
FINAL

**Building 157
Test Center**

**Historic American Buildings Survey
Level II/III**

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 157 – TEST CENTER

Location:	2701 North Harbor Drive, San Diego, CA 92101, USA
Present Owner/Occupant:	San Diego County Regional Airport Authority
Present Use:	Vacant
Significance:	<p>Building 157 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 local and national level 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 region (URS Corporation, 2008).</p> <p>Building 157 was used for testing aircraft engines and is a multi-story structure with thick, concrete walls. This building is situated in the far northern section of the facility, immediately south of the San Diego Airport runways. It is a non-contributing resource to the Ryan Aeronautical Company Historic District.</p>

Historian: Sara Orton

PART I. HISTORICAL INFORMATION

A. Physical History:

- 1. Date of erection: c. 1950
- 2. Architect: Frank L. Hope, Jr. & Associates

- 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 157 is a multi-story building with thick concrete walls. The northern portion of the building consists of two tower-like structures, with the east tower capped with metal penthouse and metal slats. The southern portion of Building 157 has a lower profile and is the Hush House for testing aircraft engines. The building has fascias and coping at the cornices. (URS Corporation, 2009).
- 5. Alterations and additions: No records of additions or alterations. From the field visit, it was not clear what was original and what may have been added at a later date.

B. Historical Context:

1. San Diego’s Aviation History:

During the first three decades of the 20th 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 City-owned 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 157 is a large, multi-story building with thick concrete walls for use as an engine testing location. On the east elevation is a single-story Hush House used for aircraft engine testing.
- 2. Condition of Building Material: Building 157 is in fair to good condition.

B. Description of Exterior:

- 1. Overall Dimensions: Building 157 has an irregular plan and is approximately 82 feet by 43 feet.
- 2. Foundations: Building 157 has a concrete foundation.
- 3. Walls: The walls of Building 157 are thick concrete.
- 4. Structural System: Concrete
- 5. Openings:
 - a. Doorways: The main entry on the west elevation is a set of large, metal double doors that lead to another set of large, metal double doors that lead to the interior. The south elevation has a small, single-entry personnel door on the first floor and a single-entry personnel door on the second floor at the top of a set of stairs that leads to the interior observation area (URS Corporation, 2009).
 - b. Windows: Building 157 has no exterior windows.
- 6. Roof: The roof of Building 157 is flat and is of unknown materials.

C. Description of Interior:

Floor Plans: Building 157 is a multi-story building with an irregular plan used for testing aircraft materials. There is the main testing area that has no internal walls or dividers. The south side of the building contains a small room on the second floor with windows into the testing area. To the west of the main building is a Hush House, also used in testing aircraft engines (URS Corporation, 2009).

D. Site:

Historic Landscape Design: None

PART III. SOURCES OF INFORMATION

A. Early Views: From the Teledyne-Ryan Archives

B. Interviews: Not Available

C. Bibliography

1. Primary and Unpublished Sources:

San Diego Unified Port District (SDUPD). 2009. 2701 North Harbor Drive Demolition Project Environmental Impact Report. April.

URS Corporation. 2008. Department of Parks and Recreation Primary Record form for the Ryan Aeronautical Company Historic District (P-37-028619, CA-SDI-18401H). January.

URS Corporation. 2009. *Appendix B. Cultural Resources Assessment Report. 2701 North Harbor Drive Demolition Project Draft EIR (UPD #83356-EIR-713)*. April.

Van Wormer, Stephen. 2005. Department of Parks and Recreation Primary Record form for the Ryan Aeronautical Company Historic District (P-37-028619, CA-SDI-18401H). Prepared by Walter Enterprises. December.

Van Wormer, Stephen, Mary Robbins-Wade. 2006. *Historic Architectural Survey Report: San Diego International Airport Master Plan*. Prepared for San Diego County Regional Airport Authority. May.

2. Secondary and Published Sources:

Leiser, Edward. 2000. "San Diego Flying Days." Copies of manuscripts on file at the San Diego Historical Society and San Diego Aerospace Museum, San Diego, CA.

Macaulay, Major T. 1928. *"The Story of Lindbergh Field, San Diego's 'Triple A' Municipal Airport Lindbergh Field."* Dedication brochure, Lindbergh Field Vertical Files, San Diego Aerospace Museum Library, San Diego, CA.

Moomjian, Scott A. and Wendy L. Tinsley. 2001. *Historic Survey Report of the Former Teledyne-Ryan Aeronautical Complex, 2701 North Harbor Drive, San Diego, California, 92101*. Prepared by Office of Maria Burke Lia, Attorney at Law, 427 C Street, Suite 416, San Diego, CA 92101. Prepared for Jones Lang La Salle, 2701 North Harbor Drive, Building 100, San Diego, California 92101. Copy on file with the San Diego Regional Airport Authority.

Moore, Floyd Roscoe. 1960. San Diego Airport Development. Thesis, Political Science, San Diego State College, San Diego, CA.

National Aviation Hall of Fame. T. Claude Ryan- Biography.
http://nationalaviation.blade6.donet.com/components/content_manager_v02/view_nahf/htdocs/menu_ps.asp?NodeID=-2144693577&group_ID=1134656385&Parent_ID=-1 (accessed November 5, 2009)

San Diego Unified Port District. 1966. *San Diego Unified District Annual Report: 1965-66*. Carl Reupsch Collection, San Diego Historical Society, San Diego, CA.

San Diego Union. Various Dates. Issues cited in text from Lindbergh Field Vertical Files, San Diego Historical Society, San Diego, CA.

San Diego Unified Port District. 1968. *San Diego Unified District Annual Report: 1967-68*. Carl Reupsch Collection, San Diego Historical Society, San Diego, CA.

San Diego Unified Port District. 1971. *San Diego Unified District Annual Report: 1970-71*. Carl Reupsch Collection, San Diego Historical Society, San Diego, CA.

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 157 – Test Center, test center towers are in the background, San Diego County Regional Airport, California, Date unknown. Teledyne-Ryan Archives.



Building 157 – Test Center, Southwest Oblique, San Diego, California, October 2009.



Building 157 – Test Center, one story Hush House in the center background, San Diego, California, Date unknown. Teledyne-Ryan Archives.



Building 157 – Test Center, West Elevation, San Diego, California, October 2009.



Building 157 – Test Center, Northwest Oblique, San Diego, California, October 2009.



Building 157 – Test Center, exterior detail, North Elevation, San Diego, California, October 2009.



Building 157 – Test Center, Northwest Elevation of the Hush House, San Diego, California, October 2009.



Building 157 – Test Center, eastern section, South Elevation, San Diego, California, October 2009.



Building 157 – Test Center, central section of South Elevation, San Diego, California, October 2009.



Building 157 – Test Center, double entry doors detail along West Elevation, San Diego, California, October 2009.



Building 157 – Test Center, western section of South Elevation, San Diego, California, October 2009.



