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*FINAL*

**Building 110/112 (122)  
Drop Hammer Planishing Shed**

**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

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**CH2MHILL**

HISTORIC AMERICAN BUILDINGS SURVEY

RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT

BUILDING 110/112 (122) - DROP HAMMER STRUCTURE PLANISHING SHED

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 110/112, now known as Building 122, 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 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 region (URS Corporation, 2008).</p> <p>Building 110/112 (122) 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 construction for industrial/aviation use.</p>

Historian: Megan Venno

PART I. HISTORICAL INFORMATION

A. Physical History:

1. Date of erection: c. 1940s
2. Architect: Unknown
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 110/112 (122) is a two-story rectangular aircraft factory building measuring approximately 30 feet by 110 feet. It was built on the east side of Building 120, the Ryan Aeronautical Main Factory Building. Building 110 is attached to the south elevation of Building 112. The west wall of Building 110/112 (122) is the former east exterior wall of Building 120. (URS Corporation, 2009).
5. Alterations and additions: Building 110/122 (122) has had no major alternations.

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 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 the, 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 110/112 (122) is reflective of a World War II-era factory within an industrial facility during its period of significance. The building is characterized by its utilitarian construction, low-pitched barrel roof, corrugated sheet metal cladding, multi-pane windows, and ventilators on the roof (URS Corporation, 2009).
2. Condition of Building Material: Building 110/112 (122) is in fair condition.

B. Description of Exterior:

1. Overall Dimensions: Building 110 is 2,645 square feet and measures approximately 25 feet by 44 feet. Building 112 is 3,301 square feet and measures approximately 75 feet by 44 feet.
2. Foundations: Building 110/112 (122) is built on a concrete slab foundation.
3. Walls: The walls of Building 110 are constructed of metal siding and have diagonal “X” braces in the plan direction at roof level. The walls of Building 112 are constructed of metal siding with plywood added to the south wall.
4. Structural System: Building 110/112 (122) has steel bowstring trusses at the end walls and the lateral system consists of diagonal bracing on the longitudinal walls. Five-inch-by-7-inch “I”-beam posts are placed approximately 20 feet apart around the building and are bolted to the concrete slab foundation.
5. Openings:
  - a. Doorways: Building 110/112 (122) has hanging doors and a set of double doors on the east elevation. A set of hanging doors is located on the north elevation. Access to Building 120 is available through hanging doors and a set of double doors as well as through a rectangular opening on the west wall.
  - b. Windows: Building 110/112 (122) has multi-pane rectangular windows located along the first and second floors of the south and east elevations.
6. Roof: Building 110/112 (122) has a low-pitched barrel roof of corrugated sheet-metal on wood joists. The roof is supported by steel, arched trusses placed on the I-beam posts along the east and west elevations. The roof trusses of Building 110/112 are attached to the columns of Building 120 to the west. A portion of Building 112’s roof shares a roof truss located within Building 110.



C. Description of Interior:

Floor Plans: Building 110/112 (122) is a two-story rectangular building that served as metal fabrication areas. The buildings have open floors plans with some moveable partitions that do not reach ceiling height.

D. Site:

Historic Landscape Design: None

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](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).

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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.

PART III. SOURCES OF INFORMATION

A. Early Views: N/A

B. Interviews: N/A

C. Bibliography

1. Primary and Unpublished Sources:

San Diego County Regional Airport Authority (SDCRAA). 2005. Teledyne Ryan Facility Study. January 1.

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.



Building 110/112 (122), Drop Hammer Planishing Shed, Southeast Oblique, San Diego, California, October 2009.



Building 110/112 (122), Drop Hammer Planishing Shed, Northeast Oblique, San Diego, California, October 2009.



Building 110/112 (122), Drop Hammer Planishing Shed, East Elevation, facing Northwest, San Diego, California, October 2009.



Building 110/112 (122), Drop Hammer Planishing Shed, Northeast Oblique, San Diego, California, October 2009.

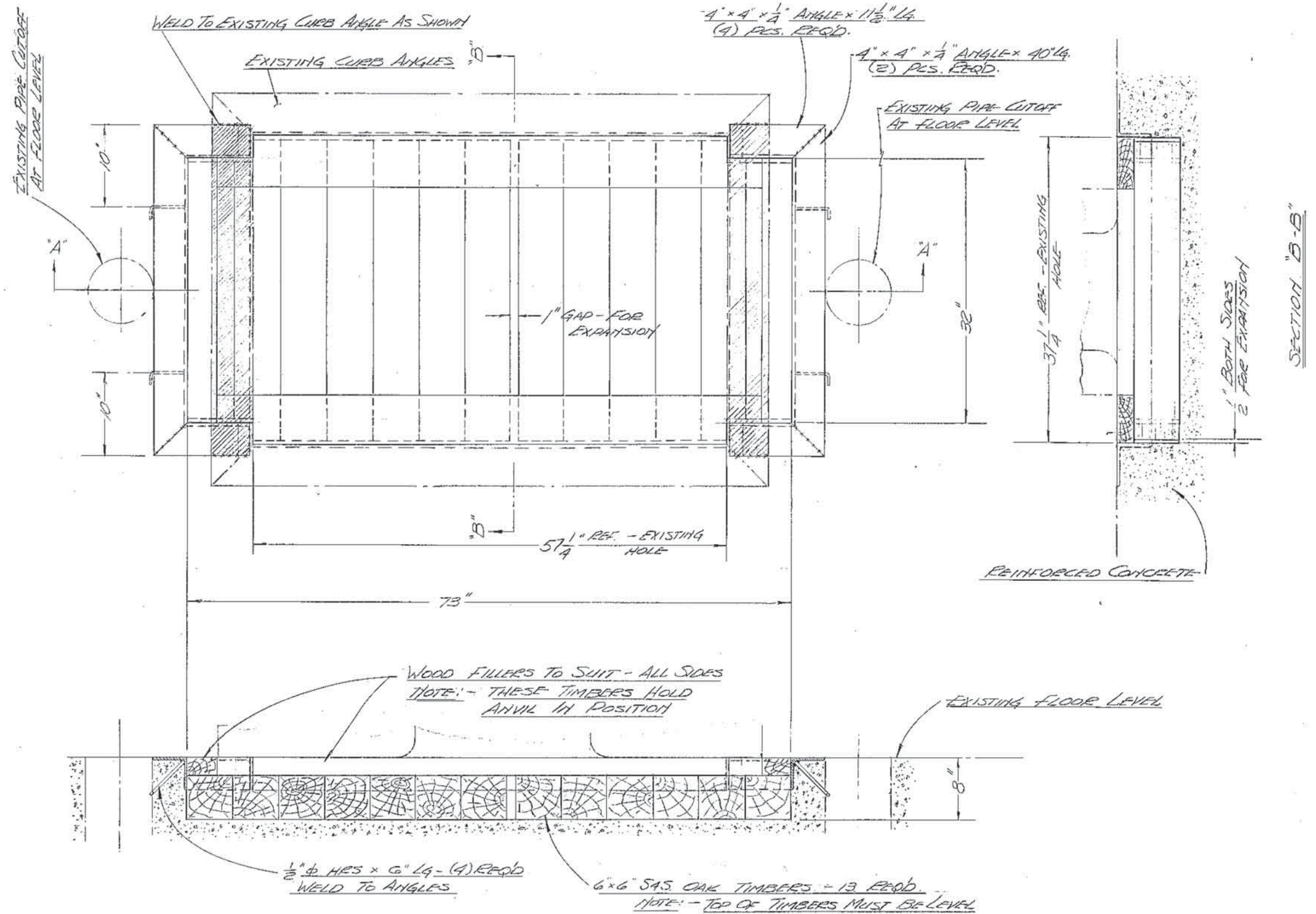


Building 110/112 (122), Drop Hammer Planishing Shed Interior, south and west wall detail, San Diego, California, October 2009.



