ICF KAISER

ICF KAISER ENGINEERS AND CONSTRUCTORS

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LA
Seismic

April 29, 1999

Mr. Bernard Savant
Special Programs
Division of the State Architect
1300 I Street, Suite 800
Sacramento, CA 95814-2919

Subject: State Building Seismic Program
Contract no. CS7122
Schematic Upgrade Report, DSA # 3015 20014

Dear Mr. Savant:

We are pleased to submit 2 copies of the schematic report for DSA building #20014. This design has been coordinated with the architect and the cost estimator, Dean Unger, AIA, and Turner/Vanir respectively.

Please do not hesitate to contact me at (510) 419-4182 if you have any questions.

Sincerely,
ICF KAISER ENGINEERS, INC.

Charles Beauvoir, S.E.
Infrastructure Group Manager

cc:

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ENGINEERING INVESTIGATION OF STATE BUILDINGS

FOR

SEISMIC RETROFIT

OFFICE & LABORATORY FACILITY – DSA # 20014

LOS ANGELES, CALIFORNIA

April 29, 1999

prepared for:

DEPARTMENT OF GENERAL SERVICES
STATE OF CALIFORNIA

prepared by:

ICF KAISER ENGINEERS

MIS97138-295971-1

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1. EXECUTIVE SUMMARY

1.1 Summary of Findings

The Office & Laboratory Facility is a two story structure constructed in 1968. It has a footprint of approximately 112 feet by 137 feet on a site sloping upward from front to back.

The structure includes a wood roof structure; comprised of plywood over 2x4 joists at 2 foot centers supported by 4x purlins at 8 foot centers spanning 20 feet to 6x select structural beams. The beams are supported by steel columns. The floor structure is primarily of wood construction which includes plywood sheathing supported by 3x wood joists spanning to steel beams, which are supported by steel columns. The columns are supported by spread footings. At the perimeter of the structure, reinforced masonry walls support the floor and roof system. These walls bear on continuous wall footings. The perimeter reinforced masonry walls are the main lateral force resisting system.

Lack of positive ties between perimeter reinforced masonry walls and floor diaphragms was identified in the original "Early Assessment" (Reference 1). That assessment indicated that the building had potential seismic failure mechanisms and therefore, it would require further evaluation.

As requested by the Department of General Services, the NEHRP FEMA 273 guidelines (Reference 2) and the1997 UBC (Reference 3) were used separately as the basis for assessing the capabilities of the existing lateral load resisting system.

This report provides the results of seismic evaluation for this building. The proposed retrofit schemes are developed separately to satisfy the criteria outlined in either 1997 UBC or FEMA 273 Codes.

From the results of the evaluation using both 1997 UBC and FEMA 273 Codes, it is found that the existing lateral force resistance system for this building is inadequate to withstand the horizontal loads induced by expected earthquakes. Upgrading the structure requires adding additional lateral force resisting systems in both orthogonal directions.

The shear capacities in both roof and floor diaphragms are not sufficient to transfer the lateral load to perimeter walls. The diaphragms need to be reinforced.

The connections between perimeter walls and diaphragms also require modifications in order to provide positive ties to the floor and roof diaphragms for out-of-plane loads and in order to increase the shear capacity of the connections.

1.2 Existing Building Risk Level Rating

Based on a preliminary review of the documents and field observations, the expected level of earthquake risk for the existing building was determined to be **Risk Level V** as per Reference 3.

1.3 Building Rating after Proposed Retrofit

Upon completion of the retrofit schemes proposed in this report, the Building rating will be **Risk Level III.**.

2. CONCLUSIONS AND RECOMMENDATIONS

2.1 Conclusions

Based on the results of the evaluation using both 1997 UBC and FEMA 273 Codes, it can be concluded that the existing lateral force resistance system for this building is inadequate to withstand the horizontal loads induced by expected earthquakes. Upgrading the structure requires adding additional lateral force resisting systems in both orthogonal directions. Both roof and floor diaphragms have inadequate shear capacity. The connections between perimeter walls and diaphragms have insufficient shear capacity. They also have insufficient capacity for out-of-plane loads.

2.2 Recommendations

The performance of this structure can be significantly improved by:

1) Adding a lateral load resisting system (steel braced frame) along column line 4 in the N-S direction.

2) Adding a lateral load resisting system (shearwall - for architectural reasons) along column line E in the E-W direction.

3) Strengthening both roof and floor diaphragms by adding plywood panels to the bottom of the diaphragms and introducing adequate nailing (spacing and pattern) in areas where deficiencies are found.

4) Modifying connections between perimeter walls and diaphragms to increase shear an out-of-plane capacity for the connections.

3. BUILDING DESCRIPTION & EVALUATION

3.1 Site and Building Description

The Office & Laboratory Facility is a two story structure constructed in 1968. It contains 2 occupiable levels over a footprint of approximately 112 feet by 137 feet on a site sloping upward from front to back of the site.

The structure includes a wood roof structure; comprised of plywood over 2x4 joists at 2 foot centers supported by 4x purlins at 8 foot centers spanning 20 feet to 6x select structural beams. The beams are supported by steel columns. The floor structure is primarily of wood construction including plywood sheathing supported by 3x wood joists spanning to steel beams. Steel columns support the steel beams. The columns are supported by the spread footings. At the perimeter of the structure, reinforced masonry walls support the floor and roof system. These walls bear on continuous wall footings.

The perimeter reinforced masonry walls resist lateral forces.

3.2 Geotechnical Conditions

Several faults are located in the Los Angeles area. The closest fault to the site is the Hollywood fault, which is approximately 6 kilometers northwest of the site. The Hollywood fault shows evidence of displacement during Holocene time, and is capable of producing an earthquake with a maximum moment magnitude of 6.5. The Santa Monica and Raymond faults are located approximately 7.5 kilometers northwest and 9 kilometers northeast of the site, respectively. The Santa Monica and Raymond faults are located along the western and eastern alignment of the Hollywood fault, respectively. The Santa Monica fault shows evidence of displacement during late Quaternary time, and is capable of producing an earthquake with maximum moment magnitude of 6.6. The Raymond fault shows evidence of displacement during Holocene time, and is capable of producing an earthquake with maximum moment magnitude of 6.5. The Newport-Inglewood Fault is approximately 11 kilometers southwest of the site. The Newport-Inglewood fault shows evidence of displacement within late Quaternary time, and is capable of producing an earthquake with a maximum moment magnitude of 6.9. Other faults that may impact the site are the San Andreas and the San Fernando, which have ruptured during the last 200 years, but are more distant from the site. The characteristics of the faults are tabulated below.

FAULT	TYPE OF FAULT	MAXIMUM MAGNITUDE	SLIP RATE (millimeters per year)
Hollywood	B	6.5	1
Santa Monica	B	6.6	1
Raymond	B	6.5	0.5
Newport-Inglewood	B	6.9	1

We have assumed that the site is underlain by bedrock of conglomerate and siltstone. Based on the above and Chapter 16 of the 1997 Uniform Building Code, we recommend a Soil Profile Type of s_c (Soft Rock Profile) for the site. We recommend the following seismic coefficient, C_A of 0.40 and C_V of 0.67.

3.3 Building and Material Conditions

The building appeared to be well maintained and in good condition.

3.4 Structural System Description

The existing structure is of reinforced masonry construction. The building roof and floor are wood supported by a steel beam floor structure. The vertical load resisting system consists of steel interior columns and exterior masonry bearing walls located at the perimeter. The interior columns are supported by spread footings and the walls are supported by continuous wall footings. Lateral loads are resisted by reinforced masonry walls.

3.5 Method of Analysis

The structure's ability to resist strong earthquakes, protect life and provide safety to the occupants is of main concern. As directed by the Department of General Services, NEHRP FEMA 273 guidelines and 1997 UBC were used separately as the basis for assessing the capabilities of the existing lateral load resisting system.

The seismic performance of an existing building is influenced by many factors including the seismicity of the area in which the structure is located, the materials of construction, the height and geometry, the structural system employed and whether or not a viable lateral force resisting system exists. FEMA 273 and 1997 UBC recommend a systematic evaluation. The evaluation includes structural items such as exterior wall construction and roof diaphragm, as well as other non-structural items such as ceilings, partitions, mechanical/electrical equipment and parapets.

3.5.1 1997 UBC Procedure

The building period (0.243 second) was calculated in accordance with guidelines given in Section 1630.2.2 of the 1997 UBC and was used to calculate the building's base shear. The resulting base shear was equal to 0.293W. The 1997 UBC equations for calculating base shear are described below.

V = Equivalent base shear

$= (C_v I / R T) W$

where:

C_v = Seismic Coefficient. Table 16-R
I = Importance Factor. Table 16-K
R = Ductility Factor. Table 16-N
T = Elastic fundamental period (eq. 30-8)

The total design base shear need not exceed the following:

$$V = (2.5C_a I / R) W$$

where:
C_a = Seismic Coefficient. Table 16-O

In addition, for Seismic Zone 4, the base shear shall also not be less than the following:

$$V = (0.8ZN_v I/R) W$$

where:
Z = Zone factor. Table 16-I
N_v = Near source factor. Table 16-T

3.5.2 FEMA 273 Procedure

The FEMA 273 building periods were calculated in accordance with Section 3 and were used to calculate the building's base shear. The resulting base shears were 1.66 W for Basic Safety Earthquake 1 (BSE-1) and 2.66 W for Basic Safety Earthquake 2 (BSE-2). The FEMA 273 equation for calculating base shear is described below.

V = Equivalent base shear

= $C_1\ C_2\ C_3\ S_a \times W$

where:

C_1 = Modification factor to relate expected maximum inelastic displacement to displacement calculated for linear elastic response. Interpolation is required between the values shown below.
= 1.5 for $T < 0.10$ seconds
= 1.0 for $T \geq T_o$ seconds

T = The fundamental period of the building which can be calculated using 3 approximate methods outlined in the FEMA 273 document or assembling a mathematical model to determine the actual building periods of vibration.

T_0 = A characteristic period of the response spectrum, defined as the period associated with the transition from the constant acceleration segment of the spectrum to the constant velocity segment of the spectrum.

C_2 = Modification factor to represent the effect of stiffness degradation and strength deterioration on maximum displacement response. Obtained from Table 3-1 of FEMA 273 document.

C_3 = Modification factor to represent increased displacement due to dynamic P-Δ effects. Maximum value of θ for all stories in the building shall be used to calculate C_3.

= 1.0 for $\theta_i = P_i \times \delta_i / V_i \times h_i < .1$ equation (2-14)
for $\theta > .1$
$C_3 = 1 + 5(\theta - 0.1) / T$
where:

θ_i = Stability coefficient

P_i = That portion of the total weight of the structure including dead weight, permanent live loads, and 25% of the transient live loads acting on the columns and bearing walls within story level i.

δ_i = The lateral drift at story i, in the direction under consideration, at its center of rigidity, using the same units as for measuring h_i

V_i = The total calculated lateral shear force in the direction under consideration at story i due to earthquake response, assuming that the structure remains elastic.

h_i = The height of story i, which may be taken as the distance between the centerline of floor framing at each of the levels above and below, the distance between the top of floor slabs at each of the levels above and below, or similar common points of reference.

S_a = Response spectrum acceleration = 1.25 g for BSE-1 earthquake and 2.0 g for BSE-2 earthquake

= S_{XS} / B_S for $0 < T \leq T_0$ equation (2-8)
$S_{X1} / B_1 T$ for $T > T_0$ equation (2-9)

S_{XS} = $F_a \times S_s$

S_s = Short period (0.2 sec) acceleration (FEMA 273 map).

F_a = Site coefficient (from table 2-13 of FEMA 273).

S_{X1} = $F_v \times S_1$

S_1 = One second period acceleration (FEMA 273 map).

F_v = Site coefficient from table 2-14 of FEMA 273).

W = The total seismic dead weight

3.6 Structural Deficiencies

3.6.1 1997 UBC Procedure

The shear capacities in both roof and floor diaphragms are not sufficient to transfer the lateral load to perimeter walls and therefore, the diaphragms need to be reinforced. The connections between perimeter walls and diaphragms do not have sufficient shear capacity and also failed to provide a positive tie to the floor and roof diaphragms for out-of-plane loads. The Demand versus Capacity Ratios (DCR) for the existing building are shown in ***Attachment B***

3.6.2 FEMA 273 Procedure

Evaluation results are similar to the 1997 UBC, the roof and floor diaphragms need to be reinforced. The connections between perimeter walls and roof/floor horizontal diaphragms are also inadequate to resist the applied loads. The DCR values for the existing structure are shown in ***Attachment B***

4. PROPOSED RETROFIT - STRENGTHENING

As directed by the Department of General Services, 1997 UBC and FEMA 273 were used separately as the basis for assessing the capabilities of the existing lateral load resisting system and developing a conceptual retrofit design. The DCR values for the retrofitted building are listed in ***Attachment B.***

4.1 1997 UBC Procedure

The conceptual retrofit design performed using 1997 UBC as a basis is presented in sketches on pages ***USK-1 to USK-5.***

4.1.1 Add Steel Braced Frames

We propose adding steel braced frames and shearwalls as additional lateral resisting systems in the N-S and E-W directions respectively.

In the N-S direction, use existing interior columns and steel floor beams. Install additional "K" braces and strengthen roof purlins to complete the "K" brace frame system.

In the E-W direction, use existing interior columns. Install additional "K" brace and strengthen both roof and floor purlins to complete the "K" brace frame system.

The existing spread footings need to be interconnected and widened to 13'-0" to resist lateral loads. The first floor interior columns need to be strengthened to resist larger axial loads resulting from a combination of gravity loads and K brace frame effects of the lateral loads.

The new struts will be constructed at both roof and floor levels in the E-W direction.

4.1.2 Increase Diaphragm Shear Strength

After adding braced steel frames in both N-S and E-W directions. The shear strength of the center portion of the floor diaphragm needs to be increased. We propose adding a new layer of plywood under the existing floor.

Similarly, both roof and floor ledger anchor bolts need to be strengthened to increase the shear transfer capacity between diaphragm and walls. We propose adding anchor bolts at 4'-0" spaces at the perimeter of the building at both roof and floor levels.

