

# ROOF PLAN - MECH/PLUMB

SCALE: 3/32" = 1'-0"

2012 PROJECT FOR:

MILL END LOFTS  
BAY CITY, MI

JOB NUMBER

E11-520

PROJECT# 1210-03

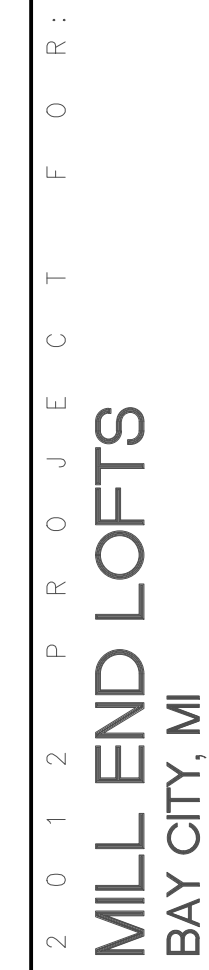
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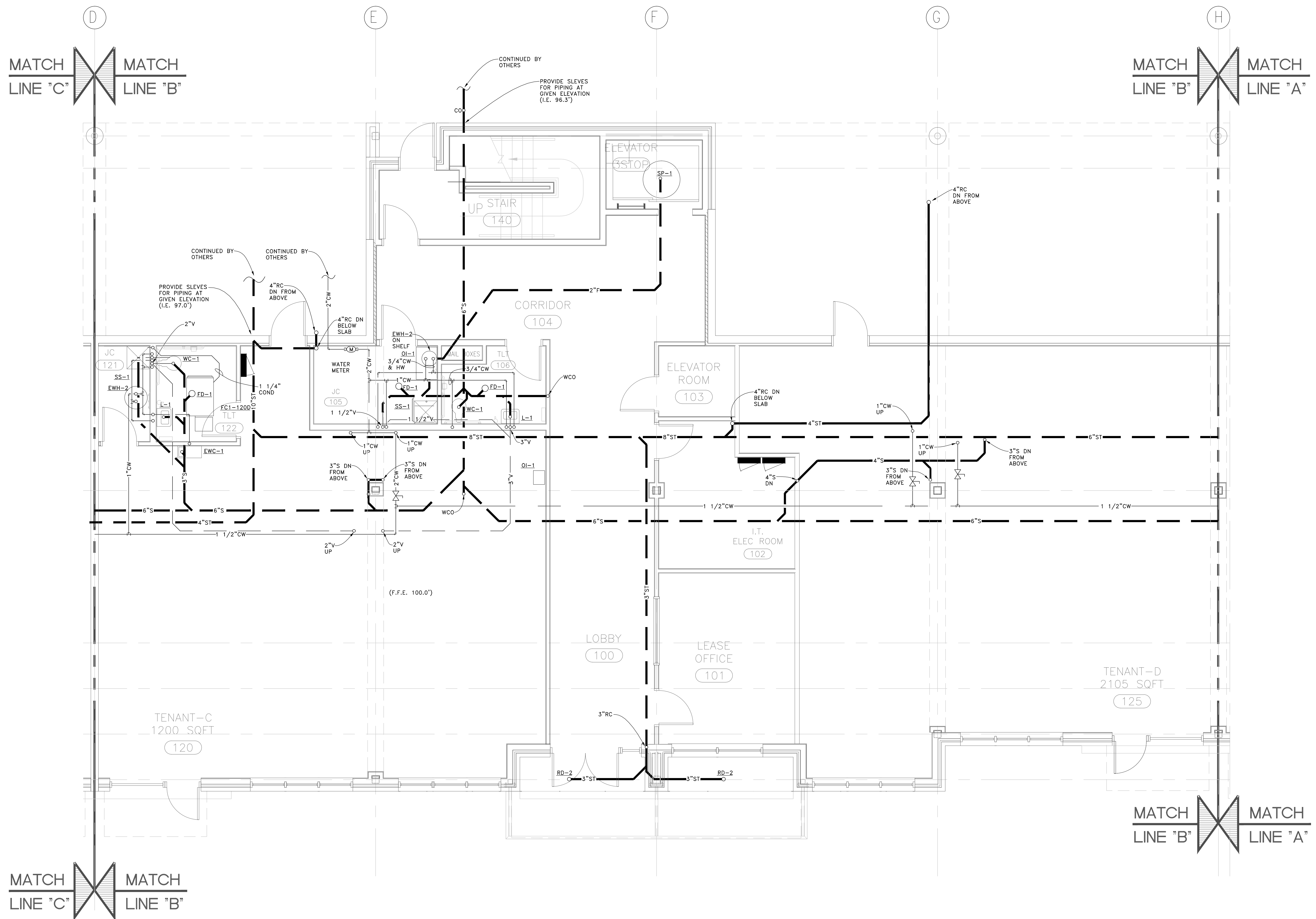


Apollo  
Engineering LLC  
E-Mail : apollo\_mi\_eng@yahoo.com

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office



J O B N U M  
E11-520



**FIRST FLOOR PLAN. - PART 'B' - PLUMBING**  
 SCALE: 1/4" = 1'-0"

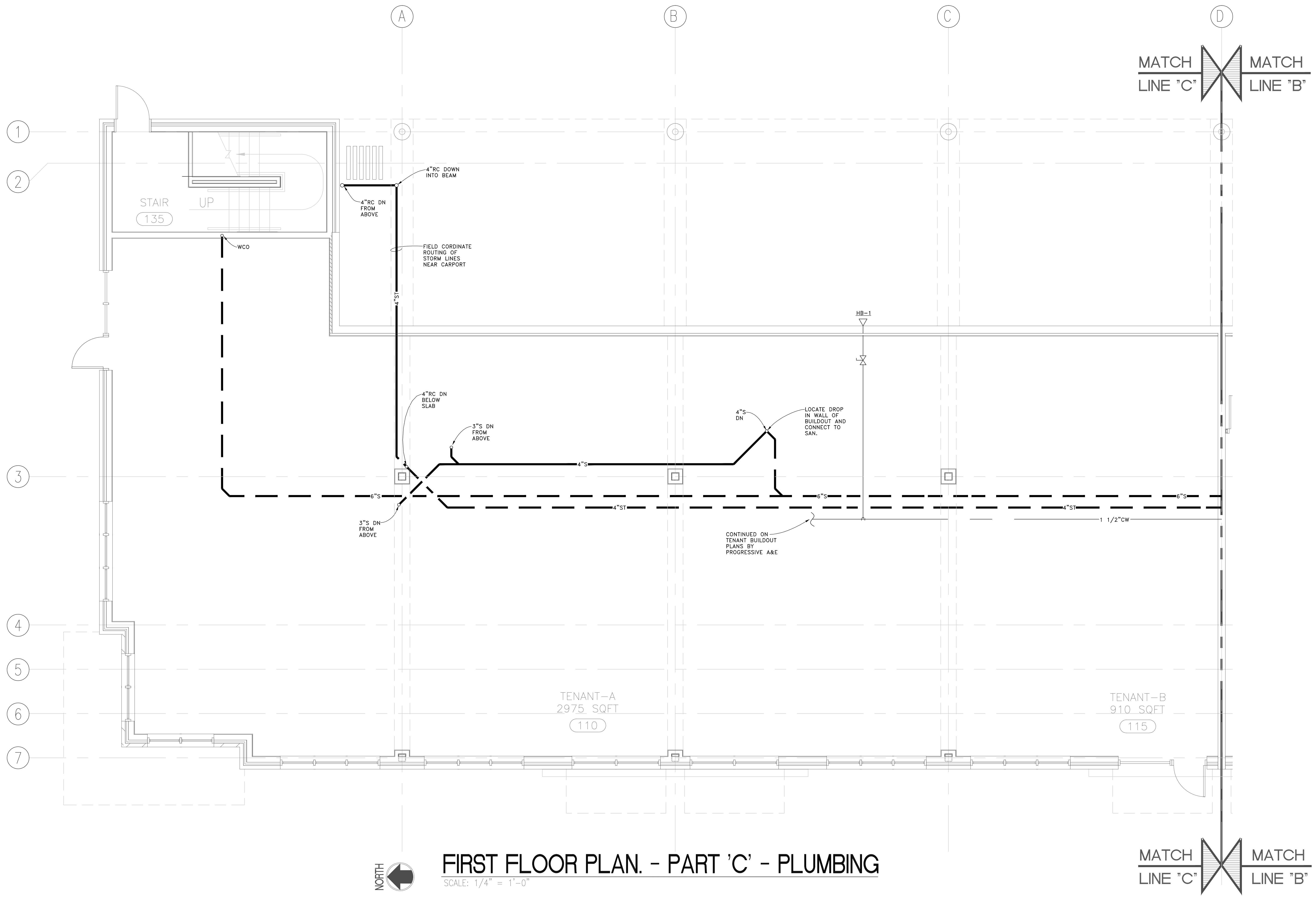
2012 PROJECT FOR:  
**MILL END LOFTS**  
 BAY CITY, MI

JOB NUMBER  
**E11-520**

PROJECT# 1210-03  
**P1.2**



**Apollo Engineering LLC**  
 8690 S. Lakeview Rd.  
 Traverse City, MI 49684  
 (231) 932-0800 office  
 E-Mail: apollo\_mtl\_eng@yahoo.com



# FIRST FLOOR PLAN. - PART 'C' - PLUMBING

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

2012 PROJECT FOR:  
MILL END LOFTS  
BAY CITY, MI

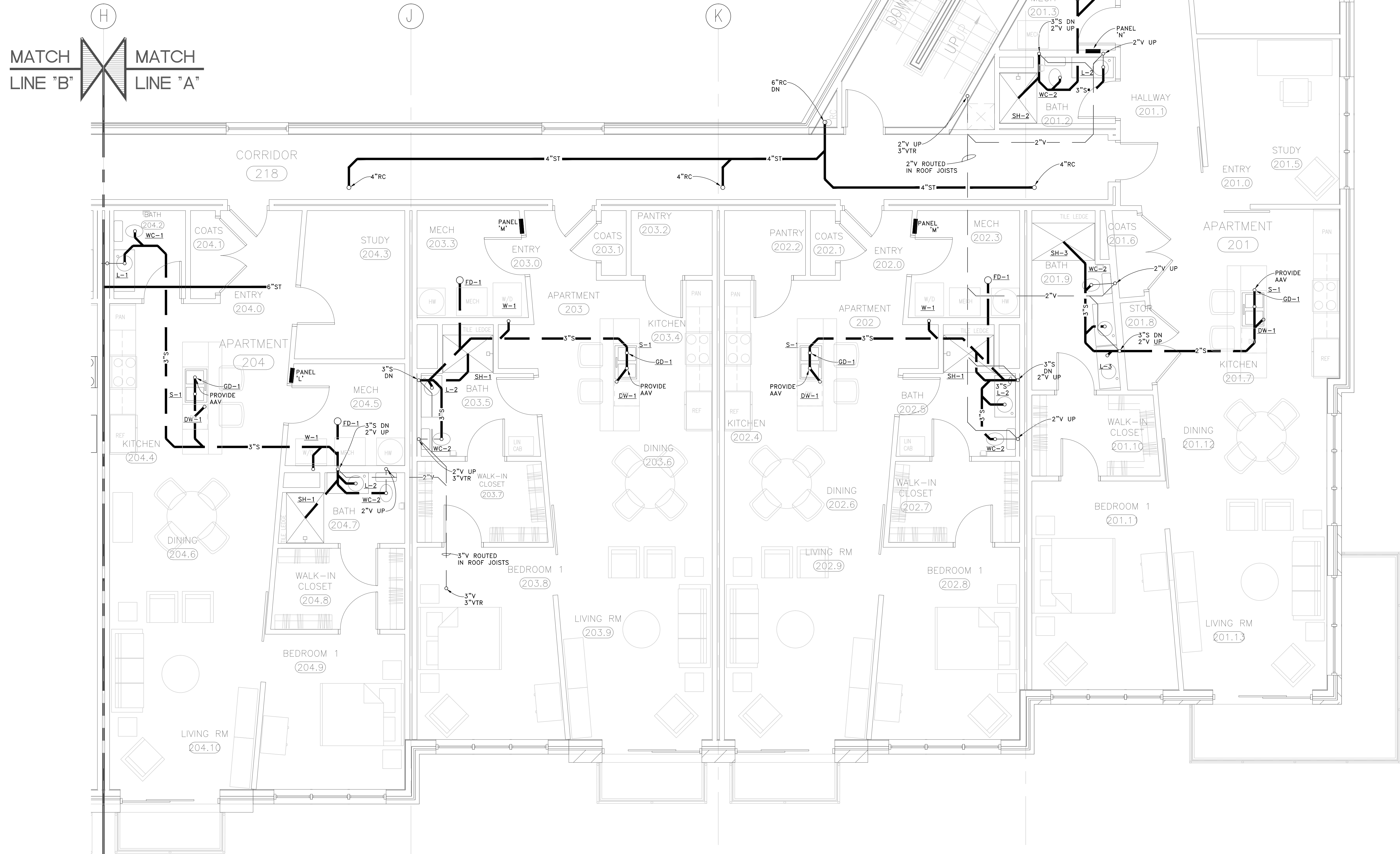
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Apollo  
Engineering LLC  
E-Mail: apollo\_mil\_eng@yahoo.com

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

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DRAWING  
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## 2ND AND 3RD FLOOR PLAN. - PART 'A' - SANITARY

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

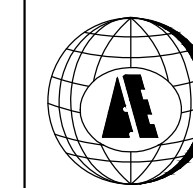


MATCH  
LINE "B"

MATCH  
LINE "A"

2012 PROJECT FOR:  
MILL END LOFTS  
BAY CITY, MI

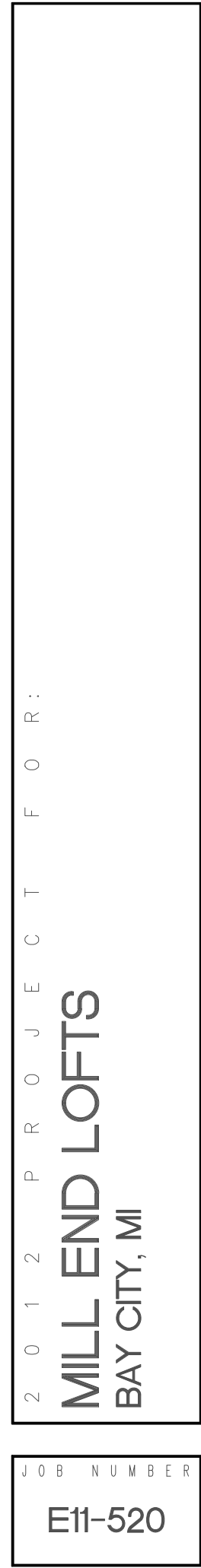
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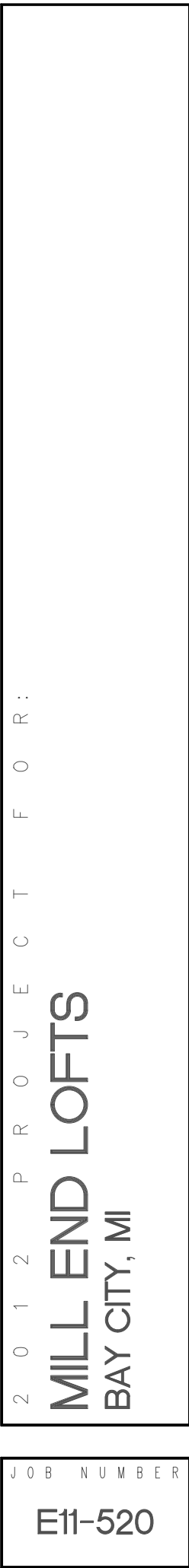


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E-Mail: apollo\_mil\_eng@yahoo.com

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MATCH  
LINE "B"

MATCH  
LINE "A"

MATCH  
LINE "B"

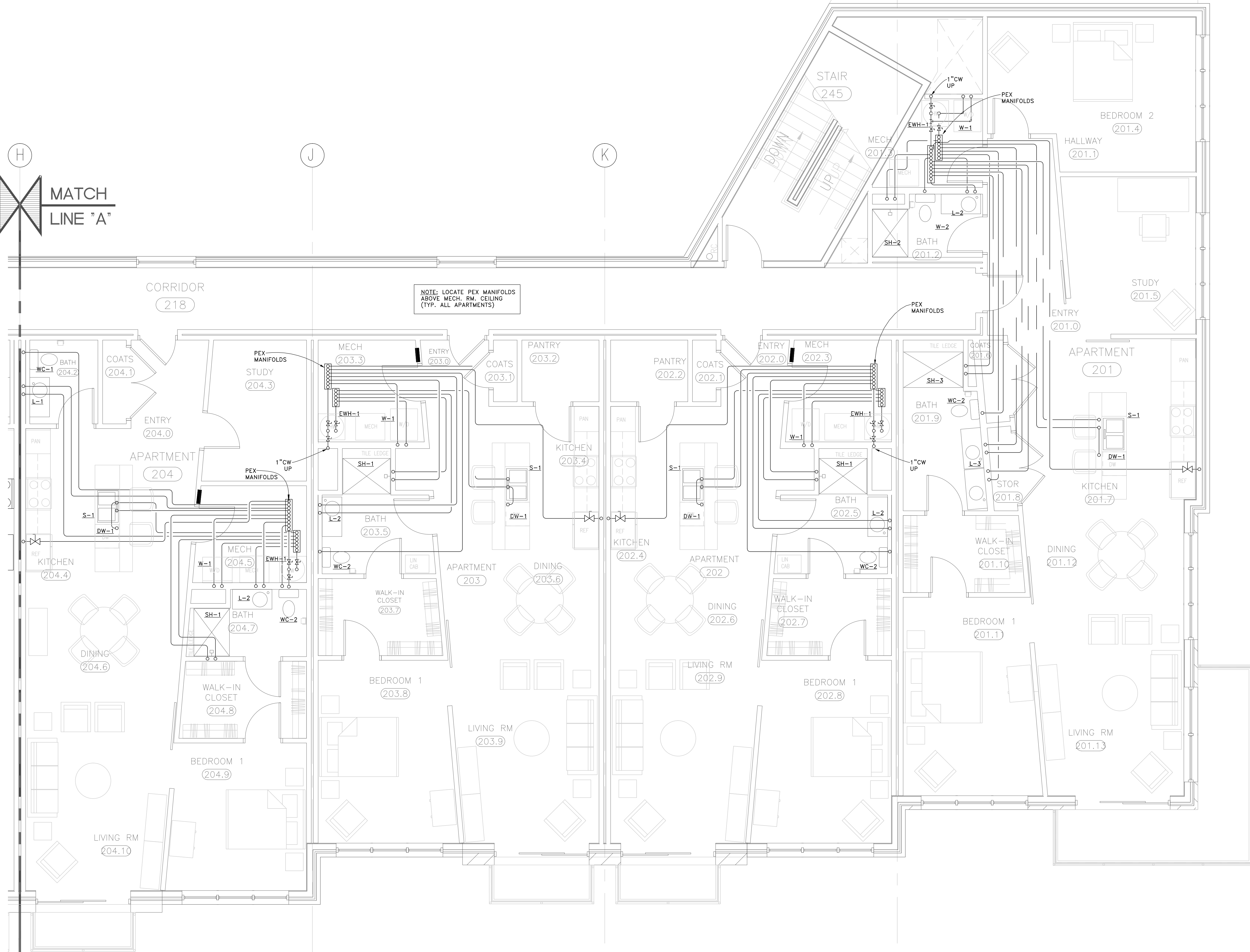
MATCH  
LINE "A"



## 2ND AND 3RD FLOOR PLAN. - PART 'A' - WATER PIPING

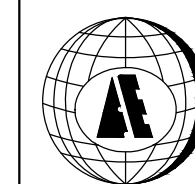
SCALE: 1/4" = 1'-0"

NOTE: LOCATE PEX MANIFOLDS  
ABOVE MECH. RM. CEILING  
(TYP. ALL APARTMENTS)



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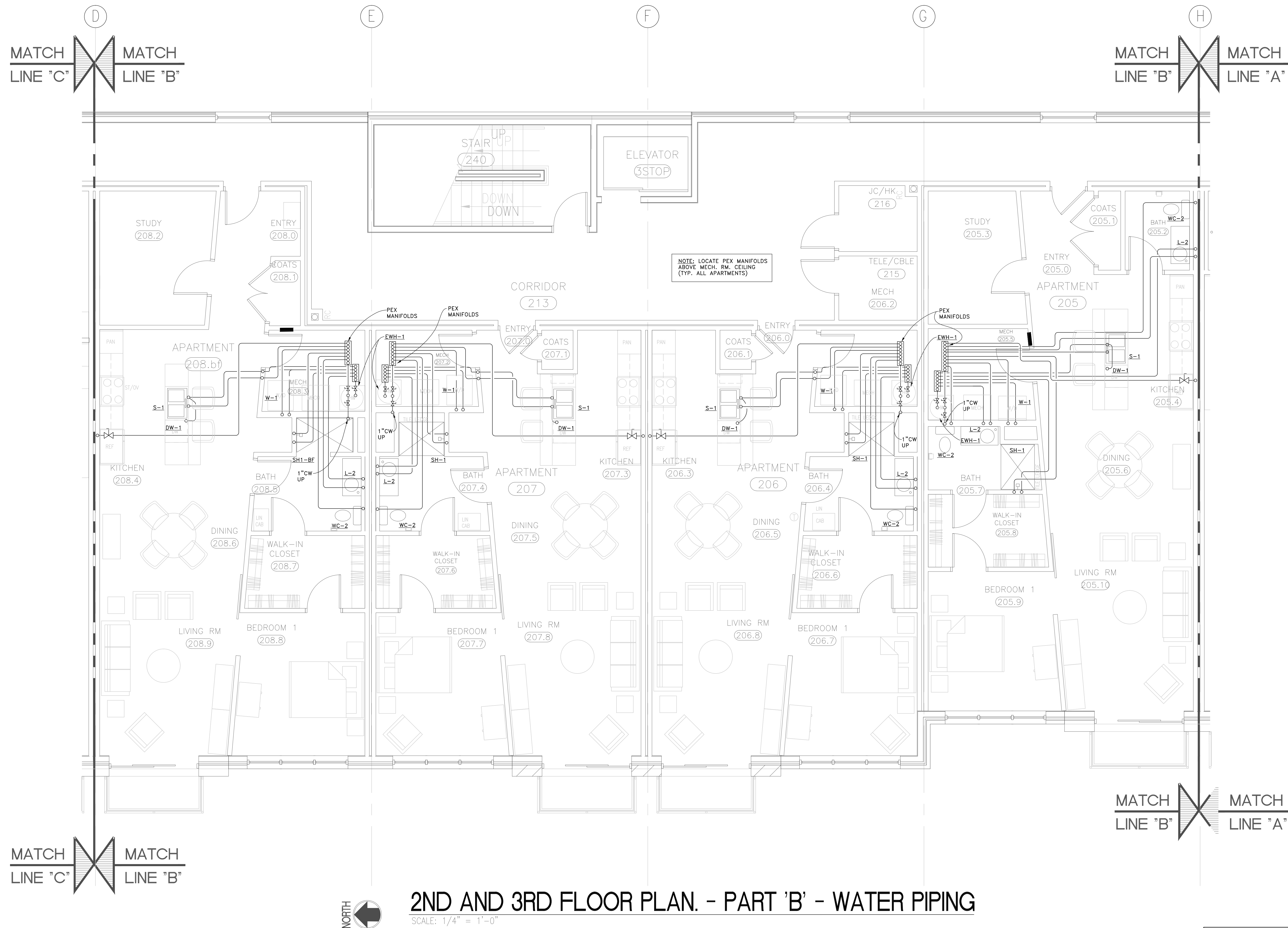


