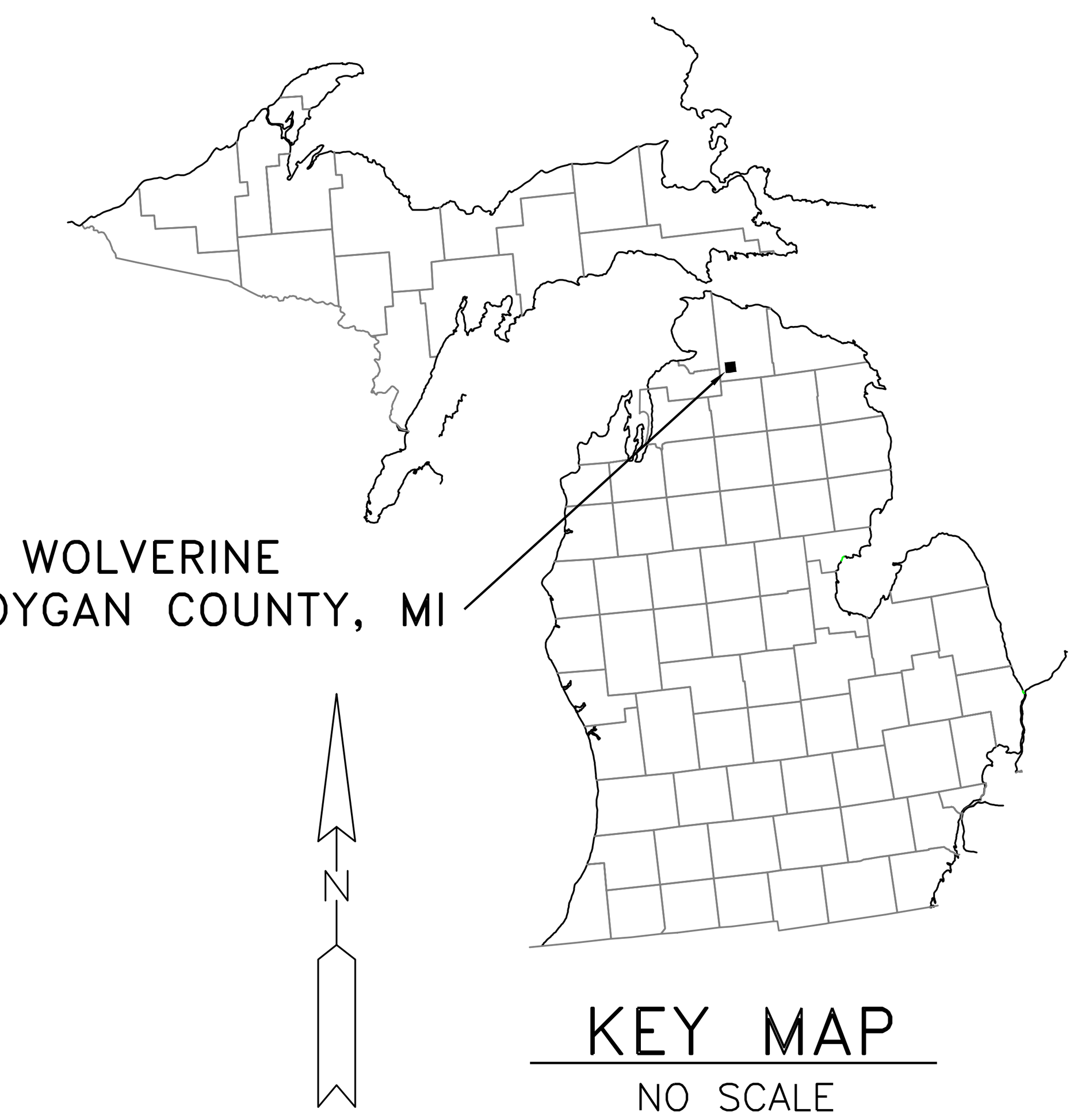
WOLVERINE COMMUNITY SCHOOLS

MIDDLE/HIGH SCHOOL BOILER REPLACEMENT PROJECT

13131 BROOK STREET WOLVERINE, MI 49799
CHEBOYGAN COUNTY, MICHIGAN



KEY MAP
NO SCALE

PROJECT DESCRIPTION

THIS PROJECT CONSISTS OF MECHANICAL HVAC/PLUMBING WORK, AND ASSOCIATED ELECTRICAL WORK, FOR REPLACING FIVE (5) OLD COPPER-FINNED BOILERS WITH NEW HIGH EFFICIENCY BOILERS AS SHOWN ON THE PLANS.

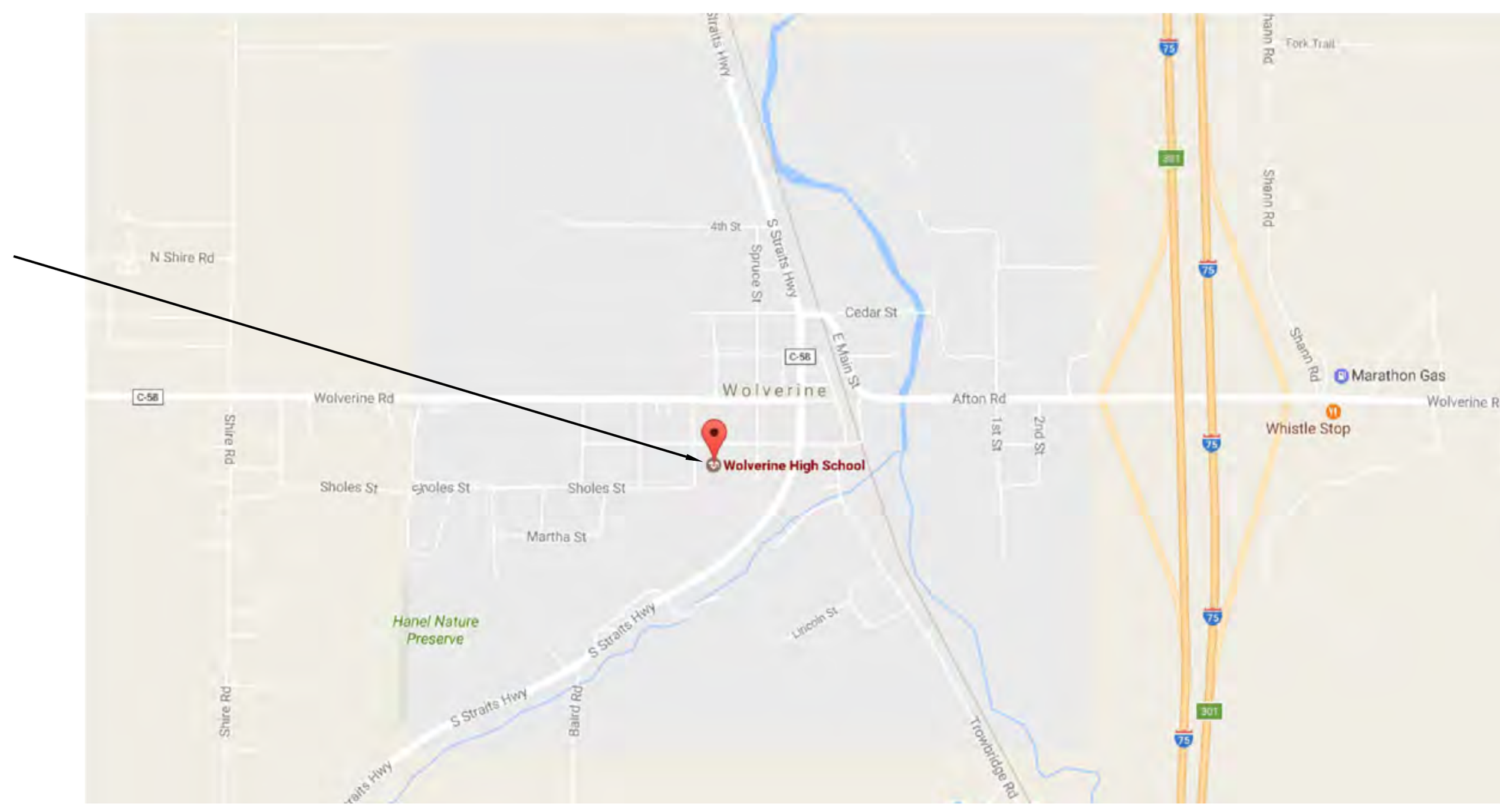
THE SCOPE OF PROJECT WORK WILL INCLUDE, BUT IS NOT NECESSARILY LIMITED TO, THE FOLLOWING ITEMS:

1) DEMOLITION WORK: REMOVE EXISTING BOILERS AND ALL ASSOCIATED GAS PIPING, VENTING, COMBUSTION AIR INTAKE, CONTROLS, ELECTRICAL, ETC...

2) MECHANICAL WORK: PROVIDE/INSTALL NEW BOILERS AND ALL ASSOCIATED NEW HYDRONIC PIPING & INSULATION, GAS PIPING, PLUMBING WORK, VENTING, CONTROLS, ETC...
2A) REPLACING THE EXISTING AIR SEPERATOR (A/S) SHALL BE BID AS AN ALTERNATE ADDER TO THE BASE-BID PROJECT.
2B) REPLACING THE TWO (2) EXISTING HEATING PUMPS SHALL BE BID AS AN ALTERNATE ADDER TO THE BASE-BID PROJECT.

3) ELECTRICAL WORK: REMOVE EXISTING BOILERS POWER/CONTROLS AND PROVIDE NEW POWER/CONTROLS FOR NEW BOILERS INCLUDING NEW EMERGENCY BOILER SHUT-DOWN SWITCHES.
3A) DISCONNECTING AND RE-CONNECTION POWER TO TWO (2) EXISTING HEATING PUMPS SHALL BE BID AS AN ALTERNATE ADDER TO THE BASE-BID PROJECT.

