B-994

Domino Sugar Plant, (American Sugar Refining Company, AMSTAR)

Architectural Survey File

This is the architectural survey file for this MIHP record. The survey file is organized reverse-chronological (that is, with the latest material on top). It contains all MIHP inventory forms, National Register nomination forms, determinations of eligibility (DOE) forms, and accompanying documentation such as photographs and maps.

Users should be aware that additional undigitized material about this property may be found in on-site architectural reports, copies of HABS/HAER or other documentation, drawings, and the “vertical files” at the MHT Library in Crownsville. The vertical files may include newspaper clippings, field notes, draft versions of forms and architectural reports, photographs, maps, and drawings. Researchers who need a thorough understanding of this property should plan to visit the MHT Library as part of their research project; look at the MHT web site (mht.maryland.gov) for details about how to make an appointment.

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Last Updated: 03-10-2011
Domino Sugar (8-994)
Statement of Sign.

Statement of Significance

The American Sugar plant is Baltimore's only remaining operating sugar refinery in a city which once ranked second among the nation's refining centers and supported as many as six separate plants. Built in 1921 as a massive complex in the 1000 block of Key Highway, the plant is the second largest refinery in the United States. The Amstar Corporation, which operates the Baltimore plant and 11 other refineries, presently supplies over one quarter of all sugar annually consumed in the United States.
### NAME

**HISTORIC**
American Sugar Refining Company

**AND/OR COMMON**
Domino Sugar Plant

### LOCATION

**STREET & NUMBER**
1100 Key Highway East

**CITY, TOWN**
Baltimore

**STATE**
Maryland

### CLASSIFICATION

<table>
<thead>
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<th>CATEGORY</th>
<th>OWNERSHIP</th>
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<td>_OCCUPIED</td>
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### OWNER OF PROPERTY

**NAME**
Amstar Corporation

**American Sugar Division**

**STREET & NUMBER**
1100 Key Highway East

**CITY, TOWN**
Baltimore

**STATE, zip code**
Maryland 21230

### LOCATION OF LEGAL DESCRIPTION

**COURTHOUSE, REGISTRY OF DEEDS, ETC.**
Baltimore City Courthouse

**STREET & NUMBER**
Fayette and Calvert Sts.

**CITY, TOWN**
Baltimore

**STATE**
Maryland

### REPRESENTATION IN EXISTING SURVEYS

**TITLE**
None

**DATE**

### DEPOSITORY FOR SURVEY RECORDS

**CITY, TOWN**

**STATE**
Designed by a consulting board to be the most efficient plant possible in 1920 the Amstar facility remains the second largest sugar refinery in the United States. Outside contractors were engaged to design and build both the Boiler Plant and the overall site. The consulting board, composed mainly of American Sugar Company engineers and management, assumed responsibility for layout and design of all process and equipment. The initial plant was designed to permit a 50% increase in capacity if desired.

As built the plant was composed of sixteen structures including offices, warehouses and ancillary buildings. At the east end of the property is the powerhouse with a nearby coal storage tower. North of it with an axis parallel to the bulkhead is the Raw Sugar Shed with its cranes for unloading ships. West of the Powerhouse is the Machine Shop. Southwest of the Raw Sugar Shed are the Wash House and the Filter House. Further west is a U-shaped complex composed of the Pan House, Finishing House and the Domino Storage Building. The plant also had a complete barrel-making plant and a three million gallon molasses storage tank.

Construction of the plant was a difficult engineering problem because more than half of it was built in the water. Hundreds of piles were driven both on land and in the harbor with the average water driven pile penetrating 6 to 22 feet of mud and 8 feet of hard strata and up to 30 feet of water. A total of over 1.2 million linear feet of piling was driven. A mat of heavy timbers and planking was built on these pilings and a reinforced concrete foundation layed on this surface.

Since this plant was constructed at one time and has been virtually unaltered, all 4-process buildings have the same reinforced concrete design. They vary in height since they were designed to house the equipment necessary to that stage of the refining process. Raw sugar passes from the ship or the raw sugar shed to the wash house via bucket conveyors. The wash house, a seven-story steel-frame and brick building with movable casement windows. After passing through mechanical crushers, the raw sugar enters a system of "minglers," large troughs, where it is mixed with syrup from sugar that has already gone through the raw sugar centrifugal machines. The resulting mass of sugar and syrup is called "magma." The magma is then passed into a large mixer and agitated before being discharged into the centrifugal machines directly below. The object of these machines is to separate the syrup from the sugar crystals. Below the centrifugal

(Cont'd.)
The American Sugar Plant is Baltimore's only remaining operating sugar refinery in a city which once ranked second among the nation's refining centers and supported as many as six separate plants. Built in 1921 as a massive complex in the 1000 block of Key Highway, the plant is the second largest refinery in the United States. The Amstar Corporation, which operates the Baltimore plant and 11 other refineries, presently supplies over one quarter of all sugar annually consumed in the United States.

