ROOFTOP PACKAGED AIR CONDITIONING UNIT SCHEDULE

SYMBOL	AREA SERVED	LOCATION	MANUFACTURER & MODEL NO.	CFM	EXT. S.P.	COOLING CAP. TOT./SENS. (BTUH) (*)	AMB. AIR D.B.	EER/ AFUE	HEATING (MBH) INPUT	HEATING (MBH) OUTPUT	FILTERS FARR 30/30 TYPE	FILTERS FARR 30/30 NO.	FILTERS FARR 30/30 SIZE	COMPRESSOR (EA) NO.	COMPRESSOR (EA) RLA.	COMPRESSOR (EA) LRA	COND. FAN NO.	COND. FAN H.P.	COND. FAN FLA	EVAP. FAN H.P.	EVAP. FAN FLA	RELIEF FAN H.P.	RELIEF FAN FLA	MCA	MOCP	UNIT VOLTAGE	OPER. WT.(LBS)	ACCESSORIES	MIN. OSA	REMARKS
AC 1 EXIST	SECOND FLOOR (INTERIOR-WEST)	ON ROOF	EXISTING PACKAGE CARRIER MODEL 48SS-060805511AA	2000	–	59,000 / 45,300	105	10 (SEER) / 80	80	64.8	DISPOSABLE	1	24"X30"X2"	1	19.3	123	1	1/3	2.1	–	6.8	–	–	33	50	208V.-3ø	850		200	EXIST. TO REMAIN/RE-USE 5.0 TON NOMINAL CAPACITY
AC 2 EXIST	SECOND FLOOR (EXTERIOR-WEST)	ON ROOF	EXISTING PACKAGE CARRIER MODEL 48SS-060805511AA	2000	–	59,000 / 45,300	105	10 (SEER) / 80	80	64.8	DISPOSABLE	1	24"X30"X2"	1	19.3	123	1	1/3	2.1	–	6.8	–	–	33	50	208V.-3ø	850		200	EXIST. TO REMAIN/RE-USE 5.0 TON NOMINAL CAPACITY
AC 3 EXIST	SECOND FLOOR (INTERIOR-EAST)	ON ROOF	EXISTING PACKAGE CARRIER MODEL 48SS-048050511AA	1600	–	47,000 / 33,000	105	10 (SEER) / 80	80	64.8	DISPOSABLE	1	24"X30"X2"	1	15.0	99	1	1/3	2.1	–	5.0	–	–	–	–	208V.-3ø	850		300	EXIST. TO REMAIN/RE-USE 4.0 TON NOMINAL CAPACITY
AC 4 EXIST	SECOND FLOOR (EXTERIOR-EAST)	ON ROOF	EXISTING PACKAGE CARRIER MODEL 48TJD008-5016A	3000	–	88,400 / 64,600	105	8.9(SEER) / 80	125	100	DISPOSABLE	4	16"X20"X2"	2	13.6	73.4	2	1/4	1.4	3	–	–	–	39.2	45	208V.-3ø	1000		200	EXIST. TO REMAIN/RE-USE 7.5 TON NOMINAL CAPACITY
AC 5 NEW	FIRST FLOOR (EXTERIOR EAST)	ON ROOF	TRANE MODEL # YCH091H	3300	0.8	86,000 / 46,000	105	10.00	120	97	DISPOSABLE	3	16"X25"X2"	2	14.4	101	1	1/2	3.4	2	8.8	–	–	44.6		208V.-3ø	1000	① ③ ④ ⑤	400	①
AC 6 NEW	FIRST FLOOR (INTERIOR ZONE)	ON ROOF	TRANE MODEL # YCH049H	1200	0.8	51,400 / 25,000	105	12.00	90	73	DISPOSABLE	2	20"X25"X2"	1	14.8	101	1	1/3	2.1	3/4	6.6	–	–	27.1		208V.-3ø	850	① ③ ④ ⑤	200	①
AC 7 NEW	FIRST FLOOR (INTERIOR ZONE)	ON ROOF	TRANE MODEL # YCH049H	1200	0.8	51,400 / 25,000	105	12.00	90	73	DISPOSABLE	2	20"X25"X2"	1	14.8	101	1	1/3	2.1	3/4	6.6	–	–	27.1		208V.-3ø	850	① ③ ④ ⑤	200	①
AC 8 NEW	FIRST FLOOR (INTERIOR ZONE)	ON ROOF	TRANE MODEL # YCH049H	1200	0.8	51,400 / 25,000	105	12.00	90	73	DISPOSABLE	2	20"X25"X2"	1	14.8	101	1	1/3	2.1	3/4	6.6	–	–	27.1		208V.-3ø	850	① ③ ④ ⑤	200	①
AC 9 NEW	FIRST FLOOR (EXTERIOR-WEST)	ON ROOF	TRANE MODEL # YCH091H	3300	0.8	86,000 / 46,000	105	10.00	120	97	DISPOSABLE	3	16"X25"X2"	2	14.4	101	1	1/2	3.4	2	8.8.	–	–	44.6		208V.-3ø	1000	① ③ ④ ⑤	400	①

⚠1

ACCESSORIES: ① ROOF CURB (GEN. CONT'R TO PROVIDE SHIM). ② ECONOMIZER ③ GRAVITY RELIEF DAMPER (100% OPENING) ④ OUTDOOR AIR FILTER ⑤ CURB W/ VIB. SPRING ISOLATORS ⑥ POWER EXHAUST

NOTE: (*) – ARI STANDARD RATING

REMARKS: ① OVERSIZED S.A. FAN MOTOR.

FAN SCHEDULE

SYMBOL	SERVICE (AREAS SERVED)	LOCATION	TYPE	WHEEL TYPE	WHEEL SIZE	MANUFACTURER & MODEL	CFM	T.S.P. (IN WG)	RPM	TIP SPEED	MOTOR HP	MOTOR VOLT-PH	MOTOR RPM	OPER. WT. (LBS)	ACCESSORIES	REMARKS
EF 1	2nd FLR., MEN'S & WOMEN'S ROOM	ON ROOF	ROOF MOUNTED	CENT. B.I.	10"	LOREN COOK ACRU-100 R2B	700	0.50	1643		1/6	120V-1ø		80	①	
EF 2	2nd FLR. UNISEX RESTROOM	ON ROOF	ROOF MOUNTED	CENT. B.I.	9"	LOREN COOK ACRU-100 R2B	125	0.50	1258		1/6	120V-1ø		80	① ⑧	90R15DH
EF 3	FWD LOCKERS, HSD LOCKER	ON ROOF	ROOF MOUNTED	CENT. B.I.	16.5"	LOREN COOK ACRU-165 R6B	2100	1.0	1171		3/4	208V-1ø		125	①	
EF 4	FWD ST. MAINT. LOCKER, SHOWER RESTROOM	ON ROOF	ROOF MOUNTED	CENT. B.I.	13.5"	LOREN COOK ACRU-135 R5B	1600	1.0	1496		1/2	120V-1ø		110	①	
EF 5	COMPRESSOR ROOM	ON ROOF	ROOF MOUNTED	CENT. B.I.	21"	LOREN COOK ACRU-210 R6B	4000	0.25	741		3/4	208V-3ø		80	①	WITH RCW 33%
* EF 6	PEST CONTROL STORAGE	ON ROOF	ROOF MOUNTED	CENT. B.I.	13.5"	LOREN COOK ACRU-135 R3B	350	.875	1240		1/4	120V-1ø		100	①	
EF 7	WOMEN'S LOCKER RM.	ON ROOF	ROOF MOUNTED	CENT. B.I.	12"	LOREN COOK ACRU-120 R3B	950	1.0	1435		1/4	120V-1ø		100	①	
EF 8	TRAFFIC SIGNAL SHOP	BELOW MEZZANINE	IN-LINE	CENT. B.I.	–	LOREN COOK GN-520	240	0.75	1200	–	71 WATTS	120V-1ø		40		
EF 9	TRAFFIC SIGN STORAGE	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBULAR CENT.	13.5"	LOREN COOK ACRU-135 R4B	1400	0.75	1330	4695	1/3	120V-1ø		100	①	
EF 10	CARPENTRY SHOP	ON ROOF	ROOF MOUNTED	CENT. B.I.	24.5"	LOREN COOK ACRU-245 R9B	6000	0.75	814	5221	2	208V-3ø		275	①	
* EF 11	GARAGE PARKING	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBULAR CENT.	21"	LOREN COOK UCIC 225	9000	0.75	1352	7963	5	208V-3ø		625	① ③	
EF 12	PAINT BOOTH EXHAUST (EXISTING)	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBE AXIAL	34"	DAYTON MODEL 3C413	–	–	–	–	–	–		750	①	INTERLOCK W/ ROLL-UP DOOR
EF 13	PAINT BOOTH EXHAUST (EXISTING)	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBE AXIAL	34"	DAYTON MODEL 3C413	–	–	–	–	–	–		750	①	INTERLOCK W/ ROLL-UP DOOR
EF 14	MAINTENANCE PAINT SHOP	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBULAR CENT.	15"	LOREN COOK UCIC-180	4600	0.25	1297	6111	1 1/2	208V-3ø		325	① ③	
* EF 15	GARAGE PARKING	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBULAR CENT.	21"	LOREN COOK UCIC-225	9000	0.75	1352	7963	5	208V-3ø		625	① ③	
* EF 16	GARAGE PARKING	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBULAR CENT.	21"	LOREN COOK UCIC-225	9000	0.75	1352	7963	5	208V-3ø		625	① ③	
* EF 17	GARAGE PARKING	ON ROOF	ROOF MOUNTED UPBLAST DISCH.	TUBULAR CENT.	21"	LOREN COOK UCIC-225	9000	0.75	1352	7963	5	208V-3ø		625	① ③	
* EF 18	LOCK-UP STORAGE	ON ROOF	ROOF MOUNTED	CENT. B.I.	12"	LOREN COOK ACRU-120 R3B	1000	0.75	1431	4495	1/4	120V-1ø		80	①	WITH RCW 50%
EF 19	ELECTRICAL SHOP	BELOW MEZZANINE	IN-LINE	CENT. B.I.	12"	LOREN COOK GN-720	400	0.875	1325	–	321 WATTS	120V-1ø		45		
EF 20	ELEV. EQPT. RM.	ON ROOF	ROOF MOUNTED	CENT. B.I.	10"	LOREN COOK ACRU-100 R2B	200	0.75	1562	4089	1/6	120V-1ø		80	① ⑧	100R15DM
EF 21	HVAC SHOP	BELOW MEZZANINE	IN-LINE	CENT.	–	LOREN COOK	240	0.75	1200	–	71 WATTS	120V-1ø		40		
EF 22	PLUMBING SHOP	BELOW MEZZANINE	IN-LINE	CENT.	–	LOREN COOK	240	0.75	1200	–	71 WATTS	120V-1ø		40		
EF 23	IRRIGATION SHOP	BELOW MEZZANINE	IN-LINE	CENT.	–	LOREN COOK	240	0.75	1200	–	71 WATTS	120V-1ø		40		

ACCESSORIES: ① ROOF CURB (PROVIDE SHIM – BY G.C.) ② MOTORIZED DAMPERS ③ MOTOR WEATHER HOOD COVER ④ DRAIN ⑤ ROOF JACK ⑥ OUTLET SCREEN ⑦ WALL CAP ⑧ FAN SPEED CONTROL

NOTES: 1) ALL FANS MARKED (*) TO BE SPARKPROOFED CONSTRUCTION (TYPE A), AND EXPLOSION PROOF MOTORS & CONTROLS.

HOOD SCHEDULE

SYMBOL	MANUFACTURER & MODEL NO.	SYSTEM/ AREA SERVED	THROAT SIZE	ACCESSORIES	WT. (LBS)	REMARKS
CAIR 1	LOREN COOK TYPE VI	WATERHEATER COMBUSTION AIR OPENING	24" X 12"	①	200	

ACCESSORIES: ① ROOF CURB (PROVIDE SHIM – BY G.C.)

