

STATE OF IOWA CAPITOL COMPLEX UTILITY SITE PLANS

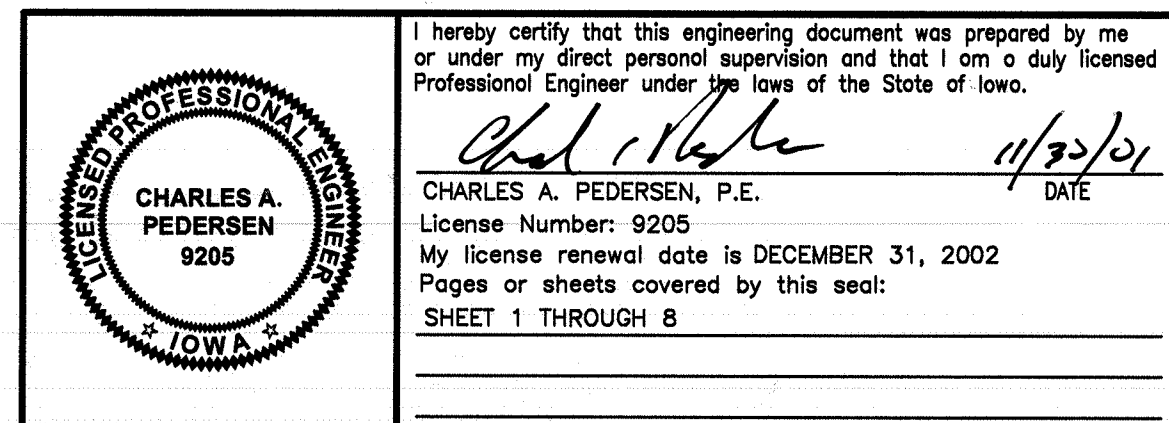
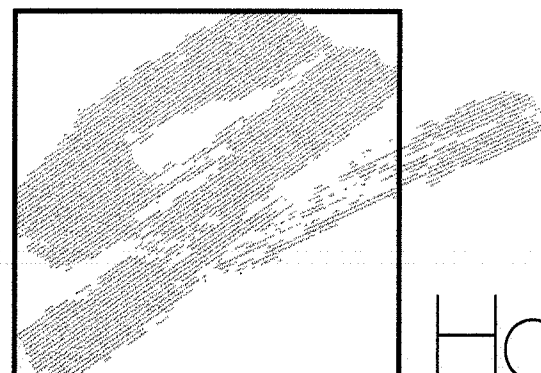
DEPARTMENT OF GENERAL SERVICES
DES MOINES, IOWA

2001

SHEET INDEX

1. UTILITY SITE PLAN - AERIAL
2. UTILITY SITE PLAN
3. UTILITY SITE PLAN - PRIMARY ELECTRIC
4. UTILITY SITE PLAN - SECONDARY ELECTRIC
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6. UTILITY SITE PLAN - CITY WATER
7. UTILITY SITE PLAN - STORM AND SANITARY SEWER
8. UTILITY SITE PLAN - IOWA COMMUNICATIONS NETWORK

CERTIFICATION

[illegible]

Howard R. Green Company

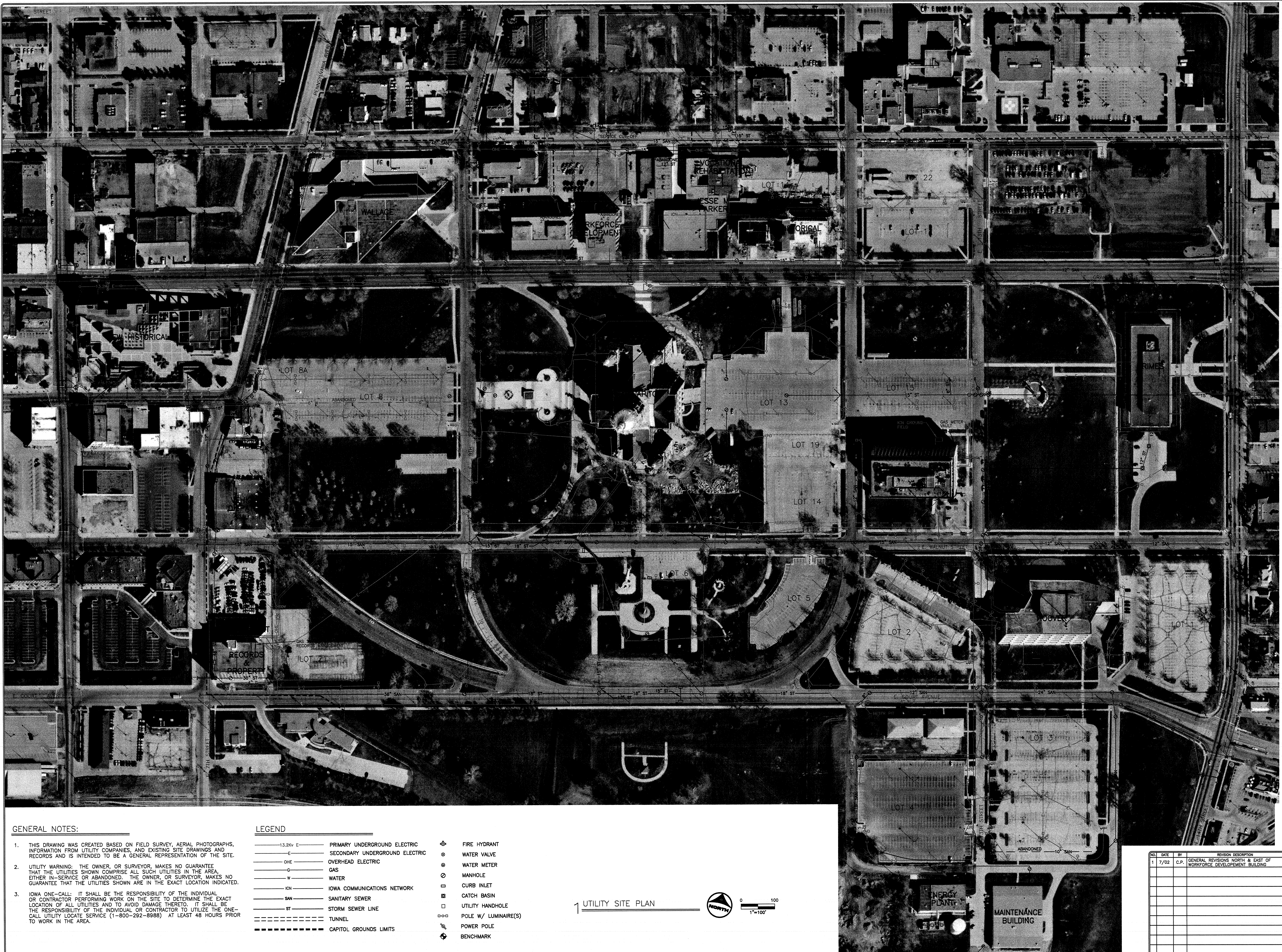
4685 MERLE HAY ROAD, SUITE 106 DES MOINES, IOWA 50322 (515) 278-2913 1 (800) 593-2339 FAX (515) 278-1846
CEDAR RAPIDS, IA CRESTON, IA DES MOINES, IA IOWA CITY, IA SIOUX FALLS, SD St. PAUL, MN
WE HELP OUR CLIENTS CAPITALIZE ON OPPORTUNITIES AND MINIMIZE LIABILITIES

RECEIVED
JAN 21 2003
GENERAL SERVICES
DESIGN & CONSTRUCTION

January 14, 2003 9:03:13 a.m.
I76020J\dwg\COVER.DWG (MHYMBAU)

FINAL
RECORD
SET (COPY)
1-21-2003

CCUM-HRG LARs
UPDATES 1-2-03



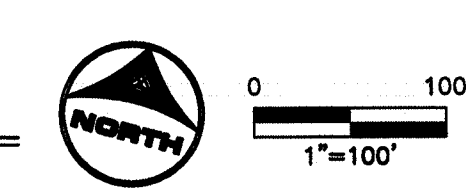
GENERAL NOTES:

1. THIS DRAWING WAS CREATED BASED ON FIELD SURVEY, AERIAL PHOTOGRAPHS, INFORMATION FROM UTILITY COMPANIES, AND EXISTING SITE DRAWINGS AND RECORDS AND IS INTENDED TO BE A GENERAL REPRESENTATION OF THE SITE.
2. UTILITY WARNING: THE OWNER, OR SURVEYOR, MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE OWNER, OR SURVEYOR, MAKES NO GUARANTEE THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.
3. IOWA ONE-CALL: IT SHALL BE THE RESPONSIBILITY OF THE INDIVIDUAL OR CONTRACTOR PERFORMING WORK ON THE SITE TO DETERMINE THE EXACT LOCATION OF ALL UTILITIES AND TO AVOID DAMAGE THERETO. IT SHALL BE THE RESPONSIBILITY OF THE INDIVIDUAL OR CONTRACTOR TO UTILIZE THE ONE-CALL UTILITY LOCATE SERVICE (1-800-292-8988) AT LEAST 48 HOURS PRIOR TO WORK IN THE AREA.

