This cornice is all cement on rear facade of main building; on wings the crown mould is G.I. - see SECTION AT ℄

- SECTION - - GUTTER, CORNICE AND CIRCULAR WINDOW OF REAR FACADE -

- SECTION - SMALL WINDOW IN SIDE FACADE OF WING -

This curved profile around wings only - see ½" scale elevations

SECTION - HALF ELEVATION OF PANEL UNDER CIRCULAR WINDOWS OF SIDE FACADE OF WINGS -

Detail of Iron Lattice

- PLAN -

- PLAN -

- PLAN OF BALCONY -

- PLAN OF BALCONY -

NOTE Use figures shown here for projection of balconies instead of those on ¼ scale drawings.

- PORTION OF FRONT FACADE OF WING -

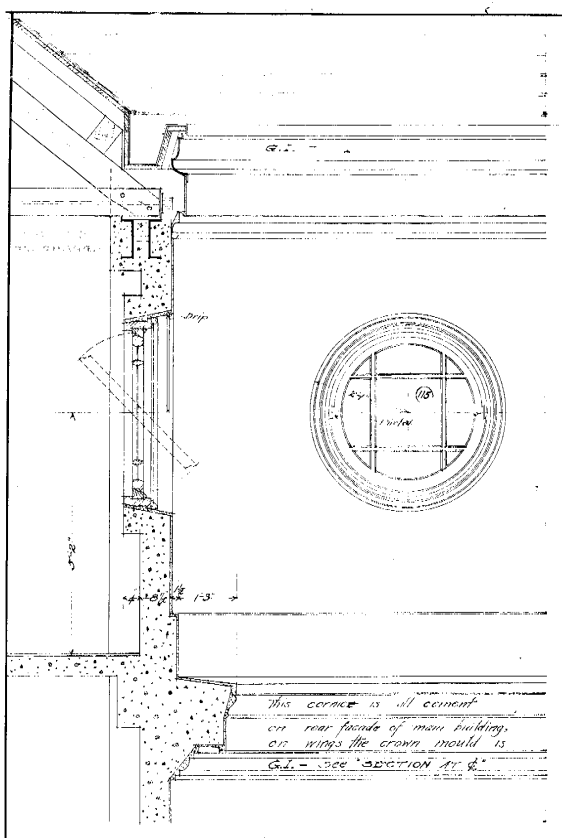
- SECTION AT ℄ -

- SECTION - - BASEMENT ENTRANCE AND BALCONY OVER -

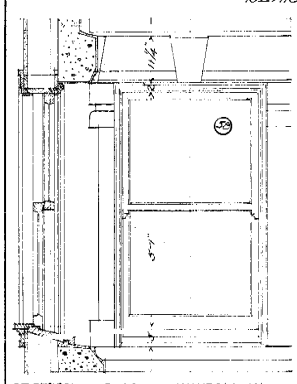
¾" SCALE DETAIL ℄ of EXTERIOR

- ALAMEDA TOWN HALL -

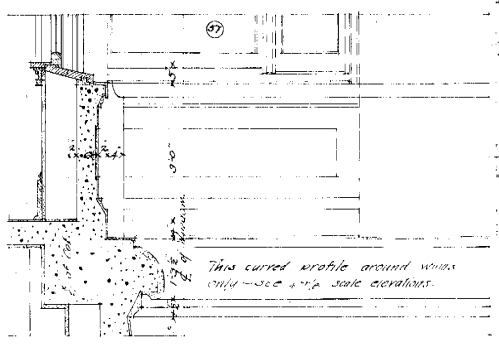
- BAKEWELL & BROWN
- ARCHITECTS
- 417 MONTGOMERY
- SAN FRANCISCO



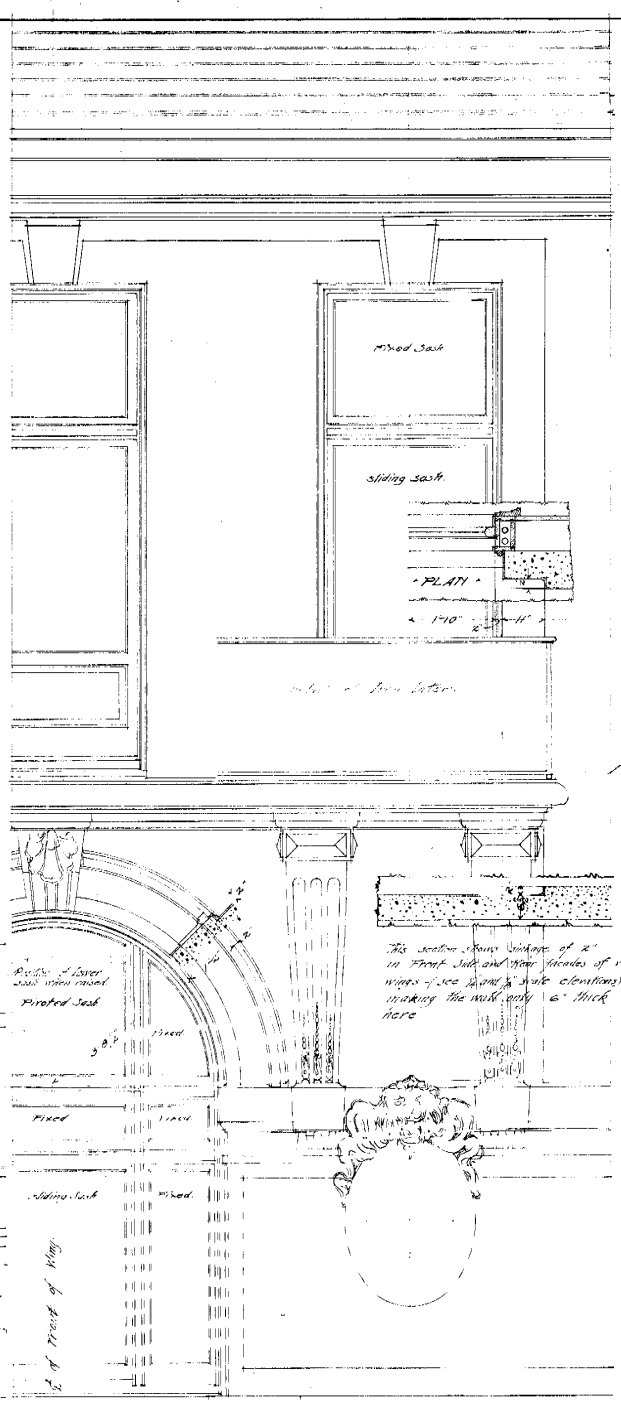
"SECTION" "GUTTER, CORNICE AND CIRCULAR WINDOW OF REAR FACADE"



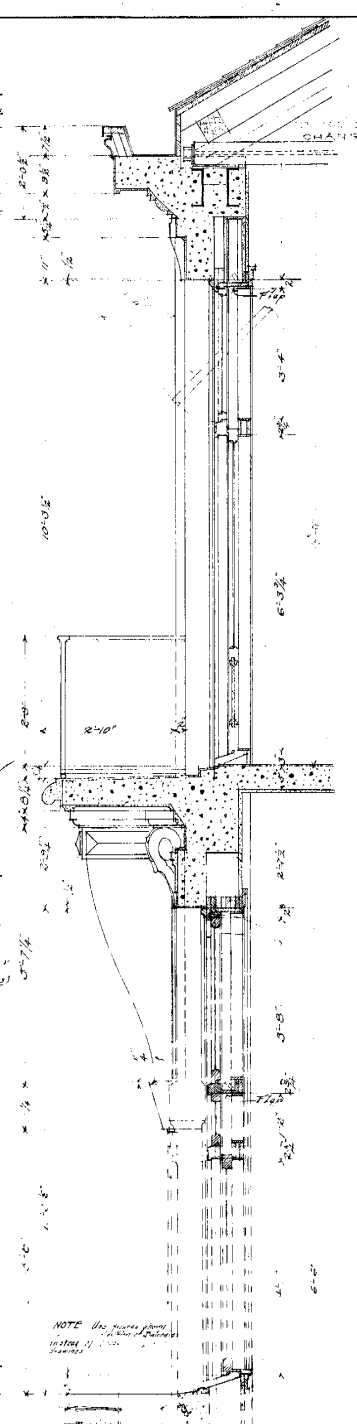
"SECTION" SMALL WINDOW IN SIDE FACADE OF WING.

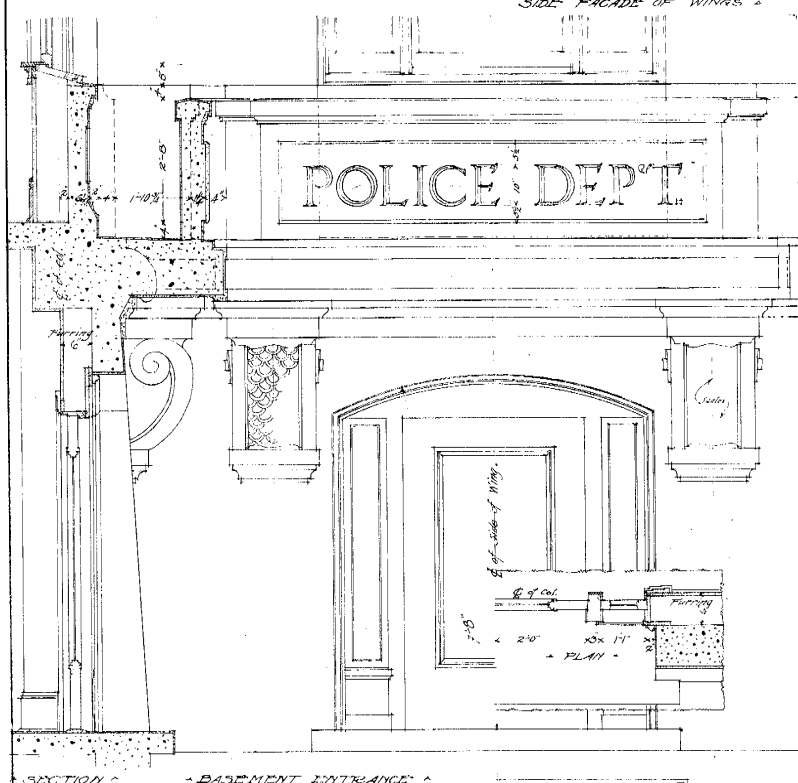


SECTION

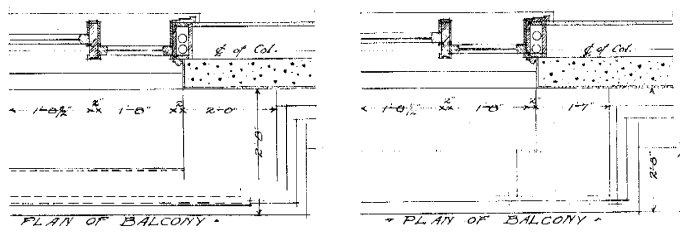


"HALF ELEVATION OF PANEL UNDER CIRCULAR WINDOWS OF SIDE FACADE OF WINGS"

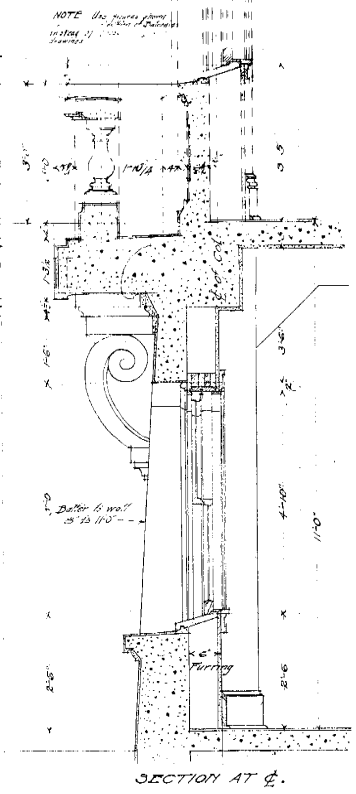




"SECTION" "BASEMENT ENTRANCE AND BALCONY OVER"



PORTION OF FRONT FACADE OF WING

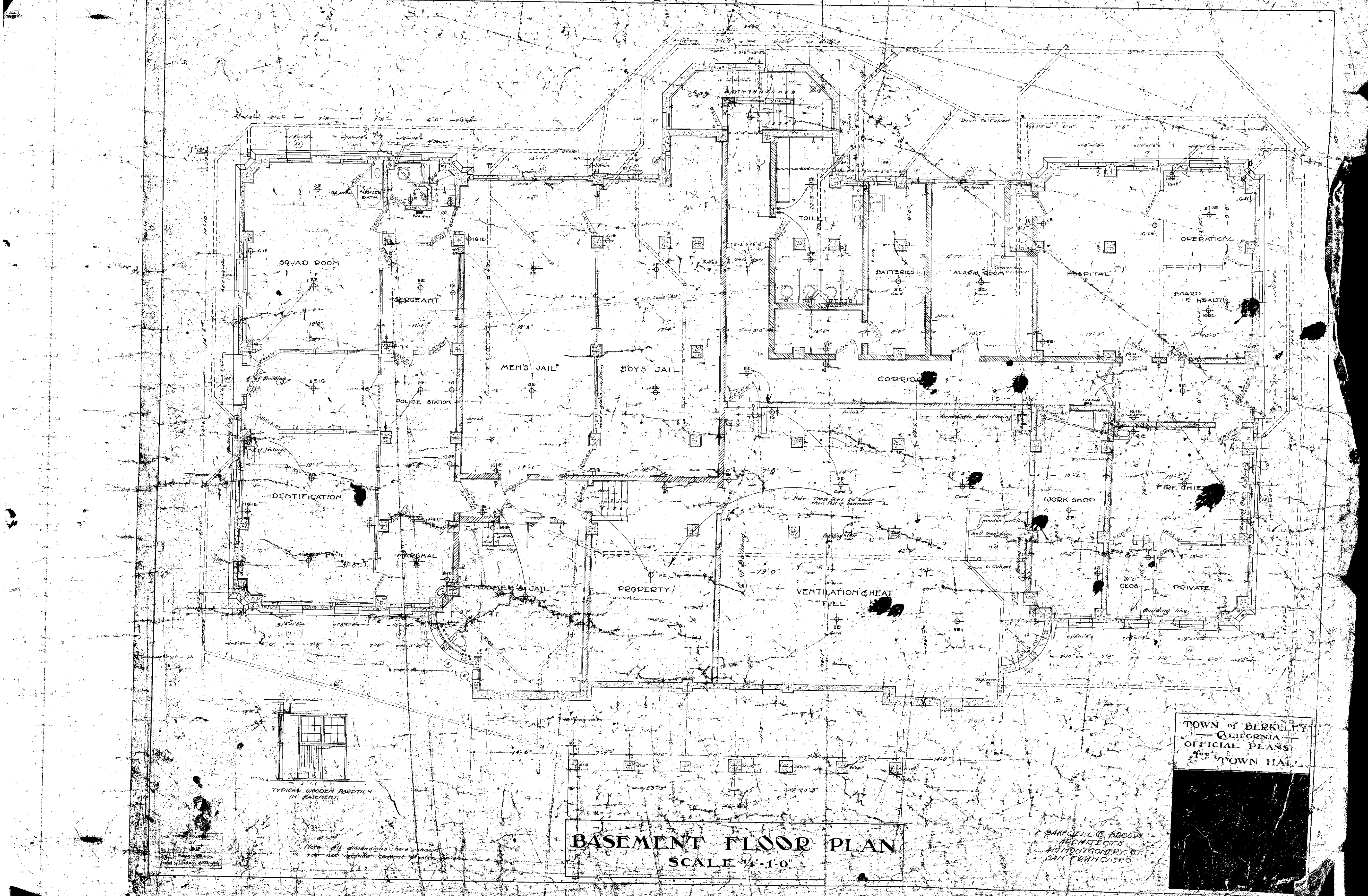


SECTION AT ℄.

¾" Scale Detail of Exterior

BERKELEY TOWN HALL

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO.


SQUAD ROOM
SERGEANT
POLICE STATION
IDENTIFICATION
MARSHAL
MEN'S JAIL
BOYS' JAIL
WOMEN'S JAIL
PROPERTY
TOILET
BATTERIES
ALARM ROOM
HOSPITAL
OPERATING
BOARD OF HEALTH
CORRIDOR
VENTILATION & HEAT
FUEL
WORK SHOP
FIRE CHIEF
CLOS
PRIVATE
SHOWER BATH
TYPICAL WOODEN PARTITION IN BASEMENT
Note: all dimensions here shown do not include cement plaster finish
BASEMENT FLOOR PLAN
SCALE 1/4"-1'-0"
BAKEWELL & BROWN
ARCHITECTS
371 MONTGOMERY ST
SAN FRANCISCO
TOWN of BERKELEY
CALIFORNIA
OFFICIAL PLANS
for TOWN HALL

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

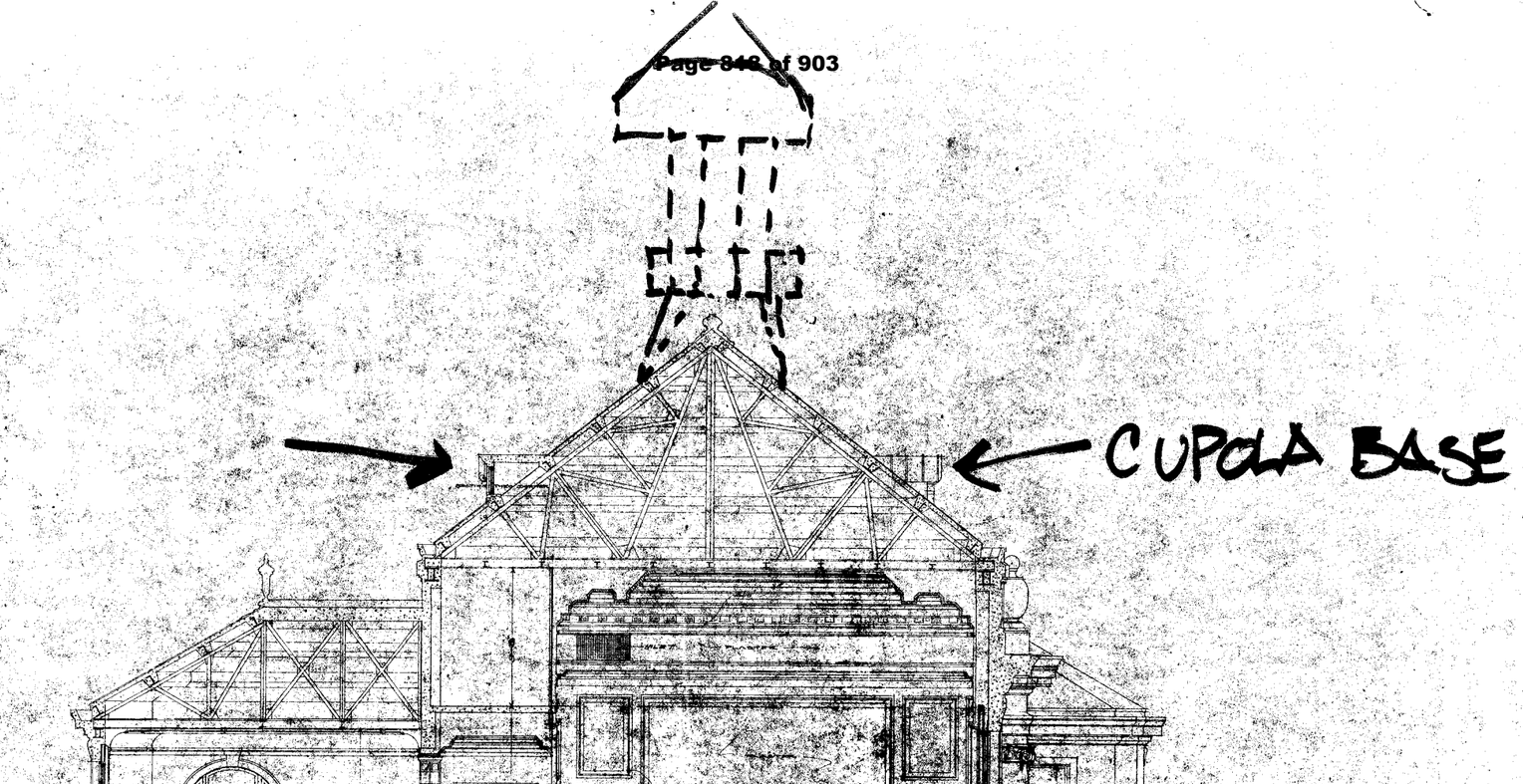
TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO

TYPICAL WOODEN PARTITION IN BASEMENT

Note:- All dimensions here shown ... cement plaster finish.

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO.



Note:- All dimensions here shown do not include cement plaster finish.

CROSS SECTION
SCALE ¼"-1'0"

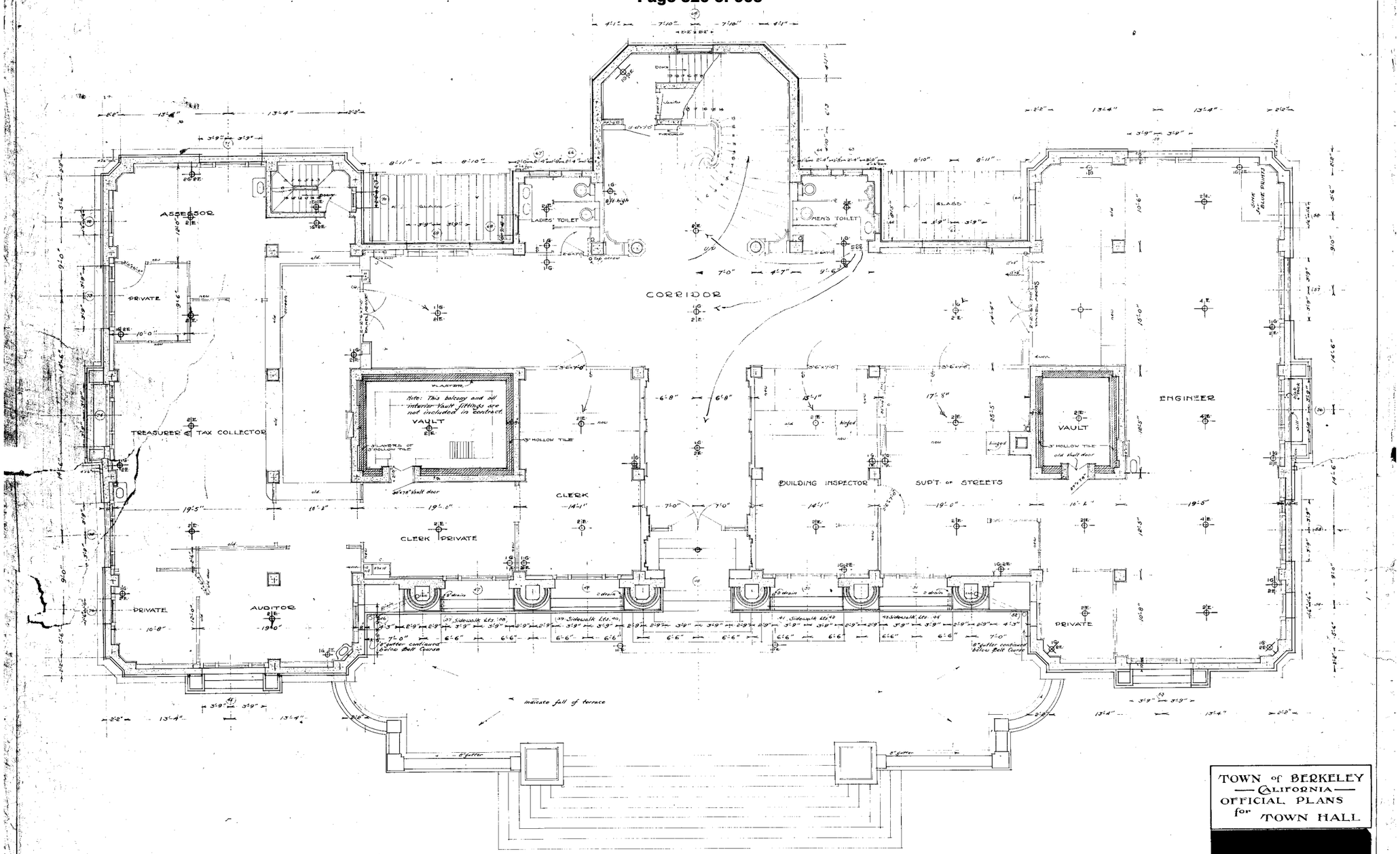
BAKEWELL & BROWN
ARCHITECTS
411 MONTGOMERY ST.
SAN FRANCISCO

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

CROSS SECTION
SCALE 1/4" = 1'-0"

Oct. 15, 1907.
SI
19

Note:- All dimensions here shown do not include cement plaster finish.



Note.- All dimensions here shown do not include cement plaster finish.

FIRST FLOOR PLAN
SCALE ¼"=1'-0"

Sept. 25, 1907
51
13
Bakewell & Brown
Architects & Engrs.

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO

PRESIDENT'S ROOM

LADIES' TOILET

MEN'S TOILET

CORRIDOR

SUP OF SCHOOLS

ASSISTANT ATTY

ANTE ROOM

ATTORNEY

COUNCIL CHAMBER

JUSTICE COURT

LAVATORY

COMMITTEE AND JURY ROOM

UNASSIGNED

ANTE ROOM

JUSTICE OF PEACE

PRIVATE OFFICE

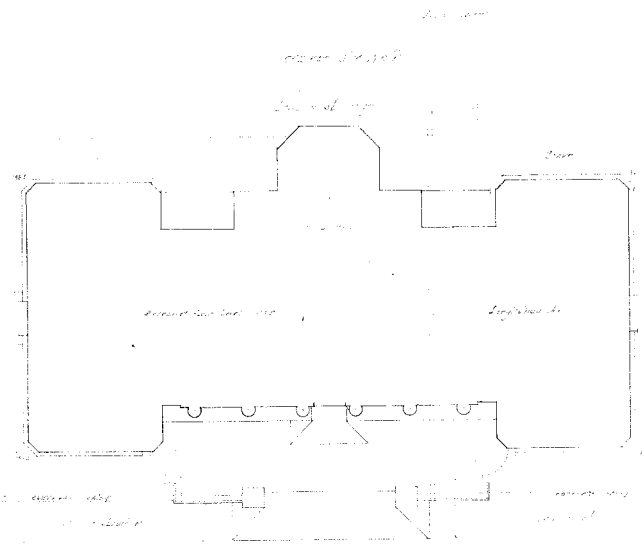
Note: All dimensions here shown do not include cement plaster finish.

