

# SAN JOSE STATE UNIVERSITY Spartan Complex Feasibility Study



**Uchida Hall**



**Uchida Annex**



**SPX Central**



**SPX East**

Prepared by:

Clerkin & Clerkin Project No: 06A01

December 29, 2006  
*revised*

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## A. EXECUTIVE SUMMARY

This report is the result of concerns and issues raised by the CSU Seismic Review Board in regard to the five buildings of the Spartan Complex. San Jose State University commissioned the study to analyze and recommend solutions and costs to potential structural and seismic deficiencies in the Spartan Complex. The report provides an overview of those issues, conditions, and recommendations. While the seismic analysis was underway, programmatic needs, physical barriers building systems, and functional issues were reviewed within the Spartan Complex. The feasibility and nature of modifications to the existing buildings is discussed and a probable estimate of work to accomplish the modifications is noted herein. The recommendations are, by necessity, of a broad and general nature with specific noted elements provided to clarify the scope of potential modifications.

The buildings included in the Spartan Complex are:

- Uchida Hall 1931, cast-in-place concrete
- Uchida Natatorium 1931, cast-in-place concrete
- Uchida Hall Annex 1955, cast-in-place concrete
- Spartan Complex Central 1961, concrete tilt-up panels
- Spartan Complex East 1927 and 1949, cast-in-place concrete
- Total Area 157,800 GSF existing  
166,650 GSF proposed

The major Seismic Modifications recommendations are:

- Roof sheathing for diaphragm modifications – Uchida Hall, Uchida Natatorium and Spartan Complex East
- Strengthen wall/roof connections at all buildings
- Additional roof beams – Uchida Annex, Spartan Complex Central
- Infill existing wall openings to provide greater shear resistance – Uchida Annex and Spartan Complex Central
- New columns and concrete shear walls – Spartan Complex Central

The major recommendation elements for the program, physical barrier, potential Life/Safety issues, and building systems issues for all buildings, in Spartan Complex, are as follows:

- Renovate to meet the present and near future needs of the departments
- Replace HVAC systems
- Modernize electrical and data systems
- Install compliant signage and door hardware
- Stair upgrades
- Provide clear, convenient and accessible means to 2<sup>nd</sup> floors
- Modify restrooms to provide accessibility
- Install low level exit signage and emergency lighting
- Review impacts on historical buildings

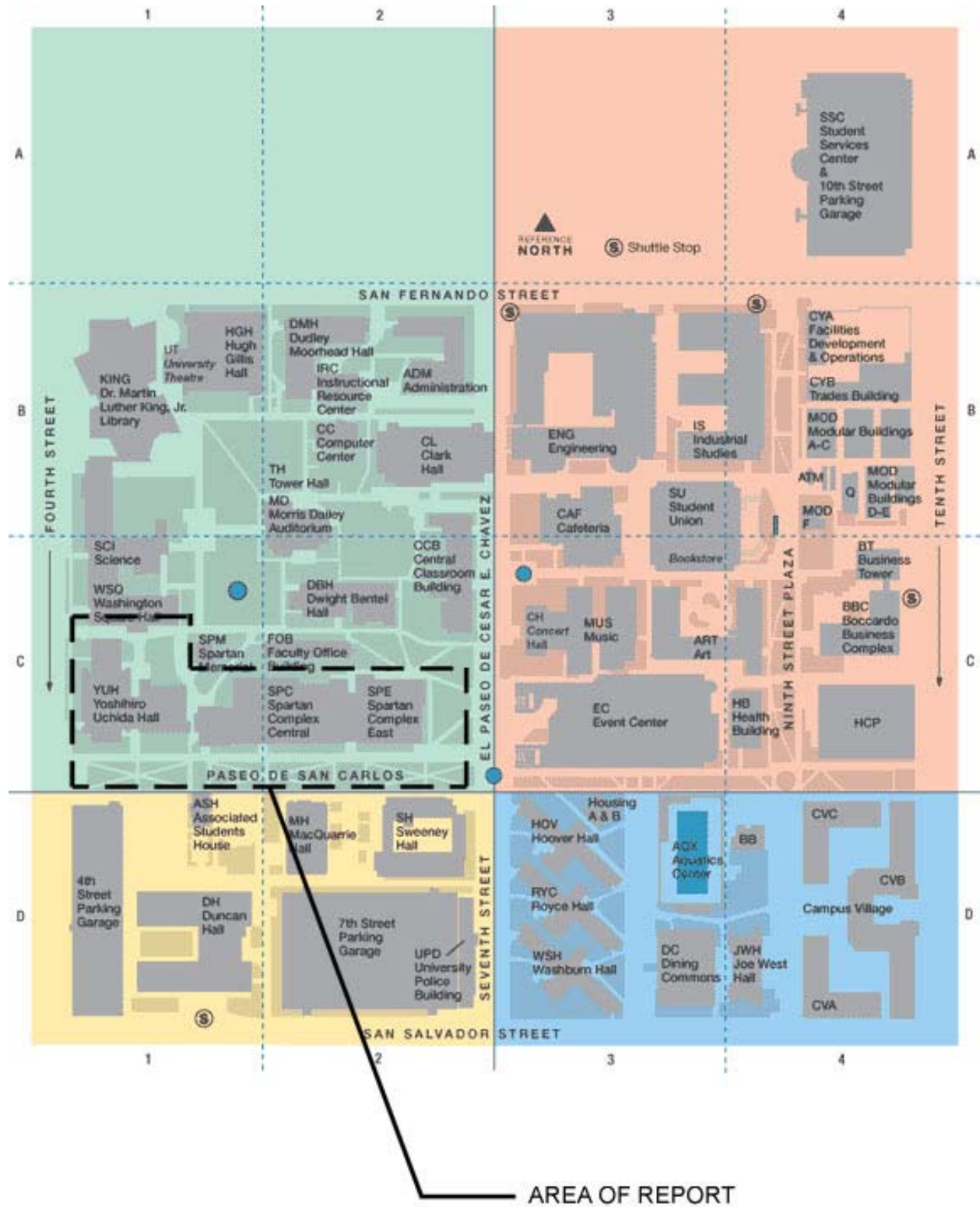
Uchida Natatorium is programmatically and functional obsolete. The recommended program for the space, which will enhance the entire complex space utilization and allow additional programs to be developed, is:

- Judo Teaching Laboratory
- Teaching and office space

The key recommendation is that the buildings can be modified to comply with the requirements of the Campus for structural safety of existing buildings and to meet the program needs of the departments.

The Budgetary Opinion of Cost for the construction described within is \$47,857,000. Work description break down by building and type of proposed work is included in Section G.

**B. CAMPUS PLAN**



## C. METHODOLOGY

The information on the existing conditions of the buildings involved was gathered by 4 main efforts:

1. Review of drawings available from Facilities Planning
2. Visual observations of each building
3. Reviews with the Department of Kinesiology
4. Reviews with the Department of Facilities Development and Operations

These sources are those that are readily available or readily observable. The reviews did not include destructive investigations of the facilities nor detailed measurements of the buildings' installed components.

The site observations were performed on 4 separate occasions:

- December 15, 2005
- January 10, 2006
- January 11, 2006
- December 19, 2006

Access was available to most rooms; though rooms with coded access hardware were generally not available and roof access was not available.

Photographic records were made of existing conditions. Some measurements were taken to provide general verification of sizes or clearances.

Reproductions of floor plans are included for reference. Some elements of seismic structural modifications are noted to clarify the proposals and highlight the feasibility of the proposal.

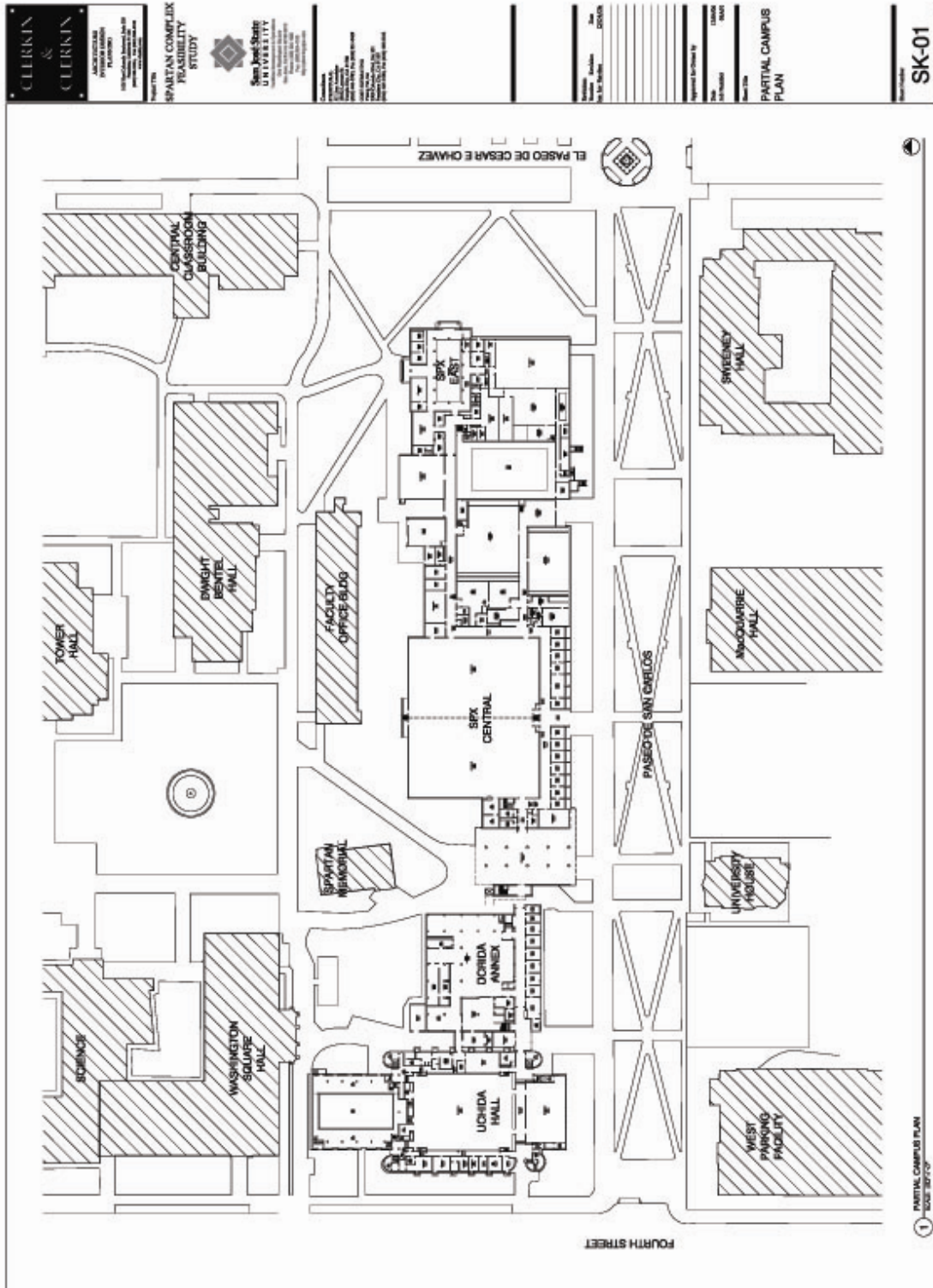
Non-accessible, for this report, will mean, generally, that the path of travel and immediate access do not meet the requirements of the CBC Chapter 11B.

Non-compliant, for this report, will mean that elements with a room or parts of a door do not meet the requirements for that function as noted in the CBC Chapter 11B.

The participants involved in the review are:

Facilities Planning, San Jose State University  
J.C. Lian Associates, Structural Engineers  
Fundament & Associates, MEP Engineers  
Yuang Tai, Inc., Cost Estimators  
Clerkin & Clerkin, Architects

D. PROJECT SITE PLAN



**E. BUILDING BIOGRAPHY BRIEFS**1. Yoshihiro Uchida Hall

Constructed:	1931	
Structure:	Cast-in-place concrete	
Square footage:	1 <sup>st</sup> floor	20,180 sf approx
	<u>2<sup>nd</sup> floor</u>	<u>9,201 sf approx</u>
	Total	29,380 sf approx

## Present use:

The original gym is used for basketball and volleyball practice, and for volleyball games. The south room is used for wrestling/gymnastics. There are bleachers on four sides of the original gym floor. The ancillary spaces under the bleachers are locker rooms, offices, team rooms, restrooms, and maintenance rooms. Circular stairs, at each corner of the building connect to the bleacher level. There is no elevator to the main or upper bleacher level. Access to the gym floor and the wrestling/gymnastics room is via a raised corridor running east/west. This corridor also connects to the corridor system connecting the Spartan Complex buildings. The building is considered to have potential to be part of possible California Register Historical District for the campus.

2. Uchida Natatorium

Constructed:	1931	
Structure:	Cast-in-place concrete	
Square footage:	1 <sup>st</sup> floor	5,850 sf approx
	Lower level	3,080 sf approx
	<u>Proposed add'l</u>	<u>2,900 sf approx</u>
	Total proposed	11,830 sf approx

The former Natatorium is located at the north end of Uchida Hall. The pool is drained and is presently used as a temporary and informal storage area. Beneath the extant seating are maintenance offices and mechanical equipment rooms. The building is considered to have potential to be part of possible California Register Historical District for the campus.

The building has had several modifications. The documented alterations have been:

- 1953 Natatorium skylights

3. Uchida Hall Annex

Constructed:	1955	
Structure:	Cast-in-place concrete	
Square footage:	1 <sup>st</sup> floor	14,300 sf approx
	<u>2<sup>nd</sup> floor</u>	<u>11,500 sf approx</u>
	Total	25,800 sf approx

The annex is a 2-story structure. Large locker room facilities are located on the 1<sup>st</sup> floor along with offices, which are on the south side of the building. The 2<sup>nd</sup> floor has several classrooms, and large wrestling and exercise rooms. The 1<sup>st</sup> floor has a more open and visible lobby space which is part of the east/west corridor, connecting, on the east to Uchida Hall's lobby, and to the covered concourse at the west side of Spartan Complex Central.

The buildings have had several modifications. The documented alterations have been:

- 1987 Roofing
- 1994 Gymnasium lighting

4. Spartan Complex Central (SPX Central)

Constructed:	1961	
Structure:	Concrete Tilt-Up Panels and Cast-in-place concrete	
Square footage:	1 <sup>st</sup> floor	48,110 sf approx
	Proposed 1 <sup>st</sup> floor add'l	399 sf approx
	2 <sup>nd</sup> floor	20,230 sf approx
	Proposed 2 <sup>nd</sup> floor add'l	5,550 sf approx
	<u>Covered Area</u>	<u>2,520 sf approx</u>
Total	74,290 sf approx	

SPX Central is a multi-use building housing disparate functions.

On the days visited, Spartan Complex Central was the heaviest used of the buildings within the Spartan Complex.

The uses of Spartan Complex Central include:

Divisible gymnasium, offices, classrooms, locker rooms, dance studio, gymnastic room, and mechanical spaces. The west side is dominated by the covered concourse. An exterior elevator is on the west side of this space. It provides access via a bridge, to the Uchida Hall Annex, and to the west classrooms of Spartan Complex Central.

A narrow driveway separates Uchida Hall from Spartan Complex Central. The elevator to the 2<sup>nd</sup> floor of Uchida Hall Annex and the 2<sup>nd</sup> floor west classrooms of SPX Central is accessed from this driveway. There is no elevator to the east 2<sup>nd</sup> floor spaces and restrooms. There is a rail-mounted chair lift to the vestibule of the 2<sup>nd</sup> floor dance studio. The 1<sup>st</sup> floor corridor connects to the 1<sup>st</sup> floor of Spartan Complex East. .

The covered concourse has a small lobby on its east side. This lobby is the end of the "Z" shaped corridor connecting to Spartan Complex – East. The 1<sup>st</sup> floor has offices along one perimeter, a large, divisible gymnasium, a large locker room complex, and a couple of classrooms on the other perimeters.

The 2<sup>nd</sup> floor east and west portions are not connected. The west side is accessed from the exterior elevator that connects by bridges to the west classrooms at to the 2<sup>nd</sup> floor of the Uchida Hall Annex. The east side 2<sup>nd</sup> floor has a large dance/performance studio and gymnastics equipment room. There is no elevator. The west side stair leads to a small corridor. The east side stair leads to a narrow vestibule, which is the main entry to the dance studio. A classroom has been created at the 3<sup>rd</sup> floor, is not shown on the original floor plans, but is shown in the original sections as a storage room. It is a low space, duct work to approximately 7'-0" AFF.

The documented modifications to the building have been mostly utility upgrades and a re-roofing project.

5. Spartan Complex East (SPX East)

Constructed:	1927	
Addition:	1949	
Demolition of east side gym:	1985	
Structure:	Cast-in-place concrete	
Square footage:	1 <sup>st</sup> floor	23,900 sf approx
	<u>Basement</u>	<u>1,450 sf approx</u>
	Total	25,350 sf approx

This is an athletic facility and office building with later additions and demolitions.



The original Women's gymnasium included a full size gym (where the present grass court is, east of the existing building), and locker rooms in the present "dance" studio. The 1949 addition relocated the locker rooms, added a natatorium, classrooms, and several offices, which are arranged to form an open court. Accesses to all spaces, except the Natatorium, are on the 1<sup>st</sup> floor level. Entry to the courtyard is up 4 steps from the campus. The 1<sup>st</sup> floor is connected to the 1<sup>st</sup> floor corridor of SPX Central. The building is considered to have potential to be part of possible California Register Historical District for the campus.

The building has had several modifications, the documented alterations have been:

- 1949 - Addition to Women's Gym
- 1985 - Demolition of old gym

**F. STRUCTURAL REVIEW**

The structural review was prepared by J.C. Lian and Associates. It identifies the critical modifications necessary but not all the modifications that should be enacted for the buildings. It is a snap shot. Alterations necessary for coordination of the mechanical, electrical systems were not identified but should be included in overall scope of the completed project, as should miscellaneous modifications and attachments. They will be identified during the future phases of the project.

Detailed calculations are not included in the report. A seismic report meeting was conducted with Mr. Ted Zsuttu, CSU, and campus representatives to review the proposed scope of work and the procedures. The reviewers were in general agreement with the proposed approach and the work outlined. Additional calculations were requested for clarification and confirmation of proposed descriptive areas. These were reviewed and incorporated in to the report. It was agreed that additional clarifying calculations should not have a significant cost impact on the project opinion of cost.

## 1. YOSHIHIRO UCHIDA HALL and NATATORIUM

### Description of building:

- The date on the original drawings is 1930.
- The building is a one-story gymnasium/pool complex plus classrooms.
- Its plan dimensions are approximately 250 feet by 120 feet.
- The foundation system consists of spread and continuous concrete footings.
- The roof framing consists of steel trusses supporting wood purlins and 2" wood decking. The perimeter and main interior bearing walls are concrete.
- The main gym has a wood-framed seating gallery on four sides, and the pool area has a concrete seating gallery on two sides.
- The lateral bracing system is wood-sheathed diaphragms, with supplementary horizontal, steel diagonal bracing, spanning to concrete shear walls.

### Listing of recommended strengthening details:

See the attached key plans #1 & #2 for locations of the recommended strengthening details.