LEGEND

- | | | | |
|------------|--------------------------------|---|----------------------|
| —13.2KV E— | PRIMARY UNDERGROUND ELECTRIC | ⊙ | FIRE HYDRANT |
| —E— | SECONDARY UNDERGROUND ELECTRIC | ⊙ | WATER VALVE |
| —OHE— | OVERHEAD ELECTRIC | ⊙ | WATER METER |
| —G— | GAS | ⊙ | MANHOLE |
| —W— | WATER | ⊙ | CURB INLET |
| —IGN— | IOWA COMMUNICATIONS NETWORK | ⊙ | CATCH BASIN |
| —SAN— | SANITARY SEWER | ⊙ | UTILITY HANDHOLE |
| —ST— | STORM SEWER LINE | ⊙ | POLE W/ LUMINAIRE(S) |
| —T— | TUNNEL | ⊙ | POWER POLE |
| —CGL— | CAPITOL GROUNDS LIMITS | ⊙ | BENCHMARK |

1 UTILITY SITE PLAN



NO.	DATE	BY	REVISION DESCRIPTION
1	7/02	C.P.	GENERAL REVISIONS NORTH & EAST OF WORKFORCE DEVELOPMENT BUILDING

STATE OF IOWA – CAPITOL COMPLEX
UTILITY SITE PLAN

CREATED BY
C. PEDERSEN

APPROVED BY
C. PEDERSEN

DATE
NOV. 30, 2001

SCALE
1"=100'

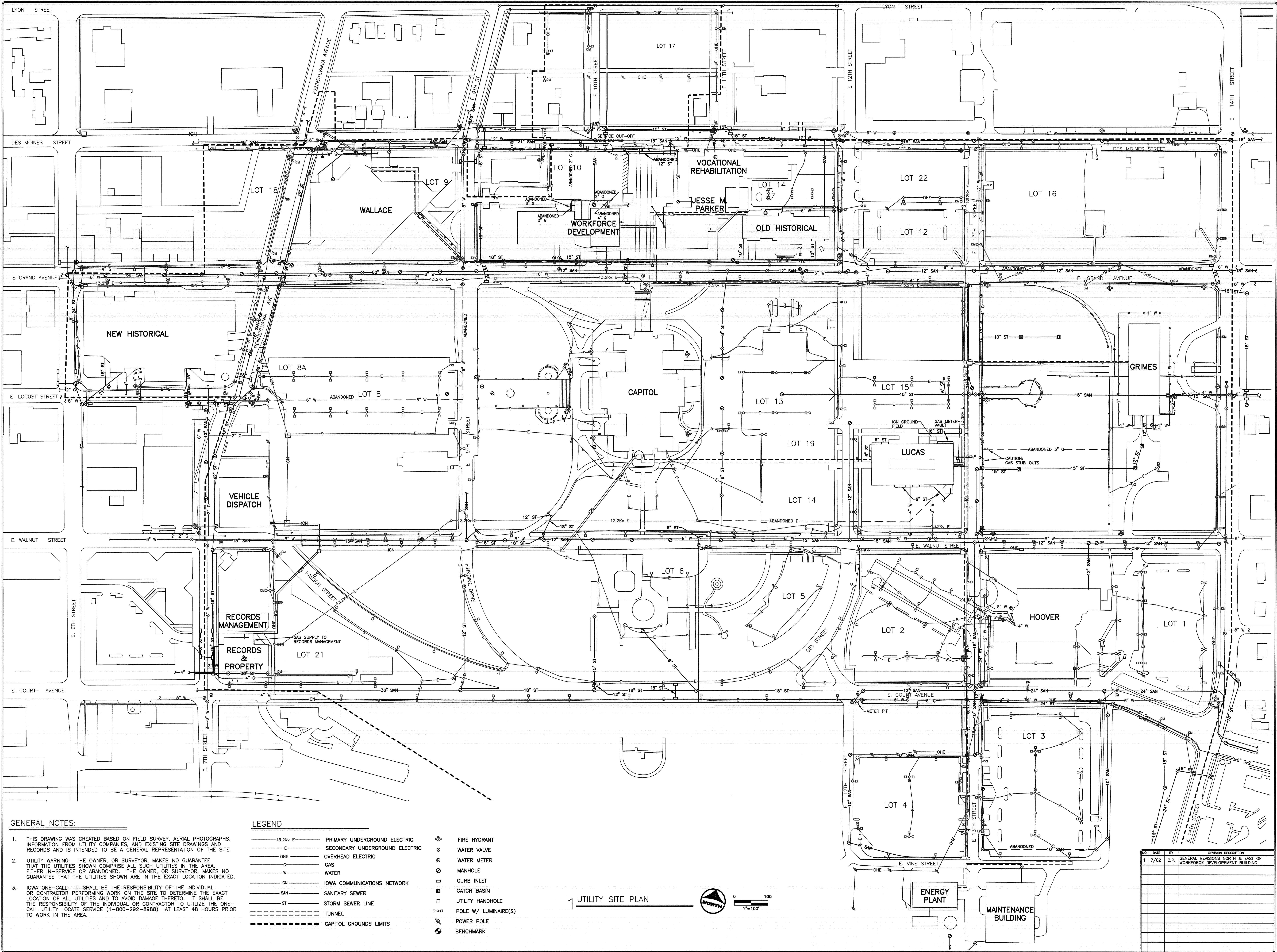
DRAWN BY
M. HYMBALGH

SHEET
1 OF 8

IOWA
ES

HOWARD R. GREEN COMPANY
4685 Merle Hay Rd., Suite 106
Des Moines, Iowa 50322
Phone: 515-278-2913
Email: info@hrgreen.com

IOWA DEPARTMENT OF
GENERAL SERVICES
CAPITOL COMPLEX MAINTENANCE DIVISION
EAST 13TH AND VINE
DES MOINES, IOWA 50319



GENERAL NOTES:

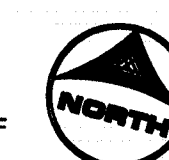
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LEGEND

- 13.2KV E. PRIMARY UNDERGROUND ELECTRIC
- 12" E. SECONDARY UNDERGROUND ELECTRIC
- OHE OVERHEAD ELECTRIC
- G GAS
- W WATER
- ICN IOWA COMMUNICATIONS NETWORK
- SS SANITARY SEWER
- ST STORM SEWER LINE
- T TUNNEL
- CAPITOL GROUNDS LIMITS

- FIRE HYDRANT
- WATER VALVE
- WATER METER
- MANHOLE
- CURB INLET
- CATCH BASIN
- UTILITY HANDHOLE
- POLE W/ LUMINAIRE(S)
- POWER POLE
- BENCHMARK

1 UTILITY SITE PLAN



0 1"=100'

NO.	DATE	BY	REVISION DESCRIPTION
1	7/02	C.P.	GENERAL REVISIONS NORTH & EAST OF WORKFORCE DEVELOPMENT BUILDING

STATE OF IOWA - CAPITOL COMPLEX
UTILITY SITE PLAN

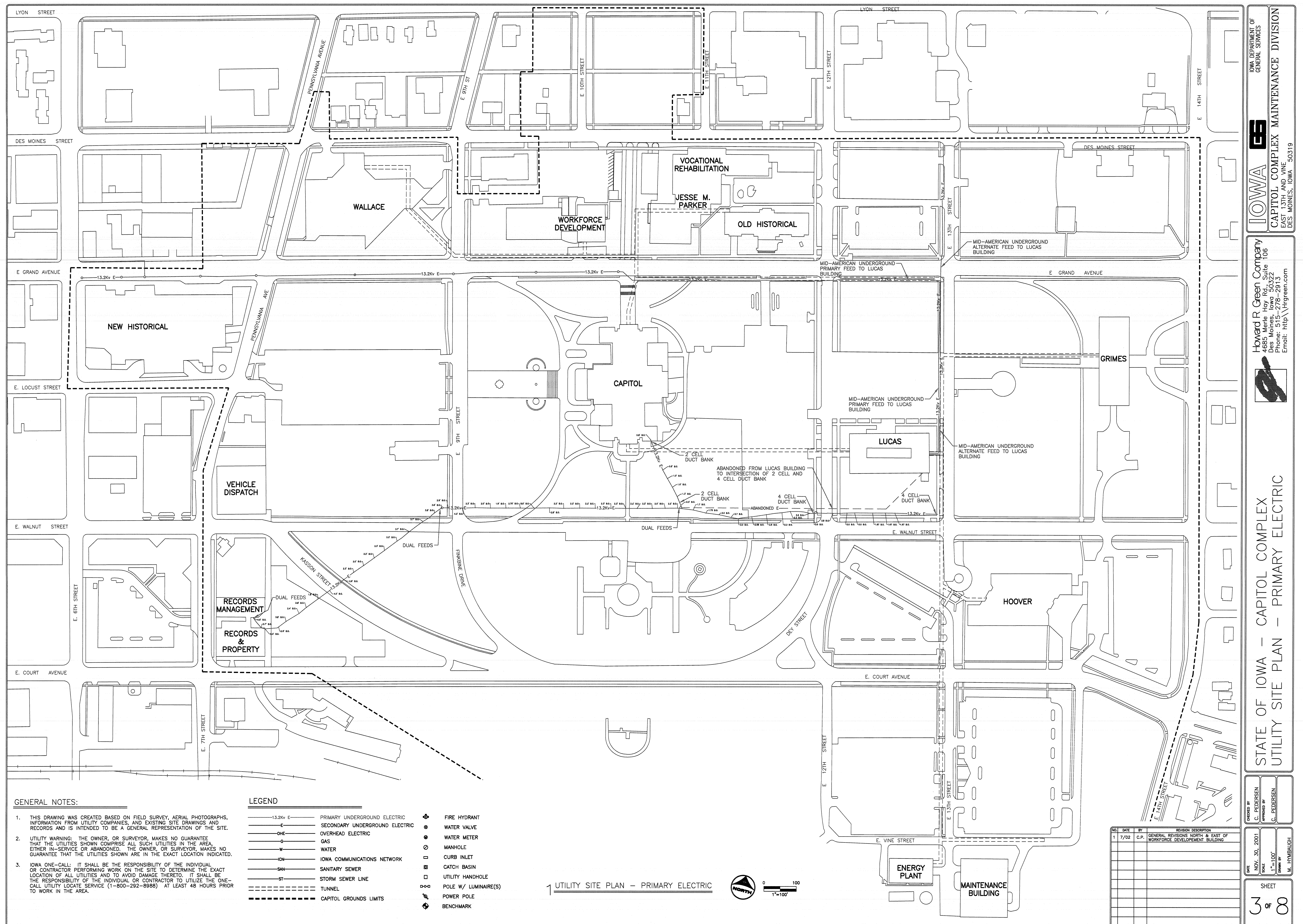
CHECKED BY
C. PEDERSEN
APPROVED BY
C. PEDERSEN

