

(WTC archives)

MEMORANDUM

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TO: Mr. John N. Kyle, Chief Engineer
 FROM: Richard M. Ailer
 DATE: September 12, 1960
 SUBJECT: WORLD TRADE CENTER STUDY - REQUEST FOR STAGE I ESTIMATE - SITE DEVELOPMENT SCHEME II
 COPY TO: Messrs. Gilman, R. S. Curtiss, R. C. Sullivan, Winters, Norland, Becker, McAvoy, Schachter, H. N. Roberts and Pettigrew

REFER		NOTED	
TO	DATE	BY	DATE
RETURN TO		FILE	

In accordance with the program and timetable developed between the Engineering Group and this Division, I am attaching an Outline Specification as well as one set of the larger scale prints of the Scheme II functional layout drawings Nos. 1141-1160, dated September 12, 1960. It is therefore requested that you now proceed with the preparation of the Stage I Estimate based on the attached.

Because this estimate will be used as the basis of a preliminary economic evaluation of this project and its components, it is requested that the estimate be broken (within the limits of Stage I accuracy) to provide separately for the cost of the following:

1. Stock Exchange above plaza together with foundations
2. World Office Building above plaza together with foundations
3. World Trade Building above plaza together with foundations:
 - a. Hotel with lobby
 - b. Trade Club
 - c. Health Club
 - d. Introduction and Information Center
 - e. Office space vs. display space
4. Areas in Horizontal Element - row
To which must be added
 - a. Increment - For finish and air condition Appraisers' Offices
 - b. Increment for lighting, dry sprinkler, ventilation in parking areas
 - c. Increment for lighting in Appraisers' Examination and Mail Examination
 - d. Increment for finished plastered walls, modular ceiling, air conditioning and store front for commercial areas
5. Peripheral road and ramps - Sidewalks
6. Plaza (a) open (b) enclosed - together with lighting, landscaping and pools
7. Pedestrian bridges across Water Street
8. Cantilevered overhang over South Street
9. Central heating plant, basic distribution and utility tunnel

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10. Commodity exchanges

11. Ballroom and auditorium above plaza

In addition to the above, it would also be appreciated if the estimate could be broken into:

- a. Foundations
- b. Structural
- c. Architectural
- d. Electrical
- e. Heating and ventilation
- f. Air conditioning
- g. Escalation and elevators

It has been agreed that the Stage I Estimate would be available by October 10, 1960 and we would also appreciate your comments regarding staging and time for completion of the work. In addition, we would appreciate an estimate for the cost of Engineering including the preparation of plans, specifications, and inspection.

It has also been agreed that we would provide your Department with one set of brown lines upon which you could incorporate all your suggestions and recommendations for areas required for utility runs and distributions, if not already provided for.

In the case of the World Office Building, we are asking for total costs but because we are too uncertain as to tenancy, it would be appreciated if you provided us with the cost per square foot for finishing office areas - vinyl tile for Floor, plaster walls including paint, modular ceiling including lighting and air conditioning, dividing masonry or metal partitioning.

In the display area of the World Trade Building, in addition to the finished mentioned above, we would appreciate an estimate of the cost/sq. ft. for the intermediate Floor slab.

Additional sets of plans as well as copies of the Outline Specifications are being distributed to your staff concurrent with this memorandum. It would be appreciated if you would advise us of the estimate of the cost for the preparation of this Stage I as soon as it is practical.

Richard M. Adler
Project Architect

jm
atts.

PROPOSED WORLD TRADE CENTER
Preliminary Outline Specifications
for Stage I Estimate
September 12, 1960

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I. LIST OF DRAWINGS

The following drawings dated September 12, 1960 comprise Scheme II of the World Trade Center Study.

<u>Drawing Title</u>	<u>Drawing No.</u>
Site Plan	W.T.C. -1141
Proposed Street Plan	" -1142
Basement - S	" -1143
Basement - N	" -1144
1st Level Plan - S	" -1145
1st Level " - N	" -1146
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Cross Sections BB & CC	" -1155
Longitudinal Section AA	" -1156
Trade Building-Typical Plan	" -1157
Hotel Plan, & Sections	
Health Club Plans	" -1158
Trade Club Plan & Observation Deck Plan	" -1159
Office Plan & Section	" -1160
Elevator Diagrams	" -1161

II.

Legend

1. Number and Numbers with sub letter in square shown in areas on drawings relate to Areas Schedules No. 1 & 2 of the Outline Specifications.