#### A. New Competition Judo Framing Plan

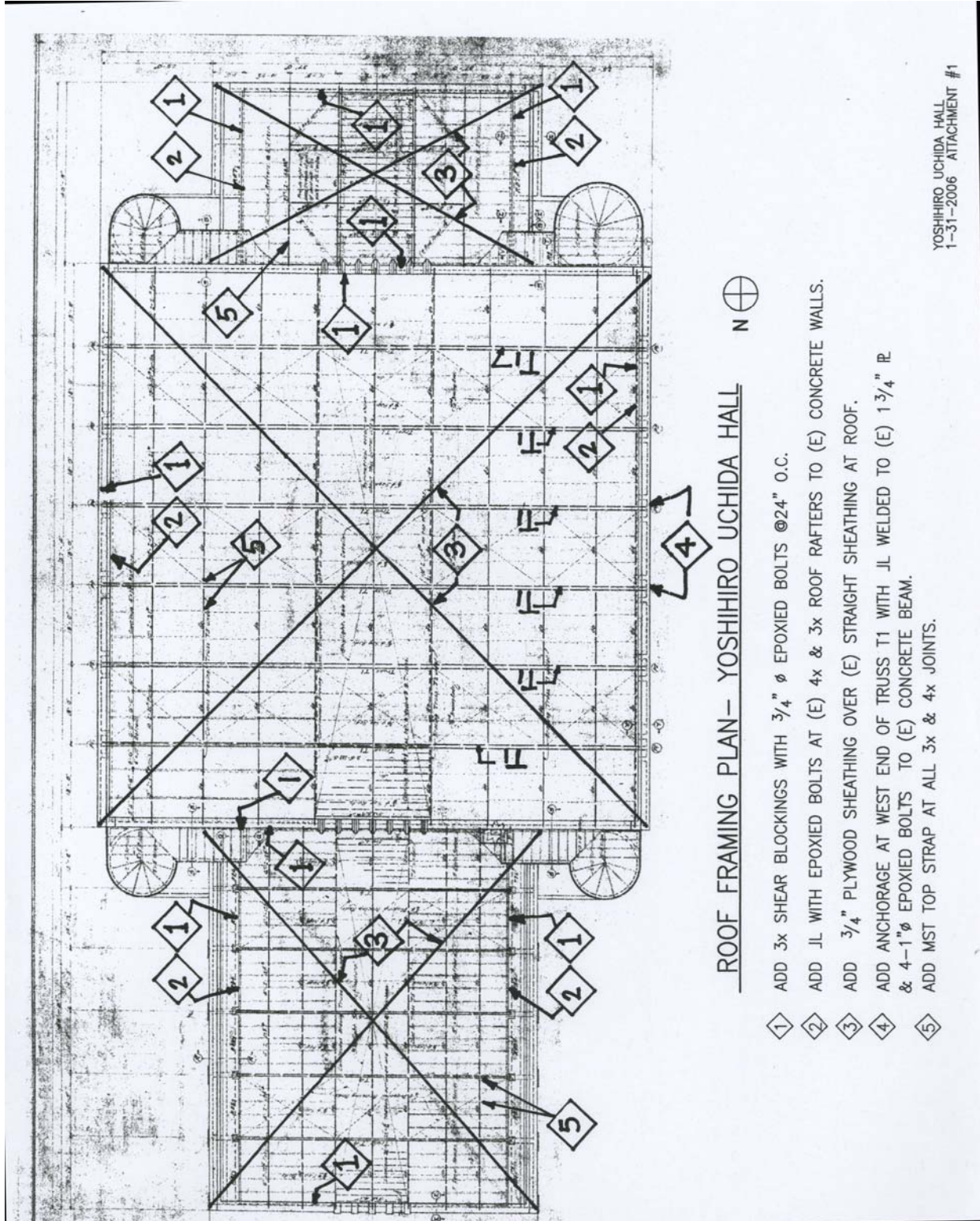
The University has requested that we include in our study the closing over of the existing pool and the addition of a new platform for competition judo.

1. Add 2" x 18 gage metal deck with 3-1/4" lightweight concrete topping with #3 @ 18" each way.
2. Add W16 x 36 girders running east-west.
3. Add W16 x 31 beams running north-south.
4. Add W14 x 43 columns supporting the girders, with 6 foot square footings.
5. Add ledger angle and 8" x 24" high CMU wall at all four sides, with epoxied dowels drilled into the supporting concrete wall below.

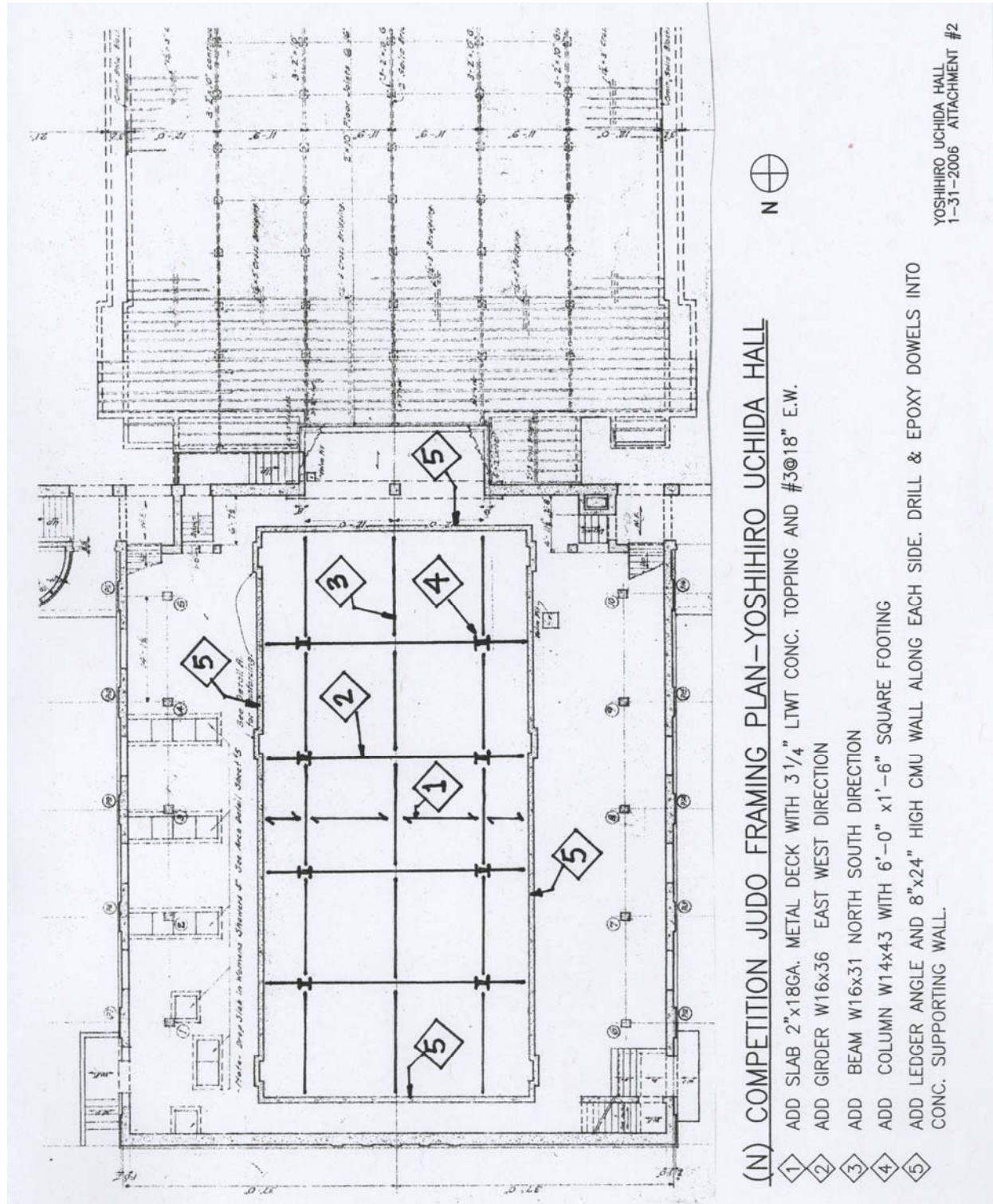
#### B. Roof Framing Plan

1. Add 3x shear blocking at four sides of each roof level, with 3/4" bolts @ 24" drilled and epoxied into existing concrete.
2. Add double angles with drilled and epoxied bolts at each existing 3x and 4x rafter to existing concrete walls.
3. Add 3/4" plywood sheathing over all existing 2" roof sheathing.
4. Add anchorage at the west end of Trusses T1, using double angles welded to existing 1-3/4" base plate and with 4-1" anchor bolts drilled and epoxied to the existing concrete support beam.
5. Add MST splice straps over the new plywood, located at all existing 3x and 4x rafter joints.

UCHIDA HALL



UCHIDA HALL



## 2. YOSHIHIRO UCHIDA HALL ANNEX

### Description of building:

- The date on the original drawings is 1955.
- The complex consists of a two-story gymnasium/classroom area, a one-story sundeck over offices on the south side, a one-story miscellaneous-use area at the west side, and a one-story mechanical room at the north side.
- The plan dimensions are approximately 110 feet by 140 feet.
- The foundation system consists of spread and continuous concrete footings.
- The second floor of the gym is a concrete slab supported on concrete columns.
- The high roof over the gym is metal deck over steel beams. The sundeck/roof is lightweight concrete topping over metal deck and steel beams. The miscellaneous-use roof is metal deck over steel beams and concrete/cmu walls. The mechanical room roof is metal deck over steel beams. The perimeter walls and interior bearing walls are concrete.
- The lateral bracing system consists of floor and roof diaphragms spanning to concrete shear walls. The high roof also has horizontal, steel diagonal bracing.

### Listing of recommended strengthening details:

See the attached key plans #1 to #3 for locations of the recommended strengthening details.

#### A. First Floor and Foundation Plan

1. Infill existing wall openings between the first and second floors at the east and west ends of the high south wall, with drilled and epoxied dowels at all sides.
2. Cut two new door openings to access the stair at the west end.

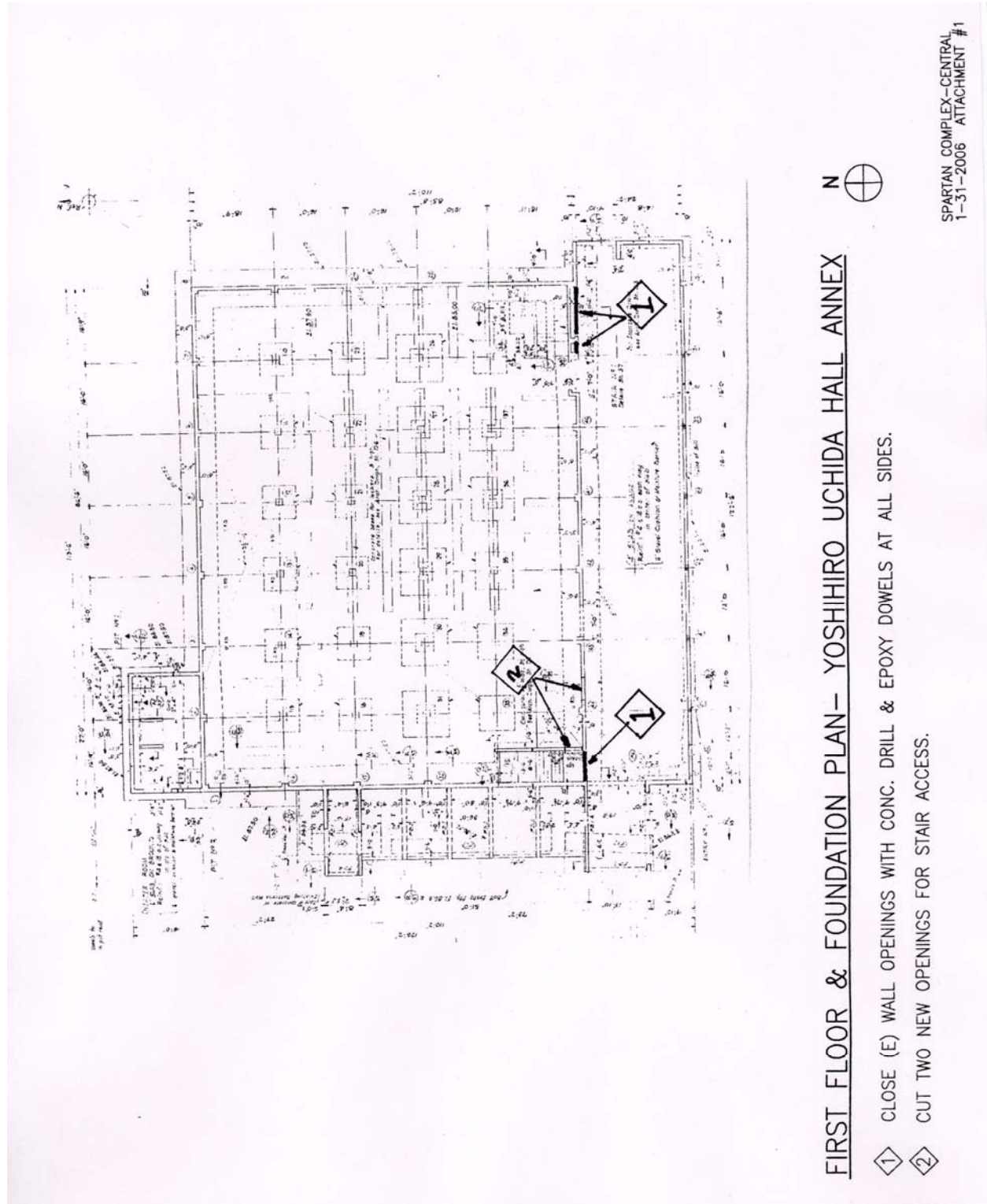
#### B. Second Floor and Low Roof Framing Plan

1. Add 8" beams at 1/3 points at designated locations, with double angles and 4-3/4" bolts drilled and epoxied to existing concrete walls, and 1/4" TEK screws @6" from top flange to existing deck soffit.
2. Add 8" beams at midbay at designated locations, with connections same as in item 1.
3. Add ledger angles at alternate bays at designated walls with 3/4" drilled and epoxied bolts @ 24" to existing concrete walls, and 1/4" TEK screws @ 6" from top leg to existing deck soffit.
4. Add seat angles at designated wall welded to bottom flange of each existing beam, with 2-3/4" bolts drilled and epoxied to existing concrete.
5. Infill existing wall at designated locations between second floor and roof, with drilled and epoxied dowels at all sides.

#### C. Roof Framing Plan

1. Add 6" square horizontal TS beams with double angles between existing 16" beams at the north and south walls, with 3/4" drilled and epoxied rods @24" to existing walls and thru-bolted to new TS.
2. Add ledger angles at alternate bays at the east and west walls, with 3/4" drilled and epoxied bolts @24" to concrete, and 1/4" TEK screws @6" from top leg to existing deck soffit.
3. Add horizontal angles at the north and south walls between all existing 16" beams, welded to bottom flange of existing 8" edge beams and 3/4" drilled and epoxied bolts @24" from vertical leg to existing concrete wall.

UCHIDA HALL ANNEX



**FIRST FLOOR & FOUNDATION PLAN— YOSHIHIRO UCHIDA HALL ANNEX**

- ① CLOSE (E) WALL OPENINGS WITH CONC. DRILL & EPOXY DOWELS AT ALL SIDES.
- ② CUT TWO NEW OPENINGS FOR STAIR ACCESS.

SPARTAN COMPLEX—CENTRAL  
1-31-2006 ATTACHMENT #1

UCHIDA HALL ANNEX

**SECOND FLOOR & LOW ROOF FRAMING PLAN—YOSHIHIRO UCHIDA HALL ANNEX**

**1** ADD 8" BEAM @ 1/3 POINTS WITH 4-3/4"  $\phi$  EPOXIED BOLTS TO (E) CONC. WALLS W/1/4" TEK SCREWS @6" TO DECK SOFFIT.

**2** ADD 8" BEAM @ MID BAY WITH 4-3/4"  $\phi$  EPOXIED BOLTS TO (E) CONC. WALLS W/1/4" TEK SCREWS @6" TO DECK SOFFIT.

**3** ADD LEDGER ANGLE L3x3 WITH 3/4"  $\phi$  @24"O.C. EPOXIED BOLTS AT EVERY OTHER BAY TO (E) CONCRETE WALLS. W/ 1/4" TEK SCREW @6" TO DECK SOFFIT.

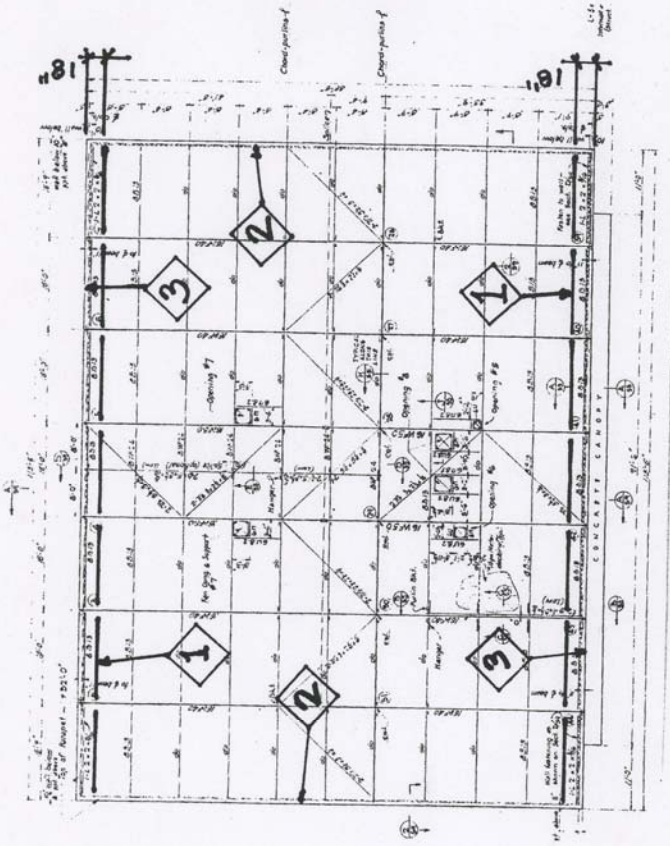
**4** ADD SEAT L 4x4 WELDED TO BOTTOM FLANGE OF EACH BEAM & 2-3/4"  $\phi$  EPOXIED BOLTS TO (E) CONC.

**5** CLOSE (E) WALL OPENINGS WITH CONC. DRILL & EPOXY DOWELS AT ALL SIDES.

YOSHIHIRO UCHIDA HALL ANNEX  
1-31-2006 ATTACHMENT #2



UCHIDA HALL ANNEX



ROOF FRAMING PLAN— YOSHIRO UCHIDA HALL ANNEX

- ① ADD 6" SQ.TUBE BETWEEN (E) 16WF WITH 3/4"φ EPOXIED RODS @24"OC. TO (E) CONCRETE WALLS & THRU-BOLTED TO TUBE.
- ② ADD LEDGER ANGLE L3x3 WITH 3/4"φ @24"O.C. EPOXIED BOLTS AT EVERY OTHER BAY TO (E) CONCRETE WALLS. W/1/4" TEK SCREWS @6" TO DECK SOFFIT.
- ③ ADD L8x4 BETWEEN 16" BEAMS WELDED TO BOTTOM FLANGE OF 8" EDGE BEAMS & 3/4"φ BOLTS @24" EPOXIED TO WALL.

SPARTAN COMPLEX—CENTRAL  
1-31-2006 ATTACHMENT #3

### 3. SPARTAN COMPLEX CENTRAL (SPX CENTRAL)

#### Description of building:

- The date on the original drawings is 1961.
- The complex consists of a combination of one and two-story units, comprised of a large, one-story gymnasium to the west, a smaller, two-story gymnasium to the east, a second story activity area at the west end over a concourse area below, a one-story office area at the south side, and a one-story, miscellaneous-use area at the north side.
- The plan dimensions are approximately 385 feet by 160 feet.
- The foundation system consists of spread and continuous concrete footings.
- The second floors are concrete slabs and beams supported on concrete columns.
- All roofs are metal deck over steel beams.
- All perimeter and main interior bearing walls are concrete except at the west end, where the first story walls are brick.
- The perimeter walls at the large gym are tilt-up concrete panels with cast-in-place concrete pilasters.
- The lateral bracing system is concrete or metal deck diaphragms spanning to concrete or brick shear walls.
- The roof over the large gym also has horizontal, diagonal steel bracing.

