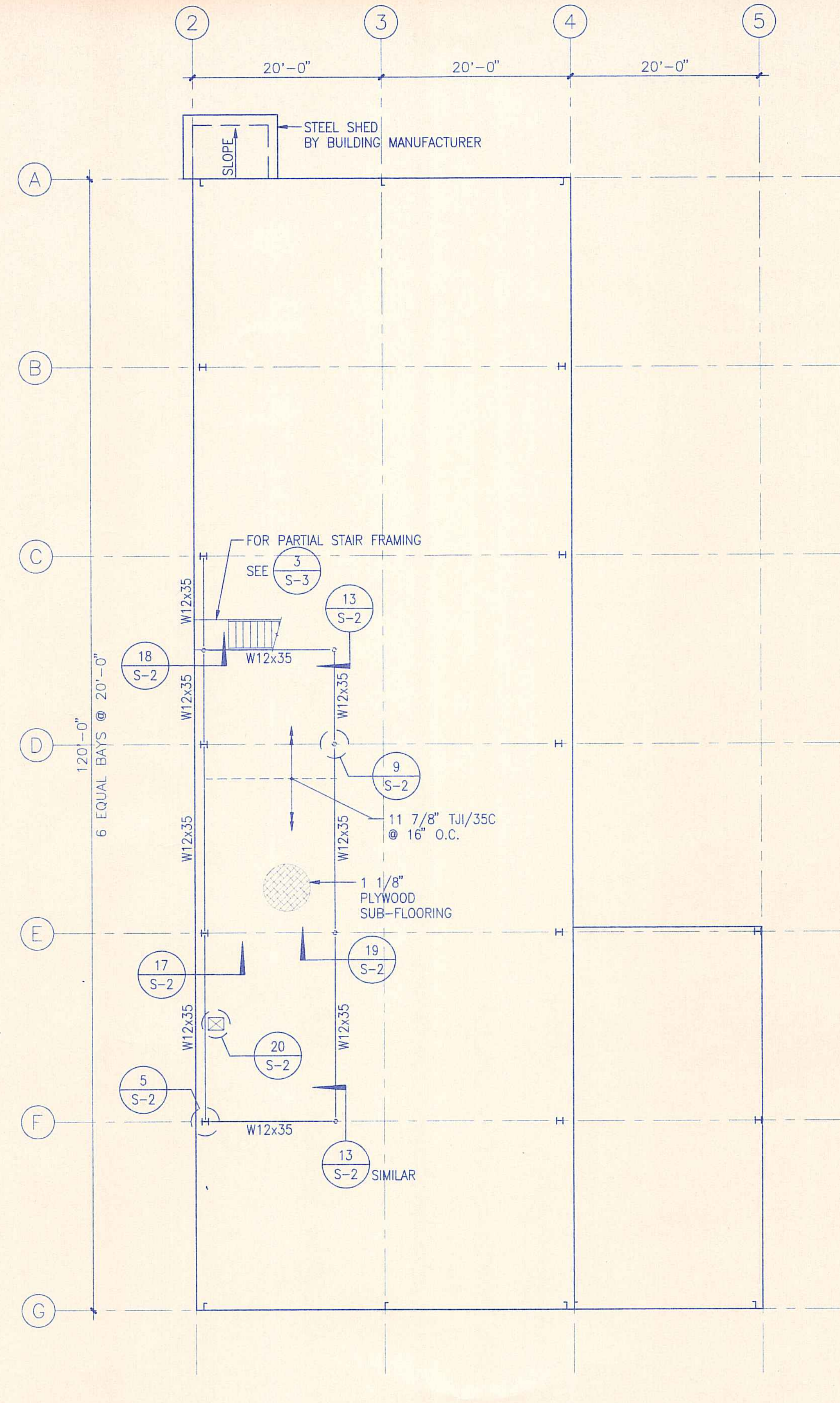
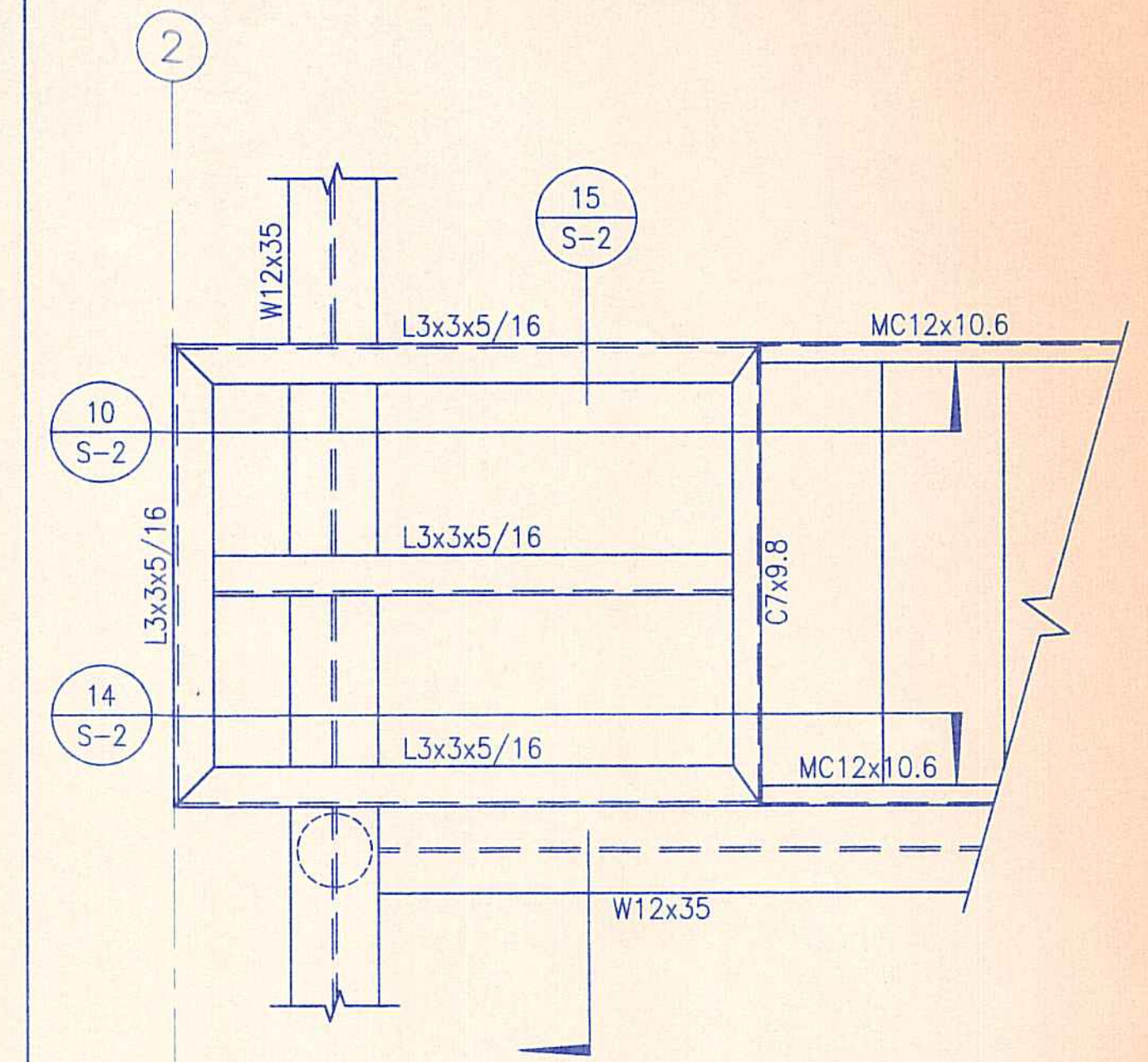


20 FOUNDATION PLAN
1/8" = 1'-0"

NOTE:
F1 INDICATES FOOTING TYPE
SEE SCHEDULE 17/S-5
TB1 INDICATES TIE BEAM
SEE SCHEDULE 17/S-5



12 MEZZANINE PLAN
1/8" = 1'-0"



3 PARTIAL STAIR FRAMING PLAN
1" = 1'-0"

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

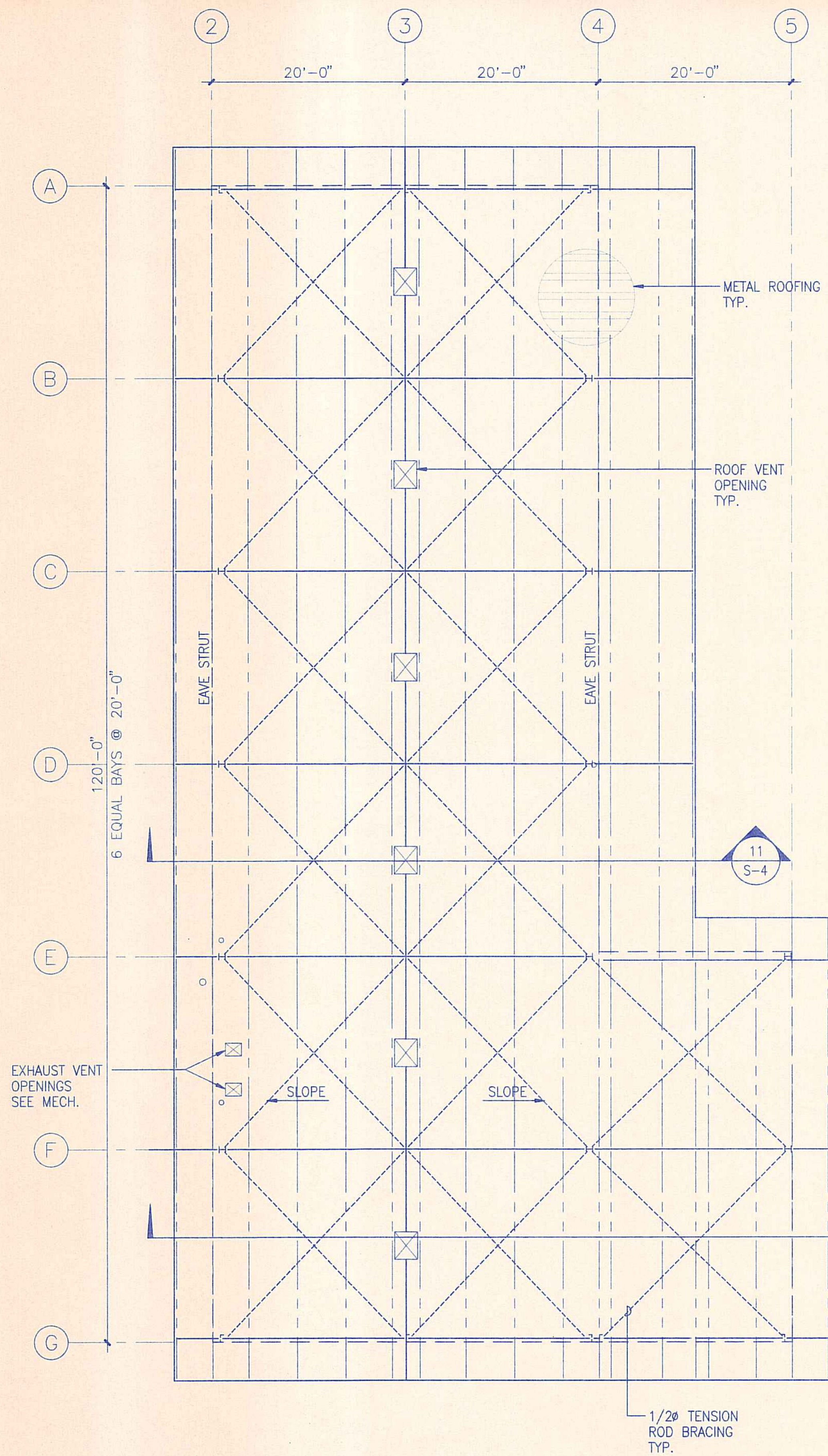
STATE TREE NURSERY OPERATIONS BUILDING
LALAMILO, SOUTH KOHALA, HAWAII

FOUNDATION & MEZZANINE FRAMING PLANS

FINAL SUBMITTAL

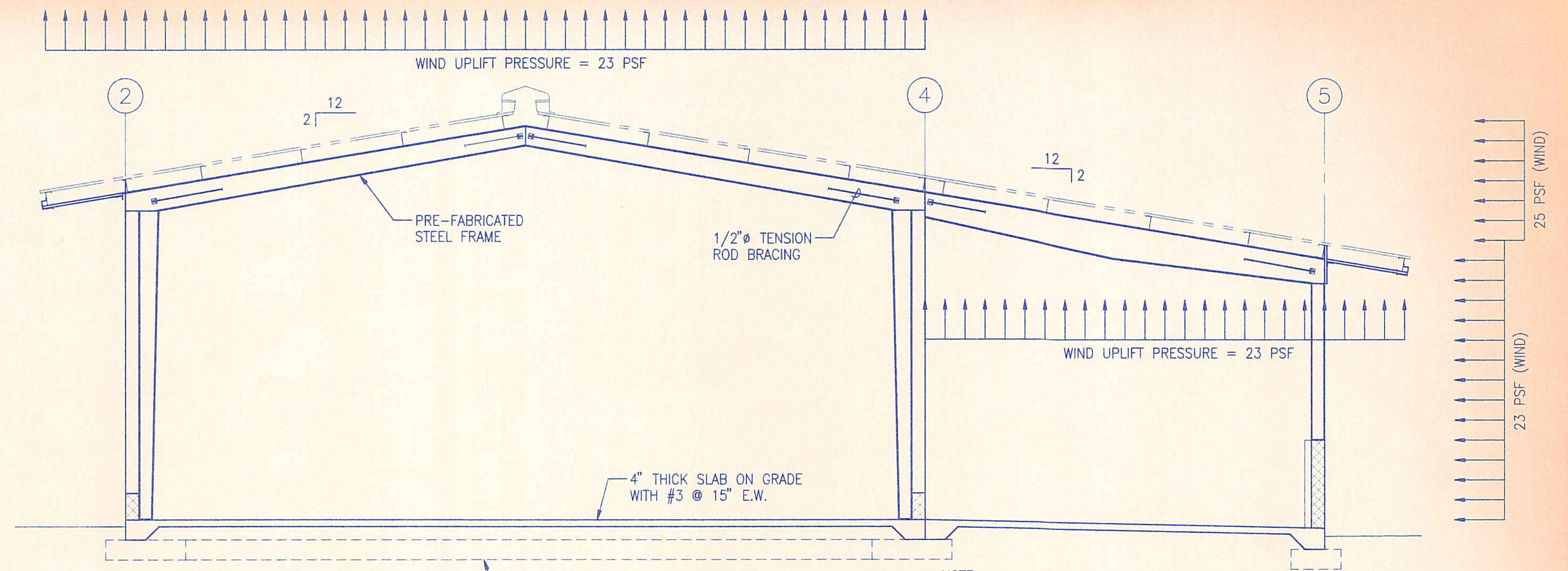
DESIGNED: MS
DRAWN: RL
CHECKED: YK
APPROVED: *[Signature]*
MANAGER-CHIEF ENGINEER

SUBMITTED: *[Signature]*
DATE: MAY 12, 1994
SCALE: AS SHOWN
DRAWING NO. S-3



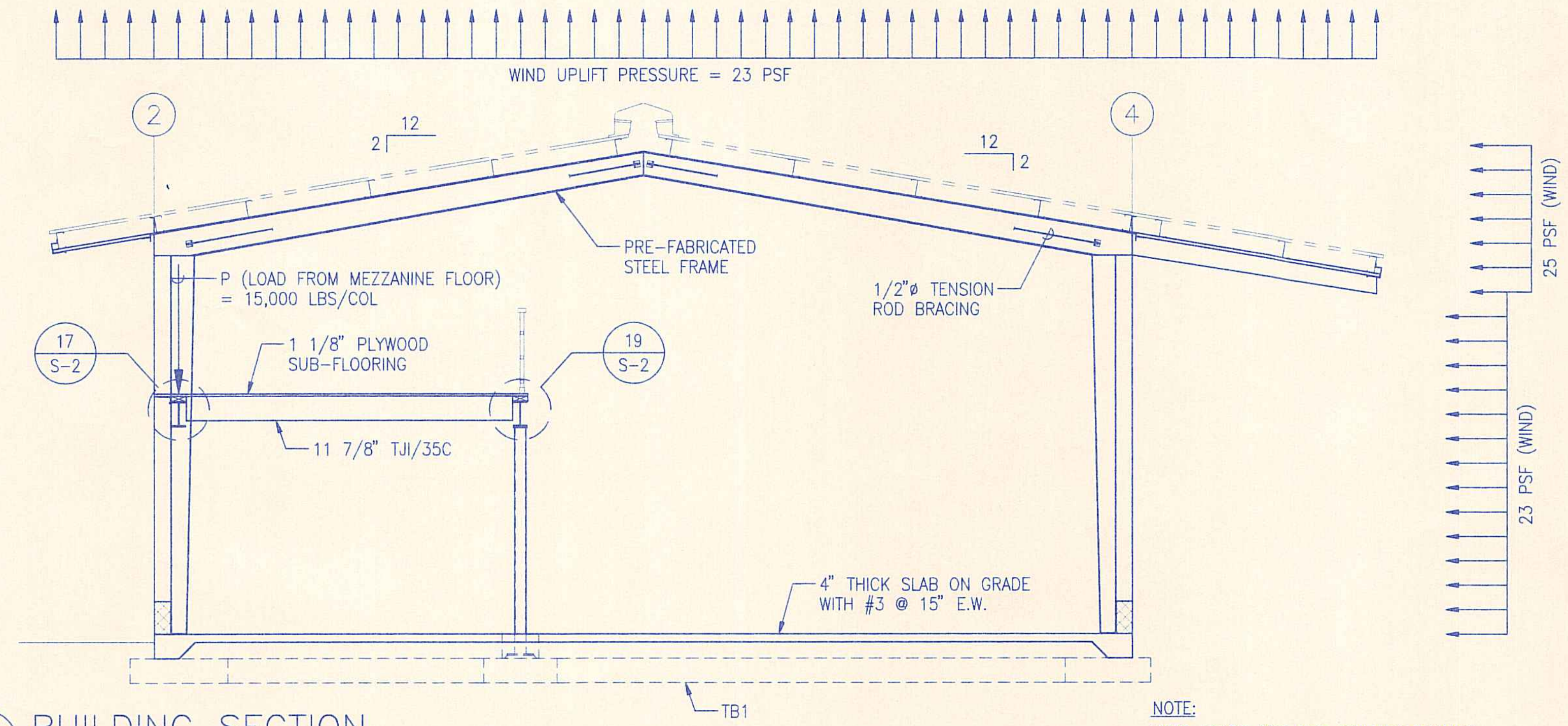
20 ROOF FRAMING PLAN
1/8" = 1'-0"

KAMU-S4.DWG
PLOT: 1/8=12



9 BUILDING SECTION
NOT TO SCALE

NOTE:
WIND LOADS ARE FOR PRIMARY FRAMES.
MANUFACTURER TO USE LARGER FORCES
FOR DESIGN OF ELEMENTS AND COMPONENTS.



11 BUILDING SECTION
NOT TO SCALE

NOTE:
WIND LOADS ARE FOR PRIMARY FRAMES.
MANUFACTURER TO USE LARGER FORCES
FOR DESIGN OF ELEMENTS AND COMPONENTS.

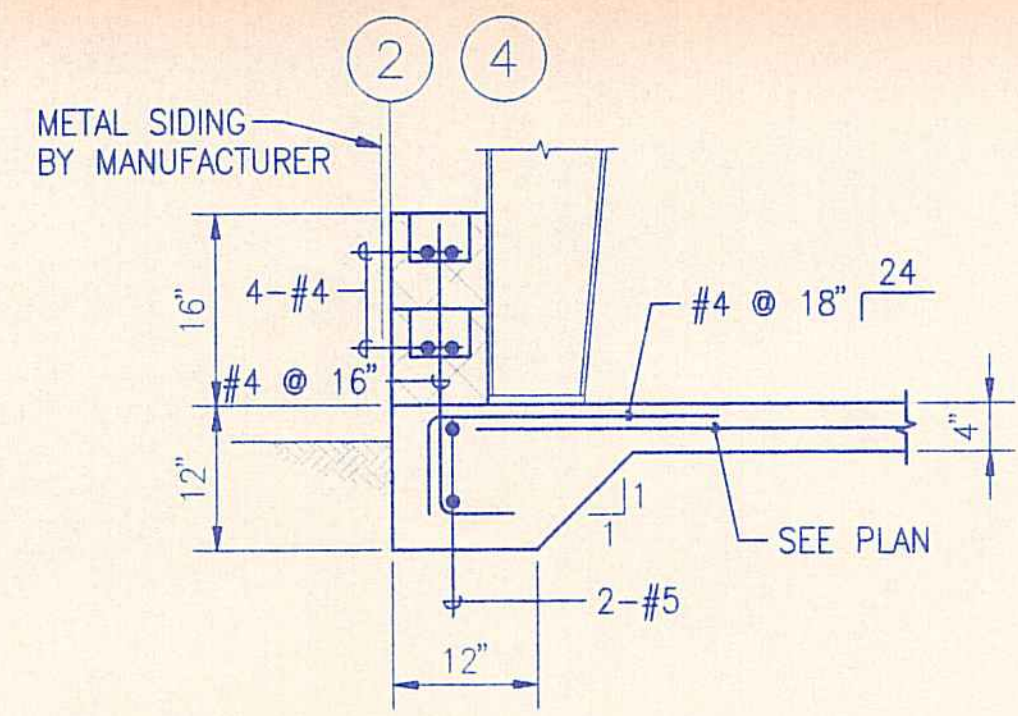
REVISION NO.	SYMBOL	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF WATER AND LAND DEVELOPMENT STATE TREE NURSERY OPERATIONS BUILDING LALAMILO, SOUTH KOHALA, HAWAII ROOF FRAMING PLANS & BUILDING SECTIONS FINAL SUBMITTAL					
DESIGNED: MS DRAWN: RL CHECKED: YK APPROVED: <i>[Signature]</i> MANAGER-CHIEF ENGINEER			SUBMITTED: <i>[Signature]</i> DATE: MAY 12, 1994 SCALE: AS SHOWN DATE: <i>[Signature]</i> DRAWING NO. S-4		

JOB NO. 63-HF-E1

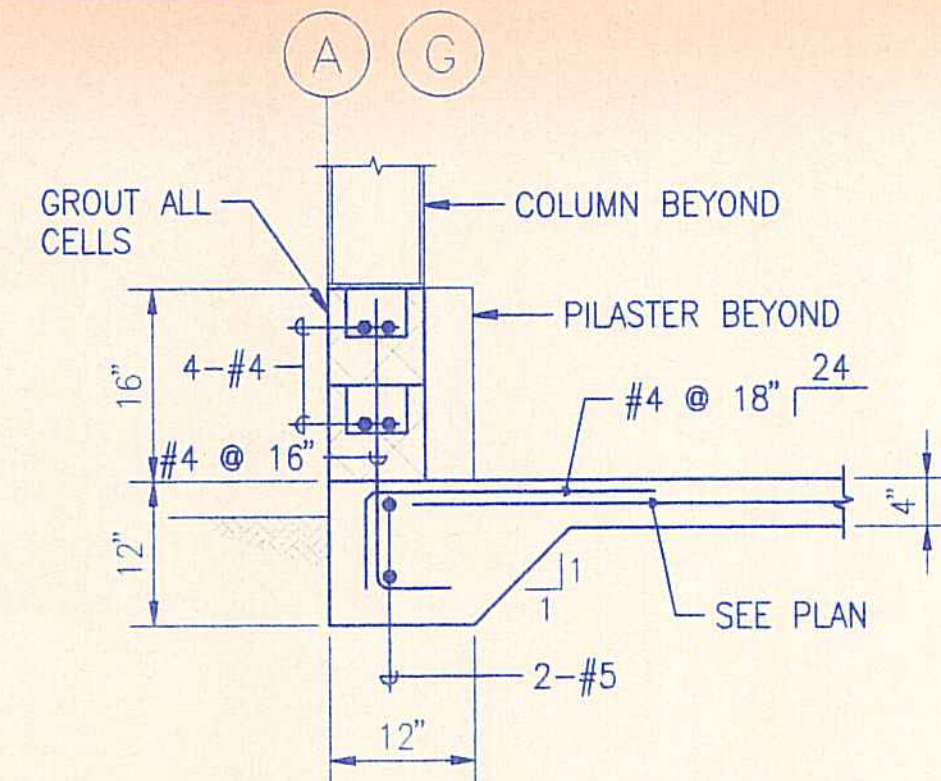
SHEET NO. 28 OF 36 SHEETS

FOOTING SCHEDULE					
FTG TYPE	SIZE			REINF.	REMARKS
	"L"	"W"	"D"		
F1	2'-6"	2'-6"	12"	3-#4 B EW	
F2	3'-0"	3'-0"	12"	3-#5 B EW	
F3	3'-6"	3'-6"	12"	4-#5 B EW	
F4	4'-0"	4'-0"	12"	6-#5 B EW	
TB1	CONT.	6"	12"	2-#8 CONT.	USE 40'-0" LONG REBAR

