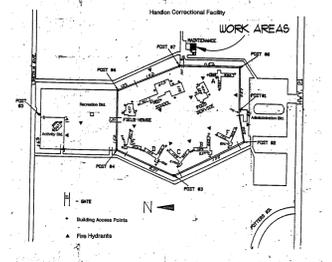


## PROPOSED LOWER LEVEL PLAN - HANDLON MAINTENANCE BUILDING

0 1 5 10  
SCALE: 1/4" = 1'-0"



## KEY PLAN

### GENERAL NOTES

1. ALL EXISTING STEAM AND STEAM CONDENSATE PIPING, EQUIPMENT, AND ALL OTHER ASSOCIATED ACCESSORIES SHALL BE REMOVED IN ITS ENTIRETY.
2. ALL NEW WORK SHALL BE INSTALLED PER ALL GOVERNING BODIES CODES AND REGULATIONS.
3. ALL NEW WORK SHALL BE INSTALLED PER DEPARTMENT OF CORRECTIONS REQUIREMENTS.
4. ALL NEW WORK SHALL BE INSTALLED USING STANDARD INSTALLATION PROCEDURES AND PRACTICES AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
5. "X-" IS A SYMBOL FOR EXISTING EQUIPMENT TO REMAIN.
6. DRAWINGS ARE FOR GENERAL SCOPE CLARIFICATION AND ARE NOT MEANT TO SHOW DETAILS OF INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL WORK REQUIRED TO BE CARRIED OUT. DETAILS AND SIZING OF EQUIPMENT, PIPING, ETC. TO BE FINALIZED DURING THE CONSTRUCTION DOCUMENT PHASE OF THE PROJECT.

DESIGN DEVELOPMENT NOT FOR CONSTRUCTION  
PLOT DATE: 2/8/13

PROJECT

IONIA PRISON COMPLEX - ENERGY AUDIT

IONIA, MI

SHEET DESCRIPTION

LOWER LEVEL  
HANDLON  
MAINTENANCE  
BUILDING

DATE

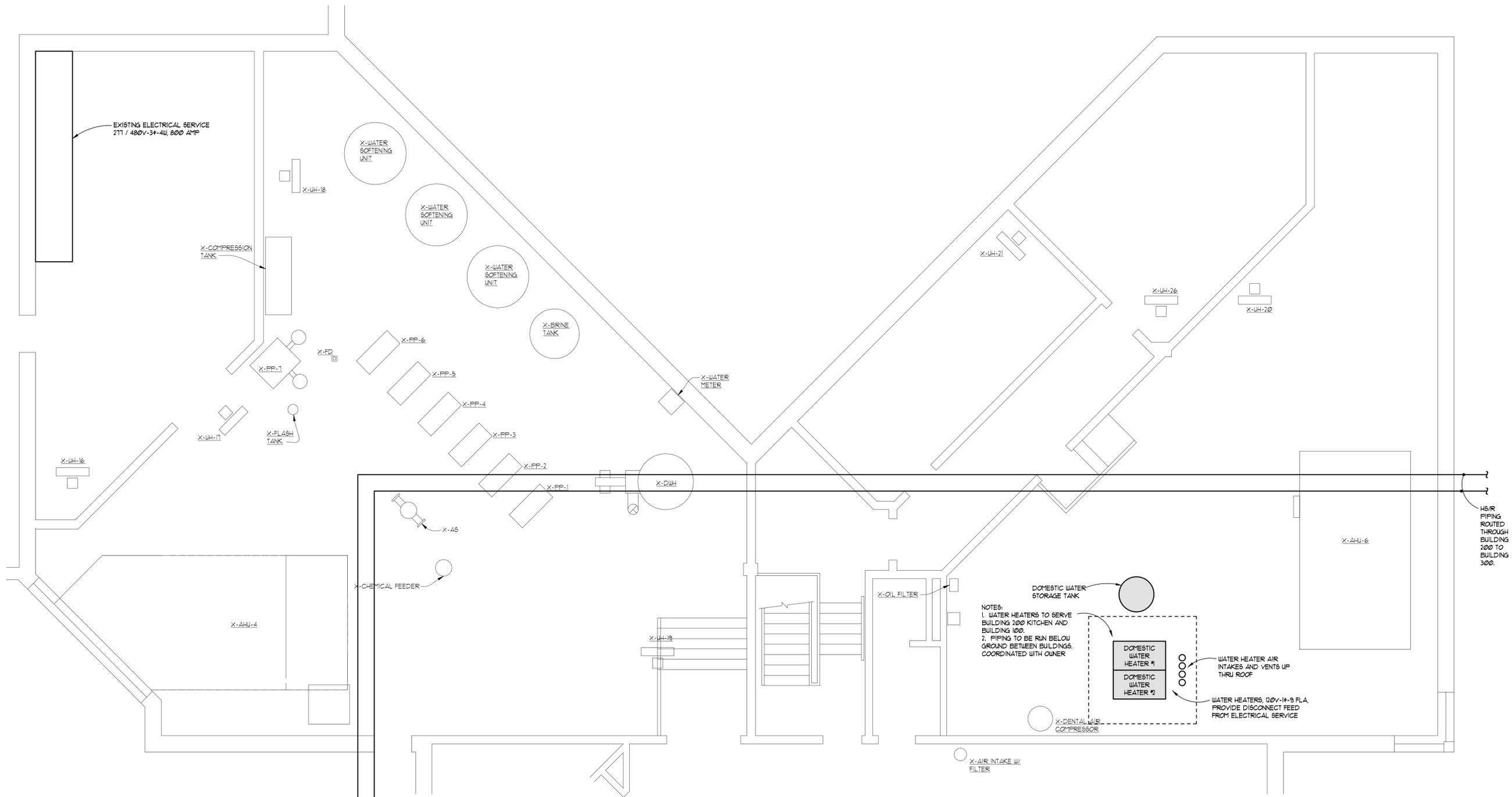
2/8/13

PROJECT NUMBER

12037.00

SHEET NUMBER

M-400



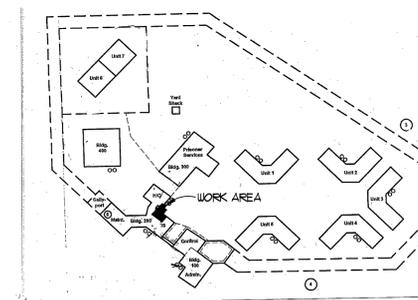
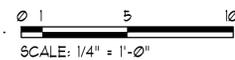
**GENERAL NOTES**