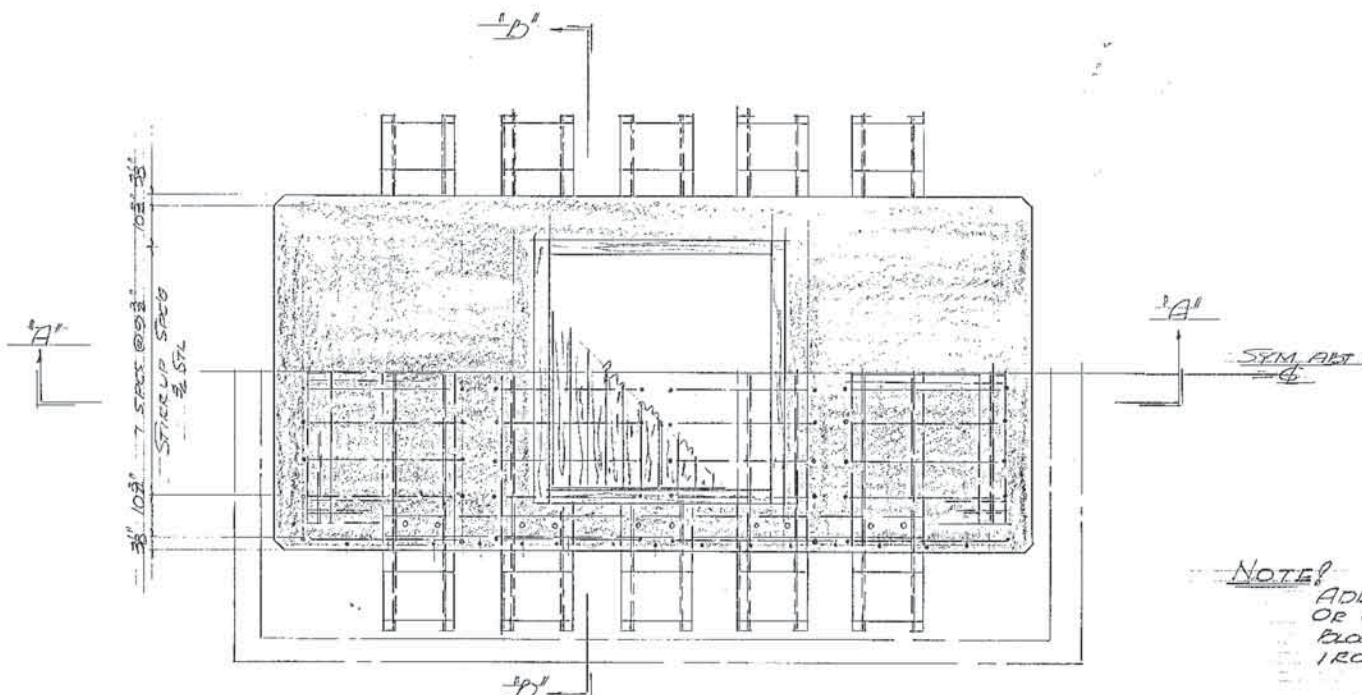
Building 110/112 (122), Drop Hammer Planishing Shed Interior, north and west wall detail, San Diego, California, October 2009.





RYAN AERONAUTICAL CO.				DATE	8-27-50
SAN DIEGO, CALIFORNIA				PROJECT NO.	15477
PLANT ENGINEERING DEPARTMENT				CHARGE NO.	
SCALE	DESIGNER	APPROVED	DRAFTSMAN	CHECKER	SHEET OF SHEETS
1/8" = 1"		W.S.R.	W.S.R.		1 / 1
JOB TITLE FOUNDATION FOR CROSTAMP					DRAWING SIZE
MODEL "L" - HAMMER SIZE 30 x 24					"C"
DETAIL					DRAWING NO.
CELO STAMP ASSET # 3-15243					2543





**NOTE:**  
 ADD 19200# OF BOILER PUNCHINGS  
 OR CLEAN SCRAP IRON TO INERTIA  
 BLOCK IN SECOND & THIRD FLOORS  
 IRON SHOULD NOT TOUCH FORMS  
 INERTIA BLOCK VOLUME  
 53.2 CUBIC FT OF STEEL  
 789 CUBIC FT OF CONCRETE

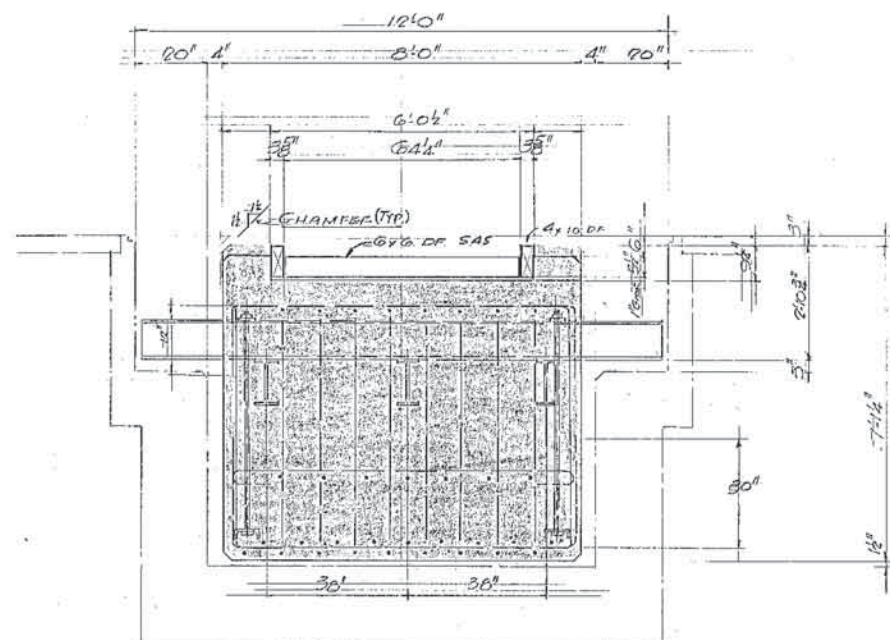
### PLAN OF INERTIA BLOCK FOR DASH ROPE DROP HAMMER

SCALE 1/2" = 1'-0"