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**P1.7**



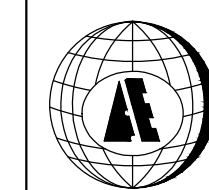


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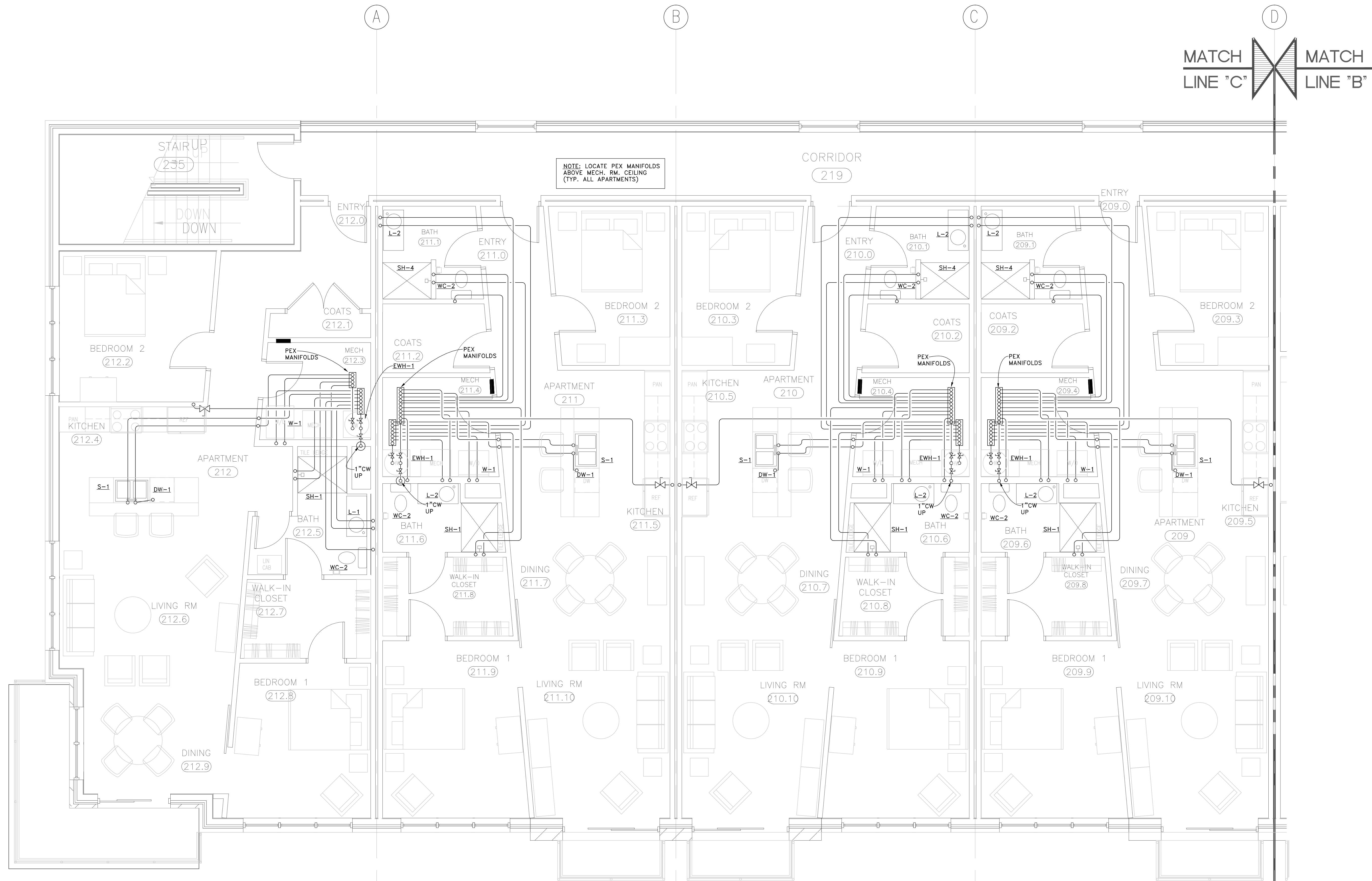
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Engineering LLC  
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## 2ND AND 3RD FLOOR PLAN. - PART 'C' - WATER PIPING

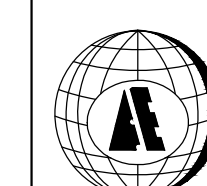
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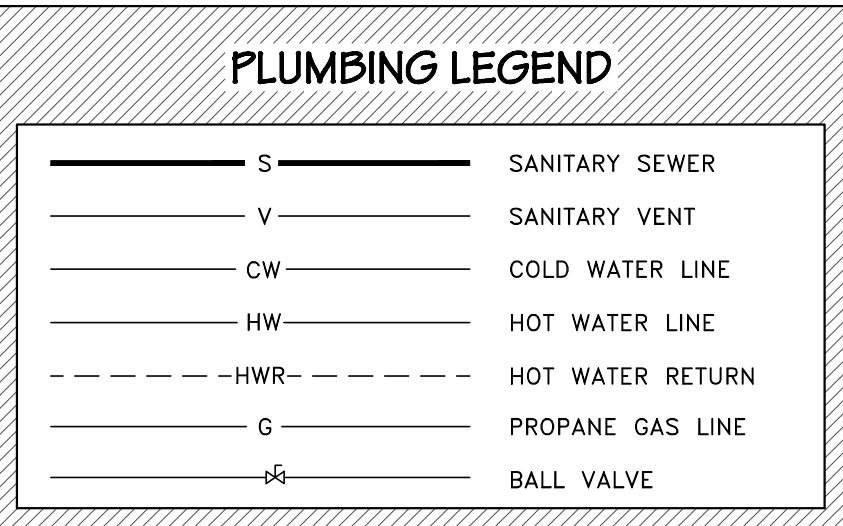
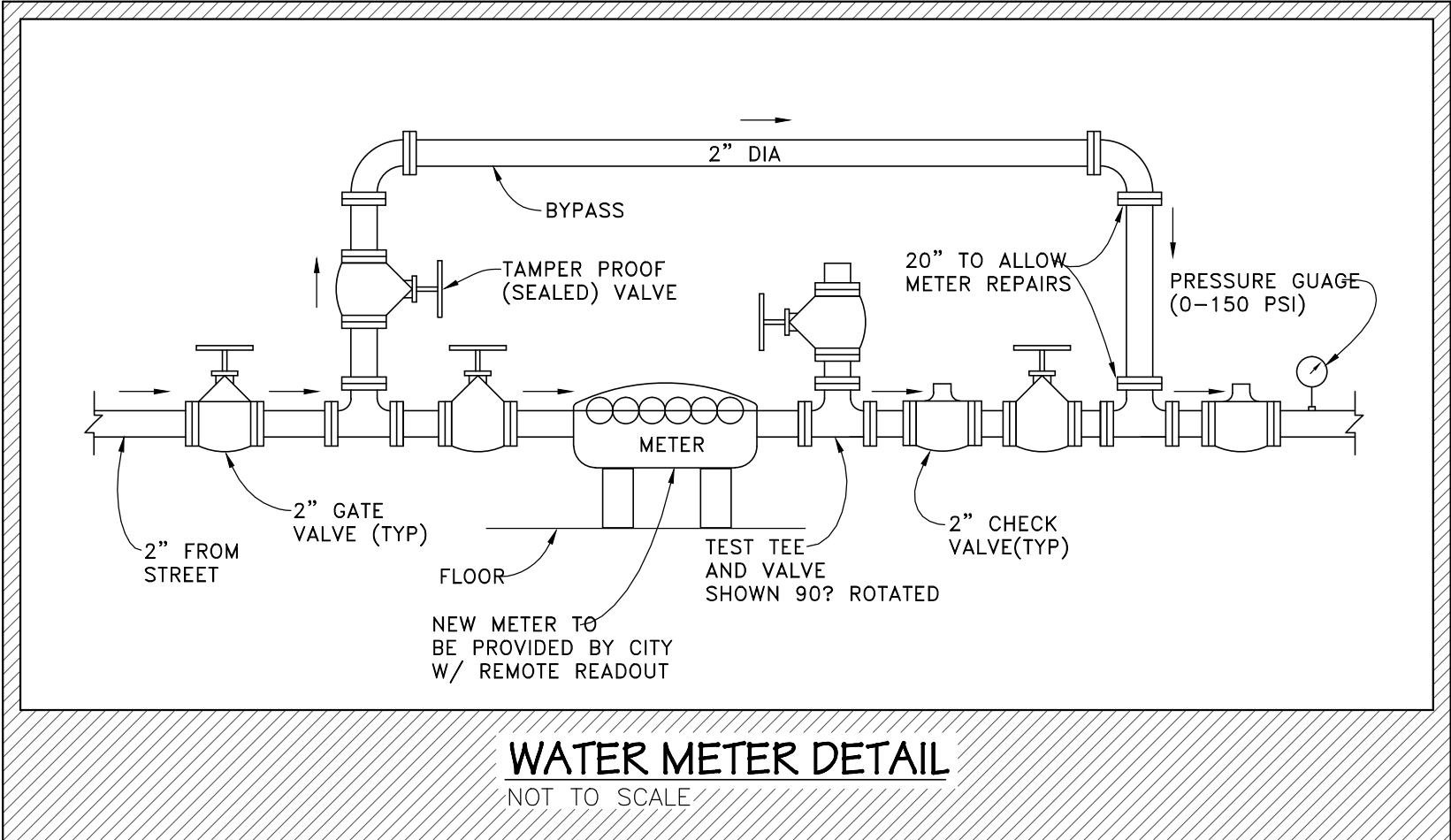
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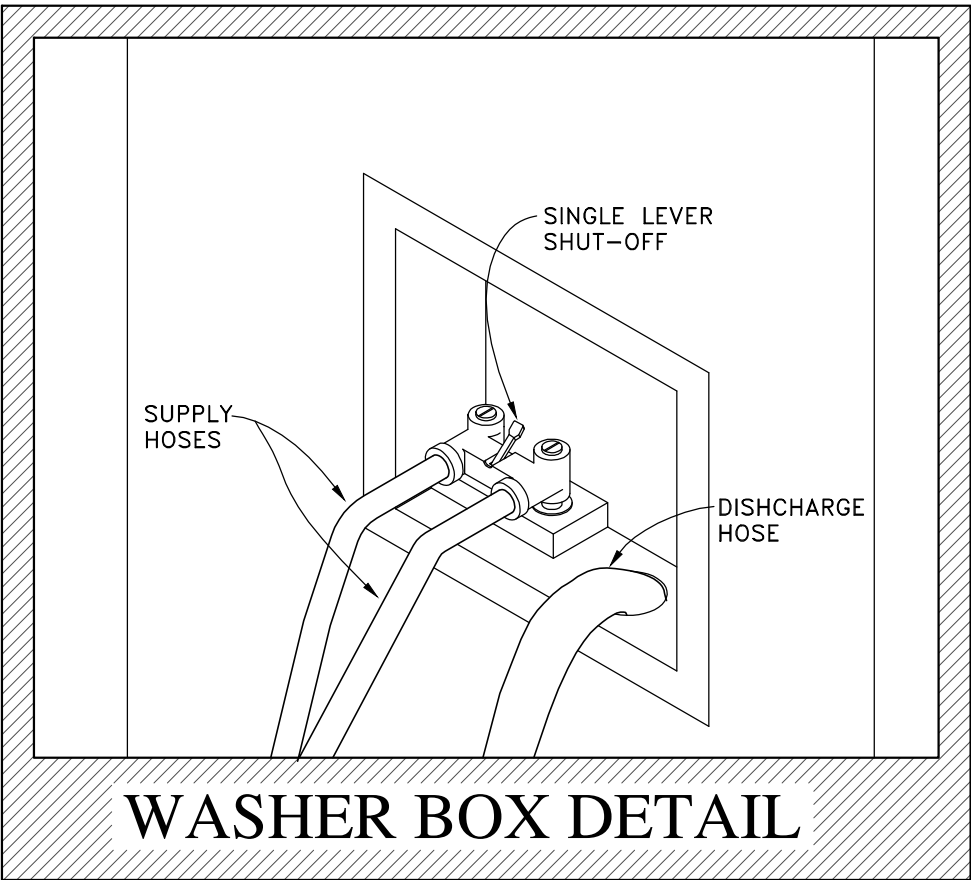
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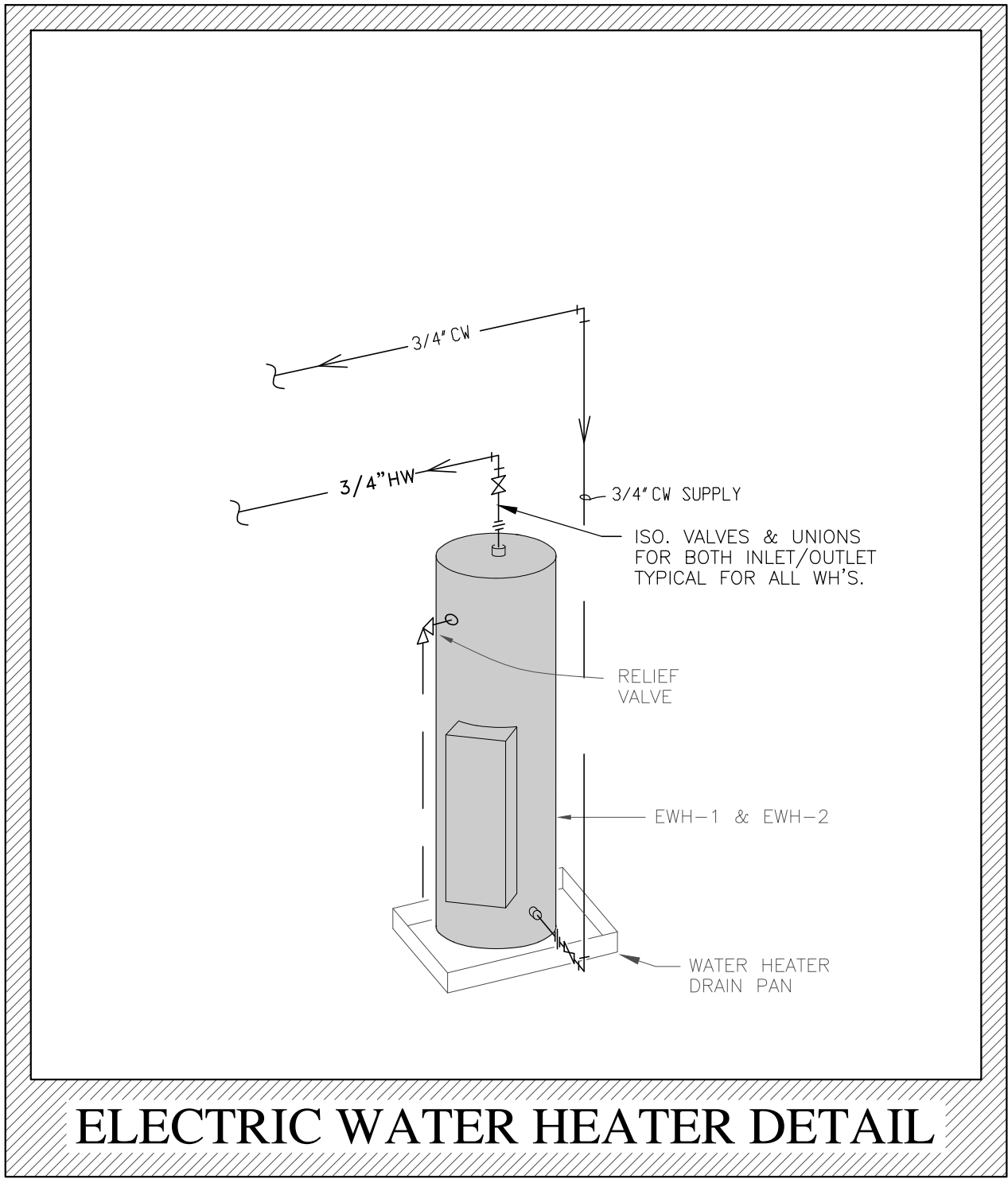
PLUMBING FIXTURE SCHEDULE							
MARK	FIXTURE	MANU.	MODEL	SAN.	HOT	COLD	REMARKS
WC-1	WATER CLOSET	KOHLER	K-3531-0	3"	-	3/4"	17" HEIGHT, W/ KOHLER #K-4731-C-0
WC-2	WATER CLOSET	KOHLER	K-3723-0	3"	-	3/4"	16" HEIGHT, W/ KOHLER #4664-0
L-1	LAVATORY	KOHLER	K-2005	1 1/2"	1/2"	1/2"	W/ SYMMONS #SLS-3510 FAUCET, NO POP-UP DRAIN, SEE NOTES #3 & #4
L-2	LAVATORY	IKEA	901-873.57	1 1/2"	1/2"	1/2"	W/ SYMMONS #SLS-3510 FAUCET, W/ POP-UP DRAIN, SEE NOTES #3 & #4
L-3	LAVATORY	IKEA	801.483.28	1 1/2"	1/2"	1/2"	W/ SYMMONS #SLS-3510 FAUCET, W/ POP-UP DRAIN, SEE NOTES #3 & #4
S-1	SINK	KOHLER	K-3822-1	1 1/2"	1/2"	1/2"	W/ DELTA 1159LF-AR
SH-1	SHOWER	AKER	SP-3648	1 1/2"	1/2"	1/2"	W/ SYMMONS 3501-CYL-B SHOWER HEAD AND VALVE
SH-1F	SHOWER	AM. STD.	6032SF.LDF	1 1/2"	1/2"	1/2"	W/ SYMMONS 3503-H321-V-CYL-B HAND HELD SHOWER, VALVE, AND BAR
SH-2	SHOWER	AKER	SHLS/RS-48	1 1/2"	1/2"	1/2"	W/ SYMMONS 3501-CYL-B SHOWER HEAD AND VALVE
SH-3	SHOWER	AKER	SP-3660-141074 (FAN)	1 1/2"	1/2"	1/2"	W/ SYMMONS 3501-CYL-B SHOWER HEAD AND VALVE
SH-4	SHOWER	AKER	SHLS/RS-48	1 1/2"	1/2"	1/2"	W/ SYMMONS 3501-CYL-B SHOWER HEAD AND VALVE
EWG-1	ELECTRIC WATER COOLER	ELKAY	EZSTL8LC	1 1/2"	-	1/2"	DUAL UNIT, ONE AT ADA HEIGHT, THE OTHER AT STANDARD HEIGHT
W-1	WASHER	BY OTHERS	-	1 1/2"	1/2"	1/2"	-
EWH-1	ELECTRIC WATER HEATER	AO SMITH	ECT-52	-	3/4"	3/4"	50 GAL., 4.5KW, 208V-1Ø
EWH-2	ELECTRIC WATER HEATER	AO SMITH	EFC-10	-	3/4"	3/4"	10 GAL., 1650W, 120V-1Ø
FD-1	FLOOR DRAIN	ZURN	ZA-415-58	3"	-	-	WITH TYPE "B" SQUARE STRAINER, NICKEL BRONZE TOP, SEE NOTE #5
RD-1	ROOF DRAIN	ZURN	Z-105-C	3"	-	-	W/ UNDERDECK CLAMP
HB-1	HOSE BIB	WOODFORD	MODEL 65	-	-	3/4"	FREEZELESS WITH VACUUM BREAKER
OI-1	FLOOR DRAIN	ZURN	Z-1186-800	3"	-	-	SIZE 800
GD-1	GARBAGE DISPOSAL	INSINKERATOR	EVOLUTION ESSENTIAL	2"	-	-	3/4 HP, 120V
NOTES: 1. SEE ARCHITECTURAL DRAWINGS FOR ALL ROUGH-IN LOCATIONS OF PLUMBING FIXTURES. 2. VERIFY COLOR WITH ARCHITECT BEFORE ORDERING. 3. INSULATE ALL EXPOSED SANITARY AND DOMESTIC HOT AND COLD WATER PIPING TO LAVATORIES. 4. PROVIDE A POWERS 480 MIXING VALVE AT EACH LAV. 5. PROVIDE A 1/2" TRAP PRIMER TO FLOOR DRAIN FROM NEAREST SINK DRAIN, OR THROUGH A ZURN Z1022 TRAP PRIMER VALVE CONNECTED TO NEAREST WATER LINE.							



DOMESTIC WATER PIPING/TUBING SIZING CHART			
NOMINAL SIZE	COPPER PIPE FLOW RANGE (GPM)	STEEL TUBING FLOW RANGE (GPM)	PEX TUBING FLOW RANGE (GPM)
1/2"	0.5-4.0	0.5-5.0	0.5-2.0
3/4"	5.0-8.0	6.0-9.0	2.1-6.5
1"	9.0-16.0	10.0-16.0	6.6-11.0
1 1/4"	17.0-22.0	17.0-28.0	12.0-19.0
1 1/2"	23.0-32.0	29.0-40.0	20.0-31.0
2"	33.0-60.0	41.0-62.0	32.0-48.0
2 1/2"	61.0-95.0	63.0-90.0	N/A
3"	96.0-140.0	91.0-150.0	N/A
4"	N/A	151.0-250.0	N/A
5"	N/A	251.0-400.0	N/A
6"	N/A	401.0-550.0	N/A
8"	N/A	551.0-900.0	N/A
NOTES: 1. FLOWS ARE GIVEN TO MAINTAIN SIMILAR VELOCITIES IN PIPING/TUBING. 2. HANGER SPACING REQUIREMENTS FOR METAL PIPING AND PLASTIC PIPING SHOULD BE DETERMINED TO ASSURE PROPER INSTALLATION.			