1. ALL EXISTING STEAM AND STEAM CONDENSATE PIPING, EQUIPMENT, AND ALL OTHER ASSOCIATED ACCESSORIES SHALL BE REMOVED IN ITS ENTIRETY.
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H5/R PIPING ROUTED THROUGH BUILDING 200 TO BUILDING 100



**PARTIAL SECOND FLOOR - ICF BUILDING 200**



**KEY PLAN**

**DESIGN DEVELOPMENT NOT FOR CONSTRUCTION**  
 PLOT DATE: 2/8/13

PROJECT

IONIA PRISON COMPLEX - ENERGY AUDIT

IONIA, MI

SHEET DESCRIPTION

PARTIAL FIRST FLOOR - ICF BUILDING 200

DATE

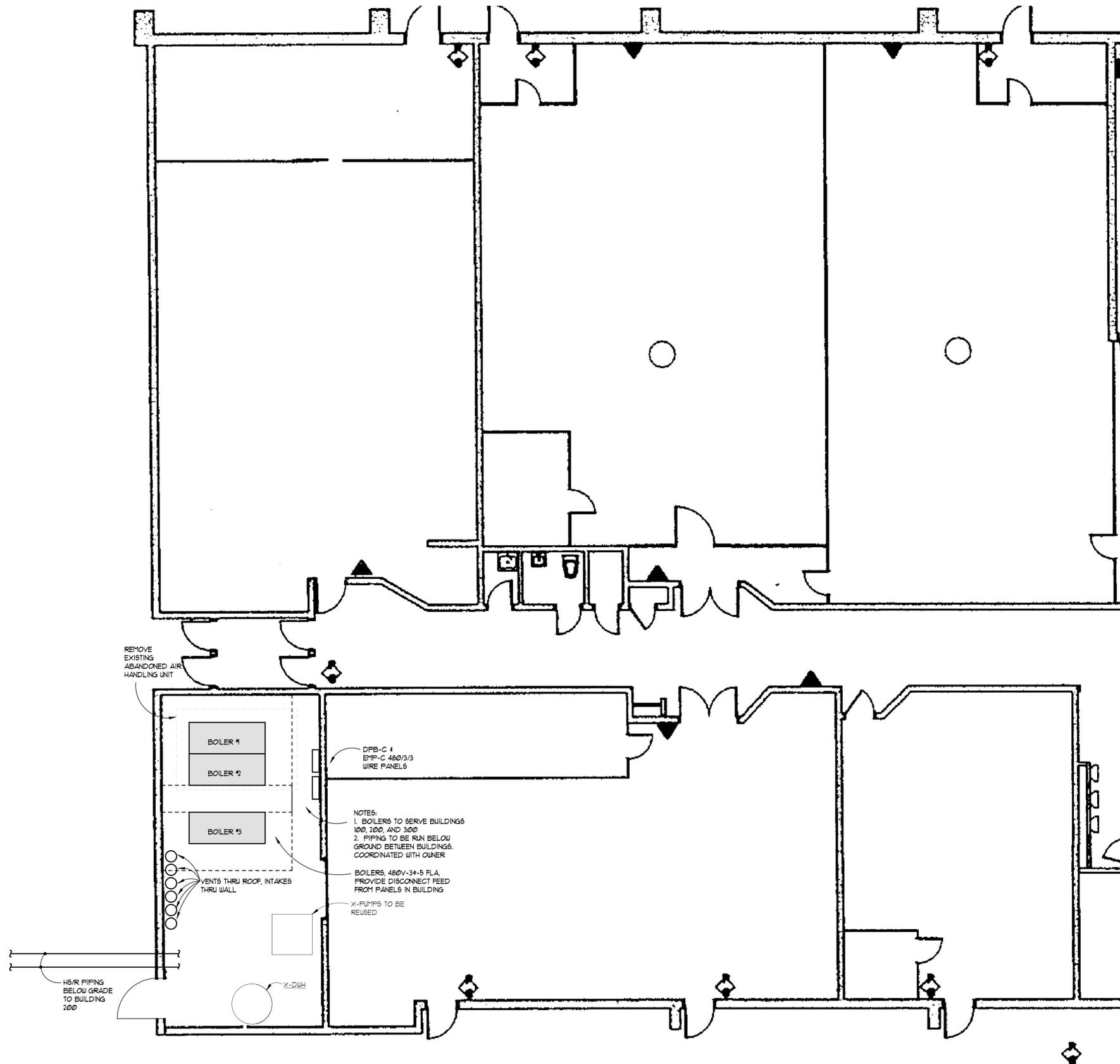
2/8/13

PROJECT NUMBER

12037.00

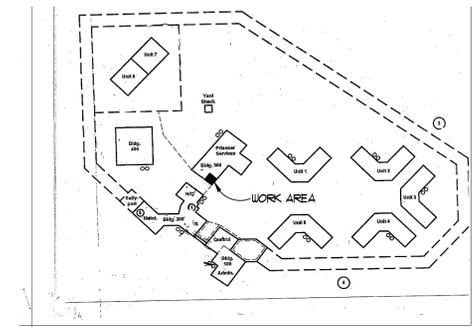
SHEET NUMBER

**M-401**



**GENERAL NOTES**

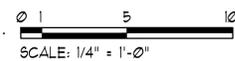
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3. ALL NEW WORK SHALL BE INSTALLED PER DEPARTMENT OF CORRECTIONS REQUIREMENTS.
4. ALL NEW WORK SHALL BE INSTALLED USING STANDARD INSTALLATION PROCEDURES AND PRACTICES AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
5. "X-" IS A SYMBOL FOR EXISTING EQUIPMENT TO REMAIN.
6. DRAWINGS ARE FOR GENERAL SCOPE CLARIFICATION AND ARE NOT MEANT TO SHOW DETAILS OF INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL WORK REQUIRED TO BE CARRIED OUT. DETAILS AND SIZING OF EQUIPMENT, PIPING, ETC. TO BE FINALIZED DURING THE CONSTRUCTION DOCUMENT PHASE OF THE PROJECT.