TOWN OF BERK[illegible]
— CALIFORNIA
OFFICIAL PLANS
for TOWN H[illegible]

Adopted and Filed
DEC 17 1907
Attest J. M. Underhill Clerk
Francis Ferris

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO

SECOND FLOOR PLAN
SCALE ¼" - 1'-0"



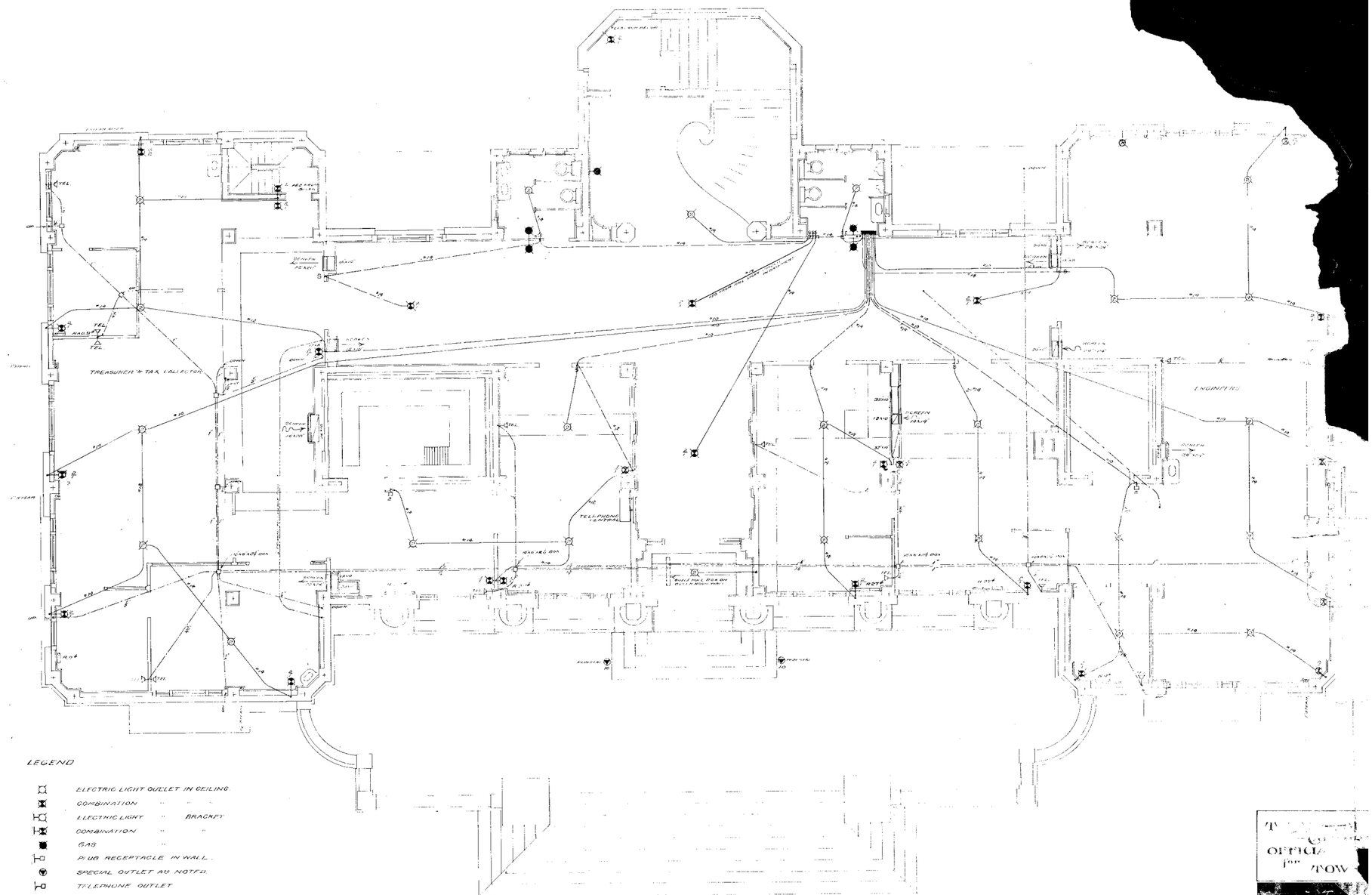
GROVE OF

GENERAL PLAN
showing position of building with reference to lot

Note:- The contract does not include grading outside of building, walks, etc. That is contract only includes work shown in ¼" Scale plans

ATTIC PLAN AND PLOT

SCALE ¼ - 1-0 & 1/16 - 1-0



LEGEND

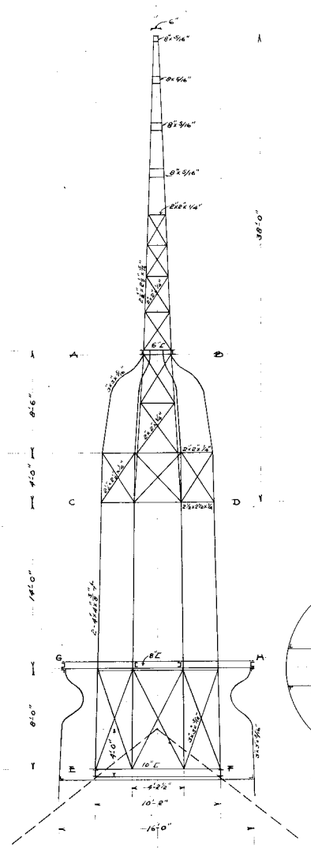
- ELECTRIC LIGHT OUTLET IN CEILING
- COMBINATION " " "
- ELECTRIC LIGHT " BRACKET
- COMBINATION " "
- GAS "
- PLUG RECEPTACLE IN WALL
- SPECIAL OUTLET AS NOTED
- TELEPHONE OUTLET
- DISTRIBUTION PANEL
- BRANCH CIRCUIT IN CEILING
- " " " FLOOR
- MAIN FEEDER IN CEILING
- TELEPHONE CONDUIT
- " PULL BOX
- STEAM MAIN
- " RETURN
- PUSH BUTTON SWITCH

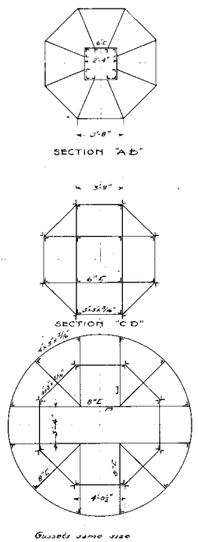
Oct 8, 1907.
22
G.E. LELAND
G.E. LELAND

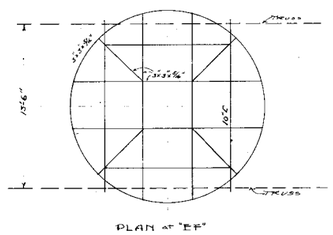
PLAN of HEATING & VENTILATING SYSTEM AND ELECTRIC WIRING & TELEPHONE CONDUIT SYS.

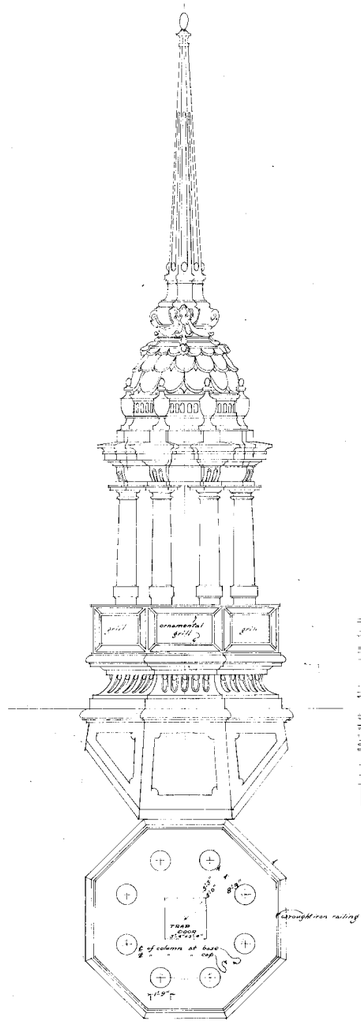
Scale 1/4"-1'0"

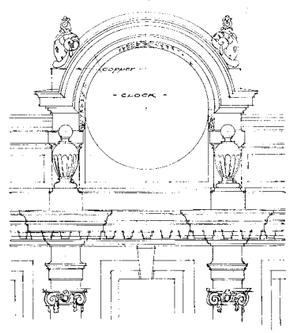
BAKEWELL & BROWN
ARCHITECTS
SAN FRANCISCO
CONSULTING









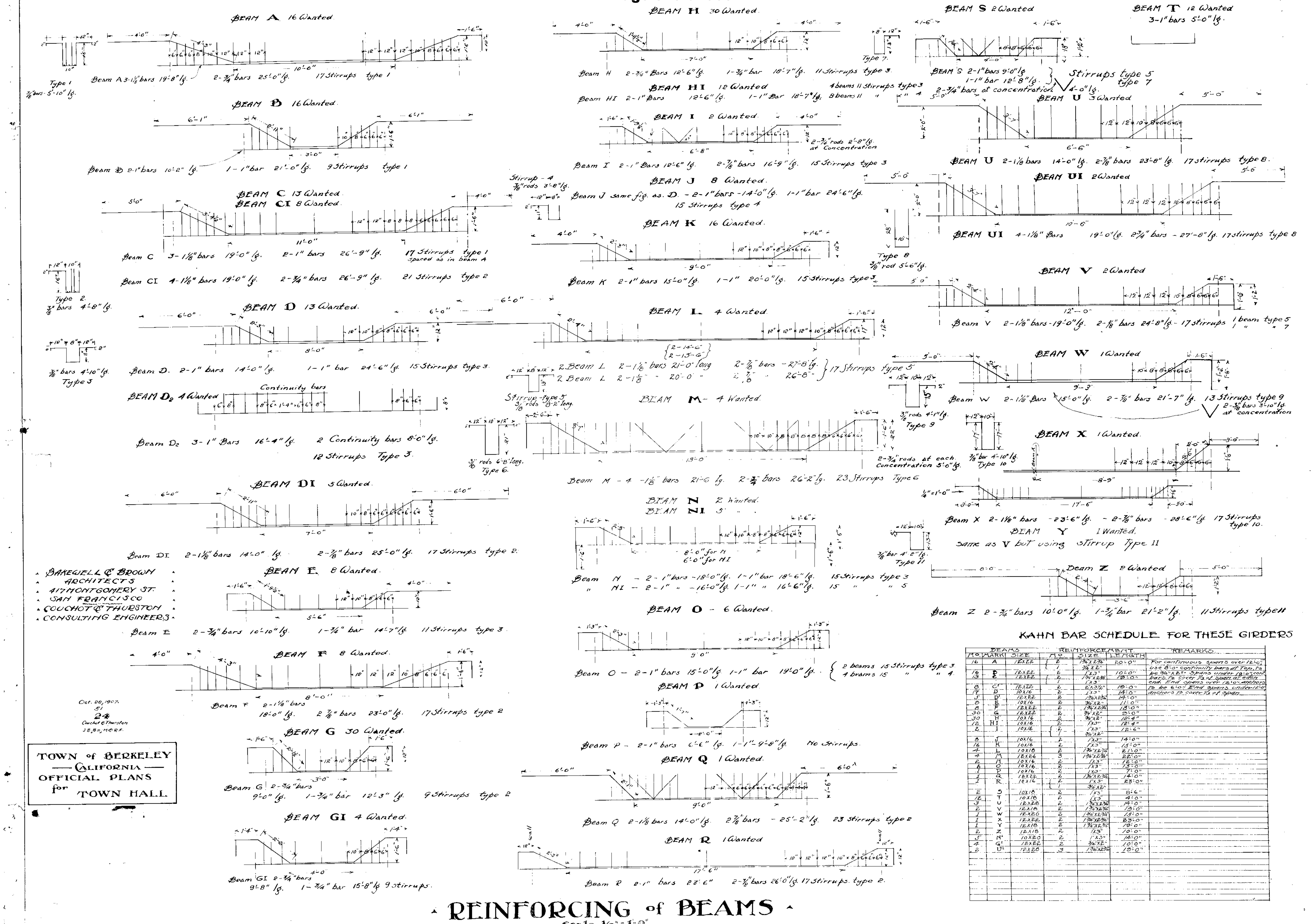


TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

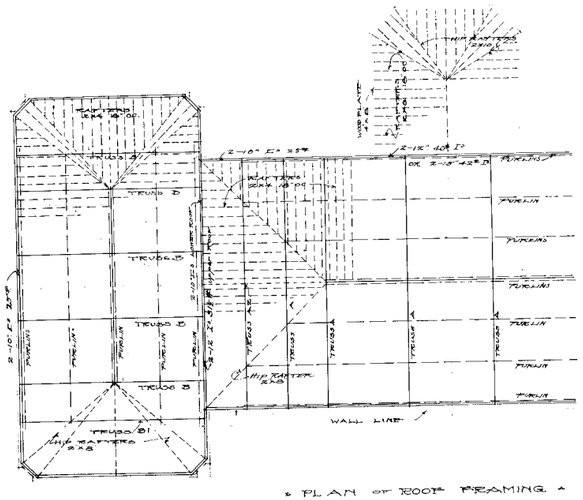
TOWER AND CLOCK

SCALE 1/4" = 1'-0"

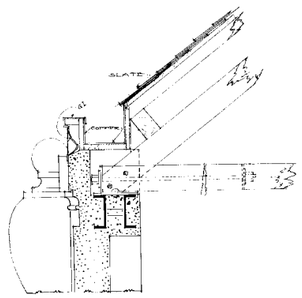
BAKEWELL & BROWN
ARCHITECTS
411 MONTGOMERY ST.
SAN FRANCISCO
COUGHOT & THURSTON
CONSULTING ENGINEERS



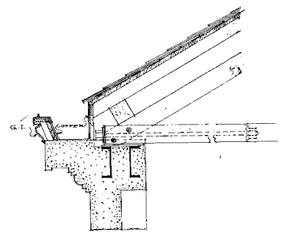
BEAM A 16 Wanted
BEAM B 16 Wanted
BEAM C 13 Wanted
BEAM C1 8 Wanted
BEAM D 13 Wanted
BEAM D2 4 Wanted
BEAM D1 5 Wanted
BEAM E 8 Wanted
BEAM F 8 Wanted
BEAM G 30 Wanted
BEAM G1 4 Wanted
BEAM H 30 Wanted
BEAM H1 12 Wanted
BEAM I 2 Wanted
BEAM J 8 Wanted
BEAM K 16 Wanted
BEAM L 4 Wanted
BEAM M 4 Wanted
BEAM N 2 Wanted
BEAM O 6 Wanted
BEAM P 1 Wanted
BEAM Q 1 Wanted
BEAM R 1 Wanted
BEAM S 2 Wanted
BEAM T 12 Wanted
BEAM U 3 Wanted
BEAM U1 2 Wanted
BEAM V 2 Wanted
BEAM W 1 Wanted
BEAM X 1 Wanted
BEAM Y 1 Wanted
Same as V but using Stirrup Type 11
Beam Z 2 Wanted
KAHN BAR SCHEDULE FOR THESE GIRDERS
BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS
Oct. 20, 1907.
TOWN of BERKELEY
CALIFORNIA
OFFICIAL PLANS
for TOWN HALL
REINFORCING of BEAMS
Scale 1/2" = 1'-0"



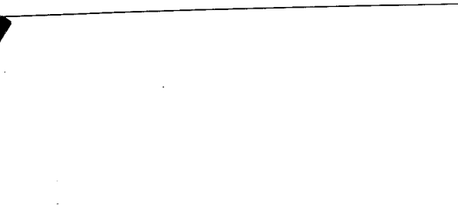
PLAN OF ROOF FRAMING
SCALE 1/8" = 1'-0"



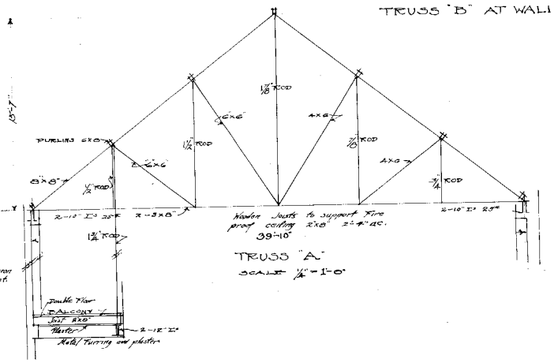
TRUSS "A" AT WALL



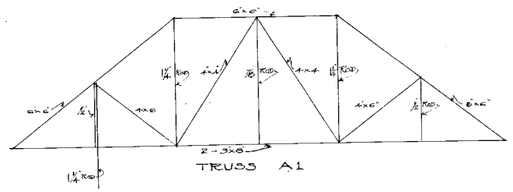
TRUSS "B" AT WALL



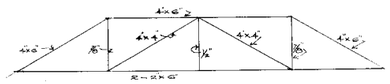
TRUSS "B"
SCALE 1/4" = 1'-0"



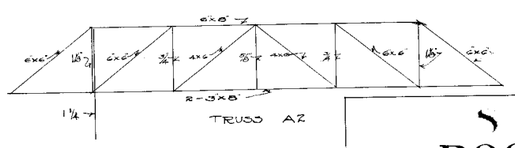
TRUSS "A"
SCALE 1/4" = 1'-0"



TRUSS A1



TRUSS B1



TRUSS A2

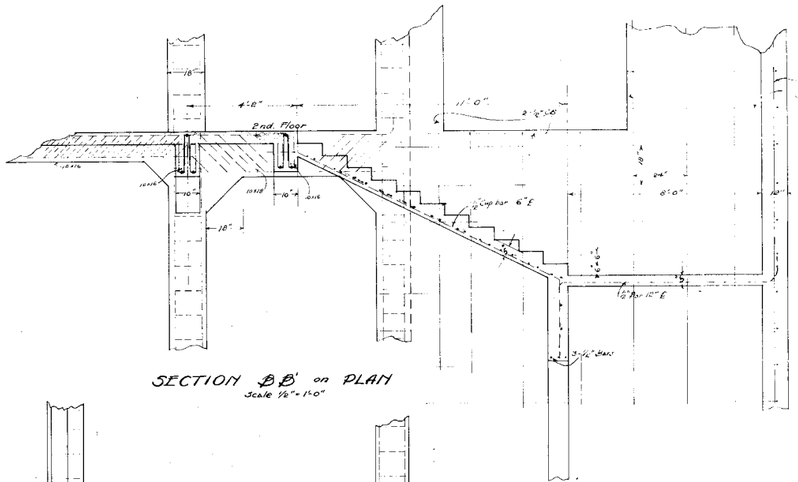
WOODEN ROOF TRUSSES

DEC. 14-07.

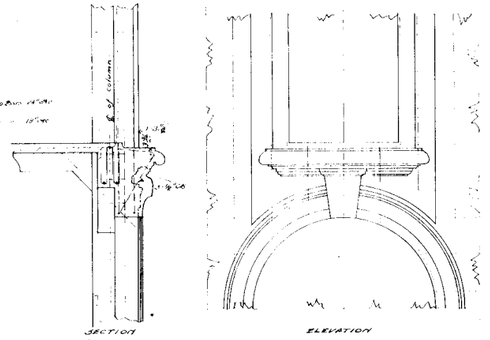
TOWN of BERKELEY
CALIFORNIA
OFFICIAL PLANS
for TOWN HALL

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO CAL.
COUCHOT & THURSTON
CONSULTING ENGINEERS

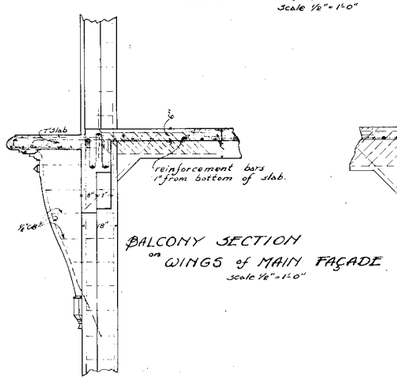
Note:- All dimensions here shown do not include cement plaster finish.



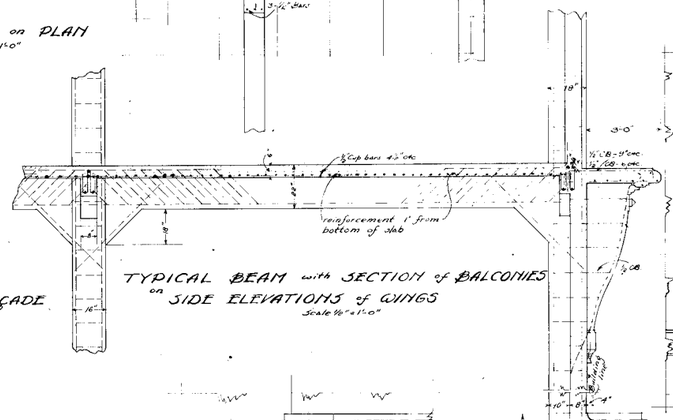
SECTION B B' on PLAN
Scale ½"=1'-0"



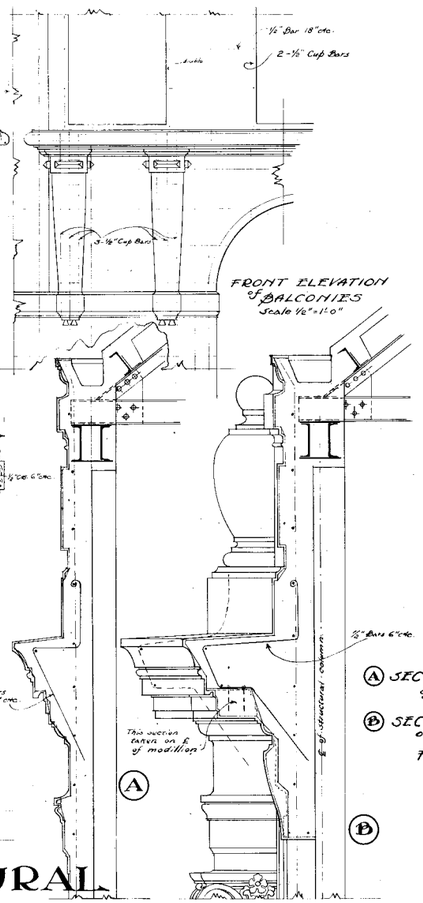
SECOND STORY BALCONIES of MAIN FAÇADE
Scale ½"=1'-0"



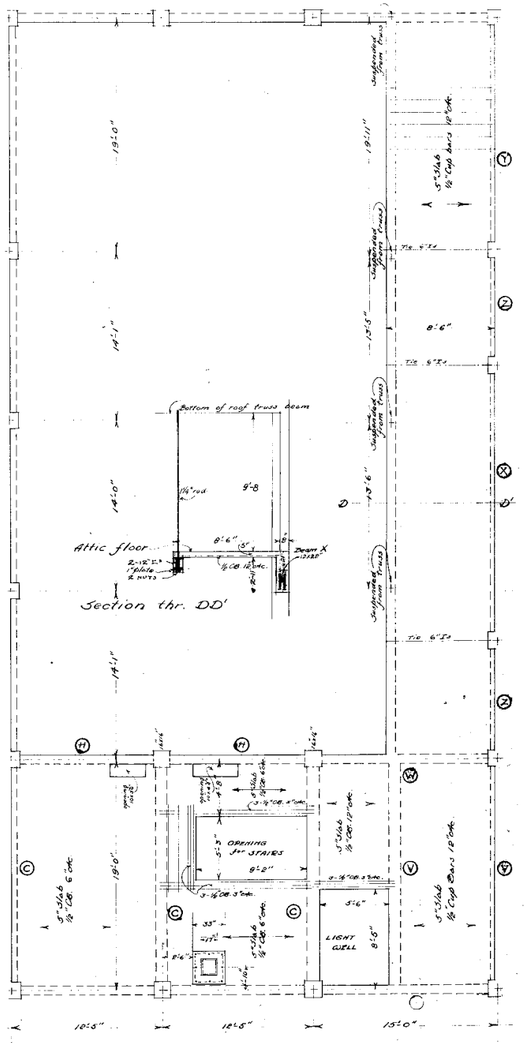
BALCONY SECTION on WINGS of MAIN FAÇADE
Scale ½"=1'-0"



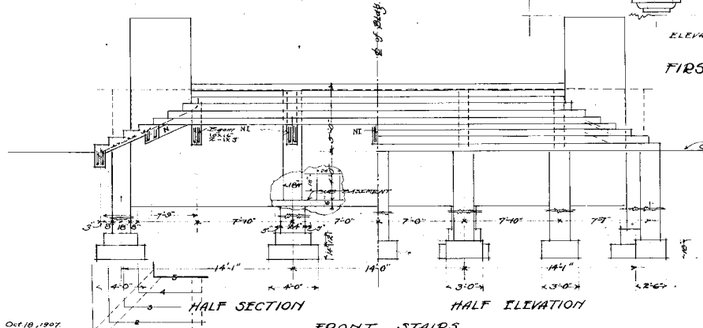
TYPICAL BEAM with SECTION of BALCONIES on SIDE ELEVATIONS of WINGS
Scale ½"=1'-0"



FRONT ELEVATION of BALCONIES
Scale ½"=1'-0"



ATTIC FLOOR PLAN
Scale ¼"=1'-0"



FIRST STORY BALCONIES of WINGS
Scale ½"=1'-0"

FRONT STAIRS
Scale ¼"=1'-0"

Oct 18, 1907.
51
Couchot & Thurston
Hirschfeld

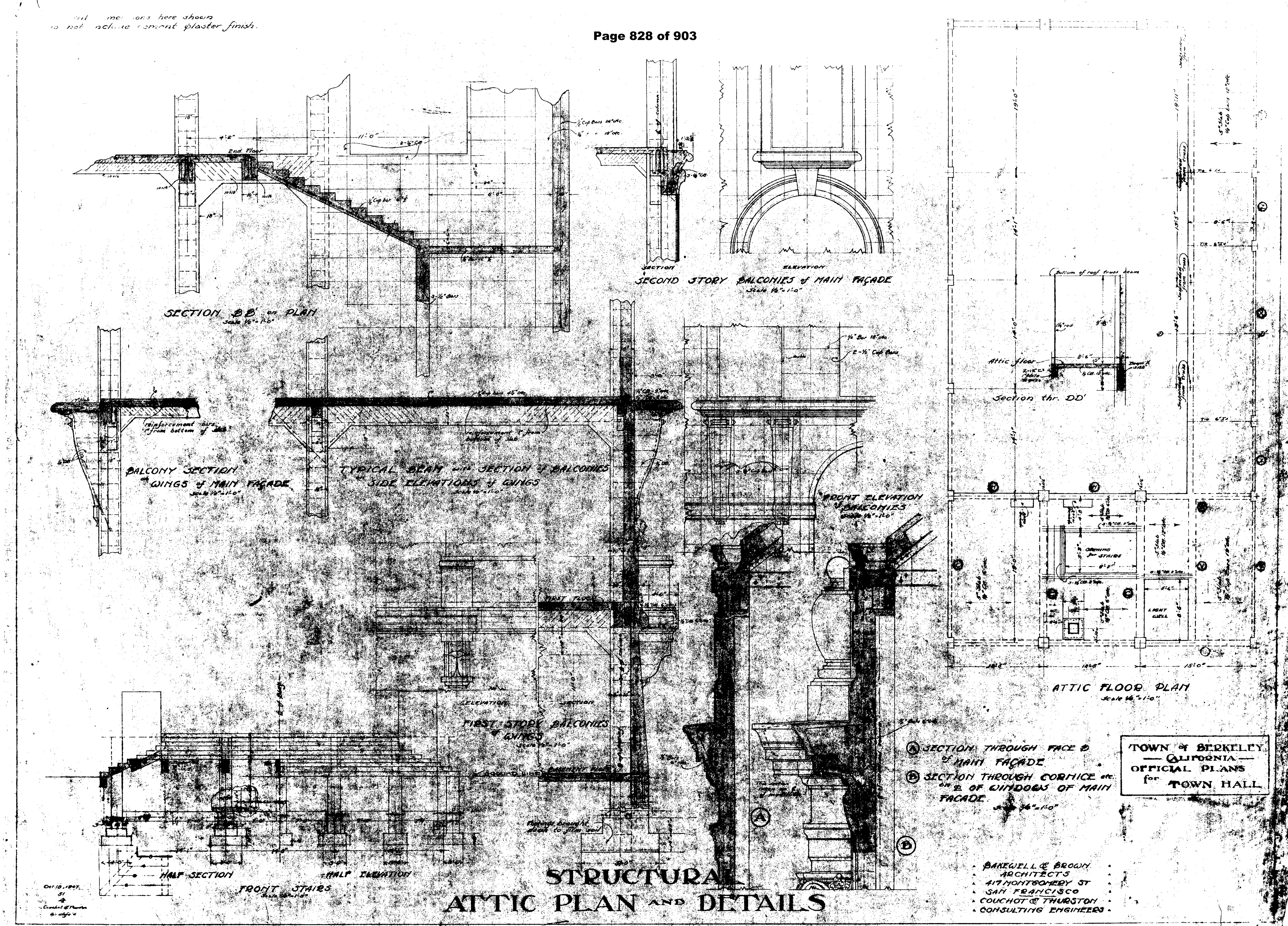
Ⓐ SECTION THROUGH FACE Ⓑ of MAIN FAÇADE

Ⓑ SECTION THROUGH CORNICE etc. on ℄ of WINDOWS OF MAIN FACADE.
Scale ¾"=1'-0"

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

BAKEWELL & BROWN
ARCHITECTS
411 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

STRUCTURAL ATTIC PLAN AND DETAILS



mensions here shown not include cement plaster finish.
SECTION BB' on PLAN
SECOND STORY BALCONIES of MAIN FAÇADE
SECTION
ELEVATION
Bottom of roof truss beam
Attic floor
Section thr. DD'
BALCONY SECTION on WINGS of MAIN FAÇADE
TYPICAL BEAM with SECTION of BALCONIES on SIDE ELEVATIONS of WINGS
FRONT ELEVATION of BALCONIES
OPENING for STAIRS
LIGHT WELL
ATTIC FLOOR PLAN
FIRST STORY BALCONIES of WINGS
ELEVATION
SECTION
FIRST FLOOR
A SECTION THROUGH FACE of MAIN FAÇADE
B SECTION THROUGH CORNICE etc. on ℄ OF WINDOWS OF MAIN FAÇADE
TOWN of BERKELEY
CALIFORNIA
OFFICIAL PLANS for TOWN HALL
HALF SECTION
HALF ELEVATION
FRONT STAIRS
STRUCTURAL
ATTIC PLAN AND DETAILS
BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

STRUCTURAL BASEMENT FLOOR PLAN

SCALE 1/4"-1'-0"

Note:- All dimensions here shown do not include cement plaster finish.