Doors

H. M. - Hollow metal
O. H. - Overhead rolling
P. G. - Plate Glass

Others

K - Kitchen
D - Dining
C. T. - Ceramic Tile

Lighting

F - Fluorescent
I - Incandescent
M - Mercury

III. INTRODUCTION

The World Trade Center complex will probably be constructed in Lower Manhattan, N. Y. C. on an area bounded approximately by the following city streets:

North - Fulton Street

East - Franklin D. Roosevelt Drive and South Street

South - Old Slip

West - Pearl Street and Water Street (partially covered by proposed project.)

The complex shall consist, in main, of a 5 tier horizontal element approximately covering the entire site. Rising as separate units from various tier levels shall be three main vertical structures:

These are:

1. World Trade Building
2. World Office Building
3. Structure housing the New York Stock Exchange Trading Floor.

Other Main Elements are:

1. At a basement level of (-5±) a grounds and building Maintenance Equipment service and storage area shall be constructed on the northwest corner of the site, west of Water Street
2. Peripheral Highway - Entrance - Water Street - runs along Fulton and then parallel to the Elevated Highway and down to Water Street Exit.
3. At street level, a N. Y. C. Police and Fire Station shall be constructed on the southwest corner of the site, west of Water Street.

N. Y. C. Code

All above mentioned structures are to be Class I as defined by the New York City Building Code. In the absence of specific requirements for certain areas the general intent of the code and prudent designs will govern.

IV. HORIZONTAL ELEMENT OF 5 TIERS

1. BASEMENT: (elevation of finish floor from grade varies: -10, -12, -15
see drawings)

Contains:

- 1) U.S. Appraisers Examination Area (including offices, OPIUM RM. and
security storage
- 2) U.S. toilets, lockers, Maintenance Area, Pistol Range, etc. (Appraisers)
- 3) U.S. Sales and Storage (Customs)
- 4) Commercial Shop Storage
- 5) Mechanical Equipment Room
- 6) Hotel Storage
- 7) World Trade Building Storage
- 8) Utility Tunnel
- 9) Interior vehicle circulation parking and truck loading dock areas

2. FIRST LEVEL - "street level" (elevation of finish floor from grade varies
+1 +4 - see drawings)

Contains:

- 1) New York Stock Exchange Clearing House
- 2) CI&E
- 3) Mail Examination Area
- 4) Appraiser's Offices
- 5) Telephone Co. Equipment room
- 6) Passenger vehicle parking
- 7) Covered city streets: Gouverneur Lane, Maiden Lane, Water Street
(partial)
- 8) Misc. storage, service and unassigned areas

- 9) Interior vehicle circulation ramps
- 10) U.S. Mail & other Truck Loading
- 11) Fire Department - N.Y.C. (Elev. +1)
- 12) Police Department - N.Y.C. (Elev. +1)

3. SECOND LEVEL (Elevation Finish Floor +16)

Contains:

- 1) Stock Exchange STORAGE
- 2) Clearing House for Stock Exchange
- 3) Passenger vehicle parking
- 4) Ramps

4. THIRD LEVEL - "Wall Street Plaza" (Elevation of finished floor +25)

Contains:

- 1) First Floor Elements of Stock Exchange (Public Entrance & Exhibits - Members Entrance & Lounge)
- 2) First Floor Elements of World Office Building (Lobby - Elevator Banks)
- 3) First Floor Elements of World Trade Building (Lobby - Restaurant - Shops - Elevator Banks)
- 4) Commercial Shops
- 5) Enclosed & Open Plaza Areas
- 6) Pools, fountain and landscaping
- 7) Termination of main architectural stair & Bridge from street level to Plaza.
- 8) Ground floor of Auditorium and Ballroom

5. FOURTH LEVEL - "Plaza Mezzanine" (Elevation finished floor +37)

Contains:

- 1) Second Floor level of World Office Building (Over First Floor Elements - Restricted Bridge)
- 2) Second Floor level of World Trade Building (Over First Floor Elements - Employee Dining & Lockers)
- 3) Commercial Mezzanine Shops with corridors and cross over (Wall Street Plaza) pedestrian bridges
- 4) Pedestrian Tie Bridge - Office Building to Stock Exchange

6. FIFTH LEVEL - Roof Terrace (Elevation finish floor +47)

Contains:

- 1) Roof Terrace
- 2) Roof: built-up - 20 year bond
- 3) Skylight over Wall Street Plaza
- 4) Pools, fountains and landscaping
- 5) World Office Building - Restaurant
- 6) World Trade Building - Restaurant

A. EXCAVATION

As required.

B. UTILITIES

Temporary Utilities

As required.

Utilities to Serve Project

1. All required connections to existing water mains, storm drains and sewers, gas mains, steam mains, electrical and communication ducts shall be made and (the lines) carried to around & through the construction site to serve the new building complex.

