

### AIR CONDITIONING UNIT SCHEDULE

SYMBOL	NEW UNIT MAKE AND MODEL	CFM	E.S.P. (IN W.G.)	AMB. TEMP. (°F)	DB WB	E.A.T. (°F)	COOLING CAPACITY (BTU)		HTG. CAPACITY (MBH)		ELECTRICAL DATA			REFRIG.	SEER	EER	A.P.U.E.	MIN. OSA (CFM)	OPER. W.T. (LBS)	REMARKS	
							TOTAL	SENSIBLE	INPUT	OUTPUT	MCA	MCOF	VOLT								PH
AC-1	CARRIER 48VLUW42060	1400	0.5	95	80	67	31,100	41,300	60	47	24.1	35	208	3	60	14.5	—	76.5	210	470	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. INSTALL NEW DISCONNECT SWITCH
AC-2	CARRIER 48VLUW4809	1600	0.5	95	80	67	36,000	48,000	90	73	36.4	50	208	1	60	14.3	—	80.4	240	480	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. INSTALL NEW DISCONNECT SWITCH
AC-3	CARRIER 48HOM4082B5	3000	0.5	95	80	67	72,200	93,300	120	101	38.8	50	208	3	60	12	—	80	450	930	COMPLETE WITH INTEGRATED ECONOMIZER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-4	CARRIER 48HOM4082B5	3000	0.5	95	80	67	72,200	93,300	120	101	38.8	50	208	3	60	12	—	80	450	930	COMPLETE WITH INTEGRATED ECONOMIZER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-5	CARRIER 48HOM4082B5	2000	0.5	95	80	67	48,000	60,400	90	74	26.5	40	208	3	60	15.2	—	80	400	600	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-6	CARRIER 48HOM4082B5	2000	0.5	95	80	67	48,000	60,400	90	74	26.5	40	208	3	60	15.2	—	80	400	600	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-7	CARRIER 48HOM4082B3	2000	0.5	95	80	67	48,000	60,400	120	101	40.1	60	208	1	60	15.2	—	80	400	600	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-8	CARRIER 48VLUW4809	1600	0.5	95	80	67	36,000	48,000	90	73	26.2	35	208	3	60	14.3	—	80.4	240	480	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-9	CARRIER 48HOM4082B5	3000	0.5	95	80	67	72,200	93,300	120	101	38.8	50	208	3	60	12	—	80	450	930	COMPLETE WITH INTEGRATED ECONOMIZER PACKAGE AND EPOXY-PHENOLIC COATED CONDENSER COIL, 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-10	CARRIER 48VLUW40809	2000	0.5	95	80	67	45,600	60,000	90	74	29.5	40	208	3	60	14.3	—	80.4	400	480	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-11	CARRIER 48VLUW40809	2000	0.5	95	80	67	45,600	60,000	90	74	29.5	40	208	3	60	14.3	—	80.4	400	480	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-12	CARRIER 48VLUW40809	2000	0.5	95	80	67	45,600	60,000	90	74	29.5	40	208	3	60	14.3	—	80.4	400	480	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH
AC-13	CARRIER 48HOM4082B3	2000	0.5	95	80	67	48,000	60,400	120	101	40.1	60	208	1	60	15.2	—	80	400	600	COMPLETE WITH FRESH AIR HOOD AND DAMPER AND EPOXY-PHENOLIC COATED CONDENSER COILS. 1ST STAGE HEAT ONLY. AND SUPPLY DUCT SMOKE DETECTOR. INSTALL NEW DISCONNECT SWITCH

### HEATING AND VENTILATING UNIT SCHEDULE

SYMBOL	MAKE & MODEL	SERVICE	SUPPLY FAN			HEATING CAPACITY (MBH)			FILTERS	OPERATING WEIGHT (LBS)	REMARKS
			CFM	RPM	ESP (IN)	INPUT (MBH)	OUTPUT (MBH)				
HV-1	REZNOR RPBL-400	MEN'S LOCKER ROOM	9750	1350	0.98	10	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-2	REZNOR RPBL-400	WAREHOUSE AREA	8000	1250	1.62	7.5	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-3	REZNOR RPBL-400	WAREHOUSE AREA	8000	1250	1.62	7.5	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-4	REZNOR RPBL-400	WAREHOUSE AREA	7000	1300	2.0	7.5	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-5	REZNOR RPBL-400	WAREHOUSE AREA	7000	1300	2.0	7.5	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-6	REZNOR RPBL-400	GARAGE AREA	7750	1300	1.81	7.5	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-7	REZNOR RPBL-400	GARAGE AREA	7750	1300	1.81	7.5	460/3/60	300 (3)	240	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH
HV-8	REZNOR HRPB-125	TOILET ROOM/LOCKER	1850	1050	0.50	3/4	460/3/60	125	100	(2) PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD AND NEW DISCONNECT SWITCH

- 1 FIELD UPGRADE ELECTRICAL SERVICE TO 10 HP FROM EXISTING 7.5 HP
- 2 FIELD UPGRADE ELECTRICAL SERVICE TO 7.5 HP FROM EXISTING 5.0 HP
- 3 FACTORY DERATED HEATING CAPACITY TO 300 MBH INPUT

### HEATING AND EVAPORATIVE COOLING MAKE-UP AIR UNIT SCHEDULE

SYMBOL	MAKE & MODEL	SUPPLY FAN			HEATING CAPACITY (MBH)		EVAPORATIVE COOLER		PUMP HP	FILTERS	OPERATING WEIGHT (LBS)	REMARKS	
		CFM	RPM	ESP (IN)	INPUT (MBH)	OUTPUT (MBH)	ENT. (DB)	ENT. (WIB)					LVG (DB)
MU-1	REZNOR HRPB-250 WITH REZNOR EVAPORATIVE COOLER	4425	1300	0.4	3	460/3/60	250	200	86°F	88°F	72°F	1/15 PERMANENT	COMPLETE WITH DOWN TURN PLENUM, STAINLESS STEEL HEAT EXCHANGER, BURNERS AND DRP PAN. 2 STAGE GAS VALVE, 2 POSITION MOTORIZED OUTSIDE AIR DAMPER WITH RAIN HOOD

