

horrible **modernistic** stuff



a **cathedral** of asphalt for an automotive age

[representing the **modern city** in new york's municipal asphalt plant]

g a b r i e l l e e s p e r d y

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Depression-weary visitors to the New York World's Fair in 1939 and 1940 were understandably enthralled by the optimistic vision of the future on display in Flushing Meadow, especially as embodied in the fair's most prominent and popular buildings and exhibitions: the Democracy of the Trylon and Perisphere Theme Center and the Futurama of the General Motors Pavilion. Whether the World of Tomorrow was imagined as a skyscraper metropolis or an industrial-agrarian town, it was supported by ultra-efficient, technologically-advanced infrastructures and linked by cross-country super expressways. This was a future which promised a frictionless flow of goods, services, and people along with a felicitous synergy of man and machine. Though derived principally from the ideal and visionary planning schemes of Le Corbusier and Frank Lloyd Wright, Democracy and the Futurama also evoked a number of realized projects—those factories and plants, dams and power stations, bridges and highways which had transformed the American landscape during the past decade. If *tomorrow* looked suspiciously like *today*, that was the point of the fair, to convince the public that the future was not only within its grasp, but that it was already in progress thanks to the productive forces and apparently benevolent operations of big business, big industry, and big government.

Figure 1:
Map of Manhattan Repaving Project, from Borough of Manhattan Annual Report, 1940-1941. Streets designated for resurfacing are shown in black.

To underscore this message, a fruitful collision of the present with the future was everywhere explicit, as in the prescribed route visitors followed to reach the GM Pavilion. Crossing a pedestrian bridge suspended over the Grand Central Parkway, a high-speed, limited-access motorway terminating nearby in one of the most complex interchanges ever engineered, visitors were afforded a sneak preview of the sort of imaginary automobile landscapes awaiting them in the Futurama. A glimpse of the future was likewise permitted the drivers on the Grand Central as they sped through the fairgrounds situated on land reclaimed from the infamous Corona Dump (Fitzgerald's "valley of ashes") through a massive public work orchestrated by Robert Moses. Where motorists were once subjected to a dark landscape of urban refuse and industrial waste they now experienced a panorama of fountains, trees, and streamlined buildings, all intended as a portend of things to come for the city of the



Figure 2:
Kahn & Jacobs, Municipal
Asphalt Plant, New York City,
1941-44, from *Architectural
Forum*, March 1944.

future. This vision lasted only as long as the fair itself. However, by the time the imagined future was dismantled in the fall of 1940, the City of New York had already announced plans for a project which, though unrelated and far more modest in scale, had clearly absorbed the spectacular lessons of the World of Tomorrow.

In June 1940, New York City Mayor Fiorello La Guardia and Manhattan Borough President Stanley Isaacs made public their plans to build a new Municipal Asphalt Plant at the easternmost end of 90th Street in upper Manhattan (Figure 2). Designed by the engineering firm of Syska & Hennessy and the architectural firm of

Kahn & Jacobs, the new plant was to rise on the waterfront site of an existing facility erected in 1914 and regarded as seriously outmoded twenty-five years later. While the ostensible motivation for the project was simply the replacement of this original, now obsolete plant, its actual impetus was far more complicated, bound up with civic issues touching upon the city's political, economic, and social life. While public works in

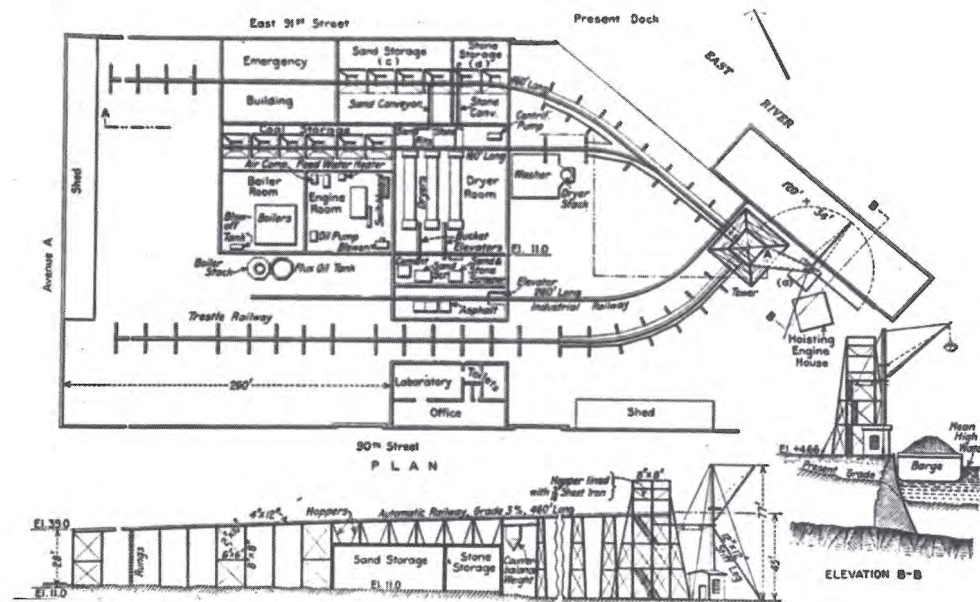


Figure 3:
Manhattan Bureau of Highways,
Site Plan for First Municipal
Asphalt Plant, New York City,
1914, From *Municipal Engineers
Journal*, October 1915.

New York (and elsewhere) always engaged the civic realm, this engagement had a particular urgency circa 1940 as the city, still recovering from the shock of the Depression, envisioned a prosperous future which might be realized through the dynamic transformation of the public landscape. This landscape had broadened considerably during the past decade, largely as a result of the New Deal, to include sites of housing, recreation, and transportation, as well as industry and utility. As a group, the projects constructed upon this landscape, by public fiat and under the aegis of the municipal government, represented in form and program a civic culture

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that embraced the same optimistic modernity and progressive efficiency so much in evidence in the futuristic fantasies of the World of Tomorrow—even in as unlikely a civic project as an asphalt plant. A public work and an industrial site, the new plant was charged with a double objective. It had to modernize asphalt production and monumentalize asphalt production. In meeting these objectives, the plant's designers consciously sought an appropriate visual expression of modernity and efficiency capable of representing industry's locus within the civic culture and asphalt's material contribution to it.