2. Utility runs shall use the Utility Tunnel provided along the west perimeter of the site development. (See drawings)

C. FOUNDATIONS

1. Foundations shall be carried to firm bearing.

World Trade Building

- a. Rises as separate unit from 5th level - Elev. +47' -0"_± to Elev. 847' -0"_±. (Restaurant level plus approximately 68 floors at 11' -6" F1 to F1).
- b. Lobby - Elev. +25' -0"_± to +47' -0"_± (Integral part of platform levels.)
- c. Restaurant Level - Elev. +47' -0"_± to +65' -0"_±.
Length: 240' -0"_±. Width: 120' -0"_±.
- d. Main Structure - Elev. 65' -0"_± to 847' -0"_±.
Length: 320' -0"_± Width: 180' -0"_±.
- e. Bay spacing - 31' -6" x 27' -0"

Office Building

- a. Rises in part as separate unit from 3rd level - Elev. +25' -0"_± to Elev. 365' -0"_±. Rises as complete separate unit from Elev. +47' -0"_± to Elev. 365' -0"_±. (Lobby, restaurant level) + approximately 26 stories - height 340' -0"_±.
- b. Lobby - Elev. +25' -0"_± to 65' -0"_±.
Length: 540' -0"_± Width: 70' -0"_±.
- c. Main Structure - Elev. to +65' -0"_± to 365' -0"_±.
Length: 661' -6"_± Width: 108' -0"_±
- d. Bay spacing 31' -6" x 36' -0".

N.Y. Stock Exchange Building

- a. Rises as separate unit from 3rd level - Elev. +25' -0"_± to Elev. +127' -0"_±.
- b. Exhibits & Public Entry - Elev. +25' -0"_± to 47' -0"_±.
Length: 200' -0"_± Width: 200' -0"_±.

c. Communications & Trading Floor - Elev. +47' -0"± to Elev.

+127' -0"± Length: 230' -0"± Width: 230' -0"±.

2. Special considerations influencing foundation loads are: Swimming Pool; Telephone Co. Equipment Rm; Parking Areas, interior vehicle circulation; reflecting pools; landscaping. (See plans for location and approximate size.)
3. Foundations shall be designed with proper consideration to membrane waterproofing, flashing and reinforcement required for hydrostatic pressures and uplift.
4. Live loads are given on "Area Schedule" No. 1.

D. STRUCTURE

To be designed as dictated by sound economic and engineering criteria.

For live loads see "Area Schedule" No. 1.

E. FACADE

The facade of the five tiers shall be Architectural stone screens, stone veneer and glass with aluminum mullions, as shown on drawings.

F. ROOFING

The roofing as in areas indicated on the drawings shall be:

- a. (Built-up) 20 year bond roofing.
- b. Terrace paving - Precast concrete panels with marble chipped surface.

G. INTERIOR PARTITIONING

See Drawings.

H. PLUMBING

1. The plumbing system shall generally consist of water supply, sanitary waste, drainage - fire standpipe and sprinkler systems as required.
2. Special requirements due to peculiarities of space utilization shall be provided (See "Area Schedule" No. 1 & 2.)

I. H. V. A. C.

1. Provisions shall be made for modular heating, ventilating and air conditioning of the various levels in accordance with the requirements shown on Area Schedule No. 1.
2. Ventilation systems shall be installed as required by code.

J. ELECTRICAL

1. Provisions shall be made for lighting levels as shown on the Area Schedule No. 1.
2. The electrical installation shall be modular and consist generally of the following electrical systems:
Electrical light and power distribution systems, wire conduit, and circuits for automatic temperature controls, alarm, signal and communication systems, and all motor and controllers for heating, ventilation, air conditioning, plumbing, elevators, fire protection, fire alarm and smoke detection systems.

K. OTHER ITEMS

Necessary foundations, structural, architectural, plumbing, H.V.A.C. and electrical considerations shall be made as pertaining to exterior vehicle roadways, ramps, sidewalks, interior and exterior informational and directional signing, (illuminated and non-illuminated), street lighting, reflecting pools, fountains, pedestrian architectural stairs, ramps and bridges; landscaping, special lighting effects, storm drainage - (See drawings.)

V WORLD TRADE BUILDING - (For general description of building size see IV-C page 6)

A. STRUCTURE (For Live Loads see "Area Schedule" No. 1.)

1. The structural framing of columns, girders and beams shall be structural steel, all field connections to be high strength steel tension bolts.
2. The floor structural system shall be cellular steel-sub-floor construction. Cellular floor panels alternated with light gage floor deck panels.
3. Fireproofing shall be 2-1/2" layer of lightweight concrete fill to be placed on the top side of the decking. A blanket of mineral fiber fireproofing sprayed directly to the underside of the cellular floor and to the structural steel beams and girders shall provide the required fireproofing for the remaining elements. Column fireproofing shall be obtained by sprayed-on mineral fiber.
4. Column spacing shall be 31'-6" X 27'-0".
5. Beam framing shall be 9'-0" o.c. across the 36'-0" bay spacing with steel studs fastened perpendicular, 4'-6" o.c. From the studs construction, 4'-6" suspended ceiling panels may be secured. These panels to accommodate diffusers and lighting elements. Office and Display Areas floor levels shall be designed to accomplish flexibility by creating an option for:
 - 1) two story clear area.
 - 2) one story office area with two story clear display area.
 - 3) one story office areas.