PLUMBING NOTES	
GENERAL NOTES	PLUMBING CONSTRUCTION NOTES
1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE AND LOCAL CODES AND REGULATIONS.	<b>GENERAL</b> 1. REFERENCE ARCHITECTURAL DRAWINGS FOR ALL ROUGH-IN DIMENSIONS, <u>BOTH FIXTURES AND WALLS</u> . 2. ALL VALVES SHALL BE ACCESSIBLE. 3. WATER HAMMER ARRESTORS SHALL BE INSTALLED AND SHALL BE ACCESSIBLE. 4. PLUMBING CONTRACTOR TO EXTEND WATER AND SANITARY LINES AND MAKE UTILITY CONNECTIONS.
2. EACH CONTRACTOR SHALL BE THOROUGHLY KNOWLEDGEABLE OF REGULATIONS GOVERNING HIS PRODUCT AND SERVICE AND SHALL ASSUME RESPONSIBILITY OF INSTALLATION IN ACCORDANCE WITH THOSE REGULATIONS.	<b>SPECIFICATIONS</b> 1. PLUMBING DESIGN PER 2009 MICHIGAN PLUMBING CODES.
3. CONTRACTORS TO VERIFY ALL DIMENSIONS RELATIVE TO THEIR SPECIFIC WORK AND SHALL BE THOROUGHLY FAMILIAR WITH EXISTING CONDITIONS PRIOR TO INITIATING THEIR WORK. DISCREPANCIES SHALL BE REPORTED TO THE GENERAL CONTRACTOR OR TO HIS ON-SITE REPRESENTATIVE.	
4. FAILURE TO DETECT INFERIOR WORK, OR WORK NOT IN ACCORDANCE WITH THESE CONSTRUCTION DOCUMENTS, SHALL NOT BE CONSTRUED AS ACCEPTABLE OF SUCH WORK.	
5. ANY PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES FOR MECHANICAL OR PLUMBING SYSTEMS, ETC. SHALL BE FIRE-STOPPED AND DRAFT-STOPPED WITH NON-COMBUSTIBLE MATERIALS PER CODE REQUIREMENTS TO MAINTAIN STRUCTURAL AND FIRE RESISTIVE INTEGRITY.	
6. DRAWINGS ARE DIAGRAMMATIC ONLY, FIELD VERIFY EXISTING CONDITIONS.	
7. PRIOR TO SUBMITTING A PROPOSAL, BIDDER SHALL HAVE VISITED THE CONSTRUCTION SITE. HE SHALL BE FAMILIAR WITH THE EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE, AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OF NEGLIGENCE ON HIS PART.	
8. PLUMBING CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL FEES, INCLUDING COSTS ASSESSED BY THE MECHANICAL UTILITY COMPANIES, AND ARRANGE FOR ALL INSPECTIONS FOR HIS WORK. AT THE COMPLETION OF PLUMBING WORK, THE PLUMBING CONTRACTOR SHALL FURNISH THE OWNER WITH ALL CERTIFICATES OF FINAL INSPECTION AND APPROVALS.	
9. PLUMBING CONTRACTOR SHALL GUARANTEE ALL WORK INSTALLED UNDER HIS CONTRACT TO BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER THE ACCEPTANCE OF THE BUILDING BY THE OWNER. SHOULD DEFECTS OCCUR WITHIN THIS PERIOD, REPAIR AND/OR REPLACE DEFECTIVE ITEMS AT NO EXPENSE TO THE OWNER.	
10. PLUMBING CONTRACTOR SHALL COORDINATE LOCATIONS OF HIS EQUIPMENT AND WORK WITH OTHER BUILDING TRADES TO AVOID ANY INTERFERENCE'S BETWEEN HIS WORK AND OTHER BUILDING TRADES. IF ANY DISCREPANCIES OCCUR, CONSULT WITH THE GENERAL CONTRACTOR OR HIS ON-SITE REPRESENTATIVE.	
11. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING, PAINTING AND/OR OTHER REPAIR DUE TO THE INSTALLATION OF MECHANICAL WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, ETC. AS REQUIRED.	
12. THE CONTRACTOR SHALL EMPLOY QUALIFIED AND EXPERIENCED WORKMEN FOR THIS WORK.	
13. THE PLUMBING CONTRACTOR SHALL PERIODICALLY REMOVE FROM THE SITE ALL DEBRIS AND RUBBISH ACCUMULATING AS A RESULT OF THE MECHANICAL INSTALLATION. UPON COMPLETION OF THE PROJECT, HE SHALL DISPOSE OF ALL DEBRIS AND RUBBISH AND SHALL LEAVE ALL AREAS CLEAN.	
14. ALL PLUMBING LINES TO BE INCORPORATED IN TGI'S OR HELD TIGHT TO DECK.	



GENERAL NOTES

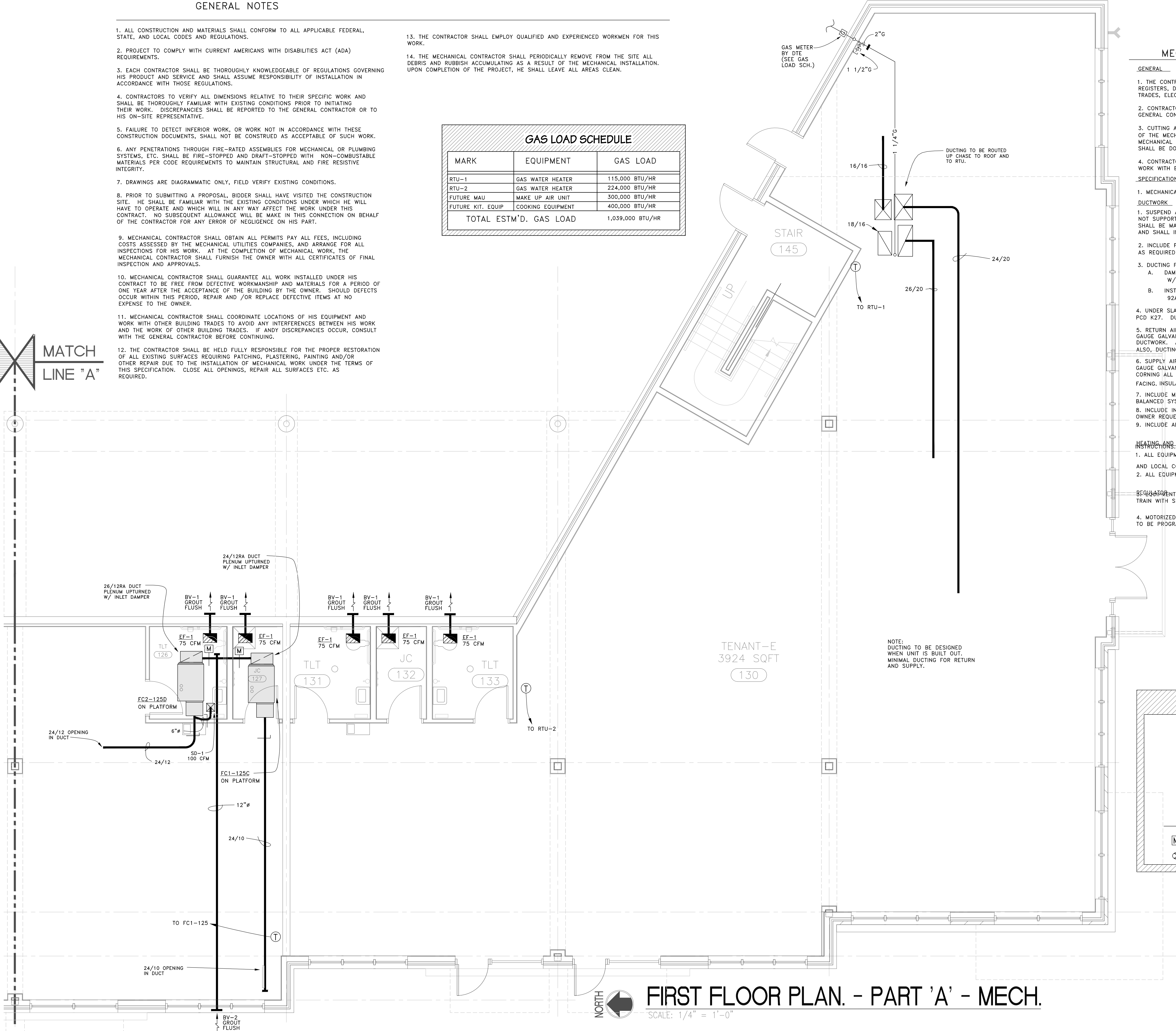
1. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.
2. PROJECT TO COMPLY WITH CURRENT AMERICANS WITH DISABILITIES ACT (ADA) REQUIREMENTS.
3. EACH CONTRACTOR SHALL BE THOROUGHLY KNOWLEDGEABLE OF REGULATIONS GOVERNING HIS PRODUCT AND SERVICE AND SHALL ASSUME RESPONSIBILITY OF INSTALLATION IN ACCORDANCE WITH THOSE REGULATIONS.
4. CONTRACTORS TO VERIFY ALL DIMENSIONS RELATIVE TO THEIR SPECIFIC WORK AND SHALL BE THOROUGHLY FAMILIAR WITH EXISTING CONDITIONS PRIOR TO INITIATING THEIR WORK. DISCREPANCIES SHALL BE REPORTED TO THE GENERAL CONTRACTOR OR TO HIS ON-SITE REPRESENTATIVE.
5. FAILURE TO DETECT INFERIOR WORK, OR WORK NOT IN ACCORDANCE WITH THESE CONSTRUCTION DOCUMENTS, SHALL NOT BE CONSTRUED AS ACCEPTABLE OF SUCH WORK.
6. ANY PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES FOR MECHANICAL OR PLUMBING SYSTEMS, ETC. SHALL BE FIRE-STOPPED AND DRAFT-STOPPED WITH NON-COMBUSTABLE MATERIALS PER CODE REQUIREMENTS TO MAINTAIN STRUCTURAL AND FIRE RESISTIVE INTEGRITY.
7. DRAWINGS ARE DIAGRAMMATIC ONLY, FIELD VERIFY EXISTING CONDITIONS.
8. PRIOR TO SUBMITTING A PROPOSAL, BIDDER SHALL HAVE VISITED THE CONSTRUCTION SITE. HE SHALL BE FAMILIAR WITH THE EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANY WAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MAKE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OF NEGLIGENCE ON HIS PART.
9. MECHANICAL CONTRACTOR SHALL OBTAIN ALL PERMITS PAY ALL FEES, INCLUDING COSTS ASSESSED BY THE MECHANICAL UTILITIES COMPANIES, AND ARRANGE FOR ALL INSPECTIONS FOR HIS WORK. AT THE COMPLETION OF MECHANICAL WORK, THE MECHANICAL CONTRACTOR SHALL FURNISH THE OWNER WITH ALL CERTIFICATES OF FINAL INSPECTION AND APPROVALS.
10. MECHANICAL CONTRACTOR SHALL GUARANTEE ALL WORK INSTALLED UNDER HIS CONTRACT TO BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER THE ACCEPTANCE OF THE BUILDING BY THE OWNER. SHOULD DEFECTS OCCUR WITHIN THIS PERIOD, REPAIR AND /OR REPLACE DEFECTIVE ITEMS AT NO EXPENSE TO THE OWNER.
11. MECHANICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF HIS EQUIPMENT AND WORK WITH OTHER BUILDING TRADES TO AVOID ANY INTERFERENCES BETWEEN HIS WORK AND THE WORK OF OTHER BUILDING TRADES. IF ANDY DISCREPANCIES OCCUR, CONSULT WITH THE GENERAL CONTRACTOR BEFORE CONTINUING.
12. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING, PAINTING AND/OR OTHER REPAIR DUE TO THE INSTALLATION OF MECHANICAL WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES ETC. AS REQUIRED.

13. THE CONTRACTOR SHALL EMPLOY QUALIFIED AND EXPERIENCED WORKMEN FOR THIS WORK.
14. THE MECHANICAL CONTRACTOR SHALL PERIODICALLY REMOVE FROM THE SITE ALL DEBRIS AND RUBBISH ACCUMULATING AS A RESULT OF THE MECHANICAL INSTALLATION. UPON COMPLETION OF THE PROJECT, HE SHALL LEAVE ALL AREAS CLEAN.

GAS LOAD SCHEDULE		
MARK	EQUIPMENT	GAS LOAD
RTU-1	GAS WATER HEATER	115,000 BTU/HR
RTU-2	GAS WATER HEATER	224,000 BTU/HR
FUTURE MAU	MAKE UP AIR UNIT	300,000 BTU/HR
FUTURE KIT. EQUIP	COOKING EQUIPMENT	400,000 BTU/HR
TOTAL ESTM'D. GAS LOAD		1,039,000 BTU/HR

MATCH  
LINE "B"

MATCH  
LINE "A"



MECHANICAL CONSTRUCTION NOTES

GENERAL

1. THE CONTRACTOR SHALL CAREFULLY COORDINATE LOCATIONS OF DUCTS, REGISTERS, DIFFUSERS, AND GRILLES WITH STRUCTURAL FRAMING, ARCH TRADES, ELECTRICAL TRADES AND PLUMBING TRADES.
2. CONTRACTOR SHALL FURNISH COMPLETE AIR BALANCING REPORT TO THE GENERAL CONTRACTOR.
3. CUTTING AND/OR PATCHING THAT MAY BE REQUIRED FOR THE INSTALLATION OF THE MECHANICAL SYSTEM(S) SHALL BE DONE AND/OR REPAIRED BY THE MECHANICAL CONTRACTOR. NO CUTTING OF THE BUILDING STRUCTURAL SYSTEM SHALL BE DONE WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT.
4. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND SHALL WORK WITH EXISTING SYSTEMS IN AN "AS FOUND" CONDITION.

SPECIFICATIONS

1. MECHANICAL DESIGN PER 2009 MICHIGAN MECHANICAL CODE & SPECS. 15000.
- DUCTWORK
1. SUSPEND ALL DUCTS SECURELY FROM ADJACENT BUILDING MEMBERS. DO NOT SUPPORT DUCTS FROM UNIT DUCT CONNECTORS. DUCT CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND SHALL INCLUDE FLEXIBLE DUCT CONNECTORS.
2. INCLUDE FIRE DAMPERS AT ALL WALL, CEILING OR FLOOR PENETRATIONS AS REQUIRED BY CODE. (SEE ARCH. DRAWINGS FOR FIRE RATED ASSEMBLIES.)
3. DUCTING FIRE DAMPERS: (PROVIDED BY M.C.)

A. DAMPERS BASED ON "RUSKIN", MODEL #D-IBD2, SIZED PER DUCT, W/FUSIBLE LINK (165°F).

B. INSTALLATION MUST COMPLY WITH THE REQUIREMENTS OF NFPA-90A, 92A AND THE STATE FIRE MARSHALL.
4. UNDER SLAB DUCT WORK TO BE EQUAL TO UNITED MCGILL UNI-COAT. PCD K27. DUCTING TO BE SEALED WATER TIGHT AS INSTRUCTED BY MANUF.
5. RETURN AIR DUCTWORK SHALL BE CONSTRUCTED AS PER SMACNA STANDARDS GAUGE GALVANIZED STEEL. NO INSULATION REQD. EXCEPT FOR ATTIC DUCTWORK. ALL RA & EA DUCT IN ATTIC TO HAVE MIN 1 1/2" INSULATION. ALSO, DUCTING TO BE LOCATED BELOW ATTIC INSULATION.
6. SUPPLY AIR DUCTWORK SHALL BE CONSTRUCTED AS PER SMACNA STANDARDS GAUGE GALVANIZED STEEL, WITH MINIMUM 1-1/2" INSULATION EQUAL TO OWENS CORNING ALL SERVICE DUCT WRAP TYPE 100 WITH FRK VAPOR BARRIER FACING. INSULATED FLEXIBLE DUCT MAY BE USED FOR ALL SHORT AIR DUCT RUNS.
7. INCLUDE MANUAL BALANCING DAMPERS AS REQUIRED FOR A COMPLETE AIR BALANCED SYSTEM.
8. INCLUDE INSULATION ON UNDERGROUND DUCTING ONLY IF CODE REQUIRES OR OWNER REQUESTS.
9. INCLUDE ALL CODE REQUIRED ITEMS FOR DRIER EXHAUST INSTALLATION.

HEATING AND COOLING EQUIPMENT

1. ALL EQUIPMENT SHALL BE INSTALLED TO MANUFACTURER'S INSTALLATION AND LOCAL CODES.
2. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO APPLICABLE STATE

REGULATIONS

EQUIPMENT INSTALLATION SHALL BE COMPLETE AND INCLUDE COMPLETE GAS TRAIN WITH SHUT OFF COCKS, SEDIMENT TRAP, AND GAS PRESSURE

4. MOTORIZED OA DAMPER TO BE CONTROLLED BY DIGITAL TIME CLOCK. TO BE PROGRAMMED FOR OCC/UNOCC. TIMES.

MECHANICAL LEGEND

RTU	ROOF TOP UNIT
FC	FAN COIL
HP	HEAT PUMP UNIT (AIR/AIR)
EF	EXHAUST FAN
S.A.	SUPPLY AIR
R.A.	RETURN AIR
O.A.	OUTDOOR AIR
E.A.	EXHAUST AIR
BV/L	BRICK VENT/ LOUVER
Ⓢ	ZONE THERMOSTAT
M	BALANCE DAMPER W/LOCKING QUADRANT
Ⓢ	MOTORIZED DAMPER (24VAC)
Ⓢ	FIRE DAMPER.

FIRST FLOOR PLAN. - PART 'A' - MECH.

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

2012 PROJECT FOR:

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BAY CITY, MI

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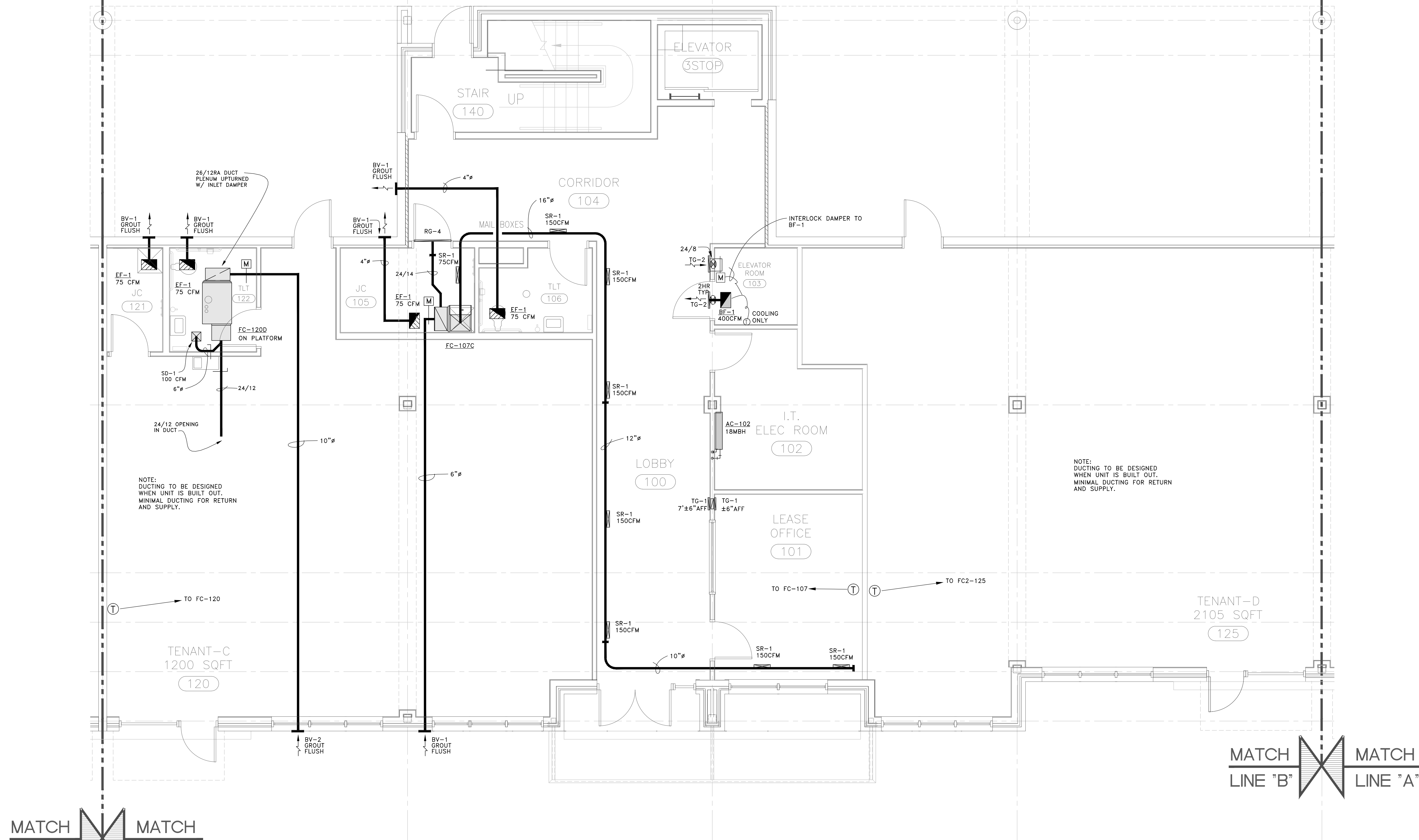


MATCH  
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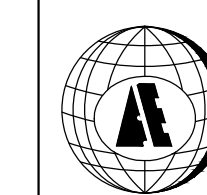
MATCH  
LINE "B"

MATCH  
LINE "A"