PROJECT LOCATION



WOLVERINE MIDDLE/HIGH SCHOOL VICINITY MAP
NO SCALE

MECHANICAL & PLUMBING ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
A/S	AIR SEPARATOR
AAV	AUTOMATIC AIR VENT
AFF	ABOVE FINISHED FLOOR
BFP	BACKFLOW PREVENTER
BHP	BRAKE HORSEPOWER
BMS	BUILDING MANAGEMENT SYSTEM
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNITS PER HOUR
CF	CHEMICAL FEED
CFM	CUBIC FEET PER MINUTE
CO	CLEAN OUT
COND	CONDENSATE
CONT.	CONTINUATION OR CONTINUED
CORD.	COORDINATE
CP	CIRCULATING PUMP
CW	DOMESTIC COLD WATER
CAP	CAPACITY
CFH	CUBIC FEET PER HOUR
DEG	DEGREES
DN	DOWN
DWH	DOMESTIC WATER HEATER
DW&V	DRAINAGE WASTE & VENT
(E)	EXISTING
EG	EXHAUST GRILLE OR REGISTER
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
E.C.	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELEV	ELEVATION
ESP	EXTERNAL STATIC PRESSURE
EWB	ENTERING WET BULB TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
E.C.	ELECTRICAL CONTRACTOR
F	FIRE PROTECTION
FC	FLEXIBLE CONNECTION
FD	FLOOR DRAIN
FFD	FUNNEL FLOOR DRAIN
FLA	FULL LOAD AMPS
FLR	FLOOR
FPM	FEET PER MINUTE
FT	FEET
(F)	FUTURE
G	GAS (NATURAL GAS / PROPANE)
GPM	GALLONS PER MINUTE
HB	HOSE BIB
HP	HORSEPOWER
HR	HOUR
HTG	HEATING
HW	DOMESTIC HOT WATER
HWR	DOMESTIC HOT WATER RETURN
HWHR	HOT WATER HEATING RETURN
HWHS	HOT WATER HEATING SUPPLY
HYD	HYDRANT
INL	INLET
IN	INCHES
ISP	INTERNAL STATIC PRESSURE
IW	INDIRECT WASTE
KW	KILOWATT
KVA	KILO-VOLT-AMPERE
LRA	LOCKED ROTOR AMPS
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MBH	THOUSAND BRITISH THERMAL UNITS PER HOUR
M.C.	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MV	MANUAL AIR VENT
NIC	NOT IN CONTRACT
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NOM	NOMINAL
OA	OUTSIDE AIR
ORC	OVERFLOW ROOF DRAIN CONDUCTOR
ORD	OVERFLOW ROOF DRAIN
P.C.	PLUMBING CONTRACTOR
PD	PRESSURE DROP
PRI	PRIOR TO ROUGH-IN
PRV	PRESSURE REDUCING VALVE
PSIA	POUNDS PER SQUARE INCH - ABSOLUTE
PSIG	POUNDS PER SQUARE INCH - GAUGE
RC	ROOF DRAIN CONDUCTOR
RD	ROOF DRAIN
REL.A	RELIEF AIR
RPM	REVOLUTIONS PER MINUTE
SAN	SANITARY WASTE
SP	STATIC PRESSURE
SS	SERVICE SINK
T.C.	TEMPERATURE CONTROLS CONTRACTOR
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
U/G	UNDERGROUND (BELOW GRADE)
V	VENT
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
VTR	VENT THRU ROOF
VS	VENT STACK
W	WASTE
W&V	WASTE AND VENT
WCO	WALL CLEAN OUT
WG	WATER GAUGE
WH	WALL HYDRANT

MECHANICAL & PLUMBING SYMBOL LIST

SYMBOL	DESCRIPTION
	PIPE ELBOW UP
	PIPE ELBOW DOWN
	DIRECTION OF FLOW
	UNION
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	PIPE CAP OR PLUG
	CIRCULATING PUMP
	ISOLATION VALVE
	GLOBE VALVE
	BALL VALVE
	BUTTERFLY VALVE
	CHECK VALVE (SWING)
	CHECK VALVE (SPRING)
	PLUG VALVE
	COMBO BALANCE VALVE/ FLOW MEASURING DEVICE
	STRAINER (Y-TYPE)
	STRAINER (BLOW OFF TYPE)
	TRAP (PLAN VIEW)
	FLOOR DRAIN (PLAN VIEW)
	FLOOR DRAIN (ELEVATION)
	FUNNEL FLOOR DRAIN (PLAN VIEW)
	FUNNEL FLOOR DRAIN (ELEVATION)
	ROOF DRAIN SUMP
CO	CLEAN OUT (IN FLOOR)
CO	CLEAN OUT (IN LINE)
BFP	BACKFLOW PREVENTER
HB	HOSE BIBB
WH	WALL HYDRANT
	PRESSURE RELIEF VALVE
	PRESSURE REDUCING VALVE
	PRESSURE AND TEMPERATURE RELIEF VALVE
	PRESSURE REGULATING VALVE
P/T	PRESSURE AND TEMPERATURE TEST PLUG
	PRESSURE GAUGE AND COCK
	THERMOMETER
MV	MANUAL AIR VENT
AV	AUTOMATIC AIR VENT
T	THERMOSTAT
T	TEMPERATURE SENSOR
	CROSS SECTION OF SUPPLY AIR DUCT
	CROSS SECTION OF EXHAUST OR RETURN AIR DUCT
	TRANSFER GRILLE
M	MOTORIZED DAMPER
	ROOF VENTILATOR (PLAN VIEW)
HWHS	HOT WATER HEATING SUPPLY PIPING
HWHR	HOT WATER HEATING RETURN PIPING
CD	CONDENSATE DRAIN
CF	CHEMICAL FEED PIPING
CW	DOMESTIC COLD WATER PIPING
HW	DOMESTIC HOT WATER PIPING
HWR	DOMESTIC HOT WATER RETURN PIPING
TW	DOMESTIC TEMPERED DOMESTIC HOT WATER PIPING
SAN	SANITARY WASTE PIPING
ST	STORM SEWER PIPING
RC	RAIN CONDUCTOR PIPING
	SANITARY VENT PIPING
G	GAS PIPING (NATURAL GAS OR PROPANE)
F	FIRE PROTECTION PIPING

PROJECT SCHEDULE

MONDAY JUNE 5, 2017 -
ISSUE DRAWINGS & SPECS FOR BID
AVAILABLE @ WWW.JLKENGINEERING.COM

TUESDAY JUNE 13, 2017 @ 3:15 PM -
PREBID WALK THRU (MANDATORY FOR BIDDING MECHANICAL HVAC CONTRACTORS)
AT PROJECT SITE
WOLVERINE MIDDLE-HIGH SCHOOL
13131 BROOK ST.
WOLVERINE, MI 49799

THURSDAY JUNE 29, 2017 @ 3:00 PM - BIDS DUE
DELIVER (1) COPY OF SEALED BIDS TO:
JOE A. HART, SUPERINTENDENT
WOLVERINE COMMUNITY SCHOOLS
ELEMENTARY SCHOOL / CENTRAL OFFICE
5993 SHOLES STREET
WOLVERINE, MI 49799
PHONE: 231-525-8201 X132
EMAIL: JHART@WOLVERINESCHOOLS.ORG

MONDAY JULY 10, 2017 - SCHOOL BOARD MEETING

MONDAY JULY 17, 2017 - CONTRACT AWARD

JULY 18, 2017 THRU AUGUST 22, 2017 - CONTRACTOR TO ISSUE BOILER/PUMP SHOPS FOR ENGINEER REVIEW/APPROVAL; PERFORM DEMO WORK AND PREPARE NEW WORK FOR NEW BOILERS/PUMPS

AUGUST 22, 2017 -
BOILERS/PUMPS ARRIVE (4-5 WEEK LEAD TIME)

SEPTEMBER 21, 2017 -
PROJECT COMPLETION INCLUDING CHEMICAL WATER TREATMENT, ELECTRICAL/CONTROLS, TEST/BALANCE, ETC.

PROJECT CONTACTS

ENGINEER:
JUSTIN KOWATCH, PE
JLK ENGINEERING
5766 CATAWABA CT.
GAYLORD, MI 49735
OFFICE: 989-448-4631
CELL: 989-614-4225
EMAIL: JKOWATCH@JLKENGINEERING.COM

OWNER:
JOE A. HART, SUPERINTENDENT
WOLVERINE COMMUNITY SCHOOLS
ELEMENTARY SCHOOL / CENTRAL OFFICE
5993 SHOLES STREET
WOLVERINE, MI 49799
PHONE: 231-525-8201 X132
EMAIL: JHART@WOLVERINESCHOOLS.ORG

METHODS OF NOTATION

SYMBOL	DESCRIPTION
B 1	EQUIPMENT DESIGNATION (I.E. BOILER NUMBER 1)
1	CONSTRUCTION KEYED NOTE NUMBER
1	DEMOLITION KEYED NOTE NUMBER
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	NEW SYSTEM COMPONENT
	EXISTING SYSTEM COMPONENT TO REMAIN
	POINT OF NEW CONNECTION

PREPARED UNDER THE SUPERVISION OF:
JUSTIN L. KOWATCH, P.E.
MICHIGAN PE NO. 45625

MECHANICAL & PLUMBING DRAWING INDEX

ELECTRICAL DRAWING INDEX

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WOLVERINE COMMUNITY SCHOOLS
MIDDLE/HIGH SCHOOL BOILER REPLACEMENT PROJECT
13131 BROOK STREET WOLVERINE, MICHIGAN 49799
MECHANICAL & PLUMBING TITLE SHEET

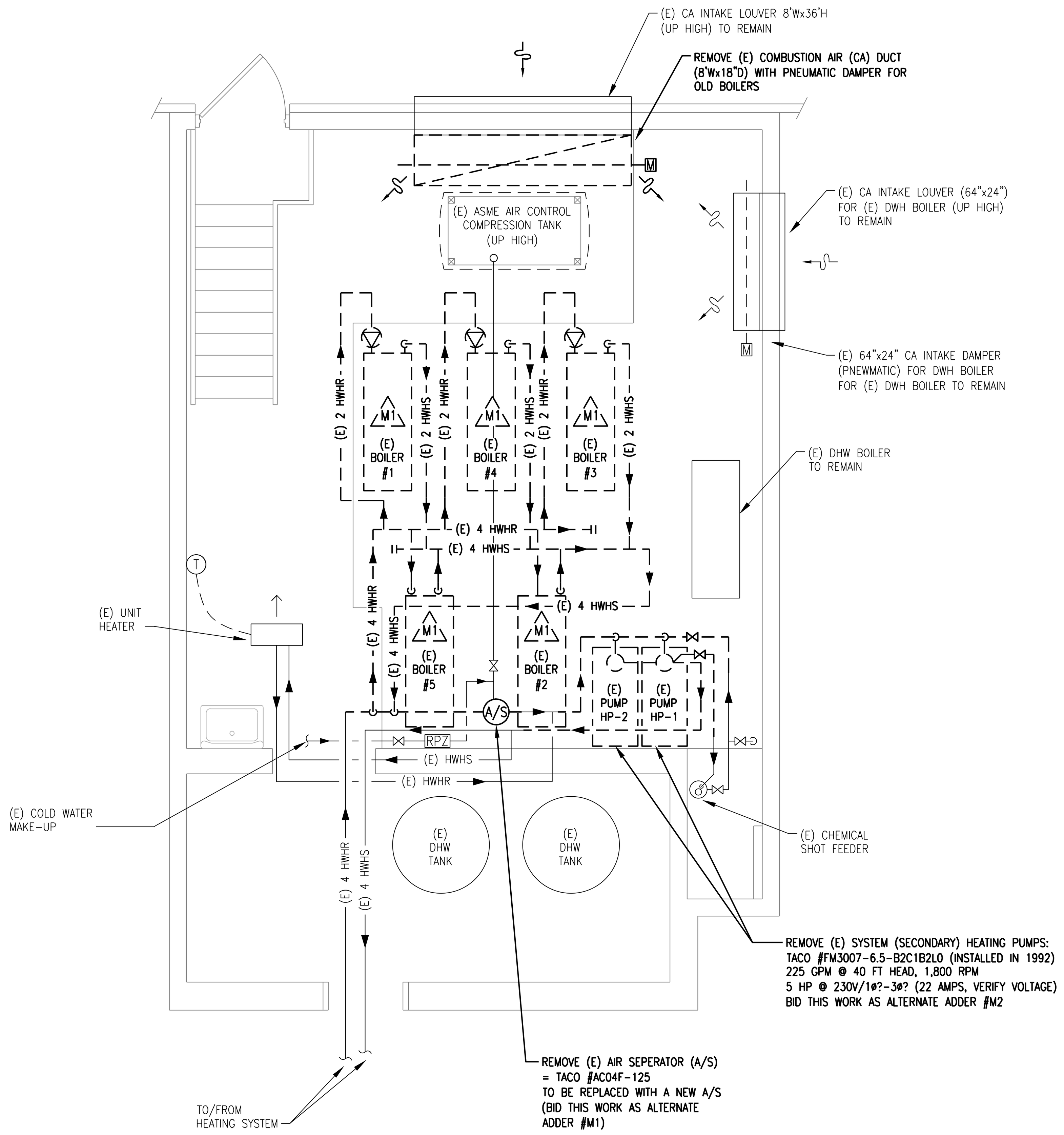
DATE	ISSUED FOR
6/5/2017	BIDDING & PLAN REVIEW