SECTION taken through BB'

SECTION taken through AA'

CULVERT 12'-4" ALREADY IN PLACE

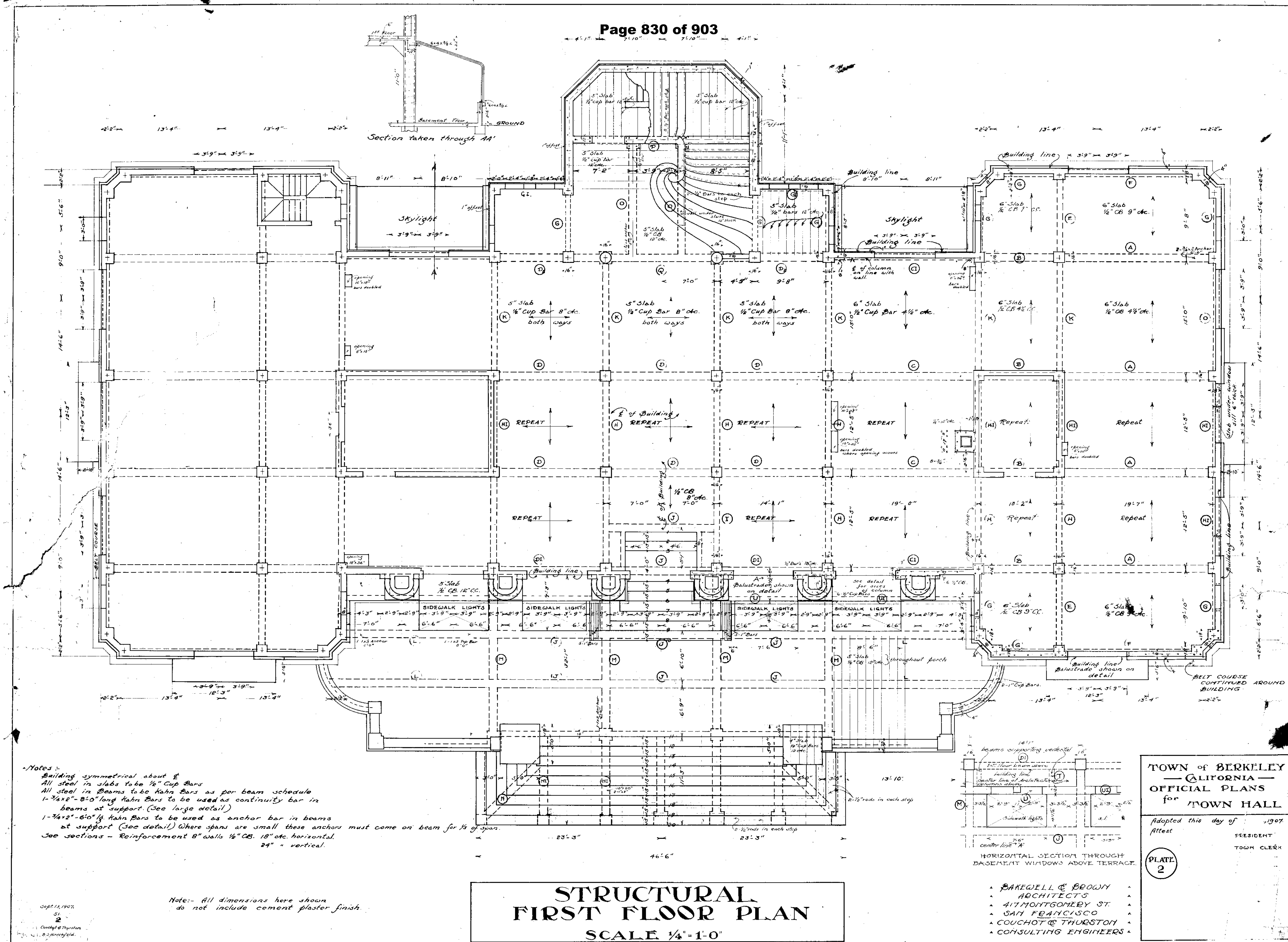
TOWN of BERKELEY — CALIFORNIA — OFFICIAL PLANS for TOWN HALL

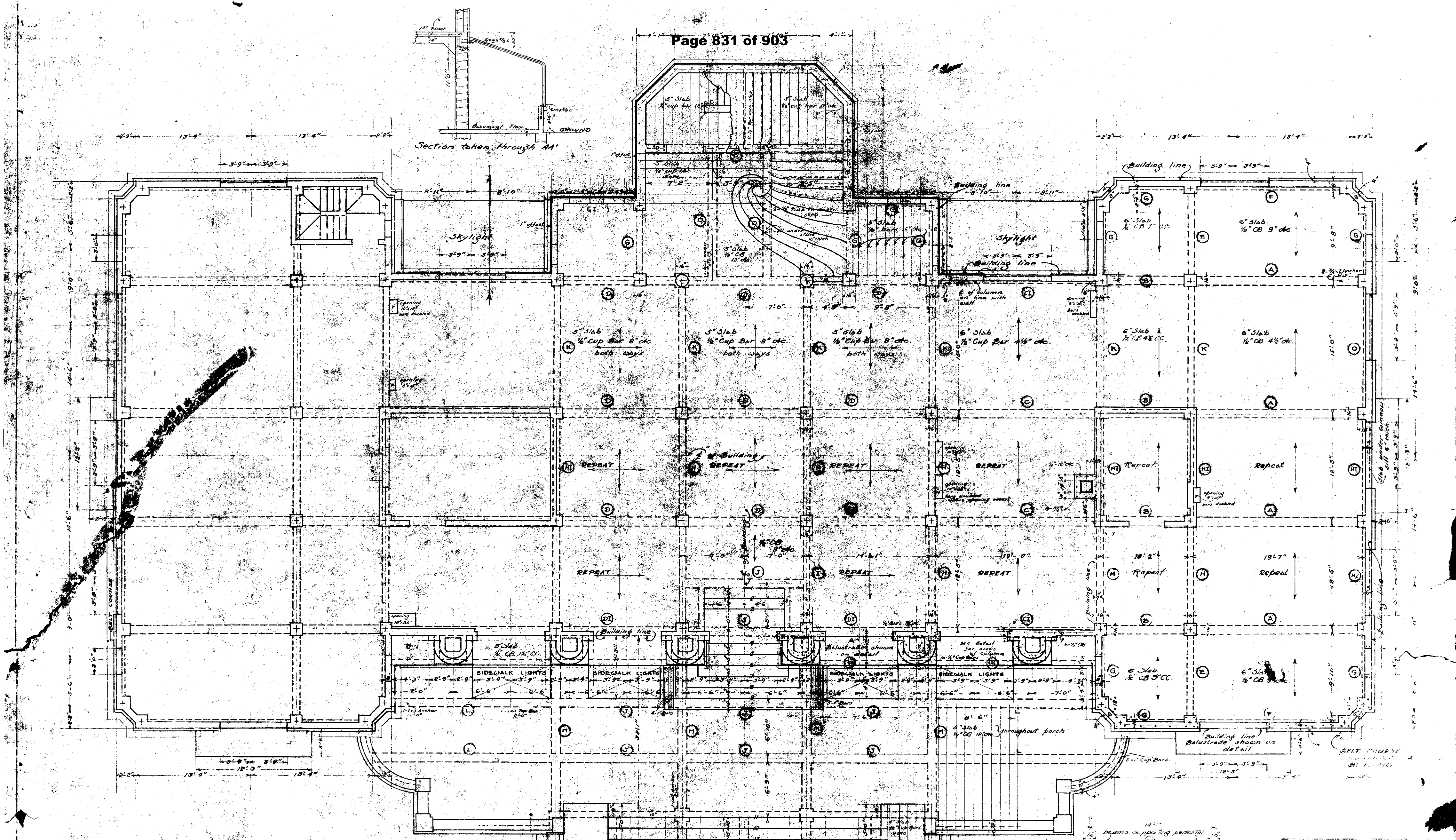
Adopted this day of ...

Attest ... PRESIDENT ... TOWN CLERK

PLATE 1

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

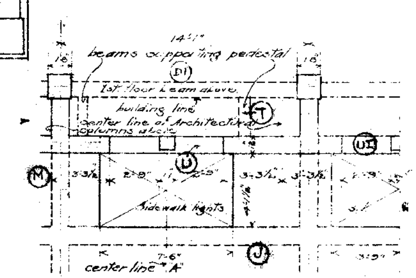

Section taken through AA'
Skylight
Skylight
Building line
SIDEWALK LIGHTS
BELT COURSE CONTINUED AROUND BUILDING
Notes :-
Building symmetrical about ℄
All steel in slabs to be ½" Cup Bars
All steel in Beams to be Kahn Bars as per beam schedule
1-¾×2"-8'-0" long Kahn Bars to be used as continuity bar in beams at support. (See large detail)
1-¾×2"-6'-0" lg. Kahn Bars to be used as anchor bar in beams at support (See detail) Where spans are small these anchors must come on beam for ⅓ of span.
See sections - Reinforcement 8" walls ½" CB. 18" c/c. horizontal. 24" " vertical.
Note:- All dimensions here shown do not include cement plaster finish.
Sept. 13, 1907.
51.
2
Couchot & Thurston
B. S. Hirschfeld.
STRUCTURAL
FIRST FLOOR PLAN
SCALE ¼" = 1'-0"
HORIZONTAL SECTION THROUGH BASEMENT WINDOWS ABOVE TERRACE.
BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS
TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL
Adopted this day of , 1907.
Attest
PRESIDENT
TOWN CLERK
PLATE 2



- Notes :-
Building symmetrical about ℄
All steel in slabs to be ½" Cup Bars
All steel in Beams to be Kahn Bars as per beam schedule
1-¾x2"-8'-0" long Kahn Bars to be used as continuity bar in beams at support. (See large detail)
1-¾x2"-8'-0" lg. Kahn Bars to be used as anchor bar in beams at support (See detail) Where spans are small these anchors must come on beam for ⅕ of span.
See sections - Reinforcement 8" walls ½" CB. 18" ctc. horizontal. 24" " vertical.

Note:- All dimensions here shown do not include cement plaster finish.

Sept. 3, 1907.



HORIZONTAL SECTION THROUGH BASEMENT WINDOWS ABOVE TERRACE

STRUCTURAL FIRST FLOOR PLAN

SCALE ¼"=1'-0"

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

TOWN OF BERKELEY
CALIFORNIA
OFFICIAL PLANS
for TOWN HALL

Adopted this day of
Attest

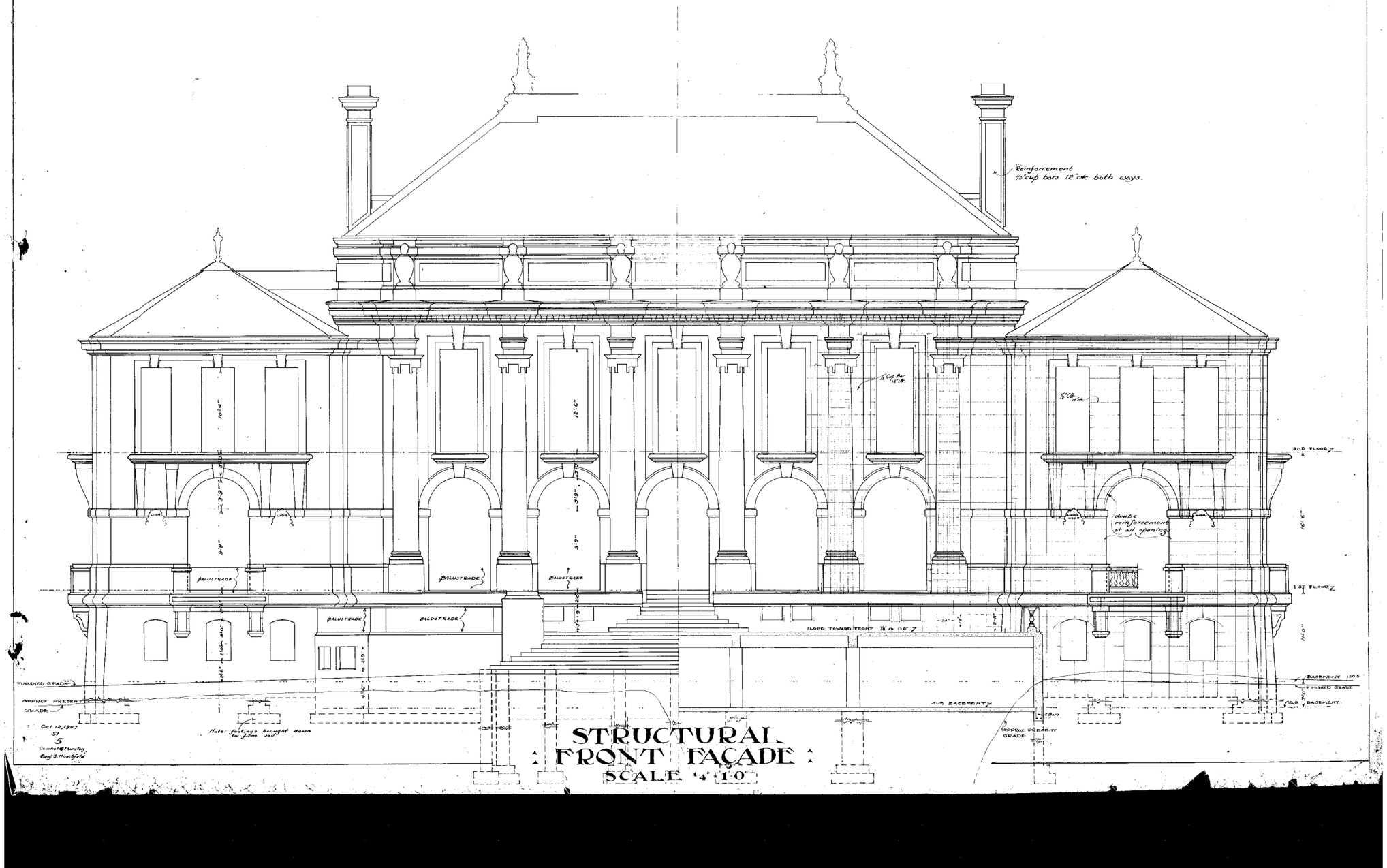
PLATE 2

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO.
COUCHOT & THURSTON
CONSULTING ENGINEERS

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

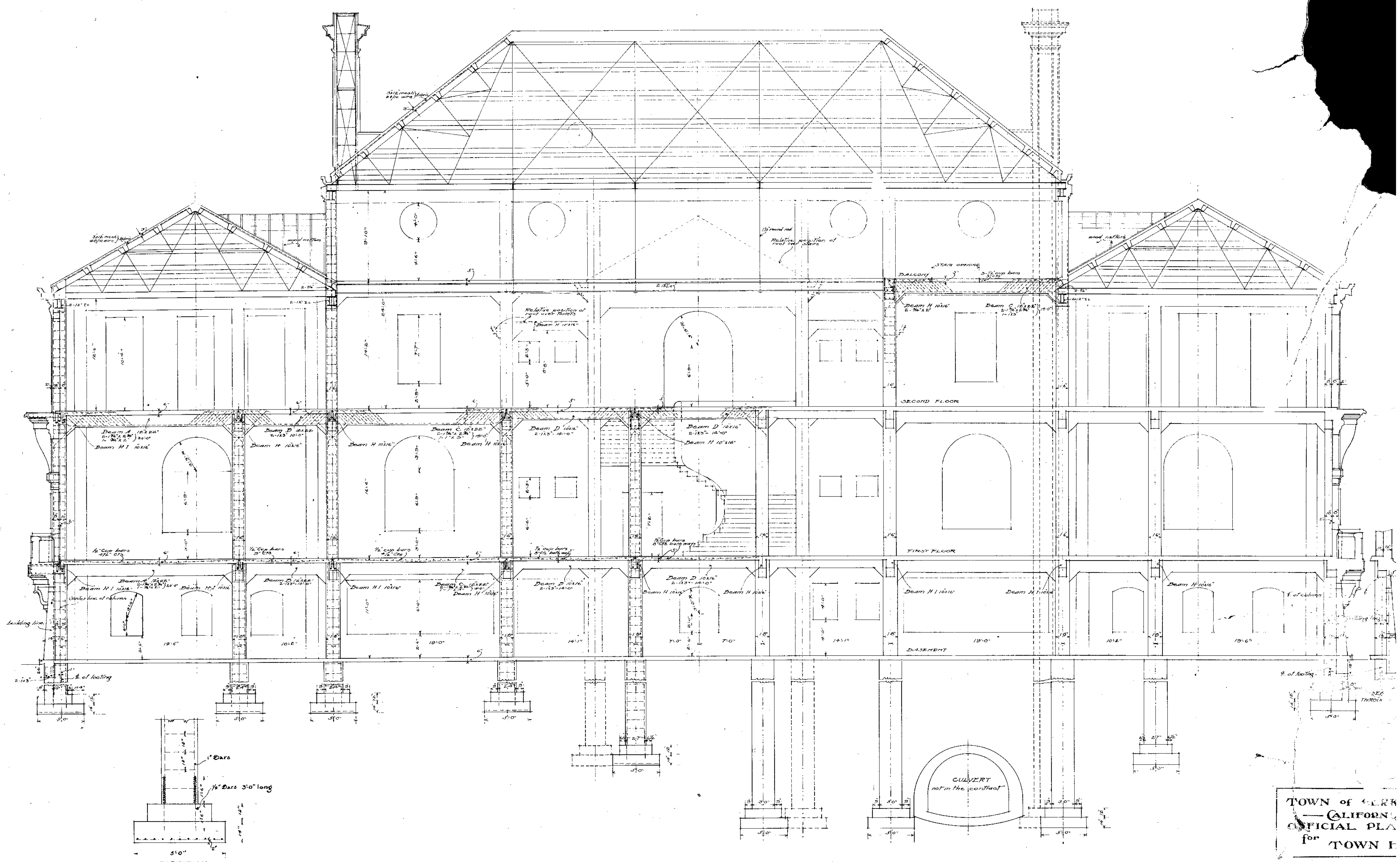
[redacted]

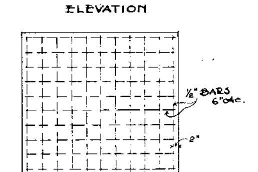
Note:- All dimensions here shown do not include cement plaster finish.



STRUCTURAL FRONT FACADE

SCALE 1/4" = 1'-0"





▲ TYPICAL 1/2" SCALE
DETAIL of FOOTINGS ▲

Note:- All dimensions here shown do not include cement plaster finish.

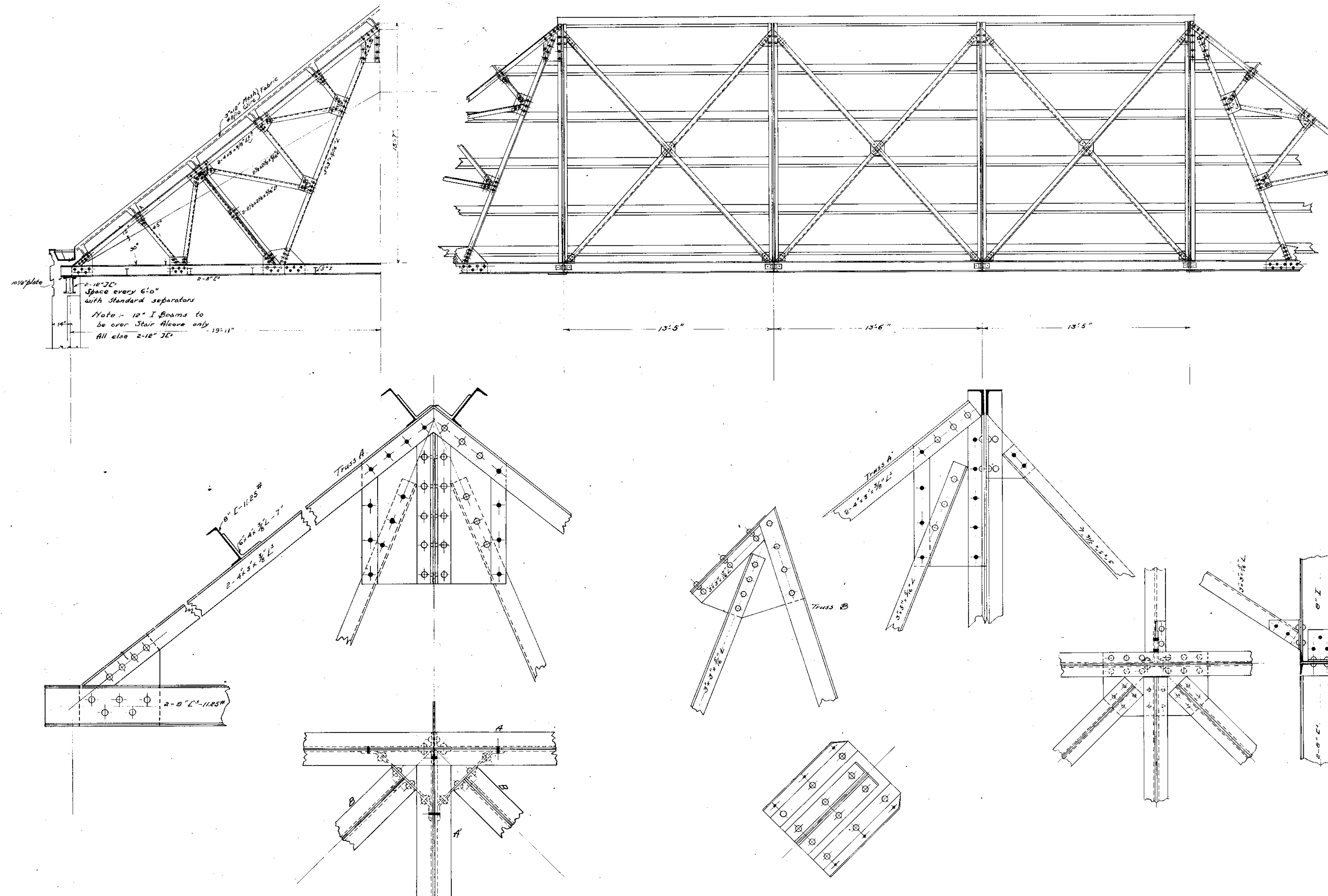
Oct. 26, 1907.
51
7
Couchot & Thurston
Fishbourne

STRUCTURAL LONGITUDINAL SECTION

SCALE 1/4" = 1'-0"