SHP 1

SPLIT HEAT PUMP UNIT

CARRIER MODEL 38-AY-030
SEER = 11.0
TOTAL COOLING CAPACITY = 28,400 BTUH
TOTAL HEATING CAPACITY = 29,600 BTUH
208/230V-1ø-60HZ
COMP. LRA = 76.0
COMP. RLA = 14.3
COND. FAN FLA = 0.9
MCA = 18.8
OPERATING WEIGHT = 100 LBS.
INTERLOCK WITH FC-1

FC 1

FAN COIL UNIT

CARRIER MODEL FA4A-030
HORIZONTAL MOUNTED
208/230V-1ø-60HZ
FAN FLA = 2.4
900 CFM @ .60 ESP
OPERATING WEIGHT = 150 LBS.
INTERLOCK WITH SHP-1

⚠4

DUST COLLECTION SYSTEM (BASE BID)

RELOCATE EXISTING DUST COLLECTOR SYSTEM INCLUDING FANS, CONTROLS, HOODS, BIN, RELATED DUCTWORK AND ALL OTHER ACCESSORIES. RELOCATED DUST COLLECTION SYSTEM SHALL COMPLY WITH ALL GOVERNING CODES. COORDINATE WITH CULVER CITY PUBLIC WORKS FOR OTHER REQUIREMENTS.

DC 1

DUST COLLECTOR (ALTERNATE #4) – ADD EQUIPMENT

STERNVENT
VIBRACLEAN MODEL DKTD 72020-4
WITH 8:1 AIR TO CLOTH RATIO
BELT DRIVEN AIR FOIL FAN
20HP BLWR MOTOR: 230V-3ø-60HZ TEFC 1750 RPM.
1/2HPSHAKER 208/203V-3ø-60HZ TEFC 850 RPM.
BLOWER: NON-SPARKLING AMCA "C"
FILTER AREA: 720 SQ. FT.
FILTER SPACING: 1.5" (WIDE TYPE).
FILTER MEDIA: COTTON SATEEN.
4-18 MULTI-POCKET MODULES 24"X30"
CONTROLLER: MAGNETIC STARTERS FOR BLOWER AND SHAKER, FACTORY WIRED, NEMA 4

⚠4

DUST STORAGE: BIN PROVIDE WITH DUST COVER

STD. FINISH: RED OXIDE PRIMER & EXTERIOR ONE COAT GRAY ENAMEL SOME PARTS PAINTED WITH ONE COAT HEAT CURED GRAY POWDER SPRAY.

⚠4

NOTE: COORDINATE POWER AND CONTROL WIRING WITH CARPENTRY EQUIPMENT.

SUPPLY AIR DIFFUSER SCHEDULE

SYMBOL	DIFFUSER SIZE	BLOW	MAXIMUM CFM	
A	8X8	4W	180	
B	8X8	3W	180	
C	8X8	2W	180	
D	8X8	2WC	180	
E	10X10	4W	280	
F	10X10	3W	280	
G	10X10	2W	280	
H	10X10	2WC	280	
I	12X12	4W	400	
J	12X12	3W	400	
K	12X12	2W	400	
L	12X12	2WC	400	
M	14X14	4W	550	
N	14X14	3W	550	
O	14X14	2W	550	
P	14X14	2WC	550	
Q	16X16	4W	720	
R	16X16	3W	720	
S	16X16	2W	720	
T	16X16	2WC	720	
U	18X18	4W	900	
V	18X18	3W	900	
W	18X18	2W	900	
X	20X20	4W	1120	
Y	20X20	3W	1120	
Z	20X20	2W	1120	

REMARKS: SYMBOL / CFM

RETURN AND EXHAUST AIR REGISTER

SYMBOL	REG. SIZE	MAXIMUM CFM	
1	8X8	150	
2	10X10	200	
3	12X12	300	
4	14X14	400	
5	16X16	600	
6	18X18	800	
7	20X20	1000	
8	22X22	1200	
9	24X24	1550	
10			

REMARKS: SYMBOL / CFM

⚠1A

MAKE-UP AIR/GAS FURNACE

SYMBOL	LOCATION (AREA SERVED)	MANUFACTURER & MODEL NO.	BLOWER SECTION CFM	BLOWER SECTION E.S.P.	BLOWER SECTION ELECTRICAL DATA	FURNACE SECTION BTUH(INPUT/OUTPUT)	FURNACE SECTION AFUE(%)	OPTIONS	OPER. WT.(LBS)	DIMENSIONS	REMARKS
MUA 1	ON ROOF (PWD/FAC./HSD LOCKERS AND RESTROOM)	MODINE WSC-101	1600	1.5	1 1/2HP-208V-3ø-60HZ	100,000 / 80,000	80	② ③ ④ ⑤ ⑥ ⑦	600	–	①
MUA 2	ON ROOF (PWD/STORAGE MAINT. AND NEW RESTROOM)	MODINE WSC-101	1600	1.5	1 1/2HP-208V-3ø-60HZ	100,000 / 80,000	80	② ③ ④ ⑤ ⑥ ⑦	600	–	①
MUA 3	ON ROOF (EQUIP. REPAIR, W. RESTROOM/LOCKER)	MODINE WSC-250	3200	1.8	3HP-208V-3ø-60HZ	250,000 / 200,000	80	② ③ ⑤ ⑥ ⑦	800	–	①
MUA 4	ON ROOF (FACILITY & MAINT. PAINT SHOP)	MODINE WSC-251	4600	1.5	3HP-208V-1ø-60HZ	250,000 / 200,000	80	② ③ ⑤ ⑥ ⑦	800	–	①
MUA 5	ON ROOF (CARPENTRY SHOP)	MODINE WSC-302	6000	1.0	3HP-208V-3ø-60HZ	300,000 / 240,000	80	② ③ ⑤ ⑥ ⑦	1200	–	①

REMARKS: ① CLEARANCE FROM COMBUSTIBLE SHALL BE PER MANUFCTURER'S RECOMMENDATIONS (PROVIDE SHEET METAL BELOW UNIT).

OPTIONS: ① FILTERS, FARR 30/30, 2" THICK ② REMOTE CONTROL PANEL ③ TWO-STAGE GAS VALVE W/ DUCTSTAT ④ DOWNTURN PLENUM ⑤ ROOF CURB-12" HIGH (PROVIDE SHIM – BY G.C.) ⑥ INTERLOCKING EXHAUST FAN RELAY ⑦ STAINLESS STEEL HEAT EXCHANGER & BURNER

⚠1

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CULVER CITY PUBLIC SERVICES BUILDING (PHASE 1)

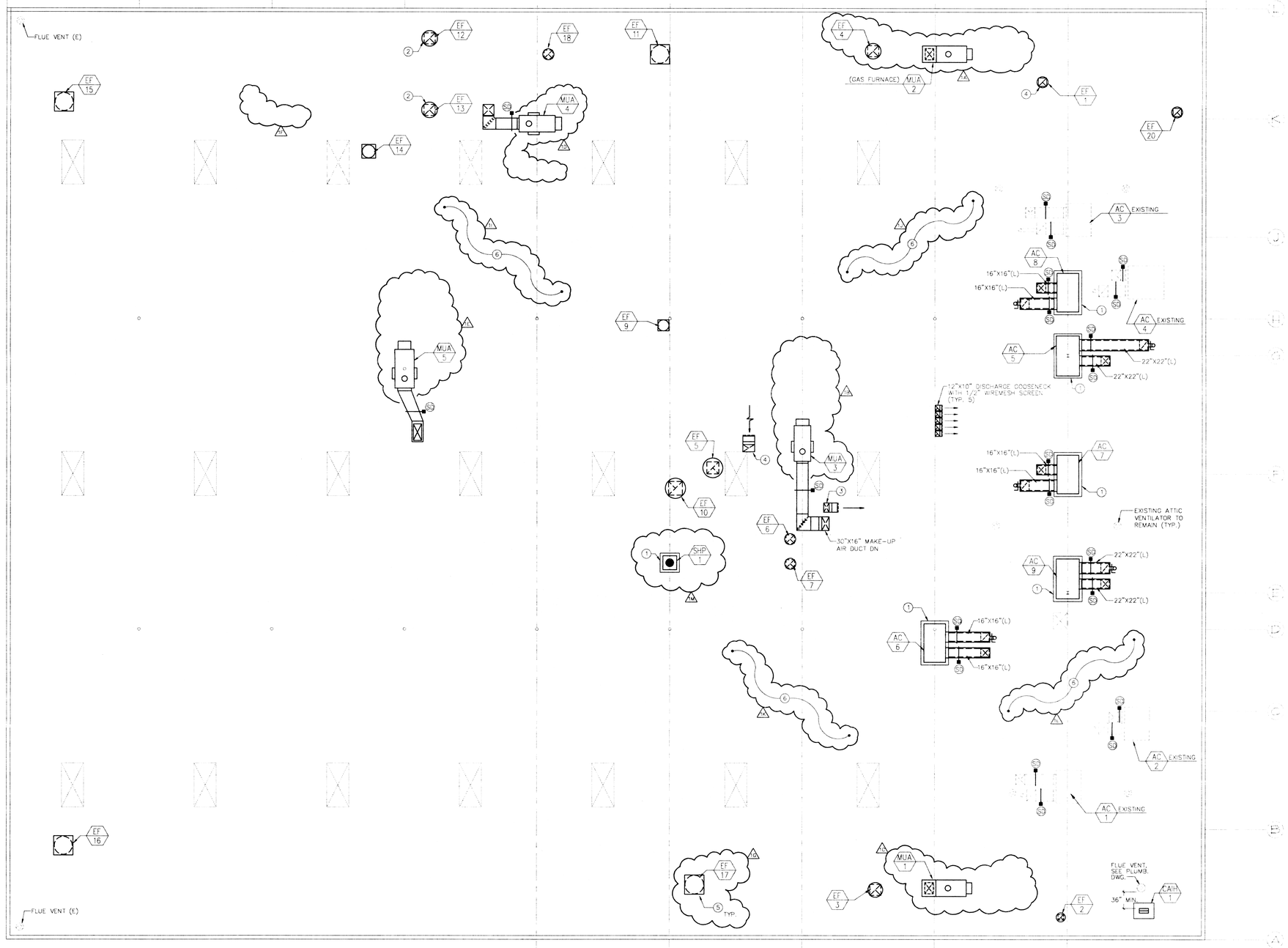
9505 JEFFERSON BLVD.
Culver City, California

Department of Transportation
Culver City, California

Project #: 3826
File #: C3826M41
Date: © October 28, 1996
Revisions:
⚠ ADDENDUM #3 28 OCT. 1996

EQUIPMENT SCHEDULE

M4.1



REFERENCE NOTES:

1. 6" HIGH EQUIPMENT PLATFORM WITH SHEET METAL COVER (W.P.) – BY G.C.
2. EXISTING PAINT BOOTH EXHAUST FAN RELOCATED EXISTING CULVER CITY TRANSPORTATION FACILITY. FAN CURB DUCTWORK SIZE, MATERIAL AND CONSTRUCTION TYPE TO MATCH EXISTING.
3. 20"X12" DISCHARGE GOOSENECK WITH 1/2" STAINLESS STEEL WIREMESH SCREEN.
4. 26"X16" INTAKE GOOSENECK WITH 1/2" STAINLESS STEEL WIREMESH SCREEN.
5. MECHANICAL CONTRACTOR TO COORDIANTE WITH STRUCTURAL ENGINEER FOR LOCATION AND FRAMING (TYPICAL FOR ALL HVAC EQUIPMENT).
6. SEE ARCHITECTURAL DRAWING FOR ALL EQUIPMENT SCREEN ON ROOF.