- 1 FIELD UPGRADE ELECTRICAL SERVICE TO 3 HP FROM EXISTING 2 HP

### MECHANICAL LEGEND

S Y M B O L S	ABBR.	DESCRIPTION
DOUBLE	SA	SUPPLY AIR DUCT
SINGLE	RA	RETURN AIR DUCT
— RA —	E	EXHAUST AIR DUCT
— E —	OA	OUTSIDE AIR DUCT
— OA —		DUCT TRANSITION
		ELBOW WITH TURNING VANES
		SUPPLY OR OUTSIDE AIR DUCT SECTION
		RETURN AIR DUCT SECTION
		EXHAUST AIR DUCT SECTION
		CIRCULAR DUCT SECTION
		FLEXIBLE DUCT
		FLEXIBLE CONNECTION
		INTERNALLY LINED DUCT
	DN	DUCT DROP IN DIRECTION OF ARROW
	FD	FIRE DAMPER
	MVD	MANUAL VOLUME DAMPER
	AD	AUTOMATIC DAMPER
	12x12 CD-2W	12x12 CEILING DIFFUSER, TWO WAY THROW
	12x12 CD-4W	12x12 CEILING DIFFUSER, FOUR WAY THROW
	12x12 SRG	12x12 SIDEWALL RETURN GRILLE, 500 CFM
	12x12 SWG	12x12 SIDEWALL RETURN/EXHAUST GRILLE
	P.O.C	POINT OF CONNECTION
	P.O.D	POINT OF DISCONNECT
		EXISTING COMPONENT TO BE REMOVED
	G	GAS PIPE
	CD	CONDENSATE PIPE

**NOTE:**

(1) ALL NEW UNITS WITH EXCEPTION OF AC-3, AC-4, AC-5, AC-6, AC-7, AC-9 AND AC-13 WEIGH LESS THAN 600 LBS IN OPERATING WEIGHTS. AIR CONDITIONING UNITS AC-3, AC-4, AC-5, AC-6, AC-7 AND AC-9 ARE IDENTICAL TO EQUIPMENT SCHEDULE THIS SHEET FOR OPERATING WEIGHTS OF EQUIPMENT.

(2) FOR AC-9 WEIGHT SEE STRUCTURAL CALCULATIONS ATTACHED.

(3) ALL NEW HEATING, VENTILATING AND EVAPORATIVE COOLING UNITS HV-1 THRU HV-8 AND MU-1 ARE IDENTICAL TO EXISTING UNITS WITH SAME PHYSICAL DIMENSIONS AND OPERATING WEIGHTS AS SCHEDULED. SEE EQUIPMENT SCHEDULE THIS SHEET FOR OPERATING WEIGHTS.

MECHANICAL EQUIPMENT SCHEDULES  
VARIOUS BUILDING'S AIR CONDITIONING UNIT  
REPLACEMENT  
**CITY OF TORRANCE**  
CITY OF TORRANCE, TORRANCE CALIFORNIA

**BYA** BARTEF YOOSEPHIANE & ASSOCIATES, INC.  
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Date: 02/21/13  
Drawn: M.S.  
Checked: B.H.  
Approved:  
Project No.:  
Scale: AS SHOWN

Drawing No. **M-1**

Revision: \_\_\_\_\_ Date: \_\_\_\_\_

### WATER HEATER SCHEDULE

SYMBOL	MAKE & MODEL	TYPE	CAPACITY (MBH)		WATER FLOW (GPM)	PRESS. DROP (FT)	RECOVERY RATE AT 80°F RISE (GPH)	EFF.	OPERATING WEIGHT (LBS)	REMARKS
			INPUT	OUTPUT						
WH 1	RAYPAK WH3-502B HI-DELTA	WATER TUBE DESIGN	500	425	52	3.5	644	85%	500	COMPLETE WITH CUPRO NICKEL HEAT EXCHANGER, 1/2" PUMP AND 80 GALLON STORAGE TANK, RAYPAK PART NO. 951118 (WATER HEATER SHALL BE SUITABLE FOR INDOOR INSTALLATION)

### HEATING BOILER SCHEDULE

SYMBOL	MAKE & MODEL	TYPE	CAPACITY (MBH)		FLOW (GPM)	WATER TEMP (°F)		ELECTRICAL DATA			OPERATING WEIGHT (LBS)	REMARKS	
			INPUT	OUTPUT		IN	OUT	VOLT	PH	HZ			
B 1	LAARS NEOTHERM NH210NN2	WATER TUBE DESIGN	210.2	200.2	20	180	180	120	1	60	64%	280	COMPLETE WITH TACO MODEL 0013-HB3-4L 1/6 HP BOILER PUMP AND ACCESSORIES (BOILER SHALL BE SUITABLE FOR INDOOR INSTALLATION)

