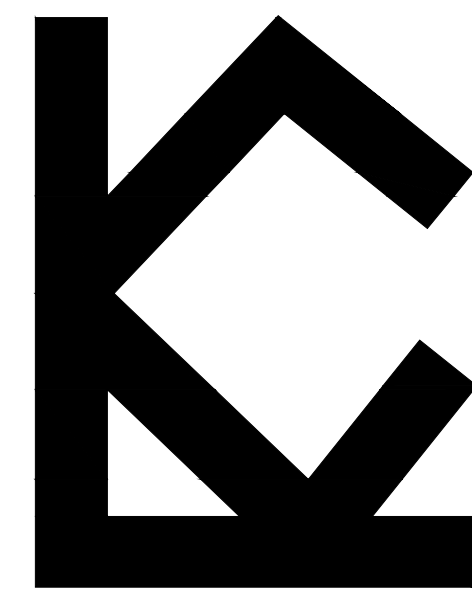


# IOWA DNR AQUARIUM RENOVATION PROJECT

IOWA STATE FAIRGROUNDS - DES MOINES, IOWA

AUGUST 29, 2016



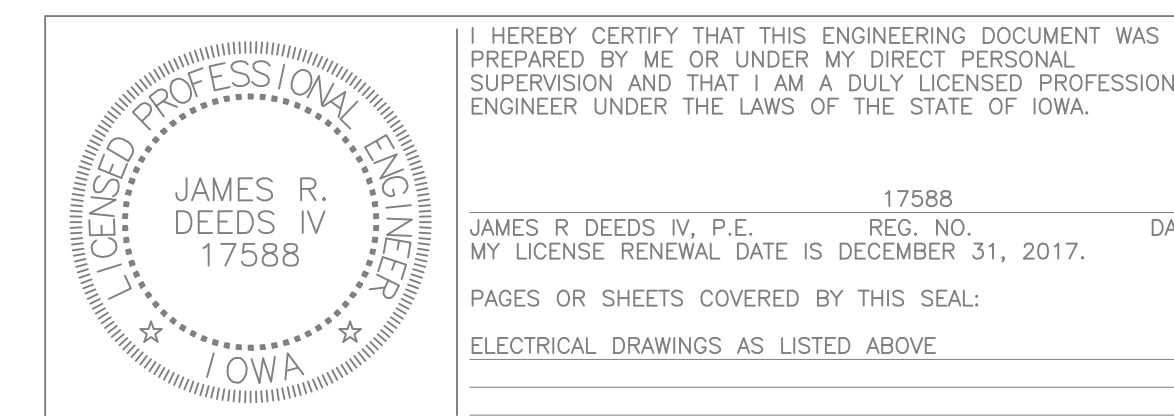
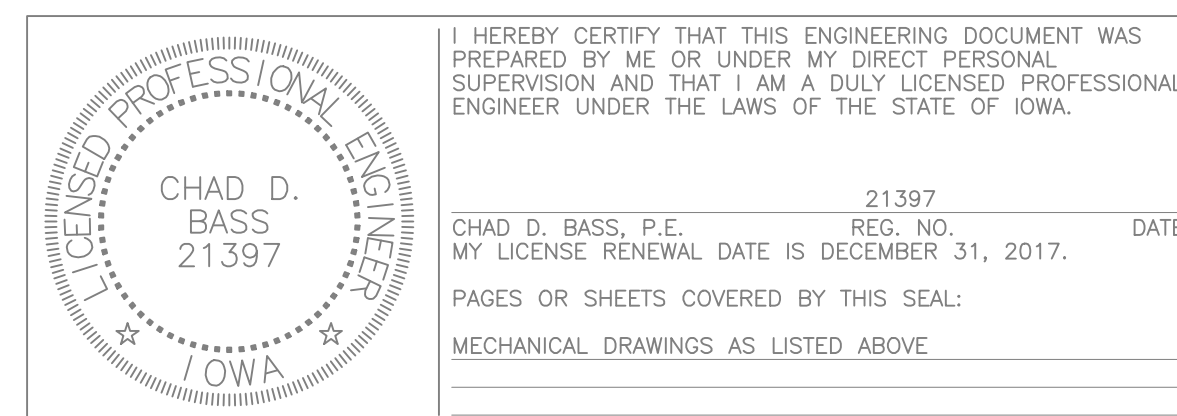
## MEP ENGINEER

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## DRAWING INDEX

M0 SYMBOLS AND GENERAL NOTES  
P1 AQUARIUM FLOOR PLAN - PLUMBING  
P2 ROOF PLAN  
P3 DETAILS AND SCHEDULES  
E1 ELECTRICAL NOTES, SYMBOLS AND DETAILS  
E2 AQUARIUM FLOOR PLAN - ELECTRICAL

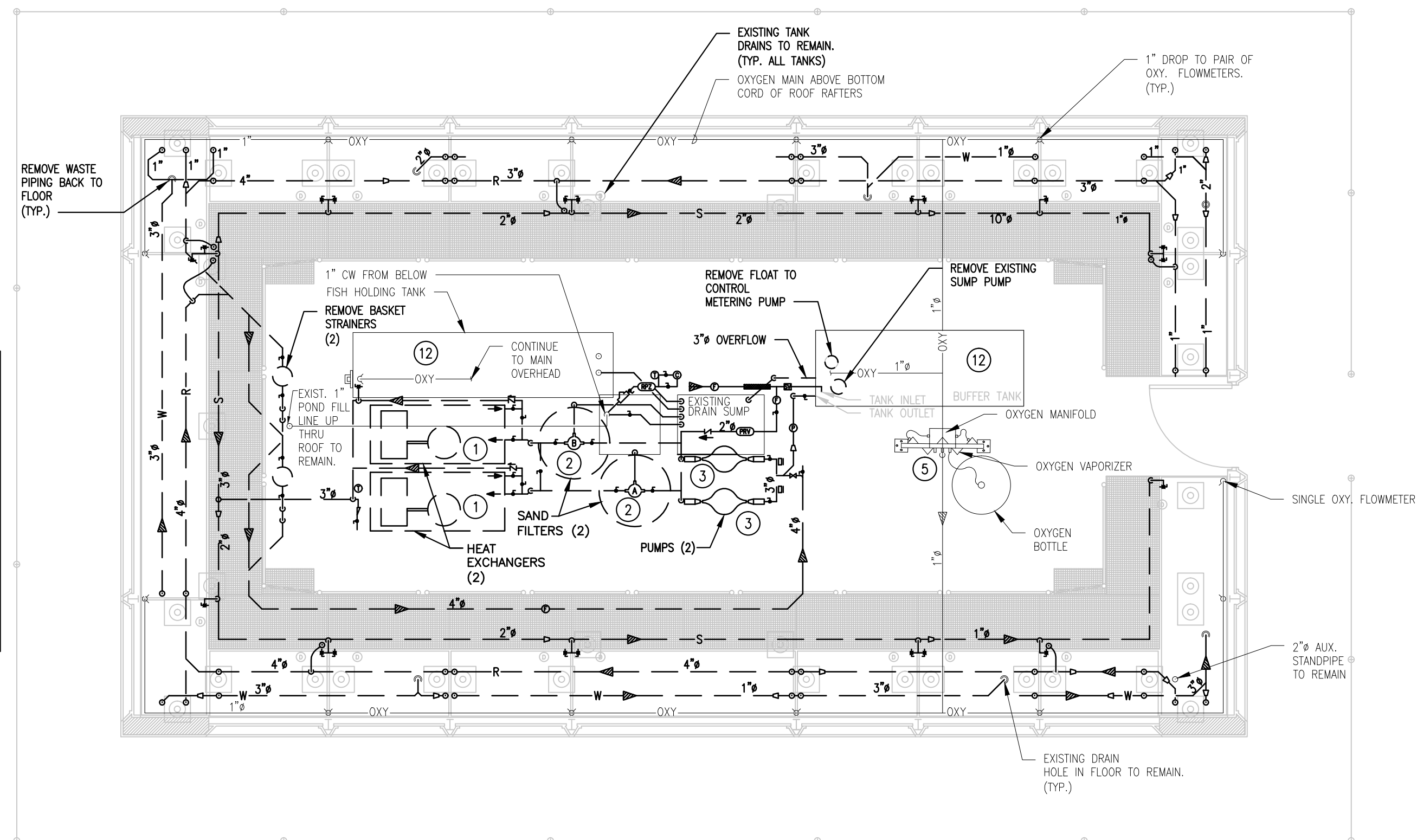




GENERAL NOTES

- REFER TO MO FOR GENERAL NOTES.
- DEMOLITION DRAWINGS PRESENT LAYOUT OF EXISTING CONDITIONS AND MAJOR MECHANICAL/ELECTRICAL ITEMS. THEY ARE NOT TO BE CONSTRUED AS COMPLETE IN REPRESENTATION OF ACCESSORIES AND INCIDENTALS TO BE REMOVED, REPLACED, OR REWORKED. NOR SHOULD ACCESSIBILITY BE INFERRED. THE CONTRACTOR IS RESPONSIBLE TO FAMILIARIZE THEMSELVES WITH THE BUILDING AND EXISTING CONDITIONS, PRIOR TO THE SUBMITTING OF A BID FOR THIS PROJECT.