Building 157 – Test Center, Hush House, San Diego, California, October 2009.



Building 157 – Test Center Interior, back wall, facing East, San Diego, California, October 2009.



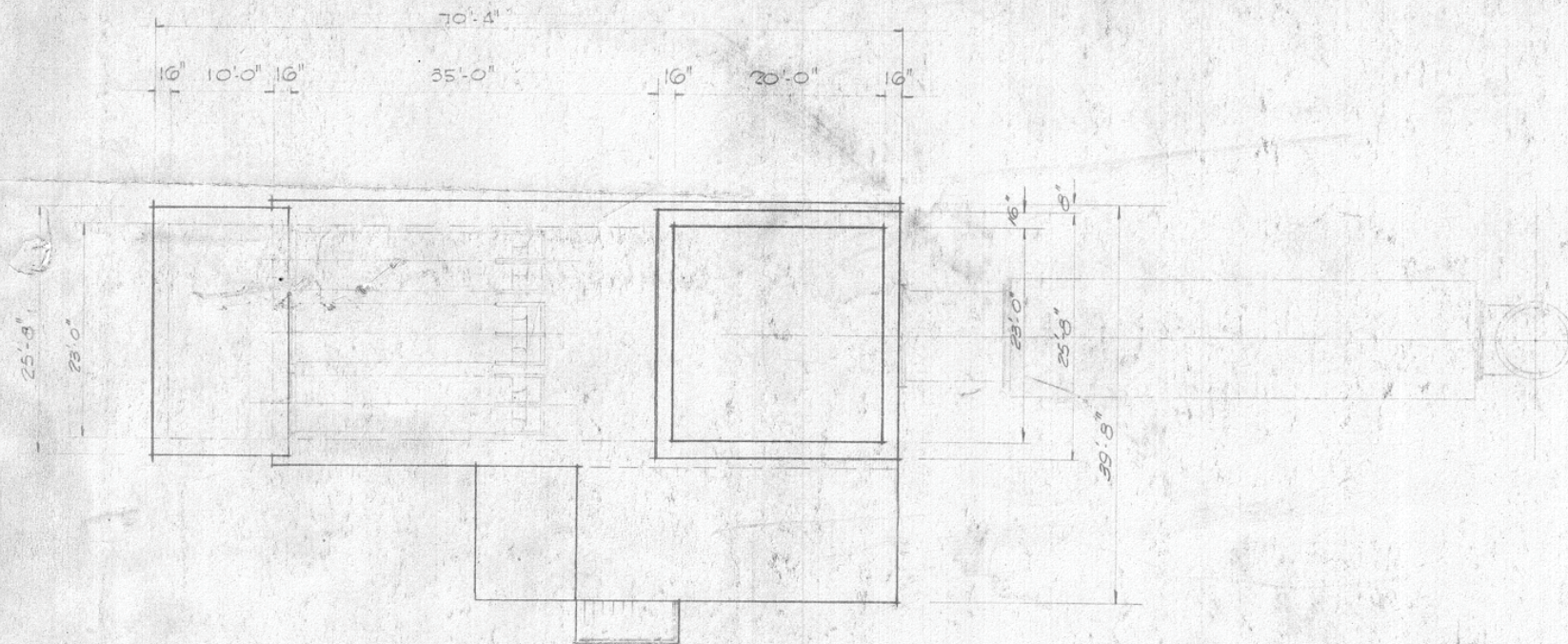
Building 157 – Test Center Interior, west wall entry, San Diego, California, October 2009.



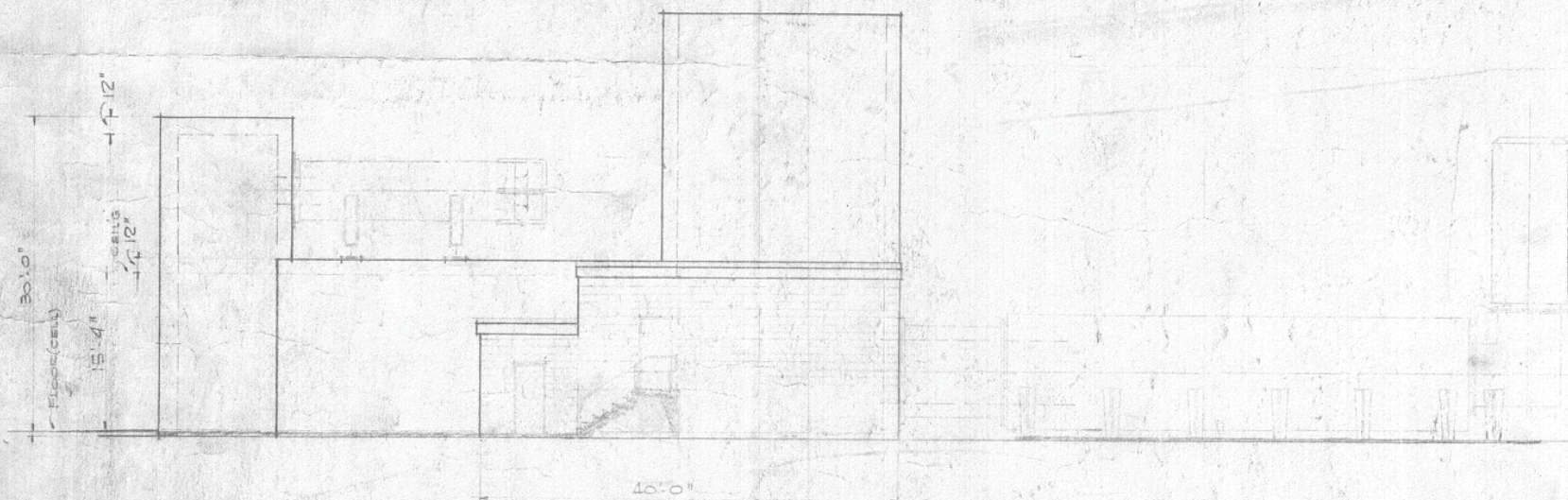
Building 157 – Test Center Interior, northeast corner, San Diego, California, October 2009.



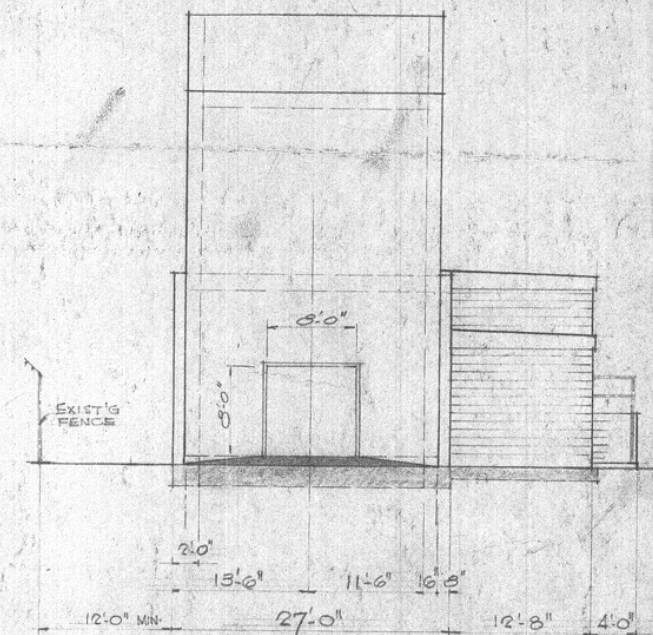
Building 157 – Test Center Interior, south wall, San Diego, California, October 2009.