Historical Significance

Immediately prior to the Civil War, the sugar refining industry in Baltimore greatly expanded. Since colonial times, the city supported several small refineries which supplied local demand; but in the 1850's the introduction of the vacuum pan process, and other developments in refining, greatly improved the methods of manufacturing and increased production. Baltimore's excellent harbor and proximity to the crude sugar sources, particularly in the West Indies, combined with a well developed rail transportation system, encouraged many new refineries to begin production in the city. By the late 1860's, six large companies--The Baltimore; Calvert; Canton, Chesapeake; Maryland; and Merchants--all had refineries in the city. In 1871 The Baltimore Sun described "the refining of sugar as most important to the general trade of the city," noting the large numbers of workers employed, the huge amounts of imported raw sugar and the capital invested.

In 1873, however, the Baltimore sugar refining industry collapsed. Stirling, Ahrens and Company, owners of four of the city's refineries and largest importers of molasses and sugar in the United States, declared bankruptcy. Although several businesses made efforts to revive the industry, from 1875 to 1920 only one refinery operated in Baltimore. This was the Curtis Bay Sugar Refinery, established in 1891 at the foot of Aspen Street on the waterfront.

Revival of the sugar industry in Baltimore occurred in 1921 when the American Sugar Refining Company built a massive plant in the Locust Point area of the city. This plant, commonly known as "Domino Sugar," took over two years to build, contains 15 buildings and covers over 20 acres--with over one quarter waterfront. In addition to

CONTINUE ON SEPARATE SHEET IF NECESSARY
MAJOR BIBLIOGRAPHICAL REFERENCES

Query-Vertical Files, Enoch Pratt Free Library
"Baltimore AMSTAR Refinery, Construction Completion Report" (private, 1922)

CONTINUE ON SEPARATE SHEET IF NECESSARY

GEORGOPHICAL DATA

ACREAGE OF NOMINATED PROPERTY

VERBAL BOUNDARY DESCRIPTION

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE                    COUNTY

STATE                    COUNTY

FORM PREPARED BY

NAME / TITLE
Linda Daur, Dennis Zembala

ORGANIZATION
Baltimore Industrial Museum

STREET & NUMBER
217 N. Charles Street

CITY OR TOWN
Baltimore, Md. 21201

The Maryland Historic Sites Inventory was officially created by an Act of the Maryland Legislature, to be found in the Annotated Code of Maryland, Article 41, Section 181 KA, 1974 Supplement.

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The Shaw House, 21 State Circle
Annapolis, Maryland 21401
(301) 267-1438
machines are the "pre-melters," where the sugar is dissolved by adding hot water. The sugar then passes to large receivers known as "melter blowups," where it is boiled to the proper consistency. From here it passes to the filter house.

The filter house is a ten-story steel-frame and brick building containing multi-story spaces for the large filters necessary to purify the melted "liquor." In 1920 this plant was one of the first to use pressure filters which greatly reduced filtering time and labor costs. Previously gravity filters made up of many layers had to be removed and cleaned by hand after each filtration. After the liquor has gone through these presses, it passes into the "char-filters," large cylindrical cast-iron vessels ten feet in diameter and twenty-three feet high. These are full of "bone char," burned animal bones ground and grated as to size. In the char filters the soluble impurities, both organic and inorganic, which discolor the liquor, are removed.

The next important step of the refining process is the boiling crystallization of the sugar which takes place in the pan house. The pan house, the third of the process buildings, is nine stories of the same type of construction of the buildings previously described. It contains large vacuum pans in which the sugar is boiled at a low temperature in order to prevent the destruction of its crystals. After the sugar has been crystalized, which may take up to eight or nine hours, it is dropped from the pans into large centrifugal machines which separate the crystals from the syrup. Sugar from these machines is taken by another set of bucket conveyors to the finishing house.