**KEY PLAN**



**PARTIAL FIRST FLOOR - ICF BUILDING 300**



DESIGN  
 DEVELOPMENT  
 NOT FOR  
 CONSTRUCTION  
 PLOT DATE: 2/8/13

PROJECT

IONIA PRISON COMPLEX - ENERGY AUDIT

IONIA, MI

SHEET DESCRIPTION

PARTIAL  
 FIRST FLOOR -  
 ICF BUILDING  
 300

DATE

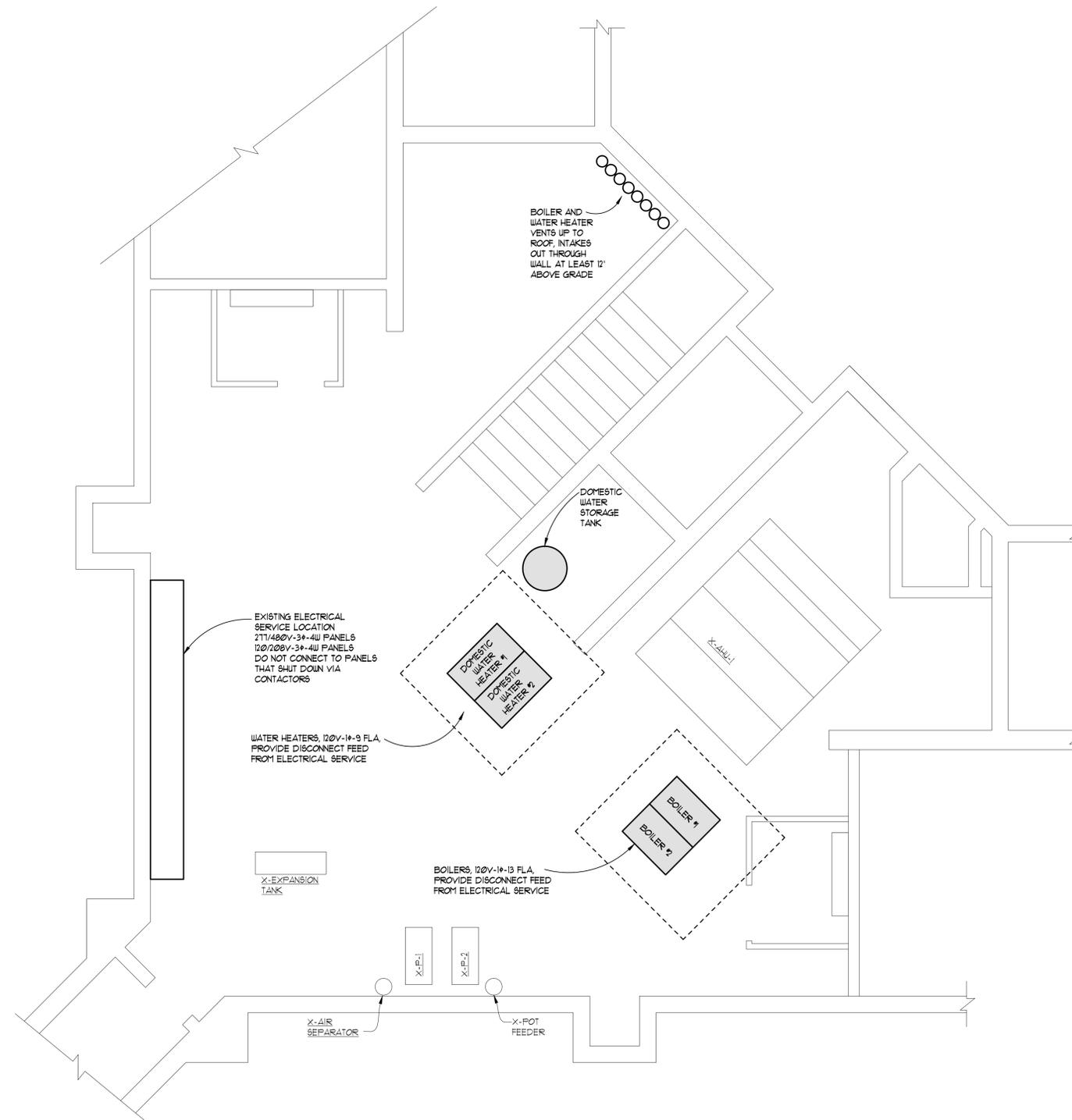
2/8/13

PROJECT NUMBER

12037.00

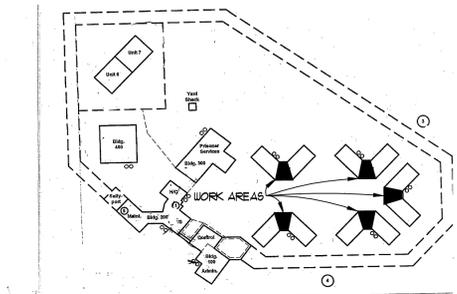
SHEET NUMBER

**M-402**



**GENERAL NOTES**

1. ALL EXISTING STEAM AND STEAM CONDENSATE PIPING, EQUIPMENT, AND ALL OTHER ASSOCIATED ACCESSORIES SHALL BE REMOVED IN ITS ENTIRETY.
2. ALL NEW WORK SHALL BE INSTALLED PER ALL GOVERNING BODIES CODES AND REGULATIONS.
3. ALL NEW WORK SHALL BE INSTALLED PER DEPARTMENT OF CORRECTIONS REQUIREMENTS.
4. ALL NEW WORK SHALL BE INSTALLED USING STANDARD INSTALLATION PROCEDURES AND PRACTICES AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
5. "X-" IS A SYMBOL FOR EXISTING EQUIPMENT TO REMAIN.
6. DRAWINGS ARE FOR GENERAL SCOPE CLARIFICATION AND ARE NOT MEANT TO SHOW DETAILS OF INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL WORK REQUIRED TO BE CARRIED OUT. DETAILS AND SIZING OF EQUIPMENT, PIPING, ETC. TO BE FINALIZED DURING THE CONSTRUCTION DOCUMENT PHASE OF THE PROJECT.

