CITY OF TORRANCE

JIM FUENTES, SUPERVISOR, HVAC AND ELECTRICAL - GENERAL SERVICE DEPARTMENT

FIRE STATION #6 HVAC ROOF TOP UNIT REPLACEMENT

21401 DEL AMO CIRCLE TORRANCE, CA. 90501

IONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) NOTES	GE	NERAL NOTES
 IN CASE OF EMERGENCY, CALL,_JIM FUENTES AT WORK PHONE #-310-625-7931. SEDIMENT FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING STRUCTURAL 	1.	PROVIDE SHOP DRA REPRESENTATIVE A ENGINEER.
CONTROLS TO THE MAXIMUM EXTENT PRACTICABLE.	2.	PROVIDE COMPLET
SITE TO STREETS, DRAINAGE FACILITIES OR ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TACKING, OR WIND.	3.	COORDINATE THE I
4. APPROPRIATE BMP'S FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS SHALL BE IMPLEMENTED TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTIES BY WIND OR RUNOFF.		DURING THE COUR RELATIVE TO THE D DOCUMENTS, OR T
5. RUNOFF FROM EQUIPMENT AND VEHICLE WASHING SHALL BE CONTAINED AT CONSTRUCTION SITES UNLESS TREATED TO REDUCE OR REMOVE SEDIMENT AND OTHER POLLUTANTS.		PRIOR TO EXECUTI FOR REMOVING, AT
6. ALL CONSTRUCTION CONTRACTOR AND SUBCONTRACTOR PERSONNEL SHALL BE MADE AWARE OF THE REQUIRED BEST MANAGEMENT PRACTICES AND GOOD HOUSEKEEPING MEASURES FOR THE PROJECT SITE AND ANY ASSOCIATED CONSTRUCTION STAGING AREAS.	4	TO RECEIVING DIRE THE CONTRACT DC
7. AT THE END OF EACH DAY OF CONSTRUCTION ACTIVITY ALL CONSTRUCTION DEBRIS AND WASTE MATERIALS SHALL BE COLLECTED AND PROPERLY DISPOSED IN TRASH OR RECYCLE BINS.	4.	OF EQUIPMENT ON REQUIRED FOR EAG
8. CONSTRUCTION SITES SHALL BE MAINTAINED IN SUCH A CONDITION THAT AN ANTICIPATED STORM DOES NOT CARRY WASTES OR POLLUTANTS OFF THE SITE. DISCHARGES OF MATERIAL OTHER THAN STORM WATER ONLY WHEN NECESSARY FOR PERFORMANCE AND COMPLETION OF CONSTRUCTION PRACTICES AND WHERE THEY DO NOT: CAUSE OR CONTRIBUTE TO A VIOLATION OF ANY WATER QUALITY STANDARD; CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR NUISANCE; OR CONTAIN A HAZARDOUS SUBSTANCE IN A QUANTITY REPORTABLE UNDER FEDERAL REGULATIONS 40 CFR PARTS 117 AND 302.	5.	CONTRACTOR SHA WORK AREA AND S DIFFUSERS, GRILLE AREA OF THE PRO. OCCUR, INCLUDING OR FINISHING OF C
9. POTENTIAL POLLUTANTS INCLUDE BUT ARE NOT LIMITED TO: SOLID OR LIQUID CHEMICAL SPILLS; WASTES FROM PAINTS, STAINS, SEALANTS, GLUES, LIMES, PESTICIDES, HERBICIDES, WOOD PRESERVATIVES AND SOLVENTS; ASBESTOS FIBERS, PAINT FLAKES OR STUCCO FRAGMENTS; FUELS, OILS, LUBRICANTS, AND HYDRAULIC, RADIATOR OR BATTERY FLUIDS; FERTILIZERS, VEHICLE/EQUIPMENT WASH WATER AND CONCRETE WASH WATER; CONCRETE, DETERGENT OR FLOATABLE WASTES; WASTES FROM ANY ENGINE/EQUIPMENT STEAM CLEANING OR CHEMICAL DEGREASING AND SUPERCHLORINATED POTABLE WATER LINE FLUSHING		REWORK OF A PRE AND FAN COILS SEI REGISTERS, DIFFUS BELOW THE CEILING INFILTRATION OF D
DURING CONSTRUCTION, PERMITTEE SHALL DISPOSE OF SUCH MATERIALS IN A SPECIFIED AND CONTROLLED TEMPORARY AREA ON-SITE, PHYSICALLY SEPARATED FROM POTENTIAL STORM WATER RUNOFF, WITH ULTIMATE	6.	PROVIDE ALL CORII PERFORM THE WO
DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REQUIREMENTS.	7.	COORDINATE LOCA OWNER'S REPRESE
EROSION IS PROHIBITED. DEWATERING OF NON-CONTAMINATED GROUNDWATER REQUIRES A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT FROM THE RESPECTIVE STATE REGIONAL WATER QUALITY CONTROL BOARD.	8.	PROVIDE SUPPORT EQUIPMENT IN ACC DO NOT SUPPORT I
11. GRADED AREAS ON THE PERMITTED AREA PERIMETER MUST DRAIN AWAY FROM THE FACE OF SLOPES AT THE CONCLUSION OF EACH WORKING DAY. DRAINAGE SHALL BE DIRECTED TOWARD DESILTING FACILITIES.		UNLESS OTHERWIS CONTACT THE BUIL OTHER BUILDING S
12. THE PERMITTEE AND CONTRACTOR SHALL BE RESPONSIBLE AND SHALL TAKE NECESSARY PRECAUTIONS TO PREVENT PUBLIC TRESPASS ONTO AREAS WHERE IMPOUNDED WATER CREATES A HAZARDOUS CONDITION.	9.	PERFORM WORK IN
13. THE PERMITTEE AND CONTRACTOR SHALL INSPECT THE EROSION CONTROL WORK AND INSURE THAT THE WORK IS IN ACCORDANCE WITH THE APPROVED PLANS.		CODES AND REGUL
14. THE PERMITTEE SHALL NOTIFY ALL GENERAL CONTRACTORS, SUBCONTRACTORS, MATERIAL SUPPLIERS, LESSEES, AND PROPERTY OWNERS: THAT DUMPING OF CHEMICALS INTO THE STORM DRAIN SYSTEM OR THE WATERSHED IS PROHIBITED.	10.	PROVIDE CODE API CONSTRUCTION TO
15. EQUIPMENT AND WORKERS FOR EMERGENCY WORK SHALL BE MADE AVAILABLE AT ALL TIMES DURING THE	11.	REPAIR ANY DAMAG
LOCATIONS TO FACILITATE RAPID CONSTRUCTION OF TEMPORARY DEVICES WHEN RAIN IS IMMINENT.	12.	INSTALL EQUIPMEN RECOMMENDATION
16. ALL REMOVABLE EROSION PROTECTIVE DEVICES SHALL BE IN PLACE AT THE END OF EACH WORKING DAY WHEN THE 5-DAY RAIN PROBABILITY FORECAST EXCEEDS 40%.	13.	PROVIDE EQUIPME
17. SEDIMENTS FROM AREAS DISTURBED BY CONSTRUCTION SHALL BE RETAINED ON SITE USING AN EFFECTIVE COMBINATION OF EROSION AND SEDIMENT CONTROLS TO THE MAXIMUM EXTENT PRACTICABLE, AND STOCKPILES OF SOIL SHALL BE PROPERLY CONTAINED TO MINIMIZE SEDIMENT TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES OF ADJACENT PROPERTIES VIA RUNOFF, VEHICLE TRACKING, OR	14.	PERFORM SYSTEM AND CERTIFICATIO HAVING JURISDICTI MANUFACTURERS,
WIND. 18. APPROPRIATE BMPS FOR CONSTRUCTION-RELATED MATERIALS, WASTES, SPILLS OR RESIDUES SHALL BE IMPLEMENTED AND RETAINED ON SITE TO MINIMIZE TRANSPORT FROM THE SITE TO STREETS, DRAINAGE FACILITIES, OR ADJOINING PROPERTY BY WIND OR RUNOFF.	15.	UPON COMPLETION SYSTEMS FUNCTIO DEMONSTRATE THE REPRESENTATIVES DEMONSTRATION V
	16.	PROVIDE O & M MA
	17.	PROVIDE TRAINING DESCRIBED IN SPE

AWINGS AND EQUIPMENT SUBMITTALS TO THE OWNER'S FOR REVIEW PRIOR TO BEING SUBMITTED TO THE PROJECT

TE AND PROPERLY FUNCTIONING CONTROL SYSTEM FOR THIS

INSTALLATION OF THE WORK OF ALL REQUIRED TRADES. IF RSE OF THE WORK, THE CONTRACTOR EXPERIENCES A PROBLEM DOCUMENTS, THE LOCAL APPLICABLE CODES AND GOVERNING THE WORK CANNOT BE INSTALLED IN ACCORDANCE WITH THE MENTS FOR ANY REASON, NOTIFY ENGINEER FOR DIRECTION TION OF THIS WORK. THE CONTRACTOR MAY BE RESPONSIBLE AT NO ADDITIONAL COMPENSATION, ANY WORK INSTALLED, PRIOR RECTION FROM THE OWNER'S REPRESENTATIVE, IN VIOLATION OF OCUMENTS OR APPLICABLE CODES.

I ON THE DRAWINGS AND IN THE SCHEDULES INDICATE THE TYPE NLY. REVIEW DRAWINGS TO DETERMINE THE EXACT QUANTITIES ACH EQUIPMENT TYPE.

ALL EMPLOY "CLEAN CONSTRUCTION" METHODS TO KEEP THE SYSTEMS FREE OF DUST, DIRT AND DEBRIS. DUCT OPENINGS, LES AND REGISTERS SHALL BE SEALED WITH VISQUINE IN ANY DJECT WHERE DUST GENERATING CONSTRUCTION ACTIVITIES IG THE PREPARATION OF WALL BOARD, PREPARATION, GRINDING CONCRETE WORK OR ANY OTHER SIMILAR ACTIVITY. IF SIMILAR EVIOUSLY FINISHED AREA IS REQUIRED, AIR HANDLING UNITS ERVING THAT AREA SHALL BE SHUT DOWN, AND ALL GRILLES, JSERS AND DUCT OPENINGS IN THAT AREA, WHETHER ABOVE OR NG, SHALL BE SEALED WITH VISQUEEN TO PREVENT DUST, DIRT AND DEBRIS INTO THE AIR DISTRIBUTION SYSTEM.

RING, TRENCHING, CUTTING AND PATCHING AS REQUIRED TO ORK FOR THIS PROJECT.

ATIONS OF SENSORS AND OTHER DEVICES WITH ENGINEER AND SENTATIVE PRIOR TO INSTALLATION.

T STEEL, HANGERS AND ACCESSORIES REQUIRED TO INSTALL CORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. DEVICES FROM DUCTWORK, PIPES, OR ELECTRICAL CONDUIT. ISE NOTED, DO NOT ALLOW PIPES OR CONDUIT TO DIRECTLY ILDING STRUCTURE, CEILING SYSTEM, LIGHT FIXTURES, ANY SYSTEM COMPONENT, OR EACH OTHER.

N ACCORDANCE WITH ALL CURRENT AND APPLICABLE LOCAL LATIONS AND AS REQUIRED BY THE LOCAL AUTHORITY HAVING J).

PROVED FIRE STOPPING AT PENETRATIONS THROUGH BUILDING O ACHIEVE FIRE, SMOKE, AND SOUND RATINGS AS REQUIRED.

AGE TO FIREPROOFING DUE TO INSTALLATION OF THIS WORK.

NT IN ACCORDANCE WITH THE MANUFACTURERS

ENT SUITABLE FOR THE INTENDED PURPOSE.

M COMMISSIONING, CLEANING, SERVICING, BALANCING, TESTING, ON REQUIRED BY THE DOCUMENTS, CODE, LOCAL AUTHORITY TION, AND AS RECOMMENDED BY THE EQUIPMENT 6, PRIOR TO OCCUPANCY.

ON OF TESTING, OPERATE EQUIPMENT TO VERIFY THAT ALL ON PROPERLY. AFTER VERIFYING THE PROPER OPERATION, HE OPERATION OF SYSTEMS AND EQUIPMENT TO THE OWNERS IS. PROVIDE 48 HOURS NOTICE AND SCHEDULE THE WITH THE OWNER.

ANUALS AS DESCRIBED IN SPECIFICATIONS.

G FOR OWNER'S MAINTENANCE AND ENGINEERING STAFF AS ECIFICATIONS.