#### Listing of the recommended strengthening details:

See the attached key plans #1 to #6 for locations of the recommended strengthening details.

#### West Portion:

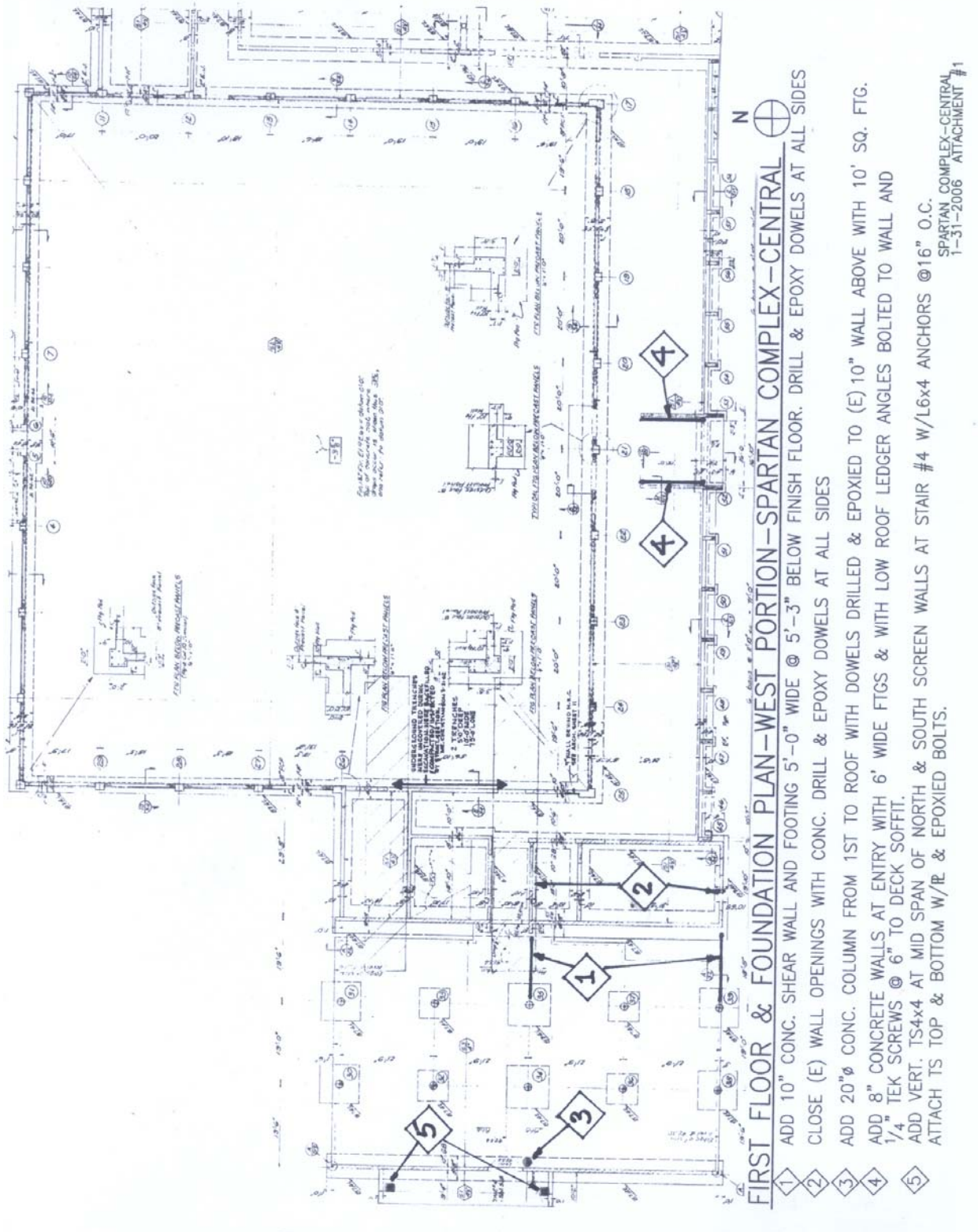
- A. First Floor and Foundation Plan
1. Add 10" concrete shear walls at designated locations between first and second floors, with 5' wide footings and drilled and epoxied dowels at all sides.
  2. Infill existing wall openings with concrete between first and second floors at designated locations, with drilled and epoxied dowels at all sides.
  3. Add 20" diameter concrete column from first floor to roof at designated location, with drilled and epoxied dowels to existing 10" concrete wall between second floor and roof, with new 10' square footing.
  4. Add 8" concrete walls alongside existing entry walls at south side, with roof ledger angles bolted to new walls and ¼" TEK screws @6" to existing deck soffit, with new 6' wide footings.
  5. Add vertical TS 4x4 members at midspan of existing north and south screen walls at Stair #4, with angle anchors @16" to screen wall, and top and bottom plates with epoxied anchor bolts.
- B. Second Floor and Low Roof Framing Plan
1. Add TS 8x12 Low Roof beams at designated locations, with 6-3/4" bolts drilled and epoxied into side of existing concrete pilasters at the north end, with welded angle connected to existing deck soffit with ¼" TEK screws @ 6".
  2. Add vertical TS 4x4 members at midspan of existing north, south and west screen walls at Stair #4, with angle anchors @16" to screen wall, and top and bottom plates with epoxied bolts.
- C. Roof Framing Plan
1. Add 8" beams at midbay or third points at designated locations with 4-3/4" bolts drilled and epoxied to existing concrete walls and ¼" TEK screws @6" at top flange to existing deck soffit.
  2. Add seat angle welded to each end of each tapered beam, with 4-3/4" bolts drilled and epoxied to existing concrete pilaster.

3. Add 10" beams at each pilaster at the east and west tilt-up walls, with double clip angles each end, and 4-3/4" bolts drilled and epoxied to existing concrete pilaster and 1/4" TEK screws @6" from top flange to soffit of metal deck.

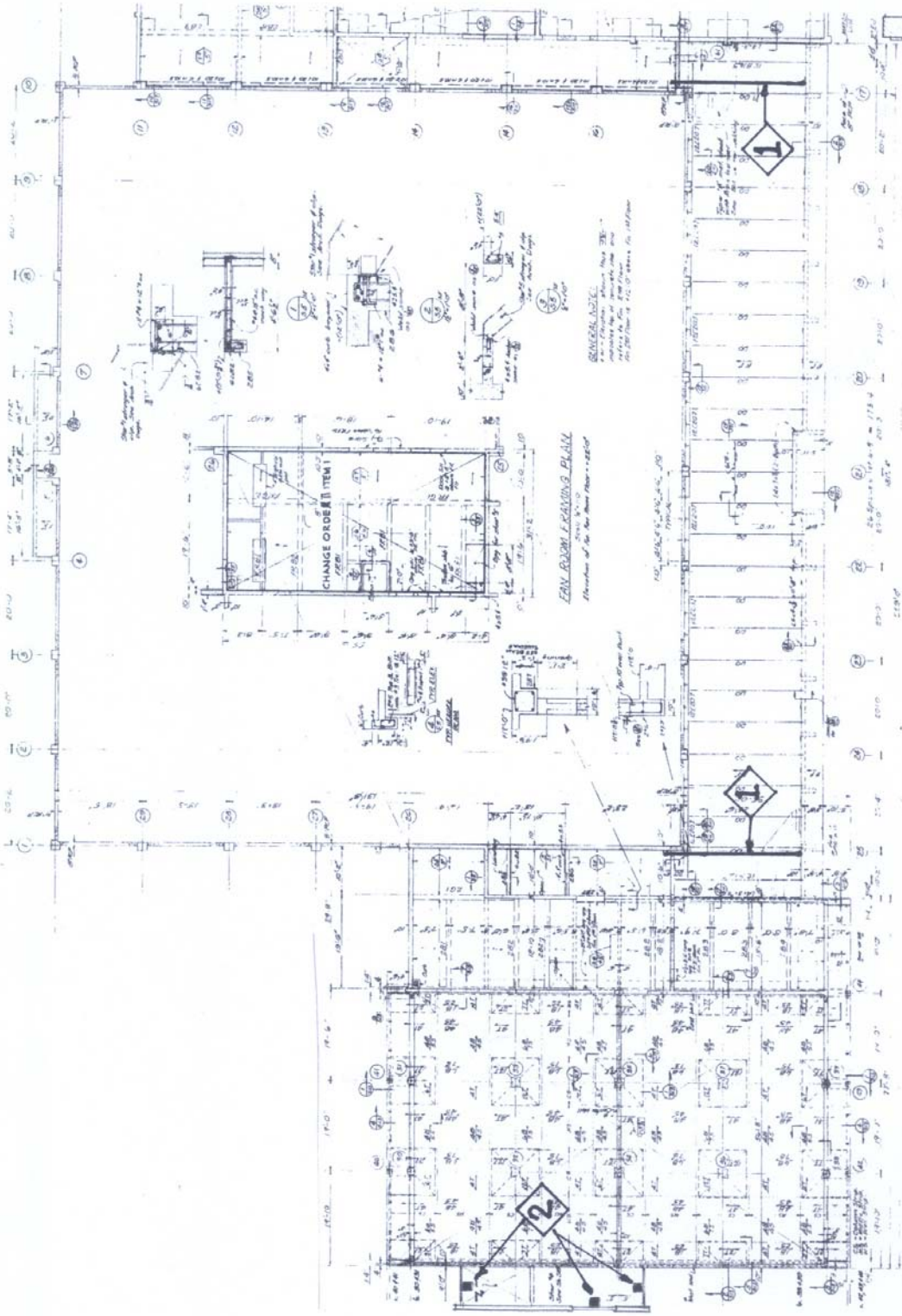
East Portion:

- A. First Floor and Foundation Plan
  1. Add 10" concrete wall at the designated location between the first and second floors, with dowels drilled and epoxied at all sides.
  2. Fill in existing wall openings at the designated locations between the first and second floors, with dowels drilled and epoxied at all sides. Cut new door openings at the designated locations.
- B. Second Floor Framing Plan
  1. Add 8" beams at midbay or third points at designated locations, with 4-3/4" bolts drilled and epoxied to existing concrete walls, and 1/4" TEK screws @6" from top flange to existing deck soffit.
- C. Roof Framing Plan
  1. Add 8" beams at midbay at designated locations, with 4-3/4" bolts drilled and epoxied to existing concrete walls, and 1/4" TEK screws @6" from top flange to existing deck soffit.
  2. Add seat angle welded to exterior ends of existing tapered beams, with 4-3/4" bolts drilled and epoxied to existing concrete walls.

SPX CENTRAL PG.1



SPX CENTRAL PG.2



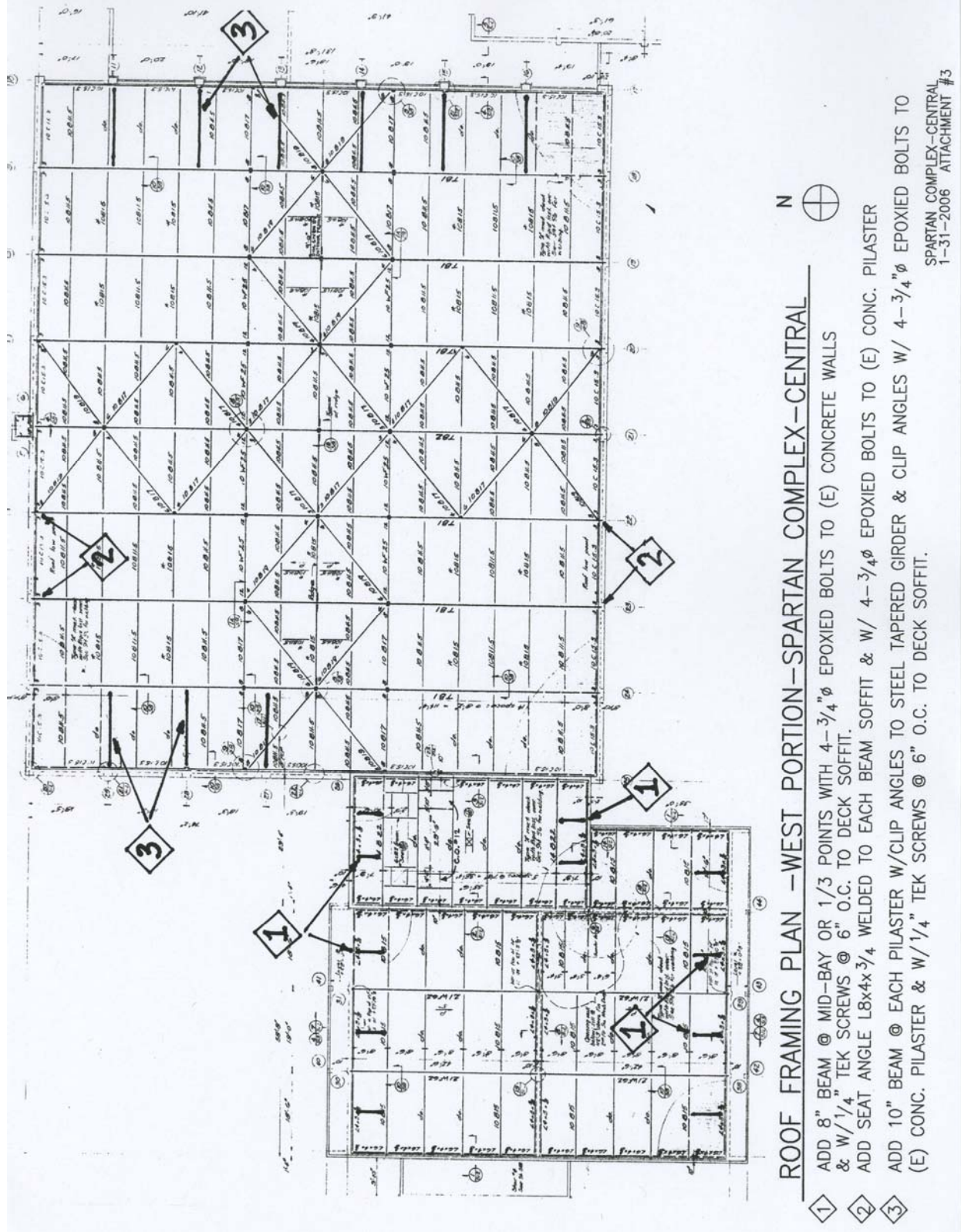
**SECOND FLOOR & LOW ROOF FRAMING PLAN—WEST PORTION—SPARTAN COMPLEX—CENTRAL**

- ① ADD TS 8x12 LOW ROOF BEAMS WITH 6- $\frac{3}{4}$ " $\phi$  EPOXIED BOLTS INTO SIDE OF (E) CONCRETE PILASTERS.  
ADD L3x3 WELDED TO TS WITH  $\frac{1}{4}$ " TEK SCREWS @ 6" TO DECK SOFFIT.
- ② ADD VERT. TS4x4 AT MID SPAN OF NORTH, SOUTH & WEST SCREEN WALLS AT STAIR #4 W/L6x4 ANCHORS @16" O.C.  
ATTACH TS TOP & BOTTOM W/R & EPOXIED BOLTS.