FLR DIMS & PLATES NOT SHOWN  
 PIT NOT SHOWN

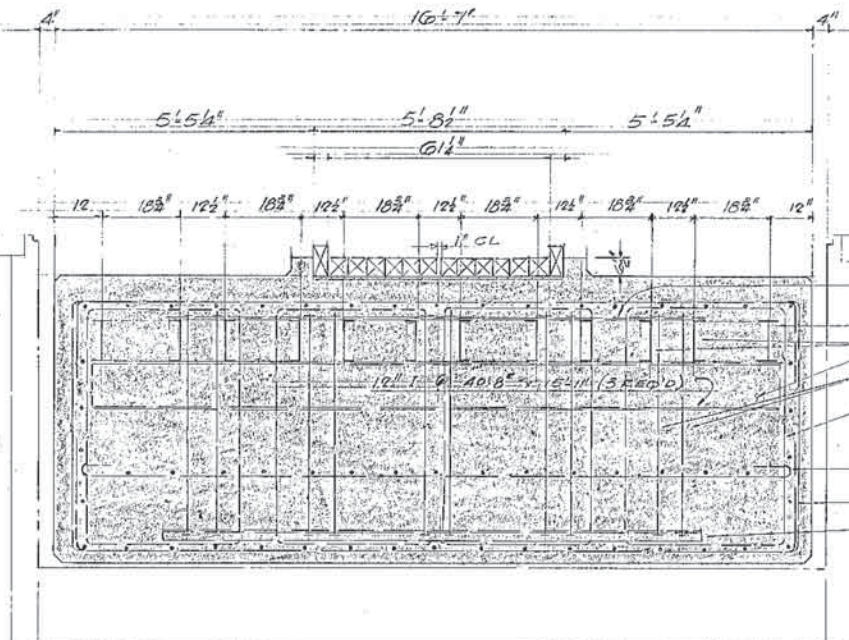
**DATA (DESIGN)**  
 HAMMER WT. 51600#  
 INERTIA BLOCK WT. 139400#  
 FOUNDATION WT.  
 RAM WT. 6050#  
 RAM VELOCITY 13.5 FT/SEC.  
 MAX. DIE WT. 6000#

**REFERENCE DWGS**  
 SPRING DETAILS SHT. 7  
 FLR BEAM DETAILS SHT. 6  
 PILING DETAILS SHT. 8  
 PIT DETAILS SHT.



### SECTION "AA"

SCALE 1/2" = 1'-0"



### SECTION "BB"

SCALE 1/2" = 1'-0"

4x4 H.R.S. x 11'-5 1/2" (2 REQ'D)  
 12" I.B. 40'-0" x 6'-10" (2 REQ'D)  
 12" I.B. 40'-0" x 11'-0" (10 REQ'D)  
 16" BOLTS x 60' (20 REQ'D)  
 3" STIRRUPS - 18" CYS.  
 3" INTERMEDIATE WRT.  
 18" CYS. BOTH WAYS HOOK ENDS  
 3" ST. BOTH WAYS  
 6" I.B. 40'-0" x 11'-5 1/2" (2 REQ'D)

**SPRINGS**  
 10 CLUSTERS - 9 SPRINGS  
 PER CLUSTER

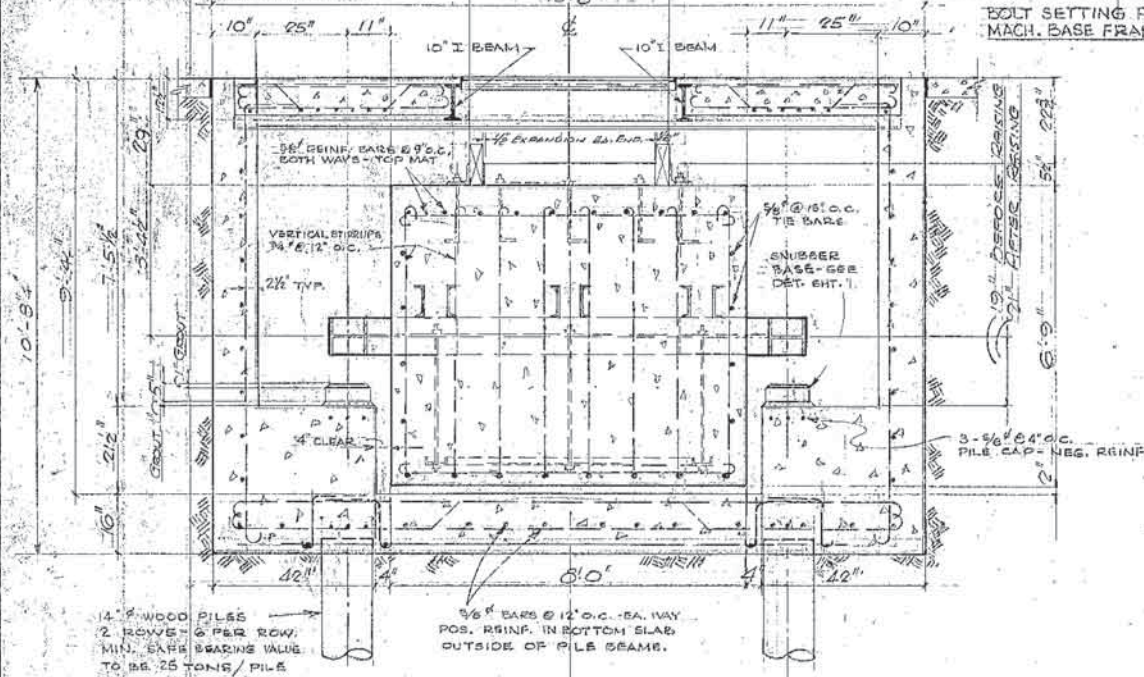
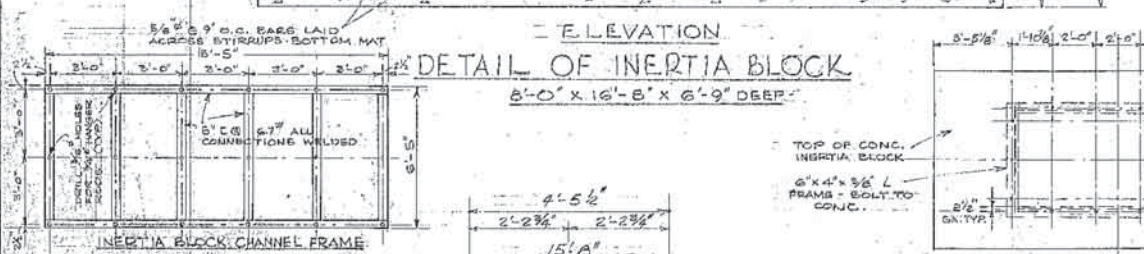
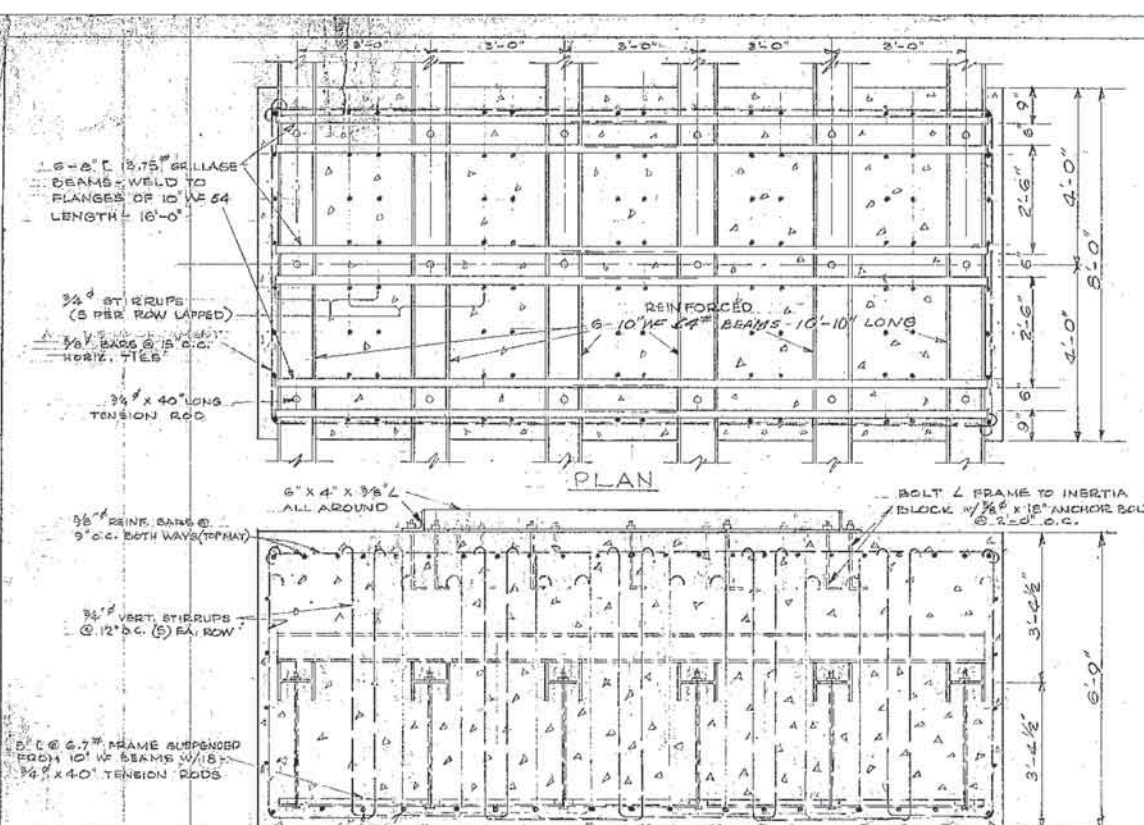
FOR SUSPENSION DETAILS SEE D2549-5  
 FOR PILING DETAILS SEE D2549-6

