

Prepared for:

Los Angeles Police Department
Emergency Command Control Communications System
Program Management Office
Los Angeles, California

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LOS ANGELES POLICE DEPARTMENT
EMERGENCY COMMAND CONTROL
COMMUNICATION SYSTEM
FACILITIES DESCRIPTION
FOR AE DESIGN

1200-243

June 23, 1975

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The preparation of these materials was financially aided through a Federal grant from the Law Enforcement Assistance Administration (LEAA) under the Omnibus Crime Control and Safe Streets Act of 1968, as amended. The opinions, findings and conclusions in this publication are those of the author and are not necessarily those of the LEAA. The LEAA reserves a royalty-free, nonexclusive and irrevocable license to reproduce, publish and use these materials and to authorize others to do so.

This document presents the results of one phase of research carried out at the Jet Propulsion Laboratory, California Institute of Technology, under Contract NAS7-100, sponsored by the National Aeronautics and Space Administration.

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54013

CONTENTS

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<u>Section</u>	<u>Title</u>	<u>Page</u>
	ACQUISITIONS	
A.	PURPOSE	1
B.	APPLICABLE DOCUMENTS	1
C.	ELECTRONIC EQUIPMENT	2
1.	City Hall East	2
a.	Police Dispatch Room (CDC)	2
b.	Electronic Equipment and Tape Room	2
c.	Communications Operations Room	3
d.	Police ECC Room	4
e.	DSB's CHE Computer Center	4
2.	Area Command Center (ACC)	5
a.	ACC Operations Area	5
b.	ACC Equipment Room	5
3.	Remote Radio Sites	5
4.	Mt. Lee	6
D.	GENERAL REQUIREMENTS FOR DESIGN	6
1.	Codes and Standards	6
2.	Facility Equipment Sizing	6
3.	Sound Control	7
4.	Preliminary Floor Plan	7
5.	AE Function	7
E.	ARCHITECTURAL AND STRUCTURAL	7
1.	Concrete Slab at 4th Level	7
2.	Concrete Slab at 5th Level	8
3.	Elevated Floor - 4th and 5th Levels	8
4.	Concrete Floors - Finish	8

CONTENTS (contd)

<u>Section</u>	<u>Title</u>	<u>Page</u>
	5. Walls and Partitions	8
	6. Wall - Acoustical Finish	9
	7. Ceiling - Acoustical Integrated	9
	8. Other Considerations	9
F.	MECHANICAL SYSTEMS	9
	1. Air Conditioning	9
	2. Ventilation	11
	3. Fire Protection	12
	4. Plumbing	12
G.	ELECTRICAL SYSTEM	13
APPENDIX	15

ECCCS FACILITIES DESCRIPTION

A. PURPOSE

This document provides an estimate of the electronic equipment, architectural, structural, mechanical and electrical requirements for the ECCCS Project. Locations within City Hall East as well as remote radio sites and LAPD Area Headquarters are considered.

B. APPLICABLE DOCUMENTS

- 1) Emergency Command Control Communications System (ECCCS) System Operations and Performance Requirements, JPL Report 1200-212.
- 2) Data Service Bureau "Policies, Procedures and Standards," 1970.
- 3) Federal Specification FF300 Air Filtration.
- 4) "Human Engineering Guide for Equipment Designers," Second Edition, by Woodson, W.E., and Conover, D.W., Berkeley, University of California Press, 1964.
- 5) "Human Engineering Design Criteria for Military Systems, Equipment and Facilities," MIL-STD-1472 A, May 15, 1970.
- 6) Electronic Industries Association Standards (To be determined)..
- 7) Emergency Command Control Communications System Master Radio Plan, JPL Report 1200-226.
- 8) Emergency Command Control Communications System (ECCCS) System Design, JPL Report 1200-234.
- 9) (Federal, State, City Building and Safety Codes to be determined).

C. ELECTRONIC EQUIPMENT

1. City Hall East

a. Police Dispatch Room (CDC)

Item	Size	Total Power
59 consoles	4 × 3 ea	29.5 kW
1 system monitor console	8 × 3	5.0 kW
1 security and facility monitor console	3 × 3	0.5 kW
2 TTY machines	2 × 2 ea	0.3 kW
2 CRT hard copy printers	2 × 2 ea	0.5 kW
2 high speed printers	3 × 2	1.0 kW
2 microfiche units	2 × 3	0.4 kW
4 FECS terminals	0 × 2	2.0 kW
2 FECS printers	2 × 2	1.0 kW
Storage area for supplies	6 × 3	-

b. Electronic Equipment and Tape Room

Item	Size	Total Power
4 racks telephone tape recording	2-1/2 × 3 ea	2 kW
3 racks radio tape recording	2-1/2 × 3 ea	1.5 kW
Storage of 580 reels of tape	14 in. dia × 2 in. ea	-