# FIRST FLOOR PLAN. - PART 'B' - MECH

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



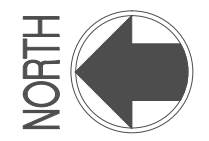
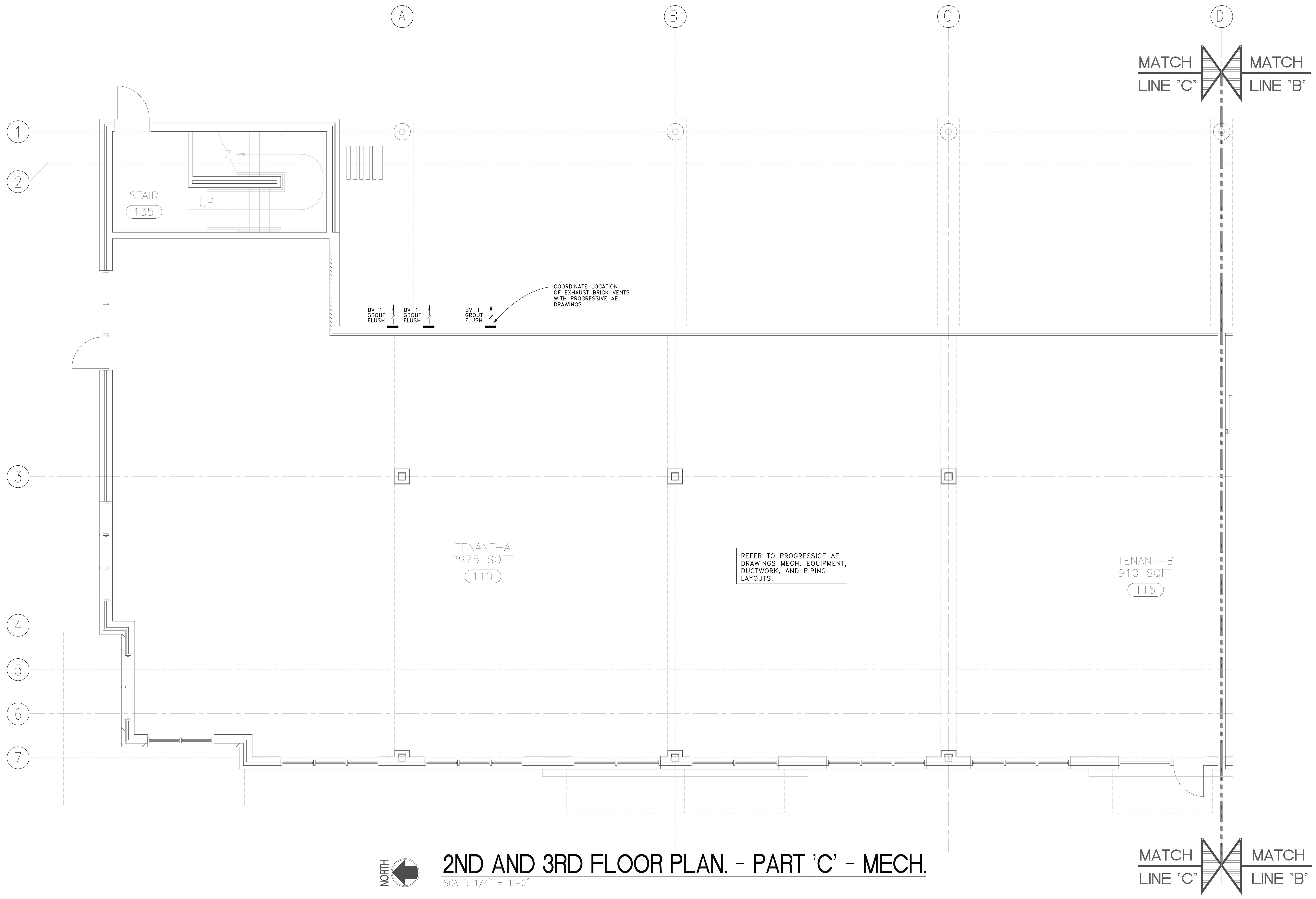
Apollo  
Engineering LLC

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

2012 PROJECT FOR:  
MILL END LOFTS  
BAY CITY, MI

JOB NUMBER  
E11-520

PROJECT# 1210-03  
DRAWING  
M1.2



**2ND AND 3RD FLOOR PLAN. - PART 'C' - MECH.**  
SCALE: 1/4" = 1'-0"

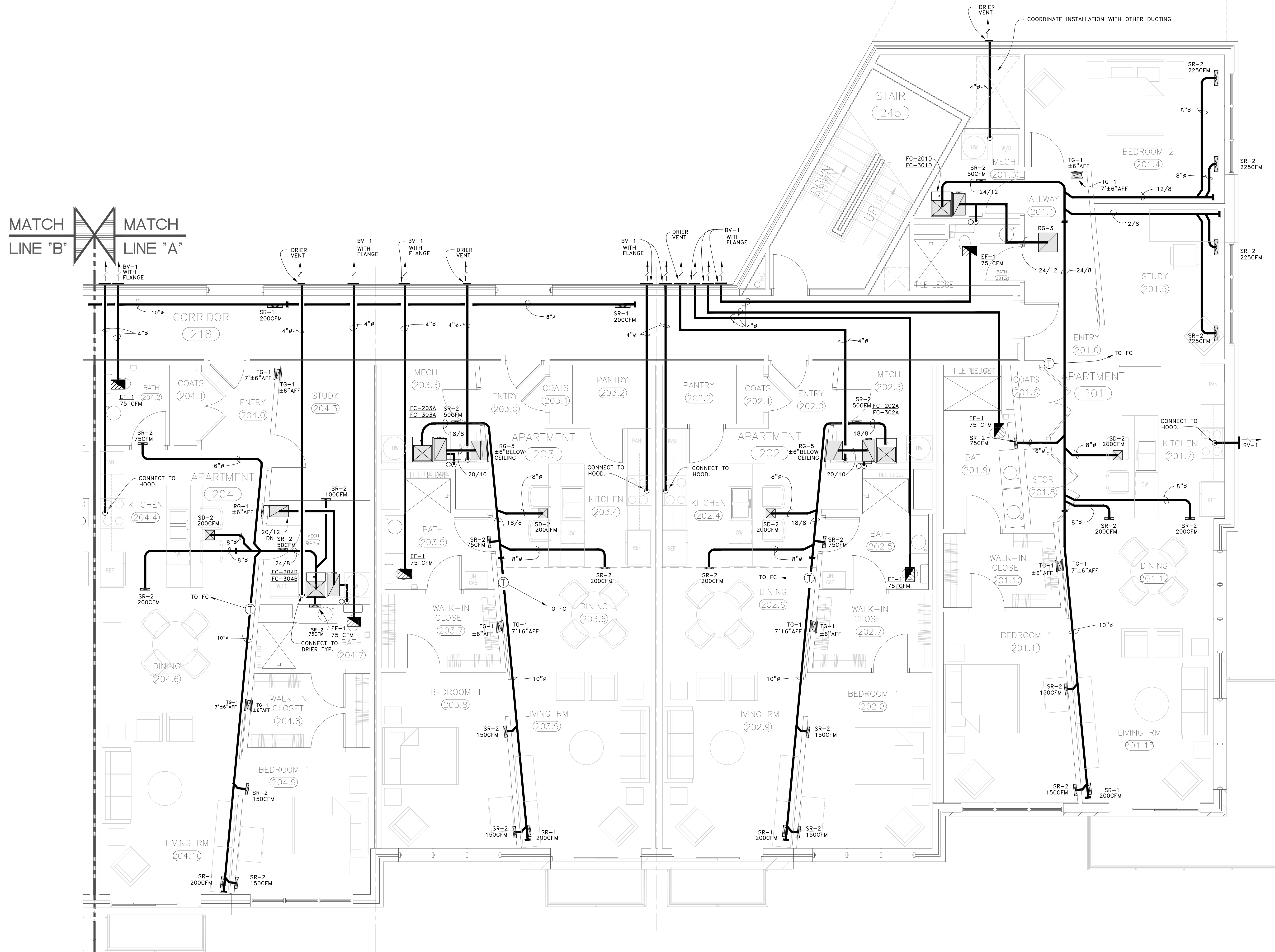
2012 PROJECT FOR:  
**MILL END LOFTS**  
BAY CITY, MI  
JOB NUMBER  
**E11-520**



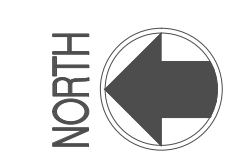
**Apollo Engineering LLC**  
E-Mail: apollo\_mi\_eng@yahoo.com  
8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

PROJECT# 1210-03  
DRAWING  
**M1.3**

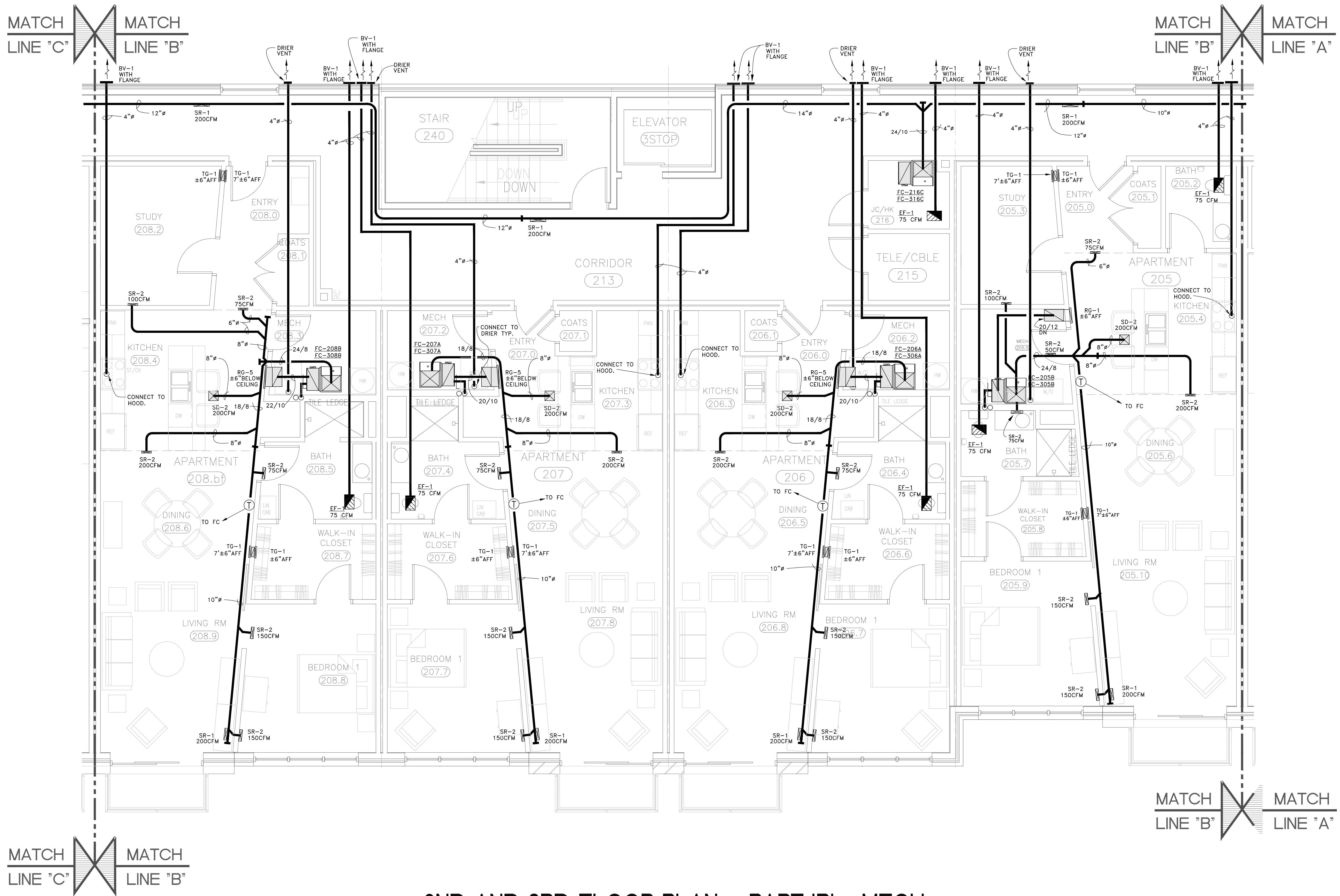




MATCH LINE "B" MATCH LINE "A"



2ND AND 3RD FLOOR PLAN. - PART 'A' - MECH.  
SCALE: 1/4" = 1'-0"



2ND AND 3RD FLOOR PLAN. - PART 'B' - MECH.  
SCALE: 1/4" = 1'-0"

2012 PROJECT FOR:  
MILL END LOFTS  
BAY CITY, MI

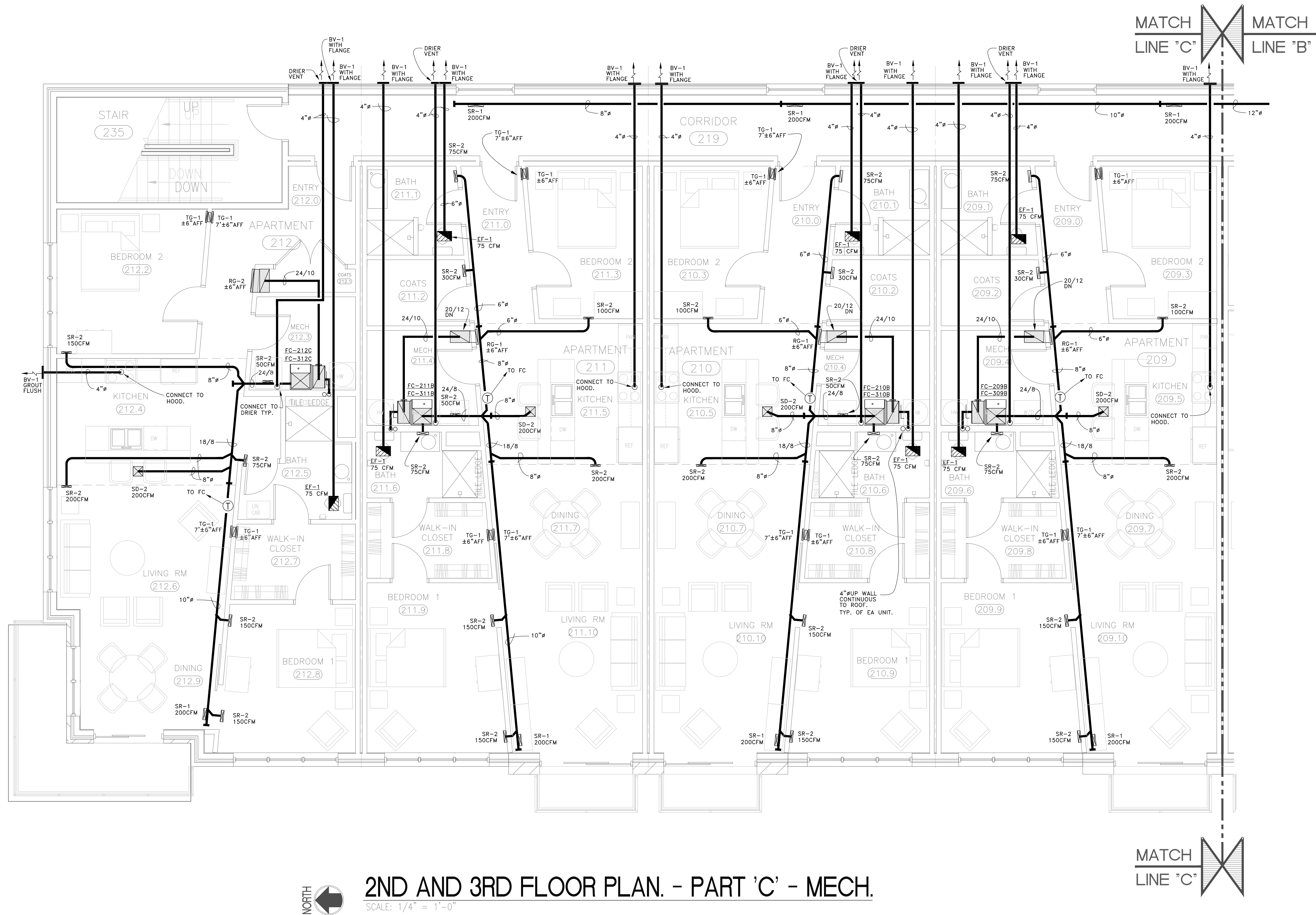
JOB NUMBER  
E11-520



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Engineering LLC  
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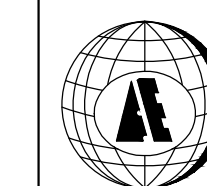
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(231) 932-0800 office

PROJECT# 1210-03  
DRAWING  
M1.5



# 2ND AND 3RD FLOOR PLAN. - PART 'C' - MECH.

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



**Apollo Engineering LLC**  
E-Mail: apollo\_m\_eng@yahoo.com

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

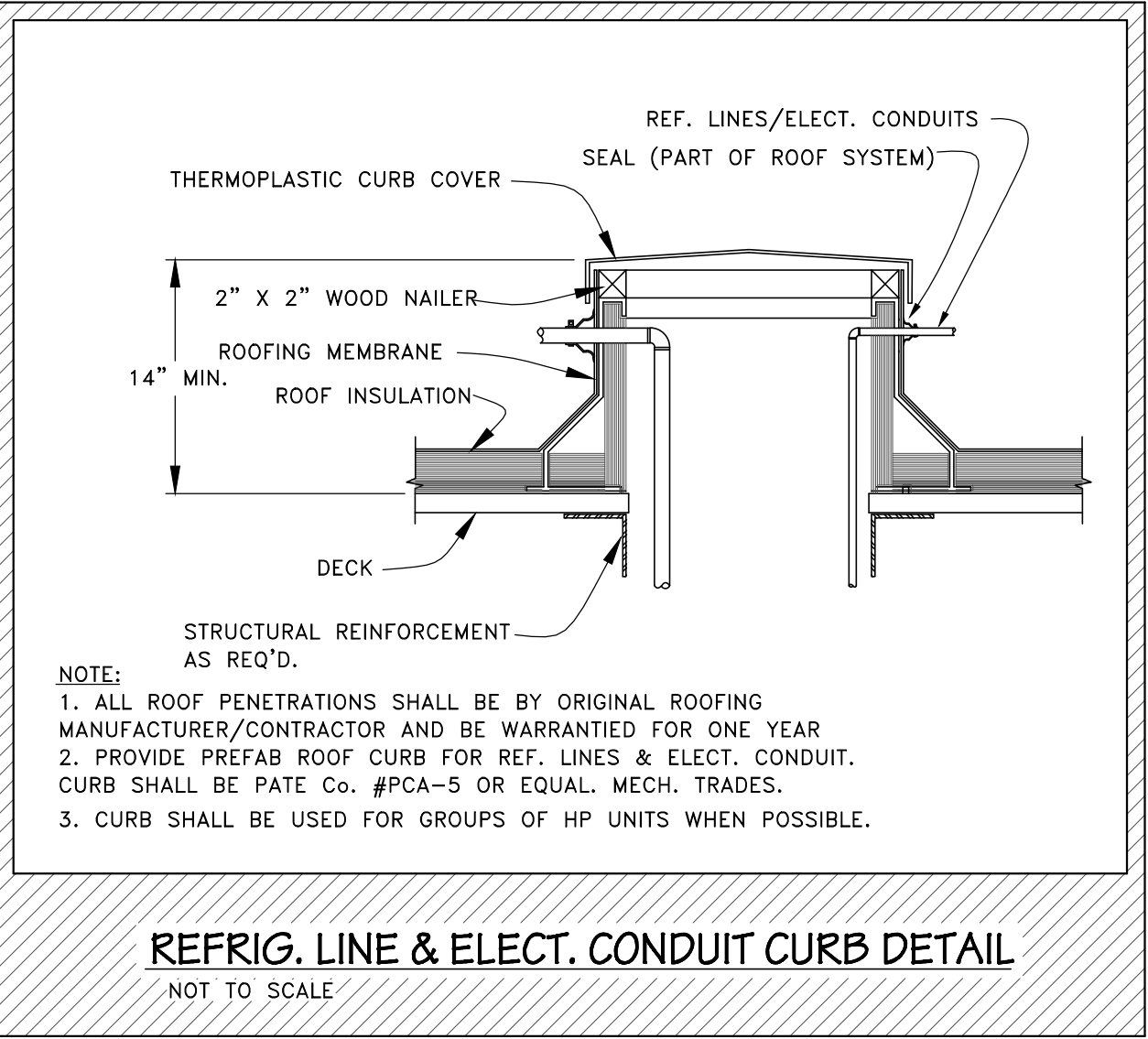
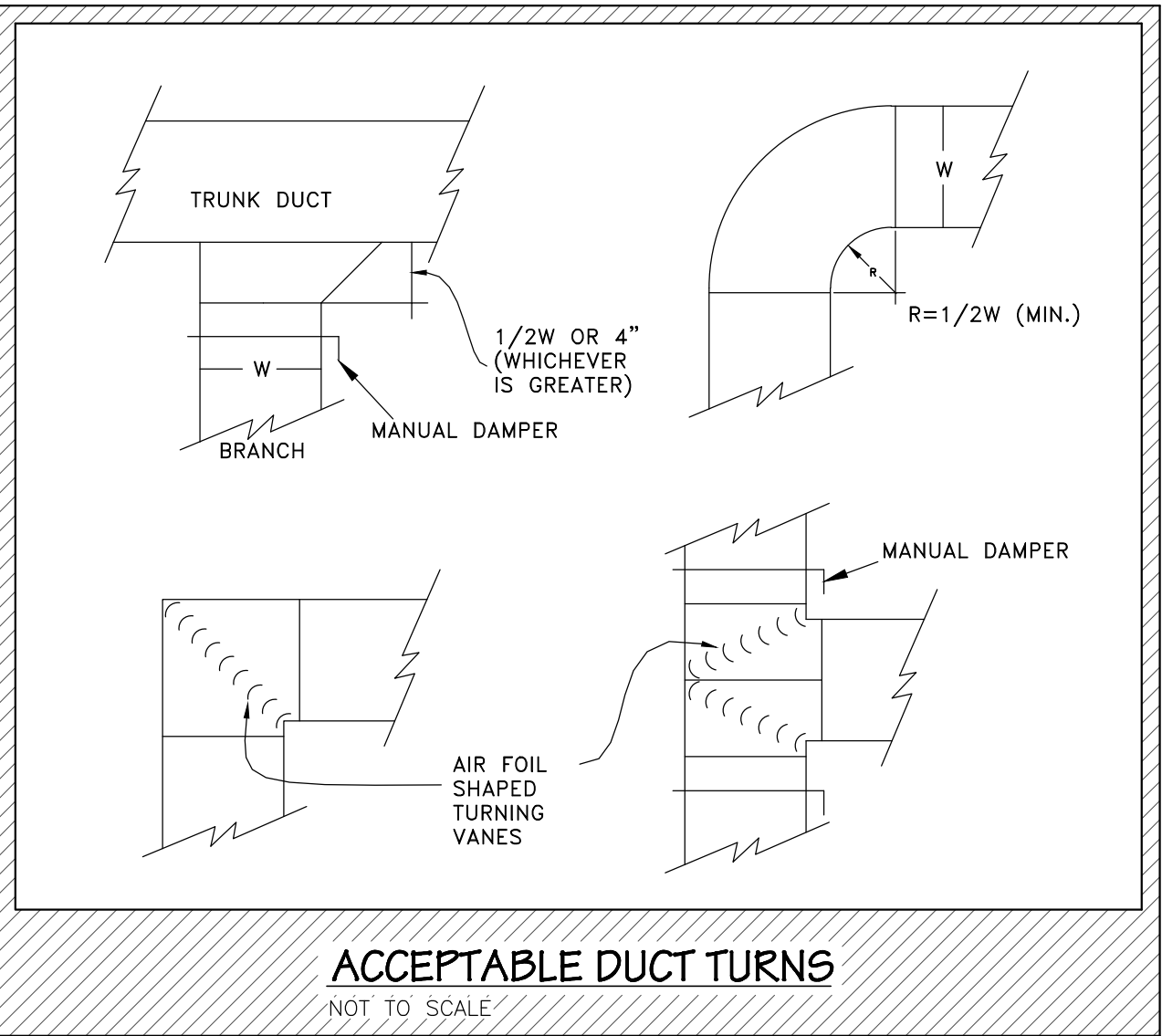
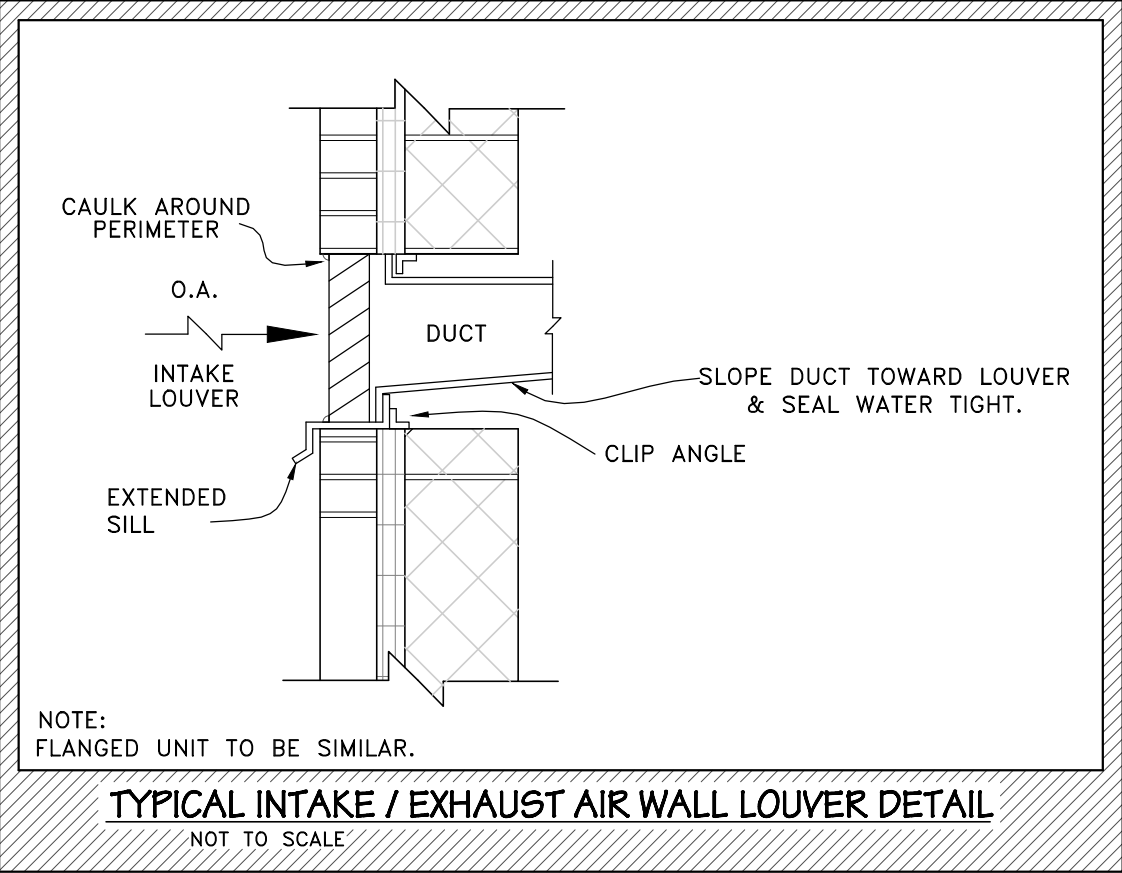
2011-2 PROJECT FOR:  
**MILL END LOFTS**  
BAY CITY, MI