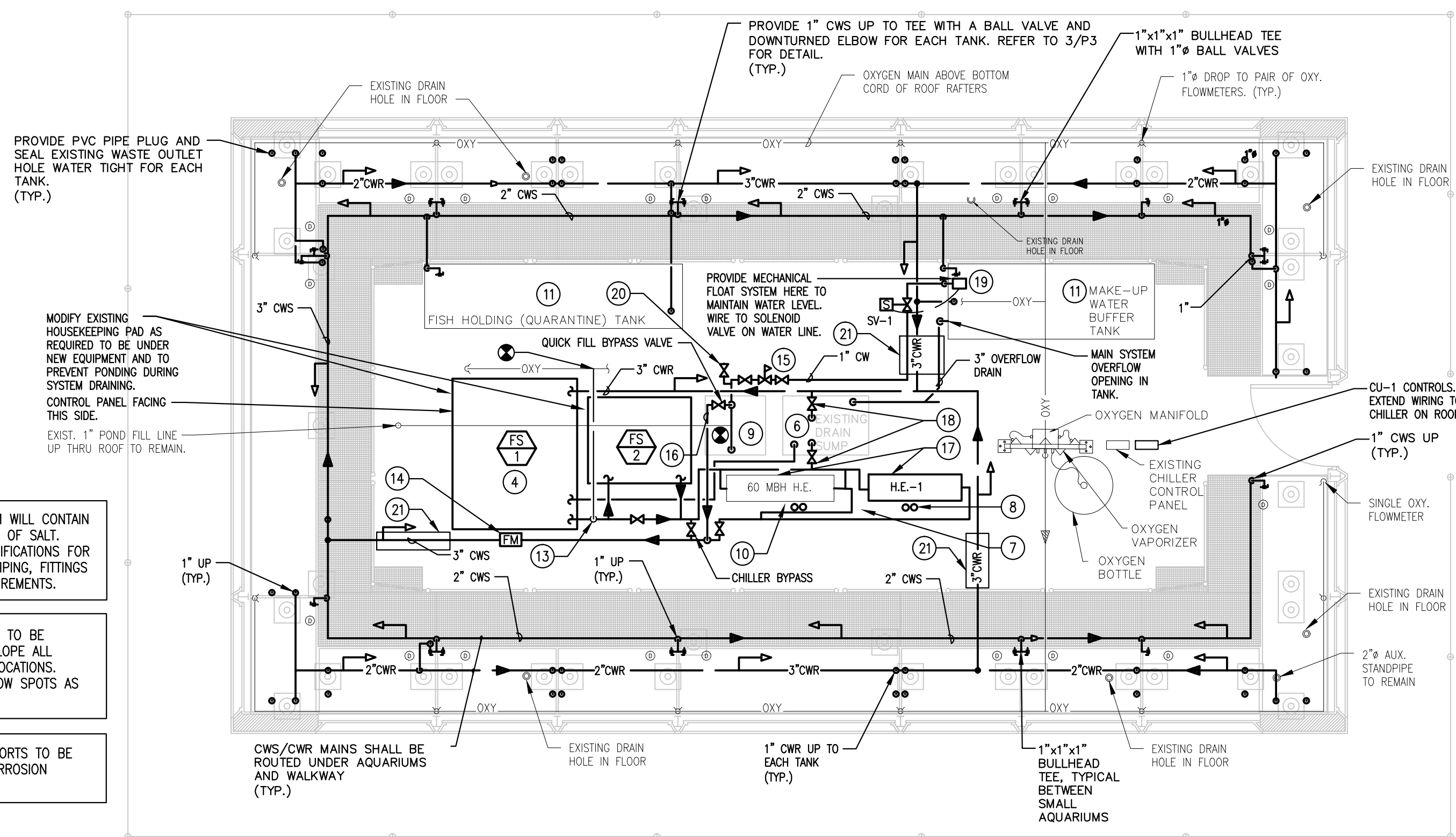
**GENERAL DEMO DESCRIPTION:** REMOVE ALL PIPING, HANGERS AND SUPPORTS WITH THE EXCEPTION OF OXYGEN PIPING AND SYSTEM COMPONENTS AS WELL AS ANY SANITARY VENT PIPING. AIR EQUALIZATION VENT PIPES FOR THE RECIRCULATING PIPING SHALL ALSO BE REMOVED. EXISTING FISH TANKS AND 60,000 BTU CHILLER WITH ASSOCIATED HEAT EXCHANGER/CONTROLS SHALL REMAIN BUT HEAT EXCHANGER WILL BE RELOCATED TO INSIDE THE AQUARIUM FROM THE ROOF. ALL EXISTING MANUAL DRAINS LOCATED ON THE BOTTOM OF THE FISH TANKS SHALL REMAIN. BUFFER TANK AND QUARANTINE TANK SHALL BE RELOCATED.



AQUARIUM BUILDING DEMO PLAN  
SCALE: 1/4" = 1'-0"

KEYED NOTES

- REMOVED PACKAGED HEAT EXCHANGERS, ASSOCIATED PIPING AND ALL APPURTENANCES.
- REMOVE SAND FILTERS, DRAIN PIPING AND ALL APPURTENANCES.
- REMOVE PUMPS AND ALL APPURTENANCES INCLUDING CONTROL PANELS.
- MAINTAIN ALL MFR AND CITY REQUIRED CLEARANCES AROUND NEW AND EXISTING CONDENSING UNITS.
- ALL OXYGEN SYSTEM COMPONENTS SHALL REMAIN.
- 3" D FROM AUTOMATIC BACKWASH. ROUTE TO EXISTING DRAIN SUMP.
- REFER TO 2/P3 AQUARIUM WATER PIPING FLOW DIAGRAM FOR PIPING REQUIREMENTS IN THIS AREA.
- EXTEND CONTROL WIRING AND REFRIGERANT LINES UP FROM HEAT EXCHANGER TO CONDENSING UNIT ON ROOF. SIZE/ROUTE PER MFR RECOMMENDATIONS.
- REFER TO 1/P3 FOR WATER ENTRANCE DETAIL.
- RELOCATE EXISTING HEAT EXCHANGER AND CONTROLLER FOR 60,000 BTU UNIT HERE. EXTEND REFRIGERANT LINES AND CONTROL WIRING UP FROM HEAT EXCHANGER TO CONDENSING UNIT ON ROOF. SIZE/ROUTE PER MFR RECOMMENDATIONS.
- EXISTING TANK TO BE RELOCATED. REFER TO NEW PLAN FOR LOCATION.
- EXTEND 3/8" EXISTING POLY TUBING OXYGEN PIPING FROM MAIN ABOVE TO CWS PIPING HERE WITH SHUTOFF VALVE. PIPING SHALL MATCH EXISTING OXYGEN PIPING.
- INSTALL FLOW METER FOR FILTER SKID PUMPS HERE. EXTEND WRING FROM FS-1 CONTROL PANEL TO HERE. INSTALL PER MFR RECOMMENDATIONS WITH APPROX. 6' OF STRAIGHT PIPE PRIOR TO THE INLET AND APPROX. 1.5' OF STRAIGHT PIPE AFTER OUTLET OF FLOW METER. COORDINATE WITH ALL MFR REQUIREMENTS.
- PROVIDE WATER PRESSURE REDUCING VALVE SET TO 60 PSI WITH PRESSURE GAUGES ON EACH SIDE. REFER TO SPECIFICATION 15145 FOR REQUIREMENTS.
- 1" QUICK FILL BYPASS FOR INITIAL SYSTEM FILL.
- PROVIDE NEW SUPPORT STAND FROM MFR WITH CORROSION RESISTANT MATERIALS. REFER TO MO FOR REQUIREMENTS.
- PROVIDE 1" SYSTEM DRAINS WITH SHUT OFF VALVES AS REQUIRED TO COMPLETELY DRAIN PIPING SYSTEM.
- PROVIDE SJE RHOMBUS DOUBLE FLOAT MASTER PUMP SWITCH MODEL #15DFMU1WOP MECHANICALLY ACTIVATED FLOAT SYSTEM TO OPERATE SV-1. REFER TO MO FOR FLOAT SYSTEM SPECIFICATIONS.
- PROVIDE 3/4" TAP WITH SHUTOFF VALVE AND MALE THREADED CONNECTION FOR GARDEN HOSE.
- PROVIDE CORROSION RESISTANT STEP OVER GRATING HERE (FIBERGRATE PART# 1486000 OR EQUAL) TO PREVENT TRIPPING OVER PIPES. FIELD VERIFY EXACT HEIGHT AND LENGTH REQUIRED PRIOR TO ORDERING.



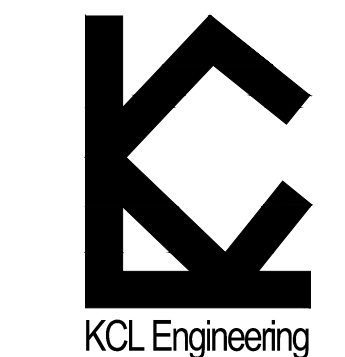
**ADDITIONAL SCOPE OUTSIDE OF AQUARIUM BUILDING:** REPLACE EXISTING 2" BALL VALVE AND ADD A TEE WITH A 2" DRAIN VALVE TO AQUARIUM WATER LINE IN WATER PIT SOUTH OF DNR BUILDING. FIELD VERIFY EXACT PIPING SIZE PRIOR TO ORDERING VALVE. MODIFY EXISTING PIPING IN PIT AS REQUIRED FOR INSTALLATION OF VALVES.

WATER IN PIPING SYSTEM WILL CONTAIN 5 PARTS PER THOUSAND OF SALT. REFER TO MO AND SPECIFICATIONS FOR CORROSION RESISTANT PIPING, FITTINGS AND ACCESSORIES REQUIREMENTS.

SYSTEM SHALL BE PIPED TO BE DRAINED FOR WINTER. SLOPE ALL PIPES BACK TO DRAIN LOCATIONS. ADD DRAIN VALVES IN LOW SPOTS AS REQUIRED.

ALL HANGERS AND SUPPORTS TO BE STAINLESS STEEL OR CORROSION RESISTANT EQUIVALENT.

AQUARIUM BUILDING PLAN  
SCALE: 1/4" = 1'-0"



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KCL Project Number: 15013

Date: 08-29-2016

Drawn By: CDB

Checked By: JCC

CONSTRUCTION SET

Revisions Date No.

DNR- AQUARIUM RENOVATION  
IOWA STATE FAIRGROUNDS  
DES MOINES, IOWA

Sheet Name:

AQUARIUM FLOOR PLAN - PLUMBING

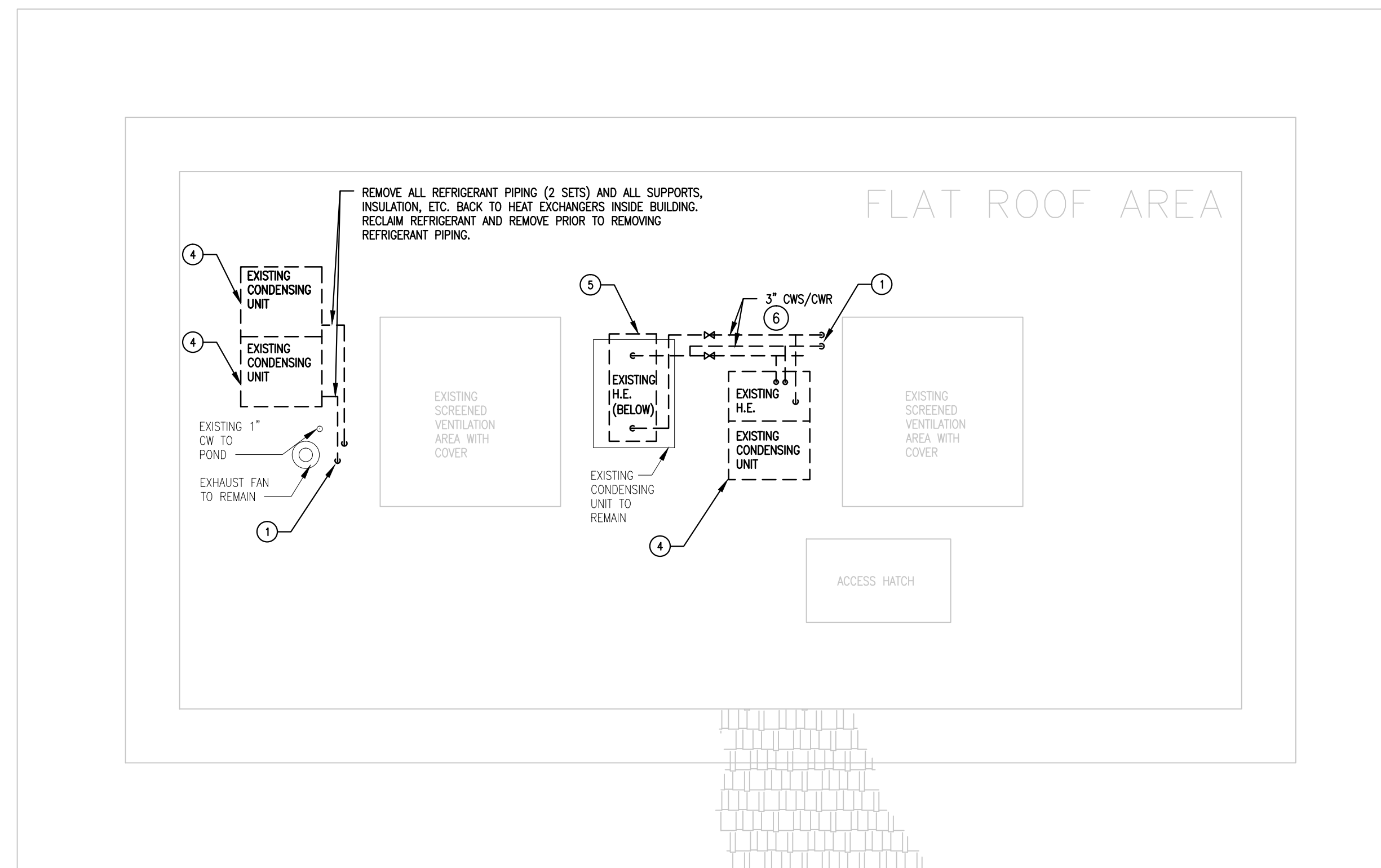
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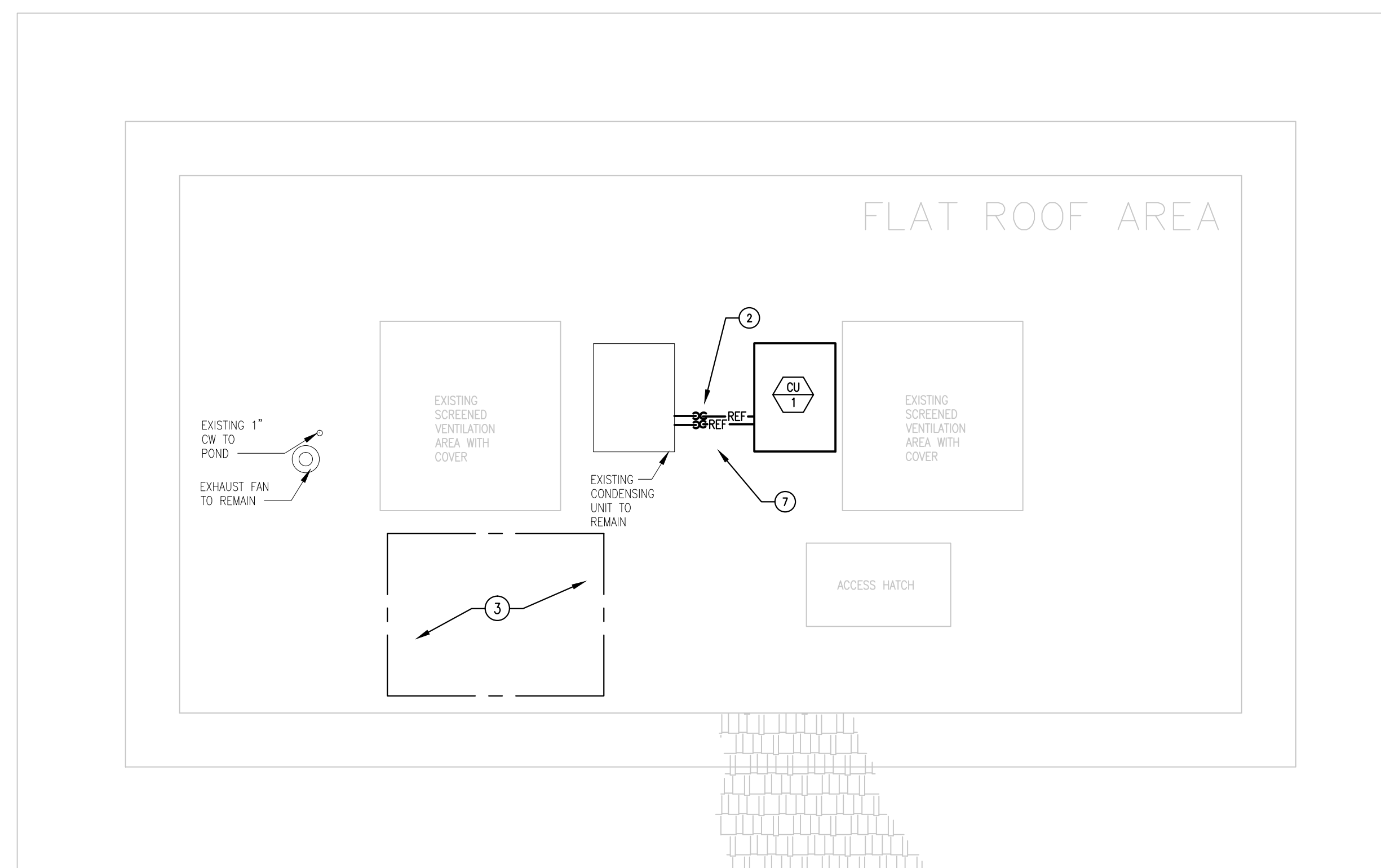
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AQUARIUM ROOF DEMO PLAN  
SCALE: 1/4" = 1'-0"



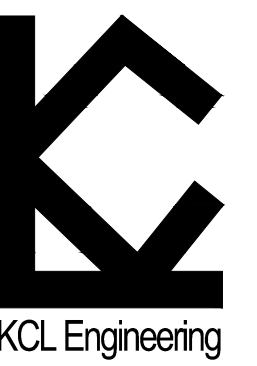
AQUARIUM ROOF PLAN  
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. REFER TO MO FOR GENERAL NOTES.
2. DEMOLITION DRAWINGS PRESENT LAYOUT OF EXISTING CONDITIONS AND MAJOR MECHANICAL/ELECTRICAL ITEMS. THEY ARE NOT TO BE CONSTRUED AS COMPLETE IN REPRESENTATION OF ACCESSORIES AND INCIDENTALS TO BE REMOVED, REPLACED, OR REWORKED. NOR SHOULD ACCESSIBILITY BE INFERRED. THE CONTRACTOR IS RESPONSIBLE TO FAMILIARIZE THEMSELVES WITH THE BUILDING AND EXISTING CONDITIONS, PRIOR TO THE SUBMITTING OF A BID FOR THIS PROJECT.

KEYED NOTES

1. PATCH HOLES AND REPAIR ROOF TO MATCH EXISTING CONDITIONS.
2. REFRIGERANT PIPING DOWN TO HEAT EXCHANGERS INSIDE BUILDING. REFER TO P2 FOR LOCATIONS.
3. REMOVE AND PATCH APPROX. 96" X 72" OPENING IN EXISTING ROOF TO INSTALL NEW EQUIPMENT AS REQUIRED. CONTRACTOR SHALL FIELD VERIFY EXACT LOCATION AND DIMENSIONS REQUIRED. CONTRACTOR SHALL ALSO REMOVE AND REPLACE ANY METAL STRUCTURE/SUPPORTS LOCATED INSIDE THE BUILDING (BELOW THE ROOF) AS REQUIRED FOR EQUIPMENT INSTALLATION FROM THE ROOF.
4. REMOVE EXISTING CONDENSING UNIT AND ALL APPURTENANCES.
5. REMOVE EXISTING HEAT EXCHANGER (BELOW CONDENSING UNIT) AND SALVAGE FOR RELOCATION INSIDE BUILDING. REMOVE ALL REFRIGERANT IN PIPING AND DISPOSE BEFORE REMOVING ALL REFRIGERANT PIPING AND SUPPORTS BETWEEN EXISTING CONDENSING UNIT AND EXISTING HEAT EXCHANGER. PREPARE EXISTING CONDENSING UNIT FOR CONNECTION TO NEW REFRIGERANT PIPING TO BE EXTENDED INTO AQUARIUM BUILDING BELOW.
6. REMOVE ALL CHILLED WATER PIPING AND APPURTENANCES BACK TO BELOW ROOF.
7. MAINTAIN ALL MFR AND CITY REQUIRED CLEARANCES AROUND NEW AND EXISTING CONDENSING UNITS.



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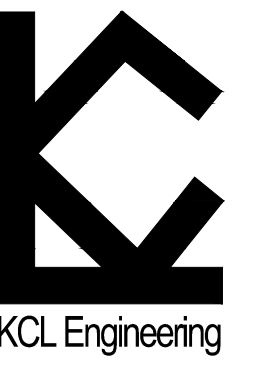
ROOF PLAN

Scale:

1/4"=1'-0"