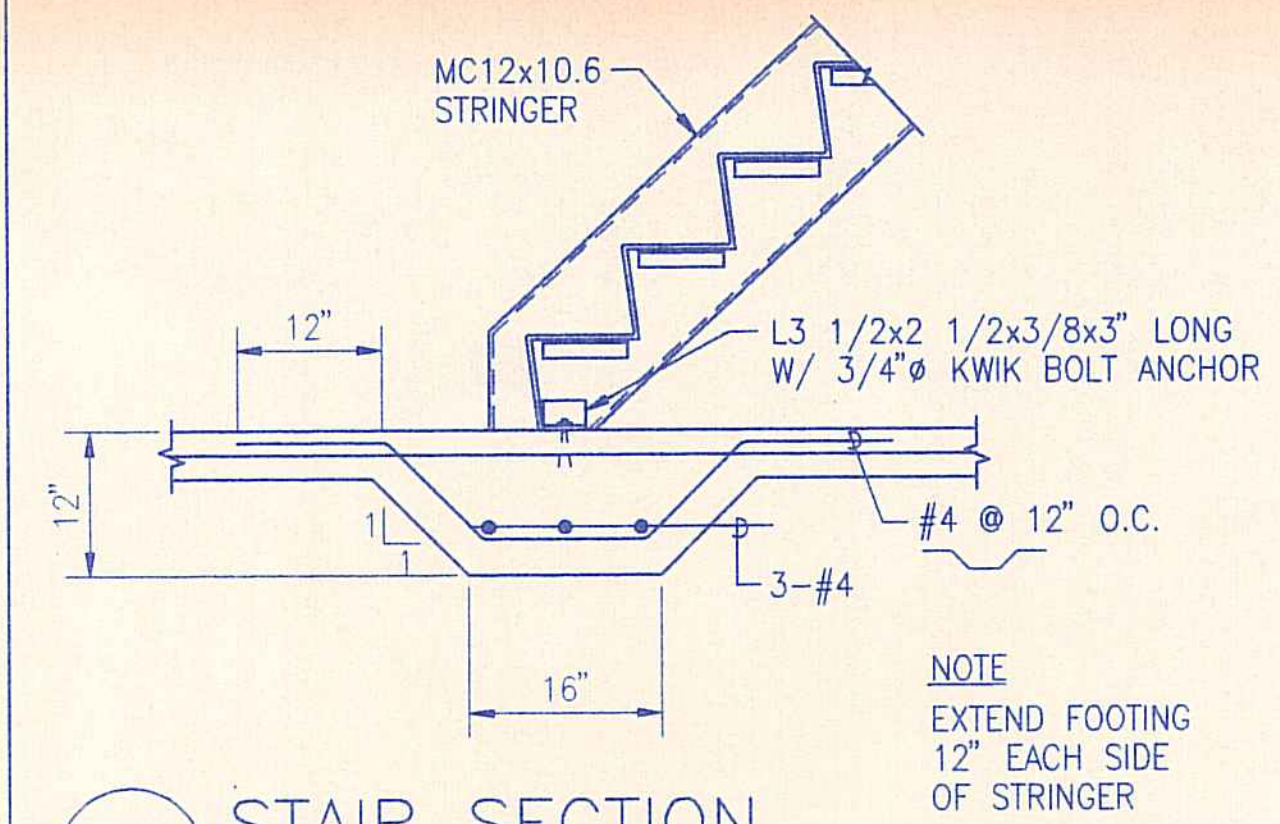
17 FOOTING SCHEDULE
3/4" = 1'-0"



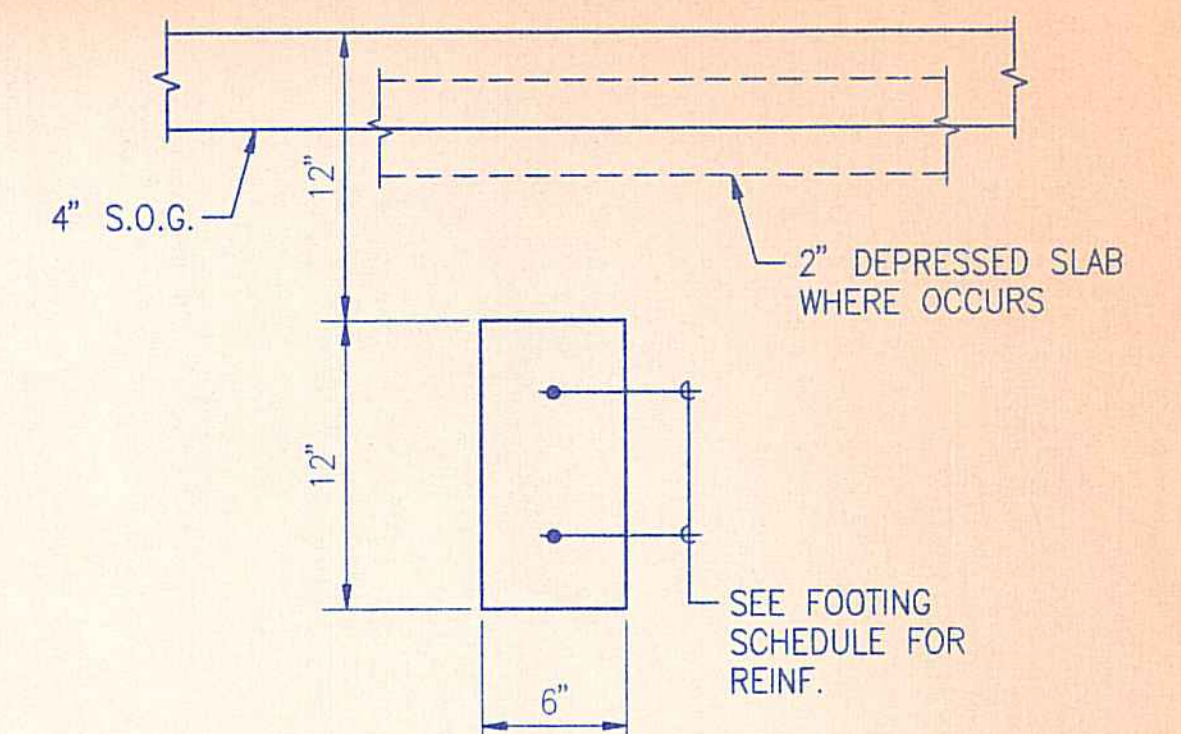
13 TYPICAL SLAB EDGE DETAIL
3/4" = 1'-0"



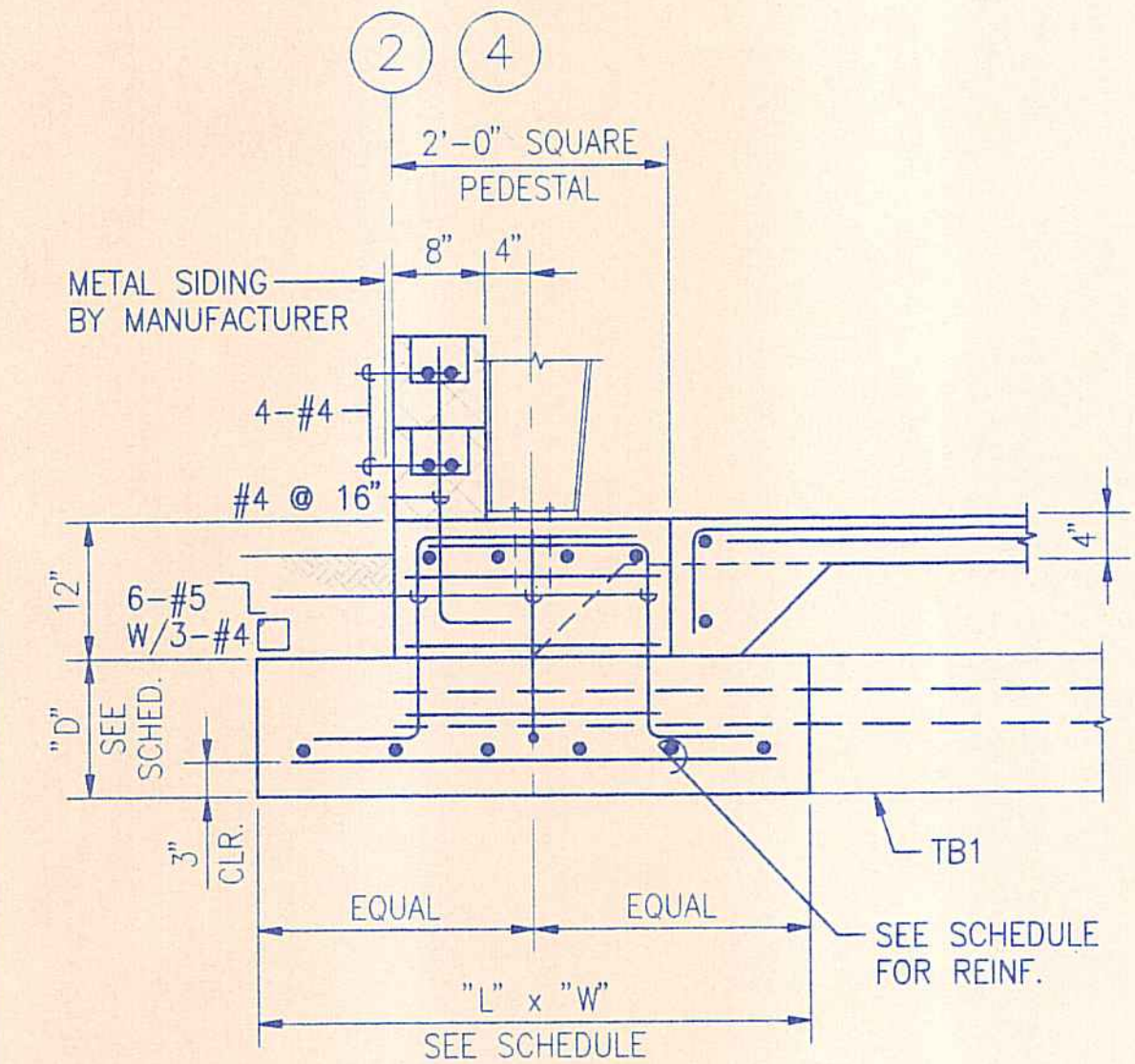
9 SLAB EDGE DETAIL
3/4" = 1'-0"



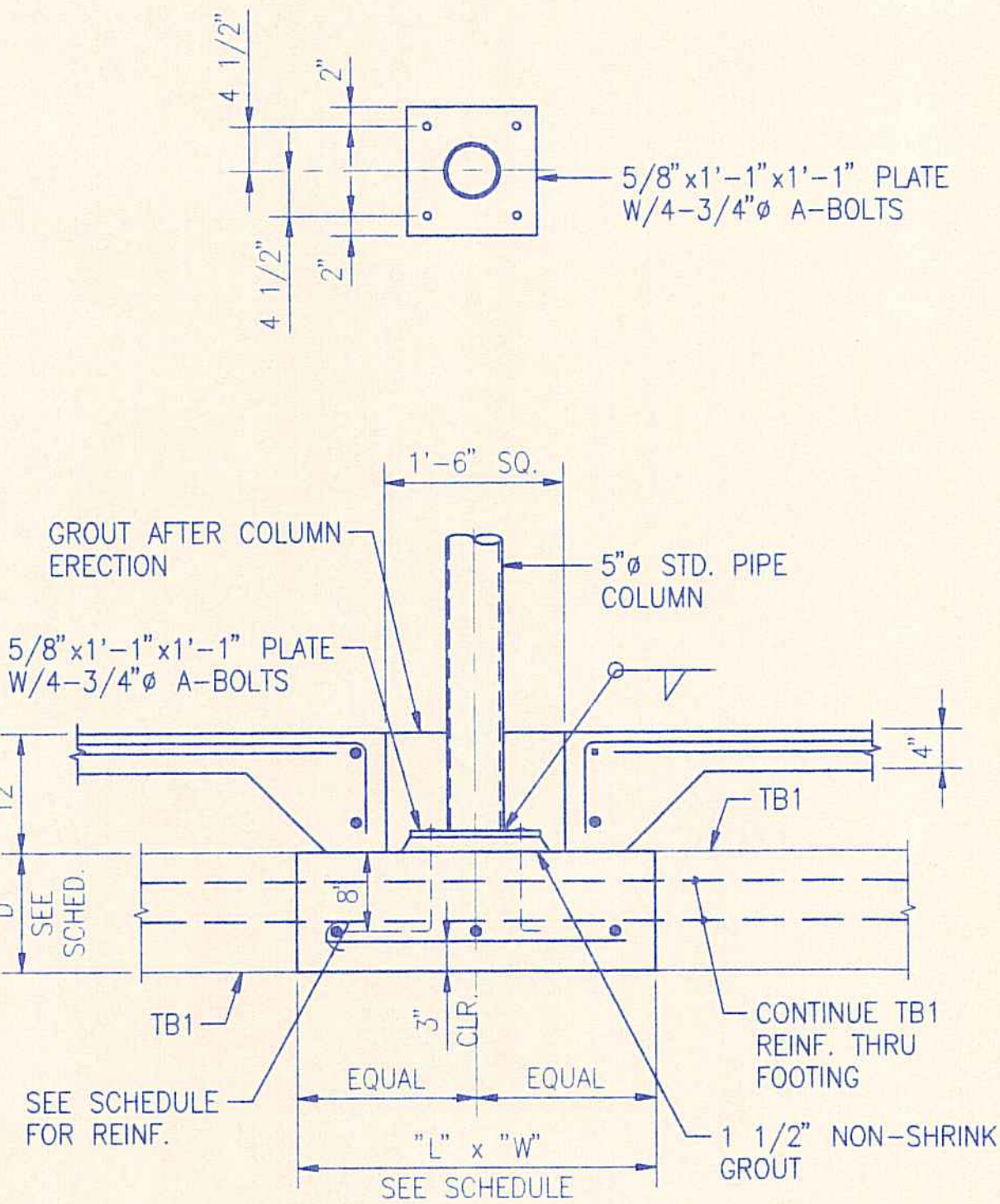
5 STAIR SECTION
3/4" = 1'-0"



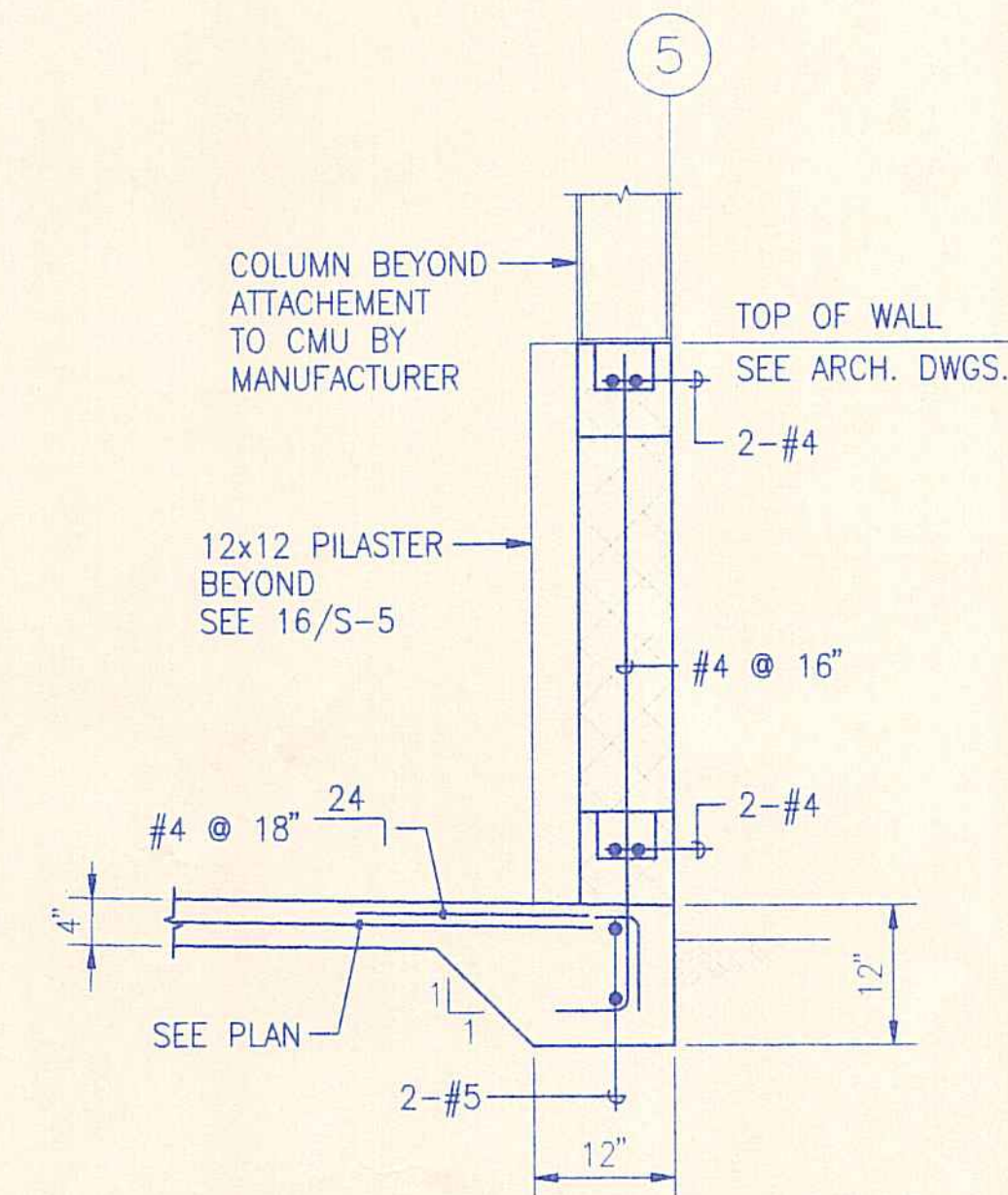
1 TB1 SECTION
1 1/2" = 1'-0"



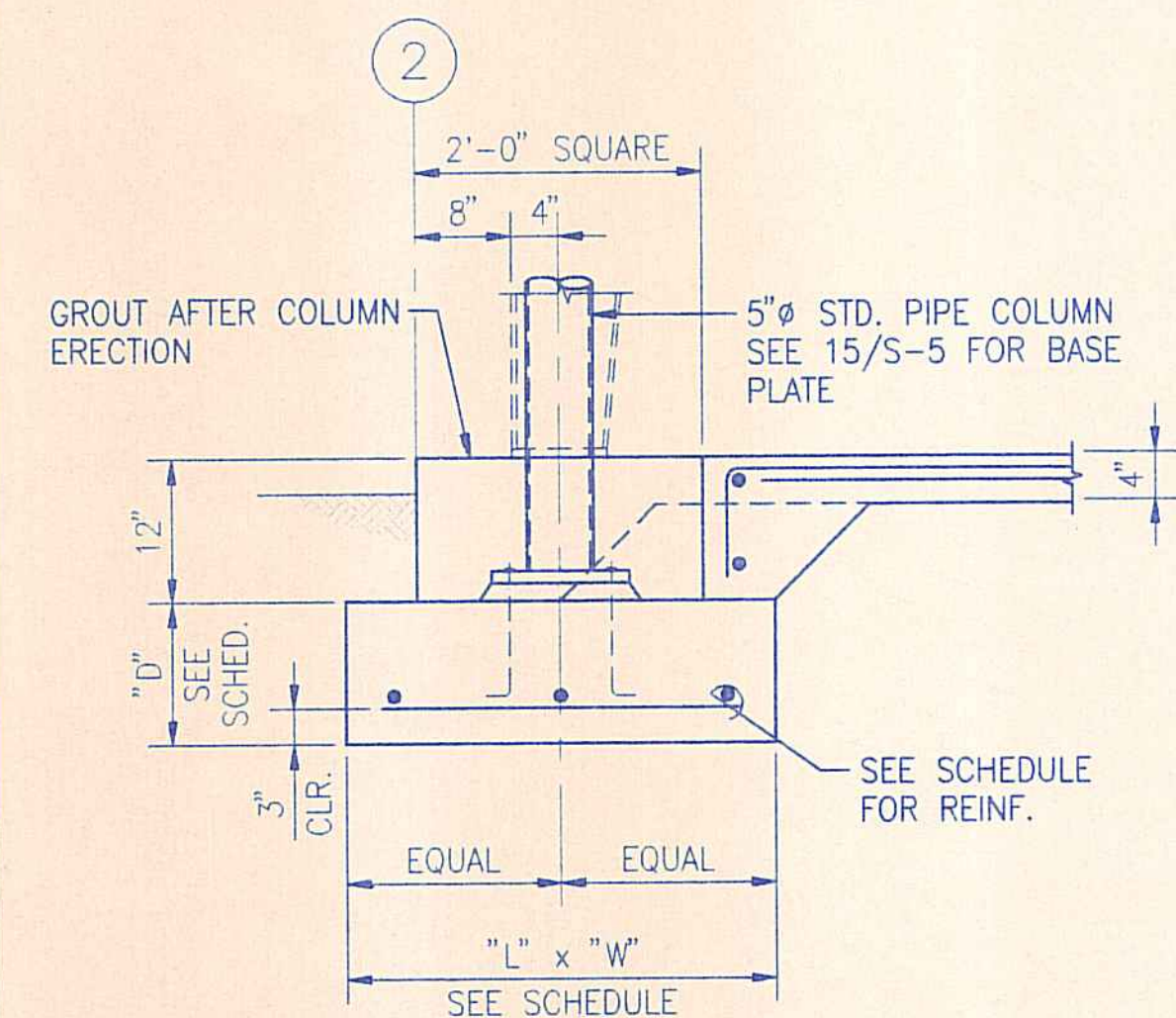
18 TYPICAL EXTERIOR COLUMN FOOTING DETAIL
3/4" = 1'-0"



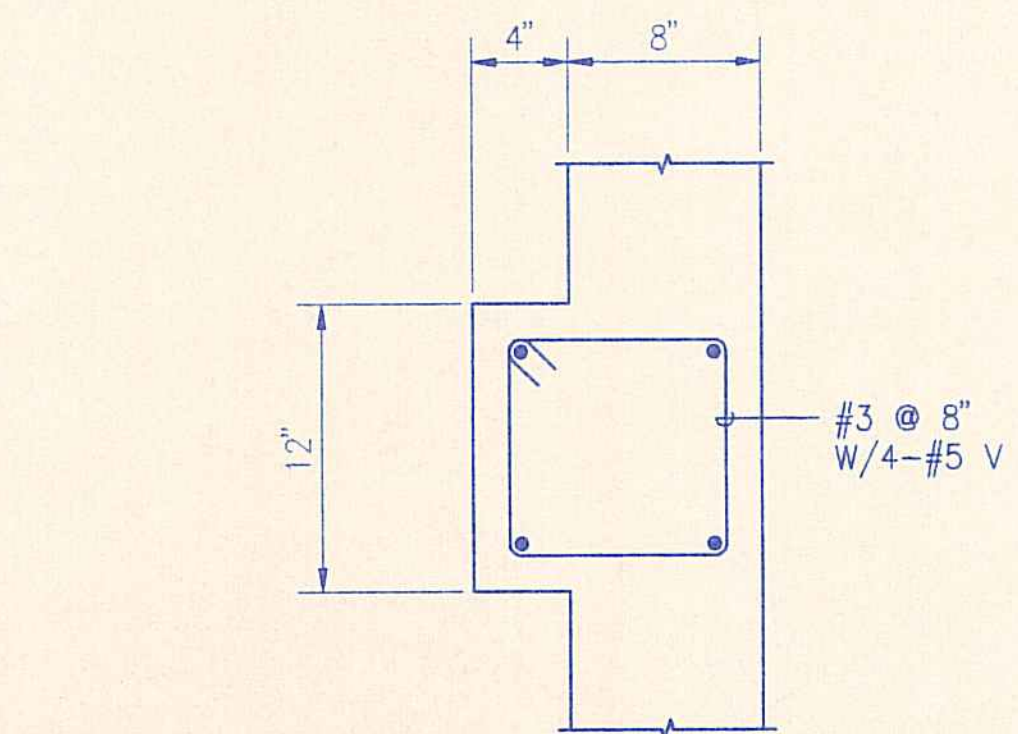
15 TYPICAL INTERIOR COLUMN FOOTING DETAIL
3/4" = 1'-0"