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

TOWN of …
— CALIFORN…
…FICIAL PLA…
for TOWN H…

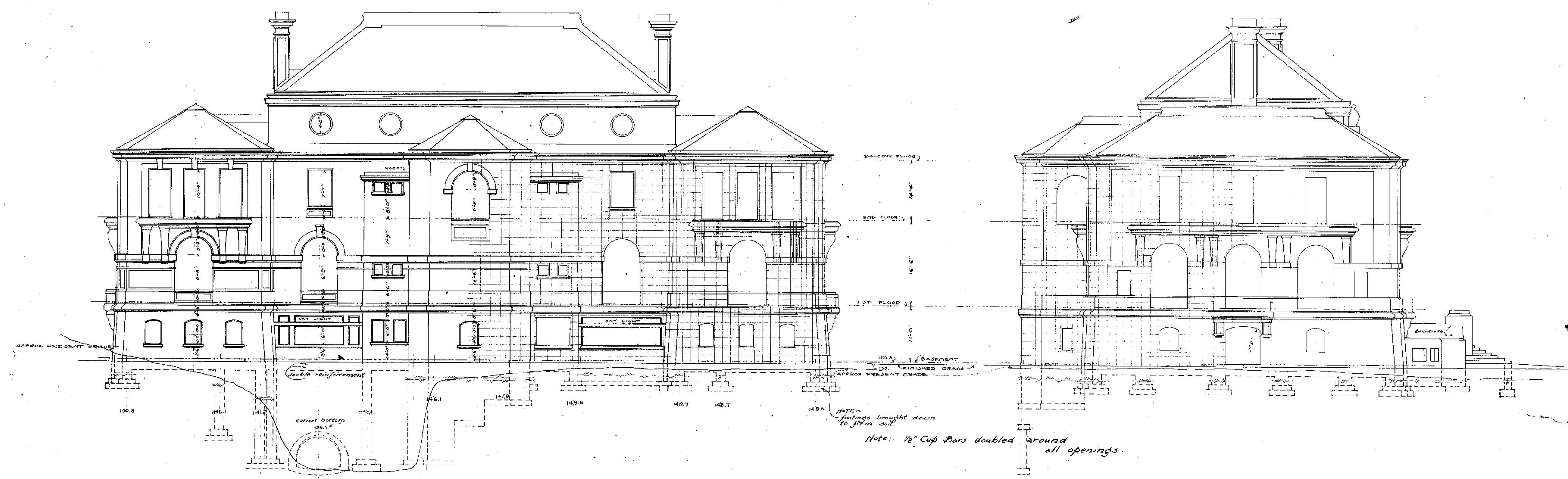


STRUCTURAL
MAIN ROOF TRUSS

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

Oct. 19, 1907
51
10
Couchot & Thurston
Hirschfeld



Oct. 12, 1907.
51
6
Couchot & Thurston
Benj. S. Hirschfeld

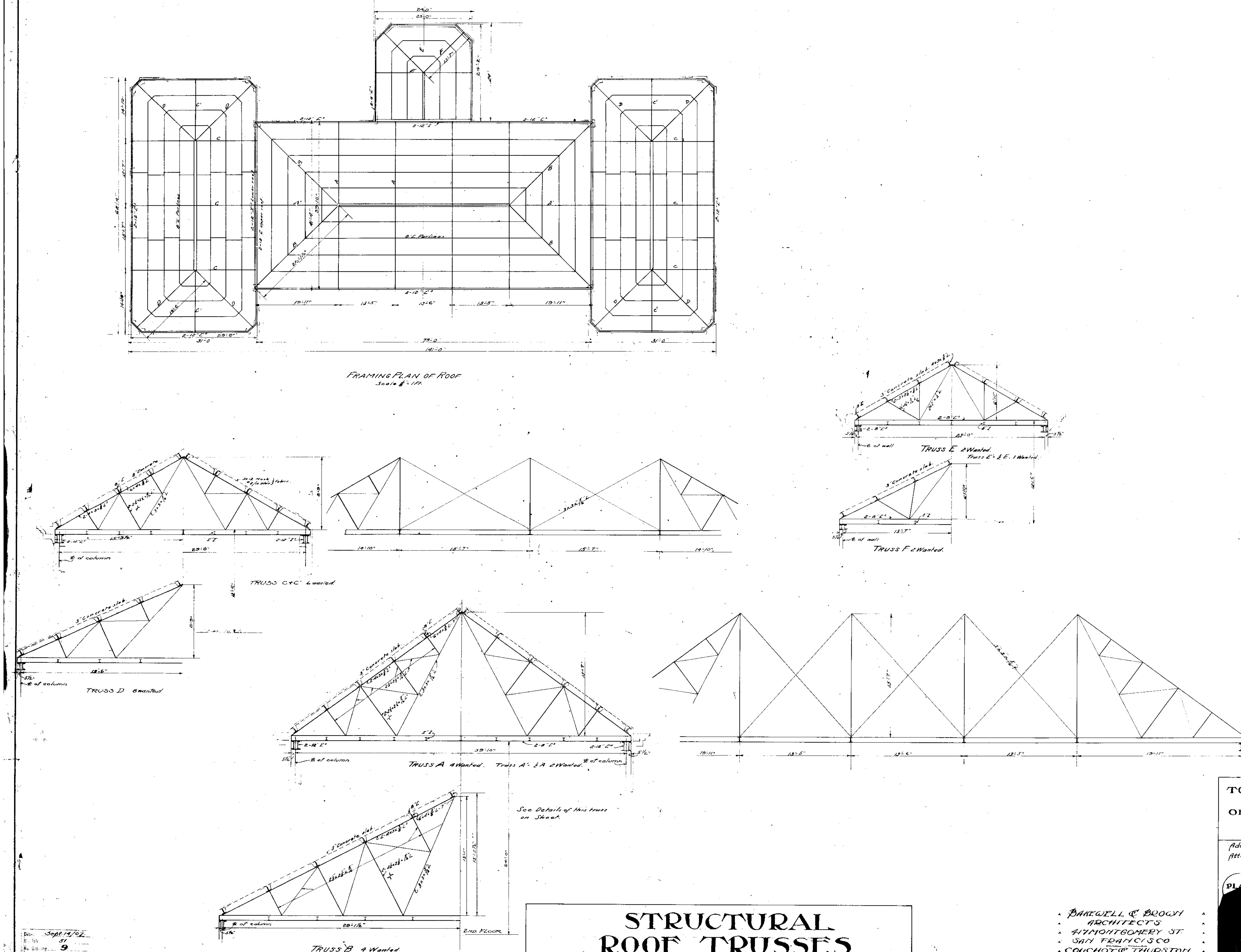
Note:- All dimensions here shown do not include cement plaster finish.

STRUCTURAL REAR AND SIDE FAÇADES

SCALE 1/8" - 1'-0"

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL



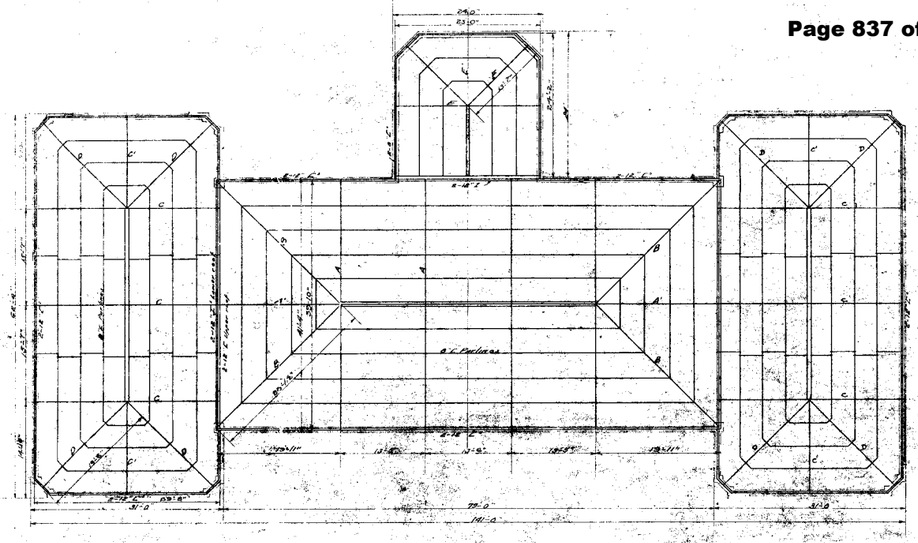
STRUCTURAL ROOF TRUSSES

TOWN of BERKELEY
CALIFORNIA
OFFICIAL PLANS
for TOWN HALL

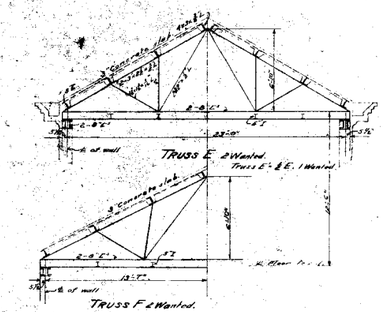
Adopted this day of
Attest

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS

Date Sept. 14/07.
No. Job 51
No. Drawing 9
Drawn by Couchot & Thurston
Traced by Couchot & Thurston

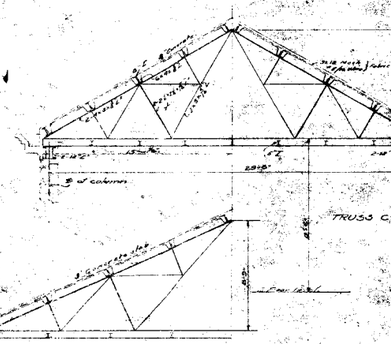


FRAMING PLAN OF ROOF
Scale 1/8" = 1'-0"

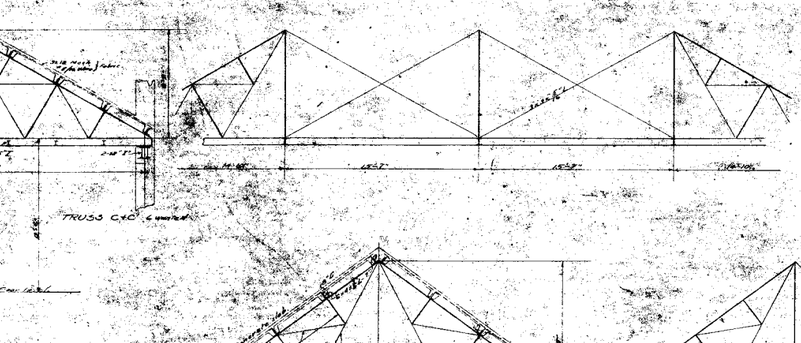


TRUSS E 2 Wanted. TRUSS E-1 & E-1 Wanted.

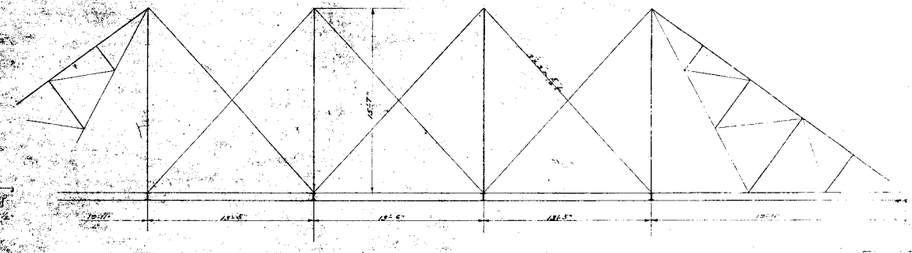
TRUSS F 2 Wanted.

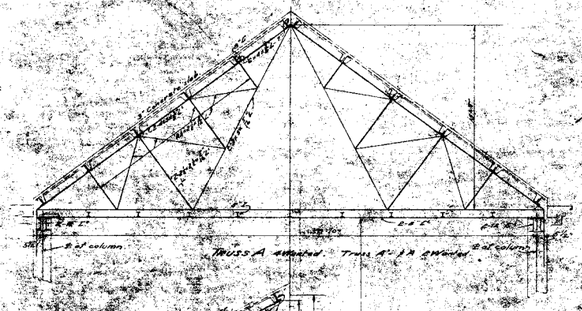


TRUSS D 6 wanted



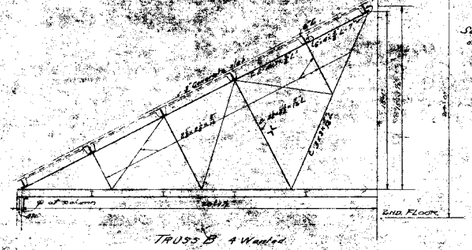
TRUSS C & C' 6 wanted





TRUSS A 4 wanted. TRUSS A-1 & A-2 Wanted.

See Details of this Truss on Sheet



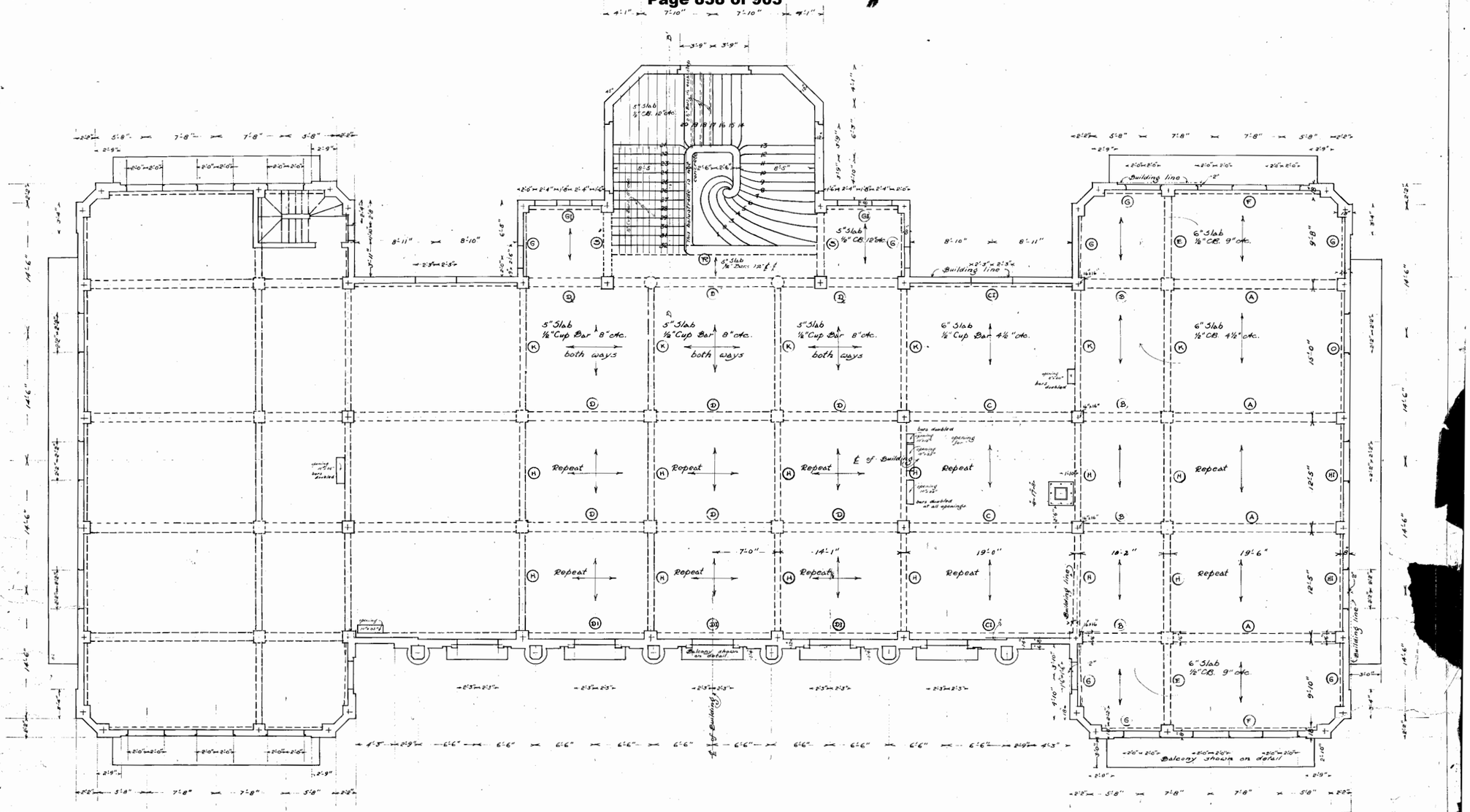
TRUSS B 4 Wanted.

STRUCTURAL ROOF TRUSSES

BAKEWELL & BROWN
ARCHITECTS
SAN FRANCISCO

TOWN of B[illegible]
CALIFO[illegible]
OFFICIAL [illegible]
OF TOW[illegible]

Adopted
Filed



Notes:-

Beams and reinforcement symmetrical about ℄.
Arrows denote direction of reinforcement in slabs.
All steel in slabs to be ½" Cup Bar
Steel in beams to be Kahn Bars as in beam schedule.
1-7/4 x 2 Kahn Bars 8'0" long to be used as continuity bar in beams over support (See large detail)
" " " 5'0" " " " " " anchor " " " at "

Note:- All dimensions here shown do not include cement plaster finish.

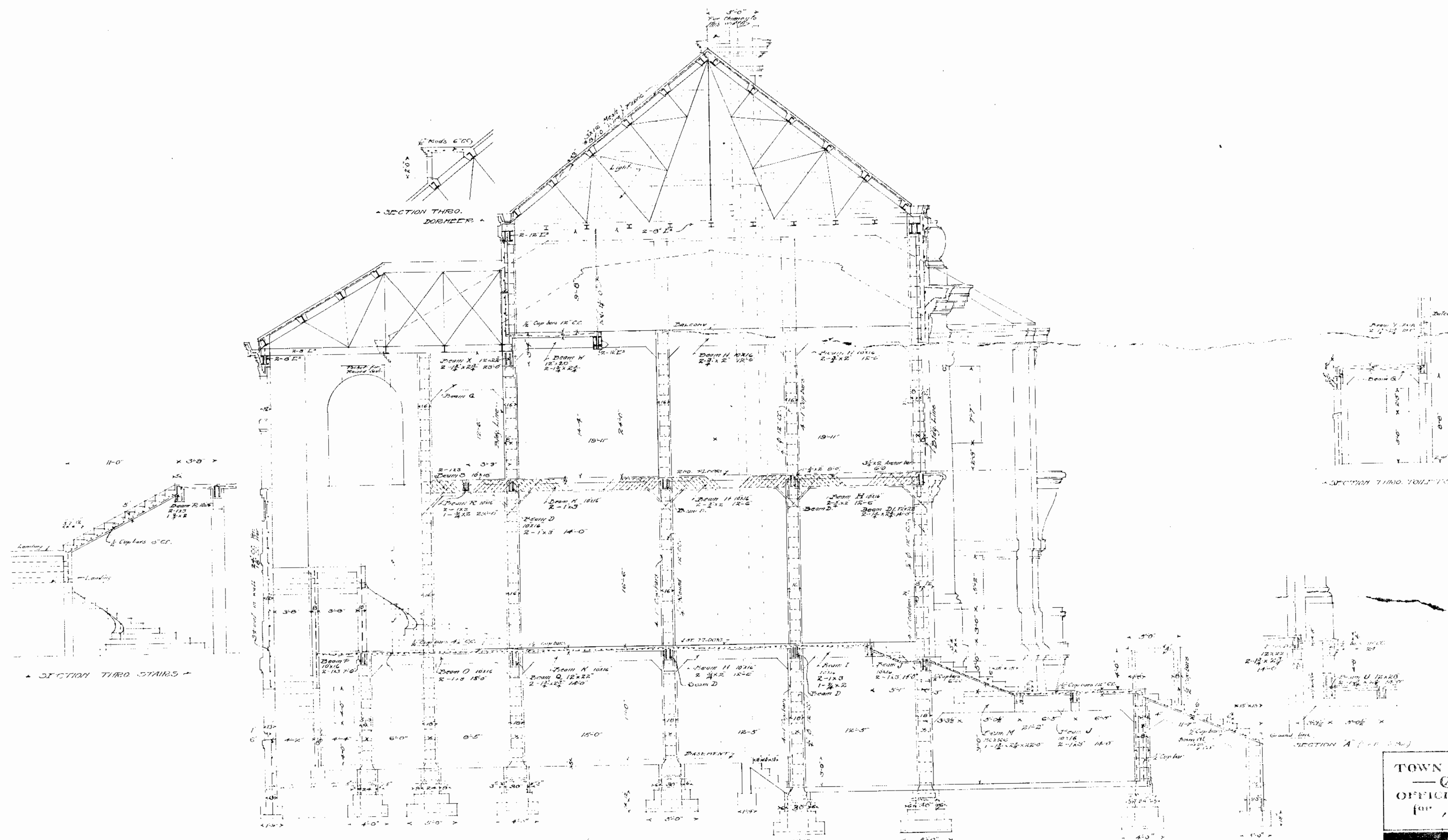
Sept. 17, 1907
51
3
Drawn by Couchot & Thurston.
Traced by E. J. Hirschfeld.

STRUCTURAL SECOND FLOOR PLAN
SCALE ¼"-1'-0"

TOWN of BERKELEY
— CALIFORNIA —
OFFICIAL PLANS
for TOWN HALL

[redacted]

BAKEWELL & BROWN
ARCHITECTS
417 MONTGOMERY ST
SAN FRANCISCO
COUCHOT & THURSTON
CONSULTING ENGINEERS



Note:- See typical ½" scale detail of footings on longitudinal section sheet.

TOWN of BE[illegible]
— CALIFORN[illegible] —
OFFICIAL PL[illegible]
for TOWN [illegible]

BAKEWELL & BROWN
ARCHITECTS
4[illegible] MONTGOMERY ST.
SAN FRANCISCO
COUCHOT & THORSTON
CONSULTING ENGINEERS

Note:- All dimensions here shown do not include cement plaster finish.

STRUCTURAL CROSS SECTION
SCALE ⅛"-1'0"

STRUCTURAL ENGINEERS

APPENDIX B

ASCE 41-17 TIER 2 SEISMIC EVALUATION OF

BERKELEY OLD CITY HALL

AT 2134 MARTIN LUTHER KING JR. WAY

BERKELEY, CALIFORNIA

April 19, 2019
Rev. 1 6/27/19

1629 Telegraph Avenue, Ste 300 | Oakland, CA 94612 | t: 510.834.1629
ida-se.com

1 Executive Summary

IDA Structural Engineers (IDA) has performed a seismic evaluation of the Old City Hall building, located at 2134 Martin Luther King Jr. Way, in Berkeley, California, using an ASCE 41-17, Tier 2 seismic evaluation procedure. ASCE 41-17, titled "*Seismic Evaluation and Retrofit of Existing Buildings,*" published by the American Society of Civil Engineers (ASCE) in 2017, is the industry standard procedure for the seismic evaluation and retrofit of existing buildings.

IDA has evaluated the building for a Basic Seismic Performance Objective (BPOE) and for an Enhanced Seismic Performance Objective (called Immediate Occupancy or IO). IDA found the Old City Hall, a 110 year old, three story, non-ductile concrete building to be seismically deficient and to pose life safety hazards to building occupants. Potentially the building could collapse or partially collapse in a major earthquake proximate to the site.

IDA has developed two concept seismic retrofit schemes, one to meet the lower Basic Seismic Performance Objective and one to meet the higher Immediate Occupancy - Enhanced Seismic Performance Objective. Mack5 cost estimators were engaged to determine ball park construction budgets for both schemes. The estimated cost for the BPOE scheme is $9,983,000. and for the IO base isolation scheme is $25,163,750. The cost estimate report is included in Appendix B.

The City of Berkeley Engineering Department has developed a total project cost and budget including consultant costs, City management costs, permit costs and testing and inspections. The budget estimated cost for the BPOE scheme is $13,030311 and for the IO scheme is $32,844,985. The Project Budget is included in Appendix A.

2 Introduction

IDA Structural Engineers (IDA) has performed a seismic evaluation of the Old City Hall building, located at 2134 Martin Luther King Jr. Way, in Berkeley, California, using an ASCE 41-17, Tier 2 seismic evaluation procedure. ASCE 41-17, titled "*Seismic Evaluation and Retrofit of Existing Buildings,*" published by the American Society of Civil Engineers (ASCE) in 2017, is the industry standard procedure for the seismic evaluation and retrofit of existing buildings.

The Intent of the Tier 2 analysis is to evaluate the seismic force resisting system in the building and determine if the building will meet or exceed the targeted seismic building performance level, or if not, whether to retrofit to achieve the desired seismic performance level. IDA has set the base seismic performance level to be the Basic Performance Objective for Existing buildings (BPOE). This is also consistent with the recommendations of the ASCE 41-17 document.

The BPOE requires a two-tier seismic performance evaluation: 1) a Life Safety Performance Level for a smaller earthquake (BSE-1E – a 225 year recurrence period earthquake having a 20% chance of exceedance in a 50 year period); and 2) a Collapse Prevention Performance Level for a

larger earthquake (BSE-2E – a 975 year recurrence period earthquake having a 5% chance of exceedance in a 50 year period). Both of these earthquakes are less than the 2500 year recurrence period earthquake (MCE) used for new buildings in current codes.

IDA has also evaluated the building for an enhanced seismic performance level. The enhanced seismic performance level also requires a two-tier seismic performance evaluation: 1) an Immediate Occupancy for a smaller earthquake (BSE-1E – a 225 year recurrence period earthquake having a 20% chance of exceedance in a 50 year period); and 2) also an Immediate Occupancy Performance Level for a larger earthquake (BSE-2E – a 975 year recurrence period earthquake having a 5% chance of exceedance in a 50 year period). A seismic retrofit and cost has been determined for both options.

The information below forms the foundation for the evaluation. This information is either derived from owner requirements, such as risk category and desired structural performance level, or is site specific, such as seismic hazard level.

Building	Old City Hall 2134 Martin Luther King Jr. Way, Berkeley, CA
Risk Category	Risk Category III - Civic Building
Two Seismic Performance Objectives Studied:	
1. Basic Performance Objective for Existing Buildings (BPOE)	Life Safety Structural Performance (S-3) Life Safety Non-structural Performance (N-C) Combined = (S3-NC)
2. Enhanced Performance Objective	Immediate Occupancy Structural Performance (S-1). Operational Non-structural Performance (N-A). Combined = (S1-NA)
Two Seismic Hazard Levels Studied	1. BSE-1E (20% in 50 years, 225 year return period) 2. BSE-2E (5% in 50 years, 975 year return period)
Level of Seismicity	High
Site Class	D
Building Type	3 Story above grade (Basement, 1st and 2nd Floors), 1909, historic, non-ductile concrete building, lightly reinforced (non-ductile) concrete walls, columns, slabs, and footings. Roofs are framed with steel trusses and covered by thin 3" concrete slabs and roofing.

2.1 Performance Objectives

The performance objectives consist of one or more pairings of a selected Seismic Hazard Level with a target Structural Performance Level and Nonstructural Performance Level.

The Basic Performance Objective for Existing Buildings (BPOE) is a specific, seismic Performance Objective (from several available choices) and is dependent on the Risk Category of the building and the desired seismic performance expected by the City of Berkeley. The BPOE for existing buildings in ASCE 41-17 is a lower category which will result in a reduced level of seismic safety and a higher probability of collapse than what would be expected by building codes for new buildings. Buildings meeting the BPOE are expected to incur little damage from frequent small to moderate earthquakes, but could be expected to incur greater levels of damage and economic loss from larger earthquakes. The level of damage and potential economic loss for buildings meeting or rehabilitated to the BPOE will likely be greater than expected for the Basic Performance Objective for New Buildings designed to current building codes.