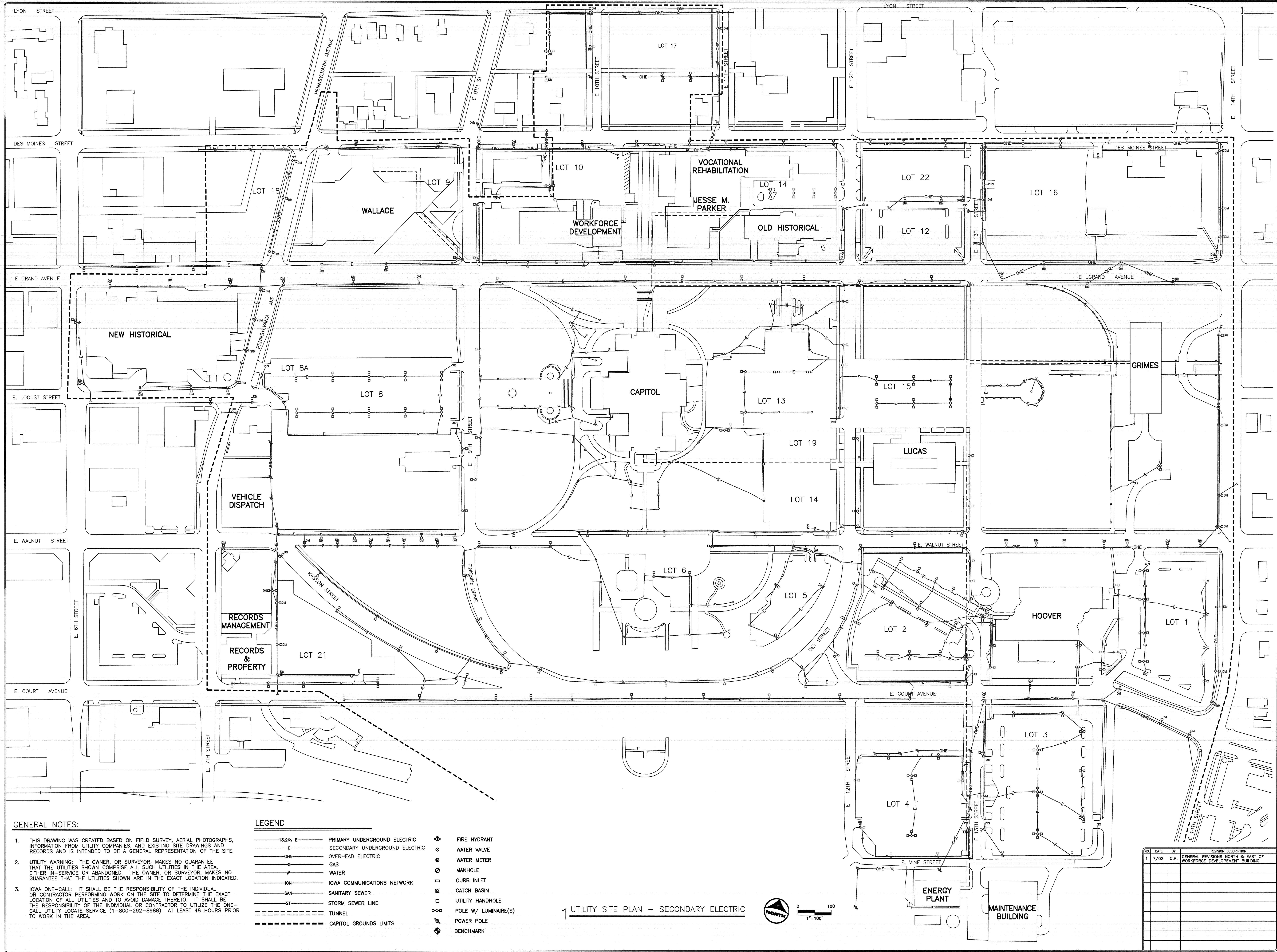
DATE
NOV. 30, 2001
SCALE
1"=100'
DRAWN BY
M. HYMBAUGH

SHEET
2 of 8

IOWA
CAPITOL COMPLEX MAINTENANCE DIVISION
DES MOINES, IOWA 50319

Howard R Green Company
4685 Merle Hoy Rd., Suite 106
Des Moines, Iowa 50322
Phone: 515-278-2913
Email: <http://hrgreen.com>





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LEGEND

- | | |
|------------|--------------------------------|
| —13.2kv E— | PRIMARY UNDERGROUND ELECTRIC |
| —E— | SECONDARY UNDERGROUND ELECTRIC |
| —OHE— | OVERHEAD ELECTRIC |
| —G— | GAS |
| —W— | WATER |
| —ICN— | IOWA COMMUNICATIONS NETWORK |
| —SAN— | SANITARY SEWER |
| —ST— | STORM SEWER LINE |
| —T— | TUNNEL |
| --- | CAPITOL GROUNDS LIMITS |

- | | |
|---|----------------------|
| ⊕ | FIRE HYDRANT |
| ⊙ | WATER VALVE |
| ⊙ | WATER METER |
| ⊙ | MANHOLE |
| ⊙ | CURB INLET |
| ⊙ | CATCH BASIN |
| ⊙ | UTILITY HANDHOLE |
| ⊙ | POLE W/ LUMINAIRE(S) |
| ⊙ | POWER POLE |
| ⊙ | BENCHMARK |

1 UTILITY SITE PLAN - SECONDARY ELECTRIC



0 100
1"=100'

NO.	DATE	BY	REVISION DESCRIPTION
1	7/02	C.P.	GENERAL REVISIONS NORTH & EAST OF WORKFORCE DEVELOPMENT BUILDING

STATE OF IOWA - CAPITOL COMPLEX
UTILITY SITE PLAN - SECONDARY ELECTRIC

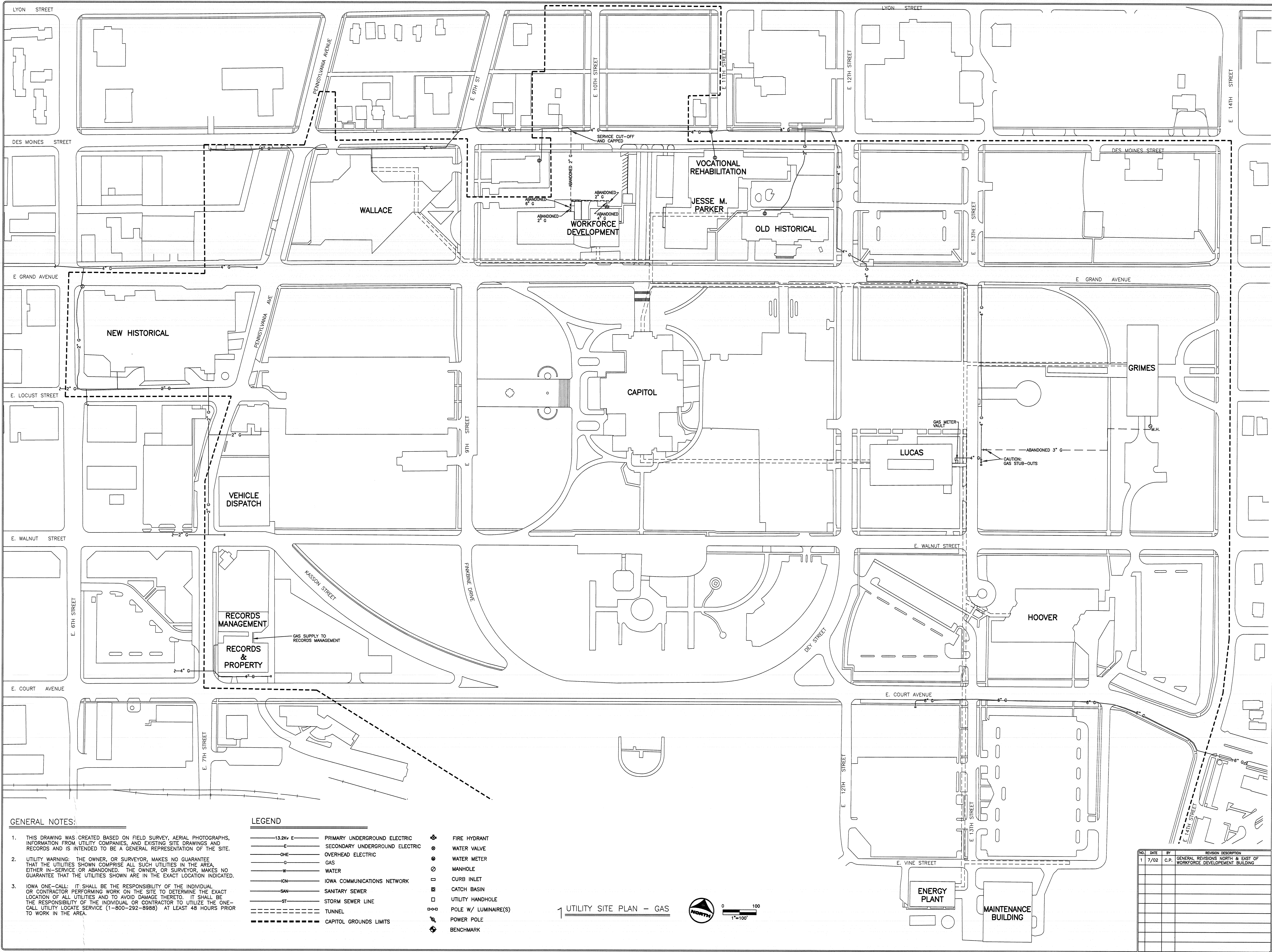
CREATED BY
C. PEDERSEN
APPROVED BY
C. PEDERSEN