### SPLIT SYSTEM AIR CONDITIONING UNIT SCHEDULE

SYMBOL	MAKE & MODEL	EVAP CFM	AMB. TEMP (°F)	E.A.T. (°F)		COOLING CAPACITY (BTU)		ELECTRICAL DATA			SEER	REFRIG. TYPE	OPER. WT (LBS)	REMARKS	
				DB	WB	SENSIBLE	TOTAL	MCA	VOLT	PH					HZ
CU 1	CARRIER 24ABC630A003	1000	95	80	67	21,300	29,000	16.8	208/230	1	60	16	PURON	160	COMPLETE WITH REFRIGERATION TUBING AND ACCESSORIES AND NEW DISCONNECT SWITCH
CU 2	CARRIER 24APAZ48A003	1600	95	80	67	36,300	51,000	27.8	208/230	1	60	16	PURON	370	COMPLETE WITH REFRIGERATION TUBING AND ACCESSORIES
CU 3	CARRIER 24APAZ48A003	1600	95	80	67	36,300	51,000	27.8	208/230	1	60	16	PURON	370	COMPLETE WITH REFRIGERATION TUBING AND ACCESSORIES

### FORCED AIR FURNACE SCHEDULE

SYMBOL	MAKE & MODEL	SUPPLY FAN		VOLTAGE	HEATING CAPACITY (MBH)		COOLING COIL MAKE AND MODEL		AFUE	FILTERS	OPERATING WEIGHT (LBS)	REMARKS
		CFM	ESP (IN)		HP	INPUT	OUTPUT	INPUT				
FAU 1	CARRIER 58WBE94012	1000	0.5	1/2	120/1/60	40	38	CARRIER CNP/P3617YACA	0.95	30% DISPOSABLE	230	COMPLETE WITH ALL ACCESSORIES AND CONTROLS. UPRIGHT POSITION, DX COOLING COIL, TWIN PACK KIT AND GREENHECK SERIES ES-10 BAROMETRIC DAMPER
FAU 2	CARRIER 58STX07010016	1600	0.5	1/2	120/1/60	66	54	CARRIER CNP/P4817YACA	0.95	30% DISPOSABLE	250	COMPLETE WITH ALL ACCESSORIES AND CONTROLS. UPRIGHT POSITION, DX COOLING COIL, TWIN PACK KIT AND GREENHECK SERIES ES-10 BAROMETRIC DAMPER
FAU 3	CARRIER 58STX07010016	1600	0.5	1/2	120/1/60	66	54	CARRIER CNP/P4817YACA	0.95	30% DISPOSABLE	250	COMPLETE WITH ALL ACCESSORIES AND CONTROLS. UPRIGHT POSITION, DX COOLING COIL, TWIN PACK KIT AND GREENHECK SERIES ES-10 BAROMETRIC DAMPER
FAU 4	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 5	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 6	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 7	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 8	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 9	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 10	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)
FAU 11	CARRIER 58STX07010012	1200	0.5	1/3	120/1/60	66	54	—	0.80	30% DISPOSABLE	120	4" FLUE DIAMETER, PROVIDE UPFLOW FURNACE WITH BOTTOM RETURN, COMPLETE WITH ALL ACCESSORIES (UPRIGHT POSITION)

### FAN COIL UNIT SCHEDULE

SYMBOL	MAKE & MODEL	CFM	E.S.P. (IN WG)	ELECTRICAL DATA			FILTER EFFICIENCY	FRESH AIR (CFM)	OPER. WT (LBS)	REMARKS	
				HP	VOLT	PH					HZ
FC 1	CARRIER F44DNB037	1200	0.4	1/2	208	1	60	30% DISPOSABLE	180	180	PROVIDE WITH ALL ACCESSORIES AND BRASS BRONZE AND STAINLESS STEEL VERTICAL INSTALLATION FIELD REPLACE FACTORY FINISHED R-410 THERMAL EXPANSION VALVE WITH MANUFACTURER RECOMMENDED R-22 THERMAL EXPANSION VALVE

