT Worlds Fair - Submarine Utilities to Thompson Island

In reply to your memo on February 7, 1966 requesting underwater utility information, the following is a compilation of what I found.

There are only three utilities serving Thompson Island at the present time. The New England Tel & Tel. serves the island with a 1300 foot seven pair (7PR) cable, placed in 1919 from Squaw Rock, which the school owns. See attached sketch. The island is served by a 6 inch water main installed in 1951 between Squaw Rock and the island of which there is a plan and profile attached and a detail sheet of the connections at either end. The electric line which serves the island and is owned by the school is two 3 conductor cables of #4 wire in a submarine cable. A sketch of the location is enclosed.

The sewerage system now in operation from the Calf Pasture to Moon Island is to be abandoned when the connection from the MDC sewer tunnel in Columbus Park to the 10.5 foot main intercepting sewer near Columbia Circle is made. At the present time the pumping station on Calf Pasture pumps through a 7.5 foot tunnel under Dorchester Bay to Squaw Head and then out to Moon Island in an 11 foot outfall to the reservoirs. The reservoirs on Moon Island hold, until one hour after the turn of the tide, the raw sewerage which is then discharged into the harbor. It takes about one hour to empty the reservoirs which accumulatively hold about fifty million gallons. After discharge the gates are closed and the process repeated on the next tide.

All of the sewerage from Squantum is pumped by an MDC pump located near Squantum and Dorchester Streets through a force main to a connection with the 11 foot outfall sewer near the old guard house on the viaduct to Moon Island. Mr. Dexter O. Fisher, a Contract Engineer for the MDC also stated that about a million gallons of raw sewerage is pumped per day from Squantum. He further stated that the MDC has just let a boring contract along the proposed route of a new 24" sewer line to the Blacks Creed pumping station. This new sewer line is made necessary by the abandonment of the Moon Island works within the next two years.

INTER-OFFICE COMMUNICATION

TO Marty Adler - Planning Coordinator

AT

FROM Paul J. Dias - Civil Engineering Aide

AT

DATE: March 28, 1966

ATTENTION:

SUBJECT Worlds Fair - Submarine Utilities to Thompson Island

In reply to your memo on February 7, 1966 requesting underwater utility information, the following is a compilation of what I found.

There are only three utilities serving Thompson Island at the present time. The New England Tel & Tel. serves the island with a 1300 foot seven pair (7PR) cable, placed in 1919 from Squaw Rock, which the school owns. See attached sketch. The island is served by a 6 inch water main installed in 1951 between Squaw Rock and the island of which there is a plan and profile attached and a detail sheet of the connections at either end. The electric line which serves the island and is owned by the school is two 3 conductor cables of #4 wire in a submarine cable. A sketch of the location is enclosed.

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I can find no underwater obstacles to the filling operation from my preliminary research into the problem thus far.

Paul J. Dias
Civil Engineering Aide

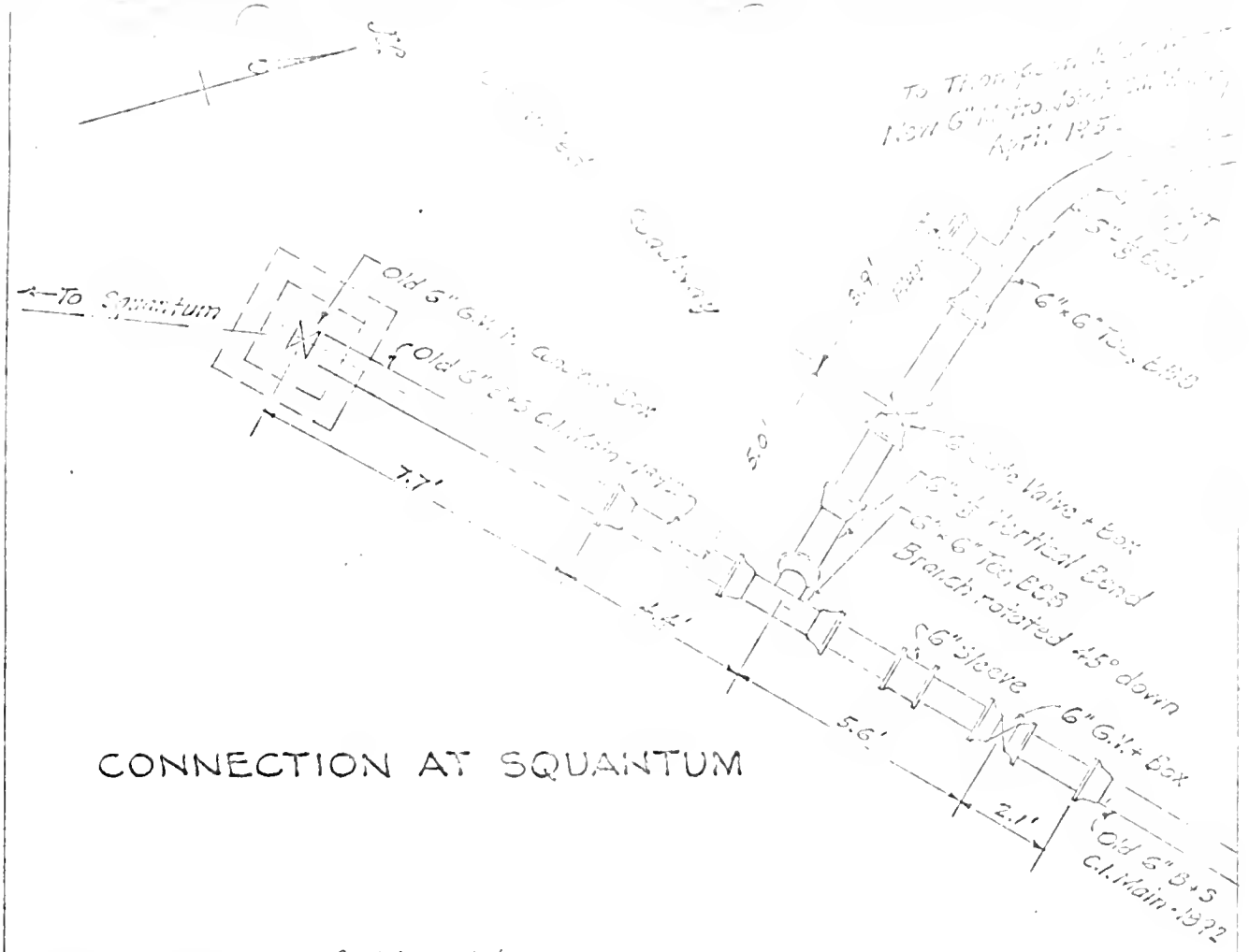
Wallace B. Orpin, P. E.
Chief Engineer and Director of Site Development