JOB NUMBER  
**E11-520**

PROJECT# 1210-03  
DRAWING  
**M1.6**



ROOF TOP UNIT SCHEDULE													
MARK	MANU.	MODEL No.	HTG.MBH INPUT	HTG.MBH OUTPUT	NOMINAL CLG.MBH	CFM	MIN. O.A.CFM	ESP	SA FAN MOTOR HP	VOLTAGE	MIN. CIR. AMPACITY	MAX. FUSE SIZE	UNIT WEIGHT
RTU-1	CARRIER	48HC-A05A2A5-1F2C0	82/115	66/90	36	1500	300	0.62	1	208v/3ø	25.6	30	590
RTU-2	CARRIER	48HC-D12B2A5-1F2J0	180/224	147/184	120	4000	310	0.62	5	208v/3ø	55.8	60	1099
NOTES: 1. BASED ON, CARRIER, (McQUAY & TRANE MAY BE BID AS EQUAL). 2. PROVIDE ECONOMIZER W/ ENTHALPY SENSOR, 14" ROOF CURB AND AUTO-CHANGE OVER THERMOSTAT. 3. PROVIDE DUCT MOUNTED SMOKE DETECTOR IN R.A. AS REQUIRED BY CODE TO SHUT DOWN UNIT UPON DETECTION OF SMOKE. (2000 CFM OR MORE). 4. HEAT EXCHANGERS TO BE STAINLESS STEEL. 5. UNITS TO HAVE MULTIPLE STAGE HEAT AND COOL (RTU-2 ONLY). RTU-2 TO HAVE 2-SPEED FAN 6. UNITS TO HAVE FUSED DISCONNECT, POWERED GFI SERVICE RECEPTACLE 7. UNITS ARE NATURAL GAS FIRED.													



HEAT PUMP FAN COIL SCHEDULE														
MARK	MANU.	MODEL No.	ORIENTATION	CLG. NOM.	HTG. @0°F HIGH/LOW	HEATING ELEC.	CFM	MAX. O.A.CFM	ESP	VOLTAGE	MIN. CIR. AMPACITY	MAX. FUSE SIZE	WT.	REMARKS
FC-XXXA	CARRIER	FE4ANB003-010	VERT./HORZ	24.0	17.0/10.0	7.5KW	900	65	0.50	208v/1ø	4.3	15 CKT B	150	SEE NOTES.
FC-XXXB	CARRIER	FE5ANB004-015	VERT./HORZ	36.0	20.0/10.0	11.3KW	1100	65	0.50	208v/1ø	4.3	25 CKT B	172	SEE NOTES.
FC-XXXC	CARRIER	FE4ANB006-015	VERT./HORZ	48.0	31.0/19.0	11.3KW	1600	65	0.50	208v/1ø	4.3	25 CKT B	200	SEE NOTES.
FC-XXXD	CARRIER	FE4ANB006-015	VERT./HORZ	60.0	33.0/19.0	11.3KW	1990	65	0.50	208v/1ø	6.8	25 CKT B	207	SEE NOTES.
NOTES:														
1. BASED ON CARRIER. (BRYANT & TRANE, MAY BE BID AS AN EQUAL)														
2. UNITS TO DELIVER NOT LESS THAN 15% CFM LESS THEN STATED VALUES.														
3. UNITS TO HAVE AN ECM FAN MOTOR.														
4. UNITS TO HAVE "INFINITY" CONTROLS.														
5. UNITS TO INTERCONNECT TO ROOF MOUNTED HEAT PUMP UNIT. ELECTRIC HEAT TO BE USED AS BACK UP.														
6. UNITS TO HAVE DUAL STAGE ELECTRIC HEAT. NOTE: TWO POWER SUPPLIES L1,2 AND L3,4. BLOWER FED FROM CIRCUIT "B".														

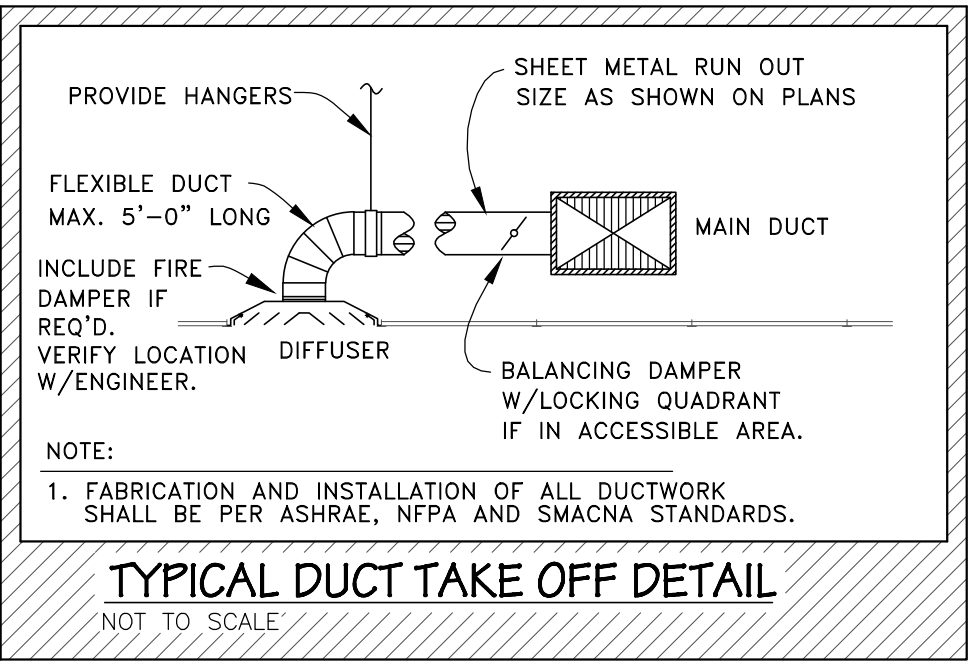
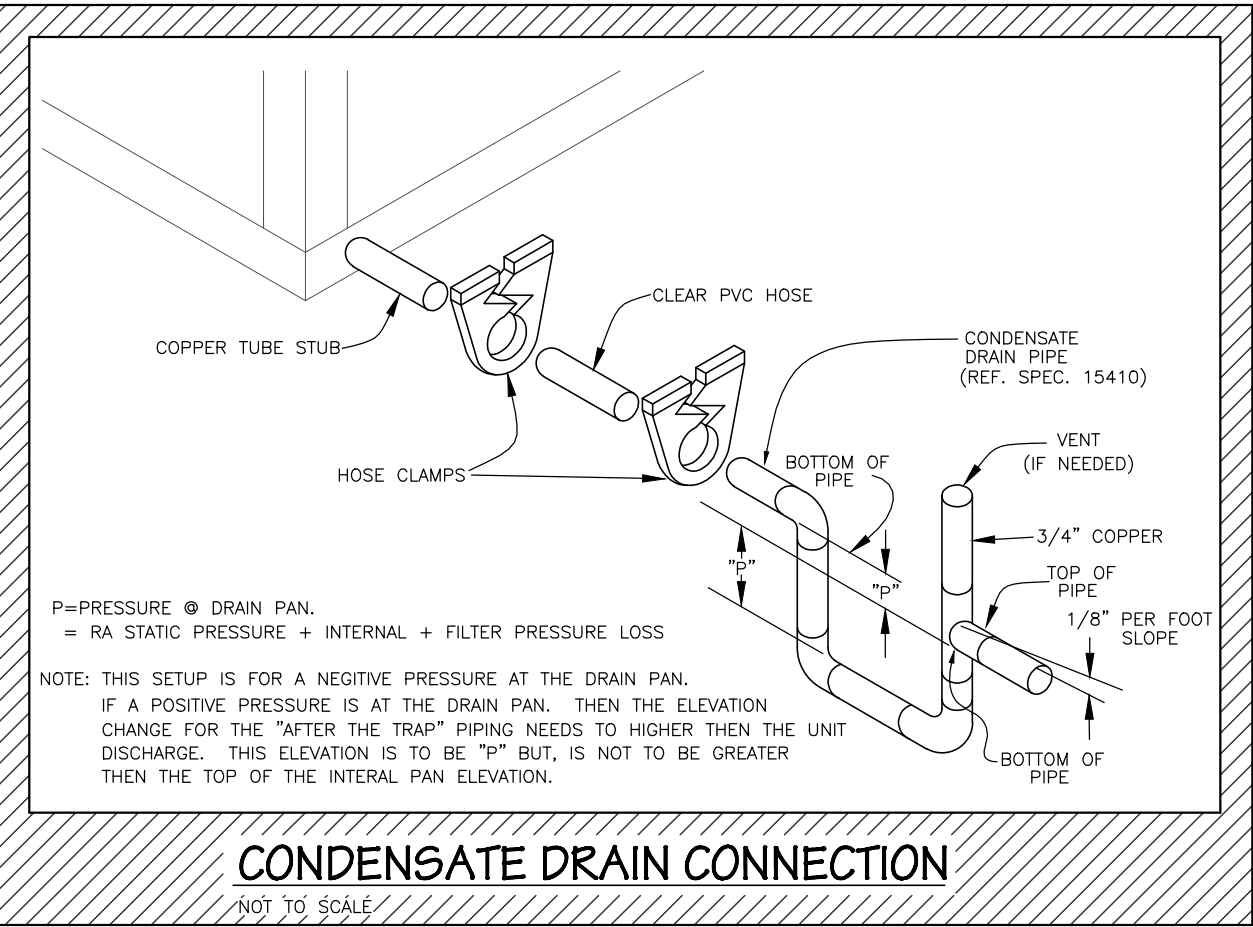
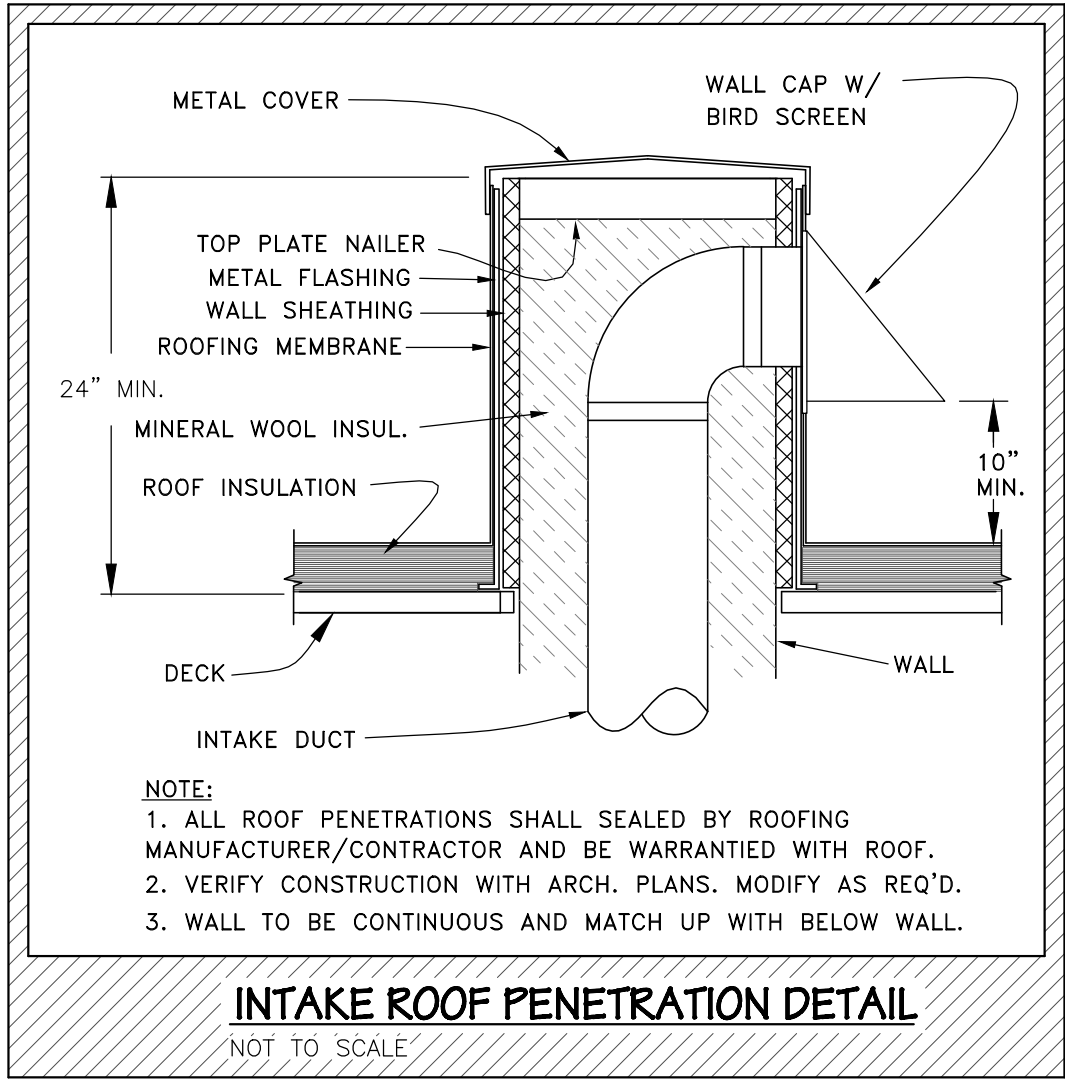
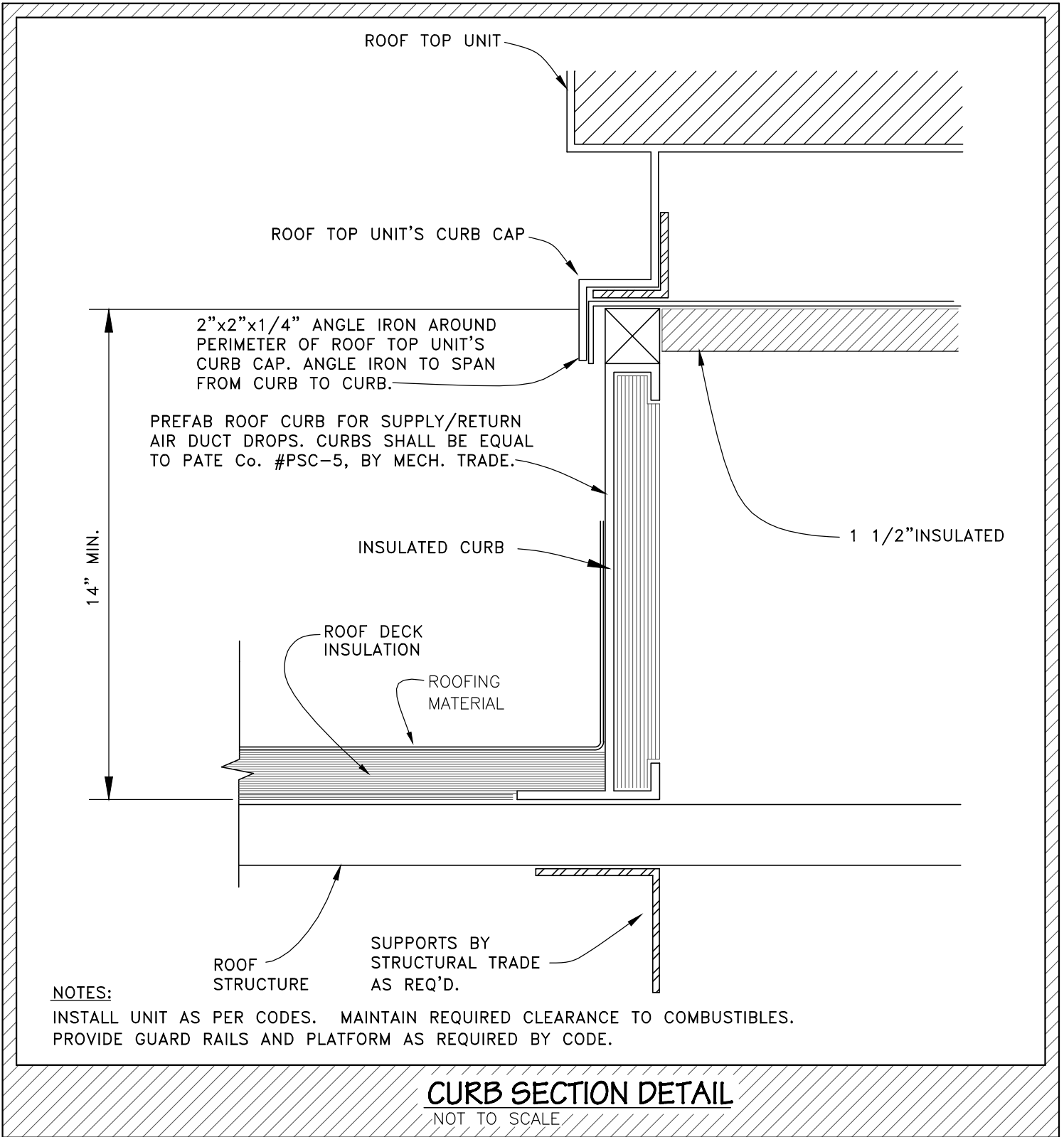
HEAT PUMP UNIT SCHEDULE									
MARK	UNIT SERVED	MODEL No.	NOMINAL CLG. CAP.	NOMINAL HTG. CAP.H/L	ELECTRICAL OPERATING AMPACITY	MOC PD	WEIGHT	REMARKS	
HP-XXXX	FC-XXXX	25VNA024A0030	25.2/19.2	10.0/17.0	208V, 1ø	23.5A	30A	324	SEE NOTES
FC-XXXB	FC-XXXB	25VNA036A0030	35.0/23.2	10.0/20.0	208V, 1ø	23.5A	40A	324	SEE NOTES
HP-XXXC	FC-XXXC	25VNA048A0030	47.5/34.8	19.0/31.0	208V, 1ø	36.6A	50A	334	SEE NOTES
HP-XXXD	FC-XXXD	25VNA060A0030	56.0/38.0	19.0/33.0	208V, 1ø	36.6A	50A	334	SEE NOTES
NOTES: 1. BASED ON CARRIER (SUBMIT MOST CURRENT). (BRYANT & TRANE, MAY BE BID AS AN EQUAL) 2. UNIT HAS 2-STAGE COMPRESSOR. 3. HEATING CAPACITIES CALCULATED AT HIGH 47DEG F AMBIANT & LOW AT 15DEG F AMBIANT. 4. UNIT TO UTILIZE PURON (410A) REF. 5. UNIT TO UTILIZE "INFINITY" CONTROLS.									