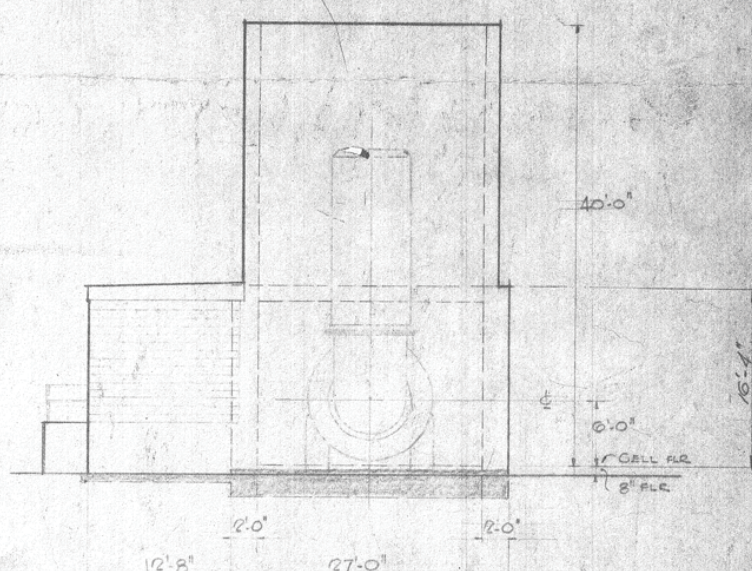
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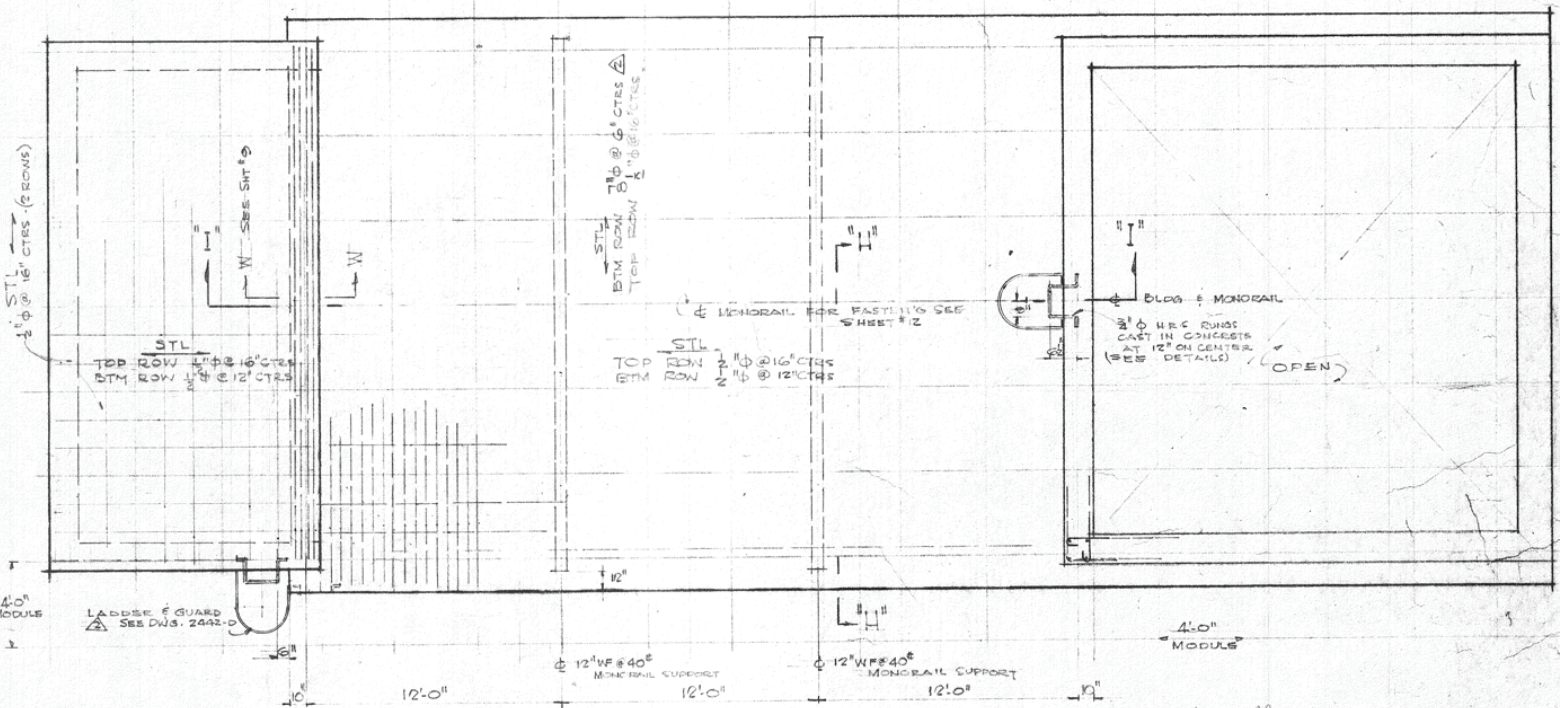
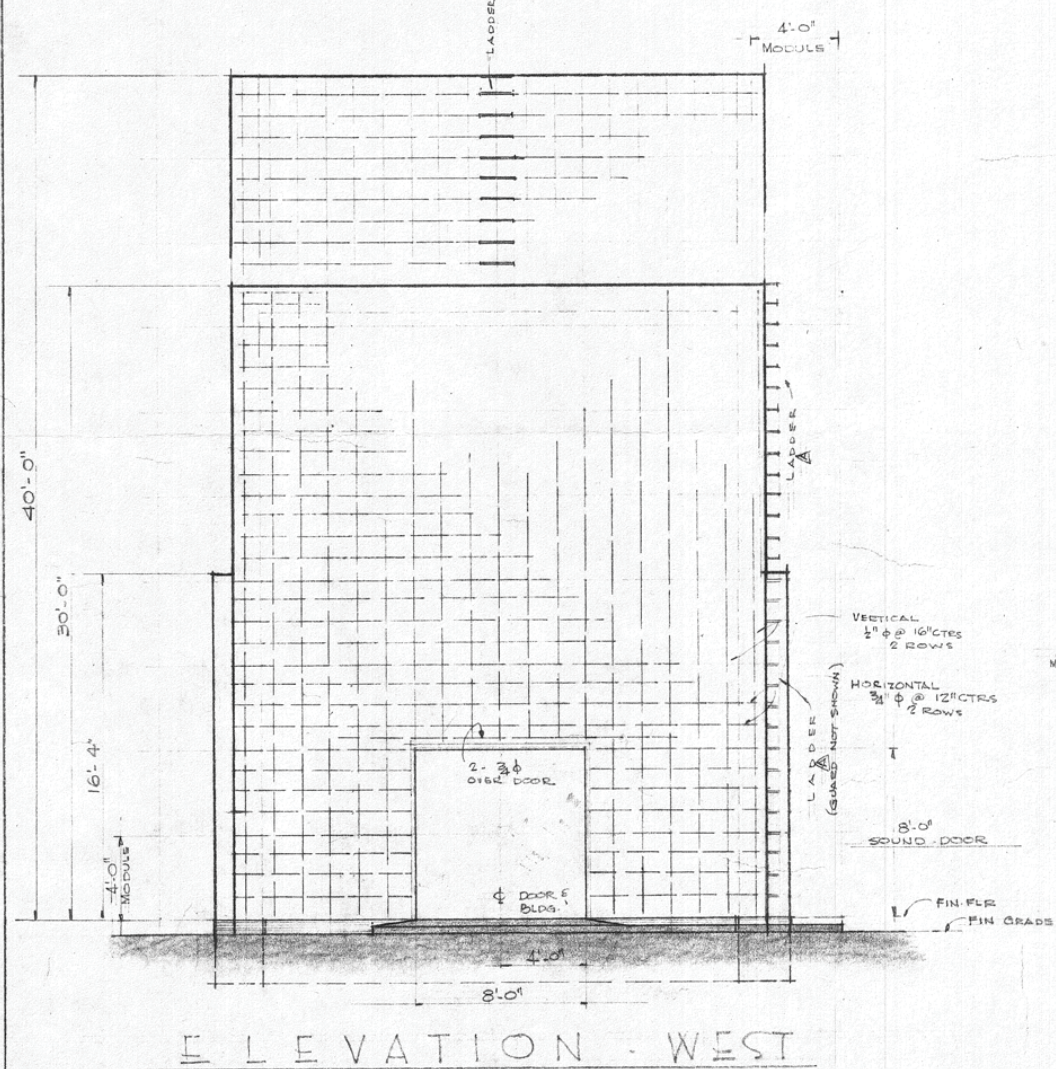
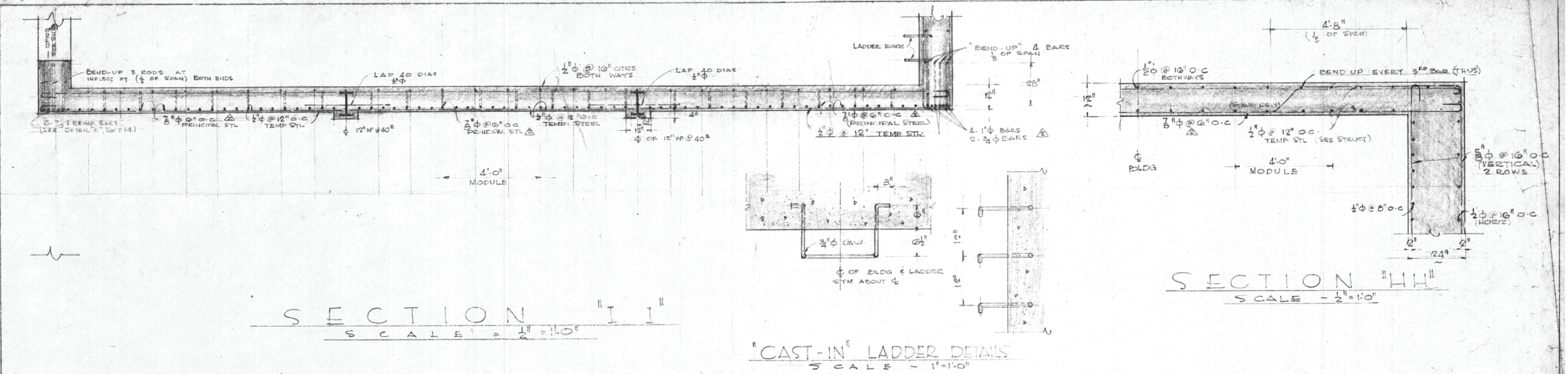


