SPECIFICATIONS (APPLY TO BUILDING "C" ALSO)

A. GENERAL

1. PRIOR TO SUBMISSION OF BID, THE ELECTRICAL CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS.
2. ALL ELECTRICAL SERVICE WORK SHALL COMPLY WITH PG&E REQUIREMENTS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PROVIDE ALL COMPONENTS, MEANS AND METHODS OF INSTALLATION AS REQUIRED BY PG&E GREENBOOK AND PUC REQUIREMENTS.
3. BRING TO THE ATTENTION OF THE ARCHITECT ANY CONFLICTING INFORMATION, OR MISSING INFORMATION FROM THE DOCUMENTS PRIOR TO START OF CONSTRUCTION.
4. PROVIDE REQUIRED COOPERATION AND COORDINATION WITH OTHER TRADES TO MAXIMIZE CONSTRUCTION EFFICIENCY.
5. ORDINANCES AND REGULATIONS: ALL SYSTEMS SHALL BE INSTALLED WITHIN STRICT ACCORDANCE WITH ALL APPLICABLE CITY, STATE AND NATIONAL CODES AND ORDINANCES.
6. TESTING AND ADJUSTING: UPON COMPLETION FO THE WORK, TEST AND REGULATE ALL SYSTEMS TO THE INTENT OF THEIR DESIGN AND TO THE OWNER'S SATISFACTION.
7. WARRANTEE: ALL MATERIALS, AND EQUIPMENT FURNISHED AND INSTALLED SHALL BE NEW, UNLESS OTHERWISE NOTED, AND FREE OF ALL DEFECTS AND SHALL BE WARRANTED FOR ONE YEAR FROM DATE OF ACCEPTANCE.
8. LICENSES, PERMITS AND FEES: PROVIDE, PROCURE AND PAY FOR ALL PERMITS SERVICES, LICENSES, FEES, ETC., REQUIRED FOR PERFORMANCE OF THIS WORK UPON COMPLETION OF THE WORK, DELIVER TO THE OWNER, ALL CERTIFICATES OF APPROVAL SIGNED BY THE CONTROLLING AUTHORITIES.
9. SUBMITTAL:
   A. SIX CATALOG CUTS FOR ALL MATERIALS AND EQUIPMENT.
   B. FIRE ALARM: SHOP DRAWINGS AS REQUIRED BY FIRE MARSHALL
10. COORDINATE EXACT HVAC LOCATION AND VERIFY ELECTRICAL LOADS WITH THE MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.
11. INSTALL ALL DEVICES AND EQUIPMENT PER MANUFACTURERS' RECOMMENDATIONS.
12. PROVIDE SUPPORTS, VIBRATION ISOLATION, AND SEISMIC BRACING.
13. FIRE ALARM: DEVICES SHOWN ON PLANS TO SHOW MINIMUM REQUIREMENTS FOR THIS BUILDING. IT IS THE RESPONSIBILITY OF THE DESIGN-BUILD CONTRACTOR TO PROVIDE REQUIRED AND COMPLETE DOCUMENTS FOR DEFERRED PERMIT SUBMITTAL.
14. THE TERM PROVIDE AS USED IN THESE DOCUMENTS IS DEFINED AS TO FURNISH AND INSTALL.

B. MATERIAL AND METHODS

1. ALL EQUIPMENT SHALL BE LISTED BY AN ACCEPTED TESTING LABORATORY AND SHALL BE INSTALLED PER LISTING OR LABELING.
2. CONDUIT ROUTING SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL LAY OUT RUNS TO SUIT FIELD CONDITIONS AND THE COORDINATION REQUIREMENTS OF OTHER TRADES.
3. PROVIDE A CODE SIZE GROUND WIRE IN ALL CONDUITS UNLESS OTHERWISE NOTED.
4. ALL OUTLETS AND JUNCTION BOXES MOUNTED IN RATED WALL SHALL BE FIRE RATED.
5. MOUNTING HEIGHT SHOWN ARE FROM FINISHED FLOOR TO CENTERLINE OF THE OUTLET OR RACEWAY. ALL MOUNTING HEIGHTS SHALL BE AS SHOWN ON THE SYMBOL LIST UNLESS OTHERWISE NOTED.
6. REFER TO ARCHITECTURAL DOCUMENTS FOR CEILING TYPES AND DETAILS. PROVIDE REQUIRED LIGHTING FIXTURE ENCLOSURE, TRIMS AND MOUNTING ACCESSORIES. REFER TO APPLICABLE BUILDING CODES. PROVIDE REQUIRED FIXTURE SUPPORTS. MAINTAIN CEILING FIRE RATINGS.
7. RUN ALL CONDUITS CONCEALED. IF CONDUITS ARE RUN EXPOSED, RUN PARALLEL WITH BUILDING LINES, GROUPED TOGETHER IN ORDERLY AND WORKMANLIKE MANNER, AND FANNED-OUT OF ELECTRICAL ROOM AND OR RESPECTIVE PANELBOARDS TO INDIVIDUAL DEVICES. THE ROUTING SHALL BE APPROVED BY ARCHITECT.
8. ALL WIRES SHALL BE COPPER #12 AWG MINIMUM.
9. ALL WIRING SHALL BE IN CONDUIT. 3/4" MINIMUM.
   A. FLEXIBLE CONDUIT: STEEL
   B. EMT CONNECTORS: SET SCREW (NO COMPRESSION)
   C. PULL CORD IN ALL EMPTY CONDUIT.
   D. EMT: STEEL
   E. INSULATION BUSHING ON 1-1/4" AND LARGER CONDUITS.
   F. EXTERIOR AND CONCRETE EMBEDS" PVC SCH. 40.
   G. METALLIC CLAD CABLE MAYBE USED WHERE SUITABLE, EXCEPT FOR FIRE ALARM SYSTEM.
10. THE WIRING OF LUMINAIRES, WIRING DEVICES AND CONTROL DEVICES, WITHIN EACH INTENDED CONTROL SCHEME, SHALL BE FULLY IMPLEMENTED USING THE PROPER TYPE AND NUMBER OF WIRES WITH CONNECTIONS AS REQUIRED.

C. PRODUCTS

1. MAIN SWITCHBOARD:
   A MANUFACTURERS: SIEMENS, GENERAL ELECTRIC, SQUARE D OR CUTLER-HAMMER.
   B MAIN BREAKERS: MOLDED CASE 22,000AIC MIN
   C BRANCH BREAKERS: 10,000AIC MIN
   D NEUTRAL BUS: COPPER FULL LENGTH WITH LUGS
   E GROUND BUS: FULL SIZE
   F OTHERS: 60HZ, 22,000AMP BUS BRACINGS
2. PANELBOARDS:
   A MANUFACTURERS: SIEMENS, GENERAL ELECTRIC, SQUARE D OR CUTLER-HAMMER.
   B BRANCH BREAKERS: 10,000AIC MIN
   C NEUTRAL BUS: COPPER FULL LENGTH WITH LUGS
   D GROUND BUS: FULL SIZE
   E OTHERS: 60HZ, 10,000AMP BUS BRACINGS
2. CONDUITS:
   A MANUFACTURERS: ALLIED TUBE & CONDUIT CORP., TRIANGLE PWC INC., WHEATLAND TUBE CO., INC. OR APPROVED EQUAL.
   B METALLIC TYPE: RSC, IMC, EMT AND FLEXIBLE.
   C NON-METALLIC TYPE: PVC SCHEDULE 40.
3. CONDUCTORS: COPPER MINIMUM 75-DEG.C INSULATION (THW, THWN). MANUFACTURED BY ROME CABLE, GRAYBAR
4. METALLIC CLAD CABLE: ALUMINUM-CLAD, COPPER MINIMUM 75-DEG.C INSULATION (THW, THWN) MEETS UL STANDARD 1569 AND NEC 334. MANUFACTURED BY ALFLEX CORP.
5. BOXES:
   A MANUFACTURERS: T&B STEEL CITY, WIREMOLD WALKERBOX
   B TYPE: STEEL-STAMPED. SUITABLE FOR ENVIRONMENT.
   C EXTERIOR AND SITE BOXES: CHRISTY OR FORNI.
6. DEVICES:
   A. SWITCHES 15A-120V: LUTRON MAESTRO OR EQUAL.
   B. RECEPTACLES 15A/20A-120V: LEVITON DECORA PLUS OR EQUAL.
   C. WALL PLATES: LEVITON DECORA PLUS OR EQUAL.
   D. SPECIALTY TYPE: NEMA CONFIGURATIONS AS SHOWN ON PLANS.
7. SWITCHBOARD MOUNTED SECONDARY SURGE ARRESTERS: UL LISTED, MEET ANSI/IEEE C62.11-1987, SUITABLE FOR SERVICE ENTRANCE LOCATIONS AND FOR SINGLE OR THREE PHASE SYSTEMS. 650VAC PHASE TO GROUND MAXIMUM. SAME AS SWITCHBOARD MANUFACTURER.
8. OCCUPANCY SENSOR:
   A. WALL BI-LEVEL: WATTSTOPPER WI-300
   B. CEILING: WATTSTOPPER A-1000/A-2000 WITH RELAY MODULE
9. LUMINAIRES: AS SCHEDULED

ABBREVIATIONS

A	AMPS OR AMPERES	(N) N	NEW
AFF	ABOVE FINISHED FLOOR	NO/NC	NORMALLY OPEN/NORMALLY CLOSED
CKT	CIRCUIT	NIC	NOT IN CONTRACT
CB	CIRCUIT BREAKER	NL	NIGHT LIGHT
C	CONDUIT	NTS	NOT TO SCALE
C.O.	CONDUIT ONLY (EMPTY CONDUIT)	OC	ON CENTER
CU	COPPER	OL	OVERLOAD
(D) D	DEMOLISH	PH, ø	PHASE
DF	DEMAND FACTOR	PNL	PANEL
(E) E	EXISTING	(RL) RL	RELOCATED
EM	EMERGENCY	(R)	REMOVE
FA	FIRE ALARM	(RN)	RENAME
FSD	FIRE SMOKE DAMPER	R	REUSED
FBO	FURNISHED BY OTHERS	SAD	SEE ARCHITECTURAL DRAWINGS
G GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SMD	SEE MECHANICAL DRAWINGS
		SLD	SEE LANDSCAPE DRAWINGS
		SPD	SEE PLUMBING DRAWINGS
HOA	HAND/OFF/AUTO	TTB	TELEPHONE TERMINAL BOARD
JB	JUNCTION BOX	TYP	TYPICAL
		TVSS	TRANSIENT SURGE SUPPRESSOR SYSTEM
LED	LIGHT EMITTING DIODE	T/S TS	TIME SWITCH
L	LOCKABLE	UON	UNLESS OTHERWISE NOTED
MCC	MOTOR CONTROL CENTER	V	VOLTS
MTD	MOUNTED	VIF	VERIFY IN FIELD
MLO	MAIN LUG/S ONLY	W	WIRE
		WP	WEATHERPROOF

TITLE 24 MANDATORY MEASURES

- ☐ LIGHT SWITCHES (OR OTHER CONTROL) IN EACH ROOM [§131(A)] NO INTERIOR LIGHTING IN SCOPE OF WORK.
- ☐ MULTI-LEVEL CONTROL FOR LIGHTING SYSTEMS > 0.8 W/SF [§131(B)] NO INTERIOR LIGHTING IN SCOPE OF WORK.
- ☐ DAYLIGHTING CONTROLS [§131(C)] NO INTERIOR LIGHTING IN SCOPE OF WORK.
  - ☐ SEPARATE SWITCHES WHEN SKYLIT OR PRIMARY SIDELIT ZONE > 250 FT2.
  - ☐ AUTOMATIC MULTI-LEVEL DAYLIGHTING CONTROLS WHEN SKYLIT OR PRIMARY SIDELIT ZONE > 2,500 FT2.
  - ☐ CONTROLS CALIBRATED SO THAT SPACE ALWAYS MEETS OR EXCEEDS DESIGN FOOTCANDLES AND ELECTRIC LIGHTING IS FULLY DIMMED WHEN DAYLIGHT IS 150% OF DESIGN ILLUMINANCE.
- ☐ AUTOMATIC SHUT-OFF CONTROLS - A TIME SWEEP WITH AN OVERRIDE SWITCH OR OCCUPANCY SENSOR TO ASSURE LIGHTS ARE OFF AFTER BUSINESS HOURS. [§131(D)] NO INTERIOR LIGHTING IN SCOPE OF WORK.
- ☐ DISPLAY LIGHTING IS SEPARATELY SWITCHED. [§131(E)] NO INTERIOR LIGHTING IN SCOPE OF WORK.
- ☐ WHEN THE TAILORED LIGHTING METHOD IS USED TO SHOW COMPLIANCE, GENERAL LIGHTING MUST BE ON A SEPARATE SHUT-OFF CONTROL FROM DISPLAY LIGHTING [§131(F)] NO INTERIOR LIGHTING IN SCOPE OF WORK.
- ☐ STORES LARGER THAN 50,000 SF MUST HAVE AUTOMATIC CONTROLS TO SHED 15% OF LIGHTING LOAD WHEN AN AUTOMATED DEMAND RESPONSE SIGNAL IS RECEIVED FROM THE LOCAL UTILITY. NO INTERIOR LIGHTING IN SCOPE OF WORK.
- ☐ ALL OUTDOOR LUMINAIRES WITH LAMPS RATED OVER 100 WATTS MUST EITHER: HAVE A LAMP EFFICACY OF AT LEAST 60 LUMENS PER WATT OR BE CONTROLLED BY A MOTION SENSOR. [§132(A)] THE NEW PORTICO WILL HAVE FOUR 70 WATT LUMINAIRES.
- ■ OUTDOOR LUMINAIRES THAT USE LAMPS RATED GREATER THAN 175 WATTS IN THE FOLLOWING AREAS ARE REQUIRED TO BE OF THE CUTOFF TYPE: (A) HARDSCAPE AREAS INCLUDING PARKING LOTS AND SERVICE STATIONS HARDSCAPE (B) BUILDING ENTRANCES (C) ALL SALES AND NON-SALES CANOPIES (D) OUTDOOR DINING (E) ALL OUTDOOR SALES AREAS. [§132(B)]
- ■ ALL PERMANENTLY INSTALLED OUTDOOR LIGHTING MUST BE CONTROLLED BY A PHOTOCONTROL OR ASTRONOMICAL TIME SWITCH THAT AUTOMATICALLY TURNS OFF THE OUTDOOR LIGHTING WHEN DAYLIGHT IS AVAILABLE. [§132(C1)]
- ■ OUTDOOR MULTI-LEVEL SWITCHING FOR BUILDING FACADES, PARKING LOTS, SALES AND NON-SALES CANOPIES, OUTDOOR SALES AREAS AND STUDENT PICK-UP/DROP-OFF ZONES, WHERE TWO OR MORE LUMINAIRES ARE USED, AUTOMATIC TIME SWITCH CONTROLS ARE REQUIRED TO HAVE THE ABILITY TO TURN OFF THE LIGHTING WHEN IT IS NOT NEEDED, AND TO REDUCE THE LIGHTING POWER BY AT LEAST 50 PERCENT BUT NOT EXCEEDING 80 PERCENT WHEN THE LIGHTING IS NOT NEEDED. [§132(C2)]

FOR ALL OTHER TITLE 24 FORMS, SEE DRAWING T24.1.

DRAWING INDEX

LEGEND

SYMBOL	DESCRIPTION
	PANELBOARDS AND TERMINALS
	DISTRIBUTION BOARD OR MOTOR CONTROL CENTER
	BRANCH CIRCUIT PANEL, FLUSH OR SURFACE MOUNTED, (120/208V, 3ø, 4W)
	EQUIPMENT CONNECTION
M	MOTOR
J H J	JUNCTION BOX, WALL OR CEILING MOUNTED
P	PULLBOX. MOUNTING AND SIZE AS INDICATED P = POWER; T = TELECOMM
M	KILOWATT-HOUR METER WITH CURRENT AND POTENTIAL TRANSFORMERS.
	SIGNAL
	TELECOMM WALL OUTLET, +18" AFF U.O.N.
	RACEWAYS
	CONDUIT RUN EXPOSED IN CEILING OR WALL
	CONDUIT RUN CONCEALED IN CEILING OR WALL
	CONDUIT RUN CONCEALED IN SLAB, UNDERSLAB OR GROUND
	CONDUIT HOMERUN, CONTINUOUS RUN TO PANEL OR EQUIPMENT CABINET
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT OR DUCT STUB
G	GROUND WIRING, SIZE AS INDICATED
#10	CROSSMARKS (SHOWN IN HOMERUN ONLY) INDICATE THE FOLLOWING: 1. NUMBER ADJACENT TO CROSSMARKS INDICATES WIRE SIZES. NO NUMBER INDICATES SIZE #12 WIRE. 2. NO CROSSMARKS INDICATES 2#12 AWG CONDUCTORS. 3. SHORT CROSSMARK IS PHASE WIRE, LONG CROSSMARK IS NEUTRAL WIRE, AND LONG WITH DOT IS ISOLATED GREEN GROUND CONDUCTOR. NORMAL GROUND WIRE IS USUALLY NOT SHOWN. 4. ¾" EMT CONDUIT MINIMUM. UPSIZE AS REQUIRED FOR CIRCUITS WITH OVERSIZED NEUTRAL.
	FLEXIBLE WIRING CONNECTION TO LUMINAIRE OR EQUIPMENT
	POWER
1 G	DUPLEX RECEPTACLE OUTLET, NEMA 5-20R, WALL MOUNTED +18" AFF UON. G (GFCI) =GROUND FAULT CIRCUIT INTERRUPTER TYPE 1=ASSOCIATED CIRCUIT. D=DEDICATED CIRCUIT
	LIGHTING
	POLE MOUNTED PARKING LOT LIGHTING LUMINAIRE - SINGLE OR TWIN HEAD.
	COMPACT FLUORESCENT LUMINAIRE - WALL MOUNTED
	FLUORESCENT STRIP - SURFACE OR CEILING MOUNTED
$a	SINGLE POLE SWITCH, LOWER CASE LETTER INDICATES CIRCUIT OR LAMPS CONTROLLED BY SWITCH, +48"AFF U.O.N.
	MISCELLANEOUS
L1	LIGHTING FIXTURE TAG, "L1" = FIXTURE TYPE
1	SHEET NOTES TAG
SF / 1	EQUIPMENT IDENTIFICATION / EQUIPMENT NUMBER
	CONVENTIONS
1, 3, 5	INDIVIDUAL CIRCUITS TO INDIVIDUAL OR MULTI-POLE BREAKERS
_ _ C 1	PANELBOARD NOMENCLATURE: PANEL SEQUENCE / BUILDING / VOLTAGE I.D. _ = 120/208 VOLTS

REVISIONS		BY
A	05-24-10	HCCC
B	08-02-10	BPC
C	HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D	09-22-10	BPC
E	10-12-10	BPC2

Om Namo Narayanaya
Om Namah Shivaya

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ELECTRICAL LEGEND
DRAWING INDEX

REGISTERED PROFESSIONAL ENGINEER
SATISH S. PAMIDI
No. E10472
Exp. 12/31/10
ELECTRICAL
STATE OF CALIFORNIA

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

E-10
B

PLANCHECK RESUBMITTAL #2

ABBREVIATIONS

A	AMPS OR AMPERES	(N) N	NEW
AFF	ABOVE FINISHED FLOOR	NO/NC	NORMALLY OPEN/NORMALLY CLOSED
CKT	CIRCUIT	NIC	NOT IN CONTRACT
CB	CIRCUIT BREAKER	NL	NIGHT LIGHT
C	CONDUIT	NTS	NOT TO SCALE
C.O.	CONDUIT ONLY (EMPTY CONDUIT)	OC	ON CENTER
CU	COPPER	OL	OVERLOAD
(D) D	DEMOLISH	PH, ø	PHASE
DF	DEMAND FACTOR	PNL	PANEL
(E) E	EXISTING	(RL) RL	RELOCATED
EM	EMERGENCY	(R)	REMOVE
		(RN)	RENAME
FA	FIRE ALARM	R	REUSED
FSD	FIRE SMOKE DAMPER		
FBO	FURNISHED BY OTHERS	SAD	SEE ARCHITECTURAL DRAWINGS
		SMD	SEE MECHANICAL DRAWINGS
G GFCI	GROUND FAULT CIRCUIT INTERRUPTER	SPD	SEE PLUMBING DRAWINGS
		TTB	TELEPHONE TERMINAL BOARD
HOA	HAND/OFF/AUTO	TYP	TYPICAL
JB	JUNCTION BOX	TVSS	TRANSIENT SURGE SUPPRESSOR SYSTEM
LED	LIGHT EMITTING DIODE	T/S TS	TIME SWITCH
L	LOCKABLE	UON	UNLESS OTHERWISE NOTED
MCC	MOTOR CONTROL CENTER	V	VOLTS
MTD	MOUNTED	VIF	VERIFY IN FIELD
MLO	MAIN LUG/S ONLY	W	WIRE
		WP	WEATHERPROOF

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	CATALOG NO.	LAMPS	VOLTS	WATTS	MOUNTINGS	REMARKS
L1	2X4 RECESSED MOUNTED DIRECT-INDIRECT FLUORESCENT LUMINAIRE WITH ELECTRONIC BALLAST SUITABLE FOR BI-LEVEL SWITCHING.	LITHONIA # 2AV-G-_-28T5-MDR-_-MVOLT GEB10PS	2-F028/T5/835	120	60	RECESSED	
L2	2X2 RECESSED MOUNTED DIRECT-INDIRECT FLUORESCENT LUMINAIRE WITH ELECTRONIC BALLAST SUITABLE FOR BI-LEVEL SWITCHING.	LITHONIA # 2AV-G-_-14T5-MDR-_-MVOLT GEB10PS	2-F014/T5/835	120	30	RECESSED	
L3	6" APERTURE COMPACT FLUORESCENT DOWNLIGHT WITH ELECTRONIC BALLAST.	LITHONIA # AF-126-DTT-6AR-LD-MVOLT GEB10IS	1-26DTT	120	30	RECESSED	
L4	6" APERTURE COMPACT FLUORESCENT DOWNLIGHT WITH ELECTRONIC BALLAST. WITH LENS SUITABLE FOR SHOWER ROOM.	LITHONIA # AF-226-DTT-6AR-LD-CGL-MVOLT GEB10IS	2-26DTT	120	54	RECESSED	
L5	NOT USED.						
B L6	SURFACE MOUNTED COMPACT FLUORESCENT CANOPY LIGHTING WITH ELECTRONIC BALLAST DAMP LABEL. DARK BRONZE FINISH.	LITHONIA # VGR4-226DTT-_-120-GEB10-DDBT-LPI	2-26DTT	120	54	SURFACE CAST-IN CONCRETE BOX	
L7	2-T5 LAMP FLUORESCENT STRIP LUMINAIRE WITH SYMMETRIC REFLECTOR AND WIRE GUARD.	LITHONIA # ZSSMR-46-MVOLT-GEB10PS	2-F028/T5/835	120	60	48" CHAIN-HUNG	
L8	SURFACE MOUNTED COMPACT FLUORESCENT DOWNLIGHT WITH ELECTRONIC BALLAST. DAMP LABEL. DARK BRONZE FINISH.	LITHONIA # CF10-226DTT-6AR-120-GEB10-DDB	2-26DTT	120	54	CEILING	
L9	WALL MOUNTED COMPACT FLUORESCENT LUMINAIRE WITH ELECTRONIC BALLAST. FULL CUT-OFF AND DARK NIGHT TYPE.	LITHONIA # MRW-226-DTT-MD-MVOLT-GEB10-_-LPI-	2-26DTT	120	54	WALL	
LL	LOW LEVEL EXIT SIGN - NON ELECTRIFIED. PROVIDE WHERE CEILING MOUNTED EXIT SIGNAGE IS SHOWN.	ACTIVE SAFETY	NONE			WALL	
LX	LED-TYPE EXIT SIGNAGE ARROWS, MOUNTING TYPE AND FACES AS SHOWN ON PLAN.	LITHONIA # EDG-_-1/2-G-120/277-ELN	INCLUDED	120	5	CEILING/WALL	

NOTES 1. COLOR AND FINISHES BY ARCHITECT.
2. PROVIDE EMERGENCY BATTERY PACK OR BALLAST AS REQUIRED.

LEGEND

SYMBOL	DESCRIPTION
	POWER
1 G	DUPLEX RECEPTACLE OUTLET, NEMA 5-20R, WALL MOUNTED +18" AFF UON. G (GFCI) =GROUND FAULT CIRCUIT INTERRUPTER TYPE 1=ASSOCIATED CIRCUIT. D=DEDICATED CIRCUIT
	DUPLEX RECEPTACLE – WALL MOUNTED ABOVE COUNTER
1,3	DOUBLE DUPLEX (QUAD) RECEPTACLE, NEMA 5-20R, WALL MTD +18"AFF 1,3 ASSOCIATED CIRCUIT
	DUPLEX RECEPTACLE OUTLET – FLUSH MOUNTED ON CEILING
	DUPLEX RECEPTACLE OUTLET – FLUSH FLOOR MOUNTED
	LIGHTING
	2X4 FLUORESCENT LUMINAIRE – RECESSED MOUNTED
	2X2 FLUORESCENT LUMINAIRE – RECESSED MOUNTED
	FLUORESCENT DOWNLIGHT LUMINAIRE – RECESSED MOUNTED
	FLUORESCENT DOWNLIGHT LUMINAIRE – SURFACE MOUNTED
	FLUORESCENT STRIP – SURFACE OR CEILING MOUNTED
	FLUORESCENT STRIP/WRAPAROUND – WALL MOUNTED
	COMPACT FLUORESCENT LUMINAIRE – WALL MOUNTED
	POLE MOUNTED PARKING LOT LIGHTING LUMINAIRE – SINGLE OR TWIN HEAD.
	SWITCHES
$a	SINGLE POLE SWITCH, LOWER CASE LETTER INDICATES CIRCUIT OR LAMPS CONTROLLED BY SWITCH, +48"AFF U.O.N. "L" DENOTES LOCKABLE "3" DENOTES THREE-WAY "D" DIMMER TYPE
$T	MOTOR RATED SWITCH WITH THERMAL OVERLOAD ELEMENT.
OS a	OCCUPANCY SENSOR SWITCH – WALL MOUNTED: SUITABLE UP TO 300SF BI-LEVEL OR SINGLE LEVEL TYPE
OS a	OCCUPANCY SENSOR SWITCH – CEILING MOUNTED: SUITABLE UP TO 1000SF
	MISCELLANEOUS
L1	LIGHTING FIXTURE TAG, "L1" = FIXTURE TYPE
1	SHEET NOTES TAG
SF 1	EQUIPMENT IDENTIFICATION / EQUIPMENT NUMBER
	CONVENTIONS
1, 3, 5	INDIVIDUAL CIRCUITS TO INDIVIDUAL OR MULTI-POLE BREAKERS
C 1	PANELBOARD NOMENCLATURE: PANEL SEQUENCE; BUILDING; VOLTAGE I.D. _ = 120/208 VOLTS

DRAWING INDEX

NO.	DWG. NO.	DESCRIPTION
1	E-10B	ELECTRICAL LEGEND & DRAWING INDEX
2	E-11B	ELECTRIC ONE-LINE DIAGRAM, DETAILS AND SCHEDULES
3	E-12B	ELECTRIC SITE PLAN
4	E-13B	LIGHTING PLAN
5	E-14B	POWER AND SIGNAL PLAN
6	E-15B	ELECTRICAL ROOF PLAN

LEGEND

SYMBOL	DESCRIPTION
	PANELBOARDS AND TERMINALS
	DISTRIBUTION BOARD OR MOTOR CONTROL CENTER
	BRANCH CIRCUIT PANEL, FLUSH OR SURFACE MOUNTED, (120/208V, 3ø, 4W)
	TERMINAL CABINET (TYPE AS INDICATED), FLUSH OR SURFACE MTD.
	TERMINAL BOARD. ¾" THICK MARINE PLYWOOD
	EQUIPMENT CONNECTION
M	MOTOR
J H J	JUNCTION BOX, WALL OR CEILING MOUNTED
P	PULLBOX. MOUNTING AND SIZE AS INDICATED P = POWER; T = TELECOMM
	MAGNETIC STARTER
A15	SAFETY DISCONNECT SWITCH-30A SIZE. LETTER DENOTES OTHER SIZES: A = 30 AMPS 15 = 15 AMP FUSES _ = NON-FUSIBLE TYPE B = 60 AMPS 30 = 30 AMP FUSES C = 100 AMPS 40 = 40 AMP FUSES
1	COMBINATION STARTER – FVNR HOA, NUMBER INDICATES NEMA SIZE
FBO	PACKAGE CONTROLLER OR STARTER FURNISHED AND INSTALLED UNDER ANOTHER SECTION BUT WIRED UNDER THIS SECTION.
PVI	PHOTO-VOLTAIC INVERTER
M	KILOWATT-HOUR METER WITH CURRENT AND POTENTIAL TRANSFORMERS.
FSD	FIRE SMOKE DAMPER, SMD
	SIGNAL
	TELECOMM WALL OUTLET, +18" AFF U.O.N.; RING AND STRING ONLY
	TELECOMM WALL OUTLET, MOUNTED ABOVE COUNTER
FANN	FIRE ALARM REMOTE ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
SD R	SMOKE DETECTOR, CEILING MOUNTED. "R" DENOTES WITH RELEASING CONTACT
SD	SMOKE DETECTOR, DUCT MOUNTED. FURNISHED AND WIRED BY DIV 16, INSTALLED BY DIV 15
HD	HEAT DETECTOR, CEILING MOUNTED.
SH	FIRE ALARM STROBE UNIT +80"AFF
HSH	FIRE ALARM HORN/STROBE UNIT +80"AFF
MSH	FIRE ALARM MINI-HORN/STROBE UNIT +80"AFF
FH	FIRE ALARM PULL STATION +48"AFF
TSH	FIRE ALARM TAMPER SWITCH
WSH	FIRE ALARM WATER FLOW SWITCH
	RACEWAYS
	CONDUIT RUN EXPOSED IN CEILING OR WALL
	CONDUIT RUN CONCEALED IN CEILING OR WALL
	CONDUIT RUN CONCEALED IN SLAB, UNDERSLAB OR GROUND
	CONDUIT HOMERUN, CONTINUOUS RUN TO PANEL OR EQUIPMENT CABINET
	CONDUIT UP
	CONDUIT DOWN
	CONDUIT OR DUCT STUB
G	GROUND WIRING, SIZE AS INDICATED
#10	CROSSMARKS (SHOWN IN HOMERUN ONLY) INDICATE THE FOLLOWING: 1. NUMBER ADJACENT TO CROSSMARKS INDICATES WIRE SIZES. NO NUMBER INDICATES SIZE #12 WIRE. 2. NO CROSSMARKS INDICATES 2#12 AWG CONDUCTORS. 3. SHORT CROSSMARK IS PHASE WIRE, LONG CROSSMARK IS NEUTRAL WIRE, AND LONG WITH DOT IS ISOLATED GREEN GROUND CONDUCTOR. NORMAL GROUND WIRE IS USUALLY NOT SHOWN. 4. ¾" EMT CONDUIT MINIMUM. UPSIZE AS REQUIRED FOR CIRCUITS WITH OVERSIZED NEUTRAL.
	FLEXIBLE WIRING CONNECTION TO LUMINAIRE OR EQUIPMENT

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

NEW BUILDING "C" - PHASE 1B
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ELECTRICAL LEGEND
DRAWING INDEX

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
1200 ARROWHEAD

E-10B

LUMINAIRE SCHEDULE

TYPE	DESCRIPTION	CATALOG NO.	LAMPS	VOLTS	WATTS	MOUNTINGS	REMARKS
LS1	SINGLE HEAD POLE MOUNTED METAL HALIDE LUMINAIRE WITH HOUSE SHIELD AND FULL CUT-OFF.	LITHONIA # OMERO MR2-250M-SR3-SCWA-HS	1-250WMH	208	297	18 FT MOUNTING HEIGHT	16 FOOT POLE SEE DETAIL 3 THIS SHEET.
LS1-ALT	SINGLE HEAD POLE MOUNTED METAL HALIDE LUMINAIRE WITH HOUSE SHIELD AND FULL CUT-OFF.	LITHONIA # KC1-250-16C-R3-4C-_-SCWA-HS	1-250WMH	208	297	18 FT MOUNTING HEIGHT	16 FOOT POLE SQUARE POLE SEE DETAIL 3 THIS SHEET.
LS2	TWIN HEAD POLE MOUNTED METAL HALIDE LUMINAIRE AND FULL CUT-OFF.	LITHONIA # OMERO MR2-250M-SR3-TWIN SCWA	2-250WMH	208	594	18 FT MOUNTING HEIGHT	16 FOOT POLE SEE DETAIL 3 THIS SHEET.
LS2-ALT	TWIN HEAD POLE MOUNTED METAL HALIDE LUMINAIRE AND FULL CUT-OFF.	LITHONIA # KC2-250-16C-R3-4C-_-SCWA	2-250WMH	208	594	18 FT MOUNTING HEIGHT	16 FOOT POLE SQUARE POLE SEE DETAIL 3 THIS SHEET.
LS3	4 FT FLUORESCENT LUMINAIRE ENCLOSED IN FIBERGLASS HOUSING. WET LABEL.	LITHONIA # DWM-2-32-AR-MVOLT-GEB10RS	2-32W-T8-735	120	62	SURFACE	
LS4	SAME AS LS3 ABOVE EXCEPT WALL MOUNTED	LITHONIA # DWM-2-32-AR-MVOLT-GEB10RS	2-32W-T8-735	120	62	WALL	6'-6"AFF TO BOTTOM

NOTES 1. COLOR AND FINISHES BY ARCHITECT.
2. LUMINAIRE TYPE L4, L8 AND L9 (REFERENCED IN TITLE 24 OUTDOOR FORMS) ARE BUILDING MOUNTED AND SHOWN ON BUILDING "C" LUMINAIRE SCHEDULE DRAWING E10B.

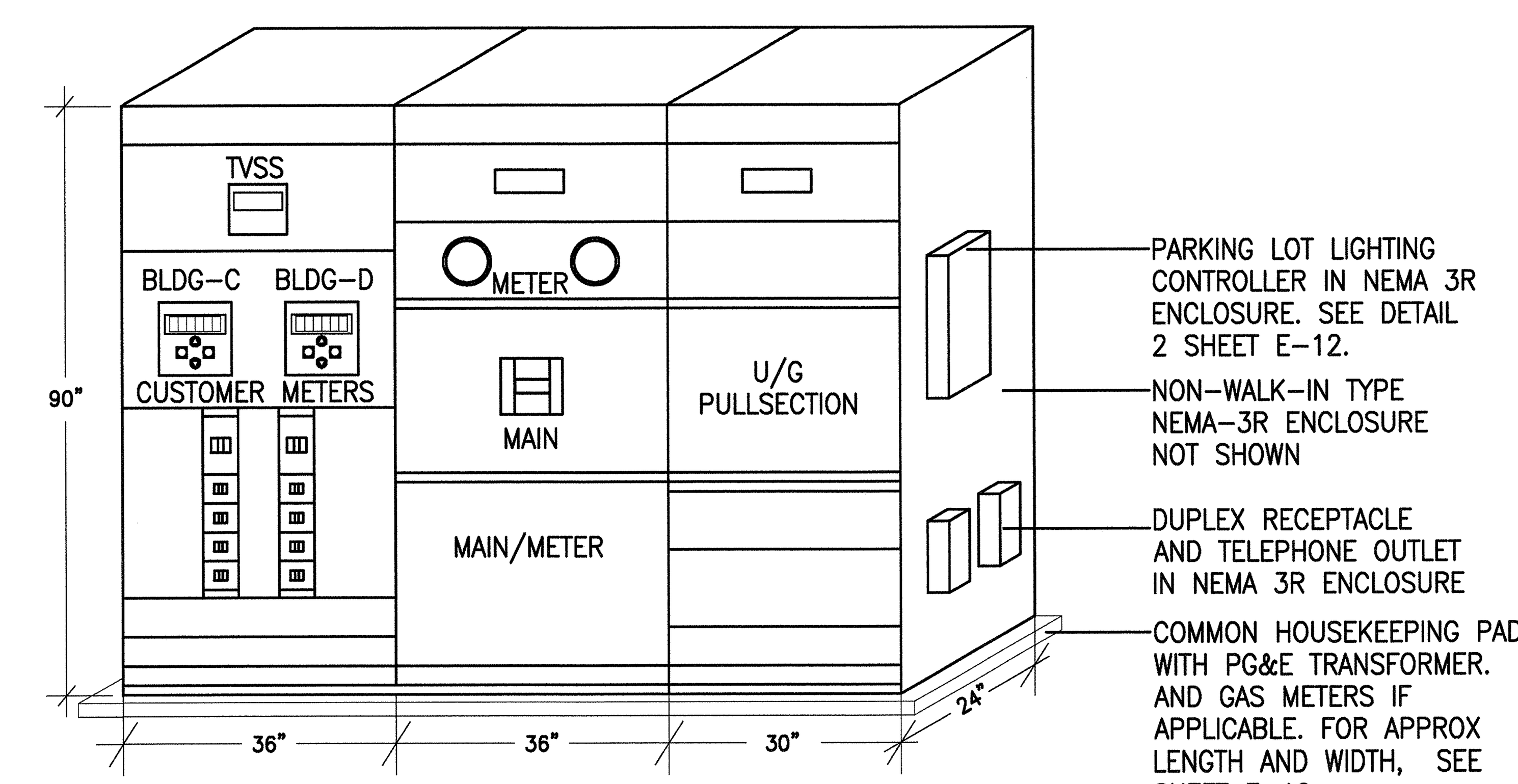
PROJECT: 15600SF — **(N) SWBD MS2** — **LOCATION: UTILITY PAD**

OTH	REC	LTG	SERVICE	KVA LOAD A	KVA LOAD B	KVA LOAD C	BKR	CKT	ABC	CKT	BKR	KVA LOAD A	KVA LOAD B	KVA LOAD C	SERVICE	LTG	REC	OTH
			SPARE (FUTURE BLDG "C")	31.0			300/3	1		2	300/3	31.0			SPARE (FUTURE BLDG "D")			
			"		31.0		"	3		4	"		31.0		"			
			"			31.0	"	5		6	"			31.0	"			
X			UTILITY PAD	1.0			20/1	7		8	20/2	1.0			PARKING LOT (1)	X		
X			UTILITY PAD		1.0		20/1	9		10	"		1.0		"			
X			CONTROL CIRCUIT			1.0	20/1	11		12	20/2			1.0	PARKING LOT (2)	X		
		X	SIGNAGE (3)	1.0			20/1	13		14	"	1.0			"			
			INSTA-HOT WATER HEATER		6.0		50/2	15		16	20/2		1.0		PARKING LOT (1)	X		
	D		12KW 208V 1 PH			6.0	"	17		18	"			1.0	"			
			SPARE				20/1	19		20	20/2	1.0			PARKING LOT (2)	X		
			SPARE				20/1	21		22	"		1.0		"			
			SPARE				20/1	23		24	20/1			1.0	TRASH/COMPOST (1)	X		
			SPARE				200/3	25		26	20/1	0.7			TRASH/COMPOST		X	
			"				"	27		28	30/2		1.4		TRASH COMPACTOR			X
			"				"	29		30	"			1.4	2HP 208V 1PH			
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
				33.0	38.0	38.0						34.7	35.4	35.4				

BUS RATING 800 AMPS
208/120 VOLTS, 3PH, 4W
X MAIN CB 800 /3P AMPS
___ MAIN LUGS ONLY ___ DOUBLE LUGS
TRIM STYLE: ___ FLUSH X SURFACE
NOTES: (1) VIA T/S#1
(2) VIA TS#2
(3) VIA TS#3

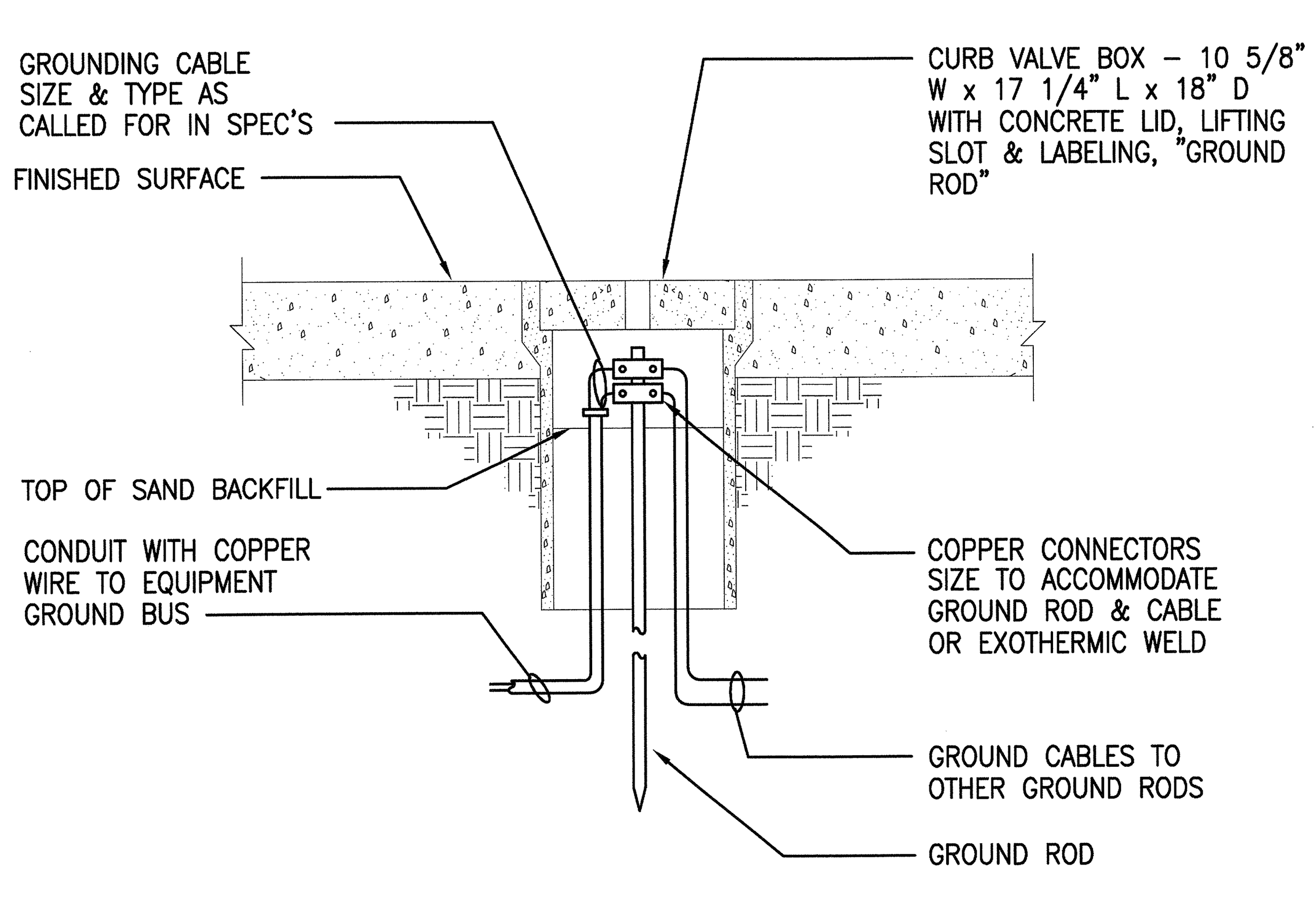
LOAD BALANCE
PHASE A: 67.7
PHASE B: 73.4
PHASEC: 73.4
TOTAL: 215

LIGHTING X 125%	68.3
RECEPT LOAD	10.0
BAL OF RECEPT LOAD X 50%DL	10.6
SUB - TOTAL	88.9 KVA
HEATING/COOLING	78.0
MISC LOADS/SPARE	62.4 KVA
PARKING LOT LIGHTING X 125%	13.8
TOTAL LOAD	243
TOTAL AMPS	675

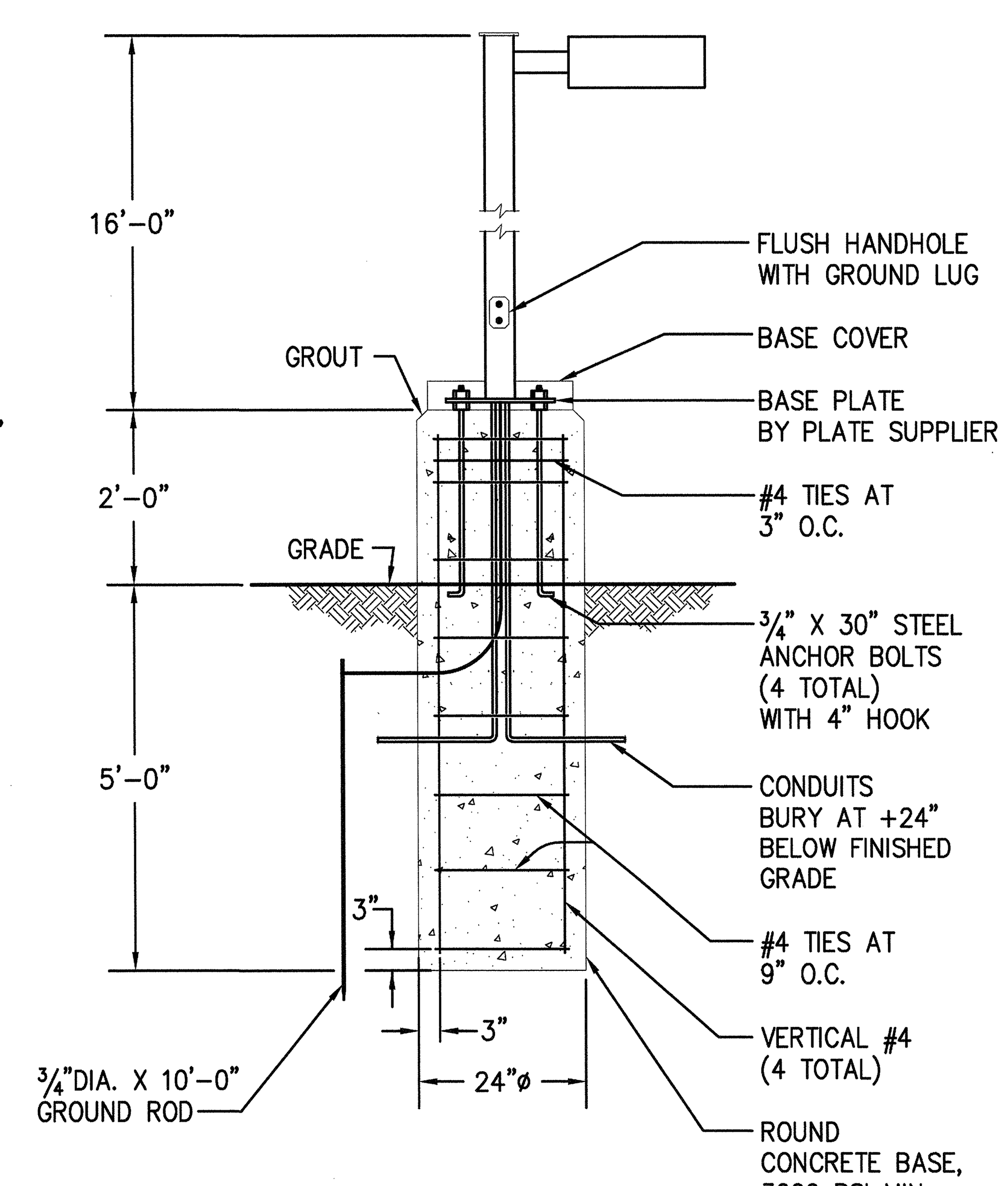


NOTE: PROVIDE ADDITIONAL 36" DISTRIBUTION SECTION OR A SWITCHBOARD MOUNTED PANELBOARD TO ACCOMODATE CIRCUITS REQUIREMENT AS SHOWN ON MS2 SCHEDULE. INCREASE PAD SIZE AS REQUIRED.