EXHAUST FAN SCHEDULE							
MARK	MODEL No.	CFM	ESP	MAX. SONES	ELECTRICAL		REMARKS
					VOLT., PHASE, POWER	CONTROL	
EF-1	FV-08VQC5	75	0.15"	0.3	120V, 1Ø 15.6W	WALL SWITCH CONTROL W/ MOTION AND HUMIDITY	BACKDRAFT DAMPER AND WALL CAP.
BF-1	BN-640	400	0.25"	3.4	120V, 1Ø 1/3HP	T-STAT. CONTROL COOLING ONLY.	BACKDRAFT DAMPER AND CEILING GRILLE
NOTES:							
1. EF-1 BASED ON PANISONIC. BF-1 BASED ON LORREN COOK. GREENHECK MAY BE BID AS EQUAL.							
2. PROVIDE BACKDRAFT DAMPER, CEILING GRILLE, AND STD. INTERNAL CONTROLS.							

DIFFUSER / GRILLE SCHEDULE						
MARK	MODEL No.	CFM	SIZE	BALANCING DAMPER	COLOR	REMARKS
SD-1	TDC	125-200	9"x9", 8"ø NECK	YES	WHITE	BORDER TYPE 1, SEE NOTE #4
SR-1	5300FL	100-250	12"x6", MATCH DUCT ø	YES	WHITE	SEE NOTES
SR-2	300FL	100-250	12"x6"	YES	WHITE	SEE NOTES
RG-1	33RS	900-1600	12"Wx42"H	NO	WHITE	BORDER TYPE 1
RG-2	33RL	1600	24"x24"	NO	WHITE	BORDER TYPE 1
RG-3	50F	2000	24"x24"	NO	WHITE	BORDER TYPE 1
RG-4	33RL	1600	36"x18"	NO	WHITE	BORDER TYPE 1
RG-5	33RL	900	24"x12"	NO	WHITE	BORDER TYPE 1
TG-1	355FL	100-400	14"x14"	NO	WHITE	BORDER TYPE 1
TG-2	355FL	400	24"x8"	NO	WHITE	BORDER TYPE 1
NOTES: 1. BASED ON TITUS. (PRICE OR KRUGER MAY BE BID EQUALS). 2. REVIEW COLOR W/ARCHITECT BEFORE ORDERING. 3. ALL SUPPLY REGISTERS ON SPIRAL DUCTWORK TO HAVE AIR SCOOP AND TO BE PAINTED TO MATCH DUCTING. 4. ALL SUPPLY AIR DIFFUSERS SHALL HAVE A 4-WAY AIR PATTERN UNLESS OTHERWISE INDICATED (SEE PLANS). 5. PROVIDE ALL DUCT COLLARS, TRANSITIONS, CONNECTIONS AND SUPPORTS. 6. PAINT INSIDE OF DUCT BEHIND REGISTERS AND GRILLES FLAT BLACK.						

WALL LOUVER SCHEDULE						
MARK	MODEL No.	UNIT SERVED	TYPE	CFM	SIZE W x H	REMARKS
BV-1	BV100	UNIT EXHAUST	EXHAUST	68-100	8" x 8"	SEE NOTES
BV-2	BV100	UNIT INTAKE	INTAKE	120-300	16" x 8"	SEE NOTES
L-1	ELF-211	FC-110	INTAKE	675	24" x 12"	SEE NOTES
NOTES: 1. BASED ON RUSKIN. (AMERICAN WARMING MAY BE BID AS EQUAL.) 2. PROVIDE FLANGE, BIRD SCREEN AND BAKED ENAMEL FINISH. 3. REVIEW COLOR W/ARCHITECT BEFORE ORDERING.						

SPLIT SYSTEM HEAT PUMP UNIT DESCRIPTION	
AIR CONDITIONING UNIT AC-102	DUCTLESS SPLIT HEAT PUMP, EQUAL TO MITSUBISHI PKA-A18HA4, 1 1/2 NOMINAL TONS AT 425 CFM, 24VDC. WEIGHT 29 LBS.
COMP. UNIT HP-102	HEAT PUMP UNIT, EQUAL TO MITSUBISHI PUZ-A18NHA4 8-18MBH COOLING/ 8-20MBH HEATING, 208V, 1PH, 13.0A MCA, OPD = 20. WEIGHT = 91 LBS.

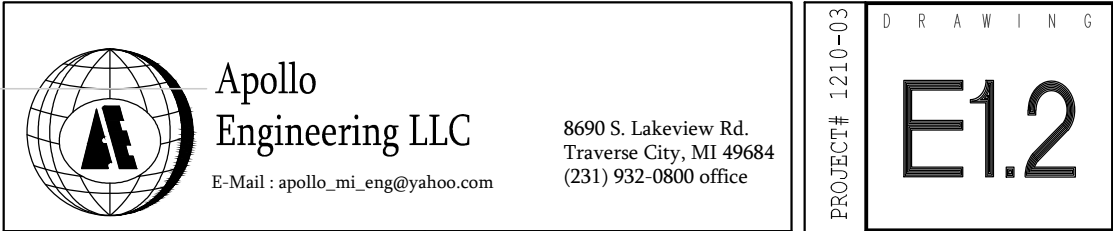




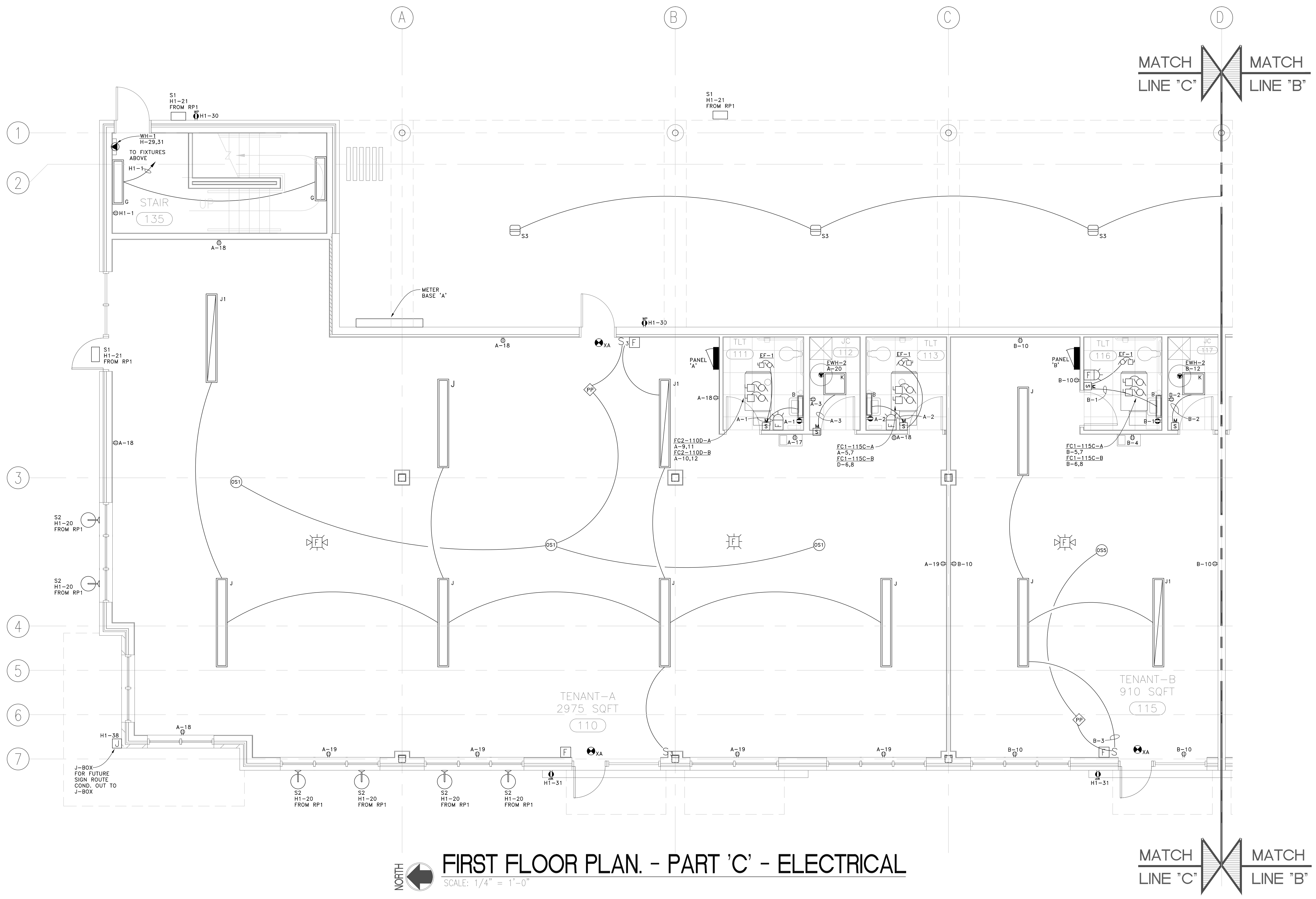












**FIRST FLOOR PLAN. - PART 'C' - ELECTRICAL**  
SCALE: 1/4" = 1'-0"

2012 PROJECT FOR:  
**MILL END LOFTS**  
BAY CITY, MI  
JOB NUMBER  
**E11-520**

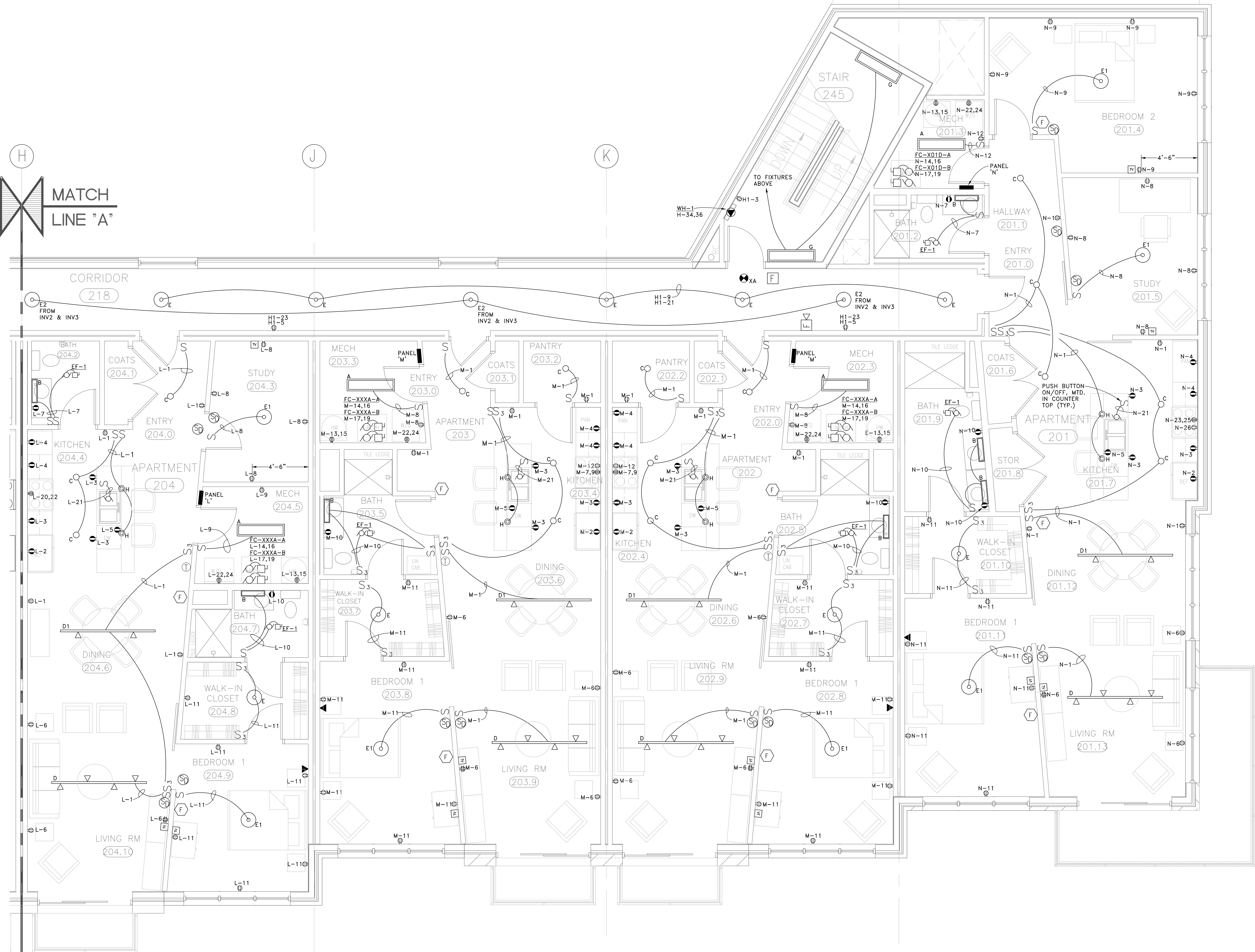


**Apollo Engineering LLC**  
E-Mail: apollo\_mil\_eng@yahoo.com  
8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

PROJECT# 1210-03  
DRAWING  
**E1.4**

MATCH  
LINE "B"

MATCH  
LINE "A"



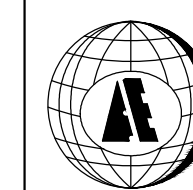
MATCH  
LINE "B"

MATCH  
LINE "A"



## 2ND AND 3RD FLOOR PLAN. - PART 'A' - ELECTRICAL

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



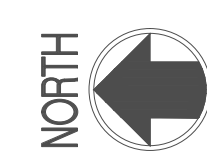
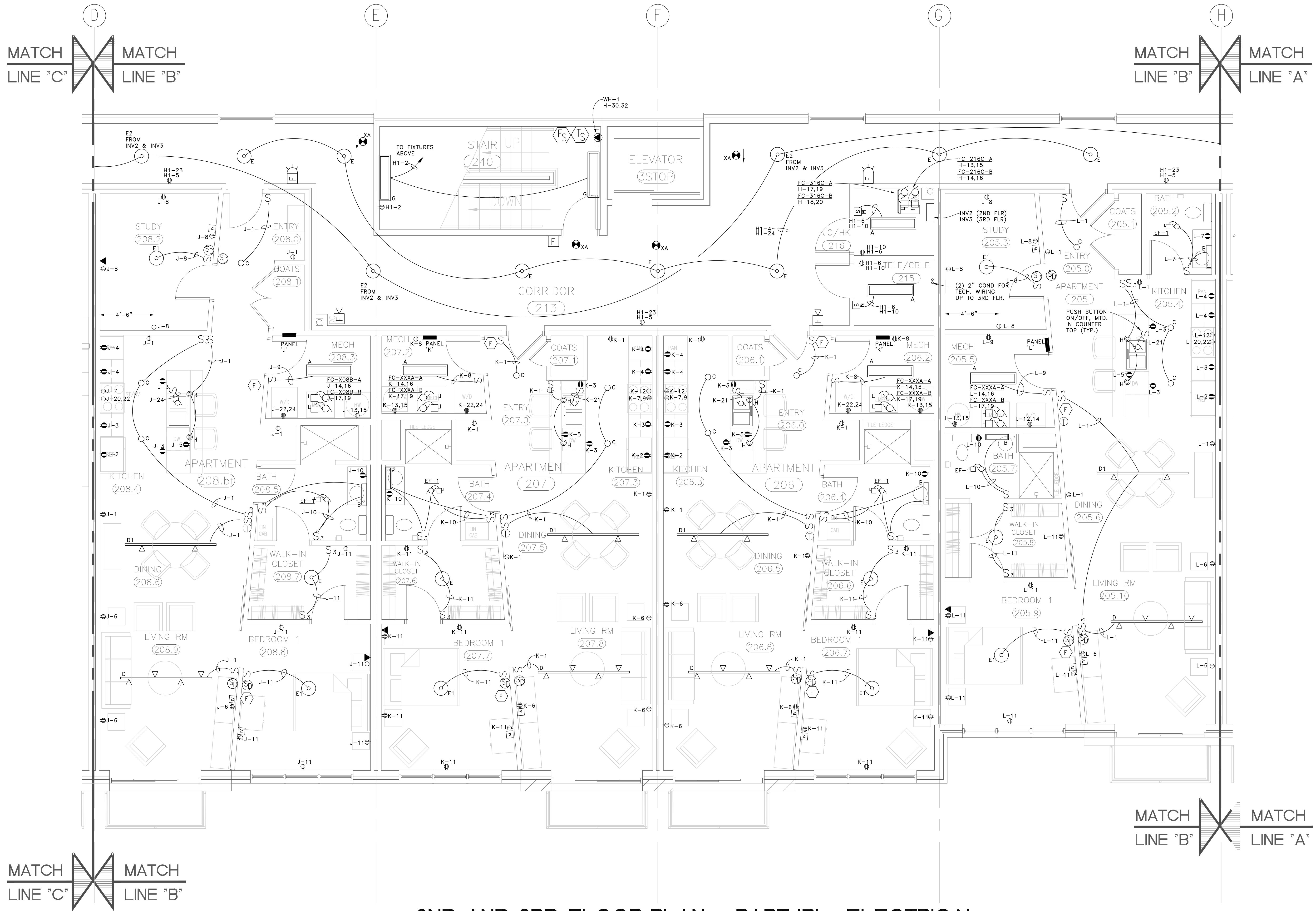
Apollo  
Engineering LLC  
E-Mail: apollo\_mtl\_eng@yahoo.com

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

201-2 PROJECT FOR:  
**MILL END LOFTS**  
BAY CITY, MI

JOB NUMBER  
**E11-520**

PROJECT# 1210-03  
**E15**



**2ND AND 3RD FLOOR PLAN. - PART 'B' - ELECTRICAL**  
SCALE: 1/4" = 1'-0"

2012 PROJECT FOR:  
**MILL END LOFTS**  
BAY CITY, MI

JOB NUMBER  
**E11-520**

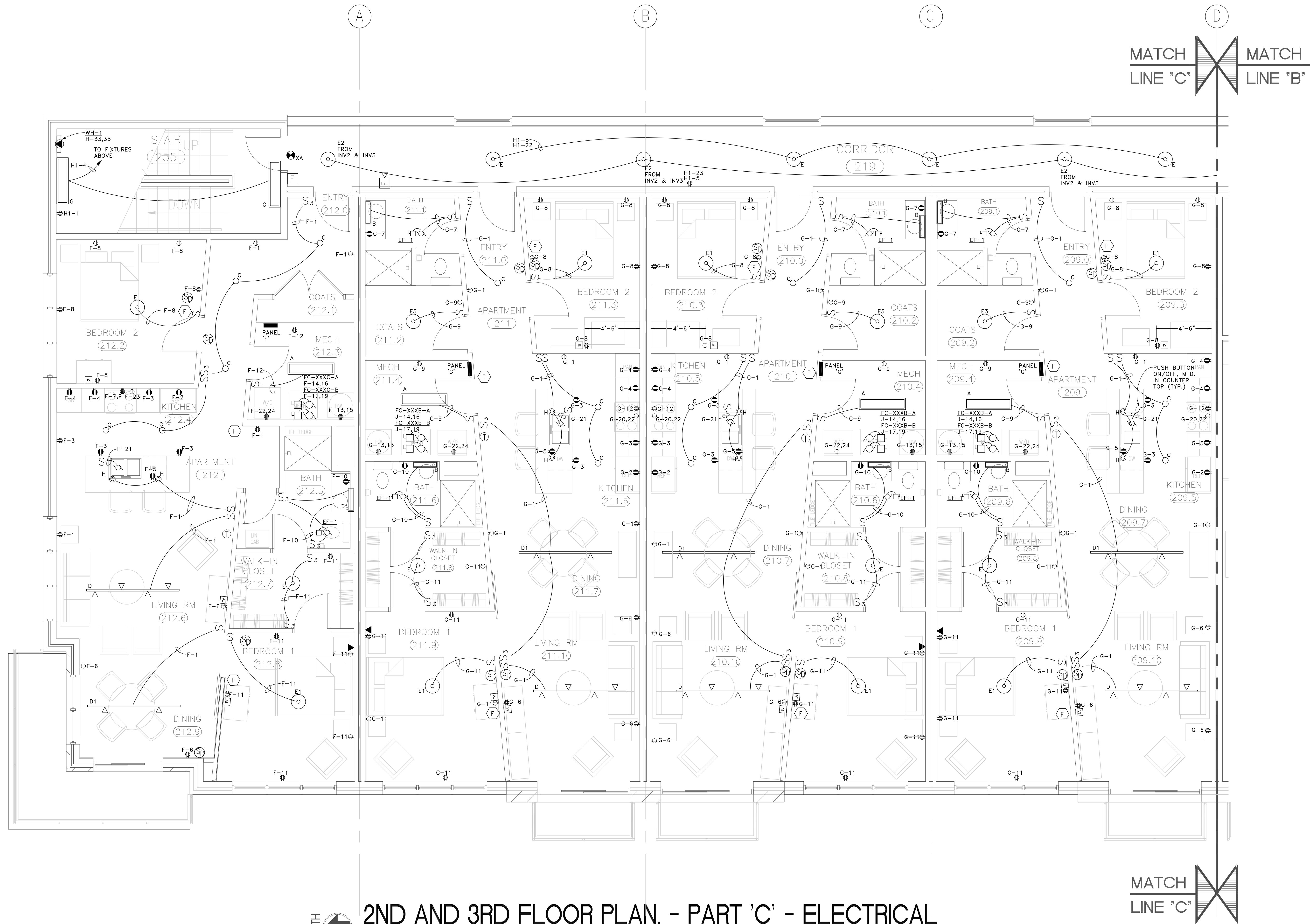


**Apollo Engineering LLC**  
E-Mail: apollo\_mtl\_eng@yahoo.com

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

PROJECT# 1210-03  
DRAWING  
**E1.6**





# 2ND AND 3RD FLOOR PLAN. - PART 'C' - ELECTRICAL

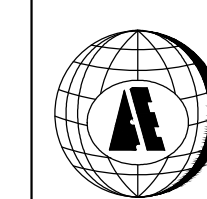
SCALE: 1/4" = 1'-0"

