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MIDWESTERN STATE UNIVERSITY

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BUILDING: CENTRAL PLANT

BUILDING ADDRESS:
COUNCIL DR, WICHITA FALLS,
TX, 76308

PROJECT: MSU CENTRAL PLANT
PROJECT NUMBER: 1005813

ISSUE: FOR CONSTRUCTION
DATE: 07 JULY 2023

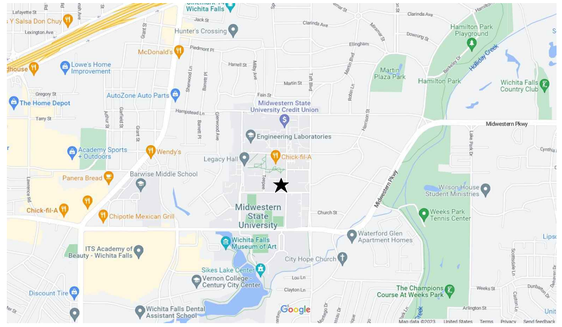
STATE OF TEXAS
CHRISTOPHER WEAVER
133201
LICENSED
PROFESSIONAL ENGINEER
7-7-23

APPLICABLE CODES:

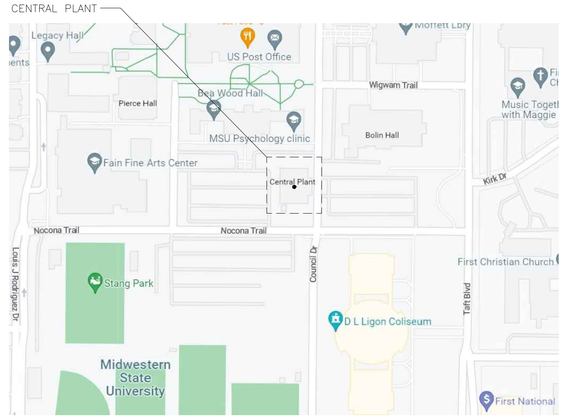
THE DESIGN OF THIS PROJECT CONFORMS TO THE FOLLOWING APPLICABLE CODES AND GOVERNMENTS REQUIREMENTS:

I. CODE AT THE TIME OF THIS RENOVATION:
   A. 2018 EDITION INTERNATIONAL BUILDING CODE (IBC)
   B. 2018 EDITION INTERNATIONAL MECHANICAL CODE (IMC)
   C. 2018 EDITION INTERNATIONAL PLUMBING CODE (IPC)
   D. 2020 NATIONAL ELECTRIC CODE (NEC)

DRAWING LIST:



VICINITY MAP



SITE LOCATION

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WICHITA FALLS, TEXAS
MSU CENTRAL PLANT

MARK	DESCRIPTION	DATE
0	FOR CONSTRUCTION	07-07-23

PROJECT NO.:	1005813
CAD DWG. FILE:	G001.DWG
DRAWN BY:	MR
CHECKED BY:	CW

SHEET TITLE

TITLE SHEET, DRAWING INDEX, AND VICINITY MAPS

G001

SHEET # OF #

LEGEND

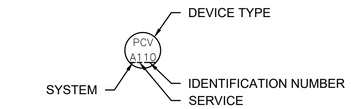
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- PLUG VALVE
- GATE VALVE
- GLOBE VALVE
- PRESSURE REGULATING VALVE
- QUCIK ACTING MANUAL BLOWDOWN VALVE
- SLOW ACTING MANUAL BLOWDOWN VALVE
- PNEUMATICALLY OPERATED VALVE
- PRESSURE SAFETY VALVE (PRESSURE RELIEF)
- SELF ACTUATED PRESSURE REGULATOR
- PIPE PLUG
- POSITIVE DISPLACEMENT TURBINE FLOW METER
- SIPHON
- STEAM TRAP
- TURBINE FLOW ELEMENT
- VENTURI FLOW ELEMENT
- STRAINER WITH DRAIN VALVE
- Y - STRAINER
- PRESSURE INDICATOR WITH SNUBBER (PI)
- TEMPERATURE INDICATOR (TI)
- EXISTING EQUIPMENT OR PIPING
- NEW EQUIPMENT OR PIPING
- ST-1 STEAM TRAP DESIGNATION
- NEW TO EXISTING
- LIMIT OF REMOVAL
- P-1, MP-1 PUMP DESIGNATION
- EQUIPMENT OR PIPING DEMOLITION
- EQUIPMENT OR PIPING DEMOLITION WITH ACM
- GATE OR GLOBE VALVE IN VERTICAL
- FLEXIBLE CONNECTION
- SOLENOID DRIVEN
- MOTOR DRIVEN
- CONDUCTIVITY SENSOR

- CA — COMPRESSED AIR
- DOMESTIC COLD WATER
- DOMESTIC HOT WATER
- VENT
- SAN — SANITARY DRAIN
- SAN — SANITARY DRAIN (BELOW FLOOR GRADE)
- MANUAL AIR VENT
- DRAIN VALVE WITH HOSE CONNECTION
- UNION
- DIRECTION OF FLOW IN PIPE
- DIRECTION OF PIPE SLOPE
- PIPE TURNED DOWN
- BOTTOM PIPE TAKE-OFF
- TOP PIPE TAKE-OFF
- PRESSURE GAGE
- THERMOMETER
- TS — TEMPERATURE SENSOR DDC SYSTEM
- FLOOR DRAIN
- ELECTRICAL SIGNAL
- INSTRUMENT AIR
- ECCENTRIC PIPE REDUCER
- OR — CONCENTRIC PIPE REDUCER
- PIPE CAPPED
- BLIND FLANGE
- VORTEX SHEDDING FLOW METER
- KEYED NOTE

MANUFACTURER SCOPE OF SUPPLY — CONTRACTOR SCOPE OF SUPPLY

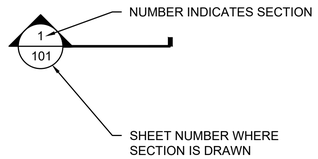
ABBREVIATIONS

ACM	ASBESTOS CONTAINING MATERIAL
BBD	BOTTOM BLOWDOWN
BD	BLOW-DOWN
BFW	BOILER FEED WATER
BHP	BRAKE HORSEPOWER / BOILER HORSEPOWER
BLR	BOILER
BMS	BURNER MANAGEMENT SYSTEM
BSV	BURNER SOLENOID VALVE
CF	CHEMICAL FEED
CFM	CUBIC FEET PER MINUTE
CHEM	CHEMICAL
CI	CAST IRON
COND	CONDENSATE
CR	CONDENSATE RETURN
CW	DOMESTIC COLD WATER
DA	DEAERATOR
DB	DRY BULB
DCS	DIGITAL CONTROL SYSTEM
DEG	DEGREE
DN	DOWN
DP	DIFFERENTIAL PRESSURE
DR	DRAIN
DWG	DRAWING
EAT	ENTERING AIR TEMPERATURE
EC	ECONOMIZER
EL	ELEVATION
EV	EMERGENCY VENT
EWT	ENTERING WATER TEMPERATURE
EXP	EXPANSION
F	FAHRENHEIT
F&T	FLOAT & THERMOSTATIC
FC	FLOW CONTROL
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FE	FLOW ELEMENT
FI	FLOW INDICATOR
FLR	FLOOR
FO	FAIL OPEN OR FLOW ORIFICE
FPM	FEET PER MINUTE
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FT	FLOW TRANSMITTER
GA	GAUGE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HP	HIGH PRESSURE / HORSEPOWER
HPC	HIGH PRESSURE CONDENSATE
HPR	HIGH PRESSURE RETURN
HPS	HIGH PRESSURE STEAM
I/P	CURRENT/PNEUMATIC TRANSDUCER
IBD	INTERMITTENT BLOW-DOWN
IN	INCH
LAT	LEAVING AIR TEMPERATURE
LBS/HR	POUNDS PER HOUR
LC	LOCKED CLOSED
LCV	LEVEL CONTROL VALVE
LI	LEVEL INDICATOR
LMTD	LOG MEAN TEMPERATURE DIFFERENCE
LP	LOW PRESSURE
LPC	LOW PRESSURE CONDENSATE
LPS	LOW PRESSURE STEAM
LS	LEVEL SWITCH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
LT	LEVEL TRANSMITTER
LWT	LEAVING WATER TEMPERATURE
MAX	MAXIMUM
MAWP	MAXIMUM ALLOWABLE WORKING PRESSURE
MBH	THOUSAND BTU/HR
MIN	MINIMUM
MUW	MAKE-UP WATER
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NG	NATURAL GAS
NO	NUMBER OR NORMALLY OPEN
NRV	NON-RETURN VALVE
OA	OUTSIDE AIR
OCEW	ON CENTER EACH WAY
PC	PUMPED CONDENSATE
PCV	PRESSURE CONTROL VALVE
PD	PRESSURE DROP
PI	PRESSURE INDICATOR
PRV	PRESSURE REDUCING VALVE
PS	PRESSURE SWITCH
PSH	PRESSURE SWITCH HIGH
PSIG	POUNDS PER SQUARE INCH GAGE
PSL	PRESSURE SWITCH LOW
PSV	PRESSURE SAFETY VALVE
PT	PRESSURE TRANSMITTER
SBD	SURFACE BLOWDOWN
SV	SOLENOID VALVE
SW	SOFTENED WATER
TCV	TEMPERATURE CONTROL VALVE
TI	TEMPERATURE INDICATOR
TSP	TOTAL STATIC PRESSURE
TT	TEMPERATURE TRANSMITTER
TYP	TYPICAL
V	VENT
VTA	VENT TO ATMOSPHERE
VTR	VENT THROUGH ROOF
W	WIDTH
XV	SOLENOID VALVE
ZS	VALVE POSITION



SYSTEM
A - BOILER B-2-23

SERVICE
1 STEAM
2 BOILER FEEDWATER
3 NATURAL GAS
4 SOFTENED WATER
5 CHEMICAL TREATMENT
6 COMPRESSED AIR
7 PROCESS WATER
8 BLOWDOWN (BBD & SBD)
Ø MISCELLANEOUS



GENERAL NOTES

1. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND INDICATE THE GENERAL AND APPROXIMATE LOCATION OF EQUIPMENT, PIPING, AND DUCTWORK. THE CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS AND DIMENSIONS PRIOR TO FABRICATION INSTALLATION.
2. CONTRACTOR SHALL FLASH AND SEAL ALL ROOF AND WALL PENETRATIONS. REFER TO PLANS AND SPECIFICATIONS FOR DETAILED REQUIREMENTS.
3. COORDINATE PIPING, DUCTWORK, ETC. LOCATIONS WITH ELECTRICAL PLANS TO AVOID CONFLICTS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE THAT OCCURS TO EXISTING EQUIPMENT TO REMAIN DURING DEMOLITION AND INSTALLATION OF NEW EQUIPMENT.
5. CONTRACTOR SHALL FURNISH AND INSTALL MANUAL AIR VENTS AT ALL HIGH POINTS IN PIPING SYSTEM.
6. CONTRACTOR SHALL FURNISH AND INSTALL DRAINS AT ALL LOW POINTS IN PIPING SYSTEM.
7. CONTRACTOR SHALL NOT MAKE CONNECTIONS TO BUILDING STEEL UNLESS PREVIOUSLY APPROVED BY OWNER.
8. CONTRACTOR SHALL BE AWARE THAT DRAWINGS DO NOT INDICATE ALL PIPE SUPPORT LOCATIONS AND HANGER DETAILS. CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING AND PROPERLY INSTALLING ALL NECESSARY PIPE SUPPORTS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR VISITING THE SITE PRIOR TO BIDDING IN ORDER TO BECOME FAMILIAR WITH THE EXISTING CONDITIONS AND ANY DISCREPANCIES OR QUESTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PRIOR TO BIDDING.
10. CONTRACTOR SHALL FURNISH AND INSTALL INSULATION AS SPECIFIED ON ALL SERVICE PIPING THAT IS 120°F OR ABOVE.
11. CONTRACTOR SHALL PAINT ALL PIPING AS SPECIFIED. COLOR TO MATCH EXISTING AS SELECTED BY OWNER.

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WICHITA FALLS, TEXAS
MSU CENTRAL PLANT

MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

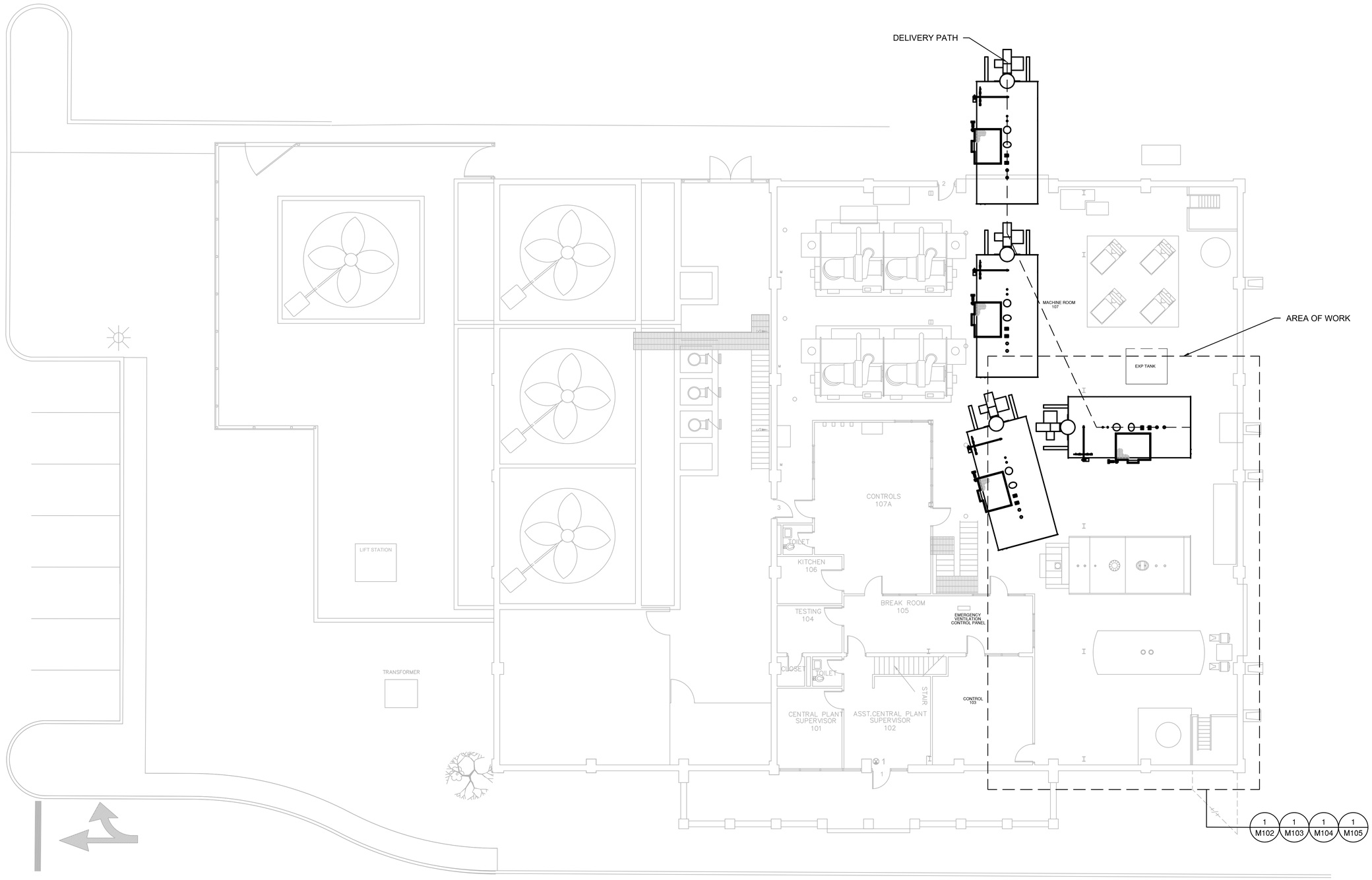
PROJECT NO.:	1005813
CAD DWG. FILE:	M001.DWG
DRAWN BY:	MR
CHECKED BY:	CW

SHEET TITLE

NOTES, ABBREVIATIONS & SYMBOLS

M001

SHEET # OF #



1 EQUIPMENT ENTRY PLAN
SCALE: 1/8"=1'-0"

GRAPHIC SCALE

0 4 8 16 32
SCALE OF FEET
1/8" = 1'-0"

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MARK	DATE	DESCRIPTION
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PROJECT NO.:	1005813
CAD DWG. FILE:	M101.DWG
DRAWN BY:	MR
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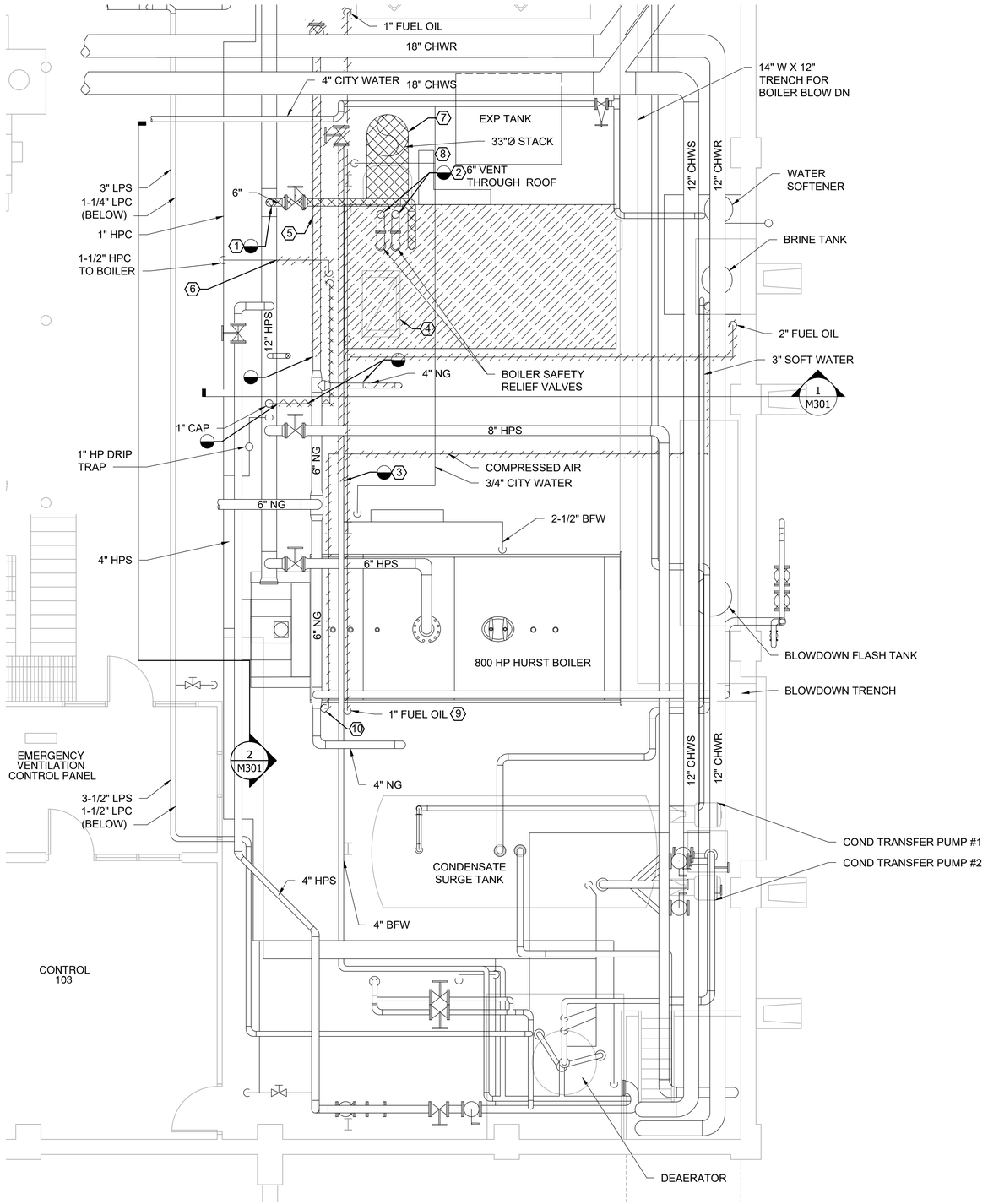
SHEET TITLE

EQUIPMENT ENTRY PLAN

M101

SHEET # OF #



1 FIRST FLOOR PARTIAL PLAN - DEMOLITION

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

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT UNLESS OTHERWISE NOTED.
2. DOUBLE CROSS HATCHED PIPING, EQUIPMENT, ETC. INDICATES EXISTING ACM TO BE DEMOLISHED.

⬡ SHEET KEYED NOTES:

1. CONTRACTOR SHALL DEMOLISH EXISTING 6" STEAM LINE FROM EXISTING B&W BOILER TO STEAM HEADER AND CAP AS CLOSE TO HEADER AS POSSIBLE.
2. CONTRACTOR SHALL DEMOLISH EXISTING PRESSURE RELIEF LINES FROM BOILER TO 12 INCHES (OR APPROPRIATE LENGTH) BELOW ROOF FOR REUSE. CONTRACTOR SHALL ENSURE PROPER SUPPORT FROM ABOVE OR BELOW THE ROOF UNTIL RECONNECTION TO EXISTING VENTS ARE MADE. ROOF ANTENNA GUIDE LINES UTILIZE EXISTING VENTS FOR SUPPORT. COORDINATE WITH CUSTOMER BEFORE DEMOLITION BEGINS.
3. CONTRACTOR SHALL DEMOLISH TWO EXISTING BOILER FEEDWATER LINES AND INSTALL NEW ISOLATION VALVES. ONLY ONE LINE SHOWN FOR CLARITY.
4. CONTRACTOR SHALL DEMOLISH FRESH AIR INTAKE AND ROOF CURB ENTIRELY. EXISTING ROOF PENETRATION WILL BE REUSED FOR NEW 30X30 FRESH AIR INTAKE AND ASSOCIATED PENTHOUSE.
5. CONTRACTOR SHALL DEMOLISH EXISTING 4" NATURAL GAS HEADER TO LOCATION SHOWN TO MAKE ROOM FOR NEW BOILER. CONTRACTOR SHALL INSTALL NEW ISOLATION VALVE WITH BLIND FLANGE IN LOCATION SHOWN.
6. CONTRACTOR SHALL DEMOLISH EXISTING 1-1/2" HIGH PRESSURE CONDENSATE LINE TO EXTENTS SHOWN. CAP EXISTING LINE.
7. CONTRACTOR SHALL DEMOLISH EXISTING 33" DIAMETER, SELF-SUPPORTED STACK IN ITS ENTIRETY.
8. CUSTOMER TO REMOVE PIPE FITTING STORAGE SHELVES PRIOR TO WORK COMMENCEMENT.
9. CONTRACTOR SHALL REMOVE EXISTING ABANDONED FUEL OIL FILTER AND FUEL OIL PIPING TO 3-WAY VALVE AT EXISTING HURST BOILER.
10. CONTRACTOR SHALL REMOVE EXISTING ABANDONED COMPRESSED AIR PIPING TO SHUT OFF VALVE AT EXISTING HURST BOILER.