DATE
NOV. 30, 2001
SCALE
1"=100'
DRAWN BY
M. HENRICH

SHEET
4 OF 8

IOWA
CAPITOL COMPLEX MAINTENANCE DIVISION
DES MOINES, IOWA 50319

Howard R Green Company
4885 Merle Hwy Rd., Suite 106
Des Moines, Iowa 50322
Phone: 515-278-2913
Email: <http://hrgreen.com>



GENERAL NOTES:

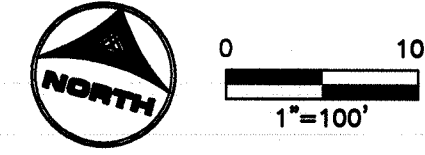
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- E SECONDARY UNDERGROUND ELECTRIC
- OHE OVERHEAD ELECTRIC
- G GAS
- W WATER
- ICN IOWA COMMUNICATIONS NETWORK
- SAN SANITARY SEWER
- ST STORM SEWER LINE
- TUNNEL TUNNEL
- CAPITOL GROUNDS LIMITS

- FIRE HYDRANT
- WATER VALVE
- WATER METER
- MANHOLE
- CURB INLET
- CATCH BASIN
- UTILITY HANDHOLE
- POLE W/ LUMINAIRE(S)
- POWER POLE
- BENCHMARK

1 UTILITY SITE PLAN - GAS



REV.	DATE	BY	REVISION DESCRIPTION
1	7/02	C.P.	GENERAL REVISIONS NORTH & EAST OF WORKFORCE DEVELOPMENT BUILDING

STATE OF IOWA - CAPITOL COMPLEX
UTILITY SITE PLAN - GAS

HOWARD R. GREEN COMPANY
4685 Merle Hoy Rd., Suite 106
Des Moines, Iowa 50322
Phone: 515-278-2913
Email: <http://hrgreen.com>

DESIGNED BY
C. PEDERSEN

APPROVED BY
C. PEDERSEN

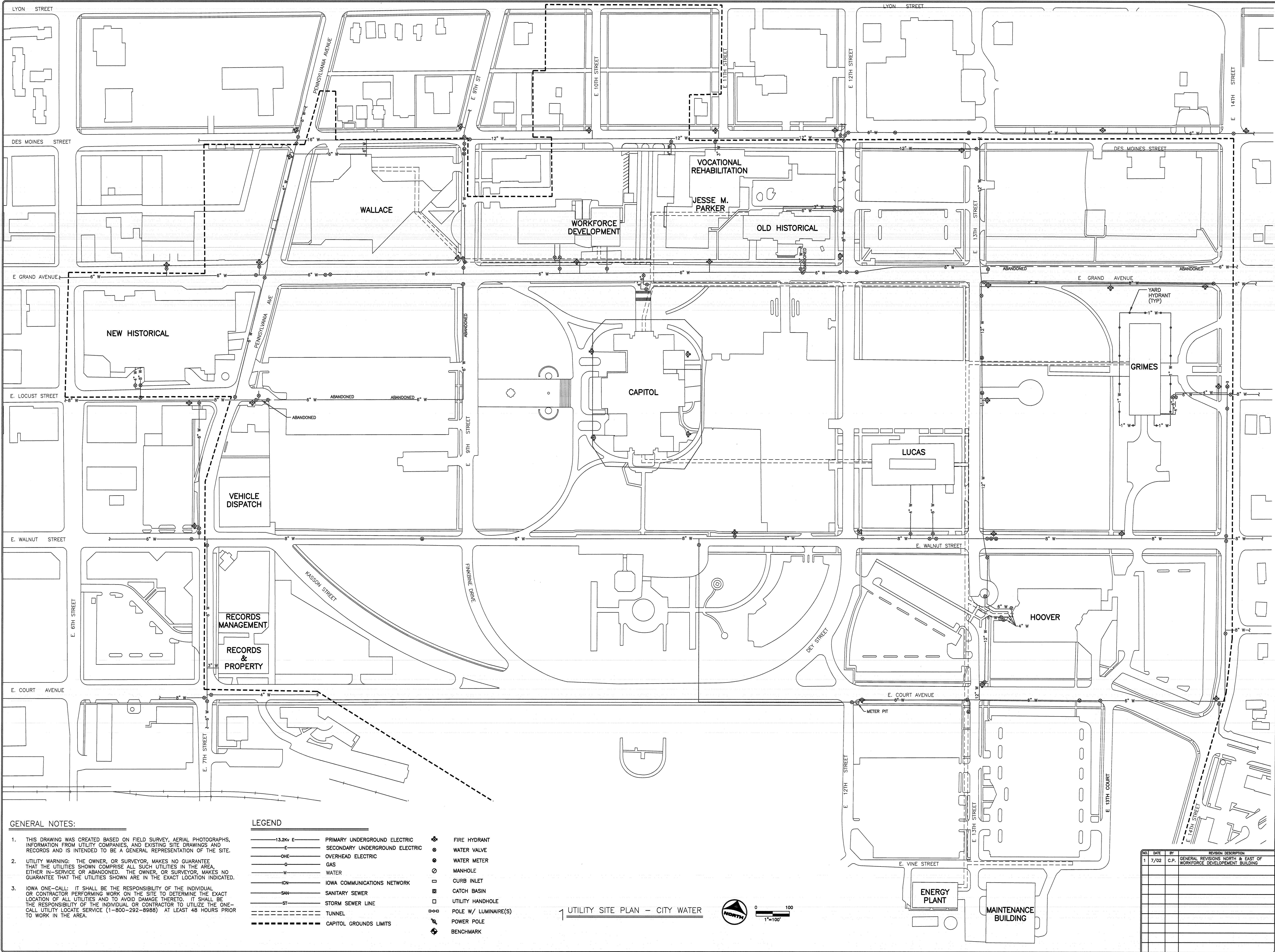
DATE
NOV. 30, 2001

SCALE
1" = 100'

DRAWN BY
M. HYMBALUGH

SHEET
5 OF 8

IOWA DEPARTMENT OF
GENERAL SERVICES
CAPITOL COMPLEX MAINTENANCE DIVISION
EAST 11TH AND VINE STS.
DES MOINES, IOWA 50319



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- UTILITY HANDHOLE
- POLE W/ LUMINAIRE(S)
- POWER POLE
- BENCHMARK

1 UTILITY SITE PLAN - CITY WATER



NO.	DATE	BY	REVISION DESCRIPTION
1	7/02	C.P.	GENERAL REVISIONS NORTH & EAST OF WORKFORCE DEVELOPMENT BUILDING

IOWA DEPARTMENT OF GENERAL SERVICES

IOWA

CAPITOL COMPLEX MAINTENANCE DIVISION

DES MOINES, IOWA 50319

Howard R. Green Company

4685 Merle Hwy Rd., Suite 106

Des Moines, Iowa 50322

Phone: 515-278-2913

Email: <http://www.hrgreen.com>

STATE OF IOWA - CAPITOL COMPLEX

UTILITY SITE PLAN - CITY WATER

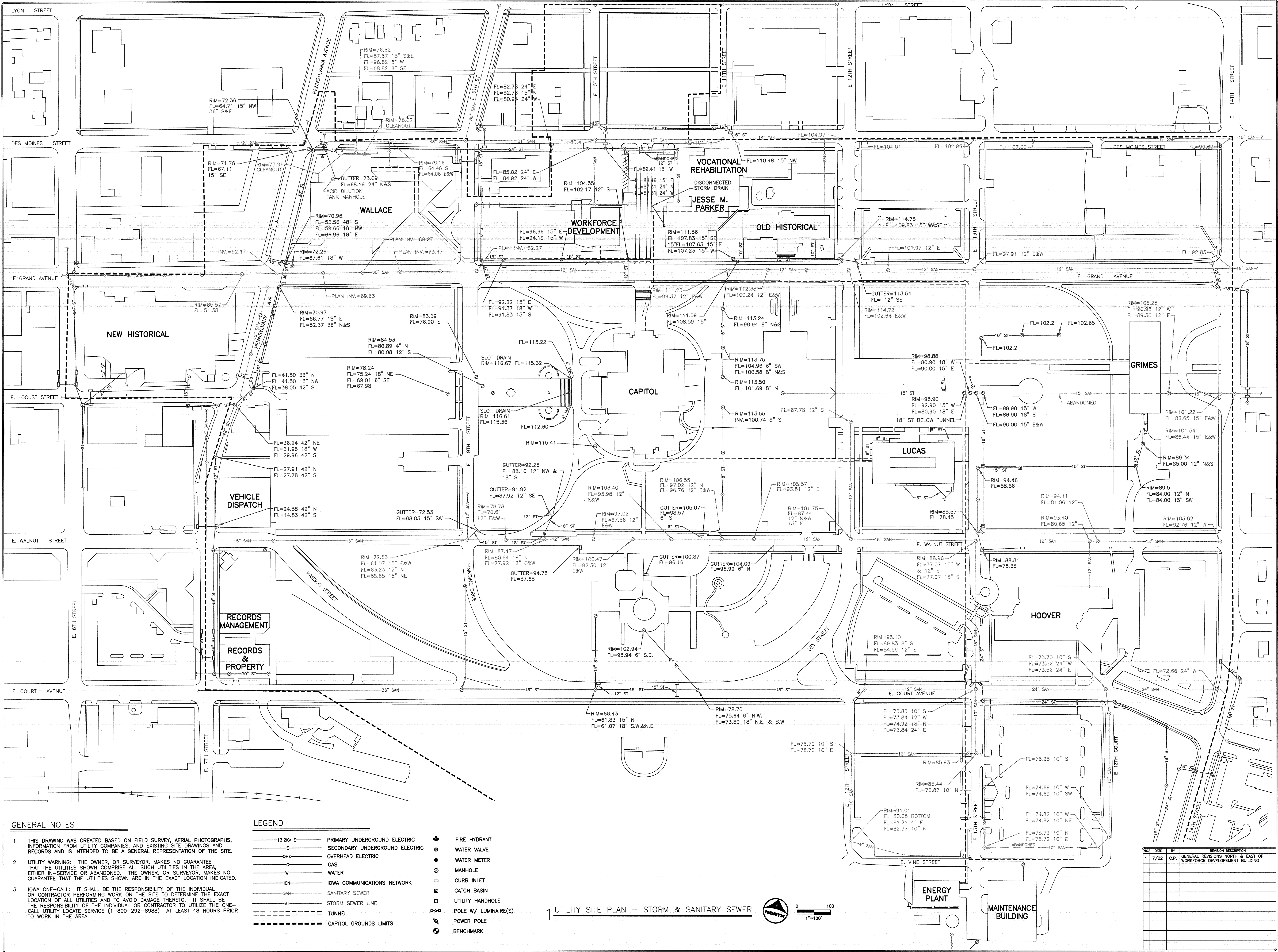
CHIEF: C. PEDERSEN

DATE: NOV. 30, 2001

SCALE: 1"=100'