The importance of asphalt in the construction of modern and efficient New York had become apparent only gradually since this type of paving was introduced in the late 19th century. Municipal engineers regarded asphalt as superior to cut stone, being less labor intensive, less expensive, and more durable. But by 1912 most streets were still paved with standard blocks of New England granite, apparently due to Tammany Hall's ownership of many source quarries, and its doling of civil service street maintenance jobs to the scores of unskilled workers who made up its political machine.¹ This changed with the 1914 election of reform-minded Mayor John Mitchell who determined that a municipal asphalt plant would save the city money and give it with better streets. Selecting a six-acre plot of city-owned land on the East River, bounded by 90th and 91st Streets and York Avenue, Mitchell's administration built an ensemble of steel-framed brick structures which included a tall pitched-roof mixing building and lower skylit sheds (Figure 3). The complex was visually dominated by a hoist tower at the river's edge, a dust collector exhaust stack east of the mixing building, and three wooden railway trestles (with gravity-operated cars) which began at the waterfront, where raw materials arrived via barge and continued to the sand, stone, and coal storage sheds. In 1915, after a year's operation, the asphalt plant was working to capacity, producing nearly 3,000 square yards of pavement per day. According to the plant superintendent William Goldsmith, this success was attributable not only to the plant's mechanical efficiency but also to management's adoption of an anti-Tammany, anti-corruption worker evaluation system.² Created by Robert Moses (then a member of the Civil Service Commission,) this system eliminated political favoritism and placed qualified workers in positions from Plant Supervisor to street gang tampers, rakers, and smoothers. Though the first municipal asphalt plant promised a future of smooth streets and good government reforms, these civic improvements were to be short-lived.

¹ William Goldsmith, "One Year's Operation of Manhattan Asphalt Plant," *Municipal Engineers Journal* 1 (October 1915): 240.

² Goldsmith, 302.

³ Quoted in Borough President's Office, "Gold Bricks and Granite Blocks," *Borough of Manhattan Report*, July 1, 1940-June 30, 1941 (New York, 1941), 19. Isaacs swept into office on La Guardia's fusion ticket of 1938.

⁴ "Gold Bricks and Granite Blocks," 19.

⁵ See for example "Divided Highway Design," *Engineering News-Record* 123 (21 December 1931): 816-19 and H. J. Gilkey, "Concrete Pavement Design and Construction Trends," *Better Roads*, April 1937, 39-41.

Two decades later, newly-elected Borough President Stanley Isaacs found what he called a "flagrant example of Tammany extravagance" in the "continued indiscriminate use" of granite paving blocks on over 40% of Manhattan's streets and highways.³ Though the city could produce asphalt paving in the municipal plant for only \$1.50 per yard, Isaacs discovered that it was regularly paying \$5.00 per yard for granite block which he vigorously denounced as an "expensive luxury" that was "inefficient and dangerous."⁴ Citing one particularly egregious example, Isaacs noted that the entire length of Parks Commissioner Robert Moses's newly completed West Side Express Highway from 72nd Street to Canal Street was paved in granite block, resulting in an additional expenditure of half a million dollars. Even aside from cost, engineering practice dictated asphalt or concrete for such roadways to prevent the hazardous vibrations produced by cars traveling over cut blocks at high speed.⁵ According to Isaacs, the construction of the West Side Highway reeked of old-style Tammany corruption.

In response, he embarked on a series of borough improvements—public works intended as models of efficiency and modernity and as sterling examples of good government. These included the construction of the East



Figure 4:
First Municipal Asphalt Plant, ca.
1940, from *Borough of Manhattan
Annual Report, 1940-41*.

River Drive express highway and an ambitious street repaving effort. For Isaacs these projects were not just roadwork; they were “the backbone of a broad civic development” that would produce a city that was, in his words, “clean, modern, and streamlined.”⁶ The repaving program, while obviously improving city streets in disrepair due to an increasing volume of motor vehicle traffic, would also aid the maintenance of property values since smooth asphalt-paved streets reduced traffic vibrations and noise, facilitating the rent and sale of apartments facing Manhattan’s north/south avenues.⁷ Isaacs’ program would also be cost effective, saving the city an estimated 80% of its current paving expenditures by replacing granite block with asphalt and by reducing the cost of the asphalt itself. To meet these goals it was necessary to double the productive capacity of the existing asphalt facility.

Clearly, a new and improved plant was required, though the buildings which eventually rose on the 90th Street site were informed by more than the exigencies of efficient production to which an industrial complex typically responded. They were equally informed by Isaacs’ vision (shared by Moses and La Guardia) for “reclaiming the beauty of the historic East Side waterfront” which had decayed into “an unsightly succession [of] grimy industrial areas.” The existing asphalt plant was one of the chief offenders, decried by Isaacs as “noisesome” and “blighting.”⁸ Isaacs’ vision called not for the removal of such industrial sites from the waterfront, but for their coordinated improvement in operation and appearance. Such steps had been taken at the sanitation dump immediately to the north where dust-reducing equipment was installed to improve the environs. Here, Isaacs was obviously influenced by the 1929 Regional Plan of New York which, though it generally advocated industrial decentralization and the relocation of municipal service facilities to outlying areas, recognized the impracticality of enforcing such a policy on the East Side waterfront. The Plan proposed that some industrial sites and service facilities be preserved, noting that if they were “conducted with proper tidiness and under reasonable control [they were] really amenities.”⁹ Responding to such a proposal in the new asphalt plant, the city was inclined to give equal programmatic importance to aesthetic considerations and functional requirements—partly a reflection of the plant’s symbolic importance as a public work, and partly a response to the changing character of the district.

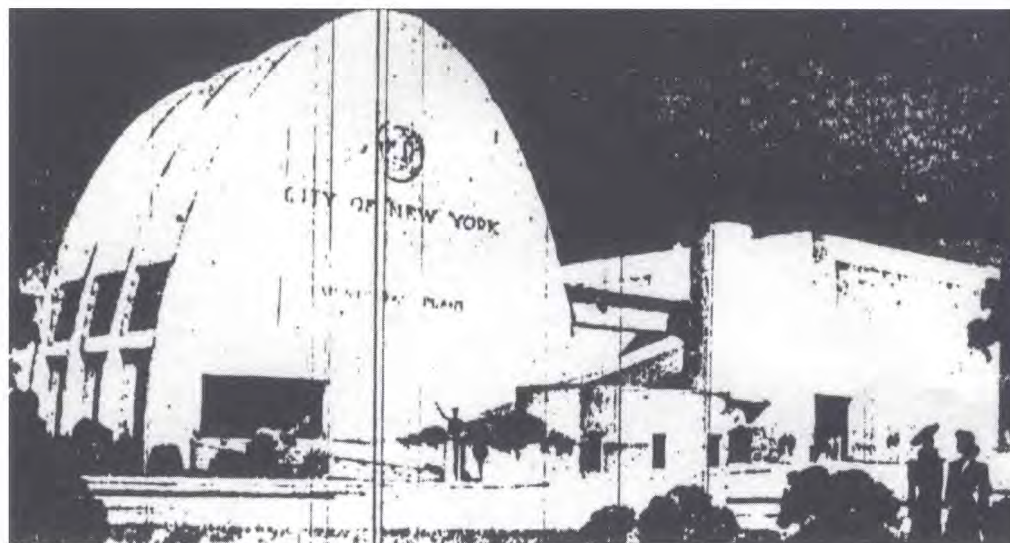
⁶ *Borough of Manhattan Report*, July 1, 1940-June 30, 1941, 13.

⁷ See “Relation of Public Improvements to Realty Values,” *Real Estate Record* (1 November 1941), 2.