PD/r

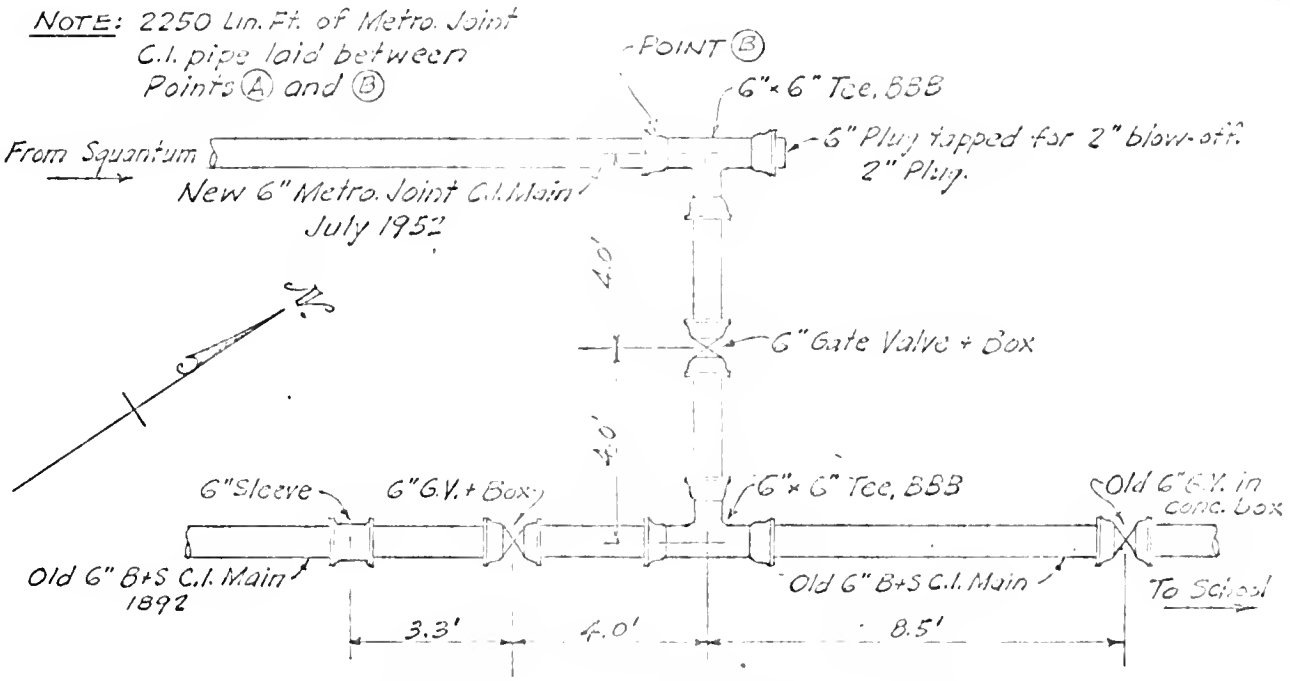
Attachments


SOUTH BOSTON
Pleasure Bay
Castle I
SIREN
OLD HARBOR
DORCHESTER BAY
MEASURED NAUTICAL MILE
COURSE 242° TRUE
Spectacle Island
STACK
Western Way
THOMPSON ISLAND
CHANNEL SPAN ONLY
FIXED BRIDGE
VERT CL 51 FT EBR
CENTER 150 FT
Pipeline and cable area
Thimble I
Halfmile Rk
Chapel Rks
Moon Head
Piling
Quantum Pt
mud
Old Colony Y C
FORT MOUNTAIN
TONSET RIVER
Squantum
marsh
Pope Hill
ELECTRIC
WORLD'S FAIR
THOMPSON ISLAND
S. E.


SOUTH BOSTON
Pleasure Bay
Castle I
OLD HARBOR
DORCHESTER BAY
THOMPSON ISLAND
Spectacle Island
Western Way
MEASURED NAUTICAL MILE
COURSE 242° TRUE
CHANNEL SPAN ONLY
FIXED BRIDGE
VERT CL 51 FT E&R
CENTER 150 FT
Pipeline and Cable area
Moon Head
Thimble I
Squantum Pt
Squantum
marsh
mud
Old Colony Y C
Commercial Pt
Pope Hill
Sevin Hill
Fox Pt
ONSET RIVER
TELEPHONE
WORLDS FAIR
THOMPSON ISLAND
SITE



CONNECTION AT SQUANTUM



CONNECTION AT THOMPSON ISLAND

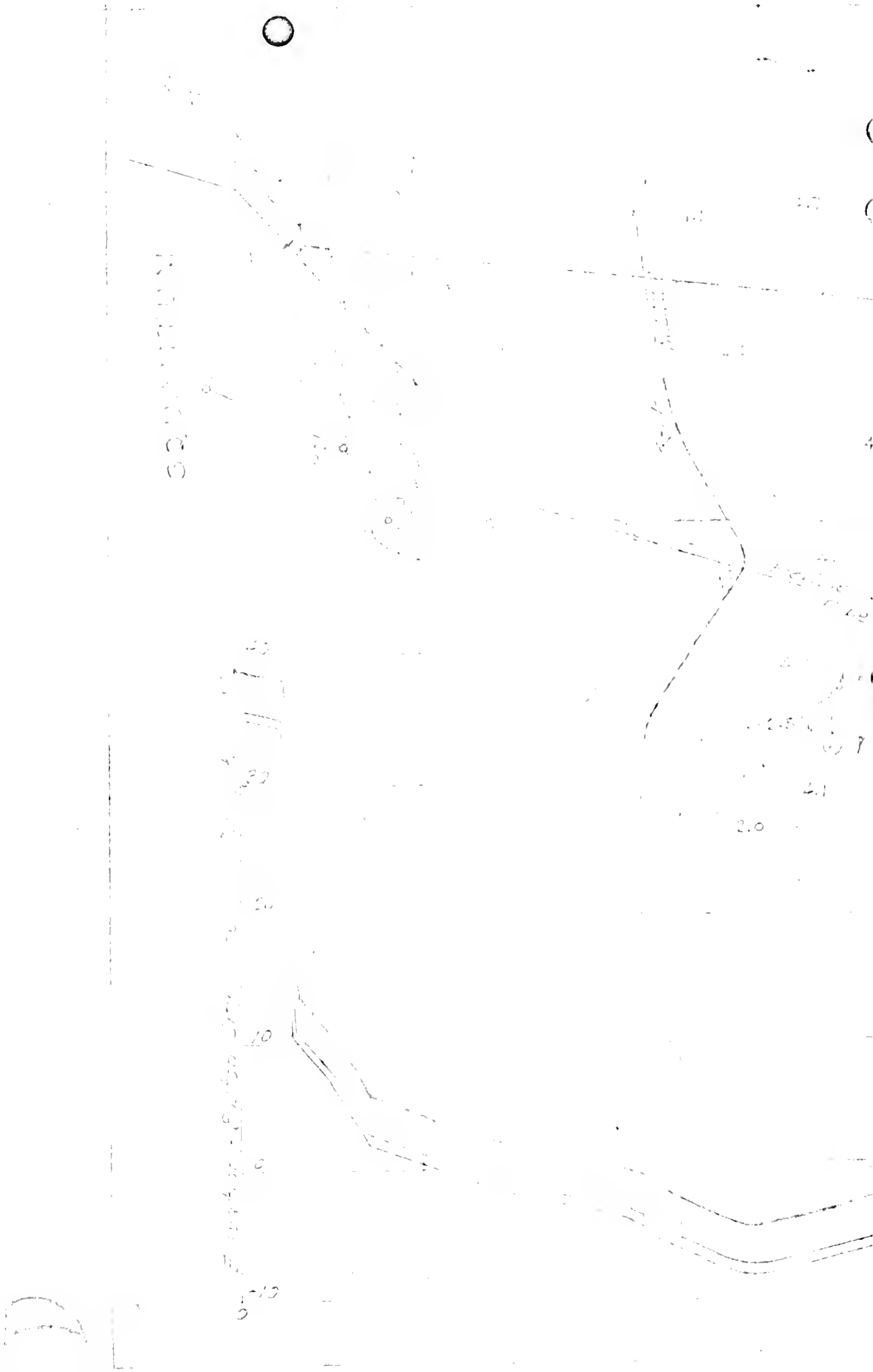
FARM AND TRADES SCHOOL

6-INCH WATER MAIN – SQUANTUM TO THOMPSON ISLAND

DETAIL RECORD OF CONNECTIONS

COFFIN & RICHARDSON, INC., ENGINEERS – BOSTON, MASS.