GRAPHIC SCALE

0 2' 4' 8'

SCALE:1/4"=1'

SCALE OF FEET

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

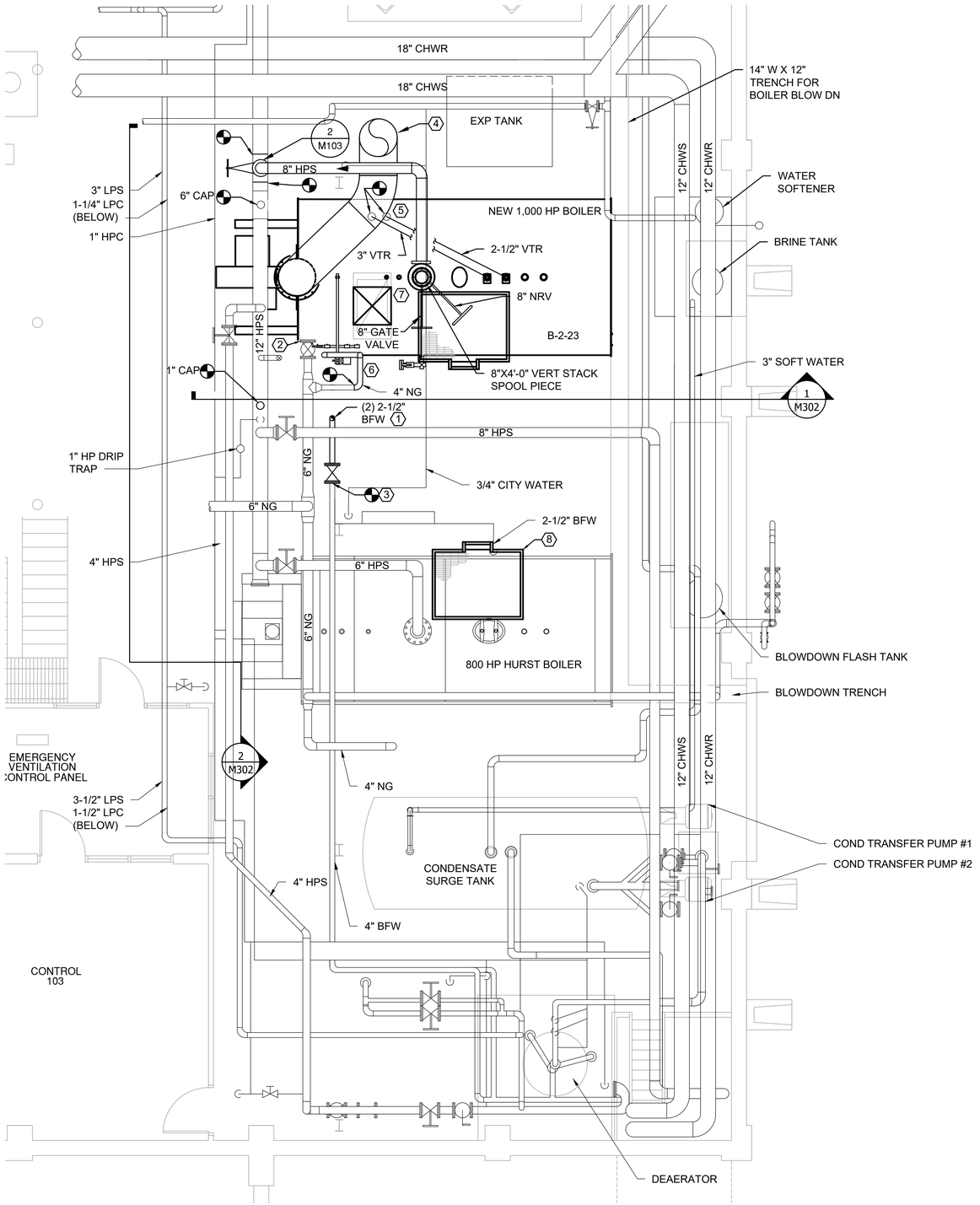
PROJECT NO.:	1005813
CAD DWG. FILE:	M102.DWG
DRAWN BY:	MR
CHECKED BY:	CW

SHEET TITLE

FIRST FLOOR PART PLAN DEMOLITION

M102

SHEET # OF #



1 FIRST FLOOR PARTIAL PLAN - NEW WORK

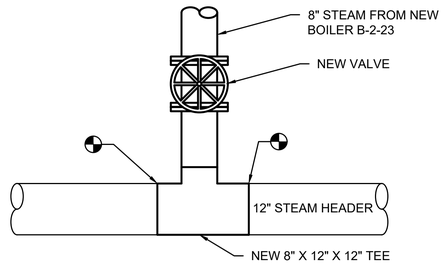
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. REFER TO MECHANICAL SCHEDULES FOR ADDITIONAL EQUIPMENT DETAILS.
3. REFER TO DRAWING M-701 AND M702 FOR NEW WORK PIPING DIAGRAMS.

⬡ SHEET KEYED NOTES:

1. (2) NEW 2-1/2" BFW LINES TO NEW BOILER (ABOVE/BELOW). EXTENT OF PIPE RUN NOT SHOWN FOR CLARITY. SEE PIPING DIAGRAMS FOR ADDITIONAL DETAILS.
2. CONTRACTOR SHALL FURNISH AND INSTALL NEW 6" PLUG VALVE WITH BLIND FLANGE AT LOCATION SHOWN. PROVIDE ADEQUATE CLEARANCE. COORDINATE UTILITY SHUTDOWN WITH OWNER.
3. CONTRACTOR SHALL PROVIDE NEW SHUT OFF VALVE IN 4" BFW LINES PRIOR TO NEW BOILER INSTALLATION.
4. NEW 30" VENT STACK THROUGH ROOF. CONTRACTOR SHALL TERMINATE 3 FEET ABOVE HIGHEST POINT ON ROOF. CONTRACTOR SHALL FURNISH AND INSTALL NEW ROOF CURB AND FLASHING. CONTRACTOR SHALL COORDINATE WITH BOILER MANUFACTURER ON FINAL STACK GEOMETRY.
5. CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) NEW BOILER PRESSURE RELIEF LINES. 2-1/2" AND 3" AS SHOWN ON DRAWINGS. NEW RELIEF LINES SHALL BE TIED INTO TWO SEPARATE AND EXISTING VTR'S. ENSURE PROPER SUPPORT WHEN DISCONNECTING OR RECONNECTING EXISTING PIPING. COORDINATE WITH OWNER.
6. PROVIDE NEW 4" NATURAL GAS CONNECTION TO BOILER GAS TRAIN. SEE P&ID DIAGRAM ON SHEET M702 FOR FURTHER DETAIL.
7. CONTRACTOR SHALL INSTALL NEW 30"X30" FRESH AIR INTAKE DUCTWORK UP TO EXISTING ROOF PENETRATION. MODIFY OPENING AND PROVIDE NEW MANUFACTURER SUPPLIED ROOF CURB. PATCH AND SEAL ROOF AND DUCTWORK PENETRATION WEATHERTIGHT TO MATCH EXISTING.
8. FURNISH AND INSTALL BOILER MANUFACTURER FACTORY FABRICATED ACCESS PLATFORM FOR EXISTING HURST BOILER. ACCESS SHALL BE FROM LEFT SIDE.



2 STEAM HEADER DETAIL - NEW WORK

SCALE: N.T.S.

GRAPHIC SCALE

0 2' 4' 8'

SCALE:1/4"=1'

SCALE OF FEET

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PROJECT NO.:	1005813
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DRAWN BY:	MR
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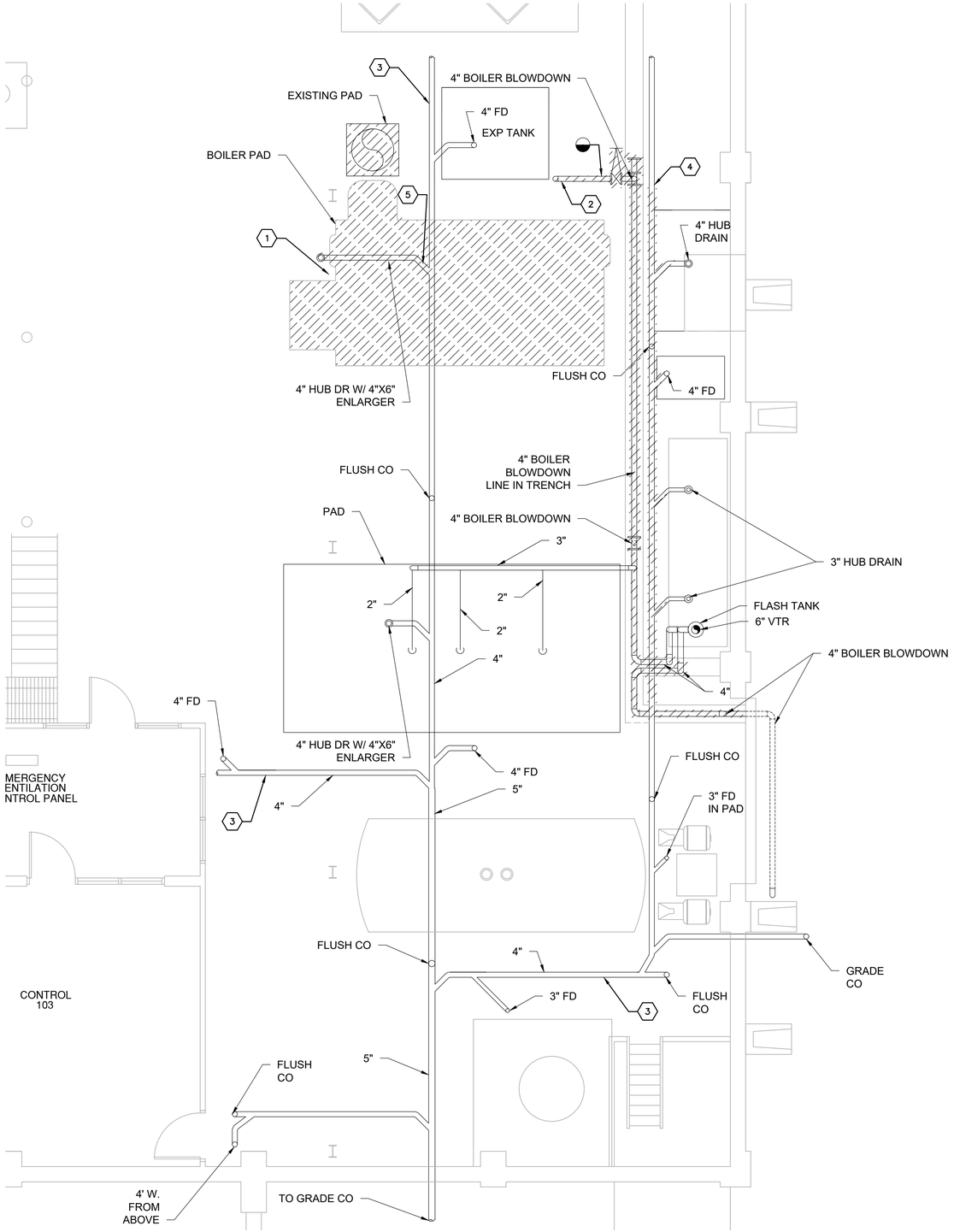
SHEET TITLE

FIRST FLOOR PARTIAL PLAN NEW WORK

M103

SHEET # OF #



1 FIRST FLOOR PARTIAL TRENCH PLAN - DEMOLITION

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

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.

SHEET KEYED NOTES:

1. CONTRACTOR SHALL DEMOLISH BOILER CONCRETE PAD. SAW CUT THE PAD AND SLAB UNDER THE BOILER. SEE STRUCTURAL.
2. CONTRACTOR SHALL DEMOLISH BOILER BLOWDOWN PIPING BACK TO THE EXTENTS SHOWN.
3. ALL PIPING SHOWN IS BELOW GRADE EXCEPT BLOWDOWN PIPING.
4. CONTRACTOR SHALL VERIFY EXISTING FLOOR DRAIN(S) AND DRAINAGE SYSTEM INVERT ELEVATION PRIOR TO WORK COMMENCEMENT. DRAINAGE SYSTEM SHALL BE DEMOLISHED AS SHOWN. CONTRACTOR SHALL VERIFY AND DOCUMENT CONDITION OF DRAINAGE SYSTEM PRIOR TO DEMOLITION ACTIVITIES. CONTRACTOR SHALL REPAIR OR REPLACE, TO ELIMINATE THE LEAKS FOUND PRIOR TO OR AS A RESULT OF WORK.
5. DEMOLISH TO 4" MAIN AND INSTALL NEW CAP.

GRAPHIC SCALE

0 2' 4' 8'

SCALE:1/4"=1'

SCALE OF FEET

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	M104.DWG
DRAWN BY:	MR
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SHEET TITLE

FIRST FLOOR PARTIAL TRENCH PLAN - DEMO

M104

SHEET # OF #

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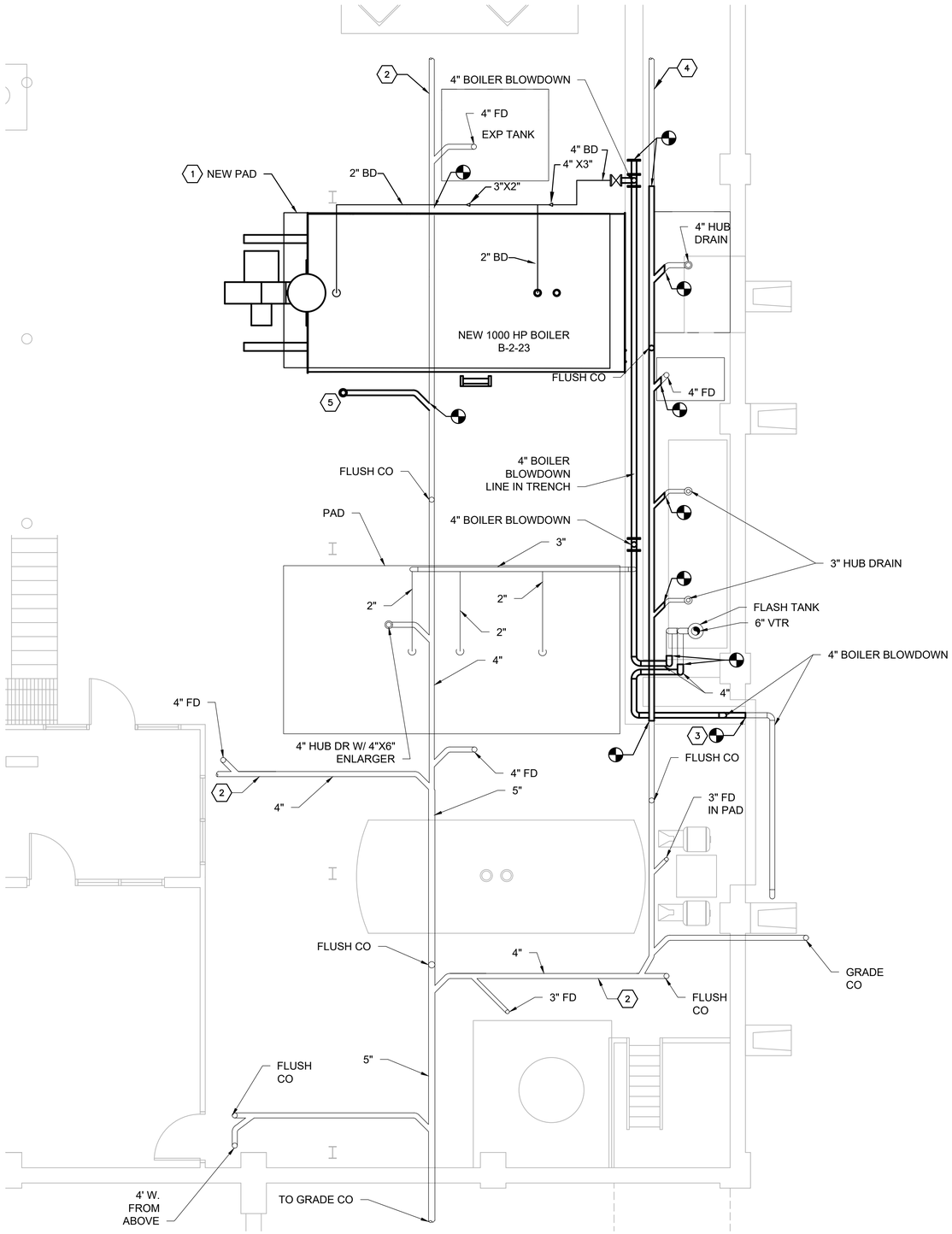

1 FIRST FLOOR PARTIAL TRENCH PLAN - NEW WORK

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

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. REFER TO DRAWING M702 FOR PARTIAL PIPING DIAGRAM.

SHEET KEYED NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL MONOLITHIC CONCRETE PAD FOR NEW BOILER. SEE STRUCTURAL SHEETS FOR PAD DETAILS. SEE M601 FOR BOILER MOUNTING DETAILS.
2. ALL PIPING SHOWN IS BELOW GRADE.
3. CONTRACTOR SHALL FURNISH AND INSTALL NEW 4" BOILER BLOWDOWN PIPING IN NEW CONCRETE TRENCH. CONTRACTOR SHALL RECONNECT ALL EXISTING BRANCHES, VENTS, VALVES, AND FURNISH AND INSTALL NEW PIPE SUPPORTS IN TRENCH. SEE STRUCTURAL FOR NEW TRENCH DETAILS.
4. CONTRACTOR SHALL FURNISH AND INSTALL NEW FLOOR DRAINAGE PIPING AND TIE INTO EXISTING BRANCH CONNECTIONS.
5. NEW 6" HUB DRAIN. CONTRACTOR TO COORDINATE WITH BOILER SHOP DRAWINGS AFTER AWARD FOR FINAL LOCATION.

GRAPHIC SCALE

0 2' 4' 8'

SCALE:1/4"=1'

SCALE OF FEET

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PROJECT NO.:	1005813
CAD DWG. FILE:	M105.DWG
DRAWN BY:	MR
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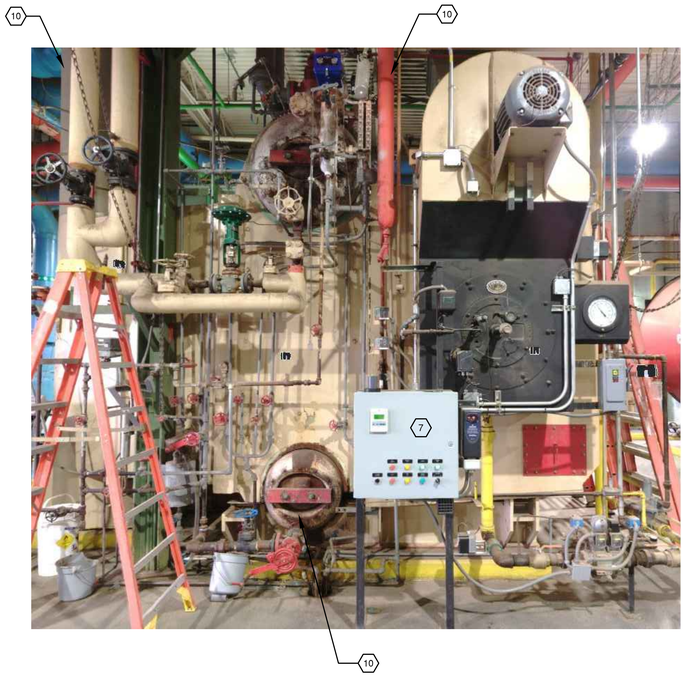
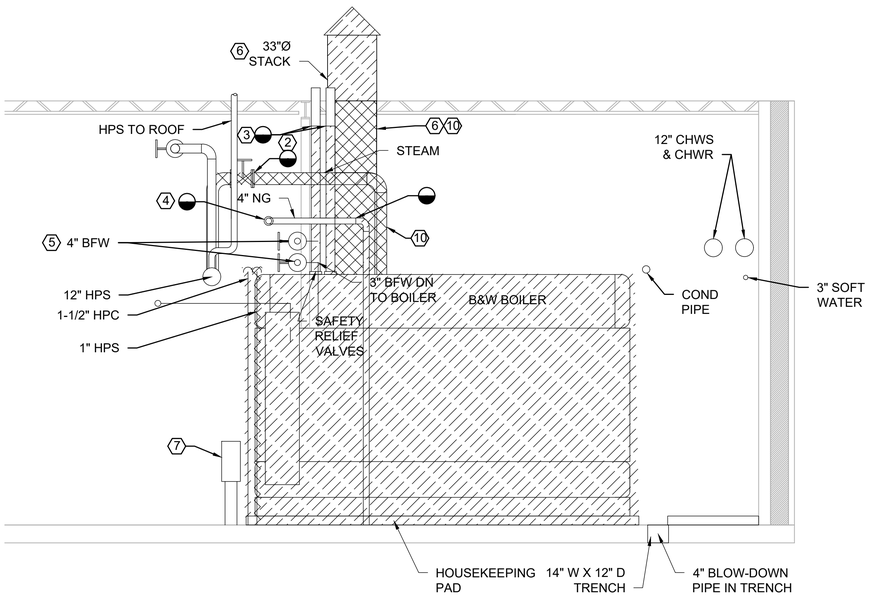
SHEET TITLE

FIRST FLOOR TRENCH PARTIAL PLAN - NEW WORK

M105

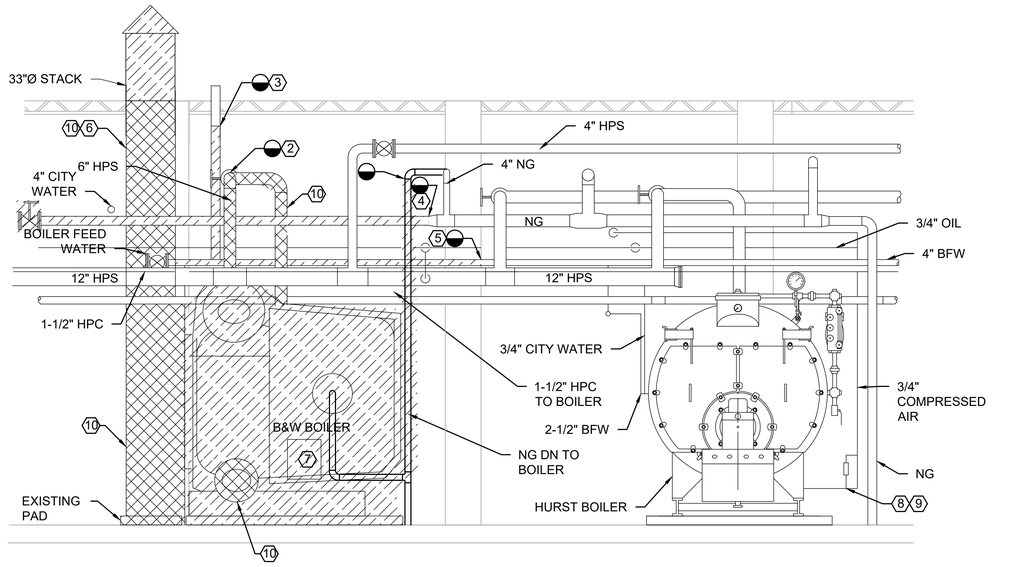
SHEET # OF #





1 SECTION 1 - DEMOLITION

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



2 SECTION 2 - DEMOLITION

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

GENERAL NOTES:

1. DOUBLE CROSS HATCHED PIPING, EQUIPMENT, ETC. INDICATES EXISTING ACM TO BE DEMOLISHED. .

SHEET KEYED NOTES:

1. NOT USED.
2. CONTRACTOR SHALL DEMOLISH EXISTING 6" STEAM LINE FROM EXISTING B & W BOILER TO STEAM HEADER AND CAP, AS CLOSE TO HEADER TAKE OFF AS POSSIBLE.
3. CONTRACTOR SHALL DEMOLISH EXISTING PRESSURE RELIEF LINES TO 12 INCHES BELOW ROOF.
4. CONTRACTOR SHALL DEMOLISH EXISTING 4" NATURAL GAS HEADER TO LOCATION SHOWN TO MAKE ROOM FOR NEW BOILER. CONTRACTOR SHALL INSTALL NEW ISOLATION VALVE WITH BLIND FLANGE.
5. CONTRACTOR SHALL DEMOLISH TWO (ABOVE/BELOW) EXISTING BOILER FEED WATER HEADERS TO LOCATION SHOWN TO MAKE ROOM FOR NEW BOILER. CONTRACTOR SHALL INSTALL NEW ISOLATION VALVES.
6. CONTRACTOR SHALL DEMOLISH EXISTING 33" DIAMETER, SELF-SUPPORTED STACK.
7. EXISTING BOILER CONTROLS AND BURNER VFD WILL BE REMOVED AND SECURED BY OWNER PRIOR TO DEMOLITION WORK BY CONTRACTOR.
8. CONTRACTOR SHALL REMOVE EXISTING ABANDONED FUEL OIL FILTER AND FUEL OIL PIPING TO 3-WAY VALVE AT EXISTING HURST BOILER.
9. CONTRACTOR SHALL REMOVE EXISTING ABANDONED COMPRESSED AIR PIPING TO SHUT OFF VALVE AT EXISTING HURST BOILER.
10. KNOWN ACM LOCATIONS TO BE REMOVED BY CONTRACTOR.