c. Communications Operations Room

Item	Size	Total Power
3 racks, ACD telephone equipment	2-1/2 × 3 ea	1.0 kW
1 rack, telephone signal conditioning	2-1/2 × 3 ea	1.0 kW
4 racks, telephone line terminations	2-1/2 × 3 ea	0.3 kW
4 racks, modems and switching	2-1/2 × 3 ea	6.0 kW
3 racks, console terminations	2-1/2 × 3 ea	1.5 kW
3 racks, terminal communications controller	2-1/2 × 3 ea	3.0 kW
1 FECS TCU	2 × 3	1.0 kW
2 racks, CCTV equipment	2-1/2 × 3 ea	1.5 kW
4 racks, microwave multiplex equipment	2-1/2 × 3 ea	1.5 kW
Storage area for spares and supplies	6 × 3	-
Test equipment storage	3 × 5	-

d. Police ECC Room

Item	Size	Total Power
20 consoles	4 x 3 ea	10.0 kW
2 TTY machines	2 x 2 ea	0.3 kW
1 high speed printer	3 x 2	0.5 kW
2 CRT hard copy printers	2 x 2 ea	0.5 kW
2 microfiche units	2 x 3	0.4 kW
4 FECS terminals	2 x 2:	2.0 kW
2 FECS printers	2 x 2	1.0 kW

e. DSB's CHE Computer Center

XDP Subsystem						Total Power P. f. = 1.0
Item	Qty	For Each Assembly				
		Running Current	ϕ	Volts	Start Current	Running kVA
CPU α/β	2	40	3	208	-	28.8
Disc	4	8	3	208	30	11.9
Mag Tapes	6	8.5	1	120	30	6.1
Card Reader	2	6	1	120	13	1.4
Card Punch	2	7.5	1	120	13	1.8
Line Printer	2	7.0	1	120	14	1.7
Miscellaneous	1	20	1	120	-	2.4
ECCCS Terminal	1	0.5	1	120	2.0	0.5

2. Area Command Center (ACC)

a. ACC Operations Area

Item	Size	Total Power
2 consoles	4 x 3	1.0 kW
1 TTY	2 x 3	0.2 kW
2 ECCCS printers	2 x 3	1.0 kW
2 FECS terminals	2 x 2	1.0 kW
2 FECS printers	2 x 2	1.0 kW

b. ACC Equipment Room

Item	Size	Total Power
1 rack - ECCCS TCU	2 x 3	1.0 kW
1 rack - FECS TCU	2 x 3	1.0 kW
2 racks, radio equipment	2-1/2 x 3 ea	1.6 kW
Storage area for documentation	2 x 3	-
1 antenna tower	-	-

3. Remote Radio Sites

Item	Total Power
a) 26 sites	
1 rack, weatherproof, radio equipment	0.5 kW
1 antenna	-
b) 9 sites	
2 racks, weatherproof, radio equipment	1.0 kW
2 antennas	-

4. Mt. Lee

Item	Size	Total Power
2 racks, communications controller (TCC)	2-1/2 x 3 ea	3.0 kW
2 racks, modem and switching	2-1/2 x 3 ea	3.0 kW
34 control system multiplex	1.5 x 2	15.0 kW
8 digital transmitters	1.5 x 2	4.0 kW
23 voice radio transmitters	1.5 x 2	16.0 kW

D. GENERAL REQUIREMENTS FOR DESIGN

1. Codes and Standards

All City of Los Angeles Codes shall apply to this design. In addition, some State and National codes shall apply where not preempted by the local codes. Standards as established by ANSI shall be used in the bid documents. The specifications shall be per the latest CSI format.

The existing building and in particular the adjacent Fire Department complex designs shall serve as a guide where not covered by this document, codes, or standards.

2. Facility Equipment Sizing

The mechanical and electrical sections include some preliminary equipment sizing. These sizings were made based on preliminary information and are reflected in the budget and area requirements. The actual sizing of all equipment is the responsibility of the architect-engineer (AE). If the required sizing causes serious problems on space or costs, notify the City.

3. Sound Control

The successful operation of a control complex and in particular the Police Dispatch area is very dependent upon sound control within the room and on all equipment in the complex. The services of a recognized sound consultant shall be secured, and the consultant shall actively participate in the design to insure an acceptable sound environment.

4. Preliminary Floor Plan

See the "Preliminary" drawing dated June 19, 1975, "Los Angeles Police Department Communications Center Plan at 4th and 5th Underground Levels" for the general floor plan arrangement (Appendix).

5. AE Function

The AE shall study and include in the design adequate doors, etc. for equipment delivery as well as supplies.

E. ARCHITECTURAL AND STRUCTURAL

Scope of work, the following, are the requirements for the completion of the Los Angeles Police Department Communications Center on the 4th and 5th levels.