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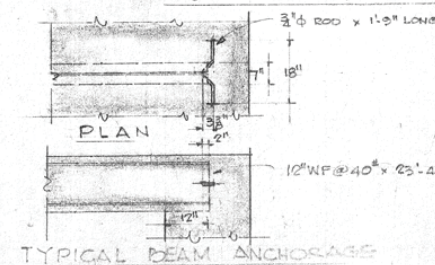


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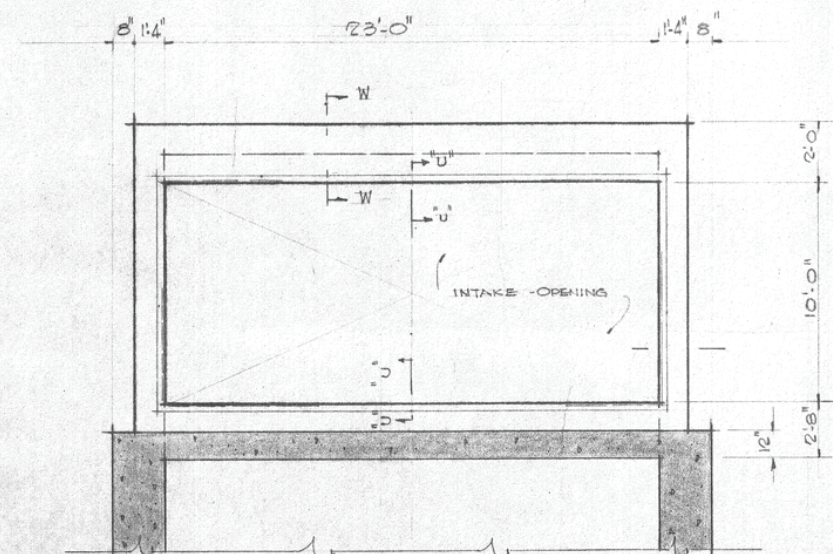
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		1" 8" FLE	
		157	
		ENGINE TEST CELL	