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MSU CENTRAL PLANT

MARK	DESCRIPTION	DATE
0	FOR CONSTRUCTION	07-07-23

PROJECT NO.:	1005813
CAD DWG. FILE:	M301.DWG
DRAWN BY:	MR
CHECKED BY:	CW

STATE OF TEXAS
CHRISTOPHER WEAVER
133201
LICENSED
PROFESSIONAL ENGINEER
7-7-23

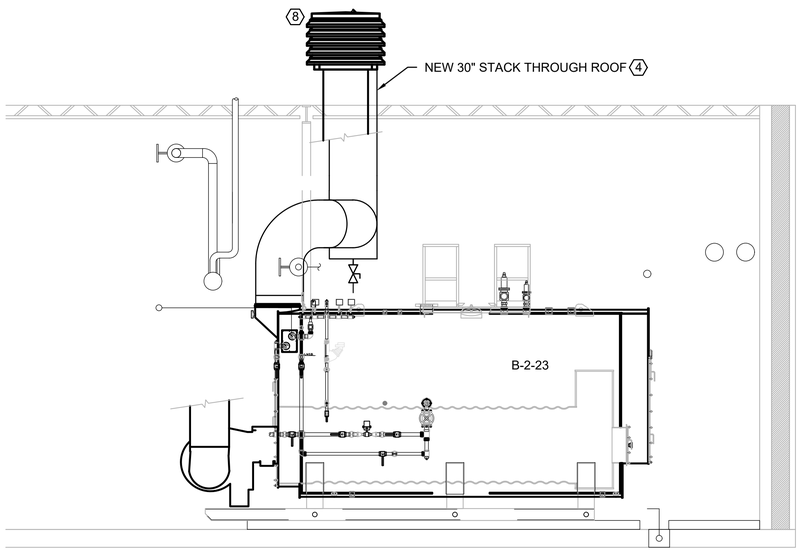
SHEET TITLE

SECTIONS DEMOLITION

M301

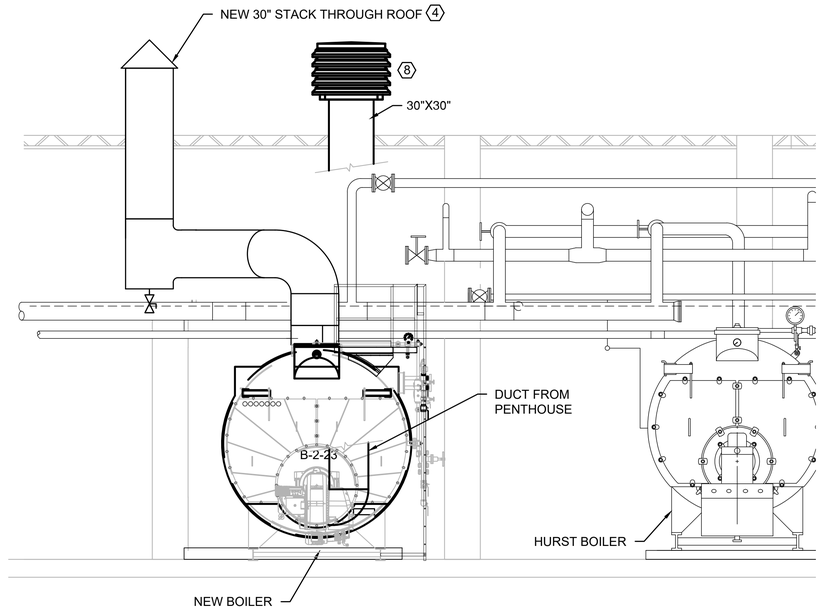
SHEET # OF #

GRAPHIC SCALE
0 2' 4' 8'
SCALE:1/4"=1'
SCALE OF FEET



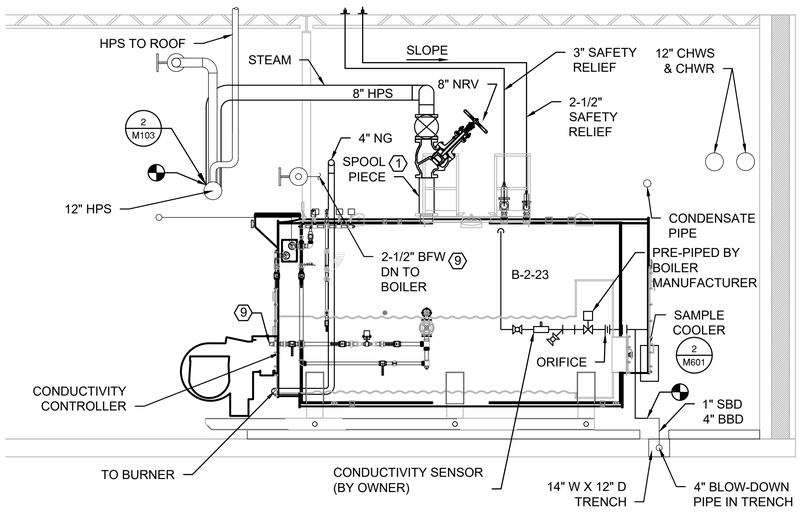
1 SECTION 1 - NEW WORK - DUCTWORK

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



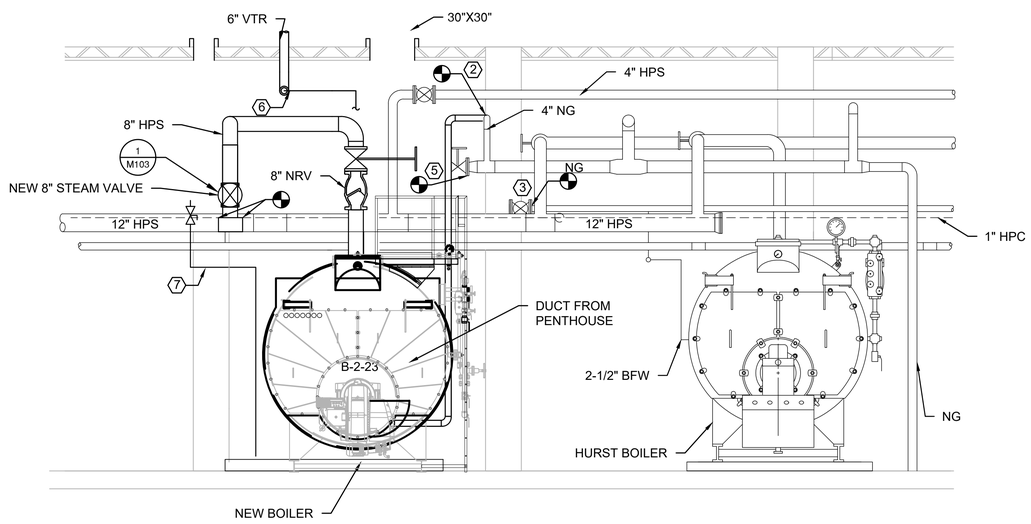
2 SECTION 2 - NEW WORK -DUCTWORK

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



3 SECTION 1 - NEW WORK - PIPING

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



4 SECTION 2 - NEW WORK - PIPING

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

GRAPHIC SCALE

0 2' 4' 8'

SCALE:1/4"=1'

SCALE OF FEET

SHEET KEYED NOTES:

1. FOUR FOOT LONG 8"Ø SPOOL PIECE SHALL BE CODE STAMPED.
2. CONTRACTOR SHALL FURNISH AND INSTALL NEW 6" PLUG VALVE WITH BLIND FLANGE AT LOCATION SHOWN. PROVIDE ADEQUATE CLEARANCE. COORDINATE UTILITY SHUTDOWN WITH OWNER.
3. CONTRACTOR SHALL INSTALL NEW 4" BFW VALVES IN EXISTING 4" BFW LINES. ENSURE ADEQUATE CLEARANCE AND ACCESS. COORDINATE WITH DEMO DRAWINGS AND LOCATE NEW VALVE APPROPRIATELY IN THE LINE AS NEEDED. SECOND LINE NOT SHOWN FOR CLARITY.
4. NEW 30" VENT STACK TO RISE VERTICALLY AND CONNECT TO EXISTING 33" STACK. CONTRACTOR SHALL FURNISH AND INSTALL NECESSARY SUPPORTS FOR THE NEW AND REMAINING STACK. ATTACH TO BUILDING STRUCTURE TO SUPPORT STACK.
5. CONTRACTOR SHALL FURNISH AND INSTALL NEW SHUT OFF VALVE IN 4" NG PRIOR TO NEW BOILER INSTALLATION. PROVIDE ADEQUATE CLEARANCE. COORDINATE UTILITY SHUTDOWN WITH OWNER.
6. CONTRACTOR SHALL FURNISH AND INSTALL NEW 3" AND 2-1/2" BOILER PRESSURE RELIEF LINES. NEW RELIEFS SHALL BE TIED INTO EXISTING VENTS THROUGH ROOF.
7. CONTRACTOR SHALL FURNISH AND INSTALL 1" BALL VALVE AND DRAIN LINES. ROUTE TO NEAREST FLOOR DRAIN.
8. COMBUSTION AIR VIA PENTHOUSE LOUVER DOWN TO BOILER AIR INTAKE. SEE DETAIL SHEET M-601.
9. 4" BFW EXISTING. ROUTE 2-1/2" BFW DOWN TO BFW CONNECTION AT FRONT OF NEW BOILER. CONTRACTOR TO DETERMINE APPROPRIATE ROUTING. ROUTE OF BFW PIPING NOT SHOWN FOR DETAIL CLARITY.
10. ROUTE 30X30 COMBUSTION AIR DUCT TO BOILER INTAKE. CONTRACTOR TO DETERMINE TRANSITIONS AND DUCT ROUTING. MAINTAIN NEGATIVE PRESSURE DROP WITHIN DUCT TO NO MORE THAN 0.75 INCHES H2O INCLUDING THE BURNER AND PENTHOUSE LOUVER. NOTIFY AMERESCO OF ANY DISCREPANCIES.

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	M302.DWG
DRAWN BY:	MR
CHECKED BY:	CW

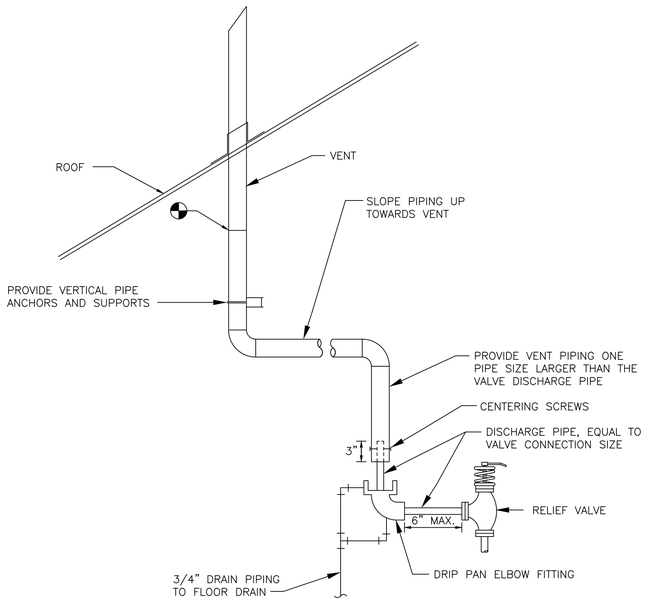
STATE OF TEXAS
CHRISTOPHER WEAVER
133201
LICENSED
PROFESSIONAL ENGINEER
7-7-23

SHEET TITLE

SECTIONS
NEW WORK

M302

SHEET # OF #

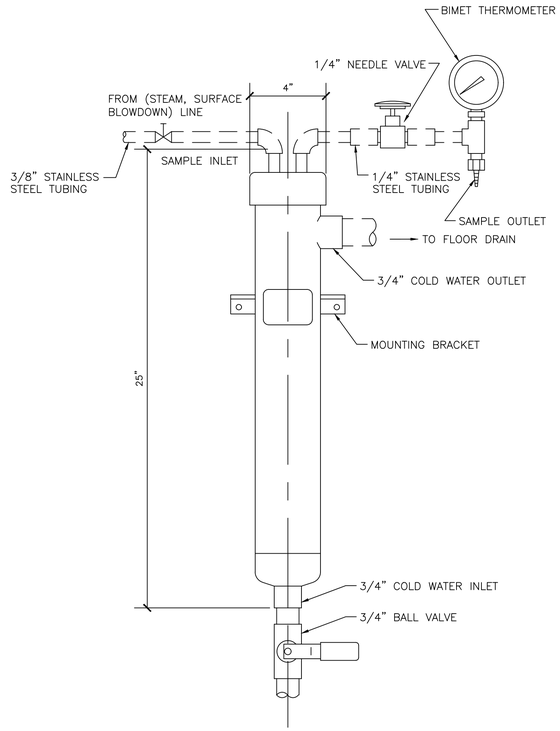


NOTES:

1. PROVIDE THIS INSTALLATION IN ACCORDANCE WITH ANSI B31.1, "POWER PIPING".
2. PROVIDE VENT PIPE ANCHORS AND SUPPORTS AS REQUIRED TO ELIMINATE ANY WEIGHT BEING TRANSMITTED TO THE VALVE'S DISCHARGE PIPE.

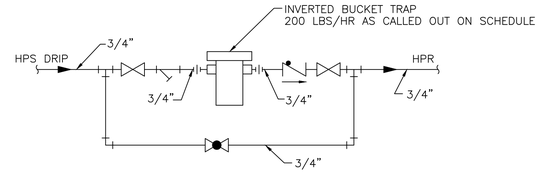
1 RELIEF VALVE DETAIL

SCALE: N.T.S.



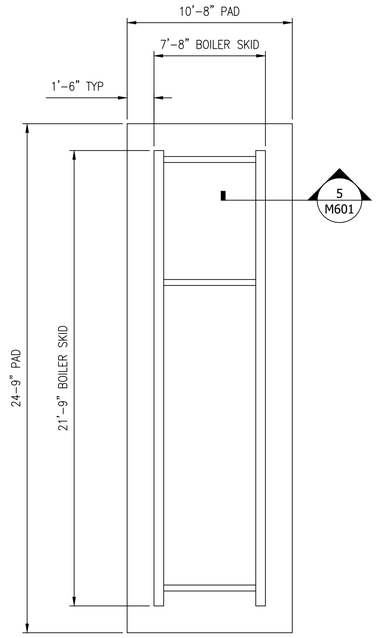
2 SAMPLE COOLER DETAIL

SCALE: N.T.S.



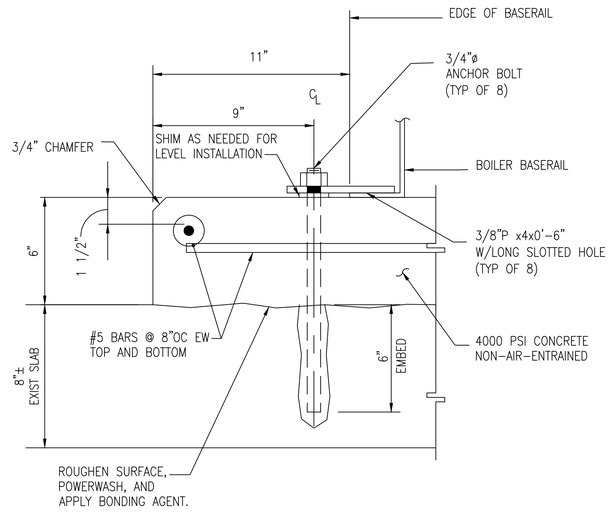
3 HPS TRAP ASSEMBLY

SCALE: N.T.S.



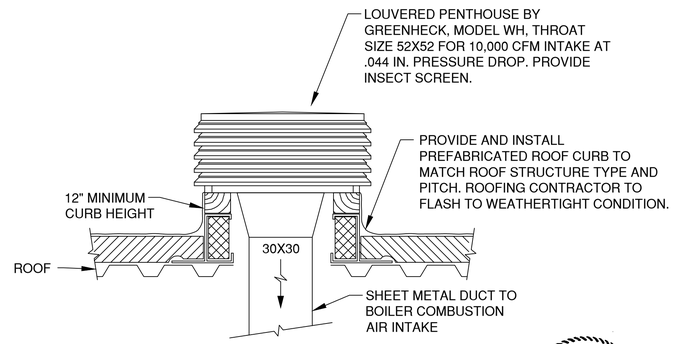
4 NEW PLAN PAD

SCALE: N.T.S.



5 BOILER MOUNTING - DETAIL

SCALE: N.T.S.



6 PENTHOUSE DETAIL

SCALE: N.T.S.

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	M601.DWG
DRAWN BY:	MR
CHECKED BY:	CW

SHEET TITLE

DETAILS

M601

SHEET # OF #

STATE OF TEXAS
CHRISTOPHER WEAVER
133201
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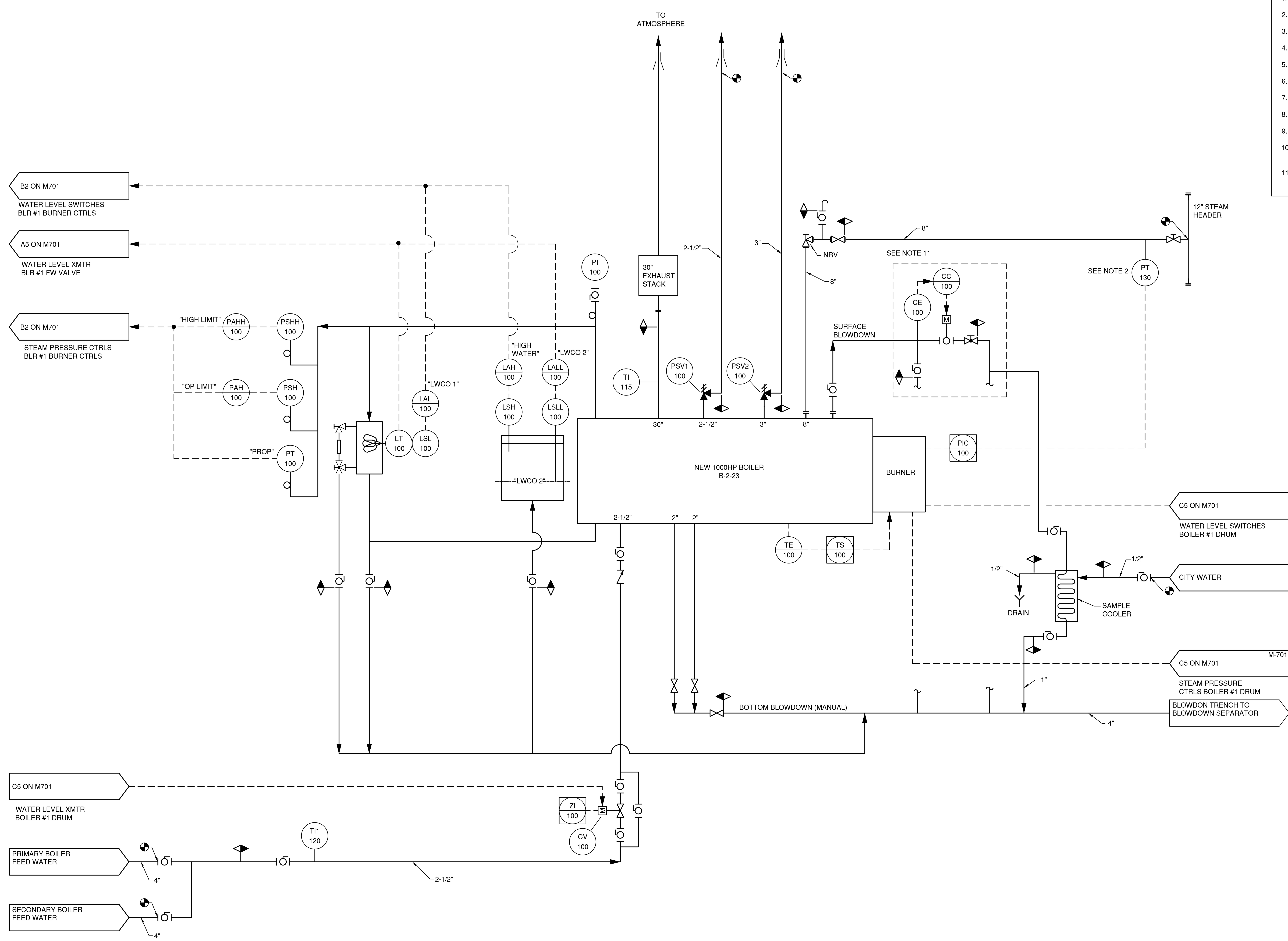
PROFESSIONAL ENGINEER
7-7-23



1 FEEDWATER AND STEAM PIPING & INSTRUMENTATION DIAGRAM

SCALE: N.T.S.

