# FINAL

# Building 120 Main Factory Building

# Historic American Buildings Survey Level I

2701 North Harbor Drive, San Diego, California 92101

Prepared for

San Diego Unified Port District (SDUPD) San Diego County Regional Airport Authority

April 2010

**CH2MHILL** 

#### HISTORIC AMERICAN BUILDINGS SURVEY

#### RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT

#### **BUILDING 120 - MAIN FACTORY BUILDING**

<u>Location:</u> 2701 North Harbor Drive, San Diego, CA 92101, USA

Present Owner/Occupant: San Diego County Regional Airport Authority

Present Use: Vacant

Significance: Building 120 is located within the boundaries of the Ryan Aeronautical Company

Historic District, a 46-acre complex containing 17 contributing resources and 30 non-contributing resources. The district is eligible on the national and local levels for the National Register of Historic Places (NRHP) under Criteria A, B, and C and for the California Register of Historical Resources (CRHR) under Criteria 1, 2 and 3. The historic district is eligible under NRHP Criterion A (CRHR 1) for its association with the contribution of aircraft manufacturers at Lindbergh Field to World War II defense production. It is also eligible for its association with Cold War research, development projects, and defense manufacturing. Under Criterion NRHP B (CRHR 2) the district is eligible for its association with aviation pioneer T. Claude Ryan and his aircraft aerospace manufacturing businesses. Ryan Aeronautical Company, under Mr. Ryan's leadership, made significant contributions to national defense production during World War II, as well as important developments in aerospace research and development in the 1950s and 1960s. The historic district is eligible under NRHP Criterion C (CRHR 3) for its representation of industrial architecture associated with the 1930s and World War II. The district embodies the distinctive architectural characteristics of aircraft manufacturing buildings of the period in Southern California. The building and structures in the district illustrate the design fabrication concepts common to aircraft manufacturing plants from the 1930s to the 1960s. During this period, the aerospace industry played a dominant role in the economy of the

Building 120 was the first building constructed at the site and is a contributing resource to the Ryan Aeronautical Company Historic District under NRHP Criterion C/CRHR Criterion 3 because of its distinctive architectural characteristics of a type, period, and method of early World War II era construction for industrial/administrative use.

Historian: Jessica Feldman

### PART I. HISTORICAL INFORMATION

## A. Physical History:

1. Date of erection: 1939, 1940 (extension)

region (URS Corporation, 2008).

- 2. Architect: Edward Gray and Ellis Wing Taylor (1940), Frank L. Hope, Jr. & Associates (free-standing restrooms, 1942)
- 3. Original and subsequent owners: Ryan Aeronautical Company signed a 50-year lease in 1939. Ryan Aeronautical Company sold to Teledyne Inc. in 1969, and the combined company became Teledyne-Ryan Aeronautical Company (TDY Industries). TDY Industries merged with Allegheny Ludlum Corporation in 1996, and Northrop Grumman Corporation acquired TDY Industries from Allegheny in 1999. Presently, the property is leased by the San Diego County Regional Airport and is under the Jurisdiction of the San Diego Unified Port District.
- 4. Original plans and construction: Building 120 is a two-story generally rectangular building originally measuring approximately 200 feet by 275 feet and sits on a concrete slab foundation and floor. The walls are supported by 7-inch-by-11-inch steel "I"-beam posts approximately 25 feet apart and mounted onto the concrete floor slab. The I-beam posts hold a 2-inch-by-4-inch steel beam covered with corrugated metal. Fenestration consists of two rows of multi-paned steel-framed windows along the perimeter of the building. Building 120 has steel-framed multi-peaked "sawtooth"-style roof set on steel columns. Single rows of steel-framed "monitor" windows are located on the north elevation of each sawtooth peak (URS Corporation, 2009).
- 5. Alterations and additions: In 1941, additions were made to Building 120 along the north and west elevations, increasing the overall size of the building to 325 feet by 600 feet (Moomjian and Tinsley, 2001). A plan for an extension in 1940 appears to show four separate additions to the original 200-foot-by-275-foot plan. The first addition was a 50-foot-by-200-foot addition on the south elevation of the original building. The building was extended on the west elevation by an additional 200 feet by 275 feet, and then this addition was extended on the south elevation with a factory office building measuring 50 feet by 150 feet. A fourth addition, measuring 200 feet by 325 feet, was designed in 1940. The plans show first-floor and mezzanine-level offices on the south elevation of both the second and third additions. The new (fourth) addition proposed in 1940 was to include first and mezzanine floors for office space along the west elevation.

A second free-standing restroom facility was added in the center of the building circa 1942. Within the past 30 years, there have been additional alterations and changes to the overall footprint, including installation of various door types and sizes at several locations, removal of interior partitions and walls, as well as the installation of canopies over doors. Several glass panes have been boarded or painted (URS Corporation, 2009).

# B. Historical Context:

# 1. San Diego's Aviation History:

During the first three decades of the 20<sup>th</sup> century, the aviation industry was established in San Diego and it became a focal point of San Diego's activities and reputation. In 1912, the Army founded an air base and the first year-round military aviation school at Rockwell Field on Naval Air Station North Island, San Diego (Macaulay, 1928; Moore, 1960). The creation of the military air bases helped establish aviation in the region during the industry's pioneering years. In 1928, the Army and Navy had invested \$5,500,000 in the air bases at North Island (Macaulay, 1928). The high profile attained by aviation in the local community during these years resulted in an awareness of the potential future of the industry by the inhabitants of the region. San Diego became the first U.S. city to establish a Municipal Board of Air Control in 1926, and was also the first to issue a complete set of air ordinances (Macaulay, 1928).

In 1922, T. Claude Ryan, an aviation pioneer who began his career as an Army pilot, left the Army and moved to San Diego, where he began giving airplane rides and flying instructions. He soon established the Ryan Flying Company at the Dutch Flats Airfield in San Diego, which later became Ryan Airport. Dutch Flats Airfield was located at present-day Barnett Avenue and Midway Drive, off the current San Diego airport site and not within the current historic district boundaries. In the 1920s, Ryan Airport was the focal point for Ryan's expanding aeronautical enterprises (flying school, flying service, and an airplane manufacturing company). In the late 1920s, the use of the airport expanded as civil aviation came of age with other companies using Ryan's field to operate air services. With the help of T. Claude Ryan, civilian aviation flourished in San Diego County during these decades.

In the mid-1920s, the Chamber of Commerce promoted San Diego as the "Air Capital of the West." The development of what is now Lindbergh Field would be the central effort in this campaign. The committee realized that in order to maintain a leadership role in aviation, San Diego must have an adequate municipal airport. They wanted the location of the airport to be a place that would combine facilities for the operation of land and seaplanes, and be as near to the city of San Diego as possible. They selected an area at the north end of San Diego Bay on Cityowned tideland; however, this area did not contain enough area to meet government requirements. Negotiations were made with the United States Navy to provide portions of the Marine Corps-owned tidelands for the airport expansion (URS Corporation, 2009).