ROOF HVAC PLAN

SCALE: 1/8" = 1'-0"

0 1 5 10 20

N

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CULVER CITY PUBLIC SERVICES BUILDING (PHASE 1)

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Culver City, California

Department of Transportation
Culver City, California

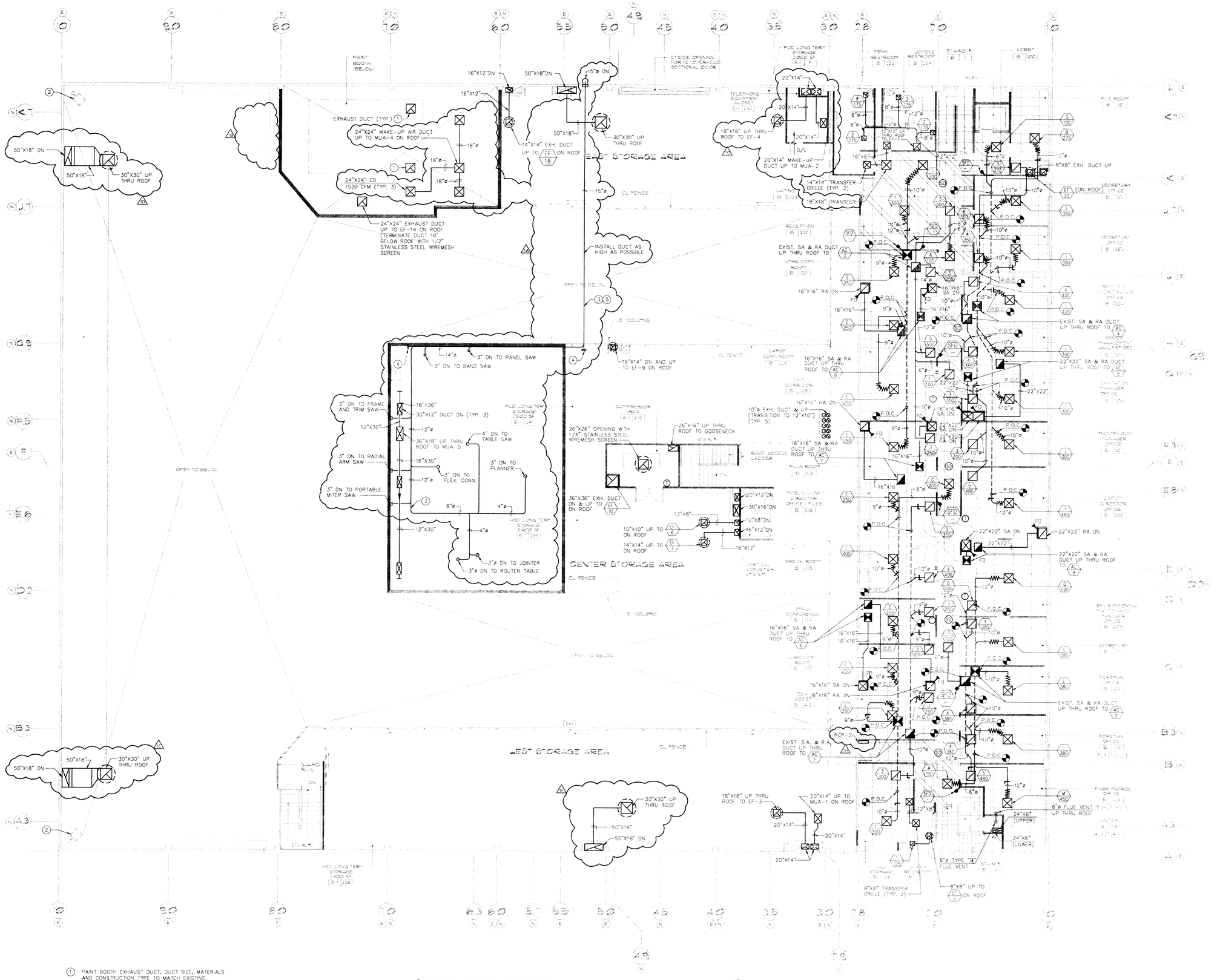
Project #: 3826
File #: C3826M44
Date: © October 28, 1996

Revisions:

1 ADDENDUM #3 28 OCT. 1996

ROOF HVAC PLAN

M4.4



1. PAINT BOOTH EXHAUST DUCT, DUCT SIZE, MATERIALS AND CONSTRUCTION TYPE TO MATCH EXISTING.
2. EXISTING UNIT HEATER, THERMOSTAT AND FLUE TO REMAIN.
3. HIGH PRESSURE DUCT BY "FOREMOST" MANUFACTURING COMPANY.
4. PROVIDE CAP FOR CLEANOUT.
5. PROVIDE SEAL FOR DUCT PENETRATION THRU SMOKE BARRIER.

SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"

N

0 1 5 10' 20'

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CULVER CITY PUBLIC SERVICES BUILDING (PHASE 1)

9505 JEFFERSON BLVD.
Culver City, California

Department of Transportation
Culver City, California

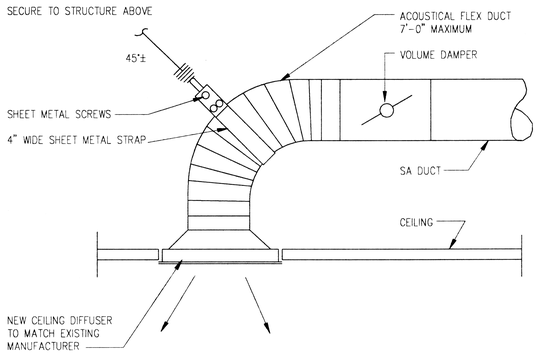
Project #:	3826
File #:	C3826M43
Date: ©	October 28, 1996

Revisions

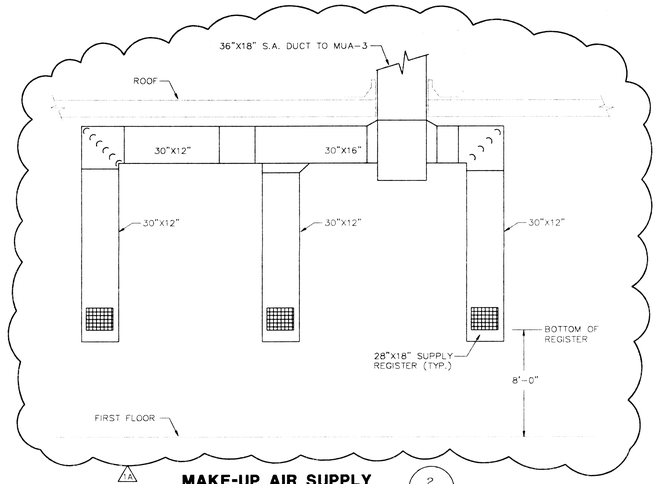
1 ADDENDUM #3 28 OCT. 1996

SECOND FLOOR HVAC PLAN

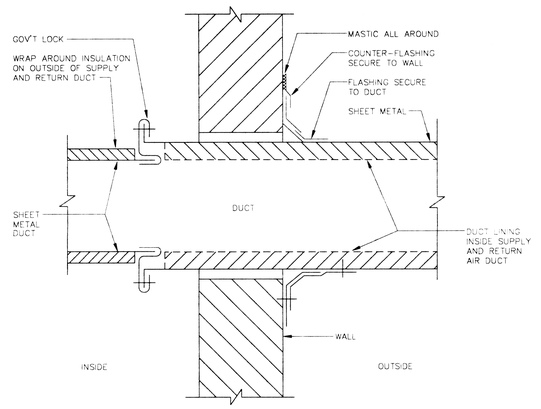
M4.3



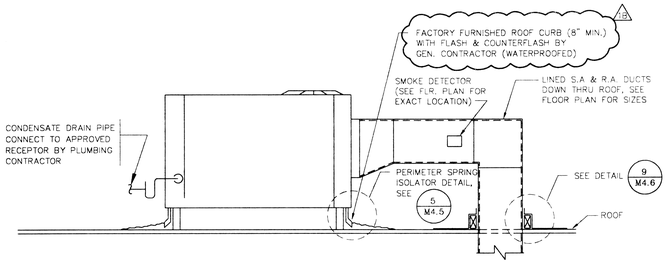
CEILING DIFFUSER DETAIL 3/M4.5
SCALE: NONE



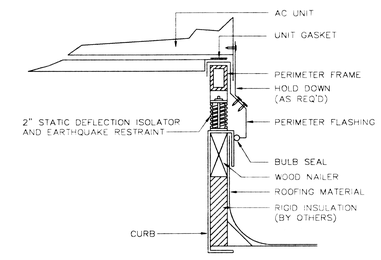
MAKE-UP AIR SUPPLY
(CARPENTRY SHOP) N.T.S. 2/M4.5



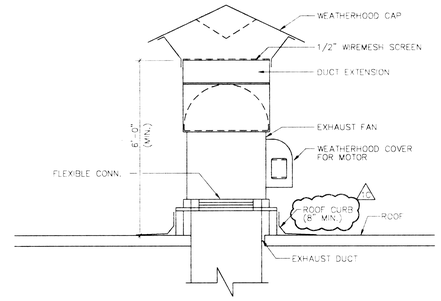
DUCT THRU WALL DETAIL N.T.S. 1/M4.5



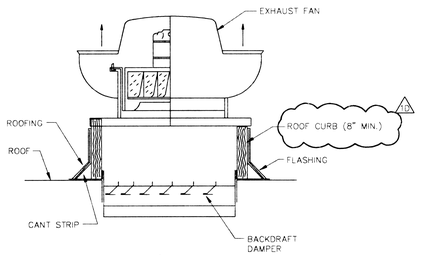
ROOFTOP A/C UNIT MOUNTING DETAIL 6/M4.5
SCALE: NONE



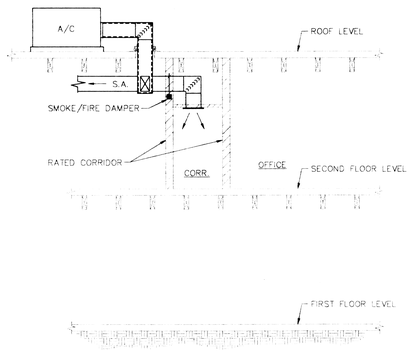
PERIMETER SPRING ISOLATOR DETAIL 5/M4.5
SCALE: NONE



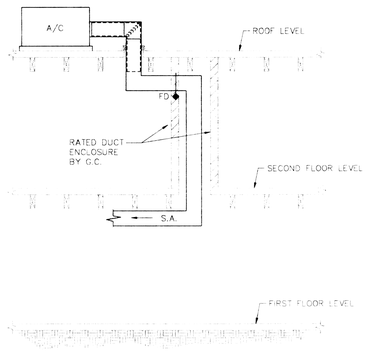
EXHAUST FAN DETAIL N.T.S. 4/M4.5



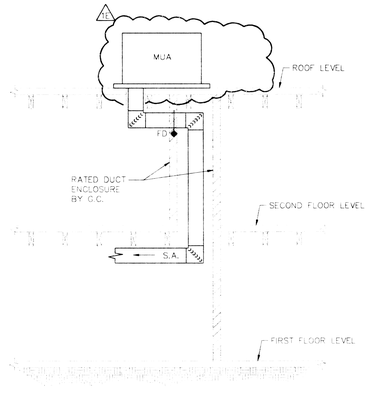
CENTRIFUGAL ROOF EXHAUSTER DETAIL 10/M4.5
NTS



A/C SUPPLY AIR DUCT RISER DIAG. 9/M4.5
NTS



A/C SUPPLY AIR DUCT RISER DIAG. 8/M4.5
NTS



MUA SUPPLY AIR DUCT RISER DIAG. 7/M4.5
NTS

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CULVER CITY PUBLIC SERVICES BUILDING (PHASE 1)