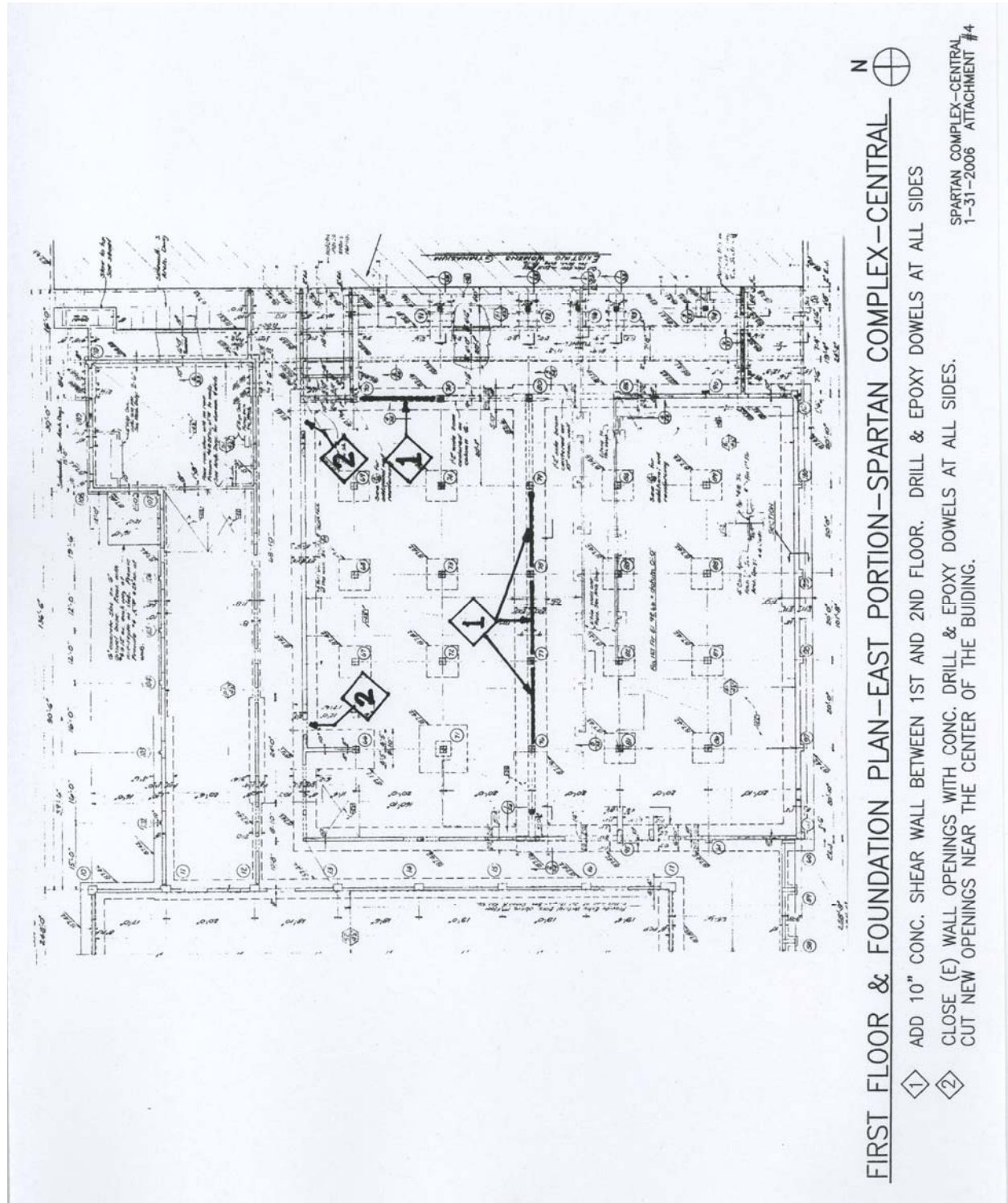


SPARTAN COMPLEX—CENTRAL  
1-31-2006 ATTACHMENT #2

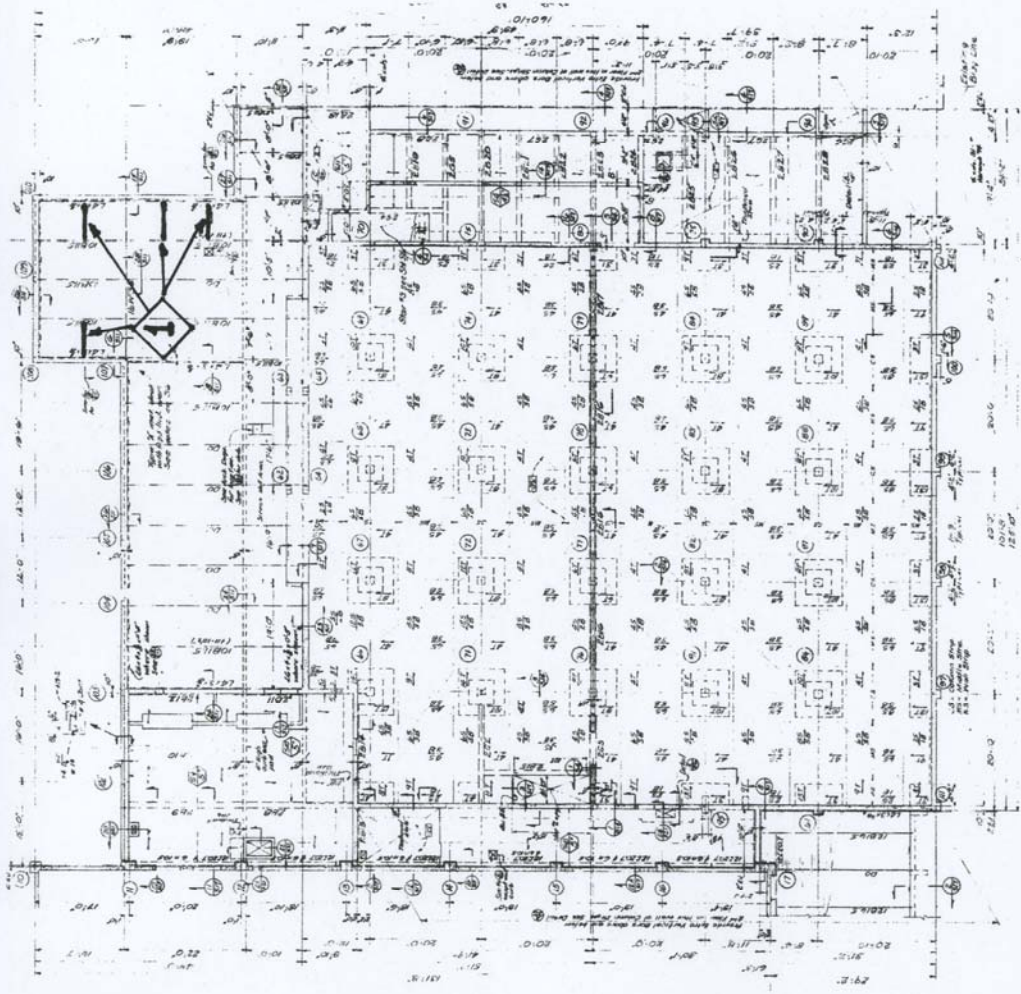
SPX CENTRAL PG.3



SPX CENTRAL PG.4



SPX CENTRAL PG.5

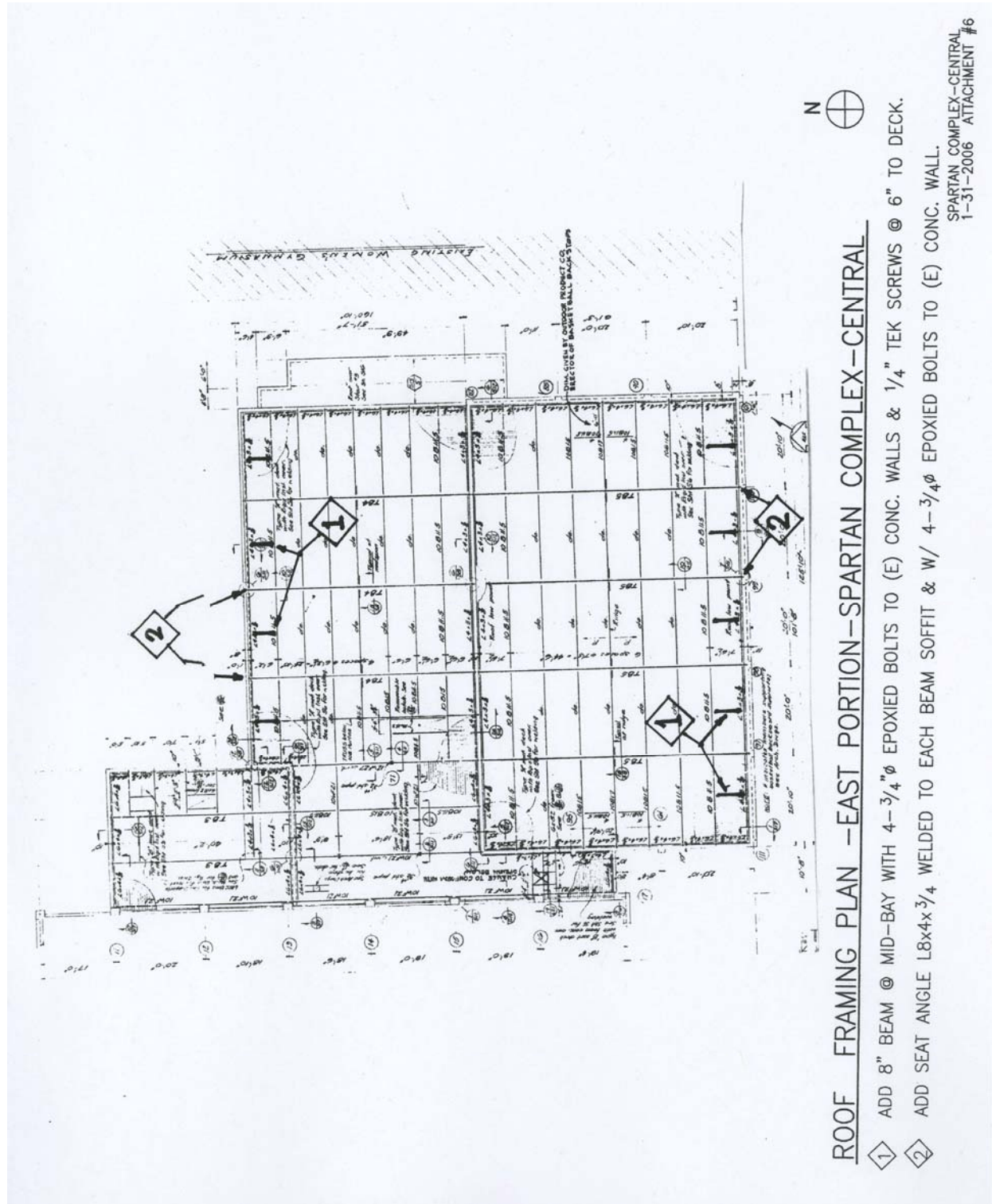


**SECOND FLOOR FRAMING PLAN - EAST PORTION - SPARTAN COMPLEX - CENTRAL**

1 ADD 8" BEAM @ MID-BAY WITH 4- $\frac{3}{4}$ "  $\phi$  EPOXIED BOLTS TO (E) CONC. WALLS &  $\frac{1}{4}$ " TEK SCREWS @ 6" TO DECK.  
 SPARTAN COMPLEX-CENTRAL  
 1-31-2006 ATTACHMENT #5



SPX CENTRAL PG.6



#### 4. SPARTAN COMPLEX EAST (SPX EAST)

##### Description of building:

- The date on the original drawings is 1949.
- The complex consists of two one-story gymnasiums, a one-story pool area, a one-story dressing room area, plus an interior courtyard with adjacent offices.
- There is a partial basement for mechanical.
- The plan dimensions are approximately 171 feet by 168 feet.
- The foundation system consists of spread and continuous concrete footings.
- The roofs over the gyms and pool are 2" wood sheathing over steel beams and steel rigid frames.
- The roofs over the dressing room area, courtyard and offices are concrete slabs and beams.
- The perimeter and interior bearing walls are concrete.
- The lateral bracing system at the wood sheathed roofs appears to be a combination of wood diaphragms acting with concrete shear walls and rigid frames, with supplementary, horizontal steel diagonal bracing. At the other areas, concrete diaphragms span to concrete shear walls.

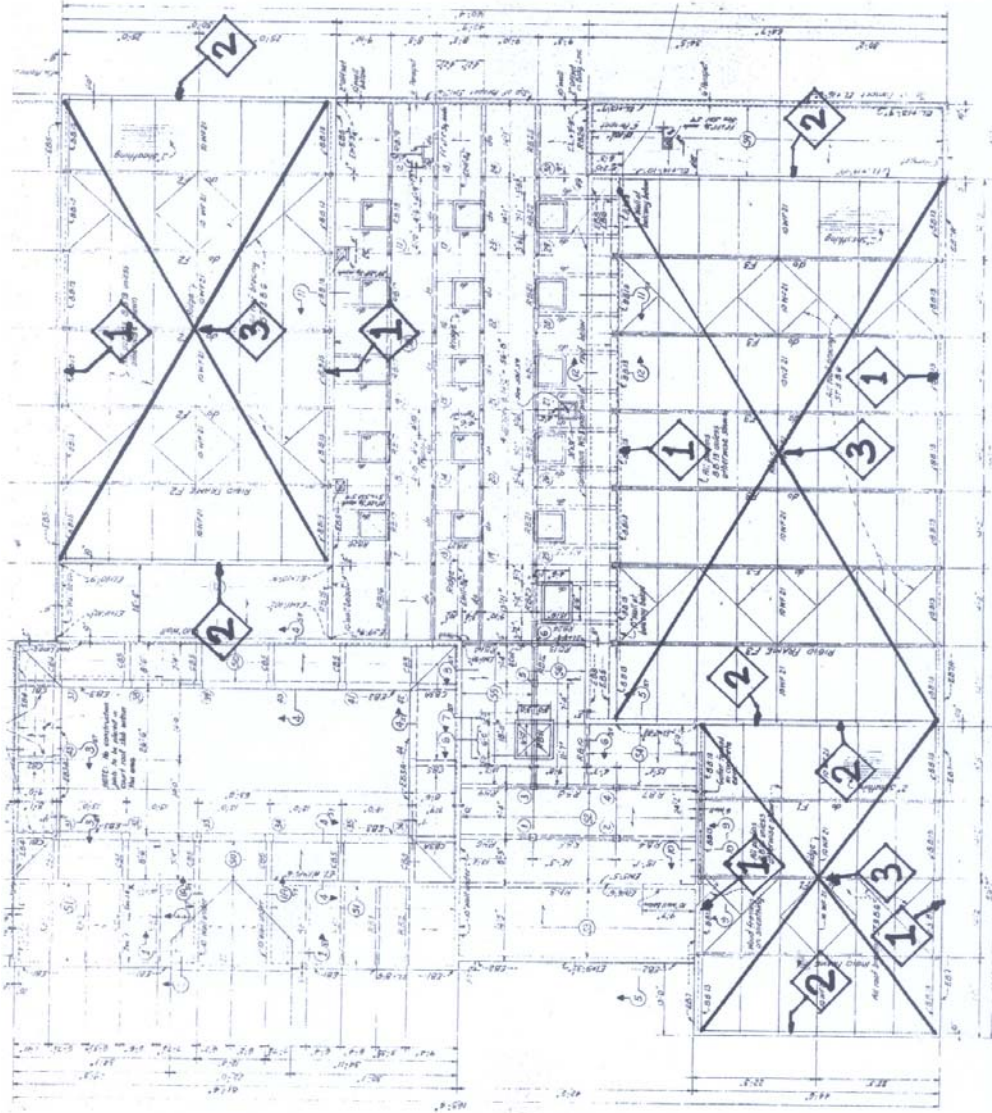
##### Listing of the recommended strengthening details:

See the attached key plan #1 for locations of the recommended strengthening details.

##### A. Roof Framing Plan

1. Drill through webs of all existing 8" edge beams at the designated walls with ¾" bolts @ 36" drilled and epoxied to existing concrete.
2. Add 3x shear blocking at the designated walls under existing 2" decking between existing 10" beams with ¾" bolts @24" drilled and epoxied to existing concrete.
3. Add ¾" plywood sheathing over existing 2" sheathing at all wood roofs.

**SPARTAN COMPLEX EAST**



**ROOF FRAMING PLAN - SPARTAN COMPLEX - EAST**



- ① DRILL THRU WEB OF (E) 8" EDGE BEAMS & ADD 3/4" Ø EPOXIED BOLTS @3'-0" O.C.
- ② ADD 3x SHEAR BLKG UNDER 2x DECKING BETWEEN (E)10WF21 WITH 3/4" Ø EPOXIED BOLTS @24" O.C.
- ③ ADD 3/4" PLYWOOD SHEATHING OVER (E) 2" T&G STRAIGHT SHEATHING AT ROOF.

SPARTAN COMPLEX-EAST  
1-31-2006 ATTACHMENT #1

**G. ARCHITECTURAL, MECHANICAL, ELECTRICAL and PLUMBING REVIEW**

The architectural and building systems review involved a snapshot of the major systems of the buildings. The MEP systems have, generally, not been systematically upgraded since the opening of the buildings. There has been renovation of portions of the complex, e.g., Uchida Hall court and lighting, Uchida Annex court, and partial ADA modifications.

Elements noted herein are those that are typical and readily observable. They do not contain, therefore, those that are related to cutting and patching, replacement for removed materials, nor, at present, unforeseen conditions.

The programmic needs of the departments that utilize the complex were discussed, in particular the Department of Kinesiology as their use is the larger part of the functions. The Department of Athletics, Department of Dance, and the Department of Mexican American Studies all occupy parts of the complex to significantly smaller extents. Conceptual plans were developed in conjunction with the Department of Kinesiology for modifications of the buildings. The conceptual plans are attached herein

Uchida Natatorium is functional obsolete and conceptual plans were developed for conversion into a Judo Laboratory and classroom spaces.

Yoshiro Uchida Hall and Spartan Complex East are being considered for potential historic contributions to the campus. The campus Work contemplated will generally have to comply with the Secretary of the Interior's Guidelines and with State of California codes, particularly Title 24, Part 8.

## 1. Typical Observations and Recommendations

- A. General comments for the Spartan Complex. The following are elements that are common to the five structures. Variation exists but the buildings have enough similar issues.
1. ADA Compliance
    - a. The buildings, except for SPX East, within the Spartan Complex allow for access from the Paseo de San Carlos to the 1<sup>st</sup> floors.
    - b. Exterior signage is limited and directional signage is missing.
    - c. Interior directional signage is limited or non-existent.
    - d. Hardware at exterior doors is generally accessible.
    - e. Some exterior doors are push plate activated. It is not a code requirement, but better signage, if available, is desirable.
    - f. Directory signage for the floors/buildings is non-compliant.
    - g. Interior signage, at individual rooms, is throughout with accompanying Braille, except some offices of SPX East Courtyard.
    - h. Interior door hardware is a mix of knobs, lever, push plates and keypads.
    - i. Graphic signage for restrooms are not standardized as to configuration.
    - j. The restrooms are a mix of non-compliant and partially compliant. Partially compliant restrooms typically have the alternate restroom configuration of CBC Chapter 11B, Figure 11B-1C. Clearances are also partially realized.
    - k. Toilet tissue dispensers in alternate compliant stalls are not compliant with latest DSA-AC requirements for recessed or semi-recessed dispensers.
    - l. Waste and hot water lines are not wrapped to protect the legs of wheelchair users.
    - m. Male restrooms typically have urinals at compliant heights.
    - n. Toilet room accessories: mirrors, paper towel dispenser, etc; are partially compliant.
    - o. Drinking fountains in paths of travel do not have rails around them.
    - p. Locker rooms are not compliant, providing neither accessible lockers nor clearances.
    - q. Showers in locker rooms are non-compliant.
    - r. Stair handrails are not compliant. They are short on required extensions at both top and bottom steps.
    - s. Guardrails do not meet latest code requirements for max 4" opening in rails.
    - t. Second floors are partially accessible: elevator provides access for Uchida Hall Annex and the west rooms of SPX Central; the chair lift provides access to the Dance Studio in SPX Central, however, the restrooms at same portion of SPX Central are accessed by going through the rooms to non-compliant restrooms.
  2. The buildings are well maintained and in good to fair condition overall from what is readily observable. There has been water intrusion and damage particularly at SPX Central.
  3. The buildings were constructed under codes that have changed or have been eliminated. Construction types and occupancies have changed significantly in the past decades. No attempt was made to correlate original construction types and occupancies with present definitions. Note that the original documents do not list this information. The buildings appear to have readily available and quickly accessed exits.

## 2. Yoshihiro Uchida Hall

- A. Located at the intersection of Paseo de San Carlos and 4<sup>th</sup> Street, Uchida Hall is a high one-story building with several athletic functions within. It has four entries and shares a common entry with Uchida Hall Annex. There are offices, team rooms, and locker rooms underneath the fixed bleacher system. Spaces under the circular stairs have been converted into a box office and an office. Many rooms were not accessed due to security systems.
- B. **Accessibility** Specific accessibility issues are noted below. The building is under review at this time, for historic status and designation, under a campus wide study. Should the building be designated, then modifications will be reviewed under Title 24, Part 8 and in conjunction with DSA Access Compliance. Equivalent facilitation will be considered. The proposed structure for the Uchida Hall Natatorium could be utilized for Uchida Hall. The scope of the work will be clarified after an historical analysis/survey is completed.
1. Typical complex wide issues apply here: signage, restrooms, hardware, and drinking fountains.
  2. Chair lift provides access to main floor of gym.
  3. The main and upper level bleachers are not accessible.
  4. Pull out seating is at the gym floor. There is no indication of accessible seating areas at this pullout seating.
  5. Men's restroom off of the entry is non-compliant; doorway clearance; stall configuration.
  6. Women's restroom, west end of corridor, is not accessible (down steps) and non-compliant.
- C. **Specific Building issues:**
1. The building is cast in place concrete and non-structural modifications and additions will be surfaced mounted typically.
  2. Handrails do not exist at several stairs.
  3. Steel mullion windows have dried and spalling caulking.
  4. Brick wainscot on east elevation has moss or mold growing in it at several locations.
  5. The textured stucco finish has attracted dirt.
  6. Alternating light/dark bands exist under the west elevation crenellations.
  7. Roof flashing difficult to access.
  8. Roofing is mostly concrete/clay shingle type tile and was not assessed. Portions of the roof are built-up roofing. Older drawings reference removed skylights in these locations.
- D. **Structural Modifications:** Additional elements to be incorporated for proposed structural seismic repairs, which are noted in *Section F*.
1. Miscellaneous patching for blocking.
  2. New flashing.
  3. Corrosion resistant plates and bolts for weather exposure and to integrate into the decoration of the building.
- E. **Academic Program:** The academic program for Uchida Hall is proposed to have changes in accessory uses.
1. The gymnasium and offices functions are proposed to remain.
  2. Additional offices and new accessible restrooms are proposed in the area of the east side locker rooms.
  3. Provide accessible seating areas on the balcony seating area.
  4. The proposed modifications will enhance the existing programs.
  5. See Conceptual Plans SK-06 and SK-08 attached.
- F. **Historical Designation:** The building is under consideration for inclusion in an historic district designation. Any determination is under a separate campus wide study being prepared by the University. Should the building be listed, then proposed modifications and

impacts will be reviewed with the campus staff and University consultants for compliance with existing guidelines and any additional procedures that may be established.

1. The wood bench seating appears to be decades old.
2. Steel mullion windows have been replaced with aluminum mullion windows. There may be some implications with historical elements.

**G. Hazardous Material Survey:** The University has commissioned a Hazardous Material study which is to be issued.

**H. Fire Life Safety:** The system seems to be inadequate for the current facility. We expect that the fire alarm system will need to be reconstructed with a fully automatic modern system in compliance with DSA requirements. Some observations are noted below.