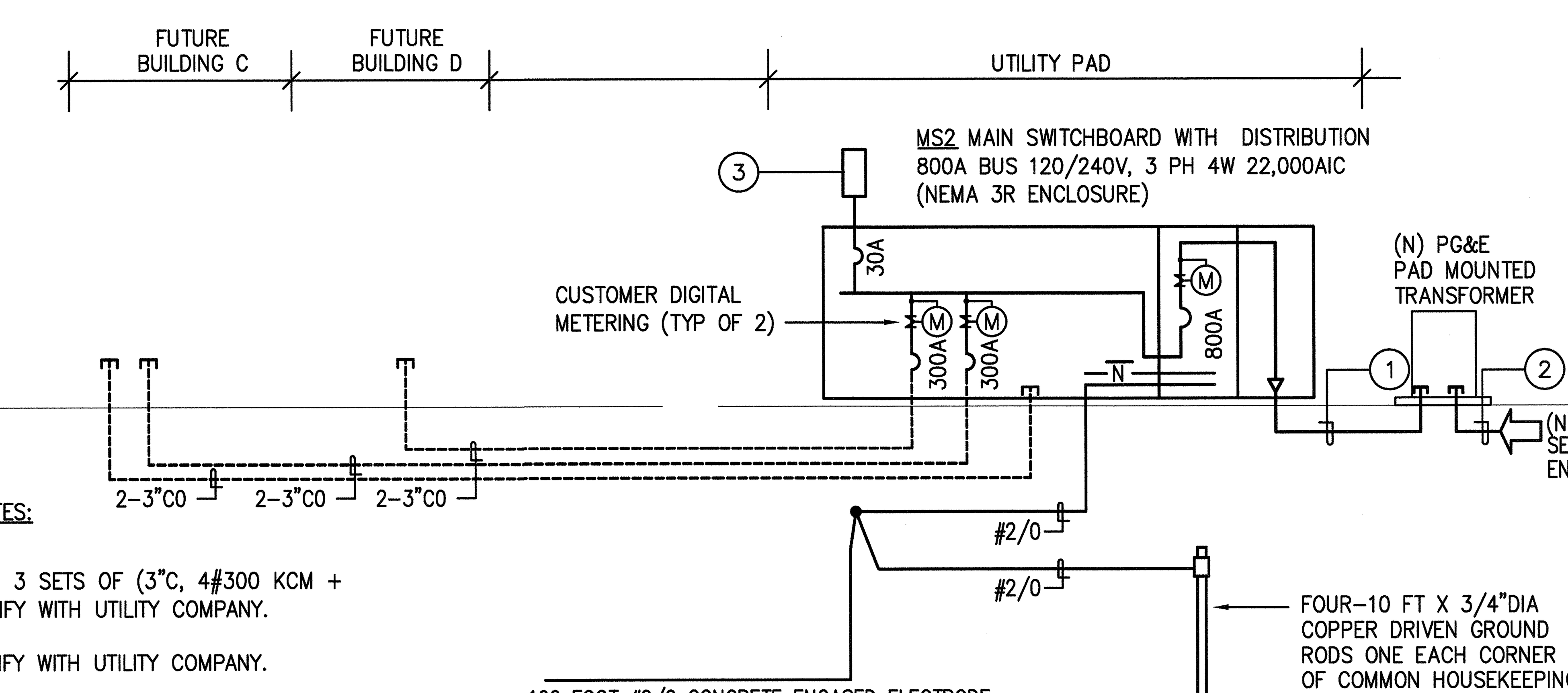
(2) ELEVATION - MAIN SWITCHBOARD "MS2"
NOT TO SCALE



(4) GROUND ROD DETAIL
NOT TO SCALE



(3) PARKING LOT LIGHTING MOUNTING DETAIL
NOT TO SCALE



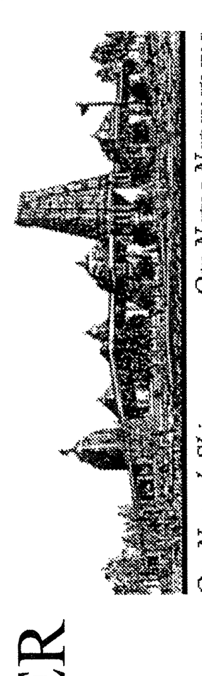
POWER SHEET NOTES:

1. MAIN SERVICE: 3 SETS OF (3"C, 4#300 KCM + 1 #1/0). VERIFY WITH UTILITY COMPANY.
2. 2-5"C.O. VERIFY WITH UTILITY COMPANY.
3. SECONDARY SURGE ARRESTOR BUILT-IN TO SWITCHBOARD MS2.

(1) ELECTRICAL ONE-LINE DIAGRAM
NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER SATISH S. PAMIDI No. E10472 Exp. 12/31/10 ELECTRICAL STATE OF CALIFORNIA

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2



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ELECTRIC ONE-LINE DIAGRAM AND SCHEDULES

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

E-11
B

PROJECT: 7800SF — **PANEL C1** — **LOCATION: ELEC/TELE BLDG C**

OTH	REC	LTG	SERVICE	KVA LOAD A	KVA LOAD B	KVA LOAD C	BKR	CKT	ABC	CKT	BKR	KVA LOAD A	KVA LOAD B	KVA LOAD C	SERVICE	LTG	REC	OTH
X			AC-C-1	3.1			40/3	1		2	20/1	1.0			EXIT AND EMERGENCY (1)	X		
			3/4"C, 3#8 + 1#10G		3.1		"	3		4	20/1		0.5		EXTERIOR (2)	X		
			USE 3P-60A/NF DISC SW.			3.1	"	5		6	20/1			1.0	CORRIDOR/UTIL ROOMS	X		
X			AC-C-2	3.1			40/3	7		8	20/1	1.3			RESTROOMS/CONF RM	X		
			3/4"C, 3#8 + 1#10G		3.1		"	9		10	20/1		1.5		ADMIN/CLOAK RM	X		
			USE 3P-60A/NF DISC SW.			3.1	"	11		12	20/1			1.5	GIFT SHOP/LIBRARY	X		
X			AC-C-3	2.5			30/3	13		14	20/1	1.0			COMP RM/CONF RM	X		
			3/4"C, 3#10 + 1#10G		2.5		"	15		16	20/1		1.0		SPARE			
			USE 3P-30A/NF DISC SW.			2.5	"	17		18	20/1			1.0	SPARE			
X			AC-C-4	2.5			30/3	19		20	20/1	1.0			GIFT SHOP - PRINTER			X
			3/4"C, 3#10 + 1#10G		2.5		"	21		22	20/1		0.9		GIFT SHOP		X	
			USE 3P-30A/NF DISC SW.			2.5	"	23		24	20/1			0.9	GIFT SHOP		X	
X			AC-C-5	2.5			30/3	25		26	20/1	1.0			LIBRARY - PRINTER			X
			3/4"C, 3#10 + 1#10G		2.5		"	27		28	20/1		1.1		LIBRARY		X	
			USE 3P-30A/NF DISC SW.			2.5	"	29		30	20/1			1.0	LIBRARY - PRINTER			X
X			AC-C-6	2.5			30/3	31		32	20/1	1.0			COMP/MEDIA RM -PRINTER			X
			3/4"C, 3#10 + 1#10G		2.5		"	33		34	20/1		1.1		COMP/MEDIA RM		X	
			USE 3P-30A/NF DISC SW.			2.5	"	35		36	20/1			0.9	COMP/MEDIA RM		X	
X			EF-C-1, 3/4"C, 3#12	1.0			20/1	37		38	20/1	0.5			FACP (1)			X
X			EF-C-2, 3/4"C, 3#12		1.0		20/1	39		40	20/1		0.5		MPOE			X
	X		ROOF RECEPTACLES			0.9	20/1	41		42	20/1			0.5	ELEC ROOM			X
				17.2	17.2	17.1						6.8	6.6	6.8				

BUS RATING 400 AMPS
208/120 VOLTS, 3PH, 4W
X MAIN CB 300 /3P AMPS
___ MAIN LUGS ONLY ___ DOUBLE LUGS
TRIM STYLE: ___ FLUSH X SURFACE
NOTES: (1) LOCK ON HANDLE
(2) VIA TS #1C

LOAD BALANCE
PHASE A: 24.0
PHASE B: 23.8
PHASEC: 23.9
TOTAL (SEC1) 72
TOTAL (SEC2) 30
TOTAL 102

LIGHTING X 125%	8.0
RECEPT LOAD	10.0
BAL OF RECEPT LOAD X 50%DL	10.0
SUB - TOTAL	28.0 KVA
HEATING/COOLING	50.0
MISC LOADS	15.0 KVA
TOTAL LOAD	93
TOTAL AMPS	258

PROJECT: 7800SF — **PANEL C2** — **LOCATION: ELEC/TELE BLDG C**

OTH	REC	LTG	SERVICE	KVA LOAD A	KVA LOAD B	KVA LOAD C	BKR	CKT	ABC	CKT	BKR	KVA LOAD A	KVA LOAD B	KVA LOAD C	SERVICE	LTG	REC	OTH
X			PV#1 13.2KW				50/3	43		44	20/1	1.1			CONF ROOM		X	
			GRID-TIED INVERTER				"	45		46	20/1		0.4		CORRIDOR/EXTERIOR		X	
			"				"	47		48	20/1			1.1	CONF ROOM		X	
X			PV#2 13.2KW				50/3	49		50	20/1	1.1			RESTROOMS/JANITOR		X	
			GRID-TIED INVERTER				"	51		52	20/1		1.0		DRINKING FOUNTAIN			X
			"				"	53		54	20/1			1.0	SPARE			
X			PV#3 13.2KW				50/3	55		56	20/1	1.1			ADMIN OFFICE		X	
			GRID-TIED INVERTER				"	57		58	20/1		1.1		ADMIN OFFICE		X	
			"				"	59		60	20/1			1.1	ADMIN OFFICE		X	
X			PV#4 13.2KW				50/3	61		62	20/1	1.1			ADMIN OFFICE		X	
			GRID-TIED INVERTER				"	63		64	20/1		1.0		ADMIN OFFICE - COPIER			X
			"				"	65		66	20/1			1.1	ADMIN OFFICE		X	
X			DRINKING FOUNTAIN	1.0			20/1	67		68	20/1	1.1			ADMIN OFFICE		X	
X			FIRE DOOR (1)		0.5		20/1	69		70	20/1		0.9		CLOAK ROOM		X	
X			FIRE DOOR (1)			0.5	20/1	71		72	20/1			1.0	CLOAK ROOM			X
X			COPIER	1.0			20/1	73		74	20/1	0.4			CORRIDOR/EXTERIOR		X	
	X		COPIER		1.0		20/1	75		76	20/1		0.5		SPARE			
			SPARE			1.0	20/1	77		78	20/1			0.5	FIRE/SMOKE DAMPER (1)			X
			SPARE	1.0			20/1	79		80	15/1	0.8			CP-1			X
			SPARE		1.0		20/1	81		82	15/1		0.8		CP-2			X
			SPARE			1.0	20/1	83		84	20/1			1.0	SPARE			
				3.0	2.5	2.5						6.6	5.6	6.7				

PROJECT: 15600SF — **(E) PANEL MS2** — **LOCATION: UTILITY PAD**

OTH	REC	LTG	SERVICE	KVA LOAD A	KVA LOAD B	KVA LOAD C	BKR	CKT	ABC	CKT	BKR	KVA LOAD A	KVA LOAD B	KVA LOAD C	SERVICE	LTG	REC	OTH
			(N) PANEL "C" (1)	34.0			300/3	1		2	300/3	31.0			(E) SPARE			
			"		34.0		"	3		4	"		31.0		"			
			"			34.0	"	5		6	"			31.0	"			
X			(E) CIRCUIT	1.0			20/1	7		8	20/2	1.0			(E) CIRCUIT	X		
X			(E) CIRCUIT		1.0		20/1	9		10	"		1.0		"			
X			(E) CIRCUIT			1.0	20/1	11		12	20/2			1.0	(E) CIRCUIT	X		
		X	(E) CIRCUIT	1.0			20/1	13		14	"	1.0			"			
			SPARE		1.0		20/1	15		16	20/2		1.0		(E) CIRCUIT	X		
			SPARE			1.0	20/1	17		18	"			1.0	"			
			SPARE				20/1	19		20	20/2	1.0			(E) CIRCUIT	X		
			SPARE				20/1	21		22	"		1.0		"			
			SPARE				20/1	23		24	20/1			1.0	SPARE			
			SPARE				200/3	25		26	20/1				SPARE			
			"				"	27		28	20/1				SPARE			
			"				"	29		30	20/1				SPARE			
								31		32								
								33		34								
								35		36								
								37		38								
								39		40								
								41		42								
				36.0	36.0	36.0						34.0	34.0	34.0				

BUS RATING 800 AMPS
208/120 VOLTS, 3PH, 4W
X MAIN CB 800 /3P AMPS
___ MAIN LUGS ONLY ___ DOUBLE LUGS
TRIM STYLE: ___ FLUSH X SURFACE
NOTES: (1) (E) 300A CB
(2)

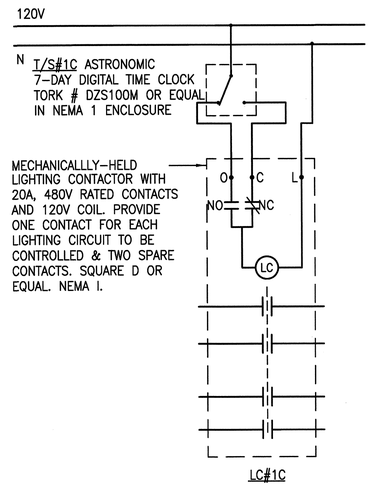
LOAD BALANCE
PHASE A: 70.0
PHASE B: 70.0
PHASEC: 70.0
TOTAL: 210

LIGHTING X 125%	68.3
RECEPT LOAD	10.0
BAL OF RECEPT LOAD X 50%DL	10.6
SUB - TOTAL	88.9 KVA
HEATING/COOLING	78.0
MISC LOADS/SPARE	62.4 KVA
PARKING LOT LIGHTING X 125%	13.8
TOTAL LOAD	243
TOTAL AMPS	675

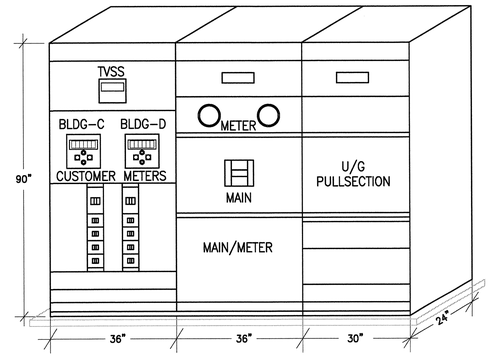
FEEDER SCHEDULE

FEEDER TAG	FEEDER DESCRIPTION	CONDUIT	SPARE CONDUIT	CONDUCTORS (75°C – THW) PHASE/NEUTRAL	CONDUCTORS (75°C – THW) GROUND	REMARKS
603	60AMP, 3 PHASE, 4 WIRE	1–1¼"C		4–#6	1–#8	
1003	100AMP, 3 PHASE, 4 WIRE	1–1¼"C		4–#2	1–#8	
2003	200AMP, 3 PHASE, 4 WIRE	1–3 1/2"C		4–3/0	1–#6	
3003	300AMP, 3 PHASE, 4 WIRE	1–3"C	1–3"C EA	4–300KCM	1–#4	(1)

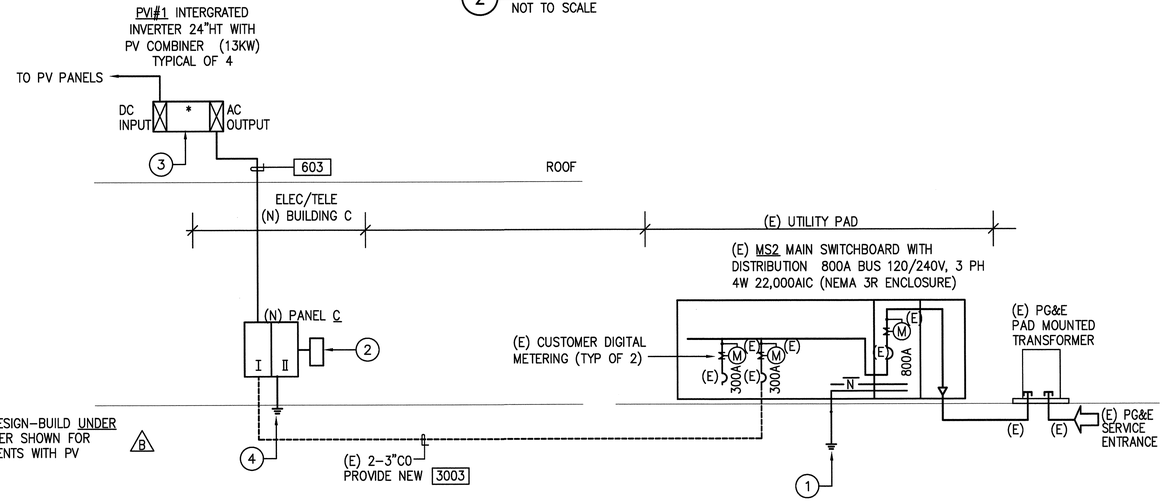
(1) FEEDER VOLTAGE DROP SHALL NOT EXCEED 2%VD, UPSIZE FEEDER AS REQUIRED.



3 BUILDING MOUNTED EXTERIOR LIGHTING CONTROLLER
NOT TO SCALE



2 ELEVATION - MAIN SWITCHBOARD "MS2" (EXISTING)
NOT TO SCALE



POWER SHEET NOTES:

1. (E) SYSTEM GROUND
2. (N) SECONDARY SURGE ARRESTOR
3. GRID-TIED PHOTO-VOLTAIC SYSTEM IS DESIGN-BUILD UNDER SEPARATE PERMIT. EQUIPMENT AND FEEDER SHOWN FOR INFORMATION ONLY. VERIFY ALL COMPONENTS WITH PV CONTRACTOR.
4. PROVIDE SYSTEM GROUND AS FOLLOWS: #3/0 CONCRETE ENCASED ELECTRODE 100FT MIN, #3/0 BOND TO COLD WATER MAIN, GAS MAIN AND BUILDING STEEL. RESISTANCE TO SOLID EARTH GROUND SHALL NOT EXCEED 5 OHMS. PROVIDE ADDITIONAL DRIVEN GROUND RODS AS REQUIRED.

1 ELECTRICAL ONE-LINE DIAGRAM
NOT TO SCALE

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

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ELECTRIC ONE-LINE DIAGRAM
DETAILS, SCHEDULES

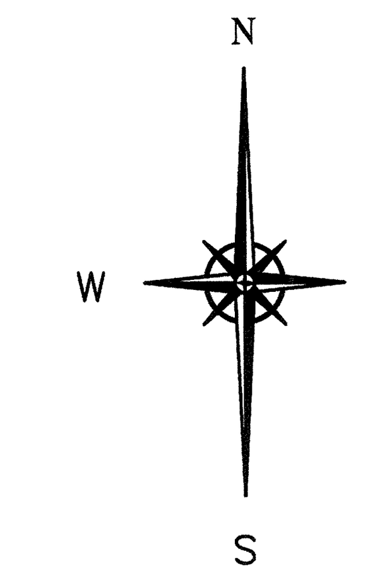
DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

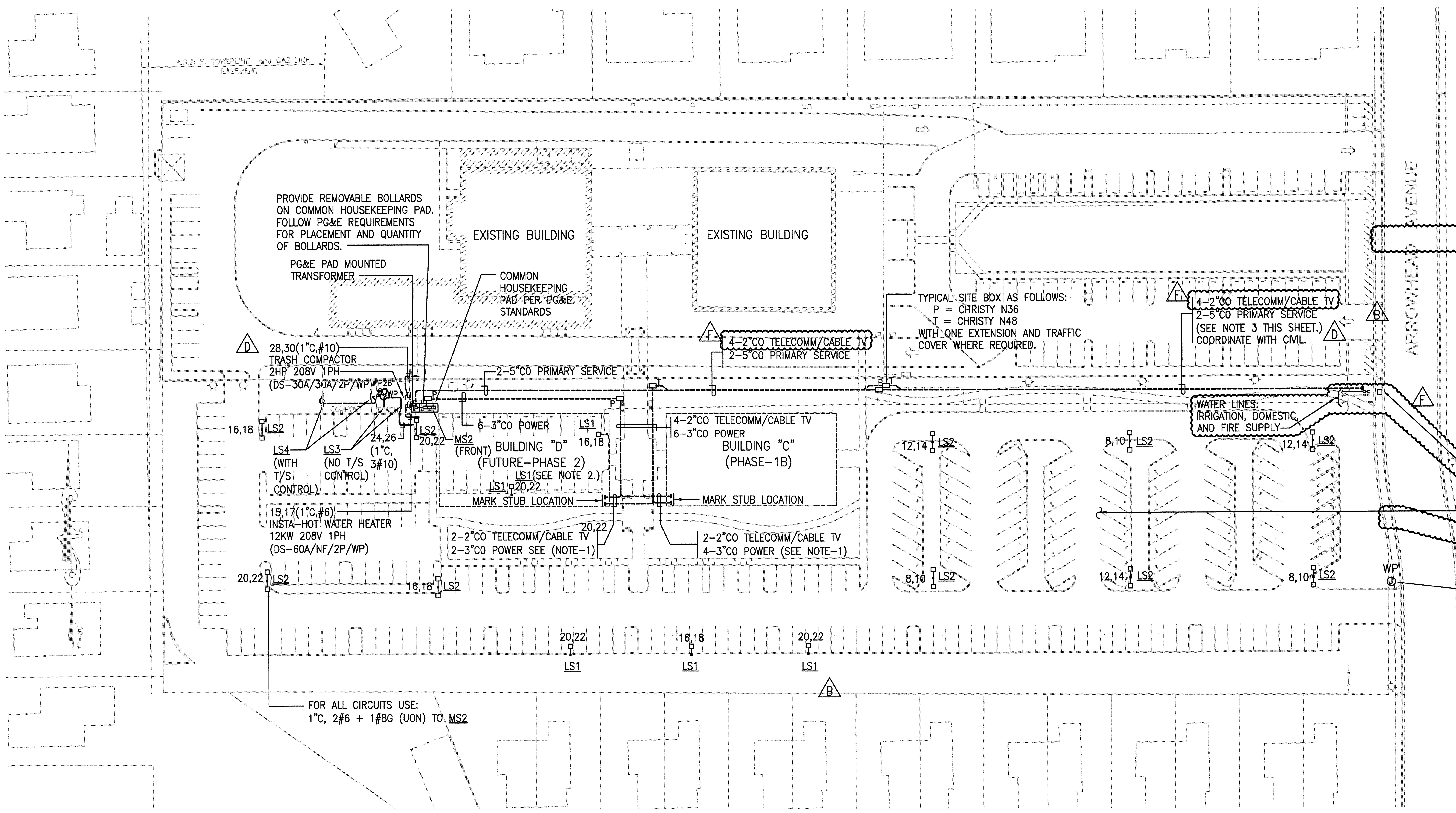
E-11B

REGISTERED PROFESSIONAL ENGINEER
RAMAN S. PAMIDI
No. E10472
Exp. 12/31/10
ELECTRICAL
STATE OF CALIFORNIA

PLANCHECK RESUBMITTAL #2

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2
F 12-01-10	BPC2





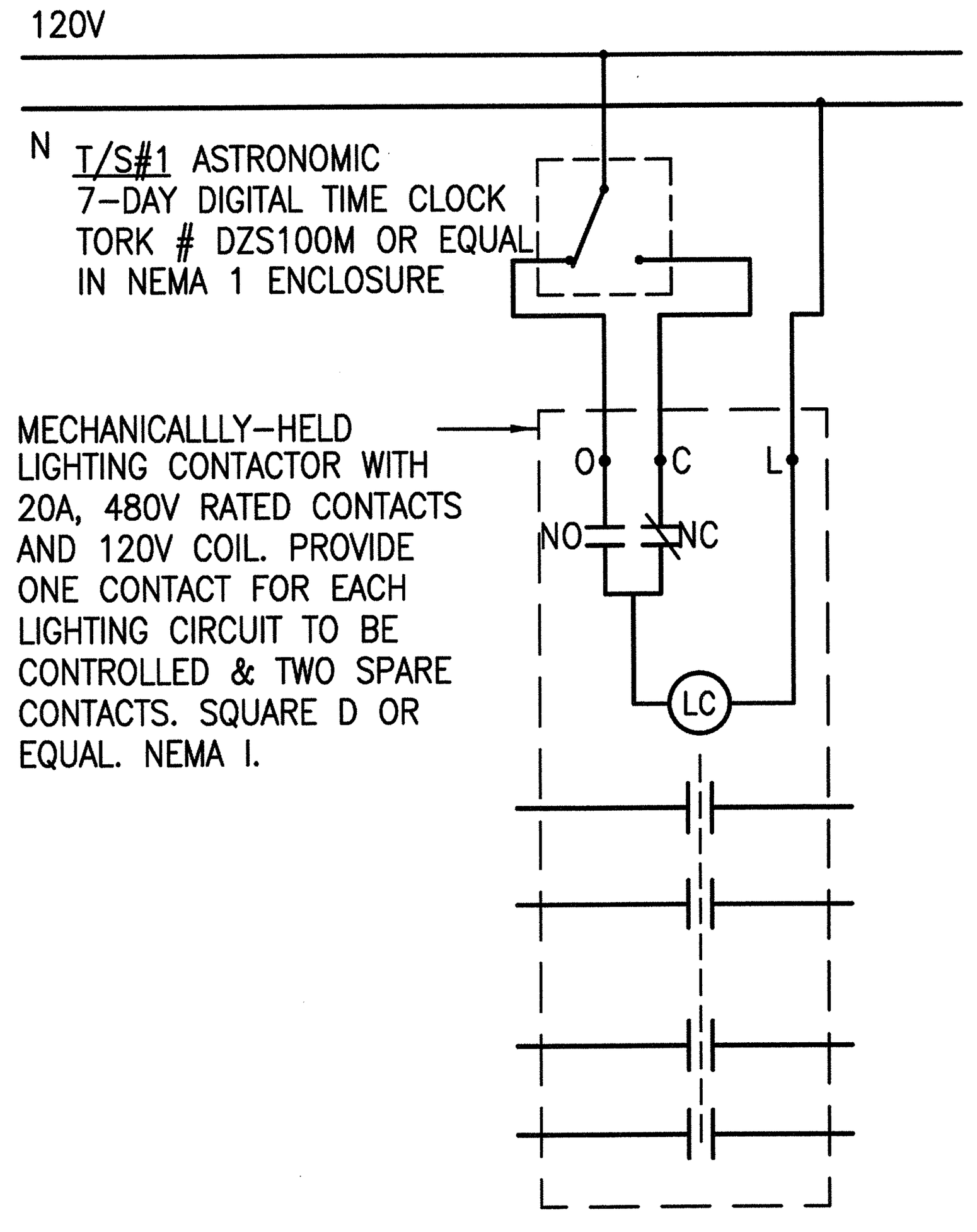
NOTES:

1. ROUTE UNDERGROUND CONDUITS TO AVOID STRUCTURAL FOUNDATIONS AND FOOTINGS. TERMINATE THE UNDERGROUND CONDUITS NEAR THE ELECTRICAL ROOMS FOR THE RESPECTIVE BUILDINGS. SEE ARCHITECTURAL PLANS FOR THE ROOM LOCATION.
2. DO NOT PROVIDE HOUSE SHIELDS FOR TWO TYPE LS1 LUMINAIRES FOR TEMPORARY PARKING LOT LIGHTING (BUILDING D).
3. COORDINATE WITH PG&E IF PRIMARY SERVICE CABLES ARE PROVIDED BY THEM. IF NOT, PROVIDE AS REQUIRED.

CITY OF LIVERMORE
PARKING LOT LIGHTING REQUIREMENTS:
A. PARKING LOT: 1 FT-CANDLE MINIMUM
B. WALKWAYS: 0.5 FT-CANDLE MINIMUM
C. MAXIMUM POLE MOUNTED LUMINAIRE MOUNTING HEIGHT: 18 FEET
C. DO NOT DEVIATE.
D. ADD AND RECONFIGURE LAYOUT TO COMPLY.

ELECTRICAL SITE PLAN

SCALE:1"=40'-0"

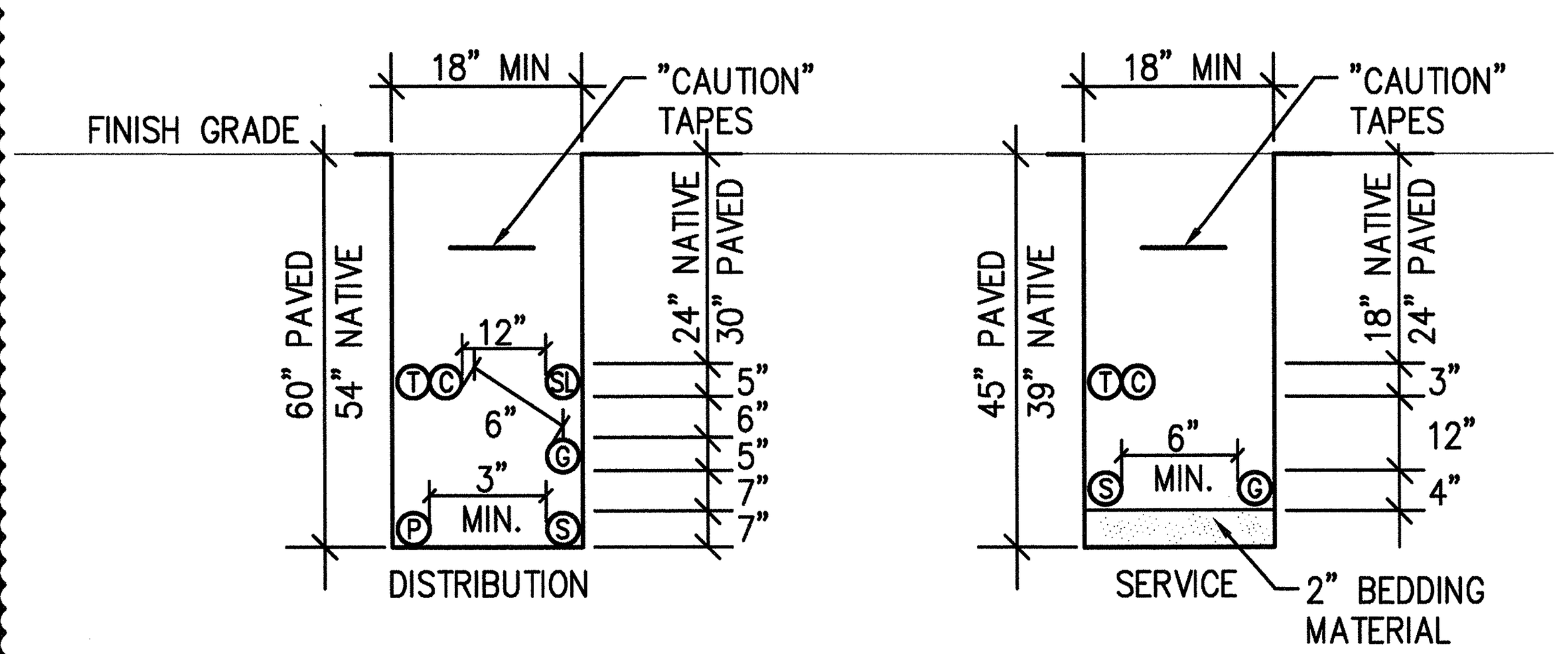


2 PARKING LOT LIGHTING CONTROLLER

NOT TO SCALE

TYPICAL FOR TIME SWITCH CONTROLLER #1, #2 AND #3

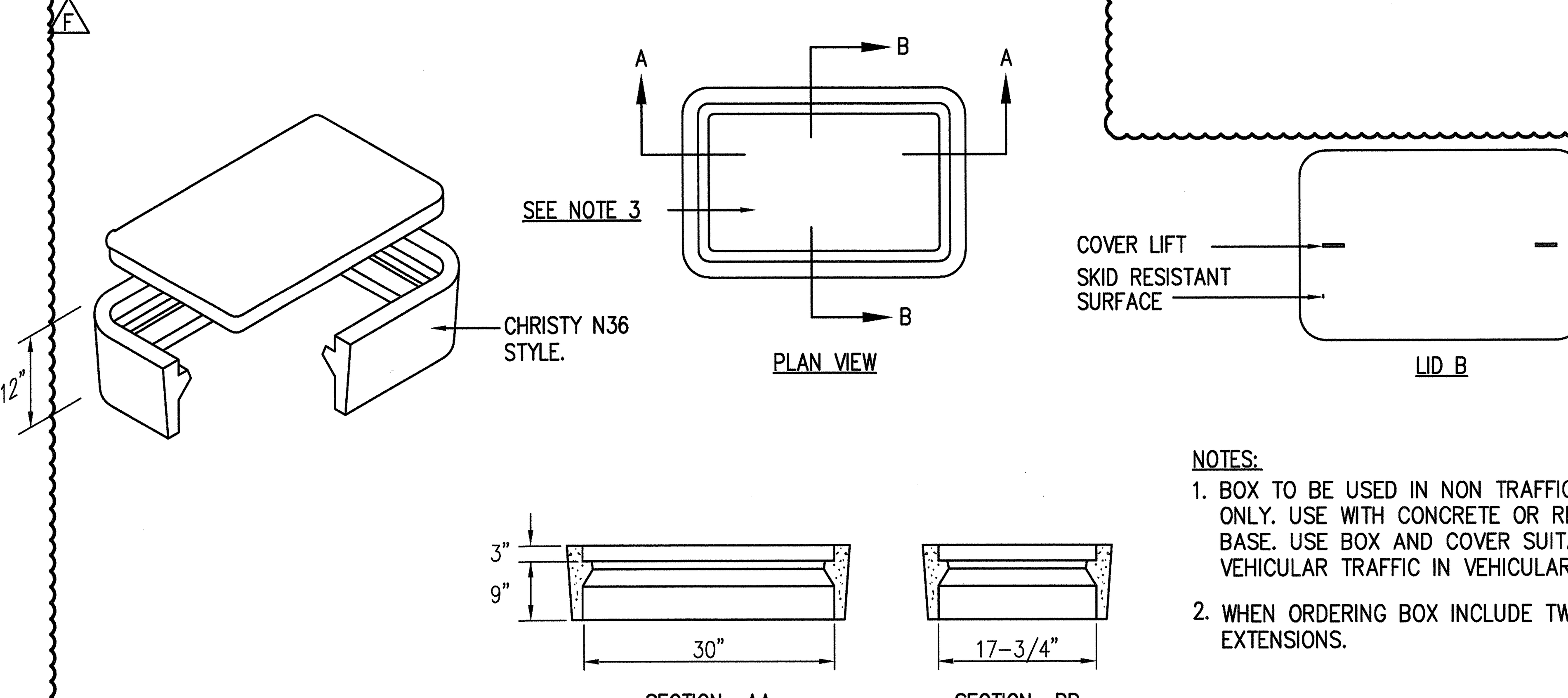
MINIMUM SEPARATION REQUIREMENTS							
LBL	UTILITY TYPE	G (INCH)	T-DUCT (INCH)	T-DB (INCH)	C (INCH)	S (INCH)	F (INCH)
G	GAS	-	12	12	12	6	12
T	TELEPHONE (DUCT)	12	-	1	1	12	12
T	TELEPHONE (DIRECT BURY)	12	1	-	1	12	12
C	CATV	12	1	1	-	12	12
S	ELECTRIC (SECONDARY)	6	12	12	12	-	3
P	ELECTRIC (PRIMARY)	12	12	12	12	3	-
SL	STREET LIGHT-NON PG&E	6	12	12	12	1	3



3 MINIMUM BACKFILL REQUIREMENTS

NOT TO SCALE

JOINT TRENCH CONTRACTOR SHALL COMPLY WITH LOCAL AND GOVERNING AGENCIES' STANDARDS AND SPECIFICATIONS.

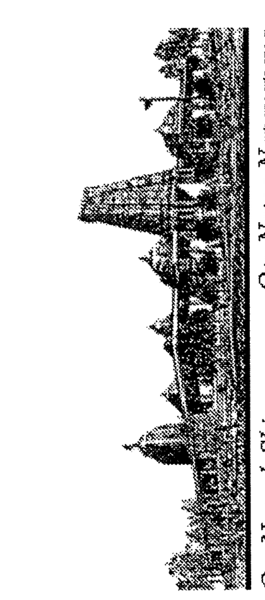


NOTES:

1. BOX TO BE USED IN NON TRAFFIC AREAS ONLY. USE WITH CONCRETE OR REDWOOD BASE. USE BOX AND COVER SUITABLE FOR VEHICULAR TRAFFIC IN VEHICULAR AREAS.
2. WHEN ORDERING BOX INCLUDE TWO 12" EXTENSIONS.

4 CONCRETE SITE BOX DETAIL

NOT TO SCALE



HINDU COMMUNITY and CULTURAL CENTER

1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
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San Francisco, California 94111
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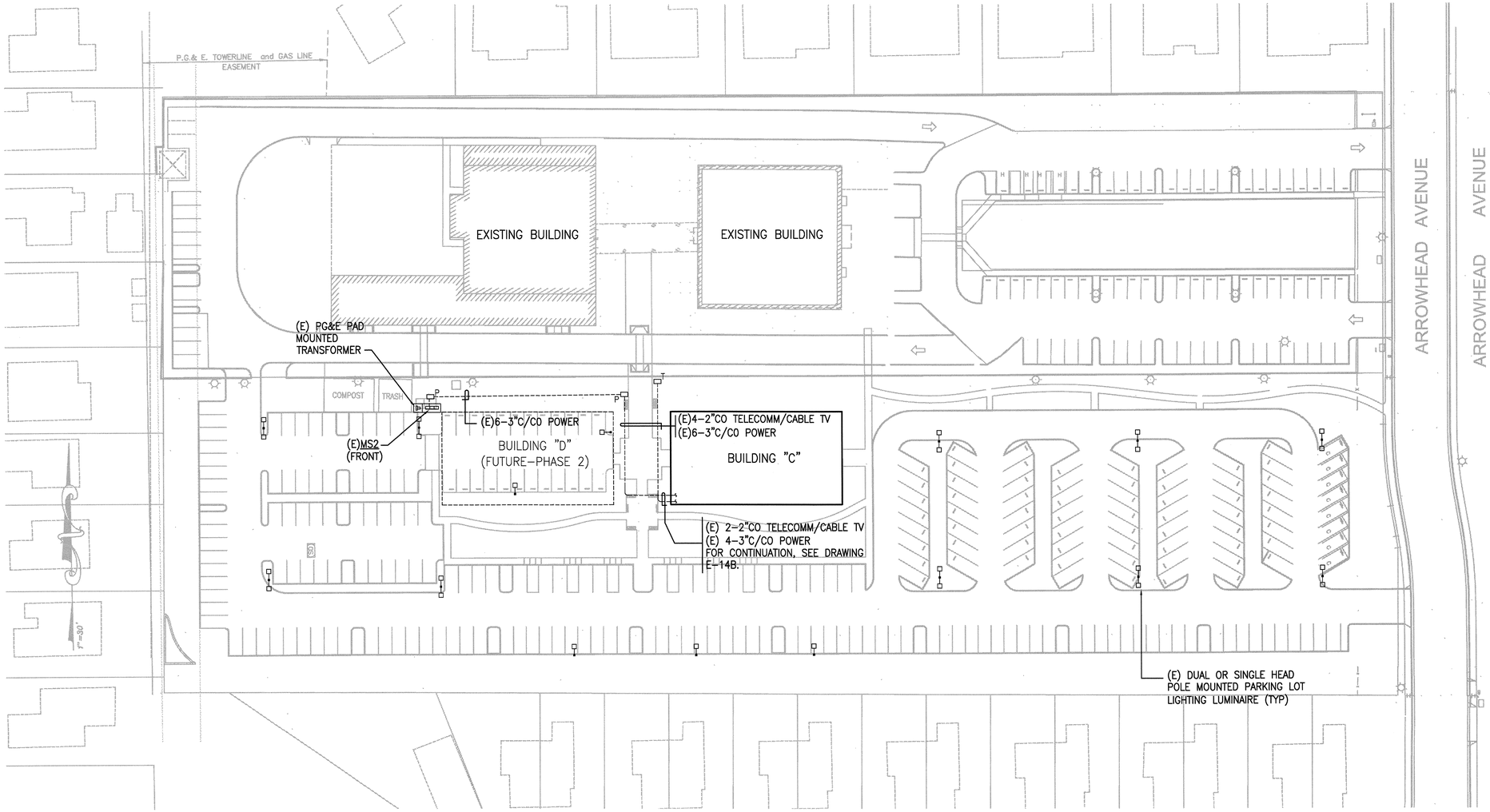
E-mail: Mail@APincSF.com 09021

ELECTRICAL SITE PLAN AND DETAILS

REGISTERED PROFESSIONAL ENGINEER SATISH S. PAMIDI No. E10472 Exp. 12/31/10 ELECTRICAL STATE OF CALIFORNIA

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

E-12



ELECTRICAL SITE PLAN

NORTH

SCALE:1"=40'-0"

THE UTILITIES THAT ARE CALLED OUT AS EXISTING ARE NOT CURRENTLY INSTALLED BUT WILL BE IN PLACE BY THE TIME THE BUILDING CONSTRUCTION STARTS. THE SITE IMPROVEMENT WORK WILL BE DONE PRIOR TO BUILDING CONSTRUCTION. HENCE THESE ARE CALLED-OUT AS "EXISTING".