9505 JEFFERSON BLVD.
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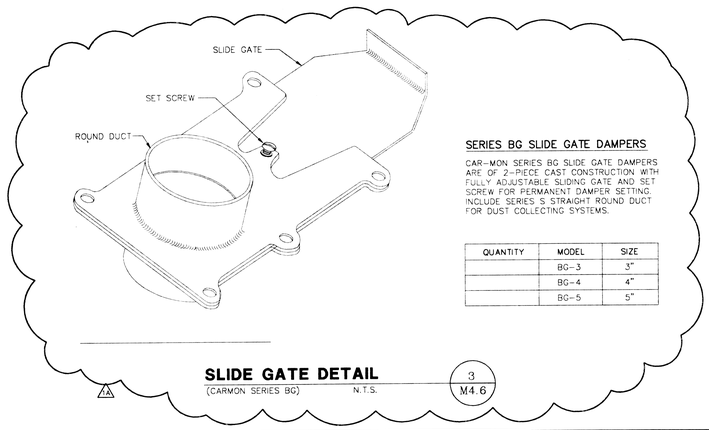
Department of Transportation
Culver City, California

Project #: 3826
File #: C3826M45
Date: © October 28, 1996

Revisions:
1 ADDENDUM #3 28 OCT. 1996

HVAC DETAILS

M4.5

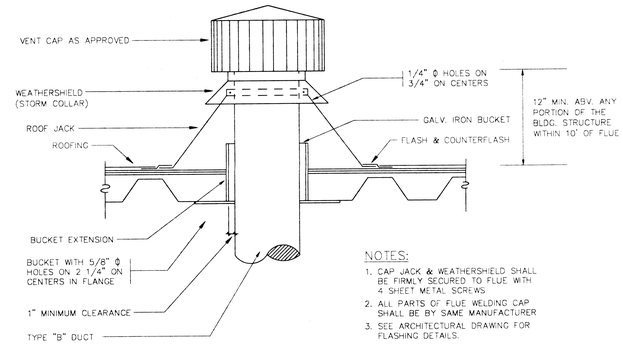


SERIES BG SLIDE GATE DAMPERS

CAR-MON SERIES BG SLIDE GATE DAMPERS ARE OF 2-PIECE CAST CONSTRUCTION WITH FULLY ADJUSTABLE SLIDING GATE AND SET SCREW FOR PERMANENT DAMPER SETTING. INCLUDE SERIES S STRAIGHT ROUND DUCT FOR DUST COLLECTING SYSTEMS.

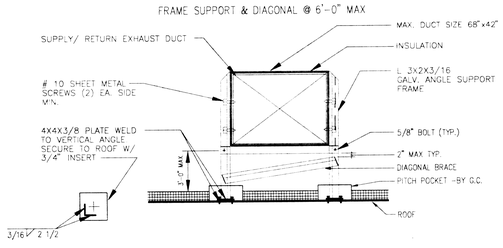
QUANTITY	MODEL	SIZE
	BG-3	3"
	BG-4	4"
	BG-5	5"

SLIDE GATE DETAIL (CARMON SERIES BG) N.T.S. — 3 / M4.6

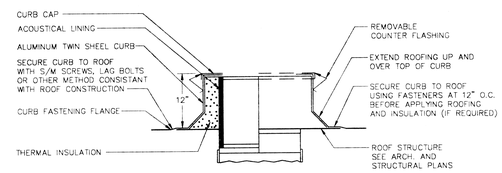


NOTES:
1. CAP JACK & WEATHERSHIELD SHALL BE FIRMLY SECURED TO FLUE WITH 4 SHEET METAL SCREWS
2. ALL PARTS OF FLUE WELDING CAP SHALL BE BY SAME MANUFACTURER
3. SEE ARCHITECTURAL DRAWING FOR FLASHING DETAILS.

FLUE THRU ROOF DETAIL NOT TO SCALE — 2 / M4.6

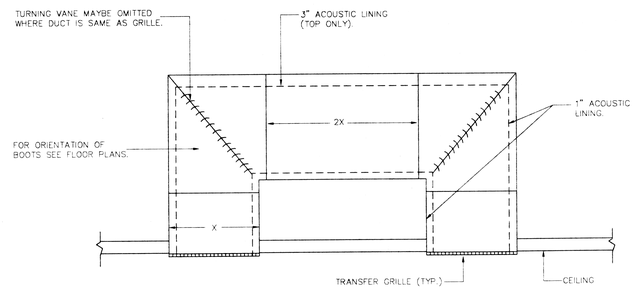


ROOF DUCT SUPPORT DETAIL NOT TO SCALE — 1 / M4.6

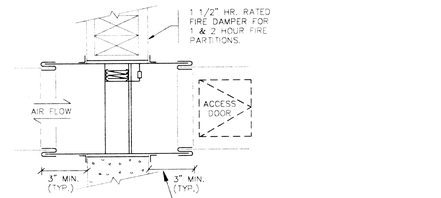


ROOF CURB DETAIL NOT TO SCALE — 6 / M4.6

NOTE: ALL BOOTS SHALL BE SAME SIZE AS GRILLE. UNLESS SPACE WILL NOT PERMIT BOOTS MAY BE SIZED FOR MAXIMUM VELOCITY OF 500 FPM AFTER INSULATION.



TRANSFER DUCT DETAIL NOT TO SCALE — 5 / M4.6



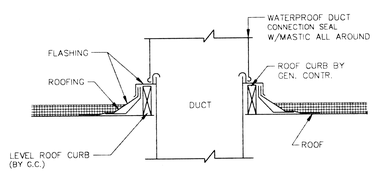
OPENING TO BE DOUBLE HEADER FRAMING FOR WOOD; CAN BE SINGLE FOR STEEL. OPENING MUST BE LINED WITH MINIMUM 5/8" TYPE X GYP. BOARD. LINING NOT REQUIRED AT CONCRETE OR MASONRY. SUGGESTED CLEARANCE BETWEEN SLEEVE AND OPENING 1/8" FOR EACH 12" DAMPER WIDTH AND HEIGHT FOR EXPANSION.
DAMPER TO BE HELD IN PLACE BY RETAINING ANGLES ATTACHED TO SLEEVE ON BOTH SIDES OF PARTITION, AND AROUND ENTIRE PERIMETER OF THE SLEEVE ANGLES TO BE MIN. 16 GA. 1 1/2" X 1 1/2" OR LARGER AS REQUIRED TO PROVIDE A MIN. 1" OVERLAP OF THE OPENING ANGLES MAY BE METERED, BUTTED OR OVERLAPPED AT THE CORNERS. ATTACH ANGLES TO THE SLEEVE (NOT THE PARTITION) WITH SHEET METAL SCREWS, BOLTS OR WELDS AS PR MANUFACTURERS INSTRUCTIONS. CONNECT DUCT TO SLEEVE WITH "S" TYPE SLIP CONNECTION. DO NOT USE MECHANICAL FASTENERS.

FIRE DAMPER SPECIFICATIONS:

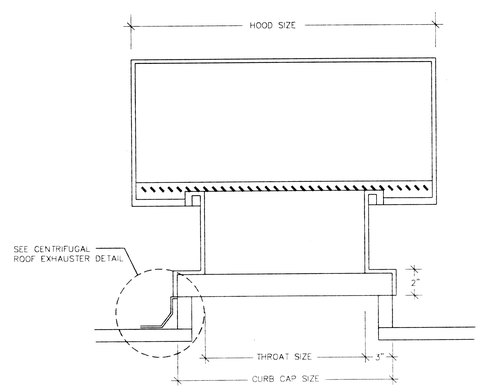
ALL FIRE DAMPERS SHALL BE LABELED AND LISTED BY CALIFORNIA STATE FIRE MARSHAL AND/OR UNDER-WRITERS LABORATORIES. ALL DAMPERS SHALL BE INSTALLED PER MANUFACTURERS INSTALLATION INSTRUCTIONS AND/OR STATE FIRE MARSHAL MATERIAL LISTING NO. 3225 POTTORFF COMPANY INC. (LISTING NO. 3225-368 X).

NOTE: PROVIDE ACCESS PANEL WHERE REQ'D. - BY G.C.

WALL FIRE DAMPER DETAIL NOT TO SCALE — 4 / M4.6



DUCT PENETRATION THRU ROOF DETAIL NOT TO SCALE — 9 / M4.6

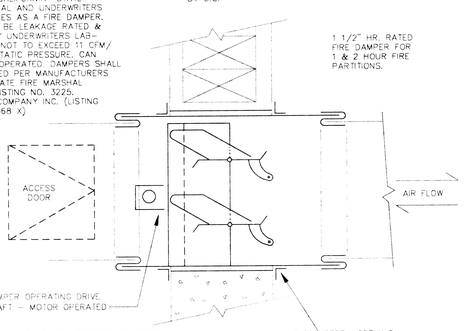


COMBUSTION AIR HOOD INTAKE DETAIL NOT TO SCALE — 8 / M4.6

COMBINATION FIRE / SMOKE DAMPER SPECIFICATIONS:

DAMPERS MUST BE LABELED AND LISTED BY CALIFORNIA STATE FIRE MARSHAL AND UNDERWRITERS LABORATORIES AS A FIRE DAMPER. MUST ALSO BE LEAKAGE RATED & LABELED BY UNDERWRITERS LABORATORIES NOT TO EXCEED 11 CFM/FT @ 1" STATIC PRESSURE. CAN BE MOTOR OPERATED. DAMPERS SHALL BE INSTALLED PER MANUFACTURERS AND/OR STATE FIRE MARSHAL MATERIAL LISTING NO. 3225 POTTORFF COMPANY INC. (LISTING NO. 3225 368 X)

NOTE:
1). PROVIDE CEILING OR WALL ACCESS WHERE REQUIRED - BY G.C.



OPENING TO BE DOUBLE HEADER FRAMING FOR WOOD; CAN BE SINGLE FOR STEEL. OPENING MUST BE LINED WITH MINIMUM 5/8" TYPE X GYP. BOARD. LINING NOT REQUIRED AT CONCRETE OR MASONRY. SUGGESTED CLEARANCE BETWEEN SLEEVE AND OPENING 1/8" FOR EACH 12" DAMPER WIDTH AND HEIGHT FOR EXPANSION.
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TYP. COMBINATION FIRE/SMOKE DAMPER NTS — 7 / M4.6

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CULVER CITY PUBLIC SERVICES BUILDING (PHASE 1)

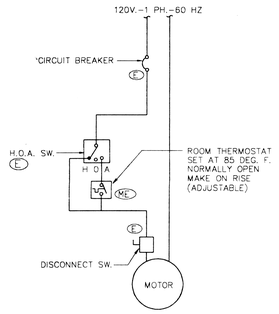
9505 JEFFERSON BLVD.
Culver City, California

Department of Transportation
Culver City, California

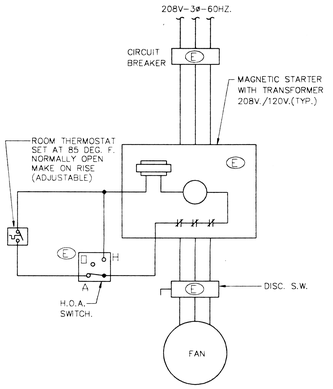
Project #: 3826
File #: C3826M46
Date: © October 28, 1996
Revisions:
1 ADDENDUM #3 28 OCT. 1996

HVAC DETAILS

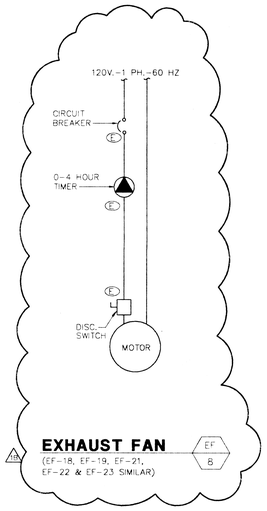
M4.6



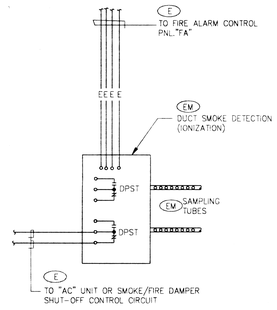
EXHAUST FAN EF 20



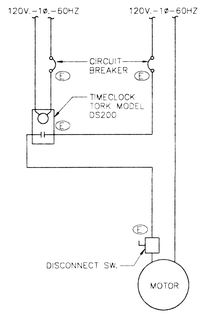
EXHAUST FAN EF 5



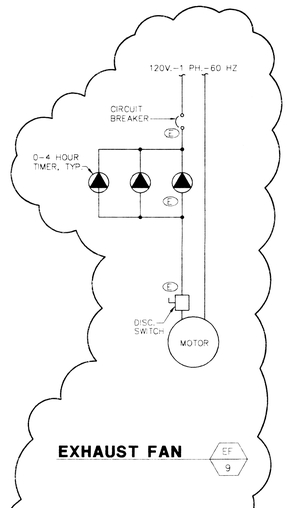
⚠1 **EXHAUST FAN** EF 8
(EF-18, EF-19, EF-21, EF-22 & EF-23 SIMILAR)