The increase in seismic risk is tempered by the recognition that older buildings have a reduced useful lifespan compared with new buildings. That is, if the traditional demand for new buildings presumes a 50-75 year life, then an existing building with a 20-30 year remaining lifespan has a lower probability of being subjected to a major earthquake over the remaining lifespan. The ASCE 41-17 standard also recognizes that the cost of achieving a higher level of seismic performance is often excessive for older buildings.

2.1.1 Structural Performance Level for BPOE

The structural performance level for BPOE is two tiered: S-3, which anticipates Life Safety seismic performance of the building following a smaller earthquake (20% exceedance in 50 years, or 225 years recurrence period) earthquake; and S-5, which anticipates a Collapse Prevention seismic performance of the building following a larger earthquake (50% exceedance in 50 years, or 975 years recurrence period).

A structure conforming to the Life Safety seismic performance level could be expected to incur significant damage following the potential seismic events. The basic lateral and vertical force resisting systems of the building should utilize most of their pre-earthquake strength and stiffness. The risk of life-threatening injury (life safety) as a result of structural damage is low. Major structural repairs should be anticipated following a major earthquake, which could take weeks to months to complete or might not be economically feasible to complete.

2.1.2 Nonstructural Performance Level for BPOE

The nonstructural performance level for the BPOE is N-C, Life Safety performance level.

Continued use of the building following an earthquake is not only limited by structural damage, but could also be limited by damage or disruption to nonstructural elements of the building,

such as ceilings, partition walls, electrical or mechanical equipment, or continued operation of utility services. Nonstructural Performance Level N-C, "Life Safety," is the post-earthquake damage state in which nonstructural components could be damaged, and may not function, but are anchored in place so that they do not fall, topple, or break connections. By avoiding potential component falling or toppling, or breaking of utility connections (such as, water, gasses, or electricity) life safety is provided to building occupants. Building access, egress, and life safety systems include doors, hallways, emergency lighting, fire alarms and fire suppression systems, and are generally expected to remain available and operable provided that these elements are braced and power and utility services are available to the building. Potentially, some use may be impaired, and some repair may be needed. The N-C, Nonstructural Performance Level essentially mirrors the requirements of new building design for cases where the structure is designed for life safety and not immediate occupancy.

2.1.3 Seismic Hazard Level for BPOE

The procedure to achieve the Basic Performance Objective for Existing buildings (BPOE) is a two-tiered procedure, which requires achieving a Life Safety Seismic Performance during ground motions (BSE-1E) with a 20% probability of exceedance in 50 years (or a 225 year recurrence interval). In addition, the BPOE requires meeting a Collapse Prevention Seismic Performance for ground motions (BSE-2E) with a 5% probability of exceedance in 50 years (or a 975 year recurrence interval). These two earthquake hazards levels and corresponding ground motions can be determined at any site in the USA via the United States Geologic Survey (USGS) website, with appropriate site soil conditions.

2.1.4 Additional Evaluation for Enhanced Seismic Performance

IDA has also evaluated the building for an enhanced seismic performance level. Enhanced seismic performance levels also require a two-tier seismic performance evaluation: 1) an Immediate Occupancy for a smaller earthquake (BSE-1E – a 225 year recurrence period earthquake having a 20% chance of exceedance in a 50 year period); and 2) an Immediate Occupancy Performance Level for a larger earthquake (BSE-2E – a 975 year recurrence period earthquake having a 5% chance of exceedance in a 50 year period). In the case of this study, having the Immediate Occupancy level as the objective, it only needs evaluation based on the BSE-2E larger earthquake and then qualifies also for the BSE-1E smaller earthquake. A seismic retrofit and cost is also determined for this option.

2.1.5 Structural Performance Level for Enhanced Seismic Performance

The structural performance level for Immediate Occupancy is also two tiered: S-1, which anticipates Immediate Occupancy seismic performance of the building following a smaller earthquake (20% exceedance in 50 years, or 225 years recurrence period) earthquake; and also S-1, which anticipates Immediate Occupancy seismic performance of the building following a larger earthquake (50% exceedance in 50 years, or 975 years recurrence period).

A structure conforming to the Immediate Occupancy seismic performance level could be expected to incur very minor damage following the potential seismic events. The basic lateral and vertical force resisting systems of the building should utilize most of their pre-earthquake strength and stiffness. The risk of life-threatening injury (life safety) as a result of structural damage is low. Minor structural repairs should be anticipated following a major earthquake, which could take days to weeks to complete, but building occupancy should be allowable following a major event.

2.1.6 Nonstructural Performance Level for Enhanced Seismic Performance

The nonstructural performance level for the Enhanced Seismic Performance is N-A, "Operational" performance level.

Nonstructural Performance Level N-A, "Operational," is the post-earthquake damage state in which nonstructural components remain minimally damaged, and remain functional. Equipment and non-structural elements are anchored in place so that they do not fall, topple, or break connections. The N-A, Nonstructural Performance Level essentially mirrors the requirements of new building design for Risk Category IV structures where the structure is designed for Immediate Occupancy.

3 Site Description

The Old City Hall at 2134 Martin Luther King Jr. Way, in Berkeley, California is located on the west side of Martin Luther King Jr. Way across the street from Martin Luther King Jr. Civic Center Park. The site is essentially flat and is bounded by Allston Way (to the south), McKinley Avenue (to the west), and Addison Street (to the north). Neighboring City buildings are set back considerably on the north and south-west. The building has a landscaped area at the front (east side), and parking area at the rear (west side). Our review of the original drawings indicates that the building was constructed over a large existing drainage culvert running east-west draining Strawberry Creek through lower Berkeley to the Bay.

4 Building Description

The building, which was constructed in 1909, is essentially a 3 story building above grade, which includes a basement, and 1st and 2nd floors. The central portion of the 2nd floor is a tall high-bay meeting room, used for City Council meetings. The building is a reinforced concrete building, originally constructed as the Town Hall for the Town of Berkeley.

The building has a predominantly rectangular plan shape, with a central rectangular portion (oriented north-south) flanked by smaller symmetrical wings (oriented east-west) at the north and south ends. The building also has a large grand stairway projection at the rear (west) in the center portion of the building plan with stairs that extend from the basement to the second

floor. The front stairs rise from grade to a front porch outside the front (east) of the building and form a grand entry at the first floor. The front facade has tall grand columns and large windows designed in Beaux-Arts style.

The building is approximately 141 ft x 62 ft in plan dimension and 69 ft tall at the high central roof ridge with a taller projection at a spire/tower above the high roof. The wings have lower ridged roofs. The basement story is 11′-0 feet tall (with a 3 ft lowered portion at the center-east), the first story is 16′-6″ tall and the second story is 14′-2″ tall. The high steep pitched roof (with 9:12 slope) extends approximately 27′ above the attic and balcony level below. The north and south roofs and stair roof are lower than the center and do not have attics.

The basement floor is a slab-on-grade at about exterior grade level and the foundation system consists of spread footings under columns and continuous footings under walls. Some brick walls were used as partition walls and also have continuous footings. Other interior walls are non-structural (non-load bearing) walls constructed with wood studs.

Floors were constructed with concrete beams and girders spanning to columns and integral slabs spanning between beams. This is consistent for the 1st, 2nd and attic/balcony floors. The roof is framed with light steel element trusses and steel I beam ceiling framing and with 3″ concrete slabs on the pitched roofs spanning between steel trusses.

It was observed at the site that two small additions were constructed at the rear of the building between the north and south wings and the building stair projection. No drawings were made available to review the construction of these small additions.

5 History

The Old City Hall is a 1909 classical Beaux-Arts architecture building constructed from 1908-1909, three years following the 1906 San Francisco Great Earthquake and following a 1904 fire that destroyed the old Town Hall. The building is on the National Historic Register. The design is resulting from a competition won by John Bakewell Jr and Arthur Brown Jr in 1907 (Bakewell & Brown Architects). The classical Beaux-Arts architecture presents a finely detailed exterior reflecting civic pride and a contrastingly unadorned interior reflecting the civic culture. The building has undergone numerous interior renovations over the years and has included two west additions of lesser architectural merit. (ref. 2)

The building originally housed the Fire Chief, a police station, a jail, a one-room hospital, the Auditor, the Tax Collector, the Superintendent of Schools, the President of the Town Council, a Justice of the Peace, civic attorneys, and Town Council Chambers.

A new MLK Civic Center at 2180 Milvia Street (formerly a Farm Credit Building) replaced the Old City Hall in the 1960s and many City of Berkeley services either moved there or to 1947 Center

Street (COB Civic Building) on the other sides (east and north) of MLK Civic Center Park by 1977. The Berkeley Unified School District (BUSD) Administration offices occupied the Old City Hall building in 1980. Following the 1989 Loma Prieta Earthquake, in which portions of the building were damaged, BUSD moved out of the building in the 1990s due to safety concerns. Since the 1990s, the City Council Chambers were used for Council meetings (into the 2000s), however the chambers are no longer used for official meetings. The building currently has no official civic use.

6 Geotechnical Information

There is no geotechnical investigation report available for this site.

Seismic ground motions used in this evaluation were derived from United States Geological Survey and California Geological Survey maps and fault information specific to this site.

A default site class S_D was assumed. This is the default site condition in ASCE 7-16.

7 Site Observation

IDA visited the building on January 11 and 17, 2019. The building generally appeared to be in reasonable condition after over 100 years of use. The exterior had many cracks and the exterior walls were dirty from years of age. The building looked as if it had a stucco finish, but IDA believes it is a coarse paint over the concrete structure. The addition at the rear appears to be a wood frame addition with a stucco finish, which is quite worn.

The structure is covered by finishes such as plaster at the interior or concrete at the exterior. There were some visible signs of rot or decay. The structure looked as though it had 110 years of use and age, but most of the building appears to be in reasonable condition.

A portion of the basement level, on the east central side of the building, extends beyond the perimeter wall above and under the main entry stair and landing, which leads from the site walkway from MLK Blvd to the main entry at the 1st Floor level. The concrete slab and steps at this main staircase, landings, and porch have cracked over the years and allowed water to penetrate into the concrete and the space below. The result is that reinforcement in slabs and supporting beams have become exposed to moisture and the reinforcement has corroded (rusted) and the concrete has cracked. The corroded reinforcement has expanded and has resulted in some large cracking in support beams and slabs.

8 Available Documents

The following drawings were available for review:

Original architectural and structural drawings-

1. **Drawings - Town Hall, for Town of Berkeley, California dated September 1907**
   Bakewell & Brown, Architects, San Francisco
   Couchot and Thurston, Consulting Engineers
   The drawings included 12 sheets.

2. **Report – Berkeley Old City Hall, Concept Design Study, May 2002**
   ELS Architecture and Urban Design
   Page & Turnbull Historic Architects
   Forell/Elsesser Engineers

9 Analysis Results and Deficiencies

9.1 General

This building was designed 20 years before the first Uniform Building Code (1927) was printed and became a required standard. IDA can only assume that live loads were similar to current times and that seismic lateral design was not considered.

In 2019, ASCE 41-17 assigns a 2.277g acceleration to this site under BSE-2E ground motions. Old City Hall is a non-ductile concrete building, meaning that the concrete has very little and widely spaced reinforcement (18 to 24 inches on center). Reinforcement at the time was of a lower grade and strength than is used currently. The concrete is old (in concrete's infant period in California) and likely has a low strength, perhaps 1500 psi.

There are many shear wall discontinuities and perforations in the building walls as configured. All of the perimeter concrete walls have many window openings, causing these shear walls to be interrupted and their overall strengths are weakened. In addition, many of the shear walls are discontinuous from the roof to the foundation, which causes discontinuities in the lateral force resisting system load path. Discontinuous concrete walls occur at the front (east) wall where the wall is discontinuous from the 1st Floor level to the ground, at the rear (west) wall where a large opening is made for the staircase from the 1st Floor to the 2nd Floor attic level, and at the north and south walls between the central area and the side wings where roofs and diaphragms step in elevation and are also discontinuous. The numerous discontinuities in walls and also at the roof structures are locations where the lateral force resisting system may become overload and may incur serious damage following a major earthquake.

Unfortunately, the building as it is configured has an incomplete seismic lateral force resisting system, not adequate to resist anticipated and potential lateral seismic forces, which could be caused by a major earthquake. It is possible that the building could experience partial building collapse, and will pose life-safety hazards, if subjected to large earthquakes proximate to the site.

9.2 Seismic Lateral Analysis using the ETABS Software Program

The building was modeled in the ETABS 3D analysis program, authored by Computers and Structures Inc. ETABS is a 3D building structural modeling and analysis program which we have used to perform a 3D seismic analysis of the modeled building.

The shear walls, floor diaphragms and roof diaphragms were modeled in ETABS, and the linear static ASCE 41-17 seismic forces were applied to the model. The program performs a linear analysis and distributes the applied seismic forces to the shear walls based on resistance rigidity of elements and outputs the resulting actions for all of the elements in the building. The results were boiled down to the most important results at the most highly loaded elements at the first and basement stories of the building. Beyond ETABS, IDA has taken the element demands and compared them to element capacities using ASCE 41-17 procedures. In the process, IDA has calculated DCR's, which are the ratio of element demands divided by element capacities, in which the result should be less than 1.0 or 100%. If DCR's are greater than 1.0, the elements are overloaded. DCR's between 1.0 and 1.2 could be judged to be slightly overloaded but reasonably OK. However, if DCR's become greater than 1.2, there is concern that the elements are not substantially adequate.

9.3 Concrete Shear Walls

Concrete walls act as bearing walls and as shear walls. Because of the seismic lateral forces imposed by ASCE 41-17, which could occur during a major seismic event, the walls have axial plus bending interaction DCR's and lateral shear DCR's. Ideally the walls are adequate to resist these forces.

The shears required by ASCE 41-17 result in shear wall DCR's approximately 2.0 to 4.1 for shear from the BSE-1E earthquake and Life Safety performance. The shears for BSE-2E result in shear wall DCR's as high as 4.1 for shear for a Collapse Prevention performance. This means that the building will not meet the performance objective of Life Safety for the BSE-1E Earthquake or Collapse Prevention for the BSE-2E Earthquake.

The east shear wall at the at the main central portion is discontinuous through the basement to the ground or foundation, and therefore, this wall will be unable to resist required seismic forces. The west wall is very limited in strength because of a large opening to the stairway wing. The seismic shear loads at these walls result in DCR's around 3.0 for the BSE-1E loads and 4.0 for the BSE-2E loads. The shear walls in the junctions between the main area and the north and

south wings also are very limited in strength because of large openings. The seismic shear loads at these walls result in DCR's around 4.0 for the BSE-1E loads and 6.0 for BSE-2E loads.

9.4 Concrete Diaphragms at the Floors and Roof

Concrete slabs span from wall to wall to form floor diaphragms at the 1st Floor, 2nd Floor and Balcony. These slabs resist gravity loads and act as diaphragms for lateral force resistance. The overall roof is composed of four separate sub-roofs: the central area is a steep pitched roof above an attic/balcony, and the north wing, south wing and west stair roofs are lower roofs. There are diaphragm discontinuities between the different roof portions. For a complete lateral force resisting system, a structural roof diaphragm system needs to be added in a horizontal plane at the ceiling level where the inertia forces from the combined roofs can be resisted and transferred to the shear wall resisting elements. There are roof trusses and steel framing at the ceiling levels, however, there is no adequate seismic diaphragm structure to act as a roof diaphragm.

There are no collectors in the diaphragms to transfer seismic forces from their origin to locations of shear wall resistance, not are there any chords in the diaphragms. These missing elements will be cause for further increased damage if the building is subjected to a major earthquake.

The building was designed in 1907 long before any good understanding of the requirements needed for seismic design in high seismic regions of California were developed. The first complete seismic requirements were developed by 1960, and since 1980 the requirements have expanded considerably to 2018. The seismic requirements required by ASCE 41-17, were never envisioned in 1907.

9.5 Tall Roof Spire and Chimney

The tall roof spire is 110 years old and does not have a very strong steel support structure. A study should be conducted to determine how to strengthen the spire and the attachment to the roof without damaging its historic fabric. Most likely a new tube steel frame can be embedded, but this will require removal and replacement of the spire at the roof.

Additionally, one tall brick chimney is present at the north side of the roof. Tall brick chimneys have a history of toppling over during earthquakes and can become a falling and life safety hazard. IDA recommends that the chimney be removed.

10 Seismic Retrofit (Mitigation)

IDA believes that there are numerous options to seismically retrofit this building. The 2002 Seismic Evaluation Report (ref 2) noted that a concrete shear wall scheme could be considered and/or a base isolation scheme could be considered. The cost estimates from that report show that the shear wall scheme was at a lower cost.

IDA believes that adding concrete shear walls to this non-ductile concrete building is a compatible solution using compatible materials with the existing construction for seismic retrofit. IDA has added Figures 16-19 showing our concept design for a seismic retrofit for the building. This is a concept seismic retrofit scheme, and it will take complete seismic retrofit design construction documents (beyond the scope of this report) to completely define the elements required to seismically retrofit the building. From the concept plans in these Figures, a construction cost estimator has developed a cost estimate for this work.

Alternately, if an enhanced seismic performance level is chosen by the City of Berkeley for the retrofit, a base isolation system could achieve this result. The cost of the base isolation system will be greater than the concrete shear wall system, however the result will be very minimal damage and increased protection for the building during earthquakes.

9 Cost Estimates

IDA has developed two concept seismic retrofit schemes, one to meet the lower Basic Performance Objective (BPOE) and one to meet the higher Immediate Occupancy - Enhanced Seismic Performance Objective (IO). Mack5 cost estimators were engaged to determine ball park construction budgets for both schemes. The estimated cost for the BPOE scheme is $9,983,000. and for the IO base isolation scheme is $25,163,750. The cost estimate report is included in Appendix B.

The City of Berkeley Engineering Department has developed a total project cost and budget including consultant costs, City management costs, permit costs and testing and inspections. The budget estimated cost for the BPOE scheme is $13,030311 and for the IO scheme is $32,844,985. The Project Budget is included in Appendix A.

10 Conclusions

The 110 year old building has a poor seismic lateral force resisting system with discontinuities at perimeter shear walls. The building also lacks a strong roof diaphragm, and needs diaphragm chords and collectors.

The building as constructed does not meet the requirements of ASCE 41-17 Tier 2 requirements for the BPOE seismic performance (Basic Performance Objective for Existing Buildings) requirement of Life Safety following a BSE-1E earthquake or Collapse Prevention following the BSE-2E Earthquake. Shear walls, have DCR's much greater than 1.0 and have many discontinuities. Required diaphragm and chords and collectors at all levels are missing in this building as well.

To achieve the BPOE seismic performance objective criteria in ASCE 41-17, the building will require a seismic retrofit including added reinforced concrete shear walls, added diaphragm chords and collectors, and an added structural diaphragm at the roof level.

Without seismic strengthening or retrofit, the Basic Performance Objective for Existing Buildings outlined in ASCE 41-17 will not be achieved.

Alternately, if an enhanced seismic performance level is chosen by the City of Berkeley for the retrofit, a base isolation system could achieve this result. The cost of the base isolation system will be greater than the concrete shear wall system, however the result will be very minimal damage and increased protection for the building.

Thank you for the opportunity to be of service. Please call IDA with any questions that you have.

Sincerely,

IDA Structural Engineers, Inc.

Jon P. Kiland, S.E.
Associate

Stephen DeJesse, S.E.
President

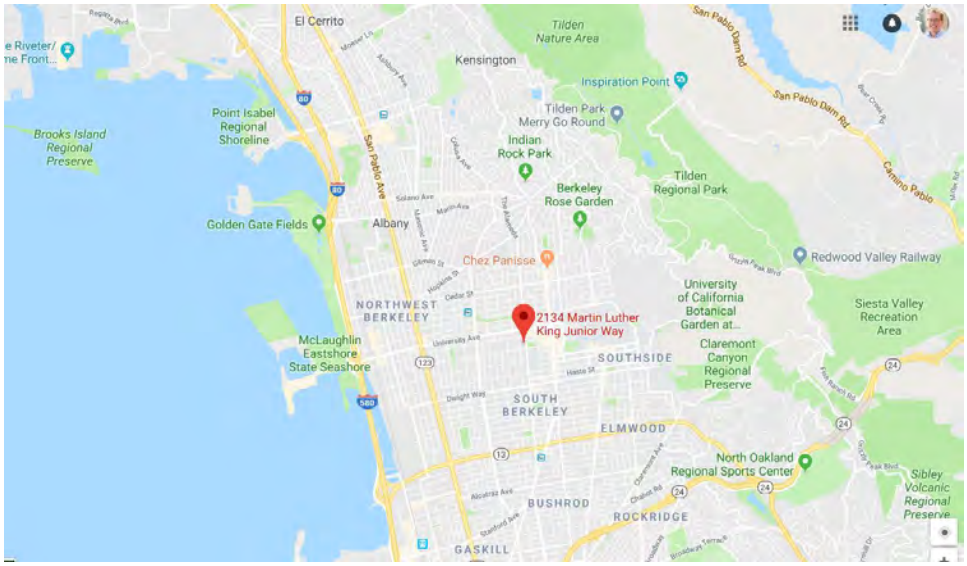


Figure 1. Vicinity Map of Berkeley Old City Hall (google)

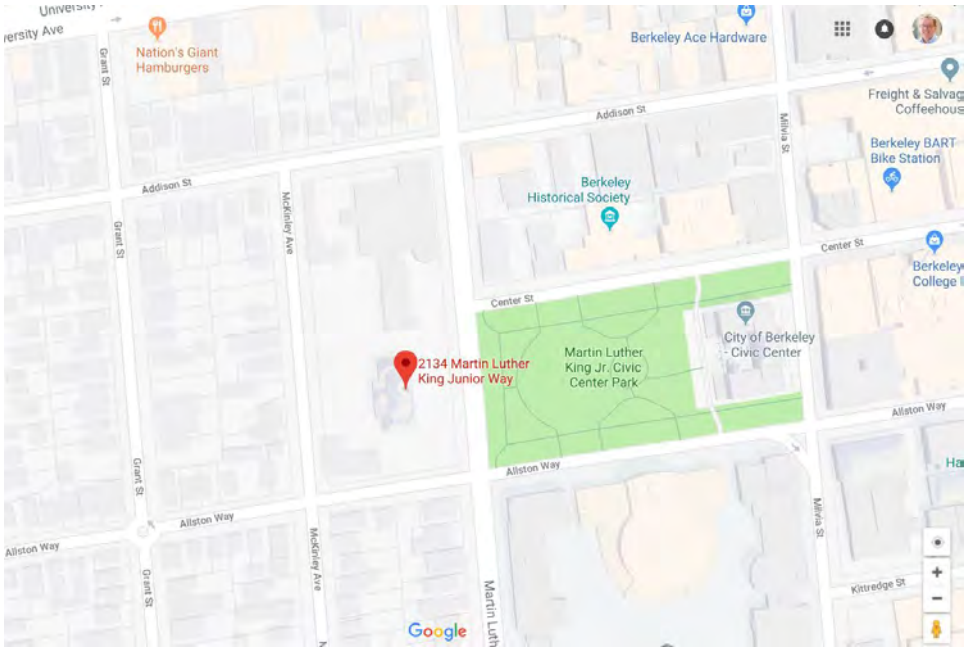


Figure 2. Site Location of Old City Hall (west of MLKJ Civic Center Park) (google)

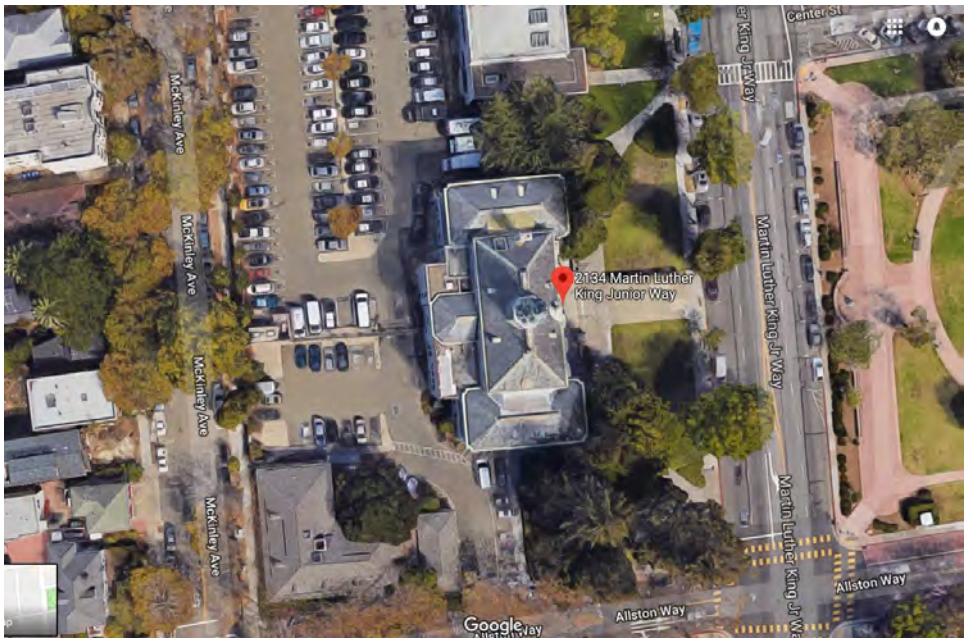


Figure 3. Site View from above of Old City Hall (google)

Figure 4. Site View from above looking west (google)

Figure 5. Site View looking west from early 1910s

Figure 6. Site View looking west from 2019

Figure 7. View looking north (south elevation)

Figure 8. Rear view (west elevation), additions at center

Figure 9. Tall Roof Spirt with very light steel framing from 1909.