4.1.3 Modify Connections between Diaphragms and Walls

As discussed above, new anchor bolts are added at the building perimeter at roof and floor levels. The new anchor bolts will also provide the positive out-of-plane connection between walls and diaphragms. The sub-diaphragm analysis indicated that an additional continuous tie is needed in the E-W direction at the floor level.

4.2 FEMA 273 Procedure

The conceptual retrofit design performed using Fema 273 as a basis is presented in sketches on pages ***FSK-1 to FSK-5.***

4.2.1 Add Steel Braced Frames

Similar to the 1997 UBC procedure, we propose adding braced steel frames and concrete shearwalls to supplement the exisitng lateral resistance systems in both N-S direction and E-W direction.

In N-S direction, use existing interior columns and steel floor beams. Install additional "K" brace and strengthen roof purlins to complete the "K" brace frame system.

In E-W direction, use existing interior columns. Install additional "K" brace and strengthen both roof and floor purlins to complete the "K" brace frame system.

The existing spread footings need to be interconnected and widened to 7'-0" to resist lateral loads. The first floor interior column needs to be strengthened to resist much larger axial loads (a combination of gravity load and frame effects of the lateral loads).

The new struts will be constructed at both roof and floor levels in E-W direction.

4.2.2 Increase Diaphragm Shear Strength

After adding braced steel frames in both N-S direction and E-W directions, the shear strength of the floor and roof diaphragms need to be increased. We propose adding a new layer of plywood under the existing diaphragms as needed.

The diaphragm chord forces exceed the strength of the existing structure. We propose adding ¼" thick steel strap in the maximum tension regions to increase the tension capacity of the chords.

Both roof and floor ledger anchor bolts need to be increased to improve the shear transfer capacity between diaphragm and walls. We propose adding anchor bolts at 4'-0" spaces at the perimeter of the building at both roof and floor levels.

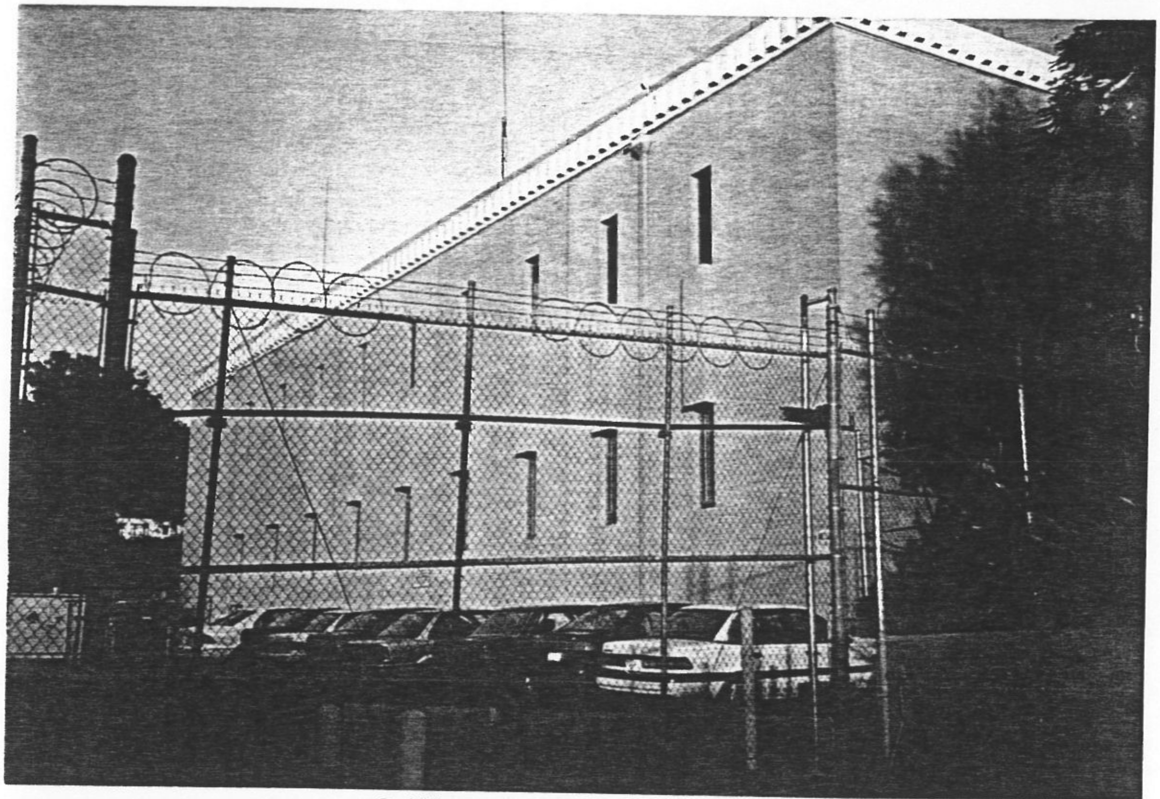
4.2.3 Modify Connections between Diaphragms and Walls

As discussed above, we propose new ties at the perimeter of the building at roof and floor levels. The new anchor bolts will also provide the positive out-of-plane connection between walls and diaphragms. The sub-diaphragm analysis indicated that an additional continuous strap is needed in the E-W direction at floor level.