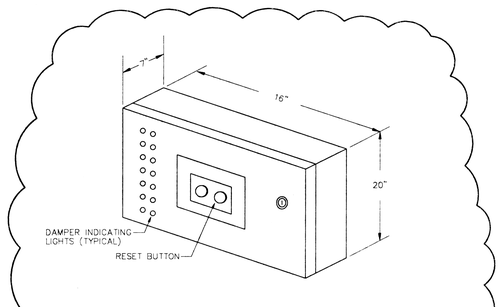
DUCT SMOKE DETECTOR SD –
NOT TO SCALE



EXHAUST FAN EF 1
(EF-2 SIMILAR)

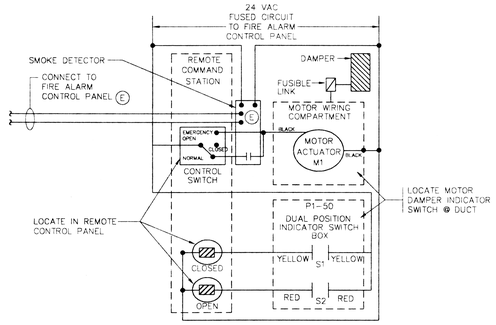


EXHAUST FAN EF 9

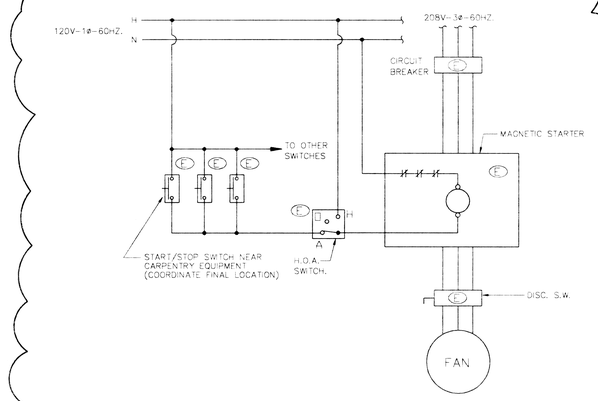


REMOTE CONTROL PANEL - RCP-1
(TYPICAL FOR RCP-2)
(POTTORFF MODEL # RCP-10)

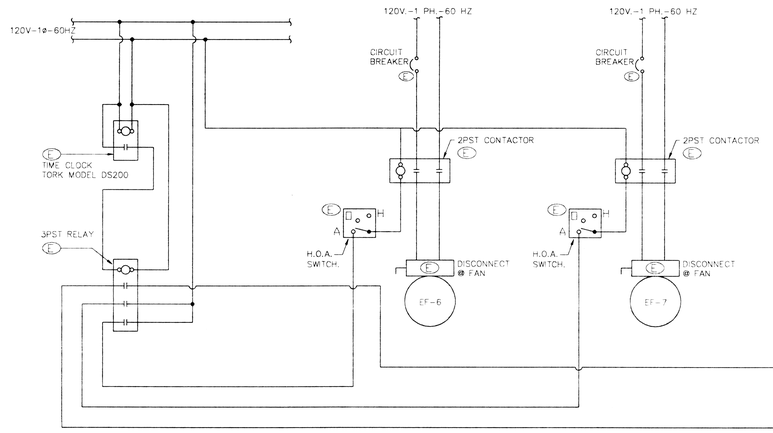
NOTE:
RCP-1 – FIRST FLOOR
RCP-2 – SECOND FLOOR



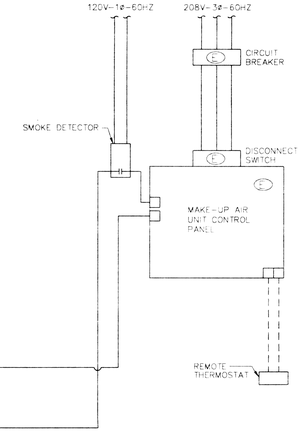
COMB. SMOKE/FIRE DAMPER DETAIL WIRING DIAGRAM
⚠1 (POTTORFF MODEL FSD 142 W/ P150 INDICATOR SW.)



⚠1 **DUST COLLECTOR** DC 1



EXHAUST FAN EF 6 EF 7



MAKE-UP AIR UNIT MUA 5

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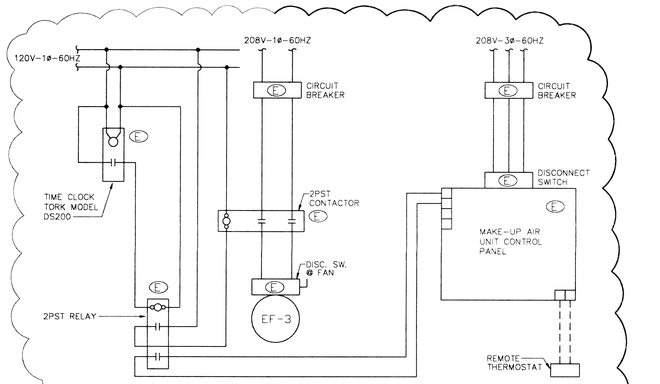
⚠1 ADDENDUM #3 28 OCT. 1996

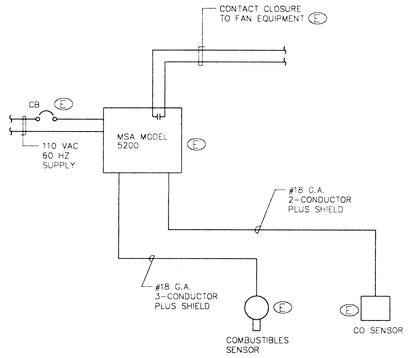
WIRING DIAGRAMS

M4.7

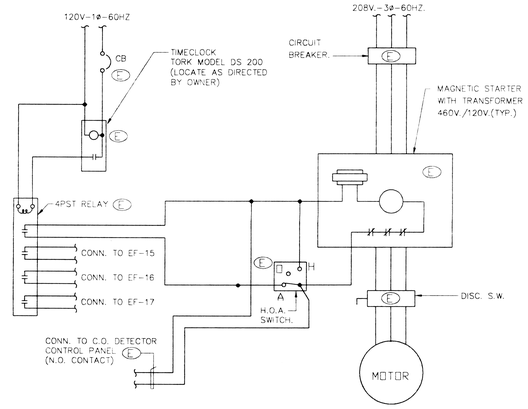


EXHAUST FAN EF 3
(EF-4 SIMILAR)

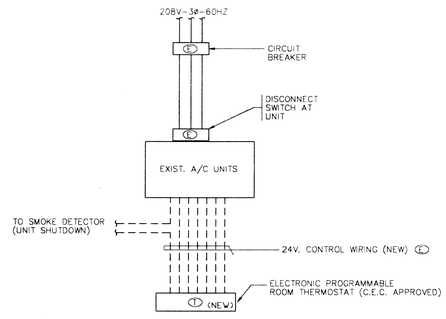
MAKE-UP AIR UNIT MUA 1



TYP. GAS MONITORING WIRING DIAGRAM
(IN FACILITY MAINTENANCE PAINT SHOP)

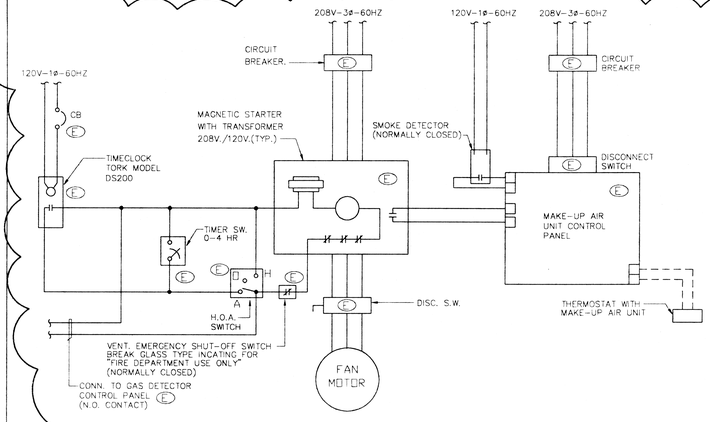


EXHAUST FAN EF 11 | EF 15 | EF 16 | EF 17
(1-HR. EARLY MORNING PURGE IN GARAGE PARKING)



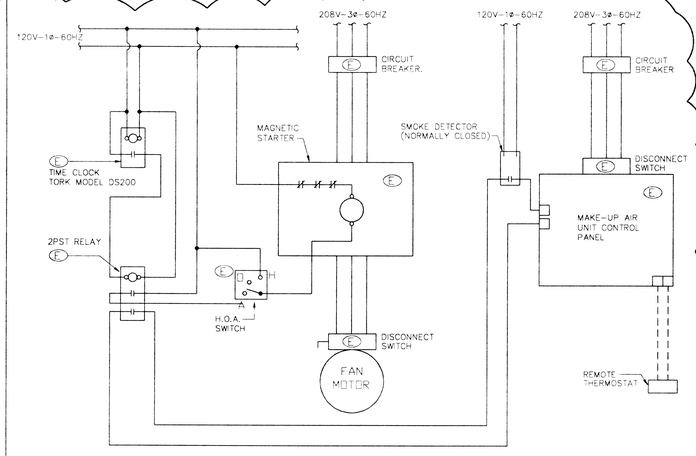
NOTES:
1. PROVIDE (NEW) DUCT SMOKE DETECTOR IN S.A. & R.A. DUCTS.
2. CONNECT LOW VOLT WIRING TO NEW LOCATION OF ROOM T'STATS.

A/C UNIT WIRING DIAGRAM AC —
(TYPICAL FOR AC-1 THRU AC-4)



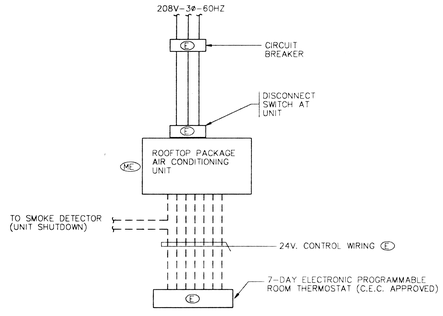
EXHAUST FAN EF 14

MAKE-UP AIR UNIT MUA 4

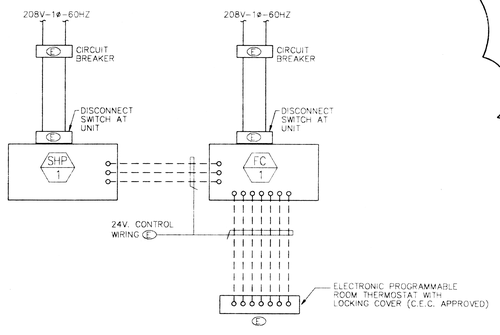


EXHAUST FAN EF 10

MAKE-UP AIR UNIT MUA 5



A/C UNIT WIRING DIAGRAM AC —
(TYPICAL FOR AC-5 THRU AC-9)



SPLIT HEAT PUMP WIRING DIAGRAM SHP 1 | FC 1
N.T.S.