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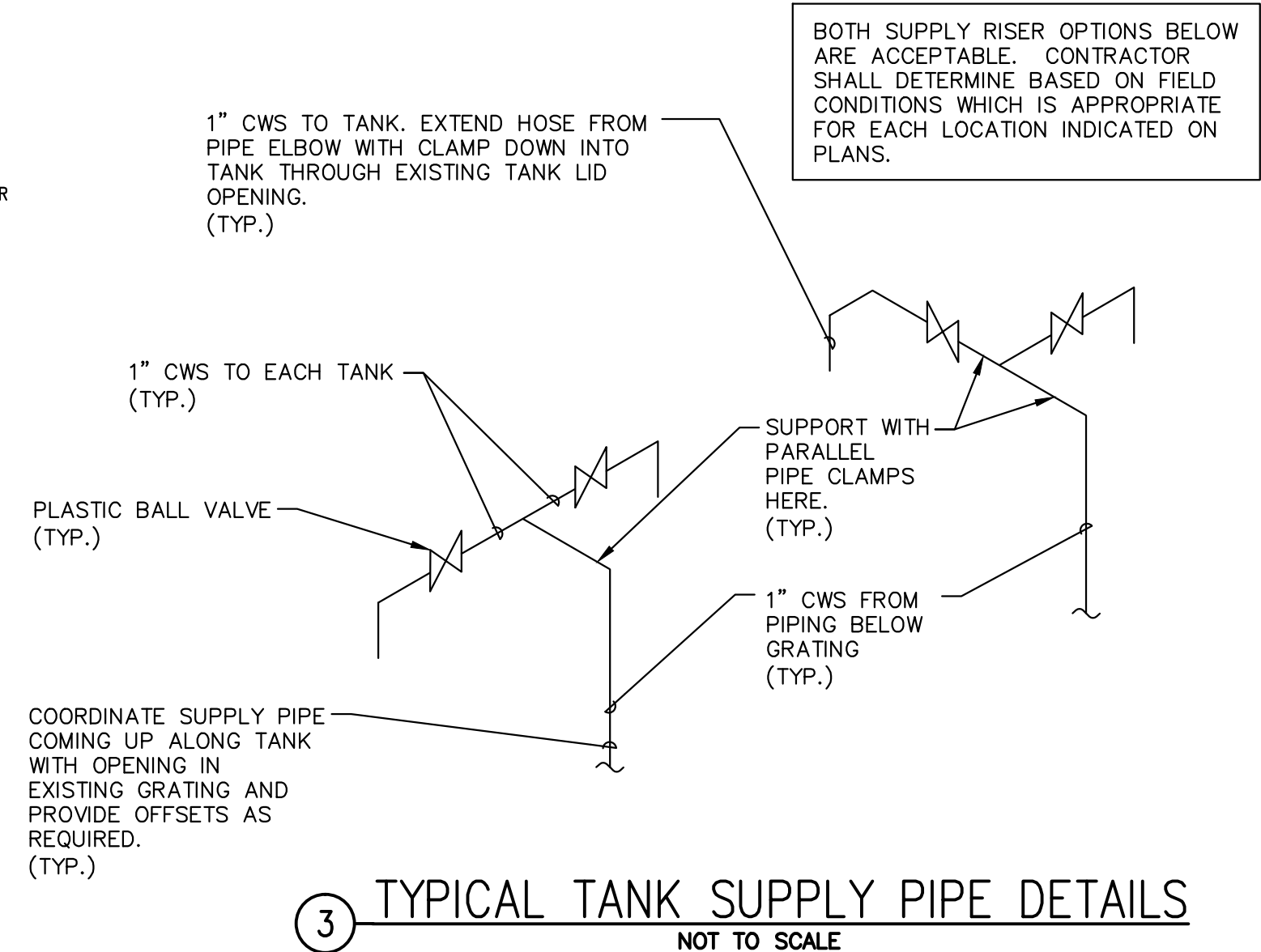
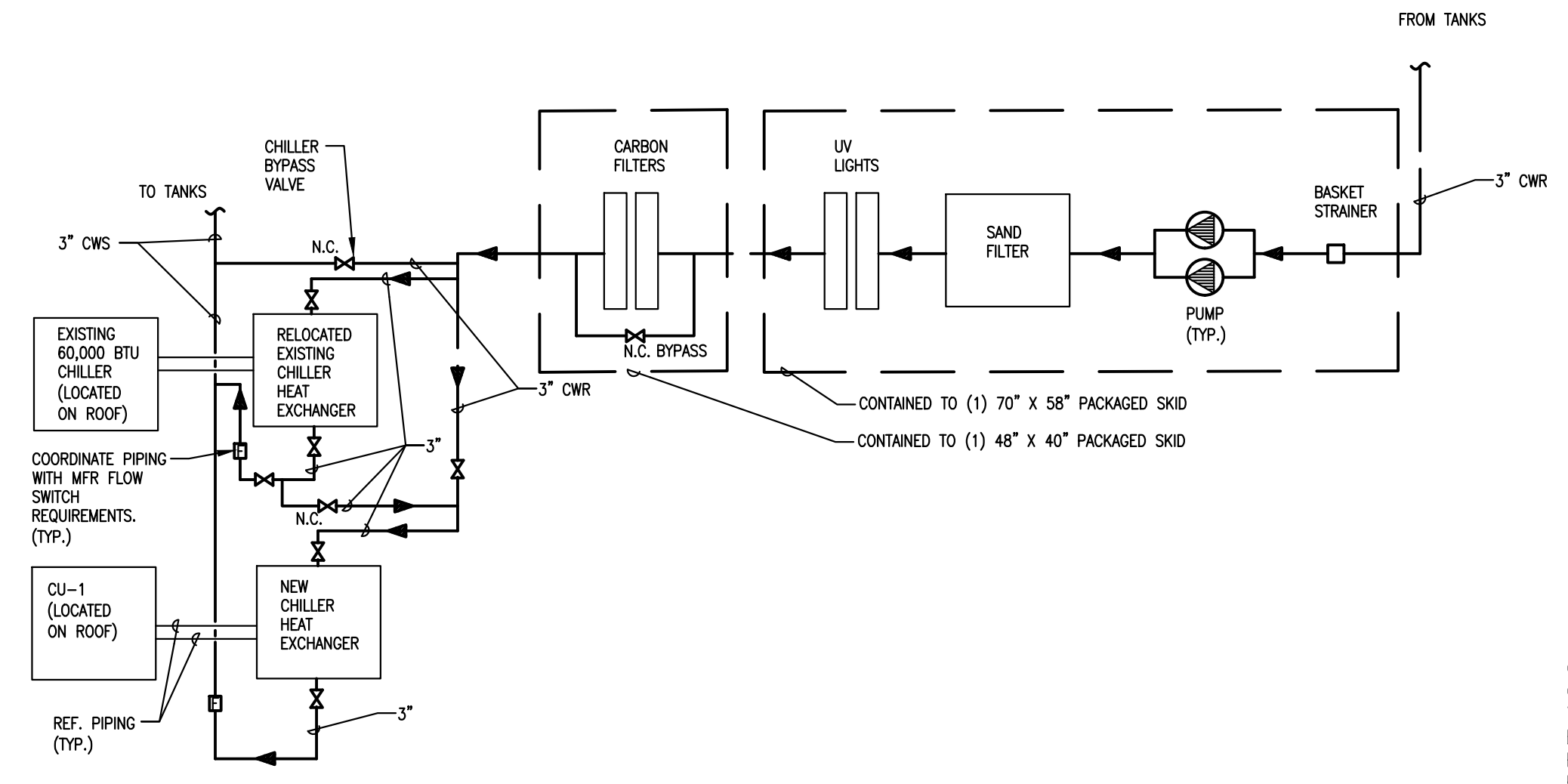
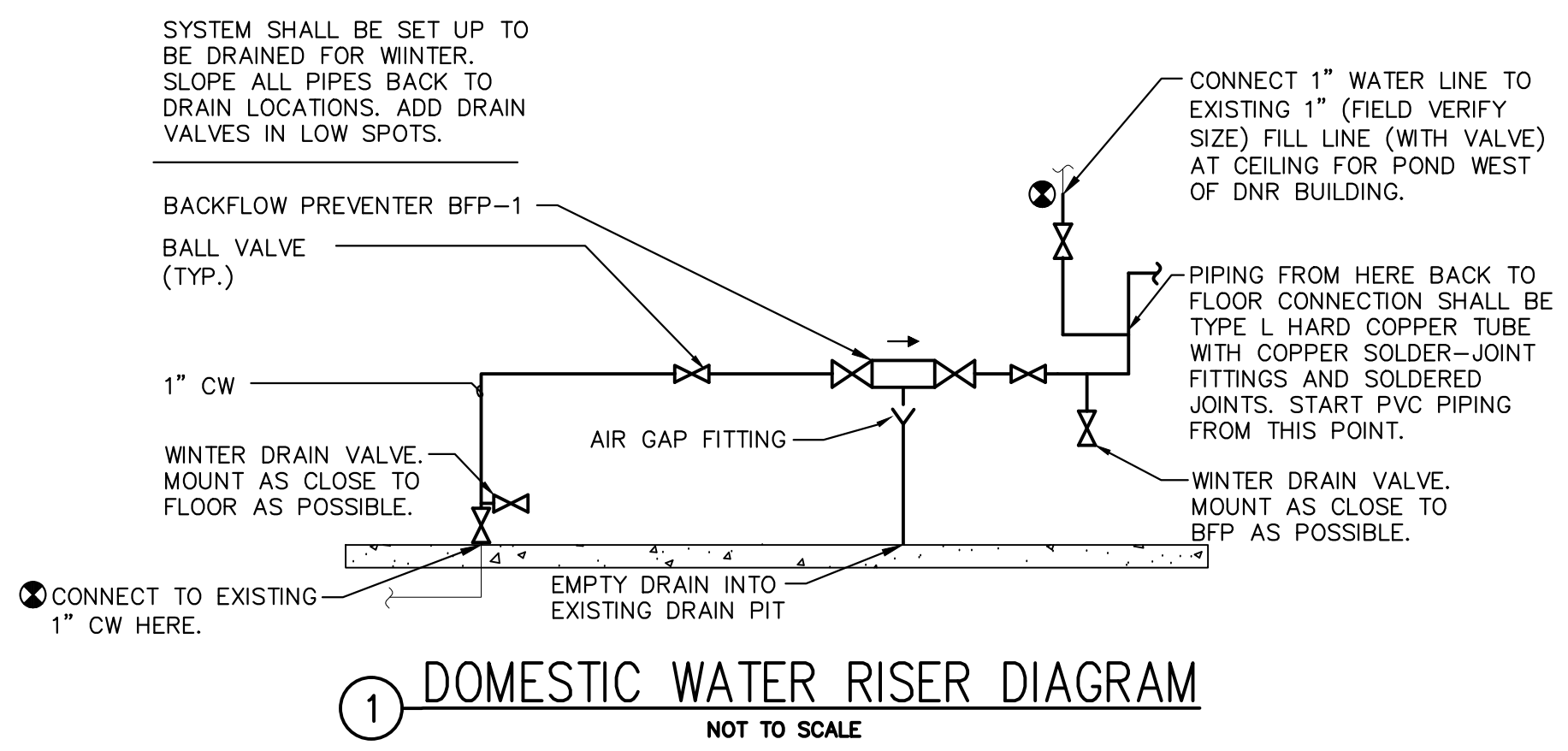
DETAILS AND SCHEDULES

Scale:

NONE

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P3



**PACKAGED SKID FILTRATION SYSTEM SCHEDULE**

REFERENCE	FS-1	FS-2
MANUFACTURER	INTEGRATED AQUA SYSTEMS	INTEGRATED AQUA SYSTEMS
MODEL #	IFS-S36A-120E2-3B-2-1DV-21-Q	IFS-D2-X-X-3B-X-X
MAX. SKID DIMENSIONS	70" W X 58" L	48" W X 40" L
SERVES	AQUARIUM	AQUARIUM
GPM	100	100
FT HEAD	48	-
# OF PUMPS	2	-
PUMP MOTOR HP	1.0	-
PUMP VOLTAGE/PH	230/3	-
SAND FILTER DIAMETER	36"	-
SAND FILTER MEDIA (QTY.)	PERMABEAD (8 CU. FT.)	-
UV STERILIZER (QTY.)	2	-
UV STERILIZER OUTPUT	120 W	-
MECHANICAL FILTER TYPE	-	CARBON (GRANULAR MEDIA)
MECHANICAL FILTER QTY.	-	2
NOTES	1,2,3,4,5,6,7,8,9,10,11,12	2,11,12

- NOTES:
- PUMPS ARE 100 GPM EACH AND FULLY REDUNDANT. PROVIDE WITH INTERLOCK SWITCH TO ONLY OPERATE ONE AT A TIME.
  - LOOP WATER CONTAINS 5 PARTS PER THOUSAND (PPM) OF SALT (SODIUM CHLORIDE).
  - PROVIDE VFD ON EACH PUMP. VFD SHALL CONVERT POWER FROM 230/1 TO 230/3 FOR PUMPS.
  - PUMP TO BE PROVIDED WITH SHAFT GROUNDING KIT.
  - PROVIDE WITH AUTOMATIC BACKWASH VALVE AND CONTROL SYSTEM, PRESSURE AND TIME ACTIVATED.
  - PROVIDE INTEGRAL BASKET STRAINER FOR PUMPS.
  - PUMPS SHALL BE SALTWATER RATED.
  - PROVIDE UNIT WITH SINGLE POINT POWER CONNECTION. 230/1, 8 MCA.
  - PROVIDE TEMPERATURE GAUGE INSTALLED IN PIPING FOR UNIT.
  - PROVIDE UNIT WITH INLINE PADDLE WHEEL TYPE FLOW METER (TO BE FIELD INSTALLED) AND REMOTE READOUT DISPLAY.
  - ALL EQUIPMENT LISTED IN SCHEDULE AND ASSOCIATED PRE-PLUMBED PIPING SHALL BE PROVIDED ON A SINGLE SKID. REFER TO M0 FOR DETAILS.
  - ALL SKID HARDWARE AND FASTENERS FOR SKID SHALL BE 316 GRADE SS OR NON-CORROSIVE NON-METALLIC.