11 SLAB EDGE DETAIL
3/4" = 1'-0"

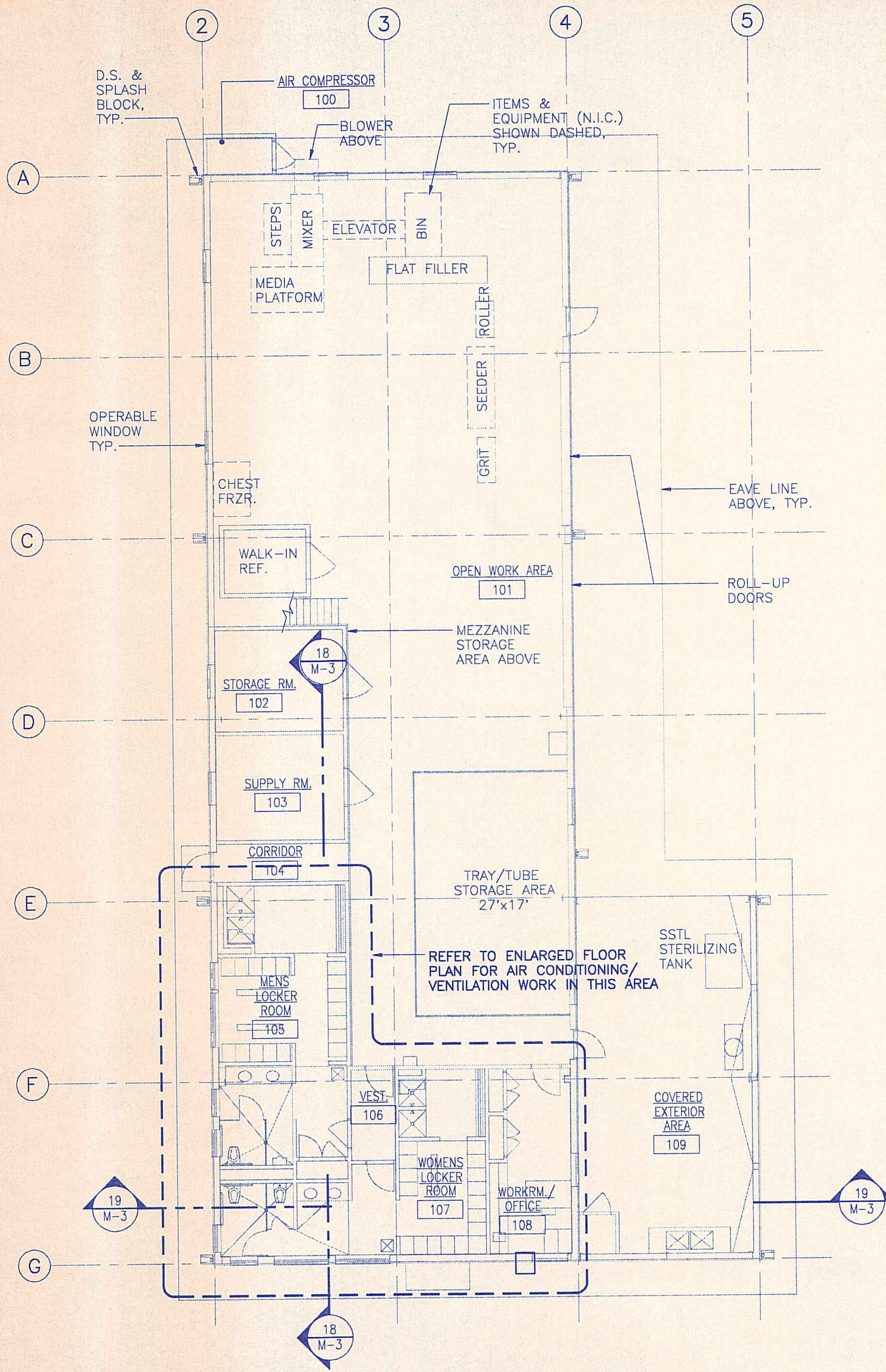


20 EXTERIOR PIPE COLUMN FOOTING DETAIL
3/4" = 1'-0"

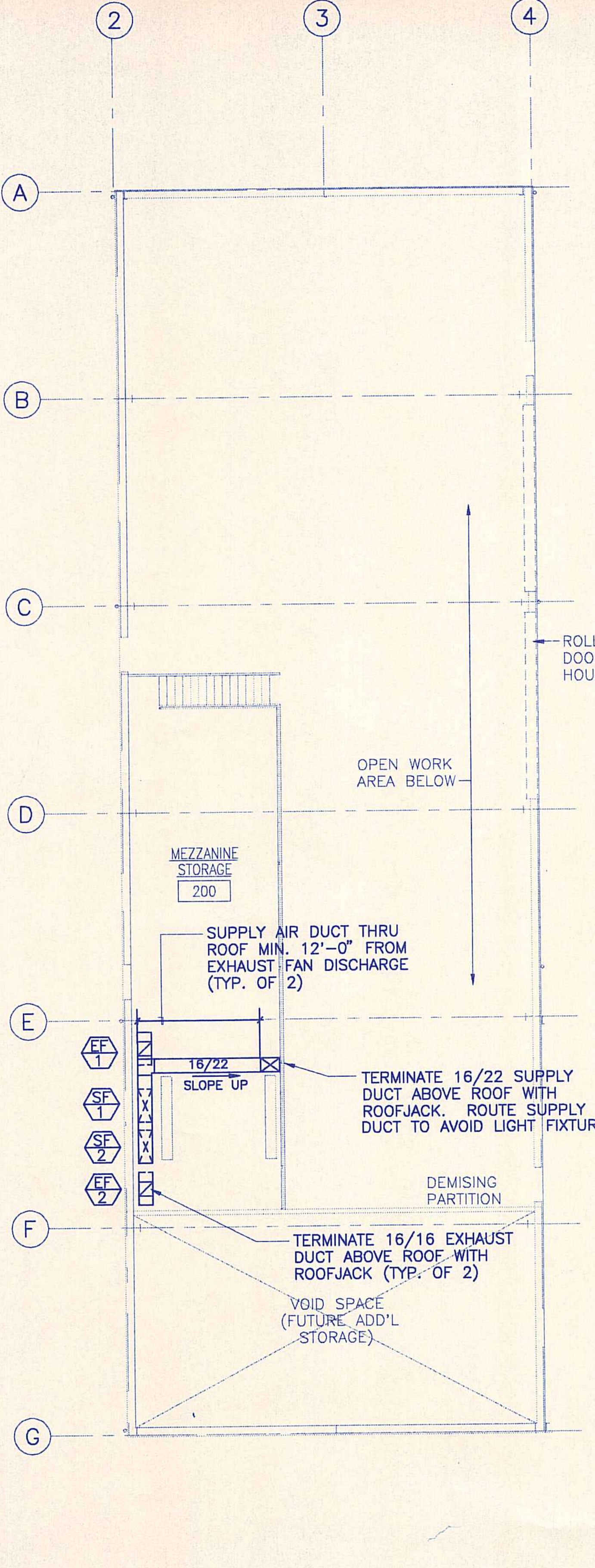


16 CMU PILASTER DETAIL
1 1/2" = 1'-0"

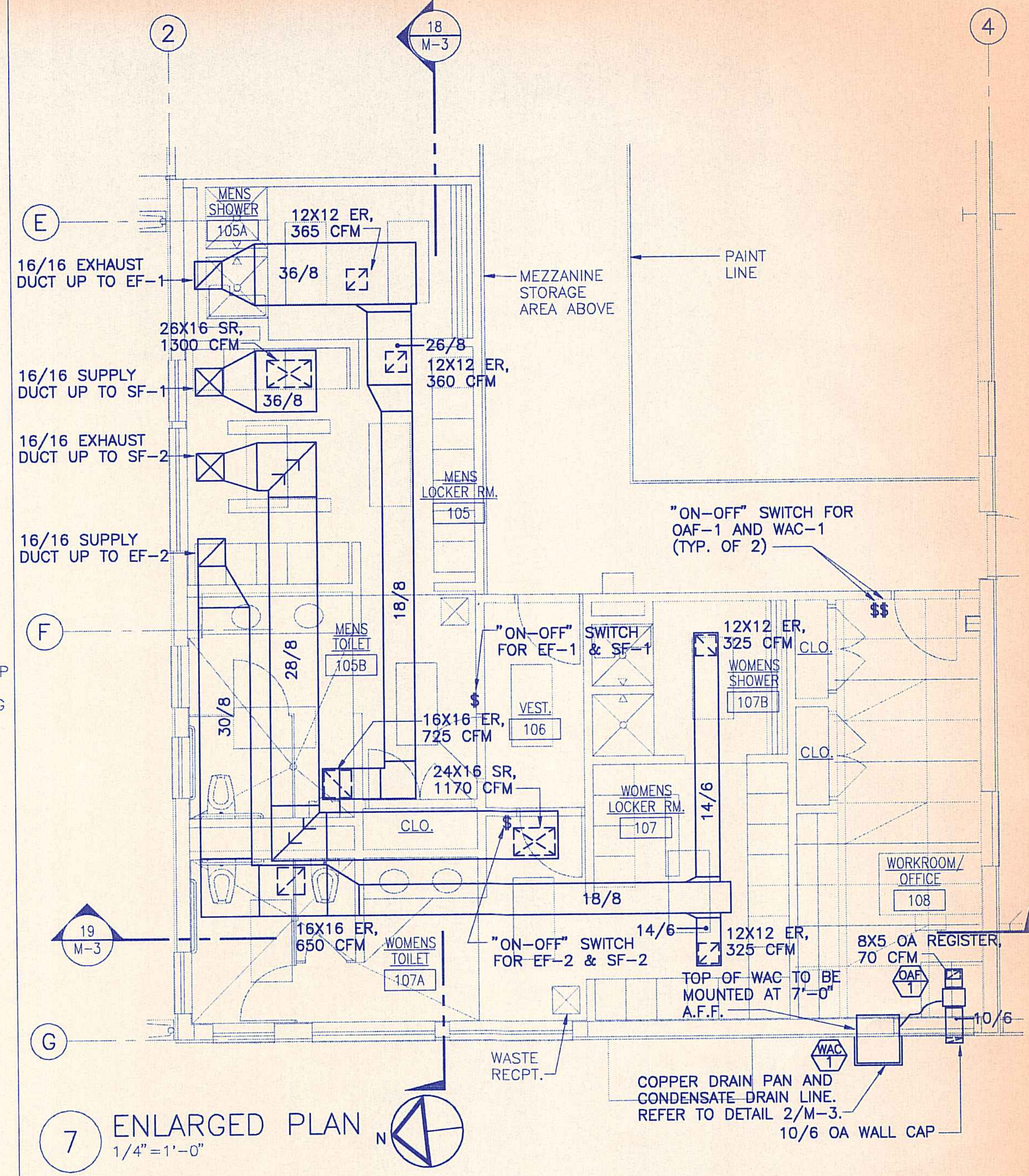
REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF WATER AND LAND DEVELOPMENT					
STATE TREE NURSERY OPERATIONS BUILDING LALAMILO, SOUTH KOHALA, HAWAII					
SECTIONS & DETAILS					
FINAL SUBMITTAL					
DESIGNED: MS		SUBMITTED: MS			
DRAWN: RL		DATE: MAY 12, 1994			
CHECKED: YK		SCALE: AS SHOWN			
APPROVED: <i>[Signature]</i>		DATE: 5-19-94		DRAWING NO. S-5	
REGISTERED PROFESSIONAL ENGINEER NO. 2108-S HAWAII, U.S.A.		MANAGER-CHIEF ENGINEER			



20 MECHANICAL FLOOR PLAN
1/8" = 1'-0"



12 MEZZANINE PLAN
1/8" = 1'-0"



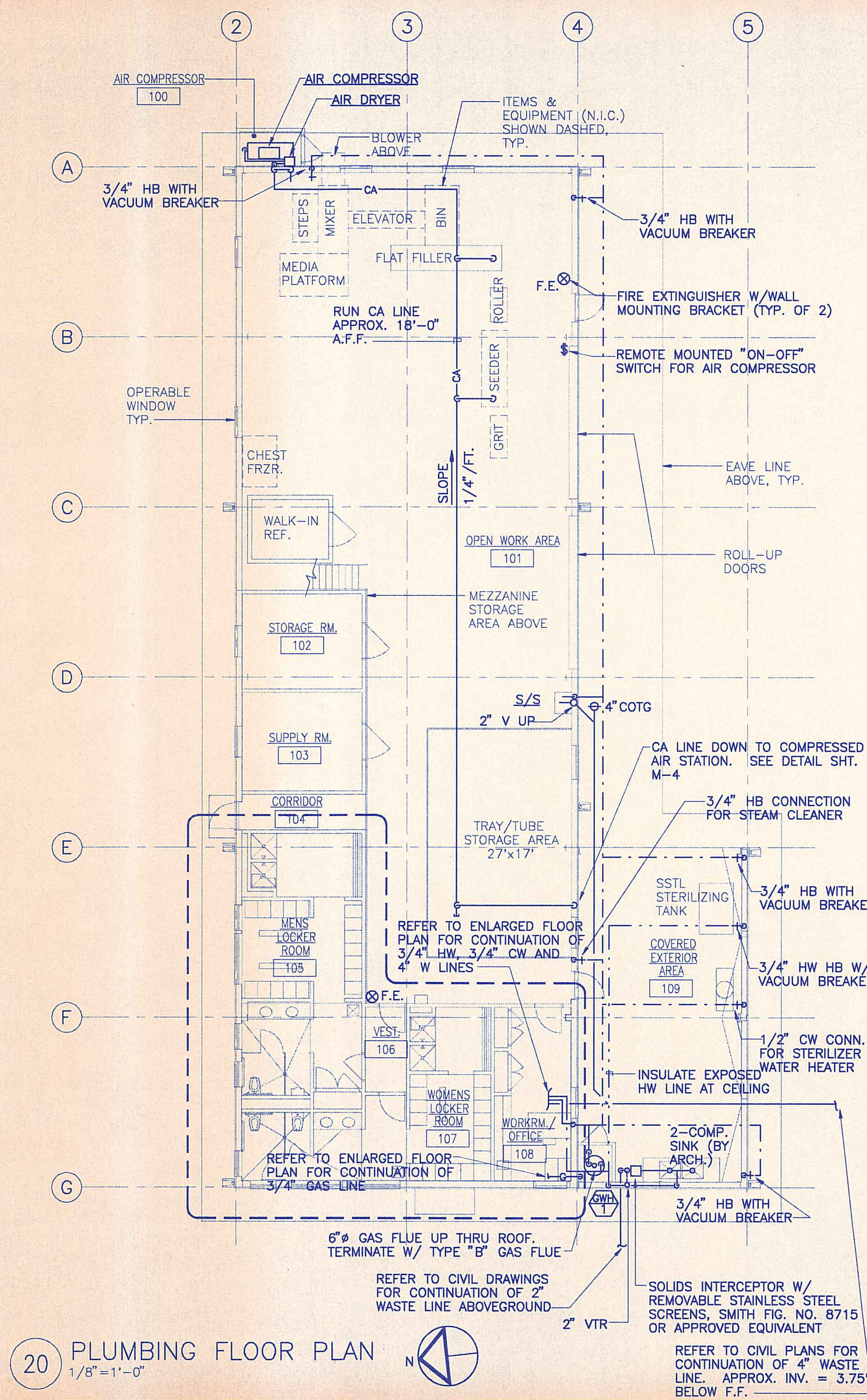
7 ENLARGED PLAN
1/4" = 1'-0"

MECHANICAL LEGEND

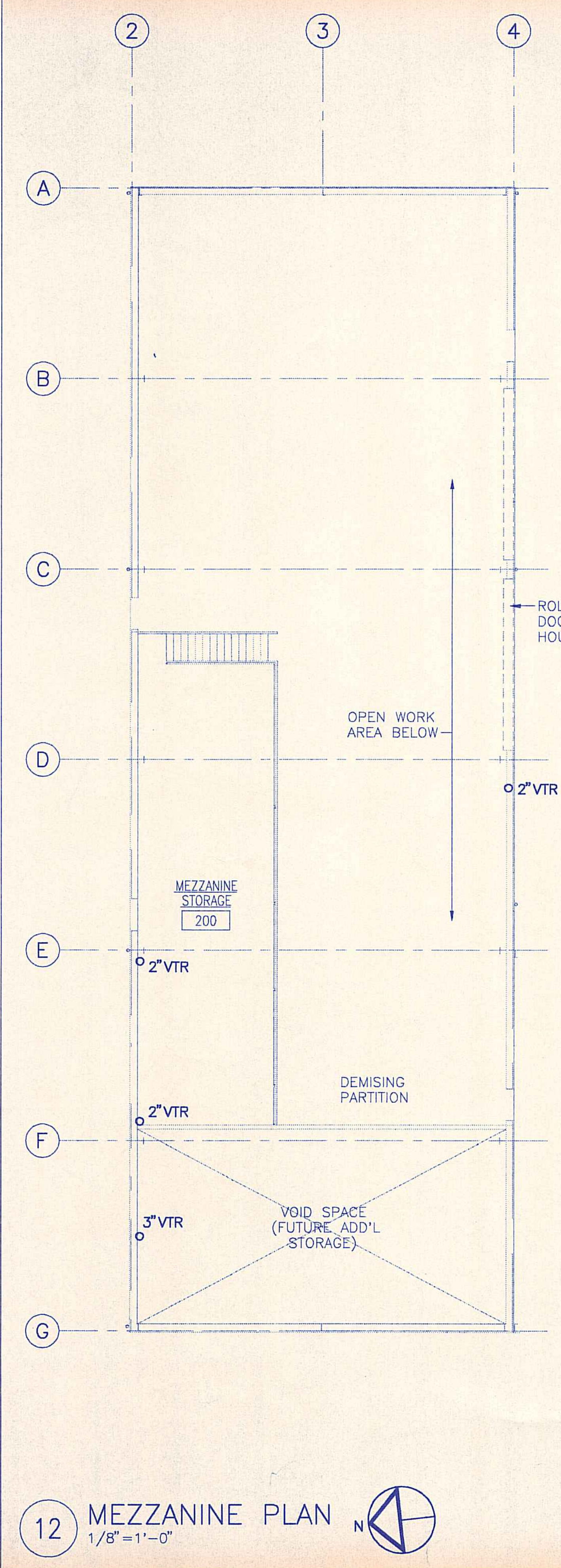
- WASTE LINE
- VENT LINE
- COLD WATER LINE
- HOT WATER LINE
- GAS LINE
- G COMPRESSED AIR LINE
- CA WATER CLOSET
- WC LAVATORY
- LAV ACCESSIBLE WATER CLOSET
- PUR ACCESSIBLE URINAL
- PLAV ACCESSIBLE LAVATORY
- S/S SERVICE SINK
- SK SINK
- SHO-1 SHOWER
- SHO-2 ACCESSIBLE SHOWER
- DF DRINKING FOUNTAIN
- VTR VENT THRU ROOF
- IWH INSTANTANEOUS WATER HEATER
- GWH GAS WATER HEATER
- HB HOSE BIBB
- WHA WATER HAMMER ARRESTER
- FD FLOOR DRAIN
- FCO FLOOR CLEANOUT
- WCO WALL CLEANOUT
- CO CLEANOUT
- COTG CLEANOUT TO GRADE
- N.I.C. NOT IN CONTRACT

- CW COLD WATER
- HW HOT WATER
- W WASTE
- V VENT
- WAC WALL AIR CONDITIONING UNIT
- OAF OUTSIDE AIR FAN
- EF EXHAUST FAN
- SF SUPPLY FAN
- SR SUPPLY REGISTER
- ER EXHAUST REGISTER
- FE FIRE EXTINGUISHER

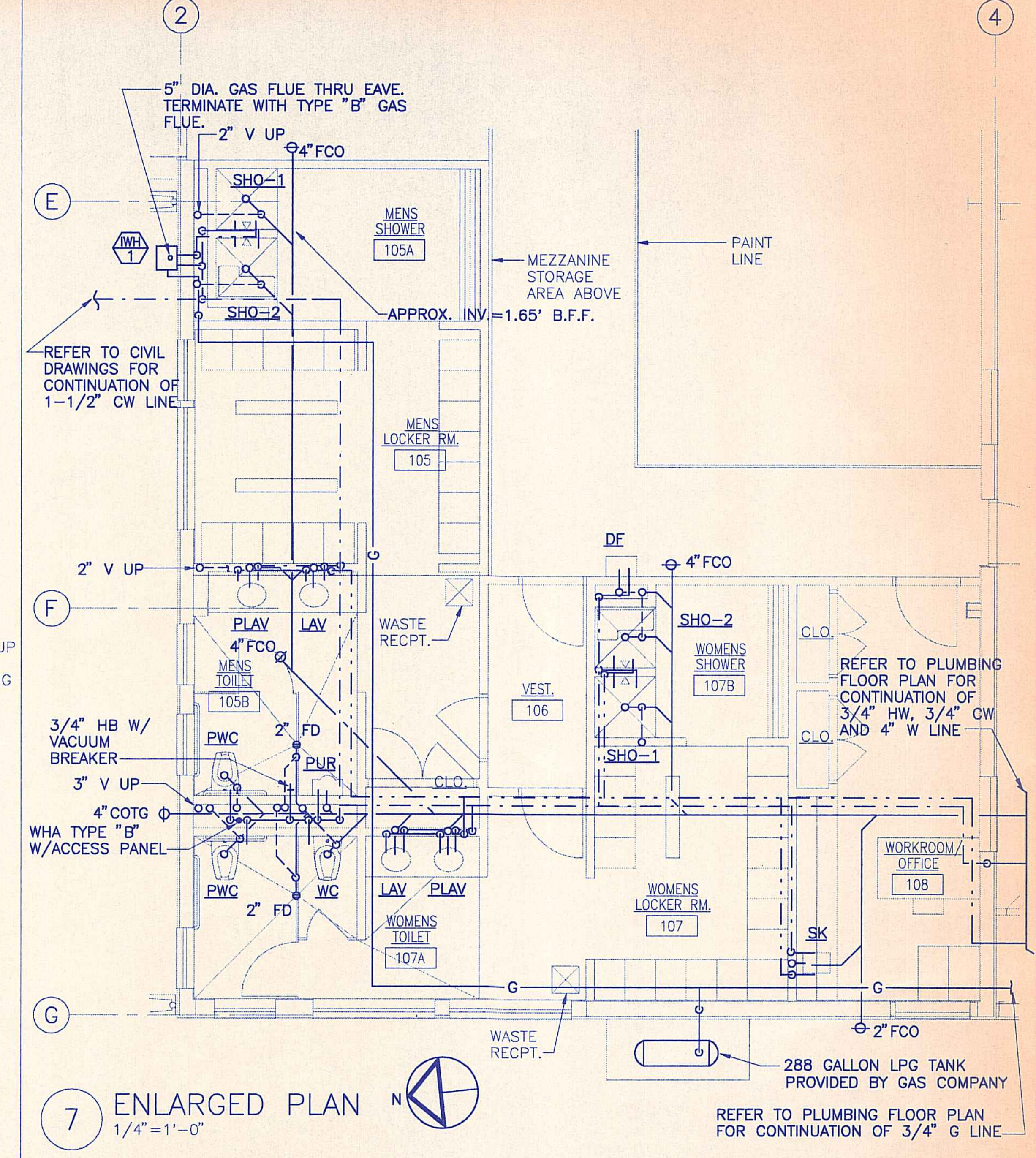
REVISION NO.	SYMBOL	DESCRIPTION	SHT. OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF WATER AND LAND DEVELOPMENT					
STATE TREE NURSERY OPERATIONS BUILDING LALAMILO, SOUTH KOHALA, HAWAII					
MECHANICAL FLOOR PLAN					
FINAL SUBMITTAL					
DESIGNED: RYT	SUBMITTED: <i>ryt</i>				
DRAWN: RYT	DATE: MAY 12, 1994				
CHECKED: RHM	SCALE: AS NOTED				
APPROVED: <i>[Signature]</i>	DATE: 5/12/94		DRAWING NO. M-1		
MANAGER-CHIEF ENGINEER			DATE		



20 PLUMBING FLOOR PLAN
1/8" = 1'-0"



12 MEZZANINE PLAN
1/8" = 1'-0"



7 ENLARGED PLAN
1/4" = 1'-0"

- GENERAL NOTES:**
- 1) THE CONTRACTOR SHALL SUPPLY ALL LABOR AND MATERIALS REQUIRED TO COMPLETE ALL WORK SHOWN ON PLANS.
 - 2) THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE PROCEEDING WITH THE WORK.
 - 3) THE CONTRACTOR SHALL COMPLY WITH THE PLUMBING CODE, UNIFORM FIRE CODE, ALL OTHER APPLICABLE CODES AND MANUFACTURER'S RECOMMENDATIONS.
 - 4) ALL DUCT DIMENSIONS ARE NET DIMENSIONS. PROVIDE ACCESS PANELS FOR ALL ITEMS UNDER THIS SECTION REQUIRING SERVICING, INSPECTION, MAINTENANCE AND ADJUSTMENT.
 - 5) ALL ITEMS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 - 6) ALL EXPOSED STEEL SHALL BE HOT-DIPPED GALVANIZED. EXPOSED TO WEATHER STEEL SHALL HAVE TWO EXTRA COATS EPOXY PAINT.
 - 7) PROVIDE DIELECTRIC UNIONS AT ALL DISSIMILAR METALS.
 - 8) CAULK ALL ROOF AND WALL PENETRATIONS TO THE OUTSIDE WATERTIGHT.
 - 9) ALL CONTROL WIRING AND CONTROL CONDUIT SHALL BE PROVIDED BY THE CONTROL CONTRACTOR.
 - 10) PROVIDE REBALANCING WITHIN ONE YEAR GUARANTEE PERIOD.