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CULVER CITY PUBLIC SERVICES BUILDING (PHASE 1)

9505 JEFFERSON BLVD.
Culver City, California

Department of Transportation
Culver City, California

Project #: 3826
File #: C3826M48
Date: © October 28, 1996

Revisions:

1 ADDENDUM #3 28 OCT. 1996

WIRING DIAGRAM

M4.8

City of Culver City

RFP No. 2520 CITY YARD HVAC REPLACEMENT

Exhibit A – *Technical Specifications*

Maintenance Yard

Technical Performance Specifications for Implementation of Mechanical Energy Efficiency Upgrades

A14CMC12

Prepared For:

Maintenance Yard
9505 W Jefferson Blvd
Culver City, CA 90232

Prepared By:

County of Los Angeles/Southern California
Regional Energy Network (SoCalREN)

Scope and Technical Specifications Developed By:

TRC Companies

June, 2024

Table of Contents

A Project Supported by SoCalREN

Southern California Regional Energy Network (SoCalREN) Public Agency Program, administered by Los Angeles County, was authorized by the California Public Utilities Commission to help eligible public agencies in Southern California harness their collective action, save energy, reduce operating costs and protect precious resources. To expand public agency participation in utility energy efficiency programs, SoCalREN is offering a range of free energy efficiency services to assist public agencies with accelerating energy retrofits.

The mechanical upgrade project at the City of Culver City's Maintenance Yard is being supported by SoCalREN. The services provided as Construction Management Support are outlined in Appendix A Responsibility Matrix Please refer to this document to better understand the relationship and role of SoCalREN Project Manager and assigned Energy Consultant.

Participation of SoCalREN is entirely at the discretion of the City of Culver City and SoCalREN may modify or terminate its services based on funding availability.

Disclaimer

The products in this report represent examples based on their efficiency and impact on project economics. Measures will require more detailed engineering analysis of feasibility and constructability. This study does not include specific design instructions and is not intended as a design document. The selected design professional or installation contractor shall accept responsibility and liability for the results.

1) Executive Summary

The Maintenance Yard at the city of Culver City ("City") is a two-story, approximately 82,000 square feet building. The building is usually occupied between 7AM and 6PM during weekdays and closed on weekends. The building is served by nine (9) packaged rooftop units with DX cooling coils and gas heating 5-7.5 tons in size. All heating ventilation and air conditioning (HVAC) units are controlled by programmable thermostats. The facility has five make-up air units with gas furnace and 23 exhaust fans serving the facility. The City of Culver City is planning various energy efficiency upgrades at the Maintenance Yard including the following measures:

- Replace Rooftop Packaged Units with Rooftop Packaged Heat Pumps
- Replace Make-Up Air Unit with Rooftop Packaged Heat Pumps
- Exhaust Fan Replacements –

SoCalREN is supporting the City by discussing the pros and cons of the various technology options and helping to identify the scope that will most effectively meet the City's goals.

The Following parties are involved during the project construction:

- Agency Construction Manager (CM): City representative assigned as Construction Manager
- Contractor: Installation contractor

2) General

2.1 Terms and Conditions

The Contractor is expected to perform the construction work in compliance with the specific project requirements listed below. Details of these items will be discussed at the Pre-Construction meeting and memorialized in the meeting minutes for that meeting.

Contract terms and conditions put forth by the City as part of this project and contained in Request for Proposals No. 2520 should not conflict with the scope of work terms and conditions. If a discrepancy should arise, the City's contract terms and conditions will take precedence.

The Contractor shall adhere to the following terms and conditions throughout the project:

a) Contractor shall conduct all work during business hours in all areas unless previously approved and scheduled with the City . Contractor shall comply with safety requirements in accordance with City requirements and Cal/OSHA.

b) Contractor must notify the City in advance of any work that may be disruptive to the normal operations and parking lot traffic flow. Any shutdown of service and/or utilities must be approved and scheduled with the City and be implemented in a manner intended not to interrupt the daily operation of the facility. Contractor must obtain approval of the City if a portion of the work needs to be performed after hours.

c) Contractor shall do all that is necessary to maintain a safe working environment for Contractor's employees, the City, facility employees, and the general public present. Safety signs, barricades,

and/or other materials will be erected by the Contractor to warn patrons and keep staff away from work areas. Safety of patrons, City staff, and Contractor's employees shall be a priority and shall be the responsibility of the Contractor.

d) Contractor shall work with the City facility staff to understand and abide by any site-specific security procedures.

e) Contractor shall clean up any construction dust, dirt, and debris from work surfaces or equipment after work is completed each day and prior to occupancy.

f) Contractor shall immediately notify the City of any and all issues that may result in a project delay and/or impact work quality or safety.

g) The City must be informed of and approve all work performed by subcontractors; however, the City will deal only with the Contractor regarding work done and costs incurred by subcontractors.

h) Contractor shall be very careful to leave the facility with no damage to its structure, contents, existing finishes, and with no evidence of cutting or patching.

i) Contractor is responsible for removing all construction and packing debris from the work site and keeping a clean, safe work area at all times. Clean up of the work area shall be at no additional cost to the City. If hazardous materials are encountered during execution of the contract, the Contractor will be responsible for removing and disposing said materials in accordance with federal, state, and local statutes and codes. Contractor will provide the City with appropriate documentation regarding the disposal of said hazardous materials as requested or required.

j) Contractor shall be very careful to leave the facility with no damage to its structure, contents, existing finishes, and with no evidence of cutting or patching. The Contractor will be held liable for the cost of repair or replacement of structures, utility systems, and any other parts of the facility damaged by the Contractor's acts of negligence or lack of full adherence to the requirements of the Scope of Work contained herein. Contractor will be held liable for the cost of repair or replacement of building components and/or vehicle(s) damaged by falling/flying equipment and/or debris.

k) All work shall be performed in accordance with all Federal, state, and local codes.

l) Contractor shall perform work in accordance with applicable requirements of governing codes, rules and regulations including the following minimum standards, whether statutory or not:

- California Electrical Code (CEC) Title 24, Part 3
- California Building Energy Efficiency Code (CBEEC) Title 24, Part 6
- California Appliance Efficiency Regulations, Title 20
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards
- National Electrical Code, including Los Angeles County and City of Culver City, local interpretation.
- Equipment and materials specified under this performance specification shall conform to the standards of UL, ASTM, NEMA, ANSI, and ETL. Base materials shall be ASTM and/or ANSI standards. Electrical manufactured apparatus furnished under this section shall conform to National Electrical Manufacturer's Association (NEMA) standards and shall

bear the Underwriters' Laboratories (UL) or Electrical Testing Laboratory (ETL) label where such a label is applicable.

- Contractor is responsible for securing all necessary permits, including 2022 Title 24 energy code documentation and compliance permits, and shall abide by local laws and regulations.

m) All work shall be warranted against defects in material and workmanship for a minimum period of one year from the date of acceptance. Any applicable warranty information beyond this should be stated and provided upfront in the Price Schedule form of RFP No. 2520.

n) Descriptions, size, quantity, and condition of existing equipment reported in this document is for guidance only. Contractor shall independently verify all existing site conditions. The City will not be responsible for any restocking fees associated with extra or incorrectly ordered equipment.

o) Provide copies of the all the applicable licenses to the City before beginning the work including but not limited to C-10 - Electrical Contractor and C-20 Warm-Air Heating, Ventilating and Air Conditioning.

p) Contractor shall survey work areas, access, and conditions of existing systems. Also, log the existing conditions to discuss with the City officials and get all required approvals from the City to continue with the project implementation.

q) Schedule the work after the approval from the City so as to minimize interruption of daily operation of the facility. Contractor to check with the City if a portion of their work needs to be performed after hours.

r) Contractor must meet the insurance and/or bond requirements outlined by the City in the Draft Standard Agreement attachment of RFP 2520.

s) Any other cost of business fees/expenses associated with performing the City work are to be included in the bid.

t) Written approval from the City in the form of executing a contract must be received in order to complete the work assigned.

u) All goods and/or services shall comply with applicable OSHA regulations in effect at the time goods are shipped and/or the service is performed. Material safety data sheets (MSDS) are required in accordance with applicable regulations. MSDS must be left on site immediately after goods and/or services have been provided.

v) Contractor will provide City information and assistance with incentives (green initiatives) and/or credits that the Contractor is aware of, and believes the City is eligible to receive, that may be offered by manufacturers, utility companies, state and/or federal agencies.

2.2 Prevailing Wages

a) Contractor shall be required to pay the prevailing rate of wages in accordance with the labor code and the State of California’s prevailing wage laws.

2.3 Meetings

Contractor shall attend the following meetings complete with preparation and follow-up:

a) **Pre-construction logistics meeting:** for introduction to team members, to understand roles and responsibilities, to discuss the construction schedule, and to learn the submittal transmittal process. At the pre-construction meeting, the construction manager (CM) shall establish a mechanism for ongoing verification/inspection of work.

b) **Submittal review meetings, as needed:** for discussion of major submittal-related issues that cannot be resolved through the submittal transmittal process.

c) **Construction kickoff meeting:** to resolve any remaining pre-construction issues, discuss safety concerns, and begin construction on site.

d) **Regular construction meetings, as needed:** to discuss punch list items, the progress of the construction, and safety issues with upcoming work.

e) **Final job walk(s):** to convey substantial completion to project team members, inspect completion of the punch list items, and request final acceptance. Contractor shall schedule this meeting and the City CM and facility personnel shall attend.

f) Contractor shall review meeting minutes circulated after each meeting and resolve all action items assigned to Contractor by the due date indicated in the minutes.

2.4 Logistics

Contractor shall coordinate logistics with the City to ensure safe and timely execution of the work. At a minimum, Contractor shall perform the following activities:

a) The City shall provide a site-specific safety briefing to Contractor upon approval of the construction schedule. Contractor shall submit a safety plan per California OSHA standards as required in the contract with the City.

b) Contractor shall work with the City and facility personnel to understand and abide by security procedures, as applicable.

c) The City will assist to coordinate parking for Contractor's vehicles. The parking strategy will be finalized in the pre-construction logistics meeting.

d) The City shall designate an area at each of the facilities for equipment storage and staging. The staging area(s) will be finalized in the pre-construction logistics meeting.

e) Contractor shall coordinate with the City CM prior to moving Contractor's equipment, tools, and materials onto the construction site at the start of the project.

f) Contractor shall be responsible for the security of Contractor's properties, tools, equipment, construction materials, and all other items contained in Contractor's staging area(s) or elsewhere on the construction site .

g) Contractor shall check in with the City CM at the start of each shift. the City CM will facilitate access to the scheduled location .

h) Contractor shall notify the City CM one week prior to any scheduled shutdowns of HVAC systems, equipment, or utilities, as needed, and arrange for the delivery, set-up and operation of temporary HVAC equipment in the affected areas. The City CM shall be responsible for notifying tenants of the scheduled shutdowns.

i) Contractor will manage delivery and staging of material to the site , including any secured storage considerations.

j) All equipment and materials removed or demolished under the terms of this project are to become the property of Contractor and are to be removed from the site and properly disposed of, unless stated otherwise by the City. Recyclable, non-hazardous material will be recycled.

2.5 Time Schedule for the project

The Contractor shall complete the project within two months from the Notice to Proceed (NTP). The Contractor shall provide a project timeline identifying various milestones to meet the required schedule.

2.6 Bid Schedule

Refer to RFP No. 2520 Section E – Schedule to view the bid schedule.

3) Submittals

Contractor will provide submittals as outlined below:

3.1 Preconstruction

Contractor shall provide the following submittals in their proposal prepared in response to RFP 2520:

a) Proposed construction schedule with major milestones indicated. May include, but not limited to:

- Equipment order
- Anticipated equipment delivery date
- Construction start and completion by site or major area
- Project walk through and punch list development
- Project sign off

If Contractor is selected and a contract executed with the City, within 5 working days after issuing the Notice to Proceed, the Contractor will prepare and submit the following items:

b) Work plan

c) Safety plan

d) Construction permits (as a City facility, no-fee permits will be issued by the City's Building Safety Department to the Contractor.)

e) Equipment submittals

f) Certifications for safety testing, acoustic testing, structural testing where applicable

g) Hazardous Waste Disposal Certificates as requested or required.

h) Forms for list of points, 2024 Title-24 Compliance forms, start-up, pre-functional checklist, functional performance tests.

i) Plans for system layouts, controls drawings, refrigerant piping, water piping where applicable, and singe line airflow and single life refrigerant plans.

j) Control drawings and documentation of sequences

3.2 Warranty Requirements

Warranty documentation for all the installed equipment and controls.