1. The number of horns/strobes combination units does not appear to meet code requirements for gymnasium "A" occupancy.
2. There are no low-level exit signs as required for "A" occupancies.
3. Could not determine if emergency lighting is installed in the gymnasium.
4. Some exit signs are missing from bottom of corner stairs.
5. Pull stations and horn/strobe combinations are located in the corridors.
6. Wall mounted, battery pack emergency lights were observed in the corridors.

**I. Building Systems:** The following observations can be made from the limited observations of the time.

1. General observations:
  - a. In general most of the mechanical, electrical and plumbing systems of this facility are inadequate, inefficient and below current standards. Heating is provided by steam radiators and small air handlers and fan coils. Radiators are found in most offices and hallways. The heating and ventilating system within the gymnasium is not suitable to properly ventilate the gymnasium during warm summer months. It is evident that proper outside air ventilation is deficient in most areas. The building envelope and fenestration permit air leaks and energy loss.
  - b. Lighting in most areas is composed of incandescent and old fluorescent fixtures that are energy inefficient, and produce low quality light with substantial glare and uneven lighting levels. The gymnasium lighting was replaced in 1994 with metal halide fixtures, producing adequate lighting.
  - c. Power distribution is antiquated and in need of replacement. It can be presumed from the age of the facility and by visual inspection that electrical power systems have been patched up through the years to provide for the new power demand within the facility. It is anticipated that new ventilation systems and adequate power for modern appliances, such as computers and athletic equipment, will require a new power distribution system for the building.
  - d. Signal systems such as data and telecommunications also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
  - e. Fire alarm seems to be adequate for the current facility. However, we expect that the fire alarm system will need to be reconstructed with a fully automatic modern system in compliance with DSA requirements.
  - f. Plumbing systems are past their useful life. Reports of sewage back up during heavy rains indicate that storm drains and sewer drains are heavily damaged. Most restrooms show conditions of use well beyond useful life. Water distribution piping, heat exchangers, vent and drainage piping indicate substantial wear and tear conditions and should be demolished, re-engineered and reconstructed.

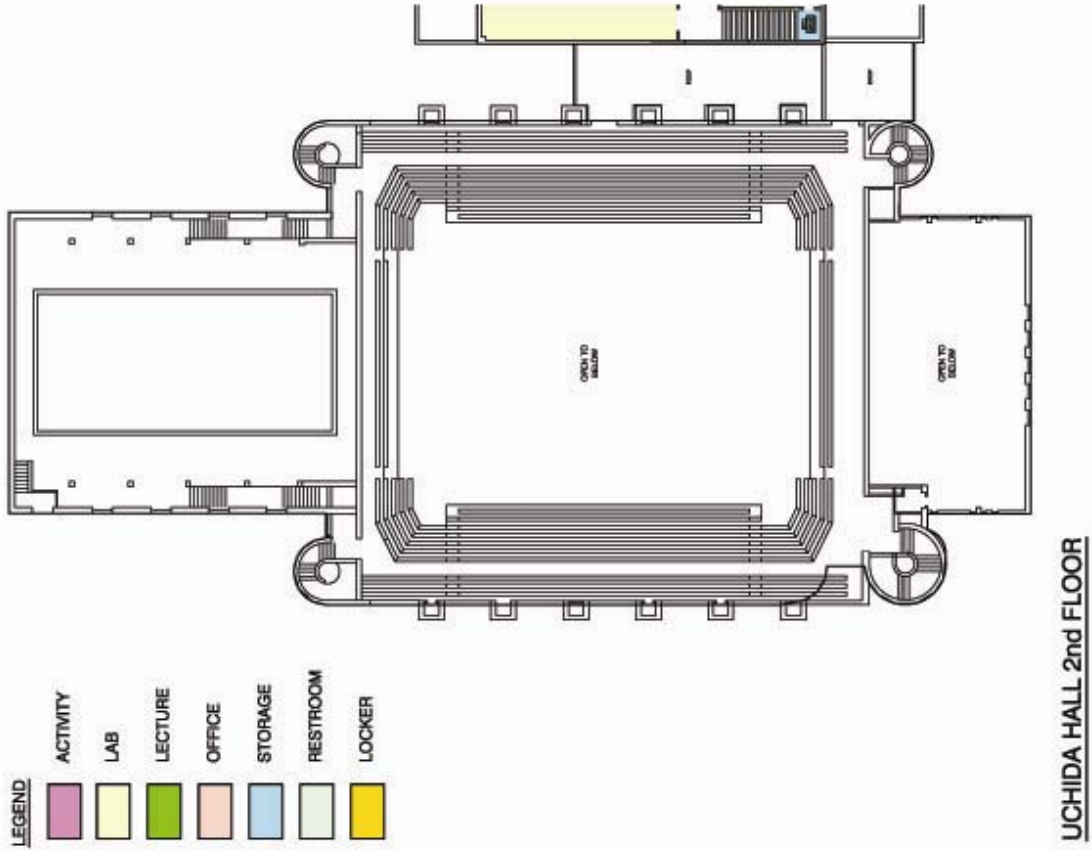
2. Recommendations

- a. General HVAC: Heating is provided by piping connection to the campus steam network. Cooling will be provided by connection to the existing chilled water piping network. Both of these utilities run in a utility tunnel in the vicinity of the building. The existing steam connection should be demolished and reinstalled with a 4 inch steam line, and a 2 inch condensate return. The chilled water line connection for supply and return should be 8 inch. An evaluation of the existing Campus Central Plant capacity to generate steam and chilled water should be conducted to determine if the current plant capacity is sufficient to accommodate the new cooling load for the Spartan complex. Steam usage will not be increased.
- b. Gymnasium HVAC: The existing six air handlers should be replaced with new air handlers in generally the same area. The new air handlers should be capable of 100% outside air intake. New roof ventilators with motorized dampers should be interlocked with the air handler operation to exhaust warm air from the gymnasium. In ventilation mode, when the air handlers simply introduce outside air to the lower portions of the gymnasium while the roof ventilators allow warm air to escape, will provide a substantial improvement in ventilation and natural cooling. The new air handlers should be installed with cooling coils for the addition of air conditioning during the remodel process or at a later time.
- c. Activities HVAC: Teaching labs, and lecture areas should be fitted with a new heating and ventilation system based on large four-pipe fan coils or small air handlers with ability to supply 100% outside air and 100% exhaust when conditions of outdoor air are favorable. Fan coils and/or air handlers should be installed with cooling coils for the addition of air conditioning during the remodel or at a later time.
- d. Office HVAC: Where dimensions are not ample and ceiling height is limited, it is recommended that these areas receive new four-pipe fan coil units below the ceiling. Each unit will have supply and return grilles mounted on the unit cabinet. The fan coil cabinets will be low profile and will conceal all piping and electrical connections. Outside air will be introduced to each fan coil unit via small ductwork to maintain minimum outside air ventilation rates. Fan coil fan operation should include multiple fan speed for smaller fan coils, and variable speed drives for larger units and air handlers.
- e. HVAC: Restrooms and Locker Rooms should be replaced with new fan coil and exhaust air systems to provide 100% outside air when the outside air temperature and humidity conditions are favorable. Shower areas should be 100% outside air at all times. All of these areas should be set for negative differential pressure relative to other building areas, such as hallways, activity areas and offices. Cooling should be optional for restrooms and locker spaces.
- f. Storage HVAC: Should have new exhaust fans with make up air provided by transfer ducts from conditioned spaces or hallways
- g. Other HVAC: The existing pneumatic HVAC controls should be replaced with a new direct digital control system compatible with Staefa or Invensys. The new system will connect to the existing Tridium interface at the central plant.
- h. Gymnasium Lighting: The gymnasium metal halide lighting was installed in 1994 and seems to be adequate. For the purposes of establishing project scale and scope, all other building lighting should be replaced with energy efficient fixtures, with proper switching, and providing proper lighting based on IES standards. All electrical wiring conduit, conductor, panels and distributions should be replaced.
- i. Lighting New: New lighting will be composed of the following: 2 x 4, 1 x 4 recessed and surface mounted fluorescent fixtures with T5 or T8 lamps with parabolic lenses. Compact fluorescent down lights, LED exit lights, and high bay high intensity output compact florescent fixtures for activity areas, excluding the main gymnasium, where lighting is adequate.



- j. Electrical Power: Given the conditions of the electrical system and associated power distribution, it is recommended that the entire system should be replaced. The new electrical distribution should be sized to accommodate new HVAC systems, computer plug power, elevators, and lighting.
- k. Electrical Signal Systems: Signal systems such as data and telecommunications also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing
- l. Public Address General: There is no requirement for public address or intercom systems
- m. Plumbing General: Inasmuch as some shower areas in locker rooms have to be upgraded with new shower fixtures and valves, the entire plumbing system should be replaced. Perhaps some of the new shower fixtures can be reused or kept as existing to remain. Based on reports from maintenance officials and visual inspection, nearly all piping, heat exchangers, and fixtures needs to be reconstructed. This includes storm and roof drain, sewage, venting, and all domestic distribution piping

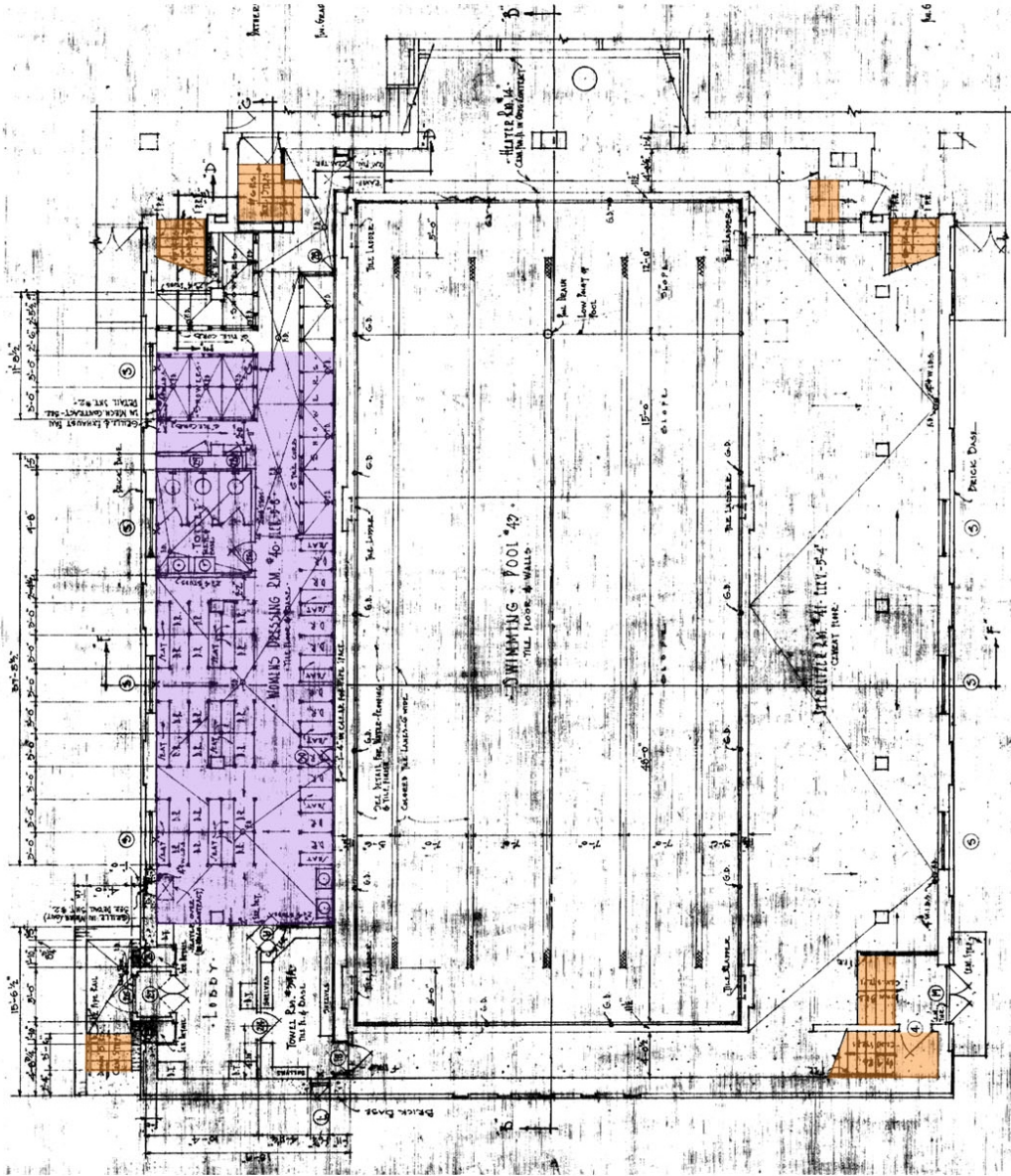




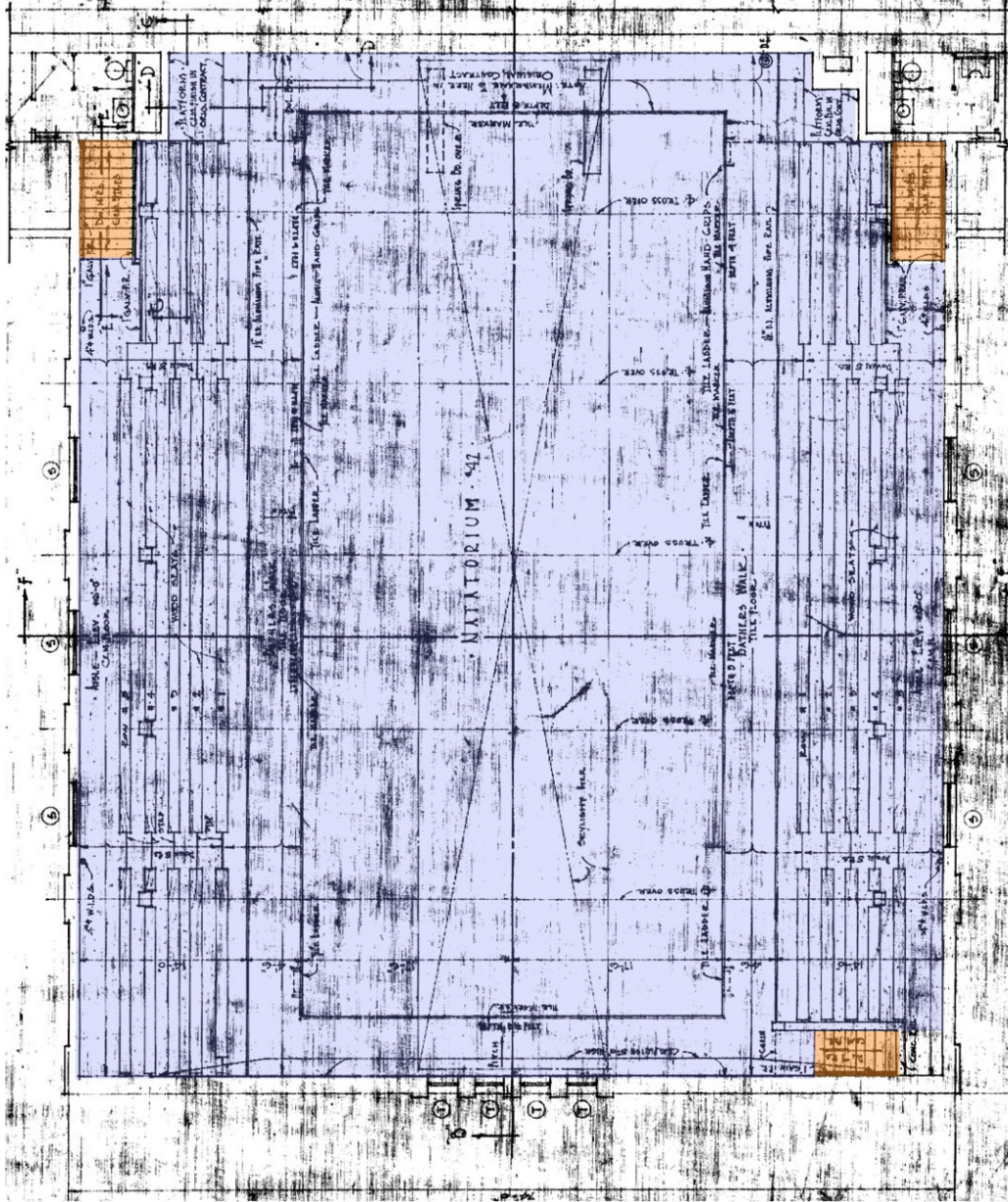
### 3. Uchida Hall Natatorium

- A. The facility is not being used except for the maintenance office below the west side tiered seating.
- B. **Accessibility:** Specific accessibility issues are noted below. The building is under review, at this time, for historic status and designation, under a campus wide study. Should the building be designated, then modifications will be reviewed under Title 24, Part 8 and in conjunction with DSA Access Compliance. Equivalent facilitation will be considered. The major concerns are: access to the main floor, seating level, and restroom availability. The scope of the work will be clarified after an historical analysis/survey is completed.
1. The main floor/deck is not accessible. Two sets of steep stairs, 5'-6"± above finish floor, are the only means of access.
  2. Tiered seating area provides no location for accessible seating.
  3. Offices under seating are not accessible.
  4. There are no restrooms readily available.
  5. The Conceptual Plans (attached SK-06 and SK-08) revise access to areas, provide new lecture and office space, and include an elevator and new stair configurations.
- C. **Specific Building Issues:**
1. The building is cast in place concrete and non-structural modifications and additions will be surface mounted typically.
  2. Handrails do not exist at several stairs.
  3. Steel mullion windows have dried and spalling caulking.
  4. Unable to determine if water intrusion has occurred at below grade doors.
  5. Exposed piping and conduits in lower levels may contain hazardous materials typical of the original construction period.
  6. Exposed piping and conduits in lower levels may create height clearance issues.
  7. Exposed conduits and panels have some exposed wiring.
- D. **Structural Modifications:** Additional elements to be incorporated for proposed structural seismic repairs, which are noted in *Section F*.
1. Miscellaneous patching for blocking.
  2. New flashing.
  3. Corrosion resistant plates and bolts for weather exposure and to integrate into the decoration of the building
- E. **Academic Program:** The academic program for Uchida Hall Natatorium is proposed for change. The building's main floor is not used at this time. This study proposes an alternate use be developed.
1. The Uchida Natatorium is functionally obsolete. Its original program is met at SPX East and the Aquatics Center.
  2. In keeping with the uses of the facility and the Spartan Complex, it is proposed that the Natatorium be converted into the Judo Teaching Laboratory on the main level. This will allow the department to better organize its programmic needs, free up a teaching laboratory in the Uchida Annex, and allow the Judo Teams a facility to hold meets with seating.
  3. The proposal involves a new main floor level and structures to be installed in the pool area up to the existing column line.
    - a. Deleting the pool floor and creating a new floor at approximately the same level as the adjacent maintenance office will provide additional office and utility spaces.
    - b. Installing a new raised floor for competitions.
    - c. Install new seating.
    - d. Create offices, lecture spaces, and locker rooms in the basement level.
  4. The structural requirements for the proposed use are:

- a. Add 2" x 18 gage metal deck with 3-1/4" lightweight concrete topping with #3 @ 18" each way.
  - b. Add W16 x 36 girders running east-west.
  - c. Add W16 x 31 beams running north-south.
  - d. Add W14 x 43 columns supporting the girders, with 6 foot square footings.
5. The architectural requirements for the proposed use are:
    - a. Mats and padding to meet NCAA & IOC regulations.
    - b. Elevator for accessibility.
    - c. Theater style seating on existing seating tiers.
    - d. Announcement and score board with floor level control.
    - e. Microphone and speaker jacks in floor minimum 4 locations.
    - f. Structure mounted speaker array with patch for background music system.
    - g. Under floor area: Cut opening for door access to create storage and offices under the new floor (area of existing pool.)
    - h. HVAC ducts through sidewalls to provide ventilation of new basement area.
    - i. Power, lighting, telephone, and data connection.
    - j. Finishes including carpet, paint, and acoustic ceiling tile.
    - k. Restoring the original large window grouping g on the north elevation.
    - l. See Conceptual Plans SK-06 and SK-08 attached.
  6. The structural diagram for this proposed use is provided under *Section D.1 Yoshihiro Uchida Hall*.
- F. **Historical Designation:** The building is under consideration for inclusion in an historic district designation. Any determination is under a separate campus wide study being prepared by the University. Should the building be listed, then proposed modifications and impacts will be reviewed with the campus staff and University consultants for compliance with existing guidelines and any additional procedures that may be established
1. Given the proposed change of use, particularly for an outside access facility, coordination with campus guidelines for historically significant buildings will be reviewed throughout the proposed work.
- G. **Hazardous Material Survey:** The University has commissioned a Hazardous Material study which is to be issued.
- H. **Fire Life Safety:** The system seems to be inadequate for the current facility. We expect that the fire alarm system will need to be reconstructed with a fully automatic modern system in compliance with DSA requirements. Some observations are noted below.
- I. **Building Systems:** Please see the discussion noted for the Uchida Hall Portion of the building for information.