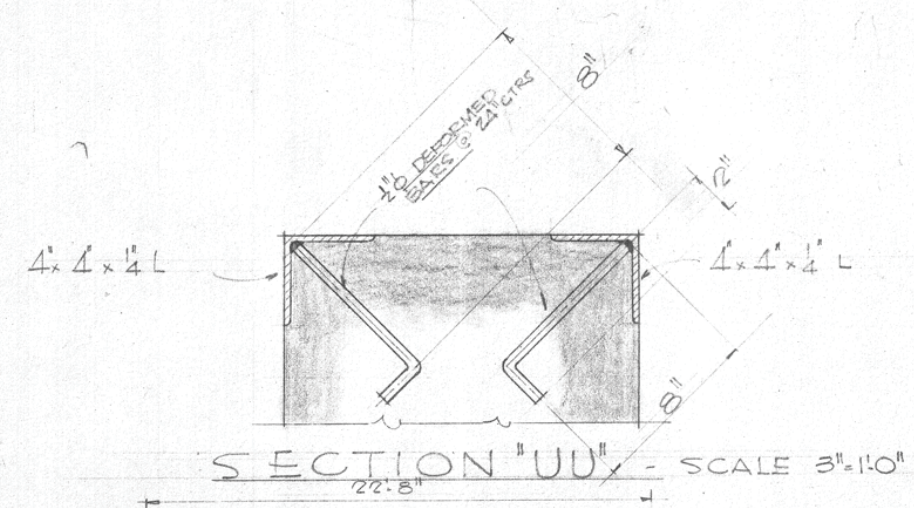
NOTE!!
FOR LADDER GUARD & LADDER
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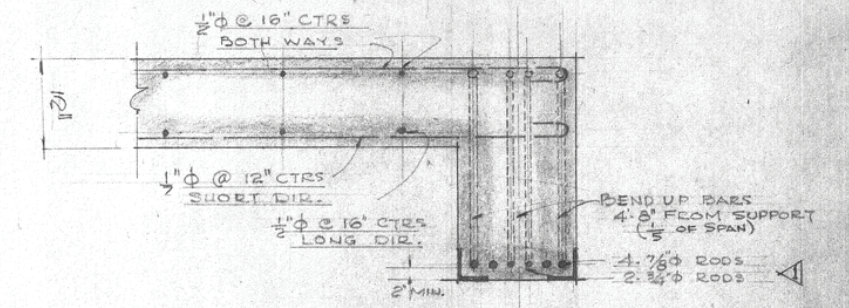
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DETAIL		STRUCTURAL DETAILS - WEST WALL	DRAWN BY		DATE	3-15-54



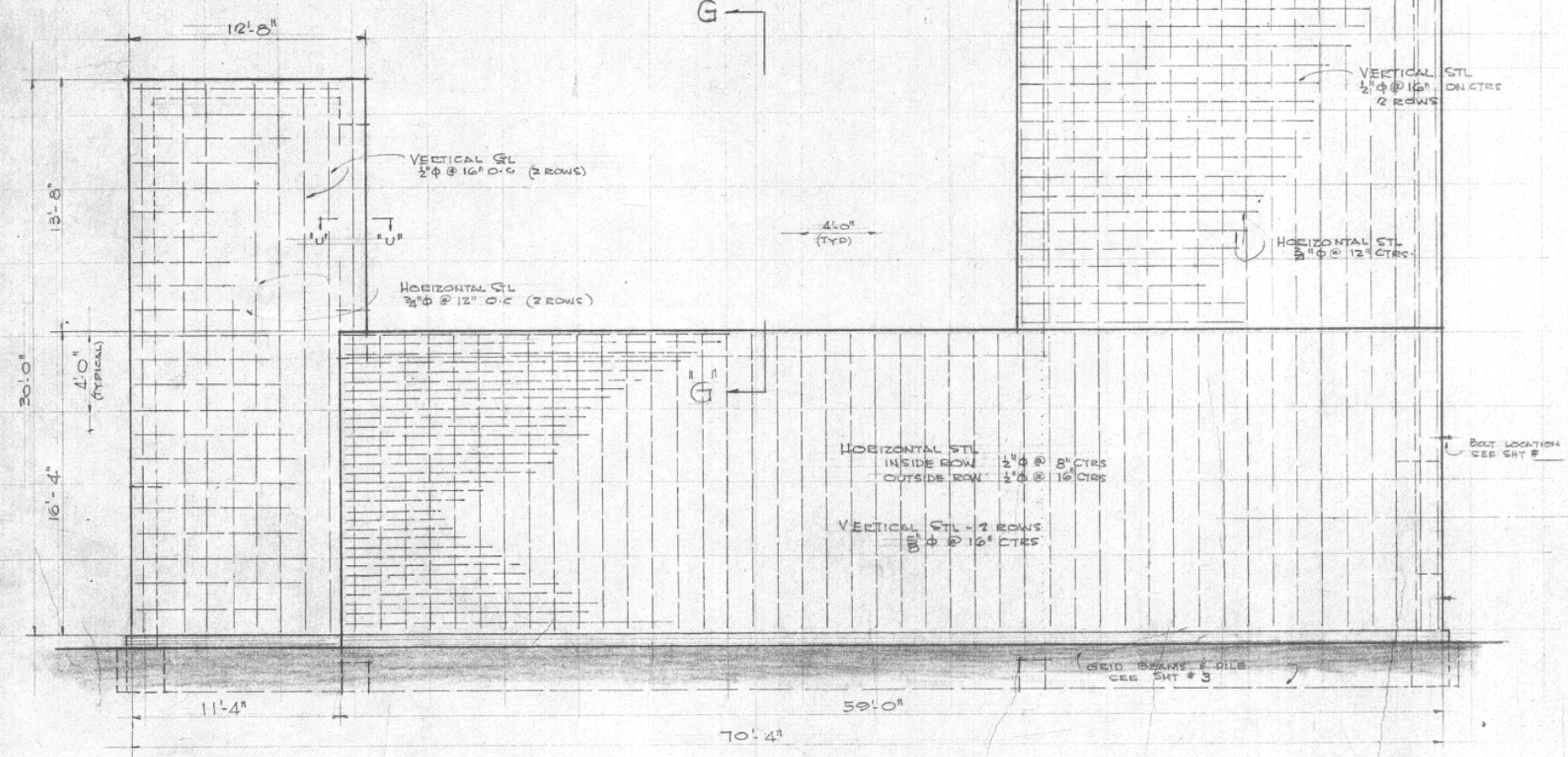
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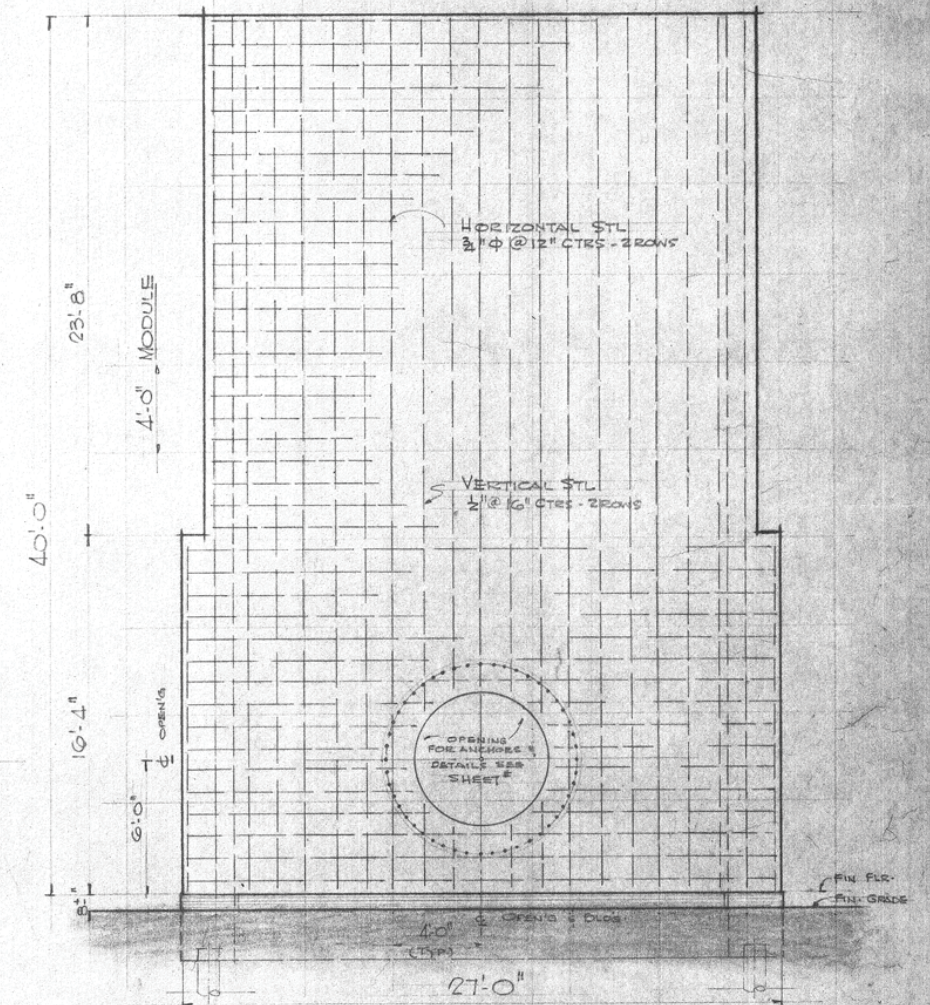
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SECTION "WW"
SCALE - 1"=1'-0"