- Any applicable warranty information should be stated and provided upfront.
- All materials shall be new and of good quality, free from damage or defect. Warranty periods shall commence at the time of final acceptance. All work furnished shall be guaranteed against defective materials, workmanship and/or improper performance for a minimum period of one year after final acceptance of the work. During this period, the Contractor shall provide replacement materials and the necessary labor to replace defective materials and repair incorrectly operating systems.
- HVAC Equipment:
    - Provide a written multi-year warranty provided by the manufacturer of on-site replacement material and equipment. On-site replacement includes transportation, removal, and installation of new products.

3.3 Training

Provide necessary training required for maintenance and document relevant training documents for the City's reference.

3.4 Close-Out

Within five days of notifying the City of substantial completion, contractor shall provide the following submittals:

a) Final signed-off punch list

b) Executed final acceptance form

- Final inspection approval report from the City’s Building Safety Division must be received to deem the work as complete and satisfactory.

c) As-builts including but not limited to system layouts, controls drawings, refrigerant piping, water piping where applicable, single line airflow, single line refrigerant plans, control drawings and

sequence of operations. Operation and maintenance (O&M) manuals for all the installed HVAC and controls equipment.

d) Systems manual, cut sheets, O&M manuals for mechanical and electrical systems, and all other related manufacturer provided documents on all the new products/equipment installed.

e) Warranty documentation for all the installed HVAC and controls equipment.

f) Reports for pre-functional checklists, TAB, functional tests, commissioning documents, measurement and verification measurements, trend data, etc.

g) Training session outline

- Provide necessary training required for future maintenance and document relevant training documents for the City's reference.

Submittals shall not be considered complete until they are reviewed and approved by the City. Contractor shall make corrections and transmit the revised submittal for approval.

4) Execution of Mechanical Projects

The Contractor is responsible for selecting, procuring, and coordinating installation of system equipment to provide fully functional HVAC packaged units and exhaust fans as outlined in this performance specification.

This performance specification does not include all details required for the completion of the work. The Contractor shall be responsible for the cost of all items required for a complete and fully functional system. The Contractor shall provide all materials, tools, equipment, and services required to meet the scope of work.

4.1 Technical Specifications

The City is planning various HVAC upgrades and proposed equipment is to be furnished and installed by the Contractor to meet the performance specifications provided below. The Contractor is responsible for identifying any modifications or changes to the proposed equipment selection and is responsible for obtaining written approval from the City to adopt any equipment schedule modifications or changes.

4.1.1 Replace Rooftop Packaged Units with Rooftop Packaged Heat Pumps

Existing Units						Proposed Units				
Unit Tag	Description	Manufacturer	Model/ Serial	Cooling Tons	Heating MBH	Recommended Manufacturer	Cooling Tons	Min IEER/ SEER	Heating MBH	HSPF/COP
AC-1	Gas Electric Packaged Rooftop Unit	Carrier	48SS-060	5	65	Trane	5	16 SEER	65	8.5 HSPF

Existing Units						Proposed Units				
Unit Tag	Description	Manufacturer	Model/ Serial	Cooling Tons	Heating MBH	Recommended Manufacturer	Cooling Tons	Min IEER/ SEER	Heating MBH	HSPF/COP
AC-2	Gas Electric Packaged Rooftop Unit	Carrier	48SS-060	5	65	Trane	5	16 SEER	65	8.5 HSPF
AC-3	Gas Electric Packaged Rooftop Unit	Carrier	48TSS-048	4	65	Trane	4	16 SEER	65	8.5 HSPF
AC-4	Gas Electric Packaged Rooftop Unit	Carrier	48TJD008	7.5	100	Trane	7.5	15.0 IEER	100	3.2 COP
AC-5	Gas Electric Packaged Rooftop Unit	Trane	YCH091H	7.5	120	Trane	7.5	15.0 IEER	120	3.2 COP
AC-6	Gas Electric Packaged Rooftop Unit	Trane	YCH049H	4.0	90	Trane	4.0	16 SEER	90	8.5 HSPF
AC-7	Gas Electric Packaged Rooftop Unit	Trane	YCH049H	4.0	90	Trane	4.0	16 SEER	90	8.5 HSPF
AC-8	Gas Electric Packaged Rooftop Unit	Trane	YCH049H	4.0	90	Trane	4.0	16 SEER	90	8.5 HSPF
AC-9	Gas Electric Packaged Rooftop Unit	Trane	YCH091H	7.5	120	Trane	7.5	15.0 IEER	120	3.2 COP

The City is planning to replace the nine (9) existing gas electric packaged rooftop units (RTUs) at the maintenance yard with new Title 24 compliant packaged heat pump units. The following outlines the responsibilities the Contractor is accountable for with respect to the packaged rooftop unit replacement at this site:

- Contractor shall disconnect and remove the nine (9) existing gas electric packaged RTUs. The Contractor is responsible for the removal and disposal of the existing RTUs in accordance with local, state and federal regulations, and the Contractor will provide all the necessary equipment, labor, and materials to safely accomplish said removal and disposal. The Contractor shall recover and dispose of the refrigerant from the existing rooftop units per U.S. Environmental Protection Agency (EPA) guidelines.

Contractor shall furnish and install nine (9) packaged rooftop heat pumps from Trane. If the Contractor is not able to furnish Trane units meeting the minimum efficiency requirements from the above table, the Contractor shall recommend other high-quality manufacturers meeting the above requirements for the City to consider as a substitute. The City's

evaluation and subsequent determination whether to accept or reject non-Trane manufactured equipment is at the sole discretion of the City.

- The new units shall fully support the integration of third-party control systems through the BACnet protocol. They shall be furnished and installed with BACnet MS/TP and/or BACnet IP capable controllers to meet this requirement.
- Contractor shall provide new Wi-Fi enabled thermostats for all the new heat pump units.
- The new units shall have operating efficiencies compliant with 2022 Title 24 minimum efficiency requirements. See above table.
- Contractor shall provide all labor, materials, equipment, accessories, etc., required for the design, purchase, delivery, and installation of nine (9) new packaged rooftop heat pumps. All materials and equipment furnished for this job shall be in current production and shall be made of high-quality material. Used, shopworn, demonstrator, prototype, reconditioned, or discontinued equipment or materials are not acceptable.
- The units must be factory packaged and tested according to ARI, ASHRAE, UL, and any other applicable code standards.
- All work shall be performed in accordance with current applicable building, plumbing, electrical, and HVAC codes. The Contractor shall be responsible for obtaining all necessary permits.
- Contractor shall conduct a survey of the existing electrical service and upgrade it to be compatible with the new packaged rooftop heat pumps. Contractor shall analyze the existing electrical service configuration, power, and capacity.
- The nine (9) packaged rooftop heat pumps shall be sized to meet or exceed the cooling, heating, and ventilation loads of the present RTUs, whichever best meets the facility needs and budget.
- Contractor shall evaluate the existing roof structure and ensure they can support the weight of the new heat pumps.
- Contractor shall remove the existing ductwork and install new ductwork. The Contractor shall perform duct leak remediation as required in compliance with 2022 Title 24 Standards and Regulations, Section 110.
- Contractor shall verify the existing electrical connections to the existing RTUs prior to ordering the new units and shall provide a new fused disconnect switch, fused to provide maximum over-current protection required by the new unit, and make additional modifications to the circuit breaker and/or electrical feeders serving the unit if a larger breaker and/or feeders are required.
- Contractor shall cap the existing gas connections to the rooftop units.
- Any electrical wiring from the source to the newly installed units is the Contractor's responsibility.
- The Contractor shall provide curb adapters and all associated roofing required to install new units on existing roof curbs and provide a weather-tight installation of new units.
- All installations shall be in accordance with manufacturer's recommendations.
- Contractor shall install/implement control sequences to include but not limited to:
    - Equipment Start/Stop

    - Economizer Control (Units with mechanical cooling capacity greater than 54,000 Btu/hr.)
    - Economizer Fault Detection and Diagnostics (Units with mechanical cooling capacity greater than 54,000 Btu/hr.)
    - All other 2022Title-24 Required Controls
- Contractor shall ensure the new heat pump units are programmed to comply with the City's requests.
- Contractor shall install new smoke detecting devices and connect them to the existing fire alarm systems in cooperation with SDD Alarm, the City's fire alarm monitoring firm. .
- Contractor shall develop and supply comprehensive documentation and supporting materials associated with the sequence of operations developed for the nine (9) packaged rooftop heat pumps for the City's reference and future use.
- Contractor shall ensure that appropriate testing, adjusting and balancing measurements are used to ensure compliance with minimum ventilation requirements per code.
- Contractor is responsible for the start-up and commissioning of the nine (9) packaged rooftop heat pumps. All systems must be fully functional and operational after installation. If follow-up work is required to correct the installation, the City shall not be charged. The Contractor shall provide a system manual and a detailed commissioning report with all the findings and equipment submittals.
- Contractor shall train key City staff on operation and general maintenance of the units. Prior to leaving the job site, the Contractor shall provide the City with all manufacturers' warranty documents upon completion of installation and training.
- Contractor shall respond to inquiries within 24 hours and will service any non-working units on the day of the call during the warranty period. The City will not be responsible for any additional costs to repair or replace new equipment or parts that are still under warranty; the Contractor is responsible for all liability.
- Unless otherwise specified, the Contractor shall unconditionally guarantee the labor and the materials used in performance of this contract within the specified guidelines and recommendations of the manufacturer's warranty. If any defects or signs of deterioration are noted which in the City's opinion are due to faulty workmanship or materials, the Contractor shall be notified and shall make the necessary repairs to correct any deficiency in the system at the Contractor's expense.

4.1.2 Replace Make-Up Air Unit with Rooftop Packaged Heat Pumps

This measure proposes replacing the existing (5) make up air units with packaged rooftop heat pumps. The existing units do not have cooling capability and the proposed units cooling capability and capacity shall be confirmed by the contractor after discussion with the City.

Existing Units						Proposed Units				
Unit Tag	Description	Manufacturer	Model/ Serial	Cooling Tons	Heating MBH	Recommended Manufacturer	Cooling Tons	Min IEER/ SEER	Heating MBH	HSPF/COP
MUA-1	Make-Up Air/ Gas Furnace Unit	Modine	WSG-101	N/A	80	Trane	TBD	16 SEER	80	8.5 HSPF
MUA-2	Make-Up Air/ Gas Furnace Unit	Modine	WSG-101	N/A	80	Trane	TBD	16 SEER	80	8.5 HSPF
MUA-3	Make-Up Air/ Gas Furnace Unit	Modine	WSG-250	N/A	200	Trane	TBD	15.0 IEER	200	3.2 COP
MUA-4	Make-Up Air/ Gas Furnace Unit	Modine	WSG-251	N/A	240	Trane	TBD	15.0 IEER	240	3.2 COP
MUA-5	Make-Up Air/ Gas Furnace Unit	Modine	WSG-302	N/A	240	Trane	TBD	15.0 IEER	240	3.2 COP

The following outlines the responsibilities the Contractor is accountable for with respect to the make-up air unit replacement at this site:

- Contractor shall disconnect and remove the five (5) make-up air units with gas furnace. The Contractor is responsible for the removal and disposal of the existing MUAs in accordance with local, state and federal regulations, and the Contractor will provide all the necessary equipment, labor, and materials to safely accomplish said removal and disposal.
- Contractor shall furnish and install five (5) packaged rooftop heat pumps from Trane. If the Contractor is not able to furnish Trane units meeting the minimum efficiency requirements from the above table, the Contractor shall recommend other manufacturers meeting the above requirements in their proposal.
- The new units shall fully support the integration of third-party control systems through the BACnet protocol. They shall be furnished and installed with BACnet MS/TP and/or BACnet IP capable controllers to meet this requirement.
- Contractor shall provide new Wi-Fi enabled thermostats for all the new heat pump units.
- The new units shall have operating efficiencies compliant with 2022 Title 24 minimum efficiency requirements. See above table.
- Contractor shall provide all labor, materials, equipment, accessories, etc., required for the design, purchase, delivery, and installation of five (5) new packaged rooftop heat pumps. All materials and equipment furnished for this job shall be in current production and shall be of quality material. Used, shopworn, demonstrator, prototype, reconditioned, or discontinued equipment or materials are not acceptable.