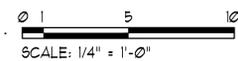


**KEY PLAN**

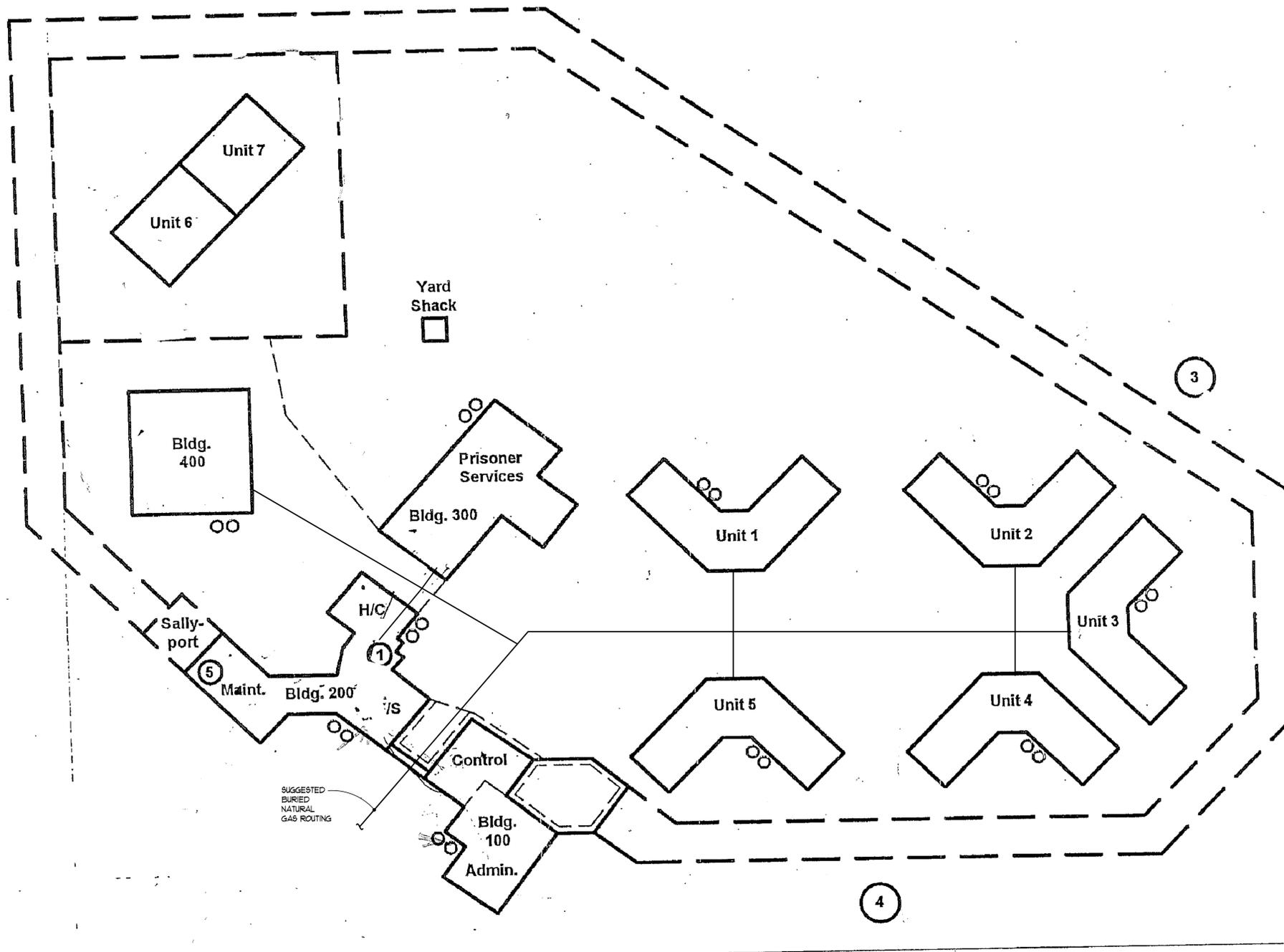
DESIGN DEVELOPMENT NOT FOR CONSTRUCTION  
 PLOT DATE: 2/8/13



**PARTIAL LOWER LEVEL - ICF TYPICAL CELL BLOCK**



PROJECT	
IONIA PRISON COMPLEX - ENERGY AUDIT	
IONIA, MI	
SHEET DESCRIPTION	
PARTIAL LOWER LEVEL ICF TYPICAL CELL BLOCK	
DATE	
10/17/12	
PROJECT NUMBER	
12037.00	
SHEET NUMBER	
<b>M-403</b>	



**GENERAL NOTES**

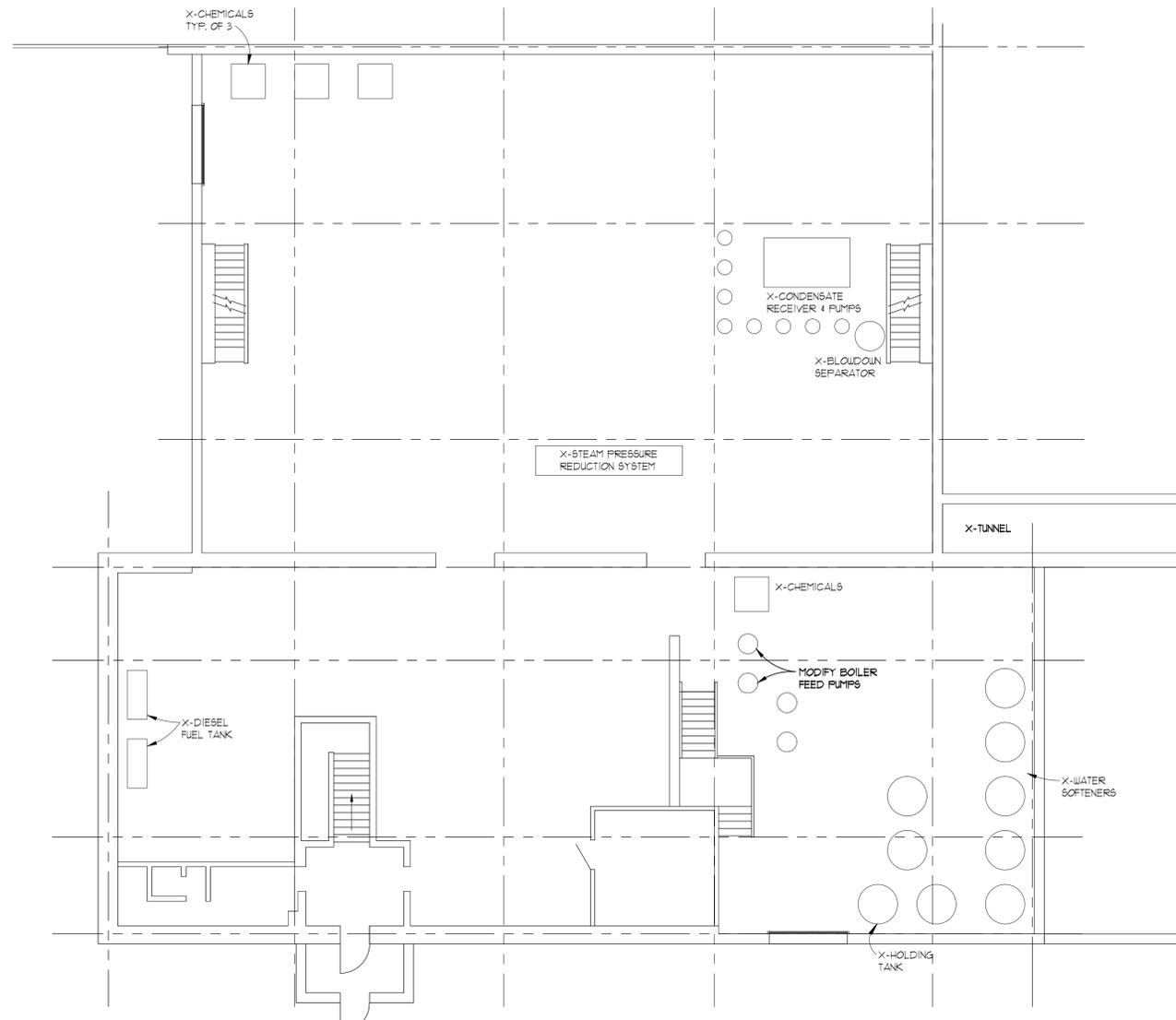
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4. ALL NEW WORK SHALL BE INSTALLED USING STANDARD INSTALLATION PROCEDURES AND PRACTICES AS REQUIRED FOR A COMPLETE AND OPERABLE SYSTEM.
5. "X-" IS A SYMBOL FOR EXISTING EQUIPMENT TO REMAIN.
6. DRAWINGS ARE FOR GENERAL SCOPE CLARIFICATION AND ARE NOT MEANT TO SHOW DETAILS OF INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR FIELD VERIFYING ALL WORK REQUIRED TO BE CARRIED OUT. DETAILS AND SIZING OF EQUIPMENT, PIPING, ETC. TO BE FINALIZED DURING THE CONSTRUCTION DOCUMENT PHASE OF THE PROJECT.