REVISION NO.	SYL	DESCRIPTION	SHT./OF	DATE	APPROVED

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Date: 5/11/94

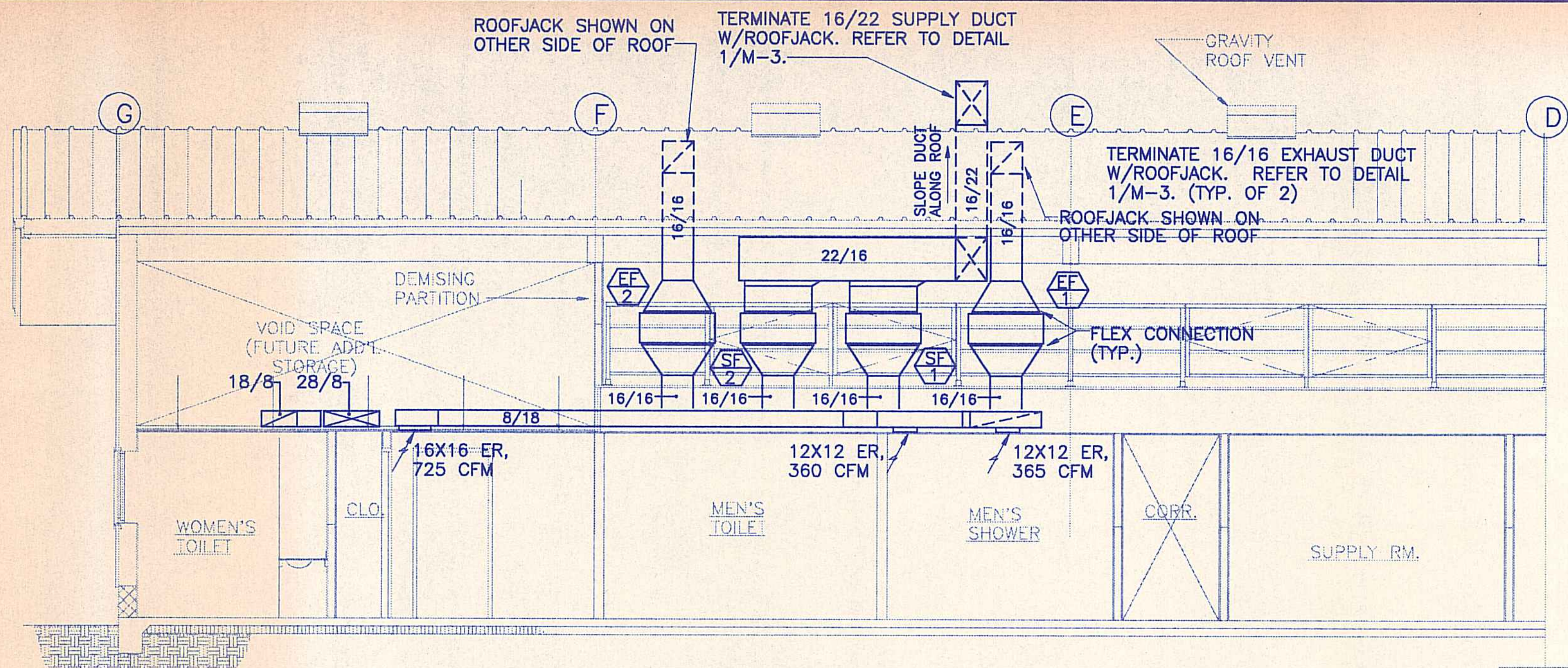
STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

STATE TREE NURSERY OPERATIONS BUILDING
LALAMILLO, SOUTH KOHALA, HAWAII

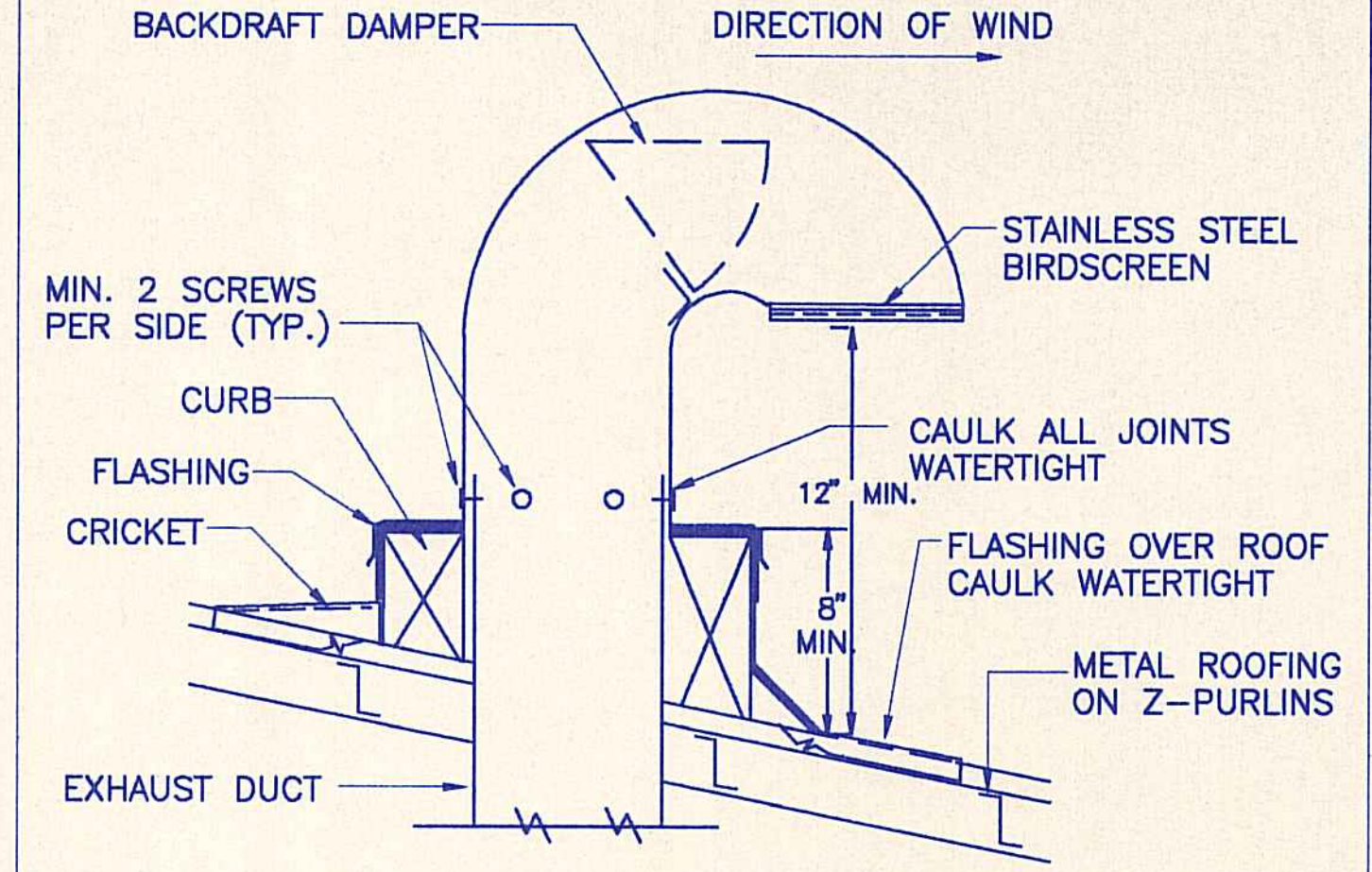
PLUMBING FLOOR PLAN

FINAL SUBMITTAL

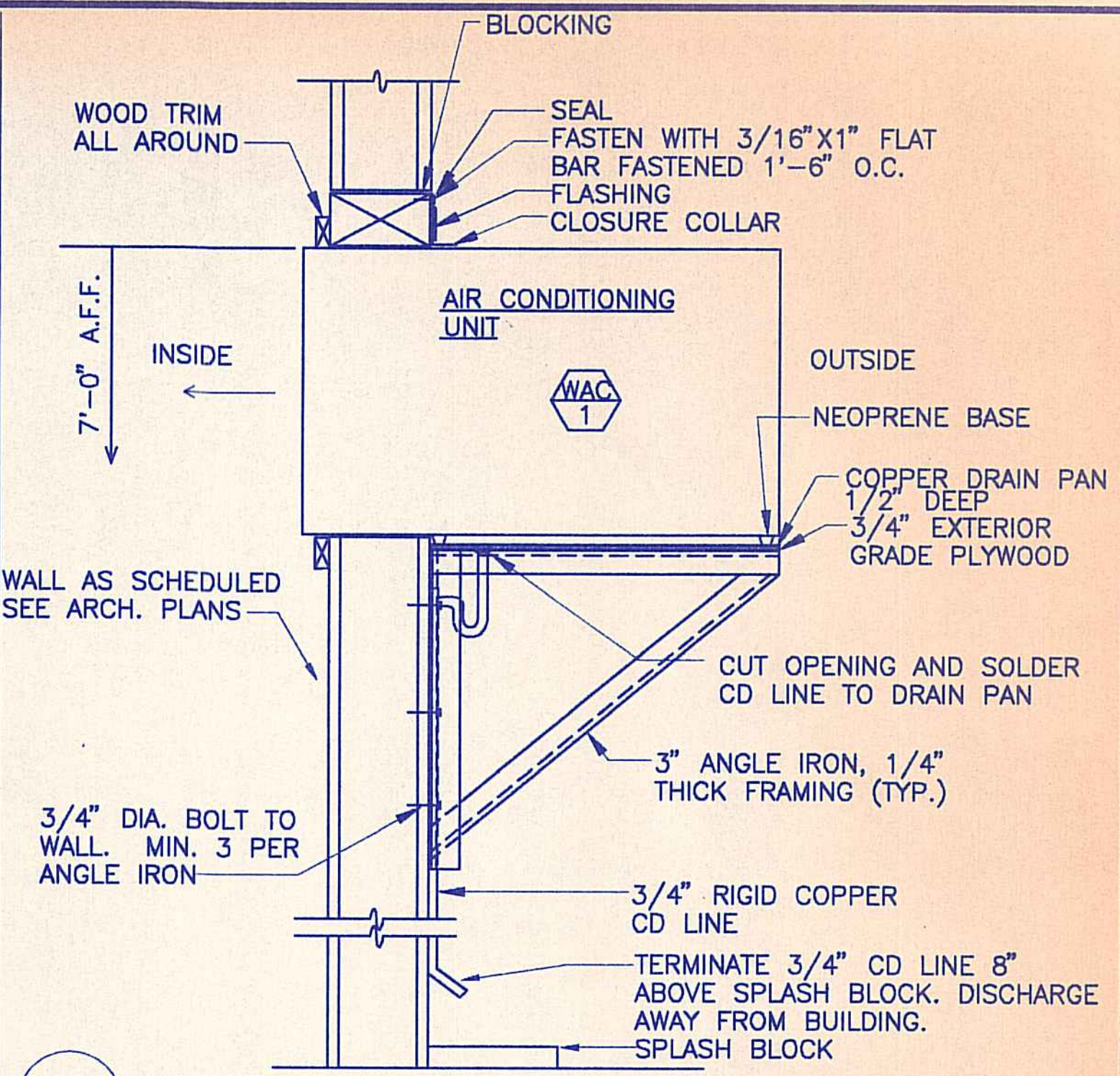
DESIGNED: ESN/RYT SUBMITTED: wj
DRAWN: RYT DATE: MAY 12, 1994
CHECKED: RHM SCALE: AS NOTED
APPROVED: [Signature] DRAWING NO. M-2
MANAGER-CHIEF ENGINEER DATE



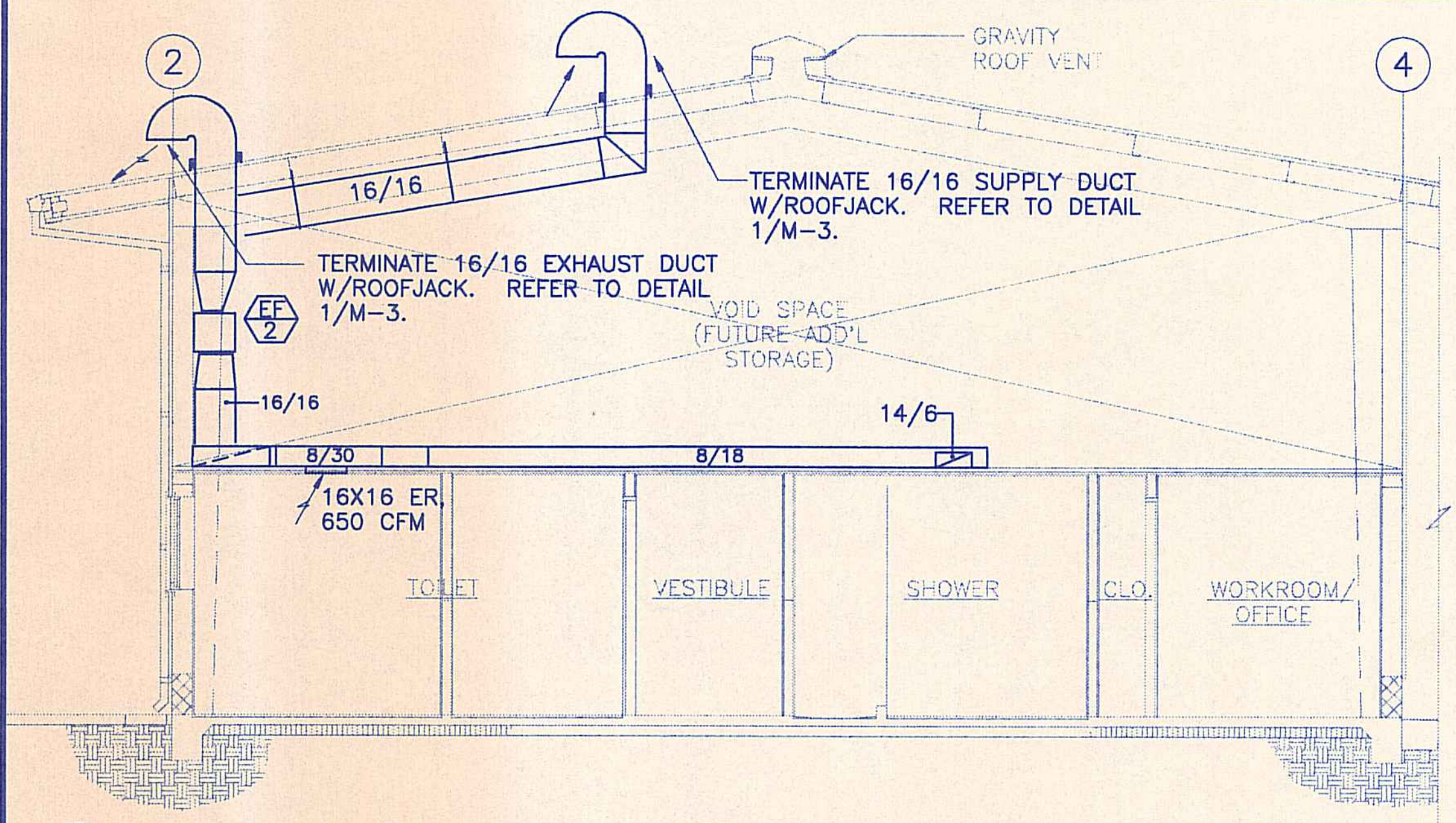
18 LONGITUDINAL BUILDING SECTION
1/4" = 1'-0"



5 ROOFJACK DETAIL
NOT TO SCALE



2 WINDOW A/C UNIT SUPPORT DETAIL
NOT TO SCALE



19 BUILDING SECTION
1/4" = 1'-0"

ENERGY CONSERVATION CALCULATIONS
REFERENCE: ASHRAE FUNDAMENTALS HANDBOOK, 1991

ROOF	
R1	OUTSIDE AIR 0.25
R2	METAL ROOF 0.00
R3	AIR SPACE 1.00
R4	INSULATION 19.00
R5	5/8" PLYWOOD 0.56
R6	INSIDE AIR 0.92
R = 21.74, U = 0.05	

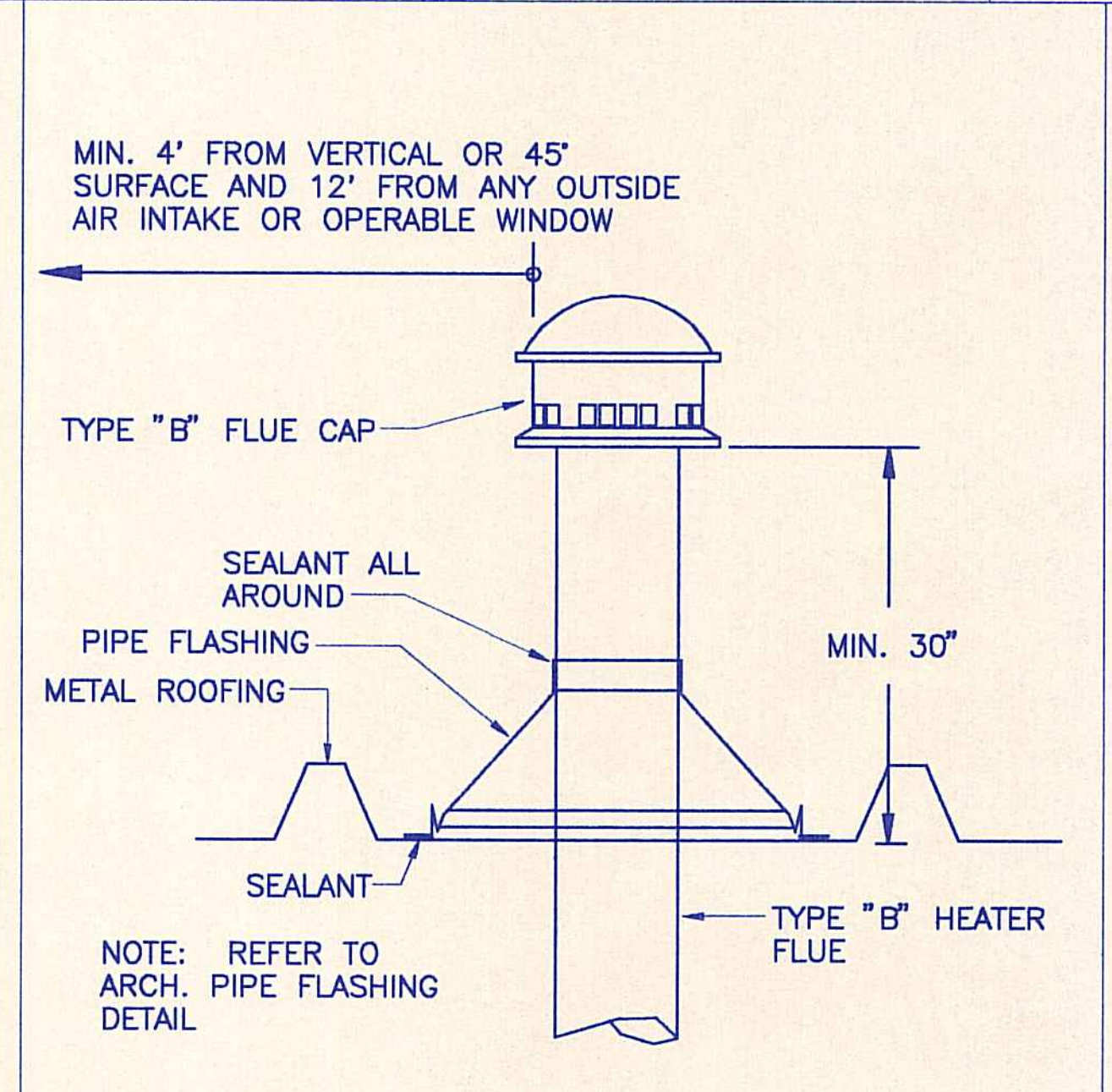
WALL	
R1	OUTSIDE AIR 0.25
R2	METAL SIDING 0.00
R3	AIR SPACE 0.85
R4	INSULATION 11.00
R5	5/8" GYPBOARD 0.56
R6	INSIDE AIR 0.68
R = 13.34, U = 1/R = 0.08	

INTERIOR WALL TOTAL AREAS
AW = 62
AF = 18
AO = 80

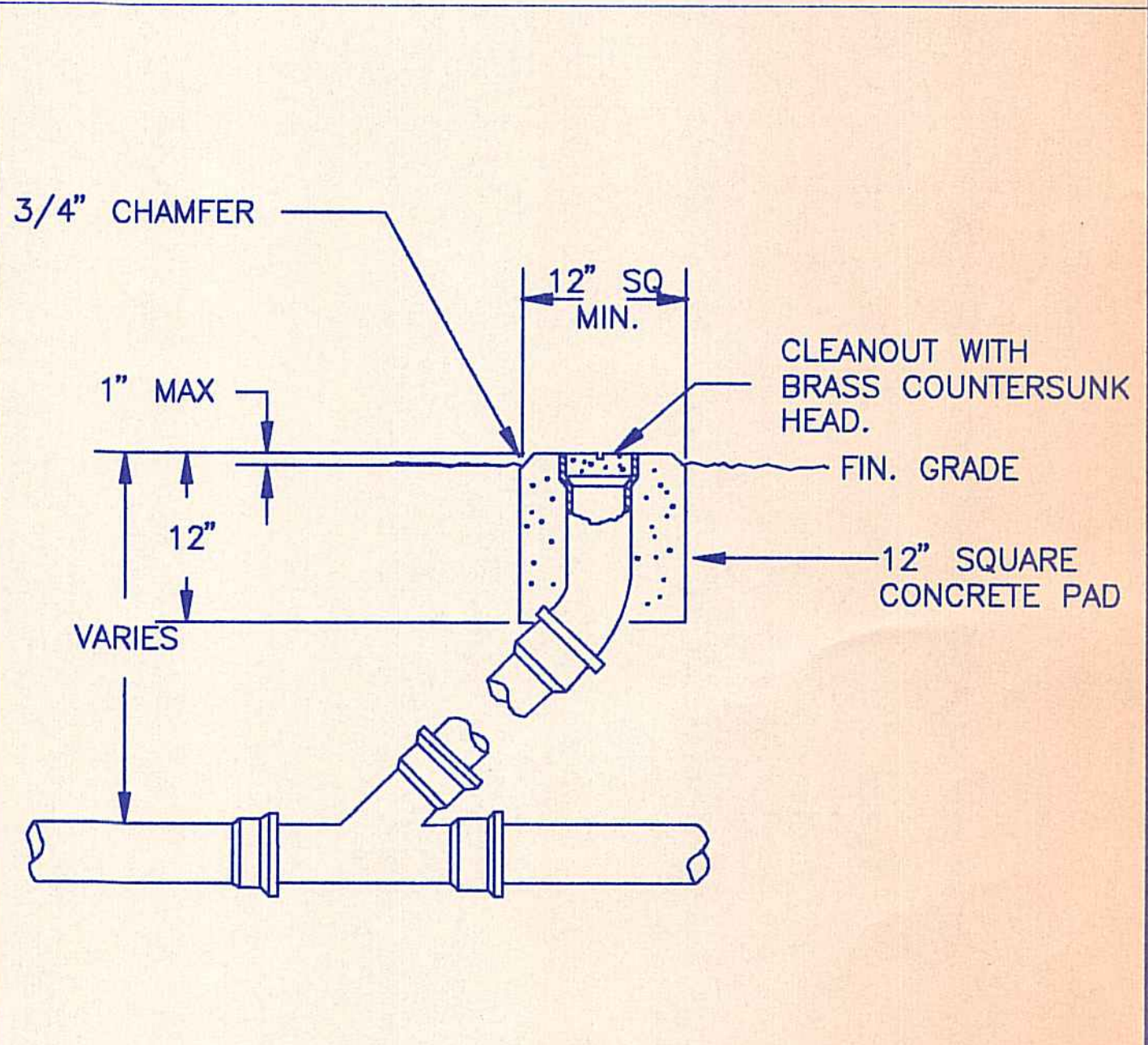
W AW = 62 SQ. FT.
AF = 18 SQ. FT.

$$OTV = \frac{(UW \times AW \times TDEQ) + (UF \times AF \times T) + (AF \times SF \times XSC)}{AO}$$

$$OTV = \frac{0.08 \times 62 \times 37 + 1.04 \times 18 \times 10 + 18 \times 20 \times 1}{80}$$

$$= \frac{183.5 + 187.2 + 360}{80} = 9.13$$


7 GAS HEATER FLUE DETAIL
NOT TO SCALE



3 CLEANOUT TO GRADE DETAIL
NOT TO SCALE

MECHANICAL EQUIPMENT SCHEDULE

- WAC** WALL AIR CONDITIONING UNIT:
1 12,000 BTUH TOTAL COOLING CAPACITY, 395 CFM HI/265 CFM LO. 1335 WATTS, 6.0 AMPS, 230 V/1 PH/60 HZ. 9.0 EER. 124 LBS. OPERATING WEIGHT. CARRIER MODEL CMG0123 OR APPROVED EQUIVALENT. COP: 2.6. PROVIDE REMOTE MOUNTED "ON-OFF" SWITCH.
- EF** EXHAUST FAN:
1 IN-LINE CABINET FAN, 1450 CFM AT 0.375" S.P.. 1060 RPM, 1/2 HP, 115 V/1 PH/60 HZ. SOUND DATA: 6.4 SONES. OPERATING WEIGHT: 85 LBS. PENN MODEL Z14 OR APPROVED EQUIVALENT. PROVIDE REMOTE MOUNTED "ON-OFF" SWITCH.
- EF** EXHAUST FAN:
2 IN-LINE CABINET FAN, 1300 CFM AT 0.375" S.P.. 980 RPM, 1/2 HP, 115 V/1 PH/60 HZ. SOUND DATA: 5.8 SONES. OPERATING WEIGHT: 85 LBS. PENN MODEL Z14 OR APPROVED EQUIVALENT. PROVIDE REMOTE MOUNTED "ON-OFF" SWITCH.
- IWH** INSTANTANEOUS WATER HEATER:
1 INSTANTANEOUS GAS WATER HEATER, 30,000 BTUH (MIN.)/89,300 BTUH (MAX.), 1.43 GPM HOT WATER OUTPUT AT 100° F RISE. 5" DIA. FLUE. OPERATING WEIGHT: 36 LBS. PALOMA CONSTANT-FLO.
- GWH** GAS WATER HEATER:
1 80 GALLON CAPACITY, 180,000 BTUH, 230 GPM AT 100° F RISE (FIRST HOUR), 173 GPM AT 100° F RISE. 6" DIA. FLUE. PROVIDE 120 V/1 PH/60 HZ POWER SOURCE, MAX. 12 AMPS. COMPLY WITH BUILDING DEPARTMENT ENERGY CODE.