F

REVISIONS		BY
A	05-24-10	HCCC
B	08-02-10	BPC
C	HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D	09-22-10	BPC
E	10-12-10	BPC2
F	12-01-10	BPC2

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
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ELECTRICAL SITE PLAN

DATE	05/28/10
SCALE:	AS NOTED
DRAWN BY:	
PROJECT:	1200 ARROWHEAD

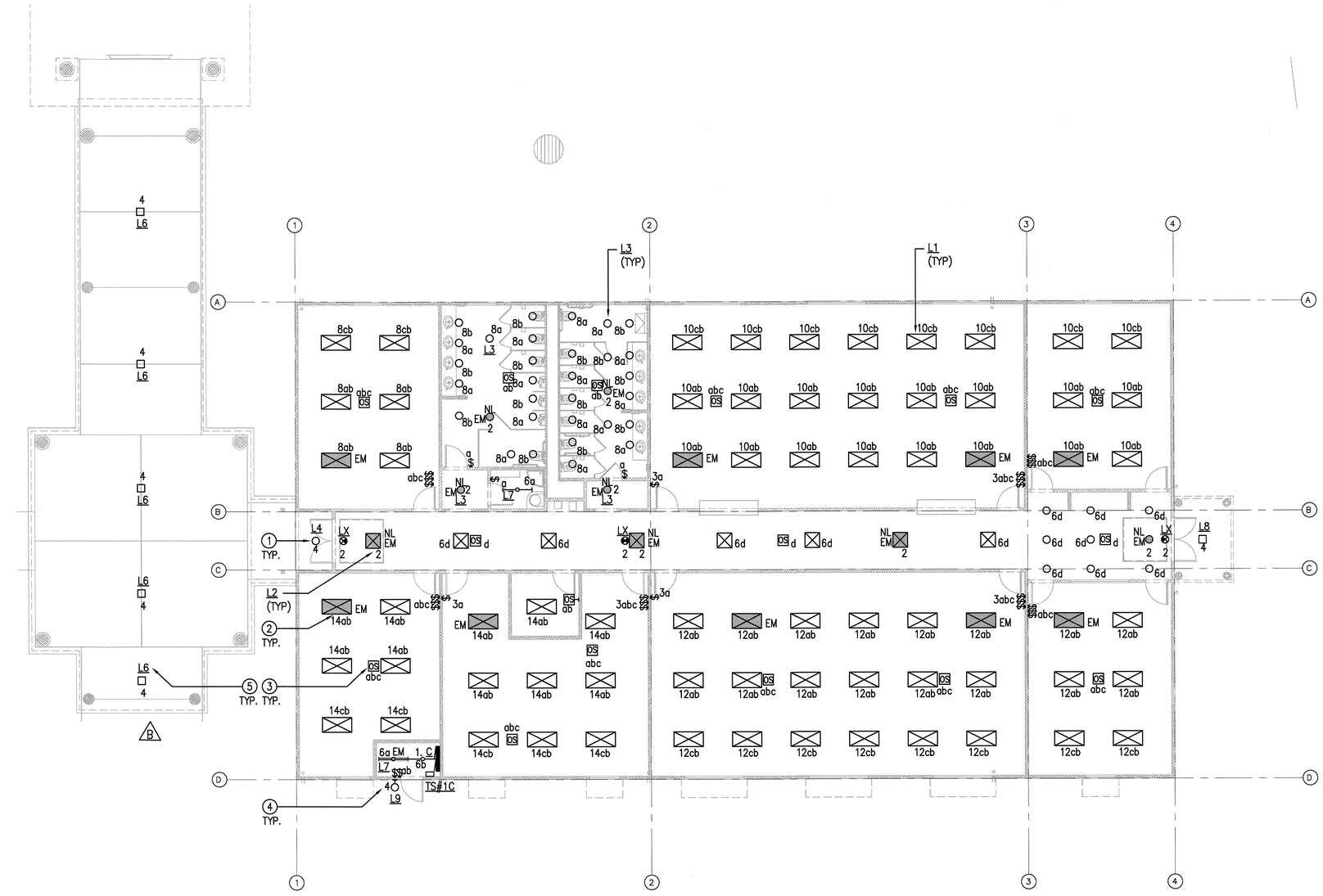
REGISTERED PROFESSIONAL ENGINEER
SATISH S. PAMIDI
No. E10472
Exp. 12/31/10
ELECTRICAL
STATE OF CALIFORNIA

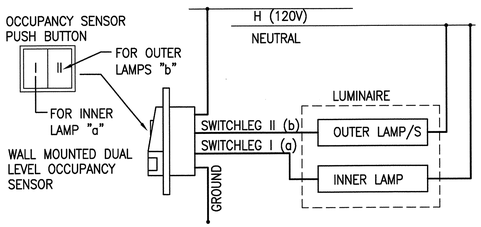
E-12B

SHEET NOTES

1. FOR CONTROLS OF BUILDING MOUNTED EXTERIOR LIGHTING, SEE DETAIL 3 DRAWING E-11B.
2. FOR EGRESS LUMINAIRE WITH BATTERY PACK SHOWN SWITCHED, CONNECT SWITCHLEG AHEAD OF BATTERY CHARGER.
3. PROVIDE WALL OR CEILING MOUNTED BI-LEVEL OCCUPANCY SENSOR AS SHOWN. CEILING MOUNTED OCCUPANCY SENSORS SHALL HAVE WALL MOUNTED BI-LEVEL OVERRIDE SWITCHES. SEE DETAIL 2 AND 3 THIS SHEET.
4. ALL CIRCUITS ARE SUPPLIED FROM PANEL "C". THE CIRCUITING OF LUMINAIRES, WIRING DEVICES AND CONTROL DEVICES, WITHIN EACH INTENDED CONTROL SCHEME, SHALL BE FULLY IMPLEMENTED USING THE PROPER TYPE AND NUMBER OF WIRES WITH CONNECTIONS AS REQUIRED. "ROUNDHOUSE" METHOD SHALL BE USED FOR ALL MULTI-CIRCUIT RUNS IN COMMON CONDUIT.
5. RUN CONDUIT/S FOR CANOPY LIGHTING EMBEDDED IN CONCRETE CEILING SLAB, DOWN THRU COLUMN, THEN UNDERGROUND AND UP TO PANEL C VIA TS #1C.

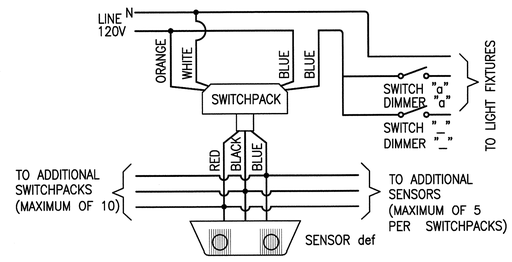
B





2 WALL MOUNTED OCCUPANCY SENSOR WIRING DIAGRAM

SCALE: NOT TO SCALE



3 CEILING MOUNTED OCCUPANCY SENSOR WIRING DIAGRAM

SCALE: NOT TO SCALE

BUILDING C - PHASE 1-B

LIGHTING PLAN

TOTAL 7800 SQ. FT.

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

GRAPHIC SCALES: 0 5' 10' 20' 25' — 1/8" = 1'-0"

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

Om Namo Narayanaya
Om Namah Shivaya

NEW BUILDING "C" - PHASE 1B
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LIGHTING PLAN

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

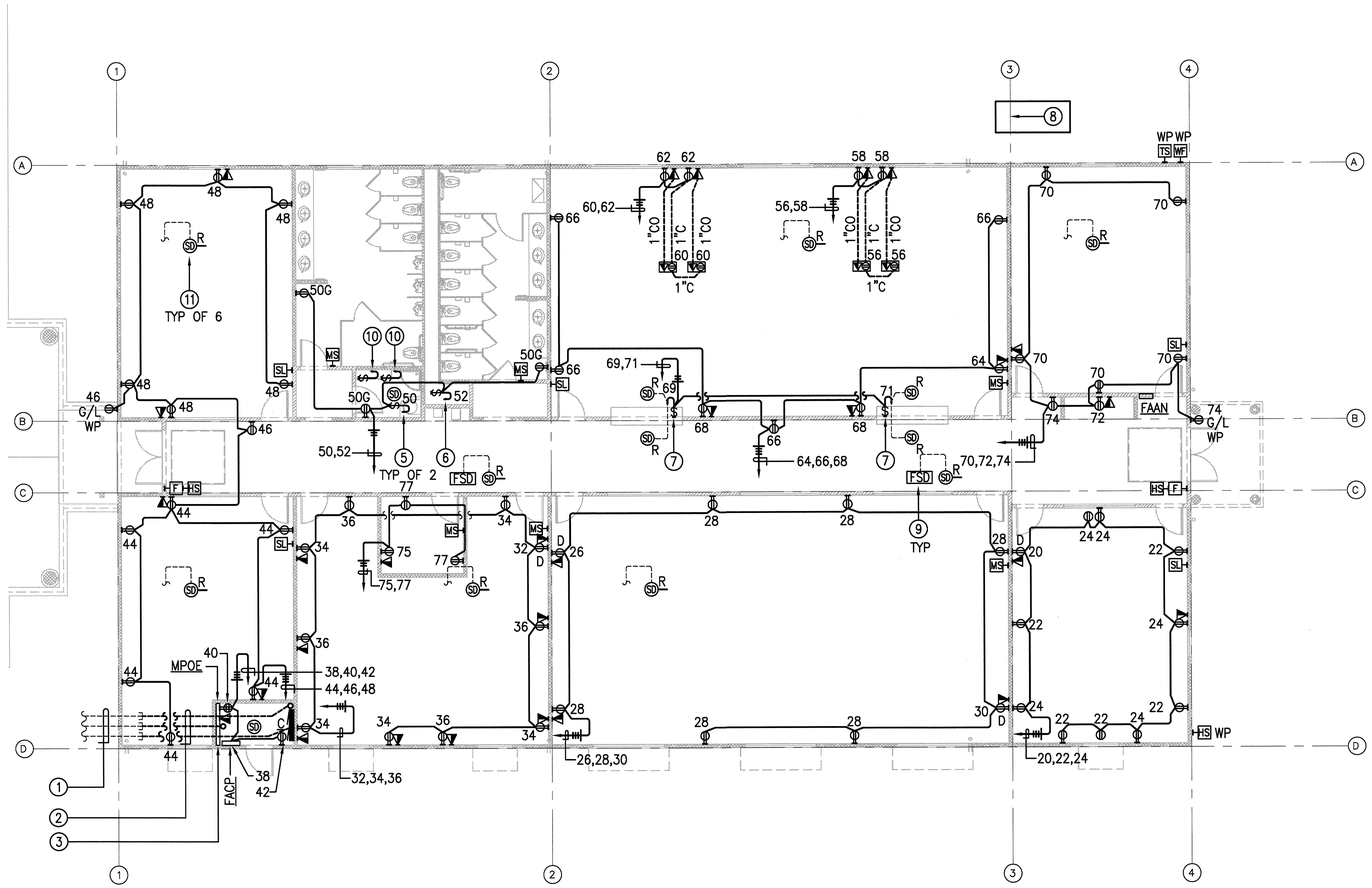
E-13B

REGISTERED PROFESSIONAL ENGINEER SATISH S. PAMIDI No. E10472 Exp. 12/31/10 ELECTRICAL STATE OF CALIFORNIA

PLANCHECK RESUBMITTAL #2

SHEET NOTES

1. (E) 2–2"CO (TELECOMM) AND (E) 2–3"CO (POWER) PLUS (E) 2–3"CO SPARE CONDUITS. FOR CONTINUATION, SEE PHASE 1A DRAWING E–12 AND E–12B (THIS PHASE).
2. EXTEND SYSTEM CONDUITS RESPECTIVELY AS SHOWN.
3. FOR MPOE, PROVIDE AS FOLLOWS:
   - PROVIDE 8'HX PLYWOOD BACKBOARD (+6"AFF BOTTOM OF PLYWOOD ON WALL AS SHOWN) FIRE RETARDANT–TYPE PAINTED TO MATCH ROOM OR BIEGE. EDGES OF BOARD SHALL BE SMOOTH AND SPLINTER FREE.
   - PROVIDE 2–4"øCO SLEEVE TO RUN FROM 6" BELOW CEILING TO 6" ABOVE CEILING. COORDINATE EXACT LOCATION WITH TENANT AND CABLING VENDOR
4. ALL CIRCUITS ARE SUPPLIED FROM PANEL "C". THE CIRCUITING OF LUMINAIRES, WIRING DEVICES AND CONTROL DEVICES, WITHIN EACH INTENDED CONTROL SCHEME, SHALL BE FULLY IMPLEMENTED USING THE PROPER TYPE AND NUMBER OF WIRES WITH CONNECTIONS AS REQUIRED. "ROUNDHOUSE" METHOD SHALL BE USED FOR ALL MULTI–CIRCUIT RUNS IN COMMON CONDUIT.
5. FOR HOT WATER HEATER CONTROLS.
6. FOR DRINKING FOUNTAIN.
7. FOR FIRE DOOR OPERATOR. PROVIDE CONNECTION TO RELEASING CONTACT OF NEAREST SMOKE DETECTOR/S.
8. ALL HOMERUNS TO RIGHT OF THIS GRID LINE SHALL BE #10 MIN.
9. LOOP FIRE/SMOKE DAMPERS INTO ONE 120V CONTROL CIRCUIT. USE C–78. PROVIDE FSD CONNECTION TO RELEASING CONTACT OF ASSOCIATED DUCT MOUNTED SMOKE DETECTOR.
10. FOR CP–1 AND CP–2, SPD. USE CIRCUIT C–80 AND C–82 RESPECTIVELY.
11. DUCT MOUNTED SMOKE DETECTOR WITH RELEASING CONTACT TO SHUT DOWN ASSOCIATED ROOFTOP UNIT ON ACTIVATION. PROVIDE CONNECTION TO SHUT–DOWN CIRCUIT OF ROOFTOP UNIT.



BUILDING C - PHASE 1-B
POWER AND SIGNAL PLAN

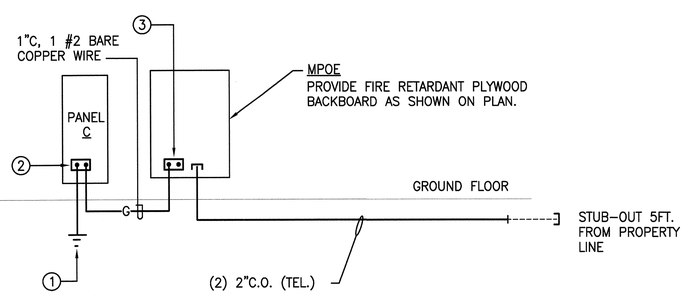
TOTAL 7800 SQ. FT.

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

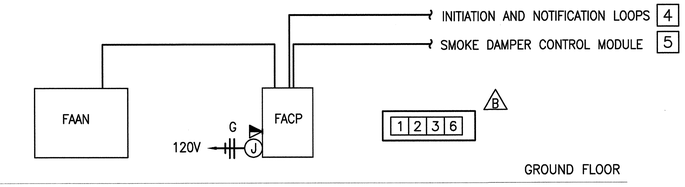
GRAPHIC SCALES: 0 5' 10' 20' 25' — 1/8" = 1'-0"

TELECOMM SHEET NOTES:

1. SYSTEM GROUND. SEE DETAIL 1 SHEET E–11B.
2. GROUND BUS IN PANEL.
3. EQUIPMENT GROUND BUS. 1/4"x4"x12" COPPER GROUND BUS WITH 20–1/4" PRE–DRILLED HOLES, MOUNTED TO THE BOARD WITH 1" THICK RUBBER/PORCELAIN SPACERS.



3 TELECOMMUNICATIONS/GROUNDING SYSTEM DIAGRAM
SCALE: NOT TO SCALE



2 FIRE ALARM SYSTEM DIAGRAM
SCALE: NOT TO SCALE

FIRE ALARM SYSTEM SHEET NOTES:

1. ALL INSTALLATION SHALL BE IN CONDUIT. WIRING SHALL BE PER MANUFACTURER'S RECOMMENDATION. MINIMUM CONDUIT SIZE SHALL BE 3/4".
2. SUBMIT SHOP DRAWINGS TO LOCAL FIRE MARSHAL FOR APPROVAL PRIOR TO START OF ANY WORK.
3. NO WORK TO BE STARTED WITHOUT THE APPROVAL OF THE FIRE MARSHAL.
4. PROVIDE FIRE ALARM SYSTEM DEVICES AS SHOWN ON PLAN AND REQUIRED BY AUTHORITY HAVING JURISDICTION.
5. FOR LOCATION AND QUANTITY OF DEVICES, SMD.
6. FIRE ALARM SYSTEM SHALL BE UNDER DEFERRED PERMITTING.

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–12–10	BPC2

One Namak Shivaya

NEW BUILDING "C" - PHASE 1B
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POWER AND SIGNAL PLAN
TELECOMM/FIRE ALARM
SYSTEM DIAGRAMS

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

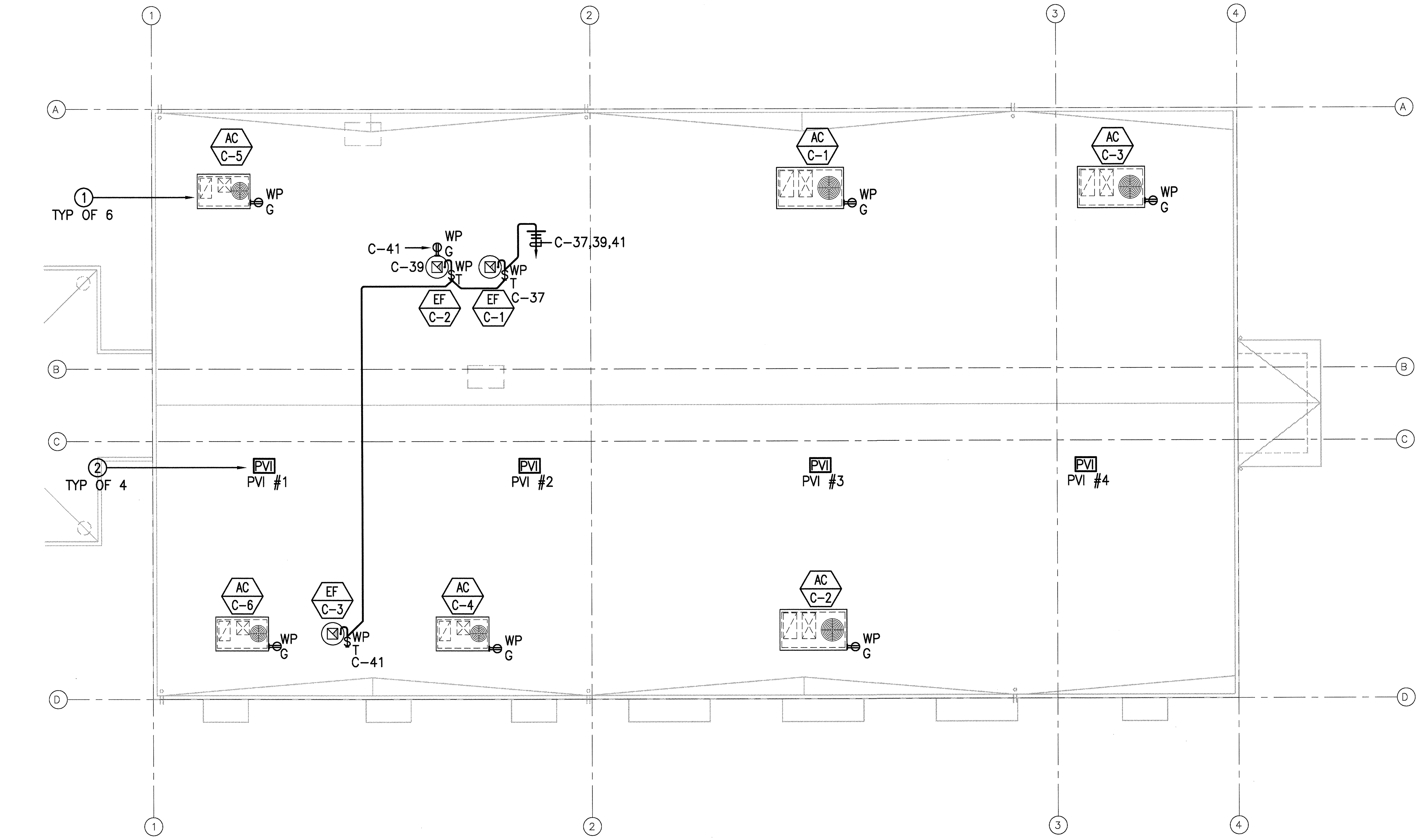
REGISTERED PROFESSIONAL ENGINEER SATISH S. PAMIDI No. E10472 Exp. 12/31/10 ELECTRICAL STATE OF CALIFORNIA

E-14B

PLANCHECK RESUBMITTAL #2

SHEET NOTES

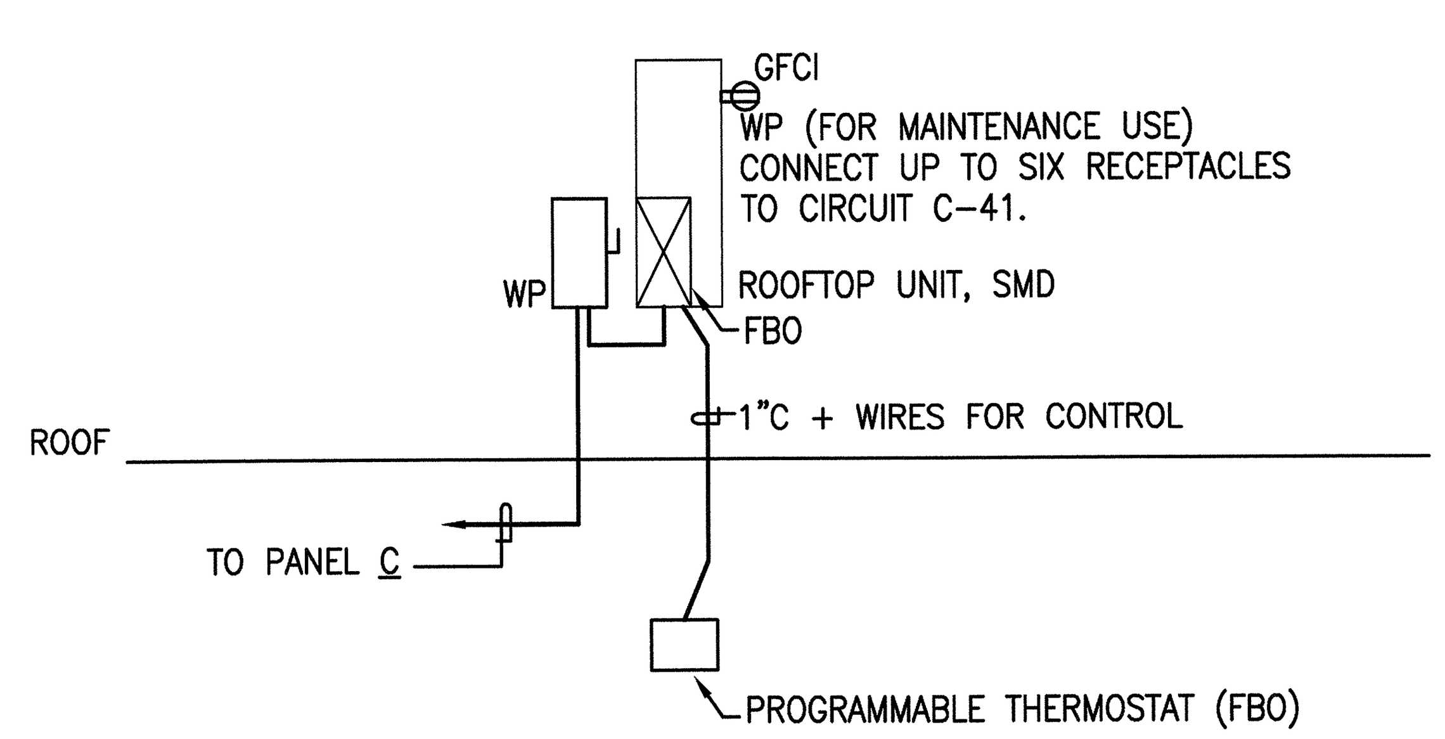
1. FOR WIRING AND DISCONNECT SWITCH REQUIREMENTS FOR HVAC ROOF TOP UNITS, SEE DETAIL 2 THIS SHEET AND SCHEDULE PANEL "C".
2. PHOTO–VOLTAIC SYSTEM IS DESIGN–BUILD UNDER SEPARATE PERMIT. LOCATION OF SYSTEM INVERTERS SHALL BE VERIFIED WITH PROVIDER.



BUILDING C - PHASE 1B
ELECTRICAL ROOF PLAN

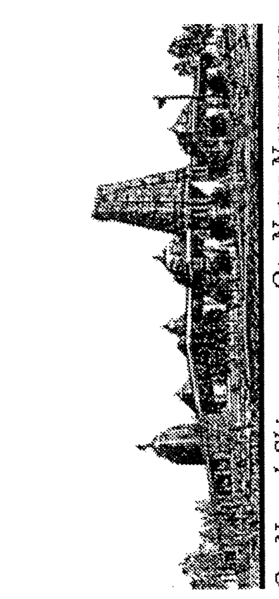
TOTAL 7800 SQ. FT.
SCALE:1/8"=1'-0"

GRAPHIC SCALES: 1/8" = 1'-0"



2 ROOFTOP HVAC UNIT WIRING DIAGRAM - TYPICAL
SCALE: NOT TO SCALE

REVISIONS	BY
A 05–24–10	HCCC
B 08–02–10	BPC
C HEALTH DEPT PLAN CHECK 08–26–10	HDPC
D 09–22–10	BPC
E 10–12–10	BPC2



NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers

ELECTRICAL ROOF PLAN

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER
SATISH S. PAMIDI
No. E10472
Exp. 12/31/10
ELECTRICAL
STATE OF CALIFORNIA

E-15B

GENERAL NOTES

1. WORK PROVIDED UNDER THIS DIVISION SHALL BE IN CONFORMANCE WITH THE APPLICABLE PORTION OF THE 2007 CBC, CMC, CFC, NEC, 2008 TITLE-24 ENERGY STANDARDS, AND THE CITY OF LIVERMORE AND THE COUNTY REQUIREMENTS.
2. PROVIDE U.L. 555 LISTED FIRE DAMPERS AT ALL DUCT PENETRATION THROUGH THE FIRE RATED ASSEMBLIES. PROVIDE UL-555S LISTED COMBINATION FIRE-SMOKE DAMPERS AT ALL THE OCCUPANCY SEPARATION WALLS AND DUCTS PENETRATING RATED CORRIDOR WALLS & SHAFT ASSEMBLIES IN ACCORDANCE WITH 2007 CBC SECTION 713.10/11. PROVIDE PROPER SLEEVE LENGTHS TO MATCH THE WALL DEPTH. MOUNT ACTUATORS, END SWITCHES, HEAT DETECTOR, SMOKE DETCTORS, ETC. ON ACCESSIBLE SIDE OF FSD.
3. FIRE AND FIRE-SMOKE DAMPERS SHALL BE INSTALLED STRICTLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS. THE MANUFACTURER'S SPECIFICATIONS SHALL BE MADE AVAILABLE TO THE INSPECTING AUTHORITY.
4. ALL PENETRATIONS AT WALLS, CEILINGS, FLOORS, ETC. BY THE DUCTWORK, PIPING, CONDUITS, ETC. SHALL BE SEALED WITH APPROVED U.L. LISTED FIRE STOPPING ASSEMBLIES TO MAINTAIN THE INTEGRITY OF THE FIRE RATING OF THOSE ASSEMBLIES. REFER TO ARCHITECTURAL FLOOR PLANS FOR WALL TYPES & LOCATIONS.
5. ALL MECHANICAL EQUIPMENT, DUCTWORK, PIPING, CONDUITS, TANKS, PACKAGED EQUIPMENT, ETC. SHALL BE SEISMICALLY ANCHORED AND BRACED IN ACCORDANCE WITH CBC, SMACNA REQUIREMENTS.
6. DIVISION-15 CONTRACTOR SHALL COORDINATE THE POWER REQUIREMENT WITH THE DIVISION-16 WORK, INCLUDING THE VOLTAGE, PHASE, AMP REQUIREMENT, OVERLOAD PROTECTION REQUIREMENT, LOCATION OF STARTERS, DISCONNECTS, INTERLOCK WIRING, POWER WIRING TO FSD'S, WIRING TO SMOKE DETECTORS, ACTUATORS, ETC.
7. INSTALL FANS, FIRE DAMPERS & FIRE/SMOKE DAMPERS AND OTHER MECHANICAL COMPONENTS REQUIRING PERIODIC SERVICE & MAINTENANCE ACCESS TO BE COMPLETELY ACCESSIBLE FROM THE CEILING ACCESS PANELS. PROVIDE CODE MANDATED CLEARANCES AT ALL EQUIPMENT & ELECTRICAL PANELS.
8. DIVISION-15 CONTRACTOR SHALL COORDINATE THE LOCATION, SIZE & ELEVATION OF THE CONCRETE HOUSEKEEPING PADS WITH THE CONCRETE WORK BASED ON THE ACTUAL MECHANICAL EQUIPMENT PROPOSED FOR THE PROJECT. CONTRACTOR SHALL ALSO COORDINATE THE LOCATION, SIZE OF THE CONCRETE WALL AND SLAB PENETRATIONS WITH THE RESPECTIVE TRADE CONTRACTORS.
9. THIS DIVISION CONTRACTOR SHALL PROVIDE COMPLETE COOPERATION IN COMMISSIONING OF ALL THE MECHANICAL, ELECTRICAL, PLUMBING AND CONTROL SYSTEMS BY PROVIDING FULLY QUALIFIED PERSONNEL, EQUIPMENT, TESTING TOOLS, MANPOWER AS NECESSARY TO COMPLETE THE COMMISSIONING, TESTING & DOCUMENTATION TASKS AS NECESSARY LEED V2.2 FUNDAMENTAL COMMISSIONING REQUIREMENT.
10. ALL MATERIALS OF CONSTRUCTION INCLUDING SELANTS; WALL, ROOF, & CEILING ELEMENTS; INSULATION; WIRING & CABLES; DEVICES AND EQUIPMENTS; TUBING, ETC. THAT COMES IN CONTACT WITH SUPPLY AIR, OUTSIDE AIR AND RETURN AIR SHALL HAVE A FLAME SPREAD RATING OF NOT MORE THAN 25 AND SMOKE DEVELOPED RATING OF NOT MORE THAN 50.
11. FOR DUCTWORK, PIPING & CONDUIT PENETRATIONS THROUGH SOUND-RATED WALLS REFER TO DETAILS AND LOCATION OF SOUND-RATED WALLS REFER TO ARCHITECTURAL PLANS.
12. AIR-MOVING SYSTEMS SUPPLYING AIR IN EXCESS OF 2,000 CFM TO ENCLOSED SPACES WITHIN THE BUILDING SHALL BE EQUIPPED WITH AN AUTOMATIC SHUTOFF IN COMPLIANCE WITH UMC SECTION 609. THE AUTOMATIC SHUTOFF SHALL BE ACCOMPLISHED BY INTERRUPTING THE POWER SOURCE OF THE AIR-MOVING EQUIPMENT WHEN SMOKE IS DETECTED IN THE MAIN SUPPLY DUCT CONNECTED TO THE EQUIPMENT.
13. DIVISION-15 CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE T-24 MANDATORY POST-INSTALLATION TESTING AND COMPLIANCE VERIFICATION AND DOCUMENTING, THE ECONOMIZER OPERATION, OUTSIDE AIR MEASUREMENT FOR EACH EACH, DUCT LEAKAGE TESTING AND DOCUMENTATION AND CONTROL SYSTEM OPERATION PER THE 2008 T-24 REQUIREMENTS.
14. LEED COMPLIANCE REQUIREMENTS: COMPLY WITH THE MANDATORY REQUIREMENTS AND OPTIONAL LEED COMPLIANCE REQUIREMENTS AS OUTLINED BELOW FOR MECHANICAL AND PLUMBING SYSTEMS. REFER TO OTHER LEED COMPLIANCE REQUIREMENTS SPECIFIED IN THE LEED CHECKLIST TITLED "LEED FOR NEW CONSTRUCTION v2.2 WORKSHEET FOR HINDU COMMUNITY AND CULTUREAL CENTER PHASE-1B BUILDING-C ADMINISTRATION BUILDING, ADDRESS:1232 ARROWHEAD AVENUE".

	CREDIT#	POINTS	DESCRIPTION
–	WEc3.1	1	WATER USE REDUCTION, 20% REDUCTION
–	EAcP1	MANDATORY	FUNDAMENTAL COMMISSIONING OF THE BUILDING ENERGY SYSTEMS
–	EAp2	MANDATORY	MINIMUM ENERGY PEFORMANCE 9TITLE-24 COMPLIANCE)
–	EAp3	MANDATORY	FUNDAMENTAL REFRIGERANT MANAGEMENT (NO CFC & HCFC)
–	EAc1	2	OPTIMIZE ENERGY PERFORMANCE (14% BETTER THAN 2008 TITLE-24)
–	EQp1	MANDATORY	MINIMUM IAQ PERFORMANCE. COMPLY WITH ASHRAE 62.1 FOR VENTILATION.
–	EQc3.1	1	CONSTRUCTION IAQ MANAGEMENT PLAN, DURING CONSTRUCTION.
–	EQc3.2	1	CONSTRUCTION IAQ MANAGEMENT PLAN, BEFORE OCCUPANCY.
–	EQc5	1	INDOOR CHEMICAL & POLLUTANT SOURCE CONTROL.

DRAWING LIST – BUILDING "C"

DWG. NO.	DESCRIPTION
M10.0B	MECHANICAL LEGEND, DRAWING INDEX, GENERAL NOTES
M11.1B	MECHANICAL EQUIPMENT SCHEDULES
M11.2B	MECHANICAL EQUIPMENT SCHEDULES
M11.3B	SPECIFICATIONS
M11.4B	SPECIFICATIONS
M13.0B	MECHANICAL PLAN – BUILDING C
M14.0B	MECHANICAL ROOF PLAN – BUILDING C
M15.0B	MECHANICAL DETAILS – BUILDING C
T24.1	TITLE-24 COMPLIANCE FORMS – OUTDOOR LIGHTING ONLY
T24.1B	TITLE-24 COMPLIANCE FORMS
T24.2B	TITLE-24 COMPLIANCE FORMS
T24.3B	TITLE-24 COMPLIANCE FORMS
T24.4B	TITLE-24 COMPLIANCE FORMS
T24.5B	TITLE-24 COMPLIANCE FORMS
T24.6B	TITLE-24 COMPLIANCE FORMS
T24.7B	TITLE-24 COMPLIANCE FORMS

B

ABBREVIATIONS

ABBR	DESCRIPTION
ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR (DUCT)
AFMD	AIR FLOW MEASURING DEVICE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ACCESS PANEL (WALL OR CEILING)
ARCH	ARCHITECTURAL
AS	AIR SEPARATOR
ASD	AUTOMATIC SMOKE DAMPER
AVD	AUTOMATIC VOLUME DAMPER
BDD	BACKDRAFT DAMPER
BHP	BRAKE HORSEPOWER
BOD	BOTTOM OF DUCT
BAS	BUILDING AUTOMATION SYSTEM
BTUH	BRITISH THERMAL UNITS PER HOUR
CBBD	COUNTER BALANCED BACKDRAFT DAMPER
CC	COOLING COIL
CFF	CAPPED FOR FUTURE
CFM	CUBIC FEET PER MINUTE
CU	OUTDOOR CONDENSER UNIT
DB	DRY BULB
DDC	DIRECT DIGITAL CONTROL
DEFL	DEFLECTION
E	EXISTING
EA,OA	EXHAUST AIR, OUTSIDE AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ET	EXPANSION TANK
FCU	FAN COIL UNIT
EWT	ENTERING WATER TEMPERATURE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FLA	FULL LOAD AMPS
FPM	FEET PER MINUTE
FPS	FEET PER SECOND
FSG	FLOOR SUPPLY GRILLE
FT	FEET
GPM	GALLONS PER MINUTE
HW	HEATING HOT WATER
HC	HEATING COIL
HP	HORSE POWER
HWP	HEATING WATER PUMP
HV	HEATING & VENTILATING
KW	KILOWATT
LAT	LEAVING AIR TEMPERATURE
LEED	LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (USGBC)
LRA	LOCKED ROTOR AMPS
LVL	LEVEL
LWT	LEAVING WATER TEMPERATURE
MBH	THOUSAND BTU PER HOUR
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CONTROL PANEL
MFR	MANUFACTURER
NC	NORMALLY CLOSED OR NOISE CRITERIA
NIMC	NOT IN MECHANICAL CONTRACT
NO	NORMALLY OPEN
OBD	OPPOSED BLADE DAMPER
OPER WT	OPERATING WEIGHT
OPP	OPPOSITE
PCD	PRIMARY CONDENSATE DRAIN
PD	PRESSURE DROP
PH	PHASE
PRESS	PRESSURE
PSIG	POUNDS PER SQUARE INCH
RA,SA	RETURN AIR, SUPPLY AIR
REF	REFERENCE
RF	RETURN FAN
RHC	REHEAT COIL
RPM	REVOLUTIONS PER MINUTE
SAD	SEE ARCHITECTURAL DRAWINGS
SCD	SECONDARY CONDENSATE DRAIN
SF	SUPPLY FAN
S.F.	SQUARE FEET
SN	SHEET NOTES
SP	STATIC PRESSURE
ST	SOUND TRAP
STR	STRAINER
TCV	TEMPERATURE CONTROL VALVE
TCP	TEMPERATURE CONTROL PANEL
TD	TEMPERATURE DIFEERENCE
TEF	TOILET EXHAUST FAN
TEMP	TEMPERATURE
TDH	TOTAL DYNAMIC HEAD
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
V	VAV TERMINAL OR VOLT
VEL	VELOCITY
VFD	VARIABLE FREQUENCY DRIVE
VIB	VIBRATION ISOLATOR
WB	WET BULB
WG	WATER GAUGE
WMS	WIRE MESH SCREEN
XFMR	TRANSFORMER
OA	OUTSIDE AIR
SD	DUCT SMOKE DETECTOR

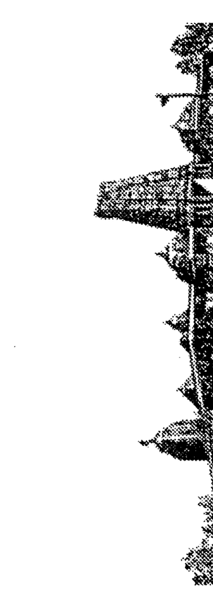
LEGEND

SYMBOL	ABBR	DESCRIPTION
1 / M-1		DETAIL NUMBER / DRAWING NUMBER
1 / M7.01		SECTION NUMBER / DRAWING NUMBER
AC / 1		EQUIPMENT IDENTIFICATION / EQUIPMENT NUMBER
(E)		EXISTING
(N)		NEW
	CSD/CMS	CEILING SUPPLY DIFFUSER
	CER (G)	CEILING EXHAUST REGISTER(GRILLE)
	CRR/CMR (G)	CEILING RETURN REGISTER(GRILLE)
	WSR	WALL SUPPLY REGISTER
	WER (G)	WALL EXHAUST REGISTER (GRILLE)
	WRR (G)	WALL RETURN REGISTER (GRILLE)
		SECTION THRU SUPPLY OR OUTSIDE AIR DUCT
		SECTION THRU RETURN DUCT
		SECTION THRU EXHAUST DUCT
		AIR OUTLET DESIGNATION CODE (SEE SCHEDULE)
CODE / SIZE CFM	FSR	FLOOR SUPPLY REGISTER
DIFFUSER TYPE (SEE SCHEDULES); CODE / SIZE CFM; NECK SIZE (SEE PLANS)		AIR OUTLET DESIGNATION
OR CER1/CRR1/ CRG1; CEG1 / SIZE CFM; DUCT SIZE	EXHAUST/RETURN OUTLET	
CODE / 1-3.0-5 CFM; SUPPLY PLENUM LENGTH(FT.); SLOT WIDTH; NO. OF SLOT		LINEAR DIFFUSER DESIGNATION

LEGEND

SYMBOL	ABBR	DESCRIPTION
	R (D)	DUCT RISE OR DROP
OR	AL(PL)	ACOUSTICAL LINING (PLENUM LINING)
		DUCT ENCLOSED IN GYP. BOARD ENCLOSURE (SEE ARCHITECTURAL DWGS)
		DIRECTION OF AIRFLOW
	FC	FLEXIBLE DUCT CONNECTION
		FLEXIBLE DUCT FOR SUPPLY (FLEXIBLE DUCT CONNECTION FOR EXHAUST)
AVD	AVD	AUTOMATIC VOLUME DAMPER
	ASD(SD)	AUTOMATIC SMOKE DAMPER
CBBDD	CBBDD	COUNTER BALANCED BACK DRAFT DAMPER
FD	FD	FIRE DAMPER
BDD	BDD	BACK DRAFT DAMPER
FSD	FSD	COMBINATION FIRE/SMOKE DAMPER WITH ACTUATOR
	VD	VOLUME DAMPER
	VD	VOLUME DAMPER WITH REMOTE REGULATOR
OR	TV	TURNING VANES
	BP	BEAM PENETRATION
		ACCESS PANEL
		SQUARE TO ROUND DUCT
		REDUCING TRANSITION
OR		REDUCING TRANSITION
UC		UNDERCUT DOOR – SEE ARCH. DWGS.
T		THERMOSTAT
TS		TEMPERATURE SENSOR
DSD, SD	SD	DUCT SMOKE DETECTOR
		LINE CONTINUED
	CFF	CAPPED FOR FUTURE
	UP	PIPING UP
	DN	PIPING DOWN
SL	SL	REFRIGERANT SUCTION LINE
LL	LL	REFRIGERANT LIQUID LINE
CD	CD	CONDENSATE DRAIN
G	G	NATURAL GAS
D	D	DRAIN
	TF	TEST FITTING
		UNION
	PG	PRESSURE GAUGE
	TH	THERMOMETER
	GV	GATE VALVE
	BV	BUTTERFLY (2 1/2" OR LARGER), (BALL VALVE 2" OR SMALLER)

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2



NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
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Ajmani & Pamidi Inc.
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MECHANICAL LEGEND
DWG INDEX, GEN. NOTES
PHASE 1-B

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
ARROWHEAD

M10.0B

No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

PAKAGED ROOFTOP AIR CONDITIONING UNIT SCHEDULE

MANUFACTURER: Trane, Carrier or Approved Equal

CODE	MODEL	COOLING CAPACITY			COOLING COIL				GAS HEATING CAPACITY		SUPPLY FAN						FILTERS					POWER EXHAUST FAN						UNIT ELECTRICAL			EER/AFUE	OPER. WEIGHT LBS.	REMARKS
		TONS	SENS MBH	TOTAL MBH	EAT DB	EAT WB	LAT DB	LAT WB	INPUT (MBH)	OUTPUT (MBH)	CFM	ESP (In.W.G.)	RPM	BHP	HP	MIN. OA CFM	TYPE	QTY	PD CLEAN	PD DIRTY	EFF/MERV	TYPE & MODEL NO.	CFM	SP (In.W.G.)	BHP	HP	RPM	MCA	MOCP	V/PH/HZ			
AC-C-1	YHC-048-E3	4	37.28	49.45	80	67	60	57.6	60	48	1,600	0.8	837	0.42	0.31 kW	300	2"	–	0.35	1"	85/MERV-13	TRANE	1,600	0.375	0.42	0.31 kW		28.30	–	208/3PH/60	15 / 81	1,200	① THRU ⑫
AC-C-2	YHC-048-E3	4	37.28	49.45	80	67	60	57.6	60	48	1,600	0.8	837	0.42	0.31 kW	270	2"	–	0.35	1"	85/MERV-13	TRANE	1,600	0.375	0.42	0.31 kW		28.30	–	208/3PH/60	15 / 81	1,200	
AC-C-3	YHC-036-E3	3	27.8	37.15	80	67	59.95	57.54	60	48	1,200	0.5	832	0.32	0.24 kW	240	2"	–	0.35	1"	85/MERV-13	TRANE	1,200	0.375	0.32	0.24 kW		21.90	–	208/3PH/60	15 / 81	1,000	
AC-C-4	YHC-036-E3	3	27.8	37.15	80	67	59.95	57.54	60	48	1,200	0.5	832	0.32	0.24 kW	440	2"	–	0.35	1"	85/MERV-13	TRANE	1,200	0.375	0.32	0.24 kW		21.90	–	208/3PH/60	15 / 81	1,000	
AC-C-5	YHC-036-E3	3	27.8	37.15	80	67	59.95	57.54	60	48	1,200	0.5	832	0.32	0.24 kW	240	2"	–	0.35	1"	85/MERV-13	TRANE	1,200	0.375	0.32	0.24 kW		21.90	–	208/3PH/60	15 / 81	1,000	
AC-C-6	YHC-036-E3	3	27.8	37.15	80	67	59.95	57.54	60	48	1,200	0.5	832	0.32	0.24 kW	240	2"	–	0.35	1"	85/MERV-13	TRANE	1,200	0.375	0.32	0.24 kW		21.90	–	208/3PH/60	15 / 81	1,000	

NOTES:

① UNIT LOCATED ON MAIN ROOF ON 14" ROOF CURB.