 **ICF SITE PLAN**

DESIGN DEVELOPMENT NOT FOR CONSTRUCTION  
 PLOT DATE: 2/8/13

PROJECT	IONIA, MI
PROJECT DESCRIPTION	IONIA PRISON COMPLEX - ENERGY AUDIT
SHEET DESCRIPTION	ICF SITE PLAN
DATE	2/8/13
PROJECT NUMBER	12037.00
SHEET NUMBER	M-404





**GENERAL NOTES**

1. ALL EXISTING STEAM AND STEAM CONDENSATE PIPING SERVING MICHIGAN REFORMATORY SHALL BE ALTERED AS REQUIRED TO INSTALL NEW BOILERS TO SERVE THE MICHIGAN REFORMATORY. ALL OTHER STEAM AND STEAM CONDENSATE PIPING, EQUIPMENT, AND ALL OTHER ASSOCIATED ACCESSORIES SERVING OTHER PRISONS SHALL BE REMOVED IN ITS ENTIRETY.
2. ALL NEW WORK SHALL BE INSTALLED PER ALL GOVERNING BODIES CODES AND REGULATIONS.
3. ALL NEW WORK SHALL BE INSTALLED PER DEPARTMENT OF CORRECTIONS REQUIREMENTS.
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**POWER PLANT GROUND FLOOR  
MECHANICAL - NEW**



0 5 10 20  
SCALE: 1/8" = 1'-0"