SCALE: 1/4" = 1'-0" NOVEMBER 1952



ATLANTIC, GULF & PACIFIC CO.
ENGINEERS AND CONTRACTORS

DREDGING, FILLING, LAND RECLAMATION
CANALS, RIVERS AND HARBORS

CABLE ADDRESS
"DREDGING" NEW YORK
BENTLEYS EXCELSIOR
LIEBER'S AND WESTERN UNION
CODES

250 BROADWAY

NEW YORK, N.Y. 10007

April 20, 1966

Mr. Martin R. Adler,
Planning Co-ordinator
Freedom 75
10 High Street
Boston, Massachusetts

Dear Mr. Adler:

Mr. Bennett and I have checked over the information we have as to the availability of hydraulic fill in the vicinity of the proposed site of the FREEDOM 75 Fair, with uncertain results.

Several years ago, we made a complete coverage of Boston Harbor looking for deposits of sand that could be dredged and used commercially. The investigation was entirely fruitless, but due to the fact that we were looking for sand only, at no time did we attempt to penetrate the harbor bottom below the level of the clay which covers the harbor quite extensively. Our borings do indicate, however, that Dorchester Bay bottom consists of twenty feet or more of mud overlying this clay, and the same condition exists in Quincy Bay and in the waters between Thompson Island and Moon Island. This would present a serious problem in making a hydraulic fill as indicated on the chart which you left with us; not only would it be necessary to dispose of a large quantity of mud in the borrow area, but it would be almost impossible to prevent the formation of mud waves in the process of reclaiming land for your FREEDOM 75 site.

At the present time, we have no solution to the problem. At some future date, possibly during this summer, we intend to extend our examination for sand outside of Boston Harbor. Should we find a suitable deposit, it would then be practical to make a sand fill. We believe this could be done in such a way to prevent serious mud waves.

As you know, Logan International Airport was constructed with hydraulic fill from the harbor bottom although there was not as much mud to contend with at this location. Whether the fill be constructed from clay or from sand brought into the harbor, we believe it would be wise to strip the site to be filled before attempting to place any sand or clay.

Yours very truly,

DeWitt D. Barlow, Jr.,
First Vice President,
Atlantic, Gulf and Pacific Company

DDBJr:McC

MEMORANDUM-FREEDOM 75

To: David Harrison

From: Martin Adler

Date: May 17, 1966

Subject: Aerial Routes Above the Bicentennial Exposition Grounds

---

Could you look into the FAA regulations regarding flight paths and height permissions in the area of our interest for the Bicentennial.

It is my understanding that the Squantum people are going up to about 30 stories which seems to imply that they have checked through this problem and found that 300 or 350 feet is a feasible height even though it is pretty much on the flight path of one of the major runways to Logan. But since this problem always comes up, I think we should have a file on the subject and have the question answered finally, at least as far as the latest regulations are concerned.

At the same time you might find out if these above regulations might be changed due to new type of transport or new type of runways or some other aviation breakthrough that we are not aware of at present and if they do change what would this mean to the height regulations.

As a suggestion you might contact Bob Loverud first since they went through this on the Waterfront project and he might have these at hand.

MA/mb

INTER-OFFICE COMMUNICATION

TO Marty Adler, Planning Coordinator

AT

FROM Paul J. Dias, Civil Engineering Aide

AT

DATE: April 5, 1966

ATTENTION:

SUBJECT WORLD'S FAIR SUBSOIL CONDITIONS

On Friday, April 1st I had another meeting in regards to the subsoil conditions under Dorchester Bay, Quincy Bay and Boston Harbor with Mr. Cliff Kaye of the U. S. Interior Department Geological Survey located at 270 Dartmouth Street, Boston, Massachusetts; also in attendance was Miss Rachael Barker, Assistant to Mr. Kaye.

I asked him the same question as I had previously asked Professor Mencher of M.I.T., "Is there any amount of sand and gravel in sufficient quantities to make fill for the World's Fair. As I mentioned in my memo to you on March 31st I used the figure of approximately 26 million cubic yards. This figure is erroneous. I have subsequently checked back through my figures and realize that 26 million cubic yards is wrong, the quantity should be approximately 7.2 million cubic yards for the fill operation of the first scheme on which we worked, namely, this filling between Thompson Island and Squantum. The 26 million cubic yards figure stuck in my mind from our work-the scheme of fill at Calf Pasteur and the most easterly side of Thompson Island which we worked up on March 1st.

Mr. Kaye stated that he was of the opinion that the possibility of using a mud and sand fill may be feasible. He did not know of any area within the Harbor where we could get sand and/or gravel in the quantity we need. He said a mixture of sand, gravel and mud may be suitable for the fill but this would have to be finally determined by a complete study. In the Old Harbor area sand and mud overlay clay in relatively large quantities. If this becomes a proven fact it would be most advantageous because of the proximity of the filling operation. As he mentioned, almost echoing Professor Mencher, a full survey of the subsoil conditions should be let to find out exactly if and where there may be suitable material for the filling operation. He referred me to Mr. Jack Davies, Deputy Chief Engineer for Logan Airport. He said Mr. Davies could answer questions relative to types of materials for fill, drying time, compaction, etc., as almost 90% of Logan Airport has been filled in by hydraulic dredging operations. Mr. Orpin is setting up a meeting for me with Mr. Davies.

I mentioned to Mr. Kaye the Boston Harbor Sanitary Investigation, Chapter 42 of the Resolves of 1935 which I saw in Professor Mencher's Office. He had no knowledge of this investigation. In checking through I went to the Massachusetts Legislative Library in the State House and talked to Mrs. Jordan who did find me the report. It is reported out in the Mass. Legislative Documents

of the House under House Bill 1000 in 1937, Book No. 5, Bills 1551-1699 inclusive on Pages 325-332. These were the recommendations made by Mr. Irving B. Crosby, Consulting Geologist for the Commission. The report deals with proposed deep rock sewerage tunnels under the Harbor. As Mr. Crosby mentions in the report, no borings at all were available and therefore many assumptions were made. This report was submitted September 3, 1936 by Mr. Irving B. Crosby. In reading it through, for our particular needs it is not useful at all.

The few borings that Mr. Kaye has in his possession he will be more than happy to supply us with.

Attached please find the cover letters that should be attached to my memo to you on March 28th in regards to Submarine Utilities at Thompson Island. These should be attached to the different sheets that the utility companies send.

Paul J. Dias

PJD:rgr

Attachments

INTER-OFFICE COMMUNICATION

TO Marty Adler, Planning Coordinator

AT

FROM Paul J. Dias, Civil Engineering Aide

AT

DATE: March 31, 1966

ATTENTION:

SUBJECT WORLD'S FAIR SUBSOIL CONDITIONS

On March 30th I had a meeting with Proffesor Eli Mencher of M.I.T., Geological Department, in regards to the subsoil conditions under Dorchester Bay, Quincy Bay and Boston Harbor.