- SF** SUPPLY FAN:
1 IN-LINE CABINET FAN, 1300 CFM AT 0.375" S.P.. 980 RPM, 1/2 HP, 115 V/1 PH/60 HZ. SOUND DATA: 5.8 SONES. OPERATING WEIGHT: 85 LBS. PENN MODEL Z14 OR APPROVED EQUIVALENT. INTERLOCK WITH EXHAUST FAN, EF-1.
- SF** SUPPLY FAN:
2 IN-LINE CABINET FAN, 1170 CFM AT 0.375" S.P.. 980 RPM, 1/2 HP, 115 V/1 PH/60 HZ. SOUND DATA: 5.8 SONES. OPERATING WEIGHT: 85 LBS. PENN MODEL Z14 OR APPROVED EQUIVALENT. INTERLOCK WITH EXHAUST FAN, EF-2.
- OAF** OUTSIDE AIR FAN:
1 CABINET FAN, IN-LINE CONFIGURATION, 70 CFM AT 0.25" S.P.. 1580 RPM, 50 WATTS, 115 V/1PH/60 HZ. SOUND DATA: 1.9 SONES. OPERATING WEIGHT: 16 LBS. PENN MODEL Z5 OR APPROVED EQUIVALENT. PROVIDE REMOTE MOUNTED "ON-OFF" SWITCH.
- AIR COMPRESSOR:**
TANK MOUNTED, HORIZONTAL RECEIVER, ELECTRIC MOTOR DRIVEN AIR COMPRESSOR, INGERSOLL-RAND MODEL 5D OR APPROVED EQUIVALENT. 200 PSIG MAX., 15 ACFM AT 100 PSIG. 80 GALLON CAPACITY TANK, 5 HP, 230 V/3 PH/60 HZ. DIMENSIONS: 64" L X 23" W X 41" H. OPERATING WEIGHT: 660 LBS. PROVIDE REMOTE MOUNTED "ON-OFF" SWITCH.
- AIR DRYER:**
15 CFM AT 100 PSIG, 1/5 HP, 115 V/1 PH/60 HZ. 55 LBS. OPERATING WEIGHT. 170 PSI MAX. WORKING PRESSURE. ZEKS MODEL 18NCB OR APPROVED EQUIVALENT.

REVISION NO.	SYMBOL	DESCRIPTION	SHT./OF	DATE	APPROVED

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

STATE TREE NURSERY OPERATIONS BUILDING
LALAMILO, SOUTH KOHALA, HAWAII

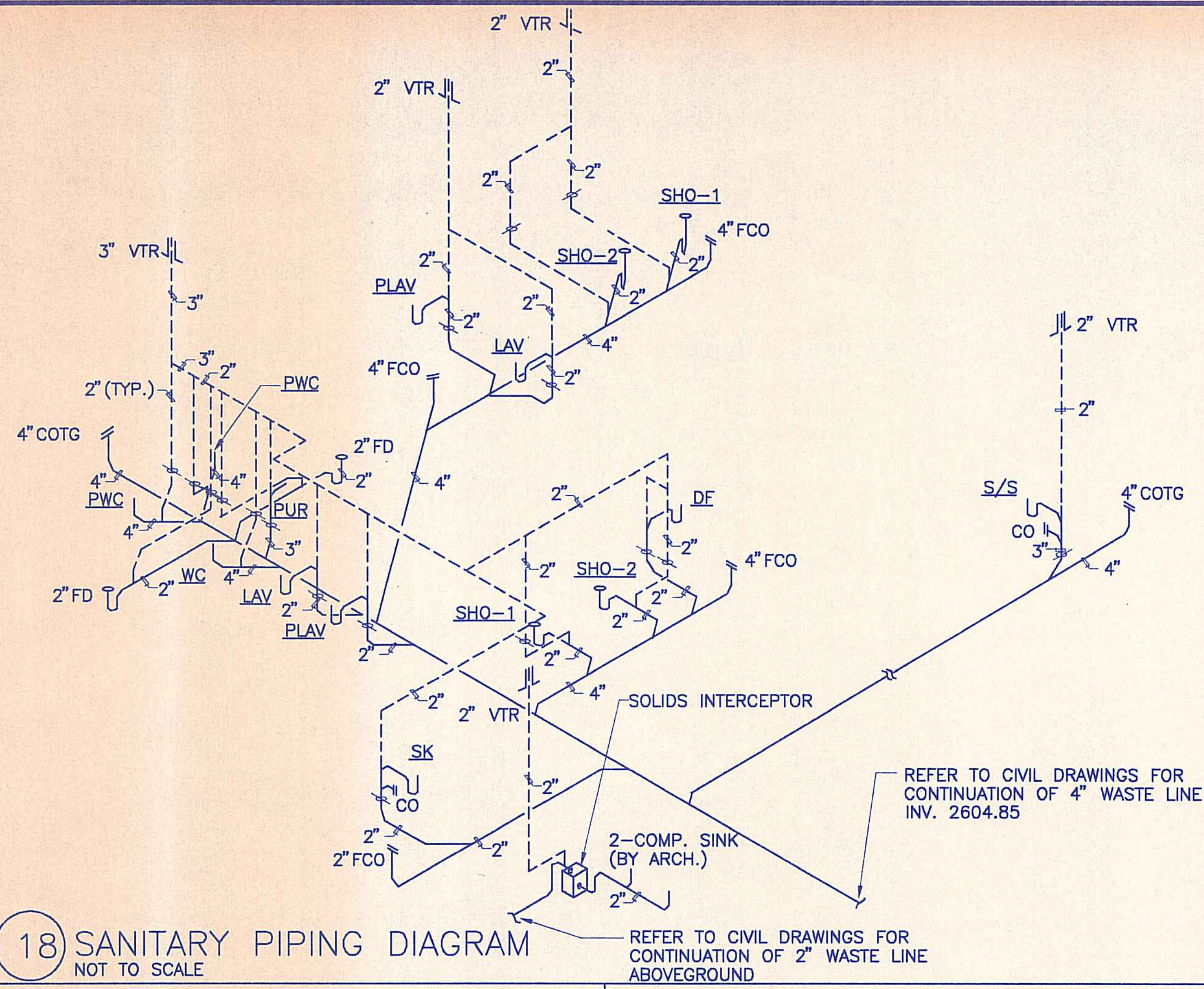
SECTIONS, DETAILS, SCHEDULE

FINAL SUBMITTAL

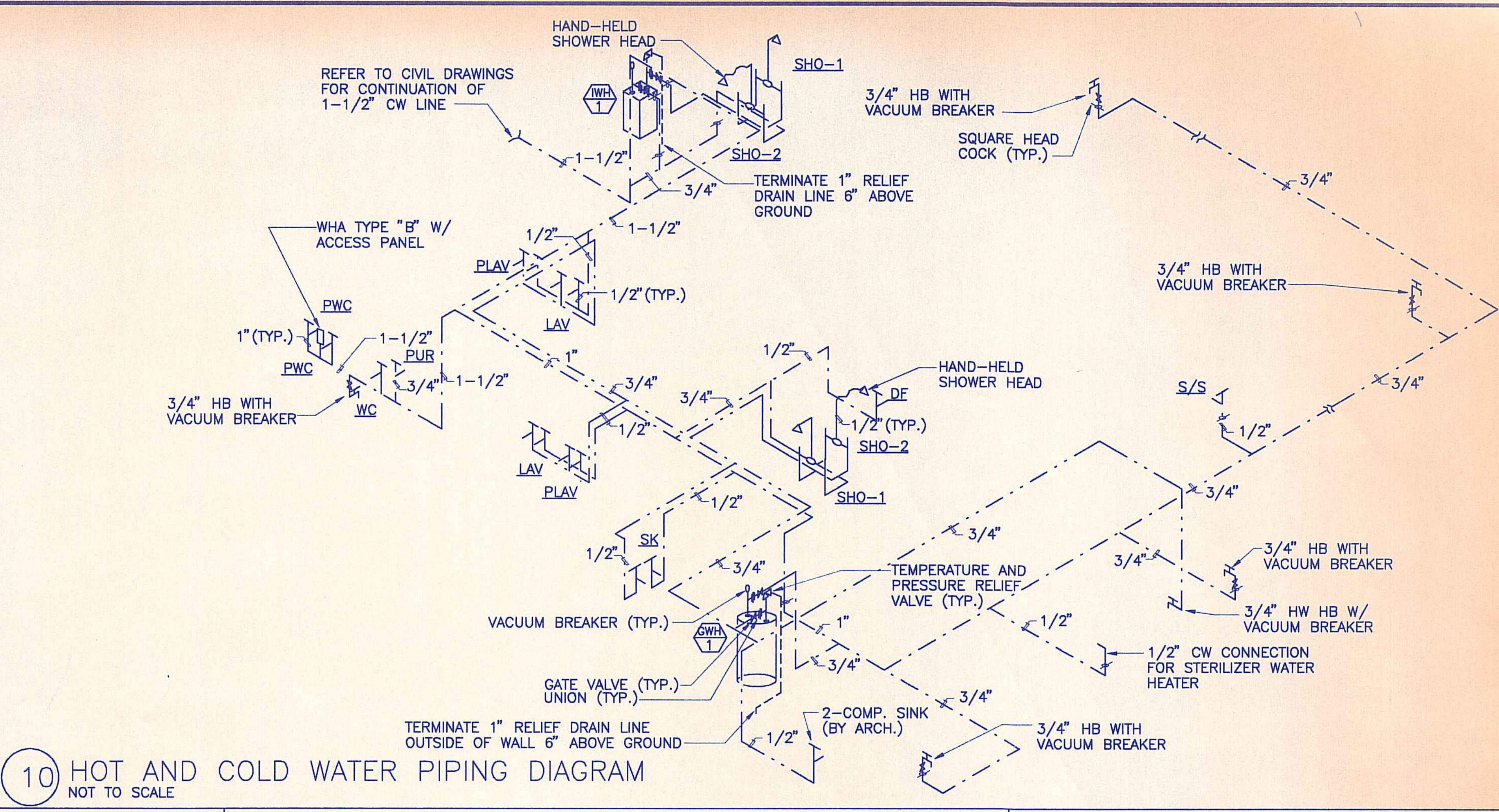
DESIGNED: RYT
DRAWN: RYT
CHECKED: RHM
APPROVED: *[Signature]*

SUBMITTED: *[Signature]*
DATE: MAY 12, 1994
SCALE: 1/8" = 1'-0"
DRAWING NO. M-3

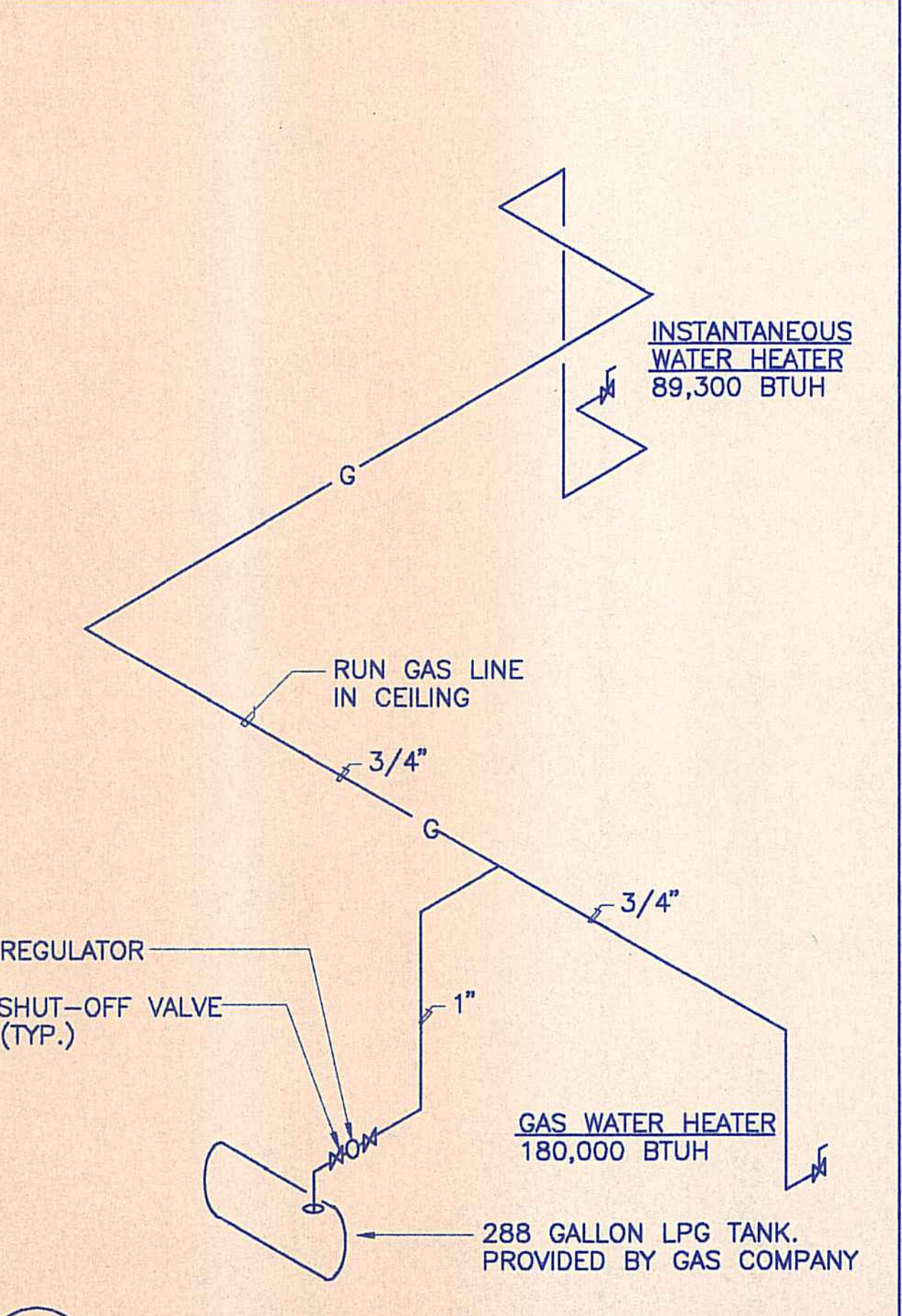
MANAGER-CHIEF ENGINEER



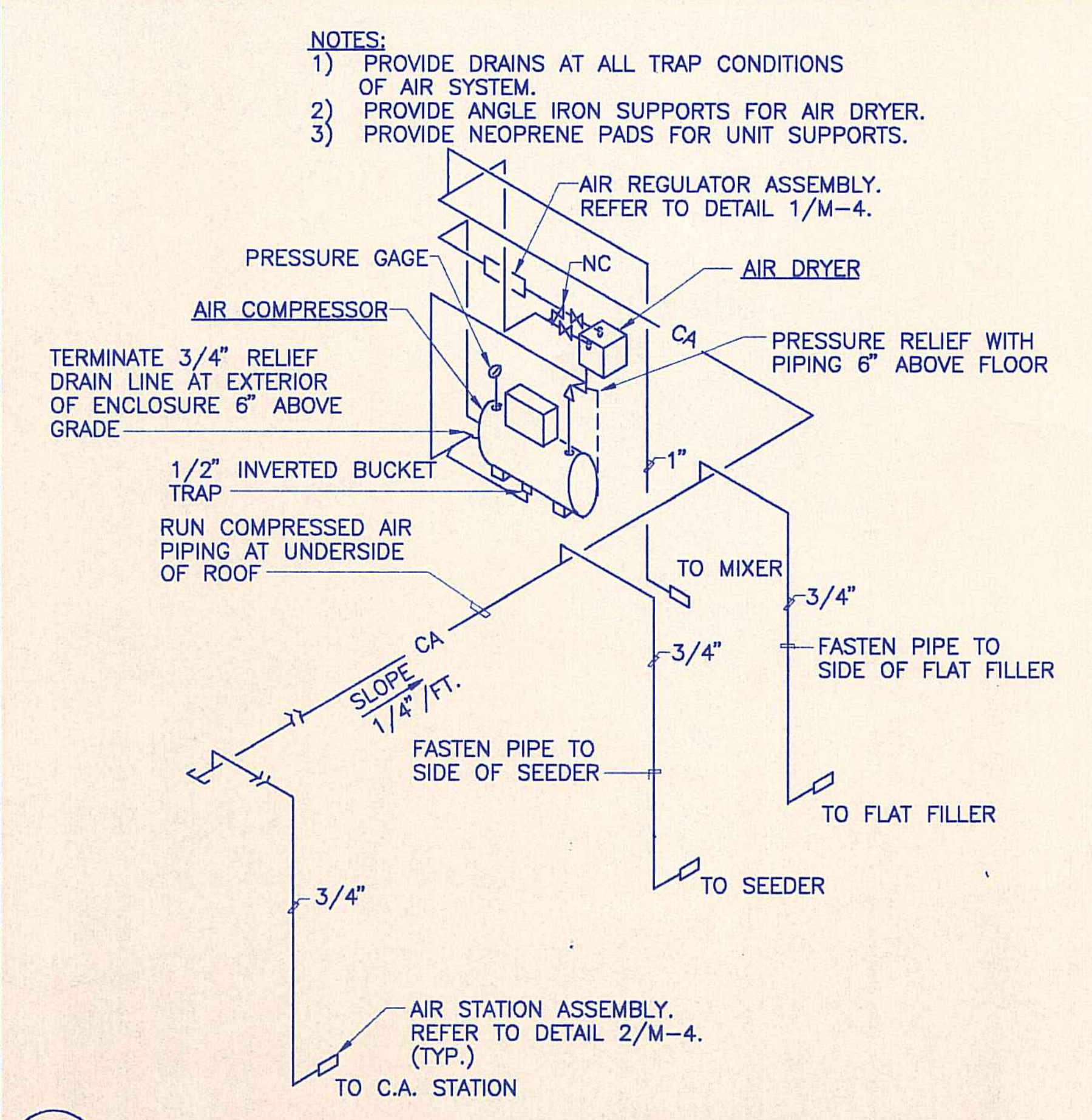
18 SANITARY PIPING DIAGRAM
NOT TO SCALE



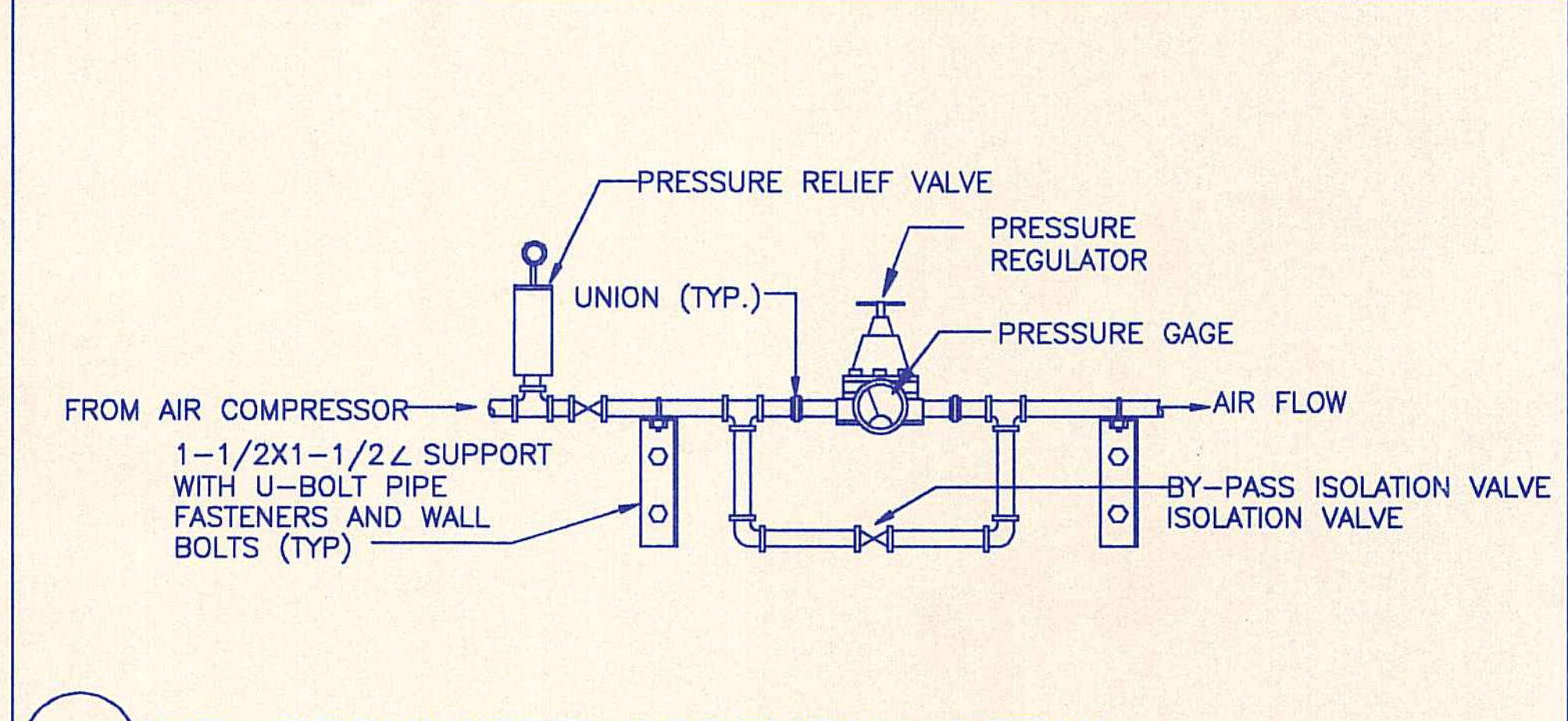
10 HOT AND COLD WATER PIPING DIAGRAM
NOT TO SCALE



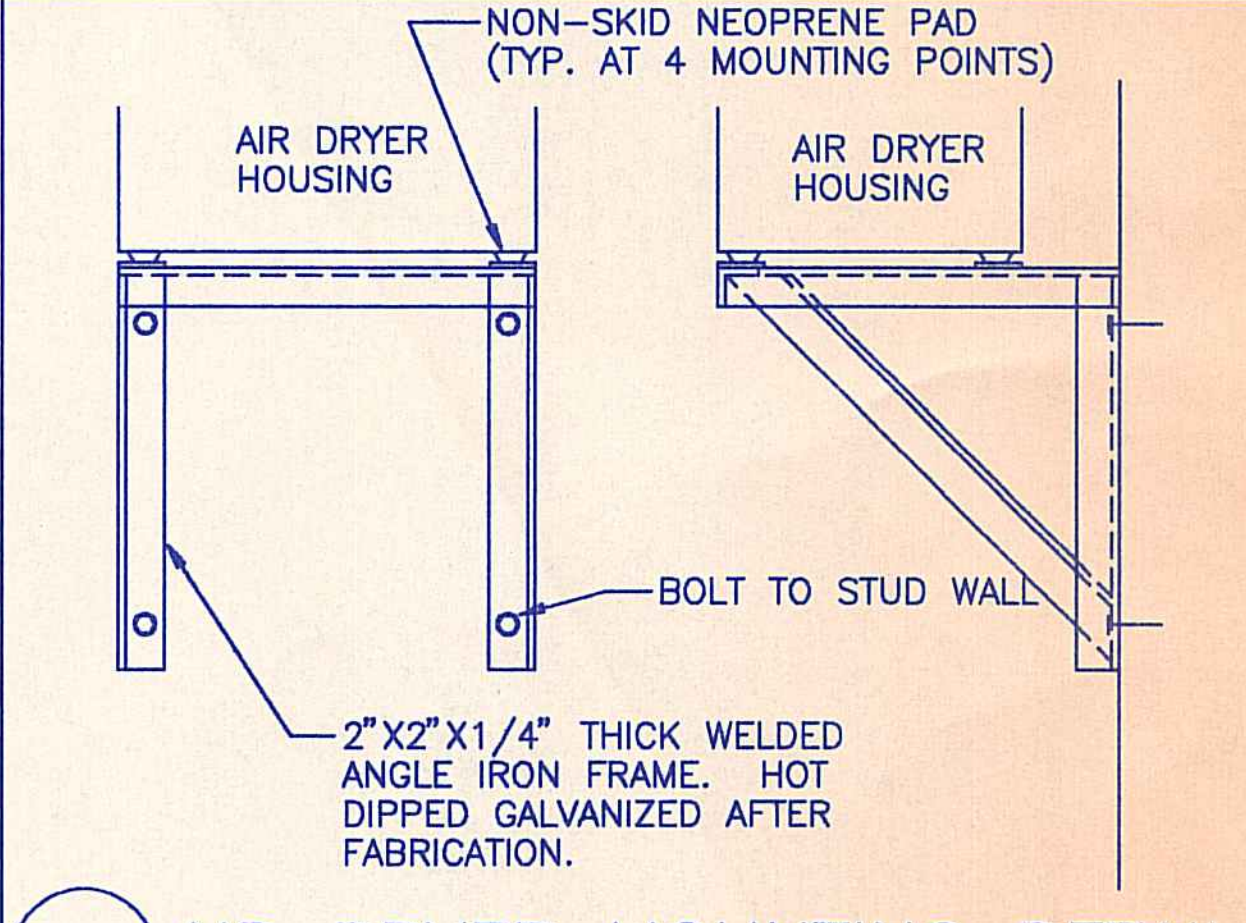
20 GAS PIPING DIAGRAM
NOT TO SCALE



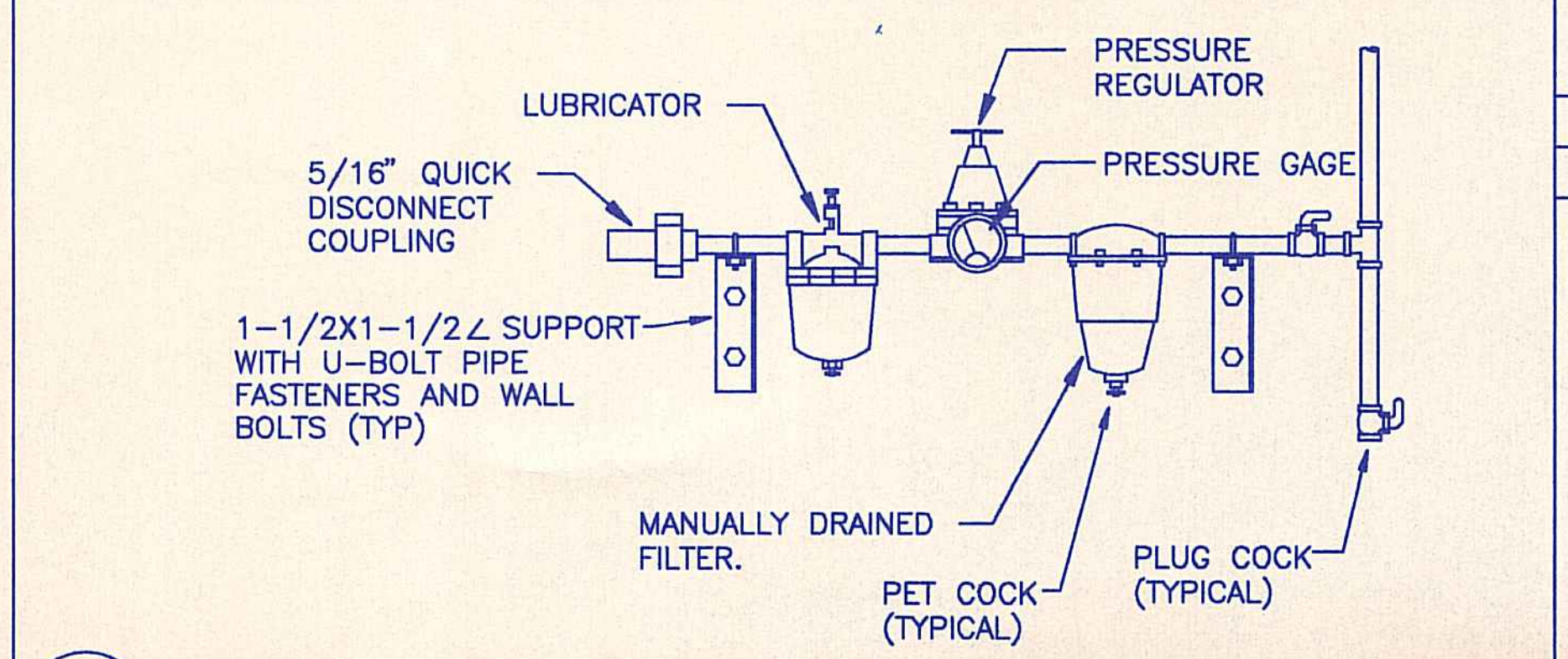
16 COMPRESSED AIR PIPING DIAGRAM
NOT TO SCALE