UCHIDA NATATORIUM



UCHIDA NATATORIUM SEAT LEVEL

#### 4. Yoshihiro Uchida Hall Annex

- A. The ground floor consists of offices and a large men's' locker room. The 2<sup>nd</sup> floor has judo mats, exercise equipment, classrooms, and offices. The corridor is straight. Building access is at grade.
- B. **Accessibility:** Specific accessibility issues are noted below.
1. Typical complex wide issues apply here: signage, restrooms, hardware, and drinking fountains.
  2. The locker rooms have no compliant lockers or dressing areas.
  3. The shower room is large and open. ADA shower area is broken and nonfunctioning.
  4. Towel hooks have no compliant stations.
  5. The restroom has no fully compliant stall. The sinks' waste and hot water lines are not wrapped
  6. Access to the 2<sup>nd</sup> Floor is via a shared exterior elevator with the Spartan Complex Central on the east side. Accessibility issues of the elevator are discussed under the Spartan Complex Central description.
- C. **Specific Building Issues:**
1. The building is cast concrete and concrete masonry units and any modifications will be surface mounted generally.
  2. Handrails do not exist at several stairs.
  3. The ceiling appears to be glued-on ceiling tile or possibly a concealed spline system.
  4. There is apparent asbestos flooring in the 1<sup>st</sup> floor corridor.
  5. Exit signs are as noted for typical issues.
  6. Mechanical equipment generates a lot of noise through the 2<sup>nd</sup> floor ceiling access panel.
  7. Storage rooms have been converted into offices.
  8. Sunshades have been added to the south facing offices.
  9. Window mounted air conditioning units imply a lack of overall cooling.
  10. Steel mullioned windows have caulking that is starting to spall.
  11. Closing off of the landing at the west side stair, per the proposed structural modifications, will require a revision of the adjacent space and construction of new stair landing.
- D. **Structural Modifications:** Additional elements to be incorporated for proposed structural seismic repairs, which are noted in *Section F*.
1. Relocate spaces within the overall building for new wall configuration
  2. Miscellaneous patching for blocking.
- E. **Academic Program:** The academic program changes proposed for Uchida Annex are based on two main objectives: to consolidate the lockers in SPX Central; and create additional office and laboratory space
1. Modify the existing lightly used men's' locker room to create a new weight training facility. This is a much needed facility for the campus.
  2. Additional offices will also be created out of the present locker room.
  3. Graduate research space will be inserted on the second floor in the present judo practice facility scheduled for the Uchida Natatorium.
  4. The proposed modifications will enhance the existing programs.
  5. See Conceptual Plans SK-06 and SK-08 attached.
- F. **Historical Designation:** The building is not under consideration for historical designation at the present time.
- G. **Hazardous Material Survey:** Is outside the scope of this study. There were materials observed that to appear to asbestos based (floor tile size) and, given the age of the building that lead based materials and finishes are present.

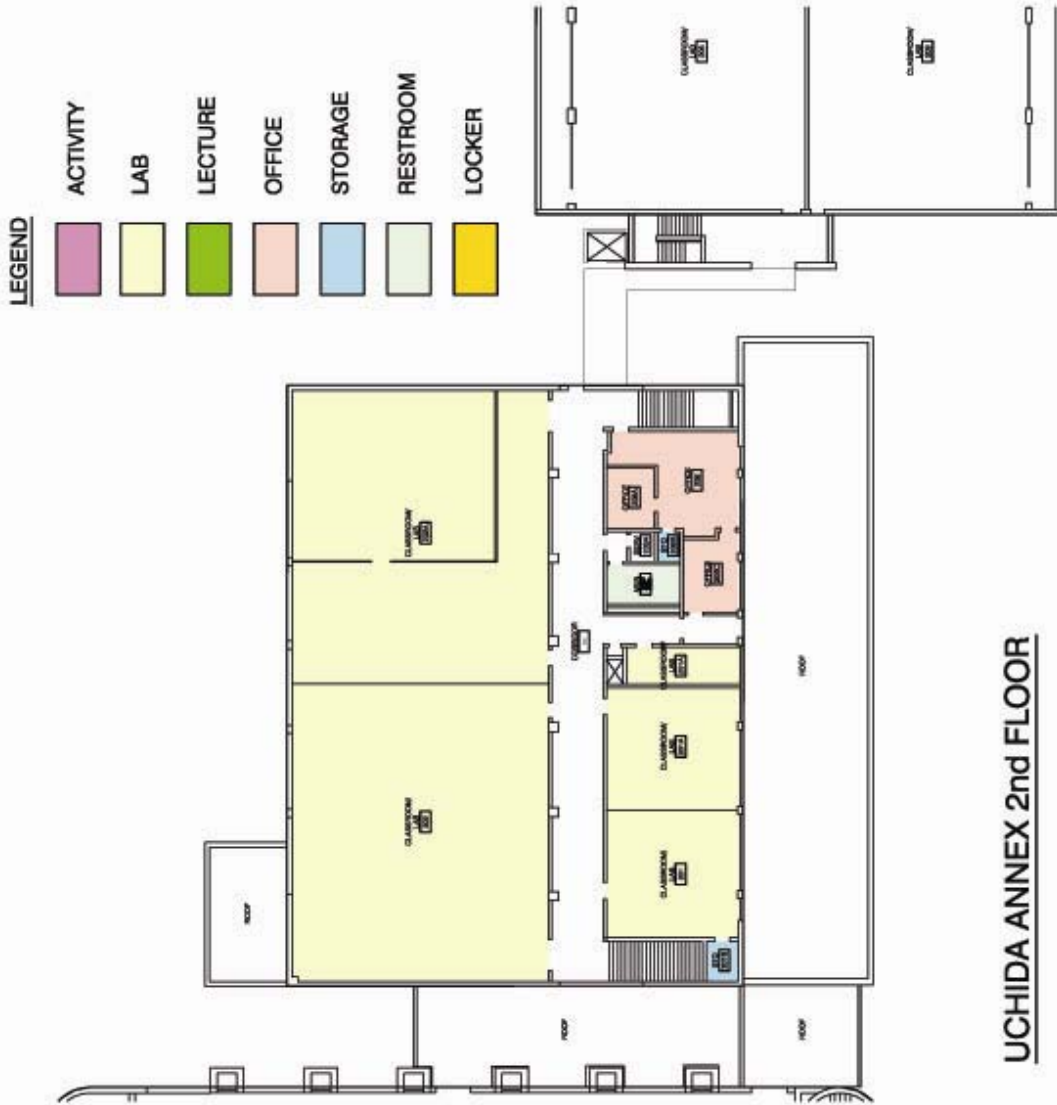


- H. **Fire Life Safety:** Fire alarm seems to be adequate for the current facility. However, we expect that the fire alarm system will need to be reconstructed with a fully automatic modern system in compliance with DSA requirements. Some observations are noted below.
1. There are no low-level exit signs as required for "A" occupancies.
  2. Pull stations and horn/strobe combinations are located in the corridors.
  3. Wall mounted, battery pack emergency lights were observed in the corridors.
  4. The west stair is noted in the Structural Modifications for a new shear wall. This will alter the layout of the stair and the adjacent space. The modified stair configuration will match the layout of the existing east side stair. The space is presently a staff locker.
  5. Note that none of the stairs exit directly to the exterior but into the corridor. Review of the configuration will be with the State Fire Marshall.
  6. Note also that the shared elevator balcony has a shared stair with the Spartan Complex Central.
- I. **Building Systems:** The following observations can be made from the limited observations of the time.
1. General observations
    - a. In general the most of the mechanical, electrical and plumbing systems of this facility are inadequate, inefficient and below current standards. Heating is provided by steam radiators, and small air handlers and fan coils. The heating and ventilation system within activity spaces is not adequate. It is evident that proper outside air ventilation is deficient in most areas. The building envelope and fenestration permit air leaks and energy loss
    - b. Lighting in most areas is composed of incandescent and old florescent fixtures that are energy inefficient, and produce low quality light with substantial glare and uneven lighting levels
    - c. Power distribution is antiquated and in need of replacement. It is presumed by the age of the facility and by visual inspection that electrical power systems have been patched up through the years to provide for the new power demand within the facility. It is anticipated that new ventilation systems and adequate power for modern appliances such as computers and athletic equipment will require a new power distribution system for the building.
    - d. Signal systems such as data and telecommunications also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
    - e. Plumbing systems are past their useful life. Reports sewage back up during heavy rains indicate that storm drains and sewer drains are heavily damaged. Most restrooms show conditions of use well beyond useful life. Water distribution piping, heat exchangers, vent and drainage piping indicate substantial wear and tear conditions and should be demolished, re-engineered and reconstructed.
    - f. The boiler for the locker rooms is a small wing on the north side.
  2. Recommendations
    - a. HVAC General: Heating is provided by piping connection to the campus steam network. Cooling will be provided by connection to the existing chilled water piping network. Both of these utilities run in a utility tunnel in the vicinity of the building. The existing steam connection should be demolished and reinstalled with a 4 inch steam line, and a 2 inch condensate return. The chilled water line connection for supply and return should be 8 inch. An evaluation of the existing Campus Central Plant capacity to generate steam and chilled water should be conducted to determine if the current plant capacity is sufficient to accommodate the new cooling load for the Spartan complex. Steam usage will not be increased.
    - b. Activity HVAC: Teaching labs, and lecture areas should be fitted with a new heating and ventilation system based on large four pipe fan coils or small air

handlers with ability to supply 100% outside air and 100% exhaust when conditions of outdoor air are favorable. Fan coils and/or air handlers should be installed with cooling coils for the addition of air conditioning during the remodel or at a later time.

- c. **Offices HVAC:** In office areas where dimensions are not ample and ceiling height is limited, it is recommended that these areas receive new four pipe fan coil units below the ceiling. Each unit will have supply and return grilles mounted on the unit cabinet. The fan coil cabinets will be low profile and will conceal all piping and electrical connections. Outside air will be introduced to each fan coil unit via small ductwork to maintain minimum outside air ventilation rates. Fan coil fan operation should include multiple fan speed for smaller fan coils, and variable speed drives for larger units and air handlers.
- d. **Restroom HVAC:** Systems in restrooms areas should be replaced with new fan coil and exhaust air systems to provide 100% outside.
- e. **Storage HVAC:** Storage areas should have new exhaust fans with make up air provided by transfer ducts from conditioned spaces or hallways
- f. **Other HVAC:** The existing pneumatic controls should be replaced with a new direct digital control system compatible with Staefa or Invensys. The new system will connect to the existing Tridium interface at the central plant
- g. **Lighting General:** For the purposes of establishing project scale and scope, all other building lighting should be replaced with energy efficient fixtures, with proper switching, and providing proper lighting based on IES standards. All electrical wiring conduit, conductor, panels and distributions should be replaced.
- h. **Lighting New:** New lighting systems will be composed of the following: 2 x 4, 1 x 4 recessed and surface mounted fluorescent fixtures with T5 or T8 lamps with parabolic lenses. Compact fluorescent down lights, LED exit lights, and high bay high intensity output compact florescent fixtures for activity areas.
- i. **Power General:** Given the conditions of the electrical system and associated power distribution, it is recommended that the entire system should be replaced. The new electrical distribution should be sized to accommodate new HVAC systems, computer plug power, elevators, and lighting.
- j. **Electrical Signal Systems:** Signal systems such as data and telecommunications also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
- k. **Public Address:** There is no requirement for public address or intercom systems.
- l. **Plumbing General:** Inasmuch as some shower areas in locker rooms have be upgraded with new shower fixtures and valves, the entire plumbing system should be replaced. Perhaps some of the new shower fixtures can be reused or kept as existing to remain. Based on reports from maintenance officials and visual inspection, nearly all piping, heat exchangers, and fixtures needs to be reconstructed. This includes storm and roof drain, sewage, venting, and all domestic distribution piping





## 5. **Spartan Complex Central (SPX Central)**

- A. SPX Central is a multi-use building housing disparate functions: Locker rooms, gymnasium, offices, and classrooms.
- B. **Accessibility:**
1. Typical complex wide issues apply here: signage, hardware, restrooms, and drinking fountains.
  2. Directions to the elevator at the west side are non-existent.
  3. The elevator serves only the west side of the 2<sup>nd</sup> Floor of the Spartan Complex Central and the 2<sup>nd</sup> Floor of the Uchida Annex. It does not provide access to the 2<sup>nd</sup> Floor central area of the SPX nor the east 2<sup>nd</sup> Floor
  4. The elevator is awkwardly located along a driveway between SPX Central and Uchida Annex. There is vehicle traffic in this drive.
  5. No compliant elevator button signage is installed.
  6. "Ramp" access on north side, between the Spartan Complex Central and Spartan Complex East, is not signed and is missing handrails if the slope is greater than 1:20.
  7. Generally, guardrail spacing at open stairs and stair landings are not compliant with maximum opening spacing of latest codes.
  8. First floor, North side restrooms not ADA compliant.
  9. The women's locker room was available for the reviewers. It is assumed that the issues observed in the Uchida Annex men's locker room, with regard to accessibility, are the same.
  10. The east side, 2nd floor, has a rail mounted chair lift to provide access to the Dance Studio and a portion of the present gymnastics practice gym. There are no restrooms available from this side of the 2<sup>nd</sup> floor. The only restrooms are in the central portion and are non-compliant.
  11. Access is not provided to the 2<sup>nd</sup> floor central portion, which includes the non-accessible, non-compliant restrooms for the 2<sup>nd</sup> floor.
  12. The west side, 2<sup>nd</sup> floor is access from the elevator noted previously. There are no restrooms on the 2<sup>nd</sup> floor in this area.
- C. **Specific Building issues:**
1. The building is cast concrete and concrete masonry units and any modifications will be surface mounted.
  2. Near south side entry, acoustic ceiling tile grid is missing portions.
  3. Dance Studio has obscured the 2<sup>nd</sup> exit way with curtains.
  4. 2<sup>nd</sup> floor east vestibule has no exit signs.
  5. Include area for signage board and building signage
  6. There is a classroom on a "3<sup>rd</sup>" floor level. It is above the 2<sup>nd</sup> floor central restrooms and appears to be converted storage or mechanical space. There is no accessible path to this level. The ceiling is low due to existing duct work.
- D. **Structural Modifications:** Additional elements to be incorporated for proposed structural seismic repairs, which are noted in *Section F*.
1. Review impact of new walls at entry and to be finished to match existing building.
  2. Alternate bracing may be necessary at proposed west entry doors. The proposed infill obscures the doors from the main walk.
  3. Provide new doorways, on east side of SPX Central, the area of the lockers rooms.
  4. Reorganize existing locker room to construction new shear walls.
  5. Demo existing walls and include new power and data communication conduits and boxes in new concrete wall.
  6. Exposed to elements bolts and plates to be corrosion resistant.
  7. Replace ceilings with new in areas of new roof beams.
  8. Analyze closing of exit system at proposed closed doors in locker rooms.
  9. Miscellaneous patching for blocking.

- E. **Academic Program:** The academic program changes proposed for Spartan Complex Central are based on two main objectives: reorganize the lockers rooms; and to create new offices and access to the entire 2<sup>nd</sup> floor.
1. Locker Rooms: The present lockers are women's and team lockers. It is proposed that the lockers be re-organized to include the men's lockers from the Uchida Annex and create new towel distribution system. This will fulfill several programmic needs for the Department of Kinesiology. Included will be new ramps to provide access to the pool in SPX East.
  2. New Office Wing: The Conceptual Plans indicate a new partial 1<sup>st</sup> floor on the south elevation, facing the Paseo de San Carlos. The existing office will be replaced with new office and a lobby the will provide access to a new 2<sup>nd</sup> floor offices. The office will connect the existing east and west sides of the SPX Central. It will facilitate ADA access to the classrooms and activity spaces that presently have problematic access. It will also provide the departments with additional office space that is badly needed.
  3. See Conceptual Plans SK-07 and SK-09 attached.
  4. The proposed modifications will enhance the existing programs.
- F. **Historical Designation:** The building is not under consideration for historical designation at the present time.
- G. **Hazardous Material Survey:** The University has commissioned a Hazardous Material study which is to be issued.
- H. **Fire Life Safety:** Fire alarm seems to be adequate for the current facility. However, we expect that the fire alarm system will need to be reconstructed with a fully automatic modern system in compliance with DSA requirements. Some observations are noted below.
1. The number of horns/strobes combination units does not appear to meet code requirements for gymnasium "A" occupancy.
  2. There are no low-level exit signs as required for "A" occupancies.
  3. Could not determine if emergency lighting is installed in the gymnasium.
  4. Pull stations and horn/strobe combinations are located in the corridors.
  5. Wall mounted, battery pack emergency lights were observed in the corridors.
  6. Note that only one stair exits directly to the exterior, all other exit into the corridor. Review of the configuration will be with the State Fire Marshall.
  7. Note also that the shared elevator balcony has a shared stair with the Uchida Annex.
- I. **Building Systems:** The following observations can be made from the limited observations of the time.
1. General observations
    - a. In general, most of the mechanical, electrical and plumbing systems of this facility are inadequate, inefficient and below current standards. Heating is provided by heating hot water generated from steam heat exchangers. Steam is provided from the campus central plant. The heat exchangers are in precarious conditions. Ventilation is provided by air handlers and fan coils. The air handlers are of the dual duct multi-zone type. Cooling coils are installed in the ventilation deck of the air handlers; however, chilled water piping has never been installed. Therefore, the Spartan Complex is served with heating and ventilation without cooling or air conditioning. It is reported that the gymnasium gets very hot, especially after the natural lighting skylights were installed in 2002. The heating and ventilating system within the gymnasium is not suitable to properly ventilate the gymnasium during warm summer months.
    - b. Lighting in the gymnasium has been renovated with high-bay fluorescent fixtures with T5 lamps in conjunction with natural lighting skylights. The combination of the T5 fixtures with the natural lighting system is highly energy efficient from a