GENERAL NOTES:

1. INSTALL PLUG VALVES ROTATED AT 90° (HANDLE OPERATED VERTICALLY).
2. ENTIRE PILOT GAS TRAIN ASSEMBLY IS THE RESPONSIBILITY OF THE INSTALLER WHEN SUPPLIED UNASSEMBLED.
3. GAS TRAIN TO BE ASSEMBLED AND / OR INSTALLED BY QUALIFIED PERSON(S) ONLY.
4. INSTALLATION MUST MEET ALL STATE AND LOCAL REQUIREMENTS AND CODES.
5. ASSEMBLED GAS TRAINS ARE NOT PRESSURE TESTED AND THIS IS THE RESPONSIBILITY OF THE INSTALLER.

SHEET KEYED NOTES:

1. BURNER FLANGE AND CONNECTION PARTS.
2. DIMENSION " X" MUST BE LESS THAN FOUR (4) FEET TO ENSURE CONSISTENT LIGHT-OFF.
3. MOTORIZED VALVE / REGULATOR SKP25.
4. CUTE SENSING LINE 45° AND INSERT TO CENTER OF PIPE.
5. HGP SWITCH MUST BE SET AT 150% OF THE BURNER MANIFOLD PRESSURE.
6. N/O VENT VALVE MUST BE MOUNTED WITH SOLENOID IN VERTICAL AND UPRIGHT POSITION.
7. LGP SWITCH MUST BE SET AT 50-70% OF THE LOWEST OPERATING PRESSURE.
8. 0-10 PSIG.
9. 0-55 IN. W.G.
10. MOUNT PILOT GAS TRAIN AS CLOSE AS PRACTICAL TO BURNER TO ENSURE CONSISTENT LIGHT-OFF.
11. PROVIDED BY OWNER.

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MSU CENTRAL PLANT

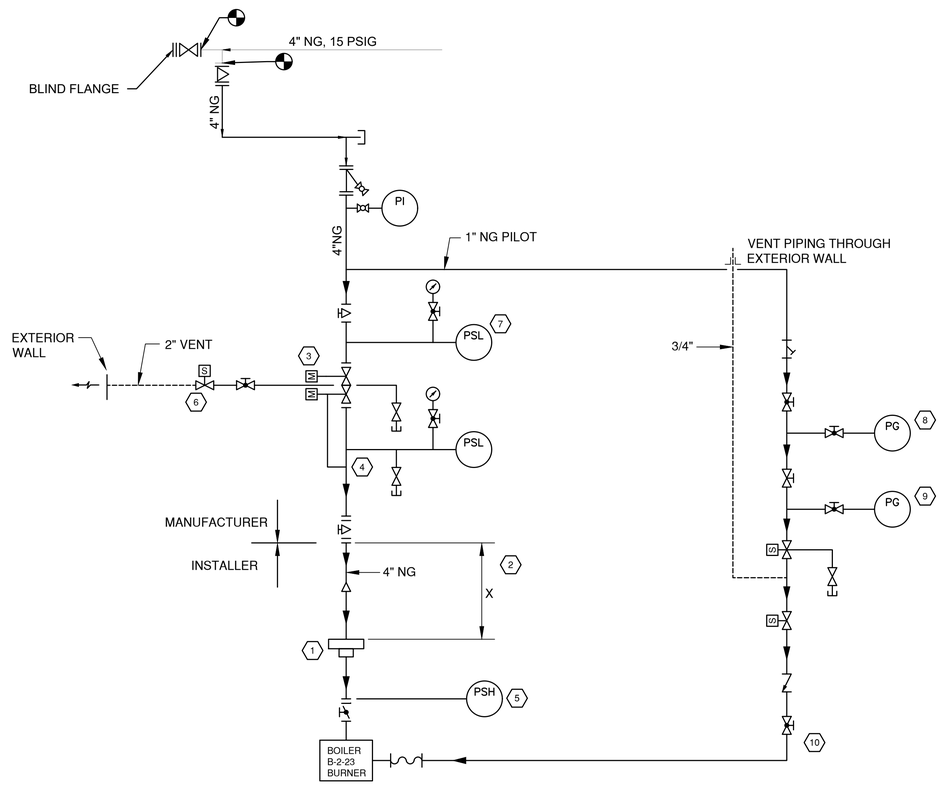
MARK DATE DESCRIPTION
0 07-07-23 FOR CONSTRUCTION
MARK DATE DESCRIPTION

PROJECT NO.: 1005813
CAD DWG. FILE: M701.DWG
DRAWN BY: MR
CHECKED BY: CW

SHEET TITLE
NEW WORK FEEDWATER AND STEAM PIPING DIAGRAM

M701

SHEET # OF #



1 NG PIPING & INSTRUMENTATION DIAGRAM

SCALE: N.T.S.

GENERAL NOTES:

1. INSTALL PLUG VALVES ROTATED AT 90° (HANDLE OPERATED VERTICALLY).
2. ENTIRE PILOT GAS TRAIN ASSEMBLY IS THE RESPONSIBILITY OF THE INSTALLER WHEN SUPPLIED UNASSEMBLED.
3. GAS TRAIN TO BE ASSEMBLED AND / OR INSTALLED BY QUALIFIED PERSON(S) ONLY.
4. INSTALLATION MUST MEET ALL STATE AND LOCAL REQUIREMENTS AND CODES.
5. ASSEMBLED GAS TRAINS ARE NOT PRESSURE TESTED AND THIS IS THE RESPONSIBILITY OF THE INSTALLER.

⬡ SHEET KEYED NOTES:

1. BURNER FLANGE AND CONNECTION POINTS.
2. DIMENSION "X" MUST BE LESS THAN FOUR (4) FEET TO ENSURE CONSISTENT LIGHT-OFF.
3. MOTORIZED VALVE / REGULATOR SKP25.
4. CUT SENSING LINE 45° AND INSERT TO CENTER OF PIPE.
5. HGP SWITCH MUST BE SET AT 150% OF THE BURNER MANIFOLD PRESSURE.
6. N/O VENT VALVE MUST BE MOUNTED WITH SOLENOID IN VERTICAL AND UPRIGHT POSITION.
7. LGP SWITCH MUST BE SET AT 50-70% OF THE LOWEST OPERATING PRESSURE.
8. 0-10 PSIG.
9. 0-55 IN. W.G.

10. MOUNT PILOT GAS TRAIN AS CLOSE AS PRACTICAL TO BURNER TO ENSURE CONSISTENT LIGHT-OFF.

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	M702.DWG
DRAWN BY:	MR
CHECKED BY:	CW

SHEET TITLE

NEW WORK
NATURAL GAS
PIPING DIAGRAM

M702

SHEET # OF #

STATE OF TEXAS
CHRISTOPHER WEAVER
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PROFESSIONAL ENGINEER
7-7-23

STEAM BOILER SCHEDULE

MARK	TYPE	FUEL	BOILER HP	MAX. INPUT (MBH)	OUTPUT (LBS / HR)	NATURAL GAS INPUT (CFH)	NATURAL GAS INPUT (PSIG)	F.D. FAN (HP)	ELECTRICAL VAC / PH / HZ	VENT STACK CONN.	BOILER FEEDWATER TEMP.	MAWP / OPER. PRESS. (PSIG)	STEAM SUPPLY NOZZLE	BFW CONN.	REMARKS	BASIS OF DESIGN
B-2-23	4- PASS WETBACK FIRETUBE	NAT. GAS	1000	39,900	34,500 AT 150 PSIG	39,900	10	60	480 / 3 PH / 60 HZ	30"	212 DEG. F	150 / 90	8"	2-1/2"	LOW NOx (30 PPM)	HURST S5-WK80MONO80/1-1000-150SP

NOTES:

1. UNIT TO BE PROVIDED WITH GAS TRAIN THAT MEETS I.R.I. AND NFPA 54 REQUIREMENTS.
2. UNIT TO BE PROVIDED WITH COMBUSTION CONTROLS AND FLAME SAFEGUARDS IN COMPLIANCE WITH ASME CSD-1, NFPA 8501, AND FM GLOBAL.
3. UNIT SHALL BE UL 726 AND 795 LISTED AND LABELED.
4. SEE SPECIFICATION SECTION 235239 "FIRE-TUBE BOILERS" FOR ADDITIONAL REQUIREMENTS.
5. ACCESS PLATFORM WITH RIGHT SIDE ACCESS.
6. PROVIDE NATURAL GAS AND BOILER FEEDWATER CONNECTIONS ON RIGHT SIDE.
7. BOILER SHALL BE FURNISHED WITH SIEMENS LMV52 CONTROLLER, WITH PARALLEL POSITIONING, O2 CONTROLS, FLUE GAS RECIRCULATION (FGR), AND VARIABLE SPEED CONTROL FOR BLOWER MOTOR.
8. BOILER LMV52 CONTROLLER SHALL BE FURNISHED WITH FOUR-LINE DIGITAL INTERFACE.
9. BOILER SHALL BE FURNISHED WITH SIEMENS NATURAL GAS TRAIN.

BOILER COMBUSTION EMISSIONS

POLLUTANT	ABBREVIATION	NAT. GAS EMISSIONS RATE (MAX) (PPM)
PARTICULATES 10 MICROMETERS OR SMALLER	PM-10	0.112 LB/HR
NITROGEN OXIDES	NOX	0.036 LB/MMBTU
CARBON MONOXIDE	CO	0.037 LB/MMBTU
VOLITILE ORGANIC COMPOUNDS	VOC'S	0.003 LB/MMBTU
METHANE	CH4 CO2	.002 LB/MMBTU 126.45 LB/MMBTU

NOTES:

1. SEE SPECIFICATION SECTION 235239 "FIRE-TUBE BOILERS" FOR FUEL ANALYSES TO BE USED TO DETERMINE BOILER EMISSIONS.
2. BOILER UNITS SHALL BE PROVIDED WITH FLUE GAS RECIRCULATION.

LOUVER SCHEDULE

MARK	APPLICATION	CFM	PRESSURE DROP (IN. WG)	THROAT VELOCITY (FT. /MIN.)	THROAT SIZE (IN. X IN.)	THROAT AREA (SQ. FT.)	HOOD WIDTH (IN.)	HOOD LENGTH (IN.)	HEIGHT (IN.)	WEIGHT (LBS.)	BASIS OF DESIGN
L-2-23	INTAKE	9,200	0.044	490	52X52	18.8	66	66	43	234	GREENHECK W/H52X52

NOTES:

1. FOUR INCH DEEP, EXTRUDED ALUMINUM INTAKE LOUVERED PENTHOUSE. INCLUDE OPTIONAL INSECT SCREEN. STANDARD FINISH. COLOR TO BE SELECTED BY OWNER.
2. COMBUSTION AIR REQUIREMENT OF 8,000 CFM OVERSIZED 15%. FREE AREA NOT A PENTHOUSE LOUVER REQUIREMENT.
3. FULLY DUCTED TO BOILER B-2-23.
4. SEE DEMO DRAWINGS FOR MODIFICATIONS TO EXISTING 24X24 ROOF OPENING.
5. GREENHECK WH52X52 OR APPROVED EQUAL.

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MSU CENTRAL PLANT

MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.: 1005813
CAD DWG. FILE: M703.DWG
DRAWN BY: MR
CHECKED BY: CW

SHEET TITLE

SCHEDULES

M703

SHEET # OF #

GENERAL NOTES

GENERAL NOTES

1. NOTE: NOT ALL SYMBOLS AND ABBREVIATIONS INDICATED ON THIS DRAWING ARE USED ON THIS PROJECT.

2. SCOPE OF WORK: FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT, SERVICES AND SKILLED SUPERVISION NECESSARY TO PROVIDE, INSTALL, TEST AND ADJUST ALL MECHANICAL, PLUMBING AND ELECTRICAL SYSTEMS TO BE COMPLETE, OPERATIONAL AND READY FOR USE, AS INDICATED IN THESE DRAWINGS AND/OR SPECIFICATIONS.

3. PERMITS, LICENSES AND FEES: PAY FOR ALL REQUIRED FEES AND OBTAIN ALL NECESSARY PERMITS AND LICENSES FOR THE LEGAL REMOVAL AND INSTALLATION OF THE WORK.

4. APPLICABLE CODES AND STANDARDS: ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS AND ANY REGULATIONS EFFECTIVE IN THE PROJECT JURISDICTION. ALL CODE CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER FOR RESOLUTION. THE APPLICABLE CODES AND STANDARDS ON THIS PROJECT INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   A. INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2018
   B. INTERNATIONAL BUILDING CODE (IBC) 2018
   C. INTERNATIONAL FIRE CODE (IFC) 2018
   D. INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2018
   E. NATIONAL ELECTRICAL CODE (NEC) 2020

4. DRAWING ACCURACY: THE LOCATION AND SIZES OF EXISTING EQUIPMENT, PIPING, OUTLETS, FIXTURES AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE VERIFIED AT THE PROJECT SITE. THE DRAWINGS ARE DIAGRAMMATIC IN NATURE AND ARE NOT INTENDED TO BE SCALED. WHEN INDICATED, ALL WORK SHALL BE PHYSICALLY LOCATED IN ACCORDANCE WITH THE ANNOTATED DIMENSIONS ON THE ARCHITECTURAL PLANS, ELEVATIONS AND DETAILS.

5. DRAWINGS: THE DRAWINGS ARE DIAGRAMMATIC AND REPRESENT THE INTENT OF THE CONTRACT. THE DESIGN DRAWINGS ARE NOT TO BE CONSIDERED A SUBSTITUTION TO THE SHOP DRAWINGS. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS CONDITIONS ALLOW, TO COMPLETE THE INTENT OF THE CONTRACT. THE ENGINEER RESERVES THE RIGHT TO MAKE MINOR ADJUSTMENTS/CHANGES IN LOCATIONS AND ARRANGEMENTS WHEN REQUIRED BY THE JOB DEVELOPMENT WITHOUT ADDITIONAL COMPENSATION TO THE CONTRACTOR.

6. PROJECT SITE VISIT: THE CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF/HERSELF WITH THE EXISTING CONDITIONS, EQUIPMENT, PIPING, WIRING, CONSTRUCTION, FINISHES, AND STRUCTURE PRIOR TO THE COMMENCEMENT OF WORK. WHEN ANY DISCREPANCY OR CONFLICT IS DETECTED AT THE PROJECT SITE, THE OWNER REPRESENTATIVE, AND ENGINEER SHALL BE NOTIFIED IMMEDIATELY PRIOR TO COMMENCING OF THE WORK.

7. COORDINATION: CONTRACTOR SHALL COORDINATE AND SEQUENCE THE WORK OF ALL DIVISIONS AND TRADES PRIOR TO FABRICATION AND INSTALLATION OF DUCTWORK AND RACEWAYS. COORDINATE THE LOCATION OF ALL NEW EQUIPMENT, DUCTWORK, PLUMBING FIXTURES, AND DEVICES WITH THE BUILDING STRUCTURE AND NEW EQUIPMENT BEFORE FABRICATION. THE INSTALLATION SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER AND SHALL CONFORM TO THE LATEST TRADE PRACTICES. MAKE THE NECESSARY ACCOMMODATIONS TO MEET THE INTENT OF THE DRAWINGS AND ENSURE A COMPLETE AND COORDINATED INSTALLATION.

8. MOUNTING HEIGHTS: COORDINATE THE MOUNTING HEIGHTS OF DEVICES TO BE LOCATED ON FINISH WALLS TO PROVIDE A CLEAN AND SYMMETRICAL APPEARANCE. DIMENSIONS, UNLESS OTHERWISE NOTED, ARE TO THE CENTERLINE OF THE EQUIPMENT.

9. MATERIALS/SUBMITTALS/SUBSTITUTIONS: MANUFACTURERS AND CATALOGUE NUMBERS ARE USED HEREIN STRICTLY AS A REFERENCE. THEY REPRESENT THE TYPE, SIZE, CONSTRUCTION, PERFORMANCE, AND LEVEL OF QUALITY REQUIRED. EQUIPMENT FROM OTHER MANUFACTURERS (SUBSTITUTIONS) THAT MATCH OR SURPASS THE CHARACTERISTICS OF THOSE REFERENCED ON THE DRAWINGS WILL BE ACCEPTABLE, SUBJECT TO WRITTEN APPROVAL BY THE OWNER REPRESENTATIVE AND THE ENGINEER. THE CONTRACTOR SHALL SUBMIT A SUBSTITUTION REQUEST ALONG WITH A COMPARISON TABLE LISTING THE CAPACITIES AND FEATURES OF THE BASIS OF DESIGN EQUIPMENT AND THOSE OF THE PROPOSED SUBSTITUTION EQUIPMENT/DEVICE FOR REVIEW AND APPROVAL.

10. BUILDING SERVICE INTERRUPTION: THE CONTRACTOR SHALL NOTIFY THE OWNER REPRESENTATIVES, AND THE ENGINEER IN ADVANCE IN ACCORDANCE WITH THE SPECIFICATIONS AND/OR THE PROJECT REQUIREMENTS LISTED ON THESE DRAWINGS, AND SHALL OBTAIN WRITTEN AUTHORIZATION. A MINIMUM OF 7 DAYS PRIOR TO THE INTERRUPTION OF ANY BUILDING SERVICE. THE CONTRACTOR SHALL COORDINATE THE TIME AND DURATION OF THE SERVICE INTERRUPTION WITH THE OWNER, AND ENGINEER .

11. CLEANING & MATERIAL DISPOSITION: OWNER HAS FIRST RIGHT OF REFUSAL OF ALL SALVAGEABLE MATERIALS. ALL OTHER MATERIAL AND DEBRIS ACCUMULATED AS A RESULT OF DEMOLITION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES BY THE CONTRACTOR AND DISPOSED OF IN A LEGAL AND PROPER MANNER, IN ACCORDANCE WITH APPLICABLE REGULATIONS. CLEAR ALL DEBRIS DAILY FROM THE AREA OF WORK AND LEAVE THE SITE IN CLEAN CONDITION. CLEAN ALL EQUIPMENT ENCLOSURES, INSIDE AND OUTSIDE.

12. CUTTING & PATCHING: PERFORM CUTTING AND PATCHING AS NECESSARY FOR THE INSTALLATION OF THIS WORK. SEAL UNUSED PENETRATIONS RESULTING FROM DEMOLITION FOR THIS WORK. ALL WORK SHALL BE PERFORMED IN SUCH A MANNER TO MINIMIZE DAMAGE TO ADJACENT EQUIPMENT, PIPING, DUCTWORK, WIRING, FIXTURES, CONSTRUCTION, FINISHES AND STRUCTURE, AND BE ACCEPTABLE TO THE OWNER'S REPRESENTATIVES. THE WORK SHALL BE PERFORMED IN ACCORDANCE WITH NECA-1 AND SHALL CONFORM TO ALL APPLICABLE CODES, REGULATIONS AND MANUFACTURER'S RECOMMENDATIONS. RESTORE SURFACES TO MATCH THE EXISTING ADJACENT FINISHES AND CONDITIONS.

GENERAL NOTES

GENERAL NOTES CONTINUED

13. DIMENSIONS: THE DIMENSIONS SHOWN ON THE PLANS ARE HORIZONTAL. THE DIMENSIONS SHOWN ON ELEVATIONS ARE VERTICAL.

14. CONCEALED COMPONENTS: PROVIDE ACCESS TO SYSTEM COMPONENTS THAT ARE CONCEALED AND REQUIRED PERIODIC ACCESS. COORDINATE THE SIZE AND LOCATION OF ACCESS PANELS AND LABELS WITH THE ARCHITECTURAL DRAWINGS AND WITH THE EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND/OR REQUIREMENTS.

15. INTERFERENCES: ANY INTERFERENCE ENCOUNTERED AT THE PROJECT SITE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER REPRESENTATIVE AND ENGINEER OF RECORD AND SHALL BE RESOLVED PRIOR TO THE INSTALLATION OF ANY NEW WORK.

16. INSTALLATION OF NEW WORK: THE INSTALLATION OF EQUIPMENT AND MATERIALS SHALL ADHERE TO THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS. ALL SERVICE AND CODE REQUIRED CLEARANCES SHALL BE MAINTAINED, WHETHER INDICATED ON THE DRAWINGS OR NOT. THE INSTALLATION OF EQUIPMENT, DUCTWORK, PIPING, FIXTURES, ETC. SHALL BE PERFORMED IN A NEAT AND WORKMANLIKE MANNER, AND SHALL CONFORM TO THE LATEST TRADE PRACTICES. COORDINATE THE DUCTWORK AND PIPING INSTALLATION WITH THE WORK OF OTHER TRADES PRIOR TO FABRICATION. MAKE THE NECESSARY ACCOMMODATIONS TO MEET THE INTENT OF THE DRAWINGS AND ENSURE A COORDINATED AND COMPLETELY FUNCTIONAL INSTALLATION.

17. PLENUM SPACES: ALL MECHANICAL, PLUMBING AND/OR ELECTRICAL EQUIPMENT, PIPING, INSULATION, WIRING, ETC. INSTALLED IN ACTIVE PLENUM SPACES SHALL MEET CODE REQUIREMENTS FOR SMOKE AND COMBUSTIBILITY RATINGS.

18. COORDINATED DRAWINGS: PROVIDE COORDINATED DRAWINGS COVERING THE AREAS OF WORK, INDICATING ALL FLOOR SLAB PENETRATIONS, CONNECTIONS TO FIXTURES, AND TO EQUIPMENT (AND KITCHEN EQUIPMENT). THE COORDINATED DRAWINGS SHALL INCLUDE BUT NOT BE LIMITED TO DUCTWORK, HVAC PIPING, DOMESTIC AND SANITARY PIPING, VENT, STORM AND GAS PIPING, MAJOR ELECTRICAL CONDUITS AND JUNCTION BOXES, AS APPLICABLE. SUBMIT 1/4 SCALE COORDINATED DRAWINGS FOR THE ENGINEER'S REVIEW AND APPROVAL.

19. AS-BUILT DRAWINGS: PROVIDE AS-BUILT RED-LINED DRAWINGS AT THE COMPLETION OF THE PROJECT FOR THE ENGINEER'S REVIEW AND FOR THE RECORD. INDICATE MAJOR CHANGES AND/OR ADJUSTMENTS TO THE EQUIPMENT AND/OR ANCILLARY DEVICE LOCATIONS.