Ryan was instrumental in the development of Lindbergh Field, San Diego's nascent municipal airport, which was established in 1928. In 1929, 4,755 planes and over 20,000 passengers arrived or departed from the Dutch Flats Airfield (Leiser, 2000). Within a few years, the majority of these activities would move to Lindbergh Field. In 1939, Ryan established a manufacturing site on airport grounds, which is the location of the historic district.

# 2. Ryan Aeronautical Company:

T. Claude Ryan was born in Parsons, Kansas in 1898, but moved with his family to Orange, California in 1912. Ryan began a lifelong relationship with the aviation industry when, around the age of 19, he enrolled at the American School of Aviation in Los Angeles. In 1919, Ryan began studying mechanical engineering at Oregon State College. While in school, he applied to the Army for aviation cadet training and was accepted, but left the Army by January 1922 in hopes of flying as a civilian (National Aviation Hall of Fame, 2009). Ryan moved to San Diego to establish the Ryan Flying Company. The Ryan Flying Company changed its name to Ryan Airlines, Inc. when it was reorganized in 1924 to begin operating the first year-round, scheduled airline service in the United States from Dutch Flats (URS Corporation, 2009). Around the same time, in the mid-1920s, Ryan entered the aircraft manufacturing business with partner Frank Mahoney and created the Ryan M-1 Monoplane, which became one of the best-known air mail carriers in the country. A modified Ryan Monoplane became the Spirit of St. Louis, the plane Charles Lindbergh flew from New York to Paris in May 1927 on the first solo flight across the Atlantic Ocean. Ryan sold the company to Mahoney in 1926 and established the Ryan Aeronautical Corporation for the sale and manufacture of aircraft engines. The company changed its name to the Ryan Aeronautical Company in 1934.

Ryan Aeronautical Company signed a 50-year lease, starting in 1939, on land at the southeastern edge of Lindbergh Field along North Harbor Drive. Three buildings from the site of the previous company were relocated to this new location. The Ryan plant was one of several

aircraft manufacturers located at Lindbergh Field that contributed to the nation's war effort in the 1940s. At peak wartime production, the Ryan plant had 8,500 employees and annual production exceeded \$55 million. Following the war, workforce was reduced to 1,200 and annual production to \$8 million (URS Corporation, 2009).

The Korean conflict provided the Ryan Aeronautical Company the opportunity to work with electronics for aerospace applications. The role in aerospace electronics led to the development of a variety of aircraft navigation and positioning equipment, including helicopter hovering devices, altimeters, and remote sensors (URS Corporation, 2009).

In 1947, the United States Navy awarded Ryan a contract to research the feasibility of reaction controls for jet aircraft. With jet engines and reaction controls handled by remote control, a Ryan vertical test rig lifted itself off the ground for the first time in 1950. In 1953, the Air Force awarded Ryan a contract to design and build two manned vertical takeoff jet research planes and 2 years later, the Ryan X-13 Vertijet was constructed. In the 1960s, Ryan continued target drone and electronic systems production and vertical takeoff and landing research (URS Corporation, 2009).

In 1969, the company was sold for \$128 million to Teledyne Inc. and became known as Teledyne-Ryan Aeronautical Company (TDY Industries). T. Claude Ryan remained with the company as chairman until his death in 1982. In 1996, TDY Industries merged with Allegheny Ludlum Corporation, and then later became a subsidiary of that company. In 1999, Northrop Grumman Corporation acquired TDY Industries from Allegheny and relocated the plant to a site in Ranch Bernardo, California, leaving the former plant site vacant. The site continues to be mostly vacant, with only a small portion of Building 100 used for administrative offices and several other buildings used for storage.

### PART II. ARCHITECTURAL INFORMATION

#### A. General Statement:

- 1. Architectural Character: Building 120 is a large, two-story generally rectangular building originally measuring approximately 200 feet by 275 feet. It has an open interior, with steel-framed multi-peaked sawtooth style roof set on steel columns. Single rows of steel-framed monitor windows are located on the north elevation of each sawtooth peak. It is reflective of and a good representation of a large-scale World War II-era factory within an industrial facility (URS Corporation, 2009).
- 2. Condition of Building Material: Building 120 is in good condition.

### B. Description of Exterior:

- 1. Overall Dimensions: Building 120 currently measures approximately 325 feet by 600 feet.
- 2. Foundations: Building 120 is built on a concrete slab foundation.
- 3. Walls: Building 120 has corrugated sheet metal exterior walls.
- 4. Structural System: Building 120 is steel-framed with corrugated steel exterior cladding.
- 5. Openings:

- a. Doorways: Two overhead slider doors and one open passageway without doors connect Building 120 with the southwest side of Building 127. There is a passageway without doors connecting Building 120 with the southeast corner of Building 111. An overhead-coiling door connects Building 120 with west side of Building 112. The east side of Building 120 is also connected to Building 110 through a passageway without doors. Building 120 has a variety of exterior door types: overhead slider, full-height swing doors, overhead coiling, aluminum and full-glass storefront, and hollow metal. Hanging, double, and single-entry doors are located around the building for access.
- b. Windows: Building 120 has two rows of continuous steel windows on the first-floor and clerestory levels. Some first-floor windows have been covered by corrugated steel and others removed where the perimeter was shared with adjacent buildings 127, 111, 128, 112, 110, and 170. All windows have been either painted or whitewashed. Light arrangements are six-over-three, typically fixed, except for a pivoting hopper-style section occupying the top four center panes and the four panes just below.
- 6. Roof: Building 120 has an angular sawtooth roof accentuated with clerestory lights.

# C. Description of Interior:

Floor Plans: Building 120 is a two-story building with an open interior. The irregularly shaped, but generally rectangular building measures approximately 325 feet by 600 feet. The building sits on a concrete slab foundation and floor. Walls are supported by 7-inch-by-11-inch steel I-beam posts approximately 12 feet apart and mounted onto the concrete floor slab. The I-beam post hold a 2-inch-by-4-inch steel beam covered with corrugated metal. Two, two-story free-standing restroom structures are located in the center of Building 120. The restroom structures are wood-framed with exterior plaster. The first-level and second-level restrooms are accessed by wood stairs along the exterior of the structures.

### D. Site:

Historic Landscape Design: Near the southwest corner and along the south elevation of Building 120, there are several ornamental trees, some in concrete planters. Most are eucalyptus, although other varietals are present. The plantings at the southwest corner provide one part of an informal hardscape courtyard bounded by Building 120, 127, 140, and 146/146A.