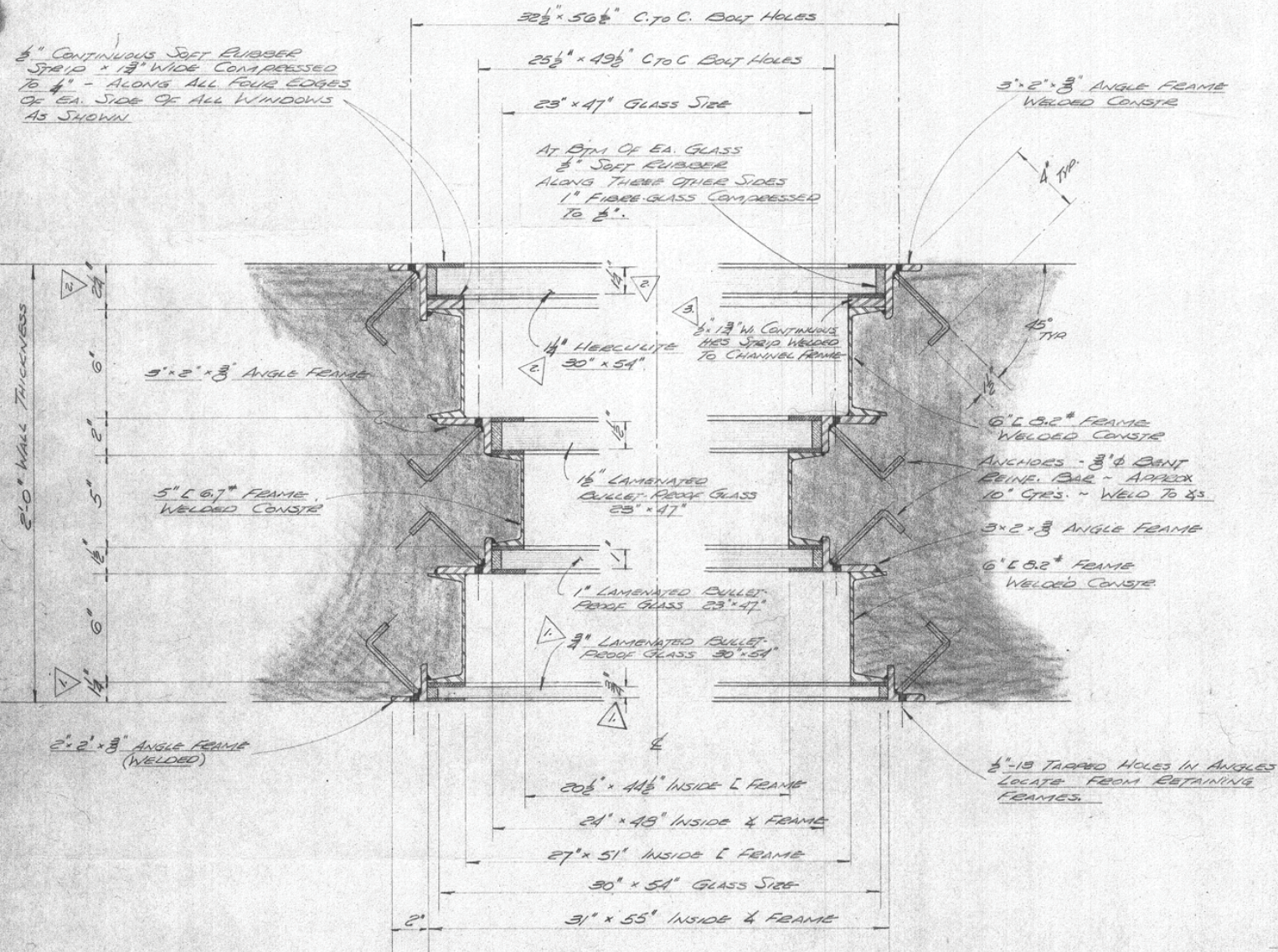
SOUTH ELEVATION - (CONTROL RM - NOT SHOWN)
NORTH ELEVATION - OPPOSITE HAND
SCALE - 1/4"=1'-0"



EAST ELEVATION

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BY TITLE	MODEL 69 ENGINE TEST CELL			DRAWING NO.
DETAIL	STRUCTURAL DETAILS			2433