SCOPE OF WORK

- A. REPLACE EXISTING ROOF TOP UNITS WITH ONES OF SIMILAR CAPACITY
- B. RECONNECT THE EXISTING GAS AND CONDENSATE LINES TO NEW UNITS. MODIFY THE EXISTING LINES AND POINT OF CONNECTIONS AS NEEDED.
- C. RECONNECT POWER TO NEW EQUIPMENT. MODIFY EXISTING ELECTRICAL AS NEEDED.
- D. START UP AND COMMISSION HVAC SYSTEM FOR SMOOTH OPERATION.

APPLICABLE CODE

AS APPLICABLE TO THE SCOPE OF WORK. NEW WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWINGS:

- 2016 CALIFORNIA BUILDING CODE, VOLUMES 1 AND 2
- 2016 CALIFORNIA ELECTRICAL CODE
- 2016 CALIFORNIA MECHANICAL CODE
- 2016 CALIFORNIA PLUMBING CODE
- 2016 CALIFORNIA EXISTING BUILDING CODE
- 2016 CALIFORNIA REFERENCED STANDARDS CODE
- 2016 CALIFORNIA FIRE CODE
- 2016 CALIFORNIA ENERGY CODE

DRAWING INDEX

	SHEET INDEX		
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S3.1	ROOF PLAN	ŀ	
S4.1	SECTIONS AND DETAILS		



ABBRE	/IATIONS			MECHANICAL	LEGEND			GENERAL NOTES
ABBR. / SYMBOL	DESCRIPTION	ABBR. / SYMBOL	DESCRIPTION	ABBR. / SYMBOL	DESCRIPTION	ABBR. / SYMBOL	DESCRIPTION	 PROVIDE SHOP DRAWINGS AND EQUIPMENT SUBMITTALS TO THE OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO BEING SUBMITTED TO THE PROJECT ENGINEER.
AD	ACCESS DOOR	LVG	LEAVING		SQUARE OR RECTANGULAR DUCT	Cws	CONDENSING WATER SUPPLY	2. PROVIDE COMPLETE AND PROPERLY FUNCTIONING CONTROL SYSTEM FOR THIS
AFF	ABOVE FINISHED FLOOR	LWB	LEAVING WB TEMPERATURE		ROUND DUCT	CW R	CONDENSING WATER RETURN	3. COORDINATE THE INSTALLATION OF THE WORK OF ALL REQUIRED TRADES. IF
AI	ANALOG INPUT	МА	MAKEUP AIR		FIRE DAMPER		REDUCER	DURING THE COURSE OF THE WORK, THE CONTRACTOR EXPERIENCES A PROBLEM RELATIVE TO THE DOCUMENTS, THE LOCAL APPLICABLE CODES AND GOVERNING
AO	ANALOG OUTPUT	МАТ	MIXED AIR TEMPERATURE	◆CSF ↓ ↓ ↓	COMBINATION FIRE/SMOKE DAMPER	D	CONDENSATE DRAIN, DRAIN	DOCUMENTS, OR THE WORK CANNOT BE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS FOR ANY REASON, NOTIFY ENGINEER FOR DIRECTION DRIOD TO EXECUTION OF THIS WORK. THE CONTRACTOR MAY BE DESPONSIBLE FOR
AMB	AMBIENT	MAX	MAXIMUM		DUCT WITH MANUAL VOLUME DAMPER		FLOW INDICATOR, FLOW METER	REMOVING, AT NO ADDITIONAL COMPENSATION, ANY WORK INSTALLED, PRIOR TO RECEIVING DIRECTION FROM THE OWNER'S REPRESENTATIVE. IN VIOLATION OF THE
AP	ACCESS PANEL	мсс	MOTOR CONTROL CENTER	+ (L-X) +	DUCT WITH ACOUSTICAL LINER. SIZE IS OL "X" IS LINER THICKNESS		FLEXIBLE PIPE CONNECTOR	CONTRACT DOCUMENTS OR APPLICABLE CODES.
ARCH	ARCHITECTURAL	MIN	MINIMUM		INCLINE RISE OR DROP IN DIRECTION		GATE VALVE	4. SYMBOLS SHOWN ON THE DRAWINGS AND IN THE SCHEDULES INDICATE THE TYPE OF EQUIPMENT ONLY. REVIEW DRAWINGS TO DETERMINE THE EXACT QUANTITIES
BAS	BUILDING AUTOMATION SYSTEM	NC	NORMALLY CLOSED		FLEXIBLE DUCT - DOUBLE LINE		BALANCING VALVE	REQUIRED FOR EACH EQUIPMENT TYPE.
BDD	BACK DRAFT DAMPER	NO	NORMALLY OPEN	M	FLEXIBLE DUCT - SINGLE LINE		PLUG VALVE	WORK AREA AND SYSTEMS FREE OF DUST, DIRT AND DEBRIS. DUCT OPENINGS, DIFFUSERS, GRILLES AND REGISTERS SHALL BE SEALED WITH VISQUINE IN ANY AREA
BHP	BRAKE HORSEPOWER	SS	STAINI ESS STEEL	$\downarrow \rightarrow \downarrow$	DIRECTION OF FLOW	<u> </u>	CHECK VALVE	OF THE PROJECT WHERE DUST GENERATING CONSTRUCTION ACTIVITIES OCCUR, INCLUDING THE PREPARATION OF WALL BOARD, PREPARATION, GRINDING OR
BTUH	BTU PER HOUR	CV			TRANSITION		PRESSURE RELIEF VALVE,	FINISHING OF CONCRETE WORK OR ANY OTHER SIMILAR ACTIVITY. IF SIMILAR REWORK OF A PREVIOUSLY FINISHED AREA IS REQUIRED, AIR HANDLING UNITS AND FAN COULS SERVING THAT AREA SHALL RE SHUT, DOWN, AND ALL CRILLES
СС	COOLING COIL	GV	GRAVITY VENTILATOR	┟┤╼┤┧	VAV (VAV-NO.)	 		REGISTERS, DIFFUSERS AND DUCT OPENINGS IN THAT AREA, WHETHER ABOVE OR BELOW THE CEILING, SHALL BE SEALED WITH VISQUINE TO PREVENT INFILTRATION
CD	CEILING DIFFUSER		NEW		SIDEWALL REGISTER		BALL VALVE	OF DUST, DIRT AND DEBRIS INTO THE AIR DISTRIBUTION SYSTEM.
CEM							BUTTERFLY VALVE	6. PROVIDE ALL CORING, TRENCHING, CUTTING AND PATCHING AS REQUIRED TO PERFORM THE WORK FOR THIS PROJECT.
	COOLING WATER SUPPLY					P.G. OR P.I. Ø	PRESSURE GAGE, PRESSURE INDICATOR	7. CUTTING, BORING, SAWCUTTING, OR DRILLING THROUGH NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED IN THE DRAWINGS
	AND RETURN COOLING TOWER WATER							OR ACCEPTED BY THE ARCHITECT AND STRUCTURAL ENGINEER.
CTWS/R	SUPPLY AND RETURN							8. COORDINATE LOCATIONS OF SENSORS, THERMOSTATS AND OTHER DEVICES WITH ENGINEER AND OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION. TEMPERATURE
CG								SENSORS MOUNTED ON EXTERIOR WALLS SHALL HAVE INSULATED BACKS. AVOID LOCATIONS NEAR EXTERIOR DOORS OR IN DIRECT SUNLIGHT. MOUNTING HEIGHT PER
CNTRL	CONTROL	OPNG	OPENING		EXHAUST REGISTER		3-WAY CONTROL VALVE	ADA. IN FINISHED AREA'S WHERE DEVICES ARE REMOVED. PATCH AND FINISH TO MATCH EXISTING SURROUNDING MATERIALS AND COLORS.
CONN	CONNECTION	OSA			CEILING DIFFUSER			9. COORDINATE THE CEILING TYPES AND DO NOT INSTALL WORK THAT REQUIRES ACCESS (JUNCTION BOXES, VALVES, DEVICES, ETC.) ABOVE INACCESSIBLE CEILINGS.
CONT	CONTINUATION	OV			SUPPLY DUCT		BLIND FLANGE	IF IT IS NECESSARY TO INSTALL SUCH WORK ABOVE AN INACCESSIBLE CEILING, PROVIDE ACCESS PANELS AS REQUIRED TO PERMIT ACCESS. COORDINATE ACCESS
CR	CEILING REGISTER	PD	PRESSURE DROP		RETURN DUCT		TEMPERATURE/ PRESSURE TEST PORT	PANEL LOCATIONS WITH THE ASSOCIATED EQUIPMENT LOCATIONS. SHOW ACCESS PANELS ON SHOP DRAWINGS. INSTALL ACCESS PANELS IN WALLS OR CEILINGS AS SHOWN ON ARCHITECTURAL PLANS OR AS DIRECTED BY THE ARCHITECT
CSF	COMBINATION FIRE/SMOKE DAMPER	POC	POINT OF CONNECTION		EXHAUST DUCT	<u></u>	OCCUPANCY SENSOR	10. PROVIDE 1" DIAMETER COLORED STICKER ON CEILINGS TO INDICATE LOCATIONS OF
DDC	DISTRIBUTED DIGITAL CONTROL	POD	POINT OF DEMOLITION		CEILING ACCESS PANEL	LS	LIGHTING CONTROL SWITCH	CONTROLLERS, FIRE DAMPERS AND BALANCING DAMPERS ABOVE CEILINGS. SHOP DRAWINGS SHALL INCLUDE A LEGEND FOR COLOR CODE.
DI	DIGITAL INPUT	(R)	RELOCATE,		DUCT WITH TURNING VANES	3.1	LIGHTING CONTROLLER	11. PROVIDE SUPPORT STEEL, HANGERS, VIBRATION ISOLATION, AND ACCESSORIES
DO	DIGITAL OUTPUT	RA	RETURN AIR		VOLUME DAMPER	TS	TIME SWITCH	RECOMMENDATIONS. DO NOT SUPPORT CEILINGS, LIGHTING FIXTURES, OR ANY OTHER DEVICES FROM DUCTWORK, PIPES, OR ELECTRICAL CONDUIT. UNLESS
DPT	DIFFERENTIAL PRESSURE TRANSMITTER	RAT	RETURN AIR TEMP.	\longrightarrow	EQUIPMENT DESIGNATION & NUMBER	05	DAYLIGHT SENSOR	OTHERWISE NOTED, DO NOT ALLOW DUCTWORK, PIPES, OR CONDUIT TO DIRECTLY CONTACT THE BUILDING STRUCTURE, CEILING SYSTEM, LIGHT FIXTURES, ANY OTHER
Ø	(DIA) DIAMETER	RG	RETURN GRILLE	T	ROOM THERMOSTAT		DIMMER	BUILDING SYSTEM COMPONENT, OR EACH OTHER. APPLIANCES DESIGNED TO BE FIXED IN POSITION SHALL BE SECURELY FASTENED IN PLACE PER BUILDING CODE
D	CONDENSATE DRAIN, DRAIN	RH	RELATIVE HUMIDITY	SD	SMOKE DETECTOR	R	LIGHTING CONTROL RELAY	12. PERFORM WORK IN ACCORDANCE WITH ALL CURRENT AND APPLICABLE LOCAL
(E)	EXISTING	RM	REFRIGERANT MONITOR SENSING POINT	₽.0.C.	POINT OF CONNECTION	63	CARBON DIOXIDE SENSOR	CODES AND REGULATIONS AND AS REQUIRED BY THE LOCAL AUTHORITY HAVING JURISDICTION .
dP	PRESSURE DROP	RPB	REVERSE PRESSURE BACKFLOW	_//C _∕/→	UNDERCUT DOOR	PS _x	POWER SUPPLY. "X" IS VOLTAGE	13. VERIFY THAT EQUIPMENT AND MATERIAL TO BE INSTALLED IN THE RETURN AIR PATH
EA	EXHAUST AIR	RPM	REVOLUTIONS PER MINUTE		DOOR LOUVER	CWS	COOLING WATER SUPPLY	APPLICABLE CODES AND REGULATIONS. SUPPLY AND RETURN AIR PLENUMS SHALL BE OF NON-COMBUSTIBLE CONSTRUCTION, SEALED AIRTIGHT, AND CONFORM TO
EAT	ENTERING AIR TEMPERATURE	SA	SUPPLY AIR	1	NEW CONSTRUCTION KEYNOTE DESIGNATION	CWR	COOLING WATER RETURN	ALL APPLICABLE CODE REQUIREMENTS. MATERIALS SHALL HAVE A MOLD, HUMIDITY, AND EROSION RESISTANT FACE THAT MEETS THE REQUIREMENTS OF UL181.
EWT	ENTERING WATER TEMPERATURE	SAT	SUPPLY AIR TEMPERATURE	$\langle 1 \rangle$	DEMOLITION KEYNOTE DESIGNATION	——HHWS——	HEATING WATER SUPPLY	COMBUSTIBLE MATERIALS EXPOSED WITHIN THE PLENUM MUST HAVE. FLAME-SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE-DEVELOPED RATING OF
EDB	ENTERING DB TEMPERATURE	SD	SMOKE DETECTOR	Н	ROOM HUMIDISTAT	HHWR	HEATING WATER RETURN	14. SUPPLY AIR, RETURN AIR, AND OUTSIDE AIR FOR HEATING, COOLING OR
EWB	ENTERING WB TEMPERATURE	SF	SUPPLY FAN	$\langle \rangle$	INTERLOCK	CTWS	COOLING TOWER WATER SUPPLY	EVAPORATIVE COOLING SHALL BE CONDUCTED THROUGH DUCT SYSTEMS CONSTRUCTED OF METAL AS SET FORTH IN THE SMACNA HVAC DUCT CONSTRUCTION
EMS	ENERGY MANAGEMENT SYSTEM	SG	SUPPLY GRILLE	0000	PARALLEL BLADE DAMPER	CTWR	COOLING TOWER WATER RETURN	STANDARDS. METAL AND FLEXIBLE, OR ANOTHER APPROVED DUCT CONSTRUCTION STANDARD.
EF	EXHAUST FAN	SP	STATIC PRESSURE		OPPOSED BLADE DAMPER			15. PROVIDE CODE APPROVED FIRE STOPPING AT PENETRATIONS THROUGH BUILDING CONSTRUCTION TO ACHIEVE FIRE, SMOKE, AND SOUND RATINGS AS REQUIRED
EXH.	EXHAUST	SPEC	SPECIFICATION	М	MOTORIZED DAMPER OR VALVE			16. REPAIR ANY DAMAGE TO FIREPROOFING DUE TO INSTALLATION OF THIS WORK.
FM	FLOW METER	SQ FT	SQUARE FOOT	BDD	BACKDRAFT DAMPER			17. INSTALL EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURERS
FS	FLOW SWITCH	S/S	START/ STOP		PIPE UNION			18. PROVIDE EQUIPMENT SUITABLE FOR THE INTENDED PURPOSE
ENT	ENTERING	ST	SOUND TRAP					19. PERFORM SYSTEM COMMISSIONING, CLEANING, SERVICING, BALANCING, TESTING,
ESP	EXTERNAL STATIC PRESSURE		THROAT	ANCHORAG	E & BRACING NOTES			AND CERTIFICATION REQUIRED BY THE DOCUMENTS, CODE, LOCAL AUTHORITY HAVING JURISDICTION, AND AS RECOMMENDED BY THE EQUIPMENT
°F	DEGREES FAHRENHEIT	те		THE SEISMIC A	ANCHORAGE OF MECHANICAL EQUIPMENT SHA	LL CONFORM TO ASCE 7	7-10 SECTION 13.3.1 AND TABLE 13.6-1,	20. UPON COMPLETION OF TESTING OPERATE FOUNDMENT TO VEDICY THAT ALL
FC	FLEXIBLE CONNECTION			CCR TITLE 24, SHOWN ON PL	2016 CBC SECTION 1613. ANCHORAGE DETAILS ANS.		INTED EQUIPMENT SHALL BE AS	SYSTEMS FUNCTION PROPERLY. AFTER VERIFYING THE PROPER OPERATION, DEMONSTRATE THE OPERATION OF SYSTEMS AND EQUIPMENT TO THE OWNERS
				ALL MECHANIC DIRECTION. RE THE ATTACHM	CAL EQUIPMENT SHALL BE BRACED OR ANCHO EFER TO CCR TITLE 24 PART II, 2016 CBC PART IENT OF THE FOLLOWING ITEMS SHALL BE DES	2 FOR EXACT REQUIREN	ONTAL FORCE ACTING IN ANY IENTS. ORCES PRESCRIBED ABOVE, BUT	REPRESENTATIVES. PROVIDE 48 HOURS NOTICE AND SCHEDULE THE DEMONSTRATION WITH THE OWNER.
				NEED NOT BE HAVE BEEN AN	DETAILED ON THE PLANS, AND THE PROJECT I ICHORED:	NSPECTOR WILL VERIFY	THAT THESE ITEMS (EQUIPMENT)	21. PRIOR TO PERMIT BEING FINALIZED, A COMPLETE REPORT OF THE TESTING AND
				A. EQUIPME B. FURNITU	ENT WEIGHING LESS THAN 400 POUNDS SUPPO IRE REQUIRED TO BE ATTACHED IN ACCORDA	ORTED DIRECTLY ON THE NCE WITH ASCE 7-10, SE	E FLOOR OR ROOF. CTION 13.5	THE INSPECTOR.(CGB5.713.10.4)
				C. TEMPOR D. EQUIPME E. EQUIPME	ART OR MOVABLE EQUIPMENT WITH FLEXIBLE ENT WEIGHING LESS THAN 20 POUNDS SUPPOI ENT WEIGHING LESS THAN 20 POUNDS SUBDE	ECONNECTION TO POWE RTED BY VIBRATION ISOL	R OR UTILITIES. LATORS. FLOOR OR HUNG FROM A WALL	22. PROVIDE O & M MANUALS AS DESCRIBED IN SPECIFICATIONS.
GPM		TYP	TYPICAL		LEMENTS THAT DO NOT REQUIRE DETAILS ON		GS, THE INSTALLATION SHALL BE	23. PROVIDE TRAINING FOR OWNER'S MAINTENANCE AND ENGINEERING STAFF AS DESCRIBED IN SPECIFICATIONS.
HP		UI	UNIVERSAL INPUT	SUBJECT TO T	HE APPROVAL OF THE MECHANICAL/ELECTRIC	AL ENGINEER.		24. SURFACE MOUNTED CONDUIT NOT PERMITTED IN OCCUPIED AREA'S.
HWS/R	SUPPLY AND RETURN	VD	VOLUME DAMPER	PIPING, DUCTV	VORK, AND ELECTRICAL DISTRIBUTION SYSTEM	M BRACING NOTE:		25. CONTROL WIRING NOTES
HZ	HERTZ	VAV	VARIABLE AIR VOLUME	PIPING, DUCTV ASCE 7-10 SEC	WORK, AND ELECTRICAL DISTRIBUTION SYSTEM	MS SHALL BE BRACED TO 13.6.8, 13.6.7 AND 13.6.5.5	D RESIST THE FORCES PRESCRIBED IN 5, ITEM 6, RESPECTIVELY.	A. PROVIDE CONTROL, SIGNAL AND COMMUNICATION WIRING AND CONDUIT.
IN	INCHES	VFD	VARIABLE FREQUENCY DRIVE	A COPY OF TH	E LATEST EDITION SMACNA MANUAL SHALL BE	AVAILABLE ON THE JOB	SITE PRIOR TO THE START OF	B. COORDINATE WITH ELECTRICAL CONTRACTOR FOR 120 VAC POWER REQUIRED FOR CONTROL DEVICES.
ICW	INDUSTRIAL COLD WATER	VRF	VARIABLE REFRIGERANT FLOW		BRACING OF THE PIPE, DUCTWORK, AND ELEC	CT. DISTRIBUTION SYSTE		C. WIRING DIAGRAMS ARE SHOWN FOR CONTROL SEQUENCE AND FUNCTION ONLY. IT REMAINS THE RESPONSIBILITY OF THE FLECTRICAL CONTRACTOR TO INSURE
KW	KILOWATT	WB	WET BULB	THE STRUCTU AND BRACE LC	KAL ENGINEER OF RECORD SHALL VERIFY THE DADS.	E ADEQUACY OF THE ST	RUCTURE TO SUPPORT THE HANGER	THAT THE ELECTRICAL PORTION OF THIS WORK IS INSTALLED PER CODE.
(L)	LINED DUCTWORK	WC	WATER COLUMN	BRACING OF D	OUCTS AND PIPING SHALL BE INSTALLED IN ACC	CORDANCE WITH SMACN	A GUIDELINES	26. REGARDLESS INDICATED ON PLAN OR NOT, CONTRACTOR TO PROVIDE BALANCING DAMPER FOR ALL SUPPLY, RETURN AND EXHAUST DUCTWORK AT
LB	POUND	WG	WATER GAUGE	WHERE BRACI BE SUBJECTEI	NG DETAILS ARE NOT SHOWN ON THE DRAWIN D TO THE APPROVAL OF THE STRUCTURAL ENG	IGS OR IN THE GUIDELIN GINEER	ES, THE FIELD INSTALLATION SHALL	BRANCH TAKEOFF.
LAT	LEAVING AIR TEMPERATURE	WM	WATER METER		E GUIDELINES PUBLISHED BY SMACNA SHALL	BE PROVIDED BY THE CO	ONTRACTOR AND KEPT AT THE JOB	SHALL BE HIGHER THAN THE NEW UNITS. UPGRADE THE EXISTING ONES TO APPROACH CITY REQUIREMENTS.
LWT	LEAVING WATER TEMPERATURE			SHE AT ALL II				