JOB NO. WCS 1701-01

SHEET M1

KEYED MECHANICAL & PLUMBING DEMOLITION NOTES:

M1 — REMOVE (E) BOILERS AND PREPARE EXISTING PIPING, UTILITIES, VENTING, ETC. FOR NEW BOILERS.



NORTH

MECHANICAL DEMOLITION PLAN

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

KEYED MECHANICAL & PLUMBING CONSTRUCTION NOTES:

MA — NEW BOILERS - SEE PIPING DIAGRAM, DETAILS, AND SCHEDULES. COORDINATE EXACT LOCATION OF NEW BOILERS WITH EXISTING CONDITIONS FOR PROPER CLEARANCES NEEDED, DRAINAGE OF NEW CONDENSATE FROM BOILERS TO EXISTING FLOOR SINK/DRAIN, ETC.

MB — NEW PIPING TO/FROM NEW BOILERS - SEE PIPING DIAGRAM FOR DETAILS.

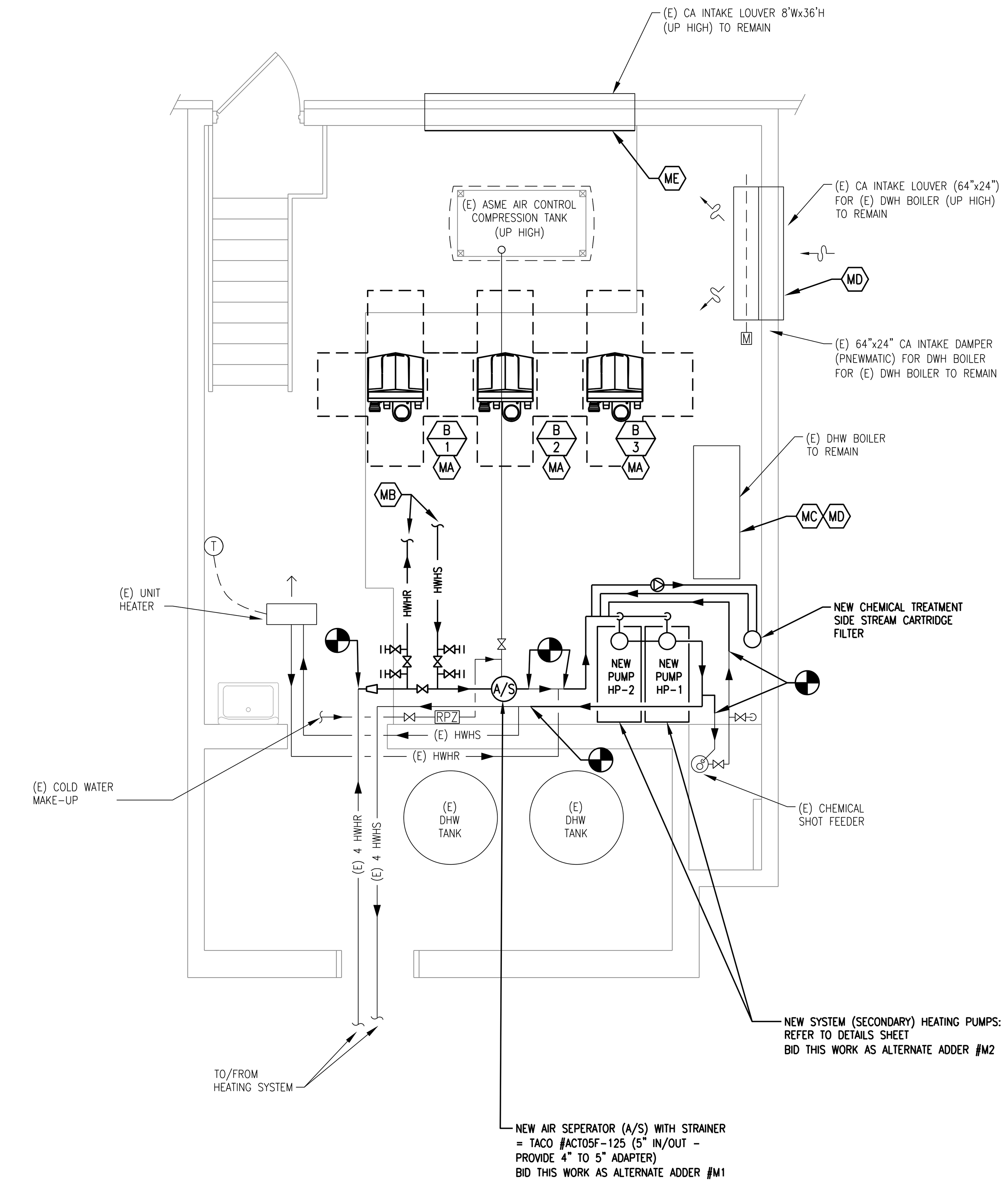
MC — REMOVE EXISTING EXISTING HEATING BOILERS VENTING AND CAP OFF AIR-TIGHT AT EXISTING DOMESTIC HOT WATER HEATING BOILER VENTING AS REQUIRED FOR EXISTING WATER HEATING BOILER TO REMAIN IN SERVICE AS-IS.

MD — REVISE EXISTING HEATING BOILERS AND EXISTING DOMESTIC HOT WATER BOILER COMBUSTION AIR INTAKE CONTROLS AS REQUIRED FOR EXISTING DOMESTIC HOT WATER HEATING BOILER TO REMAIN IN SERVICE AS-IS.

ME — CAP OFF EXISTING/OLD HEATING BOILERS COMBUSTION AIR (CA) INTAKE LOUVER

PA — CAP OFF EXISTING/OLD NATURAL GAS DROPS TO OLD/REMOVED BOILERS, TYPICAL 5X.

PB — PROVIDE NEW 1-1/2 NATURAL GAS PIPING DROPS TO NEW BOILERS.



NORTH

MECHANICAL NEW WORK PLAN

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

GENERAL MECHANICAL DEMOLITION NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE EXTENT OF DEMOLITION WORK SHALL BE AS REQUIRED BY THE NEW WORK.
2. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING SYSTEMS/EQUIPMENT PRIOR TO ISSUING HIS BID. (IE. ALL EXISTING PIPE/DUCT SIZES AND ROUTINGS/LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR).
3. ALL MECHANICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING, BUT NOT LIMITED TO, HANGERS, SUPPORTS, CONTROLS, ETC. REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF OFF SITE. CAP ALL OPEN ENDED PIPING AND EXISTING DOMESTIC WATER HEATER BOILER VENTING TO REMAIN.
4. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED, BY THE OWNER OR OWNER'S REPRESENTATIVE, AT LEAST (7) DAYS IN ADVANCE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING OPERATION.
5. WHERE DEMOLITION OF EXISTING SERVICES ARE REQUIRED TO ACCOMMODATE THE PROJECT PHASING/SCHEDULING, AND SERVICES ARE TO BE INTERRUPTED IN AREAS THAT ARE REMAINING OCCUPIED, THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AND/OR CONNECTIONS TO THE OCCUPIED AREAS TO MAINTAIN ITS PRESENT OPERATION. IF SYSTEM SHUT DOWNS ARE REQUIRED, THE CONTRACTOR SHALL SCHEDULE WORK TO BE PERFORMED AT UNOCCUPIED HOURS.
6. ALL ITEMS TO BE REMOVED AND/OR RELOCATED SHALL BE REMOVED AND/OR RELOCATED TOGETHER WITH ALL RELATED ITEMS AS REQUIRED BY THE NEW WORK TO BE PERFORMED.
7. CONTRACTOR SHALL COORDINATE ALL REMOVAL AND/OR RELOCATION WITH THE EXTENT OF THE NEW WORK AND WITH ALL OTHER TRADES INVOLVED.

GENERAL MECHANICAL NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL SCOPE OF WORK. CONTRACTOR SHALL PROVIDE ALL MECHANICAL SYSTEMS AND ASSOCIATED EQUIPMENT COMPLETE AND INCLUDE ALL NECESSARY OFFSETS, FITTINGS, AND OTHER COMPONENTS REQUIRED DUE TO INTERFERENCES, SPACE CONSTRAINTS, CODES, ETC.
2. MECHANICAL SYSTEMS SHALL BE INSTALLED PER MICHIGAN MECHANICAL CODE, MICHIGAN PLUMBING CODE, INTERNATIONAL FUEL GAS CODE, APPLICABLE NFPA BUILDING CODES (IE. 101, 90A, ETC.), AND APPLICABLE BUILDING CODES (I.E. MICHIGAN BUILDING CODE, ETC.).
3. CONTRACTOR TO VERIFY REQUIREMENTS OF ALL EQUIPMENT WITH SHOP DRAWING SUBMITTALS PRIOR TO INSTALLATION. NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN SHOP DRAWINGS AND PLANS.
4. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF MECHANICAL WORK WITH ALL OTHER TRADES. VERIFY ALL MECHANICAL AND ELECTRICAL CLEARANCES PRIOR TO THE FABRICATION OF ANY WORK. DUCTWORK, PIPING, ETC. SHALL NOT BE LOCATED DIRECTLY OVER ELECTRICAL PANELS/EQUIPMENT, OR INTERFERE WITH MECHANICAL/ ELECTRICAL EQUIPMENT CLEARANCES.
5. CONTRACTOR SHALL PROVIDE ALL MISCELLANEOUS SUPPORTING STEEL, HANGERS, ETC., FOR THE PROPER INSTALLATION OF ALL MECHANICAL SYSTEMS. DUCTWORK OR PIPING SHALL NOT BE SUPPORTED FROM/BY EQUIPMENT OR EQUIPMENT CONNECTIONS.
6. COORDINATE ALL FLOOR, WALL, AND ROOF PENETRATIONS, EQUIPMENT PADS, ETC. WITH ARCHITECTURAL/STRUCTURAL TRADES PRIOR TO ROUGH-IN. UNLESS NOTED OTHERWISE, EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, CORING, PATCHING ASSOCIATED WITH THEIR WORK. CUTTING, CORING, PATCHING WORK SHALL BE PERFORMED BY A QUALIFIED SUB-CONTRACTOR AND MATCH EXISTING OR NEW FINISHES.