1/2" CONTINUOUS SOFT RUBBER
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OF EA. SIDE OF ALL WINDOWS
AS SHOWN

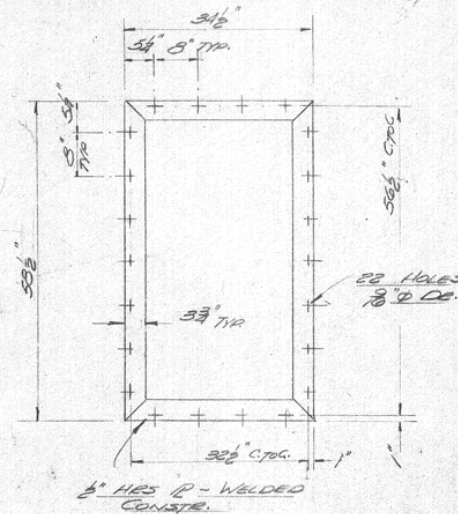


- NOTE:
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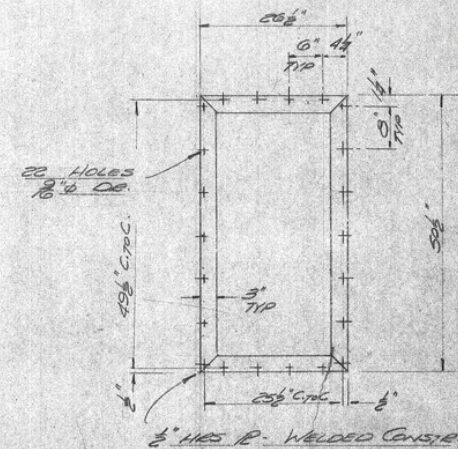
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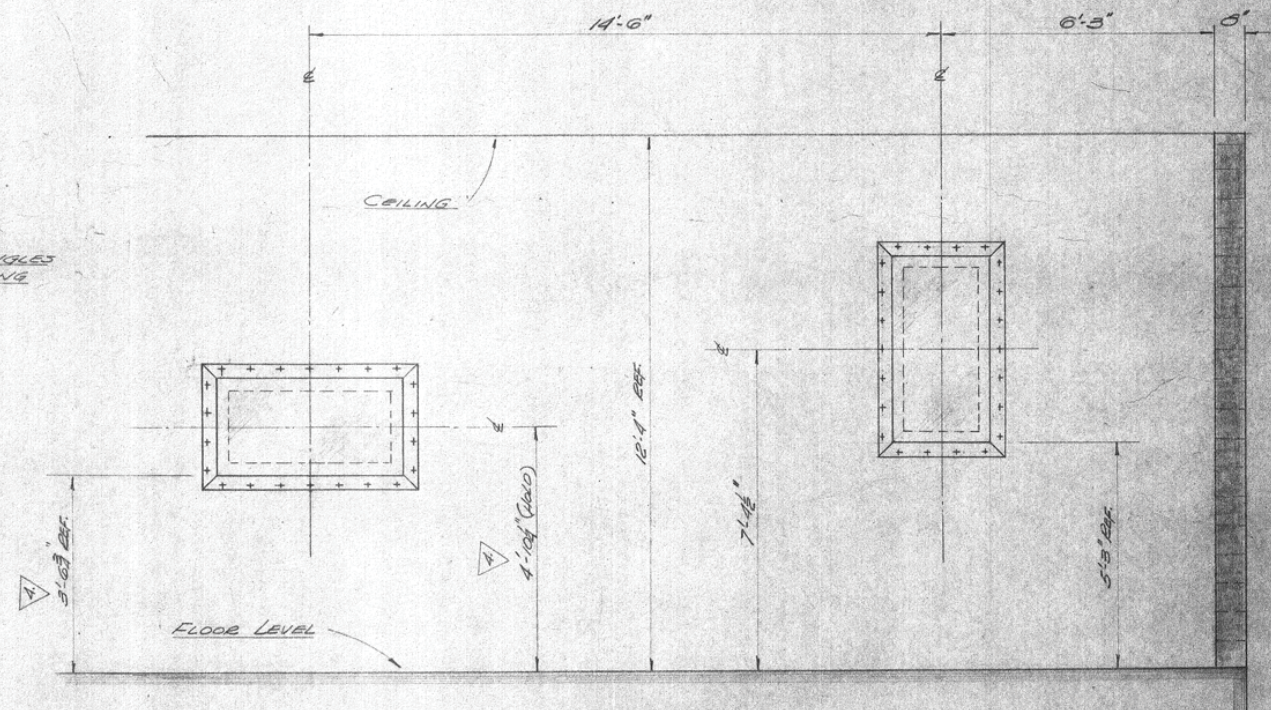
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FRAME WITH 1/2" x 1/2" HEX HD. BOLTS x 1 1/2" LG &
LOCKWASHERS - (88) EA. REQ'D TOTAL.
2. SILICA GEL BAGS TO BE ADDED BETWEEN GLASS
PANELS BY OWNER AT INSTALLATION.
3. ALL STEEL TO BE PRIMER COATED & FINISHED
WITH ONE COAT "COLONIAL IVORY".