SCOPE OF WORK

THE MECHANICAL SCOPE OF WORK FOR THIS PROJECT IS AS FOLLOWS:

- 1. REPLACE PACKAGED ROOF TOP UNITS. TAGGED AC-1 AND AC-2. NEW UNITS SHALL BE OF SIMILAR CAPACITY.
- 2. DISCONNECT AND RECONNECT NEW UNIT WITH EXISTING AIR DUCT BY DUCT FLEXIBLE CONNECTION CANVAS. MATERIAL, FABRICATION SHALL COMPLY WITH SMACNA.
- 3. DISCONNECT AND RECONNECT GAS LINES TO NEW UNITS. DISCONNECT AND RECONNECT CONDENSATE DRAIN PIPE TRAPS FOR NEW UNIT TO EXISTING MAIN CONDENSATE LINE ON ROOF. DISCONNECT AND RECONNECT ELECTRICAL POWER TO BE MODIFIED AS NEEDED.
- 4. REMOVE EXISTING THERMOSTAT AND PROVIDE NEW. WIRED THERMOSTATS TO NEW UNITS. LOCATION SHALL BE COORDINATED WITH ARCHITECT AND TENANT.

DESIGN CONDITION

OUTDOOR DESIGN CONDITION:

SUMMER: 93 DEGREE FDB, 68 DEGREE FWB

WINTER: 33 DEGREE F

INDOOR DESIGN CONDITION:

FLOW AREAS: 75 DEGREE F SUMMER 68 DEGREE F WINTER NO HUMIDITY CONTROL

TITLE 24 NOTE:

1. NO ADDITIONAL COOLING/HEATING LOADS ARE BEING ADDED TO THE BUILDING HVAC SYSTEMS.

- 2. NO CHANGES ARE BEING MADE TO THE BUILDING ENVELOPE.
- 3. NEW DUCTWORK SHALL COMPLY WITH SECTION 149(b) 1D. STANDARDS.

MECHANICAL SHEET INDEX

IEET NO.	SHEET TITLE
M0.1	MECHANICAL GENERAL NOTES, ABBREVIATIONS AND LEGENDS
M0.2	MECHANICAL SPECIFICATION
M0.3	MECHANICAL SPECIFICATION
M0.4	MECHANICAL SCHEDULES
M2.1	MECHANICAL ROOF DEMOLITION PLAN
M3.1	MECHANICAL ROOF RENOVATION PLAN
M4.1	MECHANICAL DETAILS

APPLICABLE CODES & STANDARD

AS APPLICABLE TO THE SCOPE OF WORK. NEW WORK TO BE PERFORMED IN ACCORDANCE WITH THE FOLLOWINGS:

- 2016 CALIFORNIA BUILDING CODE, VOLUMES 1 AND 2
- 2016 CALIFORNIA ELECTRICAL CODE
- 2016 CALIFORNIA MECHANICAL CODE
- 2016 CALIFORNIA PLUMBING CODE
- 2016 CALIFORNIA EXISTING BUILDING CODE
- 2016 CALIFORNIA REFERENCED STANDARDS CODE
- 2016 CALIFORNIA FIRE CODE
- 2016 CALIFORNIA ENERGY CODE

GREEN BUILDING STANDARD NOTES

MINIMUM OF 50% OF NON HAZARDOUS CONSTRUCTION WASTE SHALL BE RECYCLED. CGC 5.713.8.1.