RYAN AERONAUTICAL CO.				DATE	7-17-51
SAN DIEGO, CALIFORNIA				PROJECT NO.	
PLANT ENGINEERING DEPARTMENT				CHARGE NO.	
SCALE	DESIGNER	APPROVED	DRAFTSMAN	CHECKER	SHEET 6 OF 12
AS NOTED SADD		H.S.	AP		2
JOB TITLE FOUNDATION INERTIA BLOCKS					DRAWING SIZE
FOR CEMENTATION AND DASH ROPE CH.					D
DETAIL: INERTIA BLOCK FOR					DRAWING NO.
DASH ROPE DROP					25066

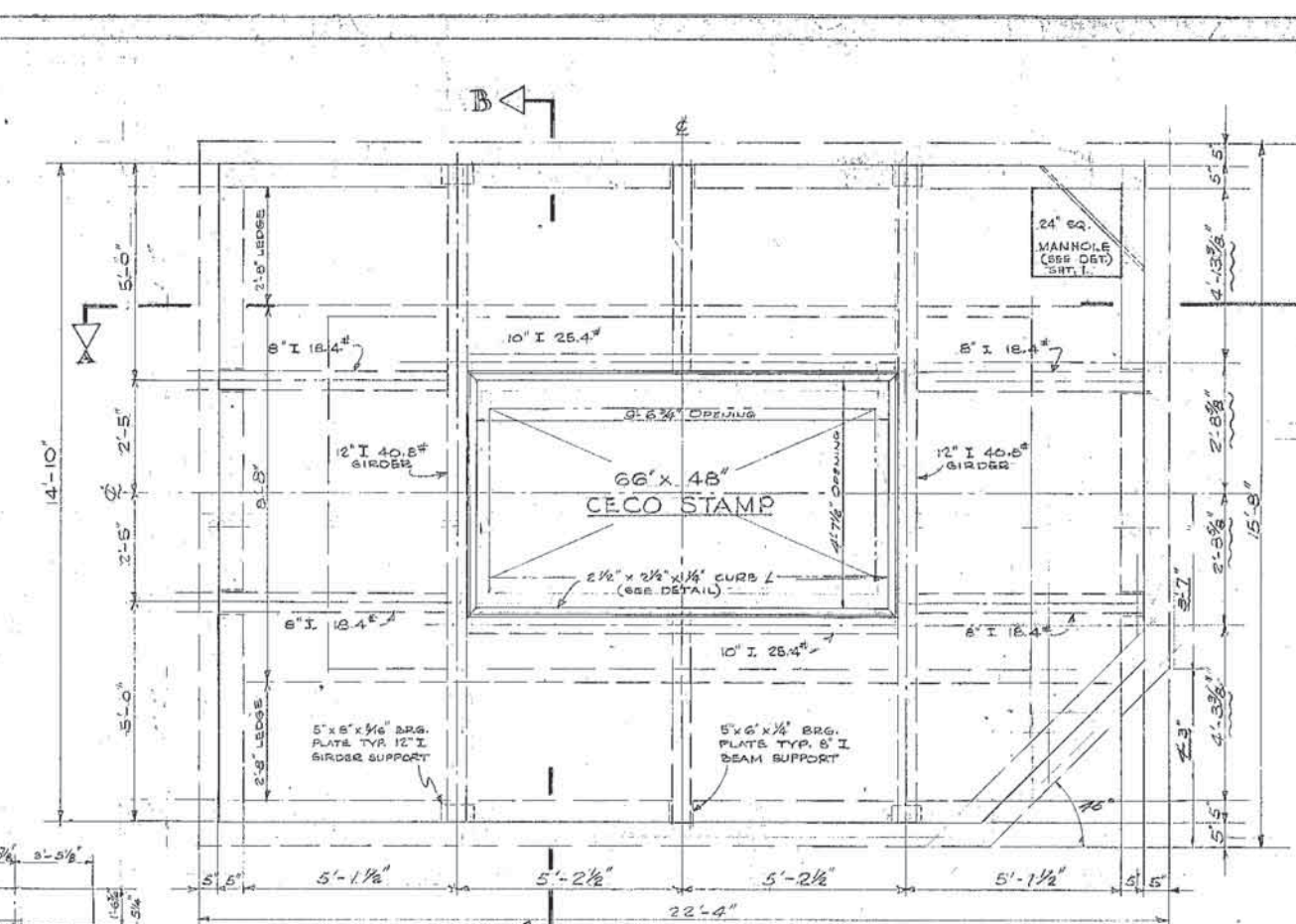




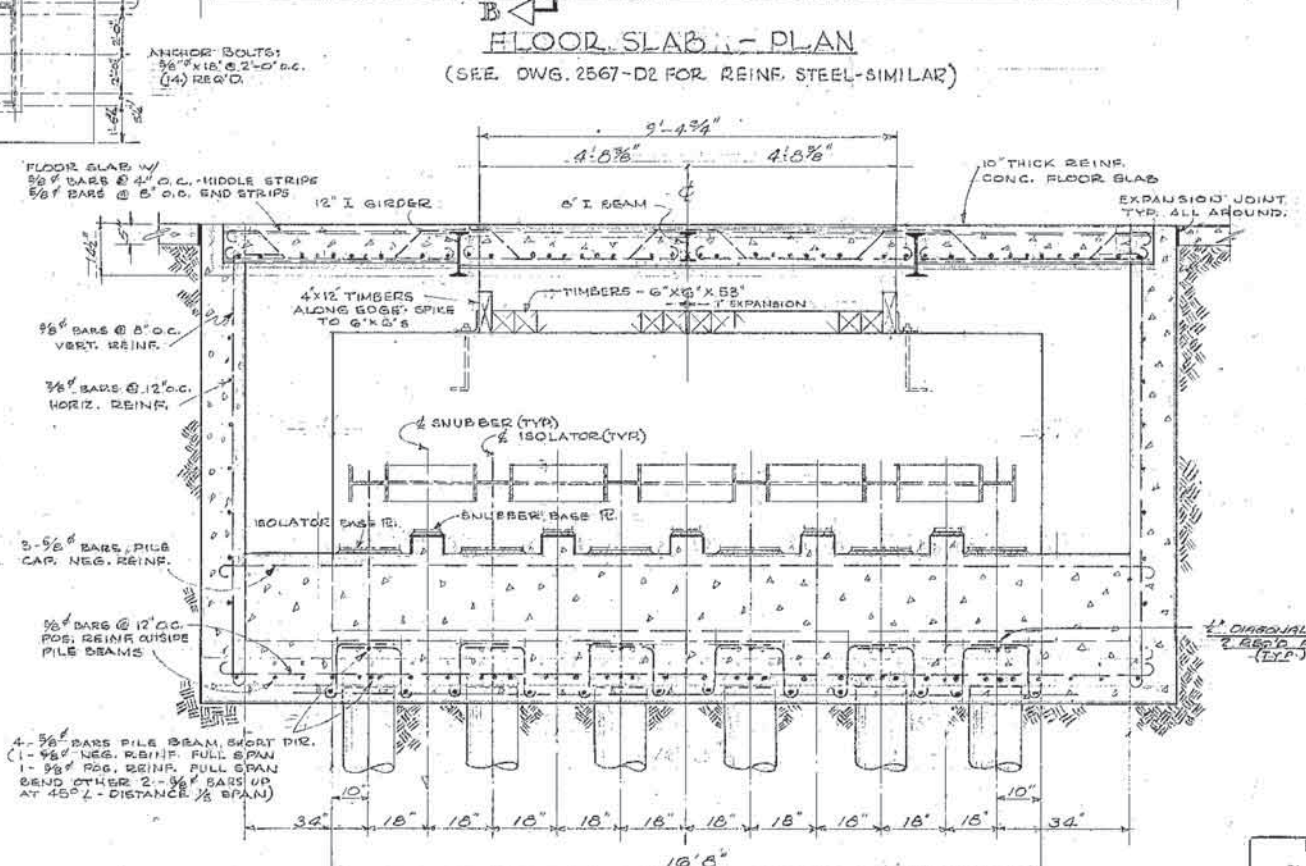




SECTION B-B



FLOOR SLAB - PLAN  
(SEE DWG. 2567-D2 FOR REIN. STEEL-SIMILAR)



SECTION A-A

**DESIGN DATA:**

TOTAL WEIGHT CECOSTAMP	26500
WEIGHT OF RAM	69800
WEIGHT - DIE COMBINATION	15000
IMPACT VELOCITY	10.5
WEIGHT - INERTIA BLOCK	138000
TOTAL IMPACT FORCE	106000
WEIGHT FOUNDATION	218000
TOTAL FORCE TRANSMITTED TO BEARING PILES	570,000#

**SPRING ISOLATION:**

12 - KOPFUND TYPE UN-25	15"
VIBRO-ISOLATORS WITH 10	5"
SNUBBERS - 9 SPES. PER ISOLATOR	