② UNIT WITH R-410A REFRIGERANT, Al/CU COND & EVAP COILS

③ SEER LISTED AT STANDARD CONDITIONS.

④ UNIT SELECTION BASED ON 95 F AMBEINT.

⑤ BOTTOM SUPPLY AND RETURN DISCHARGE.

⑥ FACTORY INSTALLED OSA ECONOMIZER CONTROL & POWER EXHAUST & SINGLE-POINT POWER SUPPLY.

⑦ PROVIDE 14" TALL WELDED STEEL CURB, 2007 CBC COMPLIANT, MICROMETL CORP. SERIES OR EQUAL TO MATCH THE AC UNIT SIZE.

⑧ PROVIDE HINGED AND INSULATED ACCESS DOOR AND 2-INCH THICK MERV 13 FILTERS.

⑨ PROVIDE MATCHING ELECTRONIC PROGRAMMABLE, T-24 COMPLIANT 7-DAY WALL THERMOSTAT.

⑩ PROVIDE FACTORY FURNISHED OUTSIDE AIR HOOD AND EXHAUST AIR HOOD AT AC UNIT AIR INLET AND EXHAUST (TYP).

⑪ PROVIDE GAS PRESSURE REGULATOR IF REQUIRED.

⑫ AC UNITS SHALL BE PROVIDED WITH DEMAND CONTROL VENTILATION OPTIONAL PACKAGE AND ROOM CO2 SENSOR TO MODULATE OPEN THE OUTSIDE AIR DAMPER BETWEEN MINIMUM AND MAX SETTINGS (ADJUSTABLE) TO LIMIT THE AMOUNT OF CO2 LEVEL IN THE OCCUPIED SPACE PER T-24.

EXHAUST FAN SCHEDULE

MFR: GREENHECK

CODE	SYSTEM	SERVICE	LOCATION	CFM	TOTAL SP IN. WC	RPM	BHP	MODEL NO./ SIZE	TYPE	ROOF CURB THROAT SIZE LXWXH	POWER REQUIREMENT				OPER. WT LBS	SOUND CRITERIA (SONE)	REMARKS
											MTR HP		VFD	V/PH/HZ			
EF-C-1		BLDG-C, MENS TOILET ROOM EXH.	ROOF	800	0.5	1411	0.12	G-101-A	MUSHROOM	14X14	1/4		NO	120V/1ø	80	12	① ② ③
EF-C-2		BLDG-C, WOMENS TOILET ROOM EXH.	ROOF	700	0.5	1380	0.12	G-101-A	MUSHROOM	14X14	1/4		NO	120V/1ø	80	12	① ② ③
EF-C-3		BLDG-C, COPIER ROOM EXH.	ROOF	300	0.5	1180	0.10	G-101-A	MUSHROOM	14X14	1/4		NO	120V/1ø	80	10	① ② ③

REMARKS:

① PROVIDE FACTORY MATCHED 8" ROOF CURB, FLASHING AND COUNTERFLASHING. SECURE CURB TO THE ROOF STRUCTURE WITH GALV. STEEL ANCHOR BOLTS.

② EXHAUST FANS SHALL BE FACTORY FURNISHED WITH BACKDRAFT DAMPER. FACTORY WIRED SPEED CONTROLLER.

③ EXHAUST FANS SHALL BE CONTROLLED FROM A CENTRALLY LOCATED ELECTRONIC PROGRAMMABLE TIME CLOCK.

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

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Mechanical & Electrical Engineers
101 California St. Suite 2035
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MECHANICAL
EQUIPMENT SCHEDULES
PHASE 1-B

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
ARROWHEAD

M11.1B

REGISTERED PROFESSIONAL ENGINEER
KUPPU G. SRINIVAS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

PLANCHECK RESUBMITTAL #2

FIRE SMOKE DAMPERS SCHEDULE

MFR: RUSKIN

CODE	MODEL NO.	DESCRIPTION
FSD-1	FSD-60	COMBINATION FIRE/SMOKE DAMPER UL 555S CLASSIFIED AND CLASS I LEAKAGE RATED AND TESTED. PROVIDE 120V ELECTRIC MOTOR ACTUATOR TS 150 FIRESTAT AND MOUNTING ANGLES. FSD TO HAVE PRIMARY HEAT SENSING DEVICE SET AT 165°F AND SECONDARY HEAT SENSING DEVICE SET AT 350°F. POWER OPEN, FAIL CLOSE TYPE. CALIFORNIA STATE FIRE MARSHAL LISTING NUMBER 3225-245-102. FSD SHALL INCLUDE REMOTE POSITION INDICATOR LIGHT PLATE AFFIXED TO THE CEILING TILE.

VIBRATION ISOLATOR SCHEDULE

MANUF: MASON OR APPROVED EQUAL

EQUIPMENT	TYPE	SERVICE	LOCATION	ISOLATOR		BASE		SEISMIC	MODEL NO. ISOLATOR/SEISMIC	REMARKS
				CODE	S.D.	CODE	WT#	RESTRAINTS		
AC-C-1	ROOFTOP ACU	BUILDING C	ROOF	N-1	1/4"	–	–	ANCHOR BOLTS	–	①②③④
AC-C-2	ROOFTOP ACU	BUILDING C	ROOF	N-1						
AC-C-3	ROOFTOP ACU	BUILDING C	ROOF	N-1						
AC-C-4	ROOFTOP ACU	BUILDING C	ROOF	N-1						
AC-C-5	ROOFTOP ACU	BUILDING C	ROOF	N-1						
AC-C-6	ROOFTOP ACU	BUILDING C	ROOF	N-1						
EF-C-1	MUSHROOM	TOILET EXH	ROOF	N-1	1/8"	–	–	ANCHOR BOLTS		①②③④
EF-C-2	MUSHROOM	TOILET EXH	ROOF	N-1	1/8"	–	–	ANCHOR BOLTS		①②③④
EF-C-3	MUSHROOM	COPY ROOM EXH	ROOF	N-1	1/8"	–	–	ANCHOR BOLTS		①②③④⑤

NOTES:

① FANS LOCATED INSIDE THE EQUIPMENT SHALL BE INTERNALLY ISOLATED.

② ANCHOR BOLTS AND ISOLATORS EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED OR PROTECTED WITH EXTERIOR GRADE ENAMEL PAINT.

③ NEOPRENE SUPER-W PAD ISOLATORS SHALL BE LOCATED BETWEEN THE ROOF CURB AND THE UNIT BASE TO SEAL AND ISOLATE. INSTALL PER MANUFACTURERS' GUIDELINES.

④ UNITS WITH FACTORY FURNISHED MATCHING ROOF CURB. SEE EQUIPMENT SCHEDULE.

⑤ PROVIDE WALL MOUNTED LOCAL EXHAUST SWITCH. WIRED BY DIVISION-16.

AIR OUTLET SCHEDULE

MFR: TITUS U.O.N.

CODE	MODEL②	DESCRIPTION ①③④
CSD1	PSS	PERFORATED FACE, MODULAR CORE CEILING SUPPLY DIFFUSER, 24"x24" FACE, STEEL CONSTRUCTION. BORDER TYPE TO MATCH CEILING TYPE. PROVIDE OBD WHERE REQUIRED FOR BALANCING AND AS INDICATED ON DRAWINGS. PROVIDE SQUARE TO ROUND TRANSITION FOR CONNECTION TO ROUND DUCT.
CSD2	PSS	SAME AS CSD1 EXCEPT 12"x12" FACE.
CER1, CEG1 CRR1, CRG1	PAR	PERFORATED FACE EXHAUST OR RETURN REGISTER OR GRILLE, 24"x24" FACE, STEEL CONSTRUCTION. BORDER TYPE TO MATCH CEILING TYPE. PROVIDE OBD FOR REGISTERS. PROVIDE LINED PLENUM WITH TOP OR SIDE OUTLET FOR DUCT CONNECTION. PROVIDE ACOUSTICAL BOOT WITH VOLUME DAMPER WHERE SHOWN.
CER2, CEG2 CRR2, CRG2	PAR	SAME AS CER1, CEG1, CRR1, CRG1, EXCEPT 12"x12" OR 18"X18" FACE.

NOTES:

① FINISHES AS SELECTED BY AND APPROVED BY ARCHITECT.

② SUFFIX "-A" DESIGNATES ALUMINUM CONSTRUCTION.

③ ALL AIR OUTLETS SHALL BE SELECTED FOR NC-25, UNLESS MENTIONED OTHERWISE.

④ ALL BRANCH DUCT INLET CONNECTION SIZES SHALL BE THE SAME SIZE AS THE AIR OUTLET DUCT CONNECTION SIZES UNLESS OTHERWISE NOTED. PROVIDE SQUARE TO ROUND DUCT TRANSITION AS REQUIRED.

REVISIONS	BY
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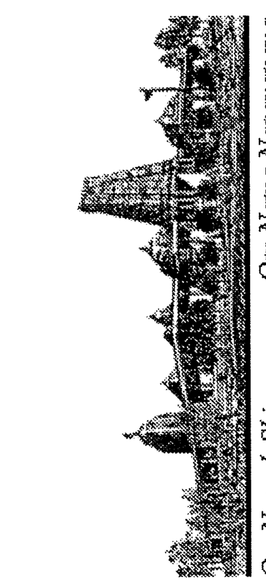
E 10-12-10	BPC2



Om Namah Shivaya   Om Namo Narayanaya

NEW BUILDING "C" - PHASE 1B

HINDU COMMUNITY and CULTURAL CENTER

1200 ARROWHEAD AVE. LIVERMORE, CA 94551

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Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APincSF.com 09021

MECHANICAL
EQUIPMENT SCHEDULES
PHASE 1-B

DATE: 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER
KUPPE G. SRINIVAS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

M11.2B

SECTION 15000

GENERAL REQUIREMENTS - MECHANICAL

PART 1 - GENERAL

1.01 CONDITIONS AND REQUIREMENTS:

A. THE GENERAL CONDITIONS, SUPPLEMENTARY GENERAL CONDITIONS, AND DIVISION 1 - GENERAL REQUIREMENTS OF THE CONTRACT DOCUMENTS ARE HEREBY MADE A PART OF THIS SECTION OF THE SPECIFICATIONS AS FULLY AS IF REPEATED HEREIN.

1.02 DESCRIPTION OF WORK:

A. PROVIDE ALL LABOR, EQUIPMENT AND MATERIALS THAT ARE REQUIRED, TO PROVIDE A COMPLETE, PROPERLY OPERATING AND SAFE MECHANICAL, PLUMBING, AND FIRE PROTECTION INSTALLATION. THE EXTENT OF THE WORK IS INDICATED ON THE DRAWINGS AND AS DESCRIBED IN THESE SPECIFICATIONS, SHALL INCLUDE ALL THAT MAY BE REASONABLY INFERRED TO BE REQUIRED FOR PROPER EXECUTION OF INSTALLATION WORK AND/OR SYSTEMS' OPERATION.

B. VERIFY SIZES, CAPACITIES, AND LOCATION OF ALL SERVICES AND UTILITIES BEFORE PROCEEDING WITH CONSTRUCTION.

C. PROVIDE CUTTING AND PATCHING AS REQUIRED FOR EXECUTION OF WORK PERFORMED UNDER THIS SECTION UNLESS SPECIFICALLY PROVIDED FOR, UNDER OTHER SECTIONS.

D. REPAIR OR REPLACE, TO THE SATISFACTION OF THE OWNER, ANY DAMAGE TO WORK OF THIS SECTION, DAMAGE CAUSED BY LEAKS OR BREAKS IN SYSTEMS OF THIS SECTION, AND DAMAGE CAUSED BY WORK OF THIS SECTION.

E. COORDINATE WITH WORK PERFORMED BY OTHER SECTIONS, IN ORDER TO ACCOMMODATE THE REQUIREMENTS OF THIS SECTION, AND TO ASSURE ADEQUATE SPACE AND PROPER LOCATION FOR ALL NECESSARY WORK OF THIS PROJECT WHETHER OR NOT WORK IS UNDER THIS SECTION.

F. PROVIDE ALL NECESSARY RIGGING EQUIPMENT AND MANPOWER TO SET NEW EQUIPMENT AND MATERIALS IN PLACE.

G. PROVIDE ALL SEISMIC RESTRAINTS REQUIRED BY CODE, OR THIS SPECIFICATION, FOR ALL EQUIPMENT, DUCT, PIPE, AND MATERIALS FURNISHED UNDER THIS SECTION. THIS CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE RESTRAINTS AND FOR PROOF OF ADEQUACY OF THE RESTRAINTS. EQUIPMENT, DUCTWORK, AND PIPING SHALL BE RESTRAINED IN ALL DIRECTIONS TO HANDLE 0.5G LOAD.

H. PREPARE AND SUBMIT TO THE ARCHITECT LARGE SCALE (MINIMUM 1/4" = 1'-0") COORDINATION DRAWINGS OF ALL CONGESTED AREAS SHOWING LOCATION AND ELEVATIONS OF ALL DUCTS, PIPING, CONDUITS, STRUCTURAL, AND OTHER ITEMS IN THE AREA. THESE DRAWINGS SHALL BE FULLY COORDINATED WITH OTHER TRADES. CHECK ROUTING AND ELEVATIONS OF ALL DUCTWORK AND EQUIPMENT BEFORE FABRICATING. REPORT ANY CONFLICTS THAT CANNOT BE SOLVED IN THE FIELD TO THE ARCHITECT. EXTRA CHARGES SHALL NOT BE ALLOWED DUE TO LACK OF COORDINATION PRIOR TO, OR DURING, CONSTRUCTION.

I. VALVES AND TRIM NOT SPECIFICALLY INDICATED BUT REQUIRED FOR PROPER FUNCTIONING AND BALANCING OF EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY THE CRAFT FURNISHING THE EQUIPMENT.

J. PROVIDE ALL LABOR AND MATERIAL REQUIRED TO SET AND ADJUST THE INSTALLATION SO THAT IT PERFORMS IN ACCORDANCE WITH THE DESIGN INTENT INCLUDED IN THE DRAWINGS AND THESE SPECIFICATIONS.

K. T-24 & LEED COMPLIANCE: COMPLY WITH THE COMPLIANCE REQUIREMENTS OF T-24 AND LEED FOR NEW CONSTRUCTION v2.2 (USGBC), INCLUDING THE PRE-REQUISITE AND THE OPTIONAL CREDIT POINT REQUIREMENTS UNDER WATER EFFICIENCY, ENERGY & ATMOSPHERE, AND INDOOR ENVIRONMENTAL QUALITY CATEGORIES TO ACHIEVE TARGETTED CERTIFICATION GOALS FOR THE BUILDING PER THE ATTACHED CHECKLIST. CONTRACTOR SHALL INCLUDE IN THE BID PRICE TO PROVIDE MATERIAL. LABOR, TESTING, COMMISSIONING, DOCUMENTATION, CERTIFICATION AS REQUIRED BY CEC, USGBC & CITY OF LIVERMORE.

1.03 CODES AND STANDARDS:

A. THE WORK INSTALLED UNDER THIS SECTION SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES, REGULATIONS, AND STANDARDS.

B. DO NOT CONSTRUE ANYTHING CONTAINED IN THESE SPECIFICATIONS OR DRAWINGS TO PERMIT WORK TO BE INSTALLED THAT DOES NOT CONFORM TO CODE.

C. CONSIDER INTERPRETATIONS AND RULINGS OF THE ENFORCING AGENCIES AS PART OF THESE SPECIFICATIONS IF COMMONLY KNOWN TO THE TRADE.

D. COMPLY WITH DRAWINGS AND SPECIFICATIONS SHOWING WORK EXCEEDING MINIMUM CODE REQUIREMENTS.

E. THE CONTRACTOR SHALL FURNISH, WITHOUT ANY EXTRA CHARGE, ADDITIONAL MATERIALS AND LABOR REQUIRED FOR THE COMPLIANCE WITH ANY RULES AND REGULATIONS.

F. CEC/T-24, LEED V2.2 REQUIREMENTS AND CITY OF LIVERMORE REQUIREMENTS.

1.04 QUALITY ASSURANCE:

A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF THE SPECIFIED PRODUCTS, OF TYPES, MATERIALS, AND SIZES REQUIRED, AND WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.

B. CONTRACTOR'S QUALIFICATIONS: REGULARLY ENGAGED IN CONSTRUCTION ON PROJECTS OF SIMILAR SIZES USING TYPES OF EQUIPMENT, MATERIAL AND METHODS AS SPECIFIED HEREIN - FOR MINIMUM OF 5 YEARS. A LETTER FROM THE CONTRACTOR CERTIFYING THESE QUALIFICATIONS MUST BE PROVIDED TO THE OWNER/ARCHITECT BEFORE SIGNING THE CONSTRUCTION CONTRACT.

C. BY ACCEPTING TO WORK, THE CONTRACTOR AGREES THAT HE HAS UNDERSTOOD THE INTENT OF THE DESIGN AND IS REASONABLY SURE THAT IT CAN BE ACCOMPLISHED BY PROCEEDING IN ACCORDANCE WITH THESE DRAWINGS AND SPECIFICATIONS.

1.05 DRAWINGS AND SPECIFICATIONS:

A. CONSIDER ALL DRAWINGS AND ALL DIVISIONS OF THIS SPECIFICATION AS A WHOLE AND PROVIDE WORK OF THIS DIVISION SHOWN ANYWHERE THEREIN.

B. ABSOLUTE ACCURACY OF THE DRAWINGS AND SPECIFICATIONS IS NOT GUARANTEED. WHILE REASONABLE EFFORT HAS BEEN MADE TO COORDINATE THE LOCATION OF EQUIPMENT AND MATERIALS WITH THE STRUCTURE AND OTHER TRADES, IT IS THE RESPONSIBILITY OF THIS CONTRACTOR TO COORDINATE EXACT REQUIREMENTS AND LOCATIONS AS GOVERNED BY ACTUAL JOB CONDITIONS, MANUFACTURER'S RECOMMENDATIONS ETC. CHECK ALL INFORMATION AND REPORT ANY DISCREPANCIES TO THE ARCHITECT BEFORE FABRICATION OR PURCHASING ANY EQUIPMENT AND IN TIME TO AVOID UNNECESSARY WORK.

1.06 LICENSES, PERMITS AND FEES:

A. PROVIDE, PROCURE, AND PAY FOR ALL PERMITS, SERVICES, METERS, LICENSES, FEES, ETC., REQUIRED FOR PERFORMANCE OF WORK OF THIS SECTION.

B. UPON COMPLETION OF THE WORK, DELIVER TO THE ARCHITECT, ALL CERTIFICATES OF APPROVAL SIGNED BY THE CONTROLLING AUTHORITIES.

1.07 VISIT TO PREMISES:

A. PRIOR TO SUBMISSION OF BID, VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS. NO EXTRA PAYMENT WILL BE MADE FOR ADDITIONAL WORK THAT WOULD HAVE BEEN MADE NECESSARY BY CONTRACTOR'S FAILING TO PROPERLY OBSERVE THE EXISTING CONDITIONS.

1.08 SUBMITTAL DATA:

A. PRODUCT DATA:

1. SUBMIT MANUFACTURER'S SPECIFICATIONS, DATA SHEETS, CERTIFIED DRAWINGS, AND INSTALLATION INSTRUCTIONS FOR EQUIPMENT, MATERIALS, AND FIXTURES SPECIFIED. INCLUDE PHYSICAL AND PERFORMANCE DATA SUCH AS WEIGHTS, SIZES, CAPACITIES, REQUIRED CLEARANCES, PERFORMANCE CURVES, ACOUSTICAL CHARACTERISTICS, FINISHES, COLOR SELECTION, AND ACCESSORIES. INCLUDE CERTIFIED DRAWINGS ON MAJOR EQUIPMENT SUCH AS AC-UNITS, WATER HEATERS, PUMPS, TANKS, BOILERS AND CONTROLS.

2. SUBMIT ALL ITEMS FROM EACH SECTION OF THE WORK AT ONE TIME, IF POSSIBLE, BUT DO NOT DELAY SUBMITTALS FOR LACK OF ONE OR TWO ITEMS.

3. PREPARE BINDERS FOR PRODUCT DATA, BROCHURES, CATALOG CUTS, ETC., IN THE FOLLOWING SEQUENCE:

   a) INDEX SHEET (WITH EACH ITEM CROSS-IDENTIFIED WITH REFERENCE TO CONTRACT DOCUMENTS AND THE DIVIDER TAB NUMBER).

   b) DIVIDER TAB #1 (WITH ITEM IDENTIFICATION, SUCH AS "AC-1").

   c) THE BROCHURE, PRODUCT DATA SHEET, OR CATALOG CUT FOR THE ITEM.

   d) THE REPEAT b) AND c), ABOVE FOR EACH ITEM OF THE SUBMITTAL (SUCH AS "P-2", "P-3").

4. PRODUCT DATA:

   a) SUBMIT MANUFACTURER'S SPECIFICATIONS, DATA SHEETS & CERTIFIED DRAWINGS.

   b) SUBMIT PRODUCTS THAT MEET OR EXCEED THE SPECIFIED MINIMUM ENERGY EFFICIENCY REQUIREMENTS.

B. SHOP DRAWINGS:

1. PREPARE AND SUBMIT PLANS, SECTIONS, DETAILS, AND DIAGRAMS TO REQUIRED SCALES FOR SPECIFIED AREAS. DRAWINGS SHALL BE COORDINATED, DIMENSIONED, AND INDICATE EQUIPMENT, PIPE, DUCT, FIRE PROTECTION, AND ELECTRICAL IN RELATION TO ARCHITECTURAL AND STRUCTURAL FEATURES. INCLUDE MINOR PIPING, DRAINS, AIR VENTS, ETC. INDICATE EXACT LOCATIONS AND ELEVATIONS OF ALL VALVES, PIPING SPECIALTIES, ACCESS DOORS, DAMPERS, ETC. HIGHLIGHT ANY DEVIATIONS IN WORK FROM WHAT IS INDICATED ON THE CONTRACT DRAWINGS.

2. REQUIRED DRAWINGS - HVAC: SUBMIT DRAWINGS, MINIMUM SCALE 1/8" = 1'-0" UNLESS OTHERWISE NOTED.

3. REQUIRED DRAWINGS - PLUMBING: SUBMIT DRAWINGS, MINIMUM SCALE 1/4" = 1'-0".

C. REVIEW AND RESUBMISSIONS:

1. SUBMITTALS MAY BE RETURNED MARKED "NO EXCEPTIONS TAKEN" OR "EXCEPTIONS TAKEN" IN WHICH CASE, RESUBMITTALS ARE NOT REQUIRED, AND WILL NOT BE ACCEPTED.

2. CORRECT AND RESUBMIT IN THE ORIGINAL QUANTITIES REQUIRED ALL SUBMITTALS MARKED "EXCEPTIONS AS NOTED".

3. SUBMITTALS MARKED "NOT ACCEPTABLE" ARE SO MARKED BECAUSE THE SUBMITTAL IS EITHER SO INCORRECT, INCOMPLETE, OR ILLEGIBLE AS TO PREVENT REVIEW; OR CONTAINS INFERIOR PRODUCT NOT COMPLYING WITH THE SPECIFICATIONS. RESUBMIT REJECTED SUBMITTALS ONLY AFTER APPROPRIATE CORRECTIVE MEASURES ARE TAKEN OR EQUAL PRODUCT SUBSTITUTED.

4. SUBMITTALS MARKED "NOT REVIEWED" SHALL INDICATE EXTRA SUBMITTALS THAT WERE NOT REQUIRED TO BE SUBMITTED IN THE FIRST PLACE. THIS ACTION DOES NOT IMPLY ACCEPTANCE OR REJECTION AND CONTRACTOR REMAINS OBLIGATED TO ENSURE THAT THE PRODUCT MEETS DRAWINGS AND SPECIFICATIONS.

5. IDENTIFY ALL RESUBMITTALS AS BEING RESUBMITTALS AND IDENTIFY WITH THE ORIGINAL ARCHITECT'S TRANSMITTAL NUMBER.

1.09 SUBSTITUTIONS:

A. GENERAL:

1. WHERE POSSIBLE, MORE THAN ONE MANUFACTURER OR VENDOR ARE LISTED FOR ACCEPTABLE MATERIALS AND/OR EQUIPMENT TO BE USED IN THE WORK. THE MATERIAL AND/OR EQUIPMENT OF ONE OF THE MANUFACTURERS OR VENDORS MAY BE CITED AND SPECIFIED BY MODEL NAME, NUMBER, OR DESCRIPTION AS THE ESTABLISHED STANDARD. BIDS SHALL BE BASED ON USING ONE OF THE SPECIFIED BRANDS. THE TERM "PRODUCTS" USED BELOW REFERS TO MATERIALS AND EQUIPMENT. WHERE MANUFACTURERS ARE LISTED WITH "OR EQUAL", OR "OR APPROVED SUBSTITUTE", ADDITIONAL MANUFACTURERS MAY BE ACCEPTABLE USING THE SUBSTITUTION PROCEDURES IN THE FOLLOWING PARAGRAPHS.

2. ADJACENT MATERIALS AND SYSTEMS HAVE BEEN DESIGNED AND DETAILED TO ACCOMMODATE THE ESTABLISHED STANDARD MANUFACTURER'S PRODUCTS. ESTABLISHED STANDARD MANUFACTURERS ARE THE ONES LISTED BY NAME ON THE SCHEDULES OR IN THE DRAWINGS. IF ONE OF THE OTHER ACCEPTABLE MANUFACTURERS IS SELECTED BY THE CONTRACTOR, THE CONTRACTOR SHALL DESIGN AND DETAIL ALL CHANGES IN ALL ADJACENT MATERIALS NECESSARY TO ACCOMMODATE THE SELECTED PRODUCTS, AND WHEN APPROVED, SHALL MAKE SUCH CHANGES TO HIS AND OTHER TRADES' WORK AT NO EXTRA COST TO THE OWNER.

B. SUBSTITUTIONS:

1. THE SUCCESSFUL BIDDERS MAY, WITHIN FIFTEEN (15) CALENDAR DAYS AFTER AWARD OF CONTRACT, PROPOSE A SUBSTITUTION OF A MATERIAL OR APPARATUS OTHER THAN THOSE SPECIFIED. PROPOSAL SHALL BE IN WRITING AND SHALL INCLUDE CHANGE IN PRICE, DESCRIPTION, AND SPECIFICATION DATA. ARCHITECT SHALL BE THE SOLE JUDGE AS TO THE MERITS OF THE PROPOSED SUBSTITUTE AND RESERVES THE RIGHT TO ACCEPT OR REJECT IT BASED ON PRICE, QUALITY, PAST PERFORMANCE OR DELIVERY, ETC. AND HIS DECISION CAN NOT BE CHALLENGED. SUBSTITUTION PROPOSALS MADE AFTER FIFTEEN DAYS AFTER AWARD OF CONTRACT WILL NOT BE ACCEPTED.

2. PRESENT EACH SUBSTITUTION INDIVIDUALLY. IF A PROPOSED SUBSTITUTE IS NOT FOUND TO BE ACCEPTABLE, THEN THE SPECIFIED ITEM MUST BE SUPPLIED.

3. FAILURE BY THE CONTRACTOR TO ORDER MATERIALS OR EQUIPMENT IN A TIMELY MANNER WILL NOT CONSTITUTE JUSTIFICATION FOR SUBSTITUTION.

4. IF CHANGES TO ADJACENT MATERIALS ARE REQUIRED TO ACCOMMODATE A SUBSTITUTED PRODUCT, ALL THE REQUIREMENTS OF A2 ABOVE APPLY.

1.10 SPACE REQUIREMENTS:

A. CONSIDER ALL SPACE REQUIREMENTS FOR ALL WORK INDICATED IN THE CONTRACT DOCUMENTS AND SUBSEQUENT DRAWINGS BEFORE INSTALLING ANY PORTIONS OF THE WORK. SPACE CONFLICTS WHICH OCCUR DURING OR AFTER INSTALLATION OF WORK, CAUSED BY FAILURE TO CONSIDER ALL SUCH REQUIREMENTS, SHALL BE RESOLVED BY THE CONTRACTOR TO THE SATISFACTION OF THE ARCHITECT AT THE CONTRACTOR'S EXPENSE..

B. INSTALL EQUIPMENT AND MATERIALS WITH ALL WORKING PARTS READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND RENEWAL. THE RIGHT IS RESERVED TO MAKE REASONABLE CHANGES IN LOCATIONS OF EQUIPMENT ON THE DRAWINGS PRIOR TO ROUGH-IN WITHOUT INVOLVING ADDITIONAL EXPENSE TO THE OWNER.

C. CONFER WITH THE OWNER/ARCHITECT TO ESTABLISH EXACT LOCATIONS, MOUNTING HEIGHTS, AND ARRANGEMENTS OF ALL THE FINISH WORK PRIOR TO ROUGHING IN.

1.11 WORKMANSHIP AND MATERIALS:

A. WORKMANSHIP SHALL BE FIRST CLASS THROUGHOUT AND PERFORMED ONLY BY COMPETENT AND EXPERIENCED WORKMEN IN A MANNER SATISFACTORY TO THE OWNER. CONSTANT SUPERVISION OF THE WORK, EITHER BY THE CONTRACTOR OR HIS COMPETENT REPRESENTATIVE, SHALL BE MAINTAINED.

B. ALL WORK SHALL BE PERFORMED BASED UPON DIMENSIONED AND ACCURATE SHOP DRAWINGS THAT HAVE BEEN APPROVED.

C. WORK SHALL BE INSTALLED SO AS NOT TO DELAY THE PROGRESS OF CONSTRUCTION AND SHALL BE PROPERLY COORDINATED WITH OTHER TRADES.

D. USE ONLY NEW MATERIALS IN PERFECT CONDITION. INSPECT ALL MATERIALS UPON ARRIVAL AT JOB SITE AND IMMEDIATELY REMOVE DEFECTIVE ITEMS FROM SITE.

1.12 CUTTING AND REPAIRING:

A. INCLUDE ALL CUTTING AND REPAIRING NECESSARY AND REQUIRED FOR THIS INSTALLATION THAT IS NOT COVERED BY OTHER TRADES. STRUCTURAL MEMBERS SHALL NOT BE CUT EXCEPT WITH THE WRITTEN APPROVAL OF THE ARCHITECT. REPAIRING SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADES INVOLVED IN A MANNER SATISFACTORY TO THE ARCHITECT.

1.13 PROTECTION:

A. THROUGHOUT THE PROGRESS OF THE WORK, PROTECT ALL PIPE, CONDUIT, DUCTS, FIXTURES, AND EQUIPMENT FROM INTRUSION BY RAIN, DIRT, AND FOREIGN MATTER, AND FROM DAMAGE OF ANY KIND. THOROUGHLY CLEAN ALL METALLIC, PLASTIC, AND PAINTED SURFACES OF EQUIPMENT PRIOR TO FINAL INSPECTION.

B. REPLACE WITH NEW MATERIALS ANY DAMAGED WORK, WITHOUT ADDITIONAL COST TO THE OWNER, SO THAT THE ENTIRE INSTALLATION WILL BE LEFT IN NEW CONDITION.

C. COMPLY WITH THE LEED v2.2 REQUIREMENTS FOR INDOOR ENVIRONMENTAL QUALITY (ITEMS EQ3.1 & EQ3.2) DURING CONSTRUCTION AND PREOCCUPANCY.

1.14 NOISE AND VIBRATION:

A. THE LIMITING OF TRANSMISSION OF NOISE AND VIBRATION IS **EXTREMELY IMPORTANT.** THIS CONTRACTOR IS TO PAY PARTICULAR ATTENTION THAT PIPING, EQUIPMENT, AND DUCTWORK IS INSTALLED SO AS NOT TO CHATTER OR RUB AGAINST OTHER MATERIALS, EQUIPMENT, AND THE BUILDING STRUCTURE. PROVIDE ISOMODE PADS, INSULATION, OR OTHER SUITABLE MATERIALS TO AVOID DIRECT CONTACT AND NOISE CONDITIONS UNACCEPTABLE TO THE OWNER OR TENANTS. CONSIDER, IN PARTICULAR, PROPER SHIELDS AT PIPE HANGERS AND PIPE AND DUCT PENETRATIONS OF WALLS AND FLOORS.

B. ANY OBJECTIONAL NOISE AND VIBRATION FROM THE POOR MATERIAL AND INSTALLATION SHALL BE CORRECTED TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST, AS DIRECTED BY THE ARCHITECT.

C. COMPLY WITH THE LOCAL RULES AND REGULATIONS FOR NOISE CONTROL AT THE PROPERTY LINE.

1.15 MANUFACTURER'S INSTALLATION DETAILS:

D. FOLLOW MANUFACTURER'S INSTALLATION DETAILS EXCEPT AS SPECIFICALLY MODIFIED ON THE DRAWINGS, AND PROVIDE ANY VALVES OR SPECIAL FITTINGS OR OTHER SPECIALTY ITEMS CALLED FOR BY THEM AS REQUIRED IN ORDER TO MAKE THE EQUIPMENT PERFORM AS INTENDED. IF THERE IS ANY DISCREPANCY BETWEEN MANUFACTURER'S IN INSTALLATION DETAILS AND WORK SHOWN ON THE DRAWINGS NOTIFY THE ARCHITECT IMMEDIATELY AND AWAIT FOR FURTHER DIRECTIONS BEFORE PROCEEDING WITH THE INSTALLATION.

1.16 CLEANING:

A. FLUSH PIPES AND DUCTS FREE FROM FOREIGN SUBSTANCES BEFORE INSTALLING VALVES, STOPS, OR MAKING FINAL CONNECTIONS.

B. AFTER ALL OTHER WORK HAS BEEN ACCOMPLISHED, CLEAN ALL EXPOSED PIPING, DUCTWORK, FIXTURES, EQUIPMENT, AND SUPPORTS. REMOVE ALL DEBRIS OF WORK OF THIS SECTION FROM SITE.

1.17 TESTING, ADJUSTING AND BALANCING (TAB) :

A. UPON COMPLETION OF THE WORK, TEST AND REGULATE ALL SYSTEMS TO THE INTENT OF THEIR DESIGN AND TO THE OWNER'S SATISFACTION. FURNISH THE OWNER A BINDER OF THE EQUIPMENT DATA AND INSTRUCT HIS REPRESENTATIVES AS TO THE PROPER OPERATION OF ALL SYSTEMS.

B. BALANCE AIR QUANTITIES TO DIFFUSERS AND GRILLES AS SHOWN ON THE DRAWINGS.

C. PIPING SYSTEMS FOR GAS, WATER AND DRAINAGE PIPING SHALL BE TESTED TO BE LEAK PROOF. SUBMIT LEAKAGE TEST DATA FOR OWNER'S RECORDS.

D. WATER FLOWS FOR PUMPS, COILS, VALVES ETC. SHALL BE BALANCED AS SHOWN ON THE DRAWINGS.

E. TAB WORK SHALL BE PERFORMED BY AN INDEPENDANT AIR BALANCING CONTRACTOR PER AABC AND NEBB STANDARDS.

F. SUBMIT AIR BALANCE REPORT AND OUTSIDE AIR CERTIFICATION PER T-24 REQUIREMENTS FOR EACH SYSTEM AND EACH ZONE.

1.18 FINAL OBSERVATION:

A. ARCHITECT SHALL MAKE FINAL OBSERVATION OF THE JOB AND NOTE UNACCEPTABLE ITEMS IN A PUNCH LIST. FINAL ACCEPTANCE SHALL NOT BE MADE UNTIL ALL ITEMS ON THIS LIST HAVE BEEN CORRECTED.

1.19 GUARANTEE/WARRANTY:

A. ALL MATERIALS, PARTS, EQUIPMENT, MODIFICATIONS MADE, AND WORKMANSHIP SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE OF THE WORK.

B. SHOULD SUCH PARTS, MATERIALS, OR WORKMANSHIP BE FOUND TO BE DEFECTIVE DURING THIS PERIOD, THEY WILL BE RECTIFIED AT NO COST TO THE OWNER. ALL LABOR REQUIRED TO RECTIFY SUCH DEFECTS WILL BE PERFORMED DURING THE NORMAL WORKING HOURS OF THE TRADE INVOLVED.

C. THIS GUARANTEE IS CONTINGENT UPON THE SYSTEM BEING PROPERLY MAINTAINED BY A QUALIFIED MECHANIC FAMILIAR WITH THIS EQUIPMENT AND THAT THE EQUIPMENT IS NOT ABUSED. EXCLUDED IS NORMAL WEAR AND TEAR, REPLACEMENT OF FILTERS AND BELTS, AND ACTS OF GOD.

D. A WRITTEN GUARANTEE TO THIS EFFECT SHALL BE SUBMITTED PRIOR TO FINAL PAYMENT AND ACCEPTANCE.

E. IF THE MANUFACTURER PROVIDES FOR A LONGER GUARANTEE PERIOD, IT SHALL ALSO BE SUBMITTED.

1.20 RECORD DRAWINGS:

A. RECORD OF JOB PROGRESS: KEEP AN ACCURATE, DIMENSIONED RECORD OF THE AS-BUILT LOCATIONS OF ALL WORK. KEEP AN UP-TO-DATE ON BLUELINE PRINTS AS THE JOB PROGRESSES AND MAKE THEM AVAILABLE FOR INSPECTION AT ALL TIMES.

B. FINAL AS-BUILT, REPRODUCIBLE DRAWINGS AND IN ELECTRONIC FILE FORMAT SHALL BE SUBMITTED PRIOR TO FINAL ACCEPTANCE AND SHALL INCLUDE THE FOLLOWING:

1. MAIN SHUT-OFF VALVES PLAINLY MARKED AND IDENTIFIED.
2. POSITION OF ALL BURIED OR CONCEALED MAINS ACCURATELY DIMENSIONED, BOTH HORIZONTALLY AND VERTICALLY.
3. LOCATIONS OF PIPING, DUCT, AND EQUIPMENT INCLUDING HEIGHT OF MAIN DUCTS, PIPES, AND EQUIPMENT IN THE ATTIC AND ON ROOF.
4. CEILING ACCESS PANEL LOCATIONS.

1.21 OPERATION MANUALS AND MAINTENANCE INSTRUCTIONS:

A. FURNISH THREE (3) COMPLETE SETS OF OPERATING AND MAINTENANCE INSTRUCTIONS FOR ALL EQUIPMENT (OF ALL TYPES) AND CONTROL SYSTEMS BOUND IN A HARDBOARD BINDER AND INDEXED. SUBMIT NO LATER THAN THIRTY (30) CALENDAR DAYS PRIOR TO SUBSTANTIAL COMPLETION.

B. IN ADDITION TO SPECIFIC REQUIREMENTS SPECIFIED IN THE VARIOUS SECTIONS OF WORK, INCORPORATE THE FOLLOWING:

1. COMPLETE OPERATING INSTRUCTIONS FOR EACH ITEM OF EQUIPMENT.
2. TEST DATA AND OTHER REPORTS THAT MAY BE SPECIFIED.
3. TYPEWRITTEN MAINTENANCE INSTRUCTIONS FOR EACH ITEM OF EQUIPMENT, LISTING IN DETAIL THE LUBRICANTS TO BE USED, FREQUENCY OF LUBRICATION, INSPECTIONS REQUIRED, ADJUSTMENTS, ETC.
4. MANUFACTURER'S BULLETINS WITH PARTS' NUMBERS, INSTRUCTIONS, ETC., FOR EACH ITEM OF EQUIPMENT, PROPERLY STRIPPED AND ASSEMBLED.
5. SPECIAL DIAGRAMS AND LITERATURE THAT MAY BE REQUIRED.
6. A COMPLETE LIST OR SCHEDULE OF ALL MAJOR VALVES GIVING THE NUMBER OF THE VALVE, LOCATION, AND THE ROOMS OR AREAS CONTROLLED BY THE VALVE. PERMANENTLY TAG EACH VALVE WITH BRASS PLATE NUMBER TO MATCH SCHEDULE.
7. POWER & CONTROL DIAGRAM, DESCRIPTIONS, AND SEQUENCE OF CONTROLS FOR EACH SYSTEM.
8. INCLUDE TELEPHONE NUMBERS AND ADDRESSES OF SERVICE COMPANIES.

C. AT COMPLETION OF JOB, CONTRACTOR AND MANUFACTURER'S REPRESENTATIVES FOR MAJOR EQUIPMENT INCLUDING THE ROOFTOP AC UNITS, BOILER, WATER HEATERS AND CONTROLS SYSTEMS SHALL MEET WITH THE OWNER'S REPRESENTATIVES TO INSTRUCT OWNER'S REPRESENTATIVES IN OPERATION AND MAINTENANCE PROCEDURES OF THEIR RESPECTIVE EQUIPMENT AND SYSTEMS.

D. PROVIDE FUNDAMENTAL COMMISSIONING FOR ALL THE SYSTEMS PER ASHRAE GUIDELINES AND LEED REQUIREMENTS. SUBMIT COMMISSIONING REPORTS FOR ALL EQUIPMENT AND SYSTEMS COMMISSIONED.

PART 2 - MATERIALS

2.01 UNIFORMITY:

A. ALL ITEMS OF SIMILAR NATURE SHALL BE BY THE SAME MANUFACTURER. TRIM FOR MAJOR ITEMS SHALL BE FURNISHED BY THE SAME MANUFACTURER AS THE ITEM.

2.02 FINISHES AND PAINTING:

A. PROVIDE ALL EQUIPMENT WITH A FACTORY FINISH.

B. TOUCH UP SCRATCHES IN FACTORY FINISHED SURFACES TO MATCH ORIGINAL. OBTAIN TOUCH-UP PAINT FROM THE MANUFACTURER OF THE PIECE OF EQUIPMENT.

2.03 PIPES AND FITTING:

A. COPPER PRESSURE TYPE L; HARD TEMPER: JOINTS 95/5 SOLDER

1. TUBING: ASTM A88.
2. FITTINGS: ANSI B16.22, WROUGHT COPPER.
3. FLANGES: ANSI B16.24, 150 PSIG RATING.
4. SOLDER: ASTM B32, ALLOY GRADE; 95% TIN, 5% ANTIMONY OR OTHER LEAD FREE SOLDER.

B. ALL OUTDOOR FERROUS SURFACES SHALL BE HOT-DIP GALVANIZED OR CORROSIONPROOF COATED WITH EXTERIOR GRADE ENAMEL PANIT.

C. GAS PIPING: INDOOR - SCH-40 BLCK STEEL, OUTDOOR - SCH-40 GALVANIZED. 2.5" AND BELOW SCREWED AND 3" AND ABOVE WELDED. BELOW GRADE SCH-40 BLCK STEEL WITH CORROSSION PROTECTION.

2.04 DIELECTRIC CONNECTIONS:

B. GENERAL: ISOLATE FERROUS FROM NONFERROUS MATERIALS IN PIPING SYSTEMS AND EQUIPMENT CONNECTIONS WITH DIELECTRIC UNIONS.

C. DIELECTRIC UNIONS:

5. 2" AND SMALLER: EPCO MODEL FX, OR APPROVED SUBSTITUTE, 250 WOG, WITH STANDARD GASKETS FOR PLUMBING AND HIGH TEMPERATURE GASKETS FOR HEATING.
6. 2-1/2" AND LARGER: EPCO MODEL X, OR APPROVED SUBSTITUTE, BRASS HALF-UNION, ANSI B16.1, 175 WOG, TO FLANGE.

2.05 GENERAL USE VALVES

A. PROVIDE JENKINS, STOCKHAM, DEMCO, GRINNELL, DEZURIK, OR NIBCO VALVES. ALL BALL OR BUTTERFLY VALVES FOR GENERAL USE SHALL HAVE EPT SEATS. VALVE HANDLES, EXCEPT IN GROUND, SHALL BE INFINITE THROTTLING WITH MEMORY STOP.

B. GATE VALVES:

1. 1/2" THROUGH 2" - THREADED: STOCKHAM FIGURE B-105.
2. 1/2" THROUGH 2" - SWEAT: B-109, SCREW BONNET.
3. 2-1/2" AND ABOVE - FLANGED: STOCKHAM FIGURE G-623 BRONZE FITTED.

C. HAND VALVES:

1. 1/2" THROUGH 2" - BALL VALVE - THREADED: STOCKHAM FIGURE S-214-BR-R-T.
2. 1/2" THROUGH 2" - BALL VALVE - SWEAT: STOCKHAM FIGURE S-214-BR-R-S.
3. 2-1/2" AND ABOVE - BUTTERFLY VALVE: DEMCO SERIES NE, LUG TYPE. PROVIDE INFINITE THROTTLING AND MEMORY STOP HANDLE. VALVES TO PERMIT REMOVAL OF PIPING ON EITHER SIDE WITH VALVE IN PLACE.

