
HERMOSA BEACH BUILDING ASSESSMENT

ASCE 31-03 Phase 1 Structural
Seismic Evaluation Report
August 12, 2015

John A. Martin & Associates, Inc.



DATE SIGNED:
6/17/2015

Executive Summary

Fire and Police Department

The Hermosa Beach Fire and Police Department building was designed and built over fifty years ago. A lot has changed in the structural engineering community and building codes since then.

The purpose of this report is to use the ASCE 31-03 “Seismic Evaluation of Existing Buildings” Tier One analysis to assess how this existing building would perform according to our current engineering standards. Under the ASCE 31-03 standard, the existing building can be evaluated for Life Safety Performance Level (LS) or Immediate Occupancy Performance Level (IO). Expected building performance for LS includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage to nonstructural component is non-life threatening. And expected building performance for IO includes damage to both structural and nonstructural components during a design earthquake such that the damage is not life threatening, so as to permit immediate occupancy of the building after the a design earthquake, and the damage is repairable while the building is occupied. Based on the use of this structure, we have looked at the feasibility of achieving either a Life Safety (LS) or Immediate Occupancy Performance Level (IO).

The Tier One evaluation is meant to be a very broad overview of the building to identify major structural deficiencies. Non-compliant items may prove to be acceptable for the overall performance of the building upon further investigation through a Tier Two Evaluation as well as the further development of required retrofit scope.

Based on the guidelines of ASCE 31, the deficiencies for this building are listed below:

- Adjacent buildings clear distance
- Wall anchorage for out-of-plane forces – cross grain bending and anchoring to diaphragm
- Transfer to Shear Walls – diaphragm and drag
- Unblocked Diaphragms – diaphragm span
- Fully grout CMU walls (for IO)

Life Safety Performance Level (LS): A seismic retrofit would be required, which would most likely include the following:

- Adding wall-to-diaphragm anchorage for out-of-plane forces
- Adding two new shear walls and foundation to minimize diaphragm span
- Strengthening of existing diaphragm drags and chords

Estimated construction cost on the order of \$600,000 to \$800,000. Estimated cost does not address the second story dormitory addition and fire hose tower. Please refer to seismic evaluation report titled *City Wide Building & Facilities Condition Assessment CIP 13-664* for other cost.

Immediate Occupancy Performance Level (IO): an increased scope of retrofit would be required.

- All of the retrofit items listed above for Life Safety
- Increase seismic joint between adjacent building
- Solid grout all cells of CMU shear wall
- Strengthen existing diaphragm – added blocking, possible addition of plywood

Estimated construction cost on the order of \$1,400,000 to \$1,600,000. Estimated cost does not address the second story dormitory addition and fire hose tower. Please refer to seismic evaluation report titled *City Wide Building & Facilities Condition Assessment CIP 13-664* for other cost.

Additional information was uncovered during a site walk on June 8, 2015.

- Dry wall had been removed at north-east corner of second story dormitory and structural framing was exposed (refer to Figure 5 under Additional Photographs section of this report). There appears to be termite damage to roof joist and stud walls.
- A portion of the original roof diaphragm and roof joist, directly below the west side of second story dormitory addition, had been removed (refer to Figure 6 under Additional Photographs section of this report). This area was observed in the mechanical attic space accessible near stairs landing. However, the extent of opening in diaphragm, strengthening of the opening, and connection detailing is unknown since existing structural drawings for this alteration is not available. To assess the structural integrity of the diaphragm, as-built of the existing, material testing and further analysis will be require.

In conclusion, the extent and cost of structural retrofit to achieve Life-Safety performance level appears to be feasible. However the extent of structural retrofit required to achieve Immediate Occupancy Performance Level, appears to be highly disruptive and cost prohibitive. It is our understanding the city wants the Fire department building to perform at an Immediate Occupancy Performance Level since this is the only fire station in town; following a design earthquake, the fire station is expected to have non-life threatening damages with immediately occupancy of the building.

Next steps:

- Proceed to ASCE 31 Tier 3 Analysis,
- As-built the existing building for confirmation of existing condition and
- Obtain geotechnical report to verify geologic site hazards.

City Hall

The City Hall building is a three story structure, constructed around 1963, located adjacent to the Police/Fire Department building. Basic lateral system consists of reinforced concrete shear wall, concrete diaphragm at floor levels, and wood diaphragm at roof.

A limited ASCE 31 evaluation was performed for the City Hall; since original construction documents are not available, the checklist concerning details could not be answered and we identified the expected retrofit based on knowledge of similar vintage buildings. Under the ASCE 31 standard, the existing building can be evaluated for Life Safety Performance Level (LS) or Immediate Occupancy Performance Level (IO). Expected building performance for LS includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage

to nonstructural component is non-life threatening. And expected building performance for IO includes damage to both structural and nonstructural components during a design earthquake such that the damage is not life threatening, so as to permit immediate occupancy of the building after the a design earthquake, and the damage is repairable while the building is occupied. Based on use of the building and year of construction, only Life Safety Performance Level was considered. Extent of retrofit required has been guestimated based on similar type of construction as Community Center Classroom Building and Police/Fire Department building. Destructive materials testing and as-built drawings of the existing structure are needed to confirm actual retrofit.

The purpose of this report is to use the ASCE 31-03 "Seismic Evaluation of Existing Buildings" Tier One analysis to assess how this existing building would perform according to our current engineering standards. The Tier One evaluation is meant to be a very broad overview of the building to identify major structural deficiencies. Non-compliant items may prove to be acceptable for the overall performance of the building upon further investigation through destructive material testing, complete as-built investigation of existing structure and a Tier Two Evaluation.

Based on assumptions and limited evaluation of Tier 1 guidelines of ASCE 31 for Life Safety Performance Category, the probable deficiencies are listed below:

- Adjacent PD/FD building clear distance
- Assumed inadequate shear walls and
- Out-of-plane anchorage at roof
- Wood Ledgers at roof
- Transfer to Shear Walls at roof
- Unblocked Diaphragms at roof

Our findings indicate that a structural seismic retrofit to address the deficiencies to meet Life Safety performance level may be feasible. Possible solution would be fiberwrap of shear walls and retrofit of anchorage.

It is estimated, based on assumption above, the structural cost for seismic retrofit will be on the order of

City Hall - \$450,000 to \$650,000

Please refer to seismic evaluation report titled *City Wide Building & Facilities Condition Assessment CIP 13-664* for other cost.

Next steps:

- Complete as-built investigation and production of drawings of the existing structure and destructive material testing
- Obtain geotechnical report to verify geologic site hazards.

Community Center (Gymnasium and Classroom Building)

The Community Center is composed of three seismically separated Buildings which are the subject of this report: Auditorium Building, Gymnasium Building, and Classroom Building.

A limited ASCE 31 evaluation was performed for the Auditorium Building, constructed around 1911, since original construction documents are not available. Under the ASCE 31 standard, the existing building can be evaluated for Life Safety Performance Level (LS) or Immediate Occupancy Performance Level (IO). Expected building performance for LS includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage to nonstructural component is non-life threatening. And expected building performance for IO includes damage to both structural and nonstructural components during a design earthquake such that the damage is not life threatening, so as to permit immediate occupancy of the building after the a design earthquake, and the damage is repairable while the building is occupied. Based on use of the building, only Life Safety Performance Level (LS) was considered. Extent of retrofit required has been guestimated based on similar type of construction as the Classroom and Gymnasium buildings, yet 20 years older. Destructive materials testing and as-built drawings of the existing structure are needed to confirm actual retrofit.

Our evaluation of the Classroom and Gymnasium buildings, that were built in 1939, has revealed these two buildings were designed remarkably well when subjected to the Tier 1 checks of ASCE 31. However, due to the vintage of the buildings, and the large increase in seismic demands between 1939 and the present, we cannot determine the feasibility of meeting the Immediate Occupancy Performance Level until further evaluation is performed under a Tier Two Evaluation. Therefore the seismic evaluation in this report has been based on Life Safety Performance Category of ASCE 31 Tier 1.

The purpose of this report is to use the ASCE 31-03 "Seismic Evaluation of Existing Buildings" Tier One analysis to assess how this existing building would perform according to our current engineering standards. The Tier One evaluation is meant to be a very broad overview of the building to identify major structural deficiencies. Non-compliant items may prove to be acceptable for the overall performance of the building upon further investigation through a Tier Two Evaluation.

Based on the Tier 1 guidelines of ASCE 31 for Life Safety Performance Level, the deficiencies for the each building are listed below:

- Auditorium Building (north wing of community center)
 - Assumed inadequate shear walls and out-of-plane anchorage
- Gymnasium Building (south wing of community center)
 - Vertical discontinuity of shear wall.
- Classroom Building (south wing of community center)
 - None

Our findings indicate that a structural seismic retrofit to address the deficiencies for the Auditorium and Gymnasium Buildings to meet Life Safety performance level will be feasible. Possible solution for Auditorium Bldg would be fiberwrap of shear walls and retrofit of anchorage. Possible solution for

Gymnasium Building would be to add a new shear wall (with footing) below the existing discontinuous wall.

It is estimated the structural cost for seismic retrofit will be on the order of

Auditorium/Theater - \$2,000,000

Gymnasium building - \$300,000 to \$500,000

Classroom building - \$0

Please refer to seismic evaluation report titled *City Wide Building & Facilities Condition Assessment CIP 13-664* for other cost.

Next steps:

- Proceed to ASCE 31 Tier 2 Analysis
- Limited as-built investigation of existing building for confirmation of existing conditions (Gym & Classroom)
- Complete as-built investigation and production of drawings of the existing structure and destructive material testing (Auditorium Building)
- Obtain geotechnical report to verify geologic site hazards.

**HERMOSA BEACH
COMMUNITY CENTER
(GYMNASIUM AND
CLASSROOM
BUILDING)**

**710 Pier Ave, Hermosa
Beach, CA 90254**

ASCE 31-03 Phase 1 Structural
Seismic Evaluation Report
June 11, 2015

John A. Martin & Associates, Inc.



DATE SIGNED:
6/17/2015

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Executive Summary

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A limited ASCE 31 evaluation was performed for the Auditorium Building, constructed around 1911, since original construction documents are not available. Under the ASCE 31 standard, the existing building can be evaluated for Life Safety Performance Level (LS) or Immediate Occupancy Performance Level (IO). Expected building performance for LS includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage to nonstructural component is non-life threatening. And expected building performance for IO includes damage to both structural and nonstructural components during a design earthquake such that the damage is not life threatening, so as to permit immediate occupancy of the building after the a design earthquake, and the damage is repairable while the building is occupied. Based on use of the building, only Life Safety Performance Level (LS) was considered. Extent of retrofit required has been guesstimated based on similar type of construction as the Classroom and Gymnasium buildings, yet 20 years older. Destructive materials testing and as-built drawings of the existing structure are needed to confirm actual retrofit.

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Based on the Tier 1 guidelines of ASCE 31 for Life Safety Performance Level, the deficiencies for the each building are listed below:

- Auditorium Building (north wing of community center)
 - Assumed inadequate shear walls and out-of-plane anchorage
- Gymnasium Building (south wing of community center)
 - Vertical discontinuity of shear wall.
- Classroom Building (south wing of community center)
 - None

Our findings indicate that a structural seismic retrofit to address the deficiencies for the Auditorium and Gymnasium Buildings to meet Life Safety performance level will be feasible. Possible solution for

Auditorium Bldg would be fiberwrap of shear walls and retrofit of anchorage. Possible solution for Gymnasium Building would be to add a new shear wall (with footing) below the existing discontinuous wall.

It is estimated the structural cost for seismic retrofit will be on the order of

Auditorium/Theater - \$2,000,000

Gymnasium building - \$300,000 to \$500,000

Classroom building - \$0

Please refer to seismic evaluation report titled *City Wide Building & Facilities Condition Assessment CIP 13-664* for other cost.

Next steps:

- Proceed to ASCE 31 Tier 2 Analysis
- Limited as-built investigation of existing building for confirmation of existing conditions (Gym & Classroom)
- Complete as-built investigation and production of drawings of the existing structure and destructive material testing (Auditorium Building)
- Obtain geotechnical report to verify geologic site hazards.

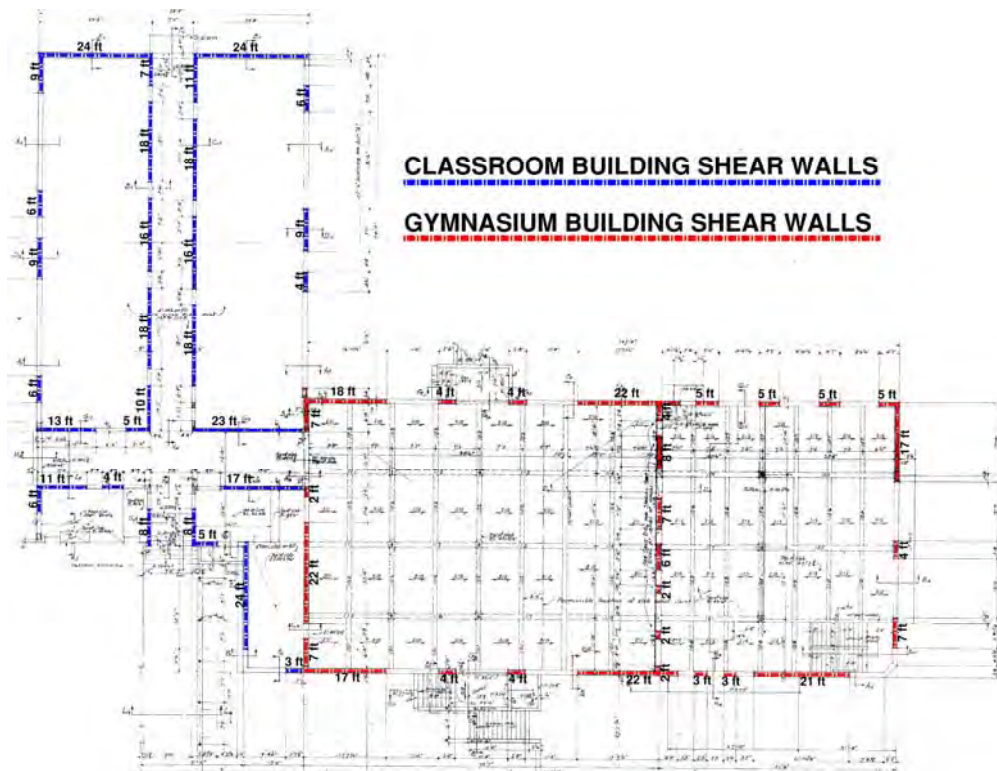
Building Description

The Hermosa Beach Community Center is actually a few seismically separated buildings as highlighted in the site map below.

- The Auditorium building (shown in red in sitemap below) was believed to be built in 1911 and makes up the north portion of the community center (closest to Pier Ave). Original construction drawings are not available. Based on observations:
 - o The footprint of this portion is approximately 20,000 s.f.
 - o Basic lateral-force-resisting system appears to be reinforced board formed concrete shear walls.
 - o Steel roof trusses with hung steel mezzanine and catwalks with a theater fly-tower.
 - o Informed that the fly tower is currently shut down due to previous damage from an earthquake.
- The Gymnasium and Classroom buildings (shown in green and blue below) were built in 1939 and makes up the south portion of the community center. Basic lateral-force-resisting system of both buildings is reinforced concrete shear wall.
 - o The Classroom building is one-story with approximate footprint of 6,500 s.f. Building construction is of concrete roof slab supported by steel open web joists spanning between concrete walls. And continuous strip footing supporting the concrete walls. The Classroom building is seismically separated from the Gymnasium building by a 3" joint.
 - o The Gymnasium is a two-story building with approximate footprint of 8,000 s.f. Roof construction is of concrete slab. A portion of the concrete roof is supported by steel joists and trusses. And the rest of the roof supported by concrete beams and girders. The concrete beams and steel trusses are supported by concrete columns and bearing walls. The walls and columns transfer loads to the soil with concrete spread and continuous footings.

An aerial photograph of a school campus. Three main buildings are highlighted with semi-transparent colored overlays: a large red building labeled 'AUDITORIUM/THEATER AND CLASSROOM BLDG.', a green building labeled 'GYMNASIUM BLDG.', and a blue building labeled 'CLASSROOM BLDG.'. The red building is at the top, the green building is in the middle, and the blue building is at the bottom right. To the left of the green building is a large parking lot filled with cars. To the right of the blue building is a green lawn area with a small gazebo-like structure. A road with a crosswalk is visible at the top right. The image is oriented with the top of the page towards the top-left of the image.

Lateral Force Resisting System (Concrete shear wall):



Site Visit

Jacqueline Vinkler and Patrick Doan, Structural Engineers from John A. Martin and Associates visited the site on March 23, 2015, to observe and record the type, nature and physical condition of the community center buildings. Any significant deviations from the original construction documents that were observed are included on the Available Drawings in this report.

During the site visit, the evaluator visually observed the following conditions:

1. Observed the configuration of the structure:
 - a. approximate length, width, and height of the structure
 - b. number of stories in the structure including a basement and/or penthouse(s)
 - c. height of adjacent buildings and location of seismic separation joints
 - d. ground elevation around perimeter of building
2. Developed other needed data as required when original documents are not available, such as:
 - a. general measurement and sketching of building and/or addition/remodel work
3. Observed the configuration of the vertical and lateral systems, where structure was visible, including the foundation.
4. Checked the condition of the building to observe signs of:
 - a. deterioration or cracking of concrete or masonry units and mortar
 - b. rusting of steel reinforcing where exposed
 - c. significant rusting, corrosion, or other deterioration of steel members
 - d. evidence of excessive foundation movement such as settlement or heave
 - e. deterioration of foundation elements
5. Identified special conditions and/or deviations from existing drawings including:
 - a. significant variation of finish materials that would affect building weight
 - b. significant variations of openings (size/location) that would affect the lateral stiffness of the structure

Photographs



Figure 1 – Steel Roof Trusses in Gymnasium



Figure 2 –Gymnasium Floor



Figure 3 – North Exterior Wall Looking East



Figure 4 – North Exterior Wall Looking West

Available Drawings

Project Name: Class Room, Cafeteria, Gymnasium, & Library Addition Pier Ave. School
(Dated 01/20/1939)

Architect: D. D. Smith

Engineer: none

Design Code: Uniform Building Code 1937 Edition

Drawing Sheets: 1 thru 20

State Approvals: State of California Department of Public Works Division of Architecture
Application No. 2777
Date: 1-19-1939
Signed: C. H. Kromei

Structural Evaluation

Evaluation Approach

1. Review available original structural drawings provided by your office, including subsequent modifications, if applicable. Determine the Building Type.
2. Conduct a building walk-through to visually assess the building's current structural condition and its conformity to original structural drawings and subsequent modifications, if applicable. This visit is limited to external observation only and no invasive work will be provided.
3. Perform a preliminary seismic evaluation of the building, using ASCE 31-03 "Seismic Evaluation of Existing Buildings" Tier One Evaluation to identify structural deficiencies. This involves responding to a series of True/False statements as applicable to the structure. Based on the above and our professional experience and expertise, our office will assess the structural capability of the existing building to resist a major earthquake. There may be minor amounts of necessary structural calculations as required by ASCE 31-03 "Seismic Evaluation of Existing Buildings" Tier One Evaluation.
4. Perform "Quick Checks" as required by ASCE 31-03 "Seismic Evaluation of Existing Buildings" Tier One Evaluation.
5. Identify potential significant structural deficiencies based on Life Safety Performance Level (LS)¹. This report indicates the areas in need of seismic retrofit with general description/type of retrofit only and whether such a retrofit is structurally feasible. This initial evaluation is not intended for bidding/construction purposes.
6. Summarize the results and findings.

Summary of Geotechnical Criteria

A summary of the assumed geotechnical criteria is presented here:

Short Period Site Coefficient (0.2 s)	$F_a = 1.0$	(per ASCE 7-10, Table 11.4-1)
Long Period Site Coefficient (1.0 s)	$F_v = 1.5$	(per ASCE 7-10, Table 11.4-2)
Soil Profile Type	Site Class D	(per ASCE 7-10, Sec. 11.4.2)
Design Spectral Acceleration (0.2 s)	$S_{DS} = 1.085g$	(per ASCE 7-10, Eqn. 11.4-3)
Design Spectral Acceleration (1.0 s)	$S_{D1} = 0.619g$	(per ASCE 7-10, Eqn. 11.4-4)

Liquefaction Potential:	Contingent on geotechnical report.
Slope Failure Potential:	Contingent on geotechnical report.
Surface Fault Rupture Potential:	Contingent on geotechnical report.

Summary of Material Testing

It is our understanding a material testing program is not available at this time.

¹ Expected building performance for LS includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage to nonstructural component is non-life threatening.

ASCE 31-03 Evaluation Statements

CLASSROOM BUILDING

Screening Phase (Tier 1)

3.7.9 Basic Structural Checklist for Building Type C2: Concrete Shear Walls with Stiff Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

C3.7.9 Basic Structural Checklist for Building Type C2

These buildings have floor and roof framing that consists of cast-in-place concrete slabs, concrete beams, one-way joists, two-way waffle joists, or flat slabs. Floors are supported on concrete columns or bearing walls. Lateral forces are resisted by cast-in-place concrete shear walls. In older construction, shear walls are lightly reinforced but often extend throughout the building. In more recent construction, shear walls occur in isolated locations and are more heavily reinforced with boundary elements and closely spaced ties to provide ductile performance. The diaphragms consist of concrete slabs and are stiff relative to the walls. Foundations consist of concrete spread footings, mat foundations, or deep foundations.

Building System

- | | | | |
|-----|----|-------|---|
| (C) | NC | N/A | LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1) |
| C | NC | (N/A) | MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3) |
| (C) | NC | N/A | WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1) |
| (C) | NC | N/A | SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2) |
| (C) | NC | N/A | GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3) |
| (C) | NC | N/A | VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4) |
| (C) | NC | N/A | MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5) |

CLASSROOM BUILDING**Screening Phase (Tier 1)**

- | | | | |
|-----|----|-------|---|
| (C) | NC | N/A | TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6) |
| (C) | NC | N/A | DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4) |
| C | NC | (N/A) | POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used. (Tier 2: Sec. 4.3.3.5) |
| (C) | NC | N/A | CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.9) |

Lateral-Force-Resisting System

- | | | | |
|-----|----|-------|---|
| C | NC | (N/A) | COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical-load-carrying system. (Tier 2: Sec. 4.4.1.6.1) |
| (C) | NC | N/A | REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1) |
| (C) | NC | N/A | SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the greater of 100 psi or $2\sqrt{f'_c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.1) |
| (C) | NC | N/A | REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be not less than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.2) |

Connections

- | | | | |
|-----|----|-----|--|
| (C) | NC | N/A | TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1) |
| (C) | NC | N/A | FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5) |

CLASSROOM BUILDING**Screening Phase (Tier 1)****3.7.9S Supplemental Structural Checklist for Building Type C2: Concrete Shear Walls with Stiff Diaphragms**

This Supplemental Structural Checklist shall be completed where required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral-Force-Resisting System

- | | | | |
|-----|----|-------|---|
| C | NC | (N/A) | DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the components for Life Safety and shall meet the requirements of Sections 4.4.1.4.9, 4.4.1.4.10, 4.4.1.4.11, 4.4.1.4.12 and 4.4.1.4.15 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.6.2) |
| C | NC | (N/A) | FLAT SLABS: Flat slabs/plates not part of lateral-force-resisting system shall have continuous bottom steel through the column joints for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.6.3) |
| C | NC | (N/A) | COUPLING BEAMS: The stirrups in coupling beams over means of egress shall be spaced at or less than $d/2$ and shall be anchored into the confined core of the beam with hooks of 135° or more for Life Safety. All coupling beams shall comply with the requirements above and shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.3) |
| (C) | NC | N/A | OVERTURNING: All shear walls shall have aspect ratios less than 4-to-1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.4) |
| (C) | NC | N/A | CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2-to-1, the boundary elements shall be confined with spirals or ties with spacing less than $8d_b$. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.5) |
| (C) | NC | N/A | REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.6) |
| (C) | NC | N/A | WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the unsupported height or length, whichever is shorter, nor less than 4 inches. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.7) |

Diaphragms

- | | | | |
|-----|----|-------|---|
| (C) | NC | N/A | DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1) |
| (C) | NC | N/A | OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4) |
| (C) | NC | N/A | PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7) |
| C | NC | (N/A) | DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8) |

CLASSROOM BUILDING**Screening Phase (Tier 1)****Connections****C NC (N/A)**

UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

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CLASSROOM BUILDING**Screening Phase (Tier 1)****3.8 Geologic Site Hazards and Foundations Checklist**

This Geologic Site Hazards and Foundations Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Geologic Site Hazards

The following statements shall be completed for buildings in levels of high or moderate seismicity.

- | | | | |
|---|----|-----|--|
| C | NC | N/A | LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.1.1) |
| C | NC | N/A | SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure. (Tier 2: Sec. 4.7.1.2) |
| C | NC | N/A | SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated. (Tier 2: Sec. 4.7.1.3) |

Condition of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

- | | | | |
|---|----|-----|--|
| C | NC | N/A | FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.1) |
|---|----|-----|--|

The following statement shall be completed for buildings in levels of high or moderate seismicity being evaluated to the Immediate Occupancy Performance Level.

- | | | | |
|---|----|-----|---|
| C | NC | N/A | DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.2) |
|---|----|-----|---|

Capacity of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

- | | | | |
|---|----|-----|---|
| C | NC | N/A | POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 feet for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.3.1) |
|---|----|-----|---|

The following statements shall be completed for buildings in levels of moderate seismicity being evaluated to the Immediate Occupancy Performance Level and for buildings in levels of high seismicity.

- | | | | |
|---|----|-----|---|
| C | NC | N/A | OVERTURNING: The ratio of the horizontal dimension of the lateral-force-resisting system at the foundation level to the building height (base/height) shall be greater than $0.6S_a$. (Tier 2: Sec. 4.7.3.2) |
|---|----|-----|---|

CLASSROOM BUILDING**Screening Phase (Tier 1)**

- | | | | |
|----------|----|------------|--|
| C | NC | N/A | TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C. (Section 3.5.2.3.1, Tier 2: Sec. 4.7.3.3) |
| C | NC | N/A | DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.4) |
| C | NC | N/A | SLOPING SITES: The difference in foundation embedment depth from one side of the building to another shall not exceed one story in height. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.5) |

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GYMNASIUM BUILDING

Screening Phase (Tier 1)

3.7.9 Basic Structural Checklist for Building Type C2: Concrete Shear Walls with Stiff Diaphragms

This Basic Structural Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

C3.7.9 Basic Structural Checklist for Building Type C2

These buildings have floor and roof framing that consists of cast-in-place concrete slabs, concrete beams, one-way joists, two-way waffle joists, or flat slabs. Floors are supported on concrete columns or bearing walls. Lateral forces are resisted by cast-in-place concrete shear walls. In older construction, shear walls are lightly reinforced but often extend throughout the building. In more recent construction, shear walls occur in isolated locations and are more heavily reinforced with boundary elements and closely spaced ties to provide ductile performance. The diaphragms consist of concrete slabs and are stiff relative to the walls. Foundations consist of concrete spread footings, mat foundations, or deep foundations.

Building System

- | | | | |
|-----|------|-------|---|
| (C) | NC | N/A | LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1) |
| C | NC | (N/A) | MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3) |
| (C) | NC | N/A | WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1) |
| (C) | NC | N/A | SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2) |
| (C) | NC | N/A | GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3) |
| C | (NC) | N/A | VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4) |
| (C) | NC | N/A | MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5) |

GYMNASIUM BUILDING**Screening Phase (Tier 1)**

- | | | | |
|-----|----|-------|---|
| (C) | NC | N/A | TORSION: The estimated distance between the story center of mass and the story center of rigidity shall be less than 20 percent of the building width in either plan dimension for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.6) |
| (C) | NC | N/A | DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force-resisting elements. (Tier 2: Sec. 4.3.3.4) |
| C | NC | (N/A) | POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used. (Tier 2: Sec. 4.3.3.5) |
| (C) | NC | N/A | CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.9) |

Lateral-Force-Resisting System

- | | | | |
|-----|----|-------|---|
| C | NC | (N/A) | COMPLETE FRAMES: Steel or concrete frames classified as secondary components shall form a complete vertical-load-carrying system. (Tier 2: Sec. 4.4.1.6.1) |
| (C) | NC | N/A | REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1) |
| (C) | NC | N/A | SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the greater of 100 psi or $2\sqrt{f'_c}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.1) |
| (C) | NC | N/A | REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be not less than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.2) |

Connections

- | | | | |
|-----|----|-----|--|
| (C) | NC | N/A | TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2: Sec. 4.6.2.1) |
| (C) | NC | N/A | FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5) |

GYMNASIUM BUILDING

Screening Phase (Tier 1)

3.7.9S Supplemental Structural Checklist for Building Type C2: Concrete Shear Walls with Stiff Diaphragms

This Supplemental Structural Checklist shall be completed where required by Table 3-2. The Basic Structural Checklist shall be completed prior to completing this Supplemental Structural Checklist.

Lateral-Force-Resisting System

- | | | | |
|-----|----|-------|---|
| C | NC | (N/A) | DEFLECTION COMPATIBILITY: Secondary components shall have the shear capacity to develop the flexural strength of the components for Life Safety and shall meet the requirements of Sections 4.4.1.4.9, 4.4.1.4.10, 4.4.1.4.11, 4.4.1.4.12 and 4.4.1.4.15 for Immediate Occupancy. (Tier 2: Sec. 4.4.1.6.2) |
| C | NC | (N/A) | FLAT SLABS: Flat slabs/plates not part of lateral-force-resisting system shall have continuous bottom steel through the column joints for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.1.6.3) |
| C | NC | (N/A) | COUPLING BEAMS: The stirrups in coupling beams over means of egress shall be spaced at or less than $d/2$ and shall be anchored into the confined core of the beam with hooks of 135° or more for Life Safety. All coupling beams shall comply with the requirements above and shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.3) |
| (C) | NC | N/A | OVERTURNING: All shear walls shall have aspect ratios less than 4-to-1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.4) |
| (C) | NC | N/A | CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2-to-1, the boundary elements shall be confined with spirals or ties with spacing less than $8d_b$. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.5) |
| (C) | NC | N/A | REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.6) |
| (C) | NC | N/A | WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the unsupported height or length, whichever is shorter, nor less than 4 inches. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.7) |

Diaphragms

- | | | | |
|-----|----|-------|---|
| (C) | NC | N/A | DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1) |
| (C) | NC | N/A | OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4) |
| (C) | NC | N/A | PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7) |
| C | NC | (N/A) | DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8) |

GYMNASIUM BUILDING**Screening Phase (Tier 1)****Connections****C NC** **N/A**

UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

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GYMNASIUM BUILDING**Screening Phase (Tier 1)****3.8 Geologic Site Hazards and Foundations Checklist**

This Geologic Site Hazards and Foundations Checklist shall be completed where required by Table 3-2.

Each of the evaluation statements on this checklist shall be marked Compliant (C), Non-compliant (NC), or Not Applicable (N/A) for a Tier 1 Evaluation. Compliant statements identify issues that are acceptable according to the criteria of this standard, while non-compliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For non-compliant evaluation statements, the design professional may choose to conduct further investigation using the corresponding Tier 2 Evaluation procedure; corresponding section numbers are in parentheses following each evaluation statement.

Geologic Site Hazards

The following statements shall be completed for buildings in levels of high or moderate seismicity.

- | | | | |
|---|----|-----|--|
| C | NC | N/A | LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance shall not exist in the foundation soils at depths within 50 feet under the building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.1.1) |
| C | NC | N/A | SLOPE FAILURE: The building site shall be sufficiently remote from potential earthquake-induced slope failures or rockfalls to be unaffected by such failures or shall be capable of accommodating any predicted movements without failure. (Tier 2: Sec. 4.7.1.2) |
| C | NC | N/A | SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site is not anticipated. (Tier 2: Sec. 4.7.1.3) |

Condition of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

- | | | | |
|---|----|-----|--|
| C | NC | N/A | FOUNDATION PERFORMANCE: There shall be no evidence of excessive foundation movement such as settlement or heave that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.1) |
|---|----|-----|--|

The following statement shall be completed for buildings in levels of high or moderate seismicity being evaluated to the Immediate Occupancy Performance Level.

- | | | | |
|---|----|-----|---|
| C | NC | N/A | DETERIORATION: There shall not be evidence that foundation elements have deteriorated due to corrosion, sulfate attack, material breakdown, or other reasons in a manner that would affect the integrity or strength of the structure. (Tier 2: Sec. 4.7.2.2) |
|---|----|-----|---|

Capacity of Foundations

The following statement shall be completed for all Tier 1 building evaluations.

- | | | | |
|---|----|-----|---|
| C | NC | N/A | POLE FOUNDATIONS: Pole foundations shall have a minimum embedment depth of 4 feet for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.7.3.1) |
|---|----|-----|---|

The following statements shall be completed for buildings in levels of moderate seismicity being evaluated to the Immediate Occupancy Performance Level and for buildings in levels of high seismicity.