20. HAZARDOUS MATERIALS: WHERE HAZARDOUS MATERIALS SUCH AS ACMs, PCBs, OR LEAD ARE ENCOUNTERED, THE CONTRACTOR SHALL CEASE DEMOLITION WORK AND NOTIFY THE OWNER AND ENGINEER AT ONCE.

19. PENETRATIONS : ALL CONDUITS PENETRATING CEILINGS AND WALLS SHALL BE INSTALLED WITH SLEEVES AT THE PENETRATION. ALL CONDUITS PENETRATING EXTERIOR WALLS AND ROOFS SHALL BE PROVIDED WITH SLEEVES, INSULATION, CURBS AND REMOVABLE CAPS AND SHALL BE MADE WATER-TIGHT AS INDICATED ON THE INSTALLATION DETAILS. CONDUITS PENETRATING FIRE RATED PARTITIONS/ASSEMBLIES SHALL BE PROVIDED WITH SLEEVES, FIRE RATED SEALS, OR COMPOUNDS AT THE GAPS BETWEEN CONDUIT AND ASSEMBLY (RATED WALLS AND FLOORS), AS REQUIRED BY THE LOCAL CODE AUTHORITY. SLEEVES THROUGH SLABS SHALL EXTEND 1" ABOVE FINISHED SURFACE.

20. TESTING : ALL ELECTRICAL WORK SHALL BE TESTED AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION, USING NETA STANDARD METHODS AND EQUIPMENT.

21. O & Ms : PROVIDE OPERATING AND MAINTENANCE (O & M) MANUALS IN ACCORDANCE WITH DIVISION 1 SPECIFICATIONS.

25. BRANCH CIRCUIT WIRE SIZE : THE MINIMUM WIRE SIZE FOR BRANCH CIRCUIT SHALL BE #12 AWG EXCEPT 120 VOLT CIRCUITS OVER 80 FEET IN LENGTH AND 277 VOLT CIRCUITS OVER 150 FEET SHALL BE 10# AWG. REFER TO DRAWINGS FOR FURTHER WIRE SIZING INFORMATION.

26. ANY DISCREPANCY FOUND ON THE DRAWINGS OR SPECIFICATIONS, THE WORSE CASE SHALL PREVAIL.

27. THE CONTRACTOR SHALL REPAIR, PATCH, AND FINISH ALL FLOOR, WALL, OR CEILING SURFACES DAMAGED DURING DEMOLITION, REMOVAL OF EQUIPMENT, ETC. TO MATCH THE EXISTING SURFACE MATERIAL AND COLOR.

ABBREVIATIONS

A	AMPERE
ACMs	ASBESTOS CONTAINING MATERIALS
ACT	ABOVE COUNTERTOP
ADA	AMERICANS WITH DISABILITIES ACT
AF	AMP FUSE SIZE
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
APPROX	APPROXIMATELY
AS	AMP SWITCH SIZE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BLDG	BUILDING
BMS	BUILDING MANAGEMENT SYSTEM
C	CONDUIT
CCT	CORRELATED COLOR TEMPERATURE
CO	CARBON MONOXIDE
COMM	COMMUNICATION
COTR	CONTRACTING OFFICER'S TECHNICAL REPRESENTATIVE
CP	CONTROL PANEL
CRI	COLOR RENDERING INDEX
CT	CURRENT TRANSFORMER CABINET
DEMO	DEMOLITION, DEMOLISH
DIM	DIMMABLE DISC DISCONNECT
DL	DAYLIGHT
DN	DOWN DWG DRAWING
E, EX	EXISTING
EA	EACH
EF	EXHAUST FAN
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
ENT	ELECTRICAL NONMETALLIC TUBING
ER	EXISTING TO RELOCATED
ETR	EXISTING TO REMAIN
EXH	EXHAUST
°F	DEGREES FAHRENHEIT
FACP	FIRE ALARM CONTROL PANEL
FL	FLOOR
FLA	FULL LOAD AMPERES
FLUOR	FLUORESCENT
FMC	FLEXIBLE METALLIC CONDUIT
FNC	FLEXIBLE NON-METALLIC CONDUIT
FSS	FUSED SAFETY SWITCH
FT	FEET
G, GND, (G)	GROUND
GFI	GROUND FAULT INTERRUPT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
HP	HORSE POWER Hz HERTZ (CYCLES PER SECOND)
IG	ISOLATED GROUND
in	INCHES
J, JB	JUNCTION BOX
K	KELVIN (DEGREES)
kW	KILOWATT
kWh	KILOWATT-HOUR
kVA	KILO VOLT-AMPERE
LFMC	LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT
LPS	LIGHTNING PROTECTION SYSTEM
LRA	LOCKED ROTOR AMPERES
MAX	MAXIMUM
MCB	MAIN CIRCUIT BREAKER
MECH	MECHANICAL
MDP	MAIN DISTRIBUTION PANEL
MFR	MANUFACTURER
MH	MANHOLE/MOUNTING HEIGHT
MIN	MINIMUM
MLO	MAIN LUGS ONLY
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NETA	NATIONAL ELECTRICAL TESTING ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NFSS	NON-FUSED SAFETY SWITCH
NIC	NOT IN CONTRACT
No.	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
OCPD	OVERCURRENT PROTECTION DEVICE
OS	OCCUPANCY SENSOR
P	POLE, PUMP
PCB	POLYCHLORINATED BIPHENYL
PH	PHASE
PIR	PASSIVE INFRARED PLUM PLUMBING
PNL	PANEL
POS	POINT OF SALE
PV	PHOTOVOLTAIC (SOLAR PANEL)

ABBREVIATIONS

R	RELOCATED FIXTURE/DEVICE
RCP	REFLECTED CEILING PLAN
REC, RECEPT	RECEPTACLE
RM	ROOM
SD	SMOKE DETECTOR
SF	SQUARE FEET
SPD	SURGE PROTECTION DEVICE
SS	STAINLESS STEEL
SW	SWITCH
TEL/DATA	TELEPHONE/DATA COMMUNICATION
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
UON	UNLESS OTHERWISE NOTED
V	VOLTS, VOLTAGE
VFD	VARIABLE FREQUENCY DRIVE
VS	VACANCY SENSOR
W	WATT, WIRE
W/	WITH
WP	WEATHER PROOF
XFMR	TRANSFORMER

ONE LINE DIAGRAM SYMBOLS

- CIRCUIT BREAKER
- DISCONNECT
- DRAW OUT CIRCUIT BREAKER
- COMBINATION MOTOR STARTER
- ENCLOSED CIRCUIT BREAKER
- GROUND
- GROUND BAR
- TRANSFORMER (T1)
- METER (M)
- MOTOR, NUMBER DENOTES HORSEPOWER (#)
- PANELBOARD (PANEL)
- VARIABLE FREQUENCY DRIVE

LEGEND

LINETYPES:

- EXISTING (LIGHT LINE WEIGHT)
- REMOVED, DEMOLISHED
- EXISTING TO REMAIN
- NEW WORK

GENERAL:

- KEYED NOTES (1)
- LIMIT OF REMOVAL
- CONNECTION POINT NEW TO EXISTING
- RACEWAY CONTINUATION

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	E001.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

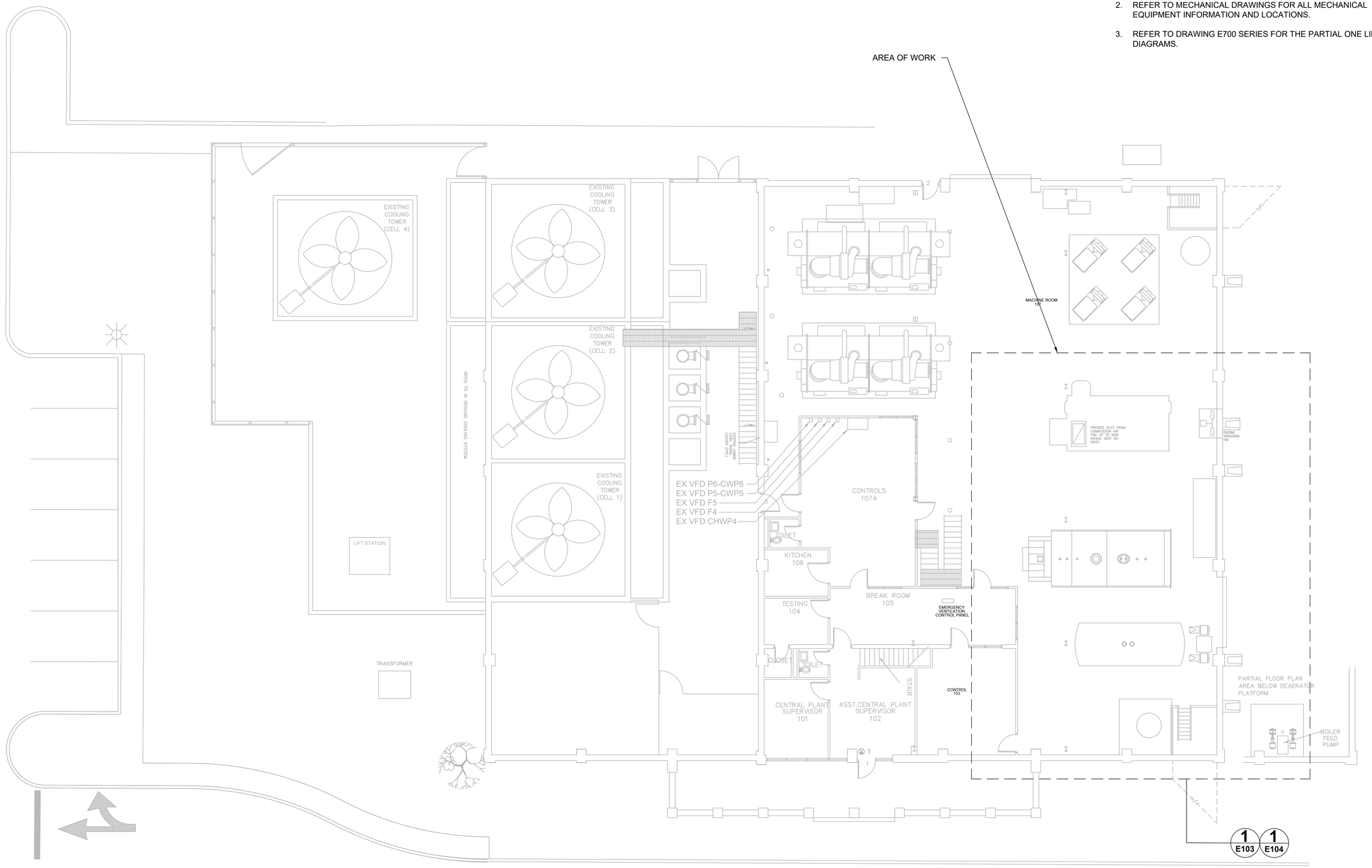
ELECTRICAL GENERAL NOTES & SYMBOLS

E001

SHEET # OF #

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. REFER TO MECHANICAL DRAWINGS FOR ALL MECHANICAL EQUIPMENT INFORMATION AND LOCATIONS.
3. REFER TO DRAWING E700 SERIES FOR THE PARTIAL ONE LINE DIAGRAMS.



1 FIRST FLOOR PLAN
SCALE: 1/8"=1'-0"

GRAPHIC SCALE

0 4' 8' 16'

SCALE:1/8"=1'

SCALE OF FEET

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PROJECT NO.:	1005813
CAD DWG. FILE:	E101.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

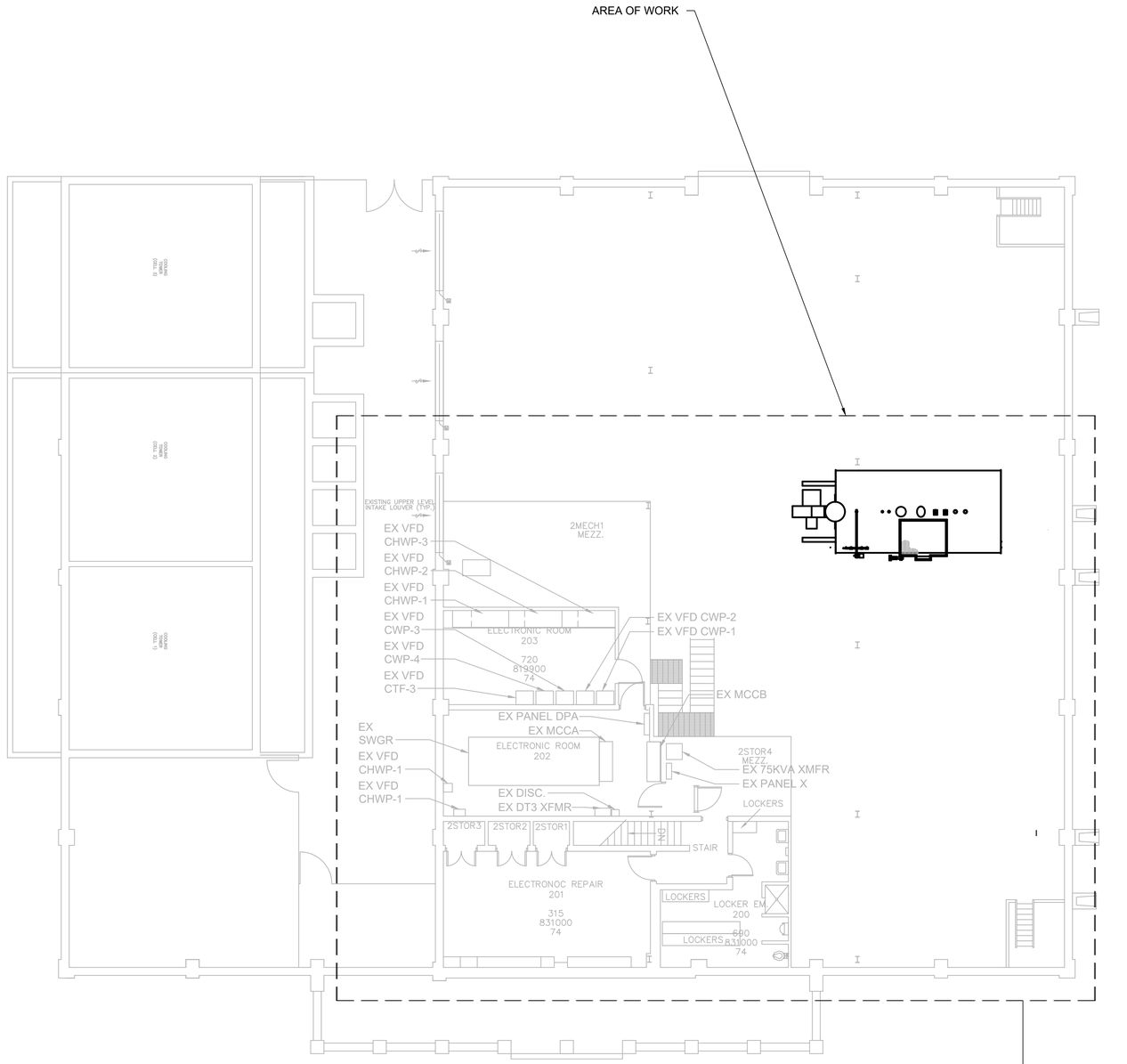
ELECTRICAL FIRST FLOOR PLAN

E101

SHEET # OF #

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. REFER TO MECHANICAL DRAWINGS FOR ALL MECHANICAL EQUIPMENT INFORMATION AND LOCATIONS.
3. REFER TO DRAWING E700 SERIES FOR THE PARTIAL ONE LINE DIAGRAMS.



1 SECOND FLOOR PLAN (N)
SCALE: 1/8"=1'-0"

GRAPHIC SCALE
0 4' 8' 16'
SCALE:1/8"=1'
SCALE OF FEET

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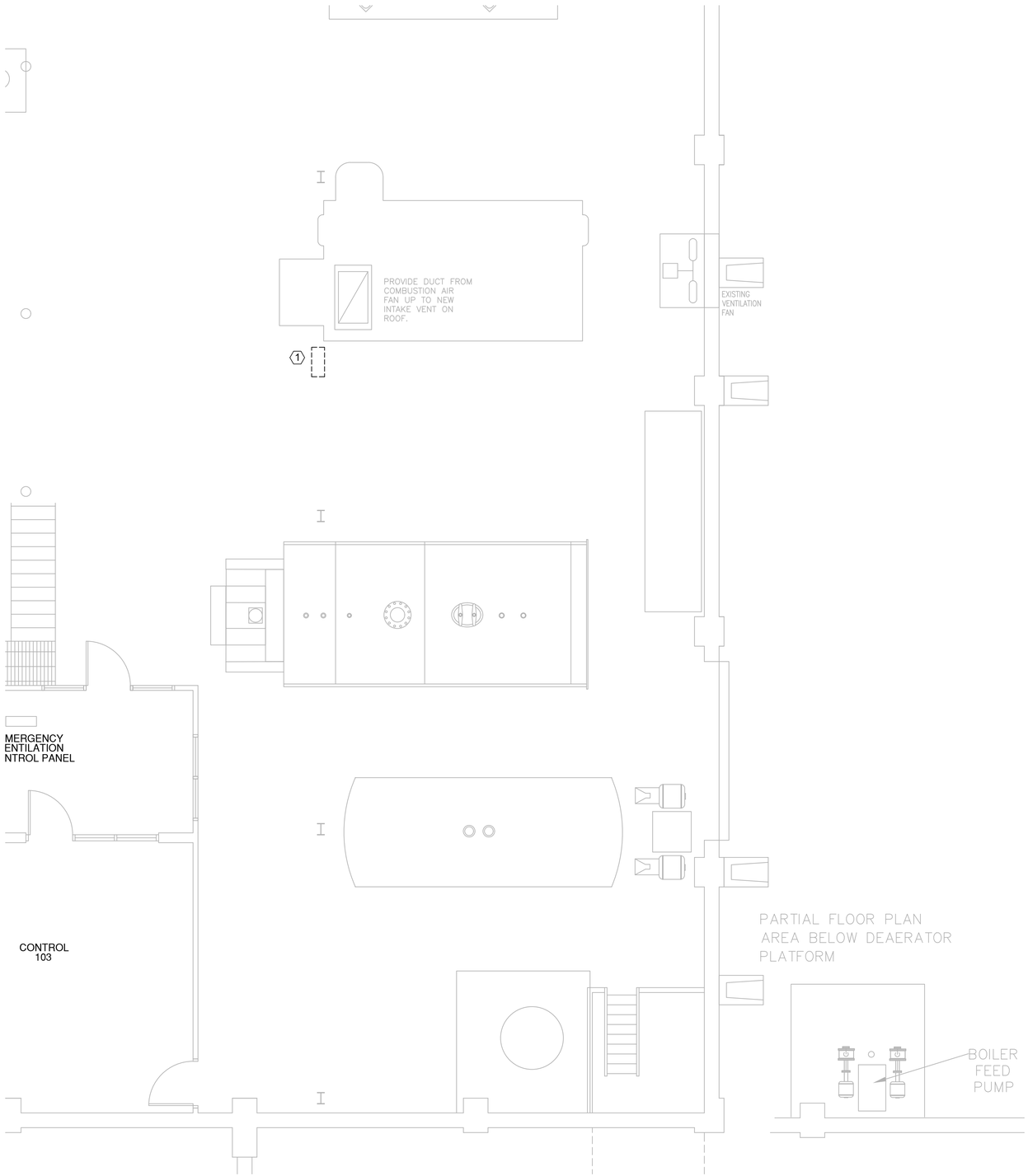
PROJECT NO.:	1005813
CAD DWG. FILE:	E102.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

ELECTRICAL
SECOND
FLOOR PLAN

E102

SHEET # OF #



1 ELECTRICAL FIRST FLOOR PART PLAN - DEMOLITION
SCALE: 1/4"=1'-0"

GENERAL NOTES:

1. FURNISH, INSTALL, AND MAINTAIN IN SAFE CONDITIONS AT ALL TIMES TEMPORARY PROTECTION REQUIRED TO ENSURE SAFETY FOR PERSONS AND PROPERTY DURING DEMOLITION AND REMOVAL WORK.
2. OWNER HAS FIRST RIGHT OF REFUSAL OF ALL SALVAGEABLE MATERIALS. ALL OTHER MATERIAL AND DEBRIS ACCUMULATED AS A RESULT OF DEMOLITION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES BY THE CONTRACTOR AND DISPOSED OF IN A LEGAL AND PROPER MANNER.
3. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
4. REFER TO MECHANICAL DRAWINGS FOR ALL MECHANICAL EQUIPMENT INFORMATION AND LOCATIONS.
5. REFER TO DRAWING E701 FOR THE PARTIAL ONE LINE DIAGRAM.

KEYED NOTES:

1. DISCONNECT AND REMOVE VARIABLE FREQUENCY DRIVE (VFD) BACK TO SOURCE, INCLUDING ALL ASSOCIATED ELECTRICAL EQUIPMENT, CONDUIT AND WIRING.