MECHANICAL ALTERNATE BID ITEMS:

ALTERNATE ADD #M1:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING AIR SEPERATOR (A/S) TO THE SCOPE OF THE PROJECT.

ALTERNATE ADD #M2:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING HEATING SYSTEM PUMPS (HP-1 & HP-2) TO THE SCOPE OF THE PROJECT.

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WOLVERINE COMMUNITY SCHOOLS
MIDDLE/HIGH SCHOOL BOILER REPLACEMENT PROJECT
13131 BROOK STREET WOLVERINE, MICHIGAN 49799
MECHANICAL PLANS

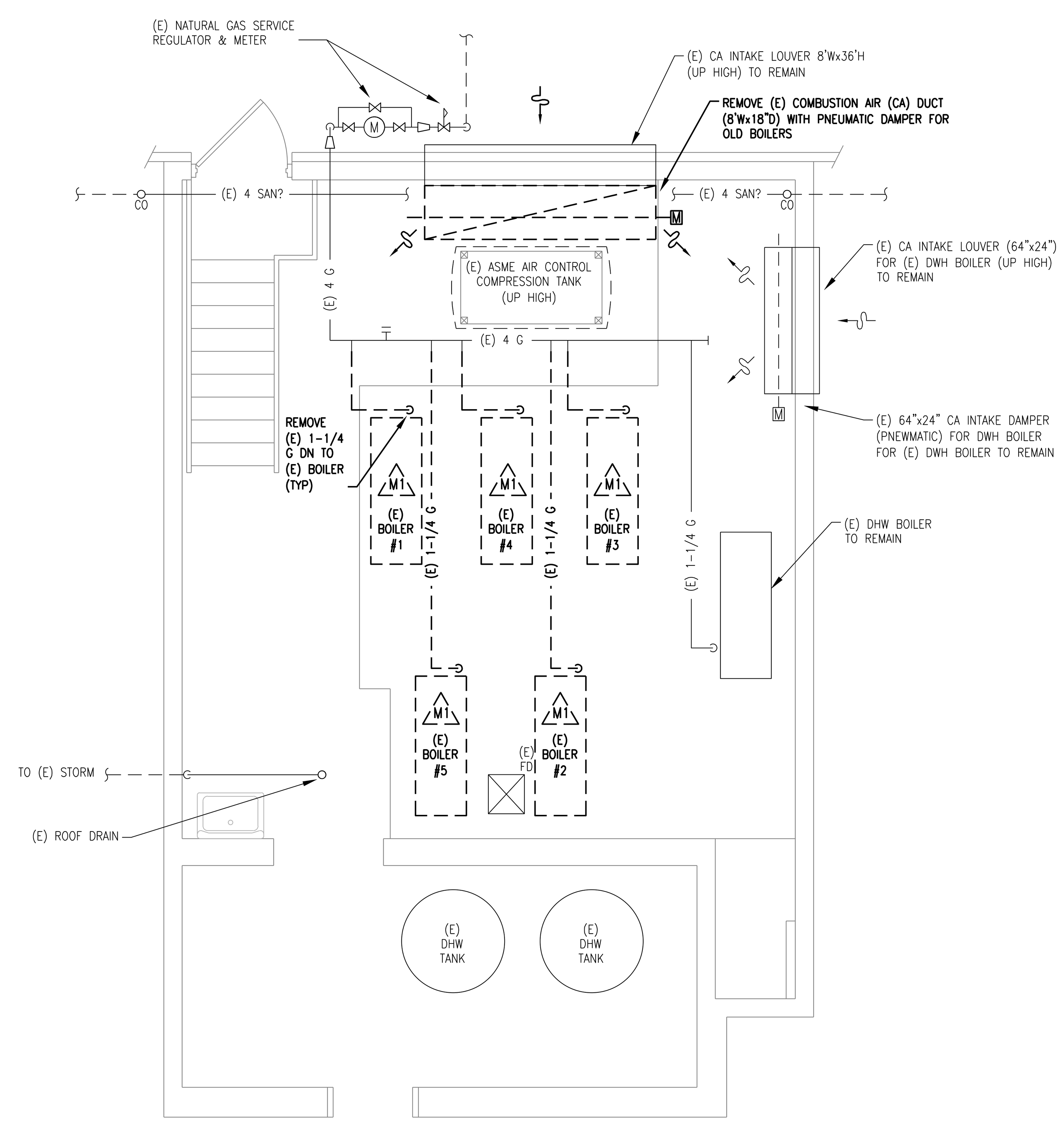
ISSUED FOR	DATE
BIDDING & PLAN REVIEW	6/5/2017

JOB NO. WCS 1701-01

SHEET M2

KEYED MECHANICAL & PLUMBING DEMOLITION NOTES:

M1 REMOVE (E) BOILERS AND PREPARE EXISTING PIPING, UTILITIES, VENTING, ETC. FOR NEW BOILERS.



NORTH

PLUMBING DEMOLITION PLAN

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

KEYED MECHANICAL & PLUMBING CONSTRUCTION NOTES:

MA NEW BOILERS – SEE PIPING DIAGRAM, DETAILS, AND SCHEDULES. COORDINATE EXACT LOCATION OF NEW BOILERS WITH EXISTING CONDITIONS FOR PROPER CLEARANCES NEEDED, DRAINAGE OF NEW CONDENSATE FROM BOILERS TO EXISTING FLOOR SINK/DRAIN, ETC.

MB NEW PIPING TO/FROM NEW BOILERS – SEE PIPING DIAGRAM FOR DETAILS.

MC REMOVE EXISTING EXISTING HEATING BOILERS VENTING AND CAP OFF AIR-TIGHT AT EXISTING DOMESTIC HOT WATER HEATING BOILER VENTING AS REQUIRED FOR EXISTING WATER HEATING BOILER TO REMAIN IN SERVICE AS-IS.

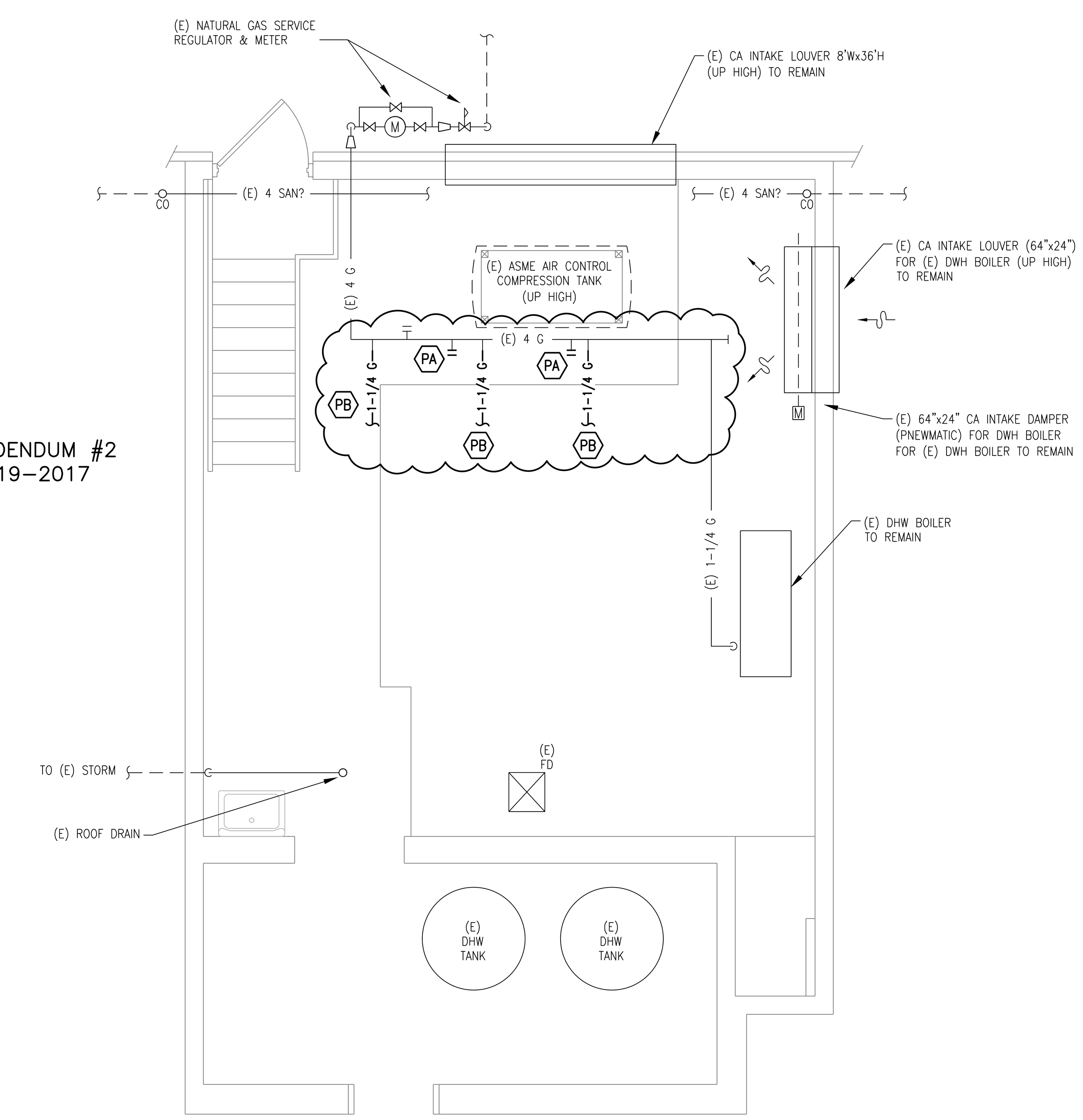
MD REVISE EXISTING HEATING BOILERS AND EXISTING DOMESTIC HOT WATER BOILER COMBUSTION AIR INTAKE CONTROLS AS REQUIRED FOR EXISTING DOMESTIC HOT WATER HEATING BOILER TO REMAIN IN SERVICE AS-IS.

ME CAP OFF EXISTING/OLD HEATING BOILERS COMBUSTION AIR (CA) INTAKE LOUVER

PA CAP OFF EXISTING/OLD NATURAL GAS DROPS TO OLD/REMOVED BOILERS, TYPICAL 2X.

PB PROVIDE NEW 1-1/4 NATURAL GAS PIPING DROPS TO NEW BOILERS. REDUCE TO 1" NEAR BOILER AND INSTALL DIRT LEG 90, ISOLATION VALVE, AND UNION NEAR THE BOILER. REFER TO BOILER PIPING DIAGRAM.