- | | | | |
|---|----|-----|---|
| C | NC | N/A | OVERTURNING: The ratio of the horizontal dimension of the lateral-force-resisting system at the foundation level to the building height (base/height) shall be greater than $0.6S_a$. (Tier 2: Sec. 4.7.3.2) |
|---|----|-----|---|

GYMNASIUM BUILDING**Screening Phase (Tier 1)**

- | | | | |
|----------|----|------------|--|
| C | NC | N/A | TIES BETWEEN FOUNDATION ELEMENTS: The foundation shall have ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Class A, B, or C. (Section 3.5.2.3.1, Tier 2: Sec. 4.7.3.3) |
| C | NC | N/A | DEEP FOUNDATIONS: Piles and piers shall be capable of transferring the lateral forces between the structure and the soil. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.4) |
| C | NC | N/A | SLOPING SITES: The difference in foundation embedment depth from one side of the building to another shall not exceed one story in height. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.7.3.5) |

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Base Shear Comparison

Estimated Classroom Building Mass: $W=1087\text{kips}$

Estimated Gymnasium Building Mass: $W=3167\text{kips}$

Design Code: 1940 UBC

Seismic

Seismic Zone: 3
SDS: N/A
Importance Factor: Not Used so 1.00
Building Type: Box System
Base Shear Coeff: $V=0.08W$ (ASD, both directions)
Base Shear: **Classroom Building $V=87$ Kips (ASD)**
Gymnasium Building $V=253$ Kips (ASD)
Allowable Story Drift: Standard Practice

Design Code: CBC 2013

Seismic

Seismic Zone: N/A
SDS: 1.085
Importance Factor: 1.0
Building Type: Ordinary Reinforced Concrete Shear Walls
Base Shear Coeff: $V=0.271W$ (both directions) (LRFD)
 $V=0.190W$ (ASD)
Base Shear: **Classroom Building $V=207$ Kips (ASD)**
Gymnasium Building $V=602$ Kips (ASD)
Allowable Story Drift: $0.025h_{sx}$

Design Code: ASCE 31-03

Seismic

Seismic Zone: N/A
SDS: 1.085
Importance Factor: m-factor for LS: 4.0
Building Type: C2: Reinforced Concrete Shear Walls with Stiff Diaphragms
Base Shear Coeff: Classroom Building $V=1.519W/m = 0.379$ (both directions) (LRFD)
 $V=0.265$ (ASD)
Gymnasium Building $V=1.302W/m = 0.326$ (both directions) (LRFD)
 $V=0.228$ (ASD)
Base Shear: **Classroom Building $V=288$ Kips (ASD)**
Gymnasium Building $V=722$ Kips (ASD)
Allowable Story Drift: N/A

Summary

The Hermosa Beach Community Center is a complex of buildings that have greatly surpassed the average life span of a typical building. There are three separate structures within what is known as the Community Center building: Auditorium Building, Classroom Building, and Gymnasium.

A limited ASCE 31 evaluation was performed for the Auditorium Building, constructed around 1911, since original construction documents are not available. Under the ASCE 31 standard, the existing building can be evaluated for Life Safety Performance Level (LS) or Immediate Occupancy Performance Level (IO). Expected building performance for LS includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage to nonstructural component is non-life threatening. And expected building performance for IO includes damage to both structural and nonstructural components during a design earthquake such that the damage is not life threatening, so as to permit immediate occupancy of the building after the a design earthquake, and the damage is repairable while the building is occupied. Based on use of the building, only Life Safety Performance Level² was considered. Deficiencies have been assumed based on similar type of construction as the Classroom and Gymnasium buildings, yet 20 years older and with known seismic related damage. This includes inadequate reinforcement of shear walls and inadequate out-of-plane connections. Destructive materials testing and as-built drawings of the existing structure are needed to confirm actual retrofit.

Our ASCE 31-03 Tier One Evaluation of the Classroom and Gymnasium buildings that were built in 1939 has revealed these two buildings were built remarkably well. There is only one noted structural deficiency for the Gymnasium building and no deficiencies identified for the Classroom Building.

The deficiency found in the Gymnasium building is a vertical discontinuity, which may be mitigated upon further investigation (Tier Two Evaluation); but likely will require a retrofit to meet Life-Safety Performance Level³. Possible solution would be to add a new shear wall (with footing) below the existing discontinuous wall.

However, the Tier One evaluation is meant to be a very broad overview of the building to identify major structural deficiencies. Because of the vintage and lateral system of the Classroom and Gymnasium buildings, it is possible that other deficiencies could be uncovered with more detailed analysis (Tier Two or Three Evaluation), and specifically when evaluating to meet Immediate Occupancy performance level.

In conclusion, the extent and cost of structural retrofit of these three buildings to achieve Life-Safety performance level appears to be feasible. Based on use of the building, the Auditorium

² Per ASCE 7-31, Life Safety Performance Level is defined as building performance that includes damage to both structural and nonstructural components during a design earthquake, such that partial or total collapse does not occur and damage to nonstructural component is non-life threatening.

³ Per ASCE 7-31, Immediate Occupancy Performance Level is defined as building performance that includes damage to both structural and nonstructural components during a design earthquake such that the damage is not life threatening, so as to permit immediate occupancy of the building after the a design earthquake, and the damage is repairable while the building is occupied.

is not being considered for Immediate Occupancy performance level. Extent of structural retrofit of Gymnasium and Classroom buildings required to achieve Immediate Occupancy performance level, can only be determined after a Tier Two evaluation is completed.

Appendix A – Quick Check Calculations



JOHN A. MARTIN and ASSOCIATES, INC. □ STRUCTURAL ENGINEERS

Architect:	_____	Sheet	_____
Project:	Hermosa Beach Community Center	Job No	14086
	Seismic Evaluation	Date	4/3/15
	_____	Engineer	BR

Appendix A – Quick Check Calculations



Design Maps Summary Report

User-Specified Input

Report Title HB Community CTR

Mon March 16, 2015 17:13:15 UTC

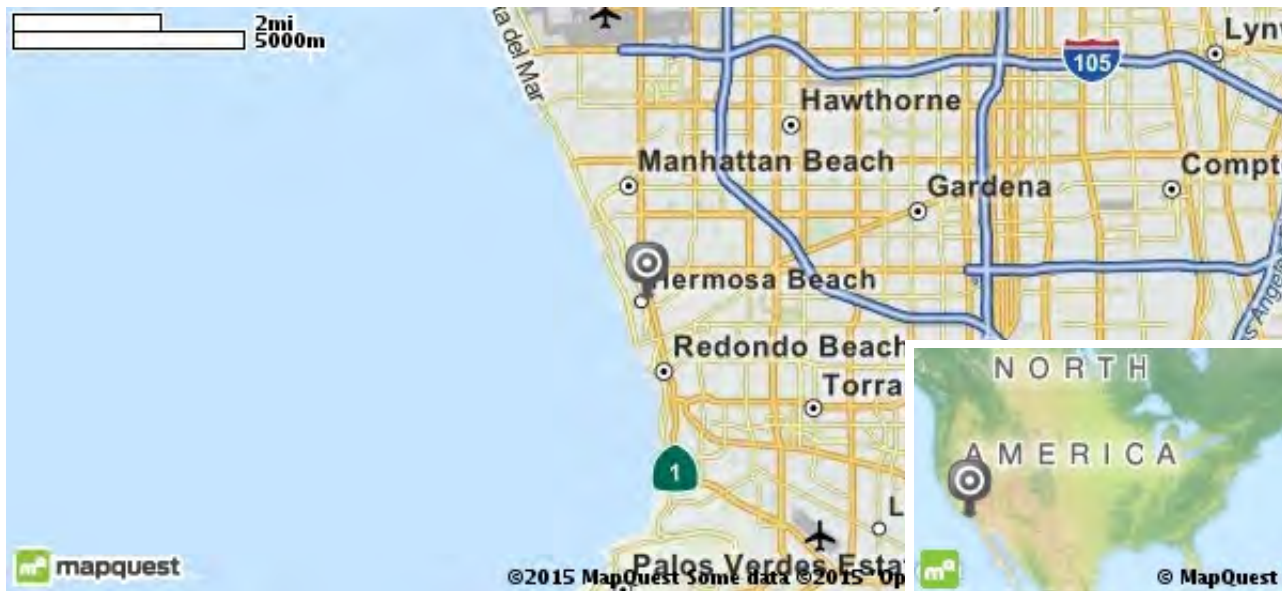
Building Code Reference Document ASCE 7-10 Standard

(which utilizes USGS hazard data available in 2008)

Site Coordinates 33.86442°N, 118.39391°W

Site Soil Classification Site Class D – “Stiff Soil”

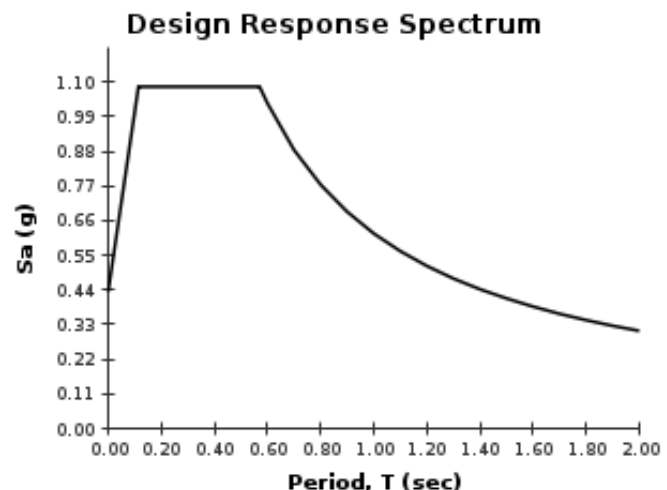
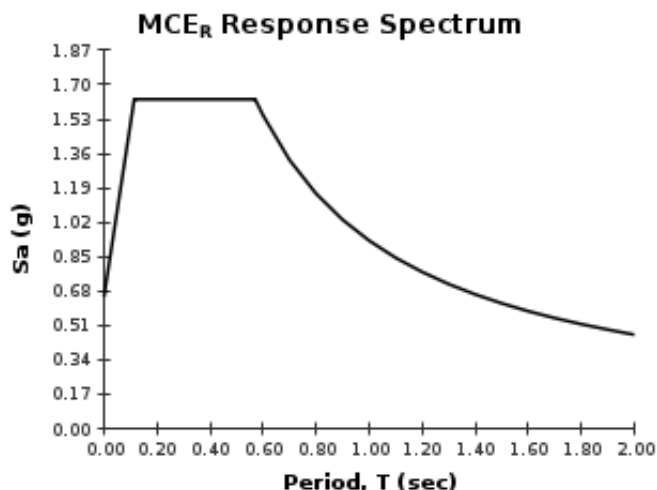
Risk Category IV (e.g. essential facilities)



USGS-Provided Output

$S_S = 1.628 \text{ g}$	$S_{MS} = 1.628 \text{ g}$	$S_{DS} = 1.085 \text{ g}$
$S_1 = 0.619 \text{ g}$	$S_{M1} = 0.929 \text{ g}$	$S_{D1} = 0.619 \text{ g}$

For information on how the S_S and S_1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the “2009 NEHRP” building code reference document.



For PGA_M , T_L , C_{RS} , and C_{R1} values, please [view the detailed report](#).



Architect:

Project:

Hermosa Beach

Job #:

14086

Date:

3/18/2015

Engineer:

BR

Area:

R1: Concrete Roof with Steel Joists

Dead Load:

Item	Gravity	Lateral
Compo Roof + Re-Roof	7.00	7.00
3" Concrete Slab	38.00	38.00
Steel Joists @ 3'-0" OC	4.00	4.00
Ceiling	5.00	5.00
MEP/Misc	6.00	6.00
Partitions	-	5.00
Total (psf) =	60.00	65.00

Live Load:

Roof (psf) = 20.00 Reducible

Area:

R2: Concrete Roof with Steel Joists & Trusses

Dead Load:

Item	Gravity	Lateral
Compo Roof + Re-Roof	7.00	7.00
3" Concrete Slab	38.00	38.00
Steel Joists @ 3'-0" OC	4.00	4.00
Steel Trusses @ 15'-0" OC	6.00	6.00
MEP/Misc	5.00	5.00
Total (psf) =	60.00	60.00

Live Load:

Roof (psf) = 20.00 Reducible

Area:

R3: Concrete Roof with 4" Flat Slab

Dead Load:

Item	Gravity	Lateral
Compo Roof + Re-Roof	7.00	7.00
4" Concrete Slab	50.00	50.00
10"x16" Concrete Beams	19.00	19.00
12"x30" Concrete Girders	24.00	24.00
14"x14" Concrete Columns	-	5.00
Ceiling	5.00	5.00
MEP/Misc	5.00	5.00
Partitions	-	5.00
Total (psf) =	110.00	120.00

Live Load:

Roof (psf) = 20.00 Reducible



Architect:

Project:

Hermosa Beach

Job #:

14086

Date:

3/18/2015

Engineer:

BR

Area:**R4: Concrete Roof with 5" Flat Slab**Dead Load:

Item	Gravity	Lateral
Compo Roof + Re-Roof	7.00	7.00
5" Concrete Slab	63.00	63.00
Ceiling	5.00	5.00
MEP/Misc	5.00	5.00
Partitions	-	5.00
Total (psf) =	80.00	85.00

Live Load:

Roof (psf) = 20.00 Reducible

Area:**F1: Concrete Floor with 4" Flat Slab**Dead Load:

Item	Gravity	Lateral
Flooring	5.00	5.00
4" Concrete Slab	50.00	50.00
Ceiling	5.00	5.00
11"x16" Concrete Beams	20.00	20.00
14"x36" Concrete Girders	35.00	35.00
14"x14" Concrete Columns	-	10.00
MEP/Misc	5.00	5.00
Partitions	-	5.00
Total (psf) =	120.00	135.00

Live Load:

Roof (psf) = 20.00 Reducible

Area:**F2: Concrete Floor with 5" Flat Slab**Dead Load:

Item	Gravity	Lateral
Flooring	5.00	5.00
5" Concrete Slab	63.00	63.00
11"x20" Concrete Beams	20.00	20.00
12"x28" Concrete Girders	22.00	22.00
14"x14" Concrete Columns	-	5.00
MEP/Misc	5.00	5.00
Total (psf) =	115.00	120.00

Live Load:

Roof (psf) = 20.00 Reducible



Architect:		Job #:	14086
Project:	Hermosa Beach	Date:	3/18/2015
		Engineer:	BR

Area: Concrete Walls

Dead Load:

Item	Gravity	Lateral
8" Wall	100.00	100.00
Total Horizontal (psf) =	100.00	100.00
12" Wall	150.00	150.00
Total Horizontal (psf) =	150.00	150.00



JOHN A. MARTIN and ASSOCIATES, INC. □ STRUCTURAL ENGINEERS

Architect:		Sheet	
Project:	Hermosa Beach Community Center	Job no	14086
	ASCE 31 Analysis	Date	3/18/2015
	Base Shear Calculation	Engineer	BR

Building 1

ASCE 31-03 Base Shear

$V = C_s W =$	1.519W	Section 3.5.2.1 (eq. 3-1)
$C =$	1.4	For one-story C2 Building Type per table 3-4
$S_{D1} =$	0.619	
$S_{DS} =$	1.085	
$C_t =$	0.02	all other framing system
$h_n =$	15 ft	height in feet above base to roof
$\beta =$	0.75	all other framing system
$T = C_t h_n^\beta =$	0.152sec	fundamental period
$S_{D1}/T =$	4.061	
$S_a =$	1.085	

UBC 1940 Base Shear

$F = CW =$	0.080W	Sec. 2312 (b)
$C = 4 \times 0.02 =$	0.080	Per table 23-C buildings in zone 3 shall have "C" multiplied by 4

ASCE 7-10 Base Shear

$V = C_s W =$	0.271W	ASCE 7-10 Eq. 12.8-1
$C_s = S_{DS}/(R/I_e) =$	0.271	ASCE 7-10 Eq. 12.8-2
$C_{smin} = 0.5 \times S_1/(R/I_e) =$	0.078	ASCE 7-10 Eq. 12.8-6
$C_{smax} = S_{D1}/(TR/I_e) =$	1.015	ASCE 7-10 Eq. 12.8-3
$R =$	4	Ordinary Reinforced Concrete (Bearing) Shear Walls
$I_e =$	1	Risk Category IV building
$T = C_t h_n^x =$	0.152sec	
$x =$	0.75	all other framing system
$C_t =$	0.02	all other framing system
$h_n =$	15 ft	height in feet above base to roof
$S_1 =$	0.621	

In-Plane Shear Wall Seismic Coefficient Comparison

	LS	IO
UBC 1958	0.080W	0.080W
ASCE 31-03	0.380W ¹	0.760W ¹
ASCE 7-10	0.181W ²	0.271W ²

¹These seismic coefficients are calculated by taking the ASCE 31-03 base shear coefficient and dividing it by the respective m factors for life safety (m=4.0) and immediate occupancy (m=2.0) per table 3-7.

²These seismic coefficients are calculated by using an importance factor of $I_e=1.0$ for life safety and $I_e=1.5$ for immediate occupancy.



JOHN A. MARTIN and ASSOCIATES, INC. □ STRUCTURAL ENGINEERS

Architect:		Sheet	
Project:	Hermosa Beach Community Center	Job no	14086
	ASCE 31 Analysis	Date	3/18/2015
	Base Shear Calculation	Engineer	BR

Building 2

ASCE 31-03 Base Shear

$V = C_s W =$	1.302W	Section 3.5.2.1 (eq. 3-1)
$C =$	1.2	For one-story C2 Building Type per table 3-4
$S_{D1} =$	0.619	
$S_{DS} =$	1.085	
$C_t =$	0.02	all other framing system
$h_n =$	38 ft	height in feet above base to roof
$\beta =$	0.75	all other framing system
$T = C_t h_n^\beta =$	0.306sec	fundamental period
$S_{D1}/T =$	2.022	
$S_a =$	1.085	

UBC 1940 Base Shear

$F = CW =$	0.080W	Sec. 2312 (b)
$C = 4 \times 0.02 =$	0.080	Per table 23-C buildings in zone 3 shall have "C" multiplied by 4

ASCE 7-10 Base Shear

$V = C_s W =$	0.271W	ASCE 7-10 Eq. 12.8-1
$C_s = S_{DS}/(R/I_e) =$	0.271	ASCE 7-10 Eq. 12.8-2
$C_{smin} = 0.5 \times S_1/(R/I_e) =$	0.078	ASCE 7-10 Eq. 12.8-6
$C_{smax} = S_{D1}/(T R/I_e) =$	0.506	ASCE 7-10 Eq. 12.8-3
$R =$	4	Ordinary Reinforced Concrete (Bearing) Shear Walls
$I_e =$	1	Risk Category IV building
$T = C_t h_n^x =$	0.306sec	
$x =$	0.75	all other framing system
$C_t =$	0.02	all other framing system
$h_n =$	38 ft	height in feet above base to roof
$S_1 =$	0.621	

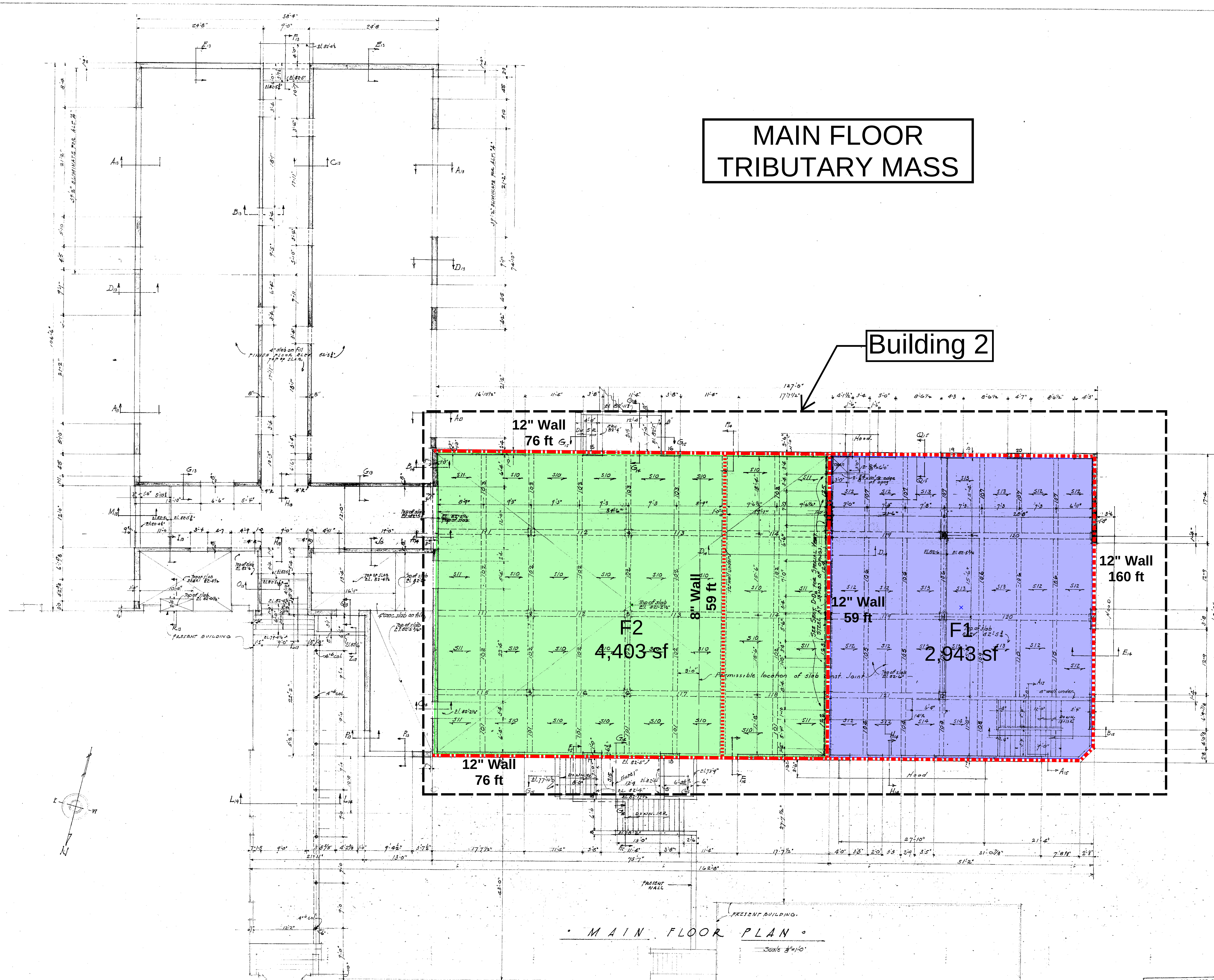
In-Plane Shear Wall Seismic Coefficient Comparison		
	LS	IO
UBC 1958	0.080W	0.080W
ASCE 31-03	0.326W ¹	0.651W ¹
ASCE 7-10	0.181W ²	0.271W ²

¹These seismic coefficients are calculated by taking the ASCE 31-03 base shear coefficient and dividing it by the respective m factors for life safety (m=4.0) and immediate occupancy (m=2.0) per table 3-7.

²These seismic coefficients are calculated by using an importance factor of $I_e=1.0$ for life safety and $I_e=1.5$ for immediate occupancy.

MAIN FLOOR TRIBUTARY MASS

Building 2



NOTE:
For typical details, general notes and schedules see
Sheet #16 For structural steel details see sheet #17
For loading schedules and details see sheet #10

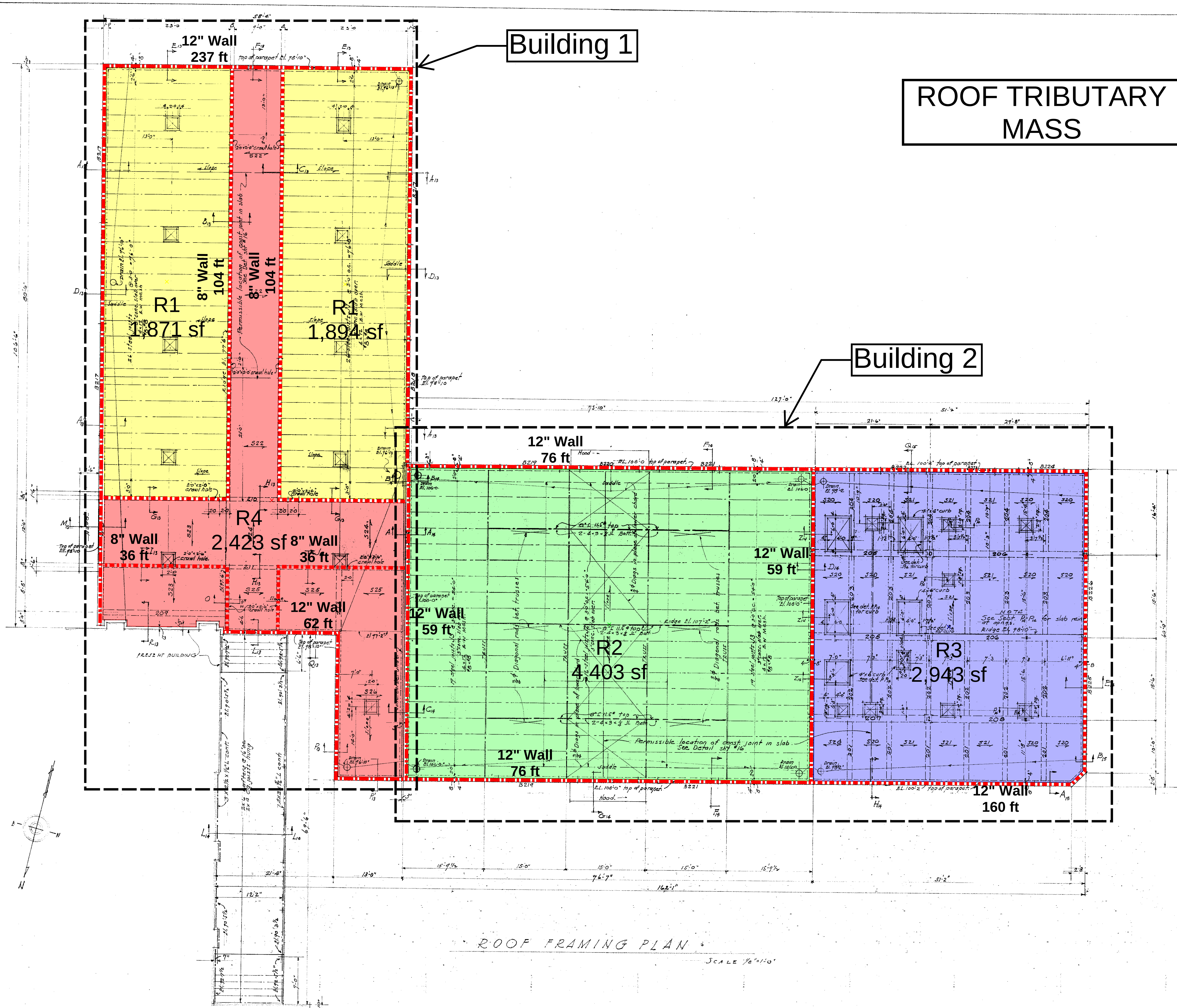
MAIN FLOOR PLAN
Scale 1/4\"/>

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOL PLANNING
1-20-1939
C. H. Kromer
CHIEF ARCHITECT

CONTRACTOR MUST
VERIFY ALL
DIMENSIONS AT THE
BUILDING.

APPROVED 1-20-1939 RESIDENTS OF BOARD C. H. Kromer CHIEF ARCHITECT	CLASS RM, CAFETERIA GYMNASIUM & LIBRARY ADDITION, PIER AVE. SCHOOL PIER AVE. & CAMINO REAL HERMOSA BEACH, CALIF. MAIN FLOOR PLAN JOB NO. 856 DRAWN BY D. D. Smith DATE JAN. 1939 MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CALIF.
--	---

County Superintendent of Schools
Los Angeles
JAN 19 1939
By S. Dwyer
Superintendent



Building 1

ROOF TRIBUTARY
MASS

Building 2

ROOF FRAMING PLAN
SCALE 1/8"=1'-0"

NOTE:
For typical details, general notes and schedules
see sheet #16 For structural steel details
see sheet #17 For footing schedules and details
see sheet #10

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
1-20-1939
Approved *Chas. Curran*
1-19-39

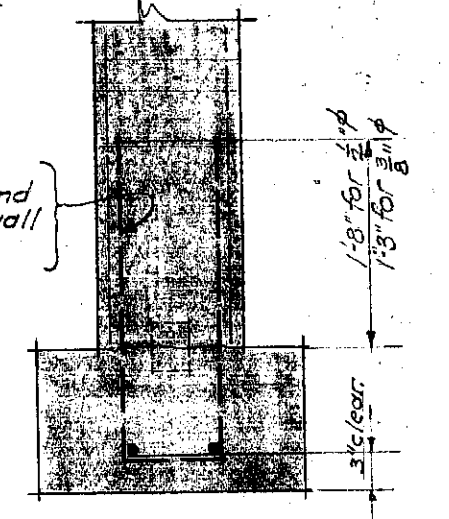
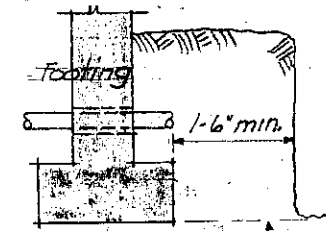
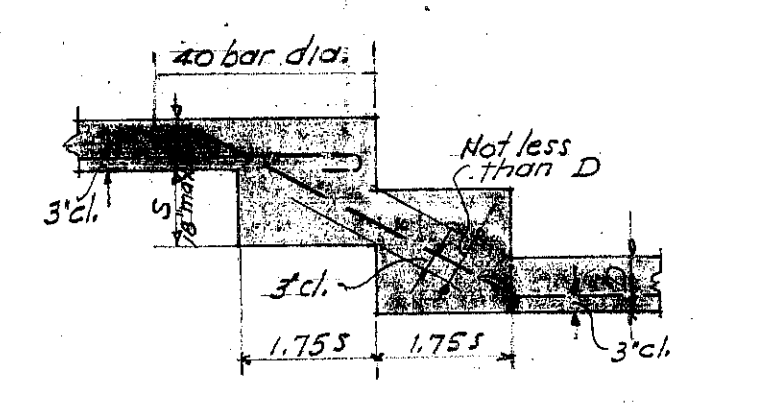
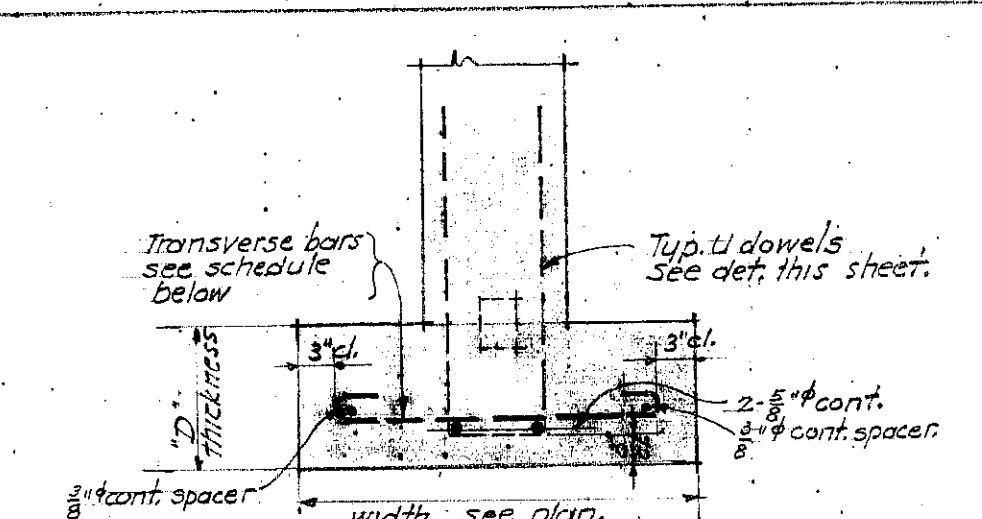
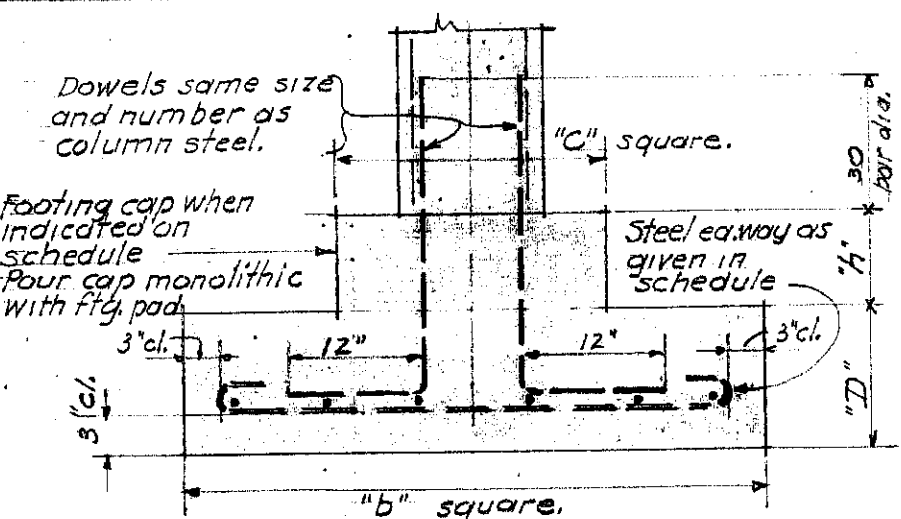
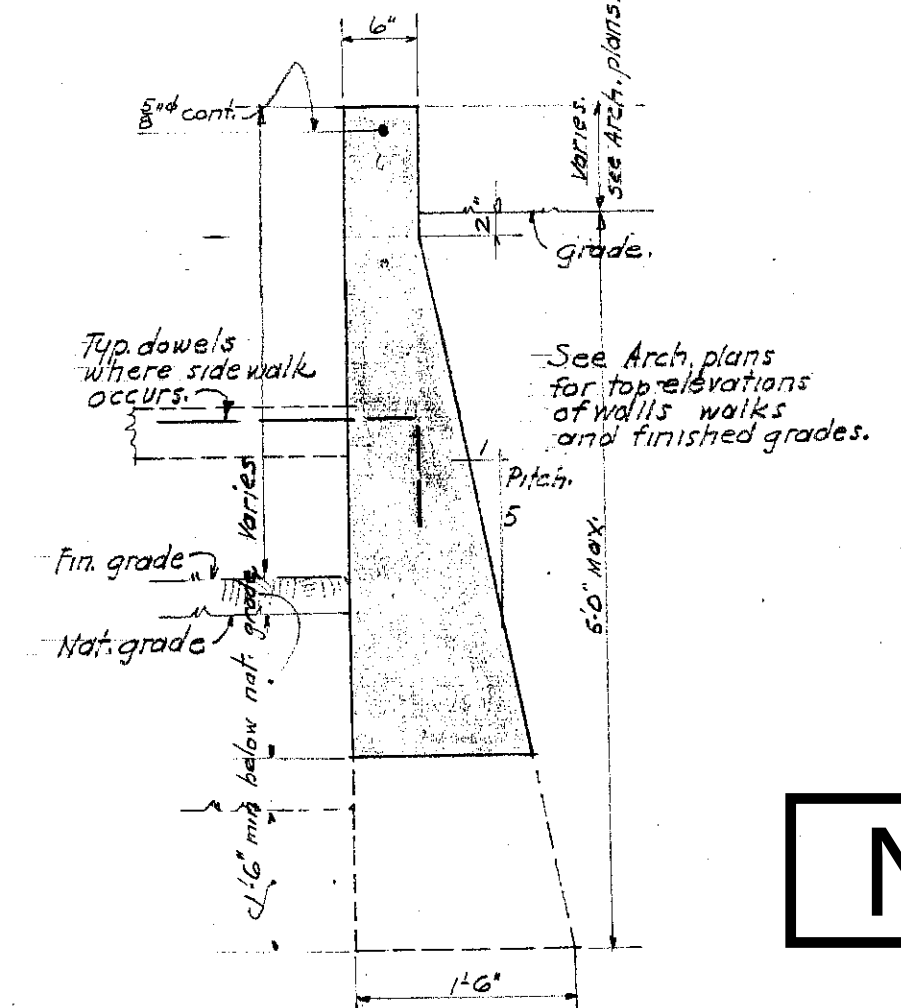
CONTRACTOR MUST
VERIFY ALL
DIMENSIONS AT THE
BUILDING.

STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS DIVISION OF HIGHWAYS PROJECT NO. 1-19-37 2777 <i>H.W.B.</i> <i>H.W.B.</i> PRINCIPAL STRUCTURAL ENGINEER	
APPROVED 1-20-1939 PRESIDENT OF BOARD <i>Arthur D. ...</i> CLERK OF BOARD <i>...</i>	CLASS RM, CAFETERIA GYMNASIUM & LIBRARY ADDITION, PIER AVE. SCHOOL FREE MOSAIC TEACHING PL. ROOF FRAMING PLAN JOB NO. 856 DRAWN <i>P.T.E.</i> TRACED CHECKED DATE JAN. 1939 MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CALIF.
APPROVED BY SCHOOLS A. R. Clifton SUPERVISOR OF SCHOOLS JAN 19 1939 By <i>J. Dixon</i> <i>...</i>	

MARSH, SMITH & POWELL,
ARCHITECTS
LOS ANGELES, CALIF.



NET WALL AREAS

[illegible]

All pipe trenches shall be located so that footings will not be undermined. Pipes shall emerge from building above the footing pad by means of sleeves thru concrete. Step footings down, if necessary, to accomplish this.

TYP. U DOWELS FOR
WALL STEEL AT FOOTING
PADS.

STEPPED FOOTING DETAIL

NOTES

Sub-numbers on section marks indicate number of sheet upon which detail occurs.

— denotes all steps in fill except sidewalks with 4"x6" electric welded wire mesh.

¹/₂" figures in boxes indicate elevations of bottoms of footing pools or walls.

See specs for details of floors on fill which are to have paper and gravel under.

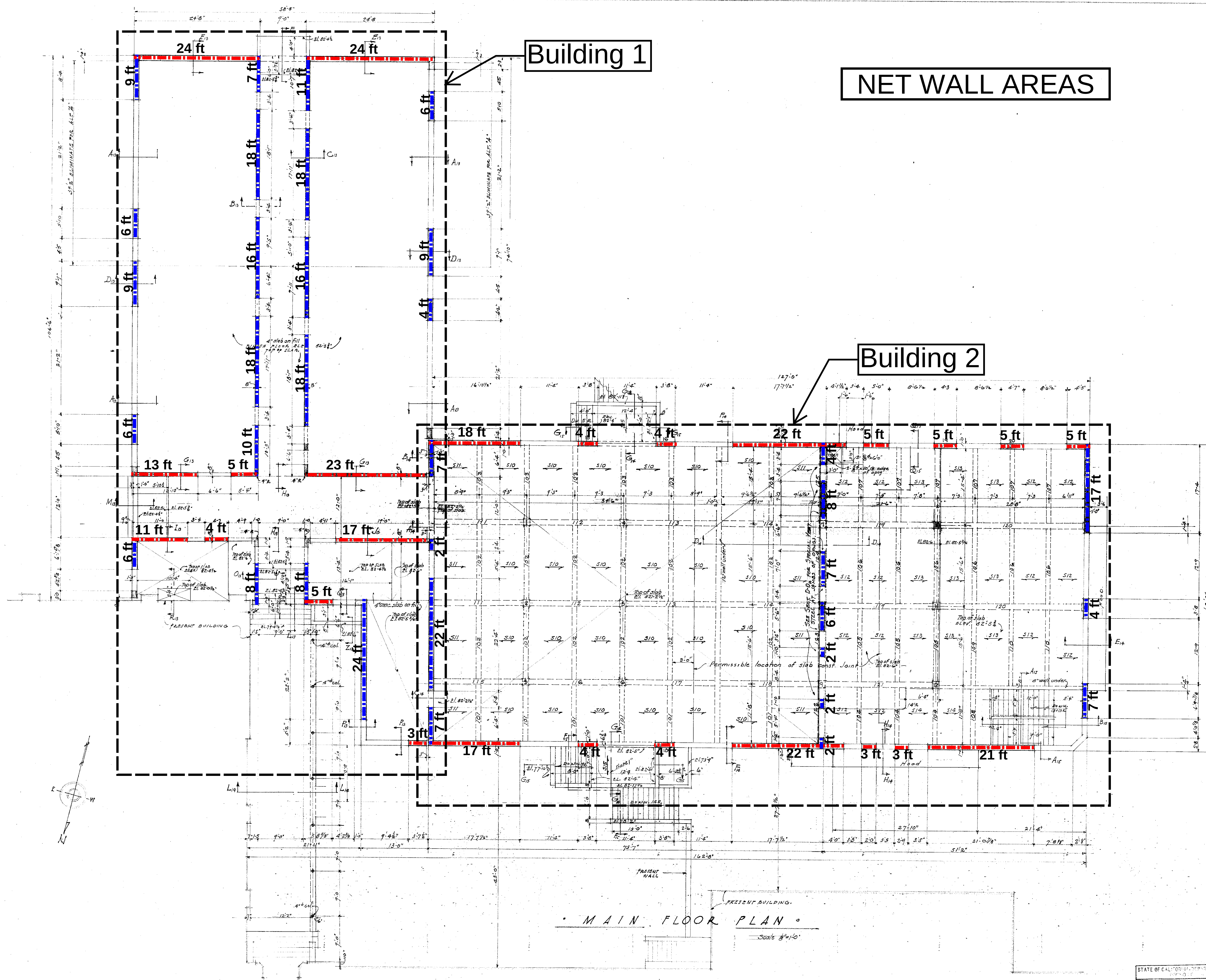
S signifies steps in footing.

Typical details and schedules on sheet # 16 together with general notes.

Structural steel details on sheet # 17.

Character of soil at footing level is silty sand. See notations on footing plan (this sheet) for soil bearing values and footing depths.

STATE OF CALIFORNIA DEPARTMENT OF EDUCATION DIVISION OF SCHOOL HOUSE PLANNING		APPLICANT 2727	APPROVED 1-12-39 BY <i>C. H. Komer</i> CHIEF, DIVISION OF SCHOOL HOUSE PLANNING
These plans have been checked for functional arrangement, educational requirements and hygienic conditions.		APPROVED 1-20-1939 PRESIDENT OF BOARD <i>William H. Smith</i> CHIEF, DIVISION OF SCHOOL HOUSE PLANNING	
Approved 1-19-39 <i>Chas. Burgett</i>	CLASS ROOMS, GYMNASIUM & PLAY GROUND 1515 E. AVENUE & GARDEN, TEAL GROUND F. & FOUNDATION PLAN		
CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.		JOB NO. 856 DRAWN BY TRACED CHECKED <i>D. H. Smith</i>	SHEET NO. 10 OF 12 SHEETS DATE JAN. 1939
APPROVED BY SCHOOL BOARD R. CLIFTON		MARSH, SMITH & POWELL, ARCHITECTS 515 ARCHITECTS BUILDG. LOS ANGELES, CAL.	



NOTE:
 For typical details, general notes and schedules see
 Sheet #16 For structural steel details see sheet #17
 For loading schedules and details see sheet #10

STATE OF CALIFORNIA
 DEPARTMENT OF EDUCATION
 DIVISION OF SCHOOL PLANNING & BUILDING
 1-20-1939
 C. H. Kromer
 CHAS. BURCH

STATE OF CALIFORNIA
 DEPARTMENT OF PUBLIC WORKS
 DIVISION OF HIGHWAYS
 1-19-37
 APPROVED
 1-20-1939
 RESIDENT BOARD
 CONTRACTOR MUST
 VERIFY ALL
 DIMENSIONS AT THE
 BUILDING.

CLASS RM, CAFETERIA, GYMNASIUM &
 LIBRARY ADDITION, PIER AVE. SCHOOL
 PIER AVE. & CAMINO REAL
 HOLMWOOD, CALIF.
 MAIN FLOOR PLAN
 JOB NO. 856
 DRAWN P.E.
 TRACED
 CHECKED
 DATE JAN. 1939
 MARSH, SMITH & POWELL, ARCHITECTS
 516 ARCHITECTS BLDG. LOS ANGELES, CAL.

County Superintendent of Schools
 Los Angeles
 JAN 19 1939
 R. D. Smith
 R. D. Smith
 R. D. Smith



JOHN A. MARTIN and ASSOCIATES, INC. □ STRUCTURAL ENGINEERS

Architect:		Sheet	
Project:	Hermosa Beach Community Center	Job no	14086
	ASCE 31 Analysis	Date	3/26/2015
	Wall Shear Stress Check	Engineer	BR

Lateral Analysis

R1 = 65psf 8" Conc Wall = 100psf
 R2 = 60psf 12" Conc Wall = 150psf
 R3 = 120psf
 R4 = 85psf
 F1 = 135psf
 F2 = 120psf

1939 Building 1	
Roof Mass	
Roor =	451 kips
Walls =	636 kips

Total Building Mass W = 1087 kips
 V = CS_aW = 1651 kips

Total Area of Walls in X-Dir A_w = 15072 in²
 Shear Stress in X-Dir = V/(A_wm) = 54.8 psi
 Total Area of Walls in Y-Dir A_w = 25584 in²
 Shear Stress in Y-Dir = V/(A_wm) = 32.3 psi

1939 Building 2	
Main Floor Mass	
Floor =	926 kips
Walls =	816 kips
Low Roof Mass	
Roor =	353 kips
Walls =	351 kips
High Roof Mass	
Roor =	264 kips
Walls =	457 kips

Total Building Mass W = 3167 kips
 V = CS_aW = 4123 kips
 V_{Roof} = 2796 kips
 V_{main} = 1313 kips

Roof Level

Total Area of Walls in X-Dir A_w = 20448 in²
 Shear Stress in X-Dir = V/(A_wm) = 68.4 psi
 Total Area of Walls in Y-Dir A_w = 13968 in²
 Shear Stress in Y-Dir = V/(A_wm) = 100.1 psi

Main Floor Level

Total Area of Walls in X-Dir A_w = 26784 in²
 Shear Stress in X-Dir = V/(A_wm) = 24.5 psi
 Total Area of Walls in Y-Dir A_w = 20736 in²
 Shear Stress in Y-Dir = V/(A_wm) = 31.7 psi



JOHN A. MARTIN and ASSOCIATES, INC. ☐ STRUCTURAL ENGINEERS

Architect _____ Sheet _____ of _____
 Project HERMOSA BEACH Job No. _____
 Date _____
 Engineer _____

TIER 1 CHECK LIST

WALL THICKNESS: $\frac{1}{25} \times H$, min 4"

$$t_{wall} = 12" \text{ min } 6" \text{ min}$$

$$H/25 = 13.12/25 = 6.24 \approx 6" , \text{ ok}$$

REINFORCING STEEL

$$\text{min } \rho = 0.0015 \text{ VERT}$$

$$\text{min } \rho = 0.0025 \text{ HORIZ}$$

$$S = 18" \text{ ok}$$

Actual ρ

6" wall	$\rho = 0.0026$	≥ 0.0026	ok
8" wall	$\rho = 0.0025$	≈ 0.0026	ok
10" wall	$\rho = 0.0025$	≈ 0.0026	ok
12" wall	$\rho = 0.0028$	> 0.0026	ok

OVER TURNING

$$\left(\frac{\text{base}}{\text{ht wall}} \right) > 0.65$$

$$59/29 = 2 > 0.651 , \text{ ok}$$

Appendix B – Reviewed Drawings

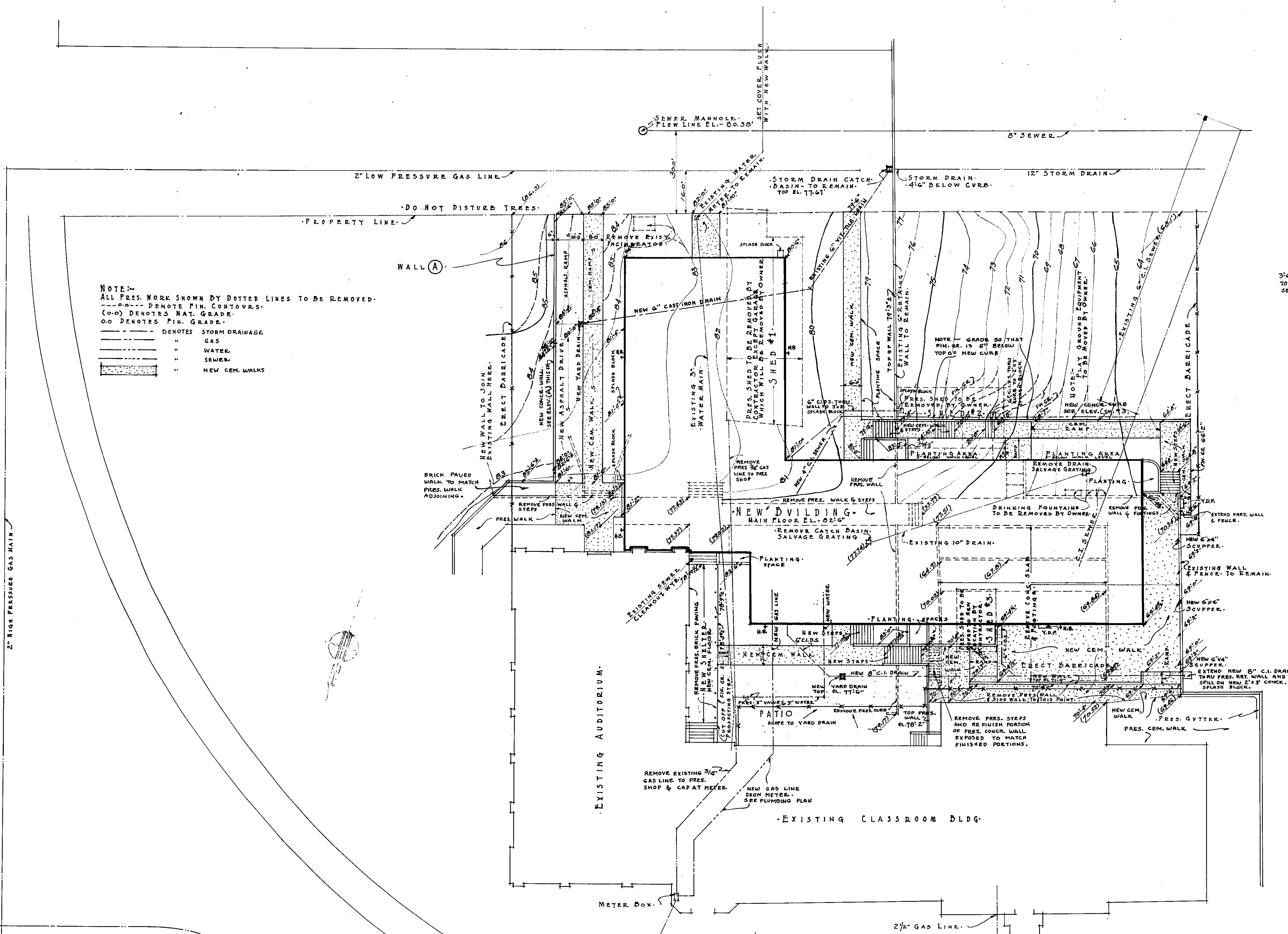


JOHN A. MARTIN and ASSOCIATES, INC. □ STRUCTURAL ENGINEERS

Architect:	_____	Sheet	_____
Project:	Hermosa Beach Community Center	Job No	14086
	Seismic Evaluation	Date	4/3/15
	_____	Engineer	BR

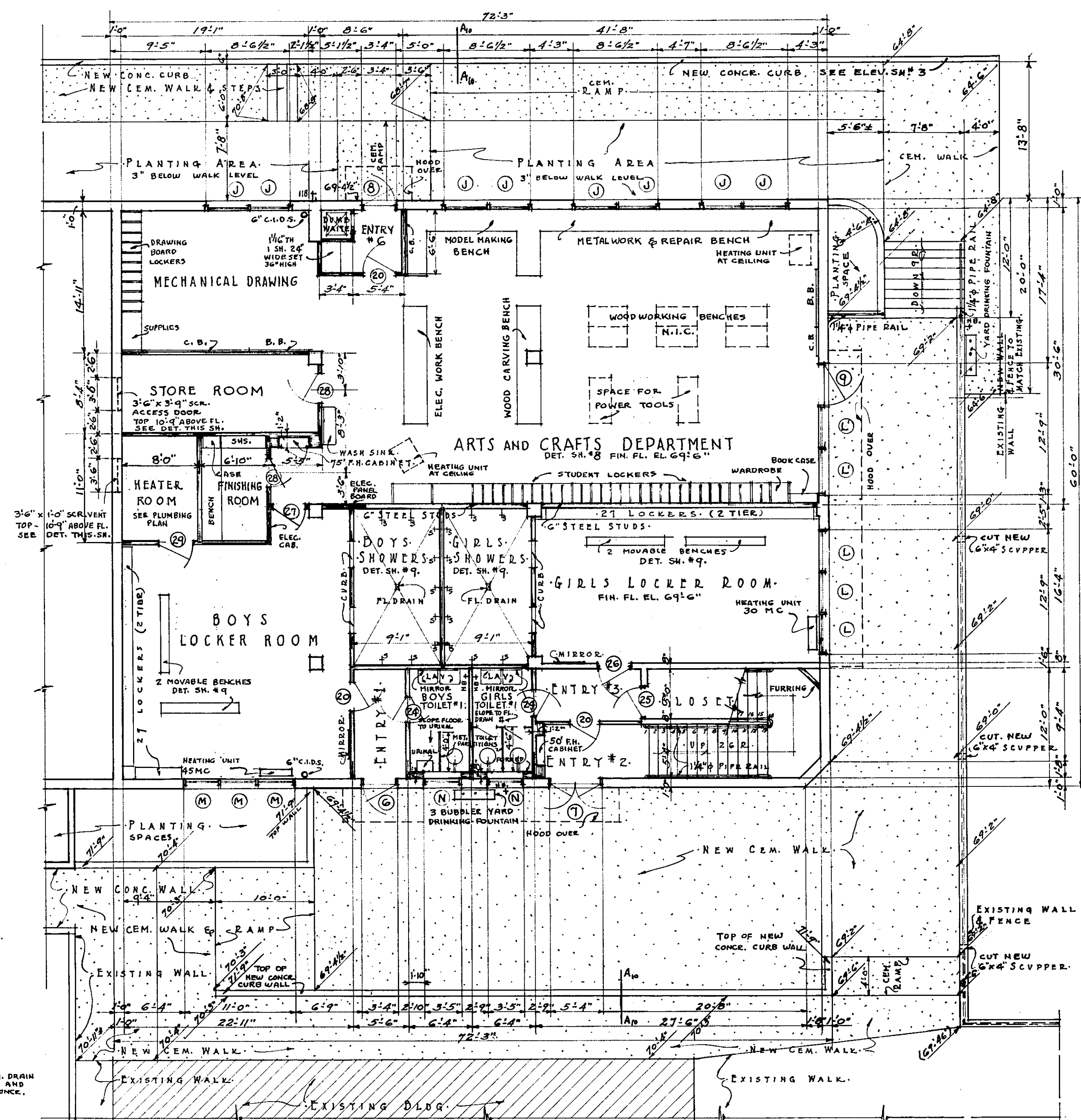
Appendix B – Reviewed Drawings

NOTE:-
ALL PREL. WORK SHOWN BY DOTTED LINES TO BE REMOVED.
--- DENOTES FIN. CONTOURS.
---(---) DENOTES NAT. GRADE.
--- DENOTES FIN. GRADE.
--- DENOTES STORM DRAINAGE.
--- DENOTES GAS.
--- DENOTES WATER.
--- DENOTES SEWER.
--- DENOTES NEW CEM. WALKS.



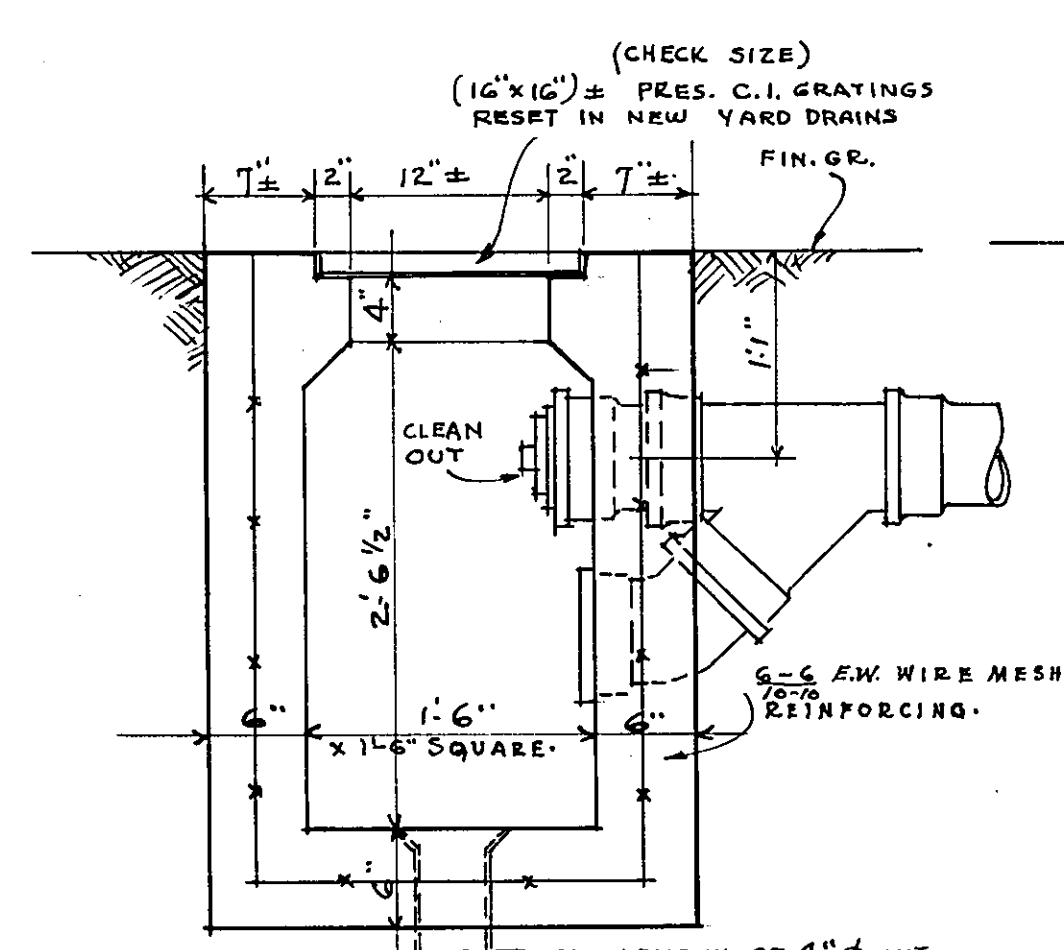
PLOT PLAN
SCALE 1/20" = 1'-0"

ELEV. OF WALL A - LOOKING WEST.
SCALE 1/8" = 1'-0"

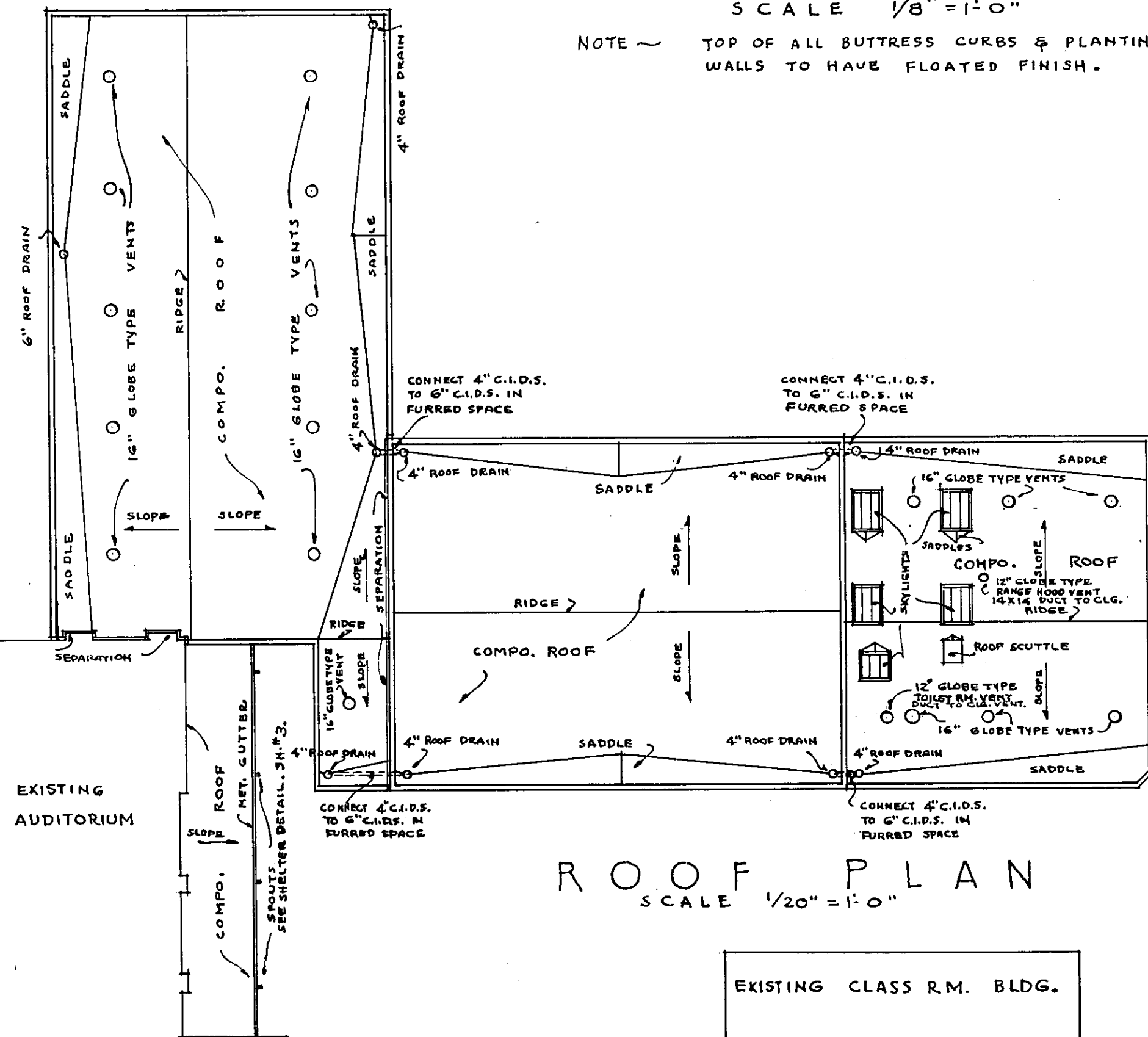


GROUND FLOOR PLAN
SCALE 1/8" = 1'-0"

NOTE - TOP OF ALL BUTTRESS CURBS & PLANTING SPACE WALLS TO HAVE FLOATED FINISH.



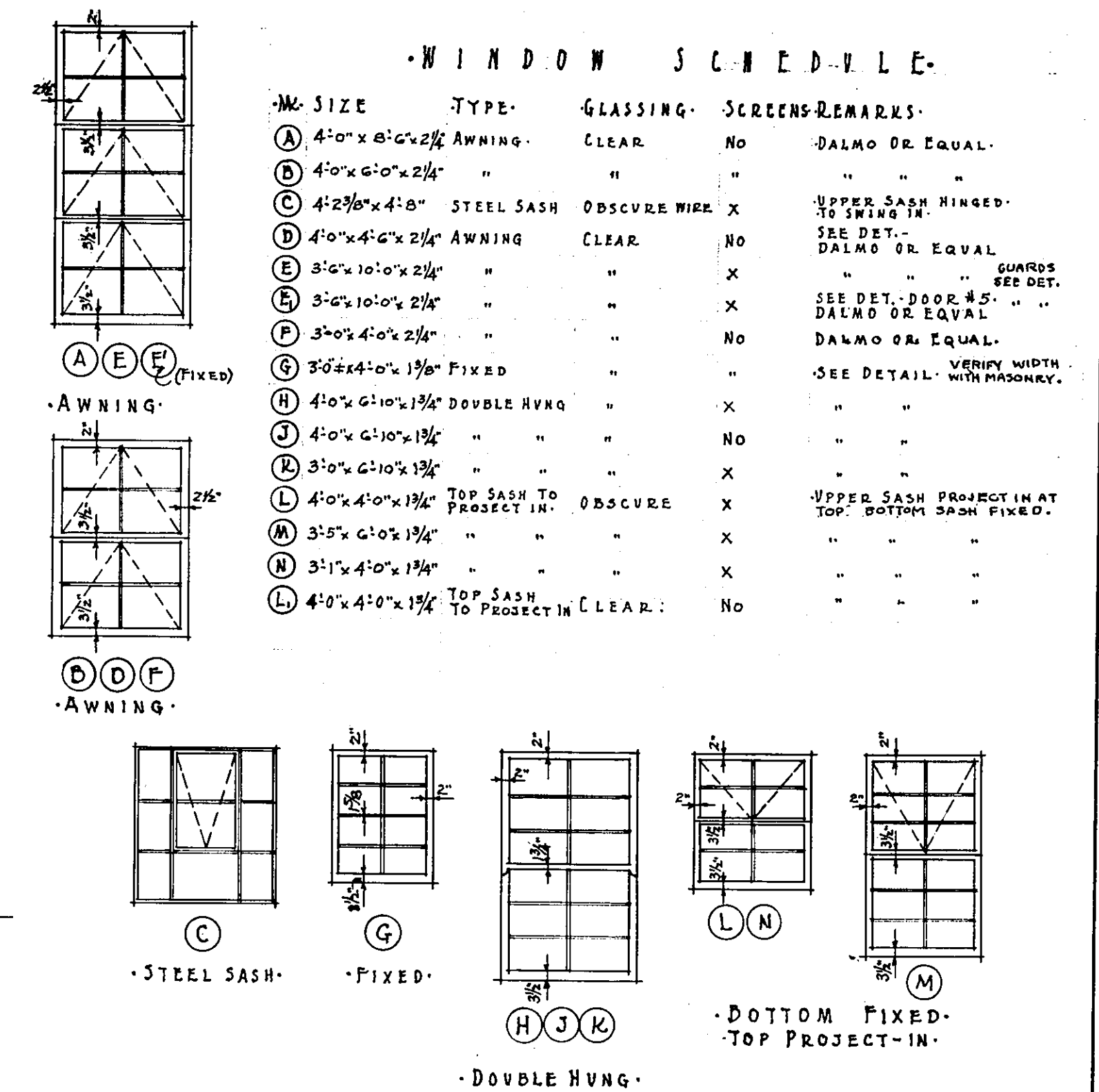
SECTION THRU
NEW YARD DRAIN
SCALE 1" = 1'-0"



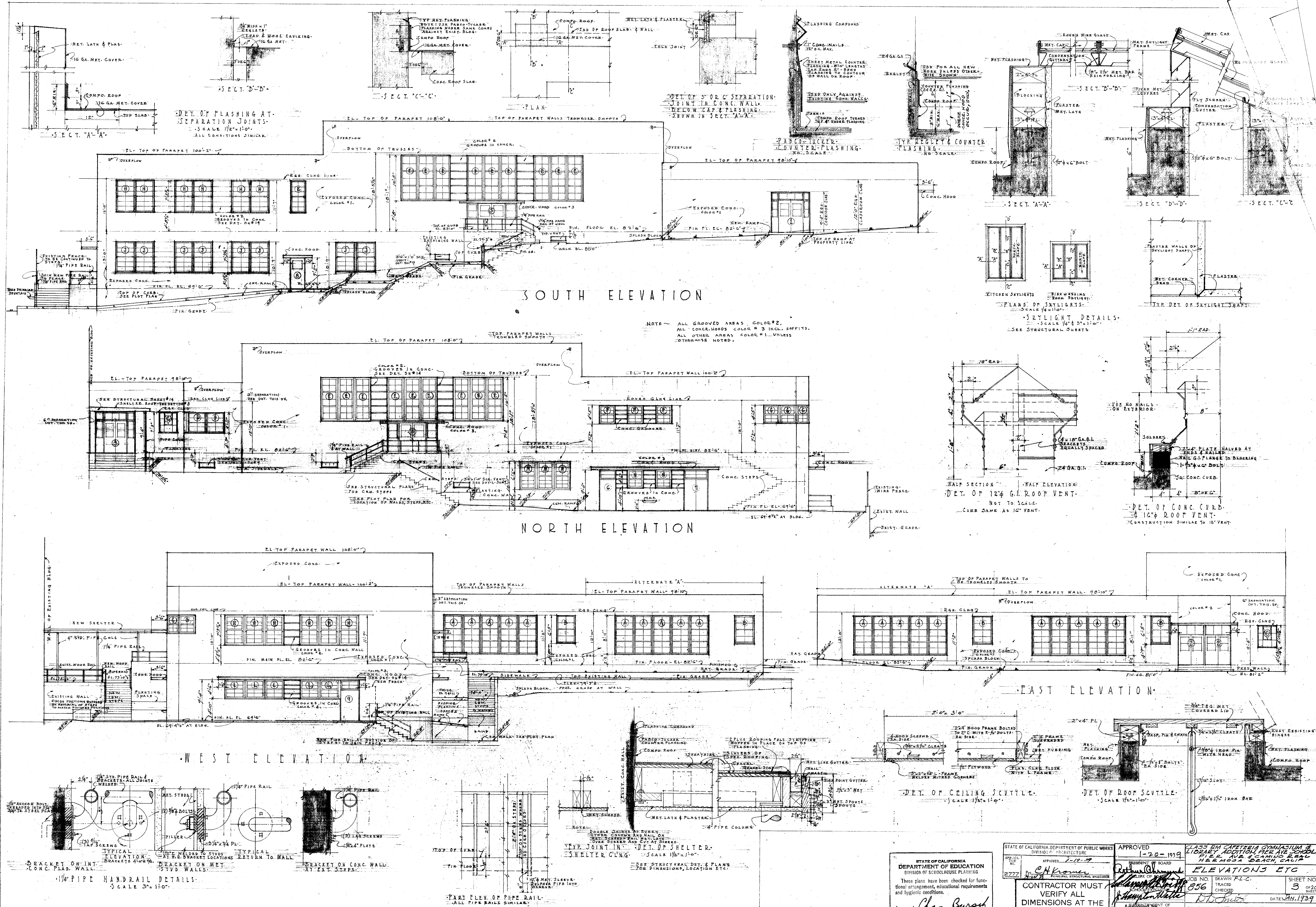
ROOF PLAN
SCALE 1/20" = 1'-0"

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOL PLANNING
These plans have been checked for functional arrangement, educational requirements and hygienic conditions.
Approved: *Chas. Burch*
1-19-37

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOL PLANNING
1-19-37
1-20-37
CLASS RM., CAFETERIA, GYMNASIUM & LIBRARY ADDITION, PIERCE SCHOOL
FEB. 10, 1937
GROUND FLOOR PLAN, PLOT PLAN & ROOF PLAN
R.L.C. W.M.A. R.L.C.
Approved: *Wm. H. Smith*
856
County Superintendent of Schools
Los Angeles
JAN. 1937
By *J. R. Smith*
Superintendent



CLASS RM, CAFETERIA, GYMNASIUM &
LIBRARY ADJACENT, FIVE AVE. SCHOOL
PIER AVE. GARDEN REAL
HER MOSA BEACH, CALIF
JL. PLAN & DOOR, WIND & RM. FIN. XCHD
PLC. TMA.
RLE
2 20
J. H. Smith
D.D. Smith
Jan. 1939
Approved by
A. E. G. G. G.
County Superintendent of Schools
Los Angeles
By J. H. Smith
Secretary



STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOLHOUSE PLANNING

These plans have been checked for functional arrangement, educational requirements and hygienic conditions.