- TESTING AND ADJUSTING OF NEW SYSTEMS SHALL COMPLY AS OUTLINED IN CGC SECTION 5.713.10.4.2.
- OPERATIONS AND MAINTENANCE SCHEDULE (O&M) AS LISTED IN CGC SECTION 5.713.10.4.5 SHALL BE DELIVERED TO THE BUILDING OWNER OR REPRESENTATIVE AND THE FACILITIES OPERATOR.
- DURING CONSTRUCTION, ENDS OF DUCT OPENING SHALL BE SEALED, AND MECHANICAL EQUIPMENT SHALL BE COVERED. CGC 5.714.4.3.
- VOC'S MUST COMPLY WITH THE LIMITATIONS LISTED IN SECTION 5.504.4 AND TABLES 4.504.1, 5.504.4.1, 5.504.4.2, 5.504.4.3 AND 5.504.4.5 FOR: ADHESIVES, SEALANTS, PAINTS, AND COATINGS, CARPET AND COMPOSITION WOOD PRODUCTS. CGC 5.714.4.4.

PRIOR TO FINAL APPROVAL OF THE BUILDING THE LICENSED CONTRACTOR, ARCHITECT OR ENGINEER IN RESPONSIBLE CHARGE OF THE OVERALL CONSTRUCTION MUST COMPLETE AND SIGN THE CITY APPROVED GREEN BUILDING STANDARDS CERTIFICATION FORM OR OTHER DOCUMENTATION REQUIRED BY THE CITY AND GIVEN TO THE BUILDING DEPARTMENT OFFICIAL PRIOR TO BUILDING FINAL APPROVAL TO BE FILED WITH THE APPROVED PLANS.

BUILDING NAME AND ADDRESS

FIRE STATION #6 CITY OF TORRANCE 21401 DEL AMO CIRCLE TORRANCE, CA 90501

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V. 1 01994
SIDENTIAL
CITY OF TORRANCE 3031 TORRANCE BLVD.
TORRANCE , CA 90503
PROJECT NAME
FIRE STATION #6
ROOF TOP UNIT
REPLACEMENT
21401 DEL AMO CIRCLE
1 PETERS CANYON ROAD SUITE 130
IRVINE, CA. 92606
ILL. 349-307-0300, FAA. 949-387-0800
Project # 17X036.00
STAMP
STAMP
SUPROFESSION
No. 31382
EXP. 6-30-18
CHANICH ST
OF CALITY
REV. DESCRIPTION DATE
CITY SUBMITTAL 09/28/2017
MECHANICAL
GENERAL NOTES
I ARREVIATIONS
AND LEGENDS
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AND LEGENDS SHEET NUMBER

PART 1 - GENERAL 1.01 DESCRIPTION:

DIVISION I APPLIES TO THIS SECTION. PROVIDE HEATING, VENTILATING AND AIR CONDITIONING AS INDICATED, SPECIFIED AND REQUIRED FOR OPTIMAL SYSTEM OPERATION.

A. WORK IN THIS SECTION SHALL INCLUDE:

- 1. AIR CONDITIONING SHALL CONSIST OF MAIN DUCTS, AIR DISTRIBUTION EQUIPMENT AND CONTROLS.
- 2. AIR CONDITIONING FOR ALL AREAS IN SCOPE OF WORK SHOWN ON PLANS COMPLETE WITH ALL AIR CONDITIONING EQUIPMENT, AIR DISTRIBUTION DUCTWORK, PIPING AND CONTROLS.
- B. RELATED WORK IN THIS SECTION SHALL INCLUDE:
- 1. FURNISHING ELECTRICAL DEVICES NECESSARY FOR MECHANICAL WORK WITH THE EXCEPTION OF DISCONNECTS UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
- 2. LINE AND LOW VOLTAGE WIRING AND CONDUIT FOR LINE AND LOW VOLTAGE WIRING FOR MECHANICAL CONTROLS INCLUDING FINAL CONNECTIONS AS INDICATED ON WIRING DIAGRAMS.
- 3. RESPONSIBILITY FOR OBTAINING CLARIFICATION FROM ARCHITECT/OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES THAT EXIST BETWEEN MECHANICAL AND ELECTRICAL WORK PRIOR TO PROCEEDING WITH THE WORK.
- 4. RESPONSIBILITY FOR CORRECT AND PROPER OPERATION OF AUTOMATIC ELECTRIC CONTROLS AND ASSOCIATED MECHANICAL EQUIPMENT AND ALL ELECTRIC POWER DRIVEN EQUIPMENT FURNISHED UNDER THIS SECTION.

C. RELATED WORK IN OTHER SECTIONS:

- 1. ALL EXPOSED PIPING, DUCTWORK AND UNFINISHED PORTIONS OF FIXTURES AND EQUIPMENT SHALL BE PAINTED WITH WEATHERPROOF COATING APPROVED BY ARCHITECT.
- 2. CONCRETE WORK ASSOCIATED AND INCLUSIVE OF MISCELLANEOUS METAL IN CONNECTION WITH PITS. TRENCHES AND CATCH BASINS WITH FOUNDATIONS OR CONCRETE PADS LOCATED UNDER BOILERS, PUMPS, AND ALL OTHER MECHANICAL EQUIPMENT, FURNISHING TEMPLATES FOR SPACING AND SIZES OF CONCRETE PADS AND ANCHOR BOLTS UNDER THIS SECTION.
- 3. MISCELLANEOUS EQUIPMENT PROVIDED BY OWNER OR UNDER OTHER SECTIONS WITH THE EXCEPTION OF EXHAUST AND VENTILATION CONNECTIONS FOR THE EQUIPMENT SHALL BE MADE UNDER THIS SECTION.
- 4. ELECTRICAL WORK AS SPECIFIED WILL BE PROVIDED UNDER ELECTRICAL SPECIFICATIONS:
- A. CONDUIT FOR LINE WIRING FOR EQUIPMENT AND DEVICES AS INDICATED OR SPECIFIED EXCEPT CONDUIT FOR LINE AND LOW VOLTAGE WIRING FOR MECHANICAL EQUIPMENT CONTROLS AS SPECIFIED UNDER MECHANICAL SPECIFICATIONS.
- B. LINE WIRING FOR EQUIPMENT AND DEVICES AS INDICATED OR SPECIFIED HEREIN EXCEPT LINE AND LOW VOLTAGE WIRING FOR MECHANICAL EQUIPMENT CONTROLS AS SPECIFIED UNDER MECHANICAL SPECIFICATIONS.
- C. PROVIDING DISCONNECT SWITCHES.
- D. FURNISHING AND INSTALLING ELECTRICAL DEVICES SUCH AS STARTERS AND DISCONNECTS, WHERE INDICATED.

1.02 QUALITY ASSURANCE:

A. GUARANTEES: IN ADDITION TO EQUIPMENT WARRANTIES, PROVIDE A WRITTEN GUARANTEE FORM REQUIRED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR ONE YEAR. GUARANTEE SHALL BE INCLUSIVE OF REPAIR OF DAMAGE TO OR REPLACEMENT OF ANY PORTION OF EQUIPMENT OR PREMISES CAUSED BY LEAKS OR BREAKS IN PIPE OR EQUIPMENT PROVIDED UNDER THIS SECTION.

1.03 SUBMITTALS:

- A. SHOP DRAWINGS: 1. SHOW ALL DETAILS OF ALL DUCTWORK, DUCT SUPPORTS, PIPING SUPPORTS, MECHANICAL EQUIPMENT PADS AND SUPPORTS AND ANY RELEVANT ELECTRICAL
- WIRING OR CONTROL WIRING DIAGRAMS.
- B. PRODUCT DATA:
- 1. WITHIN 35 DAYS AFTER AWARD OF CONTRACT AND PRIOR TO DELIVERY TO THE JOB SITE OF ANY MATERIALS OF THIS SECTION, CONTRACTOR SHALL SUBMIT SEVEN COMPLETE BROCHURES OF ALL MATERIALS AND EQUIPMENT, IN CONJUNCTION WITH ALL PRODUCT DATA SUBMITTALS.
- 2. PRODUCT DATA SHALL INCLUDE ALL AIR CONDITIONING EQUIPMENT, HANGERS, FANS, DUCTWORK CONSTRUCTION ELECTRICAL WIRING AND CONTROL WIRING DIAGRAMS AND OTHER ASSOCIATED STANDARD ITEMS AS REQUIRED TO COMPLEMENT SHOP DRAWINGS.
- 3. MANUFACTURERS AND SUPPLIERS OF EQUIPMENT SHALL PROVIDE ALL NECESSARY DATA TO COMPLY WITH THE STATE OF CALIFORNIA BUILDING ENERGY EFFICIENCY STANDARDS. COMPLIANCE CERTIFICATION FOR ALL EQUIPMENT SHALL BE INCLUDED IN EQUIPMENT SUBMITTALS

C. RECORD DRAWINGS: PROJECT RECORD DRAWINGS SHALL BE MAINTAINED THROUGH THE PROGRESS OF THE WORK AND SUBMITTED TO THE ARCHITECT FOR APPROVAL

- D. OPERATING AND MAINTENANCE MANUALS: 1. SUBMIT THREE COPIES OF ALL OPERATING INSTRUCTIONS AND MAINTENANCE
- MANUALS. 2. FULLY INSTRUCT OWNER'S OPERATING PERSONNEL AND DEMONSTRATE ALL ASPECTS OF EQUIPMENT PERFORMANCE, OPERATION AND MAINTENANCE. AMOUNT OF TIME ALLOCATED FOR SAID INSTRUCTION AND DEMONSTRATIONS OF EQUIPMENT AND SYSTEMS SHALL BE INCORPORATED IN THESE OBLIGATIONS. SUBMIT A LETTER TO ARCHITECT SIGNED BY OWNER'S REPRESENTATIVE WHO WILL OPERATE SYSTEMS STATING THAT HE/SHE HAS BEEN FULLY INSTRUCTED BY CONTRACTOR CONCERNING OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEM.
- 3. SUBMIT ONE ADDITIONAL SET OF APPROVED INSTRUCTIONS AND ONE ADDITIONAL SET OF APPROVED CONTROL DIAGRAM SUITABLY FRAMED BEHIND GLASS FOR MOUNTING AS INSTRUCTED.

1.04 PRODUCT HANDLING:

- A. PROTECTION: ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO PROTECT THE MATERIALS OF THIS SECTION BEFORE, DURING, AND AFTER INSTALLATION.
- B. REPLACEMENTS: ANY OCCURRENCE OF DAMAGE, SHALL TRIGGER IMMEDIATE REPAIR OF ALL DAMAGED AND DEFECTIVE WORK TO THE APPROVAL OF THE ARCHITECT AT NO ADDITIONAL COST TO OWNER.

1.05 MISCELLANEOUS:

- A. PERMITS AND FEES: CONTRACTOR SHALL ARRANGE, APPLY AND PAY FOR ALL NECESSARY PERMITS, INSPECTIONS, EXAMINATIONS, FEES AND CHARGES REQUIRED BY PUBLIC AUTHORITIES HAVING JURISDICTION.
- B. LOCATIONS AND ACCESSIBILITY: CONTRACTOR SHALL BE COMPLETELY INFORMED REGARDING ANY PECULIARITIES AND LIMITATIONS OF SPACES AVAILABLE FOR INSTALLATION OF WORK UNDER THIS SECTION. VALVES, MOTOR CONTROLS AND ALL OTHER DEVICES REQUIRING SERVICE, MAINTENANCE AND ADJUSTMENT SHALL BE LOCATED IN POSITIONS OF FULL ACCESS. ACCESS DOORS SHALL BE PROVIDED WHERE NECESSARY IN DUCTWORK OR CONSTRUCTION WHETHER SPECIALLY DETAILED OR NOT, AND RENDER ALL SUCH DEVICES ACCESSIBLE.
- C. SCAFFOLDING: PROVIDE ALL SCAFFOLDING, RIGGING AND HOISTING AS REQUIRED FOR THE PROPER EXECUTION OF THE WORK.
- D. DRAWINGS: DRAWINGS SHOW DESIRED LOCATION AND ARRANGEMENT OF DUCTWORK. PIPING, EQUIPMENT AND OTHER ITEMS, AND SHOULD BE ADHERED TO AS CLOSE AS POSSIBLE. CONTRACTOR SHALL ASSUME THE RESPONSIBILITY FOR COORDINATING THE WORK WITH ALL OTHER TRADES. WORK SPECIFIED WHICH IS NOT CLEARLY DEFINED BY THE DRAWINGS SHALL BE INSTALLED AND ARRANGED TO THE SATISFACTION OF THE ARCHITECT. IF CHANGES IN INDICATED LOCATIONS AND ARRANGEMENTS ARE DEEMED NECESSARY BY ARCHITECT, THEY SHALL BE COMPLETED BY CONTRACTOR WITHOUT ADDITIONAL CHARGES PROVIDED THE CHANGE IS ORDERED BEFORE WORK IS INSTALLED.