GRAPHIC SCALE
0 2' 4' 8'
SCALE:1/4"=1'
SCALE OF FEET

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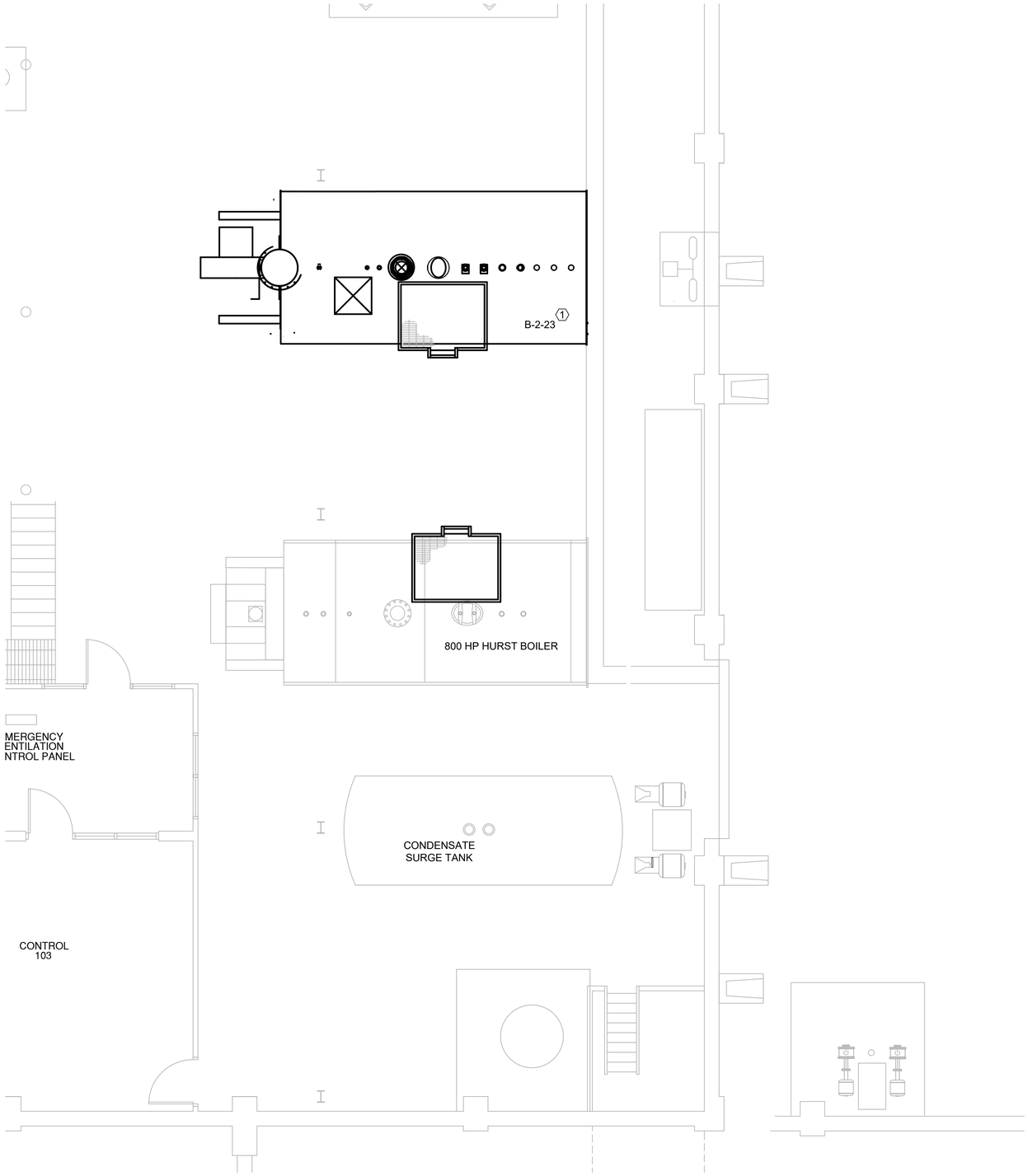
MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	E103.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE
ELECTRICAL FIRST FLOOR PART PLAN - DEMOLITION

E103

SHEET # OF #



GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. REFER TO MECHANICAL DRAWINGS FOR ALL MECHANICAL EQUIPMENT INFORMATION AND LOCATIONS.
3. REFER TO DRAWING E702 FOR THE PARTIAL ONE LINE DIAGRAM FOR FEEDER SIZE AND ADDITIONAL ELECTRICAL INFORMATION.

⬡ KEYED NOTES:

1. UTILIZE EXISTING GROUND, PREVIOUSLY SERVING THE REMOVED BOILER, FOR RECONNECTION TO NEW BOILER B-2-23.

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	E104.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

ELECTRICAL FIRST FLOOR PART PLAN - NEW WORK

E104

SHEET # OF #

1 ELECTRICAL FIRST FLOOR PART PLAN - NEW WORK
SCALE: 1/4"=1'-0"

GRAPHIC SCALE
0 2' 4' 8'
SCALE:1/4"=1'
SCALE OF FEET

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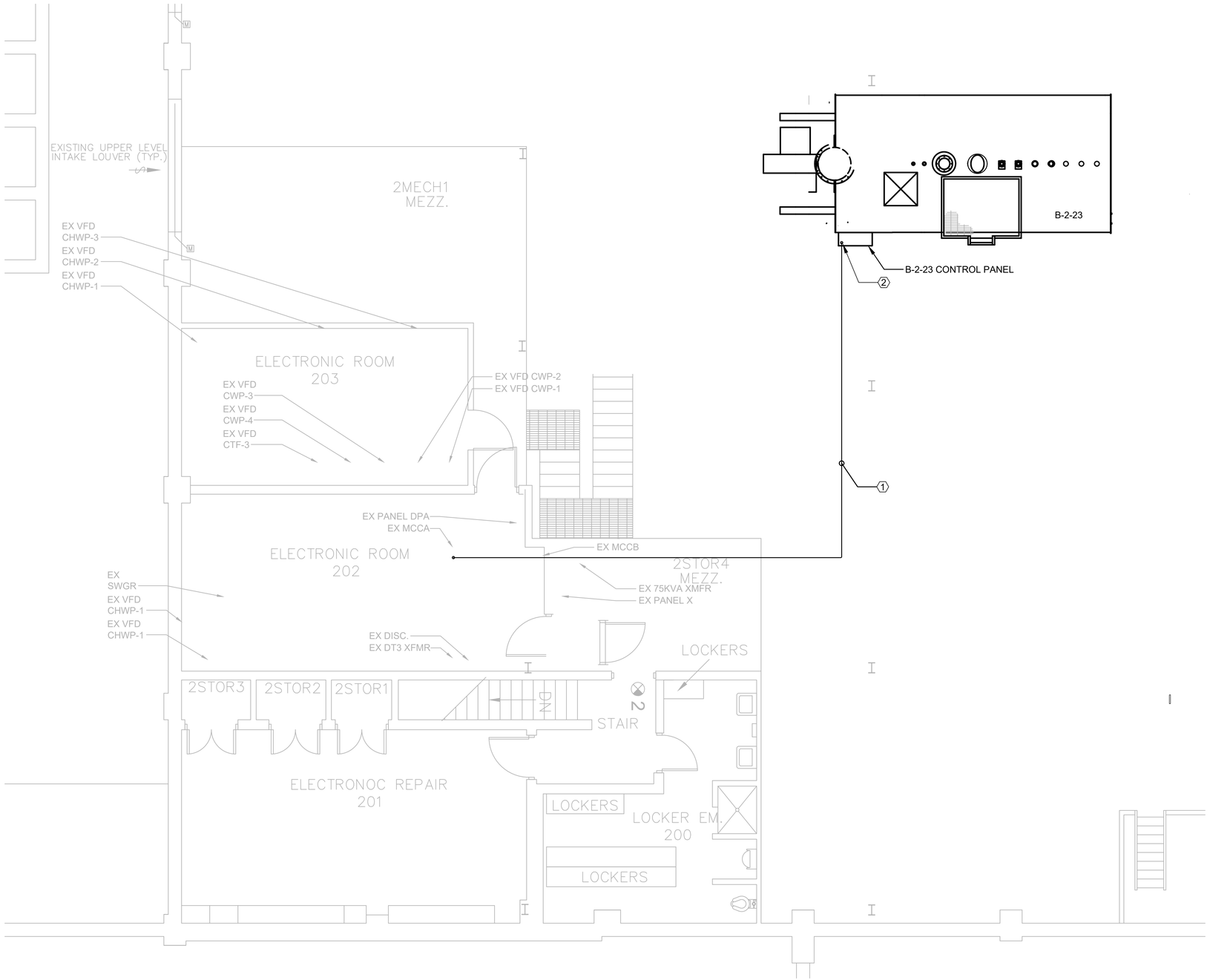

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. REFER TO MECHANICAL DRAWINGS FOR ALL MECHANICAL EQUIPMENT INFORMATION AND LOCATIONS.
3. REFER TO DRAWING E702 FOR THE PARTIAL ONE LINE DIAGRAM FOR FEEDER SIZE AND ADDITIONAL ELECTRICAL INFORMATION.

⬡ KEYED NOTES:

1. PROVIDE 3#1AWG, 1#6AWG GND, IN 1-1/4"C FROM EXISTING MCCA TO BLR. N0. 2-23 CONTROL PANEL. REFER TO DRAWING E702 FOR ADDITIONAL INFORMATION.
2. PROVIDE FINAL POWER CONNECTION TO B-2-23 VFD WITH A MINIMUM OF 3 FEET OF LFMC CONDUIT.

1 ELECTRICAL SECOND FLOOR PART PLAN - NEW WORK

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

GRAPHIC SCALE

0 2' 4' 8'

SCALE:1/4"=1'

SCALE OF FEET

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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	E105.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

ELECTRICAL SCOND FLOOR PART PLAN - NEW WORK

E105

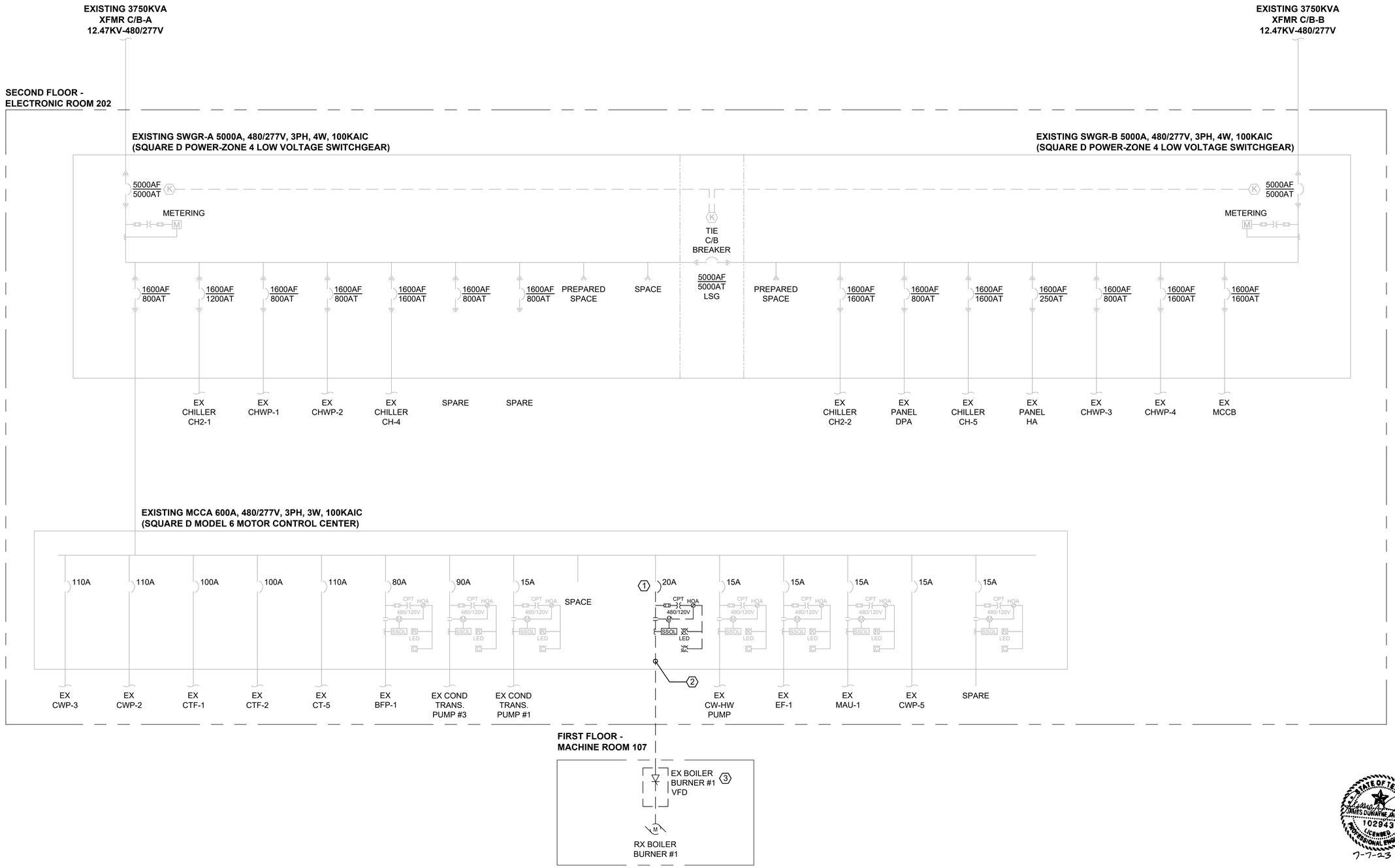
SHEET # OF #

GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.
2. ALL EQUIPMENT AND CONDUIT SHOWN IN DASHED IN BOLD LINES SHALL BE DEMOLISHED.
3. OWNER HAS FIRST RIGHT OF REFUSAL OF ALL SALVAGEABLE MATERIALS. ALL OTHER MATERIAL AND DEBRIS ACCUMULATED AS A RESULT OF DEMOLITION SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES BY THE CONTRACTOR AND DISPOSED OF IN A LEGAL AND PROPER MANNER.

KEY NOTES:

1. DISCONNECT AND REMOVE EXISTING 20A/3P CIRCUIT BREAKER.
2. EXISTING FEEDER SERVING POWER TO THE BOILER TO BE DEMOLISHED AND DISPOSED.
3. DISCONNECT AND REMOVE VARIABLE FREQUENCY DRIVE (VFD) BACK TO SOURCE, INCLUDING ALL ASSOCIATED ELECTRICAL EQUIPMENT, CONDUIT AND WIRING.



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MARK	DATE	DESCRIPTION
0	07-0723	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	E701.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

PARTIAL SINGLE LINE DIAGRAM - DEMOLITION

E701

SHEET # OF #

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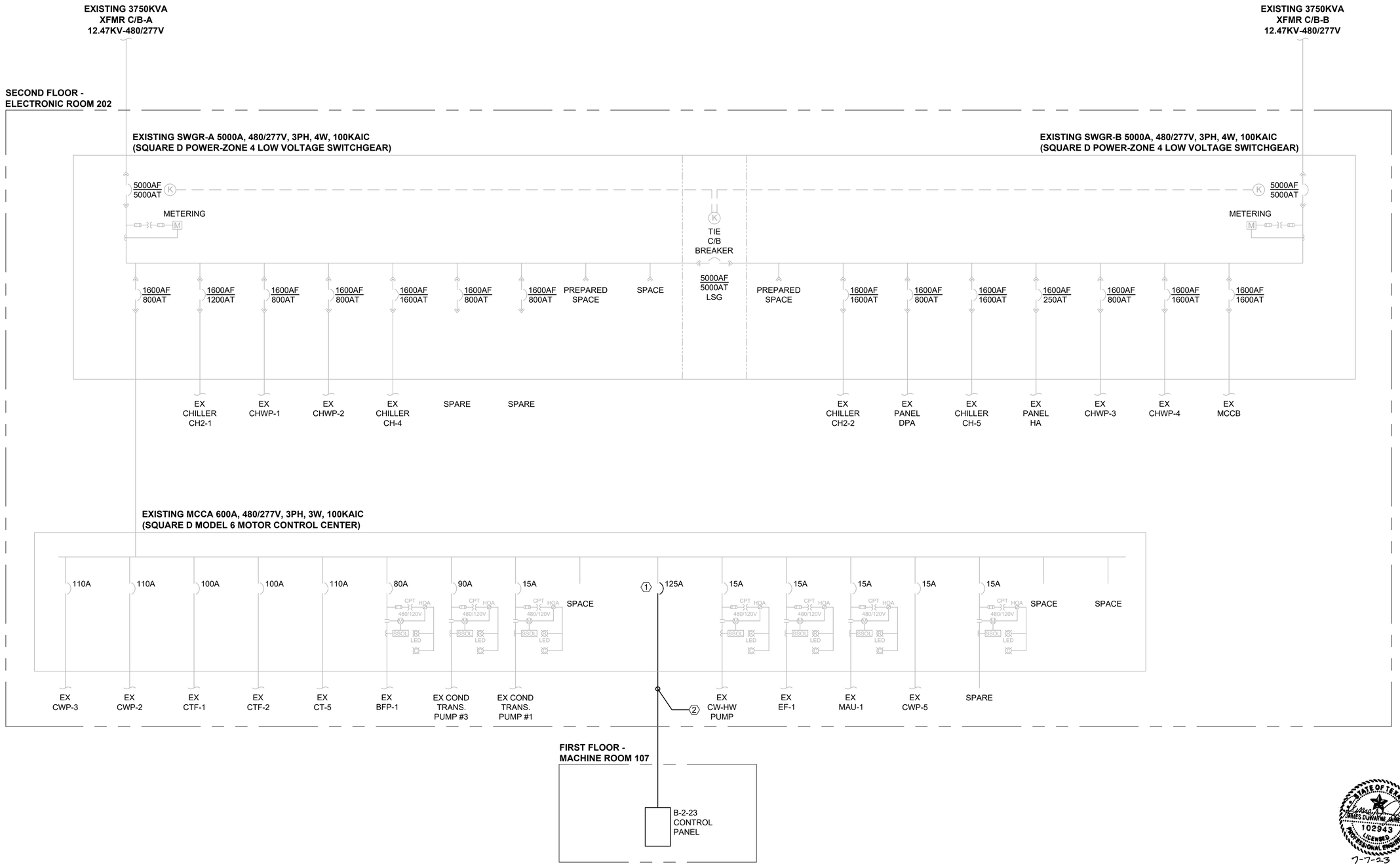
GENERAL NOTES:

1. ALL EXISTING EQUIPMENT SHOWN LIGHT LINES ARE EXISTING TO REMAIN EQUIPMENT, UNLESS NOTED OTHERWISE.

KEY NOTES:

1. PROVIDE EXISTING SQUARE D MODEL 6 MOTOR CONTROL CENTER (MCCA) WITH NEW 125A/3P CIRCUIT BREAKER. AIC RATING TO MATCH EXISTING.
2. PROVIDE 3#1AWG, 1#6AWG GND, IN 1-1/4"C FROM NEW BREAKER TO CONTROL PANEL.



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MARK	DATE	DESCRIPTION
0	07-07-23	FOR CONSTRUCTION

PROJECT NO.:	1005813
CAD DWG. FILE:	E702.DWG
DRAWN BY:	JSR
CHECKED BY:	JJ

SHEET TITLE

PARTIAL SINGLE LINE DIAGRAM - NEW WORK

E702

SHEET # OF #

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ABBREVIATION LIST

ACP	AUGER CAST PILE	MIN.	MINIMUM
ADD.	ADDITIONAL	MISC.	MISCELLANEOUS
ALT.	ALTERNATIVE	MPH	MILES/ HOUR
ARCH.	ARCHITECT, ARCHITECTURAL	N/A	NOT APPLICABLE
ASI	ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS	NS	NON-SHRINK
BOS	BOTTOM OF STEEL	NTE	NOT TO EXCEED
BP	BASE PLATE	NTS	NOT TO SCALE
CJ	CONTROL JOINT	NWC	NORMAL WEIGHT CONCRETE
CJP	COMPLETE JOINT PENETRATION	OC	ON CENTER
CL, ℄	CENTER LINE	OCEW	ON CENTER EACH WAY
CMU	CONCRETE MASONRY UNIT	OPP.	OPPOSITE
COL.	COLUMN	PAR.	PARALLEL
COMP.	COMPOSITE	PEMB	PRE-ENGINEERED METAL BUILDING
CONT.	CONTINUOUS	PERP.	PERPENDICULAR
CU.	CUBIC	PJP	PARTIAL JOINT PENETRATION
d_b	BAR DIAMETER	PI	PLASTICITY INDEX
DF	DOUGLAS FIR	PLF	LBS/ LINEAR FOOT
DIA., Ø	DIAMETER	PSF	LBS/ SQUARE FOOT
EA.	EACH	PSI	LBS/ SQUARE INCH
EJ	EXPANSION JOINT	PSL	PARALLEL STRAND LUMBER
EMBED.	EMBEDMENT	PW	PUDDLE WELD
EN	EDGE NAILING	QA	QUALITY ASSURANCE
EOR	ENGINEER OF RECORD	QC	QUALITY CONTROL
EP	EMBED PLATE	QTY.	QUANTITY
EQ.	EQUAL	REC.	RECOMMENDED
EQUIP.	EQUIPMENT	REF.	REFERENCE
EXT.	EXTERIOR	REINF.	REINFORCEMENT
FFE	FINISH FLOOR ELEVATION	REQ.	REQUIRED
GA.	GAUGE	RFI	REQUEST FOR INFORMATION
GALV.	GALVANIZED	SEC.	SECOND
GC	GENERAL CONTRACTOR	SF	SQUARE FEET
GFCMU	GROUT FILLED CONCRETE MASONRY UNIT	SIM.	SIMILAR
GR.	GRADE	SPEC.	SPECIFICATION
HCA	HEADED CONCRETE ANCHOR	SPF	SPRUCE PINE FIR
IN^2	SQUARE INCHES	STD.	STANDARD
INFO.	INFORMATION	SYP	SOUTHERN YELLOW PINE
INT.	INTERMEDIATE	T&B	TOP AND BOTTOM
K	KIP (1,000 LBS)	TBS	TO BE SIZED
KD	KILN DRIED	THK.	THICKNESS
LBS	POUNDS	TJI	TRUSS JOIST I-JOIST
LG	LIGHT GAUGE	TOC	TOP OF CONCRETE
LW	LIGHT WEIGHT	TOS	TOP OF STEEL
LSL	LAMINATED STRAND LUMBER	TSW	TOP SEAM WELD
LVL	LAMINATED VENEER LUMBER	TYP.	TYPICAL
LW	LIGHT WEIGHT	UNO	UNLESS NOTED OTHERWISE
MAX.	MAXIMUM	US	UNDERSIDE
MECH.	MECHANICAL	W/	WITH
MEP	MECHANICAL ELECTRICAL PLUMBING	W/C	WATER-CEMENT RATIO
MFR	MANUFACTURER	W/O	WITHOUT
MIL	0.001"	WWF	WELDED WIRE FABRIC