Approved: *Chas. Burroughs*
1-19-39

APPROVED: 1-20-1939
ARCHITECT: *Marshall Smith & Powell*

CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.

STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE

APPROVED: 1-20-1939
ARCHITECT: *Marshall Smith & Powell*

CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.

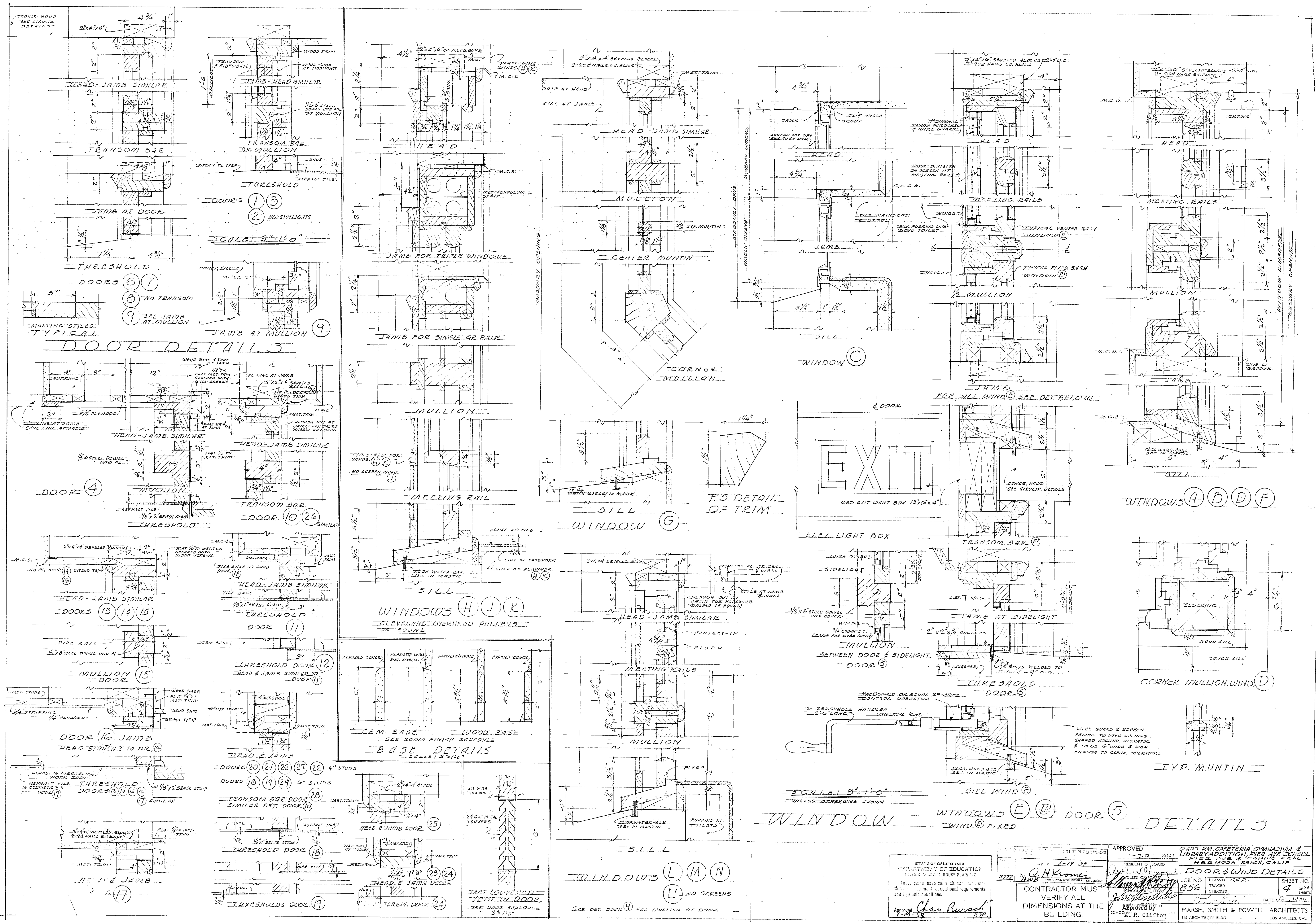
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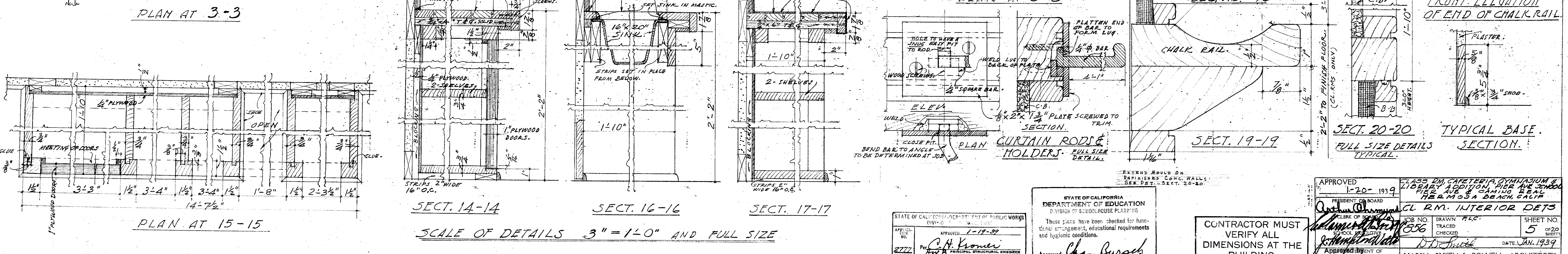
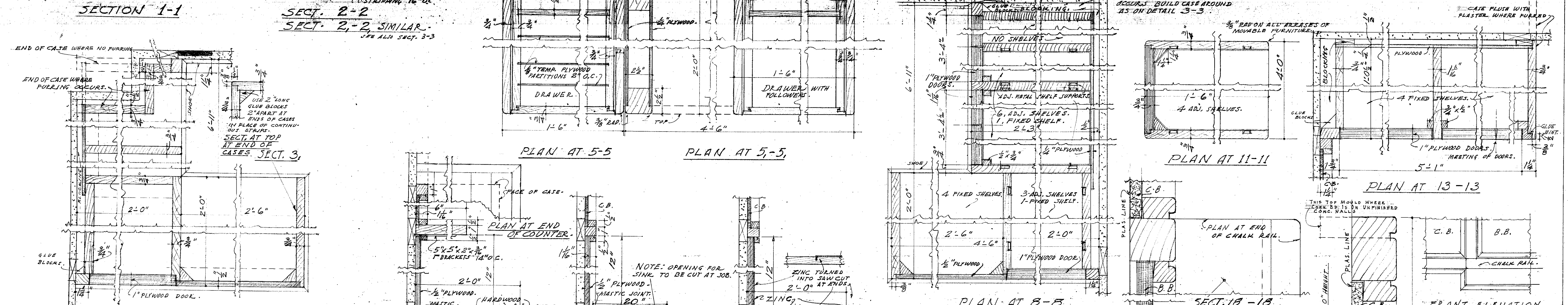
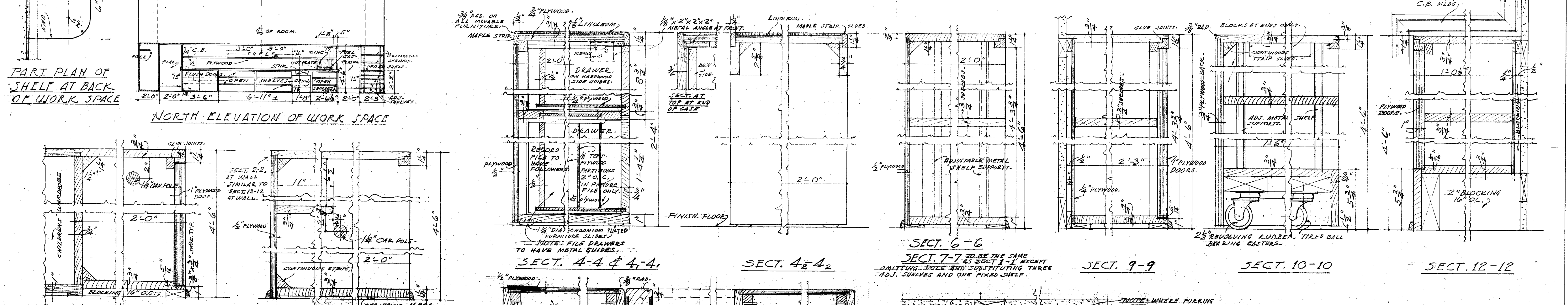
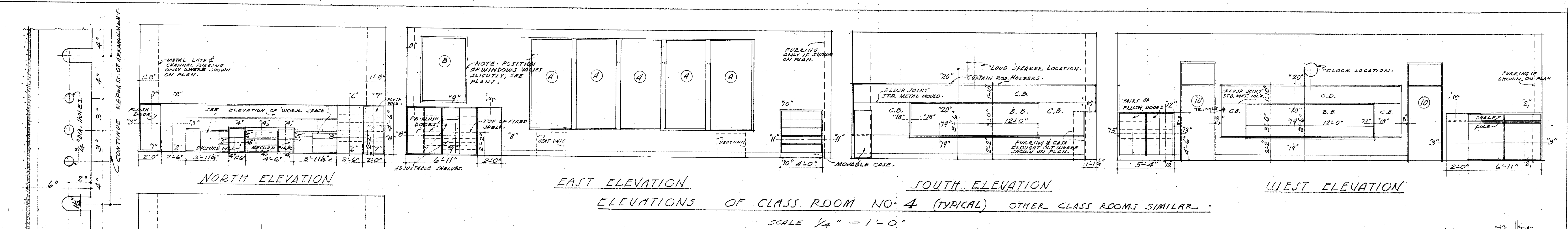
ELEVATIONS ETC

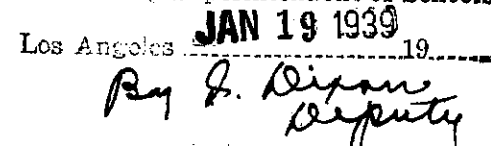
JOB NO. 856
DRAWN P.L.G.
CHECKED: *Marshall Smith & Powell*
DATE: JAN 19 1939

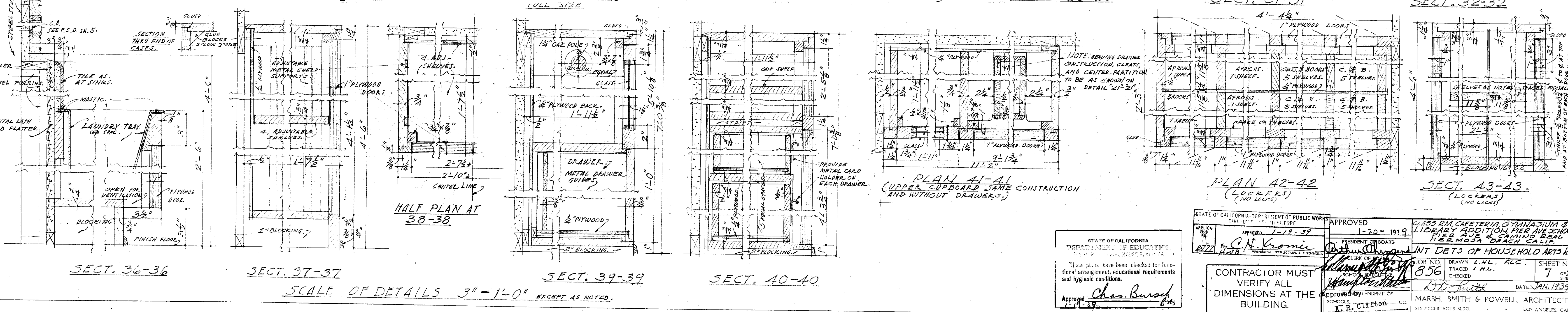
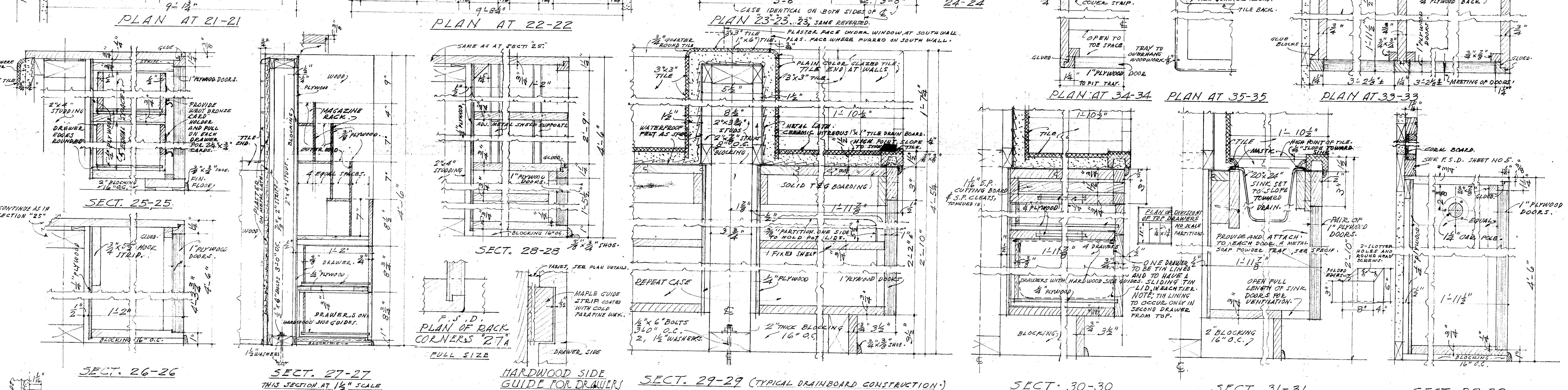
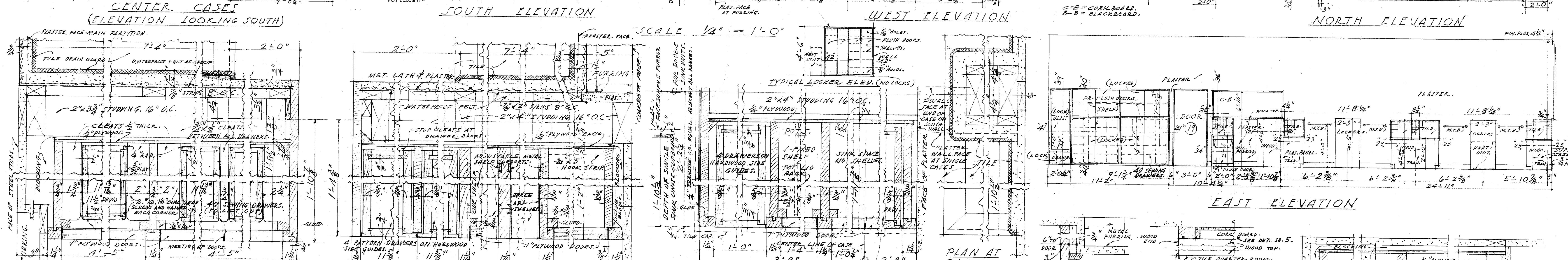
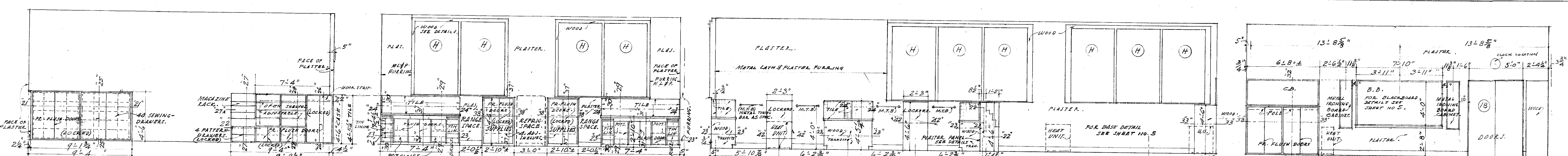
MARSH, SMITH & POWELL, ARCHITECTS
316 ARCHITECTS BLDG.
LOS ANGELES, CAL.

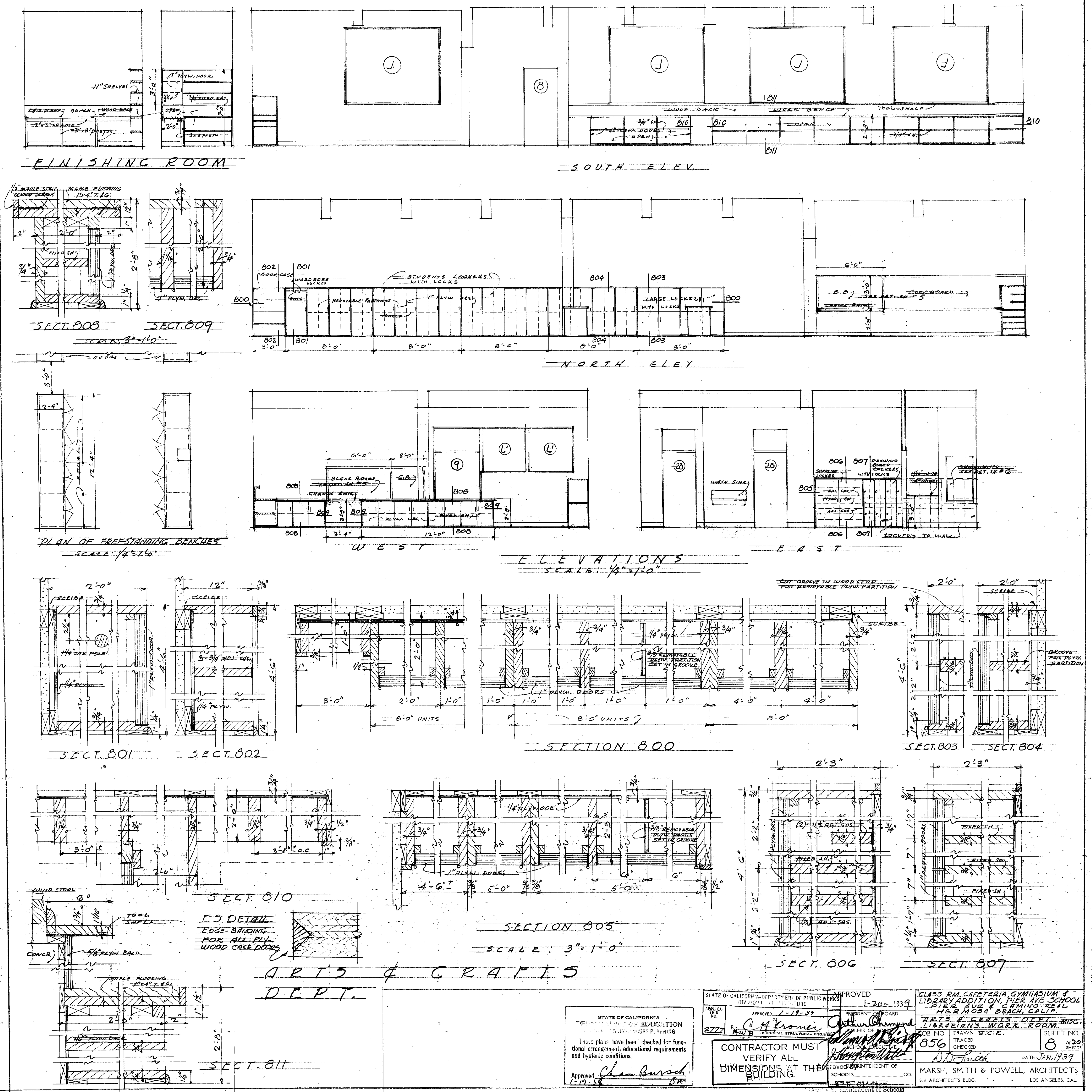
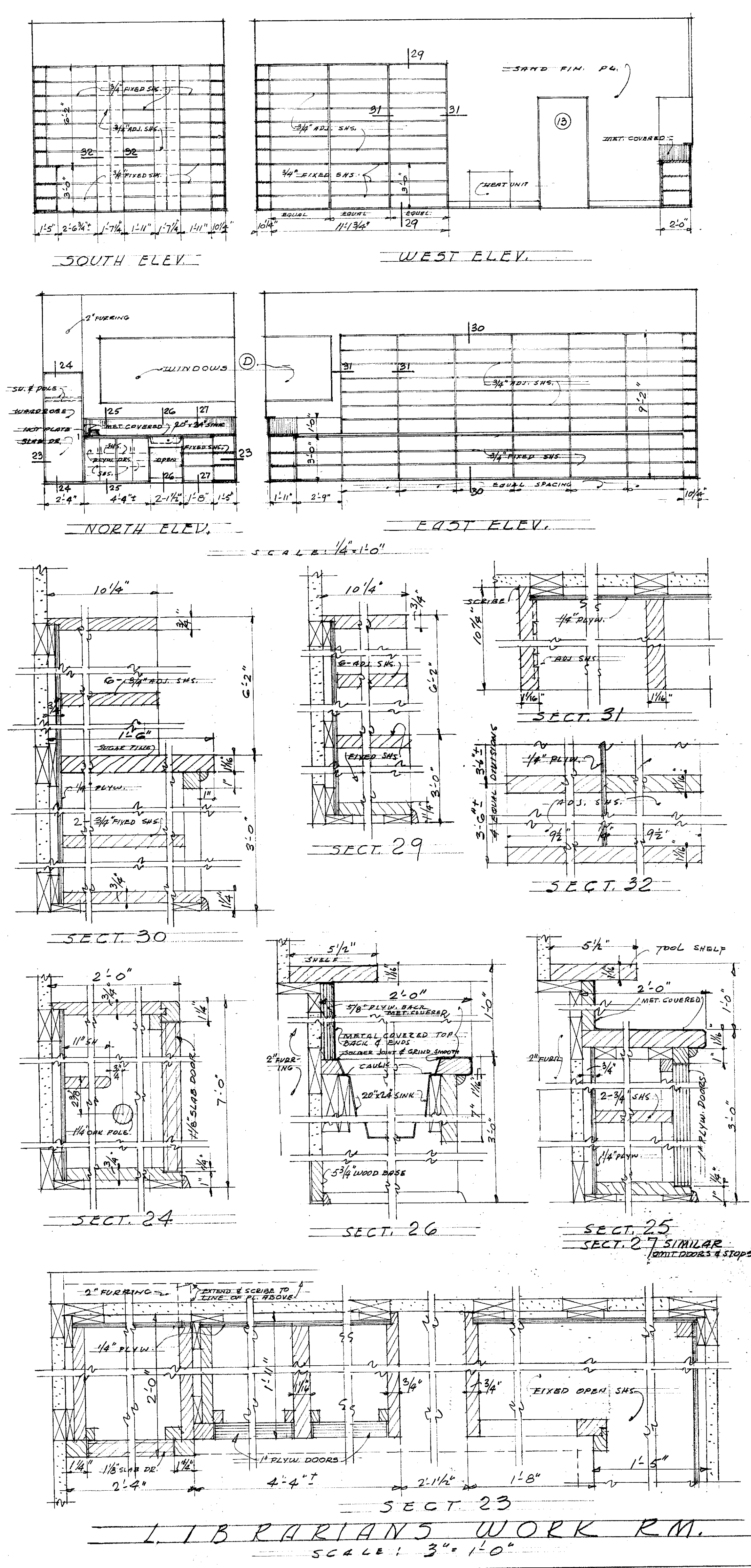
SHEET NO. 3 OF 20