ADDENDUM #2
6-19-2017



NORTH

PLUMBING NEW WORK PLAN

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

GENERAL PLUMBING DEMOLITION NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE EXTENT OF DEMOLITION WORK SHALL BE AS REQUIRED BY THE NEW WORK.
2. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING SYSTEMS/EQUIPMENT PRIOR TO ISSUING HIS BID. (I.E. ALL EXISTING PIPE SIZES AND ROUTINGS/LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY CONTRACTOR).
3. ALL PLUMBING ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING, BUT NOT LIMITED TO, HANGERS, SUPPORTS, CONTROLS, ETC. REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF OFF SITE. CAP ALL OPEN ENDED PIPING AND DUCTWORK.
4. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED, BY THE OWNER OR OWNER'S REPRESENTATIVE, AT LEAST (7) DAYS IN ADVANCE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING OPERATION.
5. WHERE DEMOLITION OF EXISTING SERVICES ARE REQUIRED TO ACCOMMODATE THE PROJECT PHASING/SCHEDULING, AND SERVICES ARE TO BE INTERRUPTED IN AREAS THAT ARE REMAINING OCCUPIED, THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AND/OR CONNECTIONS TO THE OCCUPIED AREAS TO MAINTAIN ITS PRESENT OPERATION. IF SYSTEM SHUT DOWNS ARE REQUIRED, THE CONTRACTOR SHALL SCHEDULE WORK TO BE PERFORMED AT UNOCCUPIED HOURS.
6. ALL ITEMS TO BE REMOVED AND/OR RELOCATED SHALL BE REMOVED AND/OR RELOCATED TOGETHER WITH ALL RELATED ITEMS AS REQUIRED BY THE NEW WORK TO BE PERFORMED.
7. CONTRACTOR SHALL COORDINATE ALL REMOVAL AND/OR RELOCATION WITH THE EXTENT OF THE NEW WORK AND WITH ALL OTHER TRADES INVOLVED.
8. UNLESS NOTED OTHERWISE, EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, CORING, PATCHING ASSOCIATED WITH THEIR WORK. CUTTING, CORING, PATCHING WORK SHALL BE PERFORMED BY A QUALIFIED SUB-CONTRACTOR AND MATCH EXISTING OR NEW FINISHES.

GENERAL PLUMBING NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL SCOPE OF WORK. CONTRACTOR SHALL PROVIDE PLUMBING SYSTEMS AND RELATED EQUIPMENT COMPLETE AND INCLUDE ALL NECESSARY OFFSETS, FITTINGS, AND OTHER COMPONENTS REQUIRED DUE TO INTERFERENCES, SPACE CONSTRAINTS, ETC.
2. PLUMBING SYSTEMS SHALL BE INSTALLED PER MICHIGAN PLUMBING CODE, INTERNATIONAL FUEL GAS CODE, MICHIGAN MECHANICAL CODE, AND APPLICABLE BUILDING CODES (I.E. MICHIGAN BUILDING CODES, NFPA CODES, ETC.).
3. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF PLUMBING WORK WITH ALL OTHER TRADES. CONTRACTOR SHALL VERIFY ALL MECHANICAL AND ELECTRICAL CLEARANCES PRIOR TO FABRICATION OF ANY NEW WORK. PIPING SHALL NOT BE LOCATED DIRECTLY OVER ELECTRICAL EQUIPMENT AND PANELS, OR INTERFERE WITH ELECTRICAL/MECHANICAL EQUIPMENT CLEARANCE SPACES.
4. ALL FIXTURES / EQUIPMENT SHALL BE PROVIDED WITH ISOLATION VALVES. ALL VALVES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS.

MECHANICAL ALTERNATE BID ITEMS:

ALTERNATE ADD #M1:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING AIR SEPERATOR (A/S) TO THE SCOPE OF THE PROJECT.

ALTERNATE ADD #M2:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING HEATING SYSTEM PUMPS (HP-1 & HP-2) TO THE SCOPE OF THE PROJECT.

6/19/2017 – FOR ADDENDUM #2

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WOLVERINE COMMUNITY SCHOOLS
MIDDLE/HIGH SCHOOL BOILER REPLACEMENT PROJECT
13131 BROOK STREET WOLVERINE, MICHIGAN 49799
PLUMBING PLANS

DATE	ISSUED FOR
6/5/2017	BIDDING & PLAN REVIEW
6/19/2017	ADDENDUM #2

JOB NO. WCS 1701-01

SHEET M3

HOT WATER HEATING BOILER SCHEDULE (WOLVERINE MIDDLE-HIGH SCHOOL)

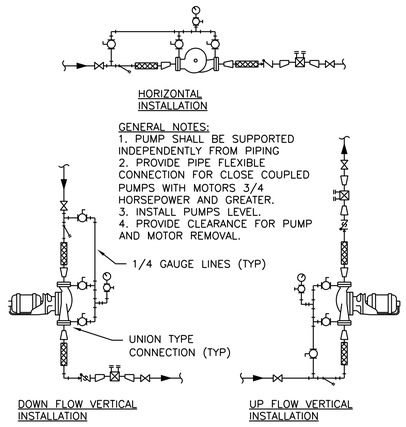
UNIT I.D.	FUEL		INPUT RANGE MBH	MAX OUTPUT MBH	RELIEF VALVE PSIG	WATER?				ELECTRICAL			VENTING SIZES ø (IN & OUT)	WEIGHT LBS (WET)	MODEL NO.	REMARKS
	TYPE	INLET PRESS. AT GAS TRAIN				E.W.T ° F	L.W.T. ° F	FLOW GPM	W.P.D. FT	VOLTS	PHASE	AMPS				
B-1	NAT. GAS	4" WC MIN. 14" WC MAX.	121-850	117-825	50	140	180	41	3.3	115	1	<12	4"ø-6"ø	700	FTX850N	SEE NOTES
B-2	NAT. GAS	4" WC MIN. 14" WC MAX.	121-850	117-825	50	140	180	41	3.3	115	1	<12	4"ø-6"ø	700	FTX850N	SEE NOTES
B-3	NAT. GAS	4" WC MIN. 14" WC MAX.	121-850	117-825	50	140	180	41	3.3	115	1	<12	4"ø-6"ø	700	FTX850N	SEE NOTES
(F) B-4	NAT. GAS	4" WC MIN. 14" WC MAX.	121-850	117-825	50	140	180	41	3.3	115	1	<12	4"ø-6"ø	700	FTX850N	POTENTIAL FUTURE BOILER NOT IN THIS CONTRACT

NOTE:
1. MODEL NUMBERS ARE LOCHINVAR "FTX" FIRE TUBE BOILER. BASE-BID LOCHINVAR "FTX". OTHER BOILERS MAY BE BID AS A VOLUNTARY ALTERNATE BUT MUST BE CLARIFIED AS SUCH IN THE BID.
2. STANDARD FEATURES: MODULATING BURNER WITH 7-10:1 TURNDOWN; STAINLESS STEEL FIRE-TUBE HEAT EXCHANGER, ASME "H" STAMPED; 50 PSI RELIEF VALVE; DIRECT VENTING UP TO 100 FEET, FACTORY SUPPLIED SIDEWALL OR ROOF VENT KIT; ADJUSTABLE HIGH LIMIT WITH MANUAL RESET; AUTO RESET HIGH LIMIT CONTROL; MANUAL RESET LOW WATER CUT-OFF; FLUE TEMP SENSOR; TEMP & PRESSURE GUAGE; CONDENSATE TRAP; 10-YEAR LIMITED WARRANTY; LOW WATER CUT-OFF.
3. SMART SYSTEM FEATURES:
3A. THREE (3) RESET TEMP INPUTS WITH INDEPENDENT OUTDOOR RESET CURVES FOR EACH; OUTDOOR TEMP SENSOR.
3B. FOUR PUMP CONTROL: BOILER PUMP WITH VARIABLE SPEED CONTROL.
3C. BMS SYSTEM INTEGRATION: 0-10 VDC ENABLE/DISABLE SIGNAL.
3D. PROGRAMMABLE SYSTEM EFFICIENCY OPTIMIZATION FOR: SPACE HEATING NIGHT SETBACK; ANTI-CYCLING; RAMP DELAY; BOOST TIME & TEMPERATURE.
3E. HIGH VOLTAGE TERMINAL STRIP: 120V/1ø WITH PUMP CONTACTS FOR 3 PUMPS.
3F. LOW VOLTAGE TERMINAL STRIP: BUILDING RECIRC PUMP START/STOP; BUILDING RECIRC RETURN TEMP SENSOR CONTACTS; FLOW SWITCH CONTACTS; ALARM CONTACTS; SYSTEM SENSOR CONTACTS; 0-10 VDC BMS CONTACTS; 0-10 VDC BOILER PUMP SPEED CONTACTS
4. PROVIDE THE FOLLOWING OPTIONS: BMS GATEWAY (BACNET OR LONMARK - CONFRIM WITH T.C.); ALARM BELL; VARIABLE SPEED BOILER CIRC PUMP (LOCHINVAR #PUM20077 - GRUNDFOS MAGNA3 40-80); CONDENSATE NEUTRALIZATION KIT; CONCENTRIC VENT KIT.
5. BOILERS SHALL BE EQUIPPED AND INSTALLED, AS REQUIRED TO MEET ASME CSD-1 AND MICHIGAN STATE BOILER RULES.
6. BOILER MANUFACTURER/SUPPLIER SHALL PROVIDE FACTORY TRAINED FIELD TECHNICIAN TO ASSIST THE CONTRACTOR WITH ON-SITE STARTUP AND OWNER TRAINING.
7. CONTRACTOR SHALL INSTALL SEALED COMBUSTION INTAKE/EXHAUST VENTING UP THRU ROOF, OR OUT THE SIDEWALL, PER MANUFACTURER'S RECOMMENDATIONS AND CODE REQUIREMENTS.