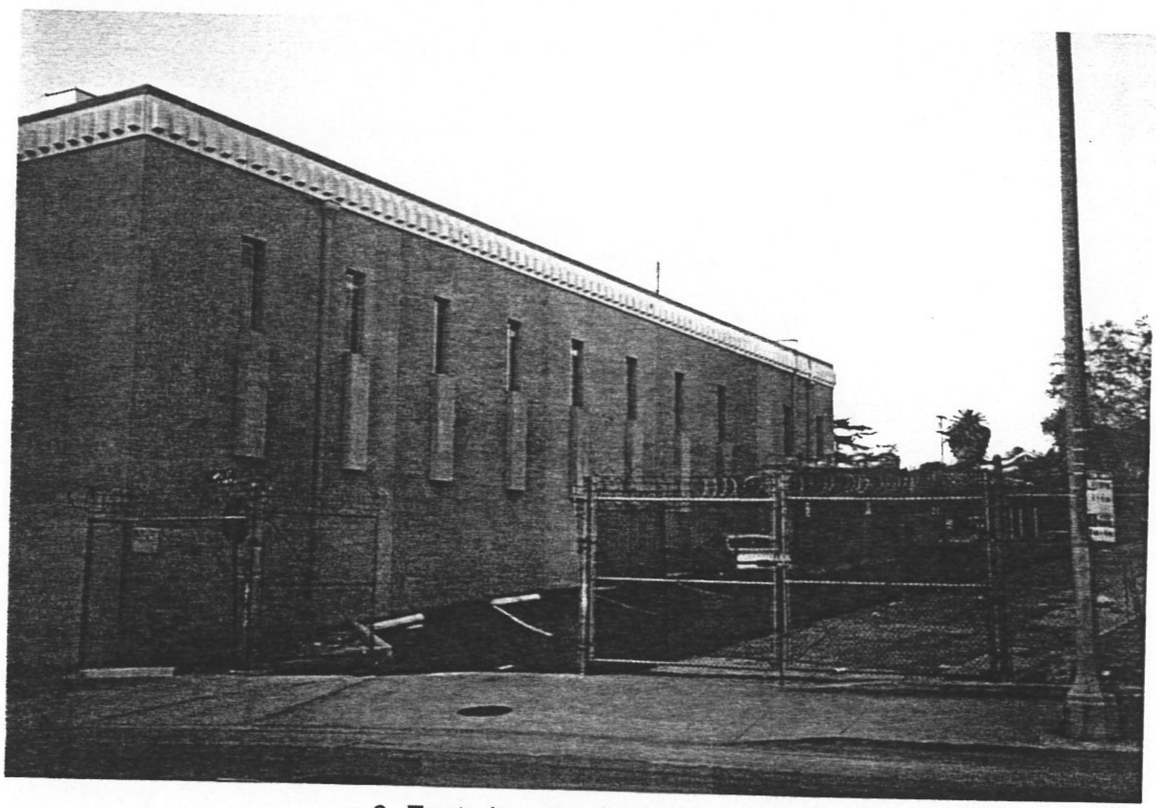
5. ATTACHMENT A

Photographs

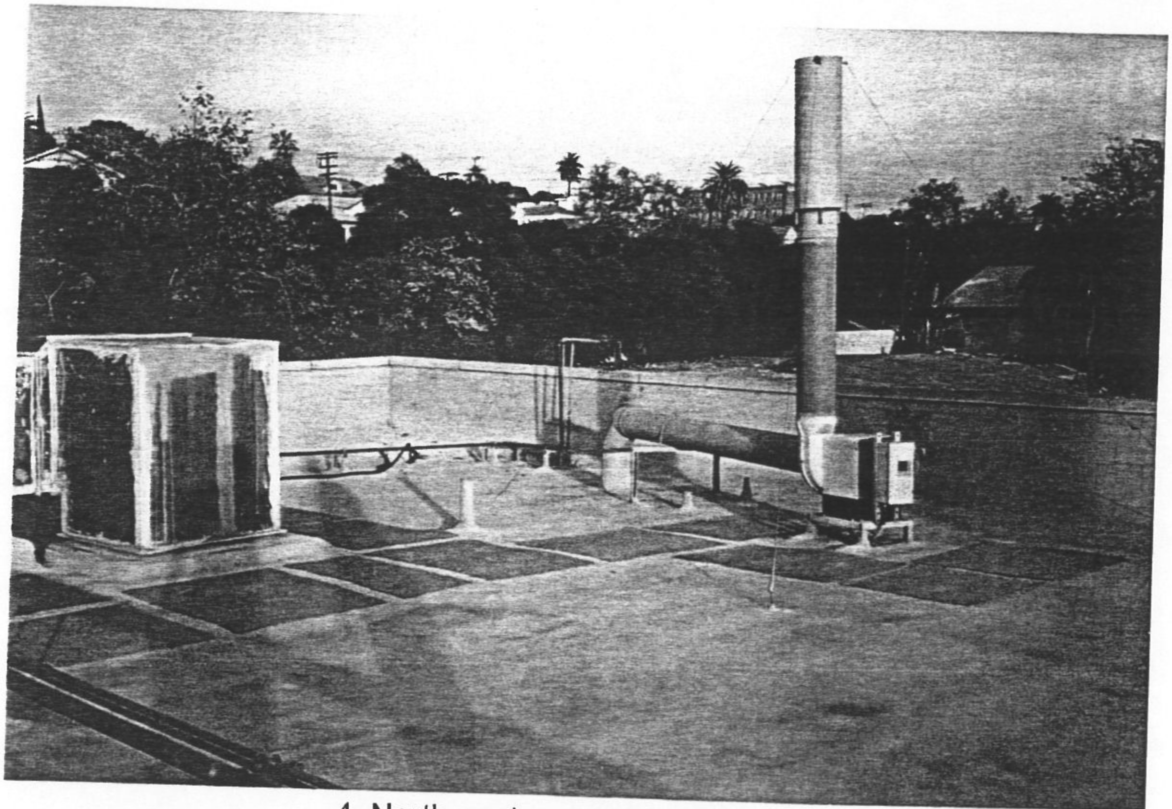
1. South elevation of entry



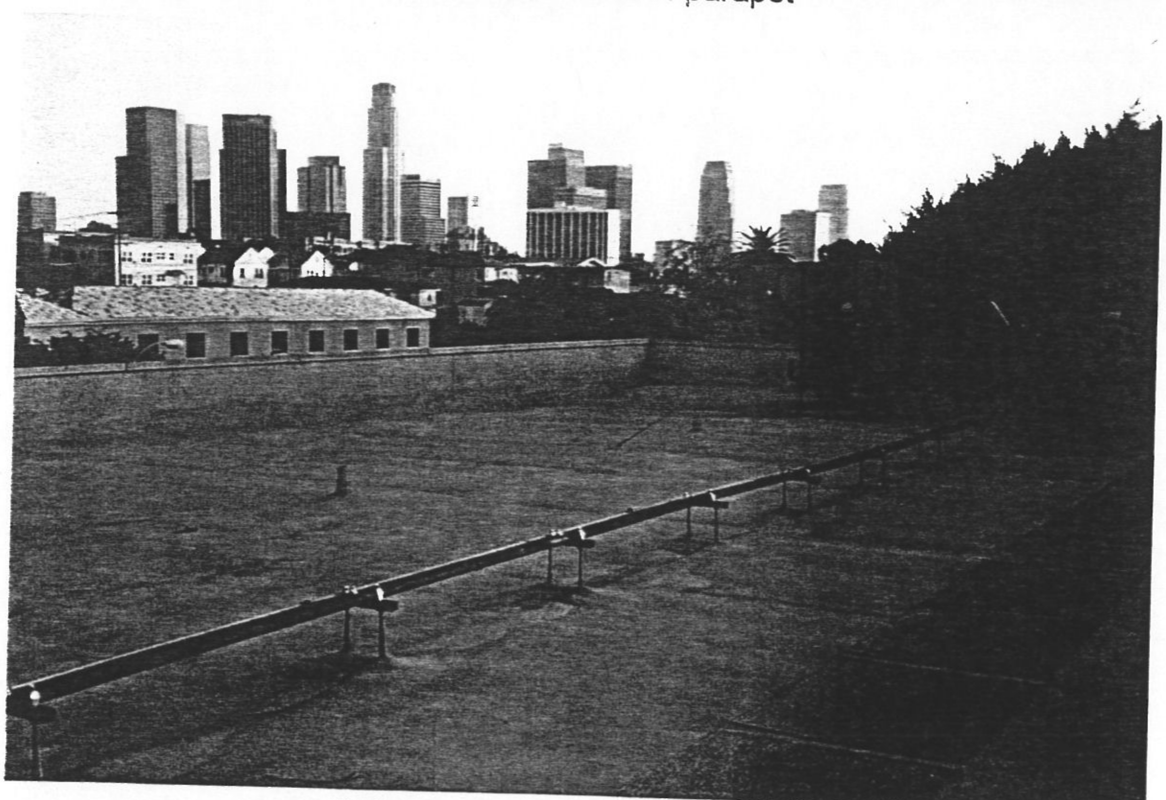
2. West elevation looking north



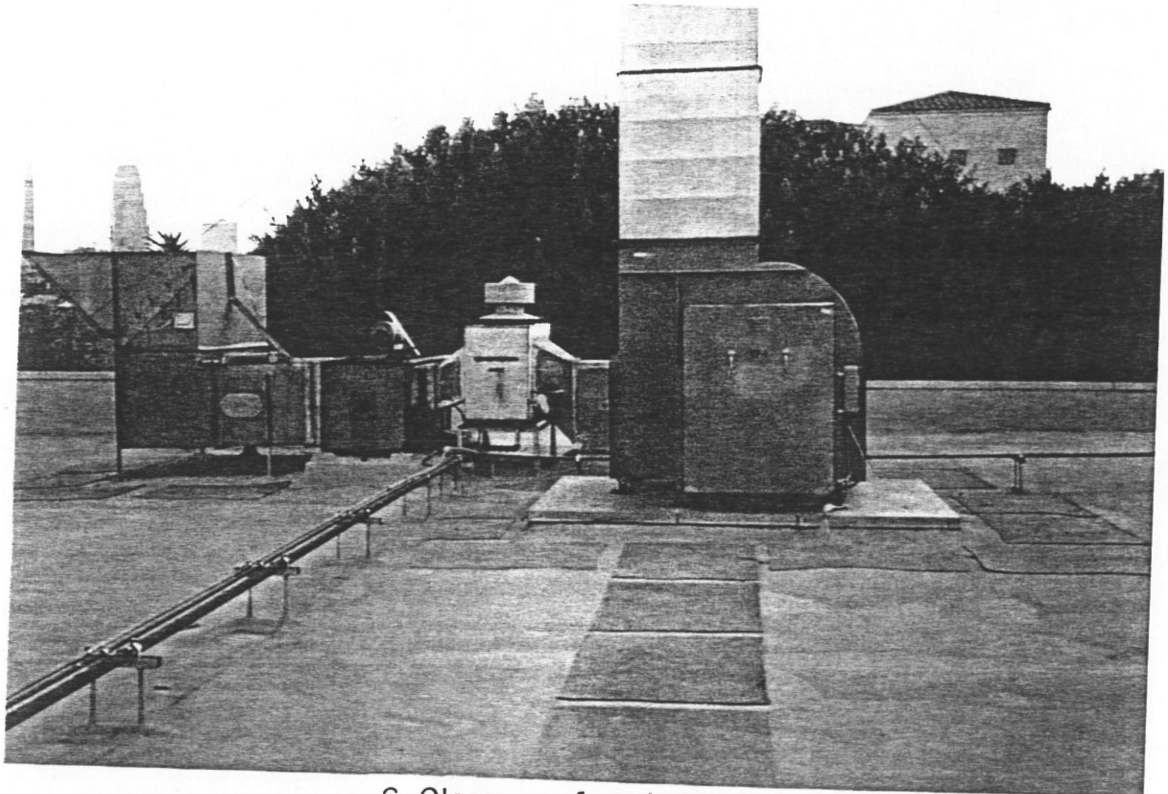
3. East elevation looking north



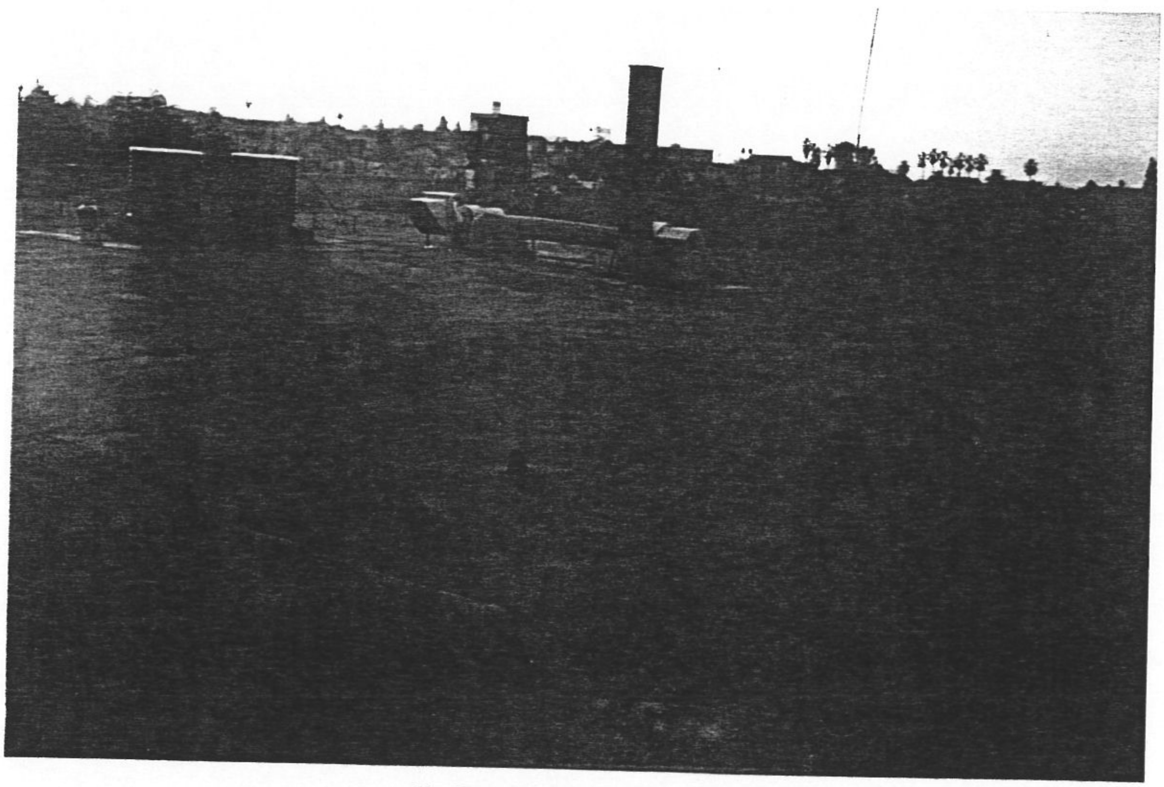
4. North east corner of parapet



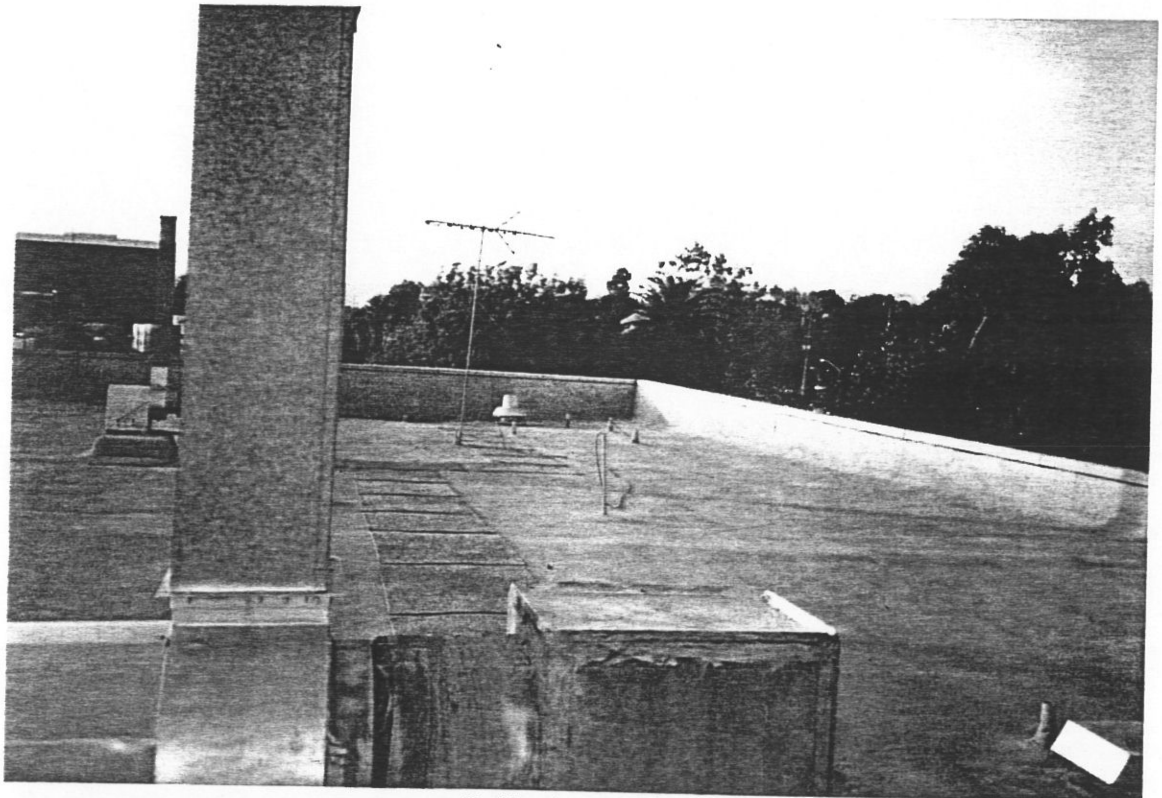
5. South east corner of parapet



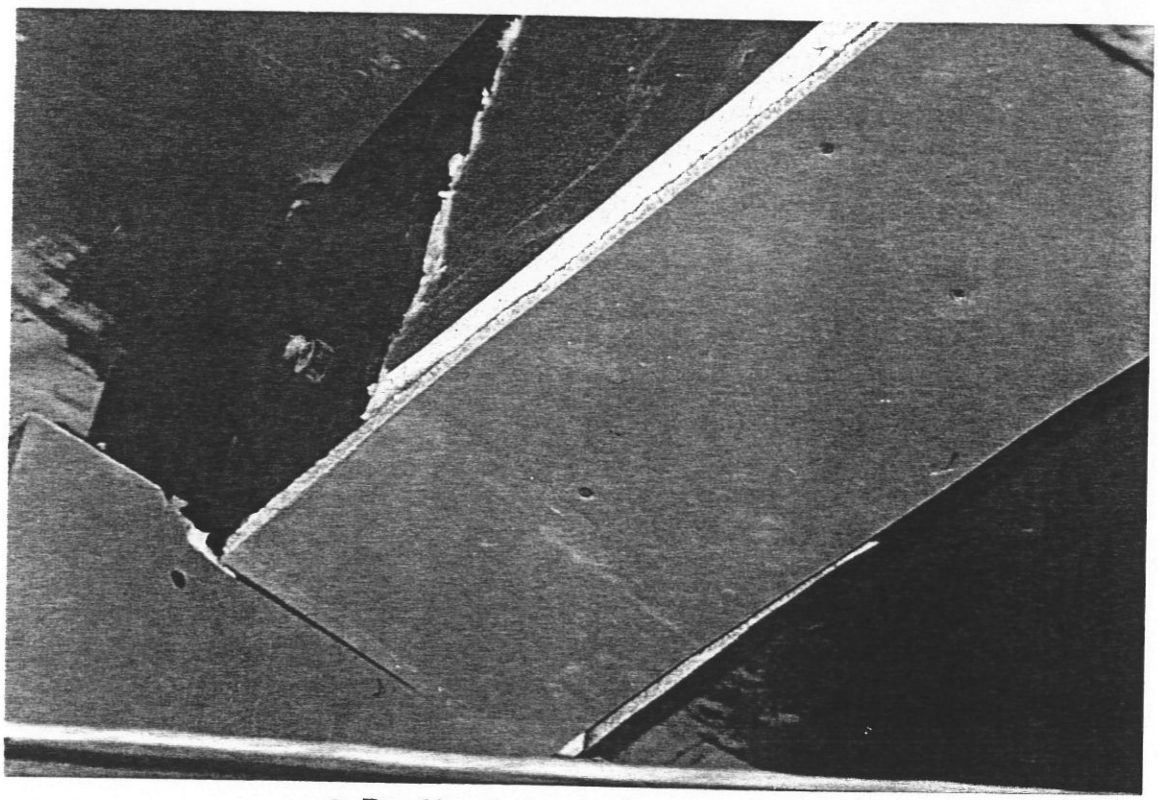
6. Close-up of equipment



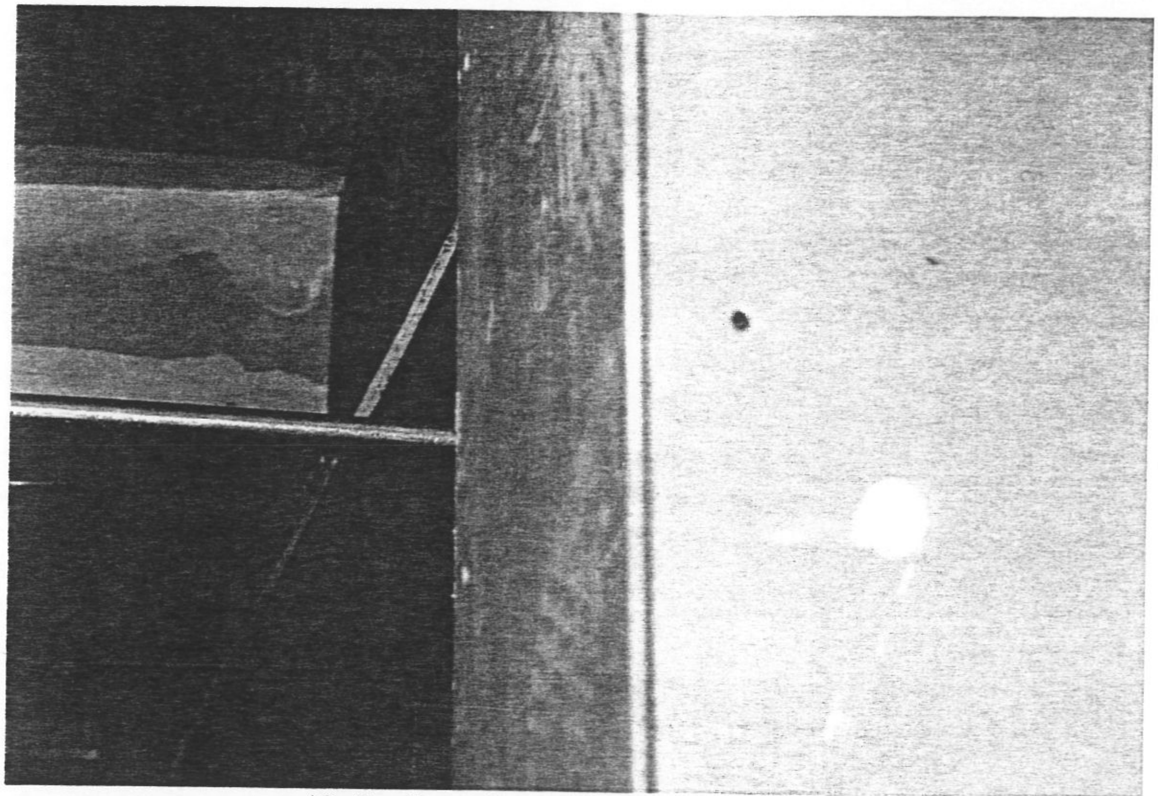