Large rotary dryers are contained in the finishing house, a nine-story steel frame and brick structure. At this point the sugar contains 2-3% of moisture. The dryers are revolving drums in which the sugar is tumbled while a current of hot air passes through. Below are another set of drums similar in design in which the heated sugar is cooled as it tumbles. The finished sugar is then passed over a set of inclined, vibrating screens, where it is grated into coarse, fine extra-fine. It is then taken by conveyor to storage bins before being packed.

The large "Domino Building" west of the finishing house is ten-stories of reinforced concrete construction. It contains the packaging machinery and storage facilities for the plant. Several other structures are important to the operation of the site, including a large boiler house, southeast of the wash house. This is also a steel-frame brick structure eight-stories high. It originally contained five vertical boilers with mechanical coal-handling facilities. West of this powerhouse is the engine house and machine shop building, a three-story steel-frame and brick structure. This building housed the steam engines and generators which powered the plant. These consisted of

(con't.)
three 1250 kilowatts direct-current generators, each connected to and driven by two twin, four-valve, non-condensing reciprocating engines, 25½" x 32" with a speed of 135 r.p.m. and developing 1880 horsepower per set.

Additional buildings include a large cooperage to the southwest which produced barrels for storing the sugar. The power plant and processing buildings were constructed of steel-frame and brick because the heavy concentration of machinery they contained made the more standard reinforced concrete construction impractical. Only the "Domino Building," a barrel-filling station and an office structure are of concrete construction. The cooperage is of standard mill construction, with heavy timber floors and brick bearing walls.

Unlike earlier manufacturing sites which grew organically over a number of years, the American Sugar Plant was the product of sophisticated engineering planning and construction. Although there have been some additions over the years, the plant remains essentially the same as when it was constructed in 1920. At that time it was a monument of state-of-the-art modern industrial design.
several warehouses, the plant contains a power house, wash house where the raw sugar is cleaned, pan house where sugar liquids are boiled, finishing house and packing house. The complex also includes its own railroad terminals and three docks to facilitate the transport of raw and finished sugar. Few structural changes have been made to the plant since it began operation in April of 1922.

Amstar Corporation, which now owns the American Sugar Refining Company, supplies 60% of the sugar sold in bulk or liquid form to industrial sugar users and over one-quarter of all sugar consumed annually in the United States. Their Locust Point plant--the second largest in the country--employs approximately 850 persons.
The American Sugar Plant in Baltimore is the only remaining operating sugar refinery in a city which once ranked second among the nation's refining centers and supported as many as nine separate plants. Built in 1921 as a massive complex in the 1000 block of Key Highway, the plant is the second largest refinery in the United States. The Amstar Corporation, which operates the Baltimore plant and all other refineries,
presently supplies over one quarter of all sugar annually consumed in the United States.
Structures

1. Coal Tower
2. Boiler Plant
3. Shop & Power House
4. Raw Sugar Shed
5. Wash House
6. Filter House
7. Port House
8. Foundation
9. Demolition Yard
10. Coopers' Yard
11. Mail Pkt.
12. Residence
13. Garage
14. Tower
15. Boiler Shed

Domino Sugar (AMSTAR)
Baltimore Cty., MD
Site plan, 1922
1" = 200'
(Stone & Webster Inc., March 1922; in construction Completion Report)
Historic View - Looking Southeast at site
Looking South

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Domino Sugar (AMSTAR)
Baltimore City, MD

Peter Liebhold 5/83

Looking South
Looking South at Wash House
Looking S.W. at Old Sugar Shed
Finishing Blds. & Domino Bldg.
Amino Sugar (Amstar) B-994
Baltimore City, MD
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Looking N.E. from front gate
Domino Sugar (Amster) B-994
Baltimore City MD
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Looking West at Domino Building
Domino Sugar (Amstcr) B-994
Baltimore City, MD
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Looking N.W. AT Office
Looking South at Copecage Bldg.
Domino Sugar (Amster) B-994
Baltimore City MD
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Looking West at Cooperage Bldg
Looking North at Shops Building
Looking N. W
Domino Sugar (Amster) B-994
Baltimore City, MD
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Interior Cooperage Bldg. Southside
Domino Sugar (Amster) B-994
Baltimore City, MD
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Interior Old Sugar Shed
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Interior Old Power House
Column Detail Cooperage Bldg, North Side

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Domino Sugar (Amstar)
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Looking S.E. at Power House