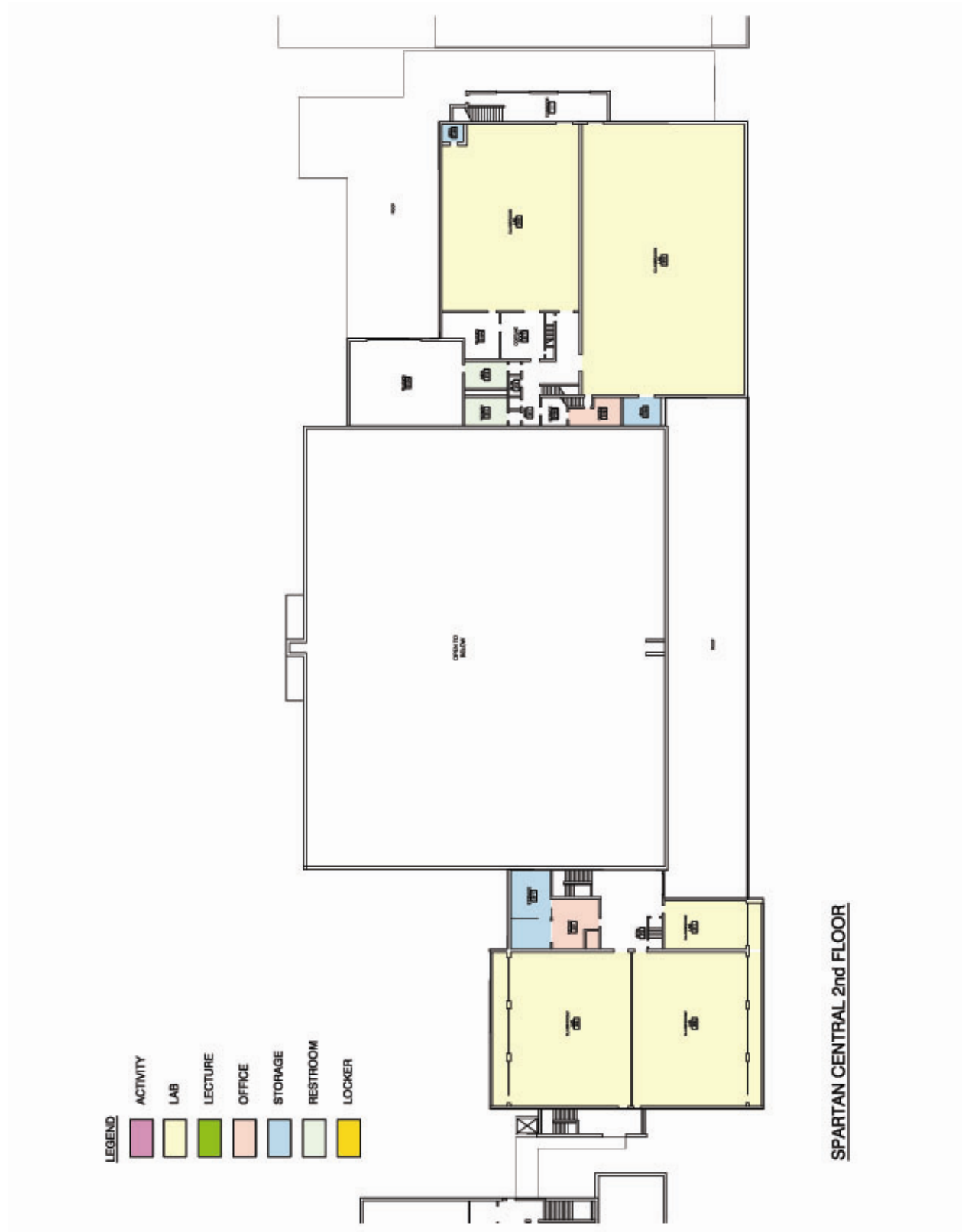
lighting point of view. However, the ventilation system in the gymnasium was modernized and with the increased solar load from the skylights, the indoor conditions in the gymnasium can become quite hot during bright days. Elsewhere in the Spartan complex, lighting does not seem to have been modernized recently. Lighting in most areas is composed of older fluorescent fixtures with prismatic lenses, plus incandescent fixtures. While lighting levels seem to be adequate, the prismatic lenses produce glare and the incandescent lamps are highly inefficient.

- c. Power distribution is antiquated and in need of replacement. It can be presumed from the age of the facility and by visual inspection that electrical power systems have been patched up through the years to provide for the new power demand within the facility. It is anticipated that new ventilation systems and adequate power for modern appliances, such as computers and athletic equipment, will require a new power distribution system for the building.
  - d. Signal systems, such as data and telecommunications, also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
  - e. Plumbing systems are past their useful life. Reports of sewage back up during heavy rains indicate that storm drains and sewer drains are heavily damaged. Most restrooms show conditions of use well beyond useful life. Water distribution piping, heat exchangers, vent and drainage piping indicate substantial wear and tear conditions and should be demolished, re-engineered and reconstructed.
2. Recommendations:
- a. HVAC General: Heating is provided by piping connection to the campus steam network. Cooling will be provided by connection to the existing chilled water piping network. Both of these utilities run in a utility tunnel in the vicinity of the building. The existing steam connection should be demolished and reinstalled with a 4 inch steam line, and a 2 inch condensate return. The chilled water line connection for supply and return should be 8 inch. An evaluation of the existing Campus Central Plant capacity to generate steam and chilled water should be conducted to determine if the current plant capacity is sufficient to accommodate the new cooling load for the Spartan complex. Steam usage will not be increased.
  - b. HVAC General: The Spartan Complex Central is equipped with several dual duct multi-zone air handlers serving most areas, and fan coils serving locker rooms. The entire multi-zone system should be replaced with variable volume air handlers with zone reheat
  - c. Gymnasium HVAC: The gymnasium HVAC system should be replaced with a system that can properly ventilate the space by utilizing a stratification method. This will allow cool air to be provided at the lower elevations within the space where occupants are, and allow hot air at the upper elevations to be exhausted from the space. New roof ventilators with motorized dampers should be interlocked with the air handler operation to exhaust warm air from the gymnasium. In ventilation mode, when the air handlers simply introduce outside air to the lower portions of the gymnasium while the roof ventilators allow warm air to escape, a substantial improvement in ventilation and natural cooling will be provided. The new air handlers should be installed with cooling coils for the addition of air conditioning during the remodel process.
  - d. Activity HVAC: Teaching labs and lecture areas should be fitted with a new heating and ventilation system based on large four-pipe fan coils or small air handlers with ability to supply 100% outside air and 100% exhaust when conditions of outdoor air are favorable. Fan coils and/or air handlers should be installed with cooling coils for the addition of air conditioning during the remodel

- e. Office HVAC: Office areas should be served by variable air volume zone terminals with reheat. This will provide proper HVAC to offices and similar spaces
- f. HVAC: Heating and ventilation systems in restrooms and Locker areas should be replaced with new fan coil and exhaust air systems to provide 100% outside air when the outside air temperature and humidity conditions are favorable. Shower areas should be 100% outside air at all times. All of these areas should be set for negative differential pressure relative to other building areas, such as hallways, activity areas and offices. Cooling should be optional for restrooms and locker spaces.
- g. Storage HVAC: Storage areas should have new exhaust fans with make up air provided by transfer ducts from conditioned spaces or hallways.
- h. Other HVAC: The existing pneumatic and Network 8000 HVAC controls should be replaced with a new direct digital control system compatible with Staefa or Invensys. The new system will connect to the existing Tridium interface at the central plant.
- i. Lighting General: Other than the gymnasium, for the purposes of establishing project scale and scope, all other building lighting should be replaced with energy efficient fixtures, with proper switching, and providing proper lighting based on IES standards. All electrical wiring conduit, conductors, panels and distributions should be replaced.
- j. Lighting New: New lighting systems should be composed of the following: 2 x 4, 1 x 4 recessed and surface mounted fluorescent fixtures with T5 or T8 lamps with parabolic lenses. Compact fluorescent down lights, LED exit lights, and high bay high intensity output compact florescent fixtures for activity areas, excluding the main gymnasium, where lighting is adequate.
- k. Power General: Given the conditions of the electrical system and associated power distribution, it is recommended that the entire system should be replaced. The new electrical distribution should be sized to accommodate new HVAC systems, computer plug power, elevators, and lighting.
- l. Electrical Signal Systems: Signal systems such as data and telecommunications also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
- m. Public Address General: There is no requirement for public address or intercom systems.
- n. Plumbing General: Based on age of the plumbing systems, reports from maintenance officials and visual inspection, nearly all piping, heat exchangers, and fixtures need to be reconstructed. This includes storm and roof drain, sewage, venting, and all domestic distribution piping.







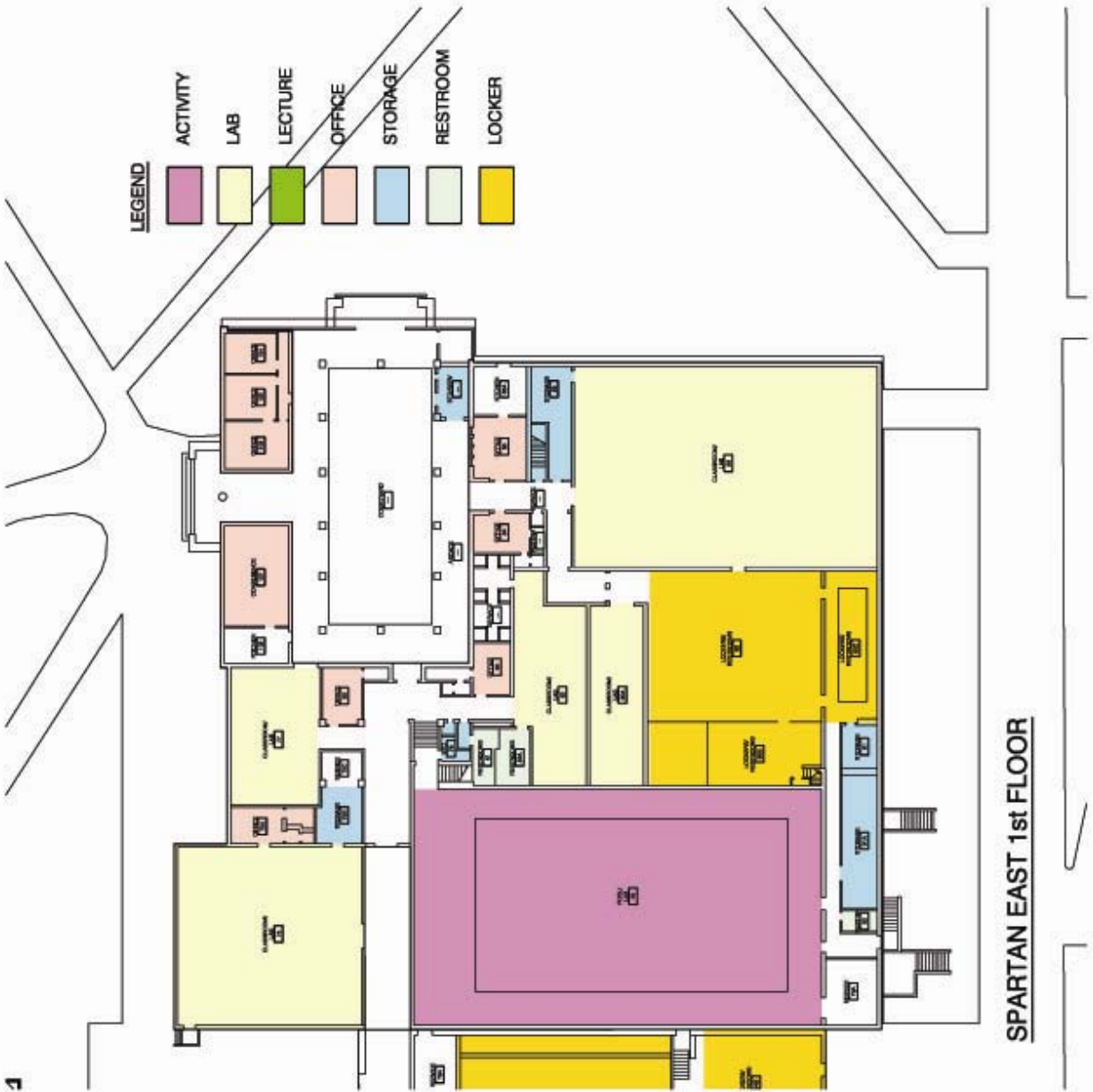
## 6. **Spartan Complex East (SPX East)**

- A. This is a multi-use building with locker rooms, natatorium, classrooms, and offices. It is connected to the 1<sup>st</sup> floor corridor of SPX Central. An intimate courtyard anchors the east end of the complex
- B. **Accessibility:**
1. Typical complex wide issues apply here: signage, hardware, restrooms, and drinking fountains.
  2. There is no direct accessible entrance into SPX East. An apparent ramp on the north side leads into SPX Central and then along the corridor into SPX East. The access has no directional signage nor has handrails.
  3. The courtyard is 2 risers up from the campus level. Accessible entries are not signed.
  4. Some rooms in SPX East do not have the accessible room signage typical elsewhere.
  5. The locker room has no compliant lockers, showers, or toilet facilities.
  6. The Natatorium is elevated above the corridor. A chair lift provides access to a very small landing that is problematic to open the door given the location of the steps at the other side of the landing.
  7. The Natatorium has no lift to provide access into the pool.
  8. The towel hook station has no compliant hooks.
- C. **Specific Building Issues:**
1. The building is cast concrete and any modifications will be surface mounted generally.
  2. Typical complex wide issues apply here regarding horns and strobes, and exit signs.
  3. Paint is peeling along some walls of the courtyard.
  4. Utility rooms have been constructed at the SE corner of the courtyard arcade.
  5. The west planter in the courtyard may interfere with overall drainage. This could not be determined.
  6. Roof tiles appear to be in good condition.
- D. **Structural Modifications:** Additional elements to be incorporated for proposed structural seismic repairs, which are noted in *Section F*.
1. New plates for epoxied bolts to conform to overall appearance of the historic building.
  2. Plates and bolts within the Natatorium to corrosion-resistive, i.e. stainless steel, to withstand the elevated humidity levels.
  3. Miscellaneous patching of plaster walls and concrete walls as necessary for the additional blocking.
  4. The existing tile roofing will be removed and restored over the over new plywood sheathing proposed.
  5. Miscellaneous patching for blocking.
  6. New flashing.
  7. Corrosion resistant plates and bolts for weather exposure and to integrate into the decoration of the building
- E. **Academic Program:** The academic program for Spartan Complex East will remain for the large space uses with the exception of the existing locker room.
1. The pool and instructional activity space will remain.
  2. The locker is proposed to be part of the consolidation in SPX Central.
  3. This modification will allow for more activity and instructional uses in the area of the present under used men's locker room.
  4. It will also enable the circulation of SPX East to be re-organized coherently.
  5. See Conceptual Plan SK-07 attached.
  6. The proposed modifications will enhance the existing program.

- F. **Historical Designation:** The building is under consideration for inclusion in an historical district designation. Any determination is under a separate campus wide study being prepared by the University. Should the building be listed, then proposed modifications and impacts will be reviewed with the campus staff and University consultants for compliance with existing guidelines and any additional procedures that may be established.
- G. **Hazardous Material Survey:** Is outside the scope of this study. There were materials observed that to appear, given the age of the building, to be asbestos and lead based materials and finishes.
- H. **Fire Life Safety:** Fire alarm seems to be adequate for the current facility. However, we expect that the fire alarm system will need to be reconstructed with a fully automatic modern system in compliance with DSA requirements. Some observations are noted below.
1. The number of horns/strobes combination units does not appear to meet code requirements for gymnasium "A" occupancy.
  2. There are no low-level exit signs as required for "A" occupancies.
  3. Some exit signs are missing.
  4. Pull stations and horn/strobe combinations are located in the some corridors.
  5. Wall mounted, battery pack emergency lights were observed in the some corridors.
  6. Courtyard exit doors have an old style surface mounted panic hardware
- I. **Building Systems:** Building Systems were reviewing only in context with the seismic review. The following observations can be made form the limited observations of the time.
1. General Observations:
    - a. In general, most of the mechanical, electrical and plumbing systems of this facility are inadequate, inefficient and below current standards. Heating hot water generated from steam heat exchangers provides heating. Steam is provided from the campus central plant. The heat exchangers are in precarious conditions. Ventilation is provided by air handlers and fan coils. The air handlers are of the dual duct multi-zone type. Cooling coils are installed in the ventilation deck of the air handlers; however, chilled water piping has never been installed. Therefore, the Spartan Complex is served with heating and ventilation without cooling or air conditioning
    - b. Natatorium: The existing natatorium is equipped with three unit heaters suspended below the roof structure and two sidewall ventilators mounted on the walls below of the roof ridge. The ventilators exhaust air from the natatorium. Make up air comes through the operable windows. The unit heaters due to arrangement and capacity do heat the indoor air to sufficient levels to avoid indoor condensation. The pool temperature is maintained in the range of 80 to 86 degrees Fahrenheit. With the air temperature substantially cooler than the water temperature, the natatorium is prone to accumulation substantial condensation on cooler services such as walls, beams, etc.
    - c. Lighting in most areas is composed of older fluorescent fixtures with prismatic lenses, plus incandescent fixtures. While lighting levels seem to be adequate, the prismatic lenses produce glare and the incandescent lamps are highly inefficient.
    - d. Power distribution is antiquated and in need of replacement. It can be presumed from the age of the facility and by visual inspection that electrical power systems have been patched up through the years to provide for the new power demand within the facility. It is anticipated that new ventilation systems and adequate power for modern appliances, such as computers and athletic equipment, will require a new power distribution system for the building.