D. BALANCE VALVES:

1. 1/2" THROUGH 2" - BALL VALVE: SAME AS HAND VALVE.
2. 2" AND ABOVE - PLUG VALVE: HOMESTEAD FIGURE 1522 (SEMI-STEEL BODY).

E. FLOW BALANCING DEVICES:

1. 1/2" THROUGH 4" - BELL & GOSSETT CIRCUIT SETTER: PROVIDE ONE PORTABLE MODEL RO-2 DIFFERENTIAL PRESSURE METER ASSEMBLY WITH QUICK CONNECTORS.

F. CHECK VALVES:

1. 2" AND SMALLER - THREADED: STOCKHAM FIGURE B-319.
2. 2" AND SMALLER - SWEAT: STOCKHAM FIGURE B-309.
3. 2-1/2" AND LARGER - FLANGED: STOCKHAM FIGURE G-931.

2.06 PIPING SPECIALTIES:

A. THERMOMETERS AND WELLS: WEKSLER TYPE AF, "ADJUST-ANGLE", 5" DIAL BIMETAL THERMOMETER. STAINLESS STEEL CASE AND STEM, EXTERNAL ADJUSTMENT, AND MATCHING BRASS WELL. STEM LENGTH SHALL BE OF THE LENGTH REQUIRED TO OBTAIN AN ACCURATE READING. USE LAYING EXTENSION WHERE PIPE IS INSULATED.

SCALE: DOMESTIC HOT WATER AND HEATING WATER 30 TO 240 DEGREES F; CONDENSER WATER 30 TO 160 DEGREES F. CHILLED WATER 30 TO 100 DEGREES F.

B. PRESSURE GAUGES: WEKSLER MODEL BA13P OR EQUAL MARSH OR ASHCROFT, 3-1/2" DIAMETER PHENOLASE WITH BLACK NUMERALS ON WHITE FACE. INSTALL WITH TYPE 35 GAUGE COCKS. SELECT DIAL RANGE SO THAT THE NORMAL OPERATING PRESSURE WILL OCCUR AS CLOSE TO THE MIDPOINT OF THE DIAL RANGE AS POSSIBLE. PROVIDE PRESSURE, VACUUM, OR COMPOUND GAUGES AS REQUIRED.

C. TEMPERATURE AND PRESSURE TEST STATION: PETERSON ENGINEERING COMPANY, 1/4" OR 1/2" MPT "PETE'S PLUG" WITH SOLID BRASS FITTING CAP. USE NORDEL VALVE CORE FOR WATER, AND NEOPRENE VALVE CORE FOR AIR.

D. AIR VENTS: HOFFMAN #79 WHERE AUTOMATIC TYPE IS SHOWN UNLESS SPECIFIED OTHERWISE. INSTALL WITH SHUT-OFF VALVES OR COCKS AND DRAIN TO A FLOOR SINK OR DRAIN. PROVIDE LUNKENHEIMER #1778-3/8 INCH COCK FOR MANUAL AIR VENT AT COILS AND AT EACH HIGH POINT IN PIPING SYSTEMS, PIPE OUTLET TO FLOOR SINK OR FLOOR DRAIN.

E. STRAINERS: CHARLES M. BAILEY #100A FOR FERROUS AND #100B OR #100BSJ FOR NON-FERROUS PIPING. ARMSTRONG, OR MUESSCO "Y" PATTERN, STAINLESS STEEL SQUARE MESH OR 3/64" PERFORATIONS. BASKET-TYPE STRAINER - MUELLER #155 WITH 5/32" PERFORATED STAINLESS STEEL SCREEN. INSTALL ALL STRAINERS WITH A BLOW-OFF HOSE VALVE WITH HOSE ADAPTER.

2.07 PIPE HANGERS AND SUSPENDED EQUIPMENT, SUPPORTS AND PENETRATIONS:

A. SUPPORTS AND HANGERS:

1. USE SUPER STRUT, UNISTRUT, B-LINE, ELCEN OR GRINNELL CHANNELS, HANGERS AND STRUCTURAL ATTACHMENTS TO PROPERLY SUPPORT THE PIPING SYSTEM AND SUSPENDED EQUIPMENT ACCORDING TO GOOD STANDARD PRACTICE AND ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM SAFETY FACTOR OF 5.0.

2. NO WATER PIPING (HVAC OR DOMESTIC WATER) SHALL HAVE DIRECT CONTACT WITH THE HANGING AND SUPPORT SYSTEM OR THE STRUCTURE. ON PIPES THAT ARE INSULATED, RUN THE INSULATION CONTINUOUS THROUGH THE HANGER AND PROVIDE SHEETMETAL SHIELDS OF PROPER LENGTH AND GAGES UNDER THE INSULATION TO PREVENT CRUSHING. ON UNINSULATED COPPER PIPING, USE STONEMAN "TRISOLATOR" OR SIMILAR UNISTRUT OR SUPER-STRUT DEVICE AT EACH HANGER OR SUPPORT POINT.

3. SIZE HANGERS PROPERLY TO FIT AROUND BARE PIPE, ISOLATOR, HANGER SHIELD, OR INSULATION AS REQUIRED.

4. SPACE HANGERS FOR HORIZONTAL STEEL PIPES WITH THE MAXIMUM DISTANCE BETWEEN HANGERS AS FOLLOWS:

NOMINAL SIZE	MAXIMUM SPAN (FEET)	MINIMUM ROD SIZE (INCHES)
1/2"	5	3/8
3/4"	6	3/8
1"	7	3/8
1 1/4"-1 1/2"	9	3/8
2"	10	3/8
2 1/2"	11	1/2
3"	12	1/2
4"	14	5/8

6. SPACE HANGERS FOR HORIZONTAL COPPER TUBE/PIPE WITH THE MAXIMUM DISTANCE BETWEEN HANGERS AS FOLLOWS:

NOMINAL SIZE	MAXIMUM SPAN (FEET)	MINIMUM ROD SIZE (INCHES)
3/4"	6	3/8
1"	7	3/8
1-1/4" - 1-1/2"	9	3/8
2"	10	3/8
2-1/2"	11	1/2
3"	12	1/2
4"	14	5/8

7. TRAPEZE SUSPENSION (TRAPEZE HANGERS MAY BE USED FOR PARALLEL LINES IF PIPES PITCH SAME DIRECTION): SIZE CHANNEL ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED LOAD RATINGS. NO DEFLECTIONS SHALL EXCEED 1/180 OF A SPAN WITH A SAFETY FACTOR OF 5.

8. USE CADMIUM PLATED OR GALVANIZED HANGERS, ATTACHMENTS, RODS, NUTS, BOLTS AND OTHER ACCESSORIES.

9. DO NOT USE WIRE, PLUMBER'S TAPE, OR OTHER MAKE-SHIFT DEVICES FOR HANGERS.

10. DO NOT BURN OR WELD ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE OWNER OR ARCHITECT.

11. NO VALVE OR PIECE OF EQUIPMENT SHALL BE USED TO SUPPORT THE WEIGHT OF ANY PIPE FOR PIPES 1-1/2" AND LARGER.

12. PROVIDE A SUPPORT OR HANGER CLOSE TO EACH CHANGE OF DIRECTION THE PIPE, EITHER HORIZONTAL OR VERTICAL.

13. WHEN PIPING IS INSTALLED USING A TRAPEZE HANGER, BOLT THE PIPE TO THE TRAPEZE USING A PIPE CLAMP, STRAP OR "U" BOLT. DO NOT WELD THE PIPE TO THE TRAPEZE.

A. ATTACHMENTS TO BUILDING STRUCTURE: (FIGURE NUMBERS INCLUDED ARE GRINNELL UNLESS OTHERWISE NOTED.)

1. BEAM SUPPORTS: SUPPORT EQUIPMENT AND PIPING LARGER THAN 4" DIAMETER BENEATH CENTERLINE OF BEAM. DO NOT CAUSE ECCENTRIC LOADS ON BEAMS.

2. HANGING FROM METAL DECKING: LOAD AT EACH SUPPORT POINT NOT TO EXCEED:

CONCRETE ON METAL DECKING: 200 POUNDS
METAL DECKING WITHOUT CONCRETE: 75 POUNDS

DISTANCE BETWEEN SUPPORT POINTS NOT TO BE LESS THAN 3 FEET. PROVIDE INTERMEDIATE BEAMS OR CHANNELS IF LOADS ARE IN EXCESS OF THE ABOVE (MINIMUM SAFETY FACTOR OF 5.0).

2.07 PIPE HANGERS AND SUSPENDED EQUIPMENT, SUPPORTS AND PENETRATIONS:

A. SUPPORTS AND HANGERS:

1. USE SUPER STRUT, UNISTRUT, B-LINE, ELCEN OR GRINNELL CHANNELS, HANGERS AND STRUCTURAL ATTACHMENTS TO PROPERLY SUPPORT THE PIPING SYSTEM AND SUSPENDED EQUIPMENT ACCORDING TO GOOD STANDARD PRACTICE AND ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. MINIMUM SAFETY FACTOR OF 5.0.

2. NO WATER PIPING (HVAC OR DOMESTIC WATER) SHALL HAVE DIRECT CONTACT WITH THE HANGING AND SUPPORT SYSTEM OR THE STRUCTURE. ON PIPES THAT ARE INSULATED, RUN THE INSULATION CONTINUOUS THROUGH THE HANGER AND PROVIDE SHEETMETAL SHIELDS OF PROPER LENGTH AND GAGES UNDER THE INSULATION TO PREVENT CRUSHING. ON UNINSULATED COPPER PIPING, USE STONEMAN "TRISOLATOR" OR SIMILAR UNISTRUT OR SUPER-STRUT DEVICE AT EACH HANGER OR SUPPORT POINT.

3. SIZE HANGERS PROPERLY TO FIT AROUND BARE PIPE, ISOLATOR, HANGER SHIELD, OR INSULATION AS REQUIRED.

4. SPACE HANGERS FOR HORIZONTAL STEEL PIPES WITH THE MAXIMUM DISTANCE BETWEEN HANGERS AS FOLLOWS:

NOMINAL SIZE	MAXIMUM SPAN (FEET)	MINIMUM ROD SIZE (INCHES)
1/2"	5	3/8
3/4"	6	3/8
1"	7	3/8
1 1/4"-1 1/2"	9	3/8
2"	10	3/8
2 1/2"	11	1/2
3"	12	1/2
4"	14	5/8

6. SPACE HANGERS FOR HORIZONTAL COPPER TUBE/PIPE WITH THE MAXIMUM DISTANCE BETWEEN HANGERS AS FOLLOWS:

NOMINAL SIZE	MAXIMUM SPAN (FEET)	MINIMUM ROD SIZE (INCHES)
3/4"	6	3/8
1"	7	3/8
1-1/4" - 1-1/2"	9	3/8
2"	10	3/8
2-1/2"	11	1/2
3"	12	1/2
4"	14	5/8

7. TRAPEZE SUSPENSION (TRAPEZE HANGERS MAY BE USED FOR PARALLEL LINES IF PIPES PITCH SAME DIRECTION): SIZE CHANNEL ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED LOAD RATINGS. NO DEFLECTIONS SHALL EXCEED 1/180 OF A SPAN WITH A SAFETY FACTOR OF 5.

8. USE CADMIUM PLATED OR GALVANIZED HANGERS, ATTACHMENTS, RODS, NUTS, BOLTS AND OTHER ACCESSORIES.

9. DO NOT USE WIRE, PLUMBER'S TAPE, OR OTHER MAKE-SHIFT DEVICES FOR HANGERS.

10. DO NOT BURN OR WELD ANY STRUCTURAL MEMBER WITHOUT THE WRITTEN APPROVAL OF THE OWNER OR ARCHITECT.

11. NO VALVE OR PIECE OF EQUIPMENT SHALL BE USED TO SUPPORT THE WEIGHT OF ANY PIPE FOR PIPES 1-1/2" AND LARGER.

12. PROVIDE A SUPPORT OR HANGER CLOSE TO EACH CHANGE OF DIRECTION THE PIPE, EITHER HORIZONTAL OR VERTICAL.

13. WHEN PIPING IS INSTALLED USING A TRAPEZE HANGER, BOLT THE PIPE TO THE TRAPEZE USING A PIPE CLAMP, STRAP OR "U" BOLT. DO NOT WELD THE PIPE TO THE TRAPEZE.

B. ATTACHMENTS TO BUILDING STRUCTURE: (FIGURE NUMBERS INCLUDED ARE ANVIL (GRINNELL) UNLESS OTHERWISE NOTED.)

1. BEAM SUPPORTS: SUPPORT EQUIPMENT AND PIPING LARGER THAN 4" DIAMETER BENEATH CENTERLINE OF BEAM. DO NOT CAUSE ECCENTRIC LOADS ON BEAMS.

2. HANGING FROM METAL DECKING: LOAD AT EACH SUPPORT POINT NOT TO EXCEED:

CONCRETE ON METAL DECKING: 200 POUNDS
METAL DECKING WITHOUT CONCRETE: 75 POUNDS

DISTANCE BETWEEN SUPPORT POINTS NOT TO BE LESS THAN 3 FEET. PROVIDE INTERMEDIATE BEAMS OR CHANNELS IF LOADS ARE IN EXCESS OF THE ABOVE (MINIMUM SAFETY FACTOR OF 5.0).

3. ANCHOR BOLTS: MATERIAL, DIAMETERS, AND LENGTHS FOR 3,000 PSI.

4. CONCRETE INSERTS: FIGURE 282. PLACE REINFORCING STEEL THROUGH INSERT AS RECOMMENDED BY MANUFACTURER FOR RECOMMENDED LOADS.

5. POURED-IN-PLACE CONCRETE ON METAL DECKING: SUPERSTRUT FIGURE C-475.

6. BEAM CLAMPS: FIGURE 87, 227, OR 228.

7. WELDED BEAM ATTACHMENT: FIGURE 66.

8. SIDE BEAM BRACKETS: FIGURE 202 OR 203.

9. HANGER RODS: ASTM A107, HOT ROLLED STEEL WITH ANSI B1.1 THREADS. (MINIMUM SAFTY FACTOR OF 5.0)

C. HANGER ROD FIXTURES:

1. TURNBUCKLES: FIGURE 230.
2. LINKED EYE ROD: FIGURE 278X.
3. CLEVIS: FIGURE 299.

D. PIPE ATTACHMENTS: (FIGURE NUMBERS BY GRINNELL)

1. ADJUSTABLE CLEVIS: FIGURE 260 OR 300.
2. U-BOLT: FIGURE 137.
3. STANCHION: FIGURE 259.
4. VERTICAL PIPE SUPPORTS: FIGURE 261.

KUPPE G. SRINIVAS
No. M18346
Exp. 9/30/12

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

Om Namah Shivaya
Om Namo Narayanaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

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MECHANICAL SPECIFICATIONS
BUILDING - C

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
ARROWHEAD

M11.3B

SECTION 15000 (CONTINUED)

E. PENETRATIONS AND ESCUTCHEONS: WHERE WORK OF THIS DIVISION PASSES THROUGH FIRE RATED PARTITIONS, WALLS, FLOORS, CONCRETE SLABS OR EXTERIOR WALLS. PACK SPACE BETWEEN PIPING AND PENETRATION OPENING WITH MATERIAL APPROVED BY UNDERWRITER LABORATORIES FOR IN THROUGH PENETRATION FIRE STOP SYSTEMS. MATERIALS, METHODS AND INSTALLATION SHALL BE IN ACCORDANCE WITH UL APPROVED LISTING AND SHALL BE DESIGNED TO ACT AS A FIRESTOP AS WELL AS A COLD SMOKE, NOXIOUS GAS AND WATER SEALANT.

FOR NON-RATED WALLS, SLEEVES SHALL BE A MINIMUM OF 2" LARGER THAN THE PIPE AND EXTEND 2" ABOVE FLOOR SLABS. USE PIPE SHIELDS, INC., UNLESS OTHERWISE NOTED. PROVIDE SLEEVES AS FOLLOWS:

1. NONINSULATED PIPING:

A. NONRATED WALL: SEAL ANNULAR SPACE WITH FIBERGLASS.

2. INSULATED PIPING:

A. NONRATED WALL: MODEL WFB-CS AND WFB-CS-CW.

3. PIPES THROUGH EXTERIOR WALL: SEAL ANNULAR SPACE WITH FIBERGLASS AND CAULK WEATHERTIGHT.

F. PROVIDE ESCUTCHEON PLATES THAT ARE NEAT, RIGID, SECURELY ATTACHED WHERE WORK OF THIS SECTION PENETRATES THE STRUCTURE. PROVIDE STAINLESS STEEL OR CHROME PLATED BRASS IN FINISHED AREAS OR WHERE REQUIRED FOR PROPER APPEARANCE AND GALVANIZED STEEL ELSEWHERE.

2.08 PIPE AND EQUIPMENT INSULATION:

A. GENERAL:

1. THE TERM PIPING HEREIN, SHALL INCLUDE HOT WATER PIPES, PUMPS, VALVES, STRAINERS AND FITTINGS. APPLY HI-LO TEMP INSULATION TO THE FITTINGS AND COVER WITH "ZESTON" FITTING CLOSURES. TUCK THE ENDS OF THE HI-LO TEMP INSULATION INTO THE THROAT OF THE FITTING AND THE EDGES ADJACENT TO THE PIPE COVERING TUFTED AND TUCKED IN, FULLY INSULATING THE FITTING BEFORE APPLYING FITTING COVER. SECURE THE FITTING COVER BY BANDING OR TAPING THE ENDS TO THE ADJACENT PIPE COVERING. EXTEND THE INSULATION ON THE VALVES UP TO THE VALVE BONNET. LEAVE STRAINER CLEANOUT PLUGS ACCESSIBLE. AT UNIONS: MITER INSULATION AT 45 DEGREES AND COAT EXPOSED INSULATION WITH INSULATING CEMENT. HEATING WATER VALVES DO NOT HAVE TO BE INSULATED.

2. INSULATE ALL HOT WATER SUPPLY AND RETURN PIPING, AND PIPING SYSTEM COMPONENTS.

3. USE MASTICS AND ADHESIVES UNDILUTED UNLESS NOTED OTHERWISE. DILUTE FOSTER 30-36 NO GREATER THAN 1 PART WATER TO 5 PARTS 30-36.

4. BUTT INSULATION AT EACH END AND SEAL THE JOINTS WITH PRESSURE SENSITIVE TAPE.

5. INSTALL ALL INSULATION TO ALLOW FOR THE OPERATION OF ALL MOVING PARTS AND TO PERMIT VIEWING OF ALL NAME PLATES, CONTROLS, INSTRUMENTS, DAMPERS AND VALVE BONNETS AND STEMS.

6. THOROUGHLY CLEAN, TEST AND HAVE APPROVED, ALL PIPING AND EQUIPMENT BEFORE INSTALLING INSULATION.

7. INSTALL INSULATION WITH THE HIGHEST QUALITY WORKMANSHIP. ALL ENDS SHALL BE NEATLY TRIMMED AND SEALED.

8. MANUFACTURER: OWENS-CORNING FIBERGLASS, ARMSTRONG, MANVILLE, OR CERTAIN-TEED.

B. TYPE AND THICKNESS:

1. GENERAL: IN ACCORDANCE WITH 2008 TITLE 24 ENERGY REGULATIONS.

2.09 EQUIPMENT SUPPORTS:

A. ALL ROTATING EQUIPMENT AND EQUIPMENT CAPABLE OF TRANSMITTING VIBRATION INTO THE SPACE SHALL BE MOUNTED ON VIBRATION ISOLATORS. ISOLATORS SHALL BE PROPERLY SIZED BY THE ISOLATOR MANUFACTURER, TAKING INTO ACCOUNT THE PIECE OF EQUIPMENT, ITS CENTER OF GRAVITY, ANCHOR POINTS, AND THE STRUCTURE UPON WHICH IT IS SETTING, SO THAT VIBRATION TRANSMITTED TO THE STRUCTURE IS HELD TO A LEVEL ACCEPTABLE TO THE OWNER.

B. ISOLATORS SHALL BE AS REQUIRED TO LIMIT THE TRANSFER OF VIBRATION AND NOISE TO THE STRUCTURE AND OCCUPIED AREAS.

C. THE ISOLATORS SHALL BE FASTENED TO THE STRUCTURE AND TO THE EQUIPMENT WITH PROPERLY SIZED AND STRUCTURALLY ENGINEERED ANCHORS AND BOLTS. IF STRUCTURAL CALCULATIONS ARE REQUIRED BY THE BUILDING INSPECTORS OR BY CODE, THEY SHALL BE PROVIDED BY THE ISOLATOR MANUFACTURER OR SUPPLIER.

D. ISOLATORS SHALL BE AS MANUFACTURED BY MASON, KINETICS, OR AMBER-BOOTH. OTHER MANUFACTURERS NOT ALLOWED.

E. ISOLATOR SPRINGS SHALL BE AS FOLLOWS:

1. CADMIUM-PLATED HELICAL STEEL SPRINGS WITH MINIMUM DIAMETER 0.8 OF OPERATING HEIGHT.

2. RESERVE DEFLECTION (FROM OPERATING TO SOLID HEIGHT) 50% OF SPECIFIED DEFLECTION.

3. RATIO OF HORIZONTAL TO VERTICAL SPRING CONSTANTS SHALL BE WITHIN RANGE OF 0.90 TO 1.10.

4. PROVIDE CORROSION RESISTANT PROTECTION FOR ALL SPRINGS AND THEIR HOUSINGS, FOR OUT-OF-DOORS INSTALLATIONS, AND ALSO FOR MATERIALS EXPOSED TO OUT-OF-DOORS DURING CONSTRUCTION. HOT-DIPPED GALVANIZED OR COATED WITH NEOPRENE OR POLYVINYLCHLORIDE.

F. THE EQUIPMENT MANUFACTURER SHALL FURNISH THE WEIGHT OF THE EQUIPMENT AT EACH POINT OF SUPPORT.

G. ALL ISOLATORS SHALL BE PROPERLY ADJUSTED SO THAT EQUIPMENT IS LEVEL, SNUBBERS AND SEISMIC TYPE MOUNTS ARE CENTERED, AND NO SHORT CIRCUITING OCCURS. THEY WILL BE READJUSTED AS NECESSARY DURING THE WARRANTY PERIOD, AT NO COST TO THE OWNER, TO ASSURE PROPER OPERATION.

H. ALL CONNECTIONS TO VIBRATING EQUIPMENT SUCH AS PIPING, CONDUITS, AND DUCTWORK SHALL BE INSTALLED SO THAT SHORT CIRCUITING DOES NOT OCCUR.

1. CONDUITS SHALL HAVE FLEXIBLE CONNECTIONS LOOPED IN AT 90 DEGREES TO ALLOW FOR MOVEMENT.

2. PIPING SHALL HAVE FLEXIBLE CONNECTORS WHERE SPECIFIED OR SHALL HAVE SUFFICIENT SPRING LEGS OR CHANGES IN DIRECTION BEFORE THE FIRST HANGER TO DAMPEN VIBRATION AND ASSURE THAT PIPING IS NOT WORK HARDENED.

2.10 SEISMIC RESTRAINTS:

A. GENERAL: PROVIDE SEISMIC RESTRAINTS PER APPLICABLE CODE AND STANDARDS AS SPECIFIED AND/OR INDICATED. DESIGN AND PROVIDE RESTRAINTS TO PREVENT PERMANENT DISPLACEMENT IN ANY DIRECTION CAUSED BY LATERAL MOTION, OVERTURNING OR UPLIFT. RESTRAINTS SHALL NOT SHORT CIRCUIT VIBRATION ISOLATED EQUIPMENT UNDER NORMAL OPERATION.

B. REQUIREMENTS:

1. CRITERIA: DESIGN RESTRAINTS FOR PIPING AND DUCTWORK PER SMACNA "SEISMIC RESTRAINT MANUAL GUIDELINES FOR MECHANICAL SYSTEMS" OR ANY SIMILAR PREAPPROVED HANGER MANUFACTURER'S DETAILS. SUBMIT REQUIRED STRUCTURAL CALCULATIONS FOR RIGIDLY ATTACHED EQUIPMENT.

2. SEISMIC FORCE CRITERIA: RIGIDLY ATTACHED: 1.0G
FLEXIBLY ATTACHED: 1.0G

3. CONTRACTOR TO SUBMIT SEISMIC RESTRAINT CALCULATIONS THAT ARE SIGNED BY A STRUCTURAL ENGINEER REGISTERED IN CALIFORNIA. CALCULATION MUST CONFIRM THE ADEQUACY OF THE RESTRAINTS AND THEIR ANCHORING TO THE BUILDING STRUCTURAL ELEMENTS.

4. AFTER INSTALLATION, CONTRACTOR SHALL ISSUE IN WRITING, AND SIGNED BY A REGISTERED STRUCTURAL ENGINEER THAT ALL SEISMIC RESTRAINTS HAVE BEEN INSTALLED TO MEET THE APPLICABLE CODES AND CONTRACT DOCUMENTS.

5. SEISMICALLY ANCHOR ALL EQUIPMENT WHICH ARE MOUNTED 4 OR MORE FEET ABOVE THE FLOOR OR WEIGHS MORE THAN 400 POUNDS. SUBMIT SEISMIC ANCHORAGE CALCULATIONS FOR SEISMIC CATEGORY D FOR BOTH FLEXIBLY & RIGIDLY SUPPORTED EQUIPMENT PREPARED BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE OF CALIFORNIA. USE ap = 2.5 AND Rp = 6.0 FOR HVAC EQUIPMENT CONSTRUCTED OF SHEET METAL FRAMING.

6. REFER TO STRUCTURAL PLANS FOR SEISMIC CALCULATIONS FOR ROOFTOP AC UNITS AND FOR STRUCTURAL FRAMING. SUBMIT FINAL EQUIPMENT LOCATIONS, WEIGHTS AND ANCHORAGE REQUIREMENTS TO THE PROJECTY STRUCTURAL ENGINEER-OF-RECORD AND OBTAIN APPROVALS BEFORE PROCEEDING WITH THE INSTALLATION.

7. OSHPD PRE-APPROVED SEISMIC SUPPORT & BRACING SYSTEM MAY BE USED IN-LIEU OF CUSTOM DESIGN. ACCEPTABLE MANUFACTURERS - MASON, NUSIG, TOLCO OR APPROVED EQUAL.

△B

5. RESTRAINT TO INCLUDE THE FOLLOWING:

A. FANS, AIR HANDLING UNITS, ROOFTOP AC UNITS.
B. PIPING, EXPANSION TANKS, AND ASSOCIATED EQUIPMENT AND PIPING.
C. DUCTS (SUPPLY, RETURN, EXHAUST, RELIEF).
D. WATER HEATERS, HEAT EXCHANGERS AND HOT WATER STORAGE TANKS.
E. GAS PIPING.

2.11 ACCESS DOORS AND PANELS:

A. WHERE REQUIRED: WHEREVER A PIECE OF EQUIPMENT OR VALVE AND OPERATOR IS INACCESSIBLE AND REQUIRES ACCESS FOR MAINTENANCE, REPAIR OR ADJUSTMENT.

B. SIZE: SIZE IS DEPENDENT UPON THE RELATIONSHIP OF THE DOOR TO THE PRODUCT BEING SERVICED; THEREFORE, THE SIZE OF THE DOOR SHALL BE SELECTED TO PROVIDE CONVENIENT ACCESS TO ITS CONTENTS.

C. MANUFACTURER: INRYCO/MILCOR, OR EQUAL BILCO, CESCO, OR KARP.

2.14 SPECIAL TOOLS:

F. FURNISH TO OWNER THE FOLLOWING: ONE SET OF ANY SPECIAL TOOLS REQUIRED TO OPERATE, ADJUST, DISMANTLE, OR REPAIR ANY EQUIPMENT IN THIS DIVISION. "SPECIAL TOOLS" MEANS THOSE NOT NORMALLY POSSESSED BY MECHANICS OR MAINTENANCE PERSONNEL.

2.15 ROOFTOP AIR CONDITIONING UNITS:

A. ROOFTOP AC UNITS SHALL BE GAS ELECTRIC PACKS AS SCHEDULED. ACCEPTABLE MANUFACTURERS SHALL BE TRANE, CARRIER, MCQUAY, YORK OR EQUAL. TRANE IS THE BASIS OF DESIGN.

B. AC UNITS SHALL USE R-410A (NO CFC AND HCFC UNITS ALOOWED) AND CALIFORNIA ENERGY COMMISSION LISTED.

C. UNITS SHALL BE PROVIDED WITH MATCHING 12' ROOF CURB AND ISOLATION PADS.

D. UNITS SHALL BE SEISMICALLY ANCHORED TO THE ROOF STRUCTURE. SUBMIT SEISMIC CALCULATIONS PREPARED BY A REGISTERED STRUCTURAL ENGINEER IN THE STATE OF CALCIFORNIA. COORDINATE WITH THE ROOF STRUCTURE PROVIDER AND ROOFING CONTRACTOR FOR FLASHING AND COUNTERFLASHING.

E. PROVIDE T-24 COMPLIANT MATCHING ELECTRONIC ROOM THERMOSTAT. THERMOSTATS SHALL BE ADAPTABLE FOR FUTURE INTEGRATION TO A BUILDING CONTROL SYSTEM. FOR UNITS SERVING ASSEMBLY OCCUPANCIES AND CONFERENCE ROOMS, PROVIDE MATCHING CARBON DIOXIDE (CO_2) SENSORS AND CONTROLS TO ADJUST THE OUTSIDE AIR AUTOMATICALLY PER THE T-24 REQUIREMENTS.

F. PROVIDE MOTORIZED OUTSIDE AIR AND RELIEF AIR DAMPERS.

G. UNITS SHALL BE STARTED-UP AND COMMISSIONED BY A FACTORY TRAINED TECHNICIAN AND A COMMISSIONING REPORT SHALL BE SUBMITTED TO SATISFY THE LEED BASIC COMMISSIONING REQUIREMENTS.

H. PROVIDE ALL UTILITIES POWER, CONTROLS, GAS, CONDENSATE DRAIN CONNECTIONS PER THE MANUFACTURER INSTALLATION GUIDELINES. PROVIDE UL LISTED FLEX CONNECTORS FOR GAS, POWER, CONTROLS. TERMINATE THE CONDENSATE DRAINS TO THE JANITOR SINK INDIRECTLY.

I. PROVIDE ACOUSTICALLY LINED SUPPLY AND RETURN MAIN DUCTS IN THE CEILING PLENUM BELOW. COORDINATE DUCT SIZE AND ROUTING WITH THE ARCHITECTURAL REFLECTED CEILING PLANS, ROOF STRUCTURE, SPRINKLER PIPING AND LIGHTING.

2.16 DUCTWORK

J. GENERAL: FABRICATE DUCTWORK OF G60 GALVANIZED SHEET METAL IN ACCORDANCE WITH LATEST EDITION OF THE SMACNA, DUCT MANUAL, AND ASHRAE GUIDE. SEAL AND TAPE ALL DUCT JOINTS AIRTIGHT.

K. ACOUSTICAL LINING: ACOUSTICAL LINING SHALL BE 1" THICK, COATED FLEXIBLE DUCT LINER AND SHALL MEET UL-181 REQUIREMENTS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

L. FLEXIBLE ROUND DUCTS: UL CLASS 1 AIR DUCTS WITH HELICAL SUPPORT WIRE, SCRIM CLOTH INNER LINER, R-4 INSULATION AND OUTER PLASTIC LINER: CODY/WEST OR EQUAL.

M. FLEXIBLE DUCT CONNECTOR: VENTFABRICS, INSTALL TO MAINTAIN NOT LESS THAN 2" METAL TO METAL SEPARATION.

2.17 DAMPERS

A. BALANCING DAMPERS: PER SMACNA PROVIDE HARD LOCKING QUADRANT, WITH RAISED CHAIR FOR INSULATED DUCTS.
B. CONTROL DAMPERS: PER SMACNA, RUSKIN FSD-60 OR EQUAL.
C. BACKDRAFT DAMPERS: RUSKIN CBD6 OR EQUAL.

2.18 ELECTRIC MOTORS:

A. PREMIUM EFFICIENCY, VOLTAGE AND PHASE TO MATCH THE APPLICATION, WEATHER ENCLOSURE TO MATCH THE APPLICATION AND LOCATION.

B. MANUFACTURER: BALDOR SUPER-E, RELIANCE, GE, WESTINGHOUSE OR APPROVED EQUAL.

2.19 VARIABLE FREQUENCY DRIVES:

A. MANUFACTURERS: ABB, DANFOSS, SAFTRONICS, YASKAWA, RELIANCE, GE OR APPROVED EQUAL

2.20 AIR BALANCE AND WATER BALANCE

A. PERSONNEL PERFORMING BALANCING AND TESTING SHALL BE FULLY QUALIFIED, EXPERIENCED, AND NORMALLY ENGAGED IN THIS TYPE OF WORK. IF THE CONTRACTOR DOES NOT HAVE SUCH PERSONNEL AVAILABLE FROM HIS OWN COMPANY, HE SHALL HIRE, AT HIS OWN EXPENSE, SUBCONTRACTORS WHO ARE QUALIFIED.

B. PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS REQUIRED TO PERFORM TESTS AND BALANCING.

C. SUBMIT FINAL AIR BALANCE REPORT TO BUILDING INSPECTION DIVISION PRIOR TO FINAL INCEPTION.

2.21 DUCT LINER AND PLENUM LINER

A. FLEXIBLE, COATED, FIBERGLASS DUCT LINER, 1" THICK (2" FOR OUTDOOR DUCTS), 1.5 PCF DENSITY, 0.24 BRUH/SQ.FT.DEG F/IN. AT 75 °F, NOISE REDUCTION COEFFICIENT OF 0.6 FOR 1", #6 MOUNTINGS, OWNES CORNING AEROFLEX PLUS OR EQUAL. DUCT LINING MATERIAL SURFACE THAT COMES IN CONTACT WITH THE AIR FLOW SHALL BE RESISTANT TO MOLD, HUMIDITY AND ERROSION AND COMPLY WITH CMC SECTION 605.

B. COMPLY WITH CMC AND SMACNA DUCT LINER APPLICATION STANDARD.

C. MANUFACTURER: KNAUF, CERTAIN-TEED CORP., MANVILLE, OWENS-CORNING OR EQUAL.

2.22 FLEXIBLE DUCTS

A. FLEXIBLE DUCT SHALL BE CLASS-I AIR DUCT PER UL 181 AND SHALL COMPLY WITH NFPA 90A AND 90B AND CALIFORNIA MECHANICAL CODE. SHALL HAVE A FLAME SPREAD RATING OF LESS THAN 25 AND A SMOKE DEVELOPED RATING OF LESS THAN 50.

B. MANUFACTURER: MODULAR FLEX, THERMAFLEX OR EQUAL.

C. MODULAR FLEX, POLY CORE, R-4.2, UNIVERSAL DUCT CLAMP DAMPER, POLYETHYLENE JACKET, PERMEABILITY = 0.17, R 4.2 FIBERGLASS INSULATION (ASTM C-518), FIBERGLASS THEREADED MESHA SCRIM, CORE-POLY LINER, HELIX- ENCAPSULATED HARD DRAWN SPRING WIRE, 2" ± W.C. PRESSURE RATING, 200° F, 4000 FT/MIN VELOCITY, UL181 CLASS 1.

D. ATTACH THE FLEX DUCTS USING FACTORY-MADE $\frac{9}{16}$"-WIDE STAINLESS STEEL CLAMPS. THE OUTER JACKET SHALL BE SECURED USING 0.35"-WIDE SELF-LOCKING NYLON STRAPS-PANDUIT CORP. OR EQUAL. THE JACKET ENDS TAPED WITH APPROVED TYPE MASTIC TAPE.

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2.23 HVAC CONTROL SYSTEM

A. PROVIDE PROGRAMMABLE T-24 COMPLIANT ELECTRONIC ROOM THERMOSTAT COMPATIBLE WITH THE ROOFTOP AC UNIT INSTALLED. THE THERMOSTAT SHALL HAS SET-UP AND SET-BACK FEATURES, DIGITAL TEMPERATURE DISPLAY, NETWORKABLE IN FUTURE.

B. MANUFACTURERS: HONEYWELL, TRANE, CARRIER OR APPROVED EQUAL.

C. PROVIDE LOCKABLE, SEE THRU, HEAVY DUTY PLASTIC THERMOSTAT GUARD, ONE FOR EACH THERMOSTAT

PART 3 - EXECUTION

3.01 PIPING INSTALLATION:

A. GENERAL:

1. SYSTEM LAYOUTS AS INDICATED ON DRAWINGS ARE GENERALLY DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT.

2. DRAWINGS AND ARRANGEMENT: INSTALL EQUIPMENT AND MATERIALS WITH ALL WORKING PARTS READILY ACCESSIBLE FOR INSPECTION, REPAIR, AND REMOVAL.

B. PIPING:

1. ANY SECTION OF PIPE FOR WHICH SIZE IS NOT SHOWN OR ANY INTERMEDIATE SECTION ERRONEOUSLY SHOWN OBVIOUSLY UNDERSIZED SHALL BE THE SAME SIZE AS THE LARGEST LINE CONNECTING TO IT.

2. THOROUGHLY CLEAN ALL PIPE AND MAINTAIN IN SUCH CONDITION THROUGHOUT CONSTRUCTION. TEMPORARILY CAP OFF PLUG ENDS OF UNPROTECTED PIPE.

3. INSTALL UNIONS AT CONNECTIONS TO EQUIPMENT, ON SERVICE SIDE OF VALVES AND ELSEWHERE AS REQUIRED OR SHOWN TO FACILITATE MAINTENANCE.

4. INSTALL DIELECTRIC INSULATING CONNECTIONS BETWEEN ALL DISSIMILAR METALS UNLESS OTHERWISE INDICATED.

5. RUN ALL PIPING GENERALLY LEVEL, FREE OF UNNECESSARY TRAPS AND BENDS, AND ARRANGE TO CONFORM TO THE BUILDING REQUIREMENTS AND TO SUIT NECESSITIES OF CLEARANCE FOR OTHER WORK.

6. ARRANGE PIPING AND HANGERS TO ALLOW FOR EXPANSION, CONTRACTION, AND STRUCTURAL SETTLEMENT. DO NOT INSTALL PIPING IN CONTACT WITH THE BUILDING STRUCTURE.

7. MAKE CHANGES IN SIZE OR DIRECTION WITH MANUFACTURED FITTINGS. THE USE OF BUSHINGS, REDUCING FLANGES, OR BENDING OF A PIPE IS NOT ALLOWED.

8. INSTALL PIPING FULL SIZE THROUGH SHUT-OFF VALVES, BALANCING VALVES, ETC. CHANGE PIPE SIZE WITHIN THREE PIPE SIZE DIAMETERS OF THE FINAL CONNECTION TO FIXTURES AND EQUIPMENT.

9. UNLESS SPECIFICALLY INDICATED OTHERWISE, INSTALL PIPING CONCEALED ABOVE CEILINGS, BENEATH THE FLOORS, OR IN WALLS. ROUTE PIPING TO LINEAR BEAMS, COLUMNS, OBSTRUCTIONS AND THE WORK OF OTHER TRADES.

10. SLOPING, AIR VENTING, AND DRAINAGE:

A. SLOPE PIPING AS INDICATED, TRUE TO LINE AND GRADE AND FREE OF TRAPS AND AIR POCKETS. UNLESS INDICATED OTHERWISE, SLOPE PIPING IN DIRECTION OF FLOW AS FOLLOWS:

SERVICE INCLINATION	SLOPE
CONDENSATE DRAIN	$\frac{1}{4}$" PER FOOT
HOT & COLD WATER	LEVEL

B. PROVIDE AIR VENTS AT HIGH POINTS IN HEATING WATER PIPING.

11. COPPER: CRIMPING OF COPPER TUBING IS PROHIBITED. ISOLATE COPPER PIPE AND TUBING FROM CONTACT WITH STEEL. FOR BRANCH DROPS AND RISES TO PLUMBING FIXTURES, ANCHOR BRANCH TO WASTE AND VENT PIPING.

12. PIPE ENDS: PERFORM PIPE CUTTING AND END PREPARATION SO AS TO RESULT IN CLEAN ENDS WITH FULL INSIDE DIAMETER. GRIND AND REAM AS NECESSARY.

13. THREADED JOINTS: APPLY TEFLON TAPE TO MALE THREADS.

14. WELDED JOINTS:

A. WELDING OF PRESSURE PIPING SHALL BE DONE BY NCPWB QUALIFIED WELDERS. PERFORM WELDING PER APPLICABLE CODES, INCLUDING ASME BOILER CONSTRUCTION CODE AND ANSI CODE FOR PRESSURE PIPING.

B. WHERE REQUIRED, PEEN AND WHEEL-GRIND WELDS. ENDS OF PIPE MAY BE BURNED FOR WELDING, HOWEVER, GRIND-BEVEL AND REMOVE SCALE BEFORE WELDING JOINT. RAGGED EDGES WITH METAL BEADS, POOR ALIGNMENT, AND OTHER INFERIOR WORK WILL BE REJECTED.

C. PERFORM WELDING WITH OXYACETYLENE OR ELECTRIC-ARC PROCESS.

15. SOLDERED JOINTS: CLEAN SURFACES TO BE JOINTED OF OIL, GREASE, RUST, AND OXIDES. CLEAN SOCKET OF FITTING AND END OF PIPE THOROUGHLY WITH EMERY CLOTH SO AS TO REMOVE RUST AND OXIDES. AFTER CLEANING AND BEFORE ASSEMBLY OR HEATING, APPLY FLUX TO JOINT SURFACE AND SPREAD EVENLY. CLEAN REFRIGERANT PIPING AS RECOMMENDED BY AIR CONDITIONING EQUIPMENT MANUFACTURER.

16. CAULKED CAST IRON BELL AND SPIGOT JOINTS:

A. MAKE JOINTS WITH LEAD AND TARRED OAKUM. USE JOINT RUNNER SO THAT, AFTER POURING, LEAD WILL FINISH FLUSH WITH BELL. PROVIDE 1" MINIMUM DEPTH LEAD SEAL.

B. MAKE JOINTS BETWEEN CAST IRON PIPE AND STEEL WITH FITTINGS MADE ESPECIALLY FOR THAT PURPOSE, SUCH AS TAPPED SPIGOTS, TUCKER CONNECTIONS, ETC..

3.02 DUCTWORK

A. FABRICATE AND INSTALL DUCTWORK AND ACCESSORIES IN ACCORDANCE WITH THE CALCIFORNIA MECHANICAL CODE, AND SMANA & ASHRAE STANDARDS.

B. SEISMICALLY SUPPORT AND BRACE ALL DUCTWORK PER SMACNA.

C. FLEXIBLE DUCT SHALL BE INSTALLED WITHOUT KINKS AND SHARP BENDS THAT RESTRICT AIR FLOW. INSTALL AND SUPPORT PER CALIFORNIA MECHANICAL CODE. INSTALL TURNS WITH A MINIMUM OF 1.5 TIMES DIAMETER RADIUS. WHEN THER IS NO HEADROOM TO MAKE TURNS TO CONNECT TO THE DIFFUSERS, PROVIDE ACOUSTICALLY LINED PLENUMS AT THE AIR OUTLETS TO SIDE CONNECT THE FLEX. DUCT.

D. COMPLY WITH THE INDOOR AIR QUALITY REQUIREMENTS DURING CONSTRUCTION, STORAGE OF MATERIALS AND POST CONSTRUCTION AS REQUIRED BY LEED-NC v2.2. KEEP THE DUCT OPENINGS COVERED DURING CONSTRUCTION TO PREVENT ENTRY OF CONSTRUCTION DUST AND DEBRIS.

E. DUCTWORK SHALL BE FABRICATED AND SEALED TO MINIMIZE AIR LEAKAGE THROUGH SEAMS AND JOINTS AND CONNECTION TO THE EQUIPMENT AND OUTLETS TO A MAX. OF 6% OF THE TOTAL SYSTEM CAPACITY AT THE RATED STATIC PRESSURE OF ±2" W.C.

F. UNLINED SUPPLY AND RETURN DUCTS SHALL BE INSULATED PER T-24 WITH DUCT WRAP INSULATION, MIN. R-6 WITH ASJ VAPOR JACKET.

3.03 EQUIPMENT

A. INSTALL EQUIPMENT PLUMB AND LEVEL. COORDINATE EQUIPMENT LOCATION AND SERVICE ACCESS WITH THE ARCHITECTURAL PLANS. PROVIDE ROOF CURBS, SUPPLEMENTAL SUPPORT FRAMING SEISMIC ANCHORAGE AND VIBRATION ISOLATION AS NECESSARY TO PROPERLY SUPPORT THE EQUIPMENT.

B. COORDINATE WITH THE ROOFING CONTRACTOR FOR REQUIRED ROOFDECK OPENING FOR DUCTWORK, CURB ANCHORAGE TO STRUCTURE AND FLACHING.