**CHILLER SPLIT UNIT SCHEDULE - DX**

REFERENCE	CU-1
MANUFACTURER	AQUALOGIC
SERVES	H.E. - 1
MODEL #	MT-5 SPLIT
OPERATING WEIGHT (LBS.)	200
CONDENSER DIMENSIONS (L X H X D)	37 X 34 X 30
HP	4
CAPACITY (BTUH)	48,000
EFFICIENCY	14.5 SEER
REFRIGERANT	R410A
SPLIT HEAT EXCHANGER MODEL	HX-48DX
H.E. DIMENSIONS (L X H X D)	43 X 24 X 14
H.E. CAPACITY (BTUH)	48,000
FLOW (GPM) MIN / MAX	30 / 60
AMBIANT AIR TEMPERATURE (DB)	96F
ELECTRICAL VOLT / PHASE	230/1
MCA	24.0
MOCP	40
NOTES	1,2,3,4,5,6,7,8

- NOTES:
- PROVIDE UNIT WITH SINGLE POINT POWER CONNECTION. DISCONNECT PROVIDED / INSTALLED BY E.C.
  - PROVIDE WITH VIBRATION ISOLATION ISOLATORS BY UNIT MFR.
  - PROVIDE UNIT WITH 5 YEAR PARTS ONLY, NON-PRORATED WARRANTY.
  - UNIT SHALL PROVIDE 62F LEAVING WATER TEMP. BASED ON 82F MAX ENTERING WATER TEMP.
  - PROVIDE CONTROL PANEL WITH EVAPORATOR TO BE WIRED TO CONDENSING UNIT.
  - PROVIDE WITH 316 SS STAND AND HARDWARE FOR BOTH CHILLER AND HEAT EXCHANGER.
  - LOOP WATER CONTAINS 5 PARTS PER THOUSAND (PPM) OF SALT (SODIUM CHLORIDE).
  - REFER TO SHEET M0 FOR ADDITIONAL REQUIREMENTS.

**PLUMBING FIXTURE SCHEDULE**

REFERENCE	MFR	MODEL	DESCRIPTION	TRIM
BFP-1	WATTS	009/909	BACKFLOW PREVENTOR - REDUCED PRESSURE ZONE ASSEMBLY, BRONZE BODY CONSTRUCTION OR FDA APPROVED EPOXY COATED CAST IRON. INTERNAL PRESSURE RELIEF VALVE BETWEEN TWO CHECK VALVES. REPLACABLE SILICONE SEAT DISCS. PROVIDE WITH AIR GAP DRAIN FITTING. SERVICE OF ALL COMPONENTS SHALL BE THROUGH SINGLE ACCESS BRONZE COVER WITH STAINLESS BOLTS. COMPLY WITH AWWA AND ASSE.	NA
SV-1	NITRA	DVD-2BC6F-120A	SOLENOID VALVE - 2 WAY, 2-POSITION, DIAPHRAM STYLE, NORMALLY CLOSED, SPRING RETURN, 1" FNPT PORT SIZE, 1.125" ORIFICE SIZE, 10-120 PSI PRESSURE RANGE, 120 VAC, 10.6 VA INRUSH AC, 9VA POWER CONSUMPTION, 8.33 HZ MAX. FREQ., 80-120 MS. COMPLETE CYCLE MIN. RESPONSE, TEMPERATURE RANGE OF 14F TO 122F, NO LUBRICATION REQUIRED, NEMA TYPE 4, 18MM DIN TERMINAL CONNECTION, CONSTRUCTION IS GLASS FILLED NYLON BODY WITH VITON SEALS AND BRASS OPERATOR, LIFE CYCLE OF 10 MILLION, CE APPROVAL.	PROVIDE ALL ACCESSORIES NEEDED TO CONNECT TO MECHANICAL FLOAT SYSTEM FOR BUFFER TANK.

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# ELECTRICAL SYMBOLS

	PENDANT MOUNTED LIGHT FIXTURE - HEIGHT AS NOTED
	STRIP LIGHT FIXTURE - SURFACE MOUNTED
	EQUIPMENT CONNECTION AS NOTED
	GFCI DUPLEX RECEPTACLE - MOUNTED OVERHEAD
	SAFETY DISCONNECT SWITCH, SEE EQUIPMENT SCHEDULE
	EXPOSED CONDUIT
	PANEL AS NOTED - SURFACE MOUNTED
	120V FLOAT SWITCH
	120V SOLENOID VALVE
	SINGLE POLE SWITCH, +48" OR AS NOTED
	LOWERCASE LETTERING DENOTES SWITCH LEG
	NOTE REFERENCE
	EQUIPMENT IDENTIFICATION
	EQUIPMENT NUMBER

# ELECTRICAL GENERAL NOTES

- THE ENTIRE PROJECT SHALL COMPLY WITH THE CURRENT ISSUE OF THE NATIONAL ELECTRIC CODE (NEC), INCLUDING AMENDMENTS, AND WITH ALL STATE, LOCAL, AND OTHER CODES AS APPLICABLE. THE CURRENT ISSUE SHALL BE THE ISSUE THAT IS IN EFFECT WHEN THE CONSTRUCTION PERMITS ARE SECURED FOR THE WORK. THE INTERPRETATIONS AND DECISIONS OF THE AUTHORITY HAVING JURISDICTION OF APPLICABLE CODES SHALL GOVERN.
- THIS CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL REQUIRED STATE AND LOCAL PERMITS AND ASSOCIATED FEES.
- NOTE THAT THE ELECTRICAL DRAWINGS ARE ONLY A PORTION OF THE COMPLETE SET OF PLANS. THE COMPLETE SET OF PLANS SHALL BE USED TO DEFINE THE ELECTRICAL WORK. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, USING THE ARCHITECTURAL PLANS FOR DIMENSIONS AND DETAILS; EQUIPMENT PLANS FOR ROUGH-IN REQUIREMENTS, AND THE MECHANICAL PLANS FOR EQUIPMENT SIZES AND LOCATIONS. COORDINATE ALL WIRING DEVICE LOCATIONS AND ELEVATIONS INDICATED ON PLANS WITH THE OWNER, ARCHITECT AND FINAL FURNITURE/EQUIPMENT LAYOUTS.
- COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION HAS TRANSPIRED. ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL, ALL PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- RACEWAYS AND BOXES ARE SHOWN DIAGRAMMATICALLY ONLY AND INDICATE THE GENERAL AND APPROXIMATE LOCATION. THE LAYOUT DOES NOT SHOW THE TOTAL NUMBER OF RACEWAYS OR BOXES FOR THE CIRCUITS REQUIRED, NOR ARE THE LOCATIONS OF INDICATED RUNS INTENDED TO SHOW THE ACTUAL ROUTING OF THE RACEWAYS.
- ALL CONDUCTOR SIZES ARE BASED ON COPPER UNLESS OTHERWISE NOTED.
- SUPPORT ALL CONDUITS FROM STRUCTURAL SLABS, WALLS, STRUCTURAL MEMBERS AND ROOF JOISTS. DO NOT SUPPORT CONDUITS FROM CEILING TIE WIRES, DUCTWORK, PIPING OR OTHER NONSTRUCTURAL MEMBERS.

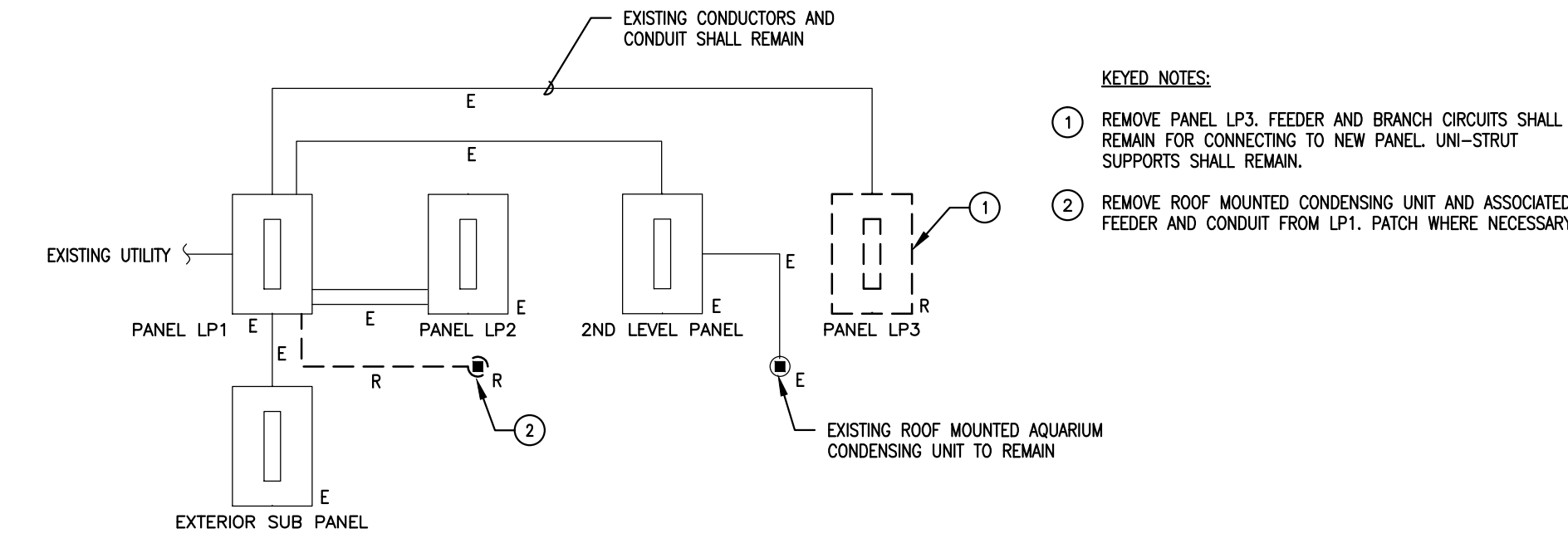
# ELECTRICAL ABBREVIATIONS

E	EXISTING ITEM TO REMAIN
EC	ELECTRICAL CONTRACTOR
MC	MECHANICAL CONTRACTOR
R	ITEM TO BE REMOVED
RR	ITEM TO BE REMOVED AND REPLACED