**BEARING PILES:**

14" P WOOD PILE - APPROX.	
LENGTH - 60'FT. BELOW GRADE	
MINIMUM BEARING CAPACITY	
SHALL BE 25 TONS PER PILE	

**FOUNDATION & FLOOR SLAB:**

DESIGN OF PIT WALLS BASED ON SOIL PRESSURE OF 30#/CU. FT. WITH MAX. SURCHARGE OF 1000#/SQ. FT.

DESIGN OF FLOOR BEAMS & CONC. SLAB BASED ON WHEEL LOADS OF AUTOMATIC LIFT - 12000#

LOAD PER WHEEL = 12000#

IMPACT = 4800#

TOTAL CONC. LOAD = 16,800#

CONCRETE SHALL WEIGH MIN. OF 4000#/YD

CONCRETE SHALL HAVE MIN. COMPRESSIVE STRENGTH OF 3,000 PSI @ 28 DAYS.

**DEFLECTION (SPRING)**

STATIC	.31"
DYNAMIC	.33"
TOTAL DEFLECTION	1.14"
SPRING CONSTANT	2900#/IN.

**REFERENCE DWGS:**

DWG. 48-120MH-2

CHAMBERSBURG BRIDGES CO.

**NOTE TO CONTRACTOR**

DIMENSIONS OF 66" x 48" CECOSTAMP BASE ARE 46 1/4" x 106 1/2"

FLOOR OF INERTIA BLOCK PIT TO BE TROWEL FINISHED, PITCH FLOOR 1" FROM E OF PIT TO END WALLS.

ALL DIMENSIONS ARE TO BE CHECKED IN THE FIELD.