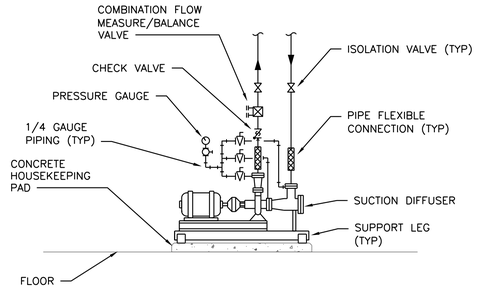
PUMP SCHEDULE

UNIT I.D.	SYSTEM SERVED	LOCATION	TYPE	FLOW GPM	HEAD FT.	MOTOR			ELECTRICAL		MODEL NO.	REMARKS
						BHP	HP	RPM	VOLTS	PHASE		
BP-1	BOILER 1 PUMP PRIMARY SYSTEM	BOILER ROOM	IN-LINE CIRCULATOR VARIABLE SPEED	40-55	2.5-5	2.5 A	FRACT.	VARIES	115	1	GRUNDFOS MAGNA3 40-80	NOTE 2 PROVIDED WITH BOILER B-1
BP-2	BOILER 2 PUMP PRIMARY SYSTEM	BOILER ROOM	IN-LINE CIRCULATOR VARIABLE SPEED	28-55	2.5-5	2.5 A	FRACT.	VARIES	115	1	GRUNDFOS MAGNA3 40-80	NOTE 2 PROVIDED WITH BOILER B-2
BP-3	BOILER 3 PUMP PRIMARY SYSTEM	BOILER ROOM	IN-LINE CIRCULATOR VARIABLE SPEED	28-55	2.5-5	2.5 A	FRACT.	VARIES	115	1	GRUNDFOS MAGNA3 40-80	NOTE 2 PROVIDED WITH BOILER B-3
HP-1	SECONDARY HEATING SYSTEM	BOILER ROOM	BASE MOUNTED END SUCTION	235	45	3.7	5	1,760	208-230	1	TACO #FI 3009C NOTE 4	NOTE 3, 4, 5, 6 CONSTANT FLOW SECONDARY
HP-2	SECONDARY HEATING SYSTEM	BOILER ROOM	BASE MOUNTED END SUCTION	225	45	3.7	5	1,760	208-230	1	TACO #FI 3009C NOTE 4	NOTE 3, 4, 5, 6 STANDBY BACK-UP SECONDARY

NOTES:
1. ALL MODEL NUMBERS ARE TACO, UNLESS NOTED OTHERWISE. OR EQUAL BY ARMSTRONG, B&G, GRUNDFOS.
2. BOILER PUMPS BP-1, BP-2, & BP-3 ARE TO BE PROVIDED WITH THE BOILER AND SHALL BE VARIABLE FLOW CONTROLLED FROM THE LOCHINVAR FTXL'S 0-10V OUTPUT TO MAINTAIN AN EFFICIENT DELTA T ACCROSS THE BOILER. COORDINATE WITH BOILER SUPPLIER AND CONTROLS SUB-CONTRACTOR.
3. PROVIDE WITH PREMIUM EFFICIENCY MOTOR, INVERTER DUTY FOR POTENTIAL/FUTURE VARIABLE SPEED/FLOW CONTROL.
4. BASE BID TACO #FI3007 AS REQUIRED TO PROVIDE A DIRECT FIT TO REPLACE THE EXISTING HEATING PUMPS. B&G MAY BE BID AS VOLUNTARY ALTERNATE IF THE PUMP CONNECTIONS LINE UP WITH THE EXISTING PIPING (CONTRACTOR TO FIELD VERIFY & CONFIRM).
5. CONTRACTOR TO FIELD VERIFY EXISTING HP-1 & HP-2 VOLTAGE (230V/1ø?) AND CONFIRM WITH SUPPLIER PRIOR TO ORDERING NEW PUMPS.
6. BID REPLACEMENT OF HP-1 & HP-2, INCLUDING PIPING WORK, AS ALTERNATE ADDER #M2.



IN-LINE CIRCULATING PUMP DETAIL
NO SCALE
TYPICAL FOR BOILER PUMPS BP-1, BP-2, BP-3



BASE MOUNTED END SUCTION PUMP PIPING DETAIL
NO SCALE

MECHANICAL ALTERNATE BID ITEMS:

ALTERNATE ADD #M1:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING AIR SEPERATOR (A/S) TO THE SCOPE OF THE PROJECT.

ALTERNATE ADD #M2:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING HEATING SYSTEM PUMPS (HP-1 & HP-2) TO THE SCOPE OF THE PROJECT.

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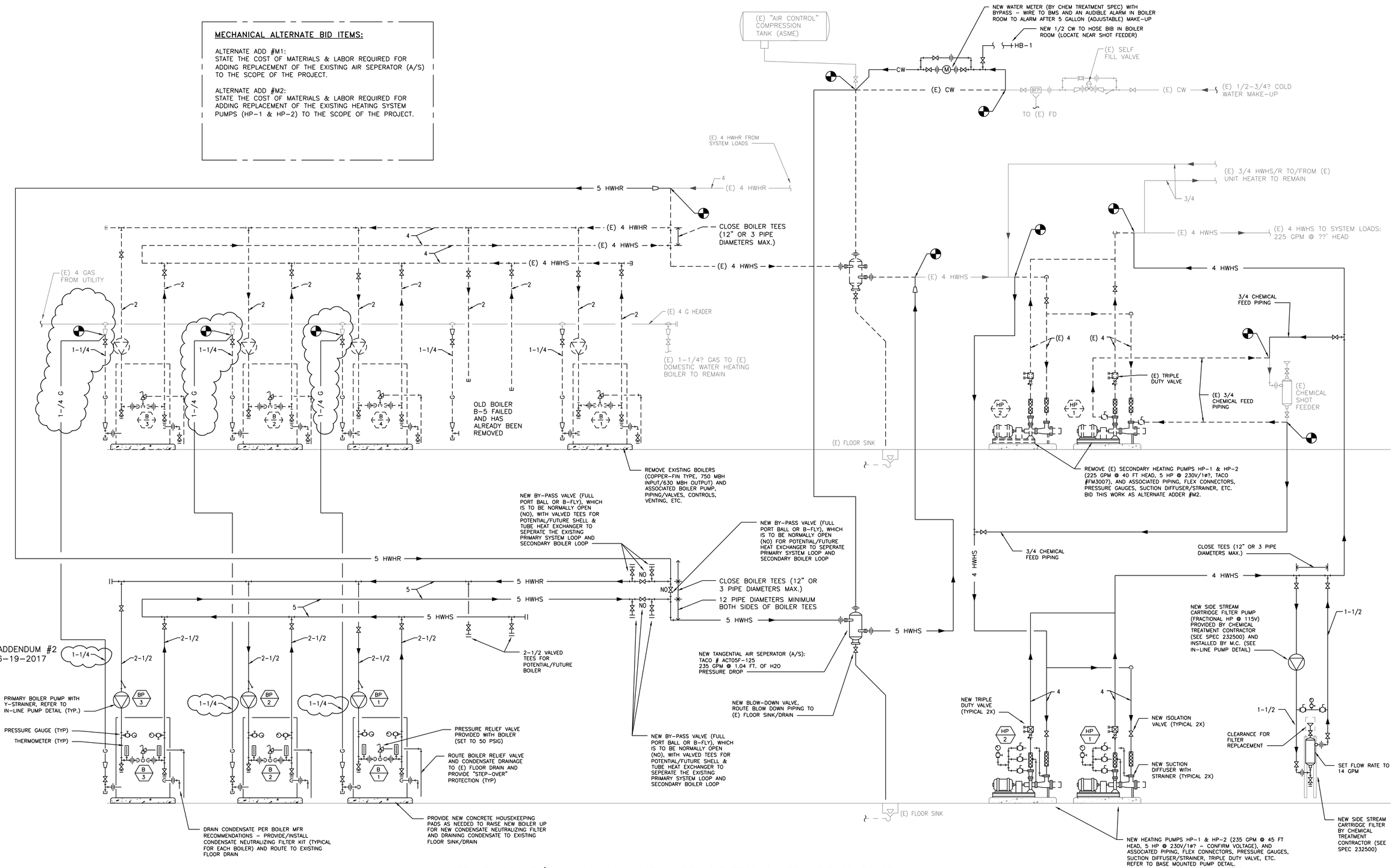
WOLVERINE COMMUNITY SCHOOLS
MIDDLE/HIGH SCHOOL BOILER REPLACEMENT PROJECT
13131 BROOK STREET WOLVERINE, MICHIGAN 49799
MECHANICAL & PLUMBING DETAILS

DATE	
ISSUED FOR	
DATE	6/5/2017
ISSUED FOR	BIDDING & PLAN REVIEW
JOB NO.	WCS 1701-01
SHEET	M4

MECHANICAL ALTERNATE BID ITEMS:

ALTERNATE ADD #M1:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING AIR SEPERATOR (A/S) TO THE SCOPE OF THE PROJECT.

ALTERNATE ADD #M2:
STATE THE COST OF MATERIALS & LABOR REQUIRED FOR ADDING REPLACEMENT OF THE EXISTING HEATING SYSTEM PUMPS (HP-1 & HP-2) TO THE SCOPE OF THE PROJECT.



WOLVERINE MIDDLE/HIGH SCHOOL HOT WATER HEATING SYSTEM PIPING DIAGRAM

GENERAL NOTES:
1. ALL BRANCH PIPING CONNECTIONS TO MAINS SHALL BE FROM SIDE OR BOTTOM OF PIPE.
2. ALL PIPING (BOTH NEW PIPING & ANY EXISTING PIPING THAT IS MISSING INSULATION) SHALL BE INSULATED WITH NEW INSULATION (AND PVC JACKETING UP TO 10' AFF) PER SPEC.
3. EXISTING HYDRONIC HEATING SYSTEM VOLUME IS UN-KNOWN. ASSUME 6,000 GALLON SYSTEM CAPACITY FOR BIDDING PURPOSES. PROVIDE UNIT COST ($/GALLON) FOR ADDITIONAL CHEMICAL TREATMENT CHEMICALS FOR PRICING IF ACTUAL VOLUME IS GREATER THAN 6,000 GALLONS.

6/19/2017 - FOR ADDENDUM #2

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13131 BROOK STREET WOLVERINE, MICHIGAN 49799
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SHEET	M5

ELECTRICAL SYMBOL LIST

SYMBOL	DESCRIPTION
FA	FIXTURE TYPE
	PENDANT OR SURFACE MOUNTED LIGHT FIXTURE
	PENDANT OR SURFACE MOUNTED EMERGENCY LIGHT FIXTURE
	WALL MOUNTED LIGHTING FIXTURE
	EMERGENCY LIGHTING UNIT
	EXIT LIGHTING FIXTURE WITH EMERGENCY EGRESS LIGHTING AND BATTERY
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS – SHADED AREA INDICATES FACE
	EXIT LIGHTING FIXTURE WITH DIRECTIONAL ARROWS – SHADED AREA INDICATES FACE
	EXIT LIGHTING FIXTURE – WALL MOUNTED
	REMOTE EMERGENCY EXIT DISCHARGE LIGHT
S	SINGLE POLE TOGGLE SWITCH
S2	TWO POLE TOGGLE SWITCH
S3	3-WAY TOGGLE SWITCH
S4	4-WAY TOGGLE SWITCH
SM	HORSE POWER RATED SWITCH
C	CONTACTOR
P	PHOTOELECTRIC CONTROLLER
T	T-STAT (BY OTHERS) ROUGHED IN BY E.C. @ 52" AFF WITH CONDUIT PATHWAY TO EQUIPMENT CONTROLS CONNECTION – COORD. WITH MECHANICAL TRADES
T	TEMPERATURE SENSOR (BY OTHERS) ROUGHED IN BY E.C. @ 52" AFF WITH CONDUIT PATHWAY TO EQUIPMENT CONTROLS CONNECTION – COORD. WITH MECHANICAL TRADES