PART 2 - PRODUCTS

- 2.01 SPLIT AIR CONDITIONING SYSTEMS
 - FURNISH AND INSTALL OUTDOOR CONDENSING UNITS AND INDOOR FAN COIL UNITS WITH GAS FURNCE OF TYPES AND SIZES INDICATED ON DRAWINGS. UNITS SHALL BE FULLY ASSEMBLED AND TESTED AND READY FOR IMMEDIATE USE. UNITS SHALL BE FIELD CONNECTED AND PROVIDED WITH ADDITIONAL REFRIGERANT CHARGE. UNITS SHALL BE U.L. LISTED AND HAVE LABEL ATTACHED.
- A. INDOOR FAN COIL UNIT:
- 1. INDOOR FAN COIL UNITS SHALL BE COMPLETE WITH COOLING REFRIGERANT DISTRIBUTION, GAS FURNACE, DRAIN PAN, SECONDARY COIL, DRAIN CONNECTIONS, FAN AND MOTOR WITH VERTICAL AIR DISCHARGE. FAN COIL UNIT SHALL BE USED WITH SPLIT SYSTEM AIR-COOLED OUTDOOR CONDENSING UNIT.
- 2. UNIT SHALL BE RATED IN ACCORDANCE WITH ARI STANDARDS 210/240, SHALL HAVE A UL LABEL OF APPROVAL, AND LEAK TESTED AT 350 PSIG AIR PRESSURE.
- 3. CABINET SHALL BE WELDED STEEL FRAME CONSTRUCTION AND REMOVABLE CASING PANELS. PANELS SHALL BE OF PREPAINTED GALVANIZED STEEL FINISHED WITH BAKED ENAMEL AND FACTORY INSULATED. INSULATED DRAIN PAN SHALL BE COMMON FOR BOTH COOLING COIL AND FAN SECTION, WITH 3/4" FPT CONNECTION.
- 4. FAN WHEEL AND SHAFT ASSEMBLY SHALL BE STATICALLY AND DYNAMICALLY BALANCED AS AN ASSEMBLY. FAN DRIVE SHALL BE DIRECT DRIVE. FAN BEARINGS SHALL BE PERMANENTLY LUBRICATED TYPE.
- 5. EXPANSION COOLING COILS SHALL USE COPPER TUBES, ALUMINUM PLATE FINS, AND GALVANIZED STEEL CASING. FINS WILL BE BONDED TO TUBES BY MECHANICAL EXPANSION.
- 6. PROVIDE UNIT WITH ELECTRONIC PROGRAMMABLE THERMOSTAT WITH AUTOMATIC CHANGEOVER.
- 7. UNIT SHALL BE FURNISHED WITH A FIELD INSTALLED 1" FACTORY SUPPLIED CLEANABLE, PERMANENT FRAMED FILTER MERV 13 OR ABOVE.

B. GAS FURNACE:

- 1. COMPLETE ASSEMBLED AND FACTORY INSTALLED HEATING SYSTEM SHALL BE INTEGRAL TO UNIT, UL OR CSA APPROVED SPECIFICALLY FOR OUTDOOR AND INDOOR APPLICATIONS FOR USE DOWNSTREAM FROM REFRIGERANT COOLING COILS. THEADED CONNECTION WITH PLUG OR CAP PROVIDED. PROVIDE CAPABILITY FOR GAS PIPING.
- 2. INDUCED DRAFT COMBUSTION TYPE WITH DIRECT SPARK IGNITION SYSTEM, REDUNDANT MAIN GAS VALVE AND 2-STAGED HEAT.
- 3. GAS BURNER SAFETY CONTROLS: PROVIDE SAFETY CONTROLS FOR THE PROVING OF COMBUSTION AIR PRIOR TO IGNITION AND CONTINUOUS FLAME SUPERVISION. PROVIDE FLAME ROLLOUT SWITCHES.
- 4. INDUCED DRAFT BLOWER SHALL HAVE COMBUSTION AIR PROVIDING SWITCHES AND BUILT-IN THERMAL OVERLOAD PROTECTION ON FAN MOTOR.
- 5. HEAT EXCHANGER: PROVIDE TUBULAR SECTION TYPE CONSTRUCTED STAINLESS STEEL HEAT EXCHANGER.
- 6. LIMIT CONTROLS: HIGH TEMPERATURE LIMIT CONTROLS WILL SHUT OFF GAS FLOW IN THE EVENT OF EXCESSIVE TEMPERATURES RESULTING FROM RESTRICTED INDDOR AIRFLOW OR LOSS OF INDOOR AIRFLOW.

C. OUTDOOR CONDENSING UNIT:

- 1. OUTDOOR MOUNTED, AIR COOLED SPLIT SYSTEM OUTDOOR CONDENSING UNIT SUITABLE FOR ROOF TOP INSTALLATION. UNIT SHALL CONSIST OF A SCROLL COMPRESSOR, AN AIR COOLED COIL, PROPELLER TYPE BLOW THRU CONDENSER FANS, ACCUMULATOR, FULL REFRIGERANT CHARGE, AND CONTROL BOX.
- 2. SYSTEMS SHALL BE RATED AND CERTIFIED IN ACCORDANCE WITH ARI STANDARDS 210/240
- AND 270. 3. UNIT CONSTRUCTION SHALL COMPLY WITH ANSI/ASHRAE 15, LATEST REVISION, AND SHALL BE CONSTRUCTED IN ACCORDANCE WITH NEC UL STANDARDS.
- 4. UNIT CABINET SHALL BE CAPABLE OF WITHSTANDING FEDERAL TEST STANDARD NO. 141 (METHOD 6061) 500 HOUR SALT SPRAY TEST.
- 5. AIR-COOLED CONDENSER COILS SHALL BE LEAK TESTED AT 350 PSIG. 6. UNIT CABINET SHALL BE CONSTRUCTED OF GALVANIZED STEEL, BONDERIZED AND COATED WITH A BAKED ENAMEL FINISH. UNIT ACCESS PANELS SHALL BE REMOVABLE.
- 7. COMPRESSOR COMPARTMENT SHALL BE ISOLATED AND HAVE AN ACOUSTIC LINING TO ASSURE QUIET OPERATION. COMPRESSOR SHALL BE FULLY HERMETIC RECIPROCATING OR SCROLL TYPE AND SHALL BE EQUIPPED WITH OIL SYSTEM, OPERATING OIL CHARGE, AND MOTOR. INTERNAL OVERLOAD SHALL PROTECT THE COMPRESSOR FROM OVER TEMPERATURE AND OVERCURRENT. SCROLL COMPRESSORS SHALL ALSO HAVE HIGH DISCHARGE GAS TEMPERATURE PROTECTION. RECIPROCATING COMPRESSORS SHALL BE EQUIPPED WITH CRANKCASE HEATERS TO MINIMIZE LIQUID REFRIGERANT ACCUMULATION IN COMPRESSOR DURING SHUTDOWN AND TO PREVENT REFRIGERANT DILUTION OF OIL.
- COMPRESSOR ASSEMBLY SHALL BE INSTALLED ON RUBBER VIBRATION ISOLATORS AND SHALL HAVE INTERNAL SPRING ISOLATION.
- 8. CONDENSER FANS SHALL BE DIRECT DRIVE PROPELLER TYPE, SHALL DISCHARGE AIR HORIZONTALLY. CONDENSER FAN MOTORS SHALL BE TOTALLY ENCLOSED, WITH CLASS B INSULATION AND PERMANENTLY LUBRICATED SLEEVE BEARINGS. MOTOR SHALL BE PROTECTED BY INTERNAL THERMAL OVERLOAD PROTECTION.
- 9. COIL SHALL BE CONSTRUCTED OF ALUMINUM FINS MECHANICALLY BONDED TO INTERNALLY ENHANCED, SEAMLESS COPPER TUBES WHICH ARE CLEANED, DEHYDRATED, AND SEALED.
- 10. REFRIGERANT CIRCUIT COMPONENTS SHALL INCLUDE BRASS EXTERNAL LIQUID LINE SERVICE VALVE WITH SERVICE GAGE PORT CONNECTIONS, SUCTION LINE SERVICE VALVE WITH SERVICE GAGE CONNECTION PORT, SERVICE GAGE PORT CONNECTIONS ON COMPRESSOR SUCTION AND DISCHARGE TYPE FITTINGS WITH BRASS CAPS, LINES WITH SCHRADER ACCUMULATOR, FILTER DRIER, PRESSURE RELIEF, AND A FULL CHARGE OF REFRIGERANT.
- 11. OPERATING CONTROLS AND SAFETIES SHALL BE FACTORY SELECTED, ASSEMBLED, AND **TESTED AND SHALL INCLUDE:**
- A) COMPRESSOR MOTOR CURRENT AND TEMPERATURE OVERLOAD PROTECTION. B) HIGH PRESSURE RELIEF. C) COMPRESSOR SHALL BE PREVENTED FROM RESTARTING FOR A MINIMUM OF 5
- MINUTES AFTER SHUTDOWN. D) LIQUID SOLENOID VALVE ELECTRONICALLY OPERATED SHUT OFF VALVE SHALL STOP AND START REFRIGERANT FLOW IN RESPONSE
- TO COMPRESSOR OPERATION. THE VALVE SHOULD BE USED WITH ALL LONG LINES APPLICATIONS (OVER 100 FT).
- E) PROVIDE WITH THERMAL EXPANSION VALVE WHICH OPERATED FOR MODULATING FLOW CONTROL TO METER REFRIGERANT FLOW. THERMAL EXPANSION VALVE IS PART OF FAN COIL UNIT AND INSTALLED BY MANUFACTURER'S AT THE FACTORY.
- F) PROVIDE MUFFLER IN LIQUID AND SUCTIONS LINES LOCATED IN A VERTICAL POSITION IN LINE TO PREVENT OIL POOLING IN MUFFLER.