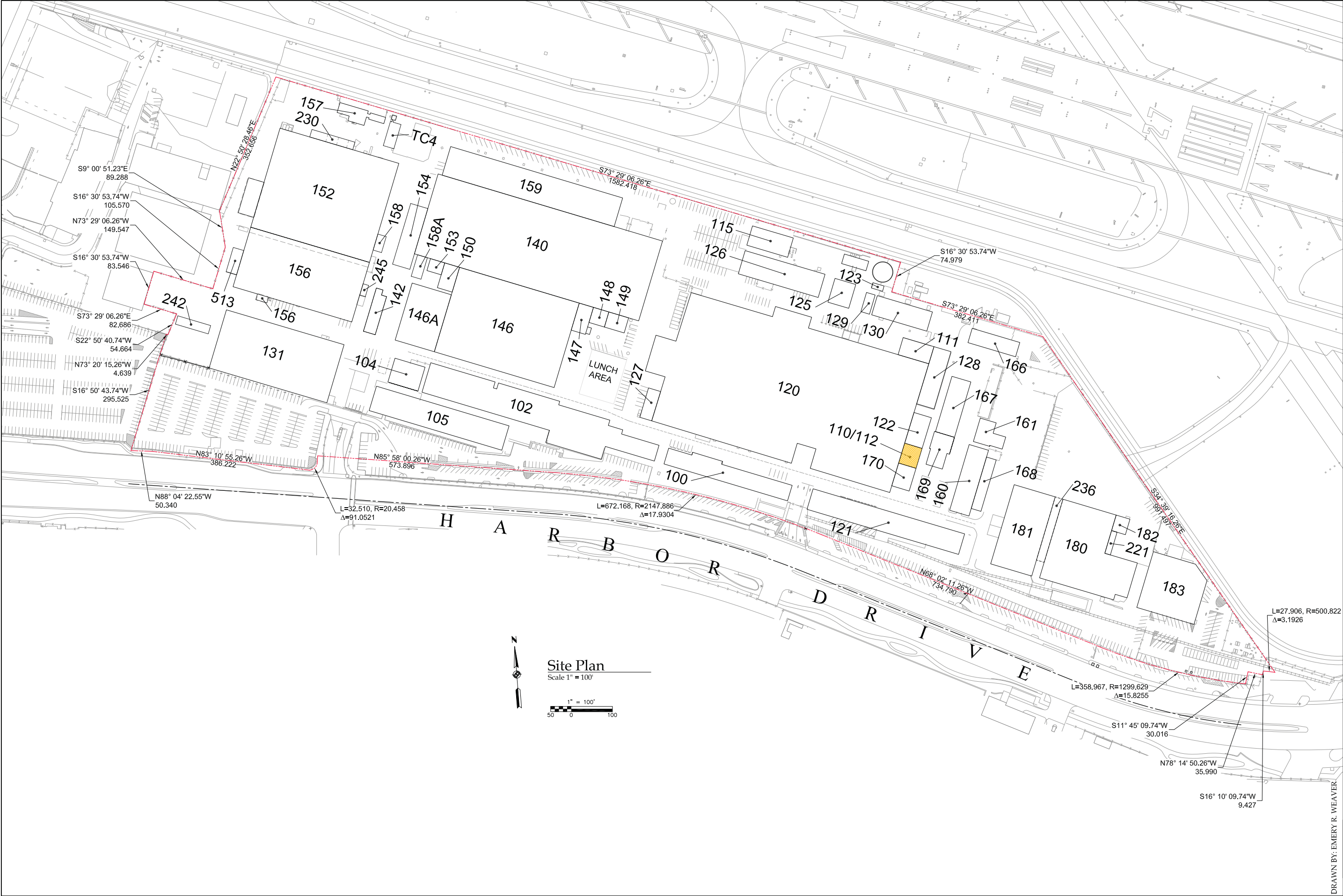
APPROVED				DATE	2-26-52
RYAN AERONAUTICAL CO.				PROJECT NO.	454172
PLANT ENGINEERING DEPARTMENT				CHARGE NO.	
SCALE	DESIGNER	APPROVED	DRAFTSMAN	CHECKER	SHEET NO.
1/2"=1'-0"	SADD	10/25			31
JOB TITLE					DRAWING
FOUNDATION FOR 66" x 48" CECOSTAMP					DWG. No.
					2567
DETAIL					125

REVISION C- 4-20-52  
REVISION D- 4-25-52  
REVISION A- 3-18-52





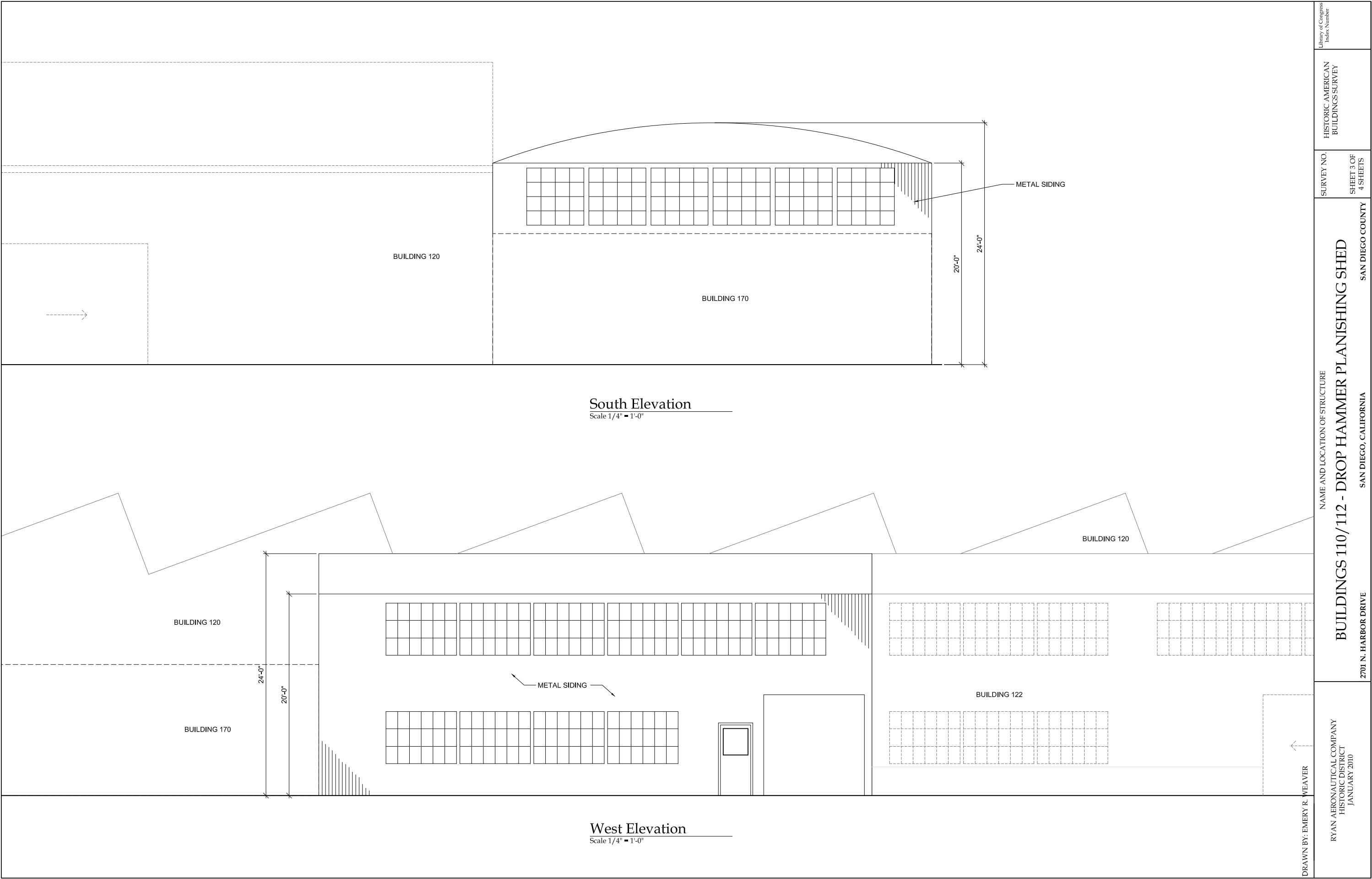




Library of Congress Index Number	HISTORIC AMERICAN BUILDINGS SURVEY	NAME AND LOCATION OF STRUCTURE	
		BUILDINGS 110/112 - DROP HAMMER PLANISHING SHED	
		SAN DIEGO COUNTY	
		SURVEY NO.	
		SHEET 1 OF 4 SHEETS	
		DRAWN BY: EMERY R. WEAVER	
RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010		2701 N. HARBOR DRIVE	SAN DIEGO, CALIFORNIA