### MECHANICAL REQUIREMENTS

- FURNISH ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, TESTING AND SERVICES NECESSARY FOR THE COMPLETE AND SATISFACTORY INSTALLATION OF THE WORK INDICATED ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING ROUGH-IN AND FINAL CONNECTION TO ALL EQUIPMENT REQUIRING SERVICES.
- SCOPE OF WORK SHALL INCLUDE ALL CONDUCITS, DISCONNECTS, LINE AND LOW VOLTAGE WIRING, AS SHOWN AND SPECIFIED PLUMBING SYSTEMS, ROOF EQUIPMENT PLATFORMS, CUTTINGS AND PATCHINGS, DEMOLITION AND HAULING OF EXISTING SYSTEMS AND EQUIPMENT
- BECAUSE OF THE SMALL SCALE OF THE DRAWINGS, IT IS IMPOSSIBLE TO INDICATE ALL OFFSETS, FITTINGS AND ACCESSORIES WHICH MAY BE REQUIRED. CAREFUL MEASURE THE CONDITIONS SURROUNDING THE INSTALLATION OF THIS WORK, FURNISH THE NECESSARY FITTINGS, ACCESSORIES AND DEVICES WHICH MAY BE REQUIRED TO COMPLETE THE INSTALLATION. VERIFY THAT ADEQUATE SPACE IS AVAILABLE TO INSTALL WORK AS SPECIFIED AND INDICATED, PRIOR TO DEMOLITION AND FABRICATION.
- THE GENERAL ARRANGEMENT INDICATED ON THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS POSSIBLE. IN THE EVENT A FIELD CONDITION ARISES WHICH MAKES IT IMPOSSIBLE OR IMPRACTICAL TO INSTALL "DEPARTURES" TO ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
- THE MECHANICAL EQUIPMENT AND INSTALLATION SHALL COMPLY WITH THE CITY OF TORRANCE BUILDING AND MECHANICAL CODES, AND REQUIREMENTS OF LEGALLY CONSTITUTED AUTHORITIES HAVING JURISDICTION.
- BEFORE BIDDING ON THIS WORK, CONTRACTORS SHALL MAKE A CAREFUL EXAMINATION OF THE PREMISES AND SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND REQUIREMENTS OF CONTRACT. BY THE ACT OF SUBMITTING A PROPOSAL FOR THE WORK INCLUDED IN THIS CONTRACT, THE CONTRACTOR SHALL BE DEEMED TO HAVE MADE SUCH STUDY AND EXAMINATION, AND THAT HE/SHE IS FAMILIAR WITH AND ACCEPTS ALL CONDITIONS OF THE SITE.
- THE LOCATION OF APPARATUS AND EQUIPMENT INDICATED ON THE DRAWINGS ARE APPROXIMATE. DUCTS AND EQUIPMENT SHALL BE INSTALLED IN SUCH A MANNER TO AVOID ALL OBSTRUCTIONS, PRESERVE HEADROOM AND KEEP OPENINGS AND PASSAGES CLEAR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AVAILABLE SPACE FOR INSTALLATION. PRIOR TO START OF WORK CONTRACTOR SHALL EXAMINE A COMPLETE SET OF CONSTRUCTION DOCUMENTS FOR ALL TRADES AND VERIFY ALL DIMENSIONS, SPACE REQUIREMENTS AND POINTS OF CONNECTION TO ALL EQUIPMENT, AND MAKE THE NECESSARY ADJUSTMENTS IN LAYING OUT WORK TO AVOID CONFLICT WITH STRUCTURAL MEMBERS AND WORK OF OTHER TRADES.
- EQUIPMENT AND DUCTWORK SHALL OPERATE WITHOUT ANY OBJECTIONABLE NOISE AND VIBRATION DURING ALL PHASES OF OPERATION AS DETERMINED BY THE ENGINEER. WHERE EXCESSIVE NOISE AND VIBRATION EXIST, IT SHALL BE CORRECTED AT NO EXTRA COST TO THE PROJECT.
- VOLUME DAMPERS SHALL BE PROVIDED IN EACH BRANCH DUCT TO EACH DIFFUSER AND REGISTER, AND SHALL BE ADJUSTABLE TYPE.
- EACH AIR HANDLING SYSTEM WITH CAPACITY MORE THAN 2000 CFM SHALL BE PROVIDED WITH SUITABLE SMOKE DETECTORS IN THE SUPPLY AIR STREAM, INTERLOCKED WITH FAN STARTERS) FOR AUTOMATIC SHUT-OFF.
- EACH HVAC SYSTEM SHALL BE PROVIDED WITH AN AUTOMATIC SPACE TEMPERATURE CONTROL DEVICE, CAPABLE OF BEING SET TO MAINTAIN SPACE TEMPERATURE SET POINTS FROM 55° F TO 85° F, AND SHALL BE CAPABLE OF OPERATING THE SYSTEM HEATING AND COOLING IN SEQUENCE. CONTROLS SHALL BE ADJUSTED TO PROVIDE A TEMPERATURE RANGE UP TO 10° F BETWEEN FULL HEATING AND COOLING, AND HAVE THE CAPABILITY TO TERMINATE ALL HEATING AT TEMPERATURES ABOVE 70° F AND COOLING AT TEMPERATURES BELOW 75° F.
- AUTOMATIC CONTROLS SHALL COMPLY WITH THE STATE OF CALIFORNIA ENERGY COMMISSION TITLE-24 REQUIREMENTS FOR OFF-HOUR CONTROL.
- AIR CONDITIONING UNITS SHALL BE STATE OF CALIFORNIA ENERGY COMMISSION LISTED
- WATERIGHT FLASHING SHALL BE PROVIDED WHEREVER DUCTWORK OR PIPING PENETRATES ROOF OR EXTERIOR WALLS.
- WHETHER OR NOT SHOWN ON DRAWINGS OR SPECIFIED HEREIN, FIRE DAMPERS SHALL BE INSTALLED IN DUCTS PASSING THROUGH FIRE RATED WALLS. FIRE DAMPERS SHALL BE COMPLETE WITH FUSIBLE LINK, ECCENTRIC WEIGHT, 16 GA. SLEEVE AND CLOSING STOP. ACCESS TO FUSIBLE LINKS SHALL BE PROVIDED THROUGH ACCESS DOOR. DAMPERS SHALL BE CONSTRUCTED IN ACCORDANCE NFPA WITH GMA REQUIREMENTS. U.L. LISTED AND STATE OF CALIFORNIA FIRE-MARL APPROVED. FIRE DAMPER SHALL BE POTTDORFF SERIES FFD-10 WITH ROUND DUCT ADAPTERS