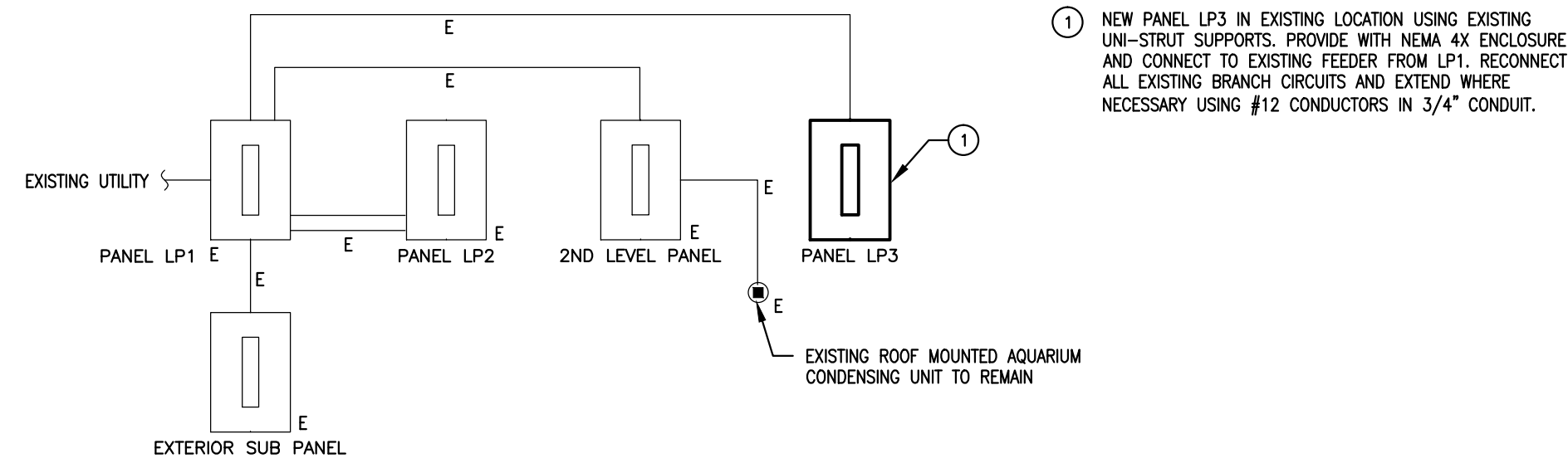
TAG	ELECTRICAL CHARACTERISTICS				DISCONNECT			REMARKS	
	VOLT/PHASE	MOTOR HP	KW	MCA	TYPE	SIZE (AMPS)	NEMA RATING		FUSE (AMPS)
CU-1	240/1	-	5.7	23	DS	60	3R	-	COORDINATE FINAL REQUIREMENTS WITH M.C.
FS-1	240/1	-	-	8	INT	-	-	-	INT VFD CONTROL. COORDINATE FINAL REQUIREMENTS WITH M.C.

**ABBREVIATIONS:**

DS	NON-FUSED DISCONNECT SWITCH
INT	INTEGRAL WITH EQUIPMENT FROM FACTORY



1 DEMO ONE-LINE DIAGRAM  
NOT TO SCALE

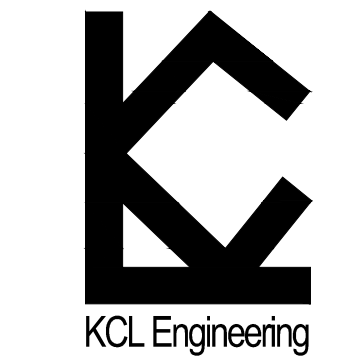


2 ONE-LINE DIAGRAM  
NOT TO SCALE

PANEL LP3												
LOAD DESCRIPTION	LOAD (VA)	TY	BRKR AMP	CKT NO	PHASE		CKT NO	BRKR AMP	TY	LOAD (VA)	LOAD DESCRIPTION	
					A	B						
EXISTING LOAD - LIGHTING	600	L	20	1	1		1320				EXISTING LOAD - RECEPTACLES	
EXISTING LOAD - FANS	360	R	20	1	3		540	4	20	1	180	EXISTING LOAD - RECEPTACLE
EXISTING LOAD - TANK LIGHTING	1300	L	20	1	5		1480	6	20	1	180	EXISTING LOAD - RECEPTACLE
EXISTING LOAD - TANK LIGHTING	1300	L	20	1	7		1800	8	20	1	500	OXYGEN SYSTEM
EXISTING LOAD - RECEPTACLES	720	R	20	1	9		1220	10	20	1	500	EXHAUST FAN
EXISTING LOAD - RECEPTACLES	720	R	20	1	11		720	12	20	1		SPARE
EXISTING LOAD - RECEPTACLES	720	R	20	1	13		720	14	20	1		SPARE
CU-1	5760	M	40	2	15		2880	16	20	1		SPARE
					17			18	20	1		SPARE
FS-1	1920	M	20	2	19		960	20	20	1		SPARE
					21		960	22				SPARE
SPARE					20			23				SPACE
SPARE					20			24				SPACE
SPARE								25				SPACE
SPARE								27				SPACE
SPARE								28				SPACE
SPARE								29				SPACE

VOLTS-PHASE-WIRE	120/240V-1PHASE-3W		
BUS RATING	125A		
MAIN BREAKER RATING	125A		
MOUNTED	SURFACE NEMA 4X		
DEMAND LIGHTING	3.20 KVA @ 100%	3.20	A PHASE 8.58
DEMAND RCPT. 10KVA @ 100%+	4.10 KVA @ 50%	4.10	B PHASE 6.90
DEMAND MOTOR	8.18 KVA @ 100%	8.18	
DEMAND APPLIANCES	KVA @ 100%		
OTHER	KVA @ %		
SCCR RATING	10000 A		
TOT. DEMAND (KVA)	15.48		
TOT. DEMAND (AMPS)	64.50		
TOT. CONNECTED LOAD (KVA)	15.48		
TOT. CONNECTED LOAD (AMPS)	64.50		
TOT. CONNECTED AMPS * 1.25	80.63 AMPS		



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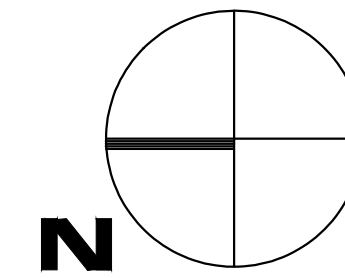
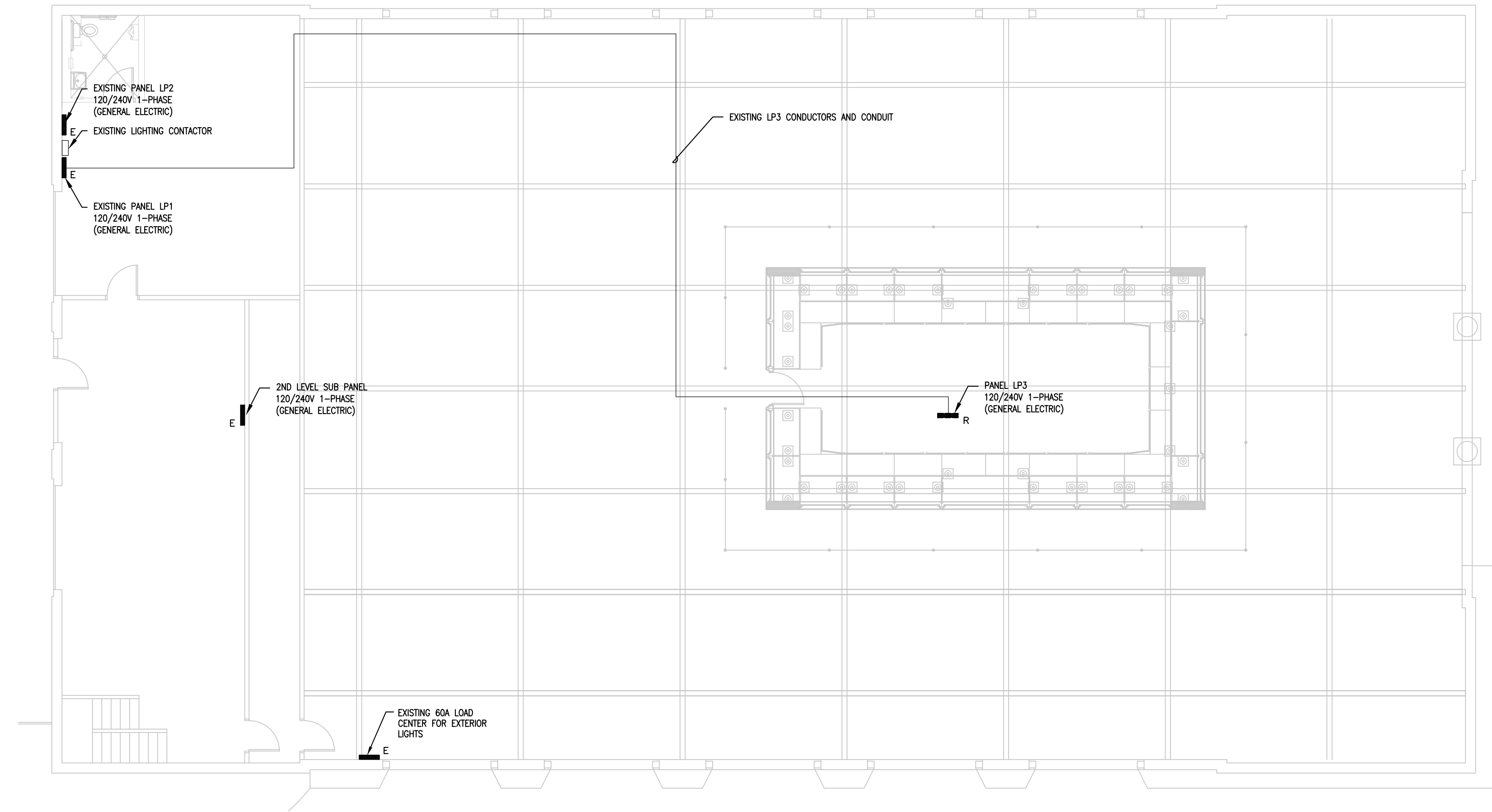
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DNR BUILDING REFERENCE PLAN  
SCALE: 1/8" = 1'-0"