DRAWN BY: M. HYNBAUGH

SHEET: 6 OF 8



GENERAL NOTES:

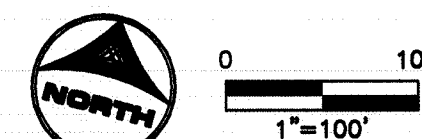
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- SAN SANITARY SEWER
- ST STORM SEWER LINE
- T TUNNEL
- CAPITAL GROUNDS LIMITS

- FIRE HYDRANT
- WATER VALVE
- WATER METER
- MANHOLE
- CURB INLET
- CATCH BASIN
- UTILITY HANDHOLE
- POLE W/ LUMINAIRE(S)
- POWER POLE
- BENCHMARK

1 UTILITY SITE PLAN - STORM & SANITARY SEWER



NO.	DATE	BY	REVISION DESCRIPTION
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STATE OF IOWA - CAPITOL COMPLEX
UTILITY SITE PLAN - STORM & SANITARY SEWER

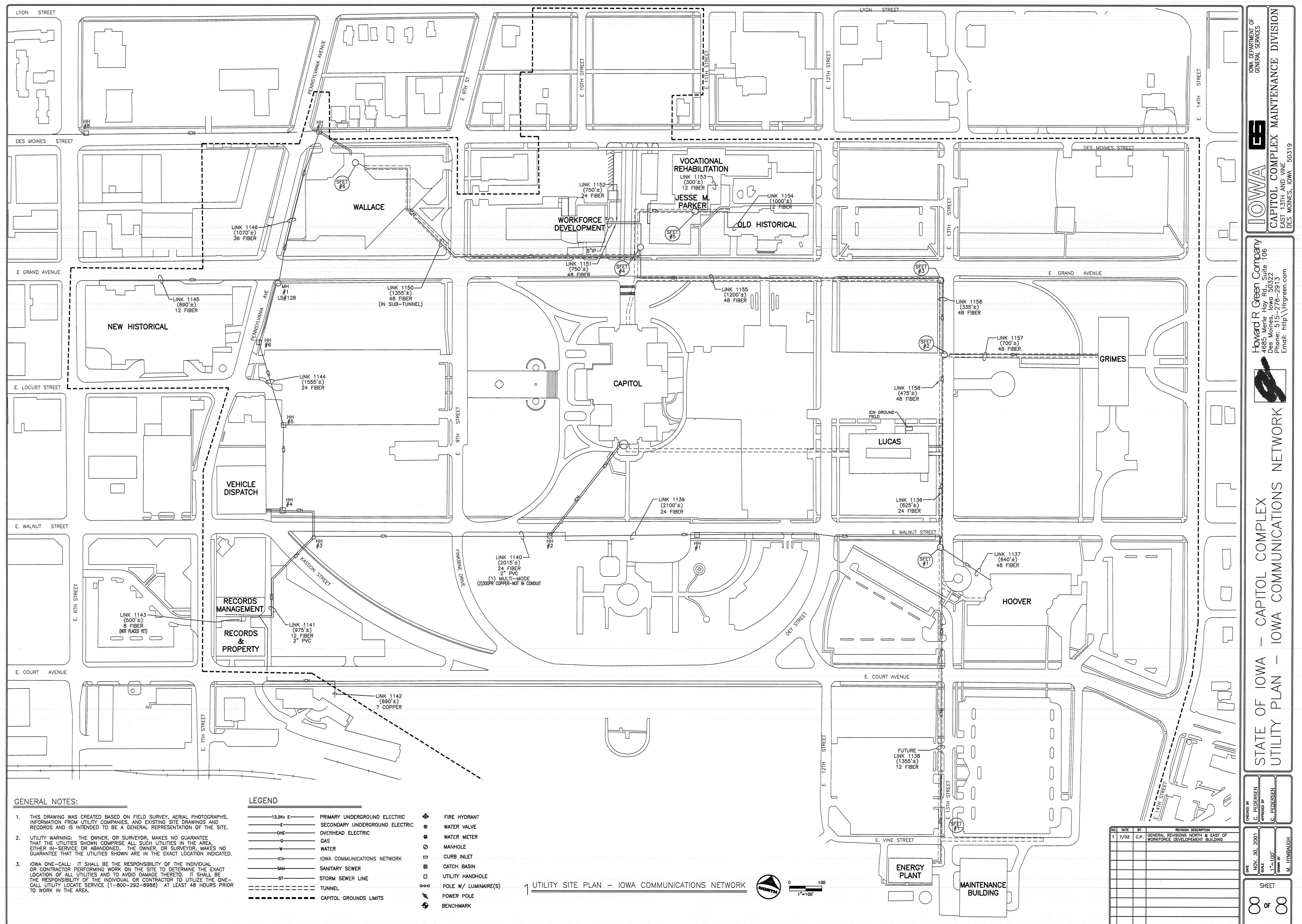
DESIGNED BY
C. PEDERSEN
APPROVED BY
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M. HYMEBAUGH

SHEET
7 OF 8

IOWA
CAPITOL COMPLEX MAINTENANCE DIVISION
EAST 13TH AND VINE
DES MOINES, IOWA 50319

Howard R. Green Company
4685 Merle Hwy. Rd., Suite 106
Des Moines, Iowa 50322
Phone: 515-278-2913
Email: hrgreen@hrgreen.com



CHILLED WATER DISTRIBUTION SYSTEM

STATE OF IOWA CAPITOL COMPLEX

DEPARTMENT OF GENERAL SERVICES

DES MOINES, IOWA

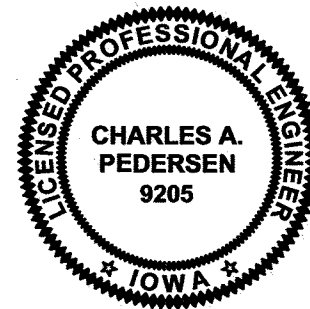
2001

SHEET INDEX

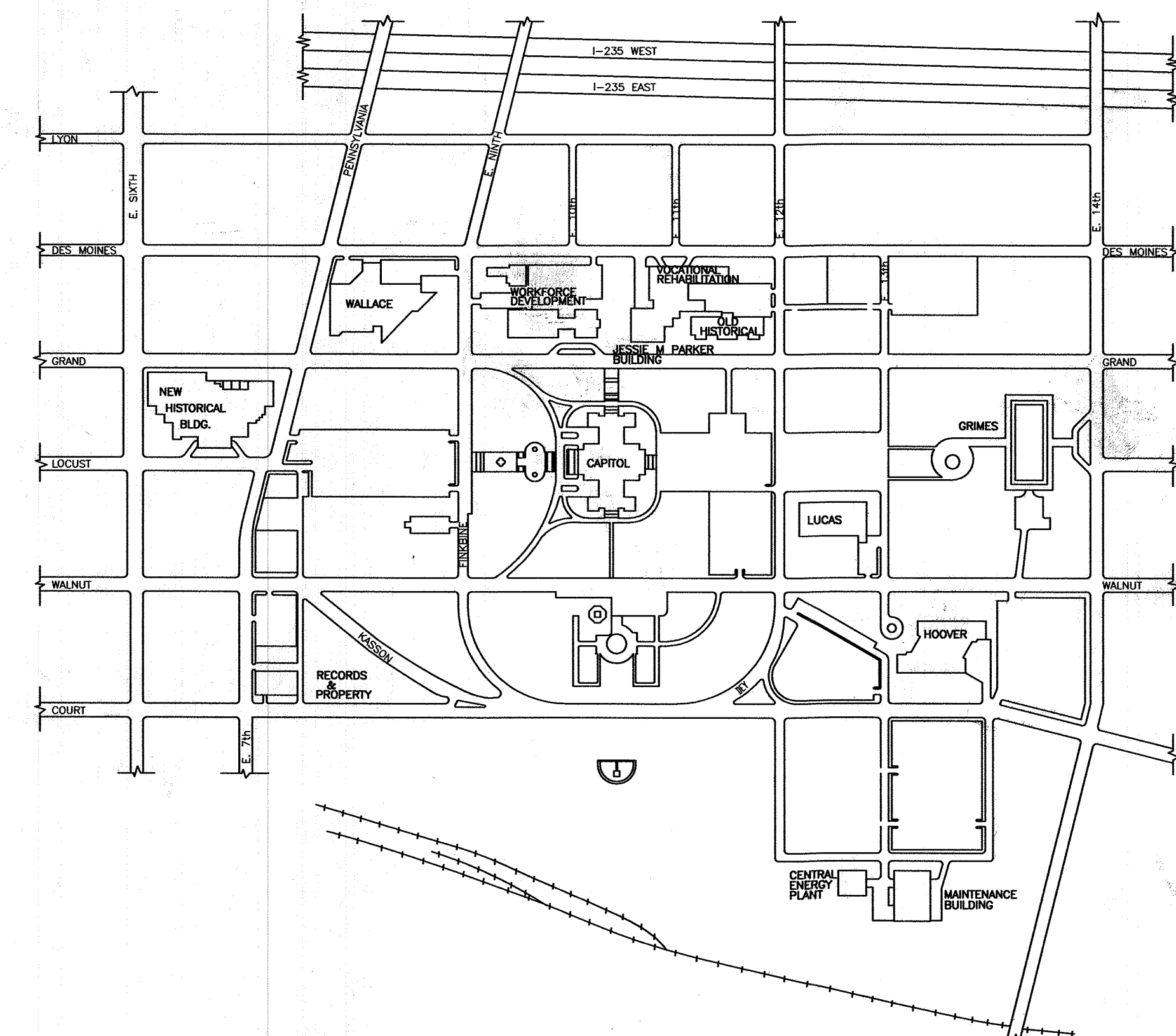
MECHANICAL

- 1 CAPITOL COMPLEX SITE PLAN
- 2 MAIN DISTRIBUTION / TUNNEL PIPING SCHEMATIC
- 3 CENTRAL ENERGY PLANT PIPING SCHEMATIC
- 4 MAINTENANCE, HOOVER, AND LUCAS BUILDING PIPING SCHEMATIC
- 5 GRIMES AND WORKFORCE DEVELOPMENT BUILDING AND PIPING SCHEMATIC
- 6 CAPITOL BUILDING PIPING SCHEMATIC
- 7 WALLACE, JESSE M. PARKER, AND OLD HISTORICAL BUILDING PIPING SCHEMATIC