1. Concrete Slab at 4th Level

Fill in a 17 ft 0 in. X 20 ft 0 in. opening in concrete slab with a 6 in. thick concrete slab. A 4 ft X 10 in. opening shall be left for a steel stairway down to the 5th level. New slab will accommodate proposed electrical equipment systems.

2. Concrete Slab at 5th Level

A 2800 sq ft depressed floor area shall be filled with 500 tons of "crusher run" fill. Over this fill will be placed a 6 in. thick concrete slab to make entire area one level. This area is to be used for electrical equipment, storage, mens and womens restrooms, and coffee room.

3. Elevated Floor - 4th and 5th Levels

Elevated floor will be 1 ft high pedestal type with vinyl asbestos tile covered panels, 2 ft². Panels will be rated at 250 pd/ft², 1000 lb point loading. Elevated floor system shall be provided with seismic bracing.

4. Concrete Floors - Finish

Existing corridors and storage room on 4th and 5th level are to receive vinyl asbestos tile, 1/8 in. thick and 4 in. top set rubber base. New and existing concrete floors in mechanical and electrical equipment rooms on 4th and 5th levels are to receive sealer or epoxy finish. Concrete floor in proposed mens and womens restrooms are to receive ceramic tile to meet sanitary requirements. Watch Commander, RTO Office, and coffee room on 5th floor are to receive vinyl asbestos tile W/4 in. top set base.

5. Walls and Partitions

Wall separation between dispatch room and coffee room, Watch Commanders Office, RTO Office, communications room, equipment rooms, Captain's Office, Police ECC Room, and corridor shall be steel stud and plaster from concrete floor to underside of concrete floor above. Wall between dispatch room and Police ECC Room, Captain's Office, Watch Commander's Office, and RTO Office are to be provided with 1/4 in. polished plate glass viewing windows. Wall between womens' lounge and storage room is to be of steel stud and plaster, concrete floor to underside of concrete floor above with a 1 hour fire rating.

Other partitions are to be 2-1/4 in. thick solid laminated gyp-board, 8 ft ceiling high. Restroom walls are to receive ceramic tile treatment in fixture areas.

6. Wall - Acoustical Finish

Wall finish in dispatch room, Police ECC Room, and electronic equipment room are to be determined by acoustical consultant.

7. Ceiling - Acoustical Integrated

Ceiling in dispatch room, Police ECC Room, Captain's Office, secretaries office, coffee room, Watch Commanders office, RTO Office, communications room, maintenance, electronic and equipment room, and corridors are to be determined by acoustical consultant.

Ceiling in restrooms are to be Keenes cement plaster.

8. Other Considerations

Some thought might be given to an "emergency housekeeping" situation that could arise - facilities for shower bathing, cooking, and food storing might be considered. Security shall be consistent with adjacent Fire Department complex.

F. MECHANICAL SYSTEMS

1. Air Conditioning

The approximate cooling load to maintain the operation area at 75° dry bulb and 50% relative humidity will be provided by 45 tons of refrigeration based on 75 kW of heat dissipated by electronic equipment, lighting at 4 W per square foot, and occupancy of 100 people. Since the operation is to be around the clock, heat will not be needed. The system shall have full redundancy so that it will still be fully operable if any one item of equipment fails. Outside

design conditions for fresh air and air cooled condensing shall be 100° D. B. and 75° W. B.

Approximately 18,500 cfm of air will be cooled to 55° by one of two 15 HP chilled water air handling units and distributed to the area by ducts above the ceiling. The space above the ceiling may be used as a return air plenum and must not contain combustibles. Zone control may be provided to individual areas by variable air volume boxes or induction boxes which mix warm plenum air with the cooled air to temper the supply air as required. Discriminator controls should reset the chilled water flow so that no more cooling is provided than that required by the zone of greatest demand.

Humidity control is not normally required by modern computer equipment. Due to the constant cooling load, room relative humidity will normally range between 40% to 50%. Underfloor air supply is not required.

Two nominal 45 ton air cooled reciprocating water chillers shall be installed, each with dual compressors, one unit to operate and one to provide stand-by. Two flexible coupled mechanical seal chilled water pumps of full required capacity, using standard motors, shall be connected to a common chilled water piping system, one pump to operate, one to provide full stand-by.

One operating and one stand-by air cooled condenser with centrifugal blowers shall be stacked one above the other, and the discharges shall be ducted to the center of the three air shafts. The fresh air for the condensers will be induced through the 10 ft X 6 ft inlet from the south shaft.

All changeover from operating to stand-by equipment shall be fully automatic in case of failure, and failure shall be indicated on the equipment monitoring panel (see electrical).

Fresh air shall be drawn from the south shaft with a blower and passed through a HEPA (High Efficiency Particulate Air) filter and a full retention activated charcoal air purifier and ducted to the air handlers.