C. CEILING SUPPORTED EQUIPMENT SHALL BE SUPPORTED FROM HANGERS VIBRATION ISOLATORS AND SEISMIC CABLE BRACING. THE FORCES DUE TO GRAVITY SUPPORT AND SEISMIC FORCES TRANSMITTED TO THE BUILDING STRUCTURE SHALL NOT EXCEED THE MAXIMUM ALLOWABLE LIMITS SPECIFIED IN THE STRUCTURAL PLANS. FOR SUPPORTING FROM WOOD STRUCTURE PROVIDE PROPER TYPE OF SIMPSON SUPPORTS BRACKETS AND SUPPORTS.

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USGBC-LEED NC v2.2 COMPLIANCE REQUIREMENTS

1.0 GENERAL:

A. COMPLY WITH THE CITY OF LIVERMORE, CA REGULATIONS GREEN DESIGN AND MEET THE ALL THE PREREQUISTE AND OPTIONAL LEED POINT CHECKLIST SELECTED FOR THE PROJECT. REFER TO THE ATTACHED CHECK LIST FOR THE TARGETTED LEED CREDIT POINTS TITLED "LEED FOR NEW CONSTRUCTION v2.2 WORKSHEET FOR HCCC PHASE-1B BUILDING-C ADMINISTRATION BUILDING LOCATED AT 1200 ARROWHEAD AVENUE, LIVERMORE, CA."

B. THE SELECTED USGBC LEED CREDIT POINTS SHALL FOLLOW THE PROCEDURES AND CRITERIA ESTABLISHED BY USBGC AND SHALL INCLUDE THE DESIGN PHASE CREDITS, CONSTRUCTION PHASE CREDITS AND THE POST CONSTRUCTION PHASE CREDITS.

C. THE DESIGN TEAM WILL SPECIFY AND/OR INDICATE THE REQUIREMENTS FOR THE DESIGN PHASE CREDITS. THE CONTRACTORS SHALL MEET THE REQUIREMENTS FOR THE CONSTRUCTION PHASE AND THE POST CONSTRUCTION PHASE REQUIREMENTS TO EARN THE TARGETTED LEED CREDIT POINTS. THE RESPECTIVE TRADE CONTRACTOR SHALL INCLUDE IN THE BID PRICE FOR INCLUDING ALL NECESSARY MATERIALS, RESOURCES, MAN-HOURS AND DOCUMENTATION NECESSARY TO COMPLY WITH EACH CREDIT POINTS PER THE USGBC GUIDELINES AND THE CITY OF LIVERMORE REQUIREMENTS.

D. THE CONTRACTOR SHALL NOT USE MATERIALS AND RESOURCES THAT ARE KNOWN TO HAVE HARMFUL EFFECTS ON THE ENVIRONMENT AND THE OCCUPANTS AND THOSE THAT ARE PROHIBITED BY USGBC. NO EQUIPMENT OR SYSTEMS SHALL BE INSTALLED IN THE BUILDING WHICH USES CFC AND HCFC REFRIGERANTS FOR HEATING, COOLING & REFRIGERATION. ALL SEALANTS, ADHESIVES, FINISHES ETC. USED IN THE MANUFACTURED PRODUCTS, EQUIPMENT, MATERIALS OF CONSTRUCTION SHALL BE FREE OF FORMALDEHYDE AND OTHER BANNED VOCs.

E. DURING CONSTRUCTION AND OCCUPANCY, CONTRACTOR SHALL IMPLEMENT THE USGBC REQUIREMENTS FOR THE "INDOOR AIR QUALITY MANAGEMENT PLAN" FOR EACH TRADE WORK. NECESSARY INSPECTION, DOCUMENTATION AND REPORTING SHALL BE PROVIDED ALONG WITH SUBMITTING THE LEED LETTER TEMPLATES TO THE CITY FOR APPROVAL.

F. EQUIPMENT EFFICIENCY: CONTRACTOR SHALL PROVIDE EQUIPMENT AND SYSTEMS THAT MEET OR EXCEED THE ENERGY EFFICIENCY SPECIFIED IN THE RESPECTIVE DIVISION SCOPE OF WORK AND AS REFLECTED IN THE TITLE-24 REPORT AND ACHIEVE THE TARGETED OVERALL BUILDING ENERGY SAVINGS BETTER THAN THE STANDARD T-TLE-24. PROVIDE ALL NECESSARY CONTROLS FOR THE HVAC, PLUMBING & LIGHTING PER THE T-24 AND THE RESPECTIVE LEED POINT CHECKLISTS.

G. PROVIDE FUNDAMENTAL COMMISSIONING OF THE BUILDING ENERGY SYSTEMS, INCLUDING BUT NOT LIMITED TO - HVAC AND CONTROL SYSTEMS, OUTSIDE AIR DELIVERY, PLUMBING SYSTEMS, LIGHTING AND CONTROLS PER THE ASHRAE COMMISSIONING STANDARDS AND USGBC GUIDELINES, PROVIDE NECESSARY MANPOWER, TOOLS, MATERIALS, EQUIPMENT, TECHNICAL SUPPORT AS NECESSARY TO CONDUCT THE COMMISSIONING. SUBMIT COMMISSIONING REPORT FOR EACH EQUIPMENT, ZONE, DEVICE, AND EACH SYSTEM.

H. REFER TO OTHER REQUIREMENTS IN THE FOLLOWING AND INCLUDE WORK SCOPE CONTAINED IN THESE DOCUMENTS AS IT RELATES TO WORK OF THIS DIVISION:

1. SECTION 01400 - PROJECT SUSTAINABILITY REQUIREMENTS.
2. SECTION 01515 - CONSTRUCTION WASTE MANAGEMENT.
3. 01810 - FUNDAMENTAL COMMISSIONING OF BUILDING ENERGY SYSTEMS.
4. LEED-NC v2.2 CHECKLIST FOR HCCC 1200 ARROWHEAD AVENUE, BUILDING-C.
5. DIVISION-15 & DIVISON 16 SPECIFICATION SECTIONS AND DRAWINGS.
6. ARCHITECTURAL, STRUCTURAL, CIVIL, STRUCTURAL PLANS AND SPECS.

2.00 THE MECHANICAL, PLUMBING & ELECTRICAL TRADE CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLYING WITH THE LEED REQUIREMENTS FOR THE FOLLOWING SELECTED CREDIT POINTS

A. SSc8 - LIGHT POLLUTION REUCTION.

B. WEC3.1 AND WEc3.2 - WATER USE REDUCTION.

C. EAcP1 - PREREQUISITE #1 - FUNDAMENTAL COMMISSIONING OF THE BUILDING ENERGY SYSTEMS..

D. EAcP2 - MINIMUM ENERGY PERFORMANCE.

E. EAcP3 - FUNDAMENTAL REFRIGERANT MANAGEMENT.

F. EAc1 - OPTIMIZE ENERGY PERFORMANCE. BUILDING ENERGY T-24 ENERGY USE SHALL BE 10.5% BELOW T-24.

G. F. EAc2 - OPTIMIZE ENERGY PERFORMANCE. BUILDING ENERGY T-24 ENERGY USE SHALL BE 15.6% BELOW T-24 PER THE T-24 COMPLIANCE FORMS ATTACHED.

H. EQcP1 - MINIMUM IAQ PERFORMANCE.

I. EQc1 - OUTDOOR AIR DELIVERY MONITORING

J. EQc3.1 - CONSTRUCTION IAQ MANAGEMENT PLAN DURING CONSTRUCTION.

K. EQc3.2 - CONSTRUCTION IAQ MANAGEMENT PLAN BEFORE OCCUPANCY.

L. EQc4.1 - LOW-EMITTING MATERIALS, ADHESIVES & SEALANTS.

M. EQc5 - INDOOR CHEMICAL & POLLUTANT SOURCE CONTROL.

N. EQc6.1 - CONTROLLABILITY OF SYSTEMS - LIGHTING.

REVISIONS	BY
△A 05-24-10	HCCC
△B 08-02-10	BPC
△C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
△D 09-22-10	BPC
△E 10-12-10	BPC2

Om Namah Shivaya Om Namo Narayanaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
E-mail: Mail@APincSF.com 09021

MECHANICAL SPECIFICATIONS

BUILDING - C

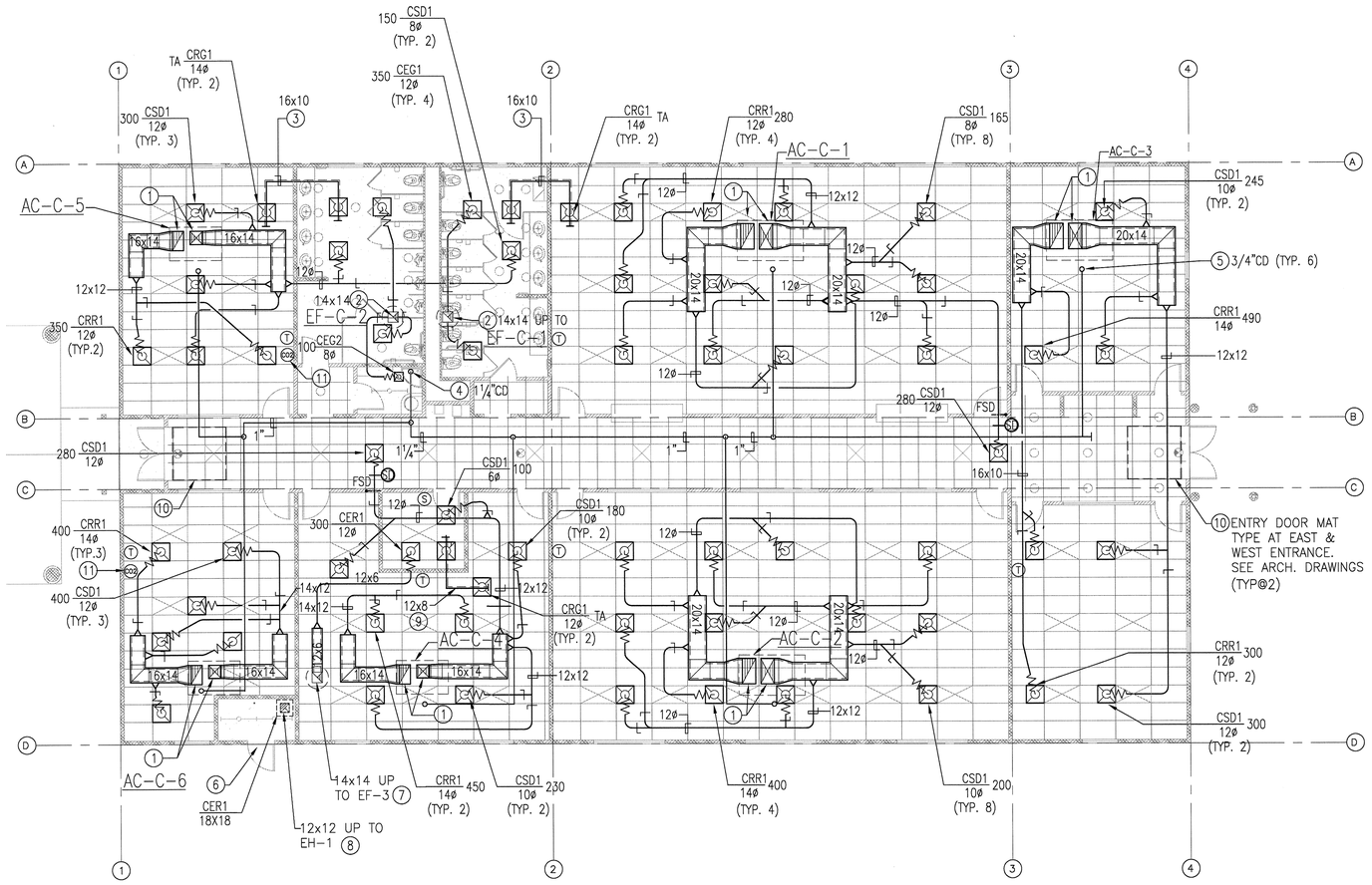
KUPPE G. SRINIVAS
No. M18346
Exp. 9/30/12

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
ARROWHEAD

M11.4B

PLANCHECK RESUBMITTAL



BUILDING C - PHASE 1-B
MECHANICAL PLAN

TOTAL 7800 SQ. FT.

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

0 5' 10' 20' 25'

GRAPHIC SCALES: 1/8" = 1'-0"

GENERAL NOTES

A. REFER TO ARCHITECTURAL AND STRUCTURAL PLANS FOR THE CEILING HEIGHT AND STRUCTURAL CLERANCES AVAILABLE FOR ROUTING THE DUCTWORK. THE AVAILABLE CLEARANCE BETWEEN BOTTOM OF STRUCTURAL JOISTS AND FINISHED CEILING IS 18". COORDINATE WITH ALL TRADE WORK INCLUDING PLUMBING, FIRE PROTECTION AND ELECTRICAL AND MODIFY THE DUCT ROUTING TO AVOID CONFLICTS.

B. THE MAXIMUM ALLOWABLE FLEXIBLE DUCT LENGTH SHALL BE 6 FEET. INSTALL PER CMC AND SMACNA REQUIREMENT.

C. ALL SUPPLY, RETURN AND EXHAUST SHALL BE DUCTED. DUCTWORK SHALL BE SEALED & LEAKAGE TESTED PER CEC T-24 REQUIREMENTS AND CERTIFIED. SHEET METAL DUCTWORK SHALL BE FABRICATED AND INSTALLED PER CMC AND SMACNA.

D. HVAC WORK SHALL BE IN COMPLIANCE WITH THE CURRENT CEC T-24 STANDARDS AND ALL APPLICABLE CALIFORNIA AND LOCAL CODES.

E. PROVIDE VOLUME DAMPERS IN EACH BRANCH DUCTS FOR AIR BALANCING.

F. PROVIDE TRANSFER AIR BOOT ABOVE CEILING AT ALL FULL-HEIGHT PARTITIONS.

G. LOCATE DUCT DETECTOR WITHIN 5 FEET FROM FSD TO CLOSE THE DAMPER WHEN THE DETECTOR IS ACTIVATED. COORDINATION WIRING WITH DIVISION-16.

H. PROVIDE FACTORY FURNISHED T-24 COMPLIANT ELECTRONIC PROGRAMMABLE ROOM THERMOSTATS FOR EACH AC UNITS AND PROGRAM THE THERMOSTATS DAILY START-STOP AND SETTING REQUIREMENTS PER THE OWNERS' BUILDING OCCUPANCY SCHEDULE. PROGRAM THE OFF-HOUR COOLING SET-UP AND HEATING SET-BACK SETTINGS PER TITLE-24. PROVIDE CO2 SENSORS FOR CONFERENCE ROOMS PER SHEET NOTE #11 BELOW.

I. AIR BALANCE CONTRACTOR SHALL VERIFY THE CONTROL FUNCTIONS OF EACH AC UNITS AND VERIFY THE ECONOMIZER OPERATION AND OUTSIDE AIR CONTROL DAMPERS ARE FUNCTIONING PROPERLY. WHEN THE UNIT IS OFF, THE EXHAUST AIR DAMPER & OUTSDIE AIR CONTROL DAMPERS SHALL CLOSE. BALANCE OUTSIDE AIR TO EACH THERMOSTATIC ZONE TO THE AMOUNT INDICATED ON THE AC UNIT SCHEDULE AND SUBMIT TEST AND VERIFICATION REPORTS IN ACCORDANCE WITH T-24 REQUIREMENTS.

J. COMPLY WITH REQUIREMENTS OF USGBC-LEED NC PER THE CHECKLIST FOR INDOOR ENVIRONMENTAL AIR QUALITY, VENTILATION, INSULATION, THERMAL COMFORT AND POST CONSTRUCTION COMMISSIONING AND PURGING. SUBMIT REPORTS FOR EACH TASK.

K. FACTORY MADE U.L. LISTED CLASS-1 ACOUSTICAL FLEX DUCT LENGTH SHALL NOT EXCEED MAX OF 6 FEET IN LENGTH. USE FACTORY ATTACHED COLLARS AND T-24 APPROVED ADHESIVE MASTIC TAPES TO ATTACH THE FLEX DUCT TO DUCTWORK AND DIFFUSER. INSTALL PER CALIFORNIA MECHANICAL CODE WITHOUT KINKS.

L. INSULATE ALL UNLINED SUPPLY AND RETURN DUCTS WITH MIN. R-8 DUCT WRAP INSULATION WITH VAPOR JACKET PER T-24 AND CMC REQUIREMENTS.

M. FOR FSD INSTALLATION REFER TO DETAIL-1/M11.2B & PER MANUF. UL LISTING.

SHEET NOTES

1. SUPPLY AND RETURN AIR DUCTS WITH ACOUSTICAL LINING FROM ROOFTOP AC UNIT IN THE ROOF WITH ONE ELBOW AND MIN. 10 FEET OF DUCT PRIOR TO CONNECTING THE BRANCH DUCTWORK. COORDINATE THE LOCATION OF THE DUCT DROP AND AC UNIT ROOFTOP LOCATIONS WITH OTHER TRADES AND ADJUST ACCORDINGLY.
2. 14x14 EXHAUST AIR DUCT UP TO TOILET EXHAUST FANS (EF-C-1 & EF-C-2) ON THE ROOF. SEE ROOF PLANS FOR CONTINUATION.
3. 14x10 TRANSFER AIR DUCT WITH ACOUSTICAL LINING. (TYPICAL OF 2).
4. TERMINATE 1¼" CONDENSATE DRAIN LINE OVER THE JANITOR'S SINK.
5. 3/4" CONDENSATE DRAIN LINE FROM ROOFTOP AC UNITS ON THE ROOF. TYPICAL OF 6. PROVIDE MINIMUM 1/8" PER FOOT SLOPE DOWN TO THE JANITOR;S SINK IN THE JANITOR ROOM. INSULATE ALL CONDENSATE LINES WITHIN THE CEILING SPACE.
6. SIGHT-PROOF 18x12 EXTERIOR GRADE DOOR LOUVER WITH INSECT SCREEN.
7. 14x14 EXHAUST AIR DUCT UP TO EXHAUST FAN (EF-C-3) ON THE ROOF. PROVIDE WALL MOUNTED LOCAL EXHAUST SWITCH TO EXHAUST THE COPIER ROOM, WHEN IT IS IN USE.
8. 12x12 EXHAUST AIR DUCT UP TO EXHAUST HOOD (EH-1) ON THE ROOF FOR GRAVITY EXHAUST ENTILATION. PROVIDE 18X18 EXHAUST GRILLE.
9. 12x8 TRANSFER AIR DUCT WITH ACOUSTICAL LINING.
10. 6'X6' DOOR ENTRY MAT TYP AT EAST AND WEST ENTRY DOORS. SEE ARCH. DRAWINGS FOR DETAILS.
11. PROVIDE WAL-MOUNTED CARBON DIOXIDE (CO2) SENSORS COMPATIBLE WITH THE ROOFTOP AC UNIT CONTROLLER FOR AC UNITS AC-C-5 & AC-C-6. WHEN THE CO2 LEVEL IN THE CONFERENCE ROOM EXCEED 800 PPM (ADJUSTABLE) IT SHALL SEND A SIGNAL TO THE AC UNIT CONTROLLER TO MODULATE OPEN THE OUTSIDE AIT AND EXHAUST AIR DAMPERS PROPORTIONALLY TO INCREASE AMOUNT OF OUTSIDE AIR TO THE SPACE. UPON A DROP IN THE CO2 LEVELS BELOW THE PRESET 800 PPM, THE OSA AND EA CONTROL DAMPERS SHALL MODULATE BACK TO THE NORMAL (MINIMUM) MODE OF OPERATION.

REGISTERED PROFESSIONAL ENGINEER
DIPAK G. SRINIVAS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

Om Namo Narayanaya
Om Namah Shivaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

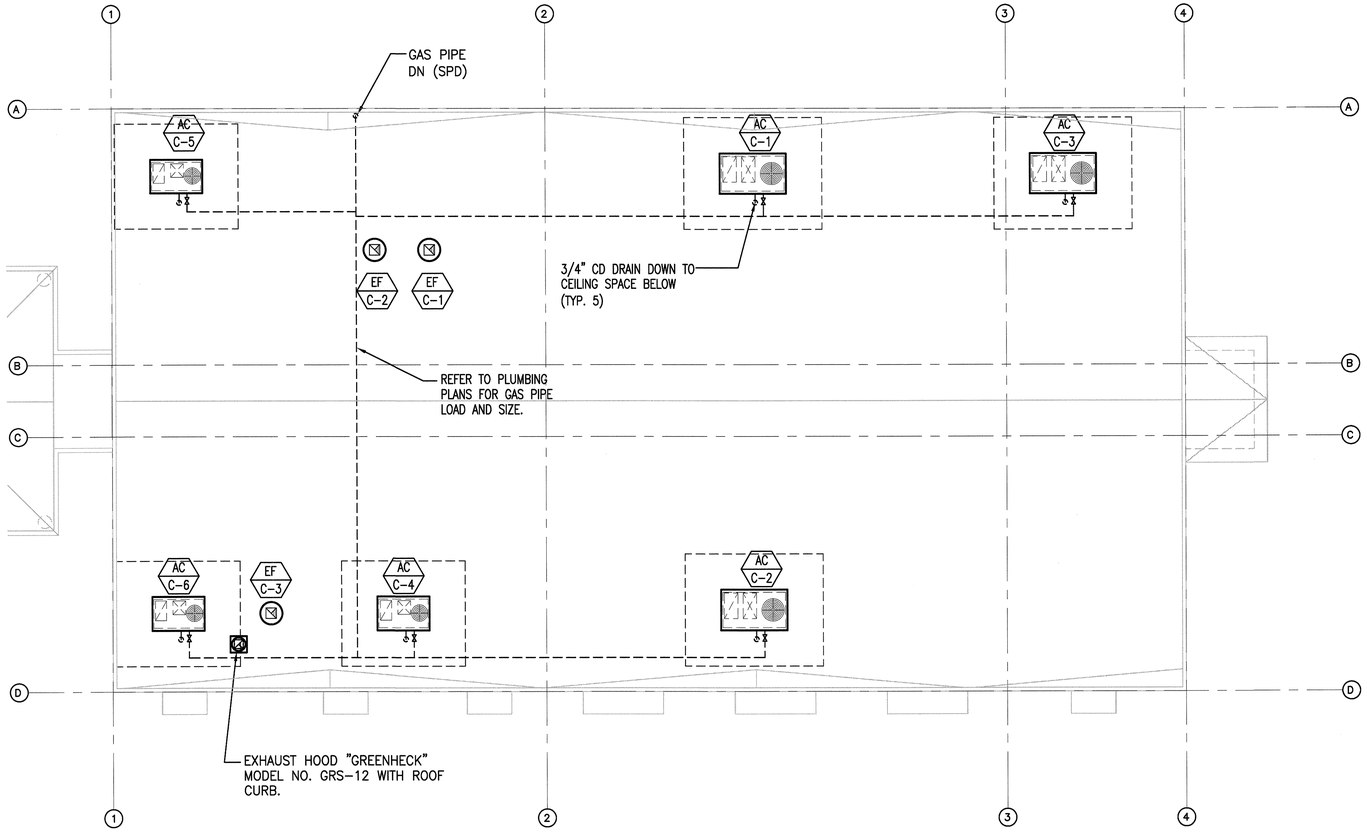
Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 Cushman St., Suite 202B
San Francisco, California 94111
Ph (415) 543-0344 Fax (415) 543-3670
E-mail: Mail@APindSF.com 09021

MECHANICAL PLAN
BUILDING C
PHASE 1-B

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

M13.0B

PLANCHECK RESUBMITTAL #2



GENERAL NOTES

A. ALL INSTALLATIONS SHALL COMPLY WITH ALL APPLICABLE CALIFORNIA AND LOCAL CODES.

B. ALL NEW WORK SHALL COMPLY WITH CURRENT 2007 CMC AND SMACNA DUCT CONSTRUCTION STANDARDS.

C. INSULATE SUPPLY & RETURN DUCTS PER TITLE 24 REQUIREMENTS.

D. MAINTAIIN SERVICE CLEARANCE ALL AROUND THE EQUIPMENTS.

E. SEISMICALLY ANCHOR ALL EQUIPMENTS TO THE STRUCTURES PER BUILDING CODE. COORDINATE WITH STRUTURAL ENGINEER FOR FRAMING AND BLOCKING FOR EQUIPMENT ANCHORAGE. REFER TO STRUCTURAL DRAWINGS FOR LOCATION OF THE UNIT AND ANCHORAGE DETAILS.

F. PROVIDE GALVANIZED PIPING & FITTINGS FOR EXPOSED GAS PIPING ON ROOF. PROVIDE GAS COCK, DIRT LEG, LISTED GAS CONNECTORS RATED FOR OUTDOOR APPLICATION AT CONNECTIONS TO EACH AC UNIT.

G. PROVIDE TRAPPED CONDENSATE DRAIN FROM THE AC UNIT AND TERMINATE TO THE SERVICE SINK IN JANITOR CLOSET. INSTALL CONDENSATE COLLECTOR DRAIN PIPING WITH MINIMUM 2% SLOPE.

H. SUPPORT ROOFTOP GAS AND CONDENSATE PIPING AND CONDUITS WITH B-LINE "DURA-BLOCK" DB SERIES SUPPORT BLOCKS ANCHORED TO ROOF. USE DURA-BLOCK "BVT" SERIES INSULATED PIPE CLAMPS (TYP). PROVIDE SLEEPER SUPPORTS AT MAX 6 FT ON CENTERS OR AS REQUIRED TO PREVENT PIPE SAGGING AND TO DRAIN THE CONDENSATE TOWARDS THE JANITOR SINK. MAINTAIN 2% SLOPE ON ROOF FOR CONDENSATE DRAIN PIPE.

BUILDING C - ROOF PLAN
MECHANICAL PLAN

TOTAL 7800 SQ. FT.

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

0 5' 10' 20' 25'

GRAPHIC SCALES: 1/8" = 1'-0"

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

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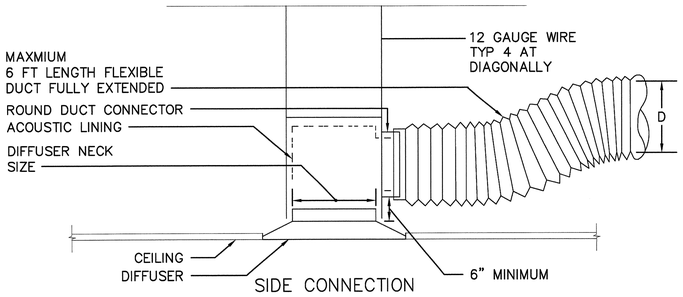
E-mail: Mail@APincSF.com 09021

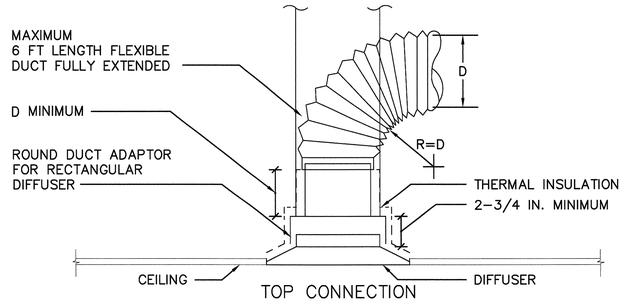
MECHANICAL ROOF PLAN
BUILDING C
PHASE 1-B

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

M14.0B

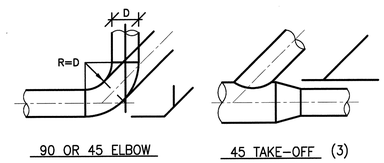
REGISTERED PROFESSIONAL ENGINEER
RUPERT G. SRITHONG
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

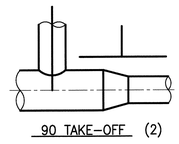


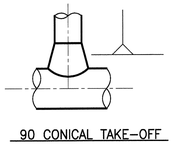


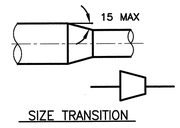
1 DIFFUSER CONNECTION DETAIL

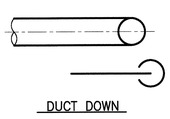
SCALE: NOT TO SCALE

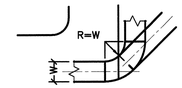


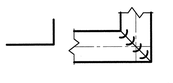


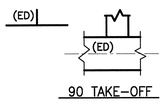


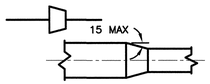


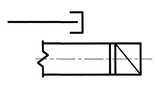


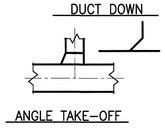


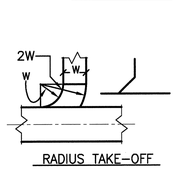


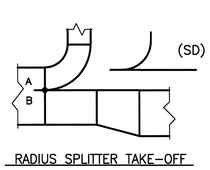










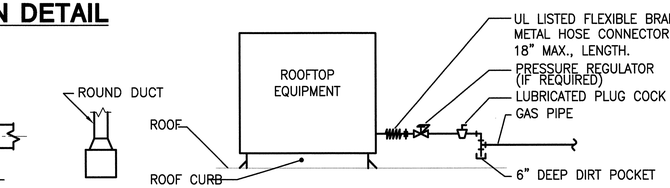


NOTES

(1) SINGLE-LINE ILLUSTRATIONS ARE SYMBOLS USED ON DRAWINGS

(2) FOR LOW PRESSURE SYSTEM ONLY.

(3) PROVIDE ACOUSTICAL LINING WHERE REQUIRED. OR WHERE SHOWN ON PLANS.



2 ROOFTOP AC UNIT GAS CONNECTION DETAIL

NOT TO SCALE

NOTE:

1. PROVIDE FLEXIBLE CONNECTORS ON UNITS W/ SPRING ISOLATORS.

NOTES

(1) SINGLE-LINE ILLUSTRATIONS ARE SYMBOLS USED ON DRAWINGS

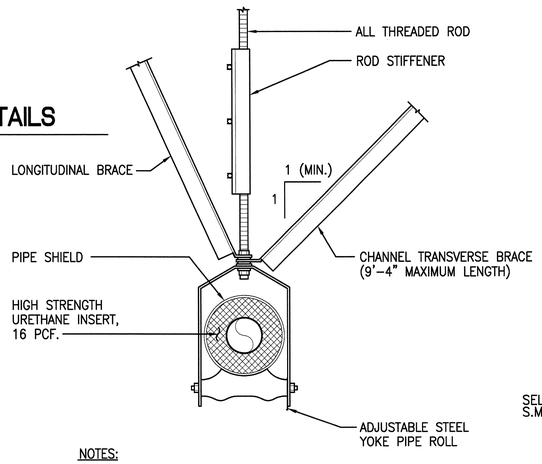
(2) SIZE A & B DIMENSIONS IN PROPORTION TO AIR QUANTITIES IN EACH LEG SPLIT

(3) FOR LOW PRESSURE SYSTEM ONLY.

(4) PROVIDE ACOUSTICAL LINING WHERE REQUIRED. OR WHERE SHOWN ON PLANS.

3 RECTANGULAR DUCT DETAILS

SCALE: NOT TO SCALE



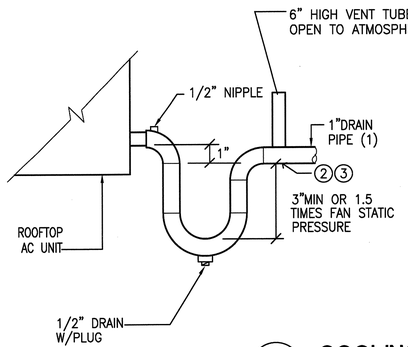
NOTES:

1. PROVIDE BRACING AS REQUIRED BY OSHPD REQUIREMENTS. PROVIDE B-LINE B3110 HANGER OR APPROVED EQUAL.

2. PROVIDE 360° GALVANIZED PIPE SHIELD PER SPECIFICATION AT ALL HANGER SUPPORT.

4 ROUND DUCT DETAILS

SCALE: NOT TO SCALE



NOTES:

(1) PITCH DRAIN LINE TOWARDS THE FLOOR DRAIN. INSTALL NEATLY TO PREVENT SAGGING AND TRIPPING. SUPPORT FROM B-LINE PEDESTAL SUPPORTS.

(2) TERMINATE CONDENSATE DRAIN TO JANITOR SINK WITH 2" AIR GAP.

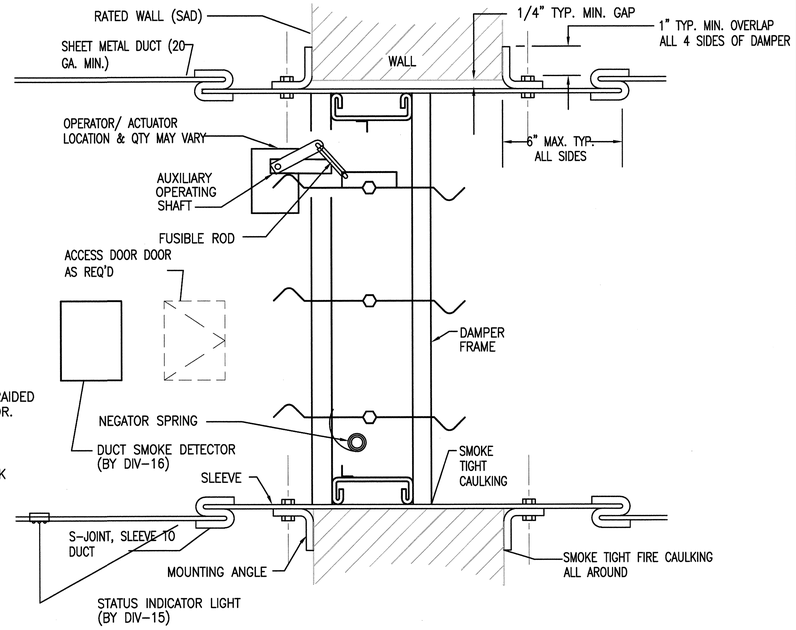
(3) INSULATE ROOFTOP CONDENSATE LINE TO PREVENT ICE FORMATION. INSULATE LINES INSIDE THE BUILDING TO PREVENT SWEATING AND DRIPPING ON THE CEILING.

5 COOLING COIL CONDENSATE TRAP (DRAW - THROUGH COIL)

NOT TO SCALE

6 PIPE HANGER DETAIL

SCALE: NOT TO SCALE



FSD INSTALLATION & OPERATION NOTES:

1. ENTIRE ASSEMBLY SHALL BE UL LISTED AND FACTORY ASSEMBLED COMPLETE WITH DAMPER, MOTOR, HEAT SWITCH, POSITION SENSORS, INTEGRAL SLEEVE, ETC., ASSEMBLY SHALL BE FACTORY TESTED PRIOR TO SHIPMENT. DAMPER SHALL BE RUSKIN FSD 60 OR APPROVED EQUAL.

2. DAMPER SHALL BE POWER OPEN & NORMALLY CLOSED DAMPER, WHICH CLOSE UPON LOSS OF POWER.

3. MOUNT MOTOR OPERATOR ON EXTERIOR OF DUCTWORK & READILY ACCESSIBLE THROUGH THE CEILING ACCESS PANEL.

4. DAMPER SHALL BE FURNISHED & INSTALLED BY DIVISION-15, MONITORED BY DIVISION-15. DAMPER SHALL BE ACTIVATED BY THE DUCT SMOKE DETECTORS LOCATED WITHIN 5 FEET DISTANCE FROM THE FSD. COORDINATE WITH DIVISION-16 FOR COMPATIBILITY WITH THE BUILDING FIRE ALARM SYSTEM.

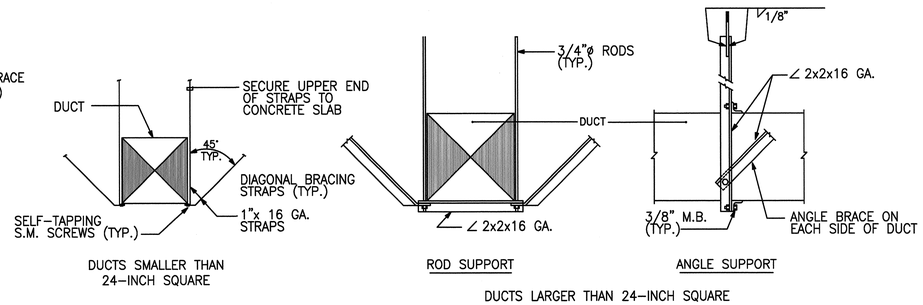
5. FURNISH ACCESS DOORS OF ADEQUATE SIZE FOR DAMPER MAINTENANCE.

6. DAMPER SHALL BE CALIF. STATE FIRE MARSHALL APPROVED AND INSTALLED IN STRICT ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES, WHICH SHALL BE MADE AVAILABLE TO THE INSPECTING AUTHORITY. DETAILS SHOWN ARE FOR REFERENCE ONLY.

7. DUCT SMOKE DETECTOR SHALL BE FURNISHED BY FIRE ALARM (DIVISION-16). INSTALLED BY DIVISION-15.

8 COMINATION FIRE & SMOKE DAMPER (FSD) DETAILIL

SCALE: NOT TO SCALE



7 DUCT HANGER AND BRACING DETAIL

SCALE: NOT TO SCALE

REVISIONS		BY
A	05-24-10	HCCC
B	08-02-10	BPC
C	HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D	09-22-10	BPC
E	10-12-10	BPC2

Om Namo Narayanaya
Om Namah Shivaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St., Suite 2700
San Francisco, CA 94111
Ph: (415) 543-9344 Fax (415) 543-9870
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MECHANICAL DETAILS

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
1200 ARROWHEAD

M15.0B

REGISTERED PROFESSIONAL ENGINEER
KURT G. SKIVIAS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

PLANCHECK RESUBMITTAL #2

PHASE–1B SCOPE OF WORK

1. THE PHASE–1B PLUMBING WORK SHALL CONSISTS OF EXTENDING THE PLUMBING UTILITIES FROM AVAILABLE SITE UTILITY SERVICES AND DISTRIBUTING TO THE NEW ADMINISTRATION BUILDINGS "C". THE UTILITIES SHALL INCLUDE BUT NOT LIMITED TO THE DOMESTIC WATER (CW), FIRE WATER (F), PG&E GAS, SANITARY SEWER AND STORM DRAIN CONNECTIONS.
2. THE REQUIRED UTILITIES SHALL BE COORDINATED WITH THE PHASE–1A SCOPE OF WORK FOR REQUIRED CAPACITY, INVERTS, PIPE MATERIAL, PIPES ZIZE, FLOW CAPACITY REQUIRED AND PRESSURE PRIOR TO THE START OF WORK.
3. THE PLUMBING CONTRACTOR SHALL COORDINATE THE REQUIRED UTILITY SIZES, POINT–OF–CONNECTIONS, PIPE INVERTS, PIPE ROUTING, PIPE MATERIAL TYPE ETC. WITH THE EXISTING SITE UTILITIES AND AS INDICATED IN THE CIVIL & LANDSCAPE DRAWINGS.
4. THE SCOPE SHALL INCLUDE MATERIAL AND LABOR, TRENCHING, BACKFILLING, SUPPORTING, CORROSSION PROTECTION, PIPE ANCHORAGE, ETC, AND COORDINATED WITH OTHER TRADE WORK AND IN COMPLIANCE WITH APPLICABLE LOCAL & STATE CODES AND STANDARDS.
5. THE FIRE–PROTECTION WORK SHALL CONSIST OF EXTENDING THE FIRE WATER FROM THE PHASE–1A STUBOUT LOCATIONS ABD DISTRIBUTED TO THE FIRE SPRINKLER SYSTEM FOR THE ADMINISTRATION BUILDING "C"AND THE COVERED WALKWAYS. THE DESIGN–BUILD FIRE PROTECTION CONTRACTOR SHALL PREPARE AND SUBMIT PLANS AND SPECIFICATIONS, HYDRAULIC CALCULATIONS AND FIRE PROTECTION SYSTEM LAYOUT INCLUDING HEAD LOCATIONS FOR A FULLY SPRINKLED BUILDING IN ACCORDANCE WITH NFPA–13 AND 14 AND THE CITY OF LIVERMORE FIRE DEPARTMENT REQUIREMENTS. PROVIDE FULL COVERAGE FOR THE BUILDING AND THE COVERED WALKWAYS.

FIRE PROTECTION GENERAL NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LATEST NFPA 13 & 14 WTH AMENDMENTS FROM THE LIVERMORE FIRE DEPARTMENT, CFC, CBC AND THE REQUIREMENTS OF THE CITY AND COUNTY FIRE MARSHAL'S OFFICE.
2. THE SCOPE OF WORK INCLUDES BUT NOT LIMITED TO PROVIDING FULL SPRINKLER FIRE PROTECTION COVERAGE FOR THE NEW BUILDING "C", AND THE COVERED WALKWAYS AS A DESIGN–BUILD (D–B) WORK. THE D–B FIRE PROTECTION CONTRACTOR SHALL PREPARE AND SUBMIT PLANS AND SPECIFICATIONS, HYDRAULIC CALCULATIONS AND SPRINKLER SYSTEM SHOP DRAWINGS TO THE CITY OF LIVERMORE PERMIT CENTER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION. (B)
3. THE D–B FIRE PROTECTION CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADE WORK, CIVIL/SITE WORK, ARCHITECTURAL AND STRUCTURAL FOR PROPER INTERFACING, PIPE ROUTING AND SPRINKLER HEAD LOCATIONS AND MAKE NECESSARY ADJUSTMENTS TO HIS WORK AS REQUIRED.
4. COORDINATE WITH DIVISION–16 FOR MONITORING OF THE FLOW AND TAMPER DEVICES AND ALARM BELL POWER REQUIREMENTS.
5. D–B CONTRACTOR SHALL CONDUCT TESTS AND DEMONSTRATIONS AS REQUIRED BY THE CITY/COUNTY FIRE DEPARTMENT AND OBTAIN FINAL PERMITS & APPROVALS PRIOR TO OCCUPANCY.
6. CONTRACTOR SHALL OBTAIN THE NECESSARY FIRE FLOW TESTS AND STREET MAIN STATIC PRESSURE FROM THE LOCAL UTILITY AND FIRE DEPARTMENT AND CONFIRM THE AVAILABLE STATIC PRESSURE PRIOR TO PREPARING AND SUBMITTING THE HYDRAULIC CALCULATIONS AND SPRINKLLER SYSTEM DESIGN.
7. ALL FIRE PROTECTION PIPING, INCLUDING TH FIRE SPRINKLER RISER, SHALL BE LOCATED INSIDE AN APPROVED INDOOR LOCATION. (B)

PLUMBING GENERAL NOTES

1. PLUMBING CONTRACTOR SHALL PROVIDE PLUMBING WORK PER THE CONTRACT DOCUMENT INCLUDING THE ARCHITECTURAL AND PLUMBING DRAWINGS AND DIVISION–15 SPECIFICATIONS.
2. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE FEDERAL, STATE AND CITY OF LIVERMORE PLUMBING CODES, LAWS AND REGULATIONS INCLUDE USGBC LEED REQUIREMENTS FOR WATER EFFICIENCY.
3. CONTRACTOR SHALL SET PLUMBING FIXTURES AND DRAINS TO ELEVATIONS AND LOCATIONS SHOWN ON ARCHITECTURAL PLANS.
4. CONTRACTOR SHALL VISIT THE SITE AND CONFIRM ALL EXISTING CONDITIONS AND REVIEW ALL DESCIPLINE DRAWINGS PRIOR TO SUBMITTING THE BIDS. DISCREPANCIES, IF ANY, MUST BE BROUGHT TO THE ATTENTION OF THE OWNERS' PROJECT MANAGER/ARCHITECT IMMEDIATELY FOR CLARIFICATION.
5. FOR EXACT SCOPE OF WORK AND PHASING REQUIREMENTS, SEE ARCHITECTURAL DRAWINGS.
6. PLUMBING MATERIALS SHALL BE IN COMPLIANCE WITH 2007 CPC. CONNECTION BETWEEN COPPER AND IRON AND STEEL PIPE SHALL BE MADE WITH DIELECTRIC ISOLATING FITTINGS, DIEELECTRIC UNIONS OR DIEELECTRIC FLANGES.
7. PROVIDE INSULATION FOR ALL DOMESTIC HOT WATER PIPING PER TITLE–24. INSULATE ALL HORIZONTAL COLD WATER PIPING AND PIPES SUBJECT TO FREEZING. INSULATION SHALL BE FIBERGLASS, RIGID MOLDED, NON–COMBUSTIBLE. PROTECT OUTDOOR INSULATION WITH HEAVY DUTY ALUMINUM JACKETTING.
8. PENETRATIONS THROUGH THE SLABS, FOUNDATION WALLS AND FOOTINGS SHALL BE SLEEVED AND COORDINATED WITH THE STRUCTURAL AND ARCHITECTURAL PLANS.
9. COORDINATE WITH CIVIL PLANS FOR ROUTING OF THE DOMESTIC WATER, FIRE WATER AND IRRIGATION WATER IN THE JOINT TRENCH.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PLUMBING UTILITY CONNECTIONS TO REFRIGERATORS, COFFEE MAKERS, DRINKING FOUNTAIN, ETC.
11. ON DIRECTION OF ARCHITECT/OWNER, PROVIDE PRODUCTS SAMPLES, MOCK–UPS AS REQUIRED. COORDINATE WITH GENERAL CONTRACTOR AND OTHER TRADE WORK AS NECESSARY TO PROVIDE THE FIELD MOCK–UP AND OBTAIN ARCHITECT/OWNER APPROVALS BEFORE PROCEEDING.
12. COORDINATE PLUMBING WORK WITH CIVIL/SITE WORK AND UTILITY COMPANY FOR PROPER INTERFACING OF THE UTILITY SIZES, PIPE INVERTS, CAPACITY, FLOW, PRESSURE, POINT–OF–CONNECTIONS, MATERIALS OF CONSTRUCTION, SUPPORTING AND CORROSION PROTECTION, ETC. MAKE ADJUSTMENTS TO PLUMBING WORK TO PROPERLY INTERFACE THE WORK WITH SITE UTILITIES.
13. ALL WORK SHALL BE WARRANTEED FOR 1–YEAR FROM THE PROJECT ACCEPTANCE BY THE ARCHITECT/OWNER. THE PROJECT ACCEPTANCE SHALL BEGIN AFTER OBTAINING ALL THE OCCUPANCY PERMITS FROM THE CITY, UPON RECEIVING ALL THE OPERATING AND MAINTENANCE (O&M) MANUALS, AS–BUILT PLANS, COMPLETION OF ALL THE PUNCHLISTED ITEMS AND SUBMITTING THE WRITTEN WARRANTY FOR THE WORK.
14. PRIOR TO REQUESTING FOR THE SUBSTANTIAL COMPLETION, REMOVE ALL CONSTRUCTION DEBRIS AND DISPOSE OFF, CLEAN ALL THE PLUMBING FIXTURES, SEWER ROD THE DRAINAGE LINES TO UNCLOG CONSTRUCTION DEBRIS, STERILIZE THE POTABLE WATER SYSTEM AND OBTAIN CERTIFICATION FROM THE LOCAL HEALTH DEPARTMENT, PRIOR TO THE PROJECT COMPLETION.