# PART III. SOURCES OF INFORMATION

A. Early Views: N/AB. Interviews: N/A

C. Bibliography

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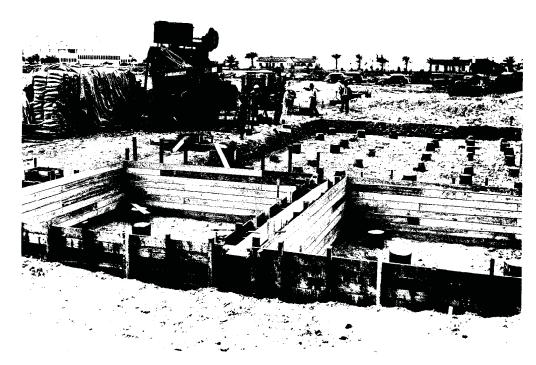
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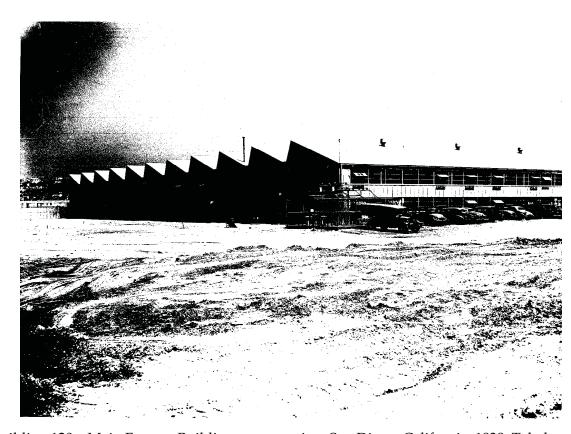
San Diego Unified Port District. 1977. San Diego Unified District Annual Report: 1976-77. Carl Reupsch Collection, San Diego Historical Society, San Diego, CA.



Building 120 – Main Factory Building, foundation, San Diego, California, 1939. Teledyne-Ryan Archives.



Building 120 – Main Factory Building, construction, San Diego, California, 1939. Teledyne-Ryan Archives.



Building 120 – Main Factory Building, construction, San Diego, California, 1939. Teledyne-Ryan Archives.



Aerial view, Building 120, Main Factory Building, in the center, San Diego, California, c. 1960. Annual Report 1960.



Building 120 – Main Factory Building, San Diego, California, Date unknown. Teledyne-Ryan Archives.



Building 120 – Main Factory Building Interior, San Diego, California, Date unknown. Teledyne-Ryan Archives.



Building 120 - Main Factory Building, West Elevation, San Diego, California, October 2009.



Building 120 - Main Factory Building, West Elevation, San Diego, California, October 2009.



Building 120 – Main Factory Building, West Elevation, facing east, San Diego, California, October 2009.



Building 120 – Main Factory Building, Northwest Oblique, San Diego, California, October 2009.



Building 120 – Main Factory Building, from doors of hangar, facing East, San Diego, California, October 2009.



Building 120 – Main Factory Building, Northeast Oblique, San Diego, California, October 2009.



Building 120 – Main Factory Building, Northeast Oblique, San Diego, California, October 2009.



Building 120 – Main Factory Building, North Elevation, facing Southwest, San Diego, California, October 2009.



Building 120 – Main Factory Building, North Elevation (east end), facing Southeast, San Diego, California, October 2009.



Building 120 – Main Factory Building, North Elevation (west end), facing Southeast, San Diego, California, October 2009.



Building 120 – Main Factory Building, North Elevation of bumpout on West Elevation, facing South, San Diego, California, October 2009.



Building 120 – Main Factory Building, South Elevation, facing Northeast, San Diego, California, October 2009.



Building 120 – Main Factory Building, South Elevation, facing Northwest, San Diego, California, October 2009.



Building 120 – Main Factory Building, Southwest Oblique, San Diego, California, October 2009.



Building 120 – Main Factory Building Interior, facing Northeast, San Diego, California, October 2009.



Building 120 - Main Factory Building Interior, facing Southwest, San Diego, California, October 2009.



Building 120 – Main Factory Building Interior, track detail, facing South, San Diego, California, October 2009.



Building 120 – Main Factory Building Interior, roof and pipe detail, facing South, San Diego, California, October 2009.



Building 120 – Main Factory Building, entry detail at South Elevation, facing North, San Diego, California, October 2009.



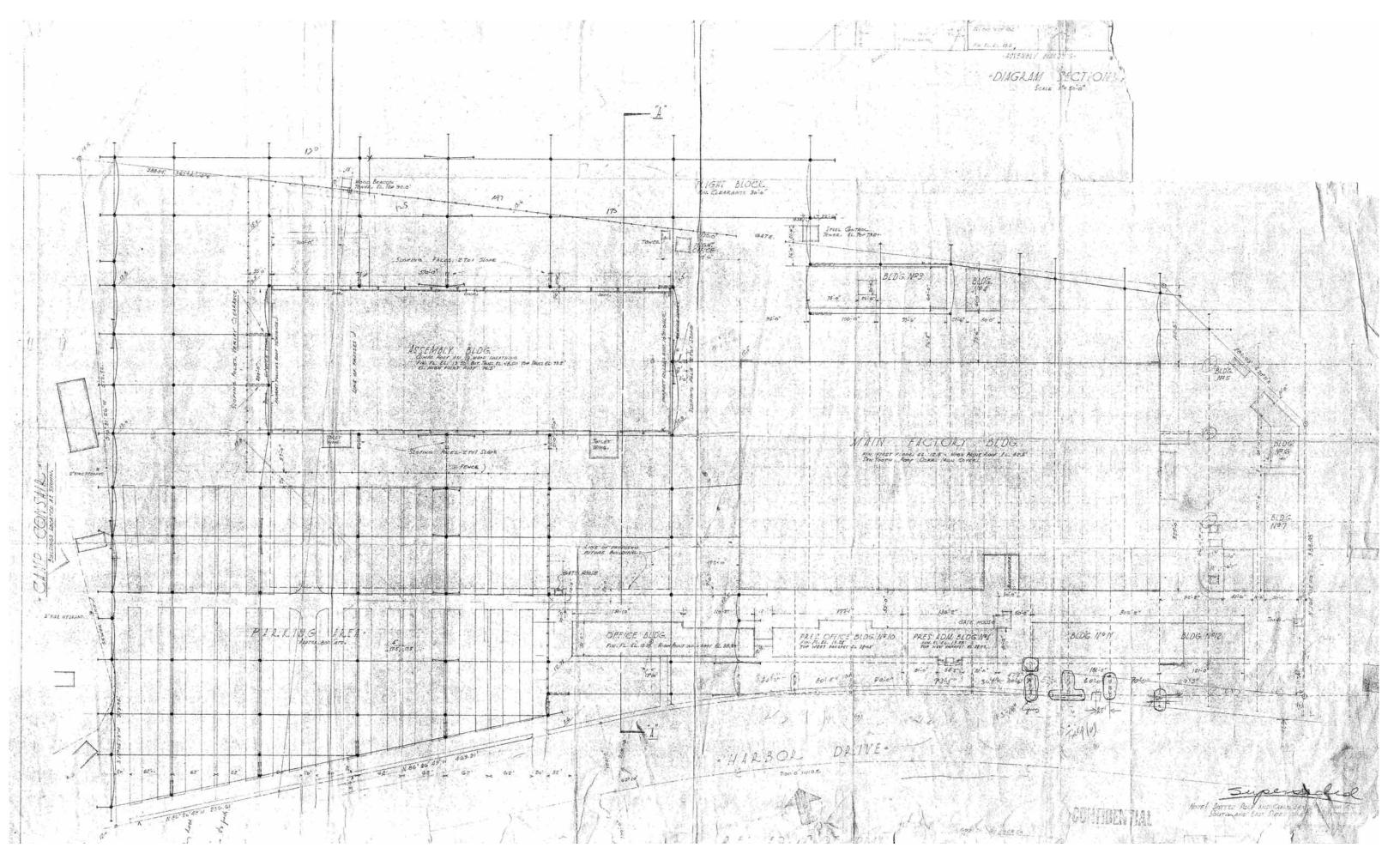
Building 120 – Main Factory Building, detail of space between bumpout on West Elevation and Building 127, San Diego, California, October 2009.