⁸ *Borough of Manhattan Report*, July 1, 1940-June 30, 1941, 18. Robert Caro called the northern stretch of the waterfront which began at the asphalt plant “a catalogue of the unlovely by-products of industrialism.” Robert Caro, *The Power Broker* (New York, 1974), 393.

⁹ Thomas Adams, “Rebuilding the City,” *Regional Plan of New York*, vol. 2 (New York, 1931), 371.

Figure 5:
Perspective rendering of the
Municipal Asphalt Plant by Arthur
Frappen, 1940.



These changes predated Isaacs' own interest in improving the waterfront. When the first asphalt plant was built on East 90th Street in 1914 the area was a working class district of brownstone flats and old-law tenements inhabited mainly by German and Hungarian immigrants employed in the local breweries. The area began to change in the late 1920s when Vincent Astor set out to develop the upper blocks of East End Avenue into Gracie Square, an exclusive residential district modeled on Beekman Place, then one of the city's most fashionable addresses. By 1940 luxury apartment buildings dominated the waterfront. At the water's edge, Carl Schurz Park had been relandscaped and expanded with a riverside esplanade over the new East River Drive. Gracie Mansion, the abandoned Federal-style country house that dominated the park's northern end, had been renovated into the Museum of the City of New York and would shortly become the official residence of the city's Mayors. But this new residential enclave, characterized by the *New York Times* as striking, picturesque, and modern, was marred by the industrial site at its northern end. For by then the old asphalt plant had become loud, dirty, and malodorous (Figure 4).¹⁰

¹⁰ See for example "Changes are cited in Gracie Square Area," *New York Times* (8 September 1940), Sec. 11, 1.

When Isaacs determined to rebuild the asphalt plant he was keenly aware of the new upscale character of the area in which he, along with Moses and other prominent New Yorkers, now lived. Isaacs stated that the new plant was "designed to protect real estate valuations in the adjoining residential neighborhood" and even

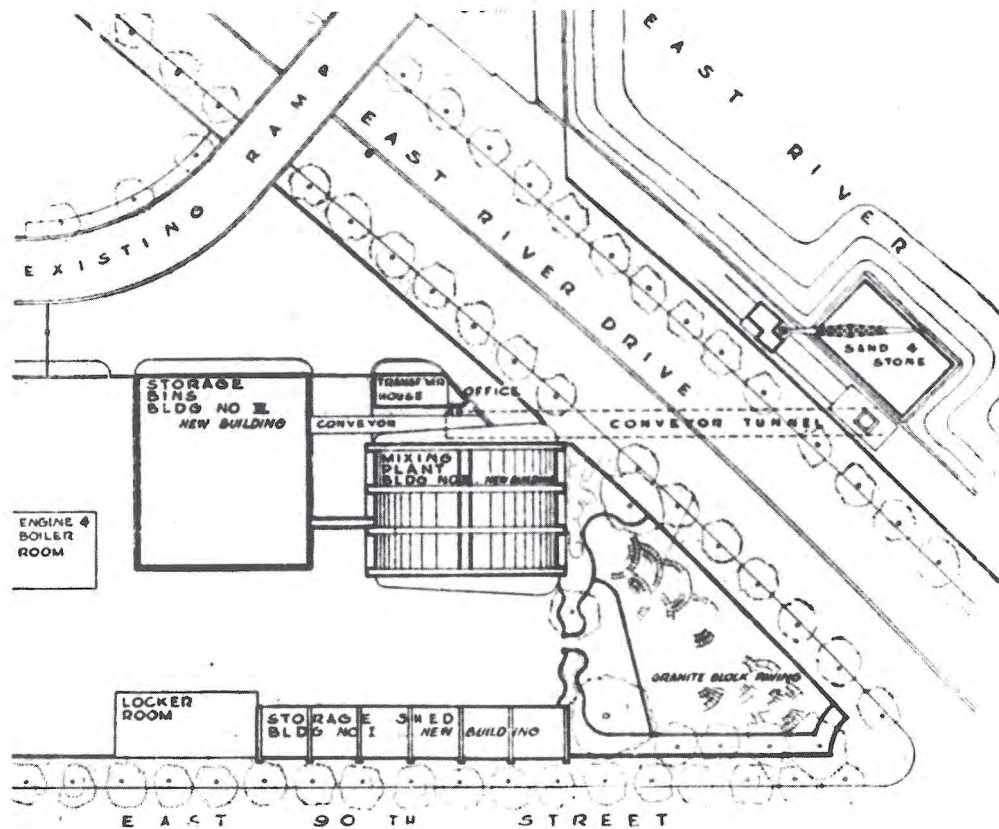


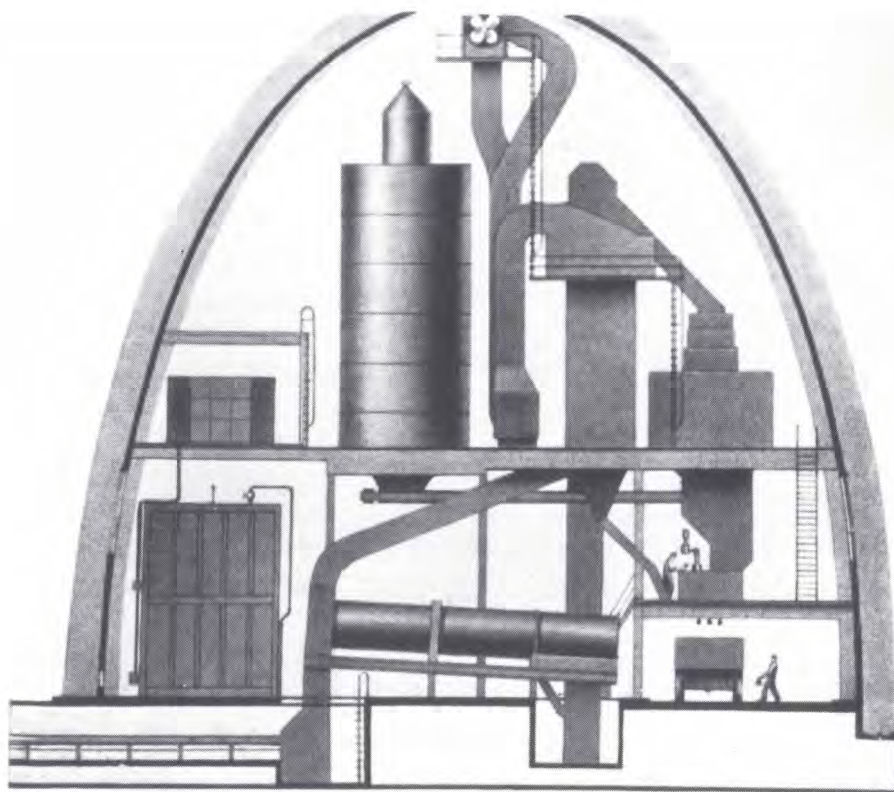
Figure 6:
Syska & Henessey and Kahn & Jacobs, Site Plan for New Municipal Asphalt Plant, 1941, from *Municipal Engineers Journal*, vol. 29, 1943 (Buildings No. I & III demolished 1970).

confidently predicted that the plant would cause an “appreciable increase in property values” and, he implied, tax dollars.¹¹ Borough Works Commissioner Walter Binger echoed these sentiments a few years later, noting that because public officials now possessed “keener appreciation of land values” the design of the asphalt plant “would be pleasing to proposed residential developments within the vicinity.”¹² This intention is obvious in Arthur Frappen’s 1940 rendering of the project which depicts the facility with a tree-lined perimeter and planted plaza, with fashionably dressed women strolling past it along a landscaped riverside quay (Figure 5). The city clearly envisioned the asphalt plant within a distinctly political framework, as an attractive appeasement to powerful real estate interests. Apparently the strategy worked, for almost immediately after plans for new

¹¹ “City Asphalt Plant to be Streamlined,” *New York Times* (28 March 1941), 25.