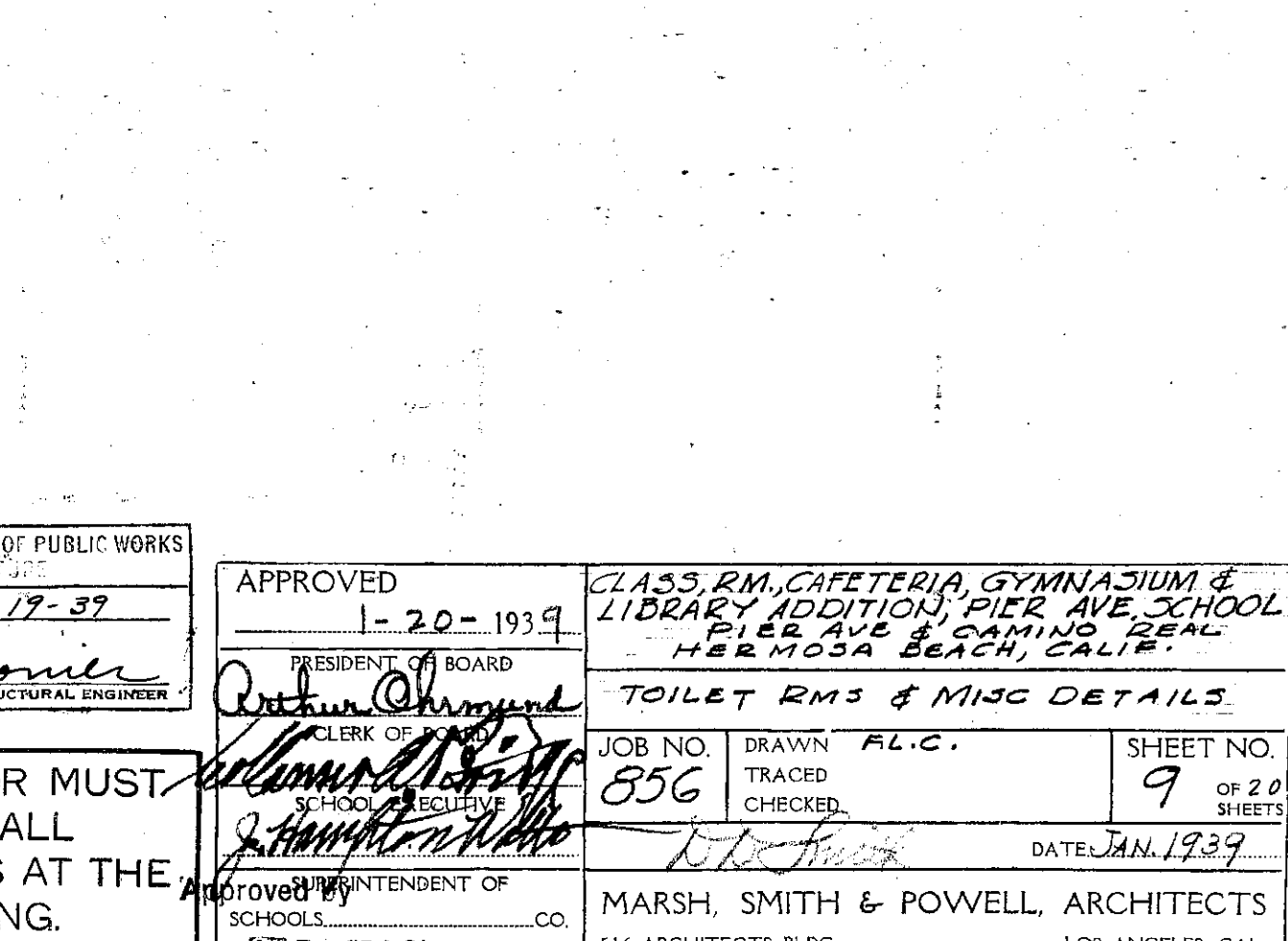
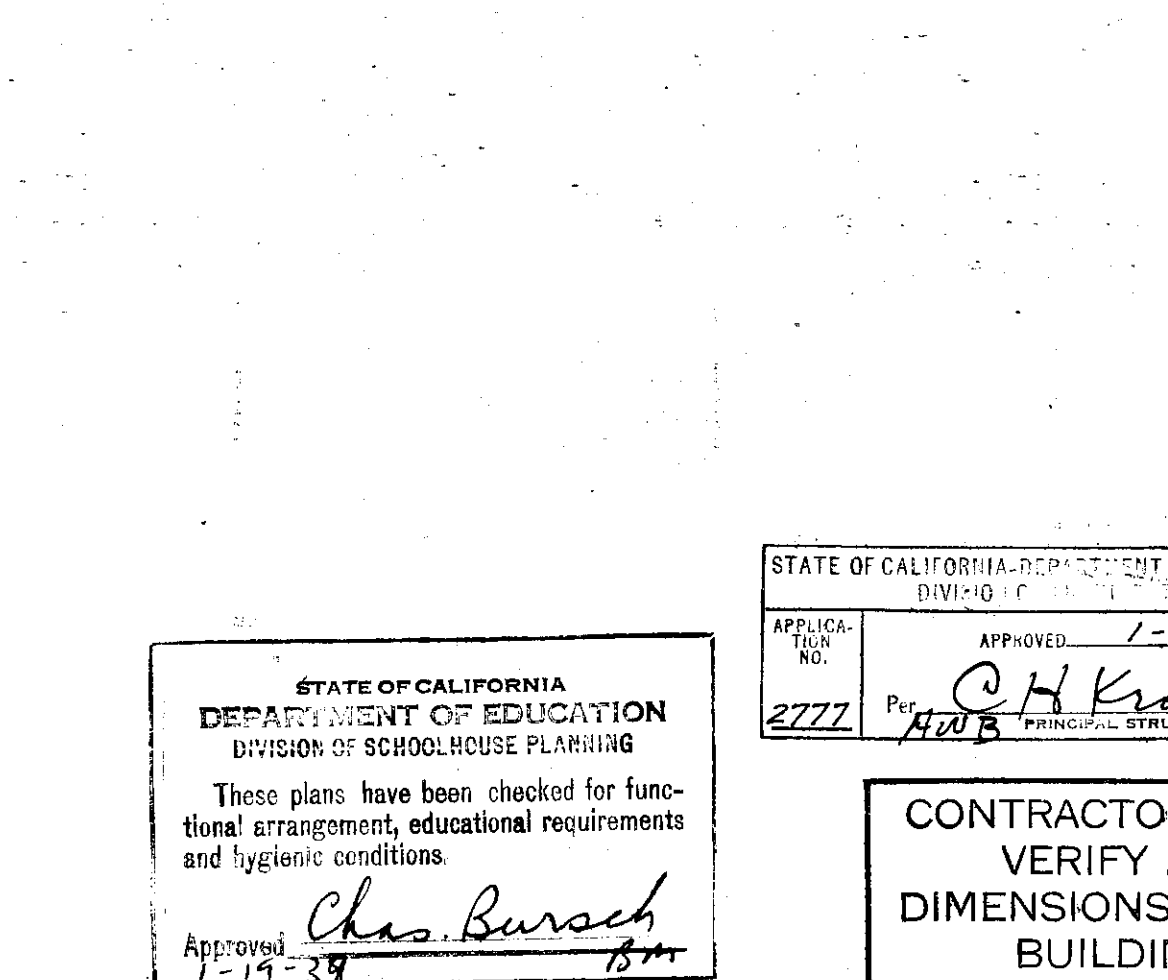
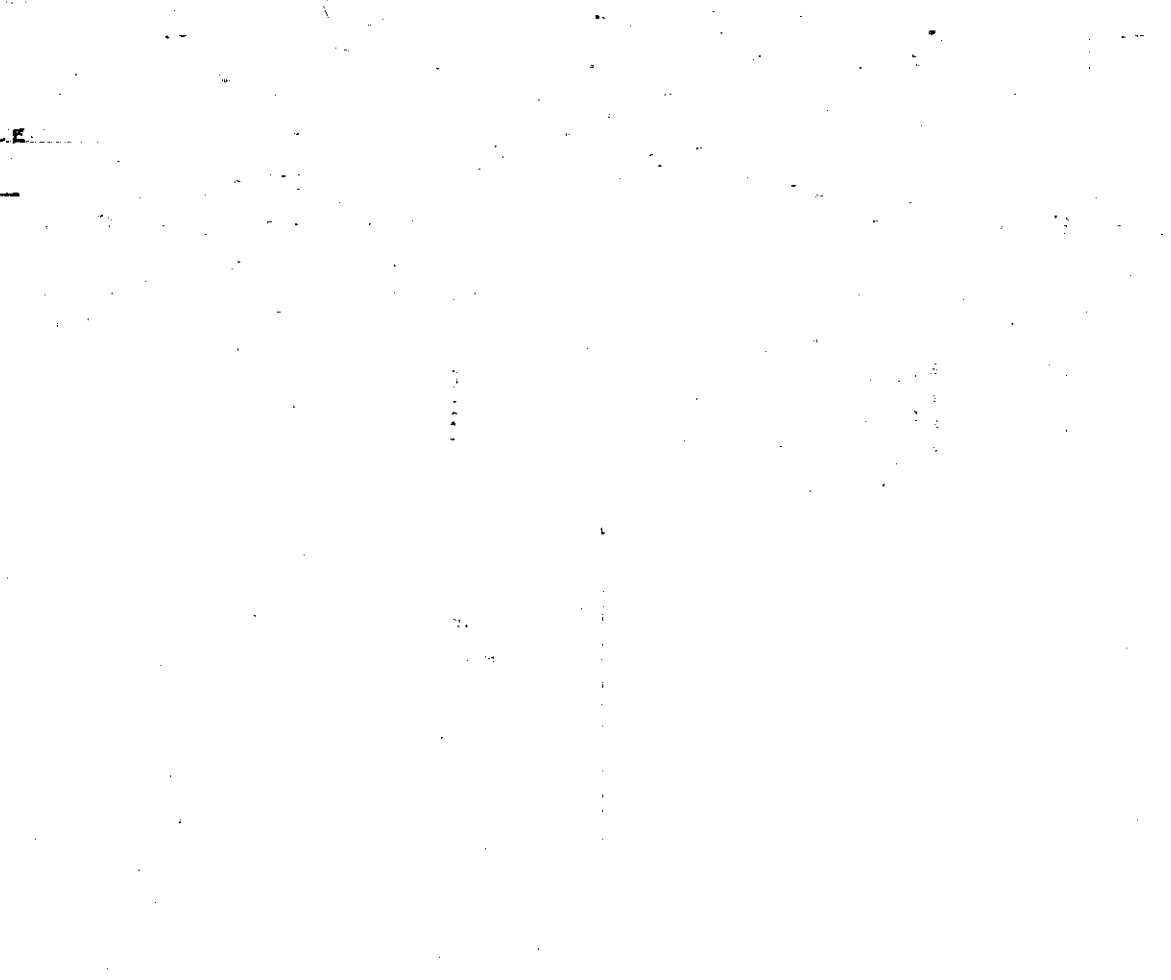
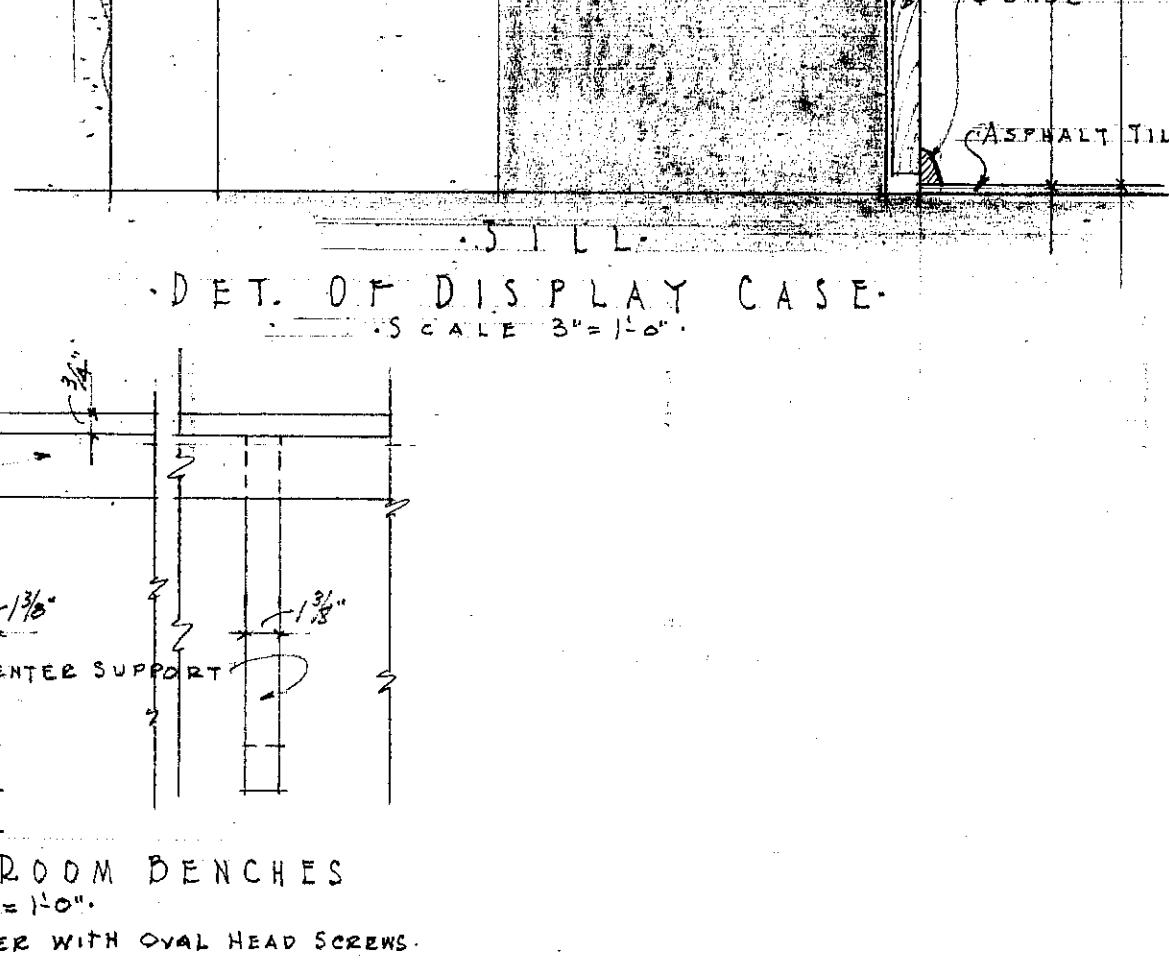
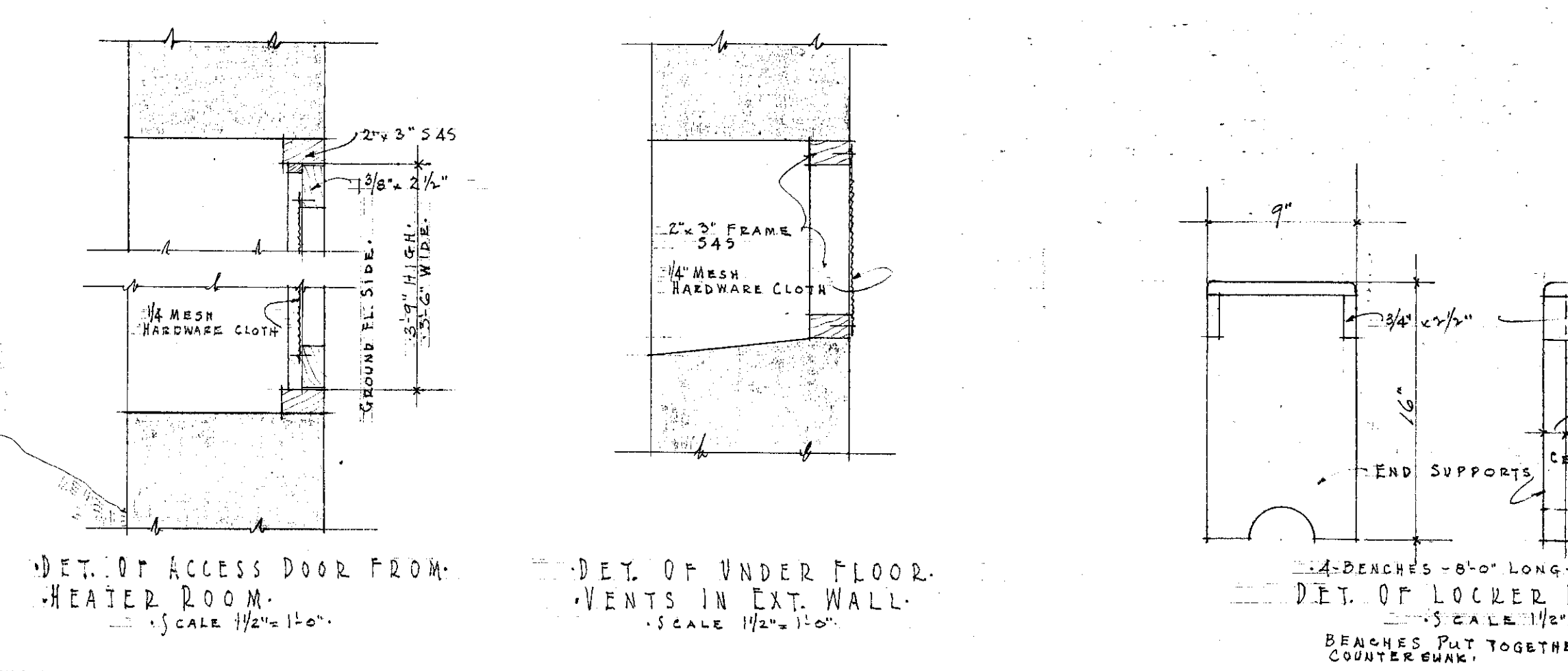
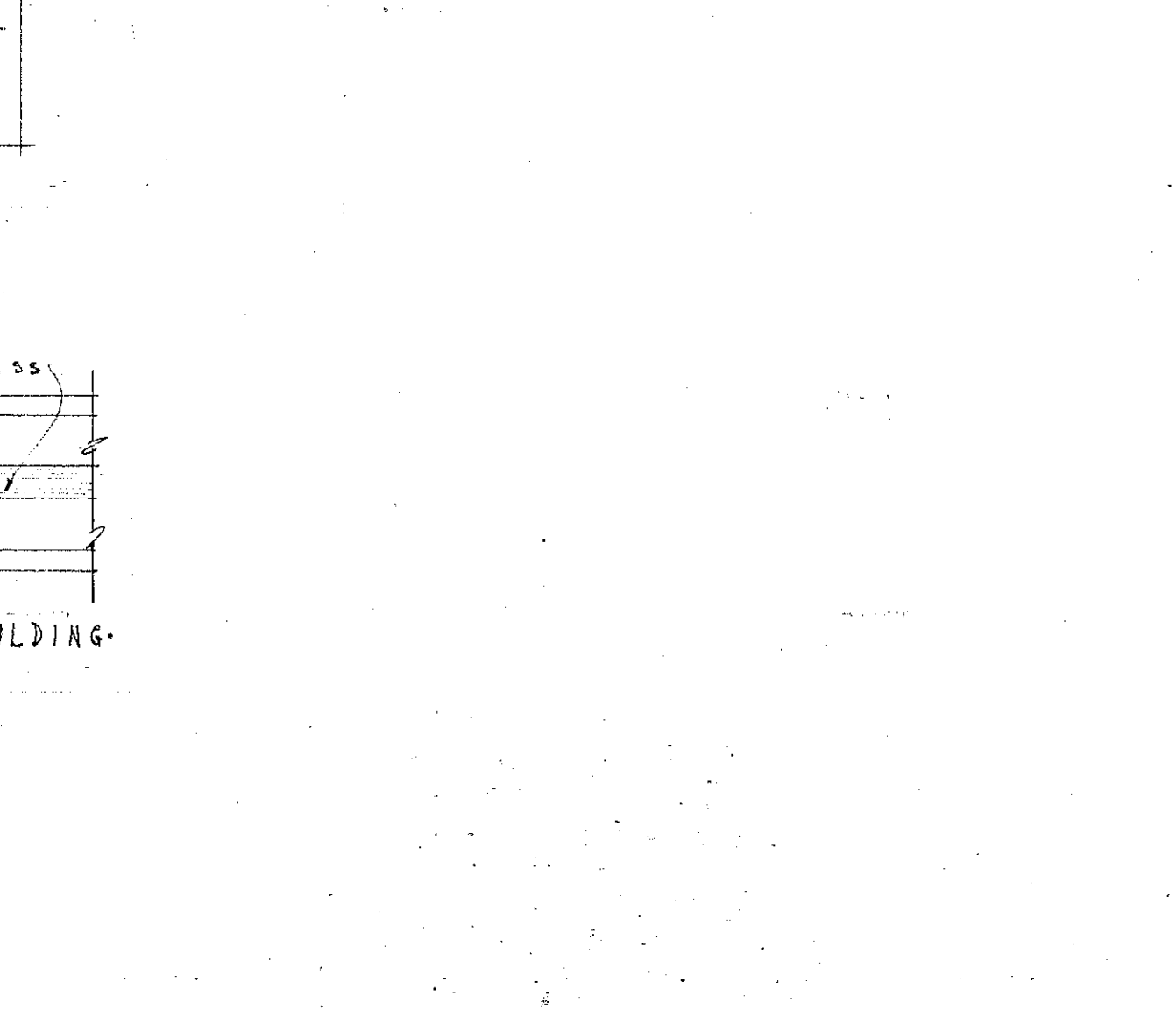
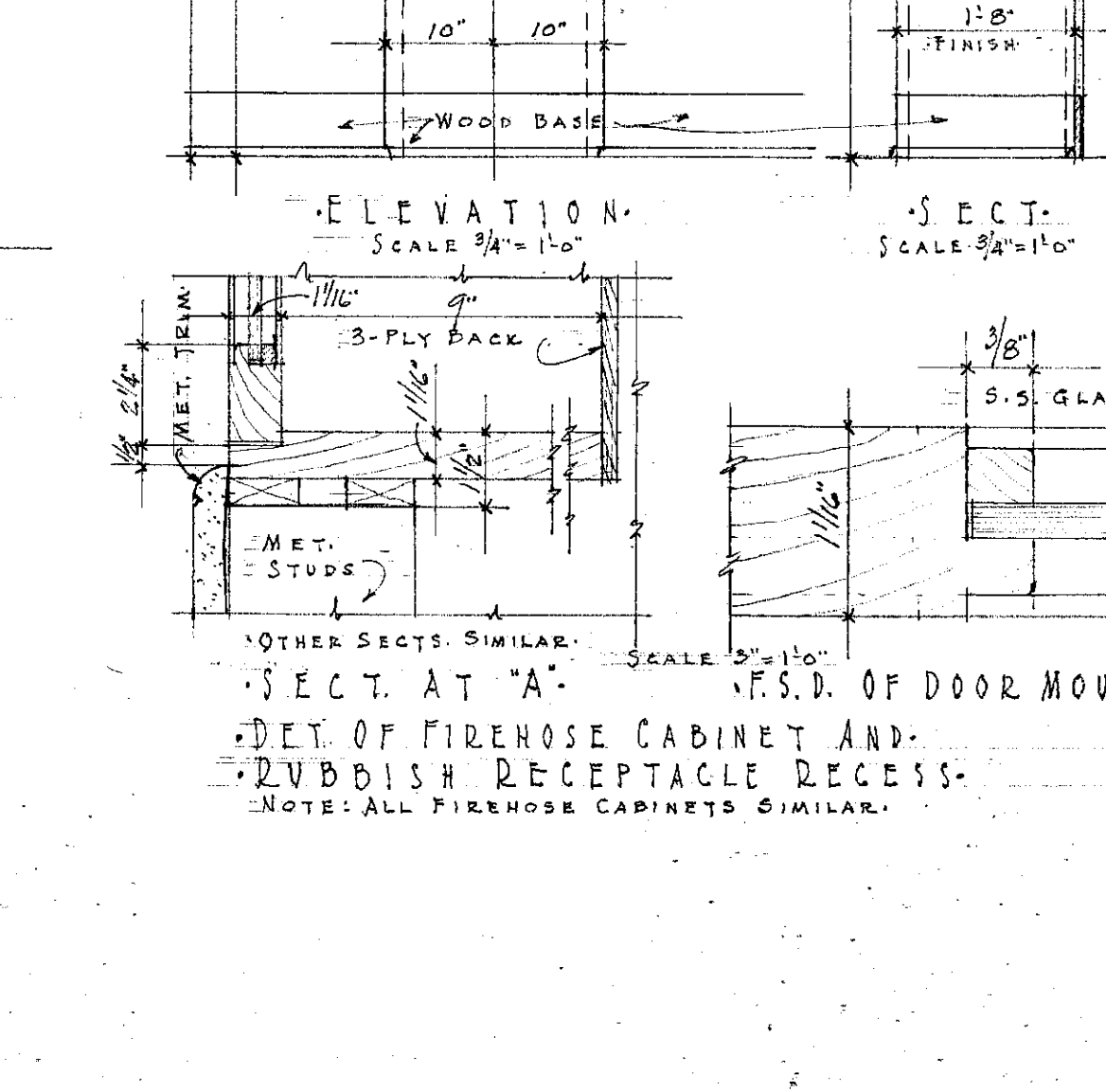
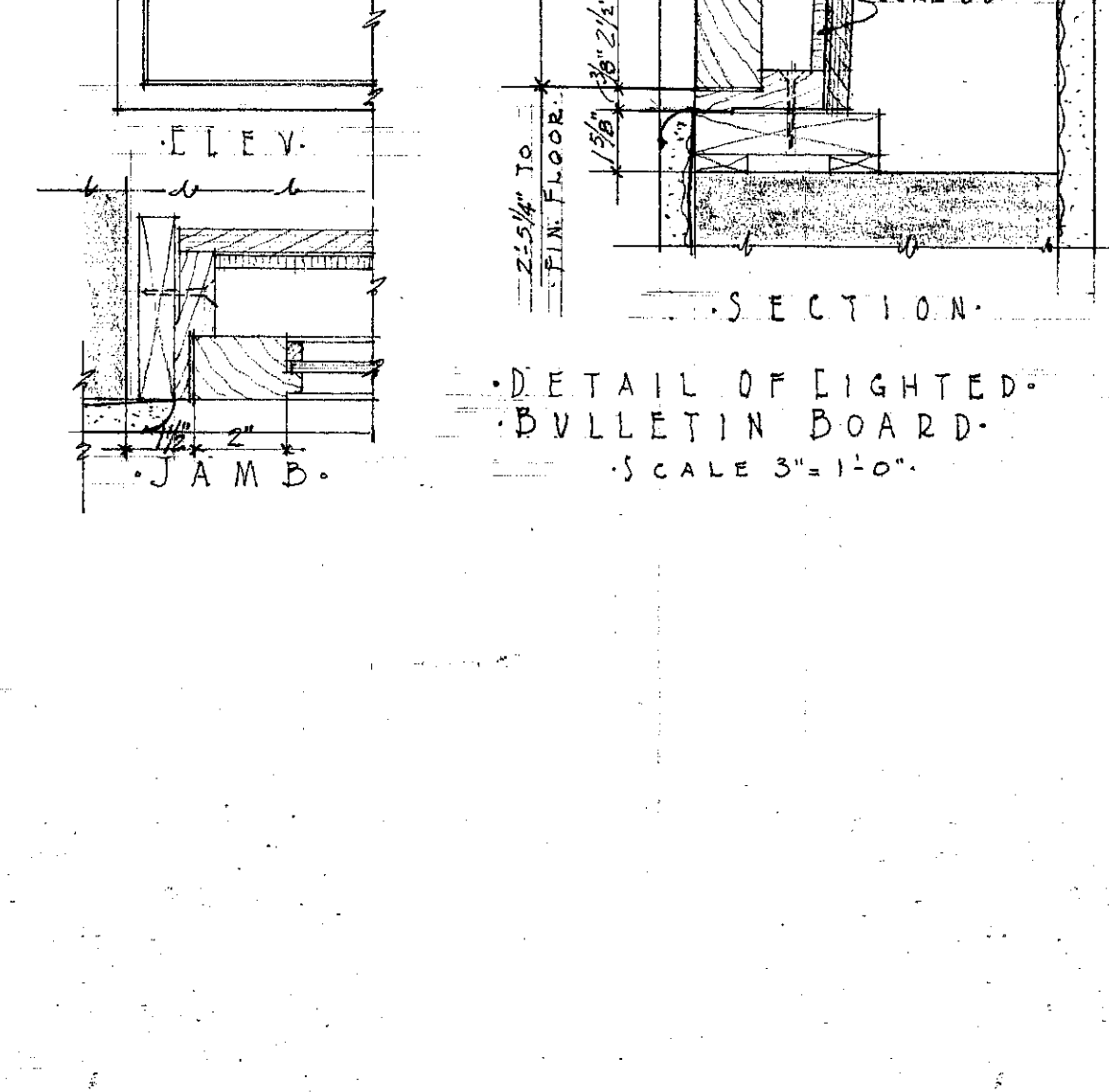
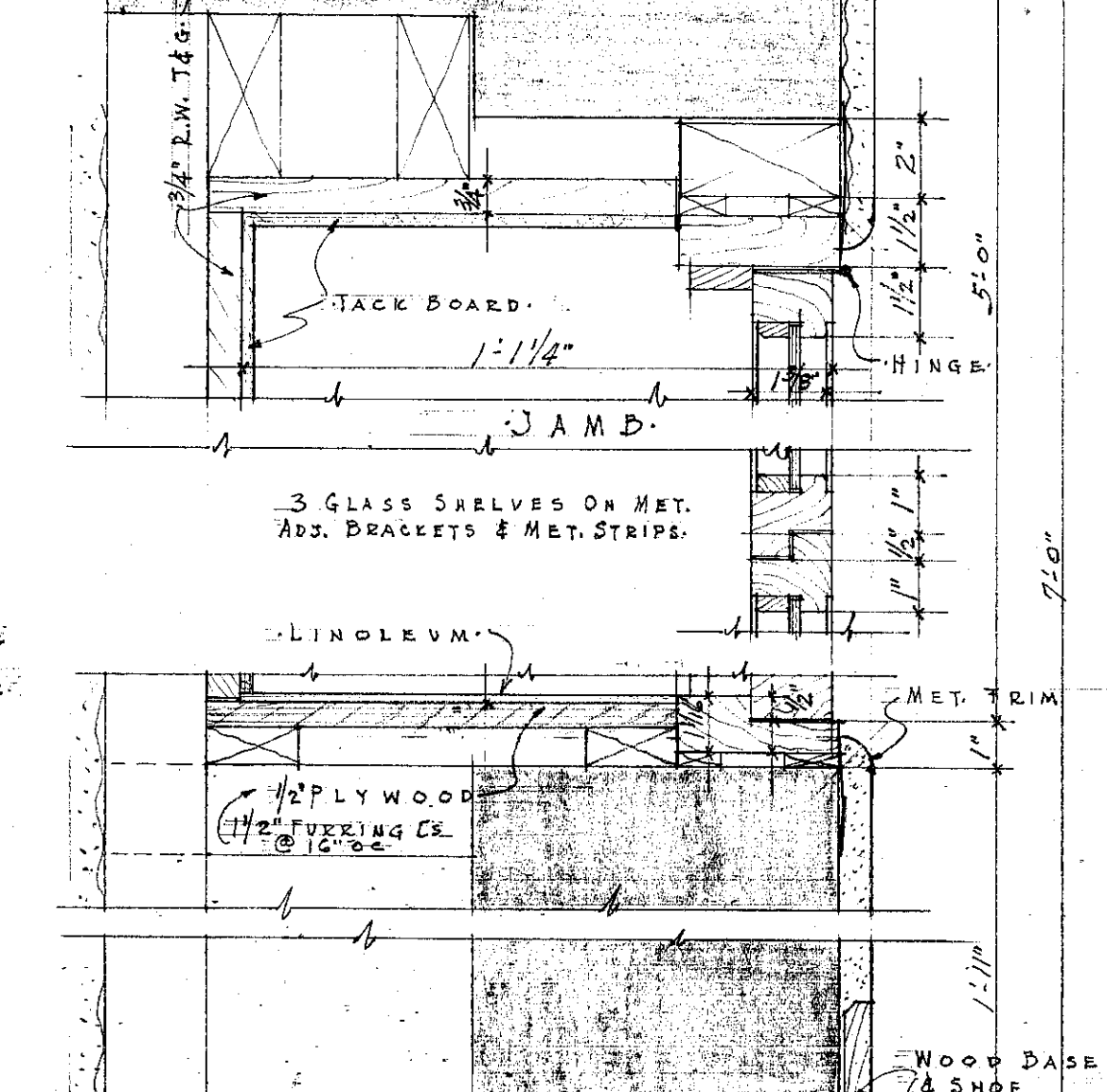
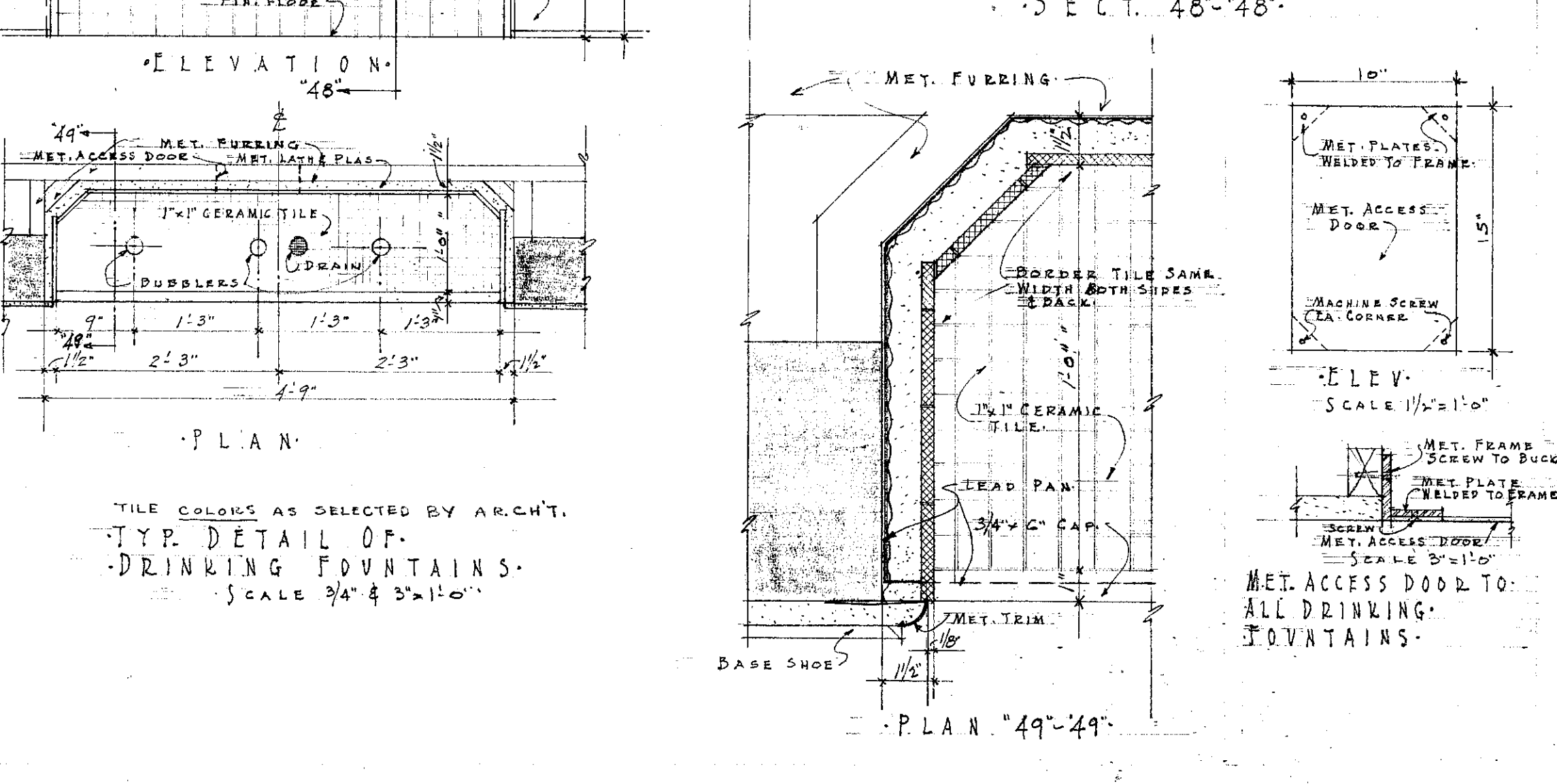
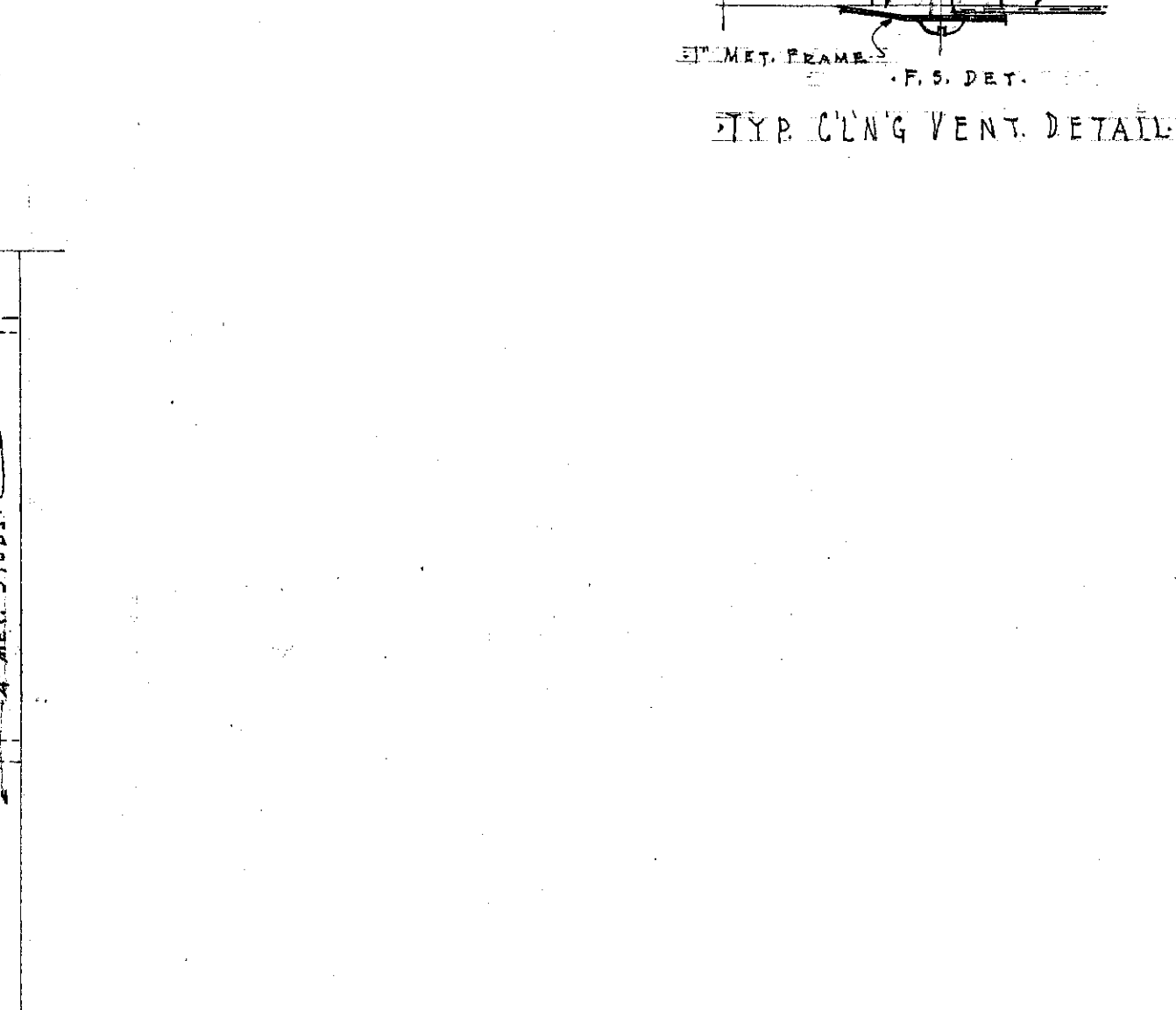
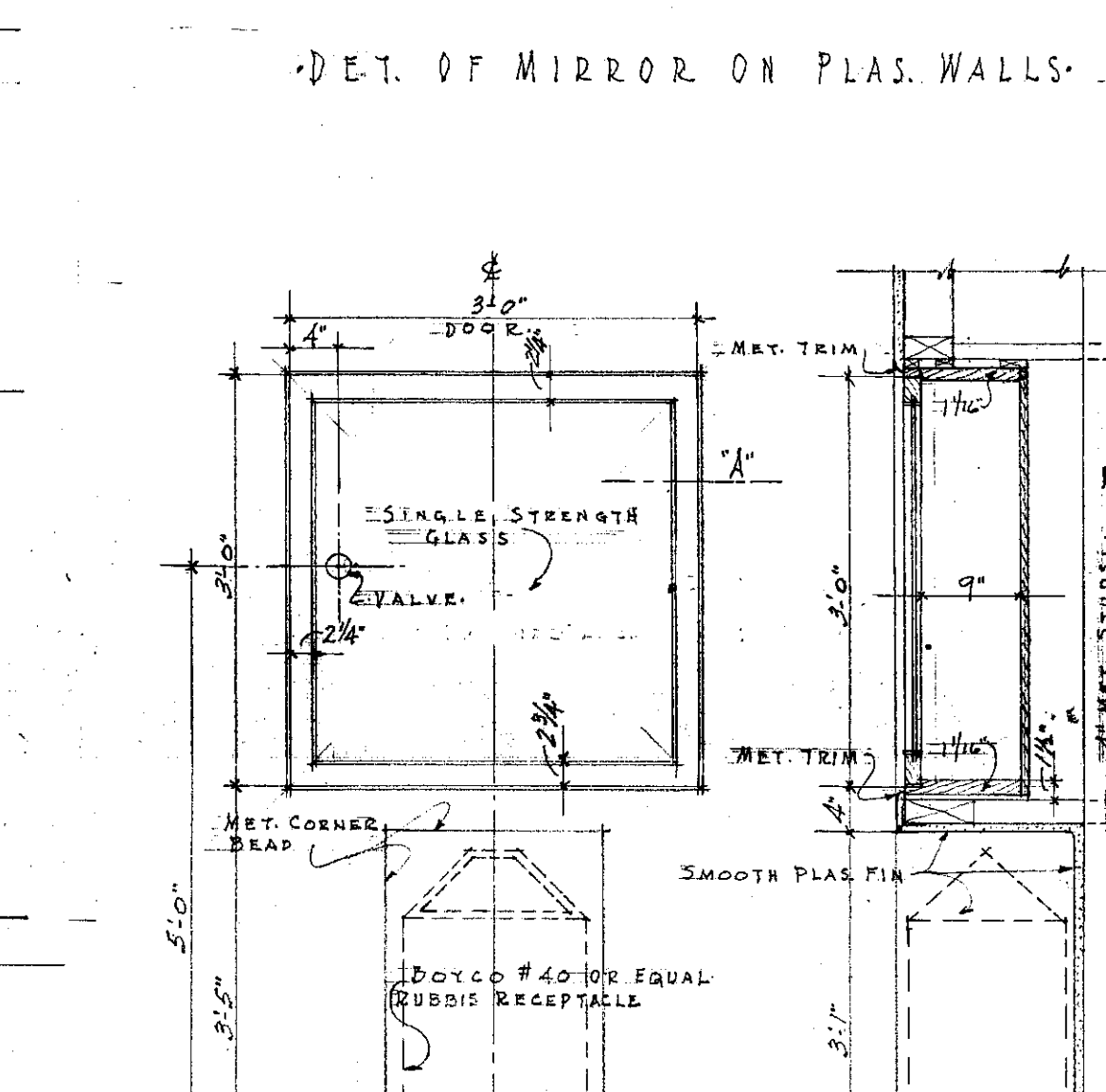
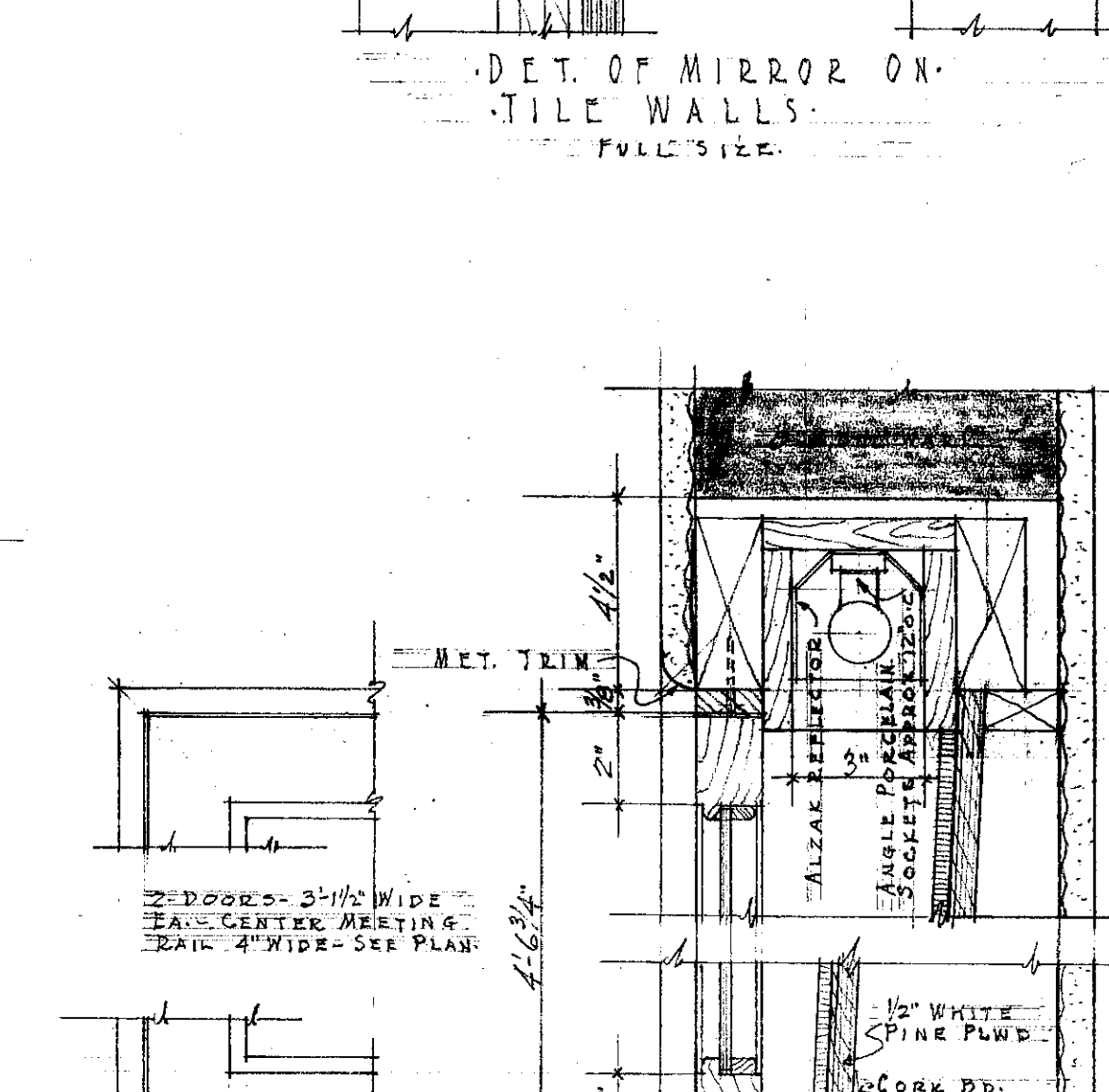
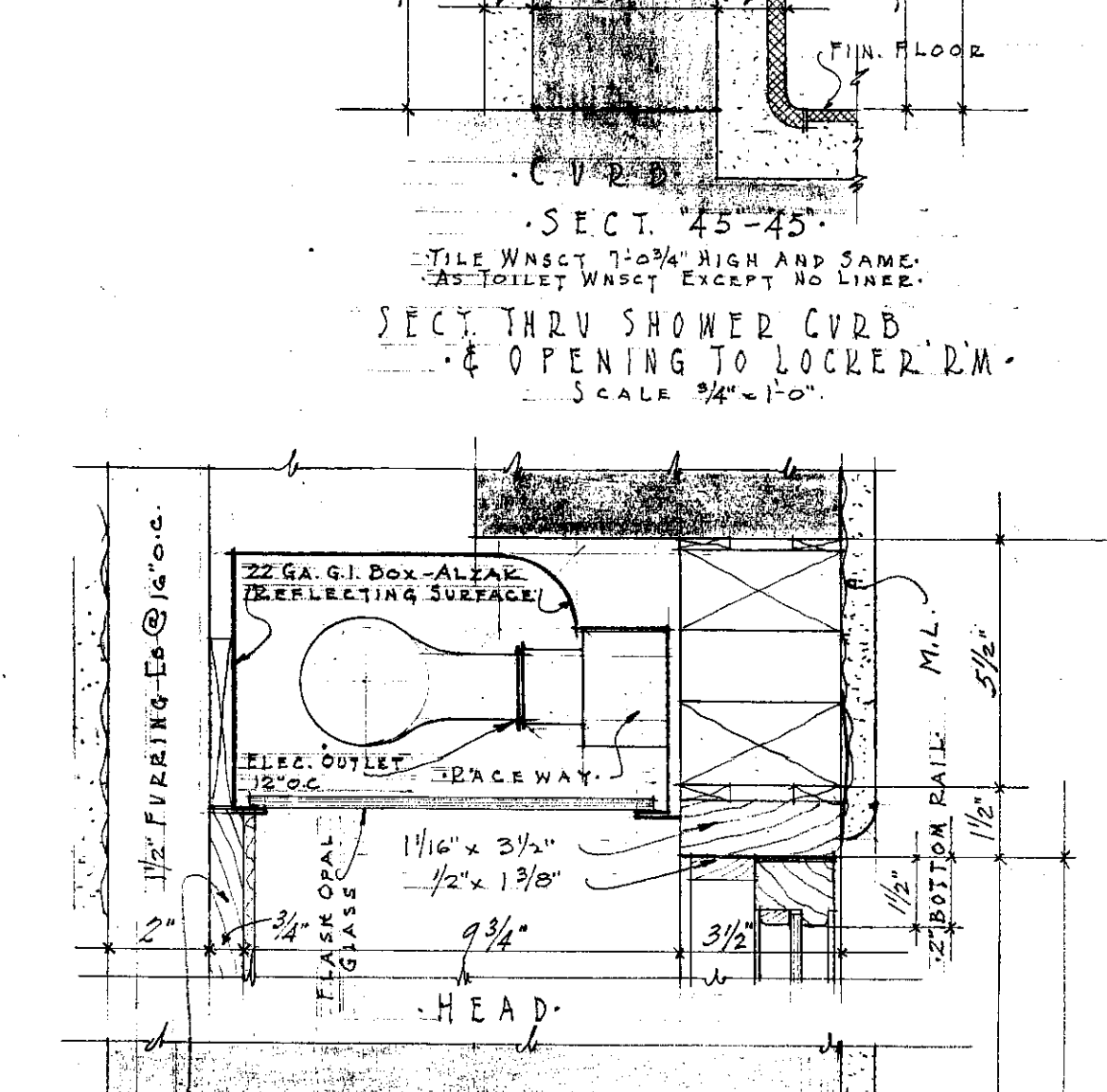
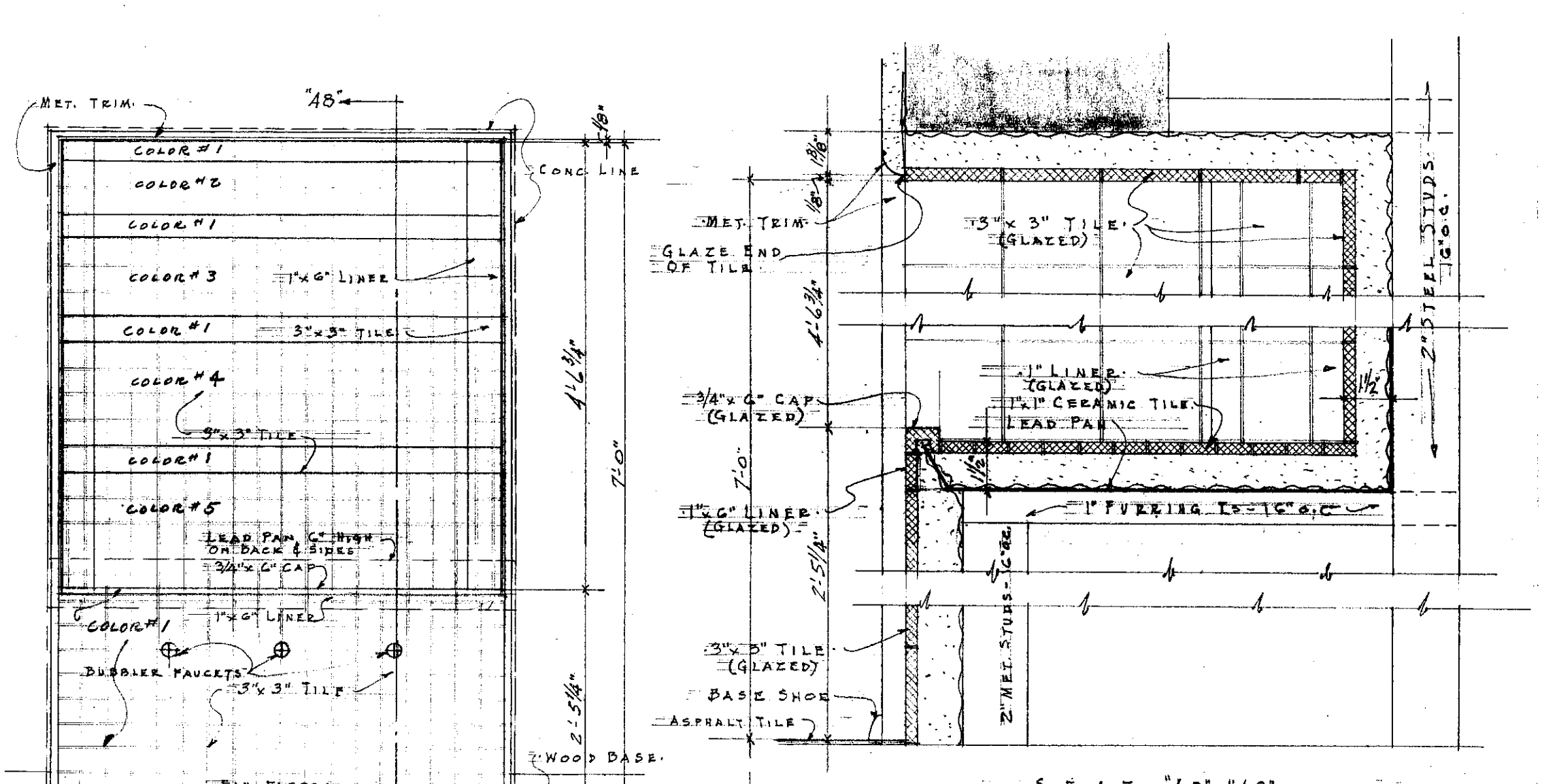
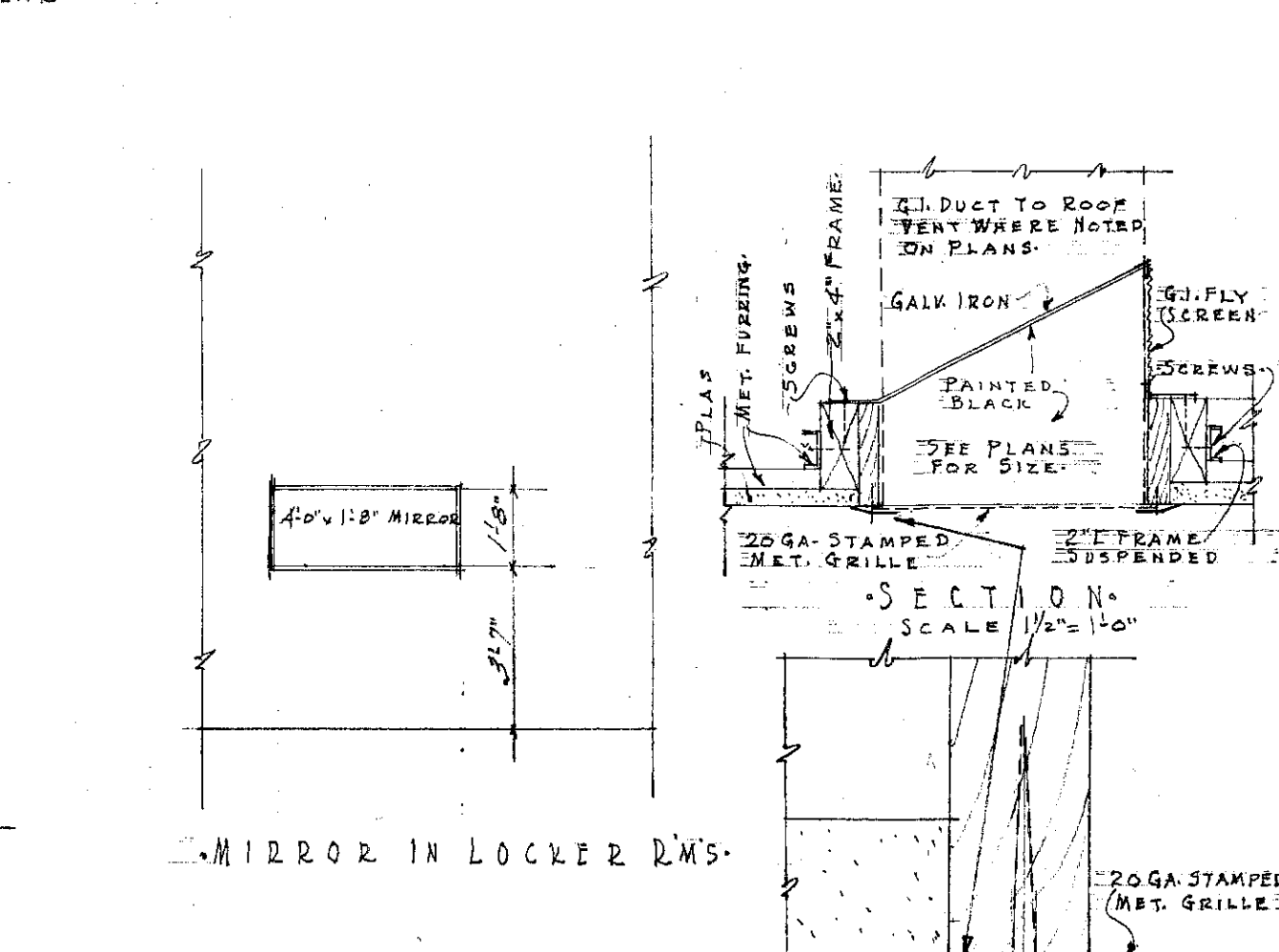
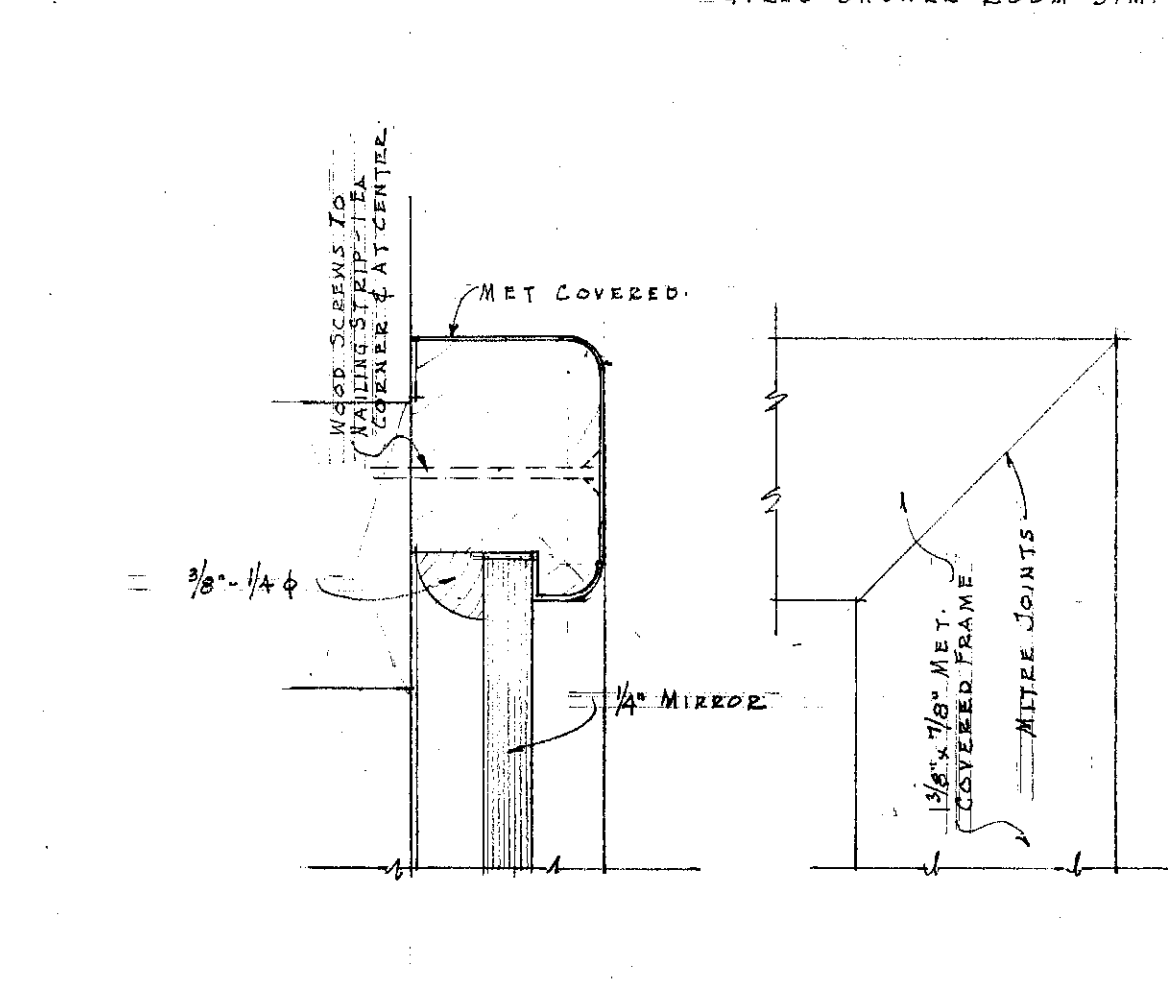
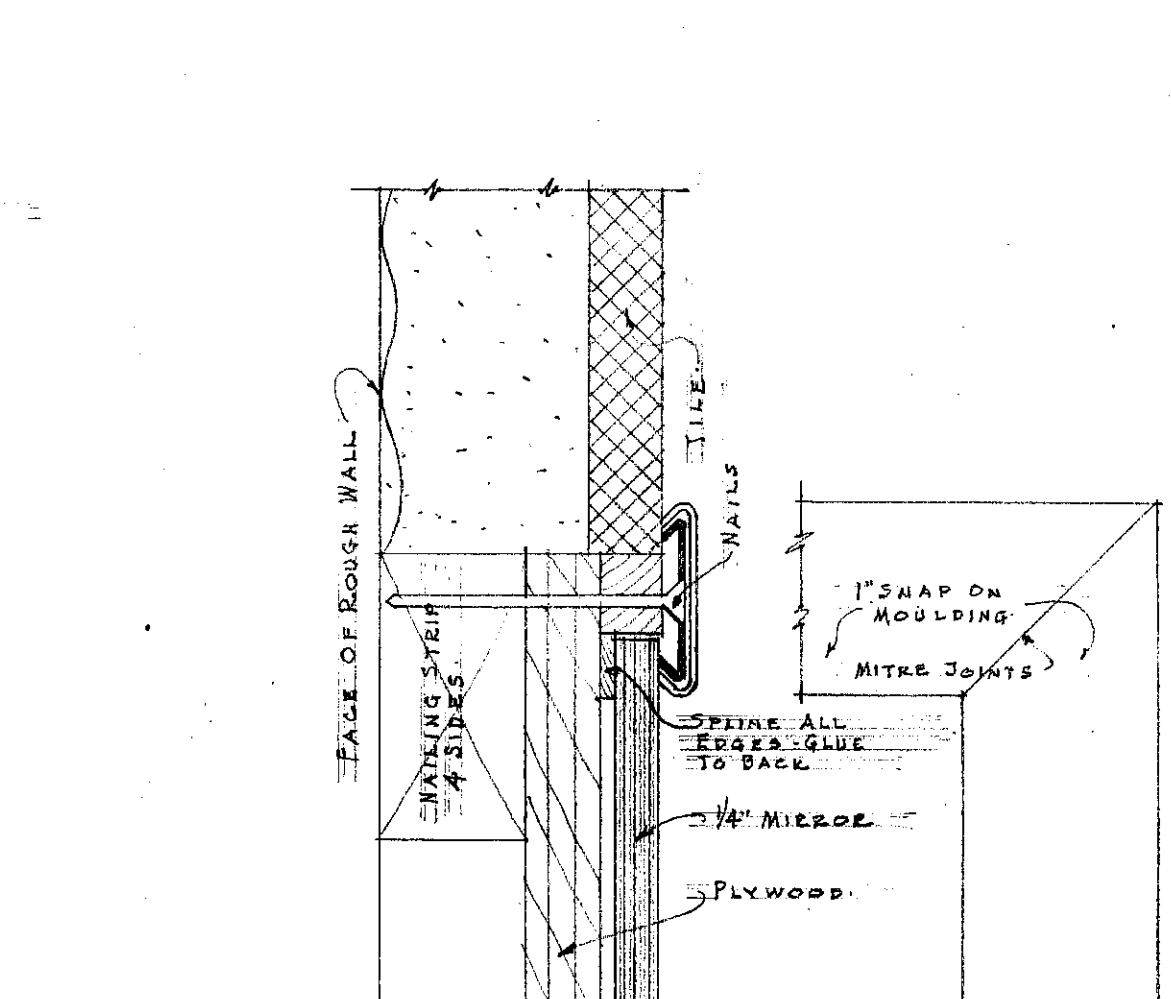
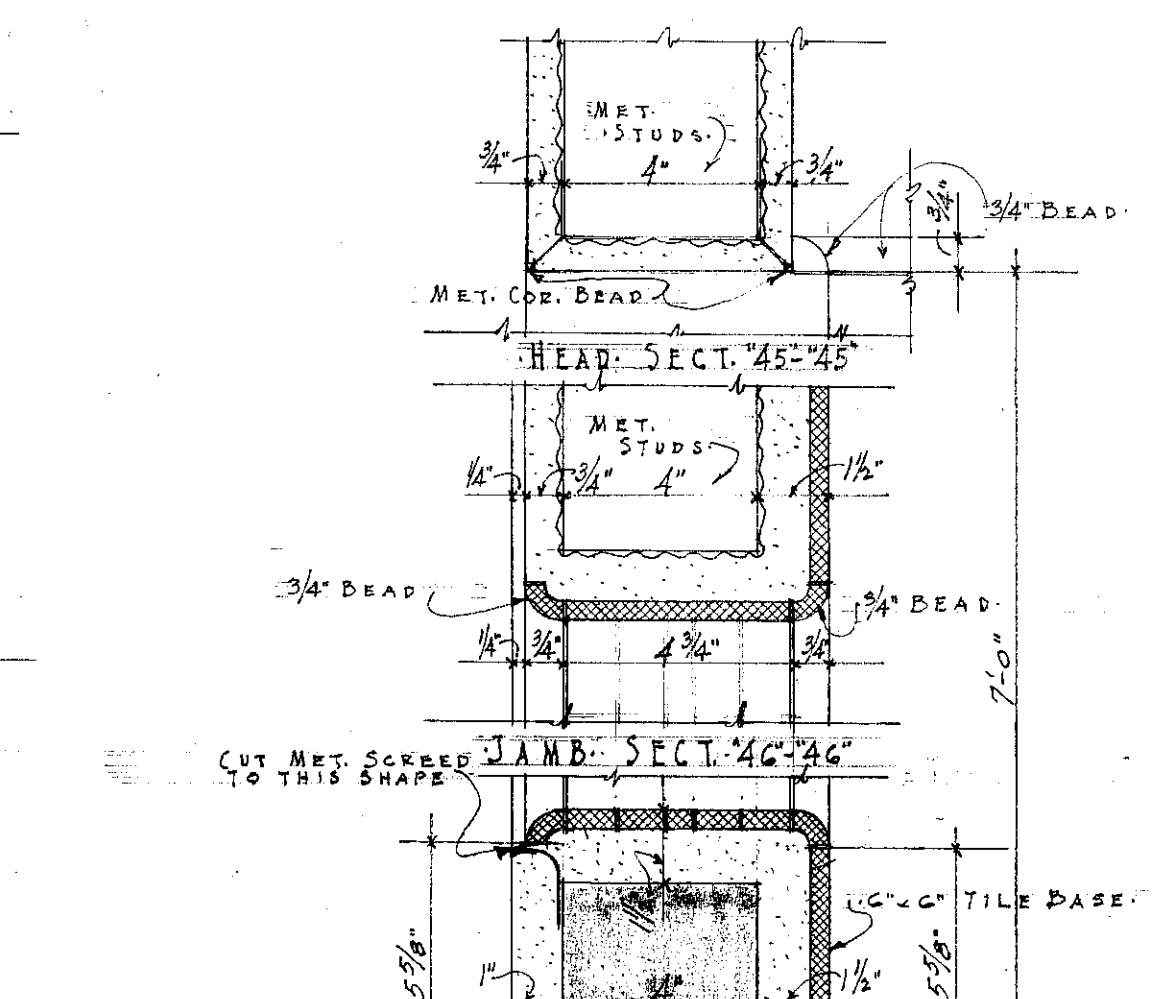
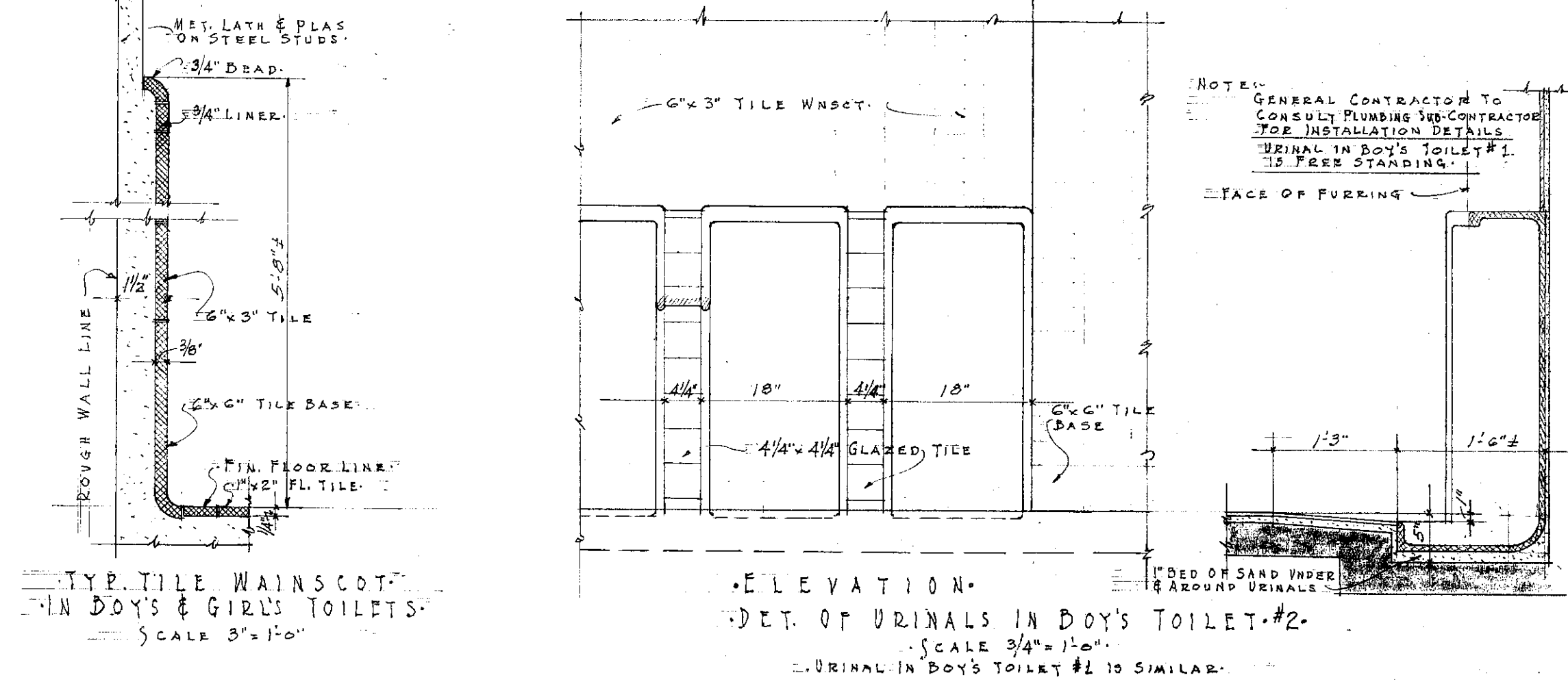
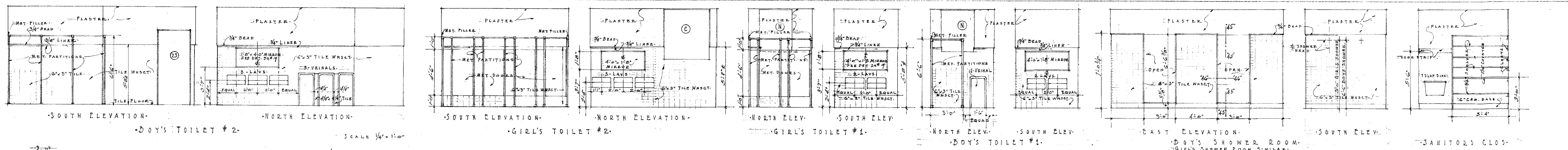