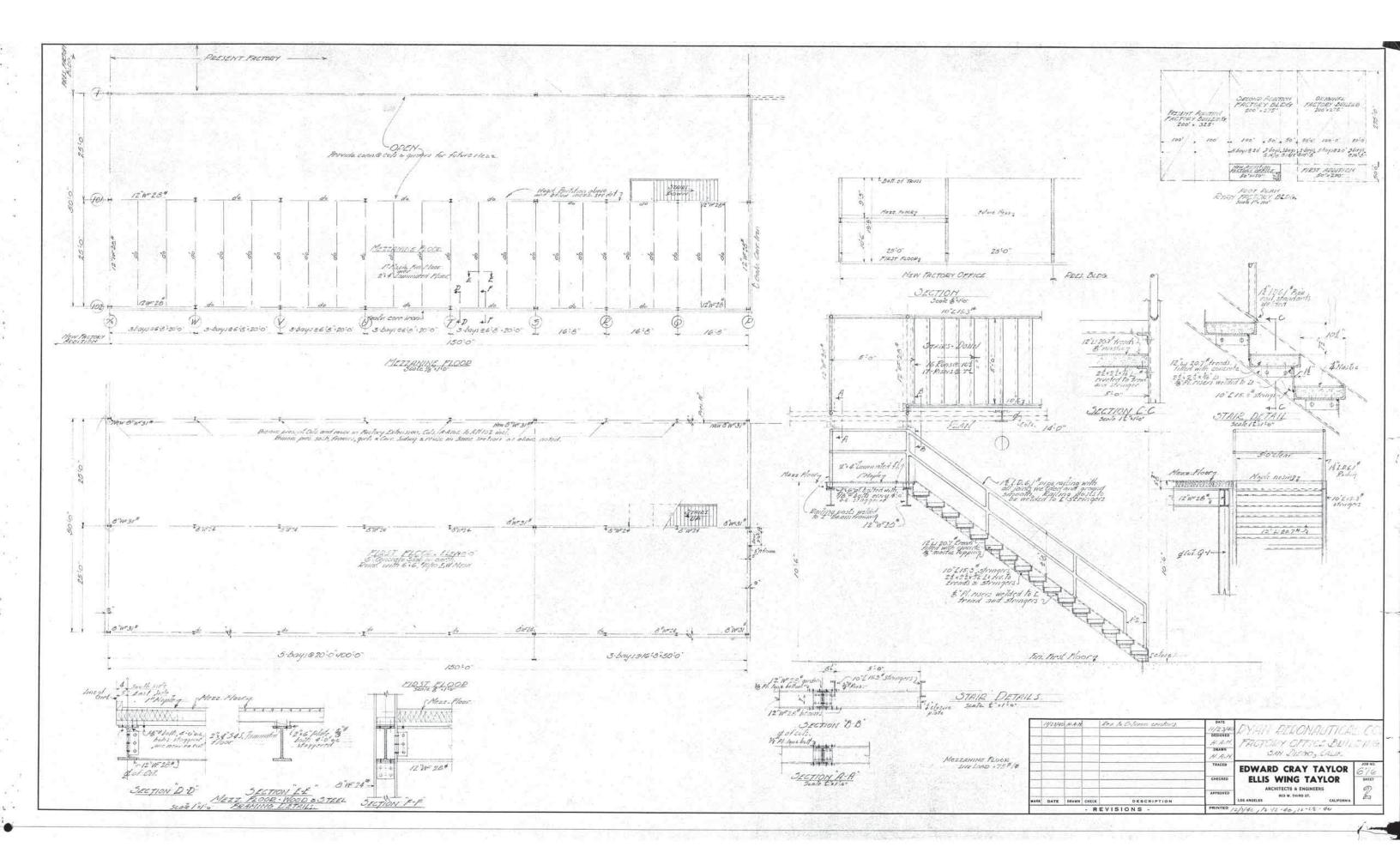


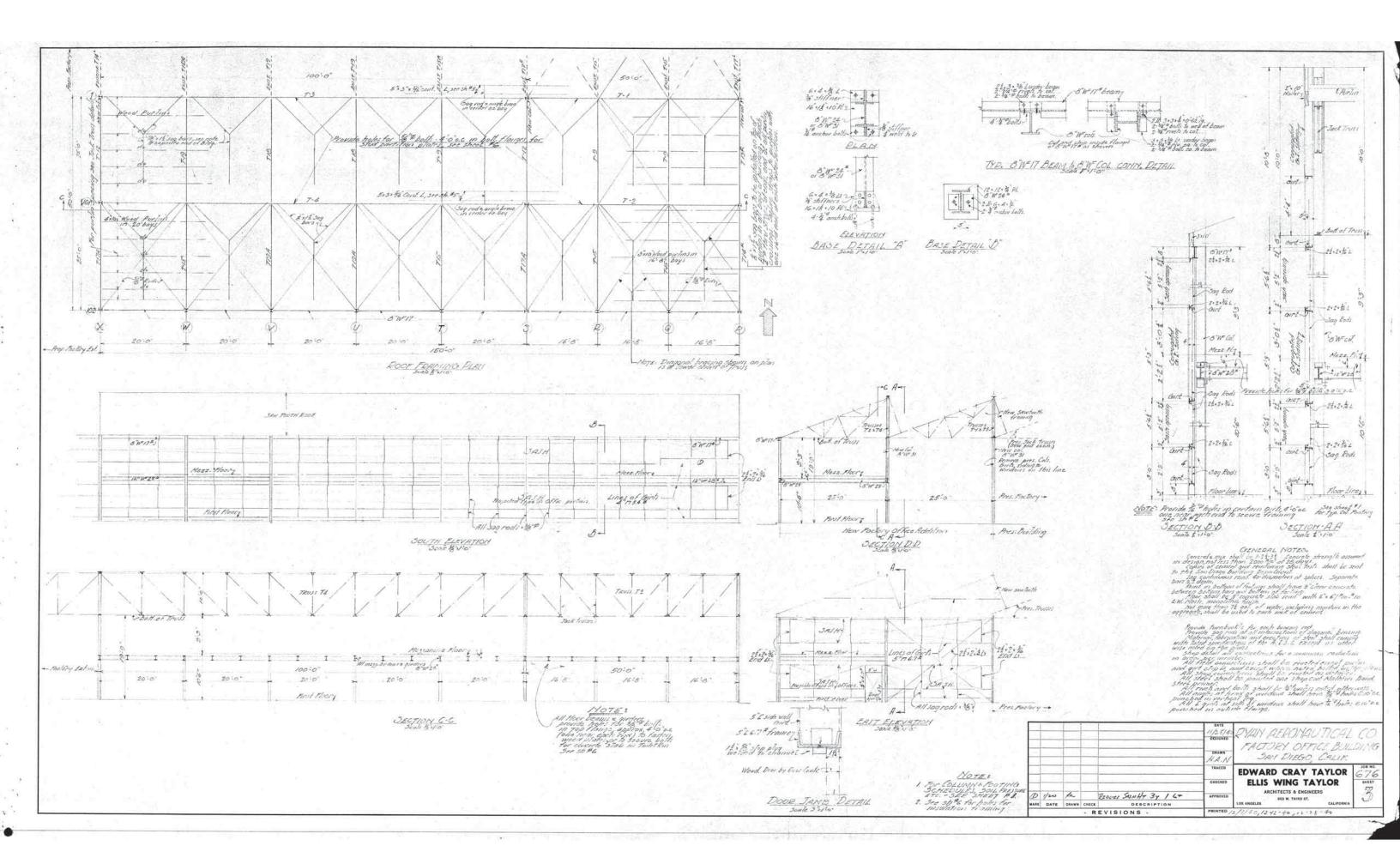
Building 120 – Main Factory Building Interior, window detail, facing Northeast, San Diego, California, October 2009.