PIPING SCHEDULE

SYSTEM	LOCATION	SIZE	PIPE	FITTINGS	JOINTS
SANITARY WASTE & VENT SYSTEM	BURIED	ALL	CAST IRON, SOIL NO–HUB	CAST IRON SOIL NO–HUB	NO–HUB COUPLING
	ABOVE GROUND	ALL	COPPER PIPING SOIL NO–HUB	CAST IRON SOIL NO–HUB	NO–HUB COUPLING
	OPTION: ABOVE GROUND SANITARY W & V	W & V 2 1/2" & SMALLER	SCHEDULE 40 GALV. STEEL	GALV. CAST IRON DRAINAGE FITTINGS	SCREWED
INDIRECT WASTE (INCLUDING CONDENSATION PIPING)		1–1/4" & ABOVE	COPPER PIPING	DWV CAST DRAINAGE	50–50 SOLDER
	ALL	3/4" & 1"	COPPER PIPING	COPPER PIPING	SOLDER
DOMESTIC WATER (CW)	ABOVE GROUND	ALL	COPPER PIPING	COPPER PIPING	95–5 SOLDER
NATURAL GAS	BURIED	PG&E SPECS. & LOCAL CODE REQM'TS.			
	ABOVE GROUND NOTE: ALL PIPING SHALL CONFORM W/LOCAL CODE	3" & LARGER	SCHEDULE 40 BLACK STEEL	BUTT WELDING SEAMLESS STEEL	WELDED
		2 1/2" & SMALLER	SCHEDULE 40 BLACK STEEL	150LB MALLEABLE IRON	SCREWED
	EXPOSED TO WEATHER	ALL GAS PIPING EXPOSED TO WEATHER (ABOVE ROOF, AT METER, ETC.) SHALL BE GALVANIZED. PROVIDE APPROVED COATING (GALVALOY, OR EQUAL) OVER GALV. PIPING WELDS.			

NOTES:
1. IF "NO–HUB" IS NOT ACCEPTABLE (BY LANDLORD OR LOCAL CODE) SUBSTITUTE USING TYLER MFGP. CO. TY–SEAL JOINTS.
2. PIPING & FITTINGS SHALL BE MANUFACTURED WITHIN U.S.A.
3. DO NOT SUBSTITUTE ABOVE PIPING & FITTINGS UNLESS APPROVED BY ARCHITECT. IF LOCAL CODE/AUTHORITIES REQM'TS. DIFFER &/OR ARE MORE STRINGENT NOTIFY ARCHITECT PRIOR TO COMMENCING WORK.
4. COPPER PIPING SHALL USE LEAD–FREE SOLDER MEETING ALL CURRENT LOCAL & STATE REQM'TS.
5. ALL EXPOSED WASTE & VENT PIPING IN FINISHED AREAS SHALL BE DWV COPPER W/ WROUGHT COPPER FITTINGS (ALL W & V (2–1/2" & SMALLER)

ABBREVIATIONS

ACU	AIR CONDITIONING UNIT
AD	ACCESS DOOR
A.F.F.	ABOVE FINISHED FLOOR
AP	ACCESS PANEL (WALL OR CEILING)
ARCH.	ARCHITECTURAL
AG	AIR GAP
AHU	AIR HANDLING UNIT
BFF	BELOW FINISHED FLOOR
BTU	BRITISH THERMAL UNIT
CD	CONDENSATE DRAIN
CO	CLEAN OUT
COTG	CLEAN OUT TO GRADE
CONT	CONTINUATION
CONN	CONNECTION
CV	CHECK VALVE
CW	COLD WATER
D	SPRINKLER DRAIN
DCDVA	DOUBLE CHECK DETECTOR VALVE ASSEMBLY
DD	DECK DRAIN
DFU	DRAINAGE FIXTURE UNIT
DN	DOWN
DWG	DRAWING
ET	EXPANSION TANK
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FPS	FEET PER SECOND
FT.	FEET
GAL.	GALLONS
GC	GAS COCK
GN	GENERAL NOTE
GPF	GALLONS PER FLUSH
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GV	GATE VALVE
HB	HOSE BIBB
HP	HORSEPOWER
HR	HOUR
HW	HOT WATER
HWR	HOT WATER RETURN
HZ	HERTZ
ICW	INDUSTRIAL COLD WATER/MAKE–UP WATER
IE	INVERT ELEVATION
IN.	INCHES
IW	INDIRECT WASTE
LV	LAVATORY
LBS	POUNDS
LW	LANDSCAPE WASTE
MAX.	MAXIMUM
MBH	1000 BTU PER HOUR
MECH.	MECHANICAL
MV	MIXING VALVE
N.I.C.	NOT IN CONTRACT
N.T.S.	NOT TO SCALE
OD	OVERFLOW DRAIN
PCW	PUMPED COLD WATER
PLBG	PLUMBING
P.O.C.	POINT OF CONNECTION
RD	ROOF DRAIN
RR	ROOF RECEPTOR
RPBP	REDUCED PRESSURE BACKFLOW PREVENTER
S	SOIL
SAD	SEE ARCHITECTURAL DRAWINGS
SCD	SEE CIVIL DRAWINGS
SCVA	SPRINKLER CONTROL VALVE ASSEMBLY
SE	SEWAGE EJECTOR
SED	SEE ELECTRICAL DRAWINGS
SI	SAND INTERECPTOR
SLD	SEE LANDSCAPE DRAWING
SMD	SEE MECHANICAL DRAWINGS
SP	SUMP PUMP
SPR	FIRE SPRINKLER PIPING
SS	SANITARY SEWER DRAINAGE
S.S.D.	SEE STRUCTURAL DRAWINGS
SSK	SERVICE SINK
TD	TRENCH DRAIN
TP	TRAP PRIMER
TYP.	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
UR	URINAL
V	VENT OR VOLTS
VB	VACUUM BREAKER
VR	VENT RISER
VTR	VENT THRU ROOF
W	WASTE
W/	WITH
W/O	WITHOUT
WC	WATER CLOSET
WCO	WALL CLEAN OUT
WFU	WATER FIXTURE UNIT
WHA	WATER HAMMER ARRESTER
WMB	WASHING MACHINE BOX
WT.	WEIGHT

LEGEND

SYMBOL	ABBR	DESCRIPTION
S / 1		RISER IDENTIFICATION / RISER NUMBER
1 / P–1		DETAIL NUMBER / DRAWING NUMBER
WH / 1		EQUIPMENT IDENTIFICATION / EQUIPMENT NUMBER
	S,W	SANITARY SOIL OR WASTE PIPING ABOVE GROUND
	S,W	SANITARY SOIL OR WASTE PIPING BELOW FLOOR
SD	SD	STORM DRAIN
RWL	RWL	RAIN WATER LEADER
	V	VENT PIPING
	CW	DOMESTIC COLD WATER PIPING
	HW	DOMESTIC HOT WATER
	HWR	HOT WATER RETURN
G	G	NATURAL GAS, LOW PRESSURE, PIPING
ICW	ICW	INDUSTRIAL COLD WATER PIPING
CA	CA	COMPRESSED AIR
SOL	SOL	SOLAR HAT WATER
VAC	VAC	VACUUM
F	F	FIRE PROTECTION PIPING
		SLOPE DOWN
	HB	HOSE BIBB
	CO	CLEAN OUT
	FCO	FLOOR CLEAN OUT
	WCO	WALL CLEAN OUT
	TPRV	TEMPERATURE & PRESSURE RELIEF VALVE
	FD	FLOOR DRAIN
		UNION
		REDUCER
	PG	PRESSURE GAUGE
	TH	THERMOMETER
		LINE CONTINUED
	GV	GATE VALVE
	GC	GAS COCK
	BV	BALL VALVE (2" OR SMALLER)
	GLV	GLOBE VALVE
	CV	CHECK VALVE
		STRAINER
	FCV	FLOW CONTROL VALVE
	PRV	PRESSURE REDUCING VALVE
	SF	SQUARE FEET
	POC	POINT OF CONNECTION

DRAWING LIST

DWG. NO.	DESCRIPTION
P10.0B	PLUMBING GENERAL NOTES, LEGEND, ABBREVIATIONS
P10.1B	PLUMBING SCHEDULES
P11.1B	PLUMBING RISER DIAGRAMS
P11.2B	PLUMBING SPECIFICATIONS
P12.0B	PLUMBING SITE PLAN (PHASE–1A)
P13.0B	PLUMBING FLOOR PLAN
(B) P14.0B	PLUMBING ROOF PLAN
P15.0B	PLUMBING DETAILS

REVISIONS	BY
(A) 05–24–10	HCCC
(B) 08–02–10	BPC
(C) HEALTH DEPT PLAN CHECK 08–26–10	HDPC
(D) 09–22–10	BPC
(E) 10–12–10	BPC2

Om Namo Narayanaya
Om Namah Shivaya

NEW BUILDING "C" - PHASE 1B
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1200 ARROWHEAD AVE. LIVERMORE, CA 94551

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PLUMBING LEGEND
DRAWING INDEX
GENERAL NOTES

REGISTERED PROFESSIONAL ENGINEER
KUPPU C. SRINIVAS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

P10.0B

PLANCHECK RESUBMITTAL #2

FIXTURE CONNECTION SCHEDULE

CODE	DESCRIPTION	MANUFACTURER & MODEL NO.	SOIL-WASTE	TRAP	VENT	CW	HW	REMARKS
WC-1	WATER CLOSET (WALL HUNG)	AMERICAN STANDARD, AFWALL FLOWISE, ELONGATED, 1.28 GPF MODEL 3351.128, WHITE, OPEN FRONT SEAT #5905.100,	4"	–	2"	1¼"	–	1.28 GPF,PUBLIC USE FLUSH VALVE SLOAN ROYAL 111-1.28 WITH VACUUM BREAKER FLUSH CONN'N.
WC-2	WATER CLOSET ADA (WALL HUNG)	SAME AS WC-1 MOUNT FOR HANDICAP	4"	–	2"	1¼"	–	1.28 GPF,PUBLIC USE FLUSH VALVE SLOAN ROYAL 111-1.28 WITH VACUUM BRKER FLUSH CONN'N, ADA HANDLE.
UR-1	URINAL ADA (WALL HUNG)	AMERICAN STANDARD 'FLOWISE FLUSH-FREE WATERLESS URINAL MODEL 6150.100	2"	–	2"	–	–	WALL HUNG, INTEGRAL HOUSING AND DRAIN INSERT ODOR BARRIER LIQUID DRAIN INSERT, WHITE, ADA
LV-1	LAVATORY (COUNTER MOUNT)	AMERICAN STANDARD 'OVALYN' UNDERCOUNTER SINK MODEL 0495.221	2"	1¼" X 1½"	1½"	½"	½"	FOR PUBLIC USE TOILET ROOMS. UNDER COUNTER MOUNTED, ADA COMPLIANT. SLOAN HANDS FREE FAUCET #SF-2350 SERIES BATTERY POWERED
SSK-1	SERVICE SINK	CORNER – FIAT TSBC 1610 SERVICE SINK	3"	3"	2"	¾"	¾"	FAUCET – FIAT 830-AA.
DF-1	DRINKING FOUNTAIN	HAWS WALL MOUNTED MODEL 1119	2"	1¼" X 1½"	1½"	½"	–	HI-LOW TYPE WITH DUAL BUBBLER, ADA ACCESSIBLE
HB-1	HOSE BIBB-INTERIOR	WOODFORD MODEL 24P, ½" CHROME PLATED WALL FAUCET WITH VACUUM BREAKER & TEE KEY.	–	–	–	¾"	–	MOUNT ON WALL UNDER LAV'S IN PUBLIC TOILET ROOMS
HB-2	HOSE BIBB-EXTERIOR	WOODFORD MODEL B74 SERIES 3/4" WALL HYDRANT WITH VACUUM BREAKER, LOOSE TEE KEY, AND DOOR.	–	–	–	¾"	–	FOR EXTERIOR AREAS. SEE NOTE ②
TP-1	TRAP PRIMER	PROVIDE MIFAB MR-500 SERIES WITH MI-DU 1/2" CW CONNECTION						SEE NOTE ①
HB-3	HOSE REEL WITH SPRAY VALVE	CHICAGO FAUCET, MODEL #535-NF, WITH RETRACTABLE 35'X⅜" RUBBER HOSE, 3/4" 893 ATM. VACUUM BREAKER, 80H SELF CLOSING SPRAY VALVE, 376 SHUT OFF VALVE, 885VOC EXPOSED T-VALVE FITTING FOR HOT & COLD WATER CONNECTION, ETFC REMOVABLE SERRATED HOSE NOZZLE WITH FLOW CONTROL.WALL HYDRANT WITH VACUUM BREAKER, LOOSE TEE KEY, AND DOOR.	–	–	–	¾"	¾"	WALL MOUNT VALVE AND HOSE INSIDE THE TRASH ENCLOSURE. CONNECT HOT WATER & COLD WATER CONNECTIONS & INSULATE BOTH HOT AND COLD WATER PIPES TO PROTECT FROM FREEZING.

D

NOTES

① PROVIDE TRAP PRIMERS TO ALL FLOOR DRAINS TO MAINTAIN WATER SEAL AT THE TRAPS.

② PROVIDE TWO HOSE BIBBS ON EAST AND WEST ENDS OF THE BUILDING AND TWO HOSE BIBBS ON ROOF ON EACH OF EAST & WEST ENDS FOR PERIODIC WASHING SOLAR PV PANELS.

PLUMBING EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL NO.
ET 1	EXPANSION TANK	BELL AND GOSSETT MODEL PTA-12, ASME, 125 PSIG WORKING PRESSURE PROVIDE NORMALLY OPEN VALVE WITH LOCK; WEIGHT WITH WATER = 100 LBS.
GI 1	GREASE INTERCEPTOR	J.R. SMITH 'GREASE INTERCEPTORS" MODEL 8025-25 EMBEDDED IN CONCRETE FLOOR INSIDE THE TRASH ENCLOSURE. SEE PLUMBING DRAWING P12.0B. NO-HUB ADAPTORS, PDI CERTIFIED AND LOCAL CODE COMPLIANT.

D

NOTES

① ---

WATER HEATER SCHEDULE

CODE	MFR	MODEL	SERVICE/LOCATION	GAS INPUT (BTU/HR)	EFF. (%)	GPH	GALS.	TEMP. RISE	WORKING PRESS. (MAX)	OPERATING WEIGHT (LBS.)	REMARKS (SEE NOTES BELOW)
WH 1	RINNAI TANKLESS	RC98HPi-NG	BLDG-C/JAN ROOM	199,000	96	588	–	60	150	100	TANKLESS, ELECTRONIC IGNITION, LOW PRESSURE GAS, 110 F SUPPLY TO PUB. LAVATORIES
WH 2	POWER STAR TANKLESS ELECTRIC	AE12	TRASH ENCLOSURE	12 kW 240/208V 50 AMP	99	60	–	70	150	10	TANKLESS, ELECTRIC, 130 F SUPPLY TO HOSE BIB IN TRASH ENCLOSURE, THERMOSTATIC ADJUSTABLE CONTROL, UL LISTED

D

NOTES

① INSTALL WATER HEATER ON THE ROOM WALL PER MANUFACTURER INSTALLATION GUIDELINES AND MAINTAINING CODE CLEARANCES TO ELECTRICAL PANEL.
② PROVIDE DIRECT VENT COMBUSTION AIR INTAKE AND EXHAUST VENTS FROM ROOF PER WATER MANUF. RECOMMENDATIONS.
③ TERMINATE WH CONDENSATE DRAIN AND FLUE DRAIN INTO CONDENSATE NEUTRALIZER KIT PRIOR TO TERMINATING INDIRECTLY TO JANITOR SINK.
④ 120V/1PH POWER. COORDINATE WITH DIVISION-16 FOR REQUIRED POWER SUPPLY. WATER HEATER SHALL BE CEC TITLE-24 LISTED.
⑤ PROVIDE STANDARD DIGITAL CONTROLLER #MC-91-S/W, CEILING/ROOF PENETRATION ASSEMBLY, VENT TERMINATION HEAD, CONDENSATE NEUTRALIZING KIT.
⑥ SEISMICALLY ANCHOR THE UNIT TO THE WALL. PROVIDE NECESSARY MOUNTING BRACKETS, HARWARE AND BACKING PLATE SUPPORTS AS REQUIRED.

WATER HAMMER ARRESTOR SCHEDULE

CODE	J.R. SMITH FIG. NUMBER	PIPE SIZE	PDI SIZE	ALLOWABLE FIXTURE UNITS	REMARKS
WHA-A	5005	¾"	A	1-11	PROVIDE WITH 8" X 8" S/S WALL MOUNTED ACCESS PANEL
WHA-B	5010	1"	B	12-32	PROVIDE WITH 8" X 8" S/S WALL MOUNTED ACCESS PANEL

PUMP SCHEDULE

CODE	GPM	TDH FT	MFR:	TYPE & SIZE	V/PH	HP	SERVICE	LOCATION	REMARKS
CP 1	10	20	B&G	NBF-36-1	120V/1	1/3 HP	HOT WATER CIRCULATING	BLDG-C/ JAN ROOM	CIRCULATING PUMP

NOTES

① PROVIDE B&G AUTOMATIC TIMER KIT TC-1 7 AQUASTAT MODEL AQS-3/4, 120V/1PH.

DRAIN AND CLEANOUT SCHEDULE

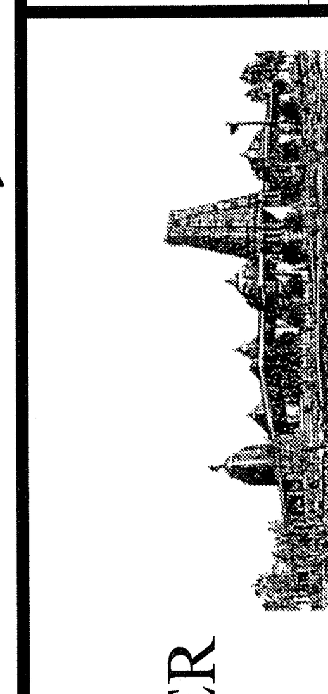
CODE	DESCRIPTION - FLOOR FINISH	J.R. SMITH FIG. NUMBER	CONN.	TOP GR. MATERIAL	GRATE SIZE	REMARKS
FD-1	FLOOR DRAIN - TILE	2005Y-B-P050	2"	NB	5" SQ	①② TOILET ROOMS
FD-2	FLOOR DRAIN - CONCRETE	2005C-B-P050	2"	NB	5" DIA	①② TOILET ROOMS
FD-3	FLOOR DRAIN - CONCRETE	DX2010-BB-P050	2"	NB	5" DIA	① FOR TRASH ENCLOSURE AND SIMILAR HIGH-TRAFFIC AREAS
FCO-1	FLOOR CLEANOUT-TILE/CONC.	4100S-PB	2" - 4"	–	–	POLISHED BRONZE TOP
WCO-1	WALL CLEANOUT	4402	3" & 4"	–	–	STAINLESS STEEL COVER
RD-1	ROOF DRAIN - MAIN	1010Y-C-R-CL	3" & 4"	–	–	
OD-1	ROOF DRAIN - OVERFLOW	1080Y-C-R-CL	3" & 4"	–	–	

D

NOTES

① PROVIDE P-TRAP WITH TRAP PRIMER CONNECTION
② LOCATE THE FLOOR DRAINS AWAY FROM FOOT TRAFFIC.

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2



NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Pamidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2025
San Francisco, California 94111
Ph (415) 543-9344 Fax (415) 543-0670
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PLUMBING
EQUIPMENT SCHEDULES

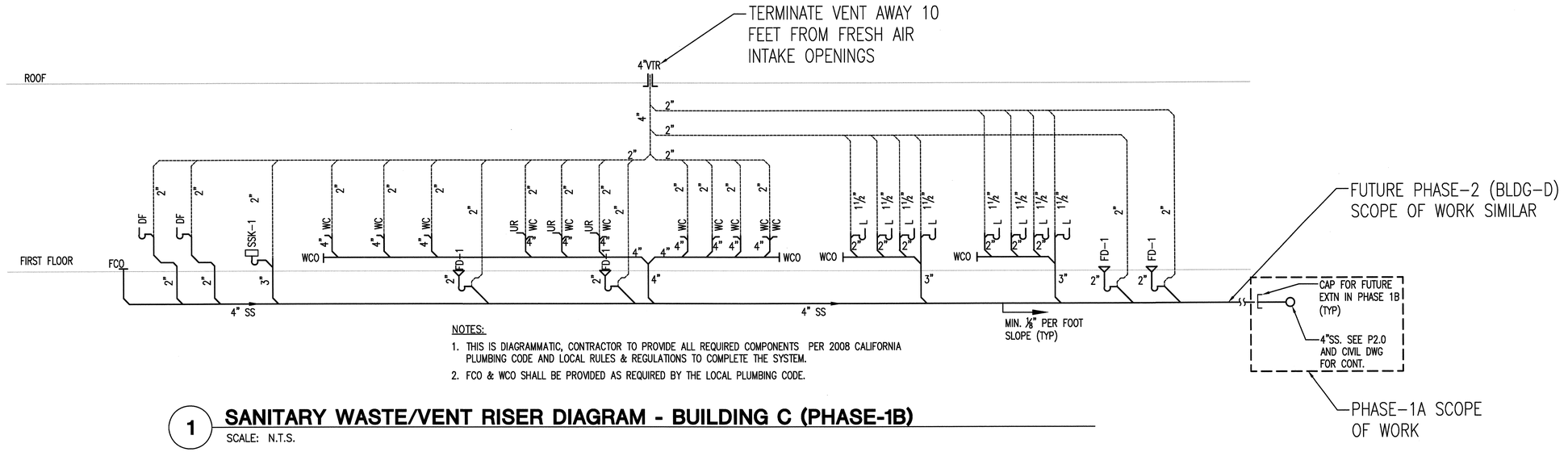
DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:

PROJECT:
1200 ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER KUPPE G. SRINIVAS No. M18346 Exp. 9/30/12 MECHANICAL STATE OF CALIFORNIA

P10.1B

PLANCHECK RESUBMITTAL #2

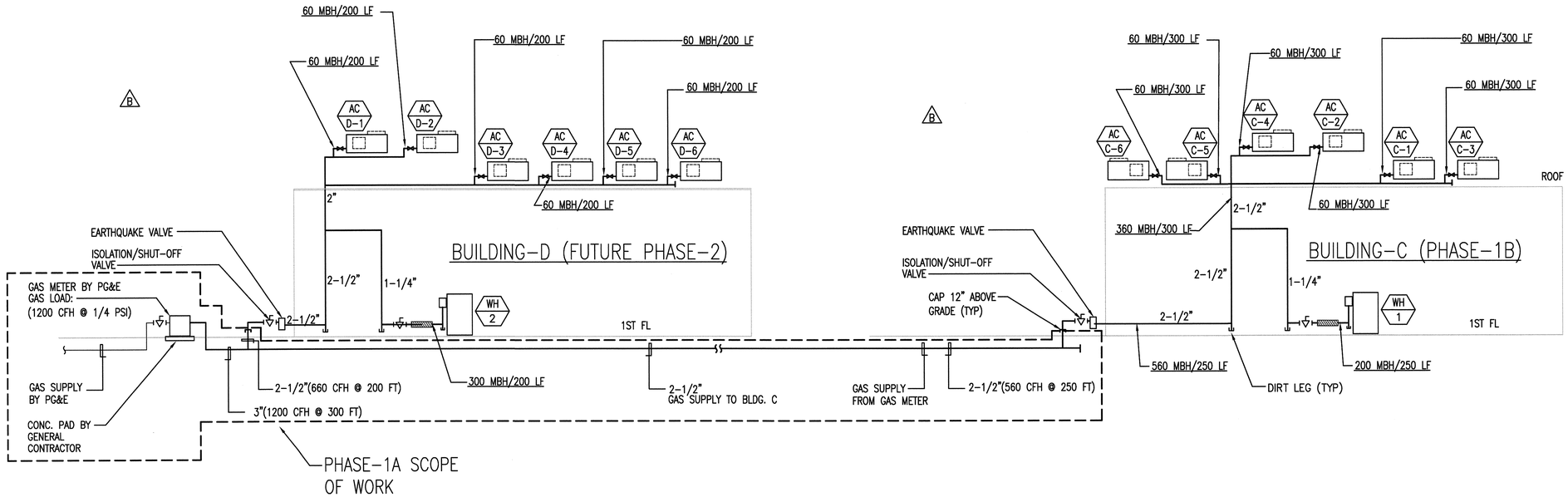


NOTES:

1. THIS IS DIAGRAMMATIC, CONTRACTOR TO PROVIDE ALL REQUIRED COMPONENTS PER 2008 CALIFORNIA PLUMBING CODE AND LOCAL RULES & REGULATIONS TO COMPLETE THE SYSTEM.
2. FCO & WCO SHALL BE PROVIDED AS REQUIRED BY THE LOCAL PLUMBING CODE.

1 SANITARY WASTE/VENT RISER DIAGRAM - BUILDING C (PHASE-1B)

SCALE: N.T.S.



3 NATURAL GAS RISER DIAGRAMS - BUILDING C AND D

SCALE: N.T.S.

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
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E 10-12-10	BPC2

One Namo Narayanaya
One Namah Shivaya

NEW BUILDING "C" - PHASE 1B
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PLUMBING
RISER DIAGRAMS

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

P11.1B

REGISTERED PROFESSIONAL ENGINEER
DILIPKUMAR G. SRIVASTAVA
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

PLANCHECK RESUBMITTAL #2

PLUMBING SPECIFICATIONS:

I. GENERAL

1.01 CONDITIONS AND REQUIREMENTS:

A. THE GENERAL CONDITIONS AND GENERAL REQUIREMENTS OF THE CONTRACT DOCUMENT ARE HEREBY MADE A PART OF THIS SECTION AS FULLY AS IF REPEATED HEREIN.

1.02 DESCRIPTION OF WORK:

A. EXTENT OF PLUMBING SYSTEM WORK REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS, SCHEDULES AND BY REQUIREMENTS OF THIS SECTION.

B. TYPE OF WORK SPECIFIED INCLUDE THE FOLLOWING:

1. SANITARY DRAINAGE AND VENT SYSTEMS COMPLETE TO POINT OF CONNECTION.
2. POTABLE WATER SYSTEMS COMPLETE TO POINT OF CONNECTION.
3. DOMESTIC HOT WATER SYSTEMS AS SHOWN TO POINT, PIPING, VALVES AND INSULATION.
4. PLUMBING FIXTURES AND TRIM AS SPECIFIED HERE AND THE ARCHITECTURAL DRAWINGS INCLUDING ALL REQUIRED ACCESSORIES.
5. ACCESS PANELS AS REQUIRED FOR WALL, FLOOR AND GRADE CLEANOUTS AND VALVES.
6. SECURE AND PAY FEES FOR PERMIT, LICENSES, INSPECTIONS AND ROYALTIES REQUIRED FOR WORK OF THIS SECTION.
7. OTHER NECESSARY ITEMS REQUIRED AND INCIDENTAL TO COMPLETING ALL PLUMBING WORK AS INDICATED ON THE DRAWINGS AND DESIGNATED HEREIN.

C. FLASHING REQUIRED IN CONJUNCTION WITH WASTE, VENT AND WATER SYSTEMS ARE INCLUDED AS WORK OF THIS SECTION.

1.03 QUALITY ASSURANCE:

A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF PLUMBING SYSTEMS, PRODUCTS, OF TYPE, MATERIALS AND SIZES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.

B. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH PLUMBING SYSTEMS WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT.

C. CODES AND STANDARDS:

1. 2008 CALIFORNIA PLUMBING CODE COMPLIANCE: COMPLY WITH APPLICABLE PORTIONS OF LOCAL PLUMBING CODE PERTAINING TO SELECTION AND INSTALLATION OF PLUMBING MATERIALS AND PRODUCTS.
2. CCR COMPLIANCE: COMPLY WITH APPLICABLE STATE ENERGY REGULATIONS REQUIREMENTS.
3. AGA COMPLIANCE: ALL GAS APPLIANCES AND EQUIPMENT SHALL COMPLY WITH REQUIREMENTS OF AMERICAN GAS ASSOCIATION.
4. USGBC – LEED v2.2 REQUIREMENTS FOR WATER EFFICIENCY AND WATER SAVINGS.

1.04 SUBMITTALS:

A. OF ALL PLUMBING EQUIPMENT, PLUMBING FIXTURES CUT SHEETS AND PLUMBING MATERIALS FOR OWNER AND OR ARCHITECTS' APPROVAL.

B. PLUMBING PIPING SHOP DRAWINGS AT 1/4"=1'-0" SCALE MINIMUM.

II. PRODUCTS:

2.01 PIPING:

A. DOMESTIC WATER HOT AND COLD: TYPE "L" HARD DRAWN COPPER WITH 95/5 SOLDER JOINTS.

B. SOIL, WASTE AND VENT ABOVEGROUND: CAST IRON SOIL, PLAIN END (HUBLESS) SERVICE WEIGHT WITH NEOPRENE SLEEVE AND STAINLESS STEEL SHIELD JOINTS.

2.02 VALVES:

A. BALL VALVES: STOCKHAM S-217-BR-R-S, EPT SEAT. THREADED, STOCKHAM FIG. S-214-BR-R-T

B. CHECK VALVES: THREADED STOCKHAM FIG. B-319 SWEAT, STOCKHAM FIG. B-309

C. WATER PRESSURE REDUCING VALVES: WATTS, AW CASH, CLAYTON OR APPROVED SUBSTITUTE. CASH FIGURE EB-24U. SET PRESSURE AT 60 PSI.

2.03 PIPING INSULATION:

A. GENERAL IN ACCORDANCE WITH TITLE 24 ENERGY REGULATIONS.

B. MANUFACTURER: OWEN-CORNING FIBERGLASS, ARMSTRONG, MANVILLE OR CETAIN-TEED.

C. PRE-MOLDED 1" FIBERGLASS WITH ASJ, R-4 MINIMUM.

2.04 DRAINAGE AND PIPING SPECIALTIES:

A. MANUFACTURERS: SMITH, JOSAM, WADE, JONESPEC OR ZURN. 100% USA MANUFACTURED COMPONENTS ONLY.

B. CLEANOUTS: PROVIDE WHERE SHOWN; TYPES AND SIZES AS SCHEDULED.

C. AIR CHAMBERS: PROVIDE ON ALL COLD AND HOT WATER CONNECTIONS WITHOUT A WATER HAMMER ARRESTOR, 18" HIGH AND DIAMETER SAME SIZE AS SUPPLY. NIBCO MODEL 620L.

D. TRAP PRIMER: INSTALL WHERE SHOWN OR REQUIRED BY CODE. PRECISION PLUMBING PRODUCTS OR MIFAB; TYPE AND SIZES AS SCHEDULED.

E. FLOOR DRAINS: PROVIDE WHERE SHOWN; TYPE AND SIZES AS SCHEDULED.

F. TRAPS; PROVIDE FOR DRAINS, SHOWERS AND SIMILAR TYPE FIXTURES. PROVIDE CLEAN-OUT PLUG IN ALL SINK P-TRAPS.

G. HOSE BIBBS: WOODFORD OR APPROVED EQUAL
HB-1 – MODEL 24P, CHROME FINISH, VACUUM BREAKER
HB-2 – MODEL 24P, BRASS FINISH, VACUUM BREAKER

2.05 FIXTURE SUPPORTS:

A. GENERAL: PROVIDE PLUMBING FIXTURE CARRIERS, SUPPORTS, AND DEVICES TO CARRY LOADS INDEPENDENTLY OF WALLS OR PARTITIONS. SECURELY BOLT SUPPORTS TO FLOOR WITH POWDER-DRIVEN OR DRILLED INSERTS OR STUDS.

B. MANUFACTURER: JOSAM, J.R. SMITH, WADE OR ZURN. SELECTION BASED ON J.R. SMITH.

2.06 ACCESS DOORS AND PANELS: (CEILINGS AND WALLS)

A. WHERE REQUIRED: WHEREVER A PIECE OF EQUIPMENT OR VALVE AND OPERATOR IS INACCESSIBLE AND REQUIRES ACCESS FOR MAINTENANCE, REPAIR OR ADJUSTMENT.

B. SIZE: SIZE IS DEPENDENT UPON THE RELATIONSHIP OF THE DOOR TO THE PRODUCT BEING SERVICED; THEREFORE, THE SIZE OF THE DOOR SHALL BE SELECTED TO PROVIDE CONVENIENT ACCESS TO ITS CONTENTS. SUBMIT SIZES FOR REVIEW.

C. MANUFACTURER: INRYCO/MILCOR, OR EQUAL BILCO, CESCO, KARP OR NYSTROM.

2.07 FIXTURE SUPPLIES AND STOPS

A. LAVATORIES: SPEEDWAY CRSST-1912-A OR APPROVED SUBSTITUTE.

B. SINKS: SPEEDWAY CRSST-1912-K OR APPROVED SUBSTITUTE.

C. WALL MOUNTED FAUCETS: SCREWDRIVER STOPS OR FAUCETS MAY HAVE INTEGRAL STOPS IN LIEU OF SEPARATE STOPS.

D. TANK WATER CLOSETS: SPEEDWAY CRSST-1912-DL

2.08 FIXTURE FLOW CONTROLS: TO COMPLY WITH TITLE 24 AT EACH FIXTURE AS FOLLOWS: MODEL ARE FOR DOLE:

A. LAVATORIES: TYPE FMB, 0.5 GPM EXCEPT FAUCETS WITH 0.5 GPM FLOW.

B. SINKS: TYPE SR, 2.0 GPM.

2.14 PLUMBING FIXTURES:

A. GENERAL: PROVIDE FACTORY-FABRICATED FIXTURES OF TYPE, STYLE AND MATERIAL. FOR EACH TYPE FIXTURE, PROVIDE MANUFACTURER'S STANDARD TRIM, CARRIER, SEATS AND VALVES AS INDICATED BY THEIR PUBLISHED PRODUCT INFORMATION; EITHER AS DESIGNED AND CONSTRUCTED, OR AS RECOMMENDED BY THE MANUFACTURER, AND AS REQUIRED FOR A COMPLETE INSTALLATION. WHERE MORE THAN ONE TYPE IS INDICATED, SELECTION IS INSTALLER'S OPTION BUT ALL FIXTURE OF THE SAME TYPE MUST BE FURNISHED BY A SINGLE MANUFACTURER OR AS INSTRUCTED BY THE OWNER OR THE ARCHITECT.

B. OTHER MATERIALS:

ALL OTHER MATERIALS NOT SPECIFICALLY DESCRIBED BUT REQUIRED FOR A COMPLETE AND PROPER INSTALLATION SHALL BE NEW, FIRST QUALITY OF THEIR RESPECTIVE KINDS, AND SUBJECT TO THE APPROVAL OF THE ARCHITECT.

III. EXECUTION:

3.01 GENERAL:

A. INSPECTIONS:

1. PRIOR TO ALL WORK OF THIS SECTION, CAREFULLY INSPECT THE INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE THIS INSTALLATION MAY PROPERLY COMMENCE.
2. VERIFY THAT ALL PLUMBING MAY BE INSTALLED IN STRICT ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS AND THE APPROVED SHOP DRAWINGS.

B. DISCREPANCIES:

1. IN THE EVENT OF DISCREPANCIES, IMMEDIATELY NOTIFY THE ARCHITECT.
2. DO NOT PROCEED WITH INSTALLATION IN AREAS OF DISCREPANCY UNTIL ALL SUCH DISCREPANCIES HAVE BEEN FULLY RESOLVED.

C. COORDINATION:

1. COORDINATE WORK WITH RELATED TRADES TO PREVENT UNDUE DELAY IN JOB PROGRESS.
2. CONTRACTOR SHALL PROVIDE A PERSON TO BE RESPONSIBLE FOR MAINTAINING PROPER POSITIONING AND ALIGNMENT OF ALL ITEMS DURING CONCRETE POURING.
3. PROVIDE MATERIALS IN SUFFICIENT QUANTITIES ON JOB SITE TO COMPLETE THE WORK AND TO ACCOMMODATE MINOR UNFORESEEN CHANGES AND ADDITIONS IN THE SCOPE OF WORK.

3.02 PIPING:

A. GENERAL:

1. SYSTEM LAYOUTS AS INDICATED ON DRAWINGS ARE GENERALLY DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION WILL PERMIT.

B. PIPING:

1. ANY SECTION OF PIPE FOR WHICH SIZE IS NOT SHOWN OR ANY INTERMEDIATE SECTION ERRONEOUSLY SHOWN OBVIOUSLY UNDERSIZED SHALL BE THE SAME SIZE AS THE LARGEST LINE CONNECTING TO IT.
2. INSTALL UNIONS AT CONNECTIONS TO EQUIPMENT, ON SERVICE SIDE OF VALVES AND ELSEWHERE AS REQUIRED OR SHOWN TO FACILITATE MAINTENANCE.
3. INSTALL DIELECTRIC INSULATING CONNECTIONS BETWEEN ALL DISSIMILAR METALS UNLESS OTHERWISE INDICATED.
4. ARRANGE PIPING AND HANGERS TO ALLOW FOR EXPANSION, CONTRACTION AND STRUCTURAL SETTLEMENT. DO NOT INSTALL PIPING IN CONTACT WITH THE BUILDING STRUCTURE.
5. UNLESS SPECIFICALLY INDICATED OTHERWISE, INSTALL PIPING CONCEALED ABOVE CEILINGS, BENEATH THE FLOORS OR IN WALLS.
6. SLOPING, VENTING AND DRAINAGE:

SLOPE PIPING AS INDICATED, TRUE TO LINE AND GRADE FREE OF TRAPS AND AIR POCKETS. UNLESS INDICATED OTHERWISE, SLOPE PING IN DIRECTION OF FLOW AS FOLLOWS:

SERVICE	INCLINATION	SLOPE
DOMESTIC WATER	LEVEL	
SANITARY VENT	UP	1/8" PER FT (MIN.)
SANITARY WASTE	DOWN	1/4" PER FT (MIN.)
CONDENSATE DRAIN	DOWN	1/4" PER FT (MIN.)

7. RUN ALL PIPING GENERALLY LEVEL, FREE OF UNNECESSARY TRAPS AND BENDS, ARRANGE TO CONFORM TO THE BUILDING REQUIREMENTS AND TO SUIT NECESSITIES OF CLEARANCE FOR OTHER WORK.
8. DOMESTIC WATER: CONNECT COPPER TUBING TO FIXTURES WITH COPPER FITTINGS; CHROME PLATED WHERE EXPOSED. PROVIDE 12" HIGH AIR CHAMBERS AT FIXTURE CONNECTIONS. PREVENT DAMAGE TO FINISHED SURFACES.
9. COPPER: CRIMPING OF COPPER TUBING IS PROHIBITED. ISOLATE COPPER PIPE AND TUBING FROM CONTACT WITH STEEL.
10. THREADED JOINTS: APPLY TEFLON TAPE TO MALE THREADS.
11. SOLDERED JOINTS: CLEAN SURFACES TO BE JOINT OF OIL, GREASE, RUST AND OXIDES. CLEAN SOCKET OF FITTING AND END OF PIPE THOROUGHLY WITH EMERY CLOTH SO AS TO REMOVE RUST AND OXIDES. AFTER CLEANING, APPLY AND END OF PIPE THOROUGHLY WITH EMERY CLOTH SO AS FLUX TO JOINT SURFACE AND SPREAD EVENLY BEFORE ASSEMBLY OR HEATING.
12. DO NOT COVER OR ENCLOSE THE PIPING WORK BEFORE IT HAS BEEN TESTED, INSPECTED AND APPROVED.
13. SEAL ALL PIPING PENETRATING THE ROOF WITH 4 LB. SHEET LEAD FLASHING WITH 8" SKIRT AND COUNTER FLASHING RIM SEALED WITH A NON HARDENING MASTIC.

C. PIPE CLEANING:

1. DURING INSTALLATION, PIPING SHALL BE KEPT CLEAN AND DRY. THE PLUMBING CONTRACTOR SHALL PHYSICALLY PRE-CLEAN ALL WATER SYSTEM PIPING TO REMOVE DIRT, DEBRIS, GRASE, OIL AND CORROSION PRODUCTS THAT MAY HAVE ACCUMULATED DURING CONSTRUCTION

D. PIPE TESTING:

1. TEST PIPING AS NOTED BELOW WITH NO LEAK OR LOSS OF PRESSURE. EPAIR OR REPLACE DEFECTIVE PIPING UNTIL TESTS ARE ACCOMPLISHED SUCCESSFULLY.

TEST SCHEDULE:

SYSTEM	MEDIUM	PRESSURE	TEST TIME
DOMESTIC WATER	WATER	150 PSIG	4 HOURS
SANITARY VENT	WATER	15 FEET	2 HOURS
SANITARY WASTE	WATER	15 FEET	2 HOURS
PROPANE GAS	AIR	50 PSIG	1 HOUR

E. STERILIZATION OF DOMESTIC WATER PIPING:

1. AFTER PRELIMINARY PURGING, CLEANING, AND FLUSHING OF THE SYSTEM, CHLORINATE THE ENTIRE POTABLE DOMESTIC WATER SYSTEM IN ACCORDANCE WITH THE CURRENT RECOMMENDATIONS OF THE AMERICAN WATER WORKS ASSOCIATION AND IN ACCORDANCE WITH ALL PERTINENT STATE AND LOCAL HEALTH CODES AND REGULATIONS.
2. CHLORINATE ONLY WHEN PRESCHEDULED AND PROVIDE PROPER WARNING SIGNS AT OUTLETS.
3. UPON COMPLETION OF THE STERILIZATION, THOROUGHLY FLUSH THE ENTIRE POTABLE WATER SYSTEM AND IMMEDIATELY FILL THE SYSTEM.
4. WHEN STERILIZATION AND FLUSHING ARE COMPLETE, ARRANGE WITH PERTINENT AGENCIES FOR ALL REQUIRED TESTS ON MAINS AND SYSTEMS.

3.03 FIXTURE INSTALLATIONS AND CONNECTIONS:

A. GENERAL:

1. SET FIXTURES TO EQUAL HEIGHT, PLUMB OR AT RIGHT ANGLES TO WALL. CONNECT TO WASTE AND WATER SUPPLIES IN NEAT, UNIFORM AND FINISHED MANNER. PROVIDE NECESSARY TRIM AND APPURTENANCES FOR COMPLETE INSTALLATION. SEE ARCHITECTURAL DRAWINGS FOR FIXTURE HEIGHTS, SPACING, ARRANGEMENTS, ETC.