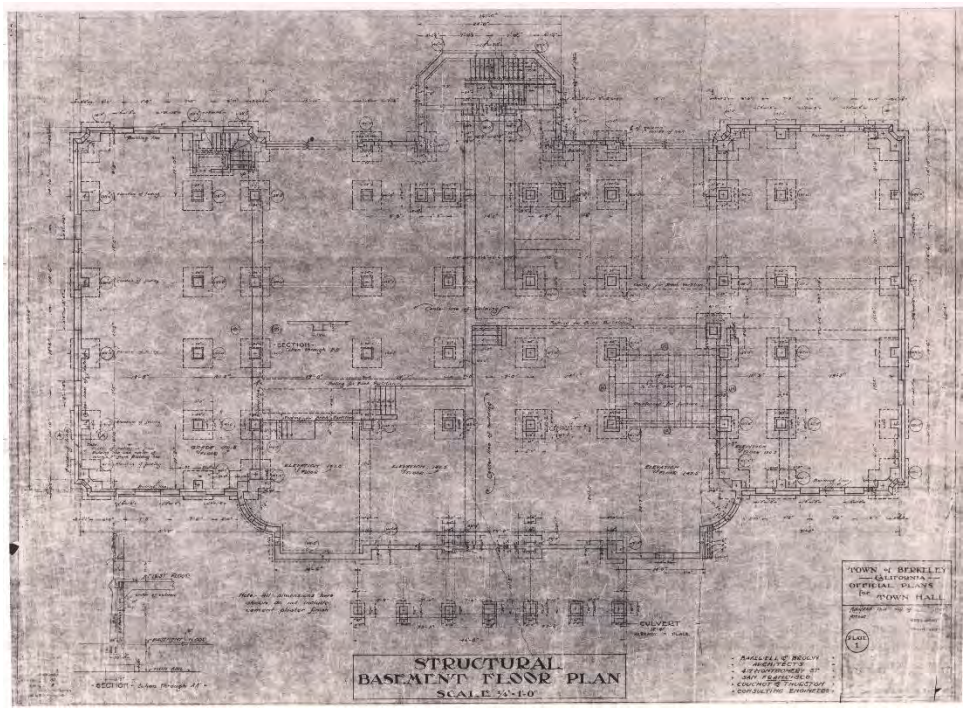


Figure 10. Basement Plan (1907 Plans)

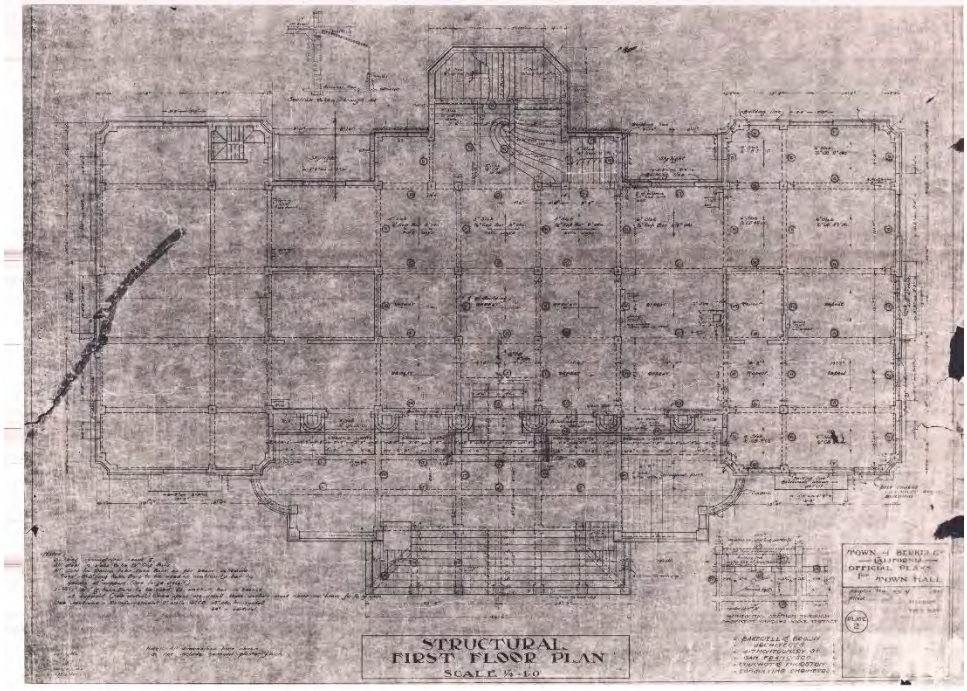


Figure 11. First Floor Plan (1907 Plans)

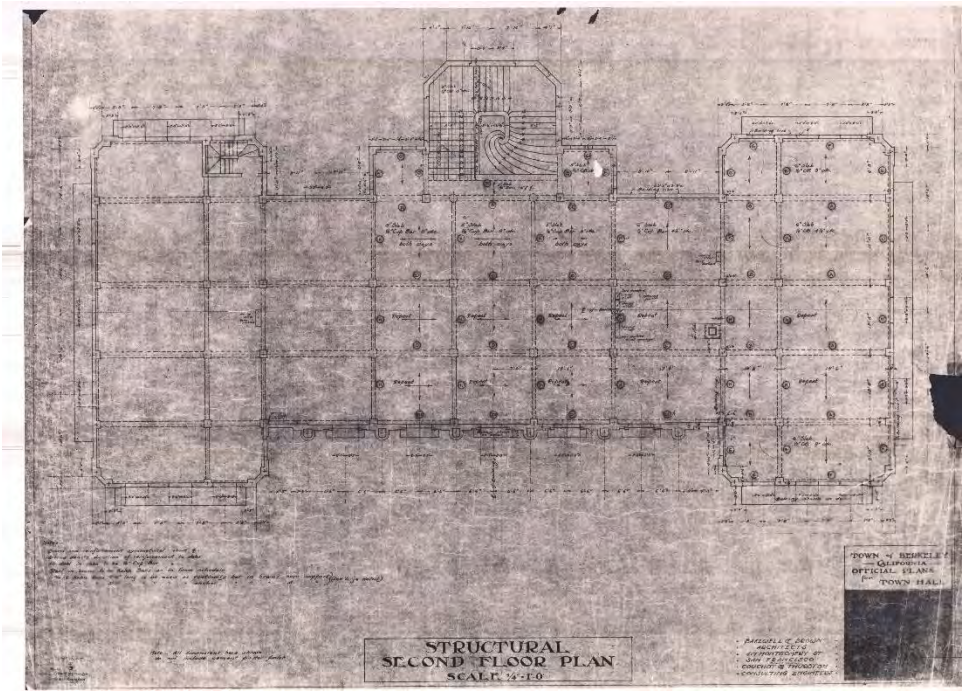


Figure 12. Second Floor Plan (1907 Plans)

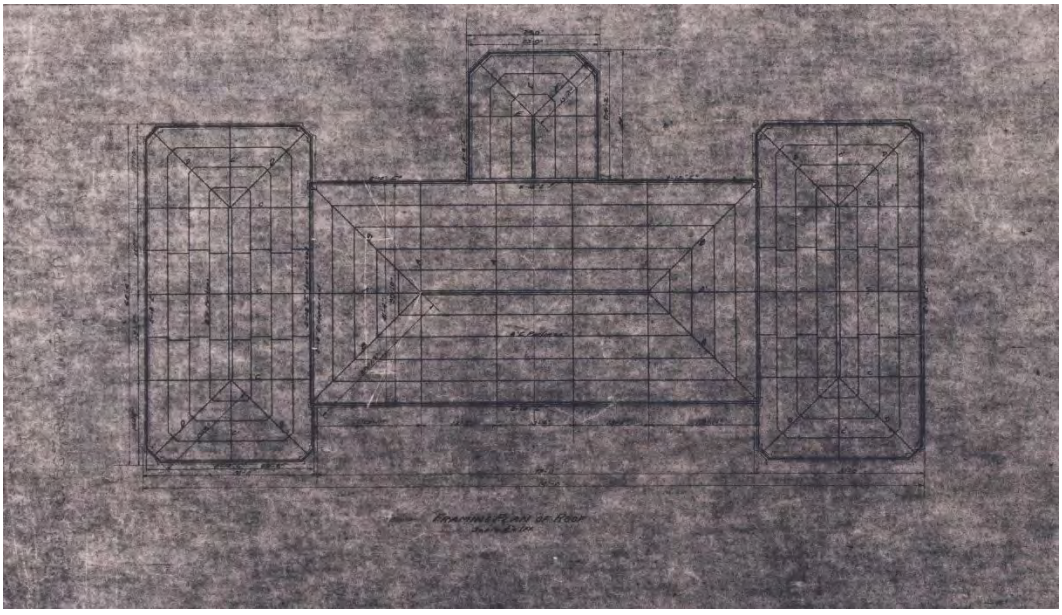


Figure 13. Roof (Truss) Framing Plan (1907 Plans)

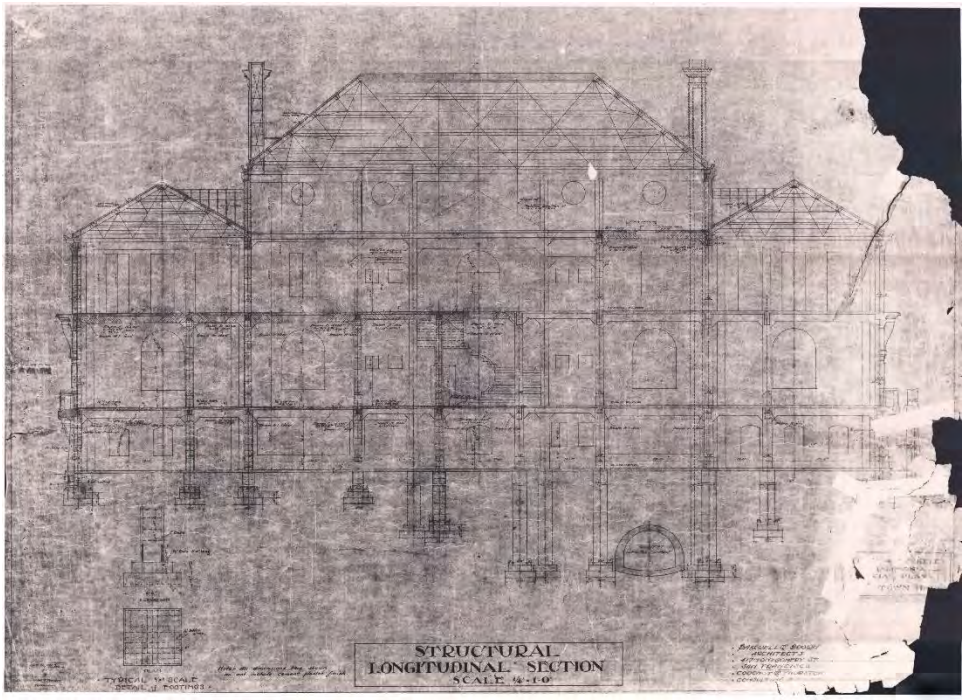


Figure 14. Building Longitudinal Section

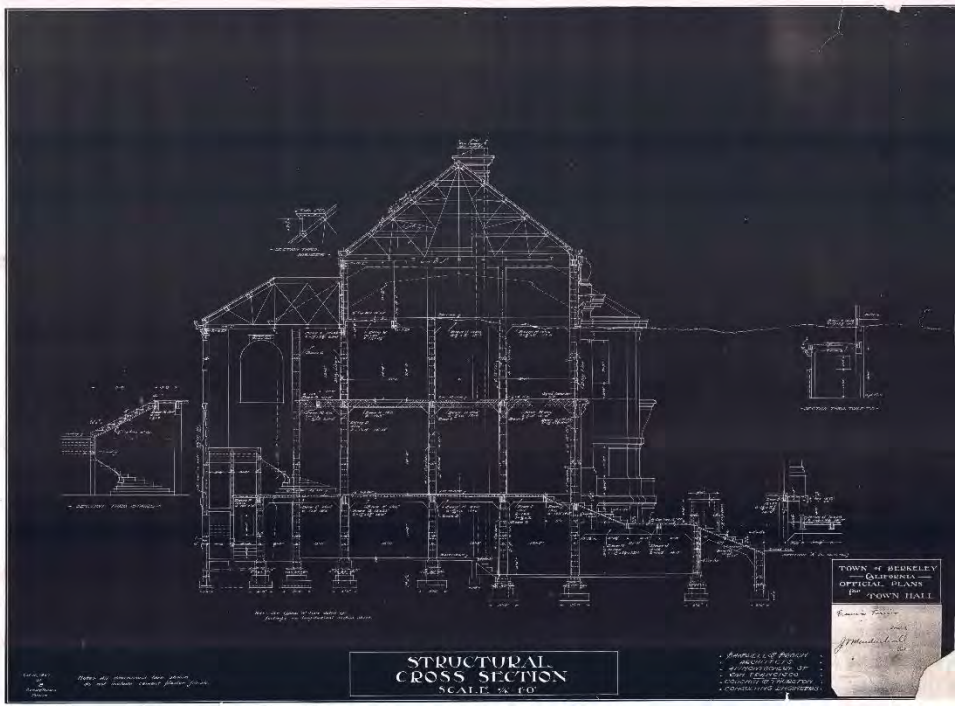


Figure 15. Building Cross Section

Figure 16. Serious crack in major beam in First Floor at Basement

Figure 17. Crack in major beam in First Floor at Basement

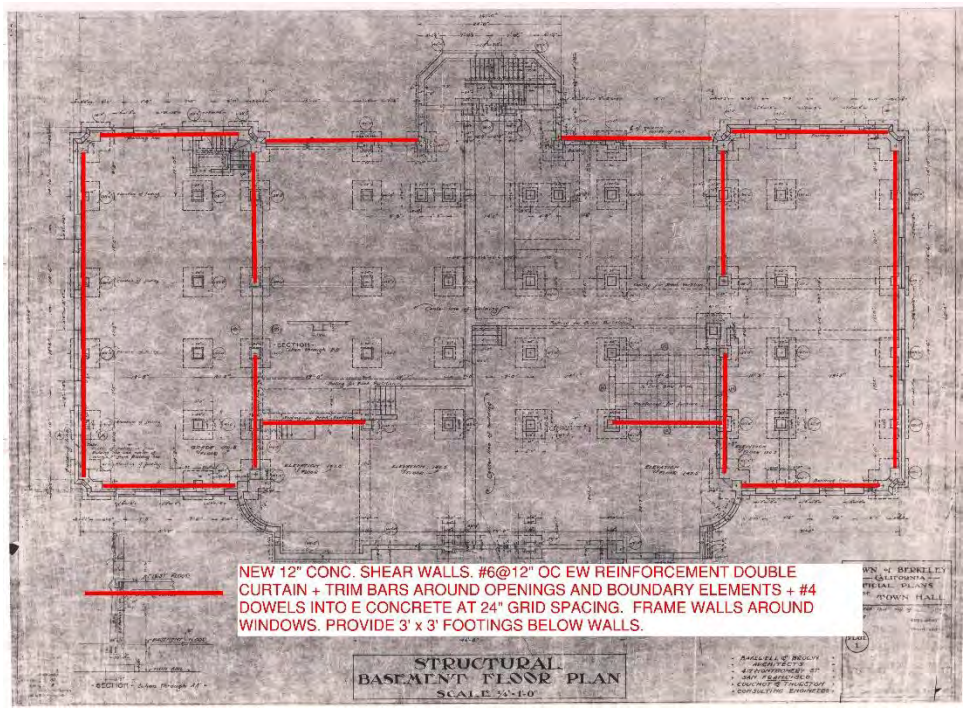


Figure 18. Seismic Retrofit Scheme (Concrete Shear Walls) at Basement

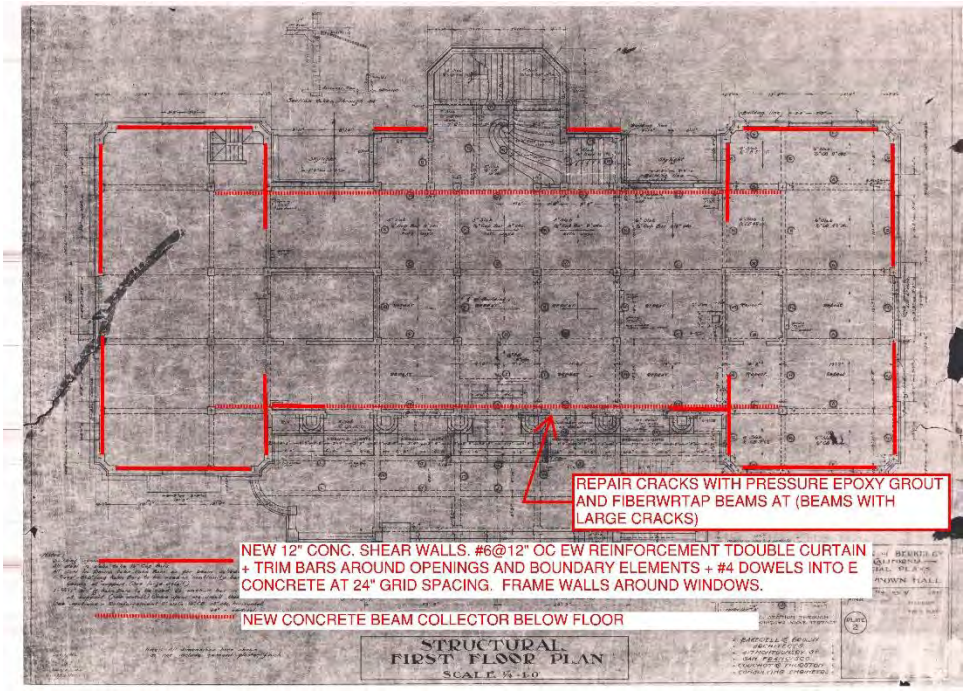


Figure 19. Seismic Retrofit Scheme (Concrete Shear Walls) at First Floor

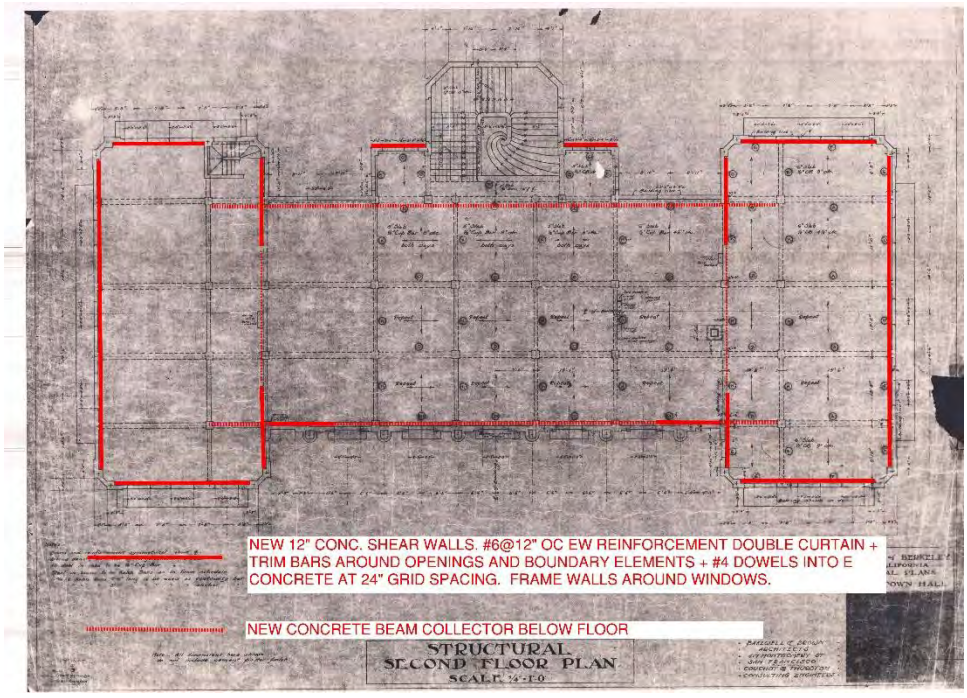


Figure 20. Seismic Retrofit Scheme (Concrete Shear Walls) at Second Floor

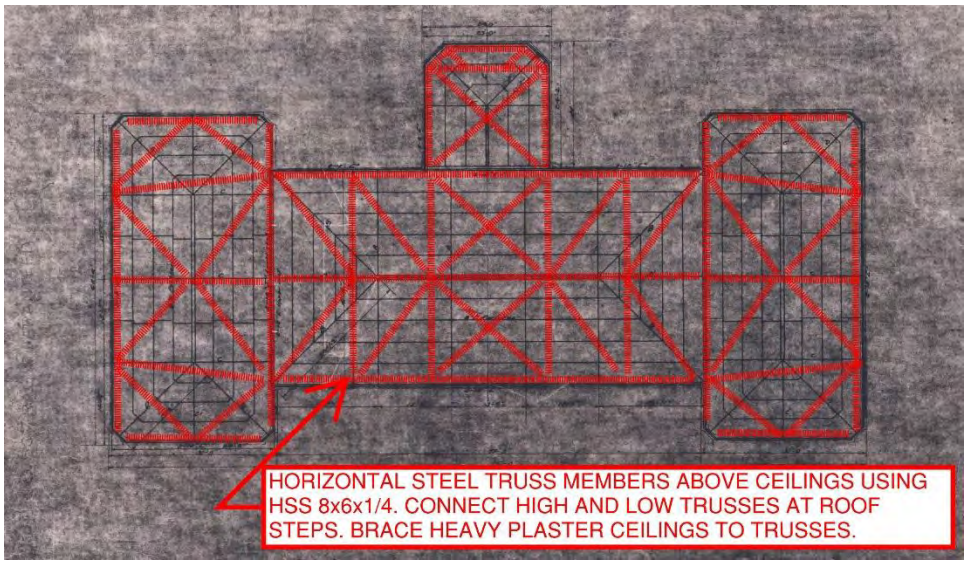


Figure 21. Seismic Retrofit Scheme (Horizontal Steel Diaphragm Trusses) at Ceiling/Roof Trusses Bottom Chords

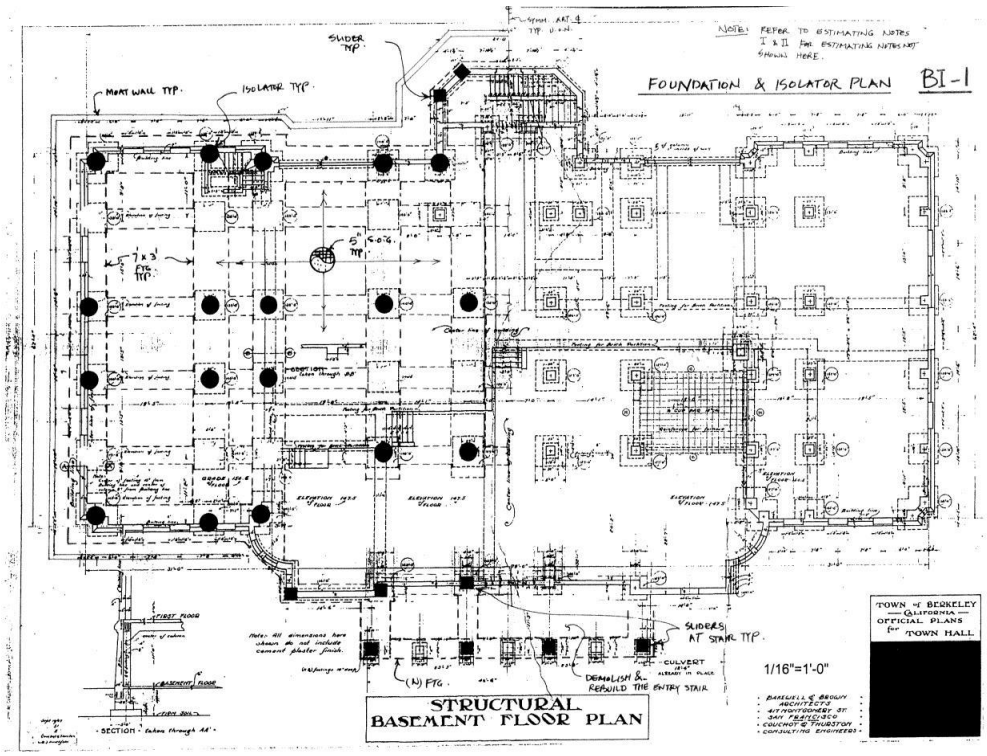


Figure 22. Seismic Retrofit Scheme (Base Isolation) at Basement (courtesy of Forell / Elsesser Engineers in 2002 report, ref 2)

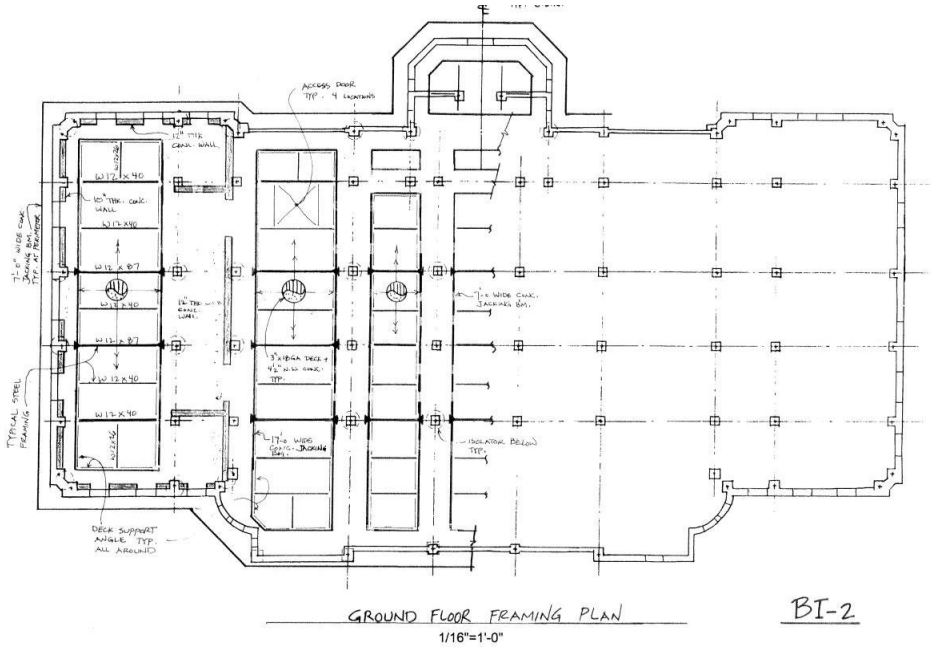


Figure 23. Seismic Retrofit Scheme (Base Isolation System) at 1st Floor (courtesy of Forell / Elsesser Engineers in 2002 report, ref 2)