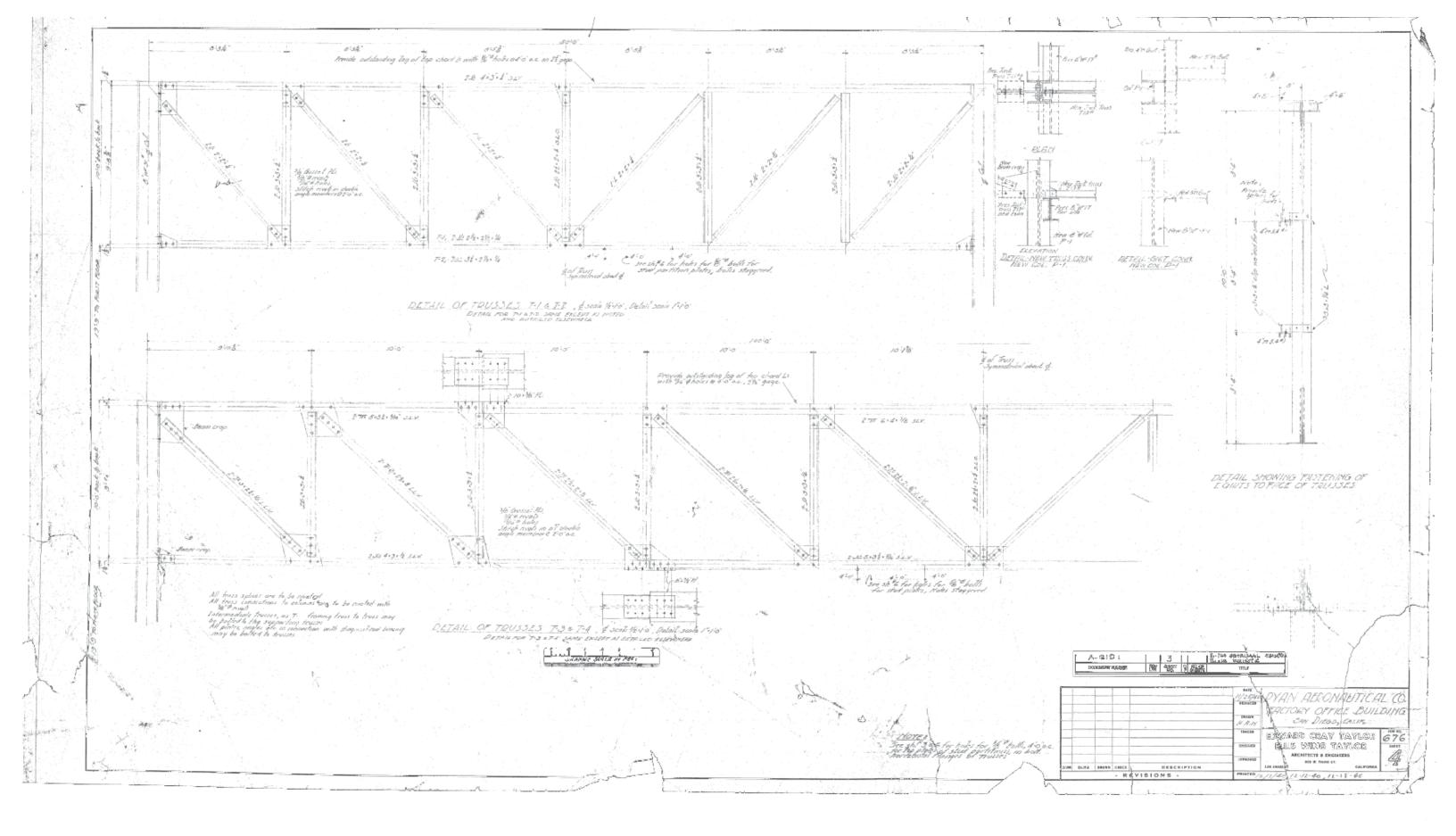


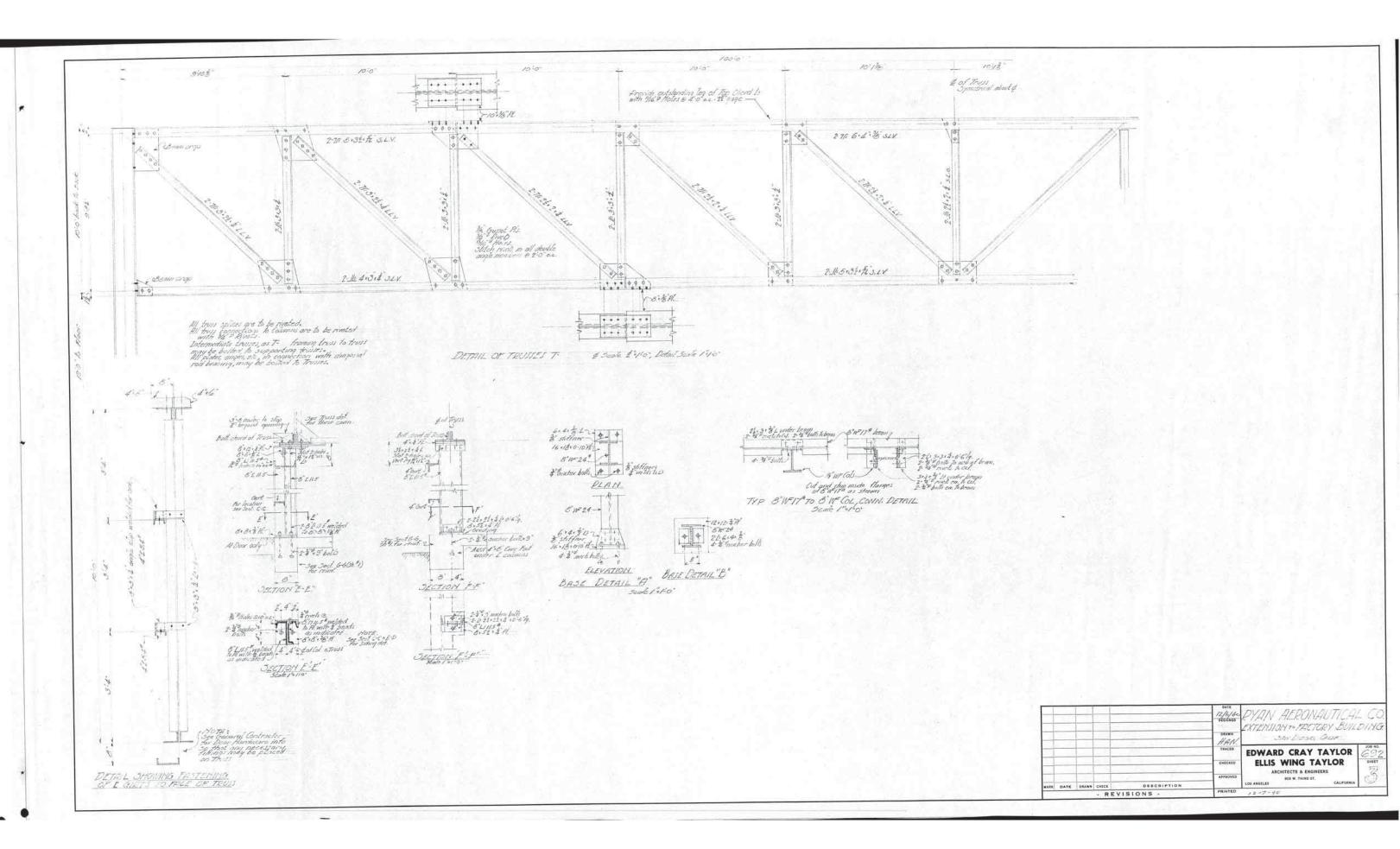
Building 120 – Main Factory Building, Context, looking North, San Diego, California, October 2009. Building 120 is on the right and Building 140 is on the left.