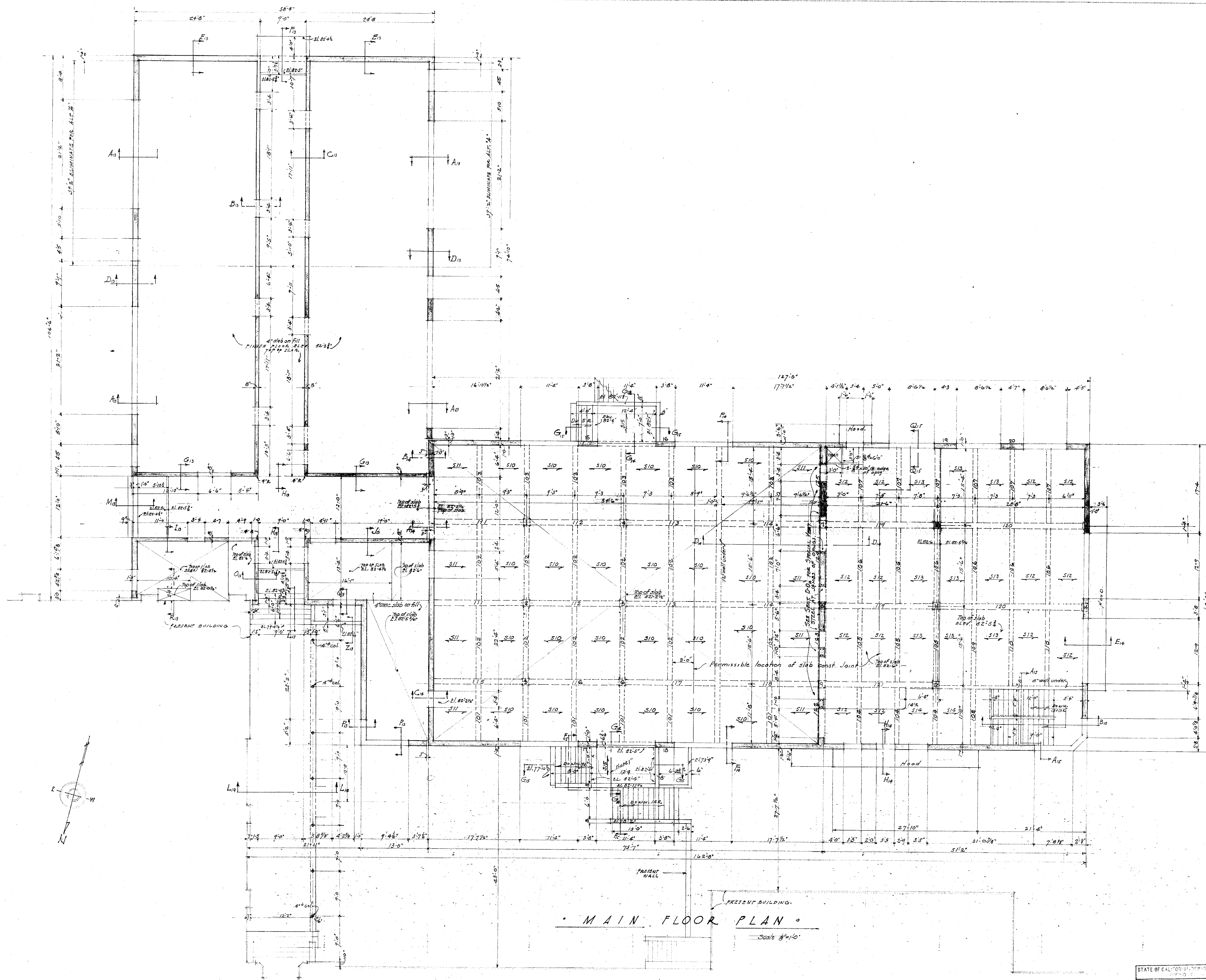






STATE OF CALIFORNIA DEPARTMENT OF EDUCATION DIVISION OF SCHOOL PLANNING THESE PLANS HAVE BEEN CHECKED FOR FUNCTIONAL ARRANGEMENT, EDUCATIONAL REQUIREMENTS AND HYGIENIC CONDITIONS. APPROVED: <i>Chas. Burdick</i> 1-19-39		APPROVED: <i>John A. Brown</i> 1-20-1939 PRESIDENT BOARD OF SUPERVISORS COUNTY OF LOS ANGELES 27721		CLASS RM., CAFETERIA, GYMNASIUM & LIBRARY ADDITION, PIER AVE. SCHOOL, LOS ANGELES, CALIF. LIBRARIANS WORK ROOM, MISC. SHEET NO. 8 DATE JAN. 1939 MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG., LOS ANGELES, CAL.	
CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.		CHECKED: <i>John A. Brown</i> 1-20-1939 ARCHITECT		TRACED: <i>John A. Brown</i> 1-20-1939 ARCHITECT	