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E1

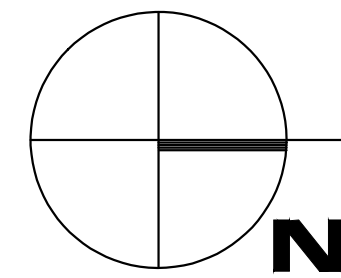
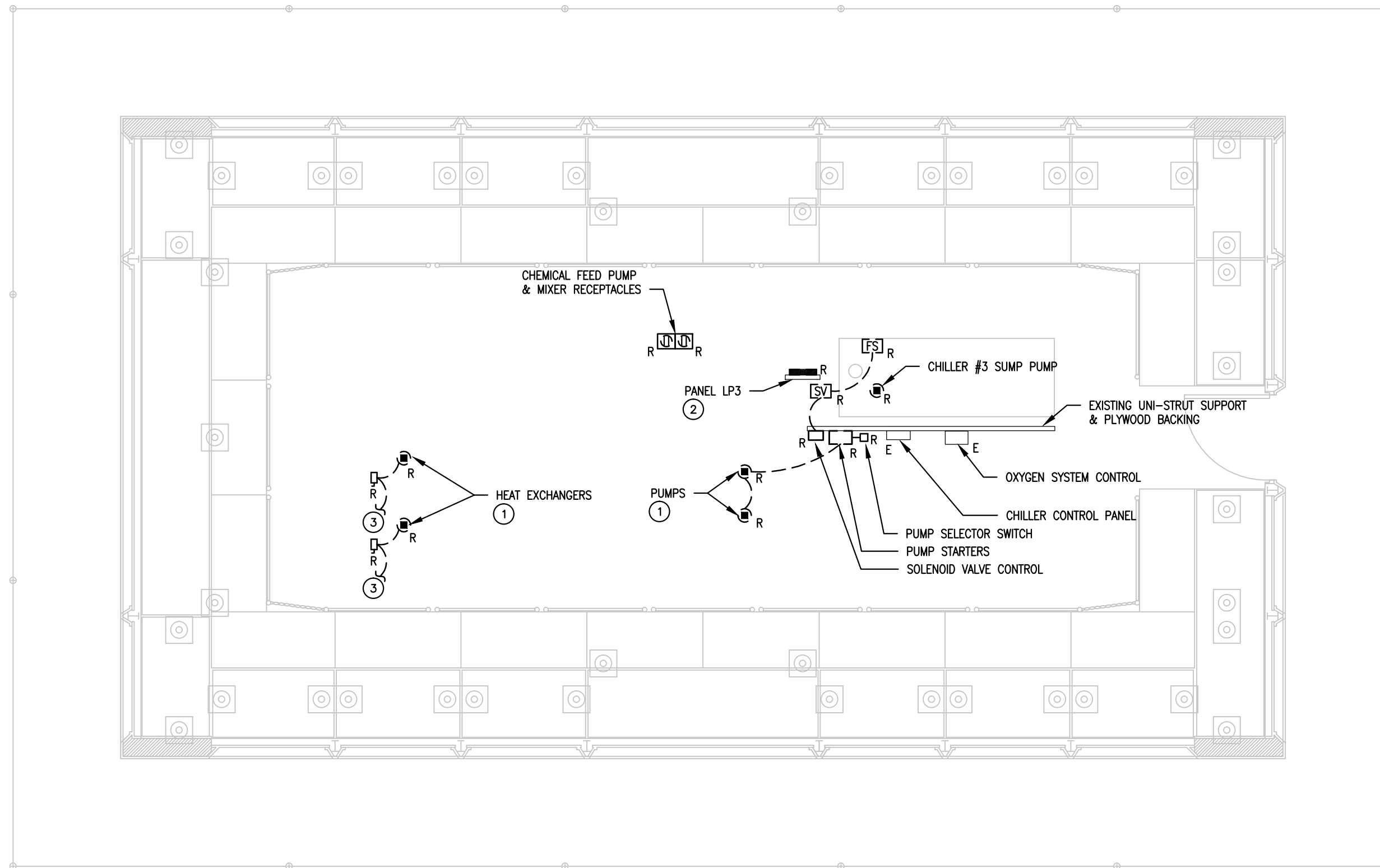


**GENERAL NOTES:**

- COORDINATE LOCATION/INSTALLATION OF MECHANICAL AND ELECTRICAL WORK WITH ALL OTHER TRADES. NO ASPECT OF A SYSTEM INSTALLATION OR ITS ROUGH-IN SHALL COMMENCE UNTIL PROPER AND TIMELY COORDINATION WITH ALL TRADES ASSOCIATED WITH THE INSTALLATION HAS TRANSPIRED. ITEMS TO BE COORDINATED SHALL INCLUDE BUT NOT BE LIMITED TO: BUILDING STRUCTURE, SHEET METAL, ALL PIPING SYSTEMS, LIGHT FIXTURES, CONDUITS, CABLE TRAYS, ETC. REFER TO ALL GENERAL, MECHANICAL, AND ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
- DEMOLITION DRAWINGS PRESENT LAYOUT OF EXISTING CONDITIONS AND MAJOR MECHANICAL/ELECTRICAL ITEMS. THEY ARE NOT TO BE CONSTRUED AS COMPLETE IN REPRESENTATION OF ACCESSORIES AND INCIDENTALS TO BE REMOVED, REPLACED, OR REWORKED. NOR SHOULD ACCESSIBILITY BE INFERRED. THE CONTRACTOR IS RESPONSIBLE TO FAMILIARIZE THEMSELVES WITH THE BUILDING AND EXISTING CONDITIONS, PRIOR TO THE SUBMITTING OF A BID FOR THIS PROJECT.
- COORDINATE ALL DISPOSAL OF CALLED OUT DEMO EQUIPMENT WITH OWNER PRIOR TO REMOVAL FROM SITE. ALL OWNER UNWANTED EQUIPMENT SHALL BECOME AVAILABLE FOR CONTRACTOR SALVAGE OR SHALL BE DEEMED WASTE AND BE REMOVED PROMPTLY FROM THE SITE.

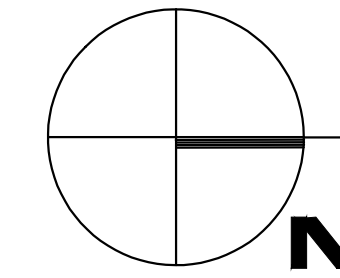
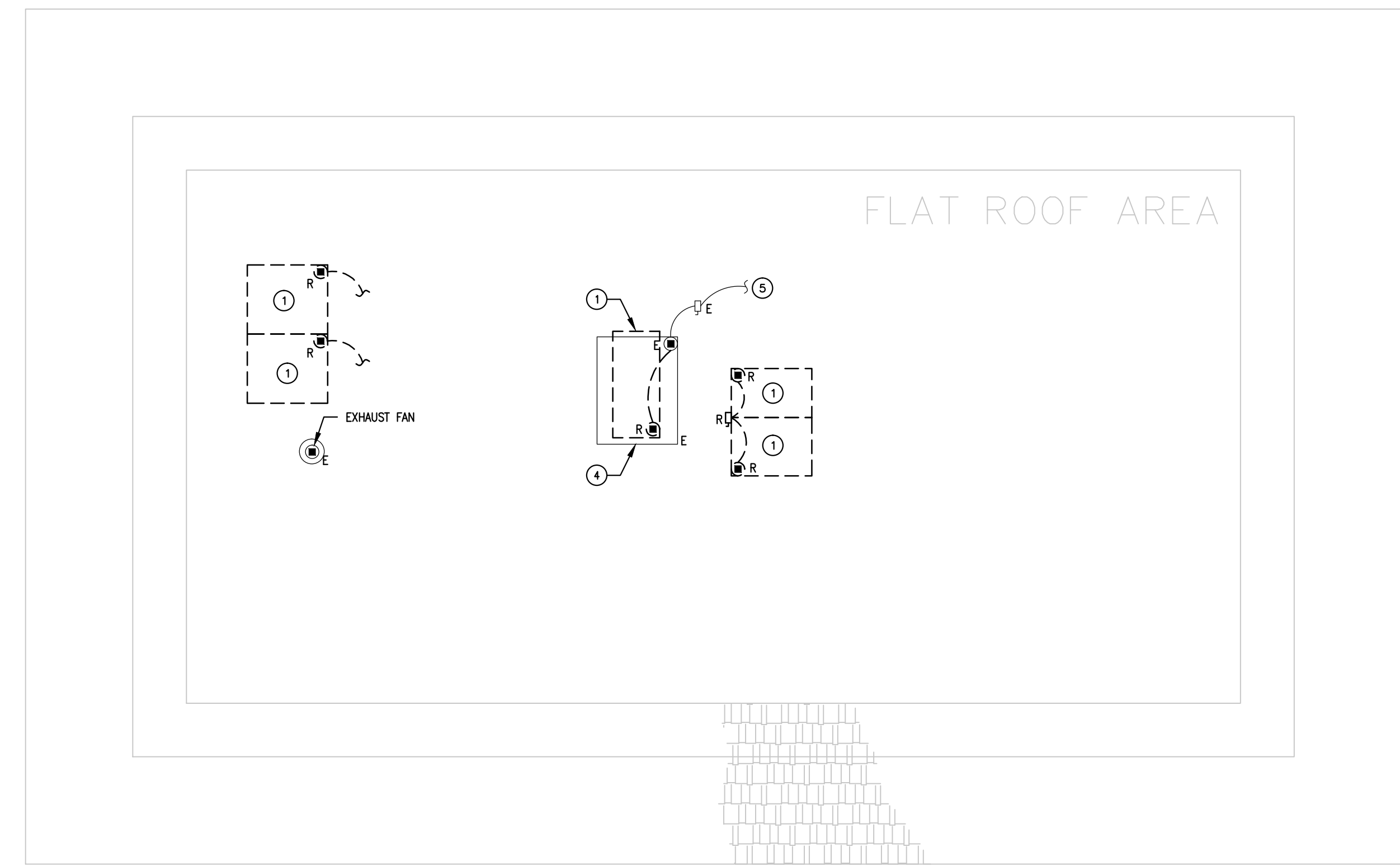
**KEYED NOTES:**

- DISCONNECT AND REMOVE MECHANICAL EQUIPMENT CONNECTION, DISCONNECT/STARTER, AND ASSOCIATED CONDUCTORS AND CONDUIT. COORDINATE FINAL DEMO REQUIREMENTS WITH M.C.
- REMOVE LP3 PANELBOARD, FEEDER AND BRANCH CIRCUITS SHALL REMAIN FOR RECONNECTION TO NEW PANELBOARD.
- REMOVE CONDENSING UNIT CIRCUIT AND CONDUIT FOR ROOF MOUNTED UNIT.
- EXISTING CONDENSING UNIT SHALL REMAIN. REMOVE HEAT EXCHANGER CIRCUIT AND COORDINATE FINAL REQUIREMENTS WITH M.C.
- EXISTING CIRCUIT FROM 2ND LEVEL PANEL SHALL REMAIN.
- RECONNECT RELOCATED HEAT EXCHANGER 25A-2P CIRCUIT TO CORRESPONDING CONDENSING UNIT. COORDINATE FINAL LOCATION AND REQUIREMENTS WITH M.C.
- INSTALL NEW LP3 NEMA 4X PANELBOARD. REFER TO ONE-LINE DIAGRAM 2/E-1. RECONNECT ALL EXISTING CIRCUITS.
- SINGLE POINT MECHANICAL EQUIPMENT CONNECTION. COORDINATE CONNECTION REQUIREMENTS WITH EQUIPMENT SUPPLIED VFD. COORDINATE FINAL ROUTING AND LOCATION WITH M.C.
- SOLENOID VALVE AND FLOAT SWITCH PROVIDED AND INSTALLED BY M.C. PROVIDE 120V CONNECTION TO SOLENOID VALVE AND COORDINATE WIRING BETWEEN VALVE AND FLOAT SWITCH. WIRING SHALL BE INSTALLED IN LIQUID TIGHT CONDUIT. COORDINATE FINAL LOCATION AND REQUIREMENTS WITH M.C.