7. Roof looking west



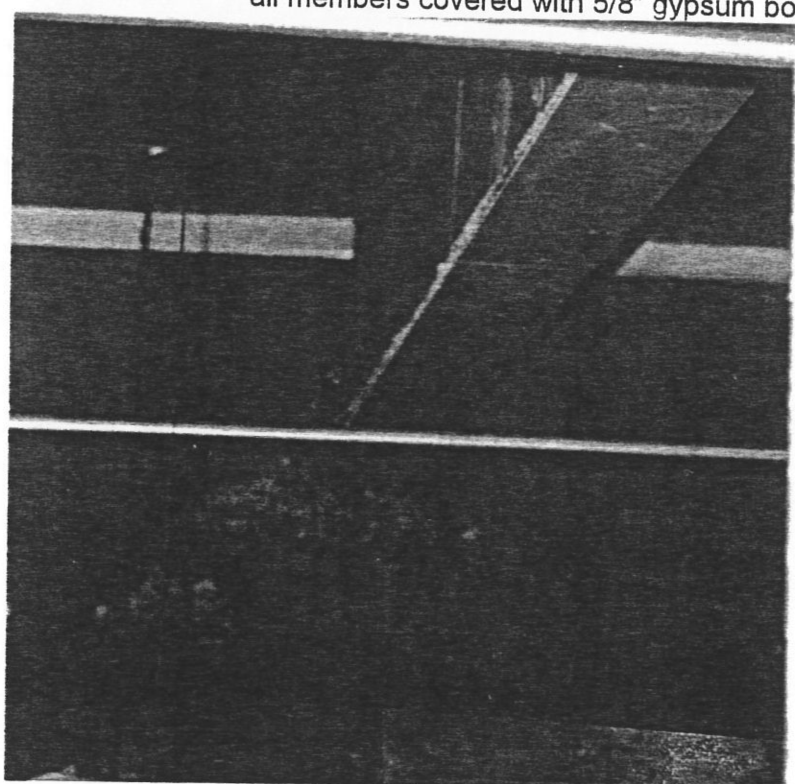
8. North west corner



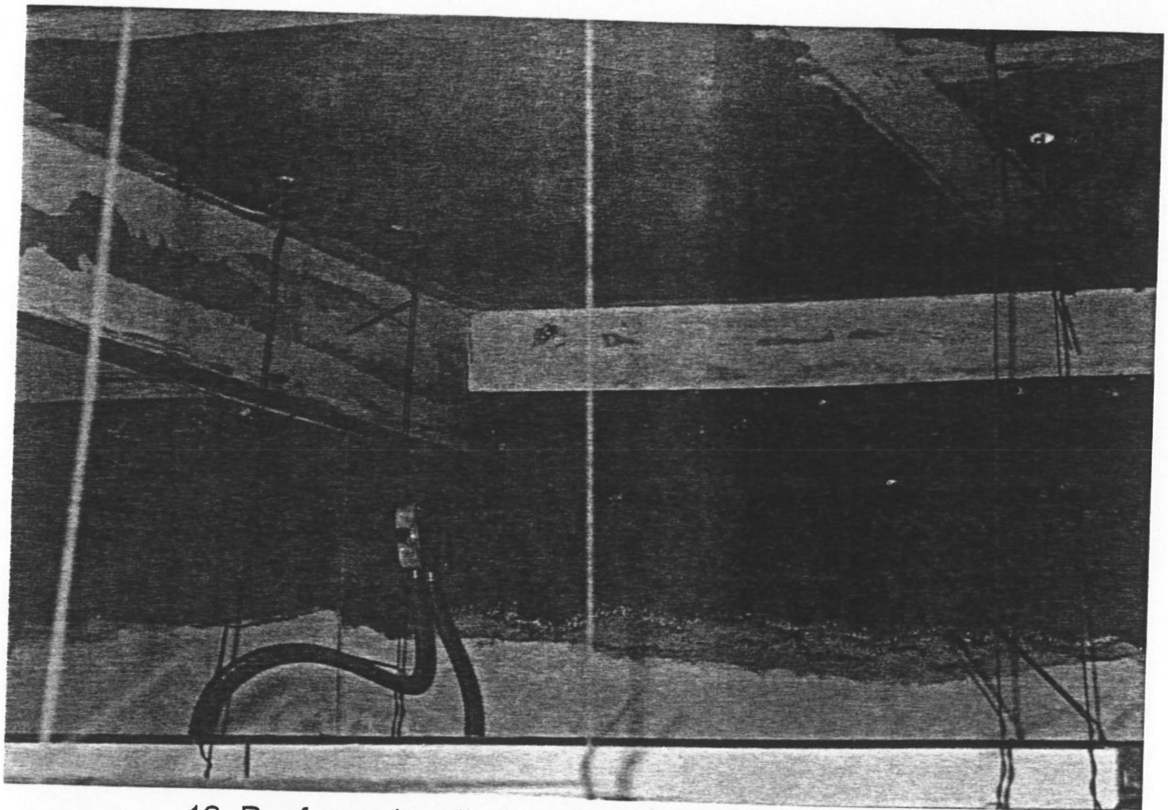
9. Roof beam to column connection-
steel column with steel bracket to support wood beam



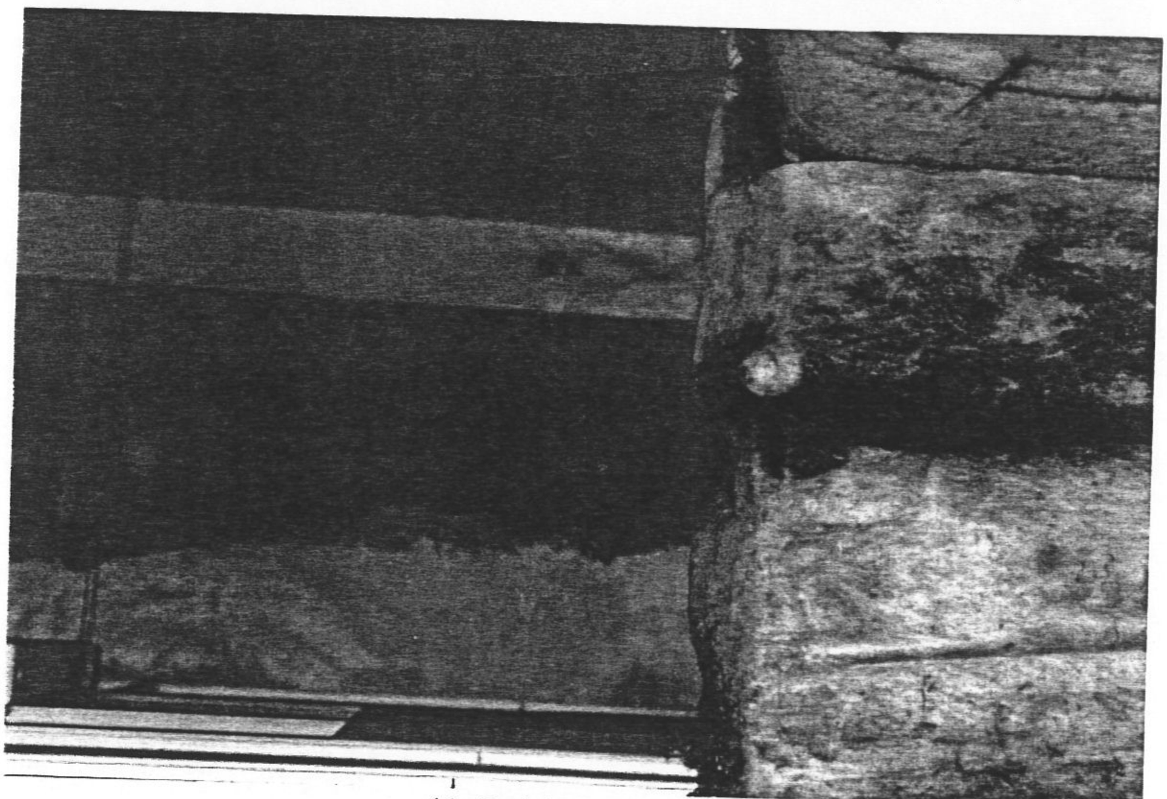
10. Roof wood purlin to wood girder-
all members covered with 5/8" gypsum board



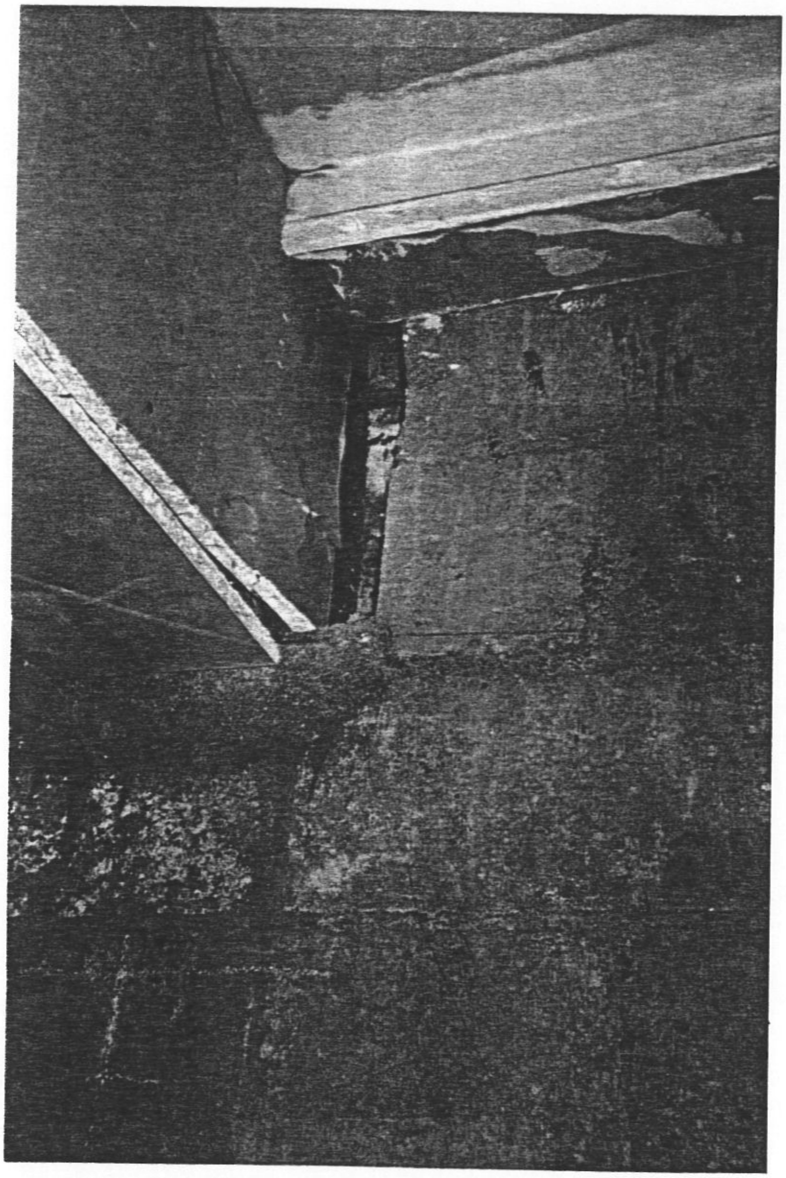
11. Roof wood beam to wall



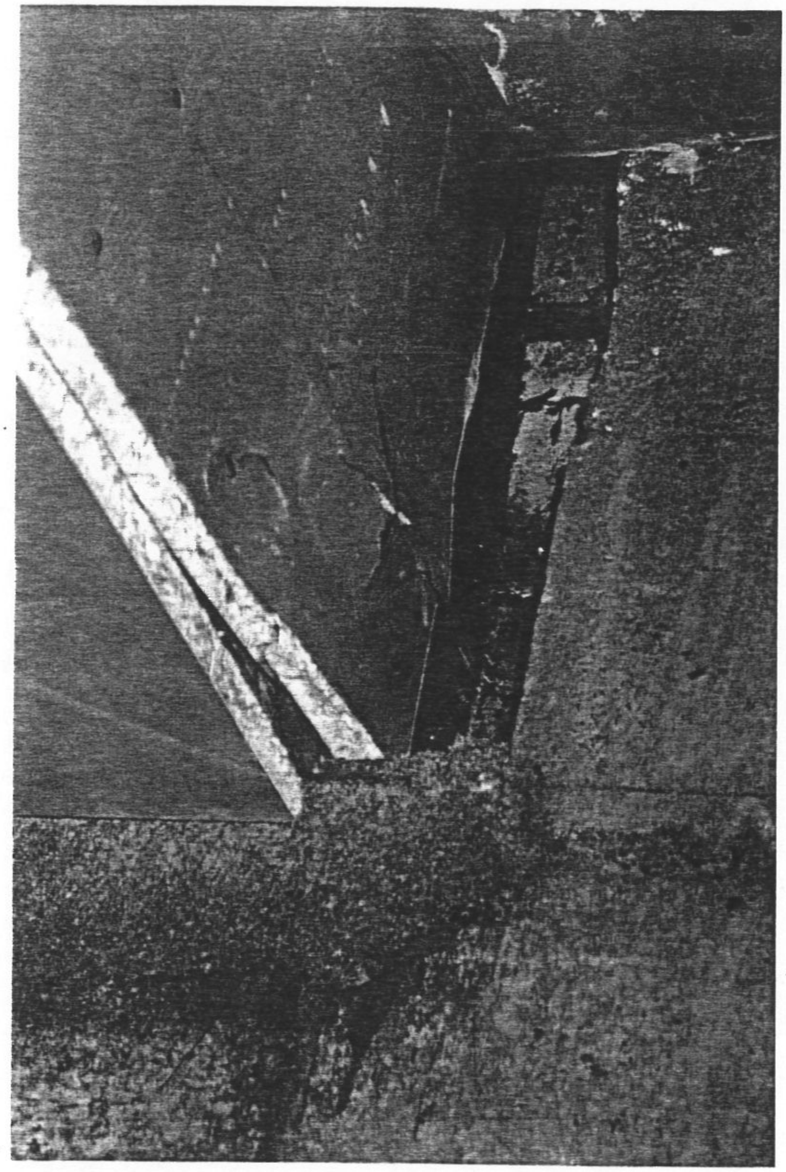
12. Roof wood purlin ledger (one bolt each side of purlin)