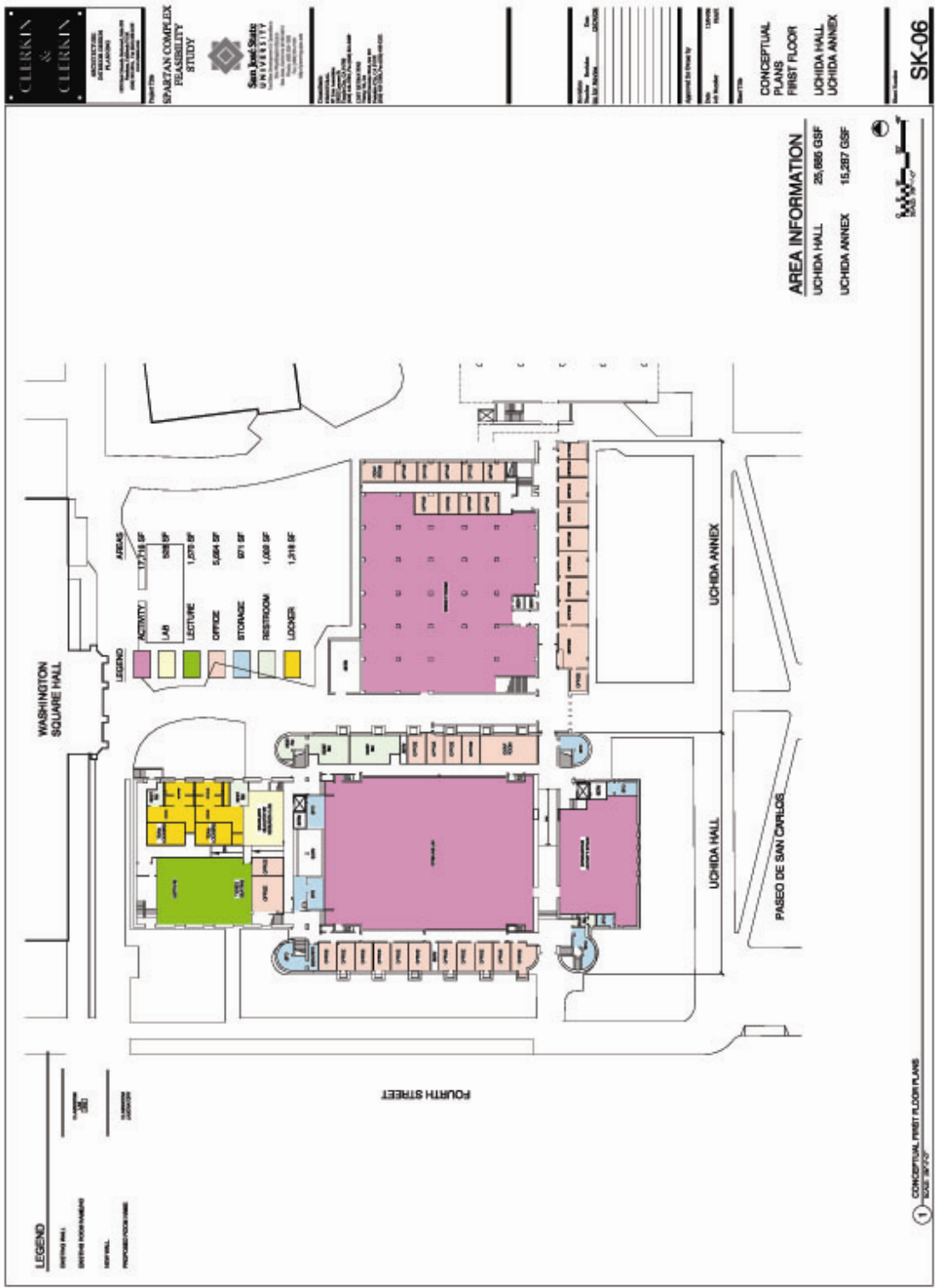
- e. Signal systems, such as data and telecommunications, also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
  - f. Plumbing General: Plumbing systems are past their useful life. Reports of sewage back up during heavy rains indicate that storm drains and sewer drains are heavily damaged. Most restrooms show conditions of use well beyond useful life. Water distribution piping, heat exchangers, vent and drainage piping indicate substantial wear and tear conditions and should be demolished, re-engineered and reconstructed
2. Recommendations:
- a. HVAC General: Heating is provided by piping connection to the campus steam network. Cooling will be provided by connection to the existing chilled water piping network. Both of these utilities run in a utility tunnel in the vicinity of the building. The existing steam connection should be demolished and reinstalled with a 4 inch steam line, and a 2 inch condensate return. The chilled water line connection for supply and return should be 8 inch. An evaluation of the existing Campus Central Plant capacity to generate steam and chilled water should be conducted to determine if the current plant capacity is sufficient to accommodate the new cooling load for the Spartan complex. Steam usage will not be increased.
  - b. HVAC General: The Spartan Complex East is equipped with dual duct multi-zone air handlers serving most areas, and fan coils serving locker rooms. The entire multi-zone system should be replaced with variable volume air handlers with zone reheat.
  - c. HVAC Natatorium: The natatorium should be fitted with a heating and dehumidification to maintain the indoor air temperature at 1 to 2 degrees above the pool temperature. The dehumidification system should be based on an indirect evaporative cooler with a duct furnace. The total system airflow rate should be in the range of 10,000 to 15,000 cfm.
  - d. HVAC Gymnasium: The gymnasium HVAC system should be replaced with a system that can properly ventilate the space by utilizing a stratification method. This will allow cool air to be provided at the lower elevations within the space where occupants are, and allow hot air at the upper elevations to be exhausted from the space. New roof ventilators with motorized dampers should be interlocked with the air handler operation to exhaust warm air from the gymnasium. In ventilation mode, when the air handlers simply introduce outside air to the lower portions of the gymnasium while the roof ventilators allow warm air to escape, a substantial improvement in ventilation and natural cooling will be provided. The new air handlers should be installed with cooling coils for the addition of air conditioning during the remodel process.
  - e. Activities HVAC: Teaching labs and lecture areas should be fitted with a new heating and ventilation system based on large four-pipe fan coils or small air handlers with ability to supply 100% outside air and 100% exhaust when conditions of outdoor air are favorable. Fan coils and/or air handlers should be installed with cooling coils for the addition of air conditioning during the remodel.
  - f. Office HVAC: Variable air volume zone terminals should serve office areas with reheat. This will provide proper HVAC to offices and similar spaces.
  - g. HVAC: Heating and ventilation systems in restrooms and locker areas should be replaced with new fan coil and exhaust air systems to provide 100% outside air when the outside air temperature and humidity conditions are favorable. Shower areas should be 100% outside air at all times. All of these areas should be set for negative differential pressure relative to other building areas, such as

- hallways, activity areas and offices. Cooling should be optional for restrooms and locker spaces.
- h. Storage HVAC: Storage areas should have new exhaust fans with make up air provided by transfer ducts from conditioned spaces or hallways
  - i. Other HVAC: The existing pneumatic and Network 8000 HVAC controls should be replaced with a new direct digital control system compatible with Staefa or Invensys. The new system will connect to the existing Tridium interface at the central plant.
  - j. Lighting General: For the purposes of establishing project scale and scope, all other building lighting should be replaced with energy efficient fixtures, with proper switching, and providing proper lighting based on IES standards. All electrical wiring conduit, conductors, panels and distributions should be replaced.
  - k. Lighting New: New lighting systems should be composed of the following: 2 x 4, 1 x 4 recessed and surface mounted fluorescent fixtures with T5 or T8 lamps with parabolic lenses. Compact fluorescent down lights, LED exit lights, and high bay high intensity output compact florescent fixtures for activity areas, excluding the main gymnasium, where lighting is adequate.
  - l. Power General: Given the conditions of the electrical system and associated power distribution, it is recommended that the entire system should be replaced. The new electrical distribution should be sized to accommodate new HVAC systems, computer plug power, elevators, and lighting.
  - m. Electrical Signal System: Signal systems such as data and telecommunications also require reconstruction. The existing systems are composed of numerous patches with exposed conduit, wire mold and other fragile attributes. New data and telecommunication backbone and substructure is recommended to replace the existing.
  - n. Public Address General: There is no requirement for public address or intercom systems.
  - o. Plumbing General: Based on age of the plumbing systems, reports from maintenance officials and visual inspection, nearly all piping, heat exchangers, and fixtures need to be reconstructed. This includes storm and roof drain, sewage, venting, and all domestic distribution piping.

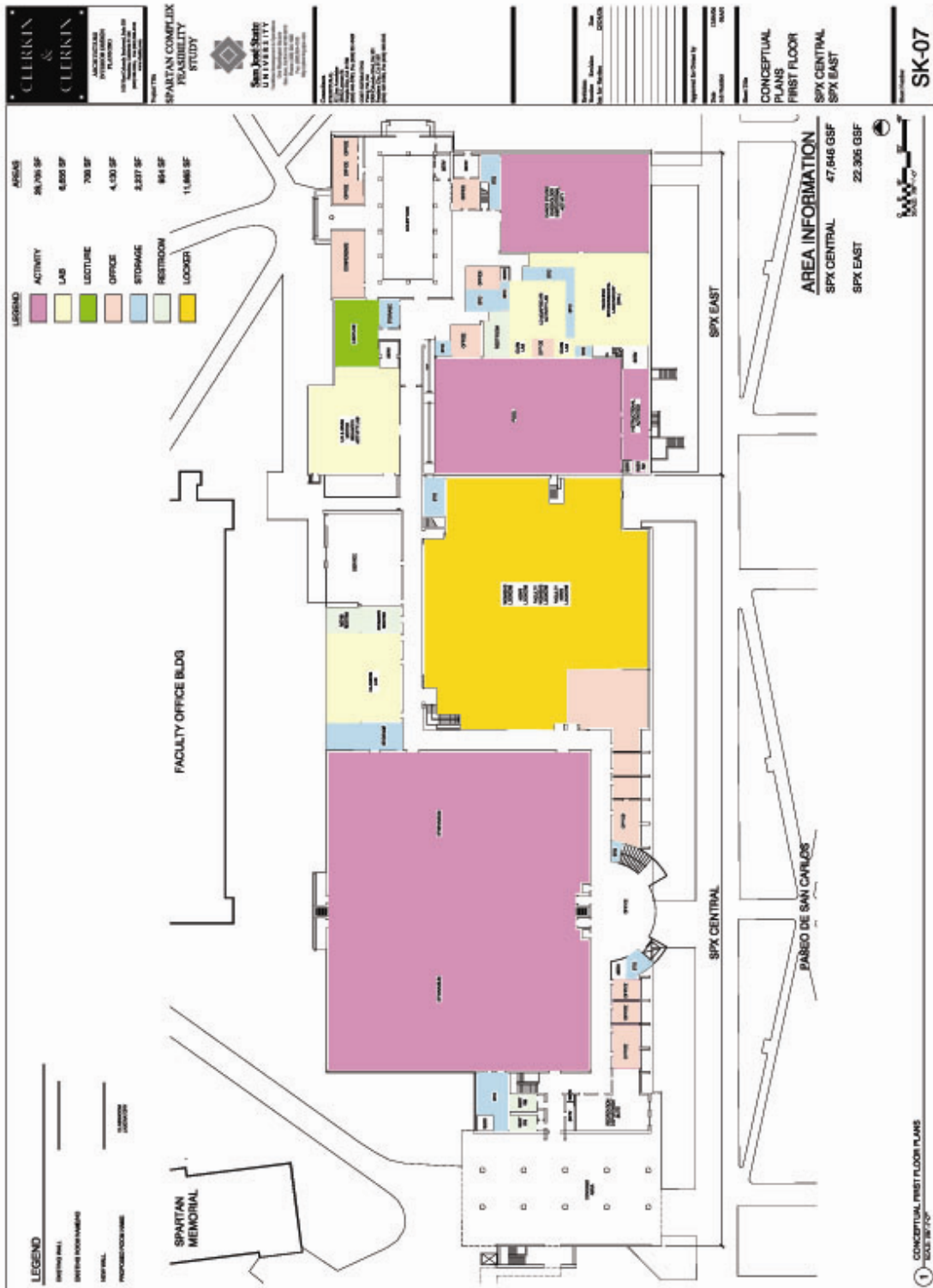


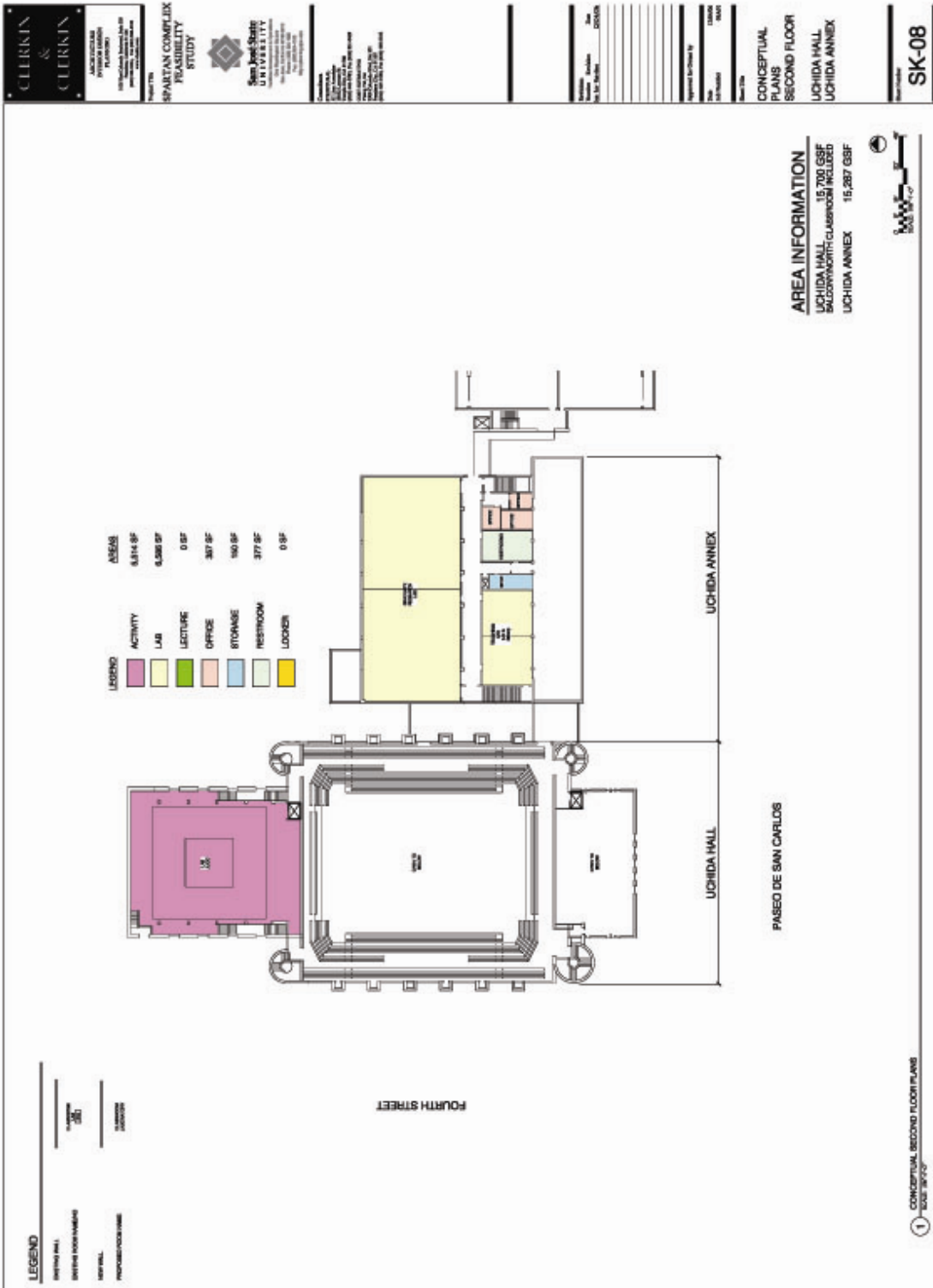
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H. CONCEPTUAL PLANS









**CLERKIN & CLERKIN**  
ARCHITECTS  
100 East Colorado Boulevard, Suite 203  
Pasadena, California 91106  
Tel: 626-799-9300  
Fax: 626-799-9301  
www.clerkin.com

Project No. 06a01  
**SPARTAN COMPLEX  
FEASIBILITY  
STUDY**



**San Jose State  
UNIVERSITY**  
1000 S. Bascom Avenue  
San Jose, CA 95128  
Tel: 408/924-2000  
Fax: 408/924-2001  
www.sjsu.edu

Architect: Clerklin & Clerklin  
Client: San Jose State University  
Project: Spartan Complex Feasibility Study  
Date: 10/20/07  
Scale: 1/8" = 1'-0"

Revision: \_\_\_\_\_  
No. of Sheets: \_\_\_\_\_  
Sheet No.: \_\_\_\_\_

Approved For Client By: \_\_\_\_\_  
Date: \_\_\_\_\_

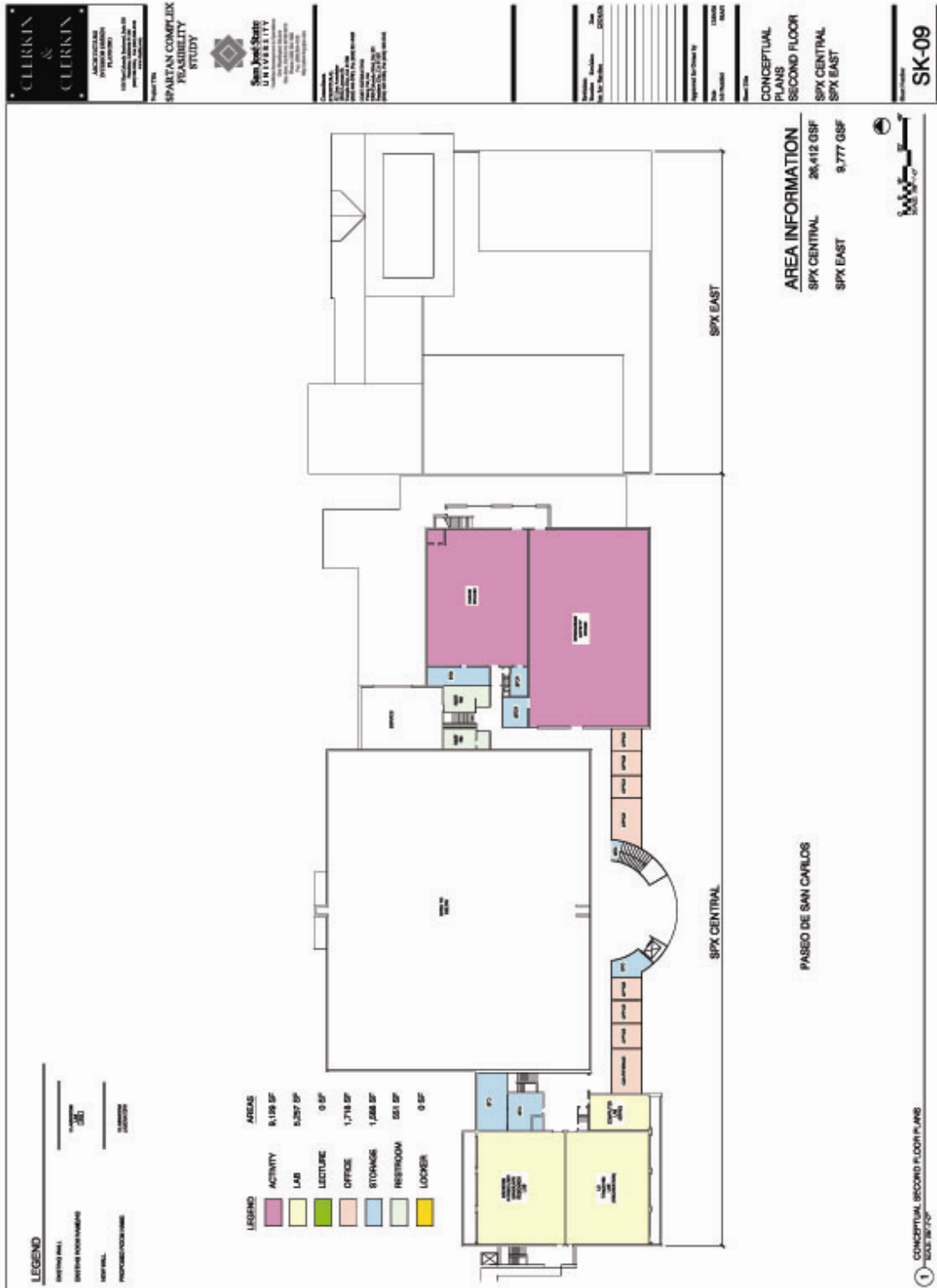
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Title: \_\_\_\_\_

CONCEPTUAL  
PLANS  
SECOND FLOOR

UCHIDA HALL  
UCHIDA ANNEX

SK-08



## I. BUDGETARY OPINION OF COST

The Opinion of Cost was reviewed with regard to the potential scope of work, which is not usually visible at this stage of analysis. It is based on individual items notes in the site visits, the probably replacement value of systems which have not been replaced or altered since initial construction. Refinement of the potential cost will be done with the clarification of the overall cost.

The following are the major systems that should be addressed in renovation/modernization projects.

- HVAC replacement
- ADA compliance particularly restrooms and hardware
- Increasing restroom fixture count
- Fire alarm and exit signage
- Abatement
- Electrical upgrades
- Integration of seismic repairs
- Locker rooms upgrade
- Signage
- Flooring replacement
- Historical integration
- Hardware
- Signage

Some elements of construction, which incorporate compliance with the guidelines for historic construction are included in the costs of the element, e.g., roofing - the estimated numbers includes the costs of tile roofing, re-installing existing and is not broken out as a separate number. Other elements are included under Special Construction.

The Opinion of Cost documents include CPDC2-7 for budgetary purposes followed by a detailed break down by category of work and type of work tied to the structure seismic repair elements.

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**APPENDIX A – RELEVANT SECTIONS FROM “HISTORIC RESOURCES SURVEY”**  
**Prepared November 30, 2005**

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