DESIGN  
 DEVELOPMENT  
 NOT FOR  
 CONSTRUCTION  
 PLOT DATE: 2/8/13

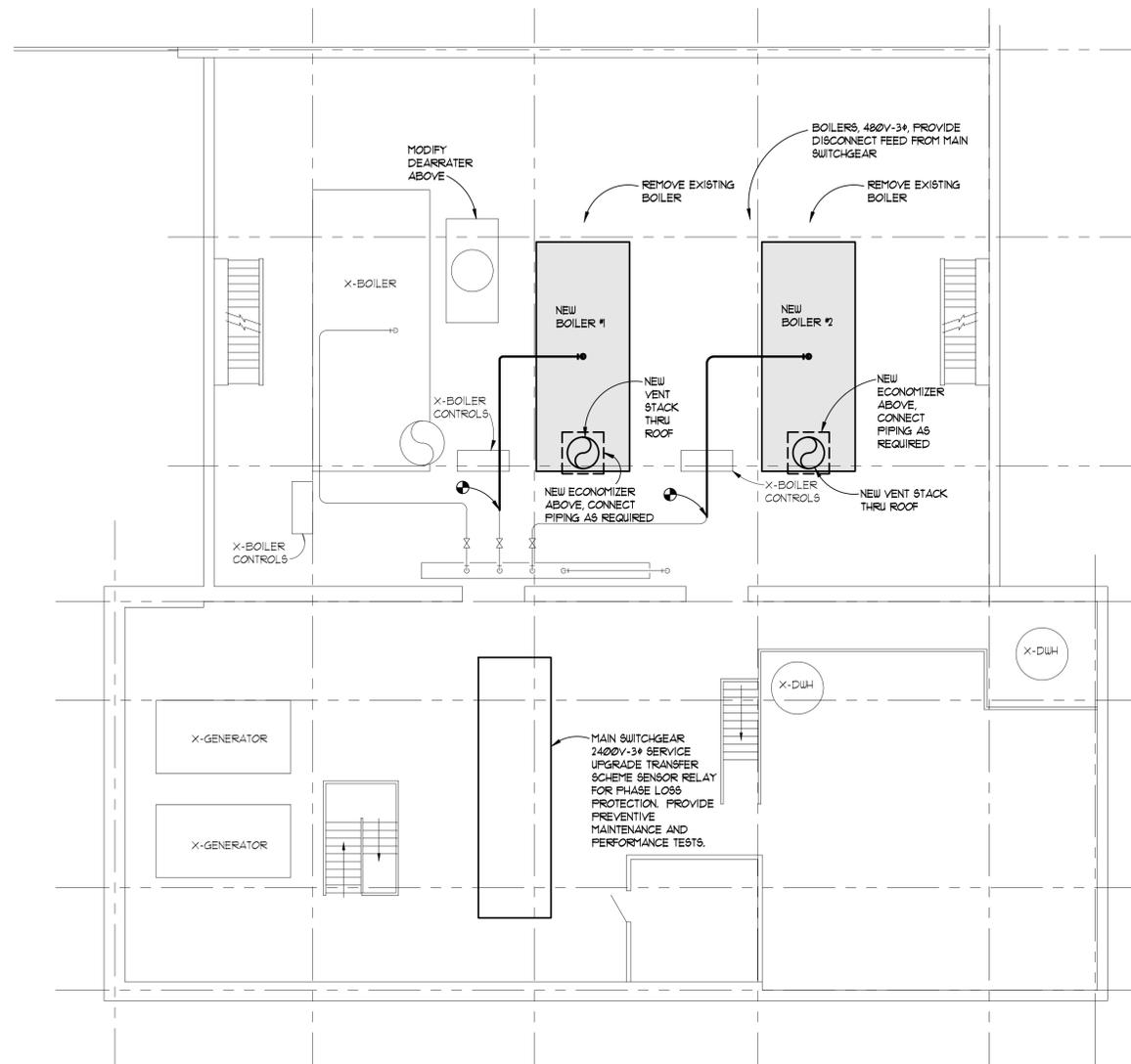
PROJECT  
 IONIA PRISON COMPLEX - ENERGY AUDIT  
 IONIA, MI

SHEET DESCRIPTION  
 POWER PLANT  
 GROUND  
 FLOOR PLAN  
 MECH. - NEW

DATE  
 2/8/13

PROJECT NUMBER  
 12037.00

SHEET NUMBER  
**M-406**



**GENERAL NOTES**

1. ALL EXISTING STEAM AND STEAM CONDENSATE PIPING SERVING MICHIGAN REFORMATORY SHALL BE ALTERED AS REQUIRED TO INSTALL NEW BOILERS TO SERVE THE MICHIGAN REFORMATORY. ALL OTHER STEAM AND STEAM CONDENSATE PIPING, EQUIPMENT, AND ALL OTHER ASSOCIATED ACCESSORIES SERVING OTHER PRISONS SHALL BE REMOVED IN ITS ENTIRETY.
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**POWER PLANT OPERATING FLOOR PLAN  
MECHANICAL - NEW**



0 5 10 20  
SCALE: 1/8" = 1'-0"

DESIGN  
DEVELOPMENT  
NOT FOR  
CONSTRUCTION  
PLOT DATE: 2/8/13

PROJECT  
IONIA PRISON COMPLEX - ENERGY AUDIT  
IONIA, MI

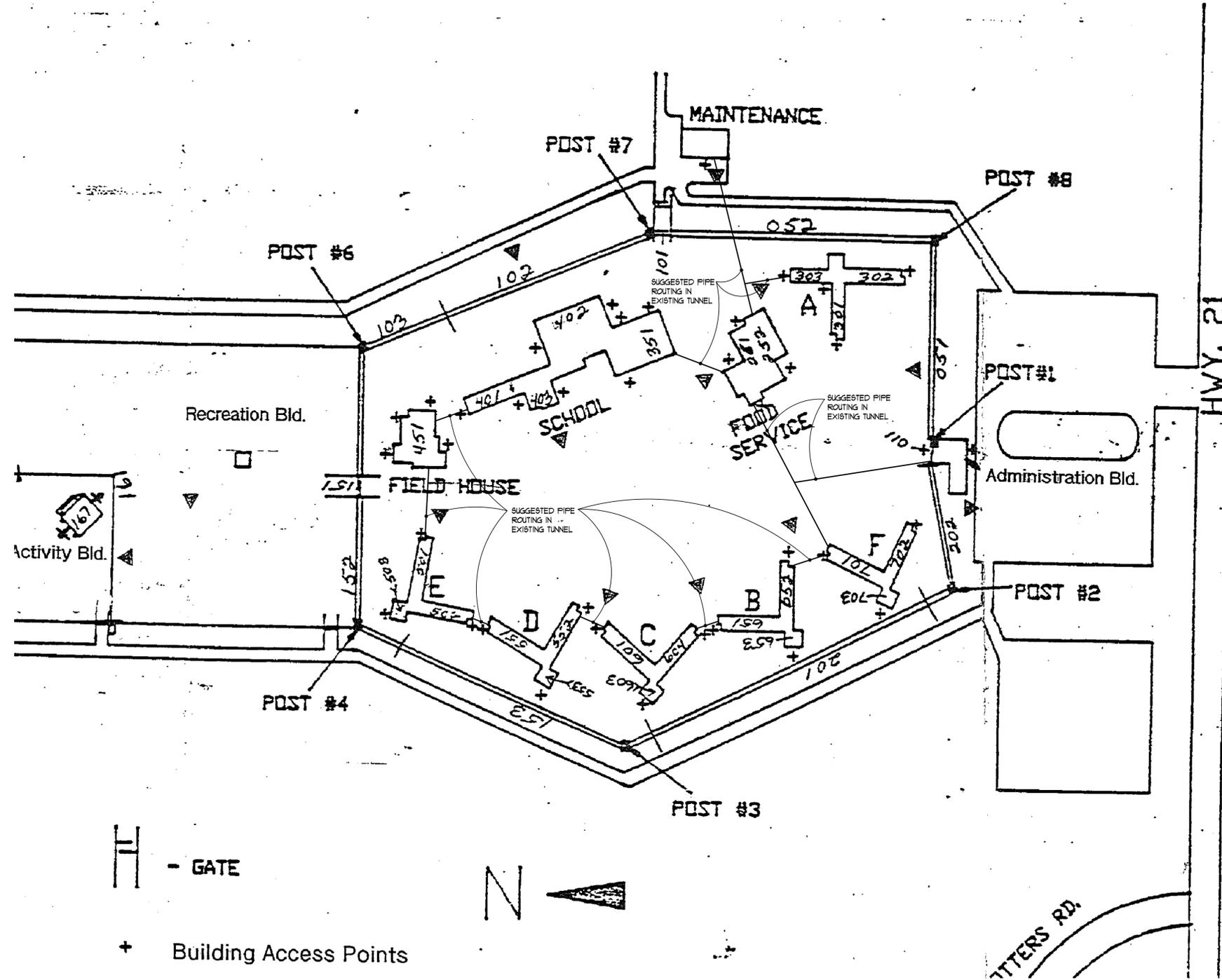
SHEET DESCRIPTION  
POWER PLANT  
OPERATING  
FLOOR PLAN  
MECH. - NEW

DATE  
2/8/13

PROJECT NUMBER  
12037.00

SHEET NUMBER  
**M-407**

# Handlon Correctional Facility



— GATE

+ Building Access Points

**HANDLON SITE PLAN**

## GENERAL NOTES

1. ALL EXISTING STEAM AND STEAM CONDENSATE PIPING, EQUIPMENT, AND ALL OTHER ASSOCIATED ACCESSORIES SHALL BE REMOVED IN ITS ENTIRETY.
2. ALL NEW WORK SHALL BE INSTALLED PER ALL GOVERNING BODIES CODES AND REGULATIONS.
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DESIGN DEVELOPMENT NOT FOR CONSTRUCTION  
PLOT DATE: 2/8/13

PROJECT	IONIA PRISON COMPLEX - ENERGY AUDIT
SHEET DESCRIPTION	HANDLON SITE PLAN
DATE	2/8/13
PROJECT NUMBER	12037.00
SHEET NUMBER	M-408