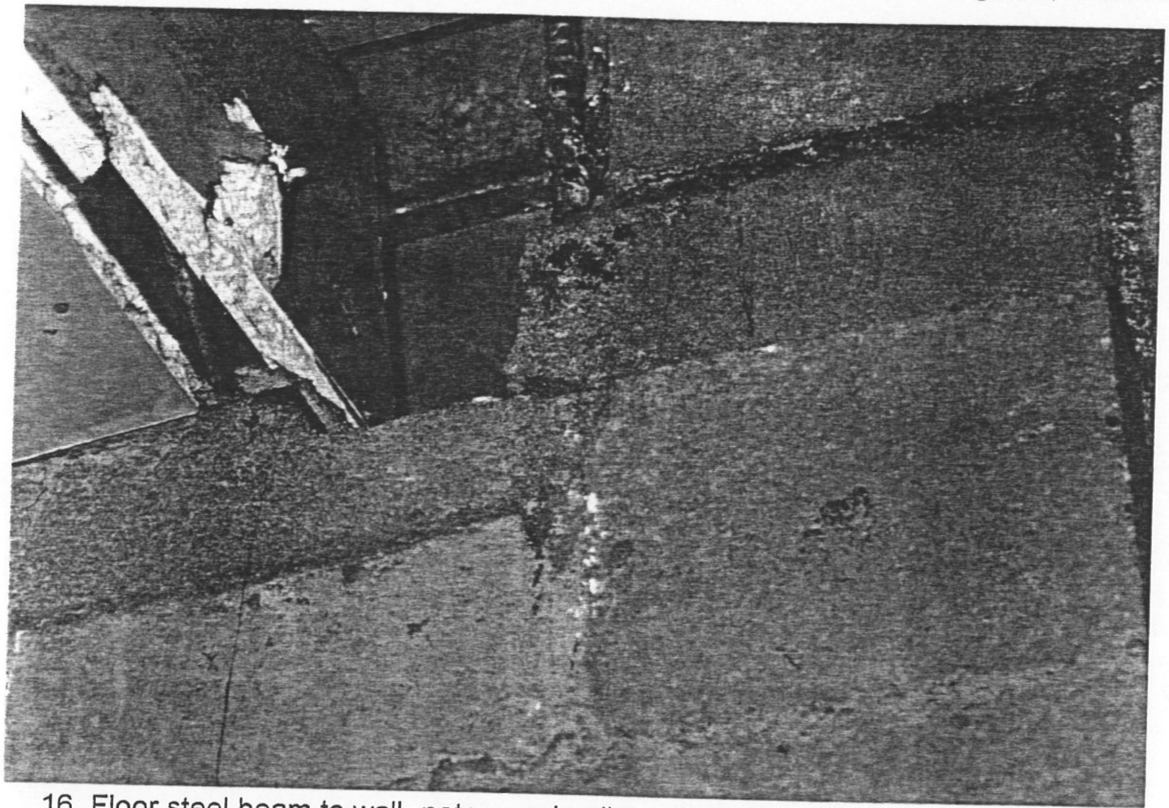
13. Bolt between purlins



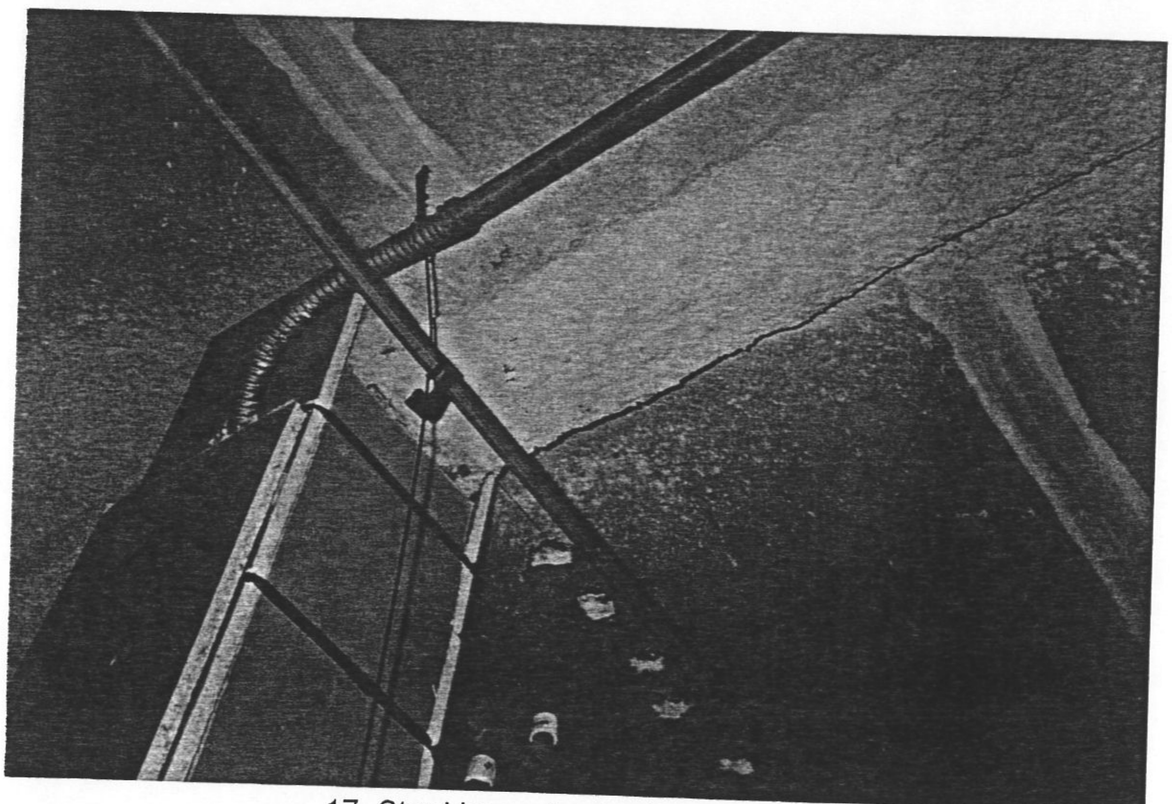
14. Floor steel beam to wall - note wood nailers for attachment of gypsum board



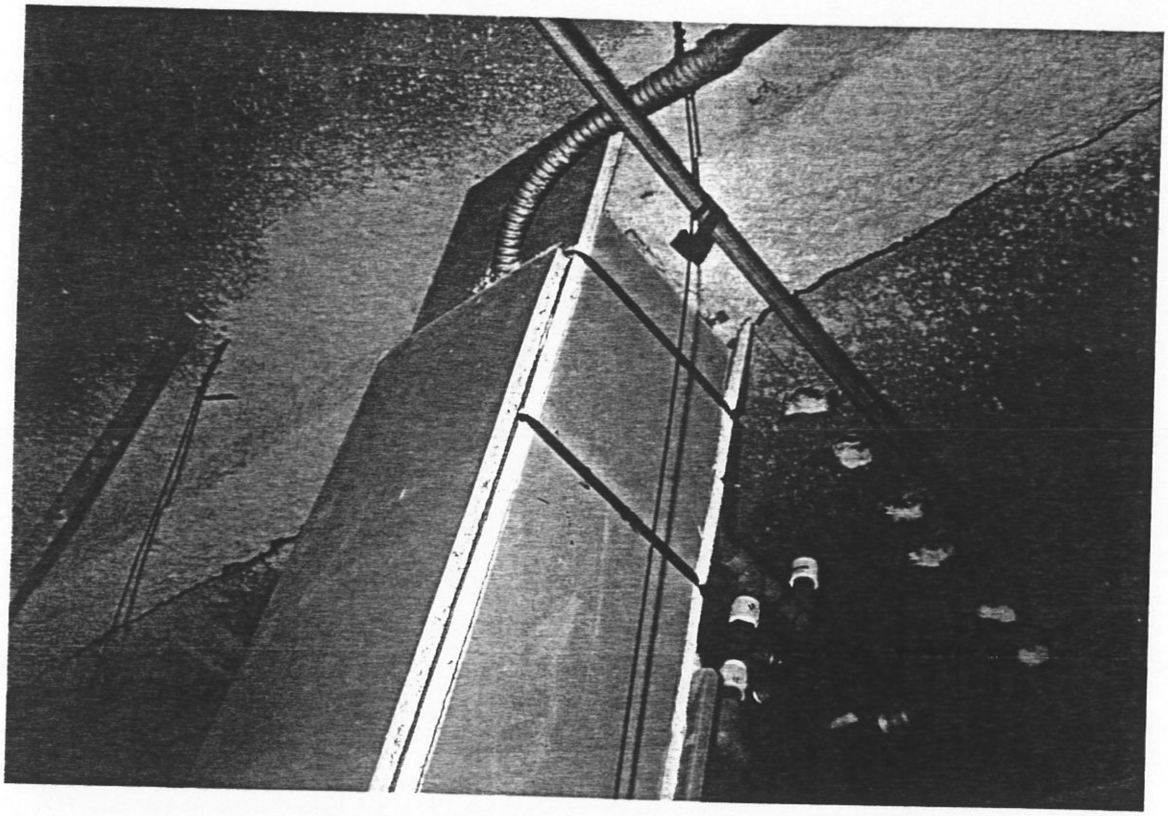
15. Floor steel beam to wall - note wood nailers for attachment of gypsum board



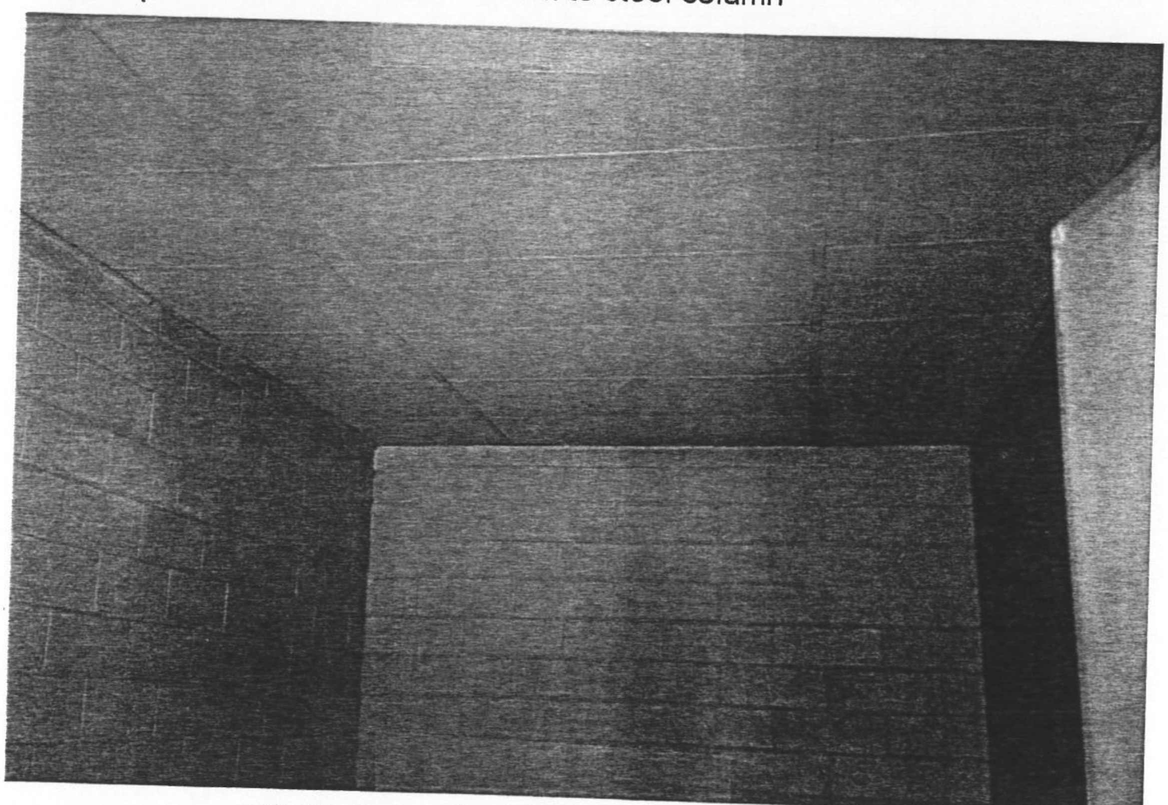
16. Floor steel beam to wall- note wood nailers for attachment of gypsum board