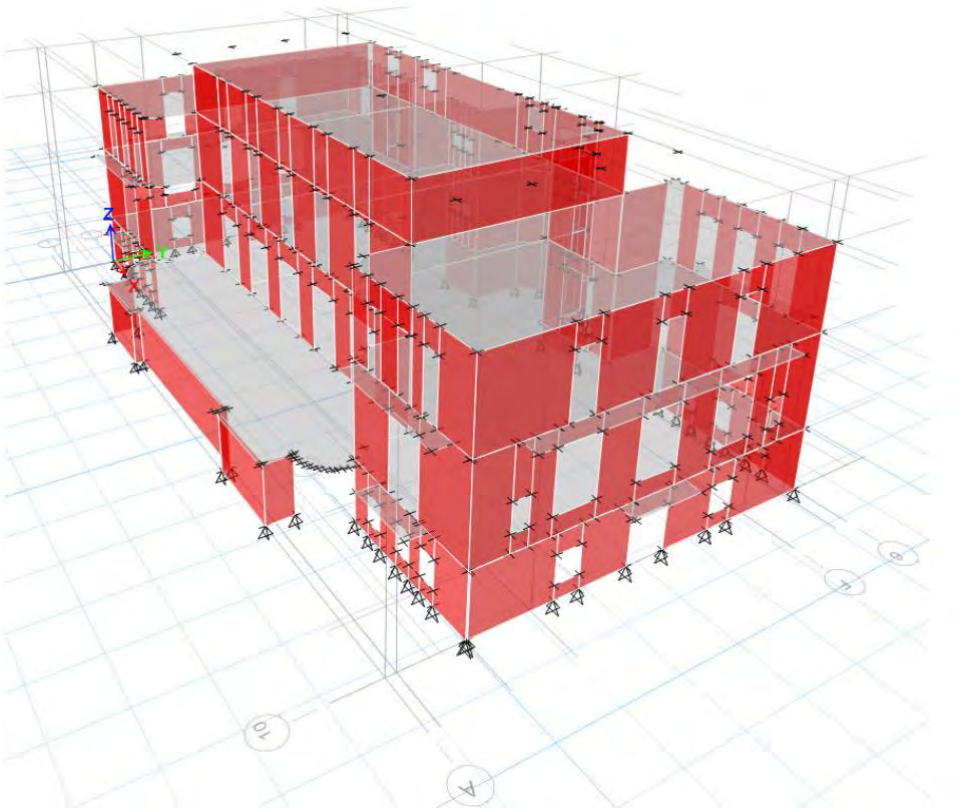


Figure 24. ETABS 3D Computer Model for Seismic Analysis

APPENDIX A – City of Berkeley Project Budget

CITY OF BERKELEY PROJECT BUDGET WORKSHEET		
Project Title: Old City Hall		4/10/2019
Project Manager: Elmar Kapfer		
Description	**Estimate**	
Construction	**BPOE Scheme**	**IO Base Isolator Scheme**
Construction	$ 7,463,000	$ 20,131,000
Cost Escalation	$ 1,027,000	$ 3,019,650
Construction Contingincy	$ 1,493,000	$ 2,013,100
Subtotal Construction Cost	**$ 9,983,000**	**$ 25,163,750**
Consultants		
Design	$ 998,300	$ 2,516,375
Construction Support	$ 499,150	$ 1,258,188
	$ 1,497,450	**$ 3,774,563**
Other Costs		
Permit Costs	$ 99,830	$ 251,638
Advertising	$ 49,915	$ 125,819
Printing	$ 49,915	$ 125,819
Testing	$ 99,830	$ 251,638
	$ 299,490	**$ 754,913**
Staff Costs		
Design Management	$ 598,980	$ 1,509,825
Construction Management	$ 224,618	$ 566,184
Inspection	$ 149,745	$ 377,456
	$ 973,343	**$ 2,453,466**
Special Costs		
Project Contingency	$ 277,028	$ 698,294
	$ 277,028	**$ 698,294**
Grand Total Project Costs	**$ 13,030,311**	**$ 32,844,985**
Notes		
Mack5 Construction Cost	**BPOE Scheme**	**IO Base Isolator Scheme**
Estimate	$ 9,983,000	$ 25,163,750
Escallation	$ 1,027,000	$ 3,019,650
Design Contingency	$ 1,493,000	$ 2,013,100
Base Construction Cost	**$ 7,463,000**	**$ 20,131,000**
City of Berkeley Cost Estimate		
Base Construction Cost	$ 7,463,000	$ 20,131,000
Cost Escalation	$ 1,027,000	$ 3,019,650
Construction Contingincy	$ 1,493,000	$ 2,013,100
Total Construction Cost	**$ 9,983,000**	**$ 25,163,750**

APPENDIX B – Cost Estimates

Conceptual Cost Plan

for

Berkeley Old City Hall

February 15, 2019

1900 Powell Street, Suite 470
Emeryville, CA 94608
ph: 510.595.3020
www.mack5.com

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Conceptual Cost Plan

Commentary

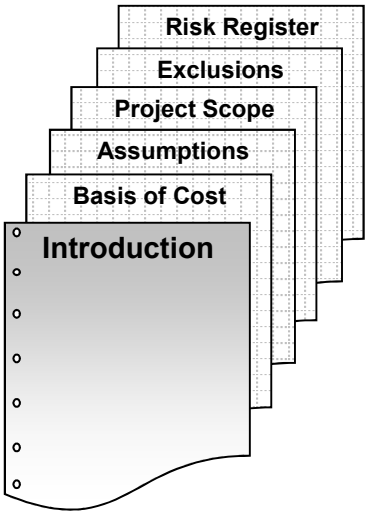
Berkeley Old City Hall

Tier 2 Seismic Retrofit

Introduction
Basis of Cost
Assumptions
Exclusions

February 15, 2019

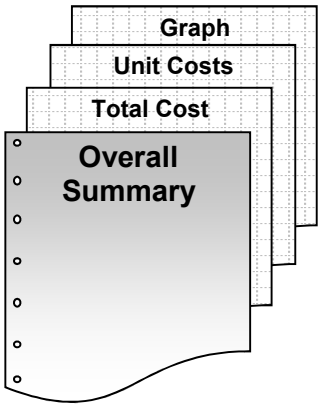
introduction



mack5 was requested to carry out a Conceptual Design Cost Plan for the proposed "Seismic Evaluation and Retrofit" of existing Old City Hall building located at 2134 Martin Luther King Jr., Berkeley CA.

The first part of the Report contains the basis of the report, the assumptions made, description of the project scope, and the exclusions to the costs which contain items that have potential to impact cost at some point in the future.

The Overall Summary section contains a Summary of Gross Floor Areas, an Overall Project Summary, and Component and Trade Cost Summaries with Graphs.



Each section contains Control Quantities, a Cost Summary and Graph, and a Detailed Breakdown of Costs.

project introduction

The Old City Hall is a 3-story, historic (1909) reinforced concrete building, originally constructed as the Town Hall for the Town Of Berkeley. The building has a predominantly rectangular plan shape, with a central rectangular portion (oriented north-south) flanked by a smaller symmetrical wings (oriented east-west) at the north and south ends. The building also has a large grand stairways projection at the rear (west) in the center portion of the building plan with stairs that extend from the basement to the second floor.

items used for cost estimate

narrative	Seismic evaluation report prepared by IDA Structural Engineers, dated January 25, 2019 (21-pages)
plan	Marked-up structural plan, original plan (4-pages)

assumptions

(a) Construction will start in August, 2020

(b) A construction period of 15 months

(c) The construction will be competitively bid by CMc's (CM at Risk) with a minimum of four, maximum five, qualified contractors based on Construction Documentation

(d) The general contractor will have full access to the site during normal business hours

(e) There are no phasing requirements

(f) The contractor will be required to pay prevailing wages

exclusions

(a) Cost escalation beyond a midpoint of March, 2021

(c) Moving and storing of existing furnishings

(b) Any improvements unrelated to the seismic retrofit and related impacts

(e) Hazardous materials handling, disposal and abatement

(f) Compression of schedule, premium or shift work, and restrictions on the contractor's working hours

(g) Soft Cost such as testing and inspection fees, architectural design and construction management fees, assessments, taxes, finance, legal and development charges

(h) Scope change and post contract contingencies

Conceptual Cost Plan

Berkeley Old City Hall

Control Quantities
Seismic Retrofit Summary
Detailed Cost Breakdown

February 15, 2019

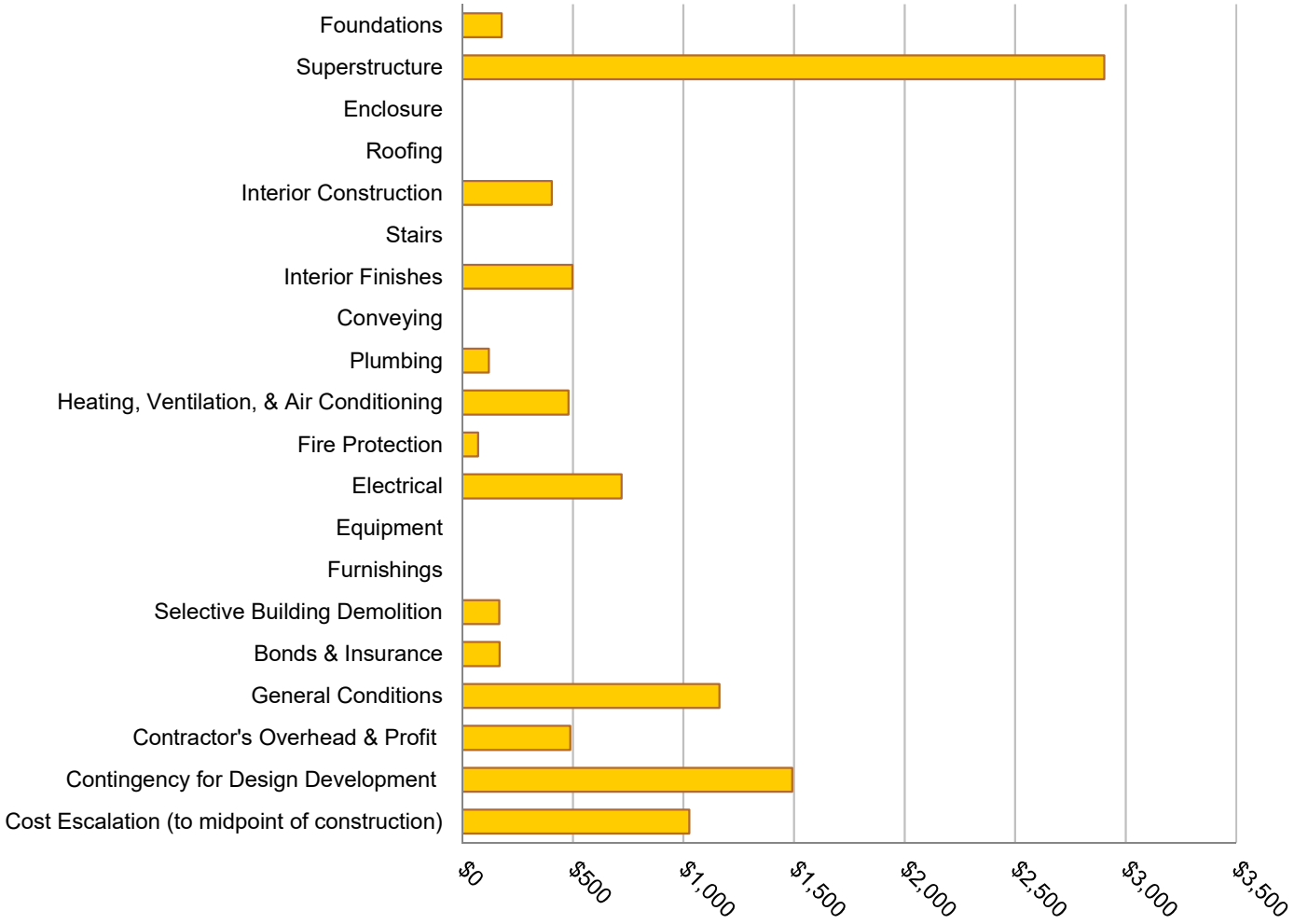
Enclosed Areas	
Basement floor	9,500
First floor	7,300
Second floor	7,200
Subtotal of Enclosed Area	24,000

CSI UniFormat Summary	*24,000 SF*	*%*	*$/SF*	*$,000*
Foundations		2%	$7.40	$178
Superstructure		29%	$120.93	$2,902
Enclosure		0%	$0.00	$0
Roofing		0%	$0.00	$0
Interior Construction		4%	$16.87	$405
Stairs		0%	$0.00	$0
Interior Finishes		5%	$20.76	$498
Conveying		0%	$0.00	$0
Plumbing		1%	$5.00	$120
Heating, Ventilation, & Air Conditioning		5%	$20.00	$480
Fire Protection		1%	$3.00	$72
Electrical		7%	$30.00	$720
Equipment		0%	$0.00	$0
Furnishings		0%	$0.00	$0
Selective Building Demolition		2%	$7.00	$168
Subtotal - Building Construction		*56%*	*$230.96*	*$5,543*
Site Improvement		1%	$4.17	$100
Subtotal - Sitework		*1%*	*$4.17*	*$100*
Total - Building and Sitework Construction		*57%*	*$235.12*	*$5,643*
Bonds & Insurance	3.00%	2%	$7.05	$169
General Conditions	20.00%	12%	$48.44	$1,162
Contractor's Overhead & Profit	7.00%	5%	$20.34	$488
Subtotal		*75%*	*$310.95*	*$7,463*
Contingency for Design Development	20.00%	15%	$62.19	$1,493
Cost Escalation (to midpoint of construction)	11.47%	10%	$42.80	$1,027
TOTAL CONSTRUCTION BUDGET		***100%***	***$415.94***	***$9,983***

Cost Analysis For Base Isolator Scheme	**$ x 1,000**
Report dated May 2002	
Base Isolation Scheme	$13,084
Fixed Scheme	$7,874
Difference (May 2002)	$5,210
Escalated to 2019 @ average 4% (17years)	$10,149
Base Scheme + Cost Difference	
$10,149 + $9,983	$20,131

NOTE: Inclusions and Exclusions listed in the Commentary Section.

CSI UniFormat Summary



Seismic Retrofit Detail

Job #19618

February 15, 2019

mack5

FOUNDATIONS	Quantity	Unit	Rate	Total ($)
Grade Beams, Reinforced Concrete, 3'-0" x 3'-0"				
Perimeter				
Sawcut (e) slab on grade	251	LF	$25.00	$6,275
Hammer/remove slab on grade	1,004	SF	$10.00	$10,040
Excavation, hand	149	CY	$75.00	$11,156
Reinforcing steel - allow 100 lbs/cy	9,622	LB	$3.50	$33,676
Concrete	96	CY	$500.00	$48,108
Haul excess fill	96	CY	$35.00	$3,368
Backfill	53	CY	$30.00	$1,576
Interior				
Sawcut (e) slab on grade	264	LF	$25.00	$6,600
Hammer/remove slab on grade	528	SF	$10.00	$5,280
Excavation, hand	78	CY	$75.00	$5,867
Reinforcing steel - allow 100 lbs/cy	5,060	LB	$3.50	$17,710
Concrete	51	CY	$500.00	$25,300
Haul excess fill	51	CY	$35.00	$1,771
Backfill	28	CY	$30.00	$829
			Subtotal For Foundations:	**$177,554**

SUPERSTRUCTURE	Quantity	Unit	Rate	Total ($)
Shearwalls, Reinforced Concrete, 1'-0"				
Perimeter				
Epoxy dowel, 10" @ 24" o.c.	2,527	EA	$75.00	$189,536
Reinforcing steel - allow 200 lb/cy	74,878	LB	$3.50	$262,074
Concrete, shotcrete	374	CY	$550.00	$205,915
Interior				
Formwork	7,684	SF	$45.00	$345,780
Reinforcing steel - allow 200 lb/cy	31,305	LB	$3.50	$109,568
Concrete, shotcrete	157	CY	$550.00	$86,089
Slab on Grade, Reinforced Concrete, 6"				
Infill at new grade beams				
Epoxy dowel, 2 @ 12" o.c.	515	EA	$75.00	$38,625
Reinforcing steel - allow 2 lb/sf	3,064	LB	$3.50	$10,724
Concrete	35	CY	$500.00	$17,731
Finish	1,532	SF	$2.50	$3,830

SUPERSTRUCTURE	Quantity	Unit	Rate	Total ($)
Beam Collector, Reinforced Concrete, 1'6" x 1'-6"				
First & Second Floor				
Epoxy dowel - allow 2/lf	800	EA	$75.00	$60,000
Reinforcing steel - allow 300 lb/cy	11,000	LB	$3.50	$38,500
Concrete	37	CY	$650.00	$23,833
Fiberwrap & Pressure Epoxy Grout (e) Damaged Beams				
First Floor Exterior Entry Deck				
Pressure epoxy grout	432	LF	$50.00	$21,600
Fiberwrap, 3 layers	1,944	SF	$100.00	$194,400
Structural Steel Framing, Tube Steel. 8" x 6" x 1/4"				
Third Floor Ceiling	22	TN	$10,000.00	$215,546
Roof attic	10	TN	$10,000.00	$100,498
Braced frames between high/low roof	2	EA	$30,000.00	$60,000
Fireproofing steelwork				NIC, Not Anticipated
Rooftop Spire Mitigation				
Seismic retrofit/roofing allowance	1	EA	$250,000.00	$250,000
Building Addition Mitigation				
Seismic retrofit allowance	2	EA	$250,000.00	$500,000
Miscellaneous Concrete Work				
Rough carpentry	24,000	GSF	$2.00	$48,000
Temporary scaffolding, shoring and safety measure	24,000	GSF	$5.00	$120,000
Subtotal For Superstructure:				**$2,902,249**

ENCLOSURE	Quantity	Unit	Rate	Total ($)
Exterior Enclosure				
Patch/repair (E)				NIC, Excluded
Subtotal For Enclosure:				

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ROOFING	Quantity	Unit	Rate	Total ($)
Roofing				
Patch/repair (E)				NIC
Subtotal For Roofing:				

INTERIOR CONSTRUCTION	Quantity	Unit	Rate	Total ($)
Interior Partition Framing, Furring and Finishing				
Shearwalls				
Metal stud furring, 3 5/8" @ 16" o.c.	16,874	SF	$18.00	$303,725
Gypsum board, finished	16,874	SF	$6.00	$101,242
Subtotal For Interior Construction:				**$404,966**

STAIRS	Quantity	Unit	Rate	Total ($)
No work anticipated in this section				NIC
Subtotal For Stairs:				

INTERIOR FINISHES	Quantity	Unit	Rate	Total ($)
Paint				
New shearwalls	16,874	SF	$2.50	$42,184
Patch/Repair Finishes To Accommodate Retrofit				
Floor and base	24,000	SF	$7.00	$168,000
Ceiling	24,000	SF	$7.00	$168,000
Miscellaneous patch	24,000	SF	$5.00	$120,000
Subtotal For Interior Finishes:				**$498,184**

CONVEYING	Quantity	Unit	Rate	Total ($)
No work anticipated in this section				NIC
Subtotal For Conveying:				

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PLUMBING	Quantity	Unit	Rate	Total ($)
Reroute to Accommodate Retrofit as Required Plumbing demolition, water/waste distribution, drainage, gas, etc.	24,000	SF	$5.00	$120,000
Subtotal For Plumbing:				**$120,000**

HEATING, VENTILATION, & AIR-CONDITIONING	Quantity	Unit	Rate	Total ($)
Reroute to Accommodate Retrofit as Required HVAC demolition, distribution, testing & balancing, etc.	24,000	SF	$20.00	$480,000
Subtotal For Heating, Ventilation, & Air-Conditioning:				**$480,000**

FIRE PROTECTION	Quantity	Unit	Rate	Total ($)
Reroute to Accommodate Retrofit as Required Fire sprinkler demolition, distribution, drainage, gas, etc.	24,000	SF	$3.00	$72,000
Subtotal For Fire Protection:				**$72,000**

ELECTRICAL	Quantity	Unit	Rate	Total ($)
Reroute to Accommodate Retrofit as Required Electrical demolition, distribution, lighting, user power, equipment power,	24,000	SF	$30.00	$720,000
Subtotal For Electrical:				**$720,000**

EQUIPMENT	Quantity	Unit	Rate	Total ($)
No work anticipated in this section				NIC
Subtotal For Equipment:				

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FURNISHINGS	Quantity	Unit	Rate	Total ($)
No work anticipated in this section				NIC
Subtotal For Furnishings:				

SELECTIVE BUILDING DEMOLITION	Quantity	Unit	Rate	Total ($)
Demolition				
Remove existing construction to accommodate retrofit	24,000	SF	$7.00	$168,000
Hazardous Materials Abatement				NIC, Excluded
Subtotal For Selective Building Demolition:				**$168,000**

SITE PREPARATION	Quantity	Unit	Rate	Total ($)
No work anticipated in this section				
Subtotal For Site Preparation:				

SITE IMPROVEMENT	Quantity	Unit	Rate	Total ($)
Staging / Lay-Down Area				
Patch/repair affected surfaces	1	LS	$100,000.00	$100,000
Subtotal For Site Improvement:				**$100,000**

APPENDIX C – Discussion of ASCE 41-17 Procedures for Existing Buildings

This is to clarify how ASCE 41-17, "*Seismic Evaluation and Retrofit of Existing Buildings*," works and to help understanding and selection of a seismic retrofit performance objective for this project. ASCE 41-17 is the national standard guidelines for seismic retrofit of existing buildings. It is not a code, but is accepted as the standard for the Unites States. ASCE 41-17 pairs selected building seismic performance levels with two earthquakes (earthquake probabilities: one smaller more frequent earthquake and one large earthquake).

The intentional building seismic performance levels are defined as follows:

Seismic Performance Levels	**Results following a defined Earthquake**
Collapse Prevention (CP)	The building does not collapse. Some elements could fall and be life threatening. The building could be so damaged that it becomes beyond repair after the event.
Life Safety (LS)	The building does not collapse. Life threatening falling hazards are mitigated. Egress routes are maintained out of the building. The building could be severely damaged and may be beyond repair after the event.
Damage Control (DC)	The building does not collapse. Life threatening falling hazards are mitigated. Egress routes are maintained out of the building. The building damage is repairable and may take weeks to months. This objective is a range between LS and IO.
Immediate Occupancy (IO)	The building does not collapse. Life threatening falling hazards are mitigated. Egress routes are maintained out of the building. The building damage is minor and repairable and may take weeks. Occupancy is allowed after the earthquake.
No Damage (ND)	The building does not collapse. Life threatening falling hazards are mitigated. Egress routes are maintained out of the building. The building damage is negligible. The building response remains linear below yield. Occupancy is allowed after the earthquake.

These targeted seismic performance levels need to be evaluated based on an Earthquake ground motion size or probability to "meet the Performance Level due to a given earthquake probability."

The two Earthquakes defined in ASCE 41-17 for existing buildings are as follows:

Earthquake Name	Earthquake Return Period	Earthquake Probability
BSE-1E Earthquake (smaller more frequent)	225 years	20% chance of exceedance in 50 years
BSE-2E Earthquake (larger possibility and less frequent)	975 years	5% chance of exceedance in 50 years

Earthquake ground motions for all probabilities are mapped by USGS for all sites in the Unites States. These subsequently need to be modified for site soil conditions. The final E in the ASCE 41-17 earthquake names (BSE-1E Earthquake) is to identify that these earthquakes are intended for Existing buildings and are at a lower probability than would be required for New buildings.

The seismic risk is tempered by the recognition that older buildings have a reduced useful lifespan as compared to new buildings. That is, if the traditional demand for new buildings presumes a 50-75 year life, then an existing building with a 20-30 year remaining lifespan has a lower probability of being subjected to a major earthquake over the remaining building lifespan. The ASCE 41-17 standard also recognizes that the cost of achieving a higher level of seismic performance is often excessive for older buildings.

Seismic Performance Objectives, as required by a building owner, are the selection of a building performance level with a selected earthquake probability.

ASCE 41-17 selects a Basic Performance Objective for Existing Buildings (BPOE) as a base line. An owner (or City) could select the BPOE, a further reduced Performance Objective, or a further enhanced Performance Objective. These could be viewed as follows:

Performance Objective Chosen	Performance to BSE-1E (225 yr)	Performance to BSE-2E (975 yr)
Reduced Objective (Owner chosen and voluntary)	Collapse Prevention	Collapse
Basic Performance Objective for Existing Buildings (BPOE). This is the minimum recommended by ASCE 41-17	Life Safety	Collapse Prevention
Owner Chosen Enhanced Seismic Performance Objectives:		
Enhanced Objective 1	Damage Control	Life Safety
Enhanced Objective 2	Immediate Occupancy	Damage Control

Enhanced Objective 3		Immediate Occupancy

The table above gives the basic choices. Some buildings are more easily retrofitted to achieve the highest performance objectives and some are more difficult. It is easier to design a new building to Immediate Occupancy. Very old buildings depending on configuration and materials used, may require considerable effort, required added elements, and corresponding construction cost to achieve Immediate Occupancy, or may actually require demolition and rebuilding.

IDA has chosen the Basic Performance Objective for Existing Buildings (BPOE) from ASCE 41-17 for the base evaluation and retrofit for the Old City Hall Building. We believed that 1) this will cause a considerable amount of retrofit work and at significant cost; 2) it is the base line for ASCE 41-17, and 3) achieving Immediate Occupancy could greatly increase the required retrofit costs. The cost estimates are included in Appendix A and B.

We believe for the Old City Hall Building to achieve Immediate Occupancy would require a base isolation system. This system is shown in concept in Figures 22 and 23.

Berkeley City Hall – Maudelle Shirek Building

Historic Structure Report – March 2020

Berkeley Civic Center Engagement Overview
Overview of material with links to specific records

GEHL

Vision and Values Workshop — December 12, 2020
Description and record of workshop exercises and summary of insights — Link

Berkeley High School Design Charrettes — February, 2020
Summary of discussion with the students and design ideas by group — Link

Berkeley High School students survey — February, 2020
Survey Questions — Link
Survey Responses — Link

Farmers Market Pop up postcards — March 7, 2020
Transcript of community comments and ideas written on postcards — Link

Stakeholder interviews
Who we've interviewed and summary of key messages/ quotes from conversations — Link
Sample questions for stakeholder interviews
Write up of recorded interviews (not not all interviews were recorded in writing) — Link

Direct emails
A record of the comments on the Conceptual Design Options received by email — Link
April, 2020

Website design comments Options A, B and C — Link
April 2020

Berkeley Civic Center Visioning

Program Cost Plan
Berkeley, California

Based on review & analysis of:

Berkeley Civic Center Program Package

Report Prepared for:

Gehl

April 14, 2020 rev2

Draft

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BASIS OF ESTIMATE

REFERENCE DOCUMENTATION

This Construction Cost Estimate was produced from the following documentation. Design and engineering changes occurring subsequent to the issue of these documents have not been incorporated in this estimate.

Document	Date
Berkeley Old City Hall - Seismic Evaluation Report by IDA Structural Engineers rev 1	6/27/2019
Berkeley Veterans Memorial Building Seismic Evaluation Report by IDA Structural Engineer	4/22/2019
Berkeley Civic Center Public Realm Rough Areas Calculations	2/28/2020
Plans for Option A, Option B and Option C	2/28/2020
Sketchup Views of 2180 Milvia Addition	2/28/2020
ELS Old City Hall Report	5/1/2002
Revised Option A 1st Floor Plan	4/10/2020
VMB Roof Addition Slide	4/10/2020
Social Service Building Slide	4/10/2020
2180 Milvia Option C Summary	4/10/2020
City Hall Option C	4/10/2020

PROJECT DESCRIPTION

The scope of work comprises a master plan for redevelopment of the old City Hall building and the Berkeley Veterans Memorial Building and the Civic Center Park around the City Civic Center in Berkeley. The summary page for each park shows the square foot area of each existing building as well as the new proposed program area. A midrange of the likely cost per square foot for the proposed scale of work is provided along with the resulting dollar cost in the current market. The two adjoining columns to the right show the dollar costs at 10% lower and 10% higher than the midrange. Important to note is that cost escalation is excluded from the totals shown. At this point in time there is no information about phasing or the scenarios that might be chosen, so current costs provide the most appropriate comparison among scenarios. Construction cost escalation has been significant in recent years (5% - 8% per annum) and is projected to begin to recede in the forthcoming years.