SPECIFICATIONS

2.02 EXHAUST FANS:

- A. FAN WHEEL SHALL BE CENTRIFUGAL BACKWARD INCLINED, CONSTRUCTED OF ALUMINUM, AND WHEEL SHALL BE STATICALLY AND DYNAMICALLY BALANCED. THE FAN HOUSING SHALL BE CONSTRUCTED OF HEAVY GAUGE ALUMINUM WITH A RIGID INTERNAL SUPPORT STRUCTURE AND A BIRDSCREEN. FANS SHALL BEAR THE AMCA RATINGS SEAL FOR AIR AND SOUND PERFORMANCE.
- B. MOTOR SHALL BE HEAVY DUTY BALL BEARING TYPE. DRIVE FRAME ASSEMBLY SHALL CONSTRUCTED OF HEAVY GAUGE STEEL. MOTORS AND DRIVES SHALL BE MOUNTED ON VIBRATION ISOLATORS, OUT OF THE AIR STREAM AND READILY ACCESSIBLE FOR MAINTENANCE. MOTOR SHEAVES SHALL BE ADJUSTABLE AND V-BELT DRIVES SIZED TO A MINIMUM OF 150% OF DRIVEN HORSEPOWER.
- C. FAN SHAFTS SHALL BE MOUNTED IN PERMANENTLY SEALED, LUBRICATED PILLOW BLOCK BALL BEARINGS, WITH A MINIMUM LIFE IN EXCESS OF 100,000 HOURS AT MAXIMUM OF 150% OF DRIVEN HORSEPOWER.
- D. EXHAUST FANS SHALL BE SELECTED ACCORDING TO COOK ACE-0 MANUFACTURER'S OR EQUIVALENT. UNITS SHALL BE CONTROLLED AND INTERLOCKED WITH EXISTING NEW FAN COIL UNITS SERVE ON THE SAME ROOM.
- 2.03 DIFFUSERS, REGISTERS AND GRILLES:
- PROVIDE AIR DISTRIBUTION EQUIPMENT OF THE INDICATED SIZES AND CAPACITIES. A. COLORS: PROVIDE AND INSTALL AIR DISTRIBUTION EQUIPMENT WITH FACTORY FINISHED ENAMEL OF COLOR TO MATCH TILE AS SELECTED. SUBMIT PAINT SAMPLES FOR APPROVAL BY ARCHITECT.
- B. SQUARE CEILING DIFFUSERS: PROVIDE TITUS PERFORATED FACE WITH CORES ALLOWING ONE, TWO, THREE AND FOUR WAY THROW PATTERNS, OF SIZE AND CAPACITY INDICATED. DIFFUSER INSTALLATION SHALL BE ADAPTED TO CEILING SUSPENSION SYSTEM AND PERFORATED FACE SHALL BE HINGED AND REMOVABLE.
- 1. SUPPLY AIR SHALL ENTER INTO CONDITIONED SPACE IN SUCH A MANNER THAT CONDITIONED AIR AND ROOM AIR IS IMMEDIATELY AND EVENLY MIXED, RESULTING IN EQUALIZATION OF TEMPERATURE WITHOUT CAUSING ANY AIR DISTRIBUTION DRAFTS THROUGHOUT ZONES OF OCCUPANCY WITH TEMPERATURE DIFFERENTIALS UP TO 25 DEGREE F FOR BOTH COOLING AND HEATING. AIR QUANTITIES AND THROWS SHALL BE AS SPECIFIED ON DRAWINGS.
- 2. MOVING AIR VELOCITY BELOW 5' LEVEL, DURING COOLING CYCLE, SHALL NOT EXCEED LIMITS OF EITHER 50 FPM AT 1.5 DEGREE F BELOW MEAN ROOM TEMPERATURE OR 70 FPM AT 1 DEGREE F BELOW MEAN ROOM TEMPERATURE. DURING HEATING CYCLE, MOVING AIR VELOCITY BELOW 5' LEVEL SHALL NOT BE LESS THAN 10 FPM. TEMPERATURE DIFFERENCE AT OR BELOW THE 5' LEVEL SHALL NOT EXCEED THE FOLLOWING: 2 DEGREE F BELOW MEAN ROOM TEMPERATURE AT 50 FPM, 1 DEGREE F BELOW MEAN ROOM TEMPERATURE AT 70 FPM. SOUND PRESSURE LEVEL IN ALL OCTAVE BANDS FOR EACH DIFFUSER SHALL NOT EXCEED NC 30 NOISE CRITERIA CURVE AT TASK LEVEL WHEN DIFFUSERS OPERATE AT SPECIFIED CAPACITIES.
- 2.04 DUCTS AND SHEET METAL WORK:
- A. PROVIDE AND INSTALL DUCTS, PLENUMS, ACCESS DOORS, FRESH AIR INTAKES, AND EXHAUST AIR OUTLETS AS INDICATED AND REQUIRED. ALL DUCTWORK SHALL BE CONSTRUCTED, ERECTED AND TESTED TO COMPLY WITH THE MOST RESTRICTIVE OF LOCAL CODES AND REGULATIONS, IN ADDITION DUCTWORK SHALL COMPLY WITH PROCEDURES DETAILED IN THE ASHRAE HANDBOOK OF FUNDAMENTALS OR THE APPLICABLE STANDARDS ADOPTED BY THE SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION. RECTANGUELAR DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL AND PREFABRICATED SPIRAL LOCKSEAM DUCTS AND FITTINGS.
- B. CEILING DIFFUSERS SHALL HAVE FINAL CONNECTION MADE WITH FLEXIBLE GLASS FIBER DUCT, (CASCO SILENT FLEX-II). FLEXIBLE DUCT CONNECTION TO ROUND DUCTS SHALL BE MADE WITH 1/2" WIDE POSITIVE LOCKING STEEL STRAPS.
- C. ALL BRANCH DUCT CONNECTIONS TO MAIN SUPPLY DUCTS SHALL BE MADE WITH LOW LOSS FITTINGS.
- D. ALL FLAT DUCT SURFACES SHALL BE DIAGONALLY CRIMPED REGARDLESS OF SIZE.LONGITUDINAL JOINTS IN ALL DUCT SIZES MAY BE FLAT-LOCK JOINTS. TRANSVERSE JOINTS AND INTERMEDIATE BRACING SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL OR GALVANIZED STRUCTURAL ANGLES IN COMPLIANCE WITH REQUIREMENTS OF THE ASHRAE GUIDE AND LOCAL AUTHORITIES HAVING JURISDICTION.
- E. TRANSVERSE JOINTS ON SUPPLY DUCTS SHALL BE SEALED WITH MASTIC OR TAPE. F. LOW PRESSURE SUPPLY DUCTS WITH INTERNAL STATIC PRESSURE IN EXCESS OF 0.75"
- OF WATER PRESSURE SHALL HAVE LONGITUDINAL JOINTS SEALED WITH MASTIC OR TAPE.
- G. LOCK JOINTS SHALL BE HAMMERED TO ENSURE THEY ARE AIRTIGHT. INSIDE OF DUCT SHALL PRESENT A SMOOTH SURFACE TO FLOW OF AIR.
- H. CHANGES IN SIZE OF DUCTS SHALL INCREASE GRADUALLY WITH A SLOPE OF NOT MORE THAN 1:5 RATIO WHERE POSSIBLE, BUT NO GREATER THAN 1:3 RATIO IN ANY EVENT.
- I. TURNS SHALL BE CONSTRUCTED WITH A THROAT RADIUS OF NOT LESS THAN THE DUCT WIDTH
- J. HORIZONTAL DUCTWORK SHALL BE STRONGLY SUPPORTED WITH GALVANIZED HANGERS TO COMPLY WITH THE REQUIREMENTS OF THE ASHRAE, SMACNA GUIDELINES AND LOCAL AUTHORITIES HAVING JURISDICTION. FLEXIBLE DUCTWORK SHALL BE SUPPORTED WITH A 4" WIDE SHEET METAL SUPPORT STRAP TO PREVENT PINCHING OF DUCTWORK AND SPACED AS PER ASHRAE, SMACNA GUIDELINES AND LOCAL AUTHORITIES HAVING JURISDICTION.
- K. PLENUMS SHALL BE CONSTRUCTED OF 18 GAUGE GALVANIZED SHEET STEEL. PLENUM HORIZONTAL REINFORCING SHALL BE MAXIMUM OF 48 INCH CENTERS BY 1-1/2" x 1-1/4" x 1-1/8" GALVANIZED ANGLES AND REINFORCED VERTICALLY BY 1-1/2" STANDING SEAMS.
- L. FLEXIBLE CONNECTIONS FOR SUPPLY AND RETURN AIR DUCTS SHALL BE 16 OZ. AIRTIGHT "VENTGLAS" NONCOMBUSTIBLE FABRIC WITH A COATING OF FIRE RETARDANT NEOPRENE ON OUTSIDE. FLEXIBLE CONNECTION SHALL BE ATTACHED TO DUCTWORK BY LOCK SEAM AND SHALL BE NO LONGER THAN 6". PROVIDE AT ALL DUCT CONNECTIONS TO MECHANICAL EQUIPMENT.
- M. TAPE TRANSVERSE JOINTS ON MAIN COLD SUPPLY AIR DUCTS WITH 4" WIDE 4 OZ. CANVAS SATURATED WITH ARABOL. ADDITIONAL COATS OF ARABOL SHALL BE APPLIED TO ENSURE DUCTWORK IS COMPLETELY AIRTIGHT.
- 2.05 TURNING VANES: A. BOTH DUCT DIMENSIONS (HEIGHT AND WIDTH) LESS THAN 48" USE; BARBER-COLEMAN AIR TURNS WITHOUT SPLICING OR APPROVED DOUBLE THICKNESS AIRFOIL VANES.
- B. EITHER DUCT DIMENSION (HEIGHT AND WIDTH) GREATER THAN 48" USE: DOUBLE
- THICKNESS AIRFOIL VANES OF APPROVED PATTERN. C. RECTANGULAR DUCT SMOOTH RADIUS ELBOWS USE - MULTIPLE SPLITTER VANES.