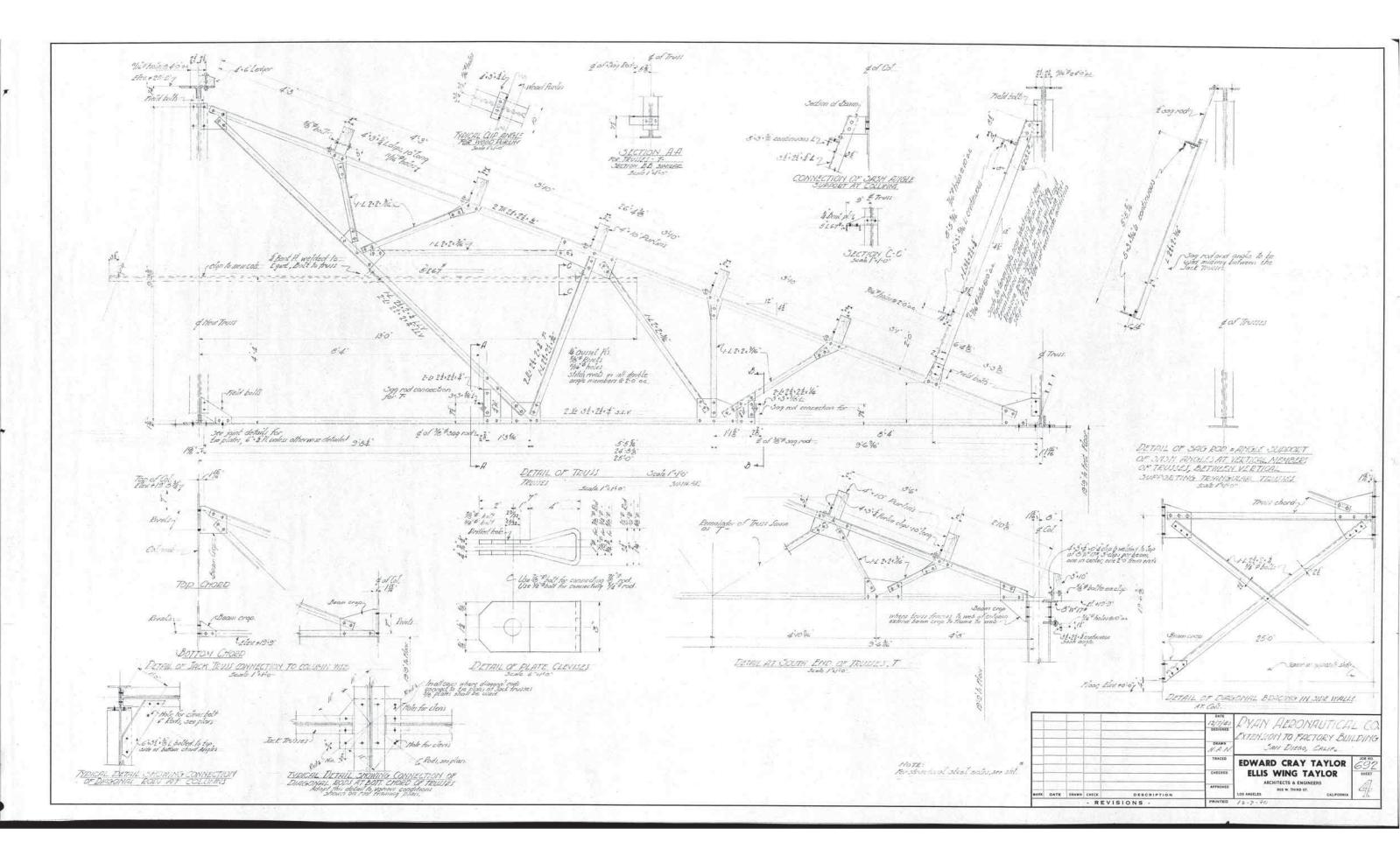


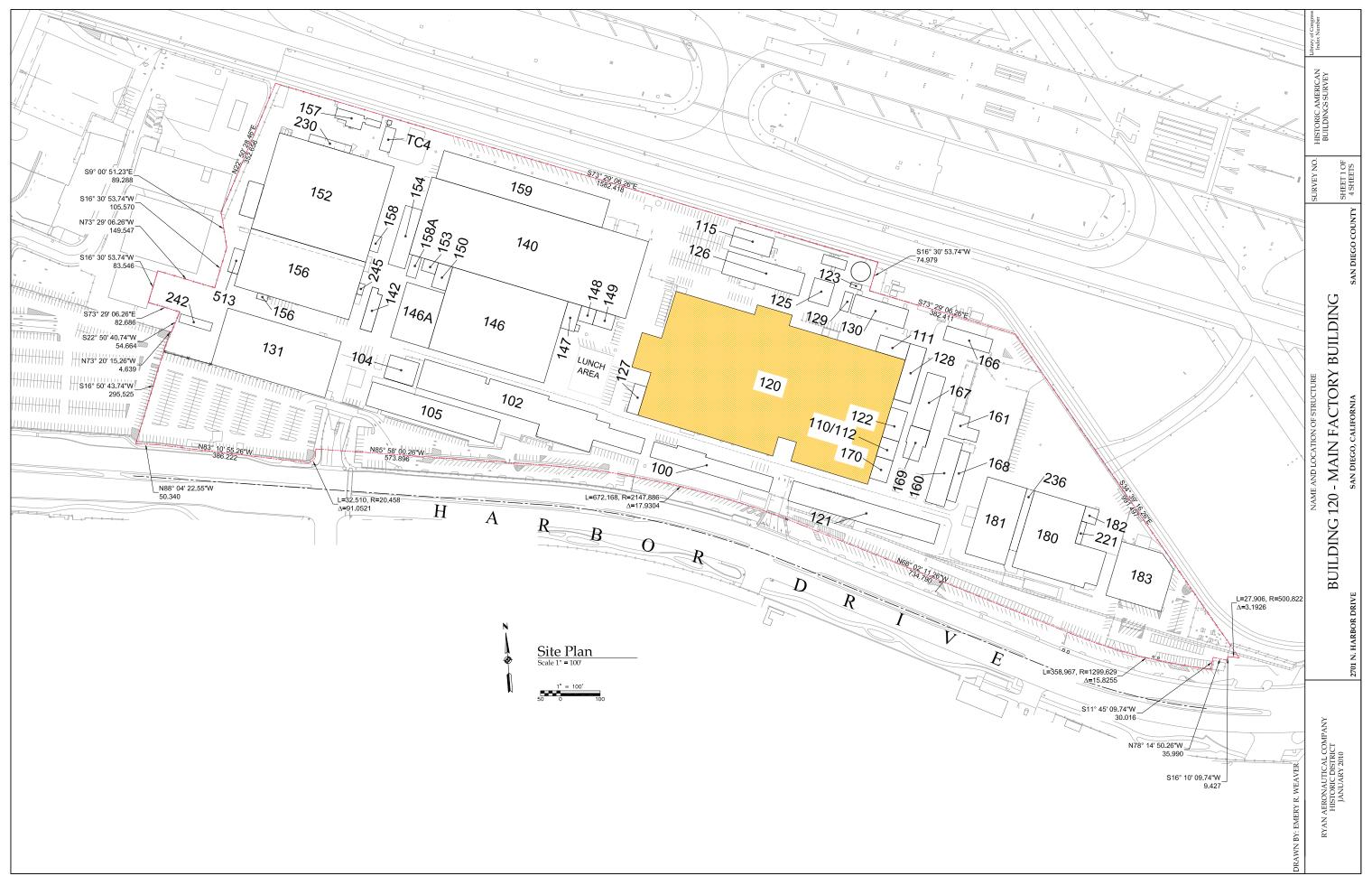


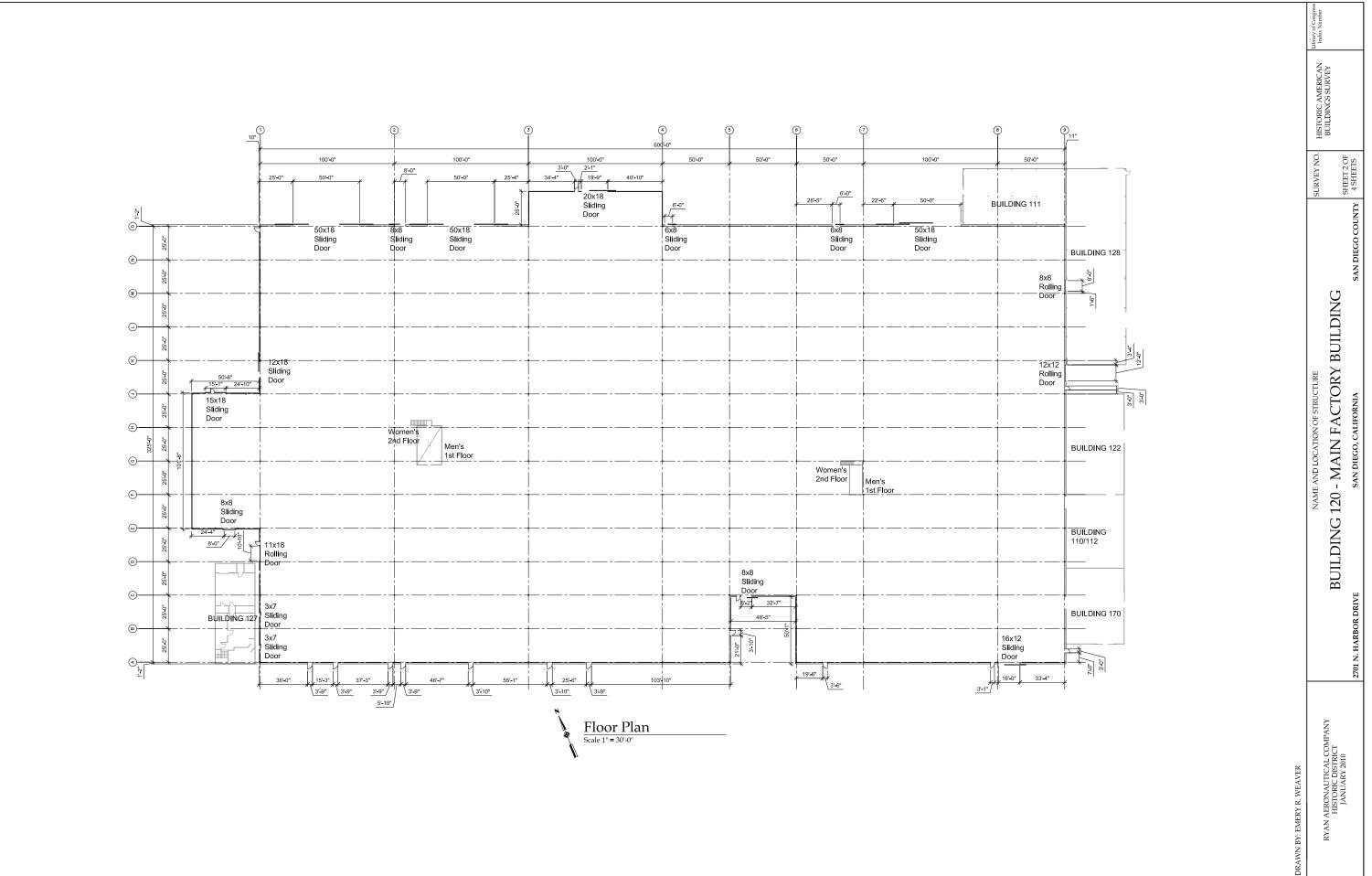