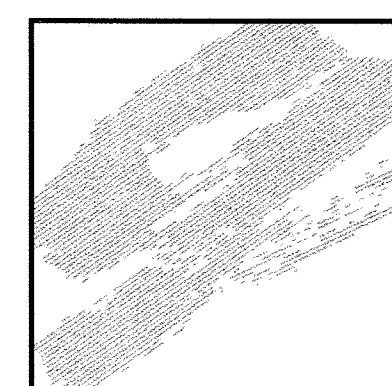
CERTIFICATION

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.	
		DATE DEC 10, 2001
	CHARLES A. PEDERSEN, P.E.	
	License Number: 9205	
	My license renewal date is DECEMBER 31, 2002	
Pages or sheets covered by this seal:		
SHEET NUMBERS 1 THROUGH 7		

KEY PLAN

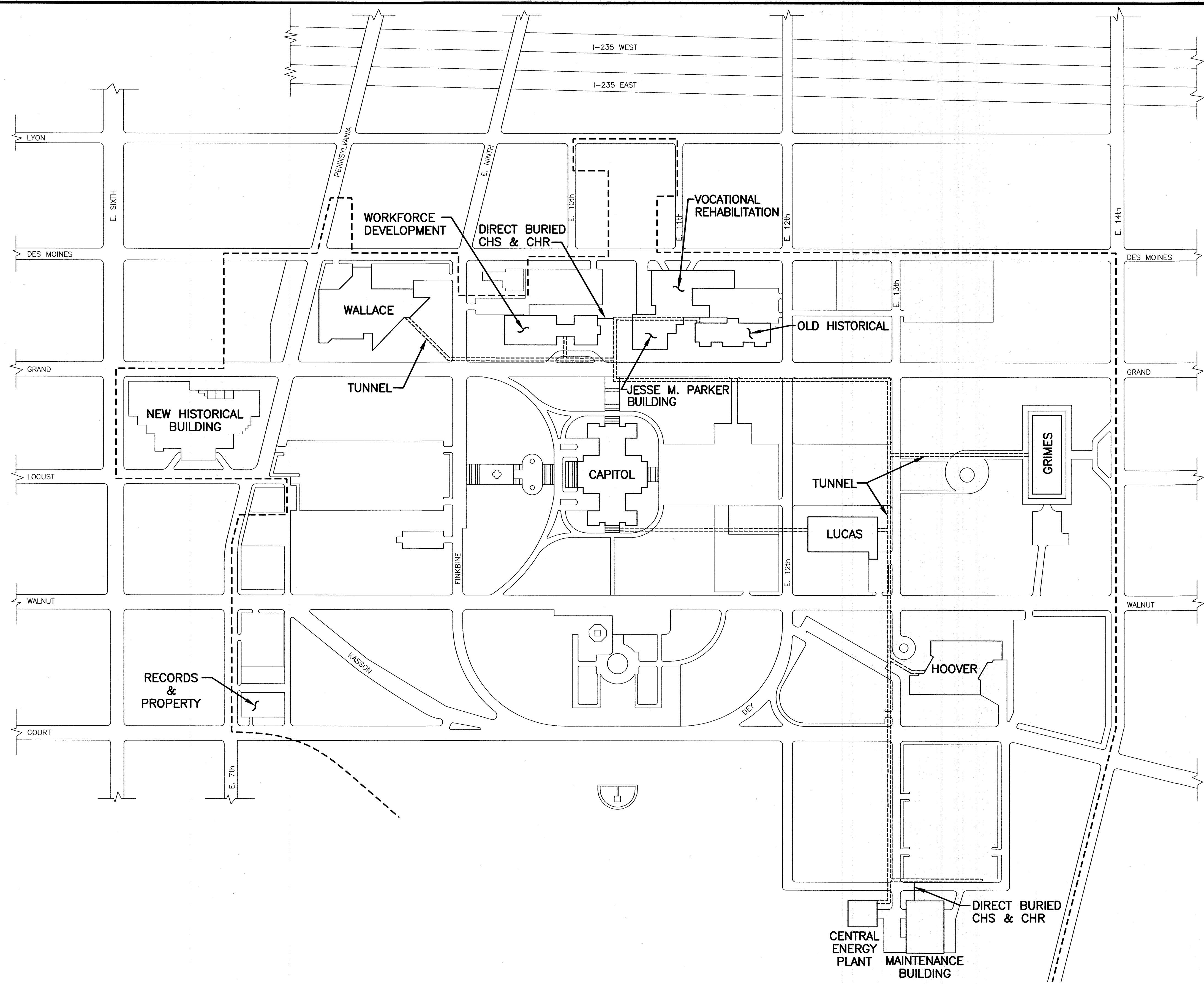


FINAL
"SURVEYED"
DATA



Howard R. Green Company
CONSULTING ENGINEERS

4685 MERLE HAY ROAD, SUITE 106 DES MOINES, IOWA 50322 (515) 278-2913 1 (800) 593-2339 FAX (515) 278-1846
CEDAR RAPIDS, IA CRESTON, IA DES MOINES, IA IOWA CITY, IA SIOUX FALLS, SD St. PAUL, MN



MECHANICAL SYMBOLS PIPING SPECIALTIES

- CWS — CONDENSING WATER SUPPLY
- CWR — CONDENSING WATER RETURN
- CHS — CHILLED WATER SUPPLY
- CHR — CHILLED WATER RETURN
- O — ELBOW TURNED UP OR TOWARDS.
- O — ELBOW TURNED DOWN OR AWAY.
- T — TEE TURNED UP OR TOWARDS.
- T — TEE TURNED DOWN OR AWAY.
- A — ARROW IN LINE INDICATES DIRECTION OF FLOW.
- P — PITCH DOWN IN DIRECTION OF ARROW.
- G — GATE VALVE.
- G — GLOBE VALVE.
- G — ANGLE GATE VALVE.
- G — ANGLE GLOBE VALVE.
- B — BALL VALVE.
- B — BALANCING OR SHUT-OFF COCK.
- B — BUTTERFLY VALVE.
- A — AUTOMATIC CONTROL VALVE, TWO-WAY.
- A — AUTOMATIC CONTROL VALVE, THREE-WAY.
- P — PRESSURE REDUCING VALVE.
- C — CHECK VALVE.
- R — REDUCER.
- U — UNION.
- R — RELIEF OR SAFETY VALVE.
- B — BACKFLOW PREVENTER.
- B — BALANCING STATION.
- A — AUTOMATIC FLOW CONTROL VALVE
- S — STRAINER.
- P — PIPE GUIDE.
- P — PIPE ANCHOR.
- E — EXPANSION JOINT
- F — FLEXIBLE PIPE CONNECTION.
- F — FLOW METER
- A — AIR VENT.
- V — VACUUM BREAKER.
- P — PETE'S PLUG, PRESSURE AND TEMPERATURE TEST STATION.
- P — PRESSURE GAUGE.
- T — THERMOMETER.
- T — TEMPERATURE SENSOR
- DPS — DIFFERENTIAL PRESSURE SWITCH

CAPITOL COMPLEX SITE PLAN
SCALE: 1"=200'



DRAWN BY: MWH JOB DATE: AUGUST 2001
APPROVED: CAP JOB NUMBER: 174550J
CAD DATE: December 10, 2001 10:58:15 a.m.
CAD FILE: 174550J\CLIENT\12.10.01\MM001.DWG (MHYMBAU)