The questions I asked were, "Is there any amount of sand or gravel in sufficient quantities for the filling operation for the World's Fair"? The amount necessary is approximately 26 million cubic yards. From the Professor's data he could give me no conclusive answer. The work he has done in the bays and harbor entails mostly probings and corings to depth of approximately 10 ft. maximum below the surface of the ocean floor. The cores he had in his office showed that overlaying a layer of clay is a layer of mud which varies anywhere from a foot thick to as much as 20 ft. thick. There are no areas which would give up any amount of sand or gravel in the amount which we need for this fill to the best of the professor's knowledge.

Another question asked him was if the clay between Thompsons Island and Squantum could stand the amount of fill necessary to have a final grade of +17. It was his considered opinion that the clay would probably compact and slip, subsequently producing the failure or settlement of the fill in future years. As he suggested, a full survey and study should be made of this problem before even one yard of fill is placed. As the foregoing mentions, this is a most critical problem which would necesitate a complete engineering survey. The only possible piece of definite information he suggested was the Boston Harbor Sanitary Investigation, Chapter 42 of the Resolves of 1935. Mr. Orpin requested me to go to the State House to obtain, if possible, a copy of this Chapter and Investigation to see what information it contained.

Professor Mencher has in his possession a boring map which I think may possibly be the work plan for the previously mentioned Boston Harbor Sanitary Investigation. He suggested that I get in touch with Mr. Cliff Kaye of the U. S. Department of Interior Geological Survey as, in his opinion, he is the most knowledgable man of the subsurface data of the Boston Harbor. Another gentlemen he mentioned for possible contact is Professor Marland Billings of the Geology Department of Harvard University. Prof. Billings also is quite knowledgable in the geology of the Boston area.

Prof. Mencher had in his possession a reproducible of the Old Harbor in Dorchester Bay which was done approximately forty years ago which showed mud,

sand and gravel depths. He was reluctant to give me a copy of the plan as it was prepared by Turner Construction Company which is still doing business. He will, however, allow me to take some information off the plan if it is necessary.

All in all, I really got no definite information from him although he was very helpful.

Paul J. Dias

PJD:rgr

~~xxxxxMr.Adder~~

Wallace B. Orpin, P. E.
Chief Engineer and Director of Site Development

INTER-OFFICE COMMUNICATION

TO Martin Adler

AT

FROM Francis C. J. Collins, Project Engineer

AT

DATE: December 27, 1966

ATTENTION

SUBJECT Freedom '75 Land Development and Improvements
(Final Report on Preliminary Data and Estimates)

We are submitting herewith, a breakdown of our preliminary estimate of cost for construction of the proposed Freedom '75 site on Thompson Island, the expansion of Columbia Point and the installation of major access roads, service roads, and utilities.

New areas produced at Thompson Island and Columbia Point, as outlined by your office, were planimetered from the best maps available.

Regarding the proposed land fill, every avenue of information was utilized, resulting in our assumption that the fill could be placed directly on the existing so-called "mud" flats by hydraulic pumping from the bay, within a two mile area. Substantiating these assumptions, feasibility and unit costs for fill and dikes were:

1. Hydraulic fill from the bay was used for building the Squantum Naval Air Station and sections of the runways at Logan International Airport.

2. Several interviews with the Army Corps of Engineers.

3. Interviews with officials of the Marine Division, Perini Corp.

4. Data from "Calf Pasture Sewage Treatment Plant", Plans by C. A. Maguire & Assoc., Olson T. Villar, Consultant (1941)

5. Sub-soil and Site Condition Study (1964) and Columbia Point Feasibility Survey, by Maurice A. Reidy Engineers, Boston, Mass.

A comparative study was made between bridges and tunnels but the cost of tunnel construction (Cut and Fill method was too high). From Columbia Point to Thompson Island, our estimates were:

Three Tube Tunnels 4,000' @ $8,000 p.f. -- $32,000.000.
Viaduct and Bridge (MBTA in median strip) 3,000' @ $4,000 p.f. --- $12,000.000.

It was, therefore, mutually agreed to use the Viaduct and Bridge Plan (50 foot clearance at channel).

The hydraulic Fill quantities were computed for the areas, assuming an average depth of 27 feet, up to elevation 13.0 (Boston City Base). Twenty-five percent additional volume was added to care for consolidation of material over a period of 2-3 years. Heavy riprapping will be needed only on the fill edges bordering the main channels.

Francis C. J. Collins

FCJC/np

Attached

INTER-OFFICE COMMUNICATION

TO [illegible]

AT

FROM [illegible]

AT

DATE : [illegible]

ATTENTION:

SUBJECT [illegible]

1. The following are very preliminary estimates of the [illegible] Island scheme which you presented to [illegible] on [illegible].

2. It is called to your attention that in order to arrive at an accurate estimate of the work involved a very complete engineering study would be necessary. This study should be performed by a Consulting Engineering Firm well acquainted with water front work and hydraulic dredging. Foreign work would have to be made and a complete study of the feasibility of this Thompson Island expansion included.

3. Engineering does not have sufficient data or expert engineering knowledge to attempt any estimate of the extension of the ITA by tunnel or bridge to the site and no estimate could be made relative to the traffic route or flow to the site.

4. The following estimates were based on dredge operation to remove the muck overlay and barge to sea and dredging the fill from nearby areas to the site.

5. <u>Maximum Scheme</u>
<u>Site</u>

a.	Thompson Island Existing	166 acres
b.	Mud flats around this island and Moon Island (north face) conveyed	705 acres
	TOTAL AREA	871 acres
c.	Muck Excavation (5' average depth)	5,6[illegible],000 C.Y.
d.	Dredged Fill to 17' above mean low water 31,8[illegible],000 C.Y. plus 25% for shrinkage and compaction	39,845,000 C.Y.
e.	Rip-Rap facing around [illegible] ft. vertical height - [illegible] ft. slope 26,7[illegible] = 1,[illegible],000 C.Y. =	1[illegible] C.Y.

PRELIMINARY ESTIMATE

Muck Excavation & Dredge 5,700,000 C.Y. @ 0.85	4,845,000
Dredged Fill 40,000,000 C.Y. @ 0.70	28,000,000
Rip-Rap 120,000 S.Y. @ 15.00	1,800,000
	34,645,000

USE $34,650,000

6. Minimum Scheme
Site

a. Thompson Island 166 acres

b. Mud flats around this island and Moon Island (north face) causeway 703 acres
TOTAL AREA 869 acres

c. Muck Excavation (5' average depth) 5,670,000 C.Y.

d. Dredged Fill to 17' above mean low water 27,217,800
plus 25% for shrinkage & compaction 34,022,250 C.Y.

e. Rip-Rap facing assume 28 ft.
Verticle height - 40 ft. slope
15,400x40 = 616,000 S.F. 68,444 S.Y.

PRELIMINARY ESTIMATE

Muck Excavation & Barging 5,700,000 C.Y. @ 0.85	4,845,000
Dredged Fill 34,000,000 C.Y. @ 0.70	23,800,000
Rip-Rap 68,000 S.Y. @ $15.00	1,020,000
	29,665,000

USE $30,000,000

7. The above estimates cover only the land fill. To this must be added roads, transportation facilities, Public and Private utilities.