Component cost models have been provided for some of the buildings earmarked for renovation. These are provided as a guide to how some representative costs/sf have been derived. The cost models develop $/SF costs for building systems based upon other similar building types adjusted for time and location. The cost scenarios that entail renovation benefit from existing floor plans that enable some approximate quantification of building metrics such as the total length of exterior wall, roof area, and partition length.

The general description of renovated spaces cites the updating of a percentage of finishes and equipment. Unit pricing assumes that this scope will be accompanied by some reconfiguration of spaces, and that some structural work will also be triggered. Some corresponding work to building skin and roofing is also assumed. The general contractor markups for supervision, general requirements, bonds and insurance, and fee are typical for the type of projects being considered, but will vary depending on the entire scope of work under contract.

Site costs are also included. TBD Consultants has provided some allowances for utility work that may be required, to cover the case of new buildings in new locations, as well as the reconfiguration of site layouts or upgrades to existing infrastructure.

The cost of phasing any of the projects is excluded. The basis of pricing assumes the general contractor will have full access to the unoccupied buildings and site area subject to the scope of work for the duration of any discrete project.

BASIS FOR PRICING

This estimate reflects the fair construction value for this project and should not be construed as a prediction of low bid. **Prices are based on local prevailing wage construction costs in Q4 of 2019**. Pricing assumes a procurement process with competitive bidding for all sub-trades of the construction work, which is to mean a minimum of 3 bids for all subcontractors and materials/equipment suppliers. If fewer bids are solicited or received, prices can be expected to be higher. Conversely in the current competitive market should a larger number of sub-bids be received (i.e. 6 and above) pricing can expected to be lower than the current estimate.

Subcontractor's markups have been included in each line item unit price. Markups cover the cost of field overhead, home office overhead and subcontractor’s profit. Subcontractor's markups typically range from 15% to 25% of the unit price depending on market conditions.

General Contractor’s/Construction Manager's Site Requirement costs are calculated on a percentage basis. General Contractor’s/Construction Manager's Jobsite Management costs are also calculated on a percentage basis.

Site Requirements	*5.0%*
Jobsite Management	*15.0%*
Phasing	*0.0%*

General Contractor’s/Construction Manager's overhead and fees are based on a percentage of the total direct costs plus general conditions, and covers the contractor’s bond, insurance, site office overheads and profit.

BASIS OF ESTIMATE

Insurance & Bonding *2.2%*
General Contractor Bonding
Sub-Contractor Bonding
OSIP

Fee (G.C. Profit) *5.0%*

Additional conditions of construction
The general contract will be by CM/GC method or competitively bid with qualified general and main subcontractors
The entire scope of work for each scenario will be bid as one contract
There will not be small business set-aside and equal opportunity employment requirements
The contractor will be required to pay prevailing wages
The contractor will have full access to the site during working hours; buildings will be unoccupied

Unless identified otherwise, the cost of such items as overtime, shift premiums and construction phasing are not included in the line item unit price.

This cost plan is based on standard industry practice, professional experience and knowledge of the local construction market costs. TBD Consultants have no control over the material and labor costs, contractors methods of establishing prices or the market and bidding conditions at the time of bid. Therefore TBD Consultants do not guarantee that the bids received will not vary from this cost estimate.

CONTINGENCY

Design Contingency *15.0%*

The Design Contingency is carried to cover scope that lacks definition and scope that is *anticipated* to be added to the Design. As the Design becomes more complete the Design Contingency will reduce.

Construction Contingency *0.0%* *Carried else where in owners budget*

The Construction Contingency has not been carried to cover the unforeseen during construction execution and Risks that do not currently have mitigation plans. (As Risks are mitigated, Construction Contingency can be reduce, but should not be eliminated.)

An owners contingency has not been included in this construction cost estimate, but it is advised that the owner carry additional contingency to cover scope change, bidding conditions, claims and delays.

CONSTRUCTION SCHEDULE & ESCALATION

The construction schedules for these projects are not known, therefore cost escalation is excluded. We expect costs escalation in the marketplace to continue to occur, and we recommend the owner take into account cost escalation in their budget per the approximate projections listed below.

Escalation: *Compounded Rate*

Year 1	*5.50%*
Year 2	*5.00%*
Year 3	*4.00%*
Year 4	*3.50%*
Year 5	*3.50%*
Beyond 5 Years	*3.50%*

This calculation does not account for adverse bidding conditions and a separate Bid Contingency should be carried if there are limited qualified bidders or if a market research study indicates.

BASIS OF ESTIMATE

EXCLUSIONS

Costs for phasing for all projects
Escalation
All soft costs
Construction contingency
Preconstruction services
Surge & moving costs
Premium foundation systems (drilled piers, micropiles, etc.)
Over excavation & recompaction of site soils
Delays in construction due to environmental mitigation measures
AV, telecommunications, and security equipment
Photovoltaic and other alternative power generation systems (alternate only)
Artwork / Public art
Utility connection fees and charges
Furniture, fixtures and equipment (FF&E) except fixed seating in auditorium space
Land acquisition, feasibility studies, financing costs and all other owner costs
Site surveys, existing condition reports and soils investigation costs
Hazardous materials abatement
Permits
Owner's contingency
Design Fees
Costs for LEED certification

OVERALL SUMMARY	BUILDING GFA	$/SF MIDRANGE	MID-RANGE	LOW (-10%)	HIGH (+10%)	COMMENTS
PRELIMINARY ORDER OF MAGNITUDE			**X $1,000**	**X $1,000**	**X $1,000**	
OPTION A						
MAUDELLE SHIREK - OPTION A	41,500	$1,123.17	46,612	41,950	51,273	
VETERANS MEMORIAL BUILDING - OPTION A	32,000	$712.99	22,816	20,534	25,097	
NEW SOCIAL SERVICES BUILDING - OPTION A	7,600	$587.37	4,464	4,018	4,910	
2180 MILVIA - OPTION A	5,500	$681.36	3,748	3,373	4,122	
OPTION A - TOTAL	**86,600**	**$896.52**	**77,639**	**69,875**	**85,402**	
OPTION B						
MAUDELLE SHIREK - OPTION B	22,620	$801.37	18,127	16,314	19,940	
VETERANS MEMORIAL BUILDING - OPTION B	25,595	$2,538.89	64,983	58,485	71,481	
NEW SOCIAL SERVICES BUILDING - OPTION B	7,600	$587.37	4,464	4,018	4,910	
2180 MILVIA - OPTION B	3,500	$3,193.00	11,176	10,058	12,293	
OPTION B - TOTAL	**59,315**	**$1,664.83**	**98,749**	**88,875**	**108,624**	
OPTION C						
MAUDELLE SHIREK - OPTION C	24,000	$707.04	16,969	15,272	18,666	
VETERANS MEMORIAL BUILDING - OPTION C	32,000	$704.83	22,555	20,299	24,810	
NEW SOCIAL SERVICES BUILDING - OPTION C	7,600	$587.37	4,464	4,018	4,910	
2180 MILVIA - OPTION C	19,675	$998.56	19,647	17,682	21,611	
OPTION C - Total	**83,275**	**$764.15**	**63,634**	**57,271**	**69,997**	
ADD ALTERNATE						
ROOFTOP ADDITION	**5,000**	$893.30	**4,466**	4,020	4,913	
ADD ALTERNATE - Total	**5,000**	**$893.30**	**4,466**	**4,020**	**4,913**	
BERKELEY CIVIC CENTER PARK - LANDSCAPING						
Scheme A Total	207,785	$20.65	4,291	3,862	4,720	
Scheme B Total	206,185	$22.13	4,562	4,106	5,018	
Scheme C Total	207,785	$21.28	4,421	3,979	4,864	
BERKELEY CIVIC CENTER PARK - LANDSCAPING - Total- See Above						

KEY CRITERIA CIVIC CENTER - OPTION A

FLOOR	AREA	UoM	OTHER	PERIMETER	AV. HEIGHT	COMMENTS
MAUDELLE SHIREK - OPTION A						
Functions as New Meeting Hall / City Offices / Community / Meeting Spaces						
Basement - New Construction						
Demolition - Existing			700			
Public Serving	4,850					
Circulation	2,240					
First Floor - New Construction						
Demolition			1,000			
Council Chambers	3,260					
Offices	800					
Restrooms	80					
Circulation	3,440					
First Floor - Existing Renovation						
Offices	4,490					
Restrooms	590					
Circulation	1,840					
Second Floor (E) Building - Same as Option A						to confirm with arch
Demolition			1,000			
Public Serving	1,755					plan not shown 2/F
Circulation	1,070					
Offices	4,000					
Restrooms	300					
MAUDELLE SHIREK - OPTION A - GSF	**28,715**	**SF**	**2,700**			
VETERANS MEMORIAL BUILDING - OPTION A						
Function as Cultural Hive						
Basement						
Public Serving	6,820					
Circulation	1,640					
Storage	1,460					
First Floor						
Public Event	5,320					
Public Serving	3,080					
Restrooms	450					
Circulation	2,090					
Second Floor						
Public Serving	1,015					
Circulation	1,205					
Offices	2,750					
Storage	90					
Restrooms	160					
VETERANS MEMORIAL BUILDING - OPTION A - GSF	**26,080**	**SF**				
2180 MILVIA - OPTION A						
New construction single story at grade						
Council Chambers						
Program Room/ Storage/Food	2,250					
Café/Restaurant	2,250					
Site Work			-			Not in program
2180 MILVIA - OPTION A - GSF	**4,500**	**SF**	**-**			

BERKELEY CIVIC CENTER - OPTION A

OPTION A SUMMARY	GROSS FLOOR AREA	$/SF MIDRANGE	MID-RANGE	LOW (-10%)	HIGH (+10%)	COMMENTS
PRELIMINARY ORDER OF MAGNITUDE			**X $1,000**	**X $1,000**	**X $1,000**	
MAUDELLE SHIREK BECOMES THE BERKELEY CENTER / BERKELEY THINK						
MAUDELLE SHIREK - OPTION A						
Functions as New Meeting Hall / City Offices / Community / Meeting Spaces						
Seismic Retrofit (Immediate Occupancy - IO scheme)	24,000	1,155.00	27,720	24,948	30,492	City of Berkeley Budget worksheet 4/10/2019
Renovate existing building	11,215	$270.00	3,028	2,725	3,331	
New construction	17,500	$890.00	15,575	14,018	17,133	
Demolish (E) building	2,700	$30.00	81	73	89	partial demo
Front entry stair and platform	2,300	$25.00	58	52	63	
Surface Parking	7,000	$5.00	35	32	39	
Landscape/Exterior Improvements	5,000	$8.00	40	36	44	
Utilities - for new addition	5,000	$15.00	75	68	83	
MAUDELLE SHIREK - OPTION A - Total	**41,500**	**$1,123.17**	**46,612**	**41,952**	**51,274**	
VETERANS MEMORIAL BUILDING - OPTION A						
Function as Cultural Hive						
Seismic Retrofit ROM (BPOE - Basic Seismic Performance Objective for Existing Building)	32,000	450.00	14,400	12,960	15,840	City of Berkeley Budget worksheet 4/23/2019
Renovate existing building	26,080	$320.00	8,346	7,511	9,180	
Surface Parking	8,000	$5.00	40	36	44	
Front entry	1,200	$25.00	30	27	33	
Utilities - existing						existing - no work
VETERANS MEMORIAL BUILDING - OPTION A - Total	**32,000**	**$712.99**	**22,816**	**104,438**	**127,645**	
NEW SOCIAL SERVICES BUILDING - OPTION A						
New Social Services Building	7,600	$562.50	4,275	3,848	4,703	
Parking lot rework	3,000	$25.00	75	68	83	
New Site Utilities	7,600	$15.00	114	103	125	
NEW SOCIAL SERVICES BUILDING - OPTION A - TOTAL	**7,600**	**$587.37**	**4,464**	**4,019**	**4,911**	
2180 MILVIA - OPTION A						
Program Room / Storage / Food / Café / Restaurant						
New Building - Single story	4,500	$750.00	3,375	3,038	3,713	
Existing Buildings Tie-in	1,000	$140.00	140	126	154	
Ramp / hardscape	4,750	$30.00	143	128	157	
Landscape/Exterior Improvements	3,000	$10.00	30	27	33	
Utilities for new building	2,000	$30.00	60	54	66	
2180 Milvia Option A - Total	**5,500**	**$681.36**	**3,748**	**11,411**	**13,945**	

KEY CRITERIA CIVIC CENTER - OPTION B

FLOOR	AREA	UoM	OTHER	PERIMETER	AV. HEIGHT	COMMENTS
MAUDELLE SHIREK - OPTION B						
New Function - CULTURAL HIVE						
Basement						
Demolition			700			
Public Serving	4,540					
Storage	4,060					
1st Floor						
Demolition			1,000			
Classrooms/Small Performance	4,500					
Venues						
Restrooms	550					
Circulation	1,840					
2nd Floor						
Demolition			1,000			
Circulation	1,070					
Classrooms/Small Performance	5,760					
Venues						
Restrooms	300					
MAUDELLE SHIREK - OPTION B - GSF	**22,620**	**SF**	**2,700**			
VETERANS MEMORIAL BUILDING - OPTION B						
NEW MEETING HALL - City Offices / Council Chambers / Community / Meeting Spaces						
Basement						
Public Serving	1,930					
Offices	4,465					
Circulation	990					
Storage	2,050					
First Floor						
Public Serving	8,400					
Restrooms	450					
Circulation	2,090					
Second Floor						
Circulation	1,205					
Offices	3,530					
Storage	325					
Restrooms	160					
VETERANS MEMORIAL BUILDING - OPTION B - GSF	**25,595**	**SF**				
2180 MILVIA - OPTION B						
New construction single story at grade						
Council Chambers						
Program Room/ Storage/Food	1,250					
Café/Restaurant	1,250					
Site Work			3,000			
2180 MILVIA - OPTION B - GSF	**2,500**	**SF**	**3,000**			

BERKELEY CIVIC CENTER - OPTION B

OPTION B SUMMARY	GROSS FLOOR AREA	$/SF MIDRANGE	MID-RANGE	LOW (-10%)	HIGH (+10%)	COMMENTS
PRELIMINARY ORDER OF MAGNITUDE			**X $1,000**	**X $1,000**	**X $1,000**	
MAUDELLE SHIREK BECOMES CULTURAL HIVE						
MAUDELLE SHIREK - OPTION B						
Seismic Retrofit (BPOE)	24,000	440.00	10,560	9,504	11,616	City of Berkeley Budget worksheet 4/10/2019
Renovate existing building	22,620	$320.00	7,238	6,515	7,962	
Demolish (E) building	2,700	$30.00	81	73	89	partial demo
Front entry stair and platform	2,300	$25.00	58	52	63	
Surface Parking	15,000	$5.00	75	68	83	
Landscape/Exterior Improvements	5,000	$8.00	40	36	44	
Utilities - upgrade existing	5,000	$15.00	75	68	83	
MAUDELLE SHIREK - OPTION B- TOTAL	**22,620**	**$801.37**	**18,127**	**16,316**	**19,940**	
VETERANS MEMORIAL BUILDING - OPTION B						
Function as City Hall Offices & Meeting Hall						
Seismic Retrofit (IO)	32,000	1,770.00	56,640	50,976	62,304	City of Berkeley Budget worksheet 4/23/2019
Renovate existing building	25,595	$320.00	8,190	7,371	9,009	
Surface Parking	8,000	$5.00	40	36	44	
Front entry	1,500	$15.00	23	20	25	
Utilities - upgrade existing	6,000	$15.00	90	81	99	
VETERANS MEMORIAL BUILDING - OPTION B - TOTAL	**25,595**	**$2,538.89**	**64,983**	**58,484**	**71,481**	
NEW SOCIAL SERVICES BUILDING - OPTION B						
New Social Services Building	7,600	$562.50	4,275	3,848	4,703	
Parking lot rework	3,000	$25.00	75	68	83	
New Site Utilities	7,600	$15.00	114	103	125	
NEW SOCIAL SERVICES BUILDING - OPTION B - TOTAL	**7,600**	**$587.37**	**4,464**	**4,019**	**4,911**	
2180 MILVIA - OPTION B						
Program Room / Storage / Food / Café / Restaurant						
New Building - Single story	2,500	$750.00	1,875	1,688	2,063	
Existing Buildings Tie-in	1,000	$140.00	140	126	154	
Ramp / hardscape	4,750	$30.00	143	128	157	
Landscape/Exterior Improvements	3,000	$10.00	30	27	33	
Utilities for new building	2,000	$30.00	60	54	66	
2180 Milvia Option B - Total	**3,500**	**$3,193.00**	**11,176**	**10,061**	**12,295**	

KEY CRITERIA CIVIC CENTER - OPTION C

FLOOR	AREA	UoM	OTHER	PERIMETER	AV. HEIGHT	COMMENTS
MAUDELLE SHIREK BECOMES THE BERKELEY CENTER / BERKELEY THINK						
Basement						
Offices	4,060					
Community meeting Rooms	4,540					
First Floor						
Exhibit gallery	3,210					
Public Serving	1,710					
Circulation	1,830					
Second Floor						
Public Serving	2,100					
Circulation	1,030					
Offices	1,805					
Storage	1,675					
Restrooms	560					
GSF	**22,520**	**SF**				
VETERANS MEMORIAL BUILDING BECOMES CULTURAL HIVE						
Basement						
Public Serving	6,820					
Circulation	1,640					
Storage	1,460					
First Floor						
Performance	4,200					
Public Serving	3,180					
Restrooms	350					
Circulation	2,090					
Second Floor						
Public Serving	2,385					
Circulation	1,205					
Exhibits	1,380					
Storage	90					
Restrooms	160					
GSF	**24,960**	**SF**				
2180 MILVIA - OPTION C						
New construction single story at grade						
New Meeting Hall	6,800					new construction
Program Room/ Storage/Food	3,940					new construction
Interior Work Remodel Existing	3,535					remodel existing
Covered Courtyard	3,400					
Site Work ramp & stairs	2,000					
2180 MILVIA - OPTION C - GSF	**19,675**	**SF**	**-**			

BERKELEY CIVIC CENTER - OPTION C

OPTION C SUMMARY	GROSS FLOOR AREA	$/SF MIDRANGE	MID-RANGE	LOW (-10%)	HIGH (+10%)	COMMENTS
PRELIMINARY ORDER OF MAGNITUDE			**X $1,000**	**X $1,000**	**X $1,000**	
MAUDELLE SHIREK BECOMES THE BERKELEY CENTER / BERKELEY THINK						
MAUDELLE SHIREK - OPTION C						
Seismic Retrofit (BPOE)	24,000	440.00	10,560	9,504	11,616	City of Berkeley Budget worksheet 4/10/2019
Renovate existing building	22,520	$270.00	6,080	5,472	6,688	
Demolish (E) building	2,700	$30.00	81	73	89	partial demo
Front entry stair and platform	2,300	$25.00	58	52	63	
Surface Parking	15,000	$5.00	75	68	83	
Landscape/Exterior Improvements	5,000	$8.00	40	36	44	
Utilities	5,000	$15.00	75	68	83	existing - upgrade
MAUDELLE SHIREK - OPTION C - Total	**24,000**	**$707.04**	**16,969**	**15,273**	**18,666**	
VETERANS MEMORIAL BUILDING - OPTION C						
Cultural Hive - Non-profit run / Arts Education / Rentable Spaces						
Seismic Retrofit (BPOE)	32,000	450.00	14,400	12,960	15,840	
Renovate existing building	24,960	$320.00	7,987	7,188	8,786	
Surface Parking	8,000	$5.00	40	36	44	
Front entry	1,500	$25.00	38	34	41	
Utilities	6,000	$15.00	90	81	99	existing - upgrade
VETERANS MEMORIAL BUILDING - OPTION C - Total	**32,000**	**$704.83**	**22,555**	**20,299**	**24,810**	
NEW SOCIAL SERVICES BUILDING - OPTION C						
New Social Services Building	7,600	$562.50	4,275	3,848	4,703	
Parking lot rework	3,000	$25.00	75	68	83	
New Site Utilities	7,600	$15.00	114	103	125	
NEW SOCIAL SERVICES BUILDING - OPTION C - TOTAL	**7,600**	**$587.37**	**4,464**	**4,019**	**4,911**	
2180 MILVIA - OPTION C						
New Meeting Hall / Storage / Food / Café / Restaurant						
New Meeting Hall	6,800	$950.00	6,460	5,814	7,106	single story to match (E) courtyard, building ht = 28ft from ext. grd.
Program Room/ Storage/Food	3,940	$750.00	2,955	2,660	3,251	single story, bldg. ht = 12ft from ext. grd
Interior Work Remodel Existing	3,535	$160.00	566	509	622	
Covered Courtyard	3,400	$120.00	408	367	449	
Site Work ramp & stairs	4,000	$30.00	120	108	132	
Landscape/exterior improvement	1	$60,000.00	60	54	66	allowance
Utilities for new building	1	$150,000.00	150	135	165	allowance
2180 Milvia Option C - Total	**19,675**	**$998.56**	**19,647**	**17,685**	**21,613**	

Berkeley Civic Center Visioning
Program Cost Plan
Berkeley, California

Berkeley Civic Center Program Package
April 14, 2020 rev2

ALTERNATES DETAIL - ROOFTOP ADDITION

GSF : 5,000

ALTERNATES SUMMARY	GROSS FLOOR AREA	$/SF MIDRANGE	MID-RANGE	LOW (-10%)	HIGH (+10%)	COMMENTS
			X $1,000	**X $1,000**	**X $1,000**	
BERKELEY CIVIC CENTER - ROOFTOP ADDITION						
VETERANS MEMORIAL BUILDING ROOFTOP ADDITION - APPLY TO ALL OPTIONS (OPTION A, B & C)						
Selective demolition	15,000	$12.00	180	162	198	
Foundation upgrade	5,000	$25.00	125	113	138	
Structural upgrade	15,000	$50.00	750	675	825	
Rooftop roof deck upgrade	5,000	$30.00	150	135	165	
Rooftop waterproofing & drainage	5,000	$35.00	175	158	193	
New roof above deck	3,500	$65.00	228	205	250	
Roof deck feathers and amenities	1,500	$40.00	60	54	66	
New parapet and railing	5,000	$25.00	125	113	138	
New stair structure	400	$90.00	36	32	40	
Refinish - interior	15,000	$15.00	225	203	248	
Refinish & add exterior cladding	15,000	$22.00	330	297	363	
MEP rework	15,000	$45.00	675	608	743	
New Elevator to roof top	1	$250,000	250	225	275	
Mark-ups & Contingency	5,000	$231.60	1,158	1,042	1,274	
ROOFTOP ADDITION - Total	**5,000**	**$893.30**	**4,466**	**4,022**	**4,916**	
ALTERNATE #1					**4,466**	

KEY CRITERIA CIVIC CENTER PARK

AREA TABULATION

	AREA	NUMBER	UOM	COMMENTS
SCHEME A				
Grass / Open Green	49,626		SF	
Hardscape	54,630		SF	
Planting	16,890		SF	
Playscape	7,500		SF	
Special Feature	10,139		SF	
Subtotal	**138,785**	**SF**		
Street Improvement + Crossings	69,000		SF	
New Tree Planting		20	EA	
Climbing Structure		1	LS	
SCHEME A - GSF Site Area	**207,785**	**SF**		
SCHEME B				
Grass / Open Green	47,040		SF	
Hardscape	64,565		SF	
Planting	12,680		SF	
Playscape	7,500		SF	
Special Feature	7,000		SF	
Subtotal	**138,785**	**SF**		
Street Improvement + Crossings	67,400		SF	
New Tree Planting		20	EA	
Skatepark		1	LS	
SCHEME B - GSF Site Area	**206,185**	**SF**		
SCHEME C				
Grass / Open Green	48,037		SF	
Hardscape	56,389		SF	
Planting	16,913		SF	
Playscape	7,500		SF	
Special Feature	9,946		SF	
Subtotal	**138,785**	**SF**		
Street Improvement + Crossings	67,400		SF	
New Tree Planting		20	EA	
Pergola & Vegetable Garden		1	LS	
SCHEME C - GSF Site Area	**206,185**	**SF**		

BERKELEY CIVIC CENTER PARK - LANDSCAPING

CIVIC PARK SUMMARY	GROSS AREA	$/SF MIDRANGE	MID-RANGE	LOW (-10%)	HIGH (+10%)	COMMENTS
PRELIMINARY ORDER OF MAGNITUDE			**X $1,000**	**X $1,000**	**X $1,000**	
BERKELEY CIVIC CENTER PARK - LANDSCAPING						
SCHEME A						
Grass / Open Green	49,626	$6.00	298	268	328	
Hardscape	54,630	$32.00	1,748	1,573	1,923	
Planting	16,890	$15.00	253	228	279	
Playscape	7,500	$20.00	150	135	165	
Special Feature	10,139	$23.00	233	210	257	
Rough Grading & Site Demolition	138,785	$3.50	486	437	534	
Street Improvement + Crossings	69,000	$15.00	1,035	932	1,139	
New Tree Planting	20	$2,700	54	49	59	
Climbing Structure	1	$33,750	34	30	37	
Misc. site furniture / fountain						excluded
Scheme A Total	**207,785**	**$20.65**	**4,291**	**3,862**	**4,721**	
SCHEME B						
Grass / Open Green	47,040	$6.00	282	254	310	
Hardscape	64,565	$32.00	2,066	1,859	2,273	
Planting	12,680	$15.00	190	171	209	
Playscape	7,500	$20.00	150	135	165	
Special Feature	7,000	$23.00	161	145	177	
Rough Grading & Site Demolition	138,785	$3.50	486	437	534	
Street Improvement + Crossings	67,400	$15.00	1,011	910	1,112	
New Tree Planting	20	$2,700	54	49	59	
Skatepark	1	$162,000	162	146	178	
Misc. site furniture / fountain						excluded
Scheme B Total	**206,185**	**$22.13**	**4,562**	**7,968**	**9,738**	
SCHEME C						
Grass / Open Green	48,037	$6.00	288	259	317	
Hardscape	56,389	$32.00	1,804	1,624	1,985	
Planting	16,913	$15.00	254	228	279	
Playscape	7,500	$20.00	150	135	165	
Special Feature	9,946	$23.00	229	206	252	
Rough Grading & Site Demolition	138,785	$3.50	486	437	534	
Street Improvement + Crossings	69,000	$15.00	1,035	932	1,139	
New Tree Planting	20	$2,700	54	49	59	
Pergola & Vegetable Garden	1	$121,500	122	109	134	
Misc. site furniture / fountain						excluded
Scheme C Total	**207,785**	**$21.28**	**4,421**	**11,947**	**14,602**	