The HEPA filter will prevent entrance of radioactive fallout to the occupied areas, and the air purifier will absorb poison gasses as well as smog. This filtration and purification process is only contemplated for the air conditioning fresh air make-up. It would be impractically expensive to so treat the approximately 60,000 cfm required by a condenser and engine generator, and since the equipment will be fully automatic, there would be no need for personnel in the equipment areas in time of disaster.

Since only the outside air has the potential of becoming contaminated, air filters for the air handling units shall be 50% efficient (N. B. S. dust spot method) and UL rated Class I. Deep pleated replaceable media filters are recommended due to their infrequent need for maintenance.

Automatic controls to be pneumatic, with control air supplied by a duplex compressor unit. A system monitor/alarm panel will be tied in with the control system.

Use of the so-called "economy cycle" which used outside air for cooling when the temperature is low enough was considered, but this was rejected due to the need to provide the HEPA filtration and charcoal air purification for the entire air volume of 18,000 cfm which would be quite expensive. The ventilation shafts shall be protected with blast doors to 15 psi over pressure. Blast door design shall be similar to those used in the adjacent Fire Department facility.

2. Ventilation

Normal ventilation as provided by code shall be provided for the restrooms.

The mechanical equipment/engine generator room will be naturally ventilated by the approximately 25,000 - 30,000 cfm required by the air cooled condensers.

The Uninterruptible Power Supply (UPS) is designed to operate within temperature limits of 32° F and 104° F, but approaching these limits has degrading effects on system reliability. An UPS of the capacity under consideration exhausts warm air which shall be at a rate of approximately 5000 cfm and which shall be collected by a hood over the equipment and ducted to an exhaust fan. A fan shall also exhaust about 1000 cfm from the battery area.

Since it is desirable to maintain the batteries in an environment of 70° F or greater, a portion of the warm air exhausted from the UPS shall be bled back to the room to maintain 75° + when the ambient air temperature is low. As the ambient temperature rises, dampers shall automatically modulate to a full exhaust condition.

As the ambient ventilation air temperature continues to rise, the air may be tempered with an evaporative type dry air cooling process which lowers the dry bulb temperature of the air without raising the moisture content. Exhaust air shall be ducted through the north wall into the fourth parking level and then to the north air shaft.

3. Fire Protection

The entire area must be provided with a fusible link fire sprinkler system installed for "Ordinary Hazard" coverage in accordance with Chapter 13 of the National Fire Code. Duct penetrations between the equipment area and the operations area must be protected with fusible link fire dampers.

An emergency smoke evacuation blower system shall be installed. Automatic fire detection/alarm equipment shall be coordinated with the adjacent Fire Department operation.

4. Plumbing

A duplex sewage sump pump shall be installed on the existing sump and connected to the existing sewer and vent stubs. Toilet facilities for 90 men

and 60 women shall be provided. An electric drinking fountain shall be provided for each level of the operations area. Floor drains are required in the equipment room.

Domestic cold water shall be provided from the building water distribution system. Water to the chillers shall be provided with reduced pressure backflow prevention. Domestic hot water shall be heated electrically. The stand-by water tank existing under the fourth level garage shall be provided with a booster pumping system. Water for the operations center shall be drawn off of this tank in normal use to prevent stagnation which will occur if the tank is used only for storage. Fuel oil piping shall be extended to the engine generators from the existing storage tank.

G. ELECTRICAL SYSTEM

Normal operating power will come from existing building transformers at 480 V, 3 phase, 60 Hertz. Two stand-by 300 kW diesel engine generators will be provided with automatic start-up on power system failure. Each will be capable of providing minimum power required for operation. An existing fuel tank will provide fuel storage, permitting operation for about 3 weeks.

The essential electronic loads shall be connected to a solid state UPS with 30 minutes of battery back-up. This system shall eliminate the numerous voltage excursions on commercial power systems. The UPS shall also provide sufficient lighting to continue operation. The UPS shall be synchronized with the power company and transferred to the power company (or engine-generators) on UPS failure.

Distribution to the electronic equipment shall be with surface metal raceways under the elevated floor. A special ground system shall be provided for the electronic equipment. To keep this ground system separate from the building ground system, isolated ground type receptacles shall be used.

Other features to be provided include

- 1) Voltage regulator for the electronic load when the equipment is not on UPS.
- 2) Emergency lighting from UPS and a second battery source.
- 3) Smoke detection in electronic and equipment areas.
- 4) Local monitoring system for the building equipment.
- 5) Security control on entries.
- 6) Lighting with levels controlled by switching.
- 7) Cable trays and other communication raceways shall be provided.

APPENDIX
LOS ANGELES POLICE DEPARTMENT
COMMUNICATION CENTER PLAN
AT
4th AND 5th UNDERGROUND LEVELS

The attached blueprint forms a part of this appendix.

END