¹² Walter Binger, “Manhattan’s New Municipal Asphalt Plant,” *Municipal Engineers Journal* 29 (1943) : 67-68.

Figure 7:
Syska & Henessey, Cross Section
of Asphalt Production Machinery
in Mixing Plant Building, from
Municipal Engineers Journal, vol.
29, 1943.



¹³ This according to the Real Estate Record, "Renting Campaign Stresses Open Areas," *Real Estate Record* (27 December 1941), 4.

¹⁴ Binger was one of many engineers brought into the Isaacs' administration to replace Tammany hacks.

asphalt plant were made public, the Hanover Trust Company announced a \$5,000,000 redevelopment scheme for the entire adjacent block of 90th Street. Formerly the site of two religious institutions, the 125,000 square foot lot had been cleared in the early 1930s but the blighting industrial presence, as well as the Depression, had quashed all previous improvement projects. Now, however, plans for the new asphalt plant had encouraged the investors to build a 500-unit complex of garden court apartments.¹³

Those plans, prepared by the engineering firm of Syska & Hennessy under the supervision of Commissioner Binger, called for the complete internalization of asphalt production in an efficient industrial complex to utilize silent, dustless, and odorless machinery enclosed in three discreet buildings.¹⁴ (Figure 6) Building No. I contained

the plant's hot water heating system and its fuel oil tank. Building No. II housed the drying, mixing and finishing equipment as well as storage for limestone dust and asphalt cement. Building No. III held sand and stone in concrete bins large enough to eliminate the dumping of excess materials in haphazard outdoor piles which had marred the old plant. Another significant improvement was the elimination of the railway trestles. Raw materials still arrived by barge, but were now conducted to storage bins underground through below grade pipes and a tunnel beneath the East River Drive. This tunnel emerged above ground on the north side of Building No. II as an enclosed, ovoid-shaped conveyor which inclined upward into Building No. III. A secondary elevated conveyor connected the two buildings.

The asphalt production process itself, which took place in the mixing unit (Building No. II), was greatly streamlined and automated. In the old plant the processing equipment spread out horizontally from the mixing building into a series of adjoining sheds. In the new plant the equipment was organized into a compact vertical manufacturing unit with a split-level beehive arrangement (Figure 7). It featured automated bucket elevators for lifting sand and stone, electric meters for regulating temperature, flow, and cycle duration, and fully motorized, electrically powered dryers and mixers. An automatic discharge unit dumped completed 4-ton batches of asphalt paving directly into trucks waiting below on the driveway which ran straight through the building. An important technological advance was the improved condition of the raw bituminous asphalt, the key ingredient in the manufacturing process. While the old plant had utilized hardened asphalt which had to be chopped by hand and melted in large kettles prior to mixing, the new plant eliminated this labor- and space-intensive process with liquid asphalt in electrically-heated pipes and storage tanks.¹⁵ Most significant for Isaacs' vision of industrial improvement and neighborhood enhancement, the manufacturing unit was equipped with a state-of-the-art dust eliminator. This not only rendered the interior environment dust-free, but vented exhaust that was supposedly cleaner than outdoor air.

Once Syska & Hennessy finalized their arrangement of the asphalt production machinery, a cross-section of the beehive-shaped manufacturing unit was presented to architects Ely Jacques Kahn and Robert Allan Jacobs. According to Commissioner Binger, the designers were directed to produce an "architectural treatment" which would "blend harmoniously with that accorded the neighboring [East River] drive as well as one that would be

¹⁵ While this streamlining and automation of plant operations obviously reduced the number of workers required to produce asphalt, the increased yield meant that larger street crews were required for laying the asphalt. As a result, low-skilled workers were shifted rather than eliminated.

Figure 8:
Kahn and Jacobs, Mixing Plant
Building east façade, showing
barrel sections, from
Architectural Forum, March 1944.



¹⁶ Binger, 68.

¹⁷ Adams, 470.

¹⁸ Binger, 68. These design intentions have been gleaned from published primary sources. No original municipal or architectural documents related to the design and construction of the plant have been found (beyond a few forms submitted to the Municipal Art Commission in May 1940). This is perhaps not surprising since from the time of the plant's completion jurisdiction passed from the Department of Borough Works to the Department of General Services to the Parks Department to a non-profit agency.

¹⁹ Borough President's Office, "The New Asphalt Plant," *Manhattan Annual Report*, 1943-44 (New York, 1944), 16.

pleasing to proposed residential developments within the vicinity."¹⁶ Here again, city officials seemed mindful of the Regional Plan which had earlier suggested that such upper East River industrial facilities be given "special architectural treatment" to accord with the "apartment residences" and "attractive environment" destined to develop there.¹⁷ However, the architects were also reminded that "the Asphalt Plant was essentially an industrial structure."¹⁸ Thus, Kahn and Jacobs were charged with designing a plant that "combines utility and eye appeal"—a further reminder of its dual role as an industrial site and a public work.¹⁹ Of course, utility and eye appeal were not mutually exclusive, and, as both Kahn and Jacobs were well aware, it was possible to derive the latter from the former, especially within the functionalist dictates of high-style European modernism.