11 AIR REGULATOR ASSEMBLY DETAIL
NOT TO SCALE

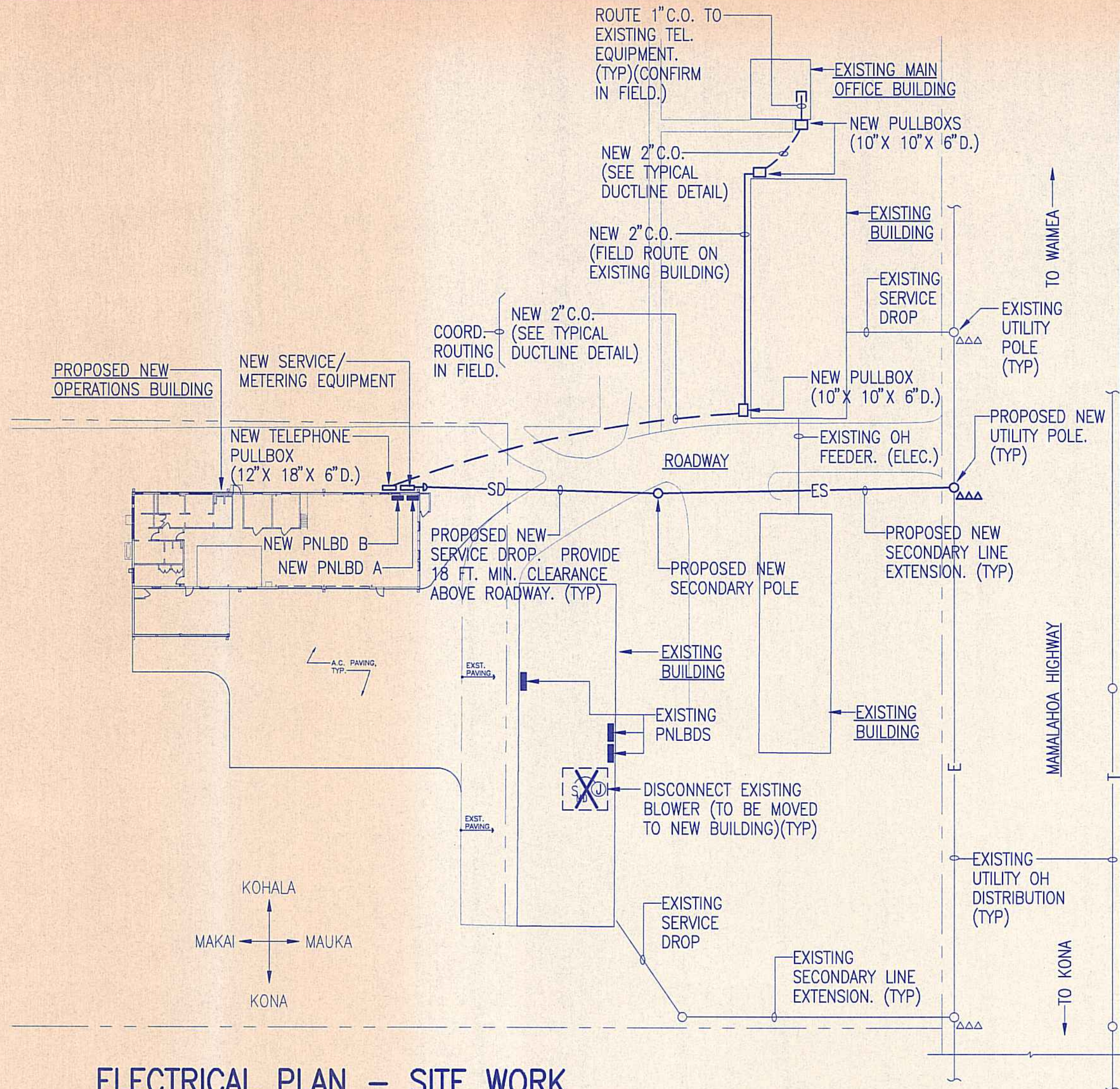


3 AIR DRYER MOUNTING DETAIL
NOT TO SCALE



12 TYPICAL AIR STATION DETAIL
NOT TO SCALE

REVISION NO.	SYMBOL	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF WATER AND LAND DEVELOPMENT					
STATE TREE NURSERY OPERATIONS BUILDING LALAMILO, SOUTH KOHALA, HAWAII					
DIAGRAMS					
FINAL SUBMITTAL					
DESIGNED: RYT	SUBMITTED: [Signature]				
DRAWN: RYT	DATE: MAY 10, 1994				
CHECKED: RHM	SCALE: 1/4" = 1'-0"				
APPROVED: [Signature]	DRAWING NO. M-4				
MANAGER-CHIEF ENGINEER		DATE			



ELECTRICAL PLAN - SITE WORK

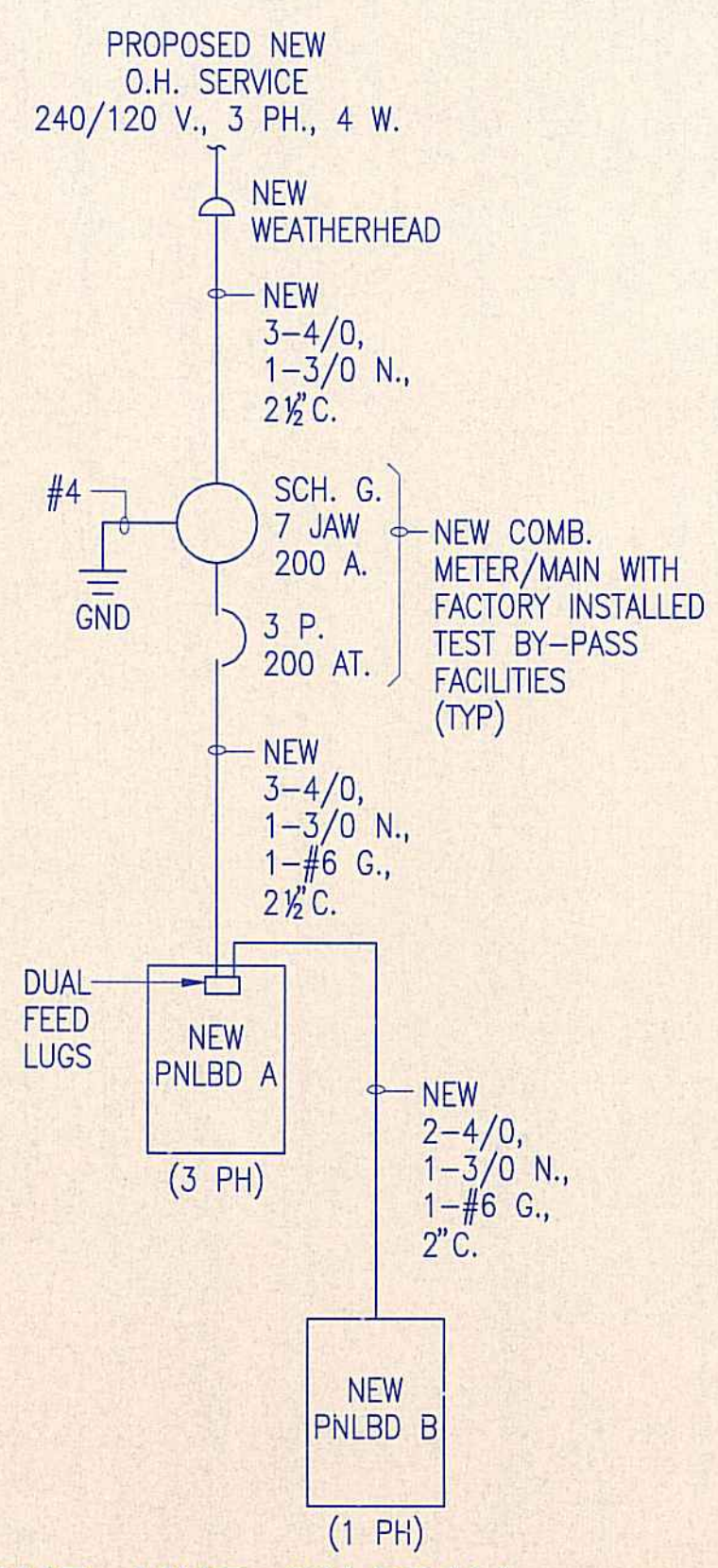
1" = 40' TMK: 6-6-05:01
 NOTE: ELECTRICAL SERVICE INSTALLATION SHALL COMPLY WITH HELCO'S REQUIREMENTS. CONTRACTOR SHALL OBTAIN HELCO'S DRAWING NO. AND PROVIDE ELECTRICAL SERVICES AS INDICATED. CONTRACTOR SHALL CONSULT WITH ENGINEER WHERE HELCO'S DRAWING DIFFERS AND RESOLVE ALL QUESTIONS PRIOR TO START OF ANY ELECTRICAL SERVICE WORK.

SERVICE/LOAD DATA

- SERVICE VOLTAGE: 240/120 V., 3 PH., 4 W.
- TYPE OF SERVICE: OVERHEAD
- ESTIMATED CONNECTED KVA:

	1 PH	3 PH	1 PH	3 PH
GEN LIGHT/RECEPT.	10.0		3.0	
MIXER	3.8		3.8	
ELEVATOR	1.7		1.7	
SEEDER	1.2		1.2	
BLOWER	2.3		2.3	
FLAT FILLER	5.3		5.3	
STEAM CLEANER	0.6		0.6	
FREEZER	0.8		0.8	
REEFER	4.0		4.0	
HOT WATER PUMP	2.8		2.8	
AIR COMPRESSOR		6.0		6.0
FUTURE EQUIPMENT		15.0		10.0
TOTALS	32.5	21.0	25.5	16.0

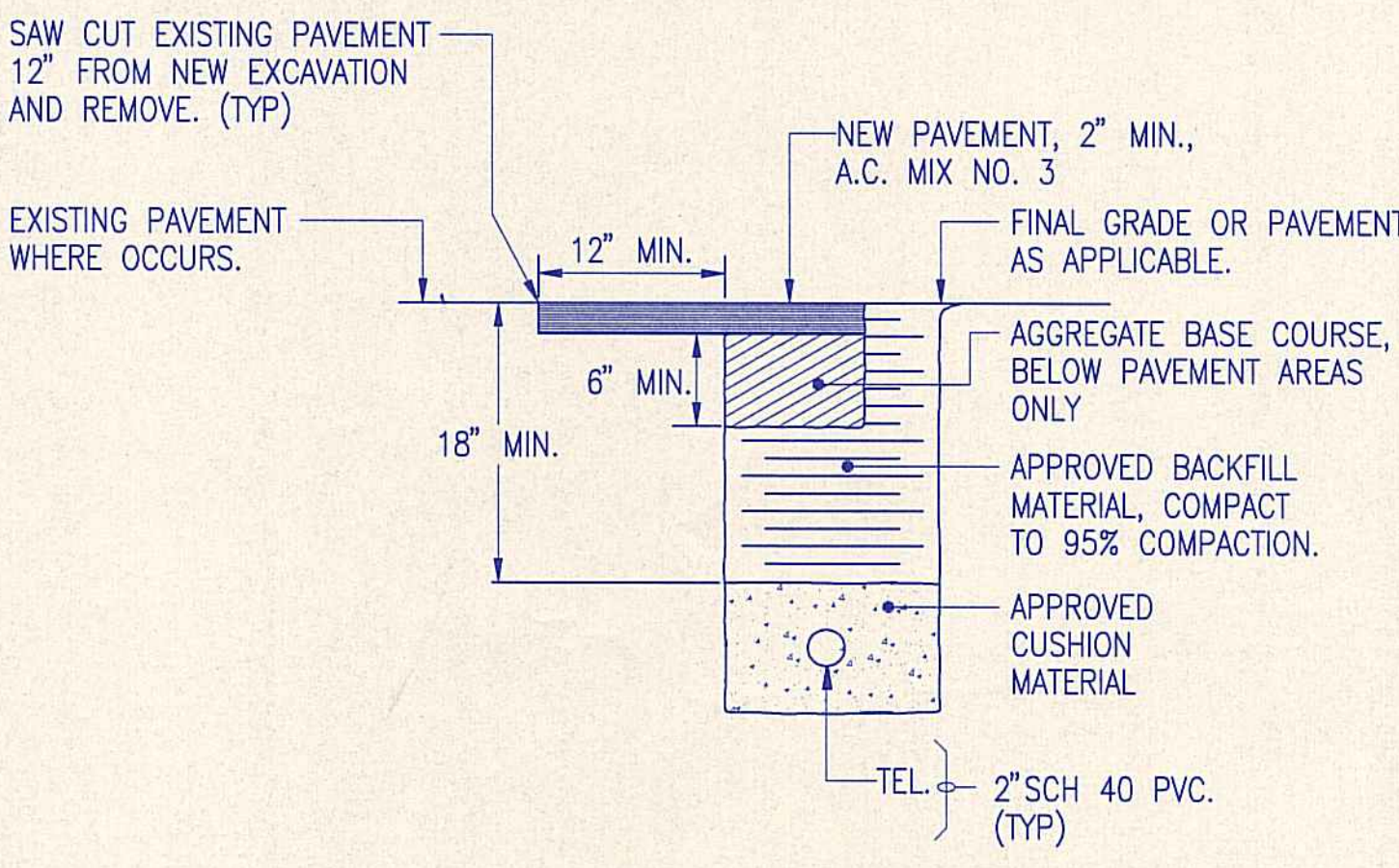
- ESTIMATED TOTAL DEMAND KVA: 1-PH: 15 KVA, 3-PH: 10 KVA
- DESIGN SERVICE CAPACITY: 200 AMPERES
- SERVICE CONDUCTORS: 4/0 COPPER
- METERING: RATE SCH G, HELCO STD. B-9. (7 JAW, 200 A. METER SOCKET)
- BILLING ADDRESS: STATE OF HAWAII, DEPT. OF LAND AND NATURAL RESOURCES, DIVISION OF WATER RESOURCE MGMT., P.O. BOX 373, HONOLULU, HAWAII 96809



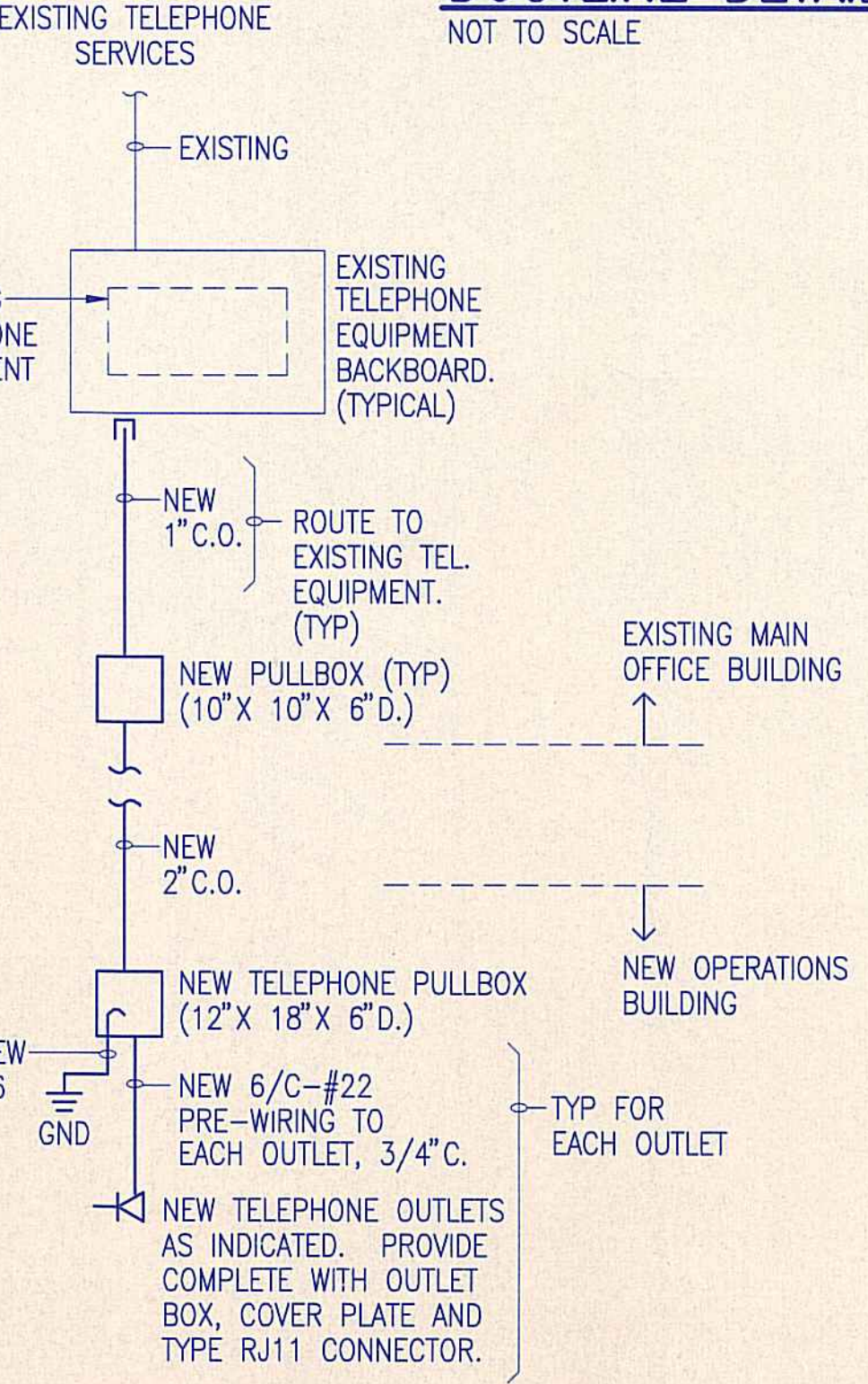
ONE-LINE DIAGRAM

- DEMOLITION NOTES**
- THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE ENGINEER IN THE FIELD DURING THE ACTUAL DEMOLITION WORK TO RESOLVE ALL QUESTIONS WHERE APPLICABLE.
 - DISCONNECT AND REMOVE THE EXISTING ELECTRICAL ITEMS AND THEIR ASSOCIATED WIRING AS INDICATED.
 - ALL REMOVED ITEMS SHALL REMAIN THE PROPERTY OF THE OWNER. CONTRACTOR SHALL CONSULT THE OWNER FOR STORAGE AND/OR DISPOSAL INSTRUCTIONS.
 - ALL WIRING ASSOCIATED WITH ITEMS TO BE REMOVED SHALL BE DISCONNECTED AND REMOVED BACK TO LAST OVERCURRENT DEVICE CONTROLLER, OR FIELD TERMINAL POINT.
 - IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING CONDITIONS. THE EXISTING CONDITIONS SHOWN ARE INTENDED TO BE AS COMPLETE AND ACCURATE AS POSSIBLE. HOWEVER, ALL ITEMS NOT SHOWN SHALL BE DEMOLISHED WHERE REQUIRED AT NO ADDITIONAL COST TO THE OWNER.

DEFINITIONS
 WIRING - ALL CONDUITS, RACEWAYS, CONDUCTORS, FITTINGS, PULLBOXES, JUNCTION BOXES, OUTLET BOXES, DEVICES, AND OTHER MATERIALS OR ITEMS AS NECESSARY FOR A COMPLETED AND OPERATIONAL ELECTRICAL CIRCUIT OR SYSTEM; OR THAT WHICH COMPRISES AN ELECTRICAL CIRCUIT OR SYSTEM.
 OUTLET - IN ADDITION TO DEFINITION IN THE NEC, OUTLET SHALL MEAN THE REQUIRED OUTLET BOXES, CONDUCTORS, TERMINATIONS, WIRING DEVICES, AND COVER PLATES, TO PROVIDE FOR THE INTENDED USE, APPLICATION, OR UTILIZATION EQUIPMENT.