### GAS-FIRED BOILER SCHEDULE

TAG	MODEL	FACILITY	BUILDING/ LOCATION	TYPE	FLUE SIZE (in)	INPUT ENERGY (MBH)	HEAT OUTPUT (MBH)	BOILER HORSE-POWER (HP)	OUTPUT EFFICIENCY (%)	WATER FLOW RATE (gmp)	WATER-SIDE PRESSURE DROP (psi)	BOILER WATER VOLUME (gal)	EWT (°F)	LWT (°F)	WATER BOILER DIMENSIONS (in)			BOILER WEIGHTS (lbs)		ELECTRICAL					NOTES
															LENGTH	WIDTH	HEIGHT	SHIPPING	OPERATING	VOLTS	PHASE	AMPS	DISC.	STRTR	
BOILER #1	BMK6000	HANDLON	BASEMENT OF MAINTENANCE	CONDENSING, GAS FIRED, HOT WATER BOILER	14	6,000	5,610	168	93.5	570	4	110	150	180	108.3	34	78.8	3,000	3,920	460	3	15.0	EC	MAN	1,2,3,6
BOILER #2	BMK6000	HANDLON	BASEMENT OF MAINTENANCE	CONDENSING, GAS FIRED, HOT WATER BOILER	14	6,000	5,610	168	93.5	570	4	110	150	180	108.3	34	78.8	3,000	3,920	460	3	15.0	EC	MAN	1,2,3,6
BOILER #3	BMK6000	HANDLON	BASEMENT OF MAINTENANCE	CONDENSING, GAS FIRED, HOT WATER BOILER	14	6,000	5,610	168	93.5	570	4	110	150	180	108.3	34	78.8	3,000	3,920	460	3	15.0	EC	MAN	1,2,3,6
BOILER #4	BMK6000	HANDLON	BASEMENT OF MAINTENANCE	CONDENSING, GAS FIRED, HOT WATER BOILER	14	6,000	5,610	168	93.5	570	4	110	150	180	108.3	34	78.8	3,000	3,920	460	3	15.0	EC	MAN	1,2,3,6
BOILER #1	BMK3000	ICF	BUILDING 300 / FIRST FLOOR MECH ROOM	CONDENSING, GAS FIRED, HOT WATER BOILER	8	3,000	2,880	86	96	261	3	80	150	180	68	28	78	2,170	2,580	460	3	5.0	EC	MAN	1,2,4,6
BOILER #2	BMK3000	ICF	BUILDING 300 / FIRST FLOOR MECH ROOM	CONDENSING, GAS FIRED, HOT WATER BOILER	8	3,000	2,880	86	96	261	3	80	150	180	68	28	78	2,170	2,580	460	3	5.0	EC	MAN	1,2,4,6
BOILER #3	BMK3000	ICF	BUILDING 300 / FIRST FLOOR MECH ROOM	CONDENSING, GAS FIRED, HOT WATER BOILER	8	3,000	2,880	86	96	261	3	80	150	180	68	28	78	2,170	2,580	460	3	5.0	EC	MAN	1,2,4,6
BOILER #1	BMK1500	ICF	ALL CELL BLOCKS / LL MECH ROOM	CONDENSING, GAS FIRED, HOT WATER BOILER	6	1,500	1,409	42	94	130	4	27	150	180	45.75	28	79	1,533	1,757	120	1	13.0	EC	MAN	1,2,5,6
BOILER #2	BMK1500	ICF	ALL CELL BLOCKS / LL MECH ROOM	CONDENSING, GAS FIRED, HOT WATER BOILER	6	1,500	1,409	42	94	130	4	27	150	180	45.75	28	79	1,533	1,757	120	1	13.0	EC	MAN	1,2,5,6

- NOTES:
1. BASED ON: AERCO
  2. NATURAL GAS CONDENSING BOILER
  3. THREE BOILERS COVER CAMPUS LOAD WITH THE FORTH BOILER AS A BACKUP.
  4. TWO BOILERS COVER BUILDING LOADS WITH THE THIRD BOILER AS A BACKUP.
  5. ONE BOILER COVER BUILDING LOADS WITH THE SECOND BOILER AS A BACKUP.
  6. PRELIMINARY SCHEDULE: FINAL EQUIPMENT SIZES AND QUANTITIES TO BE DETERMINED DURING DESIGN PHASE.

### GAS-FIRED STEAM BOILER SCHEDULE

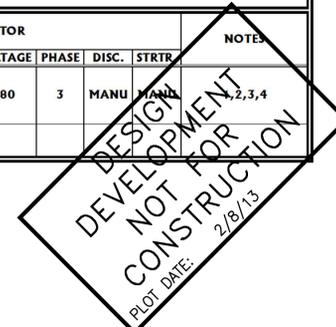
TAG	MODEL	LOCATION	TYPE	FLUE SIZE (in)	INPUT ENERGY (MBH)	MINIMUM HEAT OUTPUT (MBH)	BOILER HORSE-POWER (HP)	OUTPUT EFFICIENCY (%)	STEAM BOILER CAPACITY (lb/hr)	STEAM PRESSURE (PSI)	WATER-SIDE HEATING SURFACE (ft <sup>2</sup> )	BOILER DIMENSIONS (in)			SERVICE CLEARANCES (in)			BOILER WEIGHTS (lbs)		ELECTRICAL					NOTES
												LENGTH	WIDTH	HEIGHT	CONTROL PANEL	TOP BOILER	AROUND BOILER	SHIPPING	OPERATING	VOLTS	PHASE	HP	DISC.	STRTR	
BOILER #1	CBE-125	BELLAMNY (DORM) NEW BOILER ROOM	HORIZONTAL FIRED FIRETUBE STEAM BOILER	16	5,230	4,184	125	80	4313	100	625	199.19	85	88.38	36	36	36	11,660	18,795	120	1	-	MAN	MAN	1,2,3
BOILER #2	CBE-125	BELLAMNY (DORM) NEW BOILER ROOM	HORIZONTAL FIRED FIRETUBE STEAM BOILER	16	5,230	4,184	125	80	4313	100	625	199.19	85	88.38	36	36	36	11,660	18,795	120	1	-	MAN	MAN	1,2,3
BOILER #1	CBEX ELITE 200 800	POWER HOUSE BOILER ROOM	HORIZONTAL FIRED FIRETUBE STEAM BOILER	24	32,656	26,783	800	82	27600	150	2301	300	119.7	130.64	36	-	-	40,840	69,812	460	3	-	MAN	MAN	1,2,3
BOILER #2	CBEX ELITE 200 800	POWER HOUSE BOILER ROOM	HORIZONTAL FIRED FIRETUBE STEAM BOILER	24	32,656	26,783	800	82	27600	150	2301	300	119.7	130.64	36	-	-	40,840	69,812	460	3	-	MAN	MAN	1,2,3

- NOTES:
1. BASED ON: CLEAVER BROOKS
  2. ONE BOILER COVERS CAMPUS LOAD WITH THE SECOND BOILER AS A BACKUP.
  3. PRELIMINARY SCHEDULE: FINAL EQUIPMENT SIZES AND QUANTITIES TO BE DETERMINED DURING DESIGN PHASE.