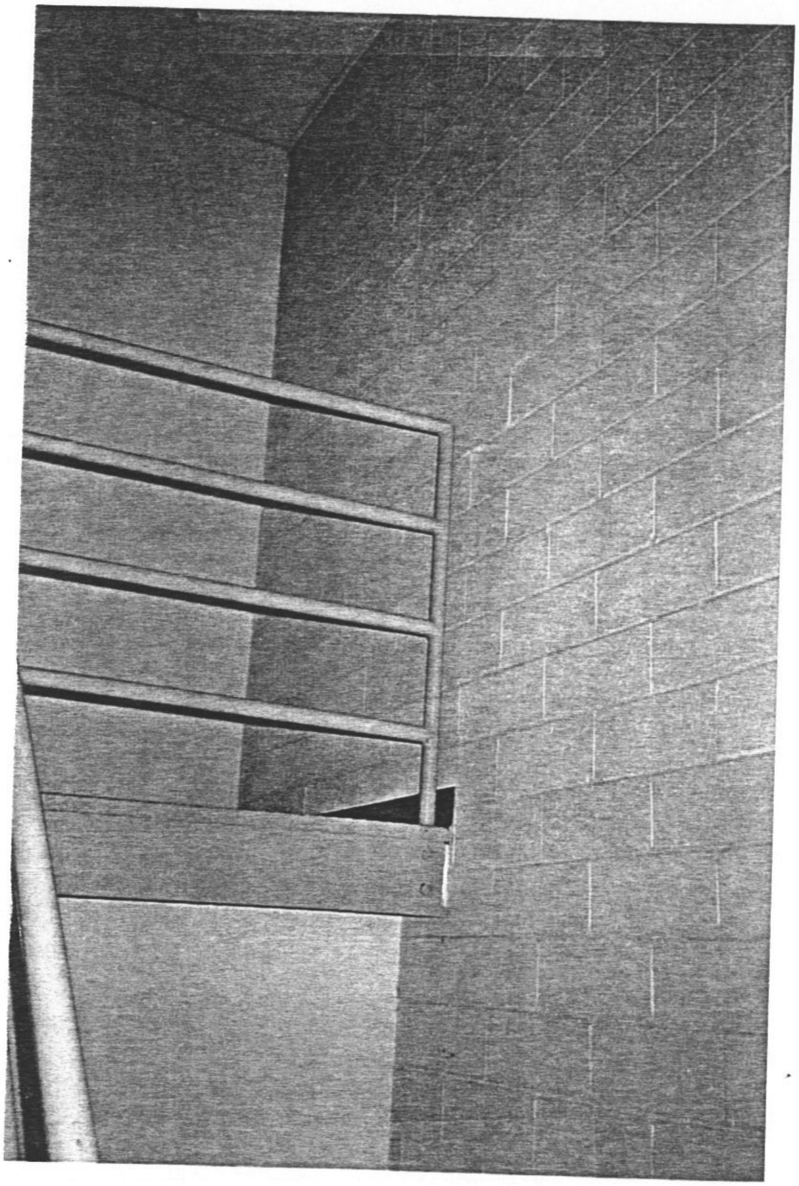
17. Steel beam to steel column



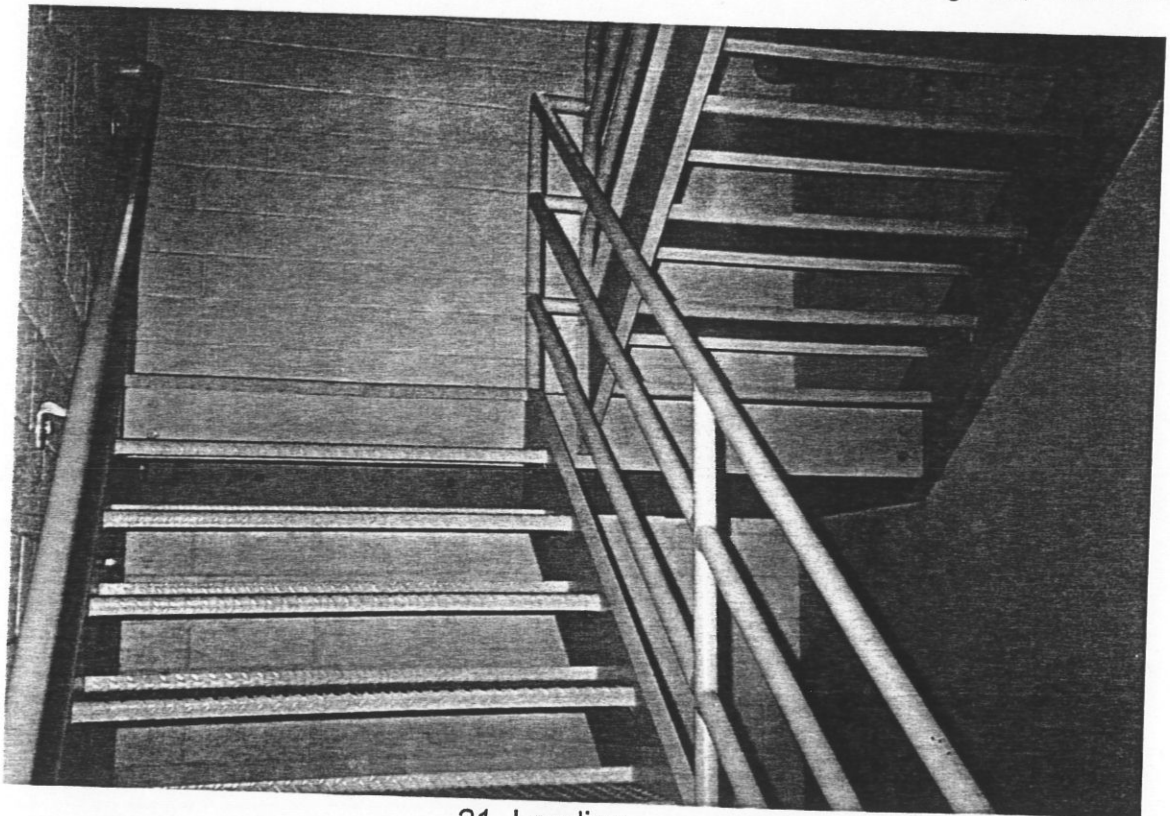
18. Steel beam to steel column



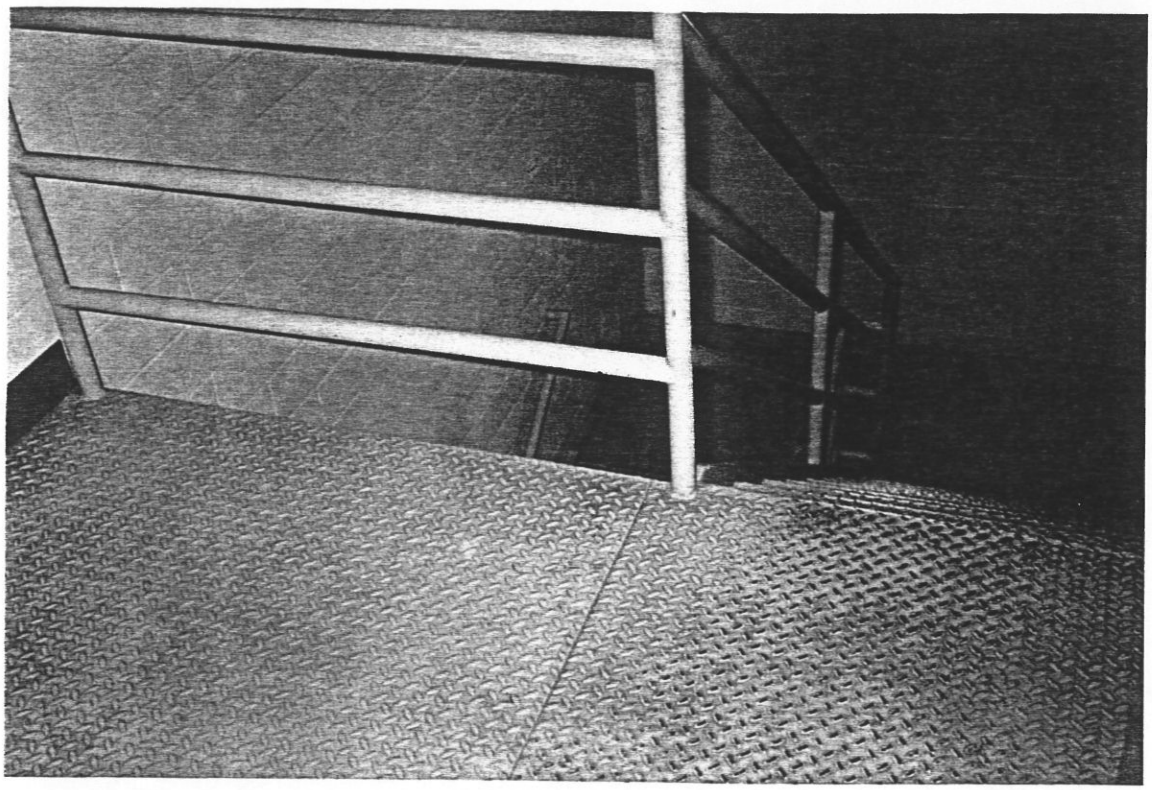
19. Stairway at southwest corner – at roof



20. Stairway at southwest corner – connection of steel to wall



21. Landing



22. Landing

6. ATTACHMENT B

Tables of Demand vs. Capacity Ratio (DCR)

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DEPT. OF PUBLIC HEALTH LAB. AND OFFICE @ L.A.
SEISMIC REHABILITATION

DCR RATIO (UBC 1997 CODE)

Item and Description		Existing Condition			Rehabilitated Condition		
		Demand	Capacity	D/C Ratio	Demand	Capacity	D/C Ratio
Diaphragm Shear (N-S Dir.)	Roof	0.728	0.640	1.138	0.350	0.420	0.833
					0.380	0.420	0.905
	2nd FL.	0.986	0.720	1.369	0.480	0.720	0.667
					0.118	0.425	0.278
					0.510	0.640	0.797
					0.220	0.425	0.518
					0.510	0.720	0.708
Diaphragm Shear (E-W Dir.)	Roof	0.550	0.425	1.294	0.235	0.425	0.553
					0.320	0.425	0.753
	2nd FL.	0.757	0.720	1.051	0.321	0.425	0.755
					0.436	0.640	0.681
					0.274	0.425	0.645
					0.436	0.720	0.606
Diaphragm Chord (N-S Dir.)	Roof	-	-	-	6.640	10.640	0.624
	2nd FL.	-	-	-	9.000	15.960	0.564
Diaphragm Chord (E-W Dir.)	Roof	-	-	-	5.140	10.640	0.483
	2nd FL.	-	-	-	7.060	15.960	0.442
Diaphragm Anchorage to Wall							
Pull Out	Roof	-	-	-	1246.000	2022.000	0.616
	2nd FL.	-	-	-	369.600	2022.000	0.183
Shear in N-S Dir	Roof	-	-	-	379.000	499.000	0.760
	2nd FL.	-	-	-	507.000	1057.500	0.479
Shear in E-W Dir	Roof	-	-	-	321.000	400.000	0.803
	2nd FL.	-	-	-	528.000	618.000	0.854
Masonry Shear Wall							
Shear in N-S Dir	2nd FL.	-	-	-	18.480	46.420	0.398
	1st FL	-	-	-	39.520	67.600	0.585
Shear in E-W Dir	2nd FL.	-	-	-	16.300	46.830	0.348
	1st FL	-	-	-	35.300	67.600	0.522
Out of Plane Bending	2nd FL.	-	-	-	0.163	0.155	** 1.052
	1st FL	-	-	-	0.016	0.155	0.103
Proposed New Brace Frame							
(N-S Dir.)							
Axial Load in New Braces	1st FL	-	-	-	223.000	230.000	0.970
Axial Load in Existing Columns	1st FL	209.000	137.000	1.526	209.000	247.000	0.846
(E-W Dir.)							
Axial Load in New Braces	1st FL	-	-	-	182.000	204.000	0.892
Axial Load in Existing Columns	1st FL	177.000	137.000	1.292	177.000	247.000	0.717
Soil Bearing for New Footing							
(N-S Dir.)		-	-	-	1.930	2.740	0.704
(E-W Dir.)		-	-	-	1.990	2.740	0.726

** : 5 % over the allowable is considered acceptable, since the assumptions used in the calc. are conservative.

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DEPT. OF PUBLIC HEALTH LAB. AND OFFICE @ L.A.
SEISMIC REHABILITATION

DCR RATIO (FEMA 273 CODE)