Robert Jacobs was well acquainted with the International Style. Graduating from Columbia's School of Architecture in 1934, just as modernist pedagogy was beginning to infiltrate the school's entrenched Beaux-Arts system, Jacobs traveled to Paris where he spent a year in the office of Le Corbusier, apparently the only American on the staff at that time.²⁰ In 1935 he returned to the United States in the company of the Swiss architect, having been hired by the Museum of Modern Art to act as interpreter during Le Corbusier's three-month Museum of Modern Art-sponsored lecture tour. Jacobs then spent several years with the firm of Harrison & Fouilhoux, where he was criticized for his excessive "Corbusier-isms." In 1938 he entered Kahn's office, becoming his partner in 1940, the year they received the municipal asphalt plant commission.²¹

At that time, Ely Jacques Kahn was a well-respected specialist for the design of manufacturing lofts in dense urban areas, the locus of which made them, in Kahn's view, a distinctive type of industrial building. Kahn believed that the urban industrial loft should be conceived of as a "machine for the production of a commodity...the structure [of which] must answer its purpose" in the provision of light, air, and flexible floor plans to accommodate machinery. He also posited that "there can be no modernity" in designs not based upon engineering principles, but did not consider those principles as an end in themselves. Rather, the successful "city factory" must likewise "be conscious of the existence of an aesthetic problem"—a problem solved not through ornamental devices "to satisfy some yearning for decoration," but through "fine proportion, balance of mass, and agreeable color of materials."²² Kahn's design principles and his two decades of experience in industrial architecture must have accorded well with the aspirations of his young partner. Though Robert Jacobs had no comparable experience in industrial architecture, he was well-versed in an industrial aesthetic. This he had assimilated from Le Corbusier who, along with Walter Gropius and other European modernists, had been impressed by the powerful industrial typologies of the daylight factory and the grain elevator. As proponents of an "International Style" they sought to produce an architecture in a similar spirit of efficiency and functional planning, utilizing bold, spare, elementary forms they regarded as appropriate for all modern buildings whether industrial or non-industrial.

Programmatically, the asphalt plant was obviously industrial: it was a site of production whose architectural disposition was to be guided by the utilitarian requirements of the manufacturing process. The architects had



Figure 9: Mixing Plant Building interior, showing barrel sections with manufacturing unit in place, from *Architectural Forum*, March 1944.

²⁰ On Columbia's pedagogical shifts see Rosemarie Haag Bletter, "Modernism Rears Its Head—The Twenties and Thirties," in *The Making of an Architect, 1881-1981*, ed. Richard Oliver (New York, 1981), 110-11.

²¹ For a full account of Le Corbusier's tour, and Jacob's participation in it, see Geoffrey T. Hellman, "From Within to Without, I & II," *New Yorker* (26 April & 3 May 1947), 31-45 & 36-53. See also Rem Koolhaas, *Delirious New York* (1978; rpt. New York, 1994), 265-69. For Jacobs' work with Harrison & Fouilhoux see Eric Mumford, Robert A. Jacobs: *An Architect's Career*, unpublished monograph (New York, 1994), 1. Kahn seems to have unofficially retired in 1940. In his unpublished memoirs he does not comment on any buildings designed by the firm after Jacobs's partnership. See Ely Jacques Kahn, *Autobiography*, Avery Library, Columbia University.

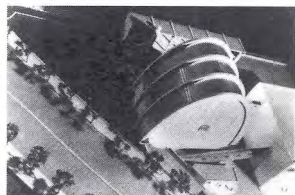


Figure 10:
Model of Municipal Asphalt Plant,
Storage Shed Building is visible
at top, from *Borough of
Manhattan Annual Report, 1940-
41*.

²² Ely Jacques Kahn, "On the
Development of Industrial
Buildings," in John Otto Teege, *Ely
Jacques Kahn* (New York, 1931), 16
and 19.



Figure 11:
Mixing Plant Building under
construction, steel trusses in
place.

PHOTO BY
SAVASTANO NY.

PHOTO N245-9-30-41
CONT. 2A P ASPHALT PLANT
N.E. AT STEEL RIBARCHS BLDG

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been cautioned, however, that a typical industrial structure—unaesthetic in the conception of the Department of Borough Works—was not desired here, for the plant was regarded as very nearly a civic amenity, not that the limited budget reflected this intention. The designers were restricted to using exposed reinforced concrete, the standard material for the Department's industrial projects, with little possibility of additional expenditures for facing materials or other enhancements to the architectural treatment. For a modernist like Robert Jacobs, who was the plant's principal designer, this type of challenge was a necessary part of architecture. But, as Le Corbusier had taught him, he could privilege function and utility without sacrificing those aesthetic concerns such as volume, surface, and harmony which, if handled correctly, would give the asphalt plant the requisite "eye appeal."

Thus, Jacobs turned to the section of the asphalt production machinery prepared by the engineers. Allowing the distinctive beehive shape of the manufacturing units to dictate the form of the building sheltering them, Jacobs created what Commissioner Binger called the "logical elliptical design" of the plant's prominent mixing unit.²³ By employing sweeping elliptical arches in lieu of a more conventional rectangular structure, which would have resulted in unusable upper level space, Jacobs found the most efficient means for enclosing the machinery. The three barrel sections, delineated by the projecting arches, were also an accommodation to the mixing equipment inside, with each section able to house one of the three manufacturing units intended for eventual installation (Figures 8 & 9). Similarly, in the auxiliary storage unit (Building No. I,) projecting flanges articulated each of the six individual sheds housed within (Figure

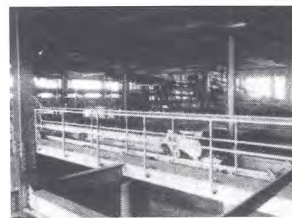


Figure 12: Storage Bins Building interior, showing windows and catwalks, from *Architectural Forum*, March 1944.

²³ Binger, 68. Binger correctly identifies the building's form. In geometric terms it is elliptical, though it is often identified as parabolic.

Figure 13: Mixing Plant Building under construction, concrete ribs being poured, from *Architectural Forum*, March 1944.

²⁴ Gilbert M. Serber, "Integral Centering for Concrete Arch Ribs," *Civil Engineering* 12 (August 1942): 439.

²⁵ In the section, the weigh box and mix meter are located to the left of the ladder depicted at right, above the truck drive-through. This section is the reverse of the mixing unit as actually built. Historic photographs and blue prints make it clear that the driveway ran north to south through building along its east wall.

²⁶ Jacobs recollection is cited in James Brooke, "Arts and Sports Center Opening in Landmark," *New York Times*, 24 October 1984, p. B3.

10). The fenestration offers a further indication of the plant's "functional design."²⁴ In the main storage unit (Building No. III,) the windows were placed high on the facade to illuminate the network of catwalks within (Figure 12). In the mixing unit (Building No. II,) the designers illuminated strategic points in the manufacturing process. For example, on the east facade the large window of each barrel section corresponded to the position of the weigh box and mix meter providing natural light for workers monitoring this equipment.²⁵ On the west facade two additional window strips illuminated the meters of the liquid asphalt holding tank.

If the function of each unit of the asphalt plant had indeed generated its form, in the case of the mixing unit this particular arched form had a modernist architectural provenance—Eugène Freyssinet's Orly airship hangars of 1916-24—of which Jacobs was surely cognizant. These had been illustrated in Le Corbusier's *Vers une Architecture* (1927) and formally quoted in his Palace of the Soviets project from 1931. Indeed, Jacobs later recalled that while working for Le Corbusier in Paris he had admired the hangars while riding his bike past the Orly airport.²⁶ Though the arch represents a logical structural choice, it was also filtered through Le Corbusier's work and represents its reintroduction by Jacobs into a similar context since, like the Orly hangars, the mixing unit was basically a vast shell for housing oddly-shaped equipment.