NOTE:
 For typical details, general notes and schedules see
 Sheet #16 For structural steel details see sheet #17
 For loading schedules and details see sheet #10

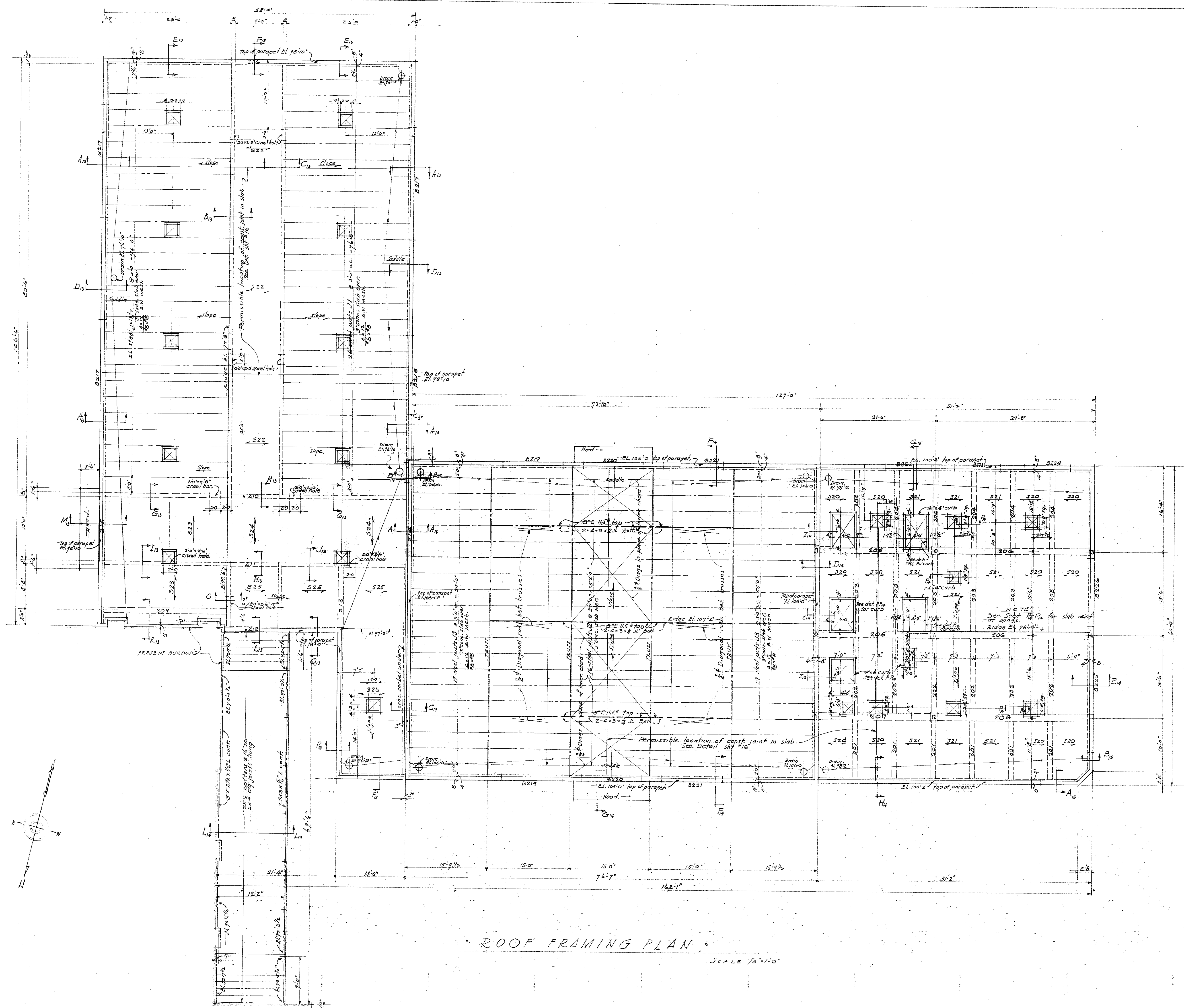
STATE OF CALIFORNIA
 DEPARTMENT OF EDUCATION
 DIVISION OF SCHOOL PLANNING
 1-20-1939
 2777
 C. H. Kromer
 COUNTY SUPERINTENDENT OF SCHOOLS
 Los Angeles

CONTRACTOR MUST
 VERIFY ALL
 DIMENSIONS AT THE
 BUILDING.

APPROVED
 1-20-1939
 RESIDENTS OF BOARD
 J. H. Smith
 CLERK
 J. H. Smith
 SUPERVISOR OF SCHOOLS
 COUNTY OF LOS ANGELES
 DATE JAN. 1939

CLASS RM. CAFETERIA GYMNASIUM &
 LIBRARY ADDITION PIER AVE. SCHOOL
 PIER AVE. & CAMINO REAL
 HOLMWOOD BEACH, CALIF.
 MAIN FLOOR PLAN
 JOB NO. 856
 DRAWN P.E.
 TRACED
 CHECKED
 DATE JAN. 1939
 MARSH, SMITH & POWELL, ARCHITECTS
 516 ARCHITECTS BLDG. LOS ANGELES, CALIF.

County Superintendent of Schools
 Los Angeles
 JAN 19 1939
 R. J. Dwyer
 Deputy



ROOF FRAMING PLAN
SCALE 1/8"=1'-0"

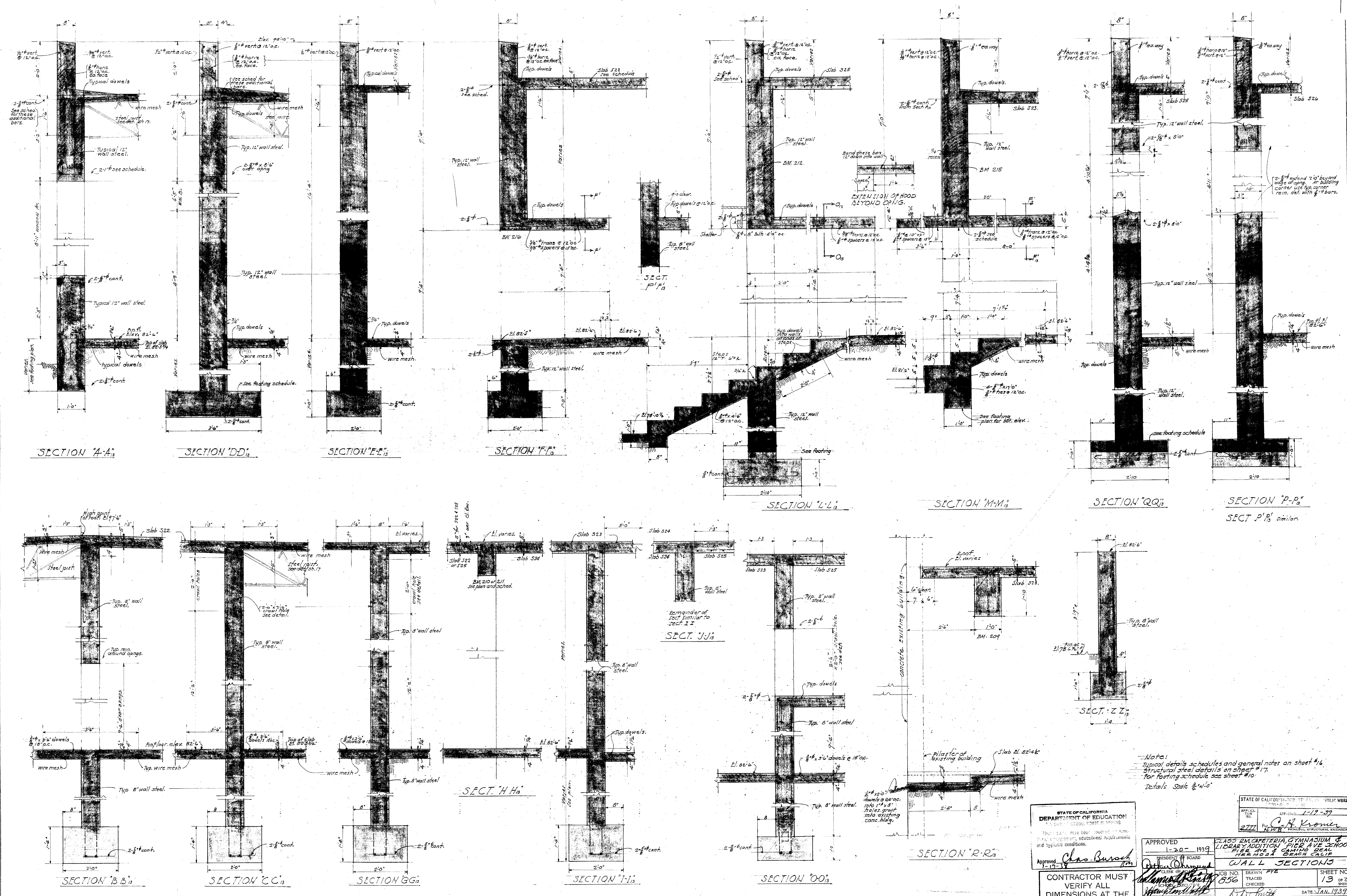
NOTE:
For typical details, general notes and schedules
see sheet #16 For structural steel details
see sheet #17 For footing schedules and details
see sheet #10

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOLS
APPROVED
1-20-1939
CHAS. CURTIS
1-19-39

CONTRACTOR MUST
VERIFY ALL
DIMENSIONS AT THE
BUILDING.

STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS	
APPROVED 1-19-39 H. H. KROMER PRINCIPAL STRUCTURAL ENGINEER	
APPROVED 1-20-1939 PRESIDENT OF BOARD ARTHUR J. DUNN CLERK OF BOARD JAMES H. BROWN	CLASS RM. CAFETERIA GYMNASIUM & LIBRARY ADDITION, PIER AVE. SCHOOL H.E. MOSA READING PLAN ROOF FRAMING PLAN JOB NO. 856 DRAWN P.T.E. TRACED CHECKED DATE JAN. 1939 MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CAL.
SHEET NO. 12 OF 20	
JAN 19 1939 By J. Dixon signature	

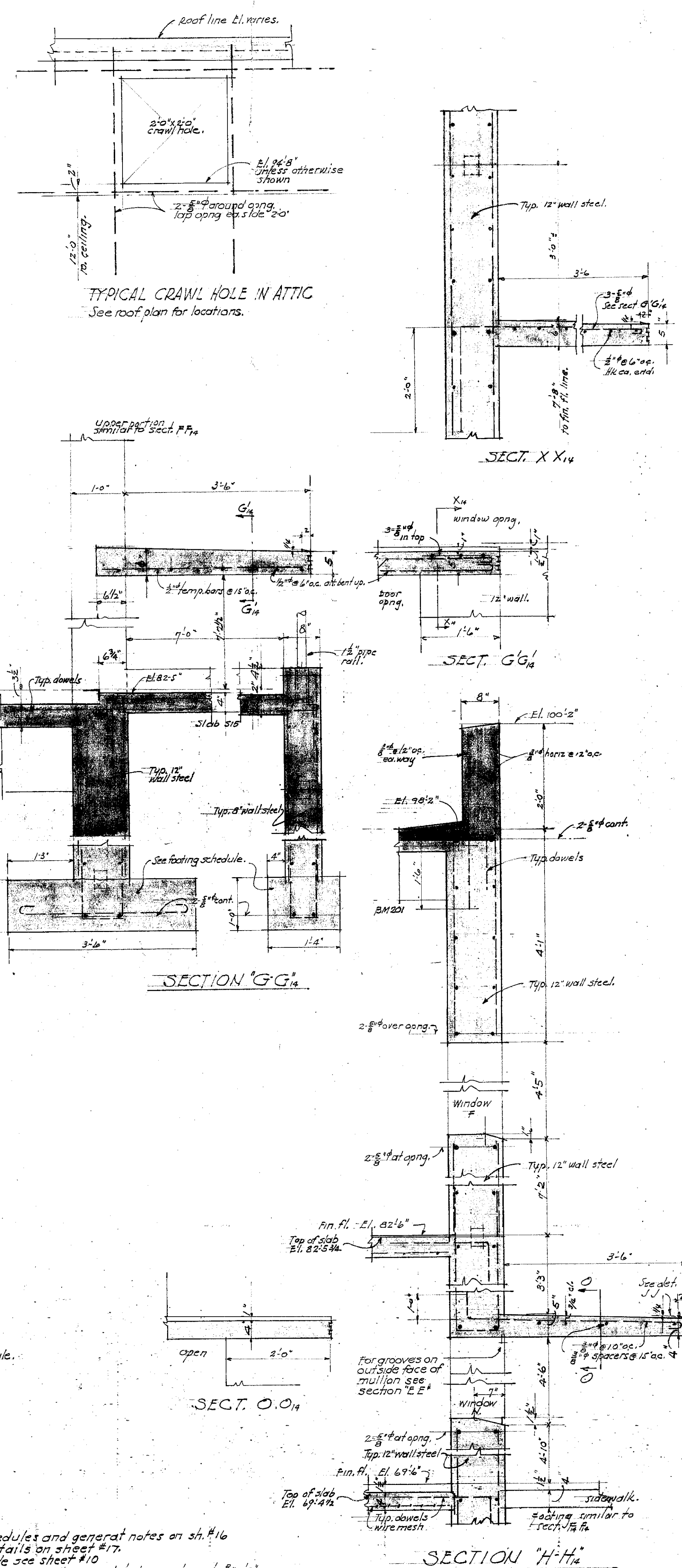
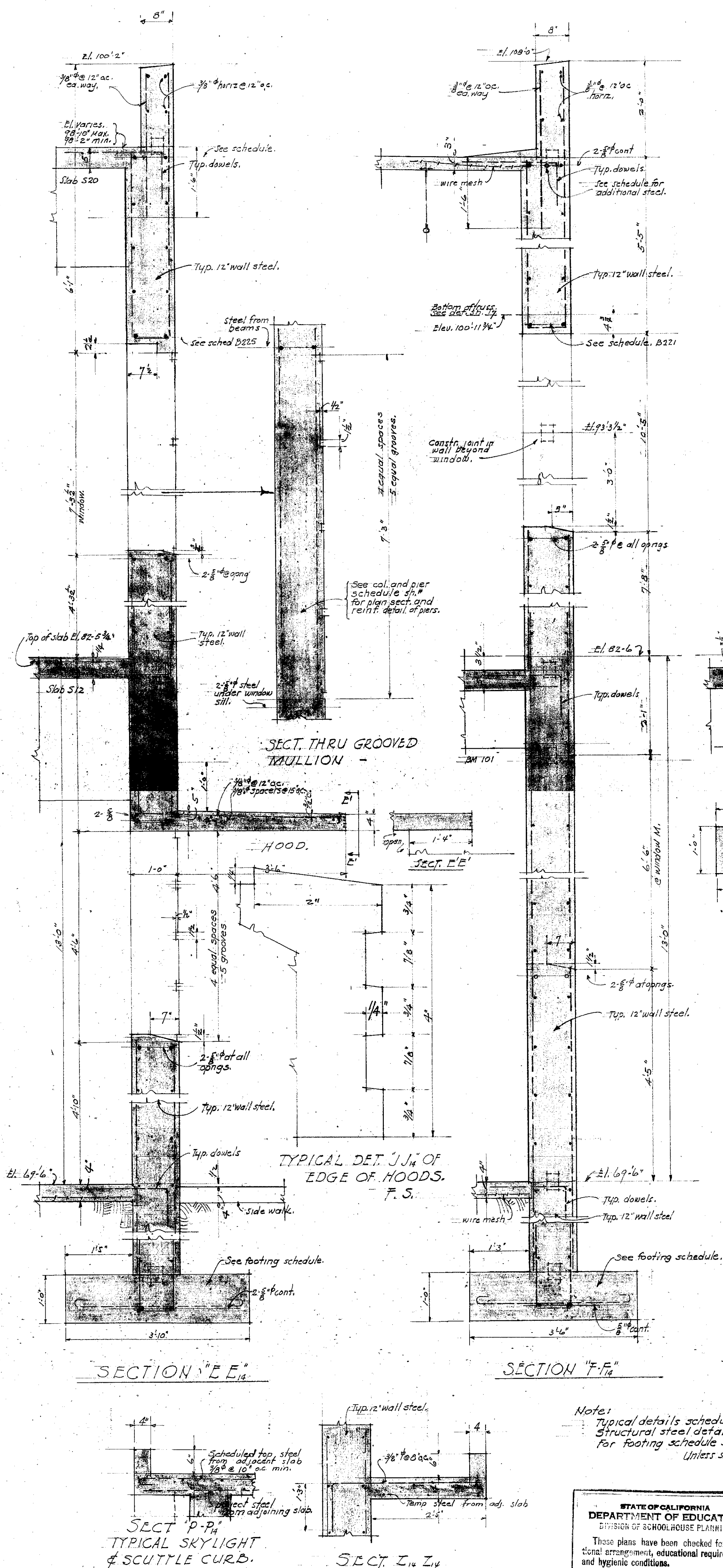
MARSH, SMITH & POWELL,
ARCHITECTS
LOS ANGELES, CALIF.



Note:
Typical details, schedules and general notes on sheet #16.
Structural steel details on sheet #17.
For footing schedule see sheet #10.
Details scale 3/4"=1'-0"

STATE OF CALIFORNIA DEPARTMENT OF EDUCATION DIVISION OF SCHOOL HOUSES		STATE OF CALIFORNIA DIVISION OF PUBLIC WORKS	
APPROVED 1-20-1939 CHAS. BURCH CLERK OF BOARD		APPROVED 1-17-39 C. H. KRONER SUPERVISOR	
CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.		SHEET NO. 13 OF 20 SHEETS DATE: JAN. 1939	
MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CAL.		MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CAL.	

By *[Signature]*
Superintendent of Schools



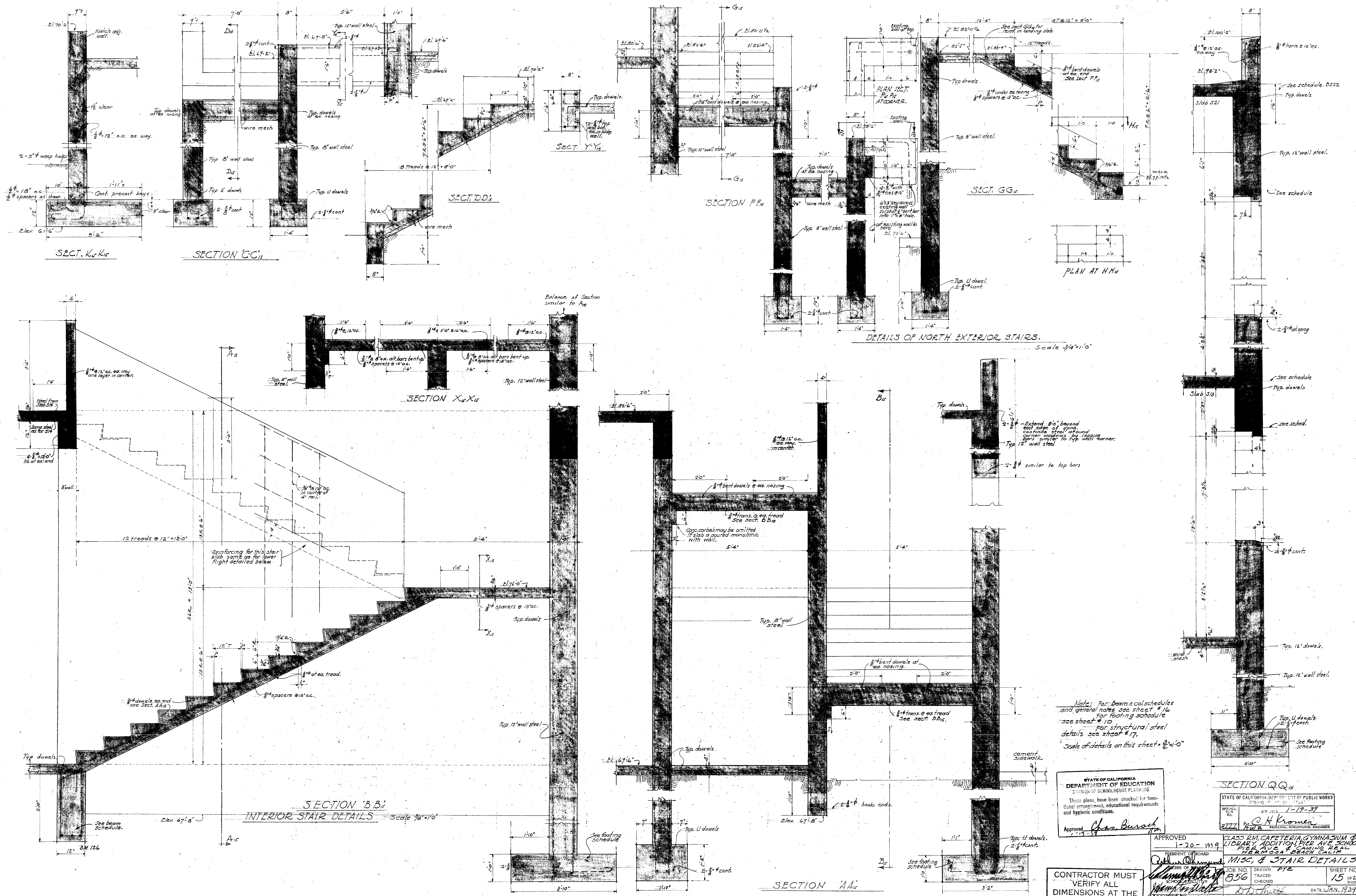
STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOLHOUSE PLANNING

These plans have been checked for functional arrangement, educational requirements and hygienic conditions.

Approved *Chas. Bursch*
1-19-39 *Bm*

DATE 1-17-37		APPROVED 1-20-1937		1253 S. MARSH STREET, LOS ANGELES, CALIF. LIBRARY ADDITION - 2ND FLOOR SCHOOL FIRE ALARM CAMPUS BEARING 1937	
PREPARED BY C. H. Krower H. J. B. STRUCTURAL ENGINEER		REVIEWED BY [Signature] [Signature] [Signature]		WALL SECTIONS	
CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.		JOB NO. 856		DRAWN BY TRACED CHECKED 14 OF 20 SHEETS	
APPROVED BY A. R. Clifton CO.		MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CALIF.			

Los Angeles **JAN 19 1939**
By *L. Dixon*
Deputy



Notes: For beam & column schedules and general notes see sheet #16
For footing schedule see sheet #10
For structural steel details see sheet #17
Scale of details on this sheet = 3/4"=1'-0"

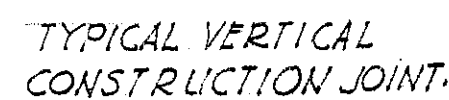
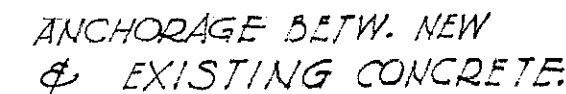
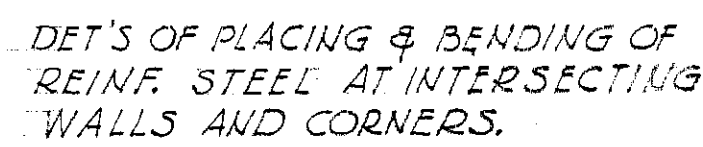
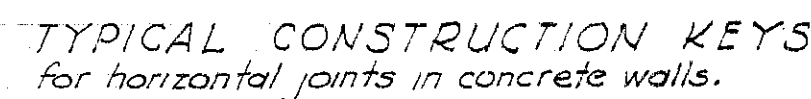
STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOLHOUSE PLANNING
These plans have been checked for functional arrangement, educational requirements and hygienic conditions.
Approved: *Chas. Bursch*
1-17-37

STATE OF CALIFORNIA, DEPT. OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
APPROVED: *C. H. Kramer*
2772, H.P.E. PRINCIPAL STRUCTURAL ENGINEER

CONTRACTOR MUST
VERIFY ALL
DIMENSIONS AT THE
BUILDING.

APPROVED: 1-20-1937
PRESIDENT OF BOARD: *William D. ...*
SECRETARY: *...*
TREASURER: *...*
CHECKED: *...*
DATE: JAN. 1937
CLASS RM. GYMNASIUM & LIBRARY ADDITION PIER AVE. SCHOOL
PIER AVE. CAMINO REAL
HERMOSA BEACH, CALIF.
MISC. & STAIR DETAILS
JOB NO. 856
DRAWN: PFE
SHEET NO. 15 OF 20
APPROVED BY: *...*
MARSH, SMITH & POWELL, ARCHITECTS
416 ARCHITECTS BLDG. LOS ANGELES, CALIF.

MAN 18
By *...*
Super



2'-0" x 1/2" keys 3'-0" o.c.
full depth of slab.

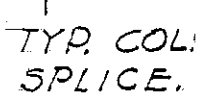
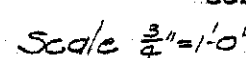
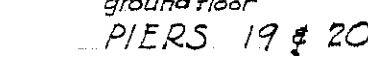
1'-0" o.c. 5/8" dowels - 13'-0" o.c.
Set of 66"

See plan for permissible
location of joints.

PLAN DETAIL OF CONST.
JOINT IN SLAB



CHEDULE
Place straight and bent bars alternately. Where bent bars, at end of slab, frame into walls, dowels of same size and spacing may be used instead of bending up bars. Reinforcing steel for slabs shall have a minimum protective covering of 1/2 inch for slabs on steel joists unless otherwise specified. Bars shall be welded with electric welded wire mesh.
Schedule shown looking north and west elevations of beams. All bars indicated are round unless shown square thus #. See sch #17 for reinf. of 3" slabs on steel joists.

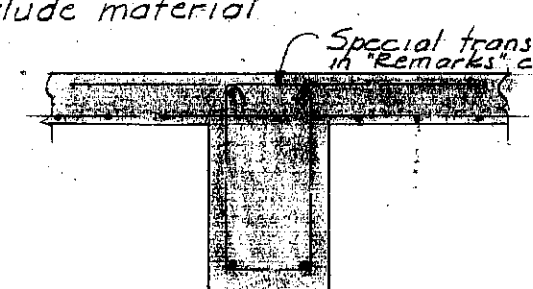


COLUMN NOTES.
In general, column pour lines and splices are at same level as adjoining wall pour lines, see wall sections. Vertical steel shall have 2' minimum clear coverage. Steel to extend to within 2' of top of cols. Cols end at roof or floor level. Wall steel ending at cols. to be hooked at far face. Column splice length occurs entirely above elevation of pour line, see detail. Column splices to occur only at points of lateral support.