GENERAL ARRANGEMENT (TYP) - DUCTLINE DETAIL

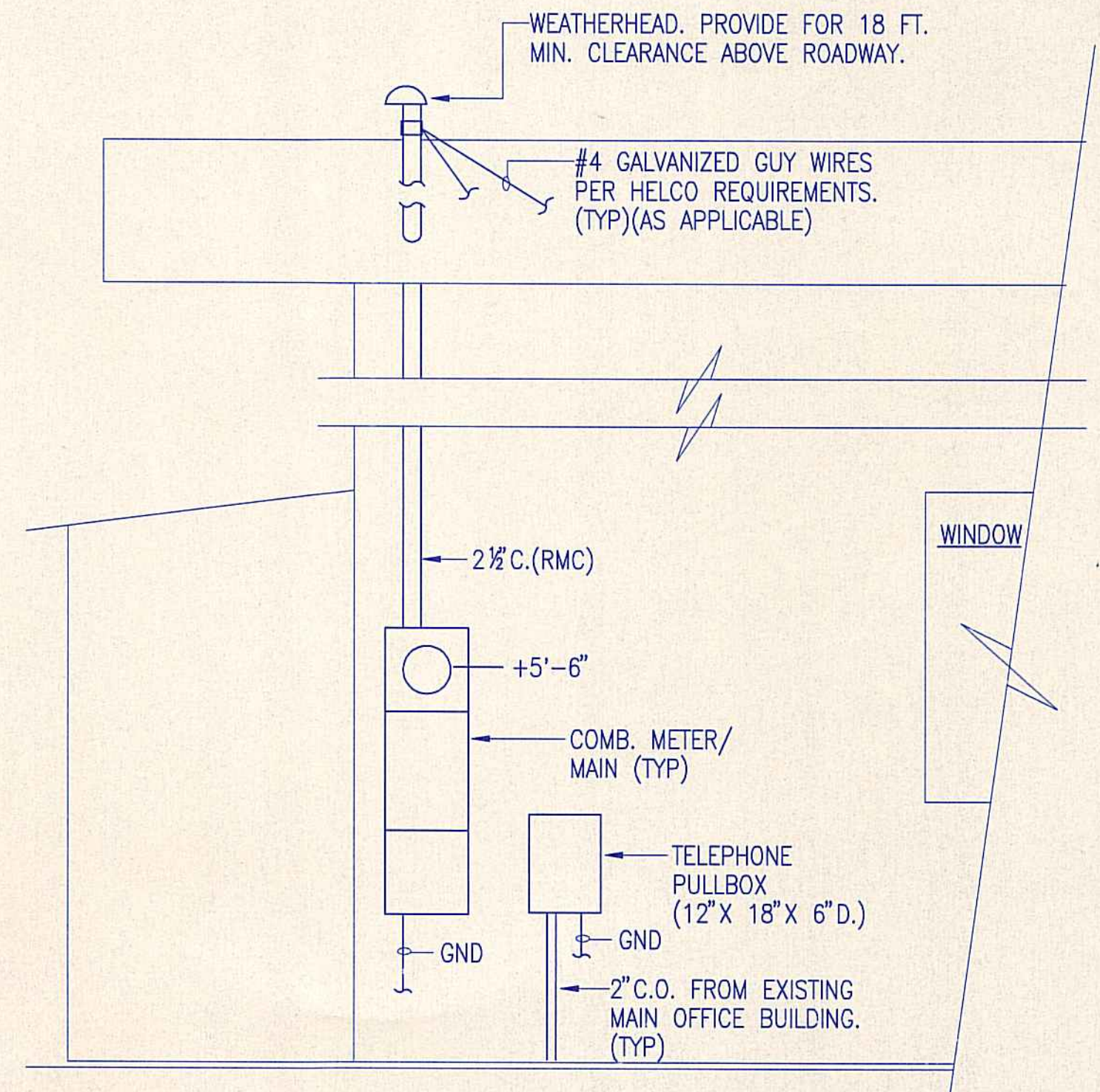


ONE-LINE DIAGRAM - TELEPHONE

- GENERAL NOTES:**
- ALL ELECTRICAL ITEMS INDICATED ON THE DRAWINGS ARE NEW AND SHALL BE PROVIDED BY THE CONTRACTOR UNLESS INDICATED AS "EXISTING", OR AS OTHERWISE NOTED.
 - ALL CONDUIT ROUTINGS AND EQUIPMENT LOCATIONS SHOWN ON THE DRAWINGS ARE APPROXIMATE. THE CONTRACTOR SHALL ROUTE, LOCATE CONDUITS, AND MOUNT EQUIPMENTS TO SUIT FIELD CONDITIONS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO INSURE THE INSTALLATION OF ALL WORK WITHIN THE AVAILABLE SPACE.
 - ALL ELECTRICAL EQUIPMENT SHALL BE NEW AND WARRANTED BY THE MANUFACTURER.
 - EXISTING CONDITIONS, MATERIALS, SIZES, LOCATIONS, AND DIMENSIONS SHOWN ON THESE DRAWINGS REPRESENT THE BEST AVAILABLE INFORMATION OBTAINED FROM EXISTING DRAWINGS AND FIELD INVESTIGATION. PRIOR TO ORDERING MATERIALS AND EQUIPMENT, THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, MATERIALS, SIZES, LOCATIONS, AND DIMENSIONS THAT AFFECT THE WORK OF THIS PROJECT. NOTIFY THE ENGINEER OF ALL QUESTIONS IN WRITING AND RESOLVE ALL CONTRACTOR'S QUESTIONS AND CONCERNS PRIOR TO PROCUREMENT AND BEFORE START OF CONSTRUCTION.
 - ALL ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, NATIONAL ELECTRICAL SAFETY CODE, AND FEDERAL, STATE, AND COUNTY GOVERNMENT STANDARDS, REGULATIONS, AND ORDINANCES.
 - ALL EXPOSED CONDUITS AND FITTINGS, AND METAL PORTIONS OF EQUIPMENT ENCLOSURE SHALL BE FIELD PAINTED FOR CORROSION PROTECTION. REFER TO SPECIFICATIONS AND DRAWING NOTATIONS AS INDICATED.
 - ALL EQUIPMENT SHALL BE PROPERLY MOUNTED, ANCHORED, AND SUPPORTED BY APPROVED METHODS FOR SEISMIC RESTRAINT.

DISCLOSURE NOTE
 THESE PLANS ARE INTENDED TO BE USED FOR BUILDING AND ELECTRICAL PERMIT PURPOSES ONLY, AND SOLELY FOR USE BY THE DESIGNATED OWNER AND CONTRACTOR. THESE PLANS ARE NOT INTENDED FOR GENERAL RELEASE AND DISTRIBUTION. THE MAIN INTENT AND PURPOSE OF PLANS ARE TO CONSTRUCT THE ELECTRICAL WORK IN ACCORDANCE WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND OTHER APPLICABLE CODES, STANDARDS, RULES AND REGULATIONS. THESE PLANS ARE NOT INTENDED TO COVER CONSTRUCTION DETAILING AND IMPLEMENTATION. ANY AND ALL QUESTIONS SHALL BE RESOLVED WITH THE ENGINEER PRIOR TO START OF ANY WORK.

PROPRIETARY NOTE
 THESE PLANS SHALL NOT BE COPIED, REPRODUCED, OR USED IN ANY FORM OR MANNER WITHOUT THE WRITTEN AUTHORIZATION OF THE ENGINEER. ANY USE OF MATERIAL ON THE PLANS BY MINOR ALTERATIONS, RE-WORDING, OR REVISIONS TO OBTAIN ORIGINALLY INTENDED MEANINGS OR RESULTS SHALL BE PROHIBITED.



GENERAL ARRANGEMENT (TYP) - SERVICE/METERING EQUIPMENT

NOT TO SCALE

ELECTRICAL PLAN SYMBOLS

	DRAWING REVISION
	* - EQUIPMENT AS IDENTIFIED
	DISCONNECT SWITCH, FUSED OR NON-FUSED AS IDENTIFIED
	MANUAL MOTOR CONTROLLER, HP RATED, USED FOR MOTOR DISCONNECT, EQUIPPED W/LOCK-OUT PROVISIONS.
	PANELBOARD OR LDCTR AS IDENTIFIED
	CONCEALED WIRING IN CEILING OR WALL, WHERE USED, HASH LINES INDICATE QTY OF WIRES
	CIRCUITOR INDICATOR. HASH LINES = QTY. OF CONDUCTORS, A-PNLBD, 1-CIR. NO., (HOMERUN/HOMERUN GROUPINGS ARRANGED BY CONTRACTOR)
	UTILITY LINES, OVERHEAD, AS IDENTIFIED, ET - ELECTRIC TRANSMISSION, ED - ELECTRIC DISTRIBUTION, ES - ELECTRIC SECONDARY, T - TELEPHONE, V - CATV, SD - SERVICE DROP
	UTILITY POLE
	DUPLEX RECEPTACLE OUTLET, 125 VOLT, SINGLE PHASE (3 = PANELBOARD CIRCUIT NUMBER)
	SPECIAL USE RECEPTACLE OUTLET, RATING AND USE AS INDICATED.
	LIGHTING SWITCH OUTLET [a = CONTROLLED LIGHTING FIXTURE(S)], S-SINGLE POLE, S2-DOUBLE POLE SINGLE THROW, S3-SINGLE POLE DOUBLE THROW, S4-DOUBLE POLE DOUBLE THROW
	LIGHTING FIXTURE/OUTLET, CEILING MOUNTED, FLUORESCENT, EXPOSED LAMP (* = TYPE IDENT BY NUMBER)
	LIGHTING FIXTURE/OUTLET, CEILING MOUNTED, FLUORESCENT, ENCLOSED LAMP, SURFACE OR RECESSED, AS INDICATED. (* = TYPE IDENT BY NUMBER)
	LIGHTING FIXTURE/OUTLET, CEILING OR WALL MOUNTED; INCANDESCENT, FLUORESCENT, OR HID; SPOT OR FLOODLIGHT; ENCLOSED OR LAMPHOLDER; AS IDENTIFIED (* = TYPE IDENT BY NUMBER)
	TELEPHONE OUTLET
	EQUIPMENT OR OTHER ELECTRICAL CONNECTION AS INDICATED

ABBREVIATIONS

A	AMPERE
AC	AIR CONDITIONING OR ALTERNATING CURRENT
AF	AMPERE FRAME
AIC	AMPERE INTERRUPTING CAPACITY
AT	AMPERE TRIP
C	CONDUIT
CO	CONDUIT ONLY
D	DEEP
EQPT	EQUIPMENT
FBO	FURNISHED BY OWNER OR OTHERS
G, GND	GROUND
HELCO	HAWAII ELECTRIC LIGHT COMPANY
KVA	KILO-VOLT AMPERE
MIN	MINIMUM
N	NEUTRAL
NFSS	NON-FUSED SAFETY SWITCH
PH	PHASE
PNLBD	PANELBOARD
T	TEL TELEPHONE
(TYP)	TYPICAL
V	VOLTS, VERTICAL
W	WIRE(S), WIDE, WATTS

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

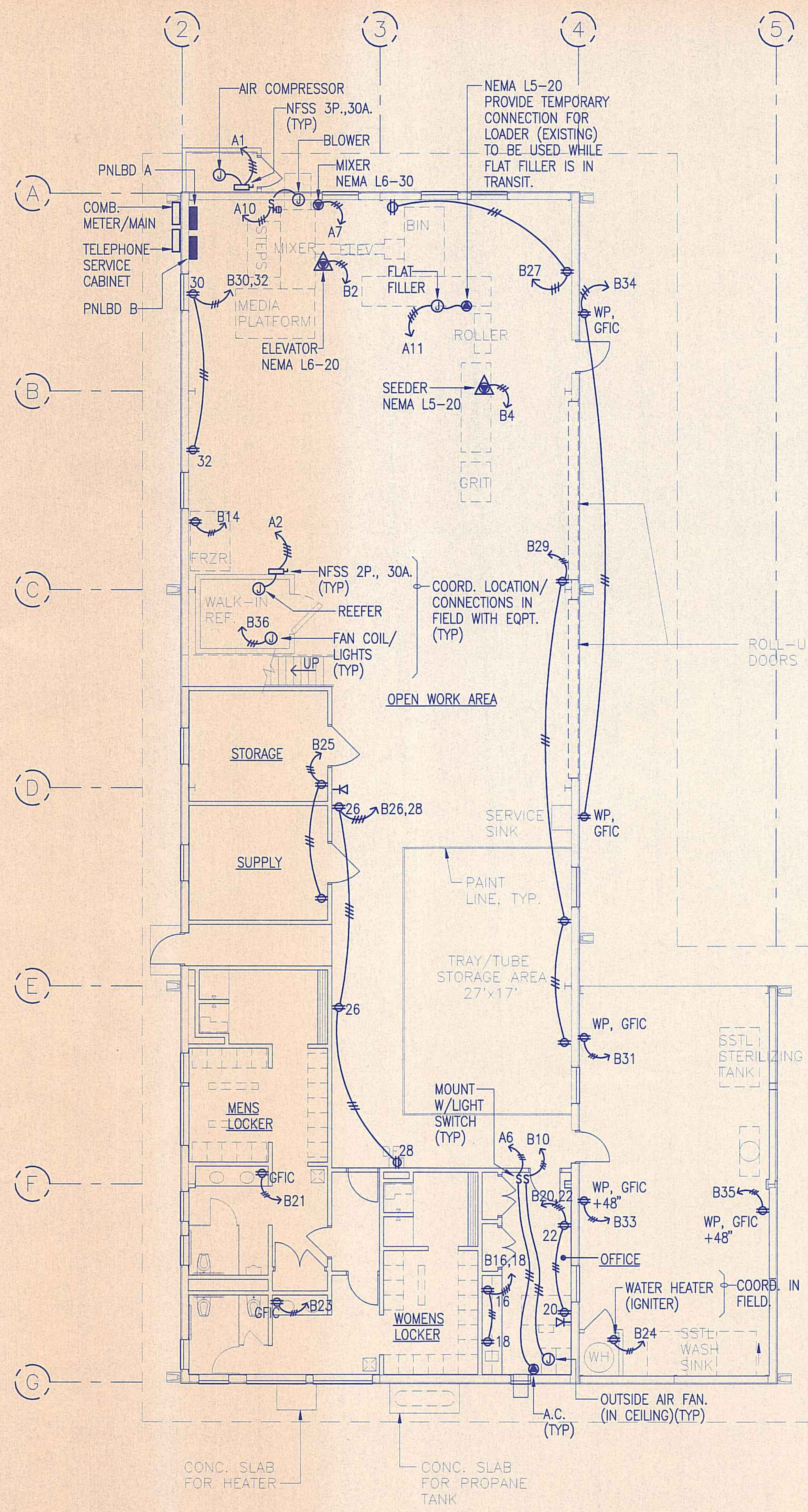
STATE OF HAWAII
 DEPARTMENT OF LAND AND NATURAL RESOURCES
 DIVISION OF WATER AND LAND DEVELOPMENT
 STATE TREE NURSERY OPERATIONS BUILDING
 LALAMILO, SOUTH KOHALA, HAWAII

ELECTRICAL PLAN - SITE WORK

DESIGNED: DKH
 DRAWN: DKH
 CHECKED: WTO
 APPROVED: *Wallace T. Oki*
 WALLACE T. OKI, P.E., INC.
 ELECTRICAL ENGINEERING
 P.O. BOX 4070/888 KINKOLE ST., STE. 1158
 H.O. HI. 96720 PH:961-9666/FAX:935-2549

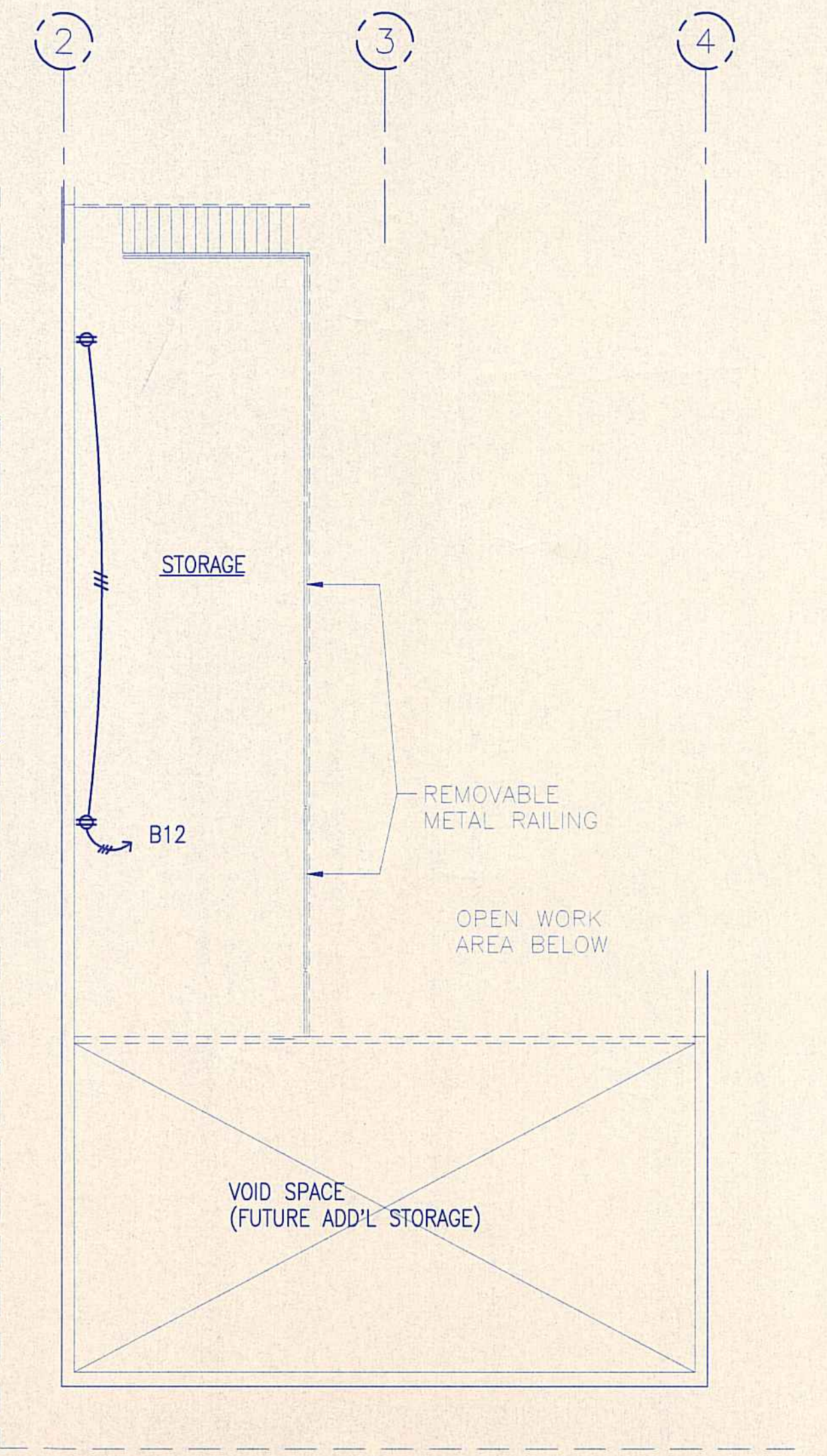
MANAGER-CHIEF ENGINEER DATE

DRAWING NO. E-1

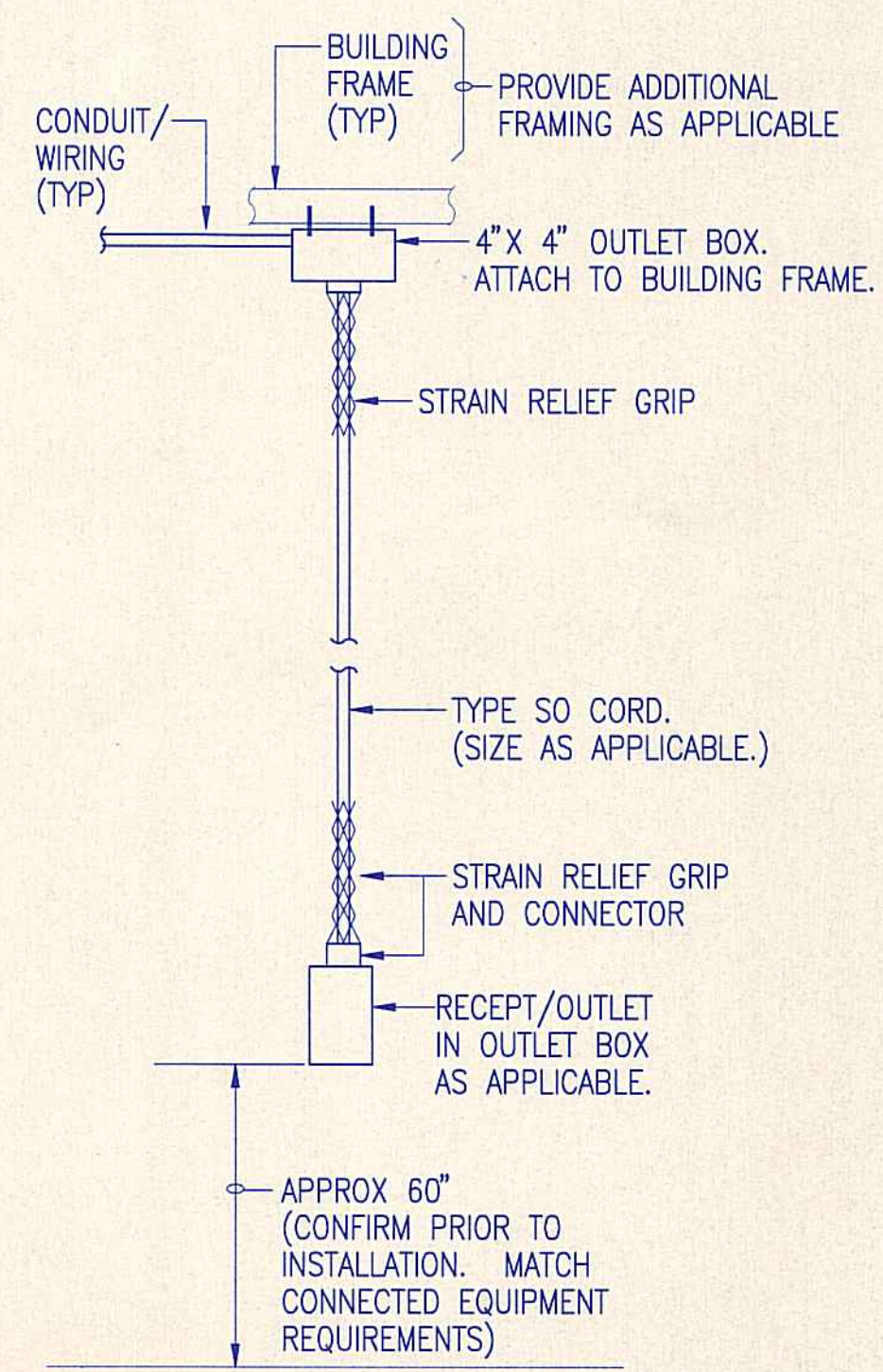


ELECTRICAL PLAN - GENERAL POWER - GROUND LEVEL
 1/8" = 1'-0"

- ELECTRICAL PLAN NOTES**
1. ALL PLANS ARE DIAGRAMMATIC AND SHOWS CIRCUITING AND HOMERUN REQUIREMENTS ONLY. WHERE A "HR" IS INDICATED, THE CONTRACTOR SHALL INSTALL THE HOMERUN CIRCUIT WIRING AS INDICATED. WHERE NO "HR" IS INDICATED, THE CONTRACTOR SHALL FIELD ARRANGE ALL HOMERUNS. CONDUITS AND CONDUCTORS SHALL BE SIZED PROPERLY PER NEC REQUIREMENTS DEPENDING ON THE HOMERUN GROUPINGS SELECTED BY THE CONTRACTOR.
 2. WHERE PERMITTED TYPE NM WIRING SHALL BE CONCEALED IN CEILING, WALL, AND CABINET SPACES. IF EXPOSED, COVER WITH REDWOOD WIRE MOLDING.
 3. ALL PANELBOARDS SHALL BE CIRCUITED AS INDICATED ON THE DRAWINGS. DO NOT CHANGE WITHOUT THE APPROVAL OF THE ENGINEER.
 4. ALL PANELBOARDS SHALL HAVE TYPEWRITTEN DIRECTORIES AND IN THE FORMAT AS INDICATED ON THE SCHEDULES, I.E., SAME PHYSICAL ARRANGEMENT AS PANELBOARD.
 5. ALL 120 VOLT BRANCH CIRCUITS LESS THAN 100 FEET MAY USE #12 CONDUCTORS. ALL CIRCUITS LONGER THAN 100 FEET SHALL USE #10 CONDUCTORS FOR THE FIRST 100 FEET. NO. 12 CONDUCTORS MAY BE USED FOR THE LAST 25 TO 50 FEET OF ANY CIRCUIT LONGER THAN 150 FEET.
 6. PROVIDE A NEUTRAL CONDUCTOR FOR EACH SET OF PHASE CONDUCTORS.
 7. PROVIDE A GROUNDING CONDUCTOR FOR ALL CIRCUITS. DO NOT USE CONDUIT OR RACEWAY FOR CIRCUIT GROUNDING. WHERE INDICATED OR REQUIRED, A DEDICATED AND/OR ISOLATED GROUND CONDUCTOR/SYSTEM SHALL BE PROVIDED.
 8. PLANS MAY NOT ALWAYS INDICATE QUANTITY OF CONDUCTORS BY HASH MARKS. PROVIDE CONDUCTORS BASED ON CIRCUITING REQUIREMENTS AND GUIDELINES STATED ABOVE.
 9. DRAWINGS ARE INTENDED TO BE COMPLETE AS TO GENERAL INTENT AND REQUIREMENTS BUT NOT TO ACTUAL DETAILS OF CONSTRUCTION, INSTALLATION, AND LOCATIONS.