CLIENT ANCER A. BALANCING VOLUME DAMPERS SHALL BE INSTALLED IN EACH BRANCH DUCT AND IN EACH MAIN DUCT TO ENSURE FOR COMPLETE AIR BALANCING. FURNISH EACH MANUAL VOLUME DAMPER WITH BEARINGS AND AN ADJUSTING DEVICE HAVING A LOCKING MECHANISM. ORRANCE PROVIDE ACCESS PANELS TO VOLUME DAMPERS IF CONCEALED OR INACCESSIBLE THROUGH CEILING OR WALL. B. BALANCING DAMPERS WHERE NEITHER DUCT DIMENSION EXCEEDS 17" SHALL BE BUTTERFLY TYPE CONSISTING OF A BLADE CONSTRUCTED OF 18 GAUGE GALVANIZED STEEL SECURELY RIVETED OR WELDED AT ITS CENTER AXIS TO A SQUARE OPERATING ROD OR SHALL HAVE AIR BALANCE AC-111 OR AC-112 BUTTERFLY TYPE INSTALLED. **CITY OF TORRANCE** C. BALANCING DAMPERS WHERE EITHER DUCT DIMENSION EXCEEDS 18" SHALL HAVE AIR 3031 TORRANCE BLVD. BALANCE AB-2, OPPOSED BLADE TYPE INSTALLED. TORRANCE, CA 90503 D. FIRE DAMPERS: FUSIBLE LINK OUT OF AIRSTREAM TYPE MANUFACTURED TO COMPLY WITH PROJECT NAME REQUIREMENTS OF STATE FIRE MARSHALL AND LOCAL AUTHORITIES HAVING JURISDICTION, WITH PERMANENT LABELING IDENTIFICATION. PROVIDE ACCESS PANELS TO FIRE DAMPERS FIRE STATION #6 IF CONCEALED OR INACCESSIBLE THROUGH CEILING OR WALL. **ROOF TOP UNIT** INSTALLED REFRIGERANT PIPING SHALL BE COPPER ACR REFRIGERANT PIPING WITH SOLDERED WROUGHT COPPER FITTINGS. REPLACEMENT 21401 DEL AMO CIRCLE HANGERS SHALL BE COMPLETE WITH THREADED STEEL RODS AND VIBRATION ISOLATORS. TORRANCE, CA 90501 SOUND AND ELECTROLYSIS ISOLATORS AS REQUIRED AND SPECIFIED FOR CORRECT OPERATION. CONCRETE INSERTS SHALL BE FURNISHED AND INSTALLED UNDER THIS SECTION. CONSULTANT A. 2-1/2" AND UNDER: GRINNELL 104 OR APPROVED EQUAL. B. 3" AND LARGER: GRINNELL 260. C. CONCRETE INSERTS: GRINNELL 280. ALL INSULATION SHALL COMPLY WITH THE STATE OF CALIFORNIA ENERGY EFFICIENCY STANDARDS. INSTALL PIPE INSULATION AFTER PIPING IS INSTALLED, TESTED AND APPROVED, IDS GROUP AND IS IN CLEAN DRY CONDITION. FIRMLY BUTT INSULATION JOINTS. A. REFRIGERANT PIPING: INSULATE PIPING WITH ARMACELL PIPE INSULATION 1" THK 1 PETERS CANYON ROAD, SUITE 130 AP/ARMAFLEX, SS (SELF SEALING) PIPE INSULATION. INSULATION SHALL HAVE A 25/50 RATED IRVINE, CA. 92606 FLEXIBLE ELASTOMETRIC THERMAL INSULATION WITH FLAME SPREAD RATING OF 25 OR LESS TEL: 949-387-8500, FAX: 949-387-0800 AND A SMOKE DEVELOPED RATING OF 50 OR LESS. B. THERMAL DUCT INSULATION: INSULATE ALL CONCEALED AND EXPOSED SUPPLY AIR DUCTS Project # 17X036.00 AND PLENUMS UNLESS OTHERWISE SPECIFIED, WITH J-M MICROLITE FIBERGLASS DUCT INSULATION, FOIL-FACED, 3/4 LB. DENSITY, 1-1/2" THICK. INSULATION SHALL BE WRAPPED STAMP ENTIRELY AROUND DUCT WITH JOINTS LAPPED AT LEAST 2" AND SECURED WITH 16 GAUGE GALVANIZED WIRE ON 12" CENTERS. INSULATION SHALL COVER ALL SURFACES INCLUDING STANDING SEAMS. C. EXPOSED COLD AND HOT SUPPLY AIR PLENUM FROM AC UNITS: SHALL BE LINED WITH J-M LINACOUSTIC, 1" THICK, 1-1/2 LB. DENSITY COATED FIBERGLASS DUCT LINER IN ACCORDANCE D. WITH NFPA 90-A REQUIREMENTS. THE CUT LINER SHALL NOT HAVE AN AIR FRICTION CORRECTION FACTOR GREATER THAN 1.1 AT A VELOCITY OF 3000 FPM. INSULATION SHALL ^{E.} BE APPLIED TO THE INSIDE OF DUCTS WITH AN APPROVED FIRE RETARDANT ADHESIVE TO PROVIDE 100% COVERAGE AND A SMOOTH SURFACE. IN DUCTS WITH ONE SIDE GREATER THAN 12", SECURE INSULATION WITH MECHANICAL FASTENERS IN ADDITION TO ADHESIVE, SPACED AT 14" CENTERS IN BOTH DIRECTIONS. MECHANICAL FASTENERS SHALL BE FLUSH WITH THE LINER SURFACE AND SHALL BEGIN WITHIN 2" OF THE LEADING EDGE OF EACH SECTION AND WITHIN 3" OF THE LEADING EDGE OF ALL CROSS JOINTS WITHIN THE DUCT SECTION. ALL EXPOSED EDGES AND THE LEADING EDGE OF ALL CROSS JOINTS OF THE LINER SHALL BE HEAVILY COATED WITH AN APPROVED FIRE RESISTANT ADHESIVE. THE DUCT LINER SHALL BE CUT TO ASSURE SNUG CLOSING CORNER JOINTS, THE BLACK SURFACE OF THE LINER SHALL FACE THE AIR STREAM, STAMP TRANSVERSE JOINTS SHALL BE NEATLY BUTTED AND ALL DAMAGED AREAS SHALL BE B. HEAVILY COATED WITH AN APPROVED FIRE RESISTANT ADHESIVE. SOUND DUCT INSULATION: WHERE SHOWN, SOUND INSULATE AIR DUCTS AS SPECIFIED FOR EXPOSED COLD SUPPLY AIR DUCTS. ALL DUCT INSULATION SHALL HAVE A MINIMUM THERMAL RESISTANCE OF 4.2 EXCLUSIVE OF FILM RESISTANCE AND FULLY COMPLY WITH 2016 CALIFORNIA MECHANICAL CODE. FURNISH EQUIPMENT AND SERVICES NECESSARY FOR PROPER INSTALLATION OF A COMPLETE AUTOMATIC TEMPERATURE CONTROL SYSTEM AS SPECIFIED. SUBMIT CONTROL DIAGRAM, SHOP DRAWINGS OF PROPOSED EQUIPMENT AND A SEQUENCE OF OPERATION WITHIN 35 DAYS AFTER AWARD OF CONTRACT. CONTRACTOR SHALL PROVIDE ANY SERVICE REQUIRED FOR PROPER OPERATION FOR ONE YEAR AFTER COMPLETION AND ACCEPTANCE OF ENTIRE WORK. SUBCONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS OF ALL AUTOMATIC ELECTRIC CONTROL EQUIPMENT INSTALLED. C. ALL MATERIALS AND EQUIPMENT PROVIDED SHALL BE STANDARD COMPONENTS, REGULARLY MANUFACTURED FOR THIS AND/OR OTHER SYSTEMS AND NOT SPECIFICALLY CUSTOM DESIGNED FOR THIS PROJECT. ALL SYSTEMS AND COMPONENTS SHALL HAVE BEEN THOROUGHLY AND COMPLETELY TESTED AND PROVEN IN ACTUAL USE FOR A MINIMUM OF TWO YEARS. D. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION OF ALL 1. BAS AND TEMPERATURE CONTROL WIRING FOR A COMPLETE AND OPERABLE SYSTEM. ALL WIRING SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL/NATIONAL CODES. ALL EXPOSED LOW VOLTAGE CONTROL WIRING LOCATED THROUGHOUT THE BUILDING SHALL BE RUN IN SSUE 2. CONDUIT. ALL LOW VOLTAGE ELECTRICAL WIRING LOCATED ABOVE THE CEILING MAY BE RUN IN PLENUM CABLE. ROOM SENSOR CABLES HIDDEN BEHIND WALLS SHALL BE RUN IN CONDUIT, WITH ROOM SENSOR CONDUIT DATE **REV.** DESCRIPTION EXTENDING ABOVE WALL INTO ACCESSIBLE CEILING. ALL CABLE SHALL BE SUPPORTED OFF BUILDING STRUCTURE AND SHALL NOT BE SUPPORTED OFF 09/28/2017 **CITY SUBMITTAL** DUCTWORK, PIPE RACKS, ETC. A. INSPECTION: BEFORE COMMENCING WORK REQUIRED BY THIS SECTION, THE WORK OF OTHER TRADES SHALL BE INSPECTED AND VERIFIED SUCH THAT WORK HAS BEEN PROPERLY COMPLETED AND INSTALLED TO FACILITATE FOR PROPER INSTALLATION OF ALL MATERIALS AND METHODS REQUIRED OF THIS SECTION. ALL HEATING, VENTILATION AND AIR CONDITIONING SHALL BE INSTALLED TO COMPLY WITH THE REQUIREMENTS OF ALL LOCAL GOVERNING AUTHORITIES, THE ORIGINAL DESIGN, AND THE REFERENCED STANDARDS. B. DISCREPANCIES: 1. IN THE EVENT OF DISCREPANCY, THE ARCHITECT SHALL BE NOTIFIED IMMEDIATELY. SHEET TITLE 2. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED BY THE ARCHITECT OR ENGINEER. MECHANICAL ALL MAJOR EQUIPMENT SHALL DISPLAY FIRMLY ATTACHED METAL NAMEPLATES WHICH **SPECIFICATIONS** STATE NAME OF MANUFACTURER, MODEL NUMBER AND ELECTRICAL DATA. AN ADDITIONAL PERMANENT LABEL SHALL BE ATTACHED TO EACH PIECE OF EQUIPMENT WHICH WILL CLEARLY INDICATE BY NUMBER WHICH OPERATING AND MAINTENANCE MANUAL EXPLAINS MAINTENANCE REQUIREMENT IN DETAIL.

2.06 DAMPERS AND LOUVERS: 2.07 REFRIGERANT PIPING: 2.08 PIPE HANGERS: 2.09 INSULATION: 2.10 TEMPERATURE CONTROL: PART 3 - EXECUTION 3.01 SURFACE CONDITIONS: 3.02 EQUIPMENT IDENTIFICATION:

3.03 SAFETY PROVISIONS: EQUIPMENT AND PIPING WITH TEMPERATURES ABOVE 140 DEGREE F OR BELOW 25 DEGREE F, SHEET NUMBER LOCATED IN A POSITION TO INFLICT DANGER TO PERSONNEL OR CREATE A FIRE HAZARD, SHALL BE PROPERLY GUARDED OR COVERED WITH INSULATION OF TYPE SPECIFIED. BOLTS, GEARS, CHAINS, PULLEYS, COUPLINGS, PROJECTING SET SCREWS, KEYS AND OTHER ROTATING OR RECIPROCATING PARTS SHALL BE COVERED OR PROPERLY GUARDED.PROVIDE GUARD RAILS, ETC., TO ENSURE SAFE OPERATION AND MAINTENANCE OF EQUIPMENT.

D. BALANCING WORK INCLUDED:

- 1. CONDUCT COMPLETE AND COMPREHENSIVE TESTING AND BALANCING OF ALL SYSTEMS, DISTRIBUTION PIPING, AIR TESTING AND BALANCING OF ALL EXHAUST SYSTEMS, AIR HANDLING UNITS, AND AIR DISTRIBUTION EQUIPMENT COMPLETE AS HEREIN SPECIFIED.
- 2. ALL SYSTEM BALANCING SHALL BE CONDUCTED BY INDEPENDENT AGENCY CERTIFIED BY AABC. PROOF OF QUALIFICATIONS SHALL BE SUBMITTED TO ARCHITECT FROM EACH SPECIALTY CONTRACTOR CERTIFIED TO PERFORM SUCH SERVICES.
- 3. ALL BALANCING SHALL BE COMPLETED TO THE SATISFACTION OF THE ARCHITECT, MECHANICAL ENGINEER, OR OWNERS REPRESENTATIVE. SHOULD THE CONTRACTOR REFUSE OR NEGLECT TO BALANCE THE SYSTEM TO THE ARCHITECT'S SATISFACTION, SUCH BALANCING SHALL BE PERFORMED BY AN INDEPENDENT AGENCY AT THE CONTRACTOR'S EXPENSE.
- 4. THE CONTRACTOR SHALL MAKE DRIVE CHANGES, INSTALL ADDITIONAL DAMPERS, VANES, GRILLE BAFFLES, OR OTHER ITEMS, AS MAY BE REQUIRED ON THE JOB, TO ACHIEVE THE OBJECTIVE OF BALANCING BALANCING THE SYSTEM TO THE ARCHITECT'S SATISFACTION.
- E. VERIFICATION OF CONDITIONS: PRIOR TO CONDUCTING ANY TESTING AND BALANCING, INSPECT EQUIPMENT AND MATERIALS AND ARRANGE WITH CONTRACTOR FOR SATISFACTORY CORRECTION OF ALL DEFECTS IN WORKMANSHIP AND/OR MATERIAL THAT COULD DISAFFECT THE WORK SPECIFIED HEREIN.
- F. PROTECTION: AS SPECIFIED HEREINBEFORE.
- G. AGENCY: BALANCING OF ALL SYSTEMS SHALL BE SUPERVISED BY AN INDEPENDENT AGENCY WHICH SPECIALIZES IN BALANCING AND TESTING OF MECHANICAL SYSTEMS, HEREINAFTER REFERRED TO AS THE AGENCY.
- H. SYSTEM OPERATION: CONTRACTOR SHALL PUT ALL COMPONENTS OF SYSTEMS IN FULL OPERATION AND SHALL CONTINUE THE OPERATION OF SAME DURING EACH WORKING DAY OF TESTING AND BALANCING.
- SUBMITTALS: WITHIN 90 DAYS AFTER THE START OF CONSTRUCTION CONTRACTOR SHALL SUBMIT A COMPLETE TESTING AND BALANCING PROCEDURE DETAILING ALL TEST EQUIPMENT THAT WILL BE USED, TESTING PROCEDURES, TEST DATA SHEETS, SYSTEMS SCHEMATICS, AND POINT OF TESTING.
- 1. TEST DATA: SUBMIT 8 COPIES OF TEST DATA TO ARCHITECT UPON COMPLETION OF WORK UNDER THIS SECTION.
- 2. CERTIFICATE: AGENCY SHALL PROVIDE CERTIFICATION IN WRITING THAT SYSTEM HAS BEEN ADJUSTED AND BALANCED AND DESIGN CONDITIONS HAVE BEEN ACHIEVED IN ALL AREAS OF BUILDING.
- J. INSTRUMENTS: INSTRUMENTS USED BY BALANCING COMPANY SHALL BE ACCURATELY CALIBRATED AND MAINTAINED IN GOOD OPERATIONAL ORDER. INSTRUMENTS SHALL BE CERTIFIED BY THE MANUFACTURER, OR AN APPROVED TEST LABORATORY WITHIN ONE YEAR OF THE TESTING DATE; SUBMIT THIS CERTIFICATE TO ARCHITECT. TEST INSTRUMENTS PROVIDED BY CONTRACTOR FOR DELIVERY TO OWNER MAY BE USED TO PERFORM PART OF THE SYSTEM BALANCING.
- K. AIR DISTRIBUTION TESTING AND BALANCING:
- 1. MAKE PITOT TUBE TRANSVERSE OF MAIN SUPPLY DUCTS AND OBTAIN DESIGN CFM AT FANS AT SIMULATED FULL LOAD CONDITIONS.
- 2. TEST AND ADJUST SYSTEM FOR DESIGN RETURN AND EXHAUST AIR CFM.
- 3. TEST AND ADJUST SYSTEM FOR OUTSIDE AIR DESIGN CFM.
- ADJUST ALL MAIN SUPPLY AND RETURN AIR DUCT TO PROPER DESIGN CFM.
 ADJUST ALL ZONES TO PROPER STATIC PRESSURE, DESIGN MINIMUM AND MAXIMUM CFM AND AIR TEMPERATURE.
- 6. TEST AND ADJUST EACH DIFFUSER, GRILLE AND REGISTER TO WITHIN +/- 10% OF SPECIFIED DESIGN REQUIREMENT.
- 7. EACH GRILLE, DIFFUSERS, AND REGISTER SHALL BE IDENTIFIED AS TO LOCATION AND AREA.
- 8. SIZE, TYPE AND MANUFACTURER OF DIFFUSERS, GRILLES, REGISTERS AND ALL TESTING EQUIPMENT SHALL BE IDENTIFIED AND LISTED. MANUFACTURER'S RATINGS ON ALL EQUIPMENT SHALL BE USED TO
- READINGS AND TESTS OF DIFFUSERS, GRILLES AND REGISTERS SHALL INCLUDE THE REQUIRED FPM VELOCITY AND TEST RESULT VELOCITY AFTER ADJUSTMENT, REQUIRED CFM, AND TEST RESULT CFM AFTER ADJUSTMENT.
 IN COOPERATION WITH THE CONTROL MANUFACTURER'S
- REPRESENTATIVE, SETTINGS SHALL BE ADJUSTED OF AUTOMATICALLY OPERATED CONTROLS TO OPERATE AS SPECIFIED, INDICATED AND/OR NOTED.
- 11. ALL DIFFUSERS, REGISTERS AND GRILLES AND ALL EQUIPMENT SHALL BE ADJUSTED TO MAINTAIN THE DESIGN CONDITIONS AT DESIGN LOADS.