The plant's materials had a similar double significance. The mixing unit was constructed of reinforced concrete with four structural trussed steel ribs which served as both form and reinforcement and eliminated the need for elaborate scaffolding during construction (Figure 11). These ribs, spaced 22 feet apart with clear spans of 90 feet, were prefabricated in three sections and assembled on-site. The thin barrel walls between the ribs are 8 inches thick and use traditional reinforcing bars. The mixing unit's end walls are of concrete slab, beam and girder construction (Figure 13). This same method was used in the construction of the two storage units. Reinforced concrete had long served as a basis for Le Corbusier's architectural investigations and he admired its powerful formal qualities, particularly as expressed in such industrial structures as grain elevators and airship hangars. Modernist and industrial, aesthetic and economical, reinforced concrete was an obvious choice for the asphalt plant even if it had not been prescribed by Borough Works.

Once concrete was selected, Jacobs determined to exploit the material fully to enhance what Le Corbusier would have called the plant's *modénature*, its profile or delineation. A writer for *Civil Engineering* put it more simply, the "architectural effect [was] enhanced by forming."²⁷ For example, the presence of the structurally crucial trusses of the mixing unit are fully expressed in the finished building by positioning the barrel walls flush with the inner rather than outer edges of the ribs. These ribs were poured in five separate stages, each of which is carefully articulated by sectional scoring on the finished arch (Figure 13). On the north and south end walls (as on the walls of the storage units) the intentional grooving of the plywood formwork resulted in a large-scale, squared grid pattern expressive of the beam and girder frame beneath (Figure 14). This grid gave a formal coherence to the ensemble of buildings and also served as a modular unit. The imprint of the formwork's pine board sheathing was left intact on all of the buildings to create a corduroy-like waling effect on exterior and interior walls (Figure 15). Jacobs' use of this characteristic Corbusian device on the east and west barrel walls of the mixing unit demonstrates the ends to which he was willing to go to achieve a desired architectural effect. For the exterior lagging of the barrel forms had to be constructed of costly long-leaf pine, since cheaper wood was not available in the 20 foot lengths needed to span the distance between ribs and using shorter lengths would have left vertical joints which violated the carefully realized waling pattern.²⁸

Other conscious Corbusian devices can be discerned throughout the plant: the ribbon windows of the storage unit are unmistakable *fenêtres en longueur*; inside the mixing unit the free plan dominates, with all machinery supported on carriages and platforms entirely independent of the exterior structure (Figure 12). Outside, the conveyors, catwalks, ramps, and driveway form an industrial *promenade architecturale*. This is especially evident in a 1940 perspective rendering of the north side of the plant by Arthur Frappen (Figure 5).²⁹ Here the composition formed by the small block of the transformer house, the smooth cylinder of the (unbuilt) free-standing hopper, and the ovoid and square conveyors seems, without stretching the point, to mimic certain elements of the Villa Savoye. Of course, dynamic compositions of conveyors and ramps can be found in many industrial facilities, as for example in Albert Kahn's Ford Factory at River Rouge (and so evident in Charles Sheeler's photographs of it). However, here at the asphalt plant such a composition appears to result not only from functional determinants (which dictated the arrangement of building units and conveyors to minimize distance), but also from proportional manipulation, or given Jacobs' Corbusian bent, from *tracés régulateurs*.

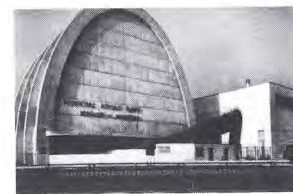


Figure 14: Mixing Plant and Storage Bins Building north façades, showing grid pattern and rib articulation, from *American City*, February 1951.

²⁷ Serber, 441.

²⁸ This pattern is difficult to discern today because the barrel walls are coated with many layers of paint that have filled in and obscured the wales.

²⁹ The rendering is also reproduced in "Design for New Municipal Asphalt Plant on East Side," *New York Times*, 1 July 1940, 21.

Figure 15: Formwork waling effect, conveyor interior, from *Architectural Forum*, March 1944.



³⁰ This treatment is evident in the Arthur Frappen rendering cited above.

Other flashier features of the asphalt plant derive less from strictly European modernist precedents than from commercial American variants, including the streamlined moderne, as for example in Kahn & Jacobs' own Marine Transportation Building at the World's Fair. These streamlined features, which the asphalt plant shares with such canonical American modernist works as Howe and Lescaze's PSFS Building and Stone and Goodwin's Museum of Modern Art, included the projecting flanges of the auxiliary storage building, the great swelling canopies on the north and south facades of the mixing unit, and the large sans serif letters of brushed aluminum emblazoned off-center across the main façade (Figure 16). The style and dynamic placement of this signage on the finished building indicate an evolution in the design from its earliest stage in which the seal of the City of New York and a more conservative serif typeface were centered on the façade.³⁰ Equally flamboyant, and redolent of contemporary commercial design, was the Monel Metal sheathing intended for the exterior conveyer



Figure 16: Mixing Plant Building detail, showing aluminum lettering on north façade, photo by the author, 1996.

belts and the barrel sections of the mixing unit above the level of the windows, the application of which was precluded by the imposition of World War II material restrictions (Figure 10). Even without this sheathing, the mixing unit is a sleek streamlined shell, hiding the complex mechanical workings within, thus concealing the dirty, messy business of making asphalt paving. In this respect Jacobs' design appears as a "skin job," analogous to the work of industrial designers such as Raymond Loewy. Like Loewy's Coldspot refrigerator, Jacobs's asphalt plant is calculated to give the appearance of simplicity, efficiency and attractiveness.³¹

In the early 1940s, even in New York, the asphalt plant, and especially the mixing unit, was modern architecture at its most startling at least in the public's perception.³² Such bold unornamented visual expressions were still uncommon in the city, among them Cory & Cory's Starrett-Lehigh building of 1931, Lescaze's townhouse of



1934; and of course, the Museum of Modern Art, which had, by contemporary accounts, "been disturbing New Yorkers, even the most up-to-date of them," since it opened 1939.³³ Such "stark and machine-made simplicity" might have been expected from the reputedly avant-garde Museum of Modern Art, but it was far more surprising coming from the government of the City of New York. Even under the progressive leadership of Mayor La Guardia,

Figure 17:
Mixing Plant Building, photo by William Ward, from *Architectural Forum*, March 1944.

³¹ This appearance is all the more striking when the New York facility is compared with other municipal asphalt plants, such as those found in St. Louis and Los Angeles, which were also built in the 1940s. As in New York, St. Louis and Los Angeles both utilize advanced technology and electrical power, but in both cities the manufacturing equipment stands independent of any housing structures, in open air. See "Asphalt Plants Serving Our Cities," *American City*, February 1951, 92-93.