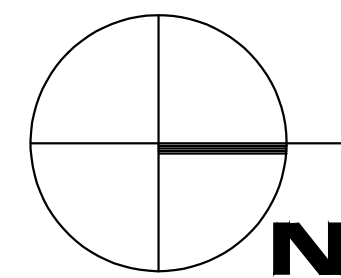
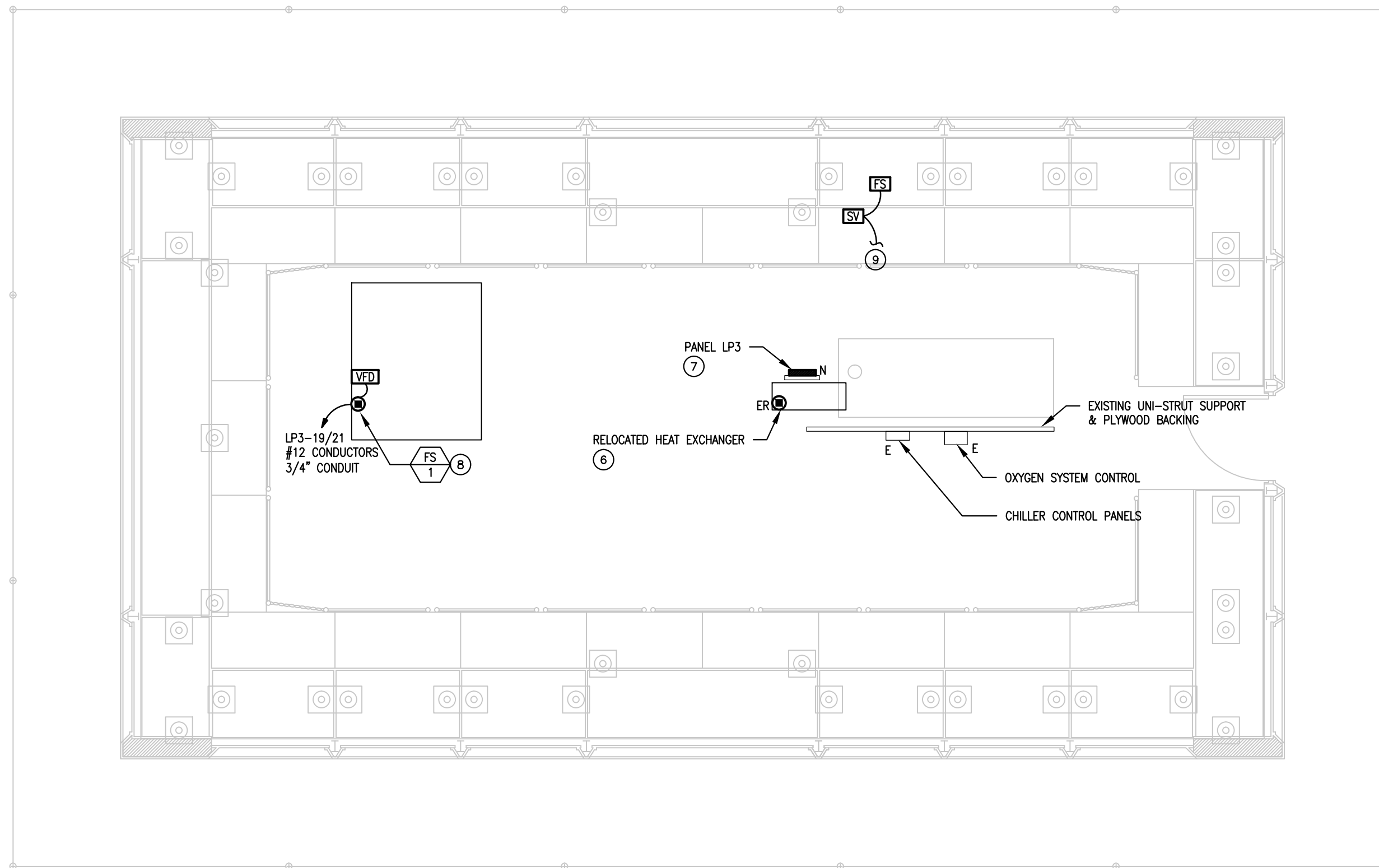
AQUARIUM BUILDING ELECTRICAL DEMO PLAN

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



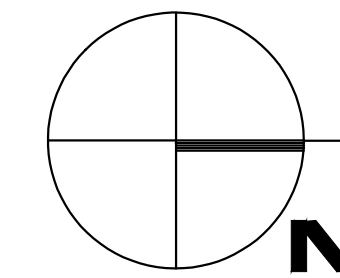
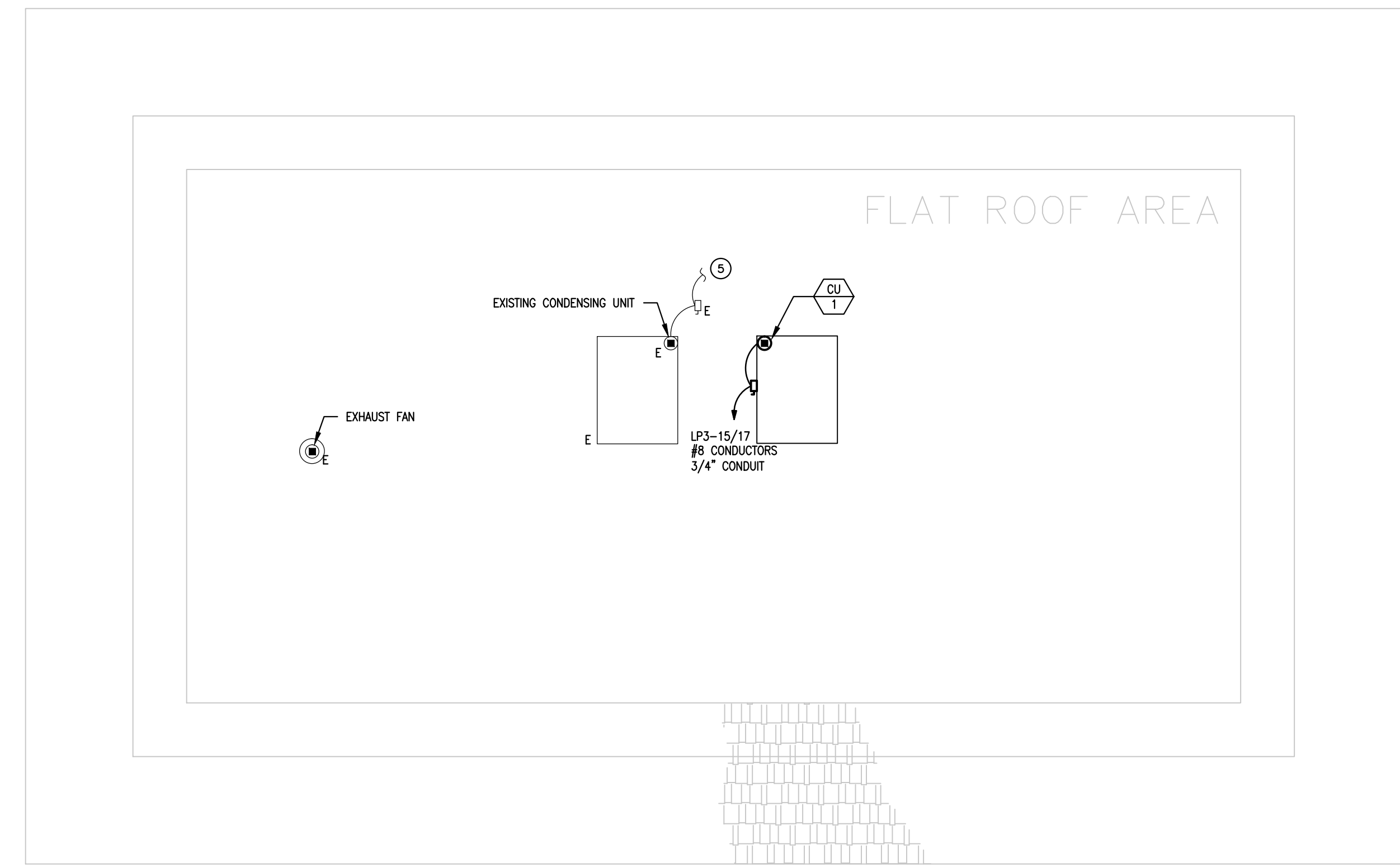
AQUARIUM ROOF ELECTRICAL DEMO PLAN

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



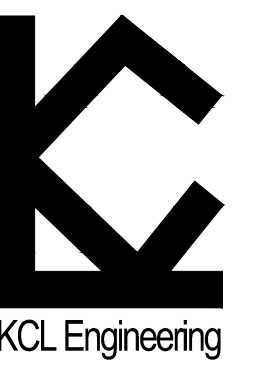
AQUARIUM BUILDING ELECTRICAL FLOOR PLAN

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



AQUARIUM ROOF ELECTRICAL FLOOR PLAN

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



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KCL Project Number: 15013

Date: 08-29-2016

Drawn By: JTL

Checked By: JRD

**CONSTRUCTION SET**

Revisions	Date	No.

**DNR- AQUARIUM RENOVATION**  
**IOWA STATE FAIRGROUNDS**  
**DES MOINES, IOWA**

Sheet Name:

AQUARIUM FLOOR PLAN - ELECTRICAL

Scale:

1/4" = 1'-0"

Sheet:

**E2**