SYMBOL	DESCRIPTION
	SINGLE PHASE MOTOR
	THREE PHASE MOTOR
	COMBINATION MOTOR STARTER WITH DISCONNECT SWITCH
VSD	VARIABLE SPEED DRIVE COMBINATION MOTOR STARTER WITH DISCONNECT SWITCH
	NON-FUSABLE DISCONNECT SWITCH
	FUSIBLE DISCONNECT SWITCH
SM	HORSE POWER RATED SWITCH
J	JUNCTION BOX
	HARD WIRE POWER CONNECTION
	CONDUIT UP
	CONDUIT DOWN
	TELECOMMUNICATIONS BACKBOARD
	DUPLEX RECEPTACLE
48"	DUPLEX RECEPTACLE MOUNTED AT 48" ABOVE FLOOR (UNLESS NOTED OTHERWISE) – SIMILAR FOR ISOLATED GROUND, EMERGENCY AND GFI RECEPTACLES
	QUAD RECEPTACLE
	DUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTERTOP OR AS REQUIRED TO ACCOMMODATE COUNTERS – REFER TO ARCHITECTURAL ELEVATIONS
	DUPLEX RECEPTACLE – GROUND FAULT INTERRUPTER
	DUPLEX RECEPTACLE – GROUND FAULT INTERRUPTER – MOUNTED 6" ABOVE COUNTERTOP OR AS REQUIRED TO ACCOMMODATE COUNTERS – REFER TO ARCHITECTURAL ELEVATIONS
WP	DUPLEX RECEPTACLE – GROUND FAULT INTERRUPTER – WEATHERPROOF COVER
	SPECIAL RECEPTACLE – NEMA CONFIGURATION AS NOTED

SYMBOL	DESCRIPTION
	CIRCUIT BREAKER
	SWITCH
	FUSE
	GROUND
A-3	CIRCUIT HOMERUN TO PANEL "A" CIRCUIT #3
	LIGHTING PANEL (LP = <240V)
	POWER PANEL (PP = >480V)
	DISTRIBUTION PANEL
T	TRANSFORMER
M	UTILITY METER
CT	UTILITY CT CABINET
FACP	FIRE ALARM CONTROL PANEL
FAA	FIRE ALARM ANNUNCIATOR PANEL
F	MANUAL FIRE ALARM STATION
SD	SMOKE DETECTOR
TD	THERMAL DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM HORN
–XX	FIRE ALARM STROBE – WALL MOUNTED (xx CANDELA)
C –XX	FIRE ALARM STROBE – CEILING MOUNTED (xx CANDELA)
F –XX	FIRE ALARM HORN/STROBE – WALL MOUNTED (xx CANDELA)
C F –XX	FIRE ALARM HORN/STROBE – CEILING MOUNTED (xx CANDELA)

ELECTRICAL ABBREVIATION LIST

ABBREVIATION	DESCRIPTION
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AIC	AMPS INTERRUPTING CAPACITY
BKR	BREAKER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
COORD.	COORDINATION
DISC	DISCONNECT
DP	DISTRIBUTION PANEL
DWG	DRAWING
E.C.	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EMT	ELECTRICAL METALLIC TUBING
(E)	EXISTING
EM	EMERGENCY LIGHT
FLA	FULL LOAD AMPS
(F)	FUTURE
FU	FUSE
GFI	GROUND FAULT INTERRUPTER
GRD	GROUND
GRS	GALVANIZED RIGID STEEL
HOA	HAND-OFF-AUTO
HP	HORSEPOWER
HZ	HERTZ
JB	JUNCTION BOX
KW	KILOWATT
KWH	KILOWATT – HOURS
KVA	KILO VOLT-AMPERES
LP	LIGHTING PANEL

ABBREVIATION	DESCRIPTION
M.C.	MECHANICAL CONTRACTOR
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MDP	MAIN DISTRIBUTION PANEL
MFS	MAX FUSE SIZE
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTR	MOTOR
NC	NORMALLY CLOSED
N.E.C.	NATIONAL ELECTRIC CODE
NF	NON-FUSIBLE
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NTS	NOT TO SCALE
P-A	PANEL "A"
P.C.	PLUMBING CONTRACTOR
PRI	PRIOR TO ROUGH-IN
RECEPT.	RECEPTACLE
(R)	RELOCATED
SD	SMOKE DETECTOR
SPEC	SPECIFICATION
TELCOM	TELECOMMUNICATIONS
TYP	TYPICAL
UH	UNIT HEATER
UON	UNLESS OTHERWISE NOTED
U/G	UNDERGROUND (BELOW GRADE)
VFD	VARIABLE FREQUENCY DRIVE
WP	WEATHERPROOF
XFMR	TRANSFORMER

GENERAL ELECTRICAL POWER NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF WORK. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL MATERIALS (I.E. CONDUIT, WIRE, PULL BOXES, DEVICES, ETC.) REQUIRED FOR A COMPLETE AND FUNCTIONAL SYSTEM.
2. ALL ELECTRICAL SYSTEMS SHALL BE PROVIDED/INSTALLED TO MEET APPLICABLE BUILDING CODES: MICHIGAN BUILDING CODE, MICHIGAN ELECTRICAL CODE, N.E.C., LIFE SAFETY CODE NFPA 101, MICHIGAN ENERGY CODE, ETC.
3. VERIFY REQUIREMENTS OF ALL MECHANICAL/PLUMBING/ARCHITECTURAL EQUIPMENT WITH SHOP DRAWING SUBMITTALS PRIOR TO INSTALLATION. NOTIFY THE ENGINEER OF ANY CONFLICTS BETWEEN SHOP DRAWINGS AND PLANS.
4. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ELECTRICAL WORK WITH ALL OTHER TRADES. CONTRACTOR SHALL VERIFY ALL MECHANICAL AND ELECTRICAL CLEARANCES PRIOR TO FABRICATION OF ANY NEW WORK. ELECTRICAL EQUIPMENT, WIRING, ETC. SHALL NOT INTERFERE WITH MECHANICAL EQUIPMENT CLEARANCE SPACES.
5. ALL CIRCUITS FOR POWER, LIGHTING, CONTROLS, ETC. SHALL BE INSTALLED IN CONDUIT AS SPECIFIED.
6. UNLESS OTHERWISE NOTED, EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ALL NEW PENETRATIONS THROUGH ALL WALLS WITH FIRE CAULK IN ACCORDANCE WITH CURRENT BUILDING CODE REQUIREMENTS.
7. UNLESS OTHERWISE NOTED, EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, CORING, PATCHING ASSOCIATED WITH THEIR WORK. CUTTING, CORING, PATCHING WORK SHALL BE PERFORMED BY A QUALIFIED CONTRACTOR AND MATCH EXISTING OR NEW FINISHES.

GENERAL ELECTRICAL DEMOLITION NOTES:

1. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL EXTENT OF THE WORK. THE EXTENT OF DEMOLITION WORK SHALL BE AS REQUIRED BY THE NEW WORK.
2. THE CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE HIMSELF WITH THE EXISTING SYSTEMS/EQUIPMENT PRIOR TO ISSUING HIS BID. ALL EXISTING PANEL/WIRE/LIGHT SIZES AND ROUTINGS SHOWN ARE APPROXIMATE AND SHOULD BE FIELD VERIFIED.
3. ALL ELECTRICAL ITEMS TO BE REMOVED SHALL BE REMOVED COMPLETE WITH ALL RELATED ITEMS INCLUDING, BUT NOT LIMITED TO, WIRES, CONDUITS, SUPPORTS, FIXTURES, LAMPS, ETC. REMOVED ITEMS SHALL BE LEGALLY DISPOSED OF OFF SITE.
4. ANY INTERRUPTION OF EXISTING SERVICES AND/OR EQUIPMENT SHALL BE PERFORMED AT A TIME APPROVED, BY THE OWNER OR OWNER'S REPRESENTATIVE, AT LEAST (7) DAYS IN ADVANCE SO AS NOT TO INTERFERE WITH THE PRESENT BUILDING OPERATION.
5. WHERE DEMOLITION OF EXISTING SERVICES ARE REQUIRED TO ACCOMMODATE THE PROJECT PHASING/SCHEDULING, AND SERVICES ARE TO BE INTERRUPTED IN AREAS THAT ARE REMAINING OCCUPIED, THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES/CONNECTIONS TO THE OCCUPIED AREAS TO MAINTAIN ITS PRESENT OPERATION. IF SYSTEM SHUT DOWNS ARE REQUIRED, THE CONTRACTOR SHALL SCHEDULE WORK TO BE PERFORMED AT UNOCCUPIED HOURS.
6. ALL ITEMS TO BE REMOVED AND/OR RELOCATED SHALL BE REMOVED AND/OR RELOCATED TOGETHER WITH ALL RELATED ITEMS AS REQUIRED BY THE NEW WORK TO BE PERFORMED.
7. CONTRACTOR SHALL COORDINATE ALL REMOVAL AND/OR RELOCATION WITH THE EXTENT OF THE NEW WORK AND WITH ALL OTHER TRADES INVOLVED.
8. EACH SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING, CORING, PATCHING ASSOCIATED WITH THEIR WORK. CUTTING, CORING, PATCHING WORK SHALL BE PERFORMED BY A QUALIFIED CONTRACTOR AND MATCH EXISTING OR NEW FINISHES.

STANDARD MOUNTING HEIGHTS

CONVENIENCE AND SPECIAL PURPOSE RECEPTACLE OUTLETS, TELE/DATA AND COMMUNICATIONS OUTLETS, NOT OTHERWISE SPECIFIED:

- 18" AFF TO CENTER OF BOX
- IN CMU WALLS – 16" AFF TO BOTTOM OF BOX.

LIGHT SWITCHES, MOTOR CONTROL DEVICES, AND FIRE ALARM PULL STATIONS, NOT OTHERWISE SPECIFIED:

- 50" AFF TO CENTER OF BOX IN CMU WALLS – 48" AFF TO TOP OF BOX.

T-STATS, TEMP. SENSORS, CO2 SENSORS, NOT OTHERWISE SPECIFIED:

- 50" AFF TO CENTER OF BOX IN CMU WALLS – 48" AFF TO TOP OF BOX.