MATCH  
LINE "C"

MATCH  
LINE "C" MATCH  
LINE "B"

2012 PROJECT FOR:  
MILL END LOFTS  
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JOB NUMBER  
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Apollo  
Engineering LLC  
E-Mail: apollo\_mil\_eng@yahoo.com

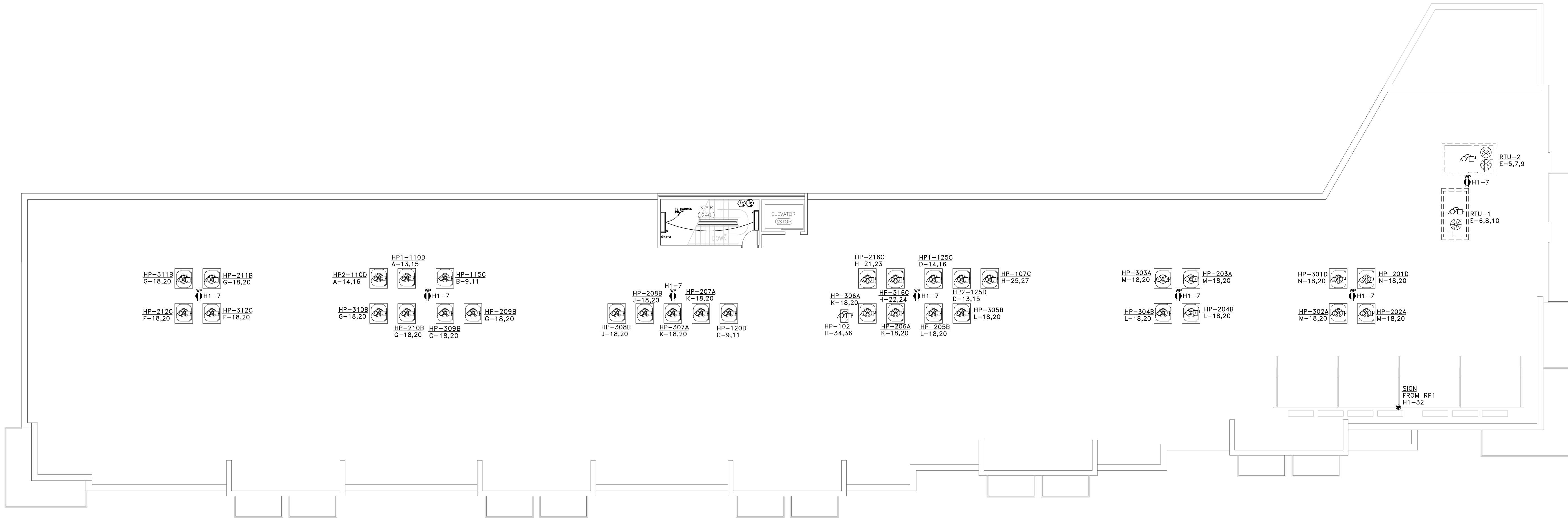
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PROJECT# 1210-03

DRAWING

E17





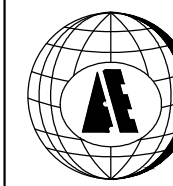
ROOF PLAN - ELECTRICAL

SCALE: 3/32" = 1'-0"

2012 PROJECT FOR:

MILL END LOFTS  
BAY CITY, MI

JOB NUMBER  
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Apollo  
Engineering LLC  
E-Mail : apollo\_mtl\_eng@yahoo.com

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Traverse City, MI 49684  
(231) 932-0800 office

PROJECT# 1210-03  
DRAWING  
E1.8

ELECTRICAL NOTES

1. PRIOR TO SUBMITTING A PROPOSAL, BIDDER SHALL HAVE VISITED THE CONSTRUCTION SITE. HE SHALL BE FAMILIAR WITH THE EXISTING CONDITIONS UNDER WHICH HE WILL HAVE TO OPERATE AND WHICH WILL IN ANYWAY AFFECT THE WORK UNDER THIS CONTRACT. NO SUBSEQUENT ALLOWANCE WILL BE MADE IN THIS CONNECTION ON BEHALF OF THE CONTRACTOR FOR ANY ERROR OR NEGLIGENCE ON HIS PART.
2. ELECTRICAL WORK SHALL COMPLY WITH THE LATEST ENFORCEABLE EDITION OF THE N.E.C., LOCAL AND STATE CODES, ORDINANCES, REGULATIONS, INCLUDING THE OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA), AND ADA GUIDELINES WITH THE LOCAL CODE AUTHORITIES HAVING JURISDICTION.
3. ELECTRICAL CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL FEES, INCLUDING COSTS ASSESSED BY THE ELECTRIC UTILITY COMPANIES, AND ARRANGE FOR ALL INSPECTIONS FOR HIS WORK. AT THE COMPLETION OF ELECTRICAL WORK, THE ELECTRICAL CONTRACTOR SHALL FURNISH THE OWNER WITH ALL CERTIFICATES OF FINAL INSPECTION AND APPROVALS.
4. ELECTRICAL MATERIALS SHALL BE NEW, AND BEAR THE "UL" LABEL.
5. BRANCH CIRCUIT WIRE FOR LIGHTING, RECEPTACLE AND SMALL POWER SHALL BE COPPER, RATED 75 DEGREES C. MINIMUM SIZE #12 AWG, AND BE TYPE "THHN", AND BE INSTALLED IN EMT. UNLESS OTHERWISE NOTED OR REQUIRED BY CODE. FEEDERS AND SECONDARY SERVICE CONDUCTORS SHALL BE STRANDED COPPER WITH 600 VOLT INSULATION, RATED 90 DEGREES C. TYPE "THHN", AND BE INSTALLED IN EMT OR PVC CONDUIT, MINIMUM SIZE 1/2" UNLESS OTHERWISE NOTED OR REQUIRED BY CODE. ALL WIRE AND CABLE SHALL BE NEW AND SHALL BE DELIVERED TO PROJECT IN UNBROKEN AND UNDAMAGED CARTONS AND REELS.
6. FUSES SHALL BE "UL" LISTED, DUAL AS MANUFACTURED BY BUSMAN CO., OR APPROVED EQUAL (200,000 ERIC).
7. PLATES FOR SWITCHES AND RECEPTACLES SHALL BE BRUSHED SMOOTH STAINLESS STEEL.
8. FLUORESCENT FIXTURE BALLAST VOLTAGE RATING SHALL BE AS NOTED, NON, HIGH POWER FACTOR, ENERGY SAVING, CLASS P, "A" SOUND RATED. HIGH DISCHARGE (HID) BALLAST SHALL BE NON, HIGH POWER FACTOR, CONSTANT WATTAGE AUTO TRANSFORMER TYPE, WITH STARTING CURRENT NOT EXCEEDING THE OPERATING CURRENT.
9. PANEL BOARDS SHALL BE RATED 120/208V, 3 PHASE, 4W, OR AS NOTED WITH PLUG TYPE BRANCH CIRCUIT BREAKERS RATED A MINIMUM 10,000 A.I.C. PANEL BOARDS SHALL BE SIMILAR TO SQUARE D, TYPE QO AND I-LINE, OR EQUAL BY WESTINGHOUSE/ CHALLENGER, E.T.A., OR GENERAL ELECTRIC.
10. ELECTRICAL CONTRACTOR SHALL VERIFY EXACT ELECTRIC UTILITY COMPANIES SERVICE POINTS AND PRIMARY SERVICE CONDUIT, ROUTING, AND SIZE WITH UTILITY COMPANY SERVICE PLANNERS PRIOR TO BEGINNING WORK.
11. ELECTRICAL CONTRACTOR SHALL GUARANTEE ALL WORK INSTALLED UNDER HIS CONTRACT TO BE FREE FROM DEFECTIVE WORKMANSHIP AND MATERIALS FOR A PERIOD OF ONE YEAR AFTER THE ACCEPTANCE OF THE BUILDING BY THE OWNER. SHOULD DEFECTS OCCUR WITHIN THIS PERIOD, REPAIR AND/OR REPLACE DEFECTIVE ITEMS AT NO EXPENSE TO THE CONTRACTOR.
12. ELECTRICAL CONTRACTOR SHALL COORDINATE LOCATIONS OF HIS EQUIPMENT AND WORK WITH OTHER BUILDING TRADES TO AVOID INTERFERENCE'S BETWEEN HIS WORK AND THE WORK OF OTHER BUILDING TRADES. IF ANY DISCREPANCIES OCCUR, CONSULT WITH THE ARCHITECT AND/OR OWNER BEFORE CONTINUING.
13. LAMPS - ALL LAMPS SHALL BE CLASSIFIED "ENERGY SAVING", AND BE PROVIDED BY E.C.
14. THE CONTRACTOR SHALL BE HELD FULLY RESPONSIBLE FOR THE PROPER RESTORATION OF ALL EXISTING SURFACES REQUIRING PATCHING, PLASTERING, PAINTING AND/OR OTHER REPAIR DUE TO THE INSTALLATION OF ELECTRICAL WORK UNDER THE TERMS OF THIS SPECIFICATION. CLOSE ALL OPENINGS, REPAIR ALL SURFACES, AND EQUIPMENT ENCLOSURES SHALL BE FREE OF ANY DEBRIS.
15. THE ELECTRICAL CONTRACTOR SHALL PERIODICALLY REMOVE FROM THE SITE ALL DEBRIS AND RUBBISH ACCUMULATING AS A RESULT OF THE ELECTRICAL INSTALLATION. UPON COMPLETION OF THE PROJECT, HE SHALL DISPOSE OF ALL DEBRIS AND RUBBISH AND SHALL LEAVE THE INTERIORS OF ALL CABINETS, PULL BOXES, AND EQUIPMENT ENCLOSURES SHALL BE FREE OF ANY DEBRIS.
16. UNDERGROUND CONDUIT TO BE SCHEDULE 40 PVC.
17. ELECTRICAL JOINTS WILL BE PERMITTED ONLY IN JUNCTION AND OUTLET BOXES. ALL JOINTS SHALL BE FIRMLY BONDED TOGETHER AND TAPED OR SHALL BE MADE WITH MECHANICAL CONNECTORS.
18. ALL LOCATIONS OF DEVICES TO BE COORDINATED WITH ARCHITECT BEFORE ROUGH-IN.

ELECTRIC WALL HEATER SCHEDULE

MARK	MANU.	MODEL No.	BTU/HR.	WATTS	ELECTRICAL	REMARKS
WH-1	MARKEL	J3425T	17,065	5000	208v/1ø, 5000W	BUILT IN THERMISTAT& CIRCUIT BREAKER

NOTES:  
1. UNITS BASED ON MARKEL. (Q-MARK & ELECTROMODE MAY BE BID AS EQUAL).

LIGHTING FIXTURE SCHEDULE

TYPE	BRAND	MODEL #	MOUNTING TYPE	LAMP	TOTAL FIXTURE POWER	VOLTAGE	NOTES:
A	SIMKAR	SY950-2-32-B11-PSN-UNV	SURFACE	(2) F32/T8/35K	50W	120V	-
B	AMERICAN FLUORESCENT	Y8AWMSC225MV W/2-F025T8	SURFACE	(2) F25/T8/35K	30W	120V	-
C	JUNO	IC22W/TCF LED14DR630K	RECESSED	630LM/3K/LED	15W	120V	-
D	JUNO	R8BL (1) R38BL (1) R533BL (4)	TRACK	HPXPPAR30-30-25-4	65W	120V	W/ LR30/25/30K/14W/800/GY LAMP
D1	JUNO	R8BL (1) R38BL (1) R533BL (4)	TRACK	HPXPPAR30-30-25-4	28W	120V	W/ LR30/25/30K/14W/800/GY LAMP
E	HI-LITE	H-15118-91-CB8-91-LCGU-FR-91	SURFACE	F32/TIT	52W	120V	MT. NEAR CEILING
E1	HI-LITE	H-15118-91-FSMC-91/LCGU-FR-91	SURFACE	F32/TIT	52W	120V	MT. ±8" A.F.F.
E2	HI-LITE	H-15118-91-FSMC-91/LCGU-FR-91	SURFACE	F32/TIT	52W	120V	W/ EMERGENCY
E3	RAB	VC200DG	SURFACE	F32/TIT	52W	120V	CLEAR GLOGE & CAGE
F	SIMKAR	IE-21-32-A-B11-PNS-UNV	SURFACE	(2) F32/T8/35K	60W	UNV	-
G	SIMKAR	MDL-4-A-W-2D+1-32T8-E-PSN-U	SURFACE	(2) F54/T5/HO	97W	UNV	-
H	HI-LITE	H-15112-91-CB8-91-GCU-FR-9	PENDENT	LED LAMP	20W	120V	-
J	SIMKAR	IE-2232-B11-PSN-UNV	CHAIN HUNG	(4) F32/T8/35K	128W	UNV	-
J1	SIMKAR	IE-232-EL53-A-B11-PSN-41-UNV	CHAIN HUNG	(4) F32/T8/35K	128W	120V	W/ EMERGENCY
K	SIMKAR	TY-242-217-B11-PSN-UNV	RECESSED	(2) F17/T8/35K	34W	120V	-
L	RAB	YXBR1F26	WALL MTD.	(1) F26/T8/35K	34W	120V	-
S1	JUNO	DT-A032-4K-UN-BL	WALL MTD.	LED LIGHT BAR (51)	51W	120V	-
S2	HI-LITE	H-15118-91-B-2-91-LSGU-FR	BASE	24 LED/41K	24W	120V	-
S3	RAB	GLED52N	CEILING	LED	56W	120V	-
S4	NAVILITE	NSWHSDCB	SURFACE	LED	6W	120V	MOUNT BELOW BELCONIES, BATTERY BACKUP LIGHTS AT ENTRANCES
XA	SIMKAR	DLC-2-G-W	SURFACE	(1) LED	3W	120V	-

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	NOTES
S	SINGLE POLE SWITCH	MOUNT @ 44" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED
S3	THREE WAY SWITCH	MOUNT @ 44" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED
X □	2'x2' FIXTURE, TYPE X	SEE LIGHTING FIXTURE SCHEDULE FOR TYPES
○ X	CAN FIXTURE	SEE LIGHTING FIXTURE SCHEDULE FOR TYPES
1'x4' X	1'x4' FIXTURE, TYPE X --	SEE LIGHTING FIXTURE SCHEDULE FOR TYPES
⊗ X	EXIT SIGN, TYPE X	SEE LIGHTING FIXTURE SCHEDULE FOR TYPES
⊕	DUPLEX OUTLET - 20 AMP	MOUNT @ 24" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED
⊕	QUADPLEX OUTLET - 20 AMP	MOUNT @ 24" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED
⊕	DUPLEX OUTLET - GROUND FAULT	MOUNT @ 24" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED
⊕	DUPLEX OUTLET - WEATHER PROOF COVER	MOUNT @ 24" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED
⊕	SPECIAL PURPOSE OUTLET, AS NOTED	REFER TO SHOP DRAWINGS FOR CONNECTION REQUIREMENTS
⊕	MOTOR, AS SPECIFIED	REFERENCE SPECIFICATIONS FOR REQUIREMENTS
⊕	FUSED DISCONNECT	REFER TO GENERAL ELECTRICAL NOTES AND ONE-LINE DIAGRAM.
⊕	STARTER/DISCONNECT	REFERENCE SPECIFICATIONS FOR REQUIREMENTS
⊕	FUSED DISCONNECT FOR VFD CONNECTION	PROVIDE ALL LINE VOLTAGE WIRING AND CONDUIT FOR VFD INSTALL. (CONTROLS CONTRACTOR WILL PROVIDE VFD UNIT.)
⊕	LIGHTING/BRANCH CIRCUIT PANELS	REFER TO GENERAL ELECTRICAL NOTES AND ONE-LINE DIAGRAM.
⊕	DATA OUTLET	MOUNT @ 24" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED, EC TO PROVIDE SINGLE GANG BOX WITH 1" C STUBBED IN ATTIC SPACE.
⊕	VOIP OUTLET	MOUNT @ 24" A.F.F. TO BOTTOM OF BOX, UNLESS OTHERWISE NOTED, EC TO PROVIDE SINGLE GANG BOX WITH 1" C STUBBED IN ATTIC SPACE.
⊕	MECHANICAL THERMOSTAT	PROVIDE CONDUIT AND BACKBOX
⊕	MECHANICAL SENSOR	PROVIDE CONDUIT AND BACKBOX
AF	ARC-FAULT CIRCUIT INTERRUPTER PROTECTION	INSTALL ARC FAULT RECEPTACLES AS CALLED FOR IN PANEL SCHEDULES
TP	TAMPER RESISTANT RECEPTACLES	INSTALL TAMPER RESISTANT RECEPTACLES AS CALLED FOR IN PANEL SCHEDULES

PANEL H

CIR. NO.	AMP/ POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/ POLES	CIR. NO.
1			4488	8640			2
3	100/3	PANEL 'H1' (ELECT. 102)	4488	8640	ELEVATOR (ELEV. RM. 103)	100/3	4
5			4488	8640			6
7			828	3764			8
9	20/2	SP-1 (ELEV. PIT)	828	3764	FC-107C-A (FIRE 107)	60/2	10
11			828	300	BF-1 (FIRE 107)	20/1	12
13	60/2	FC-216C-A (JC 216)	3764	1882	FC-216C-B (JC 216)	25/2	14
15			3764	1882			16
17	60/2	FC-316C-A (JC 316)	3764	1882	FC-316C-B (JC 316)	25/2	18
19			3764	1882			20
21	50/2	HP-216C (ROOF)	3806	3806	HP-316C (ROOF)	50/2	22
23			3806	3806			24
25	50/2	HP-107C (ROOF)	3806	1882	FC-107C-B (FIRE 107)	25/2	26
27			3806	1882			28
29	30/2	WH-1 (STAIR 135)	2500	2500	WH-1 (STAIR 240)	30/2	30
31			2500	2500			32
33	30/2	WH-1 (STAIR 235)	2500	1352	HP-102 (ROOF)	20/2	34
35			2500	1352			36
37	20/1	EW-2 (JC 105)	1650	600	LIGHTS (EXTERIOR)	20/1	38
39	20/1	SPARE	---	---	SPARE	20/1	40
41	---	SPACE	---	---	SPACE	---	42

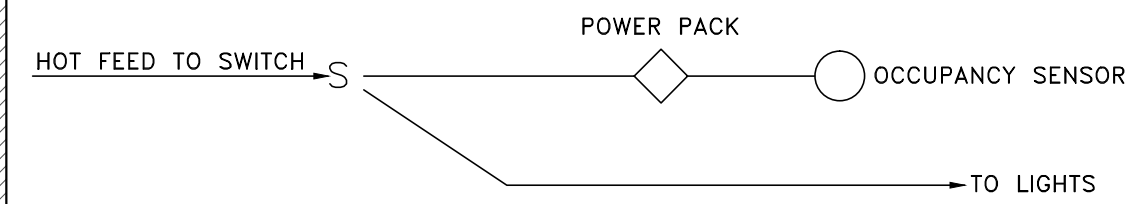
PANEL H1

CIR. NO.	AMP/ POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/ POLES	CIR. NO.
1	20/1	LIGHTS & RECEPTACLES (STAIRS 135)	924	924	LIGHTS & RECEPTACLES (STAIRS 140)	20/1	2
3	20/1	LIGHTS & RECEPTACLES (STAIRS 145)	924	506	LIGHTS & RECEPTACLES (CORRIDOR 213)	20/1	4
5	20/1	RECEPTACLES (CORRIDORS 2ND FL)	1080	506	LIGHTS & RECEPTACLES (JAN 216)	20/1	6
7	20/1	RECEPTACLES (ROOF)	1080	512	LIGHTS (CORRIDOR 219)	20/1	8
9	20/1	LIGHTS (CORRIDOR 218)	512	506	LIGHTS & RECEPTACLES (JC 316)	20/1	10
11	20/1	RECEPTACLES (JC, FIRE 107)	360	200	LIGHTS (JC, FIRE 107)	20/1	12
13	20/1	LIGHTS & RECEPTACLES (TOILET 106)	300	360	RECEPTACLES (IT 102)	20/1	14
15	20/1	RECEPTACLES (IT 102)	360	360	RECEPTACLES (IT 102)	20/1	16
17	20/1	RECEPTACLES (LEASE OFFICE 101)	720	360	RECEPTACLES (LOBBY 100)	20/1	18
19	20/1	LIGHTS (CORRIDOR 104)	165	180	ELEV. LIGHTS (ELEV. ROOM)	20/1	20
21	20/1	LIGHTS (CORR 318)	522	512	LIGHTS (CORRIDOR 319)	20/1	22
23	20/1	RECEPTACLES (CORRIDORS 3RD FL)	1080	512	LIGHTS (CORRIDOR 313)	20/1	24
25	30/2	WH-1 (STAIR 140)	2500	2500	WH-1 (STAIR 145)	30/2	26
27			2500	2500			28
29	20/1	LIGHT (ELEV. PIT)	100	1260	RECEPTACLES (EXTERIOR)	20/1	30
31	--	SPACE	---	1000	SIGN (VERIFY W/ SIGN PROVIDER) (ROOF)	35/1	32
33	30/2	WH-1 (STAIR 140)	2500	500	DOOR OPENER (ROOF)	20/1	34
35			2500	500	DOOR OPENER (EXTERIOR)	20/1	36
37	20/1	J-BOX (EXTERIOR)	500	500	J-BOX (EXTERIOR)	20/1	38
39	20/1	SPARE	---	---	SPARE	20/1	40
41	--	SPACE	---	---	SPACE	--	42