ELECTRICAL PLAN - GENERAL POWER - MEZZANINE
 1/8" = 1'-0"



GENERAL ARRANGEMENT (TYP)- CEILING RECEPT/DROP CORD
 NOT TO SCALE

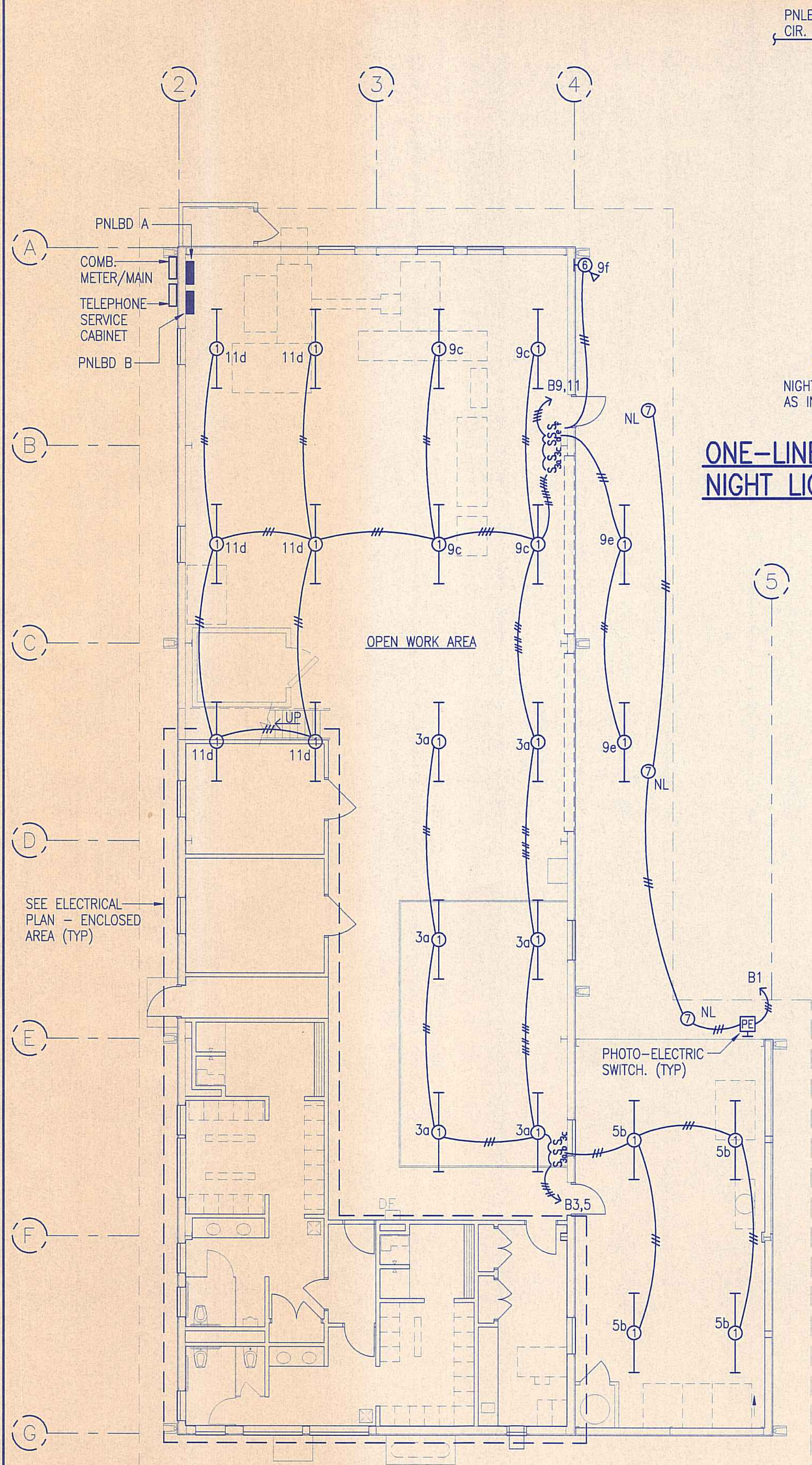
PNLBD A		240/120 VOLTS, 3 PHASE, 4 WIRE, NEUTRAL BUS, GROUND BUS, SURFACE MOUNTING, 225 A. MAIN BUS ONLY, COPPER, BOLT-ON BRANCH BREAKERS, FULL SIZE BREAKERS, 10,000 AIC, TYPEWRITTEN DIRECTORY. (DUAL-FEED LUGS.)									
WIRE SIZE	SERVICE	CIR. AMP	BKR. POLE	CIR. NO.	L N E	CIR. NO.	CIR. POLE	BKR. AMP	SERVICE	WIRE SIZE	
#12	AIR COMPRESSOR	30	3	1	A	2	2	30	REEFER	#10	
#12					3	B	4			#10	
#12					5	C	6	2	30	A.C.	
#10	MIXER	30	2	7	A	8				#12	
#10					9	B	10	2	30	BLOWER	
#8	FLAT FILLER	60	2	11	C	12				#12	
#8					13	A	14			PFFB	
	PFFB				15	B	16			PFFB	
	PFFB				17	C	18			PFFB	
	PFFB				19	A	20			PFFB	
	PFFB				21	B	22			PFFB	
	PFFB				23	C	24			PFFB	
	PFFB				25	A	26			PFFB	
	PFFB				27	B	28			PFFB	
	PFFB				29	C	30			PFFB	

△ = HIGH LEG. DO NOT USE FOR 120 VAC.

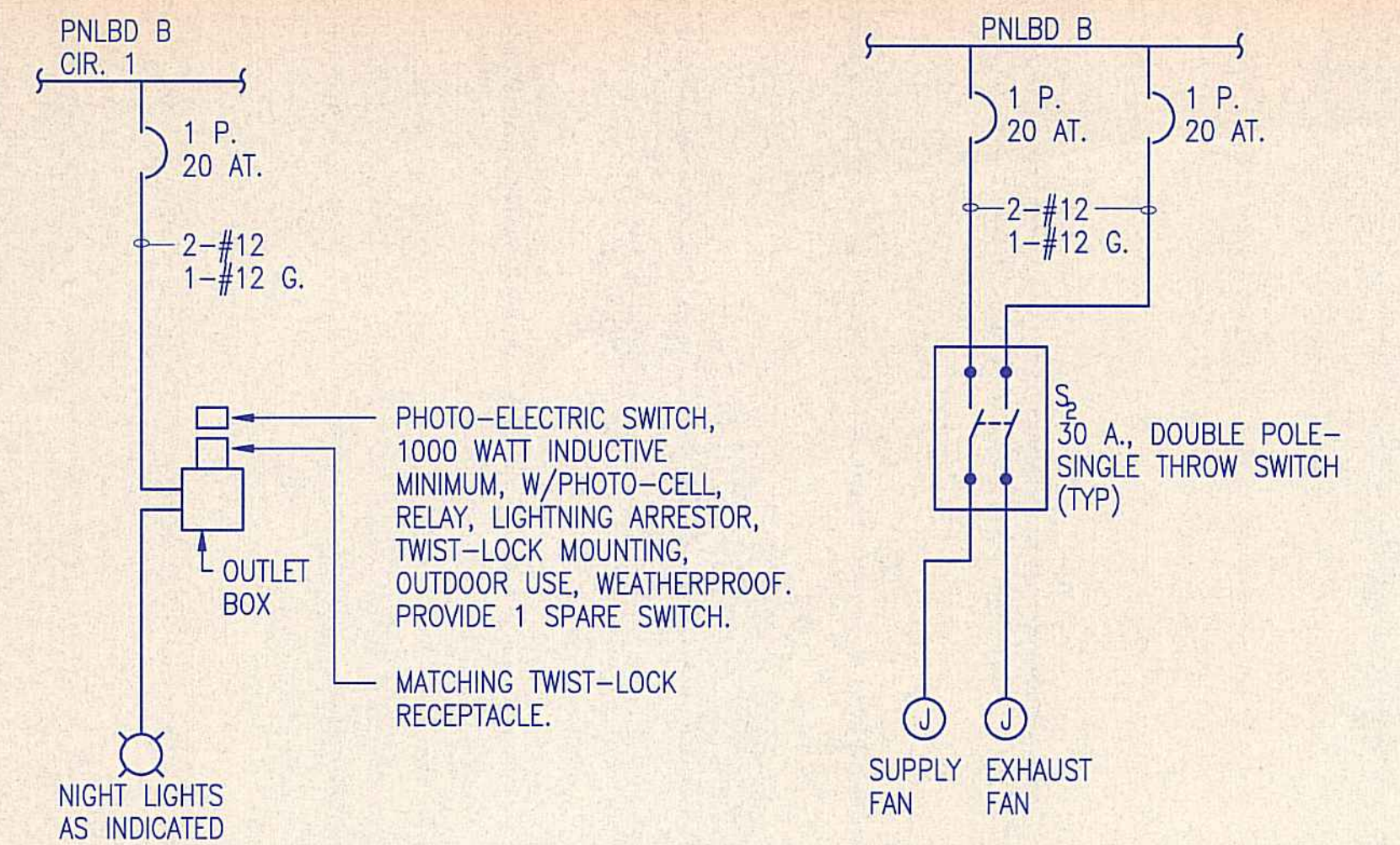
PNLBD B		240/120 VOLTS, 1 PHASE, 3 WIRE, NEUTRAL BUS, GROUND BUS, SURFACE MOUNTING, 225 A. MAIN BUS ONLY, COPPER, BOLT-ON BRANCH BREAKERS, FULL SIZE BREAKERS ONLY, 10,000 AIC, TYPEWRITTEN DIRECTORY.									
WIRE SIZE	SERVICE	CIR. AMP	BKR. POLE	CIR. NO.	L N E	CIR. NO.	CIR. POLE	BKR. AMP	SERVICE	WIRE SIZE	
#12	LIGHTS - NL	20	1	1	L1	2	1	20	ELEVATOR	#12	
#12	LIGHTS - WORK AREA	20	1	3	L2	4	1	20	SEEDER	#12	
#12	LIGHTS - WORK AREA	20	1	5	L1	6	1	20	EXHAUST FAN 1	#12	
#12	LIGHTS - WORK AREA	20	1	7	L2	8	1	20	SUPPLY FAN 1	#12	
#12	LIGHTS - WORK AREA	20	1	9	L1	10	1	20	OUTSIDE AIR FAN	#12	
#12	LIGHTS - WORK AREA	20	1	11	L2	12	1	20	RECEPT. - MEZZANINE	#12	
#12	LIGHTS - MENS LOCKER	20	1	13	L1	14	1	20	RECEPT. - FREEZER	#12	
#12	LIGHTS - WOMENS LOCKER	20	1	15	L2	16	1	20	RECEPT. - OFFICE	#12	
#12	LIGHTS - OFFICE	20	1	17	L1	18	1	20	RECEPT. - OFFICE	#12	
#12	LIGHTS - STORAGE/SUPPLY	20	1	19	L2	20	1	20	RECEPT. - OFFICE	#12	
#12	RECEPT. - LOCKER (GFCI)	20	1	21	L1	22	1	20	RECEPT. - OFFICE	#12	
#12	RECEPT. - LOCKER (GFCI)	20	1	23	L2	24	1	20	RECEPT. - HOT WATER PUMP	#12	
#12	RECEPT. - STOR/SUPPLY	20	1	25	L1	26	1	20	RECEPT. - WORK AREA	#12	
#12	RECEPT. - WORK AREA	20	1	27	L2	28	1	20	RECEPT. - WORK AREA	#12	
#12	RECEPT. - WORK AREA	20	1	29	L1	30	1	20	RECEPT. - WORK AREA	#12	
#12	RECEPT. - EXTERIOR (GFCI)	20	1	31	L2	32	1	20	RECEPT. - WORK AREA	#12	
#12	RECEPT. - EXTERIOR (GFCI)	20	1	33	L1	34	1	20	RECEPT. - EXTERIOR (GFCI)	#12	
#12	RECEPT. - EXTERIOR (GFCI)	20	1	35	L2	36	1	20	REEFER FANS/LIGHTS	#12	
	PFFB				37	L1	38	1	20	EXHAUST FAN 2	
	PFFB				39	L2	40	1	20	SUPPLY FAN 2	
	PFFB				41	L1	42			PFFB	

- MOUNTING HEIGHTS (UNLESS OTHERWISE INDICATED)**
1. RECEPTACLE OUTLET: +24 INCHES ABOVE FINISH FLOOR, CENTERLINE, VERTICAL, GROUND UP
 - +8 INCHES ABOVE COUNTER TOPS, BASINS, ETC., CENTERLINE, VERTICAL, GROUND UP
 2. SWITCH OUTLET: +48 INCHES ABOVE FINISH FLOOR, CENTERLINE, VERTICAL
 3. TELEPHONE OUTLET: +24 INCHES ABOVE FINISH FLOOR, CENTERLINE, VERTICAL
 - +8 INCHES ABOVE COUNTER TOPS, ETC., CENTERLINE, VERTICAL
 4. PANELBOARDS, CABINETS: +5'-6" ABOVE FINISH FLOOR OR FINISH GRADE TO TOP

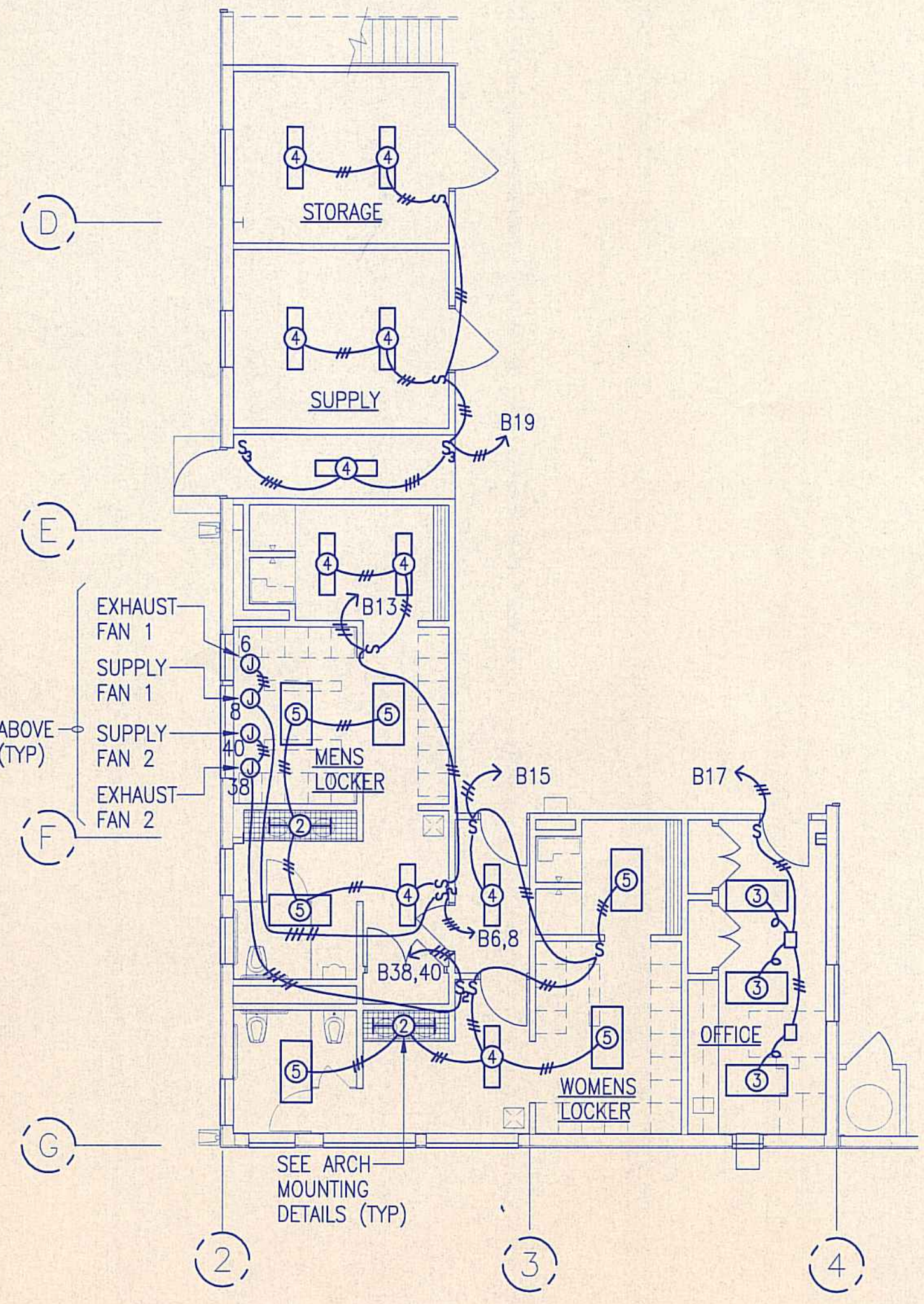
REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED
STATE OF HAWAII DEPARTMENT OF LAND AND NATURAL RESOURCES DIVISION OF WATER AND LAND DEVELOPMENT					
STATE TREE NURSERY OPERATIONS BUILDING LALAMILO, SOUTH KOHALA, HAWAII					
ELECTRICAL PLAN - GENERAL POWER					
DESIGNED: DKH	SUBMITTED:				
DRAWN: DKH	DATE: MAY 12, 1994				
CHECKED: WTO	SCALE: AS NOTED				
APPROVED:	DRAWING NO. E-2				
WALLACE T. OKI, P.E., INC. ELECTRICAL ENGINEERING P.O. BOX 4070/688 KINOLEE ST., STE. 115B HILLO, HI. 96720 PH:961-9666/FAX:935-2549		MANAGER-CHIEF ENGINEER		DATE	



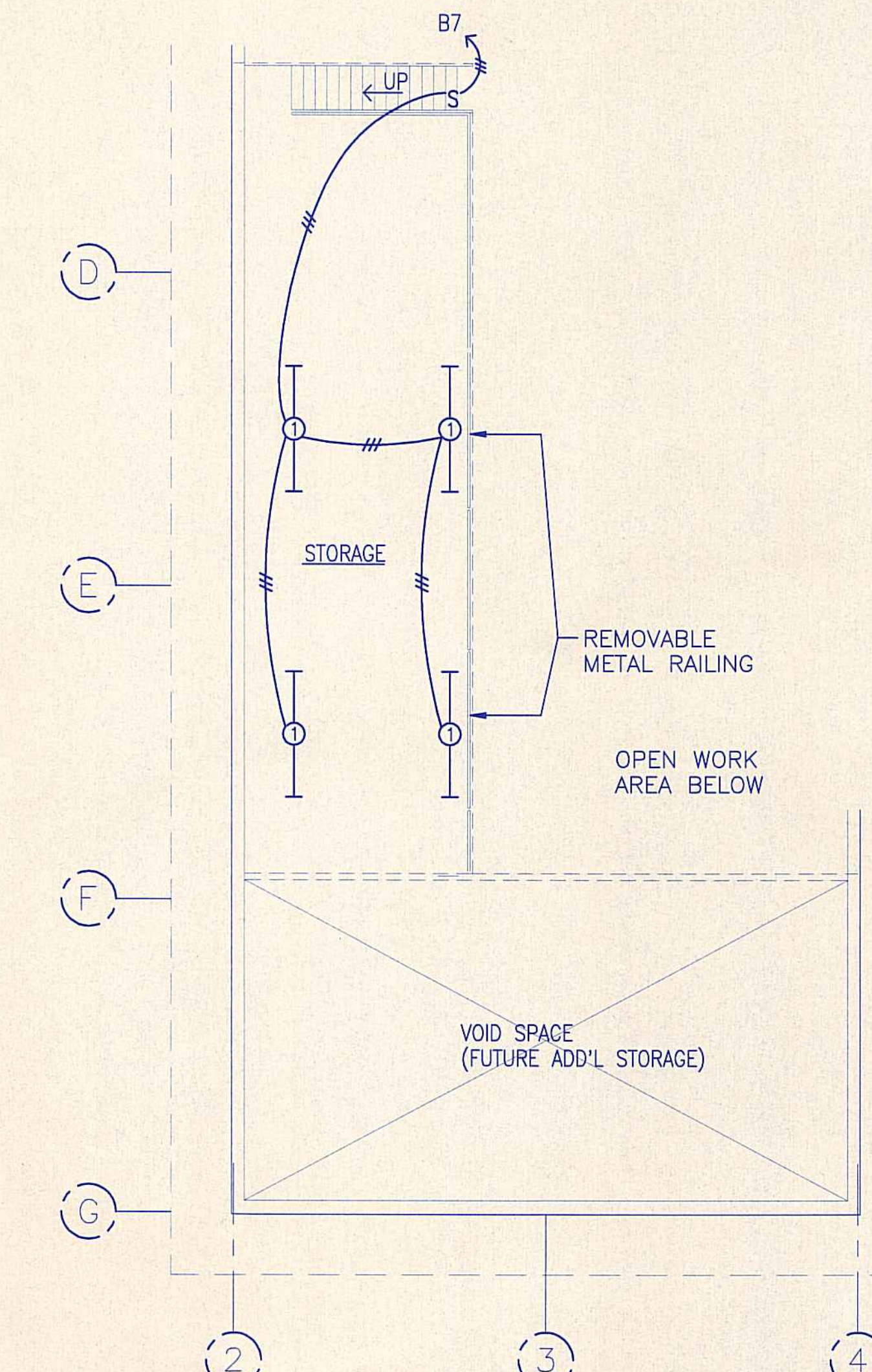
ELECTRICAL PLAN - GENERAL LIGHTING - BUILDING
1/8" = 1'-0"



ONE-LINE DIAGRAM - NIGHT LIGHT CONTROL
ONE-LINE DIAGRAM - EXHAUST/SUPPLY FANS



ELECTRICAL PLAN - GENERAL LIGHTING - ENCLOSED AREA
1/8" = 1'-0"



ELECTRICAL PLAN - GENERAL LIGHTING - MEZZANINE
1/8" = 1'-0"

CALCS. FOR ORD. 8476

AREA, SQ. FT.	WATTS ALLOWED/SQ. FT.	TOTAL WATTS ALLOWED	CONNECTED WATTS
INTERIOR			
WORK AREA, 5,840	3 W./SQ. FT.	17,520 W	3,760 W
OFFICE, 220	3 W./SQ. FT.	660 W	480 W
STORAGE, 448	1 W./SQ. FT.	448 W	400 W
LOCKERS, 1,024	1 W./SQ. FT.	1,024 W	1,040 W
TOTALS		19,652 W	5,680 W
EXTERIOR			
PERIMETER, 324 LIN. FT.	5 W./LIN. FT.	1,620	930 W
TOTALS		1,620	930 W

LIGHTING FIXTURE SCHEDULE

SYMBOL/TYPE	MOUNTING	LAMP	DESCRIPTION
①	SURFACE MOUNT TO PURLINS	2-F96T12 SL	8 FEET, FLUORESCENT LAMPHOLDER, BARE LAMP, WHITE METAL FRAME, ENCLOSED BALLAST HOUSING, CHANNEL TYPE, SNAP-ON END PLATES. FURNISH WITH LAMP TUBE GUARDS. (ENERGY EFFICIENT BALLAST.) (LOW TEMPERATURE STARTING BALLAST.)
②	SURFACE SPECIAL	2-F40CW RS	4 FEET, FLUORESCENT LAMPHOLDER, BARE LAMP, WHITE METAL FRAME, ENCLOSED BALLAST HOUSING, CHANNEL TYPE, SNAP-ON END PLATES. FURNISH WITH LAMP TUBE GUARDS. (ENERGY EFFICIENT BALLAST.) (LOW TEMPERATURE STARTING BALLAST.)
③	CEILING RECESSED LAY-IN	4-F40CW RS	2'X4' NOMINAL, SPECIFICATION GRID TROFFER, DIEFORMED AND EMBOSSED STEEL HOUSING, BAKED WHITE ENAMEL, HINGED AND LATCHED FLUSH STEEL DOOR, ACRYLIC PRISMATIC DIFFUSER. (ENERGY EFFICIENT BALLAST.) (LOW TEMPERATURE STARTING BALLAST.)
④	CEILING SURFACE	2-F40CW RS	1'X4' NOMINAL, SURFACE, METAL SIDES, BAKED WHITE ENAMEL FINISH, HINGED AND LATCHED MATTE BLACK EXTRUDED ALUMINUM REGRESSED DOOR, CLEAR PRISMATIC ACRYLIC DIFFUSER. (ENERGY EFFICIENT BALLAST.) (LOW TEMPERATURE STARTING BALLAST.)
⑤	CEILING SURFACE	4-F40CW RS	2'X4' NOMINAL, SURFACE, METAL SIDES, BAKED WHITE ENAMEL FINISH, HINGED AND LATCHED MATTE BLACK EXTRUDED ALUMINUM REGRESSED DOOR, CLEAR PRISMATIC ACRYLIC DIFFUSER. (ENERGY EFFICIENT BALLAST.) (LOW TEMPERATURE STARTING BALLAST.)
⑥	WALL SURFACE	500W. Q500/T3 TUNGSTEN HALOGEN	EXTERIOR USE FLOODLIGHT, DIE CAST ALUMINUM HOUSING WITH CAST IN FINS FOR HEAT DISSIPATION. "ANODAL" REFLECTOR OR EQUIVALENT, THERMAL SHOCK AND IMPACT RESISTANT CLEAR TEMPERED GLASS LENS IN A DIE CAST ALUMINUM FRAME, SPRING LOADED STAINLESS STEEL LATCHES FOR POSITIVE SEALING, MEDIUM BEAM SPREAD, TOP VISOR FOR SHIELDING, WALL BRACKET MOUNTING WITH SPLICE COMPARTMENT, SWIVEL MOUNTING.
⑦	CEILING SURFACE	55W LOW PRESSURE SODIUM	OUTDOOR SECURITY LIGHTING, CEILING MOUNTED, CORROSION RESISTANT ALUMINUM HOUSING, PAINTED FINISH, NEOPRENE GASKETED SEAL, CLEAR POLYCARBONATE LENS, CAPTIVES LATCHED OR SIMILAR, ANODIZED ALUMINUM REFLECTOR OR SIMILAR, SYMMETRICAL DISTRIBUTION HPF BALLAST, U.L. LISTED FOR DAMP LOCATION.

REVISION NO.	SYM.	DESCRIPTION	SHT./OF	DATE	APPROVED

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF WATER AND LAND DEVELOPMENT

STATE TREE NURSERY OPERATIONS BUILDING
LALAMILO, SOUTH KOHALA, HAWAII

ELECTRICAL PLAN - GENERAL LIGHTING

DESIGNED: DKH
DRAWN: DKH
CHECKED: WTO
APPROVED: *Wallace T. Oki*

SUBMITTED: *mw*
DATE: MAY 12, 1994
SCALE: AS NOTED
DRAWING NO. E-3

WALLACE T. OKI, P.E., INC.
ELECTRICAL ENGINEERING
P.O. BOX 4070/688 KIWOLE ST., STE. 1158
HILLO, HI. 96720 PH:961-9666/FAX:935-2549

MANAGER-CHIEF ENGINEER