### BOILER FEED SYSTEM

TAG	SERVES	LOCATION	MODEL	GALLON CAPACITY	CONDENSATE OPENING	MAKE UP WATER OPENING	OVERFLOW OPENING	DRAIN OPENING	OVERALL SYSTEM SIZE (L"xW"xH")	PUMP			MOTOR					NOTES		
										QTY.	GPM	HEAD (PSI)	RPM	HP	KW	VOLTAGE	PHASE		DISC.	STRTR
BFS-1	BOILERS 1,2	BELLAMNY (DORM) NEW BOILER ROOM	DUPLEX PACKAGED BOILER SYSTEM	340	3"	1"	3"	2"	82"x43.5"x95"	2	23.4	105	-	5 (2)	-	480	3	MANU	MANU	1,2,3,4

- NOTES:
1. BASED ON: CLEAVER-BROOKS
  2. ABBREVIATIONS  
EC - ELECTRICAL CONTRACTOR  
ETHL - ETHELBYNE GLYCOL  
PROP. - PROPYLENE GLYCOL  
MANU - MANUFACTURER  
NR - NOT REQUIRED
  3. FACTORY WIRED CONTROL PANEL (HIGH LEVEL ALARM, LOW LEVEL ALARM, LOW LOW LEVEL PUMP SHUT OFF AND ALARM, AND PUMP ALARM)
  4. PRELIMINARY SCHEDULE: FINAL EQUIPMENT SIZES AND QUANTITIES TO BE DETERMINED DURING DESIGN PHASE.



## DOMESTIC WATER HEATER SCHEDULE

TAG	MODEL	FACILITY	BUILDING/ LOCATION	SERVES	GALLON CAPACITY	MBH INPUT	MBH OUTPUT	RECOVERY OF 100°F RISE (GPH)	VENT SIZE	AIR INLET						HOT WATER TEMP. SETTING	REMARKS
											VOLTAGE	PHASE	FLA	DISC. BY	STARTER BY		
DWH-1	INN1350	HANDLON	BASEMENT OF MAINTENANCE	ENTIRE FACILITY	20.6	1,350	1,310	1572	6	6	120	1	9.0	EC	-	140	1,2,3,6
DWH-2	INN1350	HANDLON	BASEMENT OF MAINTENANCE	ENTIRE FACILITY	20.6	1,350	1,310	1572	6	6	120	1	9.0	EC	-	140	1,2,3,6
DWH-3	INN1350	HANDLON	BASEMENT OF MAINTENANCE	ENTIRE FACILITY	20.6	1,350	1,310	1572	6	6	120	1	9.0	EC	-	140	1,2,3,6
DWH-4	INN1350	HANDLON	BASEMENT OF MAINTENANCE	ENTIRE FACILITY	20.6	1,350	1,310	1572	6	6	120	1	9.0	EC	-	140	1,2,3,6
DWH-5	INN1350	HANDLON	BASEMENT OF MAINTENANCE	ENTIRE FACILITY	20.6	1,350	1,310	1572	6	6	120	1	9.0	EC	-	140	1,2,3,6
DWH-1	INN800	ICF	BUILDING 200 / 2ND FLOOR MECH	BUILDINGS 100, 200, AND 300	24.5	800	771	924	6	6	120	1	9.0	EC	-	140	1,2,4,6
DWH-2	INN800	ICF	BUILDING 200 / 2ND FLOOR MECH	BUILDINGS 100, 200, AND 300	24.5	800	771	924	6	6	120	1	9.0	EC	-	140	1,2,4,6
DWH-1	INN1060	ICF	ALL CELL BLOCKS / LL MECH ROOM	ONE CELL BLOCK	23	1,060	1,022	1224	6	6	120	1	9.0	EC	-	140	1,2,5,6
DWH-2	INN1060	ICF	ALL CELL BLOCKS / LL MECH ROOM	ONE CELL BLOCK	23	1,060	1,022	1224	6	6	120	1	9.0	EC	-	140	1,2,5,6

- NOTES:
1. BASED ON: AERCO
  2. NATURAL GAS CONDENSING WATER HEATER
  3. FOUR WATER HEATERS COVER CAMPUS LOAD WITH THE FIFTH WATER HEATER AS A BACKUP.
  4. ONE WATER HEATER COVER LOAD WITH THE SECOND WATER HEATER AS A BACKUP.
  5. ONE WATER HEATER COVER LOAD WITH THE SECOND WATER HEATER AS A BACKUP.
  6. PRELIMINARY SCHEDULE: FINAL EQUIPMENT SIZES AND QUANTITIES TO BE DETERMINED DURING DESIGN PHASE.

## STEAM BLOWDOWN SEPARATOR

TAG	SERVES	LOCATION	MODEL	FLASH STEAM VENT (IN.)	BLOWDOWN INLET (IN.)	OUTLET (IN.)	WEIGHT (LBS.)	NOTES
BDS-1	BOILERS 1,2,3,4	MECHANICAL ROOM	H34	4"	1.5"	4"	-	1,2,3

- NOTES:
1. BASED ON: CLEAVER BROOKS
  2. PROVIDE AFTER COOLER MODEL 18DF. AFTER COOLER TO INCLUDE TEMPERATURE CONTROL SENSOR, NSRA BRONZE VALVE, STRAINER, CHECK VALVE, AND TEMPERATURE INDICATOR
  3. PRELIMINARY SCHEDULE: FINAL EQUIPMENT SIZES AND QUANTITIES TO BE DETERMINED DURING DESIGN PHASE.

DESIGN DEVELOPMENT NOT FOR CONSTRUCTION  
 PLOT DATE: 2/8/13

PROJECT <b>IONIA PRISON COMPLEX - ENERGY AUDIT</b> <small>IONIA, MI</small>
SHEET DESCRIPTION <b>HVAC SCHEDULES</b>
DATE 2/8/13
PROJECT NUMBER 12037.00
SHEET NUMBER <b>M-901</b>