### ELECTRICAL AND CONTROL SYSTEMS

- PROVIDE AND INSTALL NEW PROPERLY SIZED DISCONNECT SWITCH FOR ALL (VAV) HEATING VENTILATING UNITS.
- REPLACE ALL EXISTING DISCONNECT SWITCHES FOR ALL REPLACED (VAV) AIR CONDITIONING UNITS. DISCONNECT SWITCHES SHALL BE PROPERLY SIZED ACCORDING TO THE SCHEDULED UNITS' MOOP RATINGS.
- REPLACE ALL EXISTING THERMOSTATS SERVING PACKAGED AND SPLIT SYSTEM AIR CONDITIONING UNITS AND FORCED AIR FURNACES WITH VENSTAR MODEL F-2800
- PERMANENT ACCESS TO EQUIPMENT SHALL BE PROVIDED. PROVIDE MINIMUM OF 42-INCHES CLEAR WORKING SPACE IN FRONT OF ACCESS PANELS TO COMPRESSORS, BLOWER ASSEMBLY AND AIR FILTER SECTIONS.
- EQUIPMENT SHALL BE SECURELY FASTENED TO BUILDING STRUCTURE AND THE VIBRATION ISOLATORS, AND EARTHQUAKE RESTRAINTS PER CODE.
- MINIMUM VENTILATION RATE SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ASHRAE AND C.E.C. TITLE-24 REQUIREMENTS
- WHERE NECESSARY IN DUCTWORK OR CASING, PROVIDE SUITABLE ACCESS DOORS AND FRAMES FOR INSPECTION, OPERATION AND MAINTENANCE OF ALL CONTROLS, MOTOR BEARINGS, OR OTHER APPARATUS CONCEALED BEHIND THE SHEET METAL WORK. ACCESS DOORS IN DUCTS MAY BE OF SINGLE OR DOUBLE PANEL CONSTRUCTION AS REQUIRED TO MATCH THE EXISTING DUCTWORK, CONSTRUCTED OF NOT LESS THAN 18 GAUGE GALVANIZED STEEL AND SHALL HAVE STRONG RUBBER GASKETS WITH HINGES AND LATCHES.
- ALL PLUMBING SYSTEMS AND PIPING SHALL BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS
- REPLACE ALL EXISTING EQUIPMENT PLATFORM AND CURB CAS
- WHERE APPLICABLE EXTEND PLUMBING VENT PIPE HORIZONTALLY ABOVE ROOF TO ALLOW 10 FEET DISTANCE BETWEEN VENT OUTLET AND ANY A/C UNIT FRESH AIR INTAKE

## MECHANICAL EQUIPMENT SCHEDULES VARIOUS BUILDING'S AIR CONDITIONING UNIT REPLACEMENT CITY OF TORRANCE CITY OF TORRANCE, TORRANCE CALIFORNIA

Date: 02/21/13  
 Drawn: M.S.  
 Checked: B.H.  
 Approved:  
 Project No. AS SHOWN  
 Scale:

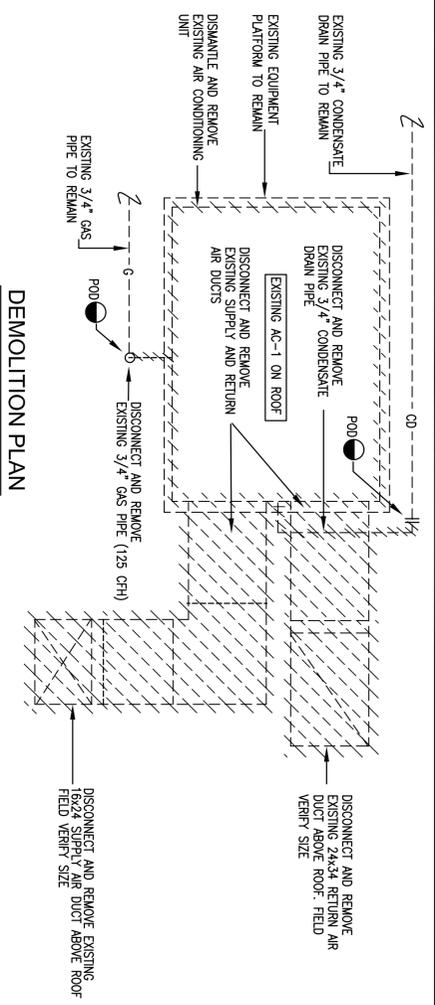
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M-2

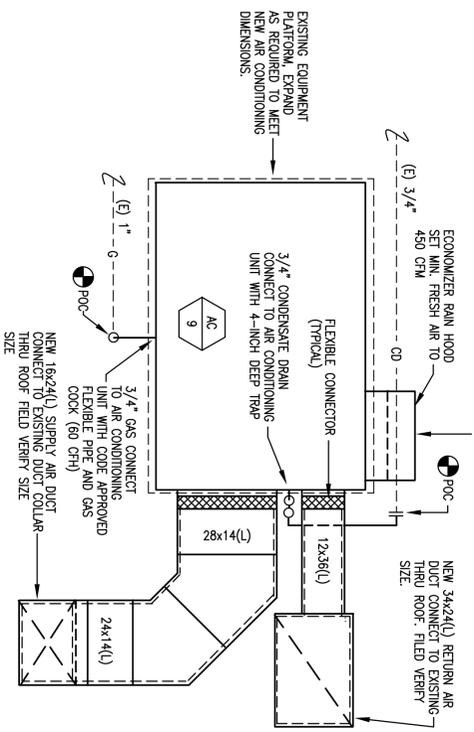
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 REMARKS



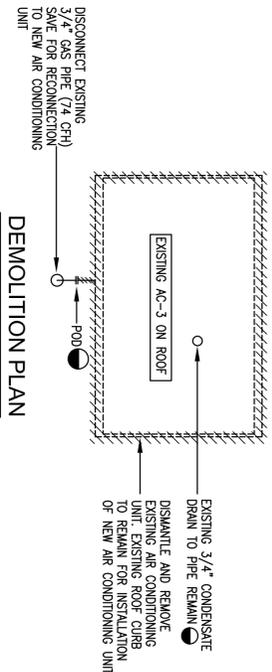
BARTEF YOOSEPHIANE & ASSOCIATES, INC.  
 CONSULTING MECHANICAL ENGINEERS  
 3734 GLENDALES DR.  
 5515 W. 116th Ave.  
 (818) 345-8614, FAX. (818) 345-8615