GENERAL

1. STRUCTURAL DESIGN BASED ON ARCHITECTURAL PLANS PROVIDED BY AMERESCO RECEIVED MARCH 17, 2023 AND STRUCTURAL RECORD DRAWINGS, DATED MAY 28, 1966.
2. FOR REFERENCED STANDARDS OF DESIGN AND CONSTRUCTION REFER TO CHAPTER 35 OF THE INTERNATIONAL BUILDING CODE (IBC). WHERE OTHER STANDARDS ARE NOTED IN THE DRAWINGS, USE THE LATEST EDITION OF THE STANDARD UNLESS A SPECIFIC DATE IS INDICATED. REFERENCE TO A SPECIFIC SECTION IN A CODE DOES NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH THE ENTIRE STANDARD. ALL SPECIFICATIONS AND CODES NOTED SHALL BE THE LATEST APPROVED EDITIONS AND REVISIONS BY THE AUTHORITY HAVING JURISDICTION OVER THIS PROJECT.
3. WHERE CONFLICTS EXISTS AMONG THE VARIOUS PARTS OF THE STRUCTURAL CONTRACT DOCUMENTS, STRUCTURAL DRAWINGS, GENERAL NOTES, AND SPECIFICATIONS, THE STRICTEST REQUIREMENTS SHALL GOVERN, UNLESS APPROVED OTHERWISE.
4. STRUCTURAL DRAWINGS SHALL BE COORDINATED WITH MECHANICAL, ELECTRICAL, PLUMBING, CIVIL, AND ARCHITECTURAL DRAWINGS. WHERE DISCREPANCIES OCCUR BETWEEN STRUCTURAL DOCUMENTS AND OTHER DISCIPLINES, THE STRUCTURAL ENGINEER SHALL BE CONTACTED.
5. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN ALL CONTRACT DOCUMENTS AND LATEST RFI, ASI, AND/OR ADDENDA AND TO SUBMIT SUCH DOCUMENTS TO ALL SUBCONTRACTORS AND MATERIAL SUPPLIERS PRIOR TO THE SUBMITTAL OF SHOP DRAWINGS, FABRICATION OF ANY STRUCTURAL MEMBERS, OR CONSTRUCTION.
6. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION. THE CONTRACTOR SHALL FIELD VERIFY STRUCTURES NOTED IN THE DRAWINGS AS EXISTING. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT AND STRUCTURAL ENGINEER.
7. DO NOT SCALE DRAWINGS FOR QUANTITY, LENGTH, OR FIT OF MATERIALS.
8. THE STRUCTURAL DRAWINGS ARE INTENDED TO SHOW THE GENERAL CHARACTER AND EXTENT OF THE PROJECT AND ARE NOT INTENDED TO SHOW ALL DETAILS OF THE WORK. DETAILS, SECTIONS, AND NOTES SHOWN ON THESE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR CONDITIONS ELSEWHERE UNLESS NOTED OR SHOWN OTHERWISE. IF LOCATIONS ARE FOUND WHERE NO TYPICAL OR SPECIFIC DETAIL OR TYPICAL SCHEDULE APPLIES, NOTIFY THE ARCHITECT AND STRUCTURAL ENGINEER.
9. THE CONTRACTOR IS RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND ALL JOB RELATED SAFETY STANDARDS SUCH AS OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA). THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING, BUT NOT LIMITED TO: ADEQUATE EXCAVATION PROCEDURES, SHORING, BRACING, AND ERECTION PROCEDURES COMPLYING WITH NATIONAL, STATE, AND LOCAL SAFETY ORDINANCES.
10. THE STRUCTURE HAS BEEN DESIGNED FOR THE LOADS IDENTIFIED WITHIN THESE STRUCTURAL DRAWINGS THAT ARE ANTICIPATED TO BE APPLIED TO THE FINAL STRUCTURE ONCE COMPLETED AND OCCUPIED.
    A. THESE DRAWINGS DO NOT DEPICT ANY SECONDARY STRUCTURAL ELEMENTS WHICH MAY BE REQUIRED UNLESS SPECIFICALLY NOTED OTHERWISE. SECONDARY STRUCTURAL ELEMENTS INCLUDE, BUT ARE NOT LIMITED TO: SUPPORT BEAMS ABOVE THE PRIMARY ROOF STRUCTURE TO SUPPORT MECHANICAL EQUIPMENT, ROOFTOP MECHANICAL CURBS, ELEVATOR SUPPORT RAILS AND BEAMS, RETAINING WALLS INDEPENDENT OF THE PRIMARY BUILDING, LIGHT POLE OR FLAG POLE FOUNDATIONS, ANCHORAGE AND SUPPORT OF MECHANICAL AND ELECTRICAL EQUIPMENT/PIPING/DUCTWORK, NON-BEARING PARTITIONS, GUARD RAILS AND POSTS, STAIR FRAMING, STAIR RAILINGS, AND EXTERIOR CURTAIN WALLS AND CLADDING.
    B. THE CONTRACTOR IS RESPONSIBLE FOR CHECKING THE ADEQUACY OF THE STRUCTURE TO SUPPORT ANY APPLIED CONSTRUCTION LOADS, INCLUDING, BUT NOT LIMITED TO: THOSE DUE TO CONSTRUCTION VEHICLES OR EQUIPMENT, MATERIAL HANDLING OR STORAGE, SHORING OR RESHORING, AND ANY OTHER CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL CONTACT GESSNER ENGINEERING FOR ANY CONSTRUCTION LOADS THAT ARE IN EXCESS OF THE STATED DESIGN LOADS.
    C. CONSTRUCTION MATERIALS SHALL BE SPREAD OUT IF PLACED ON FRAMED FLOORS OR ROOFS AND SHALL NOT EXCEED THE DESIGN LIVE LOAD PER SQUARE FOOT. DO NOT IMPACT POURED OR ERECTED FLOORS OR ROOFS WHEN PLACING MATERIALS.
11. THE BUILDING OWNER SHALL ESTABLISH A PLANNED PROGRAM OF MAINTENANCE TO ENSURE STRUCTURAL INTEGRITY FROM EXPOSURE TO THE ENVIRONMENT. THIS PROGRAM SHALL INCLUDE, BUT IS NOT LIMITED TO: PAINTING OF STRUCTURAL STEEL, PROTECTIVE COATING FOR CONCRETE, SEALANTS, CAULKED JOINTS, EXPANSION JOINTS, CONTROL JOINTS, SPALLS AND CRACKS IN CONCRETE, AND PRESSURE WASHING OF EXPOSED STRUCTURAL ELEMENTS EXPOSED TO A CORROSIVE ENVIRONMENT.

DESIGN CRITERIA

1. THE STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE (IBC), 2021 EDITION.
2. DEAD LOADS:
    A. DESIGN DEAD LOADS INCLUDE THE WEIGHT OF THE STRUCTURE, MATERIALS, COMPONENTS, PERMANENT FIXTURES, 4 PSF MECHANICAL DUCT ALLOWANCE, AND 15 PSF PARTITION LOAD.
    B. LOADING FOR MECHANICAL AND ELECTRICAL EQUIPMENT IS BASED ON THE WEIGHTS OF ASSUMED EQUIPMENT AS INDICATED ON THE STRUCTURAL DRAWINGS (INCLUDING THE WEIGHT OF CONCRETE PADS WHERE INDICATED ON MEP DRAWINGS). ANY DISCREPANCIES OR CHANGES IN THE TYPE, SIZE, LOCATION, OR NUMBER OF PIECES OF EQUIPMENT SHOULD BE REPORTED TO THE STRUCTURAL ENGINEER FOR VERIFICATION OF THE ADEQUACY OF SUPPORTING MEMBERS PRIOR TO PLACEMENT OF EQUIPMENT.
    C. MAXIMUM FACADE DEAD LOADS:
        - STONE/BRICK VENEER - 40 PSF
        - CURTAIN WALLS - 15 PSF
        - METAL PANEL - 3 PSF
        - ROOF ASSEMBLIES - 8 PSF
3. LIVE LOADS:
    A. FOOTNOTES ACCORDING TO THE IBC AND ASCE 7 SHALL PERTAIN AS APPLICABLE.
    B. IN AREAS WHERE PARTITIONS ARE ERECTED OR WILL BE REARRANGED, AN ALLOWANCE OF 15 PSF HAS BEEN MADE FOR PARTITIONS AS A UNIFORMLY DISTRIBUTED LIVE LOAD WHERE THE LIVE LOAD AS STATED BELOW IS 80 PSF OR LESS.
    C. DESIGN LIVE LOADS ARE BASED ON THE MORE RESTRICTIVE OF THE UNIFORM LOAD LISTED BELOW OR THE CONCENTRATED LOAD LISTED ACTING OVER AN AREA 2' - 6" SQUARE OR, IN THE CASE OF PARKING GARAGES 20 IN^2, OR STAIR TREADS, 4 IN^2.
    D. LIVE LOADS HAVE BEEN REDUCED USING THE STANDARD PROCEDURE FROM THE ABOVE REFERENCE CODES.
    E. FOR LIVE LOADS EXCEEDING 100 PSF, NO REDUCTION HAS BEEN MADE, EXCEPT THAT THE DESIGN LIVE LOAD ON MEMBERS SUPPORTING (2) OR MORE FLOORS HAS BEEN REDUCED A MAXIMUM OF 20% BUT THE LIVE LOAD IS NOT TO BE LESS THAN APPLICABLE REDUCTION LIMITS.

CATEGORY	UNIFORM	CONCENTRATED
• ASSEMBLY AREAS, LOBBIES, SUITES, PLAZAS, & TERRACES	100 PSF	2,000 LBS
• UNINHABITABLE ATTIC (NOTE 3)		
WITH STORAGE	20 PSF	-
WITHOUT STORAGE	10 PSF	-
• CORRIDORS & EXITS		
FIRST FLOOR	100 PSF	2,000 LBS
MECHANICAL ROOMS	40 PSF	NOTE 2
• OFFICE FLOORS	50 PSF	2000 LBS
• ROOF	20 PSF	300 LBS
• STAIRS	100 PSF	300 LBS

FOOTNOTES:
1. 1.5 TIMES THE UNIFORM LOAD OF THE OCCUPANCY SERVED, NOT REQUIRED TO EXCEED 100 PSF.
2. DESIGN CONCENTRATED LOAD IS THAT REQUIRED BY ASSUMED EQUIPMENT WEIGHT.
3. REFERENCE CODE FOR APPLICABILITY CRITERIA.

4. GEOTECHNICAL DESIGN CRITERIA:
    A. SOIL DESIGN PARAMETERS BELOW ARE BASED ON THE PRESUMPTIVE LOAD BEARING VALUES PROVIDED IN THE INTERNATIONAL BUILDING CODE, 2021 EDITION.
    B. THE FOLLOWING DESIGN INFORMATION IS PROVIDED SOLELY FOR REFERENCE AND IS NOT INTENDED TO SUPERCEDE ANY INFORMATION PROVIDED IN THE GEOTECHNICAL REPORT. SHOULD DISCREPANCIES EXIST THROUGHOUT THE DRAWINGS RELATIVE TO THE GEOTECHNICAL REPORT, THE CONTRACTOR SHALL CONTACT GESSNER ENGINEERING FOR ADDITIONAL INFORMATION.
    C. ALLOWABLE BEARING CAPACITIES:

		CAPACITY (PSF)
SHALLOW BEARING	STRIP FOOTING (FS = 2)	1,500
	ISOLATED FOOTING (FS = 2)	1,500
DRILLED PIERS	END BEARING (FS = 2, 3)	N/A
	SKIN FRICTION (FS = 2, 3)	N/A

NOTES:
1. FACTOR OF SAFETY (FS) = (TOTAL LOAD)
2. CAPACITIES LISTED REFLECT THOSE SHOWN IN THE GEOTECHNICAL REPORT.
3. REF. DETAILS FOR MINIMUM BEARING DEPTHS.

STRUCTURAL SUBMITTALS

1. SUBMIT TO THE ENGINEER FOR REVIEW APPROPRIATE SCHEDULES, SHOP DRAWINGS, SAMPLES, TEST REPORTS, AND PRODUCT DATA THAT IS RELATED TO THE STRUCTURAL PORTION OF THE WORK ACCORDING TO AIA DOCUMENT A201 GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION. NO WORK SHALL BE FABRICATED UNTIL THE ENGINEER'S REVIEW HAS BEEN OBTAINED. PROVIDED IS A LIST OF STRUCTURAL SUBMITTALS REQUIRED FOR THIS PROJECT, AND REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS:
    A. FABRICATION / ERECTION DRAWINGS:
        - FOUNDATION REINFORCING STEEL
        - STRUCTURAL CAST-IN-PLACE COMPONENTS
    B. DEFERRED SUBMITTALS (TO BE SEALED BY THE RESPONSIBLE PARTY)
    C. PRODUCT DATA SUBMITTALS
        - CONCRETE MIX DESIGN
        - CONCRETE/MASONRY/STEEL ACCESSORIES
    D. REPORTS:
        - EARTHWORK BELOW BUILDING TESTING REPORTS
        - CONCRETE TEST RESULTS
        - CONCRETE MONITORING DURING PLACEMENT
2. THE CONTRACTOR SHALL REVIEW AND STAMP SHOP DRAWINGS PRIOR TO SUBMISSION TO THE ARCHITECT/ENGINEER. THE CONTRACTOR SHALL REVIEW FOR COMPLETENESS AND COMPLIANCE WITH CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL SUBMIT EQUIPMENT PRODUCT DATA WHERE LOADING IS TO BE IMPARTED ON THE STRUCTURE DURING CONSTRUCTION FOR REVIEW, PRIOR TO USE.
4. SUBMIT SHOP DRAWINGS TO THE ARCHITECT/ENGINEER AS INDICATED OR SPECIFIED FOR REVIEW PRIOR TO FABRICATION. REVIEW WILL BE FOR GENERAL CONFORMANCE WITH DESIGN INTENT CONVEYED IN THE CONTRACT DOCUMENTS.
5. WHEN AN ENGINEER IS REQUIRED TO SIGN AND STAMP SHOP DRAWINGS AND CALCULATIONS, ENSURE SEAL INDICATES ENGINEER AS BEING REGISTERED IN THE STATE OF THE PROJECT.
6. SHOP DRAWINGS ARE NOT A PART OF CONTRACT DOCUMENTS. THEREFORE, ARCHITECT'S/ENGINEER'S REVIEW DOES NOT CONSTITUTE AN AUTHORIZATION TO DEVIATE FROM TERMS AND CONDITIONS OF THE CONTRACT.
7. THE ENGINEER REQUIRES (10) WORKING DAYS AFTER RECEIPT OF SHOP DRAWINGS AND CALCULATIONS FOR PROCESSING.

SPECIAL INSPECTIONS AND REPORTS

1. SPECIAL INSPECTIONS AND TESTING SHALL BE DONE IN ACCORDANCE WITH THE STATEMENT OF SPECIAL INSPECTIONS PER IBC CHAPTER 17, AS APPLICABLE PER THE FOLLOWING CRITERIA.
2. THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE (RDPIRC) FOR THIS PROJECT SHALL BE DESIGNATED BY THE OWNER. SUBMIT ALL SPECIAL INSPECTION REPORTS DIRECTLY TO THE RDPIRC AND BUILDING OFFICIAL FOR REVIEW. THE RDPIRC SHALL FORWARD ALL THE STRUCTURALLY RELATED SPECIAL INSPECTION REPORTS TO THE STRUCTURAL ENGINEER FOR REVIEW.
3. SPECIAL INSPECTORS SHALL BE CONTRACTED BY THE OWNER OR THE OWNER'S AUTHORIZED AGENT. SPECIAL INSPECTORS SHALL BE QUALIFIED PER THE REQUIREMENTS LISTED IN SECTION 1704.2.
4. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL TESTING, INSPECTIONS, AND NOTIFYING THE ARCHITECT/ENGINEER, SPECIAL INSPECTORS, AND BUILDING OFFICIAL PER SECTION 110.3, OF WORK READY FOR INSPECTION. THE GENERAL CONTRACTOR MUST PROVIDE ACCESS TO AND MEANS FOR PROPER INSPECTION OF SUCH WORK.
5. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPROVED, MOST CURRENT DESIGN DOCUMENTS AND SPECIFICATIONS, AND SHALL PROVIDE REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT/ENGINEER, AND OTHER DESIGNATED PERSONS.
6. THE SPECIAL INSPECTOR SHALL REPORT ALL DISCREPANCIES TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN IF UNCORRECTED, TO THE PROPER DESIGN AUTHORITY AND TO THE BUILDING OFFICIAL.
7. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS AND APPLICABLE STANDARDS OF QUALITY AND WORKMANSHIP OF THE IBC.
8. ADDITIONAL INSPECTIONS MAY BE REQUIRED BY THE GOVERNING JURISDICTION. THE BELOW REQUIREMENTS ARE MINIMUM PROJECT STANDARDS.
9. STRUCTURAL OBSERVATIONS SHALL BE PERFORMED BY A LICENSED DESIGN PROFESSIONAL OR THEIR REPRESENTATIVE DURING PERIODIC SITE VISITS. THESE OBSERVATIONS DO NOT CONSTITUTE A SPECIAL INSPECTION. STRUCTURAL OBSERVATIONS SHALL BE PERFORMED FOR THE WORK LISTED BELOW:
    A. CONCRETE CONSTRUCTION
    OBSERVE PLACEMENT OF REINFORCING STEEL, ANCHOR RODS, AND OTHER EMBEDDED COMPONENTS PRIOR TO PLACEMENT OF CONCRETE.
    B. STRUCTURAL STEEL
    REVIEW INSTALLATION OF FRAMING COMPONENTS AND CONNECTORS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
    C. COLD FORMED METAL FRAMING
    REVIEW INSTALLATION OF FRAMING COMPONENTS AND CONNECTORS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
    D. WOOD FRAMING
    REVIEW INSTALLATION OF FRAMING COMPONENTS AND CONNECTORS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
    E. WIND RESISTANCE (WOOD OR COLD-FORMED)
    REVIEW INSTALLATION OF NAILING/SCREW ATTACHMENT, BOLTING, ANCHORING, AND OTHER FASTENING OF ELEMENTS OF THE MAIN WIND FORCE RESISTING SYSTEM, INCLUDING SHEAR WALLS, DIAPHRAMS, DRAG STRUTS, BRACES, AND HOLDOWNS IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
10. SPECIAL INSPECTIONS REQUIRED FOR THIS PROJECT INCLUDE, BUT ARE NOT LIMITED TO:
    A. CONCRETE CONSTRUCTION (PER IBC SECTION 1705.3)
        1. PERIODIC INSPECTIONS:
            a. PLACEMENT OF STEEL REINFORCEMENT.
            b. WELDING OF STEEL REINFORCEMENT.
            c. PLACEMENT OF HEADED BOLTS AND EMBEDDED FABRICATIONS.
            d. VERIFY USE OF REQUIRED DESIGN MIXTURE.
            e. VERIFY CURING PROCEDURES AND MAINTENANCE OF CURING TEMPERATURE.
            f. VERIFY CONCRETE STRENGTH BEFORE REMOVAL OF SHORES AND FORMS FROM BEAMS AND SLABS.
        2. CONTINUOUS INSPECTIONS:
            a. PLACEMENT OF CONCRETE.
            b. FABRICATION OF SPECIMENS FOR STRENGTH TEST; MINIMUM (1) SET FOR 100 YDS.
            c. DETERMINATION OF SLUMP, AIR CONTENT, AND TEMPERATURE.
    B. SOILS CONSTRUCTION (PER IBC SECTION 1705.6)
        1. PERIODIC INSPECTIONS:
            a. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL.
            b. VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY.
            c. INSPECT SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY PRIOR TO PLACEMENT OF COMPACTED FILL.
            d. PERFORM CLASSIFICATION AND TESTING OF MATERIALS TO BE USED FOR FILL.
        2. CONTINUOUS INSPECTIONS:
            a. VERIFY USE OF PROPER MATERIALS, MOISTURE CONTENT, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF COMPACTED FILL.
            b. REVIEW APPROVED GEOTECHNICAL REPORT FOR COMPLIANCE AND ADDITIONAL TESTING REQUIREMENTS.
    C. POST-INSTALLED ANCHORS TO CONCRETE AND MASONRY
    SPECIAL INSPECTIONS PER MANUFACTURER'S ICC EVALUATION REPORT OR AT A MINIMUM AS SPECIFIED BELOW:
        1. PERIODIC INSPECTIONS:
            a. INSPECT MECHANICAL ANCHORS AND ADHESIVE ANCHORS FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS.
        2. CONTINUOUS INSPECTIONS:
            a. ADHESIVE ANCHORS INSTALLED HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.

GENERAL FOUNDATION

1. DIMENSIONS OF FOUNDATION ELEMENTS INDICATE MINIMUM ACCEPTABLE SIZES. LARGER SIZES FORMED BY LESS ACCURATE CONSTRUCTION MAY REQUIRE ADDITIONAL REINFORCING NOT SHOWN, WHICH SHALL BE DETERMINED BY THE STRUCTURAL ENGINEER DURING THE CONSTRUCTION OBSERVATION PROCESS. CUT HAUNCHES ON EACH SIDE OF TRENCHES OF ADEQUATE SIZE TO MAINTAIN THE VERTICAL SIDES OF THE TRENCH.
2. GRADE BEAMS AND FOOTINGS SHALL BEAR A MINIMUM OF 12" INTO COMPACTED STRUCTURAL FILL OR COMPETENT NATIVE SOILS. REDUCED PENETRATION DEPTHS INTO BEDROCK SHALL BE PER THE GEOTECHNICAL REPORT OR A MINIMUM OF 3". WHERE NOTED, FOUNDATIONS SHALL BE CONSTRUCTED ON APPROVED VOID FORMS.
3. PLACE MEP LINES BELOW SLABS AND OUTSIDE OF GRADE BEAMS AND FOOTINGS. DO NOT PLACE LINES PARALLEL WITHIN OR PARALLEL BELOW GRADE BEAMS AND FOOTINGS. REFERENCE TYPICAL DETAILS FOR ALLOWABLE PENETRATIONS PERPENDICULAR TO GRADE BEAMS, FOOTINGS AND SLABS. PROVIDE PROTECTION OF MEP LINES CROSSING GRADE BEAMS OR PROJECTING THROUGH THE SLAB TO ALLOW FOR FOUNDATION MOVEMENT.
4. A 2"- 4" PERVIOUS SAND OR GRANULAR LAYER MAY BE PLACED UNDER THE SLAB AT THE CONTRACTOR'S DISCRETION.
5. EXTEND FORMWORK AT LEAST 6" BELOW THE FINISHED GRADE ELEVATION AT PERIMETER BEAMS.
6. A VAPOR RETARDER SHALL BE PLACED UNDER ALL FOUNDATION CONCRETE.
    A. AT A MINIMUM THE VAPOR RETARDER SHALL CONFORM TO IBC "CLASS I" WITH A PERMEANCE OF 0.1 PERMS OR LESS, ASTM E1745 "CLASS C", AND ACI 302.2R WITH A MINIMUM THICKNESS OF 15 MIL. WHERE ARCHITECTURAL PLANS CALL FOR SENSITIVE FLOOR MATERIALS, A VAPOR RETARDER EXCEEDING THE ABOVE SPECIFICATIONS MAY BE REQUIRED.
    B. VAPOR RETARDERS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM E1643, WITH THE MATERIAL CONTINUOUS BELOW FOUNDATION CONCRETE AREAS AND WITH JOINTS LAPPED AT LEAST 6", OR AS INSTRUCTED BY THE MANUFACTURER.
    C. SEAMS, TEARS, AND PENETRATIONS IN THE VAPOR RETARDER SHALL BE SEALED WITH THE MANUFACTURER'S RECOMMENDED ADHESIVE OR PRESSURE SENSITIVE TAPE.
    D. AT SLAB EDGES THE VAPOR RETARDER SHALL BE SEALED TO THE EXTERIOR FACE OF THE PERIMETER FOUNDATION ELEMENT.
7. EXPANSION JOINTS SHALL BE FORMED BY A BITUMINOUS FILLER MATERIAL, COMPLYING WITH ASTM D1751, ASPHALT-SATURATED CELLULOSIC FIGURE. SET 1/2" - 1" BELOW THE SURFACE IN ORDER TO FILL THE JOINT WITH A FLEXIBLE JOINT FILLER. EXTERIOR JOINTS SHALL BE SEALED WITH A TRAFFIC GRADE SEALANT.