L. COORDINATE TESTS WITH THE MANUFACTURER OF EACH PIECE OF MECH EQUIPMENT. M. WITNESS: NOTIFY ARCHITECT IN WRITING TWO WEEKS PRIOR TO TESTING AND BALANCING OF ALL MAJOR EQUIPMENT IN ORDER TO ARRANGE THAT ARCHITECT'S REPRESENTATIVES TO WITNESS THE TESTS.

3.10 AIR DISTRIBUTION EQUIPMENT LOCATIONS:

- AIR DISTRIBUTION EQUIPMENT FINAL LOCATIONS SHALL COORDINATED WITH ARCH DWGS. 3.11 TURNING VANES:
- TURNING VANES SHALL BE INSTALLED IN ALL RIGHT ANGLE SHARP TURNS IN DUCTS. 3.12 SOUND INSULATION:

WHERE INDICATED, SPECIFIED DUCT DIMENSIONS ARE NET CLEAR DIMENSIONS, I.E., CLEAR DIMENSIONS, AFTER SOUND INSULATION HAS BEEN INSTALLED.

3.13 FIRE DAMPERS:

FIRE DAMPERS IN SUPPLY AIR DUCTS AND RETURN AIR DUCTS SHALL HAVE FUSIBLE LINKS WITH MELTING TEMPERATURE 50 DEGREES F ABOVE MAXIMUM NORMAL OPERATING TEMPERATURE (MINIMUM IS 165 F). FIRE DAMPERS SHALL BE PROVIDE WITH ADEQUATE ACCESS PANELS BY CONTRACTOR. WHERE FIRE DAMPERS ARE INSTALLED DIRECTLY BEHIND WALL REGISTERS OR GRILLES, THE REGISTER OR GRILLE SHALL BE OVERSIZED TO ALLOW FOR THE FIRE DAMPER CURTAIN.

3.14 DUCTWORK:

DUCTWORK CONNECTED TO LOUVERED OPENINGS SHALL BE TRANSITIONAL TO SIZE OF THESE OPENINGS.

3.15 CONNECTIONS:

PHYSICAL CONNECTIONS BETWEEN TWO DISSIMILAR METAL PIPES SHALL BE MADE WITH DIELECTRIC UNIONS.

3.16 OPERATION:

MECHANICAL SYSTEM SHALL OPERATE QUIETLY AND WITHOUT VIBRATION OR NOISE AND SHALL BE REGULATED OR ADJUSTED TO ARCHITECT'S SATISFACTION.

SPECIFICATIONS



DEMOL	ITION EXISTING	PACKAGEL	J AIR CONDIT	IONING	G UNIT S	SCHEDUL	=																	
MARK	DESCRIPTION	LOCATION	SERVICE	CFM	OSA CFM	ESP (IN. WG.)	SEER AFUE %	REFRIG.	COOLING C. TOTAL	AP. (MBH)	EDB EWB	LDB LWB	GAS HEAT	ING CAP. (MBH) OUTPUT	ELEC MCA	CTRICAL MOCP	DATA	РН	HZ	AMB. TEMP. (^F)	OPER. WEIGHT (LBS.)	BASED ON: MANUFACTURER	MODEL	REMARKS
AC 1 (D)	PACKAGED ROOFTOP UNIT	ROOF	LOUNGE	2000	-	0.5		22	-	-			-	-			208/230	3	60	93	600	CARRIER	48TJD006501GA	SERIAL NO.: 18979G2082 TO BE DEMOLISHED.
AC 2 (D)	PACKAGED ROOFTOP UNIT	ROOF	DORMS	2000	-	0.5		22	-	-	• / •	-	-	-			208/230	1	60	93	600	CARRIER	48TJD006501GA	SERIAL NO.: 18979G2087 TO BE DEMOLISHED.

NOTE: (D) TO BE DEMOLISHED

NEW P	ACKAGED AIR (CONDITIO	NING UNI	T SCHEDULE	(ELECTRICAL		NG/GA	AS HEATIN	NG)																
				_			OSA	ESP	SEER	C	COOLING CAP. (MBH)		EDB LDB		GAS HEATING CAP. (MBH)		ELECTRICAL DAT				1	AMB.	UNIT DIMENSION	OPER.	
MARK	MANUFACTURER	TYPE	LOCATION	MODEL	SERVICE	CFM	CFM	(IN. WG.)	AFUE %	REFRIG.	TOTAL	SENSIBLE	EWB	LWB	INPUT	OUTPUT	MCA	MOCP	VOLT	PH	HZ	TEMP. (^F)	LxWxH	WEIGHT (LBS.)	
AC 1 (N)	CARRIER OR EQUIVALENT	VERTICAL DISCHARGE	ROOF	48LCL006A2A5	LOUNGE	2000	600	0.5	16.20 80.6	410A	61.5	48	80 67	57.8 57.3	92.7	70	31	45	208/230	3	60	93	74.4x46.8x41.4	630	1 2 3 4
AC 2 (N)	CARRIER OR EQUIVALENT	VERTICAL DISCHARGE	ROOF	48LCL006A2A5	DORMS	2000	600	0.5	16.20 80.6	410A	61.5	48	80 67	57.8 57.4	92.7	70	31	45	208/230	3	60	93	74.4x46.8x41.4	630	1234

REMARKS:

1 PROVIDE ROOF TOP PACKAGED UNIT ELECTRICAL COOLING / GAS HEATING.

2 LOW NOX, MEDIUM GAS HEAT, STAINLESS STEEL HEAT EXCHANGER.

 $^{\bigcirc}$ provide unit with enclosed motor, ECM motor, motor shall be provided with permanently lubricated bearing.

(4) CONDENSER COILS SHALL BE COATED WITH EPOXY PHENOLIC COATING

 $^{(5)}$ FIELD VERIFY EXISTING CURB. PROVIDE WITH NEW CURB .

6 PROVIDE WITH DDC CONTROLLED THERMOSTAT AS PER 120.2 (J) OF 2016 TITLE 24. THERMOSTAT SHALL COMPLY WITH SECTION 120.2 (B) OF TITLE 24

7 PROVIDE THERMOSTAT WITH SETBACK CAPABILITIES.

 $_{\textcircled{8}}$ PROVIDE THERMOSTAT WITH SHUT-OFF AND REST CONTROLS AS PER TITLE 24 SECTION 120.2 (E)

(9) PROVIDE WITH ECONOMIZER.

(1) PROVIDE WITH DUCT SMOKE DETECTOR

CLIENT	
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CONSULTANT	
IDS GROUP IPETERS CANYON ROAD, SUITE IRVINE, CA. 92606 TEL: 949-387-8500, FAX: 949-387	S E 130 7-0800 17X036.00
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REMARKS

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GENERAL NOTES

- 1. KEEP SITE CLEAN DURING CONSTRUCTION.
- 2. PROTECT AIR DUCTS FROM DIRT & DEBRIS.

DEMOLITION KEY NOTES

- ROOF TOP UNIT SHALL BE DEMOLISHED AND REPLACED WITH NEW ONE.
- (E) AIR DUCT THROUGH THE ROOF TO REMAIN. VERIFY EXACT LOCATION IN FIELD. REPAIR AS NEED IT.
- EXISTING ROOF CURB SHALL BE DEMOLISHED. NEW ROOF CURB SHALL BE PROVIDED AND INSTALLED. SEE STRUCTURAL PLANS. CAP ROOF CURB OPENING DURING CONSTRUCTION.
- VERIFY CONDITION OF EXISTING CONDENSATE DRAIN PIPE. REPAIR OR REPLACE AS NEED IT.
- SHUT-OFF GAS VALVE AND DISCONNECT GAS LINE FROM (E) UNIT. CAP GAS LINE AND PROTECT DURING CONSTRUCTION.
- 6 DEMOLISH FLEXIBLE CONNECTION.
- $\langle \gamma \rangle$ EXISTING UNIT TO REMAIN.
- DEMO EXISTING SOCAL EDISON LOW VOLTAGE ELECTRICAL BOX AND RETURN TO CITY OF TORRANCE.





GENERAL NOTES

- 1. KEEP SITE CLEAN DURING CONSTRUCTION.
- 2. PROTECT AIR DUCTS FROM DIRT.
- 3. FIELD VERIFY EXISTING LOCATIONS AND SIZES OF ALL AIR DUCT-WORK AND HVAC SYSTEM AND ENSURE COMPLETE AND SAFE OPERATION OF THE WHOLE SYSTEM AFTER CONSTRUCTION. NO ADDITIONAL CHANGE ORDERS WILL BE GRANTED TO CONTRACTORS RELATED TO EXISTING CONDITIONS THAT ARE DIFFERENT THAN WHAT IS REFLECTED IN DESIGN PLANS.
- 4. IT IS THE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR TO FURNISH, REINSTALL AND COMMISSION THE WHOLE HVAC SYSTEM FOR SMOOTH AND SAFE OPERATION WITH NO EXTRA CHARGE ON OWNER.
- 5. ALL MATERIALS EXPOSED IN A RETURN AIR PLENUM OR CEILING SHALL BE NON-COMBUSTIBLE, PLENUM RATED OR HAVE FLAME SPREAD INDEX NO GREATER THAN 25 AND A SMOKE DEVELOPED INDEX NO GREATER THAN 50. CMC SEC. 602.2.
- 6. THE VENTILATION MUST BE MAINTATINED TAHT WILL RESULT IN A CONCENTRATION OF CO2 AT OR BELOW 600 PPM ABOVE AMBIENT LEVEL.
- 7. THE CO2 SENSOR MUST BE FACTORY CERTIFIED TO HAVE AN ACCURACY OF NO LESS THAN 75 PPM AT A 600 AND 1000 PPM CONCENTRATION WHEN MEASURED AT SEA LEVEL AND 25 ELECTRICAL CODE, OVER 5 YEAR PERIOD WITHOUT CALIBRATION IN THE FIELD.

RENOVATION KEY NOTES

- 1 INSTALL AIR DUCT WORK AS PER CMC 603.1, 603.2 AND SMACNA.
- (2) COORDINATE THERMOSTAT LOCATION WITH ARCHITECT AND OWNER. THERMOSTAT SHALL BE PROVIDED WITH SECURE COVER. FOR INSTALLATION SEE DETAIL NO.2 ON SHEET M4.1.
- 3 PROVIDE AND INSTALL FUSED DISCONNECT. SEE ELECTRICAL PLAN FOR WIRING.
- (4) CONNECT GAS LINE TO UNIT. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATIONS.
- 5 CONNECT (E) CONDENSATE DRAIN LINE TO UNIT. FOLLOW MANUFACTURE'S RECOMMENDATIONS AND CPC 2016 SEC 803.1.
- 6 REPLACE ANY PUNCTURED (E) CONDENSATE PIPES OR ONES THAT SHOW SIGNS OF LEAKAGE.
- 7 FOLLOW MANUFACTURER'S RECOMMENDATIONS TO MAINTAIN UNIT
- CLEARANCES. SEE DETAIL NO.7 ON SHEET M4.1.
 SEE ELECTRICAL PLANS FOR ELECTRICAL CIRCUIT BREAKER CUT-OFF.
- (9) DUCT SMOKE DETECTOR INSTALLED BY MECHANICAL CONTRACTOR AND CONNECTING INTO FIRE PANELS TO BE COMPLETED BY FIRST CHOICE.
- (10) FOR DUCT SMOKE DETECTOR INSTALLATION SEE DETAIL NO.8 ON SHEET M4.1.
- (1) EXISTING UNITS TO REMAIN NOT PART OF SCOPE.



SHEET NUMBER