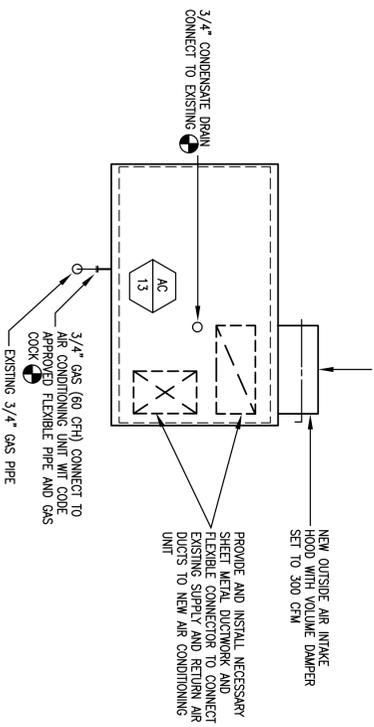
DEMOLITION PLAN



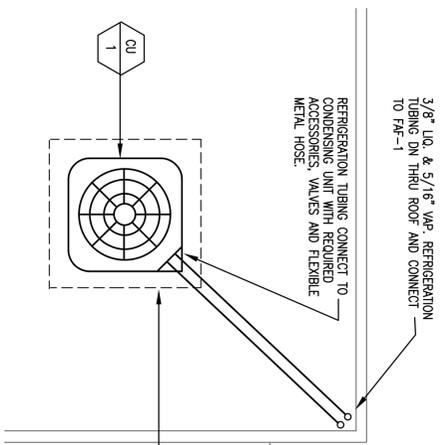
CONSTRUCTION PLAN



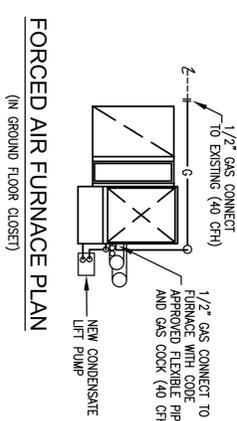
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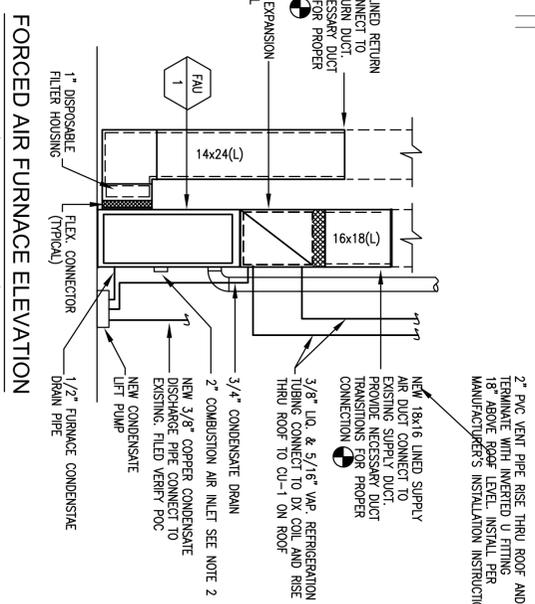
CONSTRUCTION PLAN



CONDENSING UNIT PLAN  
(ON ROOF)



FORCED AIR FURNACE PLAN  
(IN GROUND FLOOR CLOSE)



FORCED AIR FURNACE ELEVATION  
(IN GROUND FLOOR CLOSE)

- NOTES:
1. DISMANTLE AND REMOVE EXISTING FORCED AIR FURNACE, COIL, SECTIONS OF SUPPLY AND RETURN AIR DUCT AS REQUIRED AND CONDENSING UNIT ON THE ROOF. LOWER ABOVE DOOR
  2. COMBUSTION AIR INLET SEE NOTE 2

FIRE STATION #1

SCALE 1/2"=1'-0"

1

FIRE STATION #1

SCALE 1/2"=1'-0"

2

1339 POST AVE.

SCALE 1/2"=1'-0"

3

FIRE STATION #1

SCALE 1/2"=1'-0"

4

MECHANICAL DETAILS  
VARIOUS BUILDINGS' AIR CONDITIONING UNIT  
REPLACEMENT  
CITY OF TORRANCE  
CITY OF TORRANCE, TORRANCE CALIFORNIA