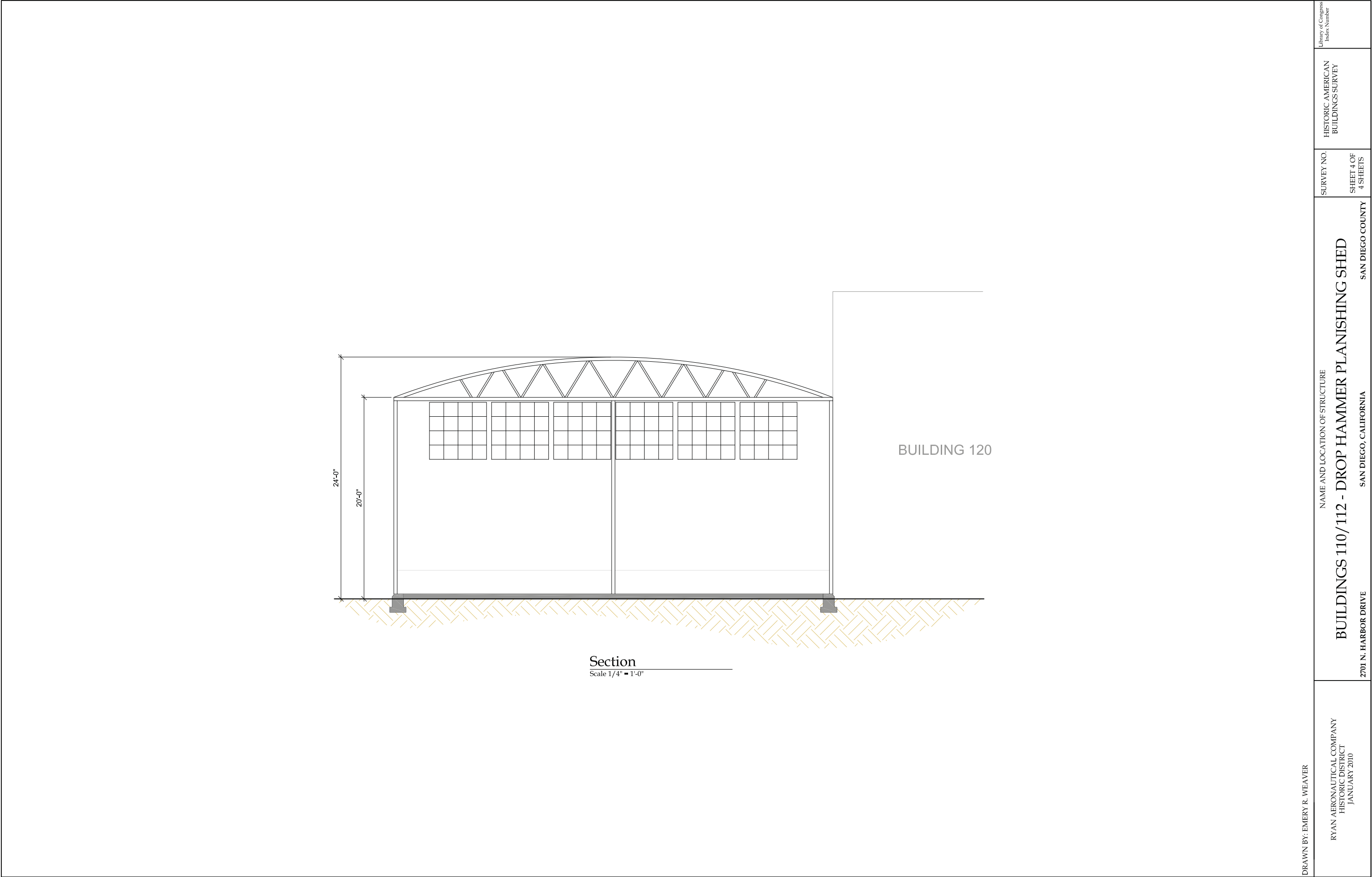






Library of Congress Index Number	
HISTORIC AMERICAN BUILDINGS SURVEY	
SURVEY NO.	SHEET 3 OF 4 SHEETS
NAME AND LOCATION OF STRUCTURE	
BUILDINGS 110/112 - DROP HAMMER PLANISHING SHED	
2701 N. HARBOR DRIVE	SAN DIEGO, CALIFORNIA
SAN DIEGO COUNTY	
DRAWN BY: EMERY R. WEAVER	
RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010	