METHODS OF NOTATION

FA	LIGHT FIXTURE DESIGNATION (I.E. FIXTURE TYPE "FA" – SEE FIXTURE SCHEDULE)
1	CONSTRUCTION KEYED NOTE NUMBER
1	DEMOLITION KEYED NOTE NUMBER
	EXISTING SYSTEM COMPONENT TO BE REMOVED
	NEW SYSTEM COMPONENT
	EXISTING SYSTEM COMPONENT TO REMAIN
	POINT OF NEW CONNECTION
A-3	CIRCUIT HOMERUN (BACK TO PANEL "A" – REFER TO PANEL SCHEDULE)

STATE OF MICHIGAN
JUSTIN L. KOWATCH
ENGINEER
No.
45625
LICENSED PROFESSIONAL ENGINEER

DATE: 6/5/2017

PREPARED UNDER THE SUPERVISION OF:
JUSTIN L. KOWATCH, P.E.
MICHIGAN PE NO. 45625

ELECTRICAL DRAWING INDEX

E1 – ELECTRICAL TITLE SHEET
E2 – ELECTRICAL PLANS

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13131 BROOK STREET WOLVERINE, MICHIGAN 49799
ELECTRICAL TITLE SHEET

ISSUED FOR	DATE
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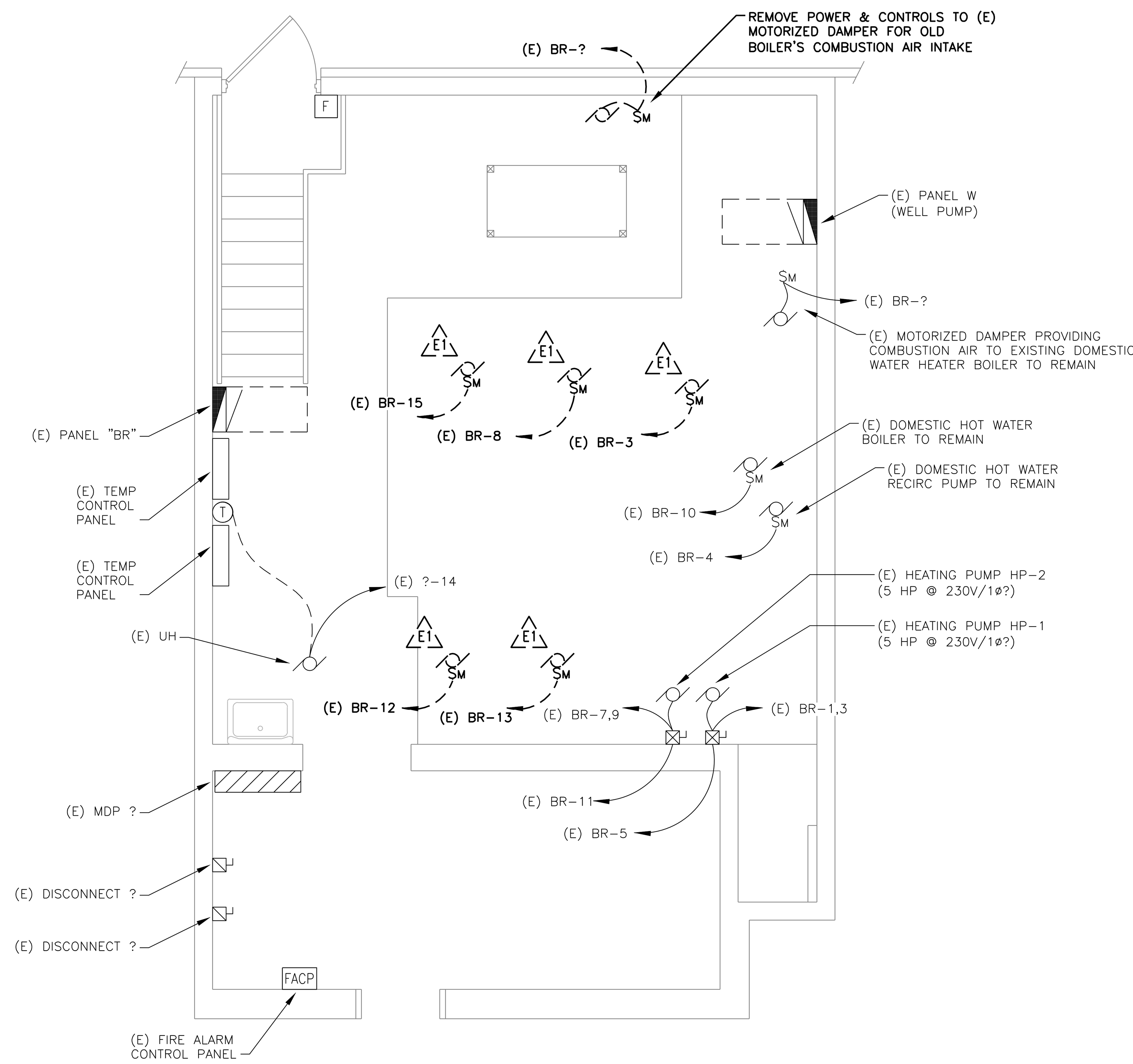
SHEET

E1

KEYED ELECTRICAL DEMOLITION NOTES:

E1 — REMOVE POWER AND CONTROL WIRING FOR (E) BOILERS AND THEIR RESPECTIVE BOILER PUMPS.



NORTH

ELECTRICAL DEMOLITION PLAN

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

KEYED ELECTRICAL CONSTRUCTION NOTES:

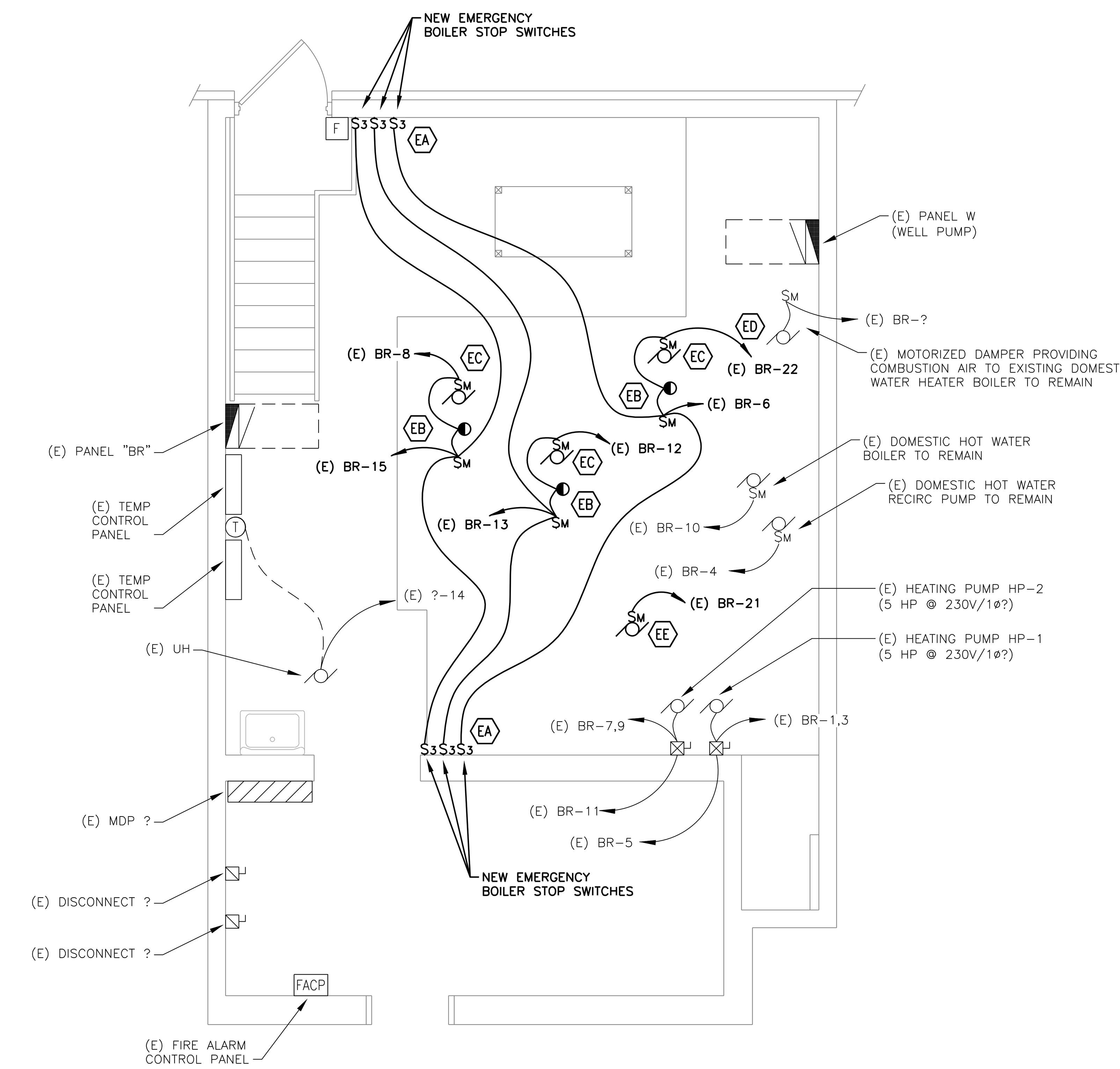
EA — PROVIDE A MANUAL OPERATED REMOTE EMERGENCY SHUTDOWN DISCONNECT SWITCH FOR EMERGENCY SHUTDOWN OF EACH BOILER'S 20 AMP/115V POWER CIRCUIT. PROVIDE 3-WAY 20A/1P SWITCHES LOCATED JUST INSIDE THE BOILER ROOM DOOR IN A SURFACE MOUNTED BOX WITH A STAINLESS STEEL COVERPLATE. EACH SWITCH SHALL BE LABELED ON THE COVERPLATE FOR THE BOILER THEY CONTROL (I.E. B-1, B-2, ETC,). ALSO, PROVIDE SIGNAGE ON THE WALL ABOVE THE SWITCH BOX WITH THE FOLLOWING ENGRAVED: "REMOTE EMERGENCY SHUTDOWN SWITCHES - ONLY USE IN CASE OF EMERGENCY". THE NAMEPLATE SHALL BE ENGRAVED THREE LAYER LAMINATED PLASTIC, 1/2" TALL BLACK LETTERS ON WHITE BACKGROUND, WITH STICKY BACK ADHESIVE SUITABLE TO MOUNT ON MASONRY WALL.

EB — PROVIDE 120V POWER WIRING FOR NEW BOILERS (<12AMP @ 115V). COORDINATE REQUIREMENTS WITH M.C. AND BOILER MANUFACTURER INSTALLATION REQUIREMENTS. EACH BOILER'S LOCAL DISCONNECT SHALL BE CAPABLE OF BEING LOCKED OPEN.

EC — PROVIDE POWER & CONTROL WIRING FOR NEW BOILER PUMP (<2.5A @ 115V). WIRE VIA CONTACTOR (BY E.C.) CONTROLLED BY RELAY IN BOILER TERMINAL BOARD. ALSO CONNECT 0-10V OUTPUT CONTROL TO VARY SPEED OF BOILER PUMP. COORDINATE REQUIREMENTS WITH M.C. AND BOILER MANUFACTURER INSTALLATION REQUIREMENTS.

ED — PROVIDE NEW 20A/1P BREAKER IN EXISTING PANEL "BR" FOR NEW BOILER B-3'S PUMP (BP-3, 2.5A @ 115V)

EE — PROVIDE NEW 20A/1P BREAKER IN EXISTING PANEL "BR" FOR NEW SIDE STREAM FILTER PUMP (FRACTIONAL HP @ 115V)



NORTH

ELECTRICAL NEW WORK PLAN

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

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