Vincent K. Cates, P. E.
Assistant Chief Engineer

VKC/r

PROPOSAL '75 LAND DEVELOPMENT
THOMPSONS ISLAND & COLUMBIA POINT

Pre-Preliminary Engineers Estimate

August 26, 1966

1. LAND FILL AREAS (NEW)

Existing "flats" range from 0' to 6' below Mean Low Water (Boston City Base).

Assume average finish fill elevation at Elevation + 18.00 (B.C.B.) to avoid maximum tide and wave conditions.

Approximate new fill shore lines given by M. Adler's office, planimetered areas from 800 scale, blown up Coast and Geodetic Survey Plans.

Thompsons Island	18,800,000 Sq. Ft.	= 300
Columbia Point	15,500,000 Sq. Ft.	= 350
New Areas - Totals	28,300,000 Sq. Ft.	= 650 Acres

2. VOLUMES - NEW LAND FILL (Hydraulic Fill from Bay within 2 miles of site)

a) Thompsons Island

27' (Av. Depth) x 12,800,000 s.f.	= 335,000,000	C.F.
Add 25% (Consolidation of Fill)	= 83,750,000	
	418,750,000	C.F.
	= 15,500,000	C.Y.

b) Columbia Point

27' (Av. Depth) x 15,500,000 S.F.	= 420,000,000	C.F.
Add 25% (Consolidation of Fill)	= 105,000,000	
	525,000,000	C.F.
	= 19,500,000	C.Y.

c) Excavation in Thompson Marina, (Possible Gravel Deposit) and Lagoons

1,500,000 C.Y.

3. RIPRAP (Scaled), as necessary on new shore line for protection against channel tide currents.

50,000 linear feet

4. COSTS - LAND FILL

Thompsons Island Land Fill
15,500,000 C.Y. @ $ .75 ---------- $11,625,000.
Columbia Point Land Fill
19,500,000 C.Y. @ $ .75 ---------- $14,625,000.
Rip rap as needed
50,000 L.F. @ $100. ---------- $ 5,000,000.
Excavation cost (item 20)
1,500,000 C.Y.
(includes Haulage & Placing)---------- $ 1,875,000.
$33,125,000.

Contingencies, Price increase, etc. 21% $ 6,956,250.

LAND FILL TOTAL COST $40,081,250. call $40,000,000.

5. Land Fill Cost per foot (based on above) For 28,300 sq. ft. = $1.40 psf

---

6. COSTS - BRIDGES

a) Thompsons Island to Columbia Point

Assume 100' width of Span with MBTA placed in median strip.
50' clearance to mean high water at channel.
$50. per square foot x 100' = 5,000. per linear foot of bridge
Figure 3,000 feet of elevated bridge and viaduct
3,000' @ $5,000 pf ---------- $15,000,000.

b) Thompsons Island to Squantum

Figure 1,500' of elevated bridge and viaduct
New Channel span - 25' clearance at M.H.W.
70' width x $40 psf = $2,800 per ft. bridge
1,500' Bridge @ $2,800 per ft. ---------- call -------- $ 4,000,000.

---

7. COSTS - HIGHWAYS & STREETS

A figure of $400. per linear foot was used as unit price cost, (including contingencies), for major highways having:

Dual Roadways (lanes of 8'x12'x12' and 12'x12'x8')	= 64.0'
Median Strip	= 16.0'
Two Sidewalks at 8'	= 16.0'
Total Street Right of Way	96.0'

(Widths from M. Cruenbaum's Memo)

The figure above, of $400 plf, (equivalent to a $2,000,000 per mile) should cover costs of thick gravel bases, roadways, landscaping, sewers, drains, water lines, highway lighting. fire and police alarm systems.

For minor service streets a unit cost of $200 plf, including all utilities, landscaping, etc. has been assumed.

8. COSTS - COLUMBIA POINT

a) Columbia North (Columbia Circle to Thompson Island Bridge)

6,000 feet @ $400 per ft. = $ 2,400,000.

b) Columbia South (Morrissey Boulevard northerly to Columbia North)

5,000 feet @ $400 per ft. = $ 2,000,000.

c) Extension of Columbia South, in a loop, to a cul-de-sac

3,000 feet @ $200 per ft. = $ 600,000.

9. COSTS - THOMPSONS ISLAND

a) New highway from Boston Marina entrance on E. Squantum St. in Squantum to Squaw Rock at proposed bridge to Thompsons Island

6,000' @ $400 plf. $ 2,400,000.

b) Connecting road between bridges on Thompsons Island

2,500' @ $400 plf. $ 1,000,000.

c) Major Service Roads on Thompsons Island

14,200' @ $200 plf. $ 3,000,000.

d) Miscellaneous Structures, pedestrian bridges, etc. along service roads $ 1,700,000.

e) Sewage disposal facilities (for either an independent treatment plant or for pumping stations and force main to the mainland $ 500,000.

f) Water Supply system, indeterminate storm water and other utilities (unforeseen at this time), in the nature of contingencies $ 500,000.

TOTAL: $68,100,000.

FREEDOM 75 MEMORANDUM

TO: Frank Christian
cc. Jim Kelso

FROM: Martin Adler DATE: July 25, 1966

SUBJECT: Proposed New Anchorage to Permit Logan 15-33 Extension:

Report from Corps of Engineers

A discussion this morning with Mr. Frank W. Fogarty, Chief, River and Harbor Section, U.S. Army Engineer Division, New England, leads to the following information:

1. Anchorages are created after special studies by the Corps of Engineers which are authorized by Congress.

The mechanism would be that the public agency involved--Mass. Port Authority--would ask Congress to authorize the Army Engineers to study and to recommend whether the present anchorage should be shifted, and if so, who should pay for it.

2. If the principal premise for shifting the anchorage is to benefit the airport, then it might be that the Army Engineers would say that the locality should pay the entire cost.

The Port Authority could then ask the FAA for assistance. Fogarty feels the FAA might not pay for the more expensive extension since there is--physically--a cheaper way.

3. If the principal premise for shifting the anchorage is proven to be to benefit commercial navigation, the Corps of Engineers would do it as a"Deep Draft Commercial Anchorage," and pay 100%.

4. The present ballpark figures for this anchorage are;

a) dredging to result in 5 to 10 million cubic yards of fill;

b) cost of 10 to 20 million dollars.

5. The amount of fill would be greatly in excess of the requirements for extending Logan"s 15-33.

It is to the Corps' interest to get the dredging job done for the anchorage the cheapest way possible. Therefore,

they would be very happy to have a place to dispose of this fill near to the dredging as possible. These areas could be;

a) Thompson Island-Columbia Point, or;

b) Bird Island Flats

6. The World's Fair scheme cannot wait on studies or further legislation by Congress for the anchorage since a) it is not certain at this time that the anchorage report will be favorable, and, b) the timing is not good; we must begin to fill in '68.

However, there is certainly reason to be optimistic about the possibility of using the fill from the new anchorage in some positive way, either to increase the World's Fair site, or fill the Bird Island flats. That is, on the northeastern side of the present fill scheme there is still some 100 acres between the present line of fill and deep water. This area could be filled with the material from the new anchorage.

In this manner either of the above areas would be, in fact, created for us free by the Corps of Engineers money, and would make Federal money work twice.