³² The soaring concrete curves of the mixing unit remained unique in New York until the revived expressionism of the late 1950s, as in Eero Saarinen's TWA Terminal (1956-62). As late as 1960, *Progressive Architecture* cited the mixing unit as a notable example of concrete design. See "Exposed Concrete Today," *Progressive Architecture* 41 (October 1960): 151. A design similar to that of the mixing unit had been projected earlier, in Oscar Niemeyer's 1947 proposal for the United Nations (study #32). Niemeyer's general assembly strongly resembles Jacobs's mixing unit, though laid on its side. Given the asphalt plant's prominent location on the East River, only a few miles north of the UN site, and that Niemeyer, like Jacobs, was a follower and friend of Le Corbusier, it seems possible that the Brazilian architect would have known the mixing unit.

³³ Henry McBride, "Opening of the New Museum of Modern Art," *New York Sun* (13 May 1939).

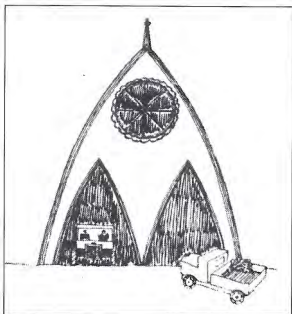
³⁴ Robert Moses, "Mr. Moses Surveys the City Statues," *New York Times Magazine* (21 November 1943), 19.

³⁵ For a full discussion of the conflicts between Robert Moses and Stanley Isaacs over municipal public works see Caro, 643, 665, and 759.

³⁶ Walter D. Binger, "Reply to Mr. Moses," *New York Times Magazine* (19 December 1943), 30. The Municipal Art Commission approved the design on 11 June 1940 without comment. See File 2343-1, Documents A-H, Municipal Art Commission, City of New York.

³⁷ "Municipal Asphalt Plant," *Architectural Forum* 80 (March 1944):110.

Figure 18:
Cartoon of "Cathedral of Asphalt," from *Architectural Forum*, March 1944.



the most notable civic projects and public works (as built by Robert Moses) featured buildings characterized by a restrained, brick-faced or stone-clad modernism, with decorative effects added for populist appeal.

In November of 1943, only a few months before the asphalt plant was scheduled to open, its design finally incited a public controversy when Robert Moses launched an attack in print after months of behind the scenes campaigning. In an article in the *New York Times Magazine* ostensibly devoted to appraising the city's public statues, Moses ridiculed the asphalt plant as "horrible modernistic stuff." Labeling the mixing unit a "Cathedral of Asphalt" and the main storage building a "Corrugated Shoe Box," Moses dismissed the entire plant as a "freakish experiment...unnecessarily ugly and obtrusive."³⁴ From the tone and content of Moses's criticism it becomes clear that his animus had as much to do with long-standing enmity toward his adversary Borough President Stanley Isaacs (whom Moses held solely responsible for the plant) as with a genuine disdain for the facility itself.³⁵

Borough Works Commissioner Walter Binger, whose department was directly responsible for the plant, responded quickly, but timidly. Though he claimed that he had "no desire to question Mr. Moses' taste (or lack of it)," Binger went on to do just that, noting that since the Municipal Art Commission approved the design, it must be "very fine."³⁶ A far more cogent defense was offered by *Architectural Forum* which responded directly to what it called Moses' "vitriolic" attack:

*Certainly the contrast of cube and ellipse offered by the two main buildings is a radical departure from the conventional brick fortification style of older industrial buildings, but this novel form is fully justified by the functions and machinery it encloses. The arch shape of the processing building was determined by the parabolic flow of the equipment layout.*³⁷

The *Forum's* accompanying photograph was offered as a further modernist defense—William Ward's oblique, abstracted view of the mixing unit which recalled the propagandizing architectural photography of Ken Hedrich and F.S. Lincoln [Figure 17]. The *Forum's* editors also satirized Moses' "Cathedral of Asphalt" with a drawing of a gothicized mixing unit (Figure 18).

In the *New York Times*, other letters and responses followed—praising and condemning the plant, questioning its location, even citing its relationship to the architecture of ancient Persia. There the matter would have rested, except that in the meantime an architecture exhibition, *Built in USA*, had opened at the Museum of Modern Art which included Kahn & Jacobs' Municipal Asphalt Plant as one of 47 buildings representative of developments in American architecture since the 1932 *International Style* show.³⁸ Curator Elizabeth Mock's pointed catalogue entry seemed calculated to defend the plant against public criticism: "The bold semi-ellipse of the mixing plant is no affectation," she wrote, further explaining that "sharply diversified industrial operations invite sharply differentiated architectural forms."³⁹ No sooner had *Built in USA* opened than the *New York Times* stirred things up once again, calling attention to the difference of opinion between Moses and the Museum over the "aesthetic lure" of the asphalt plant. Here the *Times* editors were unequivocal about their own position, complaining not that the mixing unit looked like a factory, but rather like an open-air band shell, one "big enough to accommodate three Toscaninis and an equal number of Koussevitzkys simultaneously proclaiming seven Shostakovich Sevenths." It was no wonder, they concluded, that the bombastic asphalt plant appealed to Mayor La Guardia, "always a foe of reticence."⁴⁰ Elsewhere the editors continued to balk at recent architectural developments, griping that "all modernistic buildings look alike" with their "heavy rectangles...sharp edges and lots of glass."⁴¹

This editorial in particular occasioned a lengthy response from the architect G.E. Kidder Smith who wrote on behalf of the American Institute of Architects. Smith, in addition, was well acquainted with the asphalt plant, having documented the redevelopment of the Upper East Side waterfront in photographs that were later published in municipal government reports and *Architectural Review*.⁴² Though the suitability of the mixing unit's shape was once again defended by invoking the modernist doctrine of form follows function, Smith was more concerned with explaining why the asphalt plant was "modern" and not "modernistic." The former "springs from the 'logical evolution and solution of multiform problems' while the latter 'connotes a flashy, futuristic, streamlined attempt.'" According to Smith, calling the asphalt plant modernistic "represent[ed] to a modern architect a damnation of complete opprobrium."⁴³ In coming to the defense of the asphalt plant, these diverse individuals and institutions seemed as interested in preserving the reputation of Modernism as they were in swaying public

³⁸ With only three other industrial buildings, three other New York City buildings, and two comparable public works (erected by the Tennessee Valley Authority) included in the show, the selection of the new asphalt plant was not insignificant—but neither was it surprising. Though MoMA had been openly disdainful of the type of art deco skyscrapers on which Ely Jacques Kahn's reputation rested, it had been favorably disposed toward the younger Jacobs, having hired him for Le Corbusier's lecture tour. In addition, Jacobs' former employer, Wallace K. Harrison, was a member of the museum's Board of Trustees and his former Columbia dean, Joseph Hudnut, was a member of the Architecture Committee. MoMA records are inconclusive as to whether it was good connections or genuine interest in the work itself which ultimately resulted in the asphalt plant's selection.

³⁹ Elizabeth Mock, *Built in USA since 1932* (New York, 1944), 99.

⁴⁰ "That Sweeping Arch," *New York Times* (27 April 1944), 22.

⁴¹ "Functions and Twins," *New York Times* (27 April 1944), 22.