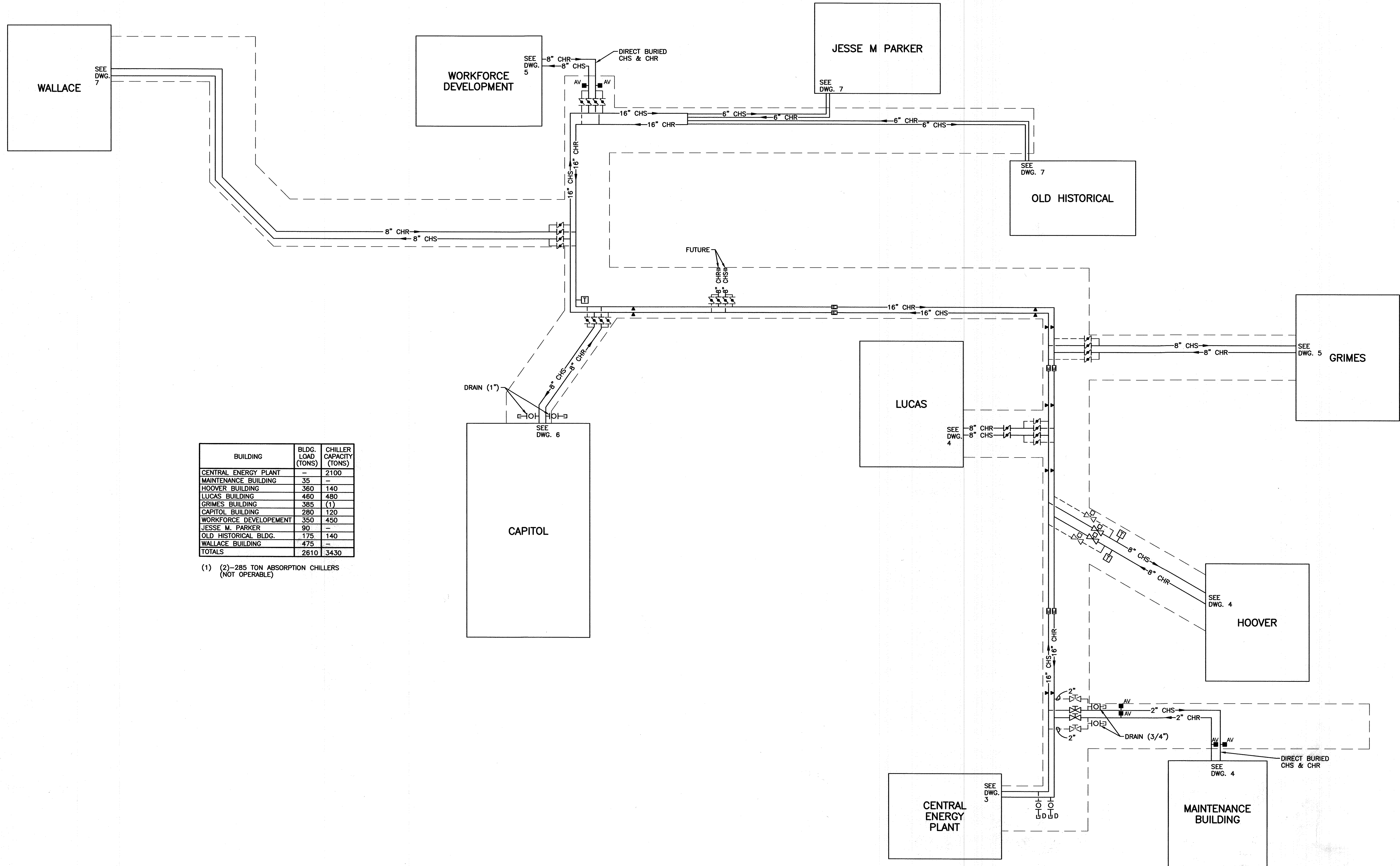
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CONSULTING ENGINEERS

STATE OF IOWA
DEPARTMENT OF GENERAL SERVICES
CAPITOL COMPLEX DES MOINES, IOWA

CHILLED WATER DISTRIBUTION SYSTEM
CAPITOL COMPLEX - SITE PLAN

SHEET NO.
1 OF 7

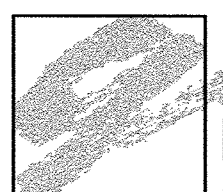


BUILDING	BLDG. LOAD (TONS)	CHILLER CAPACITY (TONS)
CENTRAL ENERGY PLANT	—	2100
MAINTENANCE BUILDING	35	—
HOOVER BUILDING	360	140
LUCAS BUILDING	460	480
GRIMES BUILDING	385	(1)
CAPITOL BUILDING	280	120
WORKFORCE DEVELOPEMENT	350	450
JESSE M. PARKER	90	—
OLD HISTORICAL BLDG.	175	140
WALLACE BUILDING	475	—
TOTALS	2610	3430

(1) (2)—285 TON ABSORPTION CHILLERS (NOT OPERABLE)

DRAWN BY: MWH JOB DATE: AUGUST 2001
 APPROVED: CAP JOB NUMBER: 174550J
 CAD DATE: December 10, 2001 10:58:39 a.m.
 CAD FILE: 174550J\CLIENT\12.10.01\MM102.DWG (MHYBAU)

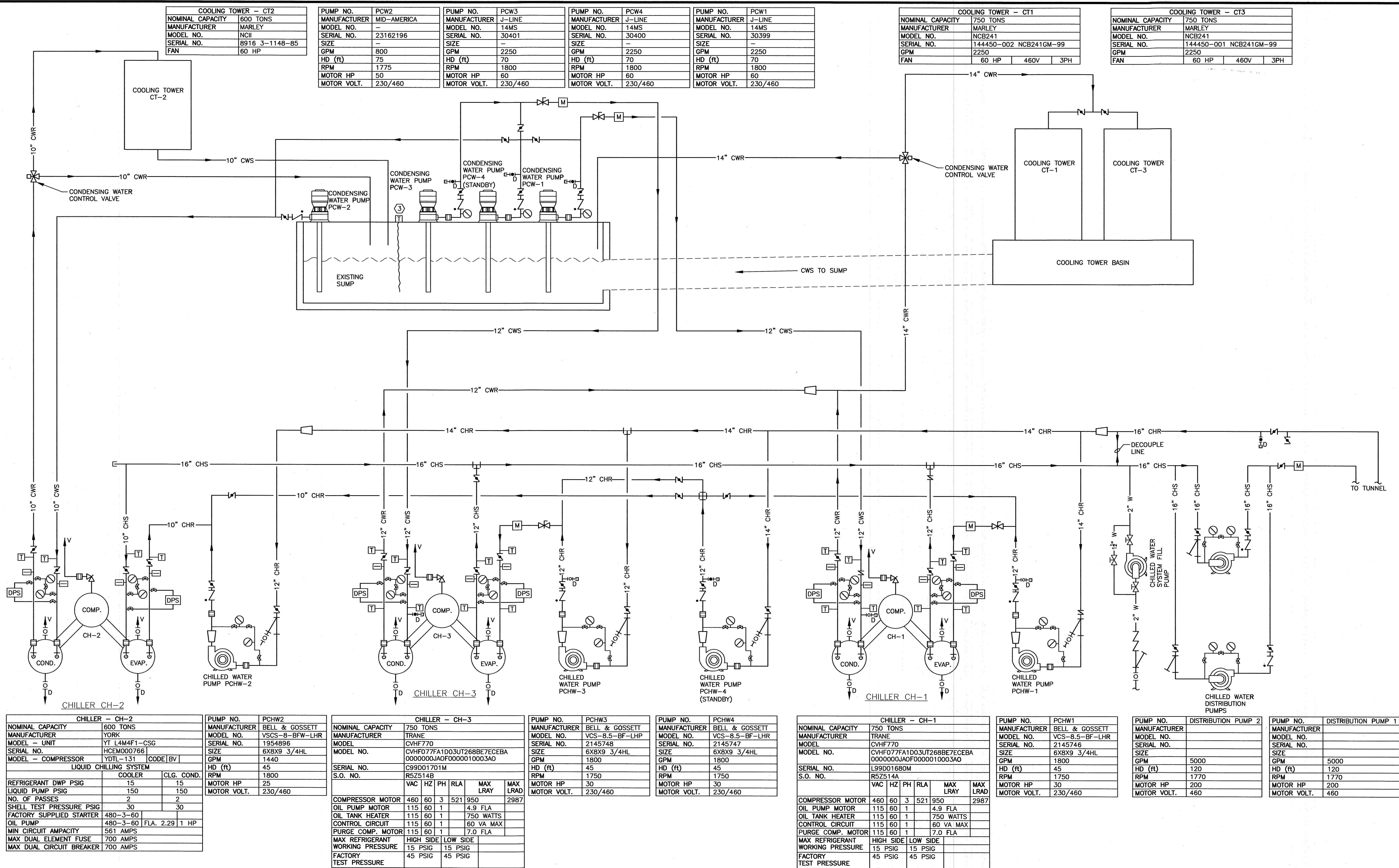
NO.	DATE	BY	REVISION DESCRIPTION

 Howard R. Green Company
 CONSULTING ENGINEERS

STATE OF IOWA
 DEPARTMENT OF GENERAL SERVICES
 CAPITOL COMPLEX DES MOINES, IOWA

CHILLED WATER DISTRIBUTION SYSTEM
 MAIN DISTRIBUTION / TUNNEL PIPING SCHEMATIC

SHEET NO.
 2 OF 7



DRAWN BY: MWH JOB DATE: AUGUST 2001
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 CAD DATE: December 10, 2001 10:54:35 a.m.
 CAD FILE: 174550J\CLIENT\12.10.01\MM103.DWG (MHYBAU)

NO.	DATE	BY	REVISION DESCRIPTION

Howard R. Green Company
 CONSULTING ENGINEERS

STATE OF IOWA
 DEPARTMENT OF GENERAL SERVICES
 CAPITOL COMPLEX DES MOINES, IOWA

CHILLED WATER DISTRIBUTION SYSTEM
 CENTRAL ENERGY PLANT PIPING SCHEMATIC

SHEET NO.
 3 OF 7

CHILLER			
MANUFACTURER	CARRIER	COMPRESSOR MOTOR DATA	
NOMINAL CAPACITY	140 TONS	VOLTS/PHASE/HERTZ	460/3/60 AC
REFRIGERATION MACHINE		RL AMPS	201 LR AMPS Y 390
MODEL NO.	23XL1010NC21	SERIAL NO.	3999Q55999
MACHINE	C2	MAX FUSE/CKT BKR	450
COMPRESSOR	10XB14000401	MIN CKT AMPACITY	251
COOLER	09XB14000701	TEST PRESSURE	375 PSI 2586 KPA
CONDENSER		DESIGN PRESSURE	300 PSI 2069 KPA
REFRIGERANT		CLR. WATER PRESSURE	150 PSI 1035 KPA
R-22 600 LBS / 272 KGS FIELD CHARGED		CLR. WATER PRESSURE	150 PSI 1035 KPA