MRA:m

Tons

sand dry 100	gravel 120	sand & gravel mix wet	140
wet 120	140		

140 lbs/cu ft
÷ 2000 lbs/ton
= .07 tons cu ft
x 27 cu ft in a cu yd.
1.89 tons cu. yds

1.89
34
756
567
64.20

60 million
64 million tons

NEW ORLEANS

EAST LAKEFRONT DEVELOPMENT

Land

Present	214 acres
Reclaimed	3520 acres
	3734 acres

Development - Orleans Levee Board

Reclamation -	seawall, hydraulic land fill, etc.	$84,995,000 @ 3734 = $22,760/ac
Improvements-	streets, drainage, sanitary sewerage and utilities (sale of utilities* to yield $4,385,000)	$70,487,000 @ 3734 = $18,880/ac
	Gross Cost	$155,482,000

3734 acres @ $155,482,000 = $41,640/acre

Development - - Private Developers

Home Construction	$230,000,000
Schools	6,500,000
Churches	4,250,000
Apartments	16,957,000
Commercial Buildings	19,200,000
	$278,070,000

Total Gross Development	$433,552,000
Total Net Development	$429,167,000*

This is a flood control and land reclamation project of the Orleans Levee Board. It was originally published in June of 1963.

Notes From
DOWNTOWN WATERFRONT CORPORATION
FLOODING STUDY

October 22, 1963
by Medcalf & Eddy

Highest Recorded Tide (Navy Yard) 4/6/51

(Minots Ledge Storm)----------15.8

Mean High Tide----------10.3

Mean Low Tide---------- 0.8

Boston City Base---------- 0.0

Metcalf & Eddy recommends Atlantic Avenue be raised to Elevation 17

Corps of Engineers - elevations dating back to the first part of the 18th century led them to the conclusion that 15.8 above BCB has been the probable maximum high water experienced by Boston.

Forty Year Period (1921-1960), C & G Survey records of monthly hightides:

Tide has been at El. 14 above BCB seven times.
Tide has been at El. 15 above BCB once (12/29/59),
highest since X-Mas Gale of 1909 and 4th highest for area.

U. S. Army Corps of Engineers (Beach Erosion Board) 7/28/59

Estimates of storm tide for coast of New England from Plymouth, Mass., to Penobscott, Maine: For a sustained wind of 100mph, average storm tide computed was 6.0 feet with variations of ± 1.5 feet, depending on indentations and protrusions on the coast line. For an 80mph sustained wind the average storm tide computed was 4.0 feet, with variations of ± 1.0 foot.

It is believed that the above estimates are representative of severe northeastern storms which persist several days. Hurricanes, which generally move through the area at a very fast rate, are unlikely to produce storm surges as high as the above values.

Metcalf & Eddy - Calculated maxiumumheight of wave, from trough to crest = 4.4 feet for a sustained wind of 80mph and 3.2 feet for a sustained wind of 35mph.

Boston Pilot's Association:

Highest waves expected in inner harbor - 1.5 to 2.0 feet
Observed at 3 feet during "whole gale" (1938 Hurricane - wind 125mph)

Freeboard or clearance above maximum height of still water level - common to use a safety factor for run-up of waves on beach orbarriers. Factor can range from 1½ to 3 times the wave height. Ex: for 2' waves and a safety factor of 2, height of the protective structure should be extended to 6' above the highest still water level.

Change in sea level. Data indicates that since 1930 the sea level has been rising @ rate of 0.02 feet per yr. Before 1930 the rate of increase was less than 0.01 feet per yr.

High Flood Tides. Conditions most favorable when a storm coincides with a period of maximum astronomical tides or wher tide is normally expected to be very high due to the relative positions of the sun, moon and earth. This condition exirted on December 29, 1959, with high water level at 15.0 during the northeastern storm, or 4.7 feet above mean high water and 2.5 feet above the predicted spring high water.

Elevation 17.0 above BCB. Selected as safe because 112 years of records show no tides above 15.8 at elevation 17.0, a cushion of 1.2 feet is provided for the rising level of the sea.

Worst Conditions. All occurring at same time could cause the water to rise higher than ever recorded, but probability is very small.

Maximum Storm Tide - which, within reasonable probability, would be experienced in this area is 3 to 4 feet above predicted astronomical tide.

NOTES - Common Practice rules that earth dikes should be at least 2' higher than concrete flood walls at any point. This is to care for "sponging" effect which occurs above water level by capillary action.

Charles river dam and locks is to be built to Elevation 17.0 (Reinforced Concrete).

FREEDOM 75 MEMORANDUM

TO: Frank Christian ~~via~~ cc Jim Kelso

FROM: Martin Adler DATE: July 20, 1966

SUBJECT: Proposed new anchorage to permit Logan 15-33 extension

Report from Corps of Engineers

A discussion this morning with Mr. Frank W. Fogarty, Chief, River and Harbor Section, U.S.Army Engineer Division, New England, leads to the following information:

1. Anchorages are created after special studies by the Corps of Engineers which are authorized by Congress.

The mechanism would be that the public agency involved--Mass. Port Authority--would ask Congress to authorize the Army Engineers to study and to recommend whether the present anchorage should be shifted, and if so, who should pay for it.

2. If the principal premise for shifting the anchorage is to benefit the airport, then it might be that the Army Engineers would say that the locality should pay the entire cost.

The Port Authority could then ask the FAA for assistance. Fogarty feels that FAA might not pay for the more expensive extension since there is--physically--a cheaper way.

3. If the principal premise for shifting the anchorage is proven to be to benefit commercial navigation, the Corps of Engineers would do it and pay 100%; as a "deep draft commercial anchorage".

4. The present ballpark figures for this anchorage are;

a) dredging to result in 5 to 10 million cubic yards of fill;

b) cost of 10 to 20 million dollars.

(Question: Mr. Fogarty, our engineers told us that fill for the fair could be hydraulically obtained for 50 cents a cubic yard. The above figures seem to imply a dollar or more a cubic yard. Is this because the proposed area is deeper water, tides, winds, etc.?)

5. The amount of fill would be greatly in excess of the requirements for extending Logan's 15-33.

It is to the Corps' interest to get the dredging job done for the anchorage the cheapest way possible. Therefore, they would be very happy to have a place to dispose of this fill near to the dredging area as possible. These areas could be;

a) Thompson Island-Columbia Point, or;

b) Bird Island Flats

6. The World's Fair scheme cannot wait on studies or further legislation by Congress for the anchorage since it is not certain at this time that the anchorage report will be favorable, and the timing is not good for our initial stages of fill. We must begin to fill in '63.

However, there is certainly reason to be optimistic about the possibility of using the fill from the new anchorage in some positive way for either to increase the World's

Fair site, or fill the Bird Island flats.

In this manner any of the above areas would be, in fact, created for free by the Corps of Engineers money, and would make Federal money work twice.

MRA:m

Good memo - however your last par appears in conflict with paragraph 2 here marked at bottom pg. 2 - you may want to clarify

MEMO FOR RECORD

From: Martin Adler

Date: May 17, 1966

Subject: U.S. Corp of Engineers Discussion on Clearance under Proposed Bridges.

I talked with Mr. Fogarty of the U.S. Corp of Engineers on May 11, 1966 and as I understand it there is no advance rule of the clearance that must be maintained under a bridge, over a navigable waterway, at least as far as a relatively shallow channel of 15' that is in Dorchester Bay.