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Date: \_\_\_\_\_

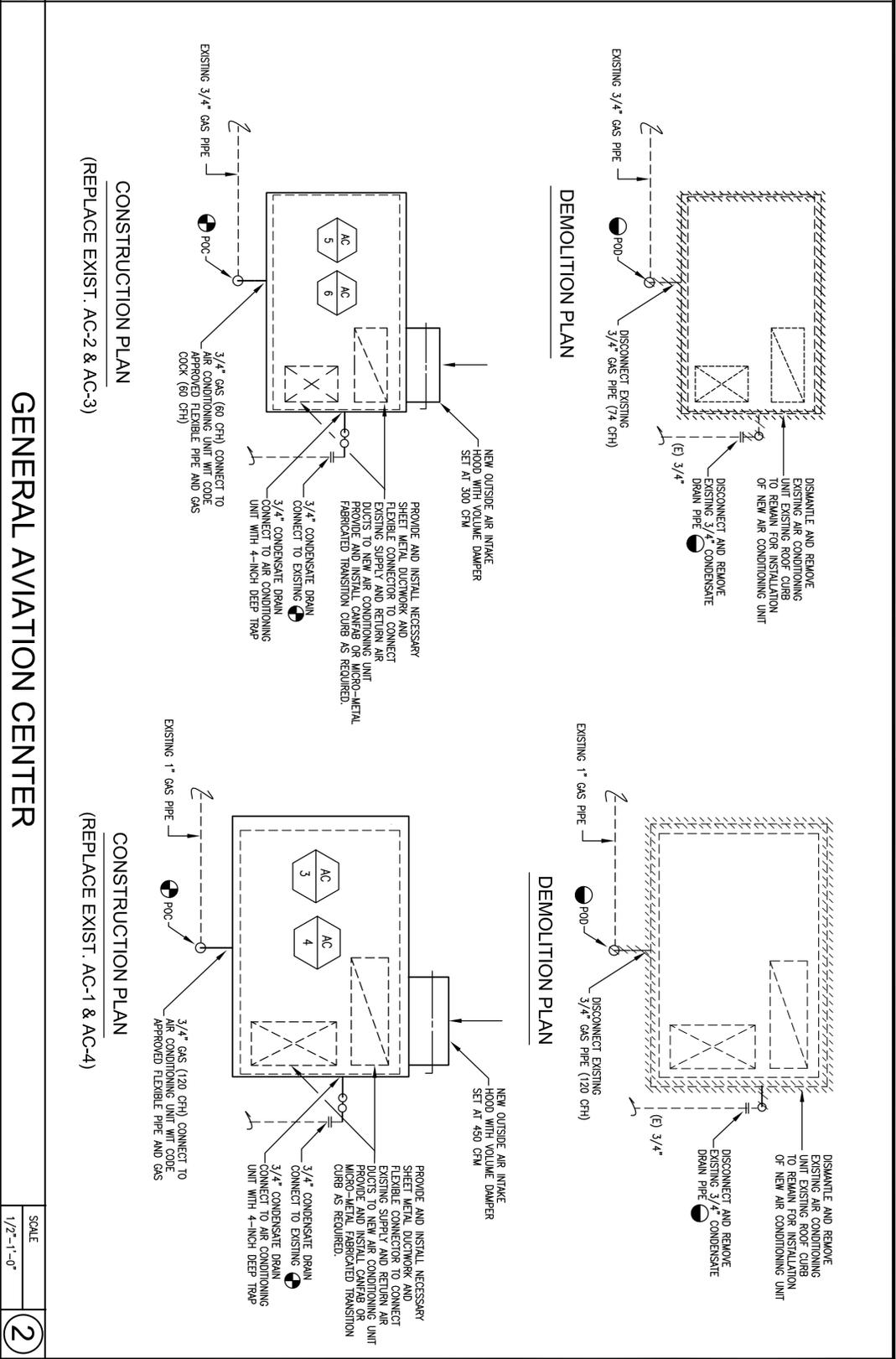
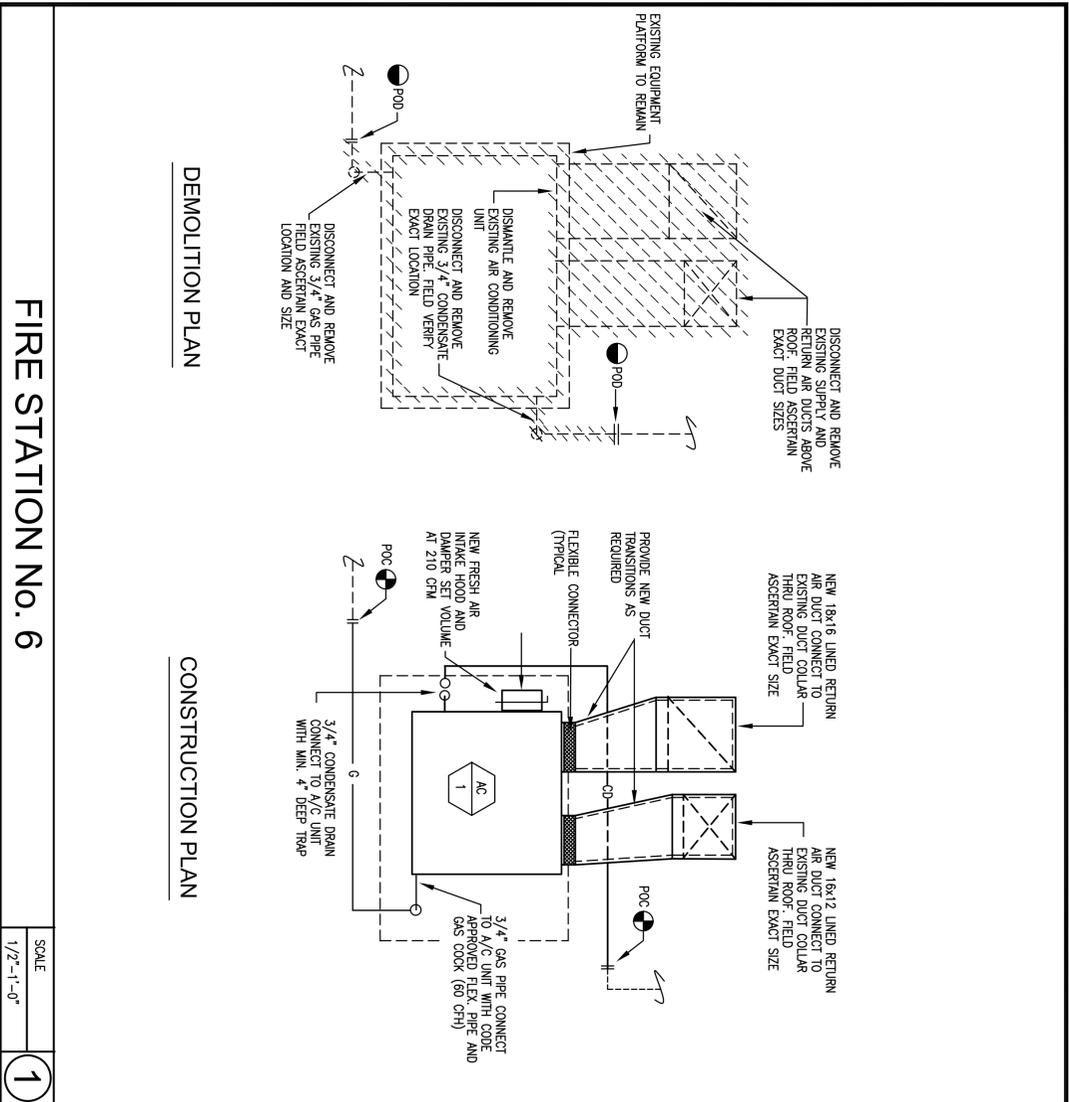
Date: 02/21/13  
Drawn: M.E.  
Checked: B.H.  
Approved: \_\_\_\_\_