⁴² See Borough President's Office, *Borough of Manhattan Report* (New York, 1941), 20-21 and "East River Drive, New York," *Architectural Review* 96 (December 1944), 177-182. Smith also had ties to MoMA having been hired by Philip Goodwin as photographer for *Brazil Builds*, a MoMA exhibition and book of 1943.

⁴³ G.E. Kidder Smith, "Modern Architecture Upheld," *New York Times* (6 May 1944), 14.

⁴⁴ Mock, 99.

opinion about this particular building. Elizabeth Mock was, at least, mindful of recent complaints, observing that the asphalt plant was a "distinct asset to its residential neighborhood."⁴⁴

What exactly about the new asphalt plant made it such a community asset—such that real estate developers were now willing to build a 500-unit apartment complex across the street? After all, despite Jacobs' successful combination of utility and eye appeal, this was still an industrial site, and even zealous advocates of mixed-use zoning, of whom there were not many among contemporary decentralist planners, would hardly imagine a factory and a luxury apartment complex as harmonious neighbors. In contrast to other municipal industrial sites, notably a Queens asphalt plant built near Flushing Meadow in preparation for the World's Fair, there was no use of elaborate landscaping to "screen industrial activity" or "hide the true nature of the factory," though production had been rendered significantly less noxious through internalization.⁴⁵ Nor is it likely that the plant's insistent modernism appealed to the developers' sense of aesthetics, since their own buildings, by architect Sylvan Bien, were executed in a restrained neo-colonial manner (Figure 19). But in some way it was precisely the plant's modernism which was finally so convincing since, as one journalist observed, it gave the new facility "anything but the appearance of an industrial plant."⁴⁶ Transcending workaday industrial architecture, the new asphalt plant could thus signify a

⁴⁵ "City Will Disguise Big Asphalt Plant," *New York Times* (15 October 1935), 33.

⁴⁶ Serber, 439.



Figure 19: [top]
Sylvan Bien, Gracie Square Gardens, New York City, 1940-41, from *Real Estate Record*, December 1941.

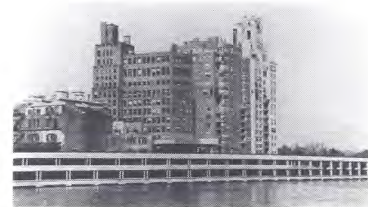


Figure 20: [above]
Borough of Manhattan Engineers, East River Drive (now Franklin D. Roosevelt Drive), New York City, 1939-42, double deck section from 81st to 89th Streets, from *Municipal Engineers Journal*, 1941.



Figure 21:
Othmar H. Ammann and Aymar Embury II, Triborough Bridge, New York City, 1936, photo by the author, 1996.

neighborhood's gentrification, an administration's crusade against corruption, a city's burgeoning modernity.

This signification of modernity, it shared with other public works of the era like the George Washington and Triborough Bridges and especially the neighboring East River Drive, whose completion to 92nd Street in 1940 was an important impetus to the asphalt plant project. One of the most highly regarded public works of the era (and one of the few not built by Robert Moses), the drive was characterized by Borough President Isaacs as a "clean, streamlined, modern super highway."⁴⁷ Stretching nine miles from the Battery to 125th Street, for much of its uptown length the drive travels on a platform built out over the river, a double or triple deck roadway topped by gardens, esplanades, and apartment towers (Figure 20). Plunging into a tunnel at 50th Street northbound motorists travel for two miles on what Robert Stern has described as "one of the world's most thrilling stretches of multilevel highway."⁴⁸ Emerging at 90th Street motorists in the 1940s (and still today) witnessed a spectacular panorama of modern New York—the four arms of the Triborough Bridge stretching out to the east; the four arches of the asphalt plant soaring to the west (Figures 21 and 22). MoMA curator Elizabeth Mock rightly called the plant "an exciting experience for motorists on the adjacent superhighway"—an experience which surely rivaled any automotive age spectacle witnessed in the Futurama.⁴⁹

Robert Jacobs had taken up Le Corbusier's gauntlet to "use the motor-car as a challenge to our great buildings" and he created an asphalt plant as a modern, efficient machine which purposefully shared the East River Drive's "bold scale [and] genuine, uncompromising concrete character."⁵⁰ But even as Jacobs' design responded to the implicit modernity of the cars and the highway on which they travelled, it laid down a challenge of its own. The unabashed monumentality and power of the plant's spare geometric forms were calculated to inspire awe

⁴⁷ *Borough of Manhattan Report*, 1940-1941, 18. The East River Drive was built in three consecutive links: 93rd-125th Streets, 50th-92nd Streets, 49th Street south.

⁴⁸ Robert Stern, et al, *New York 1930* (New York, 1987), 700.

⁴⁹ Mock, 99.

⁵⁰ Le Corbusier, *Towards a New Architecture*, trans. Frederick Etchells (New York, 1931), 140-41. This description of the drive is from "East River Drive, New York," *Architectural Review*, 180.

and reverence for modern industry, ennobling the production of asphalt taking place within—production which granted the modern highway its very existence. Robert Moses had intended the ultimate insult when he denounced the plant as a “cathedral of asphalt.” But within the efficiency-worshipping civic culture in which the project was conceived, and the modernist aesthetic in which the design was executed (remembering that Le Corbusier himself compared the Orly airship hangars to Notre Dame), Moses could not possibly have paid New York City’s Municipal Asphalt Plant a higher compliment.

The Municipal Asphalt Plant served the borough of Manhattan from 1944 until 1968 when, as an economy measure, the city consolidated all asphalt production at a single facility in Queens. In 1970, the city announced plans to clear the site and build a mixed-income, high-rise housing project. Though the storage units and all auxiliary structures were razed, the mixing unit was spared because its steel trusses made conventional demolition difficult and costly. A neighborhood community group which opposed the housing project rallied successfully to save the building. The mixing unit was declared a New York City landmark in 1976 and listed on the National Register of Historic Places in 1980. In 1985 the building was renovated by HOK (the successor firm to Kahn & Jacobs) in association with Pasanella & Klein into Asphalt Green, Inc. a non-profit sports and arts center. The transformed asphalt plant stands today as a fine example of the creative adaptive re-use of urban industrial buildings.

This article is based on research which began informally in 1989 when I joined the staff of Asphalt Green, Inc. An early version of this work was presented at the Hagley Museum and Library’s Conference on Industrial Modernism in 1995. Since then this work has benefitted from the insightful criticism of numerous colleagues, including a peer reviewer who prompted me to rethink several key issues and to whom I extend my thanks.

Figure 22:

Mixing Plant Building from East
River Drive, photo by the author,
1996.

biographical information

Gabrielle Esperdy is an architectural historian who received her Ph.D. from the CUNY Graduate Center in May 1999. A College Art Association Professional Development Fellow and a member of the History/Theory faculty at the Pratt Institute School of Architecture, She is currently working to turn her dissertation, *Modernizing Main Street: Everyday Architecture and the New Deal*, into a book.

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