Item and Description		Existing Condition			Rehabilitated Condition (BSE-1) Life Safety Performance			Rehabilitated Condition (BSE-2) Collapse Prevention Performance		
		Demand	Capacity	D/C Ratio	Demand	Capacity	D/C Ratio	Demand	Capacity	D/C Ratio
Diaphragm Shear (N-S Dir.)	Roof	5.740	4.032	1.424	2.780	4.032	0.689	1.200	1.360	0.882
					2.960	4.032	0.734			
	2nd FL.	5.820	4.536	1.283	2.820	4.536	0.622	1.200	1.510	0.795
					3.000	4.032	0.744			
Diaphragm Shear (E-W Dir.)	Roof	4.350	2.678	1.624	1.874	2.678	0.700	1.200	1.790	0.670
					2.535	2.678	0.947			
	2nd FL.	4.480	4.536	0.988	1.890	4.536	0.417	1.200	1.740	0.690
					2.610	4.032	0.647			
Diaphragm Chord (N-S Dir.)	Roof	-	-	-	52.200	98.000	0.533	83.520	98.000	0.852
	2nd FL.	-	-	-	52.900	98.000	0.540	84.640	98.000	0.864
Diaphragm Chord (E-W Dir.)	Roof	-	-	-	41.050	98.000	0.419	65.680	98.000	0.670
	2nd FL.	-	-	-	42.280	98.000	0.431	68.000	98.000	0.694
Diaphragm Anchorage to Wall										
Pull Out	Roof	-	-	-	6000.000	11491.200	0.522	9600.000	12768.000	0.752
	2nd FL.	-	-	-	7056.000	11491.200	0.614	11289.000	12768.000	0.884
Shear in N-S Dir	Roof	-	-	-	2.960	10.210	0.290	1.440	3.440	0.419
	2nd FL.	-	-	-	3.000	10.820	0.277	1.440	3.610	0.399
Shear in E-W Dir	Roof	-	-	-	2.530	4.080	0.620	1.440	1.610	0.894
	2nd FL.	-	-	-	2.610	2.710	0.963	1.440	1.820	0.791
Masonry Shear Wall										
Shear in N-S Dir	2nd FL.	-	-	-	108.000	1039.000	0.104	1.600	9.620	0.166
	1st FL	-	-	-	162.000	1039.000	0.156	1.600	6.410	0.250
Shear in E-W Dir	2nd FL.	-	-	-	ok by comparison to N-S load			ok by comparison to N-S load		
	1st FL	-	-	-	ok by comparison to N-S load			ok by comparison to N-S load		
Out of Plane Bending	2nd FL.	-	-	-	ok by comparison to UBC load			ok by comparison to 1st floor		
	1st FL	-	-	-	ok by comparison to UBC load			80.000	90.000	0.889
Proposed New Brace Frame										
(N-S Dir.)										
Axial Load in New Braces	1st FL	-	-	-	138.000	219.000	0.630	1.140	1.590	0.717
Axial Load in Existing Columns	1st FL	-	-	-	283.500	335.160	0.846	453.600	616.680	0.736
(E-W Dir.)										
Axial Load in New Braces	1st FL	-	-	-	98.000	219.000	0.447	1.140	2.230	0.511
Axial Load in Existing Columns	1st FL	-	-	-	210.000	335.160	0.627	337.000	616.680	0.546
Soil Bearing for New Footing										
(N-S Dir.)		-	-	-	-	-	-	-	-	-
(E-W Dir.)		-	-	-	-	-	-	-	-	-

7. ATTACHMENT C

Sketches of proposed Modifications

8. REFERENCES

1. ICF Kaiser Engineers, Inc.; State Building Seismic Program, Early Assessment, Step 3, Evaluations of State Buildings, Par 1.1, Building Review & Field Observation, DSA # 20014; 11/30/1998

2. Federal Emergency Management Agency; NEHRP Guidelines For The Seismic Rehabilitation Of Buildings - FEMA 273; October 1997

3. International Conference of Building Officials; Uniform Building Code (UBC), 1997 Edition

4. Report No. SSC 91-1 Policy on Acceptance Levels of Earthquake Risk in State Buildings (Table 1, Earthquake Performance Objectives for State Buildings), revised draft 3/26/92

5. Department of General Services, Real State Services Division; DSA Table - "Acceptability of Risk by Type of Occupancy"; March 1998

6. Sheldon L. Pollack Corp; Office and Laboratory Facility As Built Drawings A3, A5 thru A10 and S1 thru S5 dated 07/68

7. Federal Emergency Management Agency; NEHRP Commentary on The Guidelines for The Seismic Rehabilitation Of Buildings - FEMA 27; October 1997

8. American Institute of Steel Construction "Steel Construction Manual", Ninth Edition,

9. Division of the State Architect (DSA), State Building Seismic Program, Step 3 – Evaluationof State Buildings, Building Evaluation Process for Consulting Engineers, February 1994

VANIR
Construction Management, Inc.

980 Ninth Street, Suite 900
Sacramento, CA 95814-2719
916/444-3700
916/448-6548

FAX

Date: **April 27, 1999**

Number of pages including cover sheet: **2**

To: Joel McRonald

Phone: 324-5315

Fax phone: 323-5826

CC:

From: Ben Sabati

Phone: 916-444-3700

Fax phone: 916-448-6548

REMARKS: ☐ Urgent ☐ For your review ☐ Reply ASAP ☐ Please comment

Bernie –
FYI

Please call Carla Owens at (916) 444-3700 if there are any problems with this transmission.

VANIR Form #4-4/98

VANIR
Construction Management, Inc.

980 Ninth Street, Suite 900
Sacramento, CA 95814
916.444.3700
Fax916.448.6548

April 27, 1999

Mr. Joel McRonald
Principal Architect
Dept. of General Svcs.
Div. of the State Architect
Special Programs
1300 I St., Suite 800
Sacramento, CA 95814

Subject: Department of Public Health Building - West Temple Street - Los Angeles, CA
Budget Estimate

Dear Mr. McRonald,

Attached please find Vanir's CM estimates, in two options, for the above referenced project.

Option I estimate is the cost of structural seismic only. In this option we assumed that the building interior will be gutted completely for a full retrofit. Seismic structural items assumed can be installed meanwhile, without any need for removal and replacement of finishes, mechanical or electrical items.

Option II estimate is for full seismic retrofit including removal and replacement of all associated finishes, mechanical and electrical items, assuming no other renovation work.

We understand that the building is being renovated, but we haven't been given information on the extent of such renovation. Lacking this critical information, it is not feasible for us to provide anticipated seismic retrofit cost for the specific situation.

We hope that we can have a dialogue before the finalization of the budget package and submission to DOF as to the appropriate seismic retrofit cost.

Sincerely,

Carla Owens / Ben Sabati

Vahid (Ben) Sabati
Chief Estimator

BS/co
Attachment
C: Reg Eden
Steve Durham
Mani Subramanian
Lynn Stephens

SUMMARY OF
STATE SEISMIC PROGRAM

Estimator's Firm Name	TURNER / VANIR	DSA #	
Structural Engineer	ICF Kaiser	DEPARTMENT	Department of Public Health
BUILDING NAME	West Temple	RISK LEVEL	
BUILDING LOCATION	Los Angeles, CA	CCCI /	
BUILDING TYPE		DATE OF DRAWINGS	
BLDG GROSS AREA	30,744 SF	LEVEL OF DRAWINGS/DOCUMENTS	PRELIMINARY STUDY
CONSTR. TYPE	CONCRETE/BLOCK/WOOD/STEEL	ESTIMATE DATE	4/26/99
YEAR BUILT	NO OF FLOORS 2	ESTIMATOR	BEN / PAUL
		FILE	C:\SEISMIC\EVAL-97\WEST TEMPLE

OPTION 1

Seismic only

Fema 273 Procedure

	CSI DIVISIONS	TOTAL COST (SUB)	TOTAL COST (GENERAL)	COST PER SF (GENERAL)
1.0	GENERAL REQUIREMENTS	$ -	$ -	$ -
2.0	SITEWORK AND DEMOLITION	$ 19,000	$ 23,000	$ 0.75
3.0	CONCRETE	$ 70,000	$ 80,000	$ 2.60
4.0	MASONRY	$ 12,000	$ 14,000	$ 0.46
5.0	METALS	$ 129,000	$ 149,000	$ 4.85
6.0	WOOD	$ 311,000	$ 359,000	$ 11.68
7.0	WATERPROOFING & ROOFING	$ 9,000	$ 10,000	$ 0.33
8.0	DOORS & WINDOWS	$ -	$ -	$ -
9.0	FINISHES	$ -	$ -	$ -
10.0	SPECIALTIES	$ -	$ -	$ -
11.0	EQUIPMENT	$ -	$ -	$ -
12.0	FURNISHINGS	$ -	$ -	$ -
13.0	SPECIAL CONSTRUCTION	$ -	$ -	$ -
14.0	VERTICAL TRANSPORTATION	$ -	$ -	$ -
15.0	MECHANICAL	$ -	$ -	$ -
16.0	ELECTRICAL	$ -	$ -	$ -
17.0	HAZMAT	$ -	$ -	$ -

DIRECT COSTS		$ 550,000	$ 635,000	$ 20.65
GENERAL CONDITIONS	10.0%	$ 55,000		
Subtotal		$ 605,000		
FEE	5.0%	$ 30,000		
HISTORICAL IMPACT	0.0%	$ -		
TOTAL		$ 635,000		

This estimate is based on the assumption that seismic work will be done as part of full building renovation.

STATE BUILDING SEISMIC PROGRAM

DSA/OPDM

West Temple
Los Angeles, CA

OPTION 1
Seismic only
Form 273 Procedure

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED :
DATE PRINTED: 4/27/99
BLDG AREA 30,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
1.0 GENERAL REQUIREMENTS						
NIC	0	SF	$7.84	$0		
NIC	0	SF	$7.85	$0		
GENERAL REQUIREMENTS				$0	$0	
					$0	
2.0 SITEWORK AND DEMOLITION						
DEMOLITION						
REMOVE FINISHES - FLOOR & CEILING - RELOCATE CASEWORK	0	SF	$9.85	$0		
REMOVE INTERIOR WALL/DOORS - RELOCATE CASEWORK	0	SF	$0.43	$0		
DEMO (E) SOG & HAUL	801	SF	$4.24	$4,998		
EXCAVATE BY HAND & HAUL	59	CY	$69.50	$4,094		
RUBBISH REMOVAL						
RUBBISH LOAD AND HAUL 100FT HAUL	60	CY	$42.90	$2,574		
RUBBISH LOADING TO TRUCK	60	CY	$52.47	$3,148		
RUBBISH DISPOSAL TO DUMP, 2 MILE	60	CY	$72.03	$4,322		
DEMOLITION & SITEWORK				$19,136	$15,136	
					$19,136	
3.0 CONCRETE						
DOWEL/REBAR						
FOOTING REBAR - 200#/CY	23.07	CLBS	$102.31	$2,361		
5/8" DIA DRILL IN CONC. FOR DOWELS - FOOTING 20/EA	100	EA	$14.81	$1,481		
DOWELS	100	EA	$17.62	$1,762		
WALL REBAR - 2.5#/SF	32.55	CLBS	$102.31	$3,330		
DOWELS WELDED TO STRUCTURAL COLUMN	120	EA	$37.37	$4,484		
ALLOW FOR MISC. REBAR	10.00	CLBS	$173.48	$1,735		
CONCRETE						
FOOTING	46	CY	$275.69	$12,721		
PATCH 1ST FLOOR CONCRETE SLAB W/DOWELS	801	SF	$8.66	$6,934		
10" SHOTCRETE WALLS - INCLUDE FORMWORK @ BACK	1302	SF	$22.06	$28,721		
ALLOWANCE FOR MISC. CONCRETE - COMPLETE	10.00	CY	$657.95	$6,580		
CONCRETE				$70,107	$70,107	
					$70,107	
4.0 MASONRY						
ALLOWANCE TO PROTECT/CLEAN/PATCH	13,308	SF-AREA	$0.89	$12,455		

STATE BUILDING SEISMIC PROGRAM — **DSA/OPDM**

West Temple
Los Angeles, CA

OPTION 1
Seismic only
Fema 273 Procedure

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED :
DATE PRINTED: 4/27/99
BLDG AREA 30,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
	-	LS	$6,949.61	$0		
MASONRY				$ 12,459	$ 12,458	
					$ 12,459	
5.0 METALS						
BUY STEEL	21129	LBS	$0.62	$13,167		
FABRICATE	21130	LBS	$1.58	$33,282		
INSTALL BRACE	6	EA	$1,457.71	$8,743		
INSTALL WELD PLATE @ MOMENT FRAME	10	EA	$372.21	$3,722		
INSTALL 1/2" SIDE PLATE WELD TO COLUMNS	10	EA	$372.21	$3,722		
INSTALL W 10X30 BEAM @ 2ND FLOOR	9	EA	$1,279.39	$11,514		
INSTALL W 10X30 BEAM @ ROOF	4	EA	$1,279.39	$5,118		
ADD CONNECTION PLATE - WELD TO (E) COLUMN	28	EA	$201.68	$5,647		
INSTALL 3/4 ROD & TURN BUCKLE	1	EA	$434.50	$435		
DRILL IN 8" CMU 1/2" PLATE	427	EA	$14.81	$6,325		
INSTALL 4" X 1/2" PLATE WITH 5/8" BOLT	548	LF	$49.25	$26,990		
ALLOWANCE FOR MISC. STEEL	1	LS	$10,305.99	$10,307		
				$128,970	$128,970	
METALS					$128,970	
6.0 WOOD						
2ND FLOOR						
DRILL IN 8" CMU FOR HIT 22	133	EA	$14.81	$1,953		
HIT 22 FASTENERS	133	EA	$64.07	$8,489		
MST 60 @ A & L	73	EA	$23.05	$1,671		
2X12, 14 & 16 BLOCKING @ 1 & 8 - ONE ROW ONLY	448	BF	$6.90	$3,089		
3X12, 14 & 16 BLOCKING @ A & L - LENGTH OF HIT 22 + MST 60	1872	BF	$6.90	$12,911		
PLYWOOD SHEATHING AT CEILING	6,072	SF	$3.35	$20,319		
3X12, 14 & 16 BLOCKING @ PLYWOOD SHEATHING - 24" oc - USK-2	9,715	BF	$6.90	$66,585		
MST 60 @ G & E, FULL LENGTH	73	EA	$23.05	$1,671		
2 & 3X12, 14 & 16 BLOCKING @ MST - LENGTH OF MST 60	1430	BF	$6.90	$9,899		
ROOF						
DRILL IN 8" CMU FOR HIT 22	136	EA	$14.81	$2,015		
HIT 22 FASTENERS	136	EA	$64.07	$8,713		
MST 60	136	EA	$23.05	$3,135		
2X12, 14 & 16 BLOCKING	4,160	BF	$6.90	$28,697		
PLYWOOD SHEATHING AT ROOF	8,653	SF	$3.35	$28,966		
3X12, 14 & 16 BLOCKING @ PLYWOOD SHEATHING - 24" oc - USK-2	13,815	BF	$6.90	$95,472		
ALLOWANCE FOR MISC. R/F CARPENTRY	1	LS	$17,014.94	$17,045		
				$311,129	$311,129	