TWO REQ'D THUS
OUTER GLASS
RETAINING FRAME
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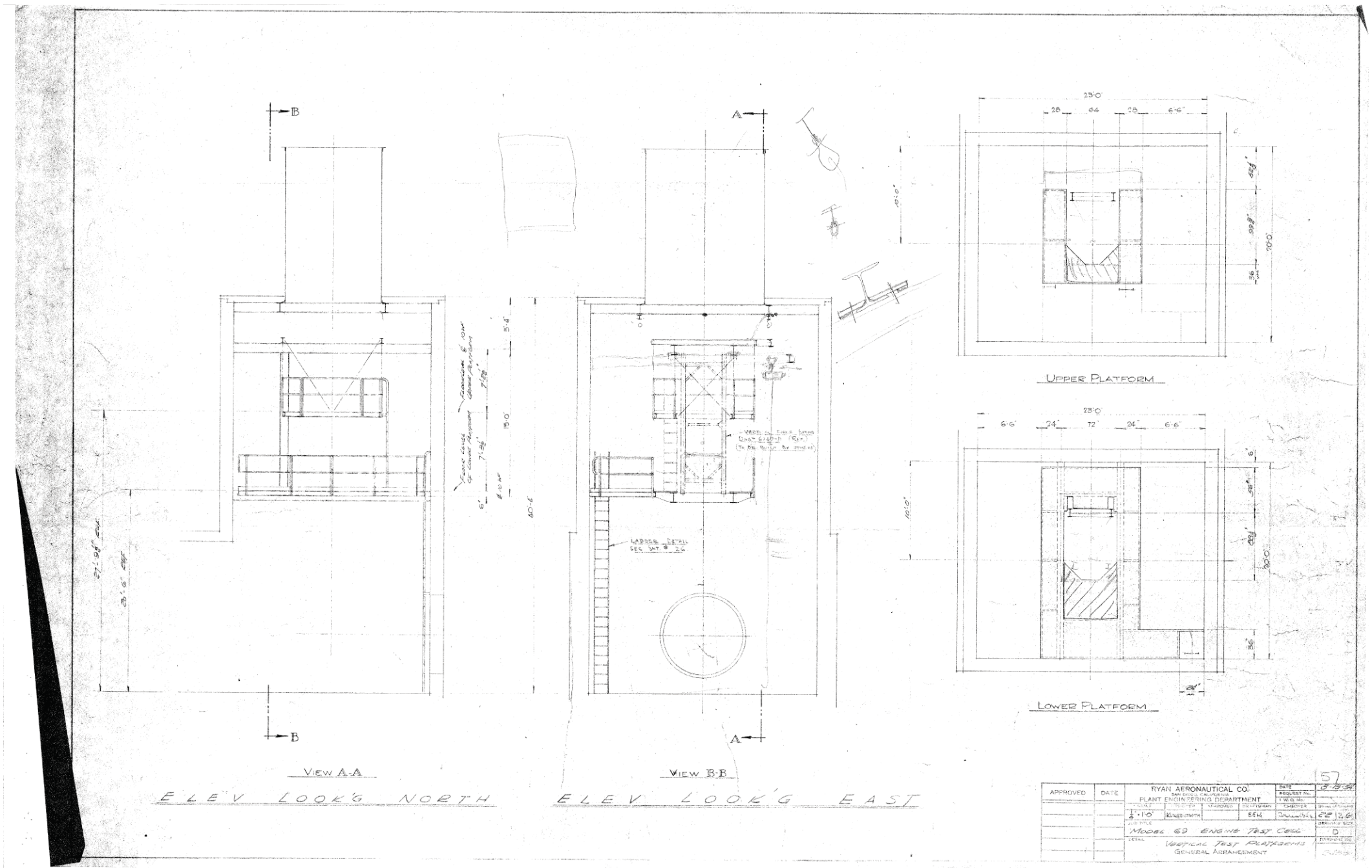


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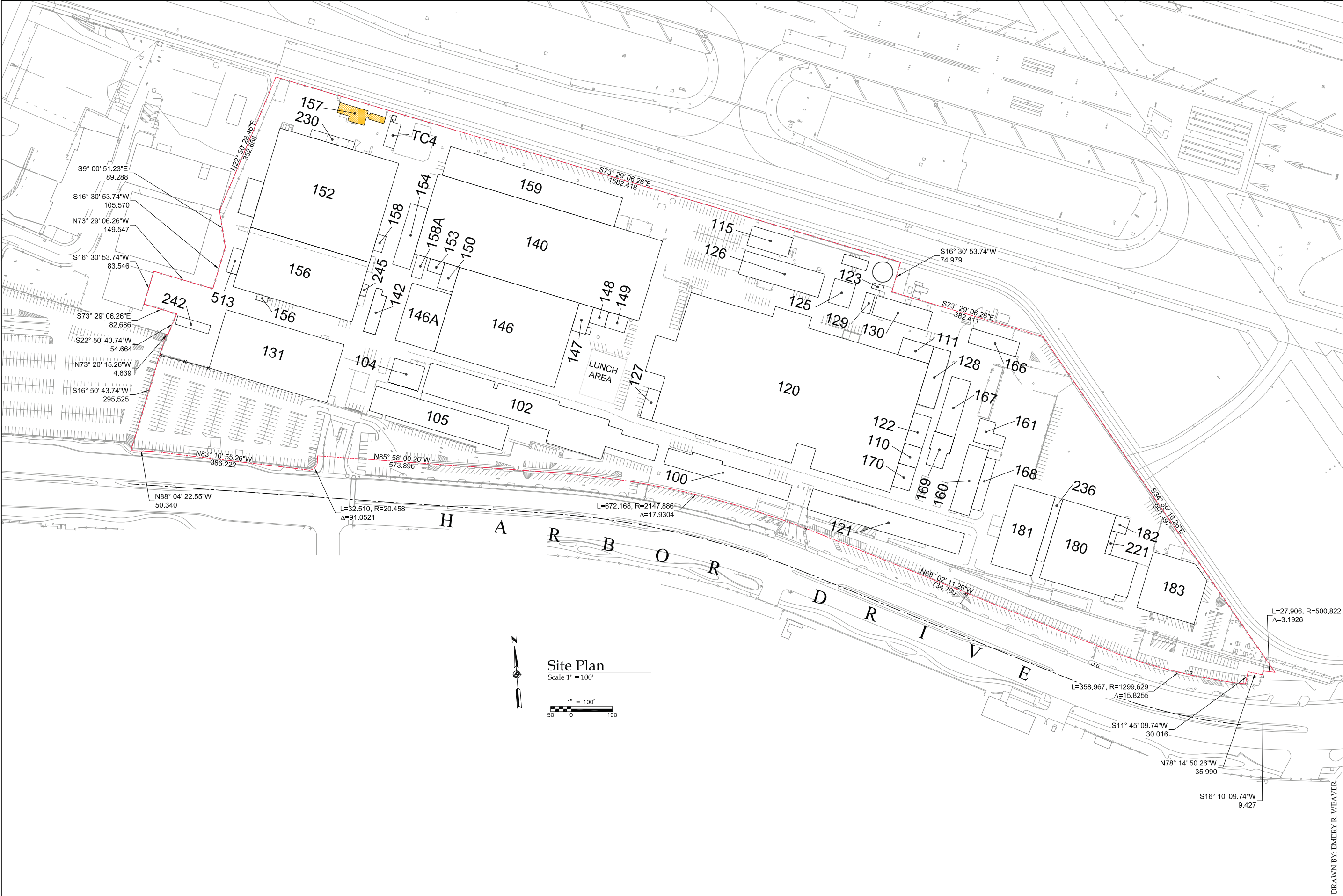
PARTIAL SECTION THRU
CONTROL ROOM LOOKING NORTH
SCALE ~ 3" = 1'-0"

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1	1 1/2" DIM WAS 1"	3/4" WAS 3/4"				MODEL 69 ENGINE TEST CELL				
				DETAIL				WINDOWS - CONTROL ROOM		
								2493		



ELEV LOOK'G NORTH ELEV LOOK'G EAST

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			CHECKED BY		W. B. D.
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			DETAIL		VERTICAL TEST PLATFORMS
			GENERAL ARRANGEMENT		



RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010	NAME AND LOCATION OF STRUCTURE		Library of Congress Index Number
	BUILDING 157 - USE UNDETERMINED		
	2701 N. HARBOR DRIVE	SAN DIEGO, CALIFORNIA SAN DIEGO COUNTY	
SURVEY NO.		HISTORIC AMERICAN BUILDINGS SURVEY	
SHEET 1 OF 4 SHEETS			