B. CLEANING AND PROTECTION:

1. CLEAN PLUMBING FIXTURES OF DIRT AND DEBRIS UPON COMPLETION OF INSTALLATION.
2. PROTECT INSTALLED FIXTURES FROM DAMAGE DURING THE REMAINDER OF CONSTRUCTION PERIOD.

C. FIELD QUALITY CONTROL:

1. UPON COMPLETION OF INSTALLATION OF PLUMBING FIXTURES AND AFTER UNITS ARE WATER PRESSURIZED, TEST FIXTURES TO DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. WHEN POSSIBLE, CORRECT MALFUNCTIONING UNITS AT SITE, THEN RE-TEST TO DEMONSTRATE COMPLIANCE; OTHERWISE REMOVE AND REPLACE WITH NEW UNITS AND PROCEED WITH RETESTING.
2. INSPECT EACH INSTALLED UNIT FOR DAMAGE TO FINISH. IF FEASIBLE, RESTORE AND MATCH FINISH TO ORIGINAL AT SIRE; OTHERWISE, REMOVE FIXTURE AND REPLACE WITH NEW UNIT. FEASIBILITY AND MATCH TO BE JUDGED BY THE ARCHITECT. REMOVE CRACKED OR DENTED UNITS AND REPLACE WITH NEW UNITS.

3.04 CLEANING UP:

A. PRIOR TO ACCEPTANCE OF THE BUILDINGS, THOROUGHLY CLEAN ALL EXPOSED PORTIONS OF THE PLUMBING INSTALLATION, REMOVING ALL LABELS AND ALL TRACES OF FOREIGN SUBSTANCE, USING ONLY A CLEANING SOLUTION APPROVED BY THE MANUFACTURER OF THE PLUMBING ITEM AND BEING CAREFUL TO AVOID ALL DAMAGE TO FINISHED SURFACES.

B. SUBMIT A SIGNED COPY OF ALL TEST REPORTS TO THE ARCHITECTS.

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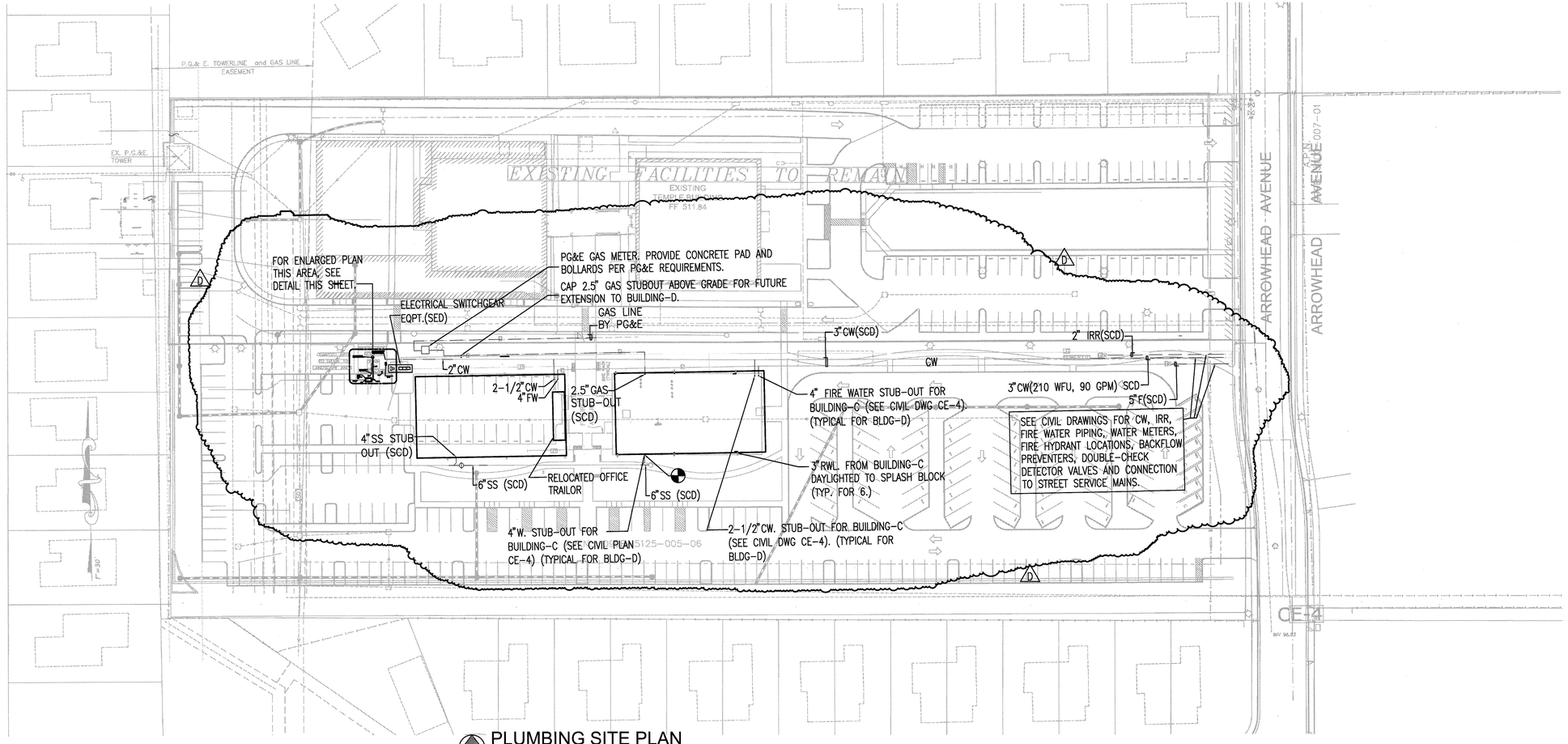
MECHANICAL SPECIFICATIONS
BUILDING - C

REGISTERED PROFESSIONAL ENGINEER
VIJAYE G. SRINIVASAN
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

P11.2B



PLUMBING SITE PLAN

NORTH

SCALE:1"=50'-0"

GENERAL NOTES

A. ALL WORK SHALL COMPLY WITH CURRENT 2007 CMC AND CPC AND CITY OF LIVERMORE CODES AND REGULATIONS.

B. SEE CIVIL DRAWINGS (SCD) FOR ALL SITE UTILITY LOCATIONS, SIZES, INVERTS, POINT-OF-CONNECTIONS, PIPE MATERIAL OF CONSTRUCTION, ETC. COORDINATE WORK OF THIS DIVISION WITH THE WORK OF OTHER TRADEWORK – ARCHITECTURAL, STRUCTURAL, CIVIL, LANDSCAPE, PG&E JOINT TRENCH AND ELECTRICAL AND MAKE ADJUSTMENTS TO WORK OF THIS DIVISION AT NOT EXTRA COST. THIS DIVISION PLUMBING CONTRACTOR SHALL COORDINATE ALL THE NECESSARY UTILITY STUBOUT LOCATIONS TO SERVE BUILDING-C AND FUTURE BUILDING-D.

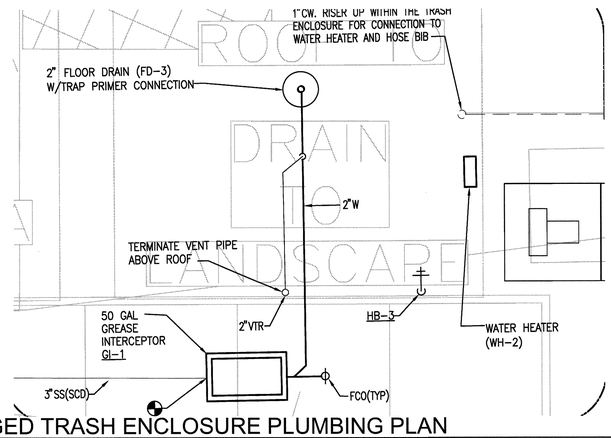
C. PROVIDE ALL BELOW GRADE PIPING UNDER THE BUILDING AS SCHEDULED. WHEN CONNECTING TO DISSIMILAR MATERIAL PROVIDED UNDER CIVIL SITE WORK, PROVIDE APPROVED TYPE OF TRASNISTION FITTINGS.

D. COORDINATE THE UNDERGROUND PIPING WITH THE BUILDING FOOTING AND FOUNDATION PLAN. ROUTE PIPING TO AVOID PENETRATING THE GRADE BEAMS, FOOTINGS AND FOUNDATIONS.

E. THE TRASH ENCLOSURE ROOM SHALL BE EQUIPPED WITH HOT AND COLD WATER HOSE BIB, A FLOOR DRAIN CONNECTED TO THE GREASE INTERCEPTOR PRIOR TO CONNECTING TO THE SITE SANITARY SEWER SYSTEM.

F. COORDINATE THE PLUMBING AND FIRE PROTECTION PIPE RISER & GAS RISER LOCATIONS WITH ARCHITECTURAL PLANS AND LOCATE TO AVOID CONFLICTS WITH ROOM LAYOUT. LOCATE RISERS IN PLUMBING CHASE.

G. OFFICE TRAILOR PLUMBING CONNECTION: DISCONNECT AND DEMOLISH EXISTING PLUMBING UTILITY CONNECTIONS TO THE EXISTING TRAILOR AT OLD LOCATION AND MAKE NEW PLUMBING (CW, SANITARY WASTE AND VENT) CONNECTIONS TO THE NEARBY SITE UTILITIES AT THE NEW LOCATION. ALL WORK SHALL BE PER LOCAL PLUMBING CODES.



1 ENLARGED TRASH ENCLOSURE PLUMBING PLAN

SCALE:1/4"=1'-0"

N W E S

REGISTERED PROFESSIONAL ENGINEER SUPRIYE G. SRIVASTAVA No. M18346 Exp. 9/30/12 MECHANICAL STATE OF CALIFORNIA

REVISIONS	BY
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PHASE-1A
PLUMBING SITE PLAN

DATE
05/28/10
SCALE:
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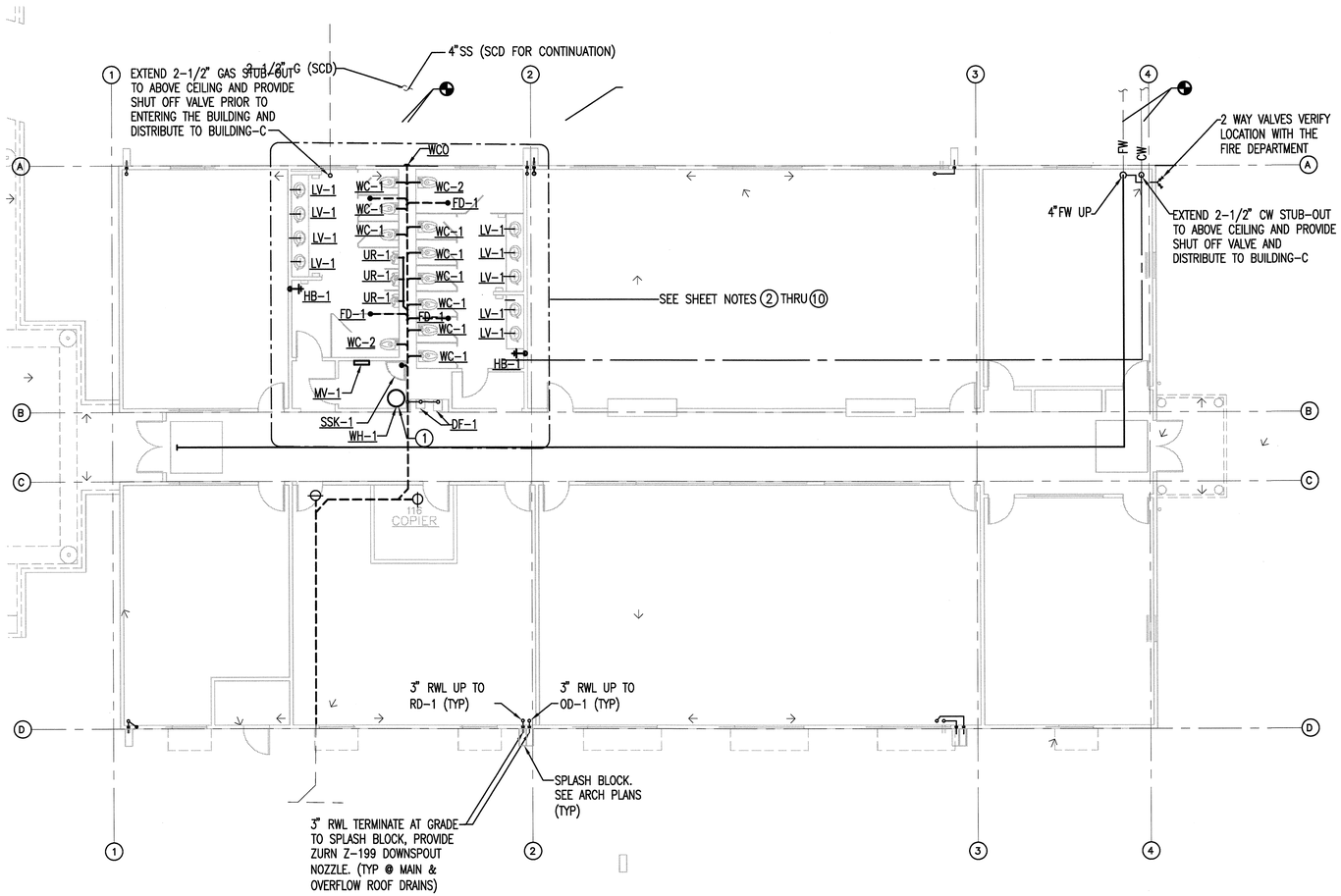
DRAWN BY:

PROJECT:
1200 ARROWHEAD

P12.0B

PLANCHECK RESUBMITTAL #2



BUILDING C - PHASE 1-B
PLUMBING PLAN

TOTAL 7800 SQ. FT.

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

GRAPHIC SCALES: 1/8" = 1'-0"

0 5' 10' 20' 25'

GENERAL NOTES

A. ALL PLUMBING WORK INCLUDING EQUIPMENT, FICXTURES AND INSTALLATION SHALL COMPLY WITH THE CURRENT BUILDING STANDARDS FOR UNIFORMITY, LEED REQUIREMENTS AND THE APPLICABLE CALIFORNIA BUILDING, FIRE, MECHANICAL AND PLUMBING CODES WITH LOCAL AMMENDMENTS.

B. REFER TO RISER DIAGRAMS FOR WASTE AND VENT SIZES AND SHEDULES FOR PLUMBING FIXTURES, FAUCETS, CONNECTION SIZES.

C. PROVIDE AUTOMATIC TEMPERING VALVES TO GENERATE 110 DEG F TEMPERED HOT WATER SUPPLY AND DISTRIBUTE TO THE LAVATORIES PER T-24.

D. PROVIDE CW DISTRIBUTION TO ALL THE PLUMBING FIXTURES PER CPC.

E. PROVIDE CW, GAS, SANITARY WASTE, STORM DRAIN AND FIRE WATER SERVICE CONNECTIONS FROM THE SITE UTILITIES AND EXTEND & DISTRIBUTE TO SERVE THE BUILDING. COORDINATE WITH THE PHASE-1A CIVIL AND LANDSCAPE TRADE WORK FOR EXACT SIZE, LOCATION, INVERT, POINT-OF-CONNECTION, ETC.

F. PROVIDE WATER EFFICIENT PLUMBING FIXTURES TO SATISFY THE LEED WATER EFFICIENCY REQUIREMENTS (SEE LEED CHECKLIST) AND PER THE PLUMBING FIXTURE SCHEDULE. INSTALL PLUMBING FIXTURES IN COMPLIANCE WITH ADA REQUIREMENTS.

G. CONTRACTOR SHALL PREPARE AND SUBMIT DETAILED SHOP DRAWING FOR PLUMBING AND FIRE RPOTECTION WORK FULLY COORDINATED WITH THE CIVIL AND LANDSCAPE WORK FOR REVIEW AND APPROVAL BY THE OWNER'S ENGINEERS. AFTER APPROVAL BY OWNER'S ENGINEERS, SUBMIT THE SAME TO CITY AS A DEFERRED SUBMITTAL AND OBTAIN CITY APPROVALS PRIOR TO START OF CONSTRUCTION. COORDINATE THE ROUTING OF THE UNDERGROUND UTILITIES WITH OTHER TRADEWORK AND UTILITY COMPANIES AND MAKE NECESSARY ADJUSTMENTS TO ROUTING TO AVOID CONFLICTS.

SHEET NOTES

(1) WATER HEATER AIR INTAKE AND FLUE EXHAUST FROM THE ROOF. TERMINATE FLUE EXHAUST MINIMUM 3'-0" ABOVE FINISHED ROOF. COORDINATE WITH SOLAR PV AND THERMAL SYSTEM PROVIDER FOR TERMINATION. PROVIDE FLASHING AND COUNTERFLASHING.

(2) PROVIDE ALL PLUMBING FIXTURES INDICATED WITH COMPLETE UTILITY DISTRIBUTION PER CPC INCLUDING BUT NOT LIMITED TO COLD WATER, HOT WATER, TEMPERED WATER, SANITARY WASTE AND VENT CONNECTIONS.

(3) PROVIDE FLOOR DRAINS COMPLETE WITH FLOOR DRAINS, WASTE & VENT CONNECTIONS, TRAP PRIMER CONNECTIONS.

(4) PROVIDE PROPERLY SIZED WATER HAMMER ARRESTORS FOR COLD WATER AND TEMPERED WATER SUPPLIES PIPING TO PLUMBING FIXTURES PER CPC TO PREVENT WATER HAMMER FROM FLUSH VALVES, AUTOMATIC AND QUICK SHUT-OFF TYPE VALVES.

(5) PROVIDE STAINLESS STEEL WALL ACCEESS PANELS FOR SERVICE ACCESS TO WATER HAMMER ARRESTORS, TEMPERAING VALVES, SHUT-OFF VALVES AND OTHER DEVICES CONCEALED BEHIND WALLS AND CEILING THAT REQUIRES ACCESS. COORDINATE LOCATIONS WITH ARCHITECT.

(6) PROVIDE HEAT TRACING FOR TEMPERED WATER AND HOT WATER PIPING TO THE PLUMBING FIXTURES, COMPLETE WITH POWER SUPPLY, TEMPERATURE REGULATORS, THERMAL INSULATION, ETC. cOORDINATE WITH DIVISION-16 FOR POWER SUPPLY.

(7) PROVIDE THERMAL INSULATION FOR ALL THE HOT WATER & TEMPERED WATER SUPPLY AND HORIZONTAL RAIN WATERS LEADERS IN THE CEILING ABOVE. PROVIDE THERMAL INSULATION FOR OUTDOOR WATER PIPING SUBJECTED TO FREEZING. INSULATION SHALL MEET TITLE-24, CPC AND CMC REQUIREMENTS.

(8) PROVIDE PIPE IDENTIFICATION LABELS AND VALVE TAGS FOR ALL PLUMBING SYSTEM PIPING INCLUDING CW, HW, TW, GAS, SANITARY WASTE & VENT PIPING.

(9) PROVIDE COMPLETE FIRE SPRINKLER WATER SERVICE EXTENSION FROM THE CITY FIRE WATER SERVICE COMPLETE WITH THE SPRINKLER RISER ASSEMBLY, CONTROL VALVE ASSEMBLIES, FIRE HOSE CONNNECTIONS, DISTRIBUTION. QUICK RESPONSE CONCEALED HEADS, INSPECTOR TEST AND DRAIN ASSEMBLY, SPRINKLER ALARM BELL AND FLOW & TAMPER SWITCHES FOR MONITORING BY THE BUILDING FIRE ALARM SYSTEM TO PROVIDE FULL COVERAGE FOR THE BUILDING. SUBMIT COMPLETE DESIGN-BUILD SHOP DRAWINGS AND HYDRAULIC CALCULATIONS. SUBMIT AND OBTAIN ALL NECESSARY APPROVALS FROM THE LOCAL CITY AND COUNTY CODE AUTHORITIES.

(10) PROVIDE ROOF DRAINS, OVERFLOW DRAINS, RAIN WATER LEADERS, AND TERMINATE AT GRADE ON TO THE SPLASH BLOCK FOR SURFACE DRAIANGE TO BIO SWALES PER CIVIL AND LANDSCAPE DRAWINGS. COORDINATE WITH ARCHITECTURAL PLANS FOR ROUTING THE RAIN WATER DRAIN WITH RESPECT TO WINDOWS. PROVIDE DOWNSPOUT NOZZLE J.R.SMITH MODEL #1770 AT EACH DOWNSPOUT DAYLIGHTING THE EXTERIOR WALLS.

REVISIONS	BY
A 05-24-10	HCCC
B 08-02-10	BPC
C HEALTH DEPT PLAN CHECK 08-26-10	HDPC
D 09-22-10	BPC
E 10-12-10	BPC2
F 12-01-10	BPC2

Om Namah Shivaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
1200 ARROWHEAD AVE. LIVERMORE, CA 94551

Ajmani & Parmidi Inc.
Mechanical & Electrical Engineers
101 California St. Suite 2020
San Francisco, California 94111
Ph (415) 543-0344 Fax (415) 543-0670
E-mail: Mail@APindSF.com 09021

PLUMBING FLOOR PLAN
BUILDING C
PHASE 1B

REGISTERED PROFESSIONAL ENGINEER
MURPE C. SAINIS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

P13.0B

PLANCHECK RESUBMITTAL #2

GENERAL NOTES

A. ALL INSTALLATIONS SHALL COMPLY WITH ALL APPLICABLE CALIFORNIA AND LOCAL CODES.

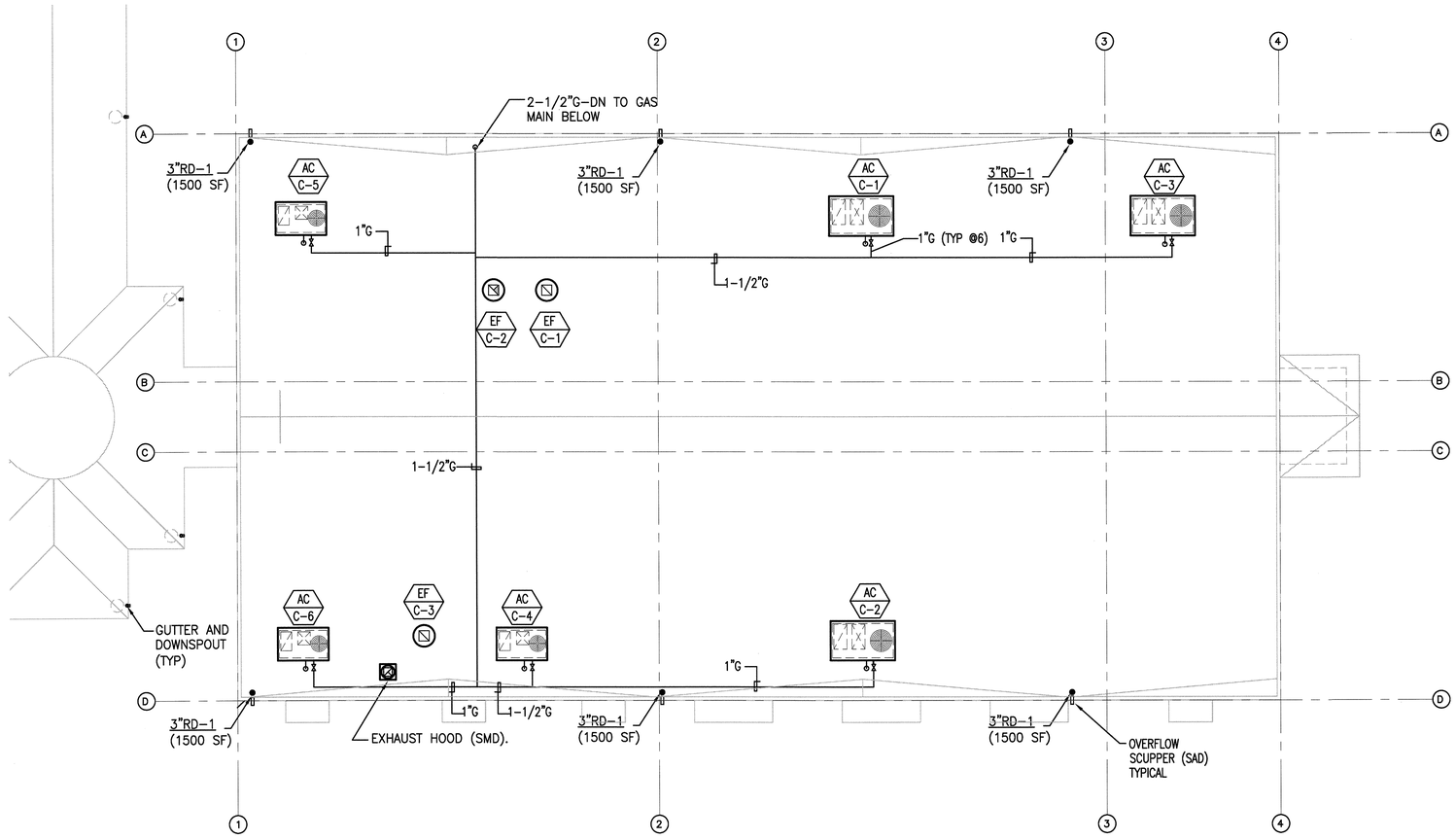
B. ALL NEW WORK SHALL COMPLY WITH CURRENT 2007 CMC AND CPC REQUIREMENTS.

C. PROVIDE GALVANIZED PIPING & FITTINGS FOR EXPOSED GAS PIPING ON ROOF. PROVIDE GAS COCK, DIRT LEG, LISTED GAS CONNECTORS RATED FOR OUTDOOR APPLICATION AT CONNECTIONS TO EACH AC UNIT. PROVIDE GAS REGULATORS IF REQUIRED. REFER TO GAS RISER DIAGRAM P11.1B FOR SIZING.

D. PROVIDE TRAPPED CONDENSATE DRAIN FROM THE AC UNIT AND TERMINATE TO THE SERVICE SINK IN JANITOR CLOSET. INSTALL CONDENSATE COLLECTOR DRAIN PIPING WITH MINIMUM 2% SLOPE.

E. SUPPORT ROOFTOP GAS AND CONDENSATE PIPING AND CONDUITS WITH B-LINE "DURA-BLOCK" DB SERIES SUPPORT BLOCKS ANCHORED TO ROOF. USE DURA-BLOCK "BVT" SERIES INSULATED PIPE CLAMPS (TYP). PROVIDE SLEEPER SUPPORTS AT MAX 6 FT ON CENTERS OR AS REQUIRED TO PREVENT PIPE SAGGING AND TO DRAIN THE CONDENSATE TOWARDS THE JANITOR SINK. MAINTAIN 2% SLOPE ON ROOF FOR CONDENSATE DRAIN PIPE.

F. PROVIDE ROOF GUTTERS AND DOWNSPUTS FOR COVERED WALKWAYS AND TERMINATE AT GRADE WITH SPLASHING BLOCKS (TYP)



BUILDING C - ROOF PLAN
PLUMBING PLAN

TOTAL 7800 SQ. FT.

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

GRAPHIC SCALES: 0 5' 10' 20' 25' — 1/8" = 1'-0"

REVISIONS	BY
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D 09-22-10	BPC
E 10-12-10	BPC2

Om Namo Narayanaya

NEW BUILDING "C" - PHASE 1B
HINDU COMMUNITY and CULTURAL CENTER
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Ph: (415) 543-9044 Fax (415) 543-0670
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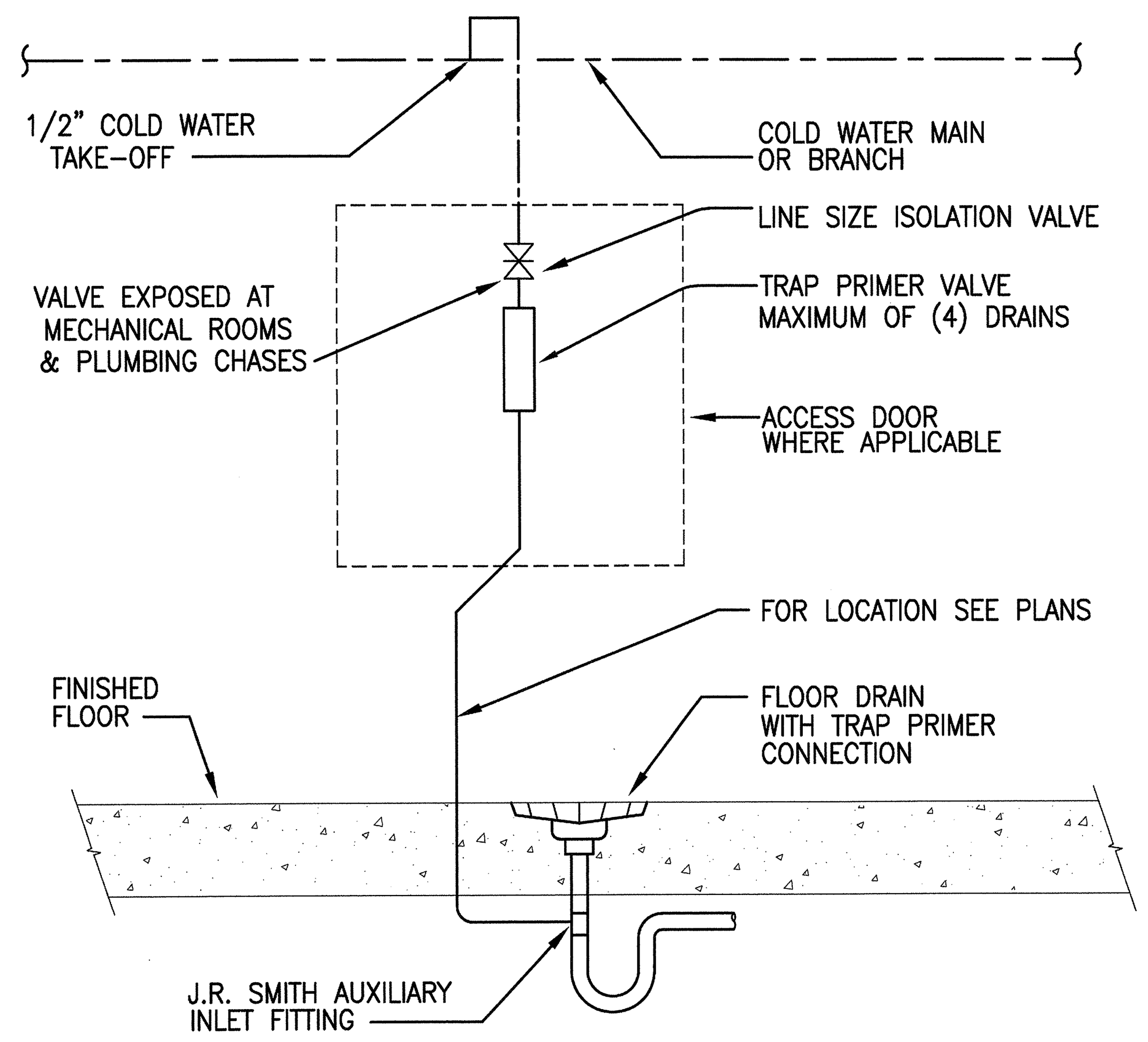
PLUMBING ROOF PLAN
BUILDING C
PHASE 1B

DATE
05/28/10
SCALE:
AS NOTED
DRAWN BY:
PROJECT:
1200 ARROWHEAD

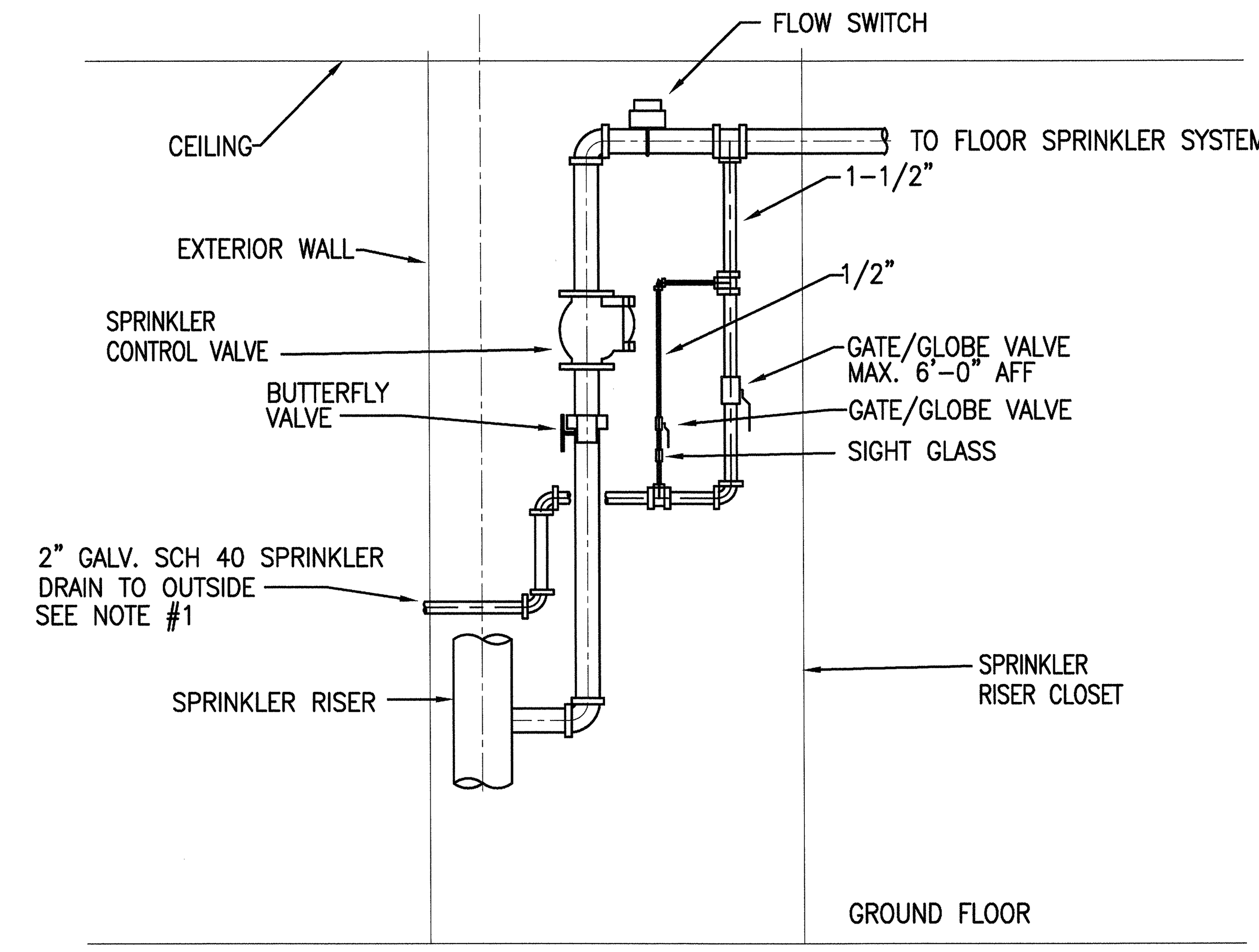
REGISTERED PROFESSIONAL ENGINEER
JOSEPH G. SRAITHS
No. M18346
Exp. 9/30/12
MECHANICAL
STATE OF CALIFORNIA

P14.0B



1 TRAP PRIMER PIPING DETAIL

SCALE: N.T.S.

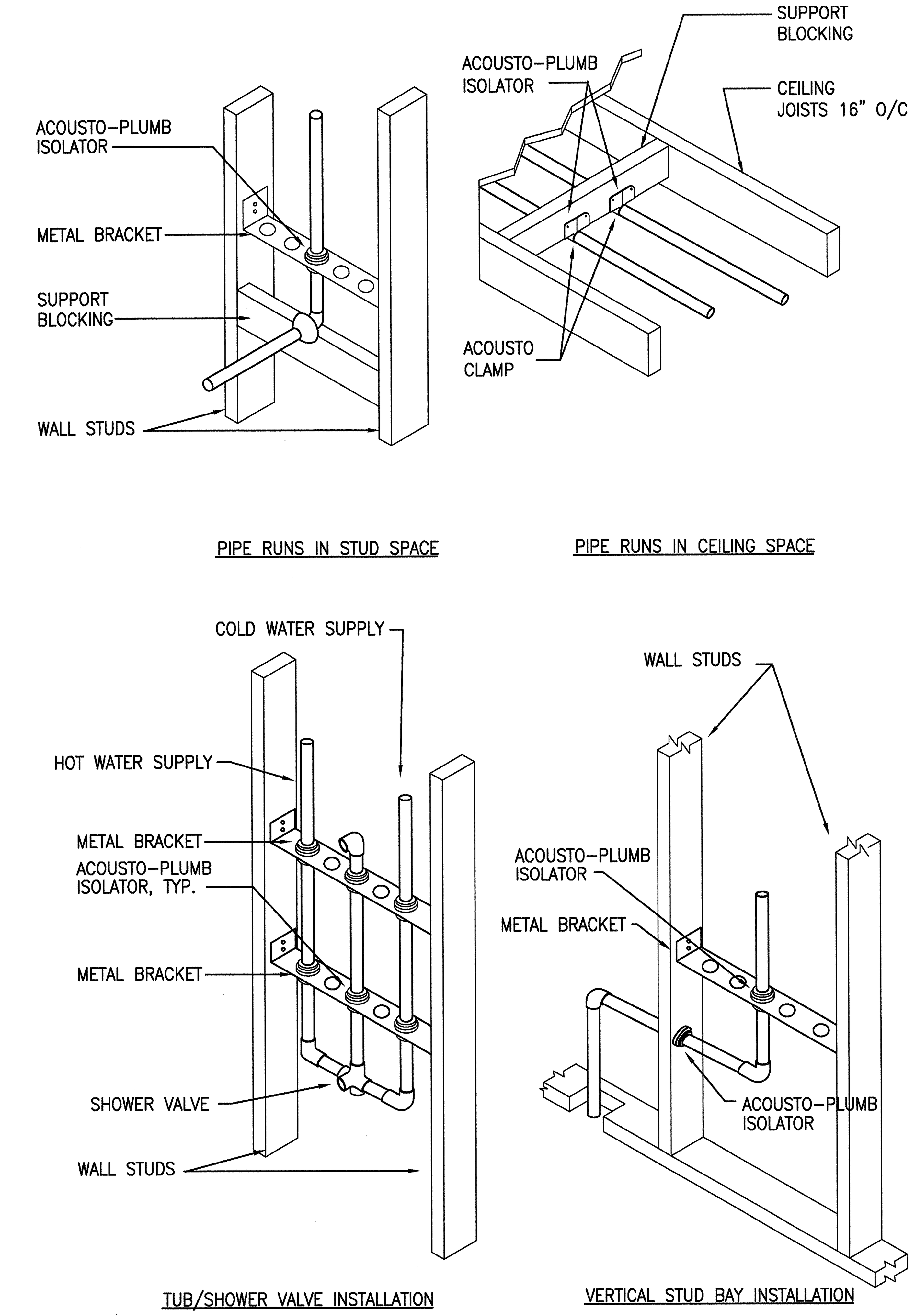


NOTE:

1. TERMINATE TEST DRAIN TO OUTSIDE PER THE LOCAL CODE REQUIREMENTS.
2. PROVIDE FLOW AND TAMPER FOR MONITORING FROM FIRE ALARM SYSTEM.
3. PROVIDE WATER FLOW ALARM PER LOCAL CODE REQUIREMENTS.

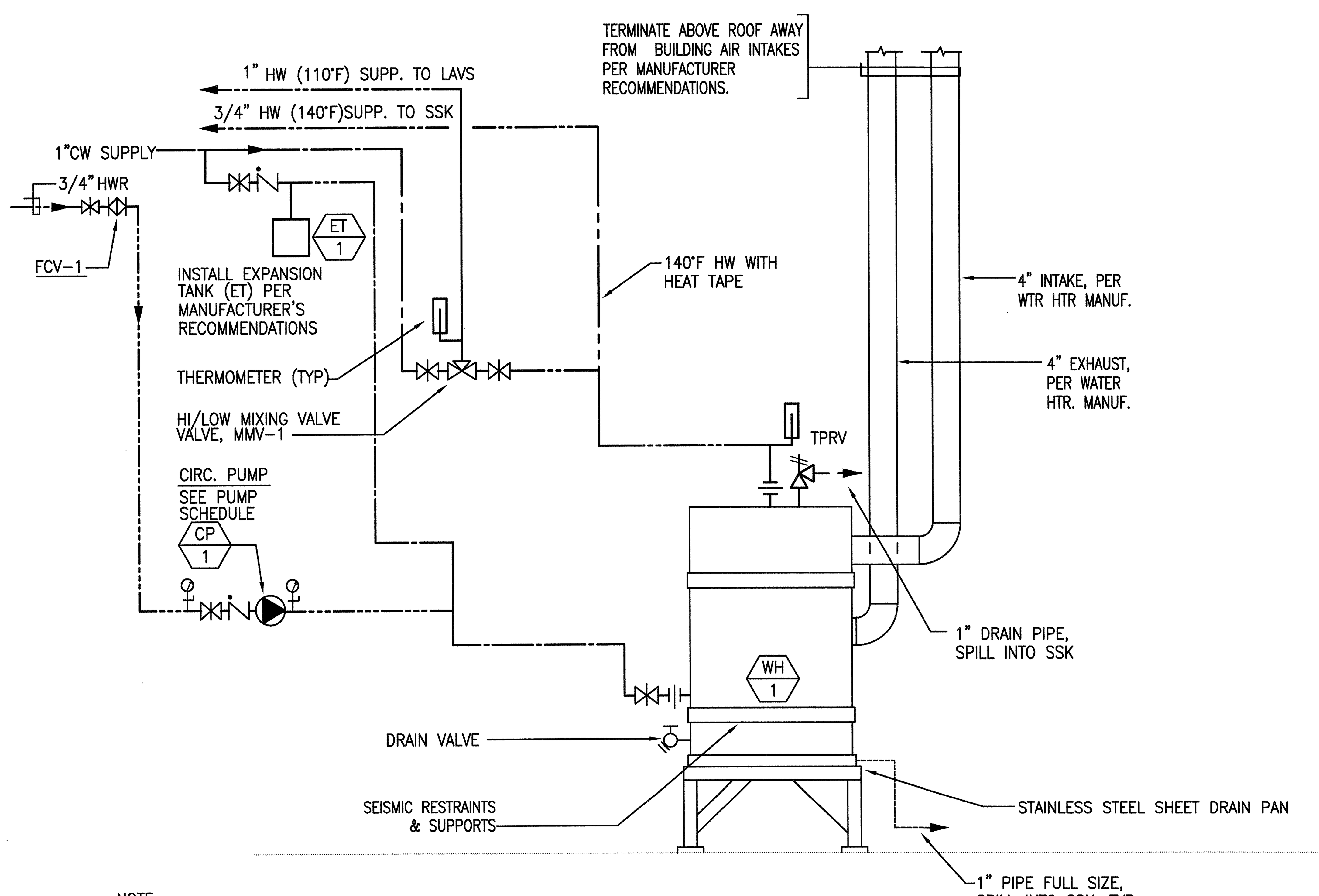
2 SPRINKLER CONTROL VALVE ASSEMBLY DETAIL

SCALE: N.T.S.



3 ACOUSTICAL ISOLATION DETAILS

SCALE: N.T.S.



NOTE:

1. INTAKE AND EXHAUST VENT MATERIAL PER MANUF. REQUIREMENT.
2. MAINTAIN SEPARATION BETWEEN INTAKE & EXHAUST PER MANUFACTURER'S RECOMMENDATIONS.

4 WATER HEATER PIPING DETAIL

SCALE: N.T.S.

REVISIONS	BY
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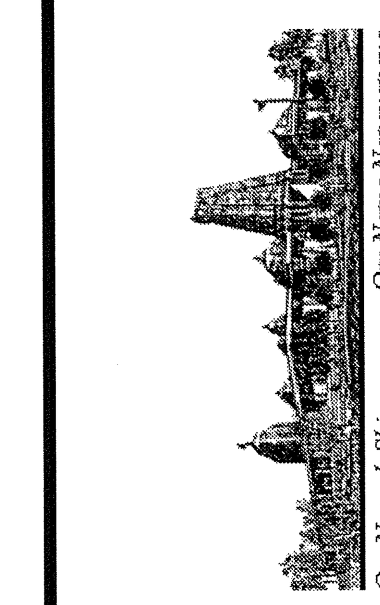

NEW BUILDING "C" - PHASE 1B

HINDU COMMUNITY and CULTURAL CENTER

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101 California St. Suite 2025
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Ph (415) 543-9344 Fax (415) 543-0670
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PLUMBING DETAILS

DATE 05/28/10
SCALE: AS NOTED
DRAWN BY:
PROJECT: 1200 ARROWHEAD

REGISTERED PROFESSIONAL ENGINEER RUPPE G. SRINIVAS No. M18346 Exp. 9/30/12 MECHANICAL STATE OF CALIFORNIA

P15.0B

PLANCHECK RESUBMITTAL #2