PUMP NO.	CHW-6
MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510
SERIAL NO.	743355
SIZE	3BB 9 1/2 BF
GPM	295
HD (ft)	85
RPM	1750
MOTOR HP	10
MOTOR VOLT.	230/460

PUMP NO.	CHW-7
MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510
SERIAL NO.	743354
SIZE	3BB 9 1/2 BF
GPM	295
HD (ft)	85
RPM	1750
MOTOR HP	10
MOTOR VOLT.	230/460

HOOVER

MANUFACTURER	WORTHINGTON
MODEL NO.	612
SERIAL NO.	1372056
SIZE	8x6
GPM	1574
HD (ft)	77
RPM	1750
MOTOR HP	40
MOTOR VOLT.	230/460

MANUFACTURER	MCQUAY INC.	
NOMINAL CAPACITY	480 TONS	
MODEL NO.	PFH063	
STYLE	1PF2041G01	
SERIAL NO.	5QD0300100	
S.O. NO.	PF2041	
LIQUID CHILLING SYSTEM		
	COOLER	CLG. COND.
GPM	1350	1350
PRESSURE DROP	8#-18.9FT	8#-18.9FT
LVG. TEMP.	44°F	94.5°F
ENT. TEMP.	51.8°F	85.0°F

LUCAS

MANUFACTURER	GOULDS PUMPS, INC
MODEL NO.	3405
SERIAL NO.	2758169
SIZE	6X8X12
GPM	1350
HD (ft)	90
RPM	1775
MOTOR HP	40
MOTOR VOLT.	230/460

MANUFACTURER	BELL & GOSSETT
MODEL NO.	-
SERIAL NO.	60
SIZE	2A
GPM	50
HD (ft)	50
RPM	1730
MOTOR HP	1
MOTOR VOLT.	200

DRAWN BY: MWH JOB DATE: AUGUST 2001
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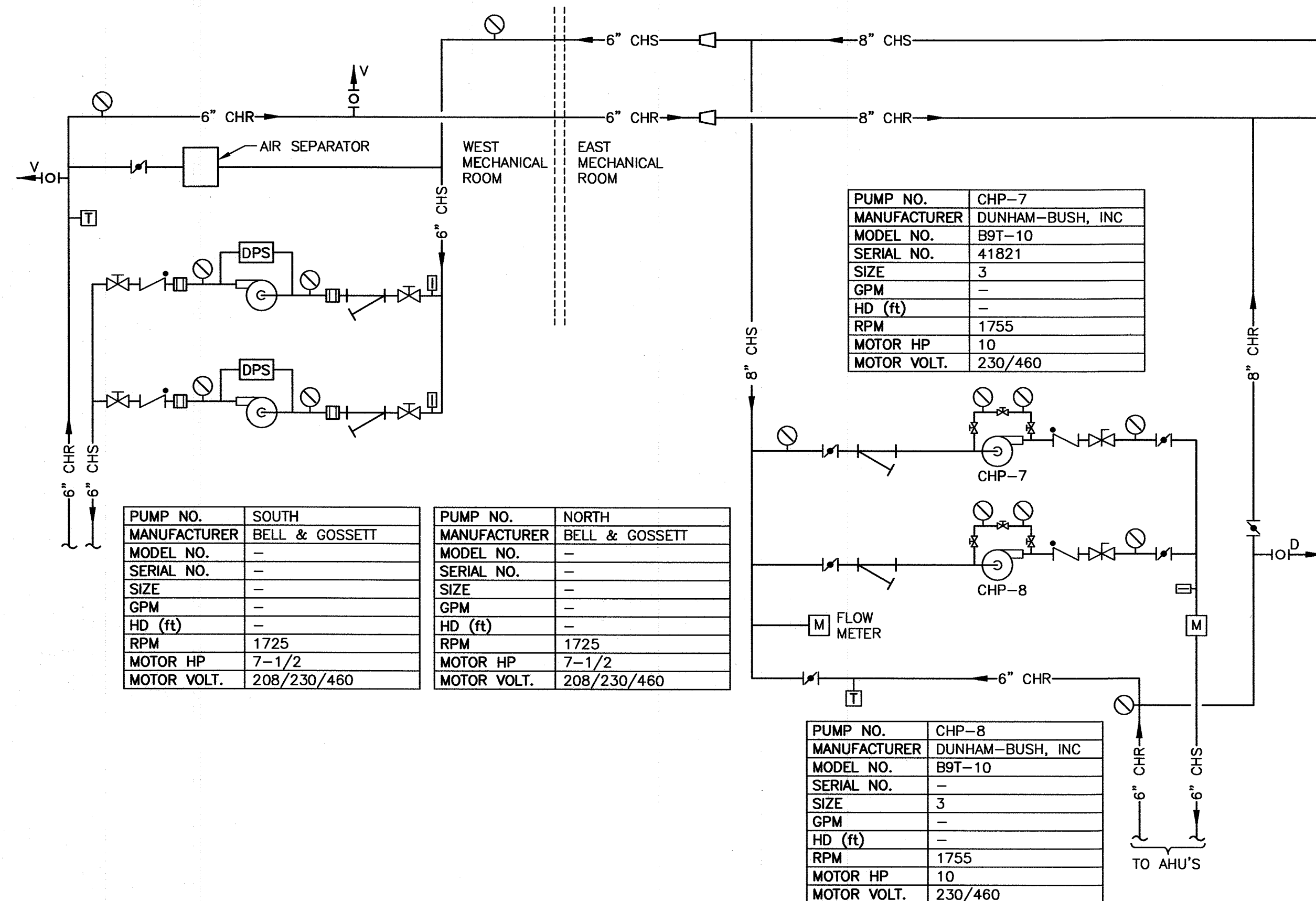
NO.	DATE	BY	REVISION DESCRIPTION

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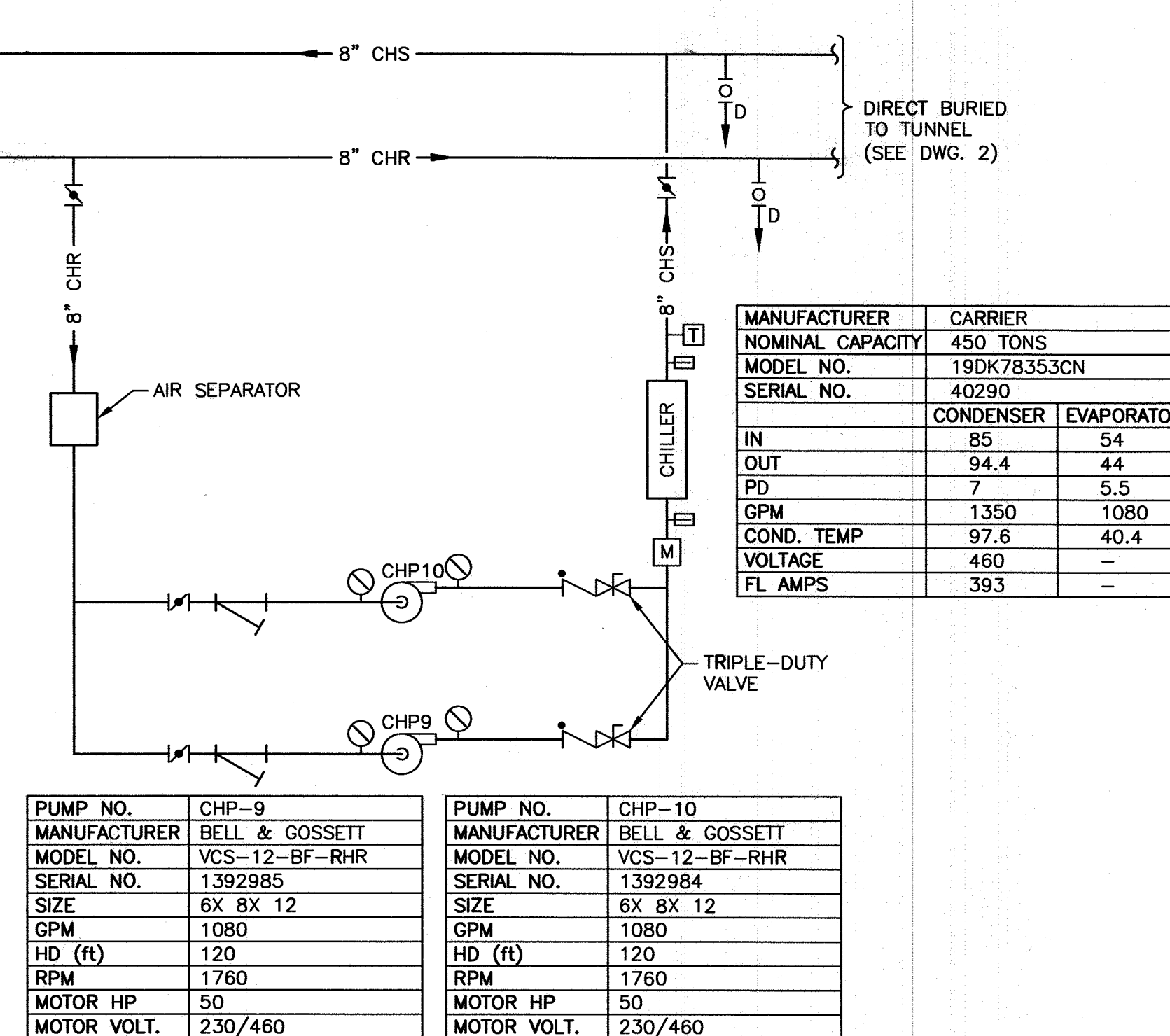
STATE OF IOWA
DEPARTMENT OF GENERAL SERVICES
CAPITOL COMPLEX
DES MOINES, IOWA

CHILLED WATER DISTRIBUTION SYSTEM
MAINTENANCE, HOOVER, AND
LUCAS BUILDING PIPING SCHEMATIC