What must be done is to analyze the usage of this channel and from such usage we can derive the clearance that is required.

I have already checked the commercial users which at the moment is the Gulf Oil tanks at commercial point; the height that is required for them is 52 feet at high water. This is their highest fixed point which means in a relatively unloaded condition at high water.

We are investigating through BRA research the yachting usage in order to determine how many yachts may be half mast above this 52 foot height.

MA/mb

cc: David Harrison

MEMORANDUM FOR RECORD

From: Martin Adler

Date: May 17, 1966

Subject: Marine Services to Commercial Point

On May 10, 1966 I spoke with Captain Russell of Boston Tow Boat and Mr. John Upton of the Boston Fuel and Transport, 36 New Street, East Boston.

According to Upton, the information they supplied the Corp of Engineers for their shipments of fuel by self-propelled barge to Commercial Point is: the highest fixed point of the barge is 52'.

What this means is that in an unloaded state at high water the barge's upper most structure extends 52' above the water line.

MA/mb

FREEDOM 75 - MEMORANDUM

TO: Jim Bolan
BRA Research

May 12, 1966

FROM: Marty Adler

RE; Proposed Bridge Columbia Point to Thompson Island; Clearance

In order to obtain a good idea of the necessary clearance from the lowest part of the proposed bridge to the mean high water mark, it is necessary to obtain information on the height of boats that use Dorchester Bay.

I have obtained the information on the fuel barges that use Commercial Point, but I have no information on the yacht facilities on it, especially the larger ones that use the various yacht facilities, particularly Squantum Marina.

Could you therefore obtain for us the information which would probably be only for sailing vessels. I do not presume any motor yacht which uses these waters, even the most luxurious, has a "highest fixed point" above 30' or 35' (the proposed bridge from Commercial Point to Squantum, as I understand it, will have a clearance of 30'.

In addition to finding out the highest and tallest vessels, could your prople also find out at the same time the number of such vessels that use these facilities. In other words if there are only 2 or 3 boats that have a 90' mast the entire summer, we may be able to avoid having to build a bridge that would open, either a draw or some other system) to permit these enormous yachts to go through.

MA:v

[illegible]

1. [illegible]

2. [illegible]

3. [illegible]

4. [illegible]

5. utilities, etc. [illegible] [illegible]

6. [illegible]

7. [illegible]

8. [illegible]

9. [illegible]

10. [illegible]

UK

MEMORANDUM - FREEDOM 75

To: Mike Collins and Dave Harrison

From: Martin Adler

Date: May 17, 1966

Subject: Meeting with Corp of Engineers

At the meeting with the Corp of Engineers May 19, 1966 might I suggest at least the following informational exchange:

1. The U.S. pierhead and bulkhead line referred to in previous memo.

2. The proposed edge and its relation to possible tidal and/or current problems. That is by constricting the Dorchester Bay-Neponset Channel somewhat are we hindering some form of tidal flow and hurting possible natural influences. Also, are there shapes that we have shown proper for the best tidal action or should there perhaps be more straight lines or more curve lines.

3. Is our assumption for a structural bridge from Squaw Rock to the new fill area below Thompson Island correct. Is there some rule of thumb as far as length of such a structure, or is it something to allow at least the 200-300 feet of egress that the tide has between Squaw Rock and the sandbar south of Thompson Island.

4. Are our functions for beach areas correct; does the corp have any fixed ideas on locations for beaches in relation to tides and winds that we are unaware of.

5. Is there any part of the plan as shown that would be of interest to the Corp as far as possible sponsorship or payment is concerned. For example, if we construct a new pier area by land fill and solid bulkheading at the present location of the Thompson Island pier, would this be of interest to the Corp. Also, if we dredge the present marshland for a small boat basin which is publically usable, is this something that the Corp could participate in. There may be other aspects that would fall into this category as you see it.

6. Perhaps you can use this meeting to firm up the legislative tyings necessary for any of the above filling chores. In addition, who is the most likely agency to construct the proposed bridge from Thompson to Columbia Point and what kind of legislative-Corp of Engineers' approval and timing is required for this.

7. Does the Corp have anything to say about the proposed new roadway that parallels East Dorchester Street and is in the mud flat area.

8. Is there any dredging or filling activity that the Corp is going to participate in from say 1968 on that might serve as a source of fill, gravel, or whatever.

MA/mb

R-
FILE
SUB

NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY

440 WASHINGTON STREET
BRAINTREE, MASSACHUSETTS 02184

JOHN D. AHERN
DISTRICT ENGINEER

February 15, 1966

Boston Redevelopment Authority
20 Pemberton Square
Boston, Massachusetts

ATTENTION: Mr. Paul J. Dias

Dear Sir:

Enclosed please find your original sketch with all the information posted that this office has available.

The cable between Squaw Rock and Thompson Island is owned by the Farm and Trade School and is working at the present time.

The cable between Moon Head and Spectacle Island is shrouded with mystery. To the best of our knowledge the cable was originally placed in 1912 and was owned by the Coleman Disposal Co., who sold their portion of Spectacle to the Boston Edison Co. in 1960 per Mr. Morgan of the Boston Edison Co., who with the City of Boston and the United States Government are owners and tenants of said island. Whether or not this cable is now abandoned or in use cannot be ascertained by this office.

	TO	INTL	DATE
VBO			
VKC			
GR			

If we can be of further assistance in this matter do not hesitate to call.

Yours truly,

Edward F. S

RECEIVED
ENGINEERING
BOSTON REDEVELOPMENT AUTHORITY
FEB 1[illegible] 1966

EFS/ceb
Att: 1

R-
FIL
SU

New England Electric System

MASSACHUSETTS ELECTRIC COMPANY 1 Cliveden Street, Quincy, Massachusetts 02169

2 March 1966

Boston Redevelopment Authority
20 Pemberton Square
Boston, Massachusetts

Attention: Mr. Paul J. Dias

Dear Sir:

As requested in your letter dated February 25, 1966, we hope that the enclosed and marked map will answer your questions.

If we can be of further assistance, please let us know.

Very truly yours

MASSACHUSETTS ELECTRIC COMPANY

Harold P. Kranz
District Superintendent of Distribution

HPK/dr
Enclosure

	TO	INIT	DATE
WBO			
VKC			
WAI			
J			
JHS			
V			
P			
B			

RECEIVED
ENGINEERING
BOSTON REDEVELOPMENT AUTHORITY
MAR 3 1966

John C. Adams, Jr.
Stephen E. Dore, Jr.
James F. Folsom
Charles H. Cannors
Vito F. Pennacchio
Charles E. Cannon
Lester A. Slocum, Jr.

George W. Coffin

COFFIN & RICHARDSON, INC.

CONSULTING ENGINEERS

141 Milk Street, Boston, Massachusetts 02109

Area Code 617 · 523-6828

March 1, 1966

Mr. Paul Dias
Boston Redevelopment Authority
Room 407
20 Pemberton Square
Boston, Massachusetts

SUBJECT: C/R Project 80
Thompson Island
Water Main

Dear Mr. Dias:

In accordance with arrangements made between our Mr. James F. Folsom and yourself, we are pleased to enclose herewith Coffin & Richardson Acc. Nos. 440 and 508 regarding the installation of a water main to Thompson Island in Boston Harbor in 1951.