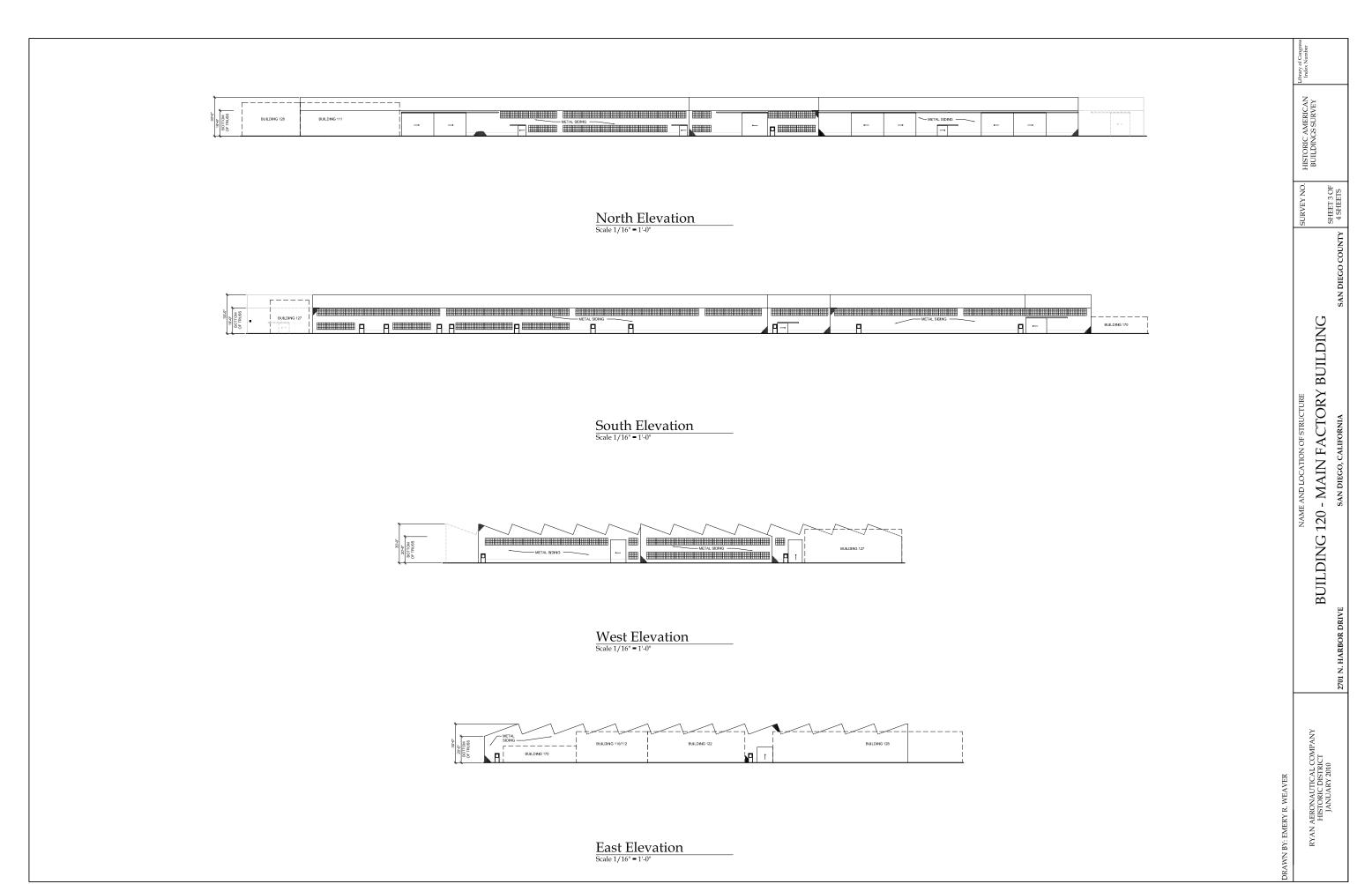












Section
Section Scale 1" - 20'-0"

RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010

HISTORIC AMERICAN BUILDINGS SURVEY

SURVEY NO.

SHEET 4 OF

SAN DIEGO COUNTY

4 SHEETS

NAME AND LOCATION OF STRUCTURE
BUILDING 120 - MAIN FACTORY BUILDING
SAN DIEGO, CALIFORNIA