- The units must be factory packaged and tested according to ARI, ASHRAE, UL, and any other applicable code standards.
- All work shall be performed in accordance with current applicable building, plumbing, electrical, and HVAC codes. The Contractor shall be responsible for obtaining all necessary permits.
- Contractor shall conduct a survey of the existing electrical service and upgrade it to be compatible with the new packaged rooftop heat pumps. Contractor shall analyze the existing electrical service configuration, power, and capacity.
- The five (5) packaged rooftop heat pumps shall be sized to meet or exceed the cooling, heating, and ventilation loads of the spaces served by the make-up air units, whichever best meets the facility needs and budget.
- Contractor shall evaluate the existing roof structure and ensure they can support the weight of the new heat pumps
- Contractor shall remove the existing ductwork and install new ductwork. The Contractor shall perform duct leak remediation as required in compliance with 2022 Title 24 Standards and Regulations, Section 110.
- The new ductwork shall be sized to meet or exceed the cooling, heating, and ventilation loads of the present MUAs, whichever best meets the facility needs and budget.
- Contractor shall verify the existing electrical connections to the existing MUAs prior to ordering the new units and shall provide a new fused disconnect switch, fused to provide maximum over-current protection required by the new unit, and make additional modifications to the circuit breaker and/or electrical feeders serving the unit if a larger breaker and/or feeders are required.
- Contractor shall cap the existing gas connections to the make-up air units.
- Any electrical wiring from the source to the newly installed units is the Contractor's responsibility.
- The Contractor shall provide curb adapters and all associated roofing required to install new units on existing roof curbs and provide a weather-tight installation of new units.
- All installations shall be in accordance with manufacturer's recommendations.
- Contractor shall install/implement control sequences to include but not limited to:
    - Equipment Start/Stop
    - Economizer Control (Units with mechanical cooling capacity greater than 54,000 Btu/hr.)
    - Economizer Fault Detection and Diagnostics (Units with mechanical cooling capacity greater than 54,000 Btu/hr.)
    - All other 2022 Title-24 Required Controls
- Contractor shall ensure the new heat pump units are programmed to comply with the City's requests.
- Contractor shall install smoke detector and connect to existing fire alarm systems if required by code.

- Contractor shall develop and supply comprehensive documentation and supporting materials associated with the sequence of operations developed for the five (5) packaged rooftop heat pumps for the City's reference and future use.
- Contractor shall ensure that appropriate testing, adjusting and balancing measurements are used to ensure compliance with minimum ventilation requirements per code.
- Contractor is responsible for the start-up and commissioning of the five (5) packaged rooftop heat pumps. All systems must be fully functional and operational after installation. If follow-up work is required to correct installation, the City shall not be charged. The Contractor shall provide a system manual and a detailed commissioning report with all the findings and equipment submittals.
- Contractor shall train key City staff on operation and general maintenance of the units. Prior to leaving the job site, the Contractor shall provide the City with all manufacturers' warranty documents upon completion of installation and training.
- Contractor shall respond to inquiries within 24 hours and will service any non-working units on the day of the call during the warranty period. The City will not be responsible for any additional costs to repair or replace new equipment or parts that are still under warranty; the Contractor is responsible for all liability.
- Unless otherwise specified, the Contractor shall unconditionally guarantee the labor and the materials used in performance of this contract within the specified guidelines and recommendations of the manufacturer's warranty. If any defects or signs of deterioration are noted which in the City's opinion are due to faulty workmanship or materials, the Contractor shall be notified and shall make the necessary repairs to correct any deficiency in the system at the Contractor's expense.

4.1.3 Exhaust Fan Replacements

This measure proposes replacing the existing exhaust fans serving the facility. The following provides more detail on the proposed equipment and procedural requirements.

Existing Units						Proposed Units		
Unit Tag	Description	Manufacturer	Model/ Serial	CFM	Type	Recommended Manufacturer	CFM	Type
EF-1	Exhaust Fan	Loren Cook	ACRU-100 R28	700	10" Cent. B.I.	TBD	700	Cent. B.I.
EF-2	Exhaust Fan	Loren Cook	ACRU-100 R28	125	9" Cent. B.I.	TBD	125	Cent. B.I.
EF-3	Exhaust Fan	Loren Cook	ACRU-165 R68	2100	16.5" Cent. B.I.	TBD	2100	Cent. B.I.

Existing Units						Proposed Units		
Unit Tag	Description	Manufacturer	Model/ Serial	CFM	Type	Recommended Manufacturer	CFM	Type
EF-4	Exhaust Fan	Loren Cook	ACRU-135 R58	1600	13.5" Cent. B.I.	TBD	1600	Cent. B.I.
EF-5	Exhaust Fan	Loren Cook	ACRU-210 R68	4000	21" Cent. B.I.	TBD	4000	Cent. B.I.
EF-6	Exhaust Fan	Loren Cook	ACRU-135 R38	350	13.5" Cent. B.I.	TBD	350	Cent. B.I.
EF-7	Exhaust Fan	Loren Cook	ACRU-120 R38	950	12" Cent B.I.	TBD	950	Cent. B.I.
EF-8	Exhaust Fan	Loren Cook	GN-520	240	13.5" Tubular Cent.	TBD	240	Tubular Cent.
EF-9	Exhaust Fan	Loren Cook	ACRU-135 R48	950	12" Cent. B.I.	TBD	950	Cent. B.I.
EF-10	Exhaust Fan	Loren Cook	ACRU-245 R98	6000	24.5" Cent. B.I.	TBD	6000	Cent. B.I.
EF-11	Exhaust Fan	Loren Cook	UCIC 225	9000	21" Tubular Cent.	TBD	9000	Tubular Cent.
EF-12	Exhaust Fan	Dayton	3C413	9,000	34" Tube Axial – Upblast Discharge	TBD	9,000	Tube Axial – Upblast Discharge
EF-13	Exhaust Fan	Dayton	3C413	9,000	34" Tube Axial – Upblast Discharge	TBD	9,000	Tube Axial – Upblast Discharge
EF-14	Exhaust Fan	Loren Cook	UCIC-180	4600	15" Tube Axial – Upblast Discharge	TBD	4600	Tube Axial – Upblast Discharge
EF-15	Exhaust Fan	Loren Cook	UCIC-225	9000	21" Tube Axial – Upblast Discharge	TBD	9000	Tube Axial – Upblast Discharge

Existing Units						Proposed Units		
Unit Tag	Description	Manufacturer	Model/ Serial	CFM	Type	Recommended Manufacturer	CFM	Type
EF-16	Exhaust Fan	Loren Cook	UCIC-225	9000	21” Tube Axial – Upblast Discharge	TBD	9000	Tube Axial – Upblast Discharge
EF-17	Exhaust Fan	Loren Cook	UCIC-225	9000	21” Tube Axial – Upblast Discharge	TBD	9000	Tube Axial – Upblast Discharge
EF-18	Exhaust Fan	Loren Cook	ACRU-120 R38	1000	12” Cent. B.I.	TBD	1000	Cent. B.I.
EF-19	Exhaust Fan	Loren Cook	GN-720	400	12” Cent. B.I.	TBD	400	Cent. B.I.
EF-20	Exhaust Fan	Loren Cook	ACRU-245 R98	200	10” Cent. B.I.	TBD	200	Cent. B.I.
EF-21	Exhaust Fan	Loren Cook		240	Cent.	TBD	240	Cent.
EF-22	Exhaust Fan	Loren Cook		240	Cent.	TBD	240	Cent.
EF-23	Exhaust Fan	Loren Cook		240	Cent.	TBD	240	Cent.

The following outlines the responsibilities the Contractor is accountable for with respect to the exhaust fan replacements at this site:

- Contractor shall disconnect and remove the existing exhaust fans serving the facility. The Contractor is responsible for the removal and disposal of the existing exhaust fans in accordance with local, state and federal regulations, and the Contractor will provide all the necessary equipment, labor, and materials to safely accomplish said removal and disposal.
- Contractor shall furnish and install exhaust fans as per the specifications in the above table. If the Contractor is not able to furnish units meeting the requirements from the above table, the contractor shall recommend other units after consulting with the City.
- Contractor shall ensure that new exhaust fans are programmed to operate with the existing manual switch and roll up door switch in the paint shop.
- The new units shall have operating efficiencies compliant with 2022 Title 24 minimum efficiency requirements.

- Contractor shall provide all labor, materials, equipment, accessories, etc., required for the design, purchase, delivery, and installation of new exhaust fans. All materials and equipment furnished for this job shall be in current production and shall be of quality material. Used, shopworn, demonstrator, prototype, reconditioned, or discontinued equipment or materials are not acceptable.
- The units must be factory packaged and tested according to ARI, ASHRAE, UL, and any other applicable code standards.
- All work shall be performed in accordance with current applicable building, plumbing, electrical, and HVAC codes. The Contractor shall be responsible for obtaining all necessary permits.
- Contractor shall conduct a survey of the existing electrical service and upgrade it to be compatible with the new exhaust fans. Contractor shall analyze the existing electrical service configuration, power, and capacity.

4.2 Testing, Adjustment, and Balancing

Contractor shall ensure that appropriate testing, adjusting and balancing measurements are used to ensure compliance with minimum ventilation requirements per code.

4.3 Implementation Verification

Contractor shall perform functional testing of all the equipment to ensure that the units are operational and control sequences are properly implemented and working per design intent. The Contractor shall provide a system manual and a detailed commissioning report with all the findings and equipment submittals.

4.4 Measurement and Verification

Contractor shall ensure through measurement and verification that ventilation requirements, cooling and heating loads, and 2022 Title 24 code requirements are met and the recommended sequence of operations are implemented.

4.5 Training

Contractor shall provide necessary training required for the installed controlled system, including maintenance, commissioning, and detailed documentation relevant to training for the City's reference. Training documents shall not be considered complete until they are reviewed and approved by the City. Contractor shall make corrections and transmit the revised submittal for approval.

Appendix A: Responsibility Matrix

Task	SoCalREN PM	Agency	Consultant	Contractor
Construction				
Secures Construction Permit		S		P
Prepares Construction Schedule		R/A		P
Perform Construction				P
Submittals/CDs and RFIs	S	R/A	R	P
Review & Approve Invoices		P		
Process Invoices		P		
Inspection of Work		P		
Supplemental Work/Change Orders	S	P/A	S	P/A
Prepare Meeting Agendas/Minutes		P		
Attend Project Meetings	S	P	S	P
Develop Punch Lists	S	P	R	
Correct Punch List Items		R/A		P
O&M Manuals and Training	S	R/A	S/R	P
Final Inspection		P/A		P
Acceptance		P/A		
Lighting/Mechanical As-Built	S	R/A	S/R	P
Commissioning				
Startup Checklists	R	R/A	S/R	P
Functional Performance Test Procedures	R	R/A	S/R	P
Startup Documentation	R	R/A	S/R	P
Functional Performance Tests	R	R/A	S/R	P
Systems Manual	R	R/A	S/R	P

P = Primary; S = Support; R = Review, A = Approval
SoCalREN PM = SoCalREN's Project Manager
Agency = Enrolled Public Agency
SoCalREN Consultant = Engineering Consultant on contract to SoCalREN
Contractor = Construction Firm