STATE BUILDING SEISMIC PROGRAM

DSA/OPDM

West Temple
Los Angeles, CA

OPTION I
Seismic only
Fema 273 Procedure

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED :
DATE PRINTED: 4/27/99
BLDG AREA 30,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
WOOD					$311,129	
7.0 WATERPROOFING & ROOFING						
ALLOWANCE FOR PATCH WORK	15372	SF	$0.56	$8,611		
			$0.00	$0		
WATERPROOFING & ROOFING				$8,611	$8,611	
					$8,611	
8.0 DOORS & WINDOWS						
NIC	0	EA	$1,180.54	$0		
			$0.00	$0		
DOORS & WINDOWS				$0	$0	
					$0	
9.0 FINISHES						
NIC	0	SF	$5.52	$0		
			$0.00	$0		
FINISHES				$0	$0	
					$0	
10.0 SPECIALTIES						
NIC	0	FLOOR	$5,463.55	$0		
			$0.00	$0		
SPECIALTIES			$	-	$ -	
					$ -	
11.0 EQUIPMENT						
NIC	0	FLOOR	$3,466.55	$0		
			$0.00	$0		
EQUIPMENT			$	-	$ -	
					$ -	
12.0 FURNISHINGS						
NIC	0	FLOOR	$1,591.09	$0		
			$0.00	$0		
FURNISHINGS			$	-	$ -	
					$ -	

STATE BUILDING SEISMIC PROGRAM

West Temple
Los Angeles, CA

OPTION 1
Seismic only
Fema 273 Procedure

DSA/OPDM

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED:
DATE PRINTED 4/27/99
BLDG AREA 39,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
13.0 SPECIAL CONSTRUCTION						
NIC			$0.00	$0		
			$0.00	$0		
SPECIAL CONSTRUCTION				$ -	$ -	
					$ -	
14.0 VERTICAL TRANSPORTATION						
NIC			$0.00	$0		
			$0.00	$0		
VERTICAL TRANSPORTATION				$ -	$ -	
					$ -	
15.0 MECHANICAL						
PLUMBING						
NIC	0	SF	$1.6[illegible]	$0		
HVAC						
NIC	0	SF	$5.9[illegible]	$0		
			$0.0[illegible]	$0		
MECHANICAL				$0	$0	
					$0	
16.0 ELECTRICAL						
NIC	0	SF	$5.6[illegible]	$0		
			$0.0[illegible]	$0		
ELECTRICAL				$0	$0	
					$0	
17.0 HAZMAT						
NIC	0	SF	$3.3[illegible]	$0		
			$0.00	$0		
HAZMAT				$0	$0	
					$0	
SUBTOTAL				$550,411	$550,411	
					$0	

STATE BUILDING SEISMIC PROGRAM

West Temple
Los Angeles, CA

OPTION I
Seismic only
Fema 273 Procedure

DSA/OPDM

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED :
DATE PRINTED: 4/27/99
BLDG AREA 30,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES

SUMMARY OF
STATE SEISMIC PROGRAM

Estimator's Firm Name:	**TURNER / VANIR**		DSA #	
Structural Engineer:	ICF Keiser	*OPTION II*	DEPARTMENT	Department of Public Health
BUILDING NAME	West Temple	*Full Seismic*	RISK LEVEL	
BUILDING LOCATION	Los Angeles, CA	*Fema 273 Procedure*	CCCI /	
BUILDING TYPE			DATE OF DRAWINGS	
BLDG GROSS AREA	30,744 SF		LEVEL OF DRAWINGS/DOCUMENTS	PRELIMINARY STUDY
CONSTR TYPE	CONCRETE/BLOCK/WOOD/STEEL		ESTIMATE DATE	4/26/99
YEAR BUILT	NO OF FLOORS 2		ESTIMATOR	BEN / PAUL
			FILE	C:\SEISMIC\EVAL-97\WEST TEMPLE

	CSI DIVISIONS	TOTAL COST (SUB)	TOTAL COST (GENERAL)	COST PER SF (GENERAL)
1.0	GENERAL REQUIREMENTS	$ 175,000	$ 202,000	$ 6.57
2.0	SITEWORK AND DEMOLITION	$ 58,000	$ 68,000	$ 2.21
3.0	CONCRETE	$ 70,000	$ 80,000	$ 2.60
4.0	MASONRY	$ 12,000	$ 14,000	$ 0.46
5.0	METALS	$ 129,000	$ 149,000	$ 4.85
6.0	WOOD	$ 311,000	$ 359,000	$ 11.68
7.0	WATERPROOFING & ROOFING	$ 9,000	$ 10,000	$ 0.33
8.0	DOORS & WINDOWS	$ 30,000	$ 35,000	$ 1.14
9.0	FINISHES	$ 170,000	$ 196,000	$ 6.38
10.0	SPECIALTIES	$ 11,000	$ 13,000	$ 0.42
11.0	EQUIPMENT	$ 11,000	$ 13,000	$ 0.42
12.0	FURNISHINGS	$ 3,000	$ 3,000	$ 0.10
13.0	SPECIAL CONSTRUCTION	$ -	$ -	$ -
14.0	VERTICAL TRANSPORTATION	$ -	$ -	$ -
15.0	MECHANICAL	$ 277,000	$ 320,000	$ 10.41
16.0	ELECTRICAL	$ 229,000	$ 265,000	$ 8.62
17.0	HAZMAT	$ 103,000	$ 119,000	$ 3.87

DIRECT COSTS		$ 1,598,000	**$ 1,846,000**	**$ 60.04**
GENERAL CONDITIONS	10.0%	$ 160,000		
Subtotal		$ 1,758,000		
FEE	5.0%	$ 88,000		
HISTORICAL IMPACT	0.0%	$ -		
TOTAL		**$ 1,846,000**		

STATE BUILDING SEISMIC PROGRAM

DSA/OPDM

West Temple
Los Angeles, CA

OPTION II
Full Seismic
Fema 273 Procedure

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED :
DATE PRINTED: 4.27.99
BLDG AREA 30,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
1.0 GENERAL REQUIREMENTS						
NC	30741	SF	$2.84	$87,419		
NC	30741	SF	$2.85	$87,629		
GENERAL REQUIREMENTS				$175,048	$175,048	
					$175,048	
2.0 SITEWORK AND DEMOLITION						
DEMOLITION						
REMOVE FINISHES - FLOOR & CEILING - RELOCATE CASEWORK	30744	SF	$0.65	$26,207		
REMOVE INTERIOR WALL/DOORS - RELOCATE CASEWORK	30744	SF	$0.43	$13,103		
DEMO (E) SOG & HAUL	801	SF	$6.24	$4,999		
EXCAVATE BY HAND & HAUL	59	CY	$68.59	$4,004		
RUBBISH REMOVAL						
RUBBISH LOAD AND HAUL 100 FT HAUL	60	CY	$42.90	$2,574		
RUBBISH LOADING TO TRUCK	60	CY	$52.47	$3,148		
RUBBISH DISPOSAL TO DUMP, 2-MILE	60	CY	$72.03	$4,322		
DEMOLITION & SITEWORK				$58,446	$58,446	
					$58,445	
3.0 CONCRETE						
DOWEL/REBAR						
FOOTING REBAR - 50# / CY	23.07	CLBS	$102.31	$2,361		
5/8" DIA DRILL IN CONC. FOR DOWELS - FOOTING 2#/EA	100	EA	$14.81	$1,481		
DOWELS	100	EA	$17.62	$1,762		
WALL REBAR - 2.5# / SF	32.56	CLBS	$102.31	$3,330		
DOWELS WELDED TO STRUCTURAL COLUMN	120	EA	$37.37	$4,484		
ALLOW FOR MISC. REBAR	10.00	CLBS	$173.43	$1,735		
CONCRETE						
FOOTING						
PATCH 1ST FLOOR CONCRETE SLAB W/DOWELS	46	CY	$276.65	$12,721		
10" SHOTCRETE WALLS - INCLUDE FORMWORK @ BACK	801	SF	$8.66	$6,934		
	1302	SF	$22.06	$28,721		
ALLOWANCE FOR MISC. CONCRETE - COMPLETE	10.00	CY	$657.96	$6,510		
CONCRETE				$70,107	$70,107	
					$70,107	
4.0 MASONRY						
ALLOWANCE TO PROTECT/CLEAN/PATCH	13,959	SF-AREA	$0.89	$12,459		

STATE BUILDING SEISMIC PROGRAM

DSA/OPDM

West Temple
Los Angeles, CA

OPTION II
Full Seismic
Form 271 Procedure

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED :
DATE PRINTED: 4/27/99
BLDG AREA 30744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
	.	LS	$6,949.81	$0		
MASONRY				$ 12458	$ 12,459	
					$ 12,458	
5.0 METALS						
BUY STEEL	21130	LBS	$0.62	$13,162		
FABRICATE	21130	LBS	$1.58	$33,202		
INSTALL BRACE	8	EA	$1457.71	$8,746		
INSTALL WELD PLATE @ MOMENT FRAME	10	EA	$372.21	$3,722		
INSTALL 1/2" SIDE PLATE WELD TO COLUMNS	10	EA	$372.21	$3,722		
INSTALL W 10X30 BEAM @ 2ND FLOOR	9	EA	$1279.39	$11,514		
INSTALL W 10X30 BEAM @ ROOF	4	EA	$1279.39	$5,118		
ADD CONNECTION PLATE - WELD TO (E) COLUMN	28	EA	$201.68	$5,647		
INSTALL 3/4 ROD & TURN BUCKLE	1	EA	$434.50	$435		
DRILL IN 8" CMU 3/4" PLATE	427	EA	$14.81	$6,325		
INSTALL 4" X 1/4" PLATE WITH 5/8" BOLT	548	LF	$49.25	$26,999		
ALLOWANCE FOR MISC. STEEL	1	LS	$10306.99	$10,307		
METALS				$128,970	$128,970	
					$128,970	
8.0 WOOD						
2ND FLOOR						
DRILL IN 8" CMU FOR HTT 22	133	EA	$14.81	$1,963		
HTT 22 FASTENERS	133	EA	$64.07	$8,189		
MST 60 @ A & L	73	EA	$23.05	$1,671		
2X12, 14 & 16 BLOCKING @ 1 & 6 - ONE ROW ONLY	448	BF	$6.90	$3,099		
3X12, 14 & 16 BLOCKING @ A & L - LENGTH OF HTT22 + MST 60	1872	BF	$6.90	$12,914		
PLYWOOD SHEATHING AT CEILING	6,072	SF	$3.35	$20,319		
3X12, 14 & 16 BLOCKING @ PLYWOOD SHEATHING - 24" oc - USK-2	9,715	BF	$6.90	$66,935		
MST 60 @ G & E, FULL LENGTH	73	EA	$23.05	$1,671		
2 & 3X12, 14 & 16 BLOCKING @ MST - LENGTH OF MST 60	1450	BF	$6.90	$9,999		
ROOF						
DRILL IN 8" CMU FOR HTT 22	136	EA	$14.81	$2,015		
HTT 22 FASTENERS	136	EA	$64.07	$8,713		
MST 60	136	EA	$23.05	$3,135		
2X12, 14 & 16 BLOCKING	4,160	BF	$5.93	$28,667		
PLYWOOD SHEATHING AT ROOF	8,653	SF	$3.35	$28,956		
3X12, 14 & 16 BLOCKING @ PLYWOOD SHEATHING - 24" oc - USK-2	13,645	BF	$6.90	$56,472		
ALLOWANCE FOR MISC. R/F CARPENTRY	1	LS	$17,844.81	$17,845		
				$311,129	$311,129	

STATE BUILDING SEISMIC PROGRAM

DSA/OPDM

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Los Angeles, CA

OPTION II
Full Seismic
Form 273 Procedure

PREPARED BY: TURNER / VANIR
DATE PREPARED: 4/26/99
REVISED:
DATE PRINTED: 4/27/99
BLDG AREA 30,744 SF

DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES
WOOD					$311,129	
7.0 WATERPROOFING & ROOFING						
ALLOWANCE FOR PATCHWORK	15072	SF	$0.55 $0.00	$8,611 $0		
WATERPROOFING & ROOFING				$8,611	$8,611 $8,611	
8.0 DOORS & WINDOWS						
ALLOWANCE FOR R & R	25	EA	$1,180.51 $0.00	$29,513 $0		
DOORS & WINDOWS				$29,513	$29,513 $29,513	
9.0 FINISHES						
ALLOWANCE FOR R & R	30744	SF	$5.52 $0.00	$169,753 $0		
FINISHES				$169,753	$169,753 $169,753	
10.0 SPECIALTIES						
ALLOWANCE FOR R & R	2	FLOOR	$5,466.55 $0.00	$10,933 $0		
SPECIALTIES				$ 10,933	$ 10,933 $ 10,933	
11.0 EQUIPMENT						
ALLOWANCE FOR R & R	2	FLOOR	$5,466.55 $0.00	$10,933 $0		
EQUIPMENT				$ 10,933	$ 10,933 $ 10,933	
12.0 FURNISHINGS						
ALLOWANCE FOR R & R	2	FLOOR	$1,303.00 $0.00	$2,606 $0		
FURNISHINGS				$ 2,606	$ 2,606 $ 2,606	

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13.0 SPECIAL CONSTRUCTION						
NIC			$0.00	$0		
			$0.00	$0		
SPECIAL CONSTRUCTION				$ -	$ -	
					$ -	
14.0 VERTICAL TRANSPORTATION						
NIC			$0.00	$0		
			$0.00	$0		
VERTICAL TRANSPORTATION				$ -	$ -	
					$ -	
15.0 MECHANICAL						
PLUMBING. ALLOWANCE FOR R & R	30744	SF	$1.85	$53,986		
HVAC: ALLOWANCE FOR R & R	30744	SF	$7.15	$219,632		
			$0.00	$0		
MECHANICAL				$276,668	$276,668	
					$276,668	
16.0 ELECTRICAL						
ALLOWANCE FOR R & R	30744	SF	$7.43	$228,551		
			$0.00	$0		
ELECTRICAL				$228,551	$228,551	
					$228,551	
17.0 HAZMAT						
ALLOWANCE	30744	SF	$3.34	$102,731		
			$0.00	$0		
HAZMAT				$102,731	$102,731	
					$102,731	
SUBTOTAL				**$1,596,458**	**$1,596,458**	
					$0	

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DESCRIPTION	QUANTITY	UNIT	COST	TOTAL	TOTAL	NOTES