If you have any further questions, please let us hear from you.

Very truly yours,

COFFIN & RICHARDSON, INC.

John C. Adams, Jr.

JCA:pb
Enc.

	TO	INIT	DATE
WBO			
VKC			
WAT			
FJV			
JJG			
FJC			
FRW			
RJV			
PID	✓		
BJA			
FIN			

ENGINEERING INPUTS FOR 1967

1) Photogrammetry $_____

additional sheets necessary to round out the available Columbia Point one.

2) Consulting Engineer $_____

to supervise the boring contract

to supervise the survey contract

without supervision of above $_____

ROLE: to supervise, or do work to result in fill contract. BRA help available as liaison and back-up studies

3) BRA 1-2 permanently assigned to Fair $ 20,000

1) work with architects and planners on Preliminary Plan - bridges, roads, profiles, subsoil studies

NB Contracts for Engineering: Capital costs/ public works total $115. million

SCOPE:

1. verify line for fill
2. take sufficient borings/soundings
3. make profiles, finished grades roads etc.
4. profiles for any proposed subways
5. propose handling of utilities
6. photogrammetry of area from aerial photos (on hand)
7. surveys of areas

The following timetable is proposed:

1966 completion of Pre-Preliminary Plan

1967 mid 1968	Land Fill Engineering
1967 - 1969	Final Master Plan
	Final engineering
1970	Finished site plan w/ contours, utilities, profiles
mid 1968 mid 1970	Fill
1970 mid 1972	Settle
1970 -73 -75	Parcel, Pavilion Planning, Design Review, etc.
1971 -72	Begin construction of bridges, roads, utilities, etc.
1973	Begin pavilions
April 19, 1975	Open

MRA:m

1975 WORLD FREEDOM FAIR, INC.

BOSTON REDEVELOPMENT AUTHORITY

FOR: Preliminary Plan, February 1967 - March 1968

A. Most Important Item is Engineering

1. Photogrammetry series (topo, block) for the site and contiguous Squantum area.
2. Hiring a Master Consultant
3. B.R.A. Engineer(s) designated full-time Freedom 75
4. Out-of-house work to phase of preparing land fill contract
   a. soundings
   b. borings
   c. surveys necessary for above.
5. Other work, in-house, to assist in preparation of Preliminary Plan by a) assisting staff
   b) assisting/working with master consultant

B. Planning/Architecture/Design

Background Studies -

1. Expositions, past, present and future (especially Expo '67 on site)
2. New Urban Communities (NUC)
3. Other agency studies MDC-MAPC-MBTA: relative to NUC, especially market factors. Harbor Island Commission.

Studies/Research Projects

1. Principles for NUC in Boston
   a) land uses; market factors; transportation, especially MBTA

NB. formulation of out-of-house studies[1]

1. to be funded by HUD, Foundations, etc. This NB applies to all sections

2. Principles of Urban Design for NUC

   Staff: Planners/Urban Designers

3. Re-use Design

   Basic studies of pavilion re-use, (re-use as same use - temporary into permanent); pre-planning and structural engineering for re-use as different re-use.

   Staff: Architects - most of this should be specially funded and studied.

4. Sub-Area, Exposition site design

   Detailed studies of sub areas

   1. residential
   2. lagoon
   3. lagoon center plaza, etc.

   Staff: Urban designers/architects/ planners/engineers

5. Sketch plans for special purposes: presentations to universities, etc.

   a. plans
   b. drawings, rough elevations, perspectives

   Staff Planners/ Architects/ Designers

TO: Bob Davidson, MAPC
Julia Broderick, MAPC

FROM: Martin Adler, BRA

DATE: January 14, 1966

SUBJECT: Projected MAPC-FREEDOM 75 Joint Planning Participation in U. S. Bicentennial in Boston, 1975

CHECKLIST OF WORK ITEMS

I Review Functions

A. Transportation Planning

1. Roads
2. MBTA
3. Water - any MAPC ideas, goals for hi-speed water transport
4. Rail (interstate) - any MAPC ideas, goals

B. Site Planning - on Peninsula

1) Land use objectives of Freedom 75
   (a) Residential
   (b) Recreational
   (c) Transportation

II Liaison Functions

1. Liaison with Quincy Planning
2. Liaison with Natural Resources People
   (a) Water
   (b) Fowl
   (c) Fish
   (d) Floral
3. Legal Aid?
   (a) Ownership data
   (b) Riparian rights, etc., etc.

III Major Planning Functions

MAPC takes the lead in:

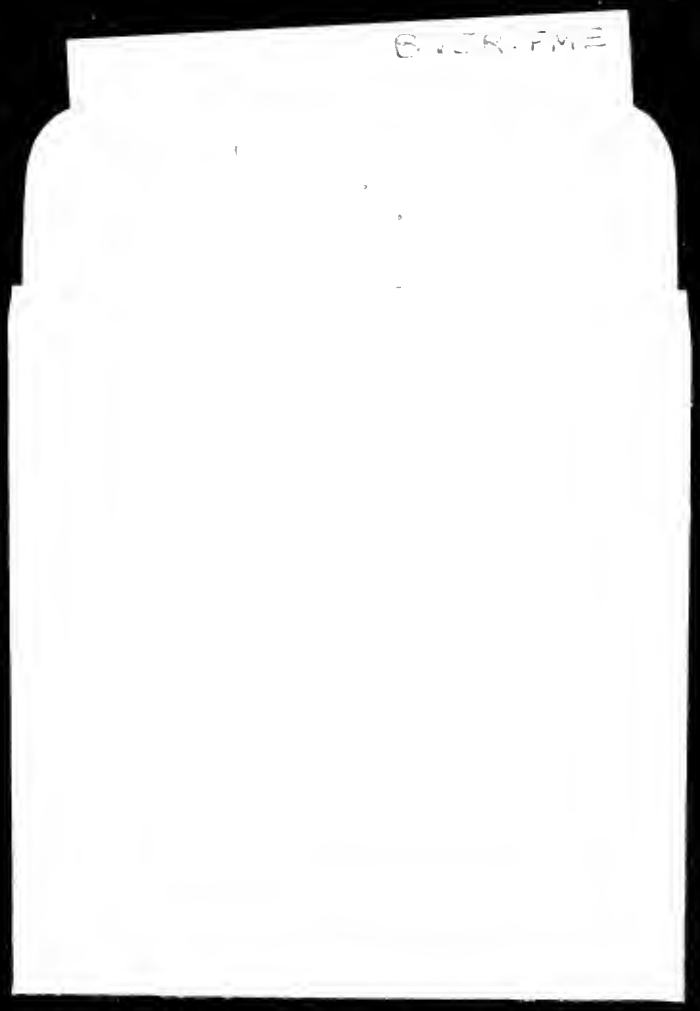
1. Proposed Dam
   a) Locational aspects
   b) affect on Milton, Quincy, etc., etc. on:
      (1) natural resources problems
      (2) MAPC recreational goals
         (a) green spaces
         (b) benches
         (c) marine uses
         (d) culture

2. MAPC legislative goals, problems,

3. Inter-agency problems (or make Freedom 75 aware of them)

4. General Land Use Planning - Extra Peninsula
   MAPC objectives for peripheral areas:
      (1) Squantum Air Base
      (2) Long Island
      (3) Other islands
      (4) Squantum Residential

MRA/mb



PAT. PENDING