OCCUPANCY LEGEND

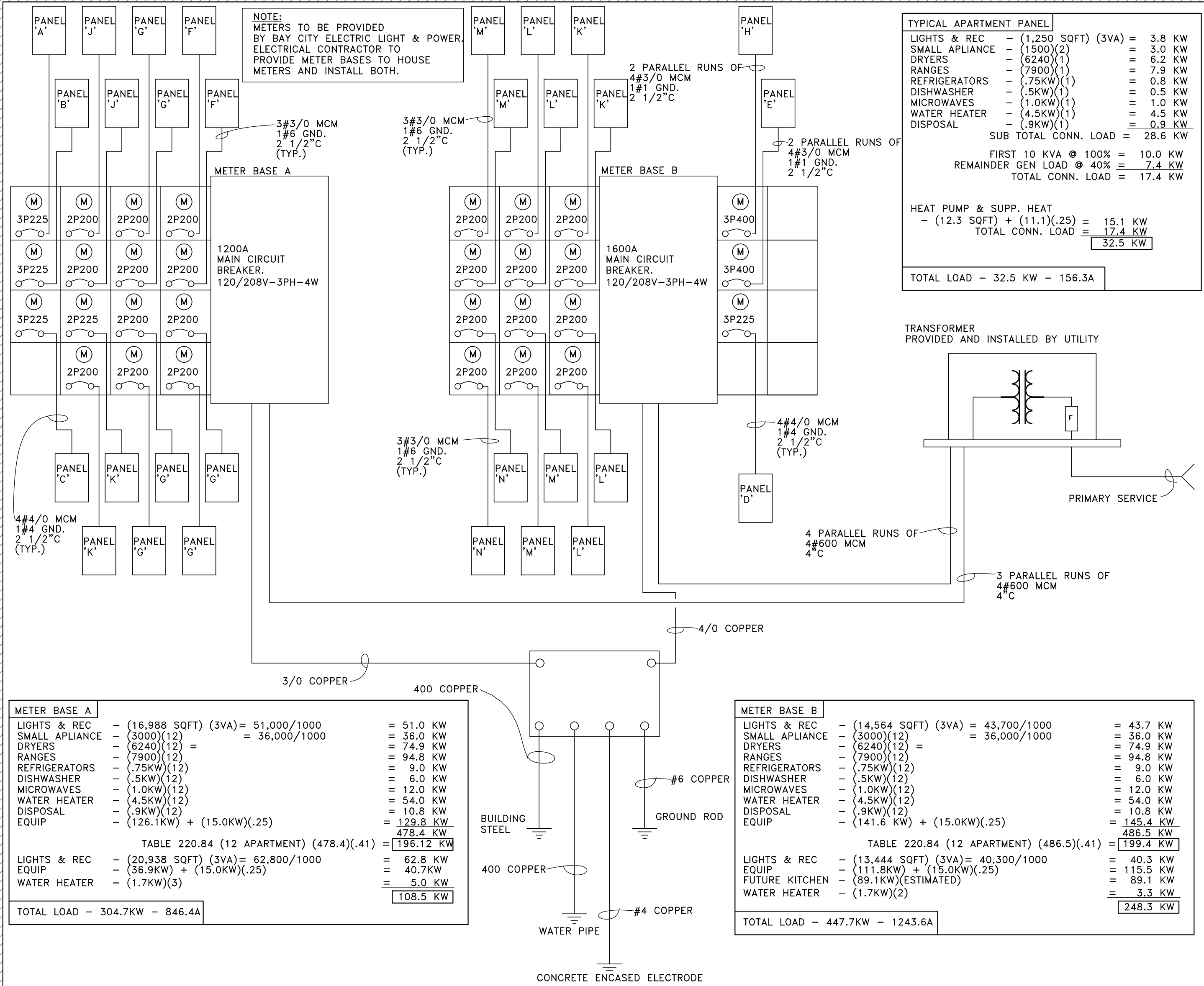
SYMBOL	BRAND	MODEL #	DESCRIPTION
⊕	LEVITON	OSSMT-MDW	WALLBOX MOUNTED MULTI-TECHNOLOGY OCCUPANCY SENSOR
⊕	LEVITON	ODS10-IDW	WALLBOX MOUNTED PIR OCCUPANCY SENSOR
⊕	LEVITON	OSC10-MOW	CEILING MOUNTED MULTI-TECHNOLOGY OCCUPANCY SENSOR (1000 SQ. FT)
⊕	LEVITON	OSC05-MOW	CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR (500 SQ. FT)
⊕	LEVITON	OSW12-MOW	WALL/CORNER MTD. MULTI-TECHNOLOGY OCCUPANCY SENSOR (1200 SQ. FT)
⊕	LEVITON	OSC20-UOW	CEILING MOUNTED ULTRASONIC OCCUPANCY SENSOR (2000 SQ. FT)
⊕	LEVITON	OSC20-MOW	CEILING MOUNTED MULTI-TECHNOLOGY OCCUPANCY SENSOR (2000 SQ. FT)
⊕	LEVITON	OSP20-ODO	POWER PACK FOR 120VAC SYSTEM
⊕	LEVITON	6212H	WALLBOX MOUNTED 5-BUTTON TIMER SWITCH UP TO 12 HOURS

OCCUPANCY SENSOR WIRING DIAGRAM



WIRE SIZE REQUIREMENTS

NOTE: BASED ON A MAXIMUM OF 6-VOLT DROP (5%) ON 120V CIRCUITS. WIRES FOR RUNS OVER 100'-0" SHALL BE DETERMINED ON THIS A MAXIMUM OF A 5% DROP ALLOWED.												
BRANCH CIRCUIT AMPS	LENGTH OF RUN - FROM PANEL TO FIRST CONNECTION - FEET											
AMPS	50'	60'	70'	80'	90'	100'	110'	120'	130'			
15	#12	#12	#12	#12	#12	#12	#10	#10	#10			
20	#12	#12	#12	#12	#10	#10	#10	#10	#10	#8		
30	#10	#10	#10	#10	#8	#8	#8	#8	#8	#6		



ONE-LINE DIAGRAM



Apollo  
Engineering LLC  
E-Mail: apollo\_mtl\_eng@yahoo.com

8690 S. Lakeview Rd.  
Traverse City, MI 49684  
(231) 932-0800 office

PROJECT# 1210-03

DRAWING  
E2.1

JOB NUMBER  
E11-520

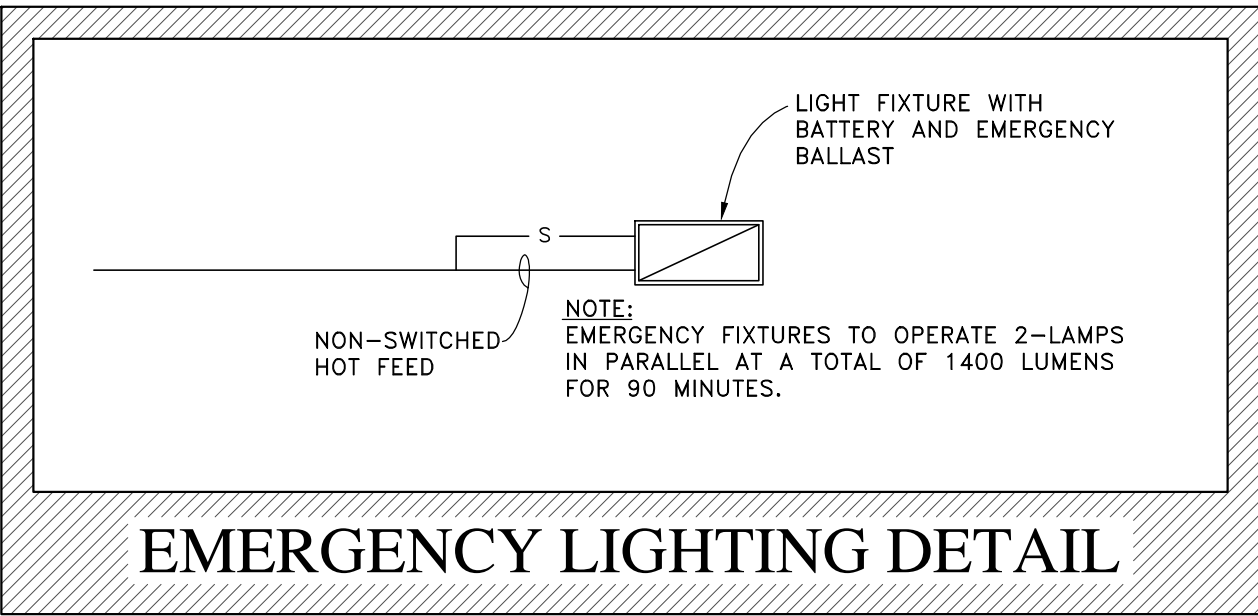
2011-2  
MILL END LOFTS  
BAY CITY, MI

PANEL E									
400 AMPS M.C.B. 120/208V-3ø-4W									
CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.	AMP/POLES	CIR NO.
1	20/1	LIGHTS & RECEPTACLES (TLT 131,133)	400	200	LIGHTS & RECEPTACLES (JC 132)	20/1	2		
3	20/1	LIGHTS (TENENT-E 130)	200	500	EW-C-1 (TENENT-E 130)	20/1	4		
5			6696	3072			6		
7	60/3	RTU-2 (TENENT-E 130)	6696	3072	RTU-1 (TENENT-E 130)	30/3	8		
9			6696	3072			10		
11	20/1	RECEPTACLES (TENENT-E 130)	1080	1080	RECEPTACLES (TENENT-E 130)	20/1	12		
13	20/1	EW-H-2 (JC 132)	1650	2500	WH-1 (TOILET 133)	30/2	14		
15	30/2	WH-1 (STAIR 135)	2500	2500			16		
17			2500	500	J-B-O-X (TENENT-E 130)	20/1	18		
19	20/1	SPARE	----	----	SPARE	20/1	20		
21	---	SPACE	----	----	SPACE	---	22		
23	---	SPACE	----	----	SPACE	---	24		
25	---	SPACE	----	----	SPACE	---	26		
27	---	SPACE	----	----	SPACE	---	28		
29	---	SPACE	----	----	SPACE	---	30		
31	---	SPACE	----	----	SPACE	---	32		
33	---	SPACE	----	----	SPACE	---	34		
35	---	SPACE	----	----	SPACE	---	36		
37	---	SPACE	----	----	SPACE	---	38		
39	---	SPACE	----	----	SPACE	---	40		
41	---	SPACE	----	----	SPACE	---	42		

PANEL F									
200 AMPS M.C.B. 120/208V-1ø-3W									
CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.	AMP/POLES	CIR NO.
1	15/1	LIGHTS & REC. - AF,TP (LIVING)	720	750	REFRIGERATOR (KITCHEN)	20/1	2		
3	20/1	RECEPTACLES - TP (KITCHEN)	540	360	RECEPTACLES - TP (KITCHEN)	20/1	4		
5	20/1	DISHWASHER (KITCHEN)	500	540	RECEPTACLES - AF,TP (LIVING ROOM)	15/1	6		
7	50/2	RANGE (KITCHEN)	4500	510	LIGHTS & REC. - AF,TP (BEDROOM 2)	15/1	8		
9			4500	219	LIGHTS & REC. (BATHROOM)	15/1	10		
11	15/1	LIGHTS & REC. - AF,TP (BEDROOM)	507	252	LIGHTS & REC. (MECH)	15/1	12		
13			2250	3764			14		
15	30/2	EW-H-1 (MECH.)	2250	3764	FC-X12C-A (MECH)	60/2	16		
17			1882	3806			18		
19	25/2	FC-X12C-B (MECH.)	1882	3806	HP-X12C (ROOF)	50/2	20		
21	20/1	GARBAGE DISPOSAL (KITCHEN)	972	3120	W/D (BATHROOM)	40/2	22		
23	20/1	MICROWAVE (KITCHEN)	1000	3120			24		
25	20/1	SPARE	----	----	SPARE	20/1	26		
27	---	SPACE	----	----	SPACE	---	28		
29	---	SPACE	----	----	SPACE	---	30		
31	---	SPACE	----	----	SPACE	---	32		
33	---	SPACE	----	----	SPACE	---	34		
35	---	SPACE	----	----	SPACE	---	36		
37	---	SPACE	----	----	SPACE	---	38		
39	---	SPACE	----	----	SPACE	---	40		
41	---	SPACE	----	----	SPACE	---	42		

PANEL K									
200 AMPS M.C.B. 120/208V-1ø-3W									
CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.	AMP/POLES	CIR NO.
1	15/1	LIGHTS & REC. - AF,TP (LIVING)	720	750	REFRIGERATOR (KITCHEN)	20/1	2		
3	20/1	RECEPTACLES - TP (KITCHEN)	540	360	RECEPTACLES - TP (KITCHEN)	20/1	4		
5	20/1	DISHWASHER (KITCHEN)	500	540	RECEPTACLES - AF,TP (LIVING ROOM)	15/1	6		
7	50/2	RANGE (KITCHEN)	4500	219	LIGHTS & REC. (MECH)	15/1	8		
9			4500	219	LIGHTS & REC. (BATHROOM)	15/1	10		
11	15/1	LIGHTS & REC. - AF,TP (BEDROOM)	507	1000	MICROWAVE (KITCHEN)	20/1	12		
13	30/2	EW-H-1 (MECH.)	2250	5595	FC-XXXX-A (MECH)	60/2	14		
15			2250	5595			16		
17	15/2	FC-XXXX-B (MECH.)	561	2444	HP-XXXX (ROOF)	30/2	18		
19			561	2444			20		
21	20/1	GARBAGE DISPOSAL (KITCHEN)	972	3120	W/D (MECH)	40/2	22		
23	---	SPACE	----	3120			24		
25	---	SPACE	----	----	SPACE	---	26		
27	---	SPACE	----	----	SPACE	---	28		
29	---	SPACE	----	----	SPACE	---	30		
31	---	SPACE	----	----	SPACE	---	32		
33	---	SPACE	----	----	SPACE	---	34		
35	---	SPACE	----	----	SPACE	---	36		
37	---	SPACE	----	----	SPACE	---	38		
39	---	SPACE	----	----	SPACE	---	40		
41	---	SPACE	----	----	SPACE	---	42		

PANEL L									
200 AMPS M.C.B. 120/208V-1ø-3W									
CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.	AMP/POLES	CIR NO.
1	15/1	LIGHTS & REC. - AF,TP (LIVING)	720	750	REFRIGERATOR (RESTROOMS)	20/1	2		
3	20/1	RECEPTACLES - TP (KITCHEN)	540	360	RECEPTACLES - TP (KITCHEN)	20/1	4		
5	20/1	DISHWASHER (KITCHEN)	500	540	RECEPTACLES - AF,TP (LIVING ROOM)	15/1	6		
7	15/1	LIGHTS & REC. (BATHROOM)	219	510	LIGHTS & REC. - AF,TP (STUDY)	15/1	8		
9	15/1	LIGHTS & REC. (MECH)	219	219	LIGHTS & REC. (BATHROOM)	15/1	10		
11	15/1	LIGHTS & REC. - AF,TP (BEDROOM)	507	1000	MICROWAVE (KITCHEN)	20/1	12		
13			2250	3764			14		
15	30/2	EW-H-1 (MECH.)	2250	3764	FC-XXXB-A (MECH)	60/2	16		
17			1882	2444			18		
19	25/2	FC-XXXB-B (MECH.)	1882	2444	HP-XXB (ROOF)	40/2	20		
21	20/1	GARBAGE DISPOSAL (KITCHEN)	972	3120	W/D (MECH)	40/2	22		
23	20/1	SPARE	----	3120			24		
25	---	SPACE	----	----	SPACE	20/1	26		
27	---	SPACE	----	----	SPACE	---	28		
29	---	SPACE	----	----	SPACE	---	30		
31	---	SPACE	----	----	SPACE	---	32		
33	---	SPACE	----	----	SPACE	---	34		
35	---	SPACE	----	----	SPACE	---	36		
37	---	SPACE	----	----	SPACE	---	38		
39	---	SPACE	----	----	SPACE	---	40		
41	---	SPACE	----	----	SPACE	---	42		



## EMERGENCY LIGHTING DETAIL

### FIRE ALARM & FIRE PROTECTION KEY

SYMBOL	DESCRIPTION	PART NO.
[FACP]	FIRE ALARM CONTROL PANEL	EST 1064GD
[RA]	REMOTE ANNUNCIATOR	EST RLCD-C
[BPS]	BOOSTER POWER SUPPLY	EST BPS-10A
[F]	MANUAL PULL STATION	EST SIGA-270
[SD]	PHOTOELECTRIC SMOKE DETECTOR	EST SIGA-PS
[DB]	DETECTOR BASE	EST SIGA-SB
[FSD]	STROBE DEVICE	EST GIR-VM
[FH]	HORN STROBE DEVICE	EST GIR-HDVM
[H]	CEILING MOUNTED STROBE	EST GC-VM
[HSH]	CEILING MOUNTED HORN STROBE	EST GC-HDVM
[TS]	TAMPER SWITCH	
[FS]	FLOW SWITCH	

LOCAL EST REPRESENTIVE IS CENTRAL FIRE PROTECTION.  
CONTACT DENNIS SARGENT AT (231) 941-6405

PANEL C									
225 AMPS M.C.B. 120/208V-3ø-4W									
CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.	AMP/POLES	CIR NO.
1	20/1	LIGHTS & RECEPTACLES (TLT 122)	200	200	LIGHTS & RECEPTACLES (JC 121)	20/1	2		
3	20/1	LIGHTS (TENENT-C 120)	200	500	EW-C-1 (TENENT-C 120)	20/1	4		
5	60/2	FC1-120D-A (TENENT-C 120)	3764	1882	FC1-120D-B (TENENT-C 120)	25/2	6		
7			3764	1882			8		
9	50/2	HP-120D (ROOF)	3806	1260	RECEPTACLES (TENENT-C 120)	20/1	10		
11			3806	1650	EW-H-2 (JC 121)	20/1	12		
13	20/1	SPARE	----	----	SPARE	20/1	14		
15	---	SPACE	----	----	SPACE	---	16		
17	---	SPACE	----	----	SPACE	---	18		
19	---	SPACE	----	----	SPACE	---	20		
21	---	SPACE	----	----	SPACE	---	22		
23	---	SPACE	----	----	SPACE	---	24		
25	---	SPACE	----	----	SPACE	---	26		
27	---	SPACE	----	----	SPACE	---	28		
29	---	SPACE	----	----	SPACE	---	30		
31	---	SPACE	----	----	SPACE	---	32		
33	---	SPACE	----	----	SPACE	---	34		
35	---	SPACE	----	----	SPACE	---	36		
37	---	SPACE	----	----	SPACE	---	38		
39	---	SPACE	----	----	SPACE	---	40		
41	---	SPACE	----	----	SPACE	---	42		

PANEL D									
225 AMPS M.C.B. 120/208V-3ø-4W									
CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.	AMP/POLES	CIR NO.
1	20/1	LIGHTS & RECEPTACLES (TLT 126)	200	200	LIGHTS & RECEPTACLES (JC 128)	20/1	2		
3	20/1	LIGHTS (TENENT-D 125)	200	500	EW-C-1 (TENENT-D 125)	20/1	4		
5	60/2	FC1-125C-A (TENENT-D 125)	3764	1882	FC1-125C-B (TENENT-D 125)	25/2	6		
7			3764	1882			8		
9	60/2	FC2-125D-A (TENENT-D 125)	3764	1882	FC2-125D-B (TENENT-D 125)	25/2	10		
11			3764	1882			12		
13	50/2	HP2-125D (ROOF)	3806	3806	HP1-125C (ROOF)	50/2	14		
15			3806	3806			16		
17	20/1	RECEPTACLES (TENENT-D 125)	720	720	RECEPTACLES (TENENT-D 125)	20/1	18		
19	20/1	EW-H-2 (JC 128)	1650	----	SPARE	20/1	20		
21	20/1	SPARE	----	----	SPACE	---	22		
23	---	SPACE	----	----	SPACE	---	24		
25	---	SPACE	----	----	SPACE	---	26		
27	---	SPACE	----	----	SPACE	---	28		
29	---	SPACE	----	----	SPACE	---	30		
31	---	SPACE	----	----	SPACE	---	32		
33	---	SPACE	----	----	SPACE	---	34		
35	---	SPACE	----	----	SPACE	---	36		
37	---	SPACE	----	----	SPACE	---	38		
39	---	SPACE	----	----	SPACE	---	40		
41	---	SPACE	----	----	SPACE	---	42		

PANEL J

200 AMPS M.C.B. 120/208V-1ø-3W

CIR NO.	AMP/POLES	DESCRIPTION	LOAD	LOAD	DESCRIPTION	AMP/POLES	CIR NO.
1	15/1	LIGHTS & REC. - AF,TP (LIVING)	720	750	REFRIGERATOR (KITCHEN)	20/1	2
3	20/1	RECEPTACLES - TP (KITCHEN)	540	360	RECEPTACLES - TP (KITCHEN)	20/1	4
5	20/1	DISHWASHER (KITCHEN)	500	540	RECEPTACLES - AF,TP (LIVING ROOM)	15/1	6
7	20/1	MICROWAVE (KITCHEN)	1000	510	LIGHTS & REC. - AF,TP (STUDY)	15/1	8
9	15/1	LIGHTS & REC. (MECH)	4500	219	LIGHTS & REC. (BATHROOM)	15/1	10
11	15/1	LIGHTS & REC. - AF, TP (BEDROOM)	507	972	GARBAGE DISPOSAL (KITCHEN)	20/1	12
13	30/2	EW-H-1 (MECH.)	2250	3764	FC-X08B-A (MECH)	60/2	14
15			2250	3764			16
17	25/2	FC-X08C-B (MECH.)	1882	2444	HP-X08B (ROOF)	40/2	18
19			1882	2444			20
21	20/1	SPARE	---	3120	W/D (BATH)	40/2	22
23	---	SPACE	---	3120			24
25	---	SPACE	---	---	SPARE	20/1	26
27	---	SPACE	---	---	SPACE	---	28
29	---	SPACE	---	---	SPACE	---	30
31	---	SPACE	---	---	SPACE	---	32
33	---	SPACE	---	---	SPACE	---	34
35	---	SPACE	---	---	SPACE	---	36
37	---	SPACE	---	---	SPACE	---	38
39	---	SPACE	---	---	SPACE	---	40
41	---	SPACE	---	---	SPACE	---	42