Project No. \_\_\_\_\_  
Scale: AS SHOWN

Drawing No. \_\_\_\_\_

M-3





**SERVICE BUILDING**

SCALE: NONE

3

**DISMANTLE AND REMOVE EXISTING HEATING VENTILATION UNITS HV-1 THROUGH HV-8 COMPLETE WITH EVAPORATIVE COOLING SECTION ON HV-1 AND ECONOMIZER PACKAGES ON HV-2 THROUGH HV-8. SAVE EXISTING ROOF CURBS TO INSTALL NEW UNITS. PROVIDE AND INSTALL ALL NECESSARY SHEET METAL TRANSITION DUCT TO MAKE CONNECTION BETWEEN NEW UNITS AND EXISTING SUPPLY AND RETURN AIR DUCTWORK, AS REQUIRED. RECONNECT GAS PIPING TO NEW HEATING VENTILATING UNITS WITH NEW CODE APPROVED FLEXIBLE GAS PIPE AND SHUT OFF COCK. UNITS TO BE CONNECTED TO EXISTING CONTROL AND POWER WIRING. REPLACE EXISTING DISCONNECT SWITCH AND THERMOSTATS.**

EXISTING HV UNIT	REPLACING NEW HV UNIT
HV-1 REZNOR RPAK-1-300D	HV-1
HV-2 REZNOR RPAK-1-300D	HV-2
HV-3 REZNOR RPAK-1-300D	HV-3
HV-4 REZNOR RPAK-1-300D	HV-4
HV-5 REZNOR RPAK-1-300D	HV-5
HV-6 REZNOR RPAK-1-300D	HV-6
HV-7 REZNOR RPAK-1-300D	HV-7
HV-8 REZNOR HRXE-100	HV-8

REFER TO EQUIPMENT SCHEDULE AND SPECIFICATIONS FOR SPECIFIC REQUIREMENT OF EACH UNIT REFER TO STRUCTURAL DRAWINGS FOR ATTACHMENT AND SEISMIC BRACING OD UNITS TO EXISTING CURBS

**CULTURAL ARTS CENTER**

SCALE: NONE

4

**DISMANTLE AND REMOVE EXISTING KITCHEN MAKE-UP AIR UNIT COMPLETE WITH EVAPORATIVE COOLING, FURNACE AND FAN SECTIONS AND ACCESSORIES. SAVE EXISTING ROOF CURB TO INSTALL NEW MAKE-UP AIR UNIT. PROVIDE ALL NECESSARY SHEET METAL TRANSITION DUCT AND ACCESSORIES TO MAKE CONNECTION BETWEEN NEW UNIT AND EXISTING SUPPLY AIR DUCTWORK, AS REQUIRED. RECONNECT GAS PIPING TO NEW MAKE-UP AIR UNIT WITH NEW CODE APPROVED FLEXIBLE GAS PIPE AND SHUT OFF COCK. RECONNECT EXISTING MAKE-UP WATER AND DRAIN PIPING TO NEW. MAKE-UP AIR UNIT CONNECT POWER WIRING AND CONTROLS.**

EXISTING MAKE-UP AIR UNIT	REPLACING NEW MU UNIT
REZNOR HCRG-250-S-MV	MU-1

REFER TO EQUIPMENT SCHEDULE FOR SPECIFIC REQUIREMENT FOR EACH UNIT ATTACH UNIT TO EXISTING CURB WITH SAME SIZE FASTENERS AS EXISTING.

**GENERAL AVIATION CENTER**

SCALE: NONE

2

**DISMANTLE AND REMOVE EXISTING FORCED AIR FURNACES IN CLOSETS IN THE FOLLOWING ROOMS. THE EXISTING FURNACES ARE BOTTOM RETURN, DRAWING AIR FROM BOTTOM RETURN AIR PLENUMS. THE SUPPLY AIR IS DISCHARGED VERTICALLY THROUGH EXISTING SUPPLY AIR DUCTS TO SIDE WALL REGISTERS.**

ROOM	EXISTING FURNACE	REPLACING FURNACE
CERAMIC RM.	DAY & NITE 395BBAW036060	FAU-4
KITCHEN	DAY & NITE 395BBAW036060	FAU-5
ROOM 25	PAYNE 395 BAW03060	FAU-6
ROOM 26	PAYNE 395 BAW03060	FAU-7
ROOM 27	PAYNE 395 BAW03060	FAU-8
ROOM 28	PAYNE 395 BAW03060	FAU-9
ROOM 29	PAYNE 395 BAW03060	FAU-10
ROOM 30	PAYNE 395 BAW03060	FAU-11

PROVIDE SHEET METAL TRANSITION DUCT AND ACCESSORIES TO MAKE CONNECTION BETWEEN NEW FAU AND EXISTING SUPPLY DUCTS AND RETURN AIR PLENUMS AS REQUIRED. RECONNECT GAS PIPING TO NEW FORCED AIR FURNACES WITH CODE APPROVED FLEXIBLE GAS PIPES AND SHUT OFF COCKS. CONNECT EXISTING POWER WIRING AND CONTROLS. RE-INSULATE SUPPLY DUCTS WHERE INSULATION IS DAMAGED PROVIDE 120 VOLT PIGTAIL AND THERMOSTAT

REFER TO EQUIPMENT SCHEDULE FOR SPECIFIC REQUIREMENT OF EACH UNIT