See drawing sections for details and Area Schedule No. 1 for live loads.

B. FACADE

The facade shall be curtain wall construction and shall consist of the following:

- 1) Lobby Area: Glass with aluminum mullions
- 2) Main Structure: Aluminum curtain wall panels (65%); glass (30%); and stone veneered exterior columns (05%).

C. ROOFING

The roofing shall be 20 year bond.

D. INTERIOR PARTITIONING

See drawings.

E. PLUMBING

1. The plumbing system shall generally consist of water supply, sanitary waste, drainage, fire stand pipe and sprinkler systems.
2. Special requirements due to peculiarities of space utilization shall be provided (See "Area Schedule" No. 1 & 2)

F. H.V.A.C.

Provisions shall be made for modular heating, ventilating and air conditioning of the various floors in accordance with the requirements shown on Area Schedule No. 1.

G. ELECTRICAL

1. Provisions shall be made for lighting levels as shown on "Area Schedule" No. 1.
2. The electrical installation shall be modular and consist generally of the following electrical systems:
Electrical lighting and power distribution systems, wire, conduit, and circuits for automatic temperature controls,

alarm, signal and communications systems, and all motors and controllers for heating, ventilation, air conditioning, plumbing, elevators, fire protection, fire alarm and smoke detection systems.

H. OTHER ITEMS

Necessary structural, architectural, plumbing, H.V.A.C. and electrical considerations shall be made pertaining to interior directional and informational signing (illuminated and non-illuminated), reflecting pools, fountains, special lighting effects - (see drawings).

VI WORLD OFFICE BUILDING - (For general descriptions of building size see IV-C page 6)

Similar to outline specifications for World Trade Building and as per Area Schedule No. 1 & 2 - except:

1. Provisions shall be made for breeching the smoke stack of the Assay Building to the World Office Building. The venting shall be from the roof of the new structure.
2. Bay spacing shall be 31' -6" x 36' -0".

VII NEW YORK STOCK EXCHANGE BUILDING - (For general description of building size see IV-C page 6)

As per plan and Area Schedules No. 1 & 2.

VIII ATTACHMENTS

(Area Schedule No. 1)
(Area Schedule No. 2) not copied .
Finish Classifications

FINISH TYPES

A. UNFINISHED

1. ARCHITECTURAL

- (a) Floors = concrete
- (b) Wall = Masonry or Aluminum & Glass (perimeter walls of area only).
- (c) Ceiling= Fireproofed
- (d) Columns= Fireproofed
- (e) Doors = Exterior and perimeter walls of tenant area provided with doors - H. M. - Plate glass, Overhead rolling.

2. PLUMBING

All plumbing lines run to perimeter of area as required and capped.

3. HVAC

- (a) All duct work and chilled water lines as required run to perimeter of tenant area and capped.
- (b) If fin tube radiation is required on exterior walls, it will be installed. No convector covers provided.

4. ELECTRICAL

Power and lighting electrical requirements will be made available to the tenant from a designated electrical closet. He will complete his own installation from this point.

FINISH TYPES

B. SEMI-FINISHED

1. ARCHITECTURAL

Same as unfinished area.

2. PLUMBING

Same as unfinished area.

3. HVAC

- (a) All required duct work and chilled water lines as required run through the tenant area. These lines to be capped at point which will enable the tenant to tap off.
- (b) If fin tube radiation is required on exterior walls, it will be installed. No convector covers provided.

4. ELECTRICAL

Bus ducts for power and lighting requirements to run through tenant area for his use.

FINISH TYPES

C. FINISHED

1. ARCHITECTURAL

- (a) Floors = Finished = Vinyl tile; terrazzo.
- (b) Walls = Plastered= (Painted or unpainted)
Veener as design dictates
- (c) Ceiling=Finished = Suspended system, modular fixture.
- (d) Columns=Plastered = (Painted or unpainted)
Veener as design dictates.

2. PLUMBING

Complete plumbing installation shall be provided including all required fixtures.

3. HVAC

Complete HVAC System shall be provided, including diffusers etc.

4. ELECTRICAL

Complete electrical installation shall be provided including outlets and lighting fixtures.