NOTES-ON BEAM SCHEDULE

TYR POSITION OF BARS
W/ 2 LAYERS OF STEEL OCCURS

TYPICAL STIRRUPS
TYPE 'A'

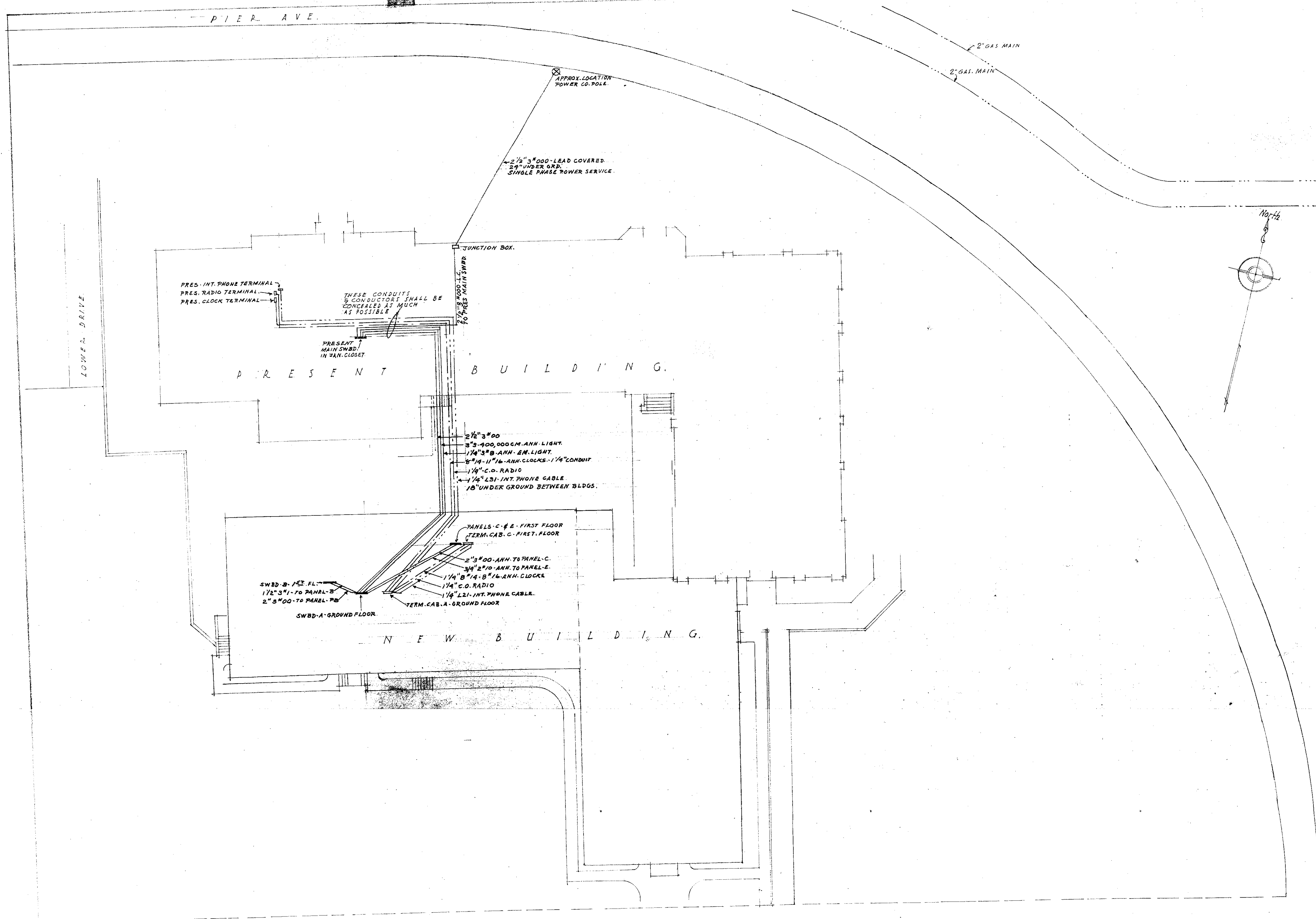


SECTION SHOWING SP
SLAB STEEL OVER G.
#111 TO 125 IN. & #205 TO 2

CONTRACTOR MUST
VERIFY ALL
DIMENSIONS AT THE
BUILDING

APPROVED		GLASS RM. CATERPILLAR, CYMNIANUM & LIBRARY ADDITION, PIER AVE. SCHOOL	
1-20-1959		FIVE AVE. & SEMINOLE CREEK	
PRESIDENT OF BOARD		SCHEDULES ETC	
CLERK OF BOARD		JOB NO.	DRAWN P.T.E.
SCHOOL EXECUTIVE		856	TRACED
			CHECKED
			SHEET NO.
			16 OF 22 SHEETS
APPROVED BY		DATE JAN. 1959	
SCHOOLS		MARSH, SMITH & POWELL, ARCHITECTS	
CO.		100 EAST 15TH ST. DALLAS, TEXAS	

MAN 10 May 1968
By J. [Signature]
Deputy



- SYMBOLS**
- CEILING OUTLET
 - BRACKET OUTLET
 - DUPLEX RECEPT. OUTLET
 - YARD LIGHT
 - EXIT BOX
 - SINGLE POLE SWITCH
 - THREE WAY SWITCH
 - LOCK TYPE SWITCH
 - INTERCOM. PHONE
 - SECONDARY CLOCK OUTLET
 - PERS. P. OUTLET
 - 1/2" CONDUIT
 - 3/4" CONDUIT
 - 1" CONDUIT
 - 2" CONDUIT ONLY
 - BELL
 - FIRE ALARM
 - FD FULLMAN #400000 FLOOR BOX, OR EQUAL
 - P. ARROW #7757, OR EQUAL
 - RANGE OUTLET CAPPED
 - HEAT UNIT TRANS
 - HEAT UNIT OUTLET

SCHEDULE OF MAIN SWITCHBOARD

ADD TO PRESENT MAIN SWITCHBOARD
400 AMP. 2 POLE SWITCH FOR LIGHT-CONNECT TO PRES. MAIN SWITCH & METER
30 AMP. 2 POLE SWITCH FOR EM. LIGHT-CONNECT BETWEEN PRES. MAIN SW. & METER
200 AMP. 2 POLE SWITCH & METER FOR SINGLE PHASE POWER

SCHEDULE OF EXIT SIGNS

TYPE "A" - C.W. COLE CO. #114155 - FLUORESCENT, OR EQUAL
TYPE "B" - C.W. COLE CO. #114156 - KRYSTAL - EXIT SIGN

SCHEDULE OF SWITCHBOARD A

40 AMP. 2 POLE SWITCH FOR PANEL A
PANEL A - 16 NON SWITCHED FUSED CIRCUITS
ON SWITCHBOARD A - WITH SPARE FOR HEAT TRANSFORMER
100 AMP. 2 POLE SWITCH FOR PANEL B - WITH SPARE FOR HEAT TRANSF.
300 AMP. 2 POLE SWITCH FOR PANEL C
60 AMP. 2 POLE SWITCH FOR SPARE
30 AMP. 2 POLE SWITCH FOR EM. PANEL
200 AMP. 2 POLE SWITCH FOR POWER PANEL 70

SCHEDULE OF SWITCHBOARD B

PANEL B - 16 NON SWITCHED FUSED CIRCUITS - ON SWBD B
POWER PANEL 70 - ON SWBD B - CONTAINS
4 - 60 AMP. 2 POLE PULL OUT FUSED SWITCHES
8 - 30 AMP. 2 POLE PULL OUT FUSED SWITCHES

SCHEDULE OF PANEL BOARDS

PANEL A - ON SWITCHBOARD A
PANEL B - ON SWITCHBOARD A
PANEL C - 20 NON SWITCHED FUSED CIRCUITS - WITH SPACE FOR HEAT TRANSF.
PANEL D - 16 SWITCHED CIRCUITS - ON PANEL C

SCHEDULE OF TERMINAL CABINETS

TERM. CAB. A - 3 SECTIONS EACH SECTION 12 1/2" x 18" x 24" WITH LOCKED DOOR OVER EACH SECTION
TERM. CAB. C - 3 SECTIONS - 12 1/2" x 18" x 24"

PLOT PLAN
SCALE 1" = 20 FT.

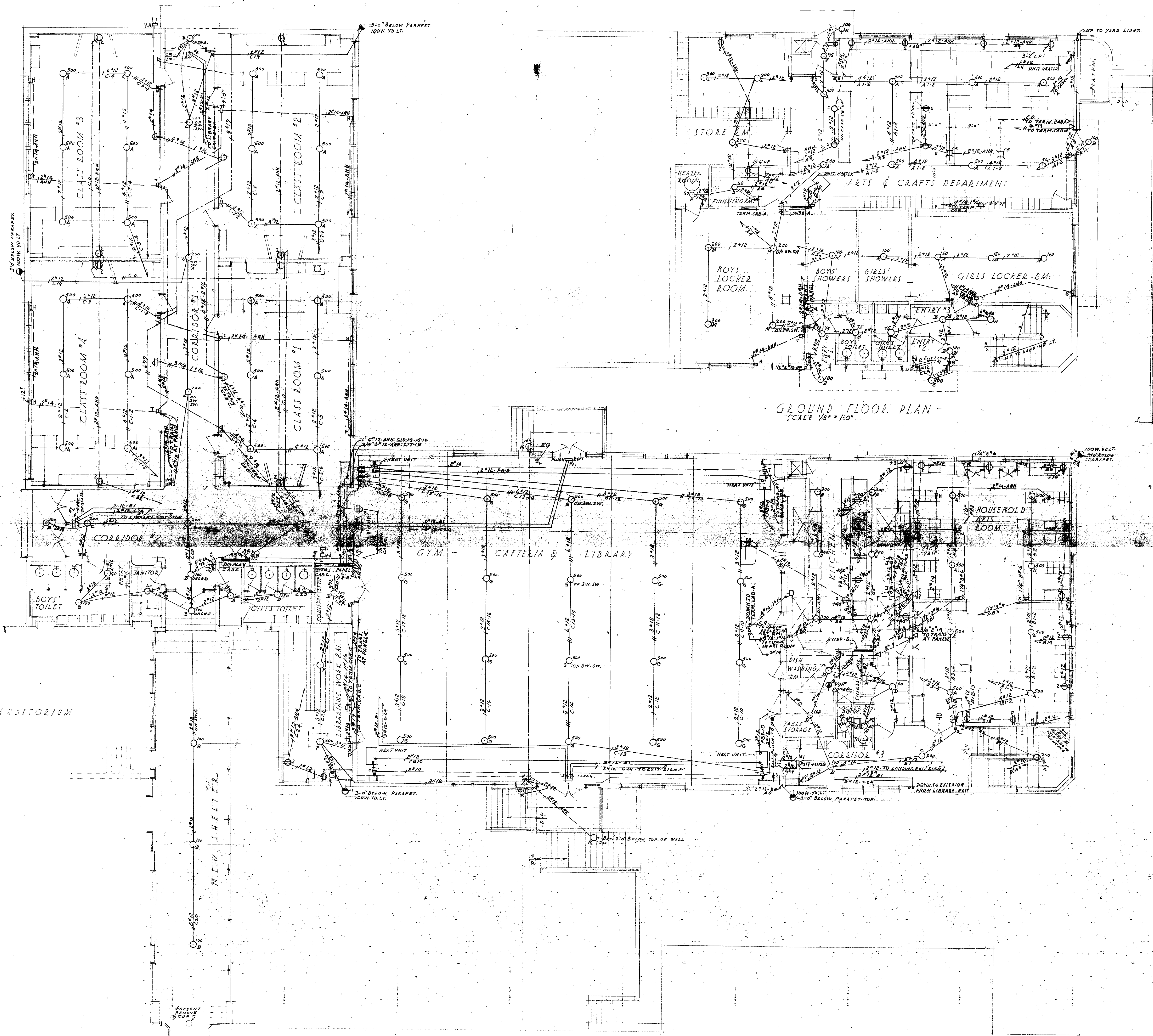
STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOLHOUSE PLANNING
These plans have been checked for functional arrangement, educational requirements and hygienic conditions.
Approved: *Chas. Burroughs*
1-14-39

STATE OF CALIFORNIA - DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
APPROVED: *C. H. Kramer*
1-20-39
2722
PRINCIPAL STRUCTURAL ENGINEER

CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.

APPROVED: *D. D. Smith*
1-20-39
PRESIDENT OF BOARD
JOB NO. 856
DRAWN: *H.M.G.*
CHECKED: *D.D. Smith*
DATE: JAN. 1939
MARSH, SMITH & POWELL, ARCHITECTS
516 ARCHITECTS BLDG. LOS ANGELES, CAL.

County of Los Angeles
JAN 19 1939
By *D. D. Smith*
Superintendent of Schools



- MAIN FLOOR PLAN -
SCALE 1/8" = 1'-0"

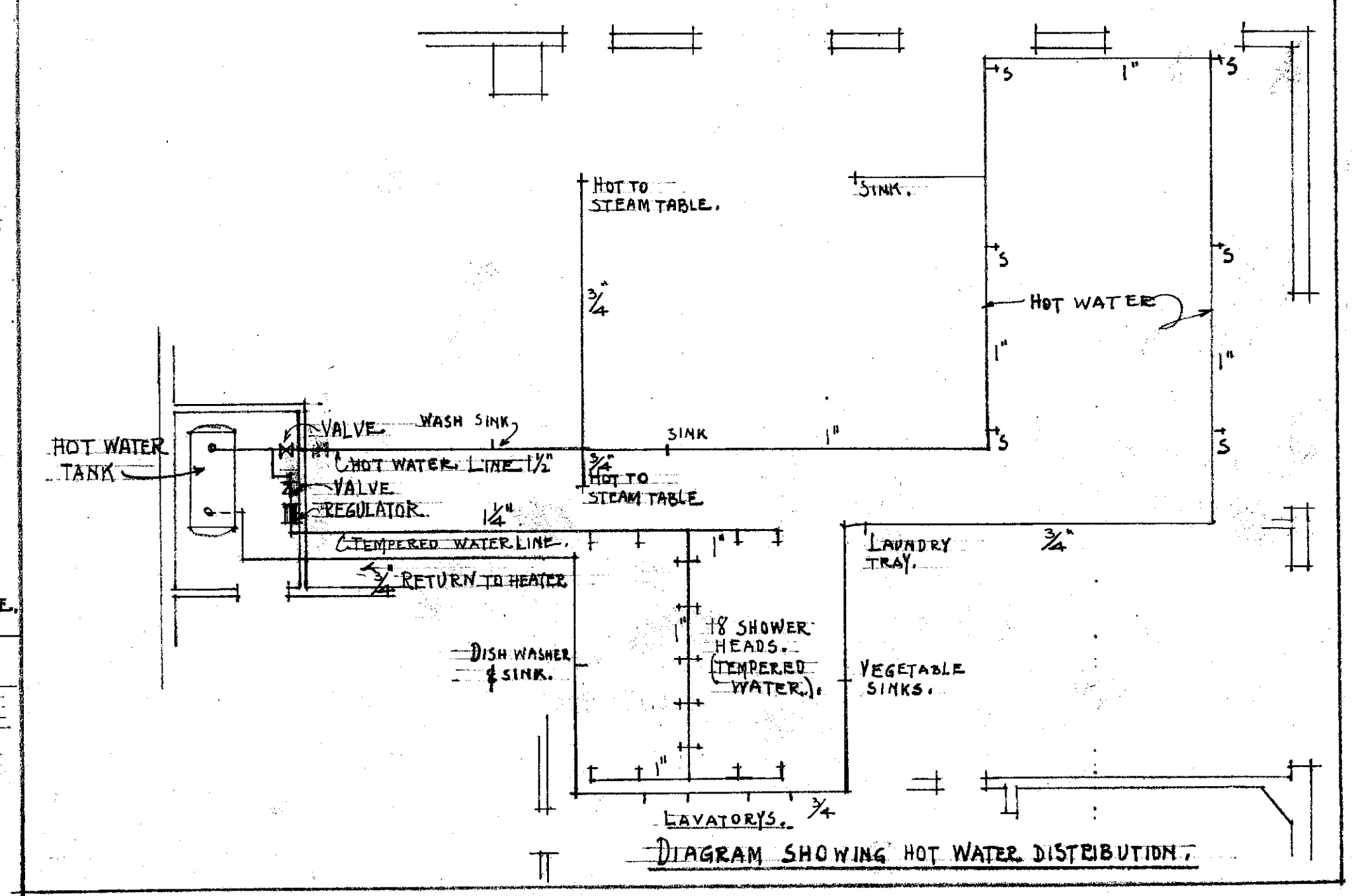
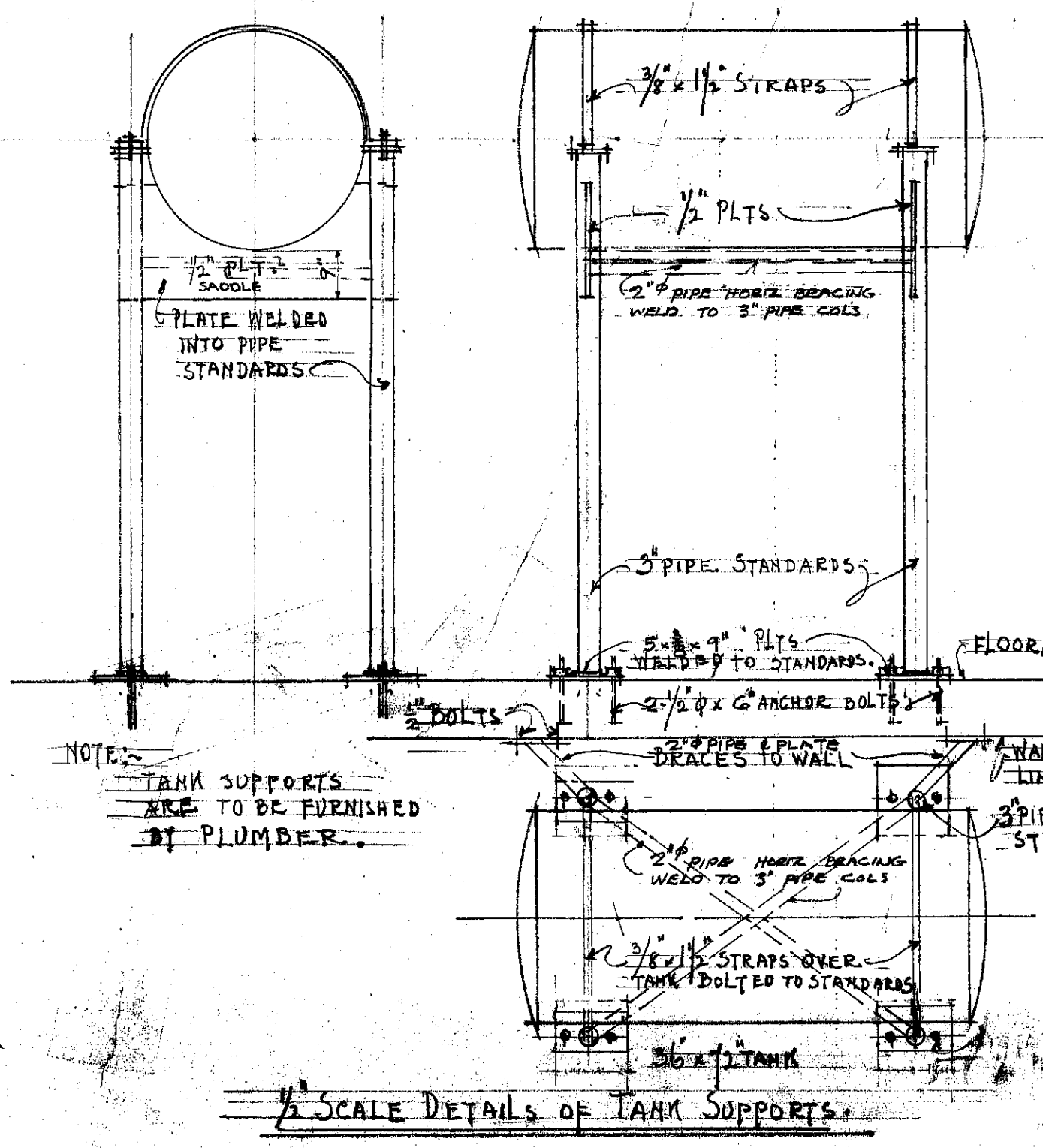
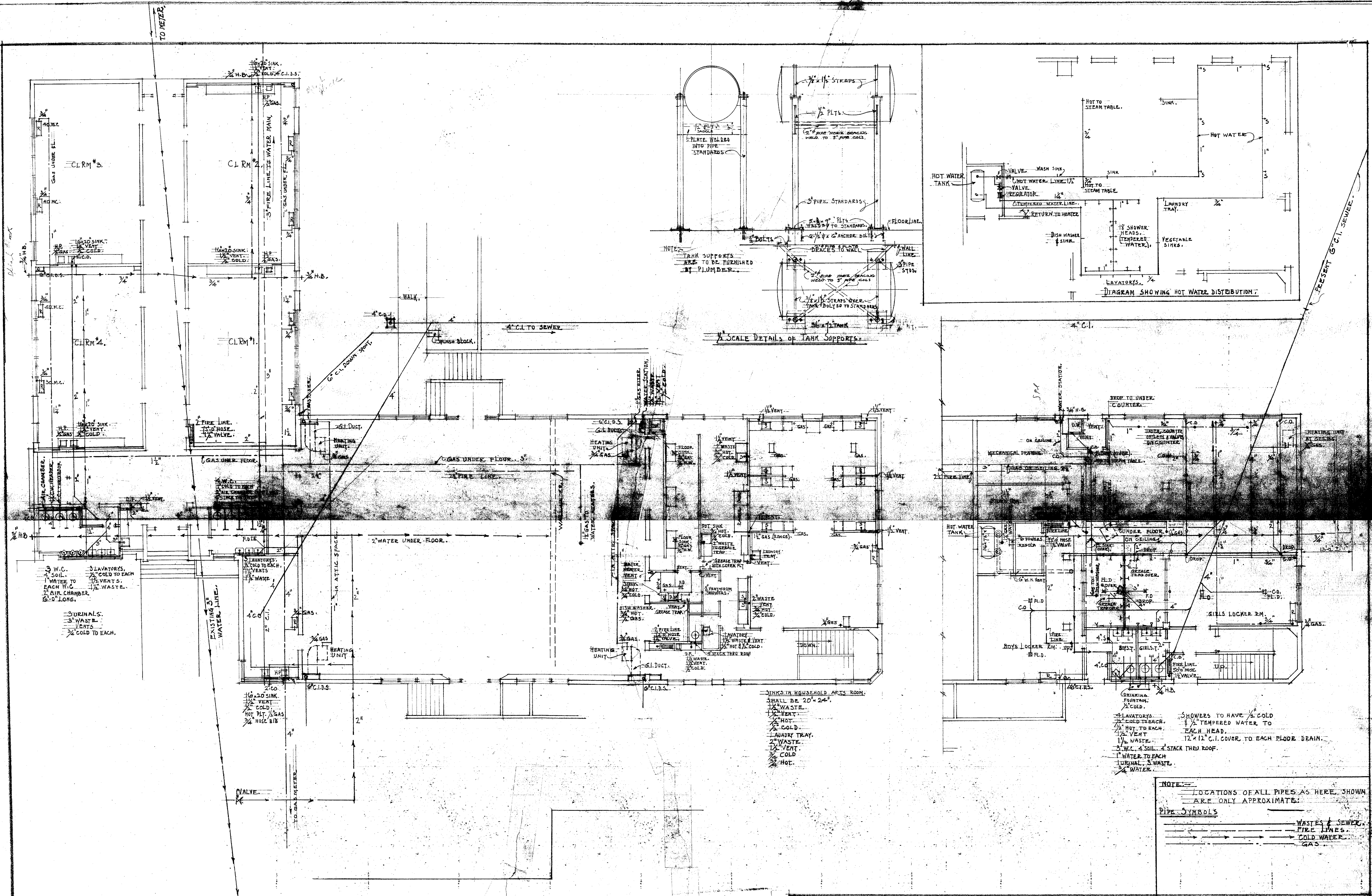
- GROUND FLOOR PLAN -
SCALE 1/8" = 1'-0"

STATE OF CALIFORNIA
DEPARTMENT OF EDUCATION
DIVISION OF SCHOOL HOUSE PLANNING
These plans have been checked for functional arrangement, educational requirements and hygienic conditions.
Approved: *Chas. Burack*
1-19-38

STATE OF CALIFORNIA DIVISION OF PUBLIC WORKS APPLICANT: <i>C. H. Kromer</i> 2772	APPROVED 1-20-1939 <i>John H. Kromer</i> PRESIDENT OF BOARD CLERK OF BOARD <i>John H. Kromer</i> APPROVED BY <i>A. R. Clifton</i> SCHOOL HOUSE PLANNING	CLASS RM., CAFETERIA, GYMNASIUM & LIBRARY ADDITION, PIERRE SCHOOL, PIERRE, S.D. ELECTRICAL PLAN DRAWN: <i>HMC</i> CHECKED: <i>K. H. Smith</i> DATE: JAN. 1939	SHEET NO. 19 OF 20 MARSH, SMITH & POWELL, ARCHITECTS LOS ANGELES, CAL.
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CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.

By *J. Dixon*
1-19-38

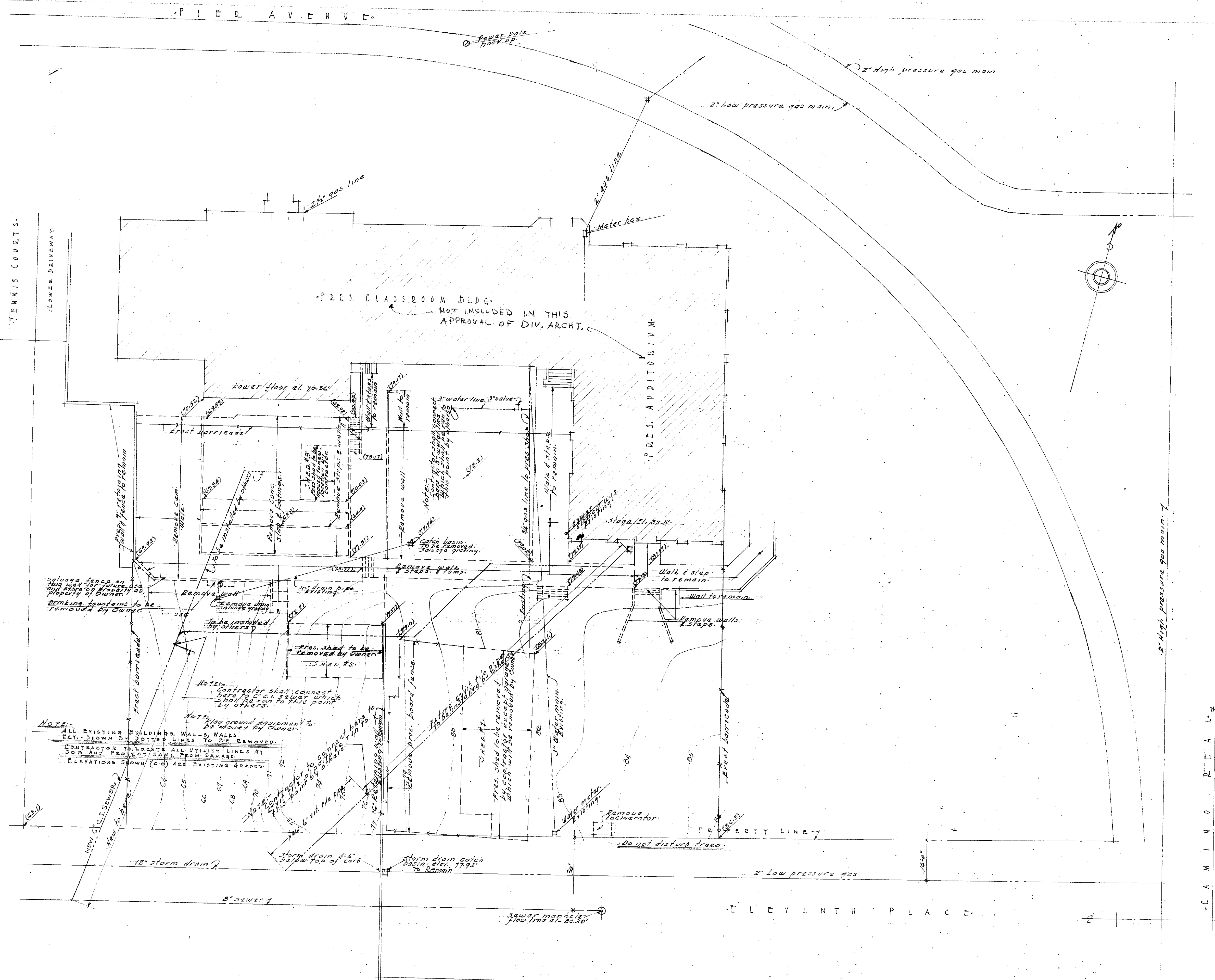


NOTE: LOCATIONS OF ALL PIPES AS HERE SHOWN ARE ONLY APPROXIMATE.

PIPE SYMBOLS

WASTE & SEWER
FIRE LINES
COLD WATER
GAS

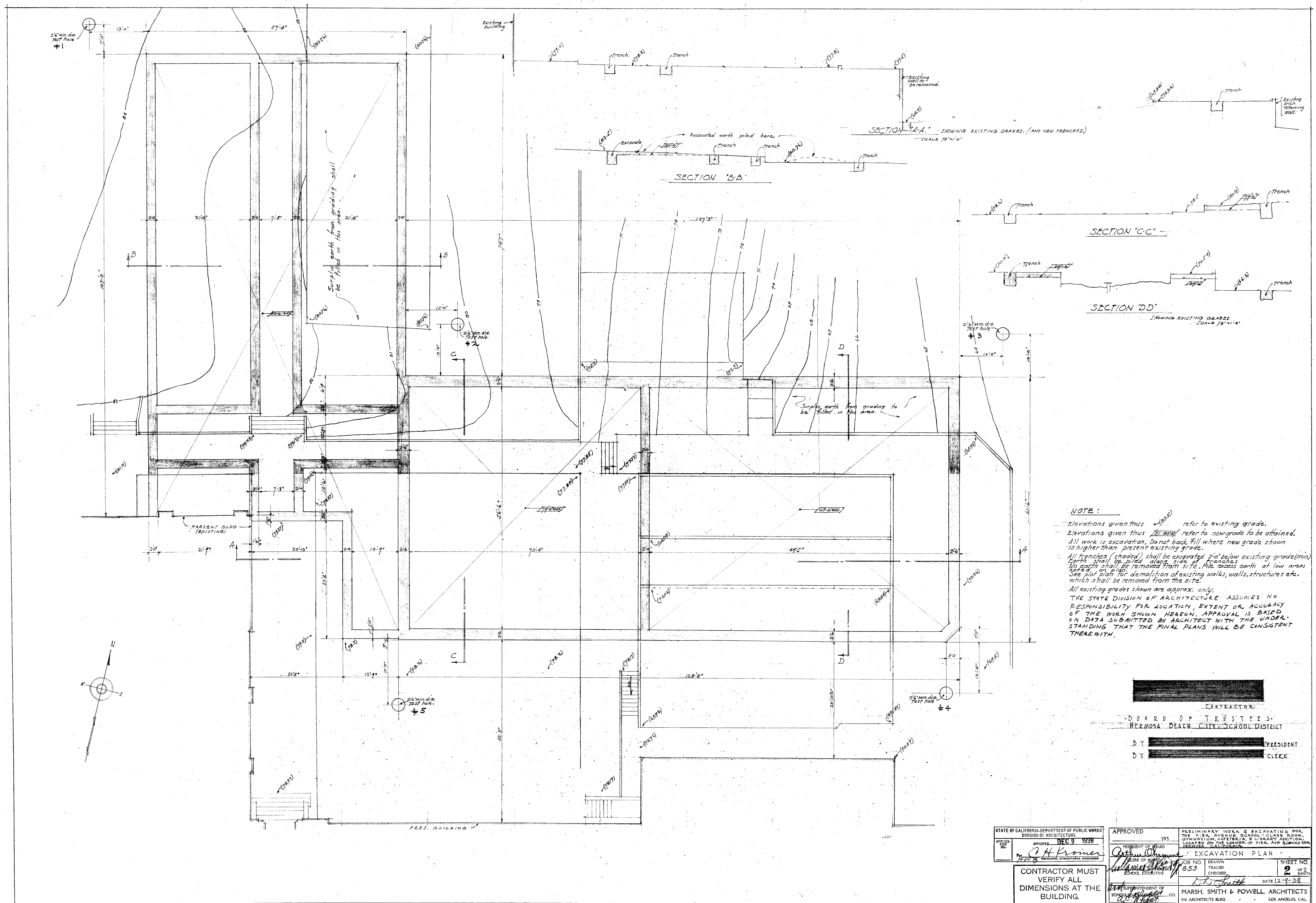
STATE OF CALIFORNIA DEPARTMENT OF EDUCATION DIVISION OF SCHOOL PLANNING These plans have been checked for functional arrangement, educational requirements and hygienic conditions. Approved: <i>Chas. Burch</i> 1-19-39	STATE OF CALIFORNIA DIVISION OF PUBLIC WORKS APPROVED: <i>CH Kromer</i> 1-17-39 CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.	APPROVED: <i>W. H. Smith</i> 1-20-1939 RESIDENT OF BOARD JAN 19 1939 MARSH, SMITH & POWELL, ARCHITECTS 514 ARCHITECTS BLDG. LOS ANGELES, CALIF.	CLASS RM, CAFETERIA, GYMNASIUM & LIBRARY ADDITION PER ARCH. 2777 PLUMBING & HEATING PLAN SHEET NO. 20 OF 20 DATE JAN. 1939
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PLOT PLAN
SCALE 1" = 20'

CONTRACTOR:
 BOARD OF TRUSTEES
 HERMOSA BEACH CITY SCHOOL DISTRICT
 BY _____ PRESIDENT
 BY _____ CLERK

STATE OF CALIFORNIA-DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE		APPROVED DEC 9 1938		PRELIMINARY WORK & EXCAVATING FOR: THE PIER AVENUE SCHOOL - CLASSROOM, GYMNASIUM, GYMNASIUM, & LIBRARY ADDITION. LOCATED ON THE CORNER OF PIER AVE. & CAMINO DE FERIA, HERMOSA BEACH, CALIF.	
APPROVED BY H. B. KRONER PRINCIPAL SUPERVISOR OF SCHOOLS		APPROVED BY Arthur Chas. Howard CLERK OF BOARD SCHOOL EXECUTIVE		JOB NO. 193 DRAWN: P.L.C. TRACED: CHICKER CHECKED: D. K. Smith	
CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING		MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CALIF.		SHEET NO. 1 OF 2 DATE 12-9-38	



NOTE :

- Elevations given thus ^{100.50} refer to existing grade.
 - Elevations given thus 100.50 refer to new grade to be attained.
 - All work is excavation. Do not back fill where new grade shown is higher than present existing grade.
 - All trenches (shaded) shall be excavated 2'-0" below existing grade (min).
Earth shall be piled along side of trenches.
No spoil shall be removed from site. Spoil earth at low areas
marked on plan.
Use of pick and shovel for demolition of existing walks, walls, structures etc.
which shall be removed from the site.
 - All existing grades shown are approx. only.
- THE STATE DIVISION OF ARCHITECTURE ASSUMES NO RESPONSIBILITY FOR LOCATION, EXTENT OR ACCURACY OF THE WORK SHOWN HEREON. APPROVAL IS BASED ON DATA SUBMITTED BY ARCHITECT WITH THE UNDERSTANDING THAT THE FINAL PLANS WILL BE CONSISTENT THEREWITH.

CONTRACTOR
BOARD OF TRUSTEES
HERMOSA BEACH CITY SCHOOL DISTRICT
BY [REDACTED] PRESIDENT
BY [REDACTED] CLERK

STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE		APPROVED	
APPLICANT NO.	DEC 9 1938	193	PRELIMINARY WORK & EXCAVATING FOR THE PIER, AVENUE OF THE STARS, G.O.M., LOCATED ON THE CORNER OF PIER, AND PLACING BSA.
APPROVED BY <i>C.H. Kromer</i> PRINCIPAL, STRUCTURAL ENGINEER		PERMIT OF WORK EXCAVATION PLAN	
CONTRACTOR MUST VERIFY ALL DIMENSIONS AT THE BUILDING.		JOB NO. 853 DRAWN TRACED CHECKED <i>L.H. Smith</i> DATE 12-9-38	
INDEPENDENT OF SCHOOLS & COLLEGE CO. <i>C.H. Kromer</i>		MARSH, SMITH & POWELL, ARCHITECTS 516 ARCHITECTS BLDG. LOS ANGELES, CAL.	