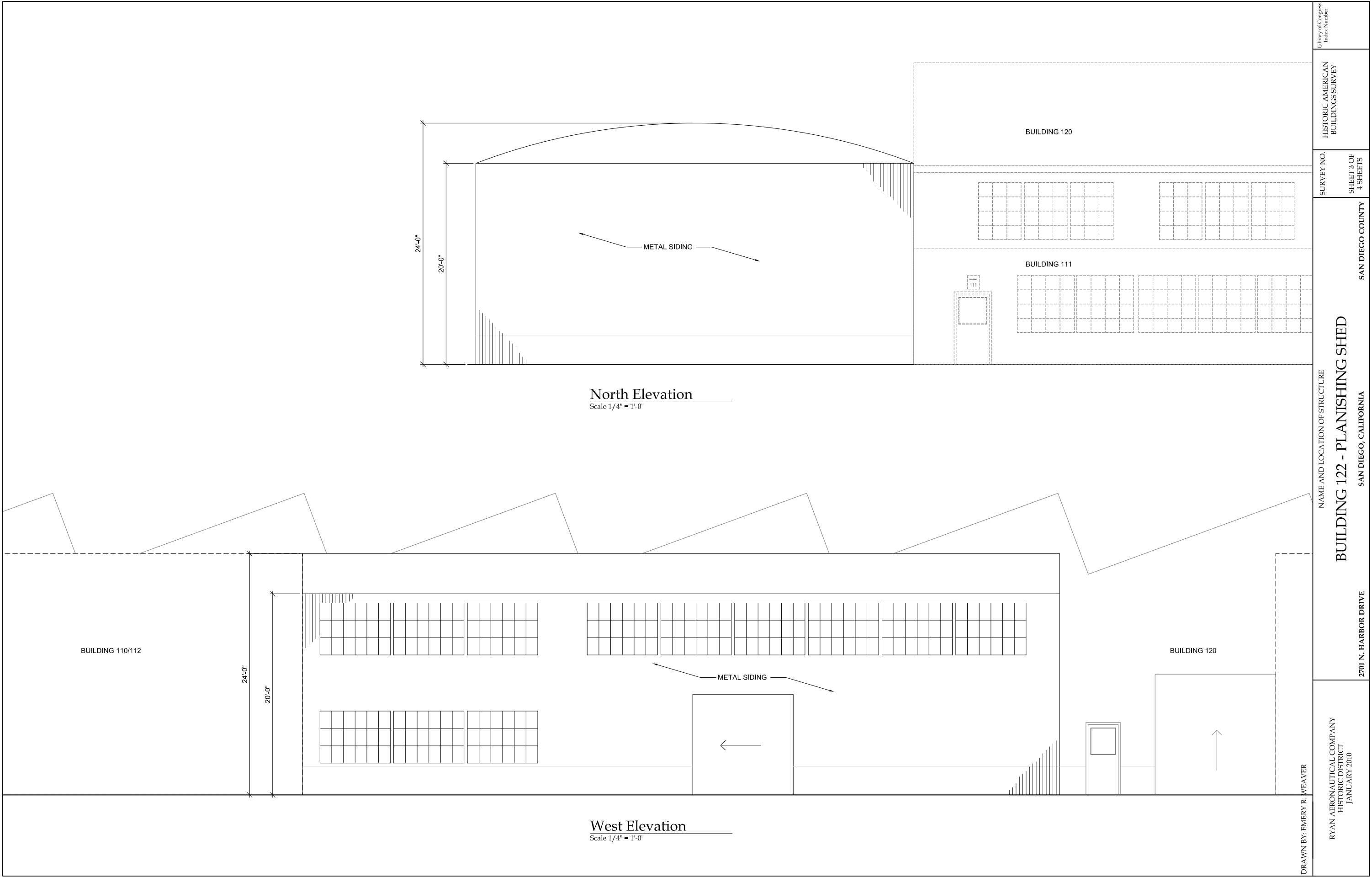
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Scale 1/4" = 1'-0"

DRAWN BY: EMERY R. WEAVER	NAME AND LOCATION OF STRUCTURE		SURVEY NO.	HISTORIC AMERICAN BUILDINGS SURVEY	Library of Congress Index Number
	BUILDINGS 110/112 - DROP HAMMER PLANISHING SHED				
	2701 N. HARBOR DRIVE SAN DIEGO, CALIFORNIA SAN DIEGO COUNTY				
	RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010				
			SHEET 4 OF 4 SHEETS		



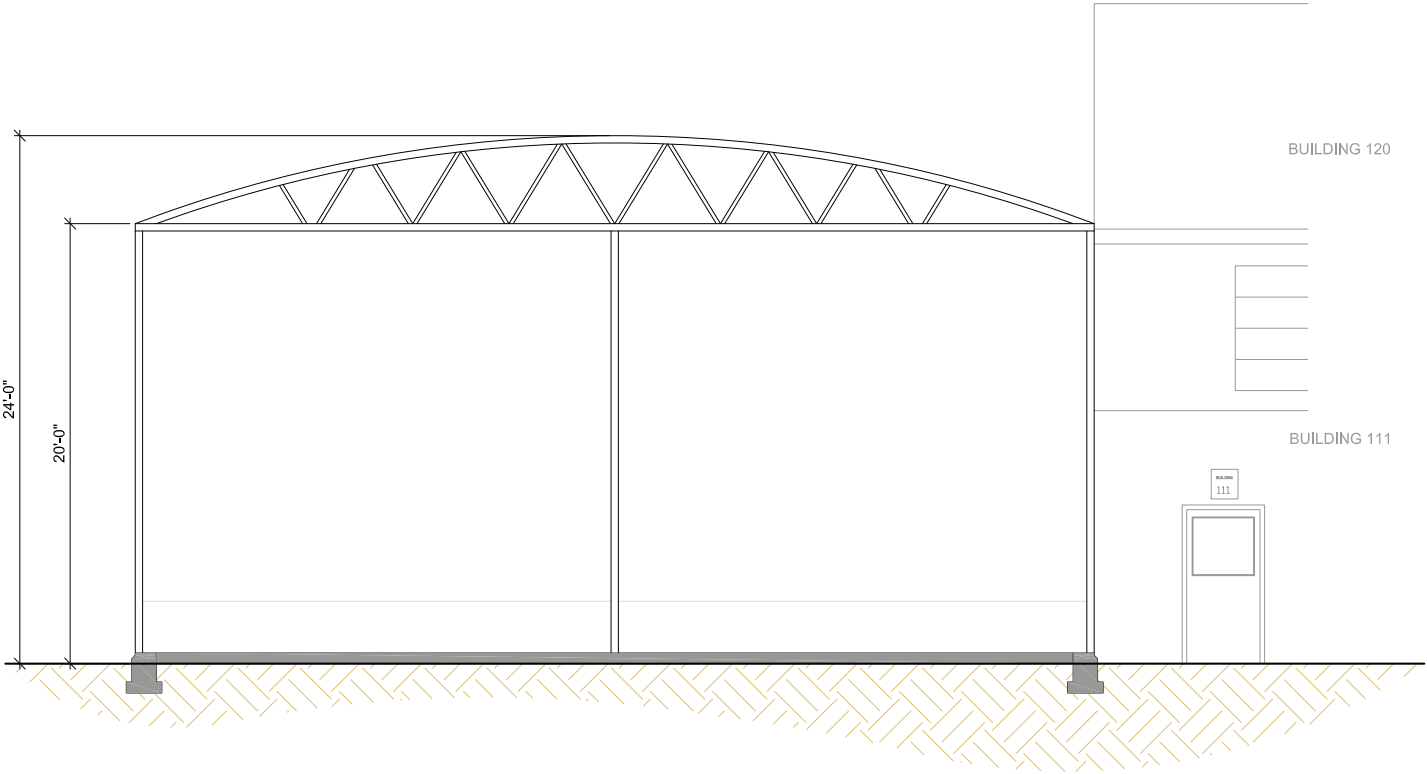






Library of Congress Index Number	HISTORIC AMERICAN BUILDINGS SURVEY		SAN DIEGO COUNTY
	SURVEY NO.	SHEET 3 OF 4 SHEETS	
	NAME AND LOCATION OF STRUCTURE  BUILDING 122 - PLANISHING SHED  SAN DIEGO, CALIFORNIA  2701 N. HARBOR DRIVE		
RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010			

Section  
Scale 1/4" = 1'-0"



DRAWN BY: EMERY R. WEAVER	RYAN AERONAUTICAL COMPANY HISTORIC DISTRICT JANUARY 2010	NAME AND LOCATION OF STRUCTURE  <b>BUILDING 122 - PLANISHING SHED</b>  SAN DIEGO, CALIFORNIA  2701 N. HARBOR DRIVE	SURVEY NO.  SHEET 4 OF 4 SHEETS	HISTORIC AMERICAN BUILDINGS SURVEY	Library of Congress Index Number
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