REINFORCEMENT

1. ALL REINFORCEMENT WORK SHALL CONFORM TO THE FOLLOWING STANDARDS AND ANY STANDARDS REFERENCED THEREIN:
    - ACI 318 - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
    - ACI 315 - DETAILS AND DETAILING OF CONCRETE REINFORCEMENT
2. MATERIALS SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:
    - REINFORCEMENT - ASTM A615, GRADE 60
    - WELDED WIRE FABRIC - ASTM A185, SMOOTH, FLAT SHEET
3. LAPS AND SPLICES IN REINFORCING BARS SHALL BE A MINIMUM OF (30) BAR DIAMETERS.
4. BARS #3, #4, AND #5 MAY BE COLD BENT IN THE FIELD. FIELD BENDING BEYOND #5 IS NOT PERMISSIBLE.
5. REINFORCEMENT SHALL BE ADEQUATELY SECURED BY WIRE TIES AND SUPPORTED BY PLASTIC, METAL, OR MASONRY SUPPORTS. SPACING OF SUPPORTS SHALL BE AS NECESSARY TO PREVENT SAGGING OF THE REINFORCEMENT UNDER THE WEIGHT OF CONSTRUCTION WORKERS AND WET CONCRETE.
6. WHERE REINFORCEMENT MUST TRANSITION BETWEEN STEPPED ELEMENTS, SLOPE SHALL NOT BE GREATER THAN 1:6 UNLESS NOTED OTHERWISE.
7. CLEAN REINFORCEMENT OF LOOSE RUST AND MILL SCALE, EARTH, ICE, OR OTHER FOREIGN MATERIALS THAT MAY REDUCE BOND TO CONCRETE.
8. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCEMENT FOR CAST-IN-PLACE CONCRETE CONSTRUCTION:

CONCRETE STRUCTURE	INTERIOR			EXTERIOR		
	TOP	SIDE	BOTTOM	TOP	SIDE	BOTTOM
BEAMS	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"
COLUMNS	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"
GRADE BEAMS/FOOTING W/O VAPOR RETARDER	1 1/2"	N/A	N/A	3"	3"	3"
GRADE BEAMS/FOOTING W/ VAPOR RETARDER	1 1/2"	2"	2"	2"	2"	2"
SLAB ON GRADE	3/4"	2"	2"	2"	2"	2"
WALLS	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"
WIDE PAN JOIST (BEAMS)	1 1/2"	1 1/2"	1 1/2"	2"	2"	2"
DRILLED PIERS	N/A	N/A	N/A	3"	3"	3"

NOTES: "EXTERIOR" IS EXPOSURE TO EARTH OR WEATHER.

SLAB-ON-GRADE SITE PREPARATION

1. ALL FILL PLACED BELOW THE FOUNDATION SLAB SHALL BE SELECT FILL CONSISTING OF A LOW PLASTICITY CLAYEY SOIL WITH A PLASTICITY INDEX BETWEEN 8 AND 18, A MAXIMUM GRAVEL CONTENT OF 40%, AND ROCKS NO LARGER THAN 2" IN THEIR LARGEST DIMENSION. ALTERNATIVELY, A CRUSHED LIMESTONE BASE MATERIAL MEETING THE REQUIREMENTS OF THE TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT) 2014 STANDARD SPECIFICATIONS ITEM 247, TYPE A, GRADE 3 MAY BE USED.
2. THE BUILDING PAD SHALL EXTEND A MINIMUM OF 5' - 0" FROM THE EDGE OF THE BUILDING FOOTPRINT IN ALL DIRECTIONS.
3. CONSTRUCTION AREAS SHALL BE STRIPPED OF ALL VEGETATION, LOOSE TOPSOIL, SURFICIAL CONCRETE, ETC. SUBGRADE SOILS SHALL BE REMOVED BELOW EXISTING GRADE IN ACCORDANCE WITH THE "MINIMUM EXCAVATION DEPTH" NOTED BELOW. ROOTS OF TREES WITHIN THE CONSTRUCTION AREAS SHALL BE EXCAVATED AND REMOVED UNLESS APPROVED OTHERWISE.
4. SLOPING SITES SHALL BE BROUGHT TO A LEVEL CONDITION TO MEET THE LOWEST EXCAVATED ELEVATION TO ALLOW FOR A UNIFORM DEPTH BUILDING PAD.
5. WHERE REQUIRED, SOIL STABILIZATION SHALL BE PERFORMED IN ACCORDANCE WITH GEOTECHNICAL RECOMMENDATIONS TO THE "STABILIZATION DEPTH" NOTED BELOW.
6. ONCE FINAL SUBGRADE ELEVATION HAS BEEN ACHIEVED, EXPOSED SOIL SUBGRADE AREAS SHALL BE PROOFROLLED WITH A 15 TON ROLLER (MINIMUM) OR EQUIVALENT EQUIPMENT AS APPROVED BY THE GEOTECHNICAL ENGINEER. WEAK AREAS DETECTED DURING THE PROOF ROLLING PROCESS SHALL BE REMOVED AND REPLACED WITH SOILS EXHIBITING SIMILAR CLASSIFICATION, MOISTURE CONTENT, AND DENSITY AS THE ADJACENT IN SITU SOILS.
7. SELECT FILL SHALL BE COMPACTED IN PLACE TO FORM A LEVEL BUILDING PAD IN ACCORDANCE WITH THE "MINIMUM REPLACEMENT DEPTH" NOTED BELOW.
8. ALL SELECT FILL SHALL BE PLACED ON PREPARED SURFACES IN LIFTS NOT TO EXCEED 8" IN LOOSE MEASURE, WITH COMPACTED THICKNESS NOT TO EXCEED 6".
9. SELECT FILL SHALL BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR (ASTM D 698) DENSITY AT A MOISTURE CONTENT RANGING WITHIN 2% OF OPTIMUM MOISTURE CONTENT FOR DEPTHS OF 3' - 0" OR LESS. IF FILL IN EXCESS OF 3' - 0" IS REQUIRED, ALL STRUCTURAL AND SELECT FILL DEEPER THAN 3' - 0" SHALL BE COMPACTED TO 99% OF STANDARD PROCTOR (ASTM D 698).
10. SLOPES ADJACENT TO FOUNDATIONS SHALL FALL A MINIMUM OF 6" IN THE FIRST 10' - 0". WHERE SITES DO NOT ALLOW THIS, DRAINAGE SYSTEMS SHALL BE IMPLEMENTED TO ACCOMMODATE THE RUNOFF.
11. FOR SITE AREAS NOT BELOW PAVEMENTS OR GROUND SUPPORTED STRUCTURES, A CLAY CAP SHALL BE PLACED AROUND THE PERIMETER OF THE STRUCTURE FOR THE TOP 12" OF ADJACENT GRADE TO EXTEND TO THE EDGE OF THE BUILDING PAD ON ALL SIDES. THE SOILS USED FOR THE CLAY CAP SHALL HAVE A MINIMUM PI OF 30 AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR (ASTM 698) DENSITY AT A MOISTURE CONTENT RANGING WITHIN 2% OF OPTIMUM MOISTURE CONTENT.

MINIMUM EXCAVATION DEPTH	2' - 0"
STABILIZATION DEPTH	N/A
MINIMUM REPLACEMENT DEPTH	2' - 0"

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE FOLLOWING STANDARDS AND ANY STANDARDS REFERENCED THEREIN.
    - ACI 301 - SPECIFICATIONS FOR STRUCTURAL CONCRETE
    - ACI 117 - SPECIFICATIONS FOR TOLERANCES FOR CONCRETE CONSTRUCTION AND MATERIALS
    - ACI 318 - BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
2. CONCRETE SHALL BE IN ACCORDANCE WITH THE TABLES BELOW UNLESS NOTED OTHERWISE.

CONCRETE MIX SCHEDULE

CLASS	28 DAY STRENGTH (f'_c) (PSI)	MAX. W/C	SLUMP	MAX. AGGREGATE SIZE	AIR CONTENT
A	3,000	0.55	5" - 7"	1 1/2"	3% - 6%
B	3,000	0.55	4" - 6"	1 1/2"	3% - 6%
C	4,000	0.55	4" - 6"	1 1/2"	3% - 6%
D	4,000	0.45	4" - 6"	1 1/2"	≤ 1.5%
E	5,000	0.40	3" - 5"	1"	6% - 10%
F	4,000	0.50	4" - 6"	3/4"	-
G	3,000	0.50	4" - 6"	3/4"	-
H	2,000	0.55	5" - 7"	3/4"	-

NOTES:
1. CONCRETE SHALL BE NORMAL WEIGHT UNLESS NOTED OTHERWISE.
2. FLY ASH MAY BE USED UP TO 25% REPLACEMENT OF PORTLAND CEMENT, EXCEPT AT POLISHED SLABS (LIMITED TO 15%) OR ARCHITECTURALLY EXPOSED CONCRETE (VERIFY WITH ARCHITECT).
3. ALL MIXES SHALL UTILIZE A WATER REDUCING ADMIXTURE.
4. AT POLISHED CONCRETE FINISHES, USE OF CURING COMPOUNDS IS NOT ALLOWED UNLESS SPECIFICALLY APPRVOED BY THE ARCHITECT AND POLIHSING SYSTEM MANUFACTURER.
5. SLUMP SHALL BE DETERMINED AT POINT OF PLACEMENT.
6. FOR TOPPING SLAB LESS THAN 2" THICK, CONTRACTOR SHALL SUBMIT PROPRIETARY MIX DESIGN AND PREPARATION PROCEDURE FOR APPROVAL.

USE	CLASS
GRADE BEAMS	B
SLABS-ON-GRADE	B
FOOTINGS	B
HOUSEKEEPING PADS	G
MUD SLABS	H
TOPPING SLABS (> 2")	G
TOPPING SLABS (≤ 2")	(NOTE 6)

3. MATERIALS SHALL COMPLY WITH THE FOLLOWING REQUIREMENTS:
    - READY-MIXED CONCRETE - ASTM C94
    - PORTLAND CEMENT - ASTM C150, TYPE I/II
    - FLY ASH - ASTM C618, CLASS F OR C
    - NORMAL WEIGHT AGGREGATES - ASTM C33
    - LIGHT WEIGHT AGGREGATES - ASTM C330
    - WATER - ASTM C1602
    - WATER-REDUCING, PLASTICIZING, AND RETARDING ADMIXTURE - ASTM C494
    - AIR ENTRAINING ADMIXTURE - ASTM C260
    - CURING COMPOUNDS - ASTM C309, TYPE 1, CLASS B
    - FLOOR SEALERS, HARDENERS, FINISHES, AND COVERINGS SHALL BE COMPATIBLE WITH CONCRETE PROPERTIES
4. READY-MIXED CONCRETE SHALL BE FURNISHED WITH BATCH TICKET INFORMATION. PROJECT-SITE MIXING IS NOT ACCEPTABLE.
5. PLACEMENT OF CONCRETE SHALL BE COMPLETED WITHIN 90 MINUTES AFTER THE INTRODUCTION OF THE MIXING WATER, PER ASTM C94.
6. COLD WEATHER CONCRETE PLACEMENT SHALL COMPLY WITH ACI 306.1 AND AS FOLLOWS:
    A. WHEN AVERAGE HIGH AND LOW TEMPERATURE IS EXPECTED TO FALL BELOW 40° F FOR (3) CONSECUTIVE DAYS, MAINTAIN DELIVERED CONCRETE MIX TEMPERATURE WITHIN THE TEMPERATURE RANGE REQUIRED BY ACI 301.
    B. DO NOT USE OR PLACE CONCRETE ON FROZEN MATERIALS OR MATERIALS CONTAINING ICE OR SNOW.
    C. DO NOT USE CALCIUM CHLORIDE, SALT, OR OTHER MATERIALS CONTAINING ANTIFREEZE AGENTS OR CHEMICAL ACCELERATORS UNLESS APPROVED IN MIX DESIGNS.
    D. PROTECT CONCRETE WORK FROM PHYSICAL DAMAGE OR REDUCED STRENGTH THAT COULD BE CAUSED BY FROST, FREEZING ACTIONS, OR LOW TEMPERATURES.
7. HOT WEATHER CONCRETE PLACEMENT SHALL COMPLY WITH ACI 305.1 AND AS FOLLOWS:
    A. MAINTAIN CONCRETE TEMPERATURE BELOW 95° F AT TIME OF PLACEMENT.
    B. CHILLED MIXING WATER OR CHOPPED ICE MAY BE USED TO CONTROL TEMPERATURE, PROVIDED WATER EQUIVALENT OF ICE IS CALCULATED TO TOTAL AMOUNT OF MIXING WATER.
8. BEFORE TEST SAMPLING AND PLACING OF CONCRETE, WATER MAY BE ADDED TO THE PROJECT SITE, SUBJECT TO THE LIMITATIONS OF ACI 301. DO NOT ADD WATER TO THE CONCRETE AFTER ADDING HIGH-RANGE WATER-REDUCING ADMIXTURES.
9. SECURELY POSITION ALL ITEMS TO BE CAST IN PLACE SUCH AS REINFORCING DOWELS, ANCHORS, SLEEVES, ETC. PRIOR TO PLACEMENT OF CONCRETE.
10. EMBEDDED CONDUITS, PIPES, AND SLEEVES SHALL MEET THE REQUIREMENTS OF ACI 318. REFERENCE TYPICAL DETAILS FOR ALLOWABLE PENETRATIONS AND ADDITIONAL REQUIRED REINFORCEMENT.
11. PLACE ALL VERTICAL CONSTRUCTION JOINTS IN THE CENTER OF SPANS IN ACCORDANCE WITH THE TYPICAL DETAILS. CONTRACTOR SHALL SUBMIT PROPOSED LOCATIONS FOR CONSTRUCTION JOINTS NOT SHOWN ON STRUCTURAL DRAWINGS FOR REVIEW BY THE ARCHITECT AND ENGINEER.
12. FOOTING, GRADE BEAM, AND SLAB AREAS SHALL BE CLEANED OF DEBRIS AND STANDING WATER PRIOR TO POURING CONCRETE.
13. WHERE NOTED, SAW CUT JOINTS SHALL BE CUT AS SOON AS THE CONCRETE HAS OBTAINED ADEQUATE STRENGTH TO RESIST RAVELING OF THE JOINT EDGES, GENERALLY BETWEEN 4 TO 12 HOURS AFTER THE CONCRETE HAS BEEN FINISHED. HOWEVER, IF ENTRY IS DELAYED TOO LONG, SAWING CAN BECOME DIFFICULT AND UNCONTROLLABLE CRACKING MAY OCCUR. THE BEST TIME FOR SAWING SHALL BE DETERMINED IN THE FIELD AS TIMING MAY VARY BASED ON MIX DESIGN, PLACEMENT, AND CURING CONDITIONS. SAW CUTS SHALL BE A MINIMUM 1/4 OF THE SLAB THICKNESS, UNLESS NOTED OTHERWISE, WITH REINFORCEMENT CONTINUOUS THROUGH SAW CUTS IN ACCORDANCE WITH THE CONTROL JOINT DETAIL. DO NOT SAWCUT ELEVATED SLABS OR SLABS OVER VOID FORMS.
14. CONCRETE SHALL REACH 70% OF THE SPECIFIED 28 DAY COMPRESSIVE STRENGTH AND BE IN PLACE FOR 7 DAYS PRIOR TO REMOVAL OF FORMS OR CONSTRUCTION ON TOP OF THE SLAB.

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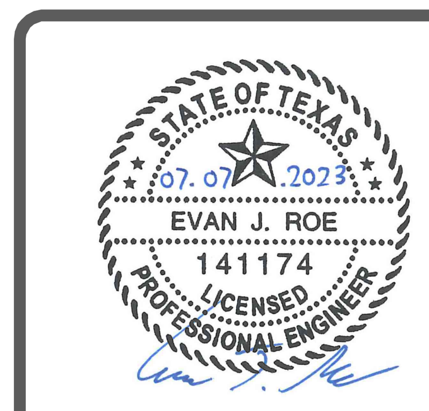

FOR CONSTRUCTION

MSU CENTRAL PLAN EXPANSION
MIDWESTERN STATE UNIVERSITY
WICHITA FALLS, TX

NOTES

ISSUE DATE:	07.07.2023
DRAWN BY:	DEB
CHECKED BY:	EJR
PROJECT #:	22-1265

REVISIONS

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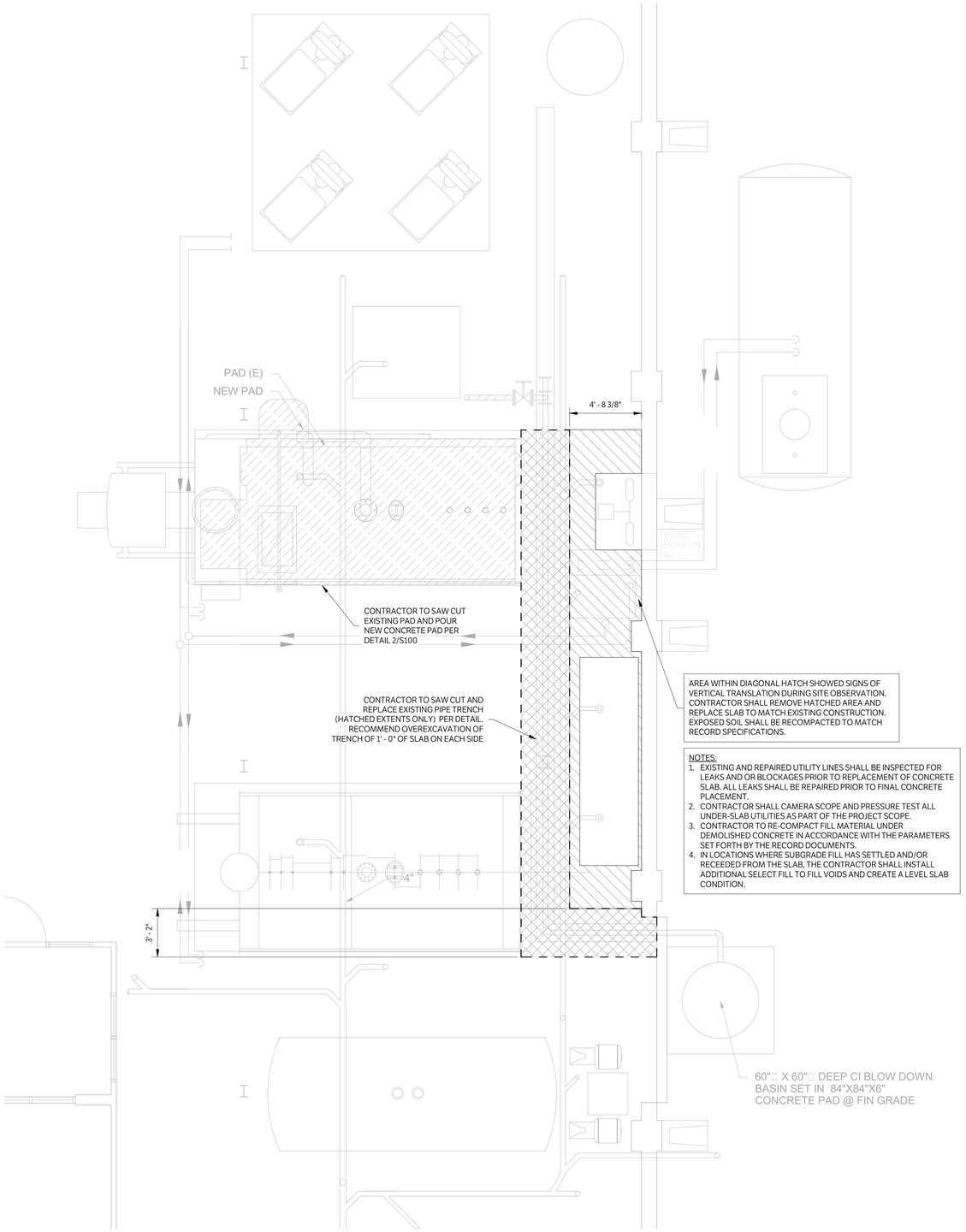
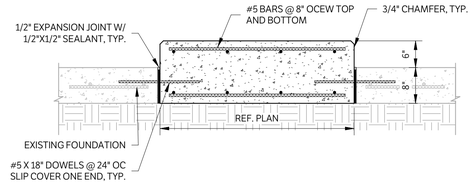


1 FOUNDATION PLAN
1/4" = 1'-0"

NOTE:
REF. MEP PLANS FOR BOILER CONNECTION TO NEW CONCRETE FOOTING



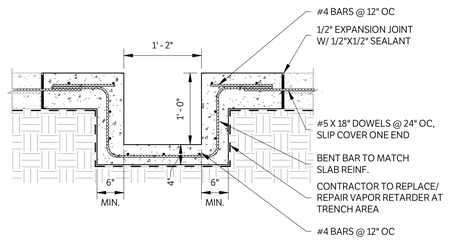
2 BOILER FOOTING
N.T.S.

NOTES:
1. REFERENCE GENERAL NOTES AND DETAILS FOR ADDITIONAL INFORMATION.
2. CONTRACTOR SHALL VERIFY LOCATIONS AND TYPES OF PLUMBING FIXTURES WITH ARCHITECTURAL DRAWINGS PRIOR TO COMMENCING CONSTRUCTION.
3. VERIFY ALL DIMENSIONS & DROPS WITH ARCHITECT AND OWNER PRIOR TO COMMENCING CONSTRUCTION.

LEGEND

DROP

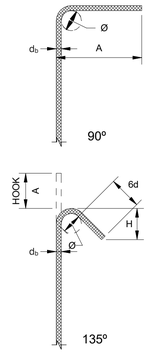
SLOPE — SLOPES ARE 1/8"/FT UNO



3 TRENCH RECONSTRUCTION
N.T.S.

STIRRUP/TIE HOOK DIMENSIONS ALL GRADES OF STEEL				
BAR SIZE	Ø	90°	135°	
		A	A	H
#3	1 1/2"	4"	4 1/4"	3"
#4	2"	4 1/2"	4 1/2"	3"
#5	2 1/2"	6"	5 1/2"	3 3/4"
#6	4 1/2"	12"	8"	4 1/2"
#7	5 1/4"	14"	9"	5 1/4"
#8	6"	16"	10 1/2"	6"

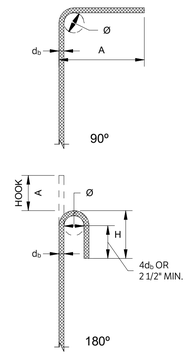
NOTE: Ø = FINISHED INSIDE BEND



4 STIRRUP/TIE HOOKS
N.T.S.

STANDARD DOWEL HOOK DIMENSIONS ALL GRADES OF STEEL				
BAR SIZE	Ø	90°	180°	
		A	A	H
#3	2 1/4"	6"	5"	4"
#4	3"	8"	6"	4 1/2"
#5	3 3/4"	10"	7"	5"
#6	4 1/2"	12"	8"	6"
#7	5 1/4"	14"	10"	7"
#8	6"	16"	11"	8"

NOTE: Ø = FINISHED INSIDE BEND



5 STANDARD DOWEL HOOKS
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STATE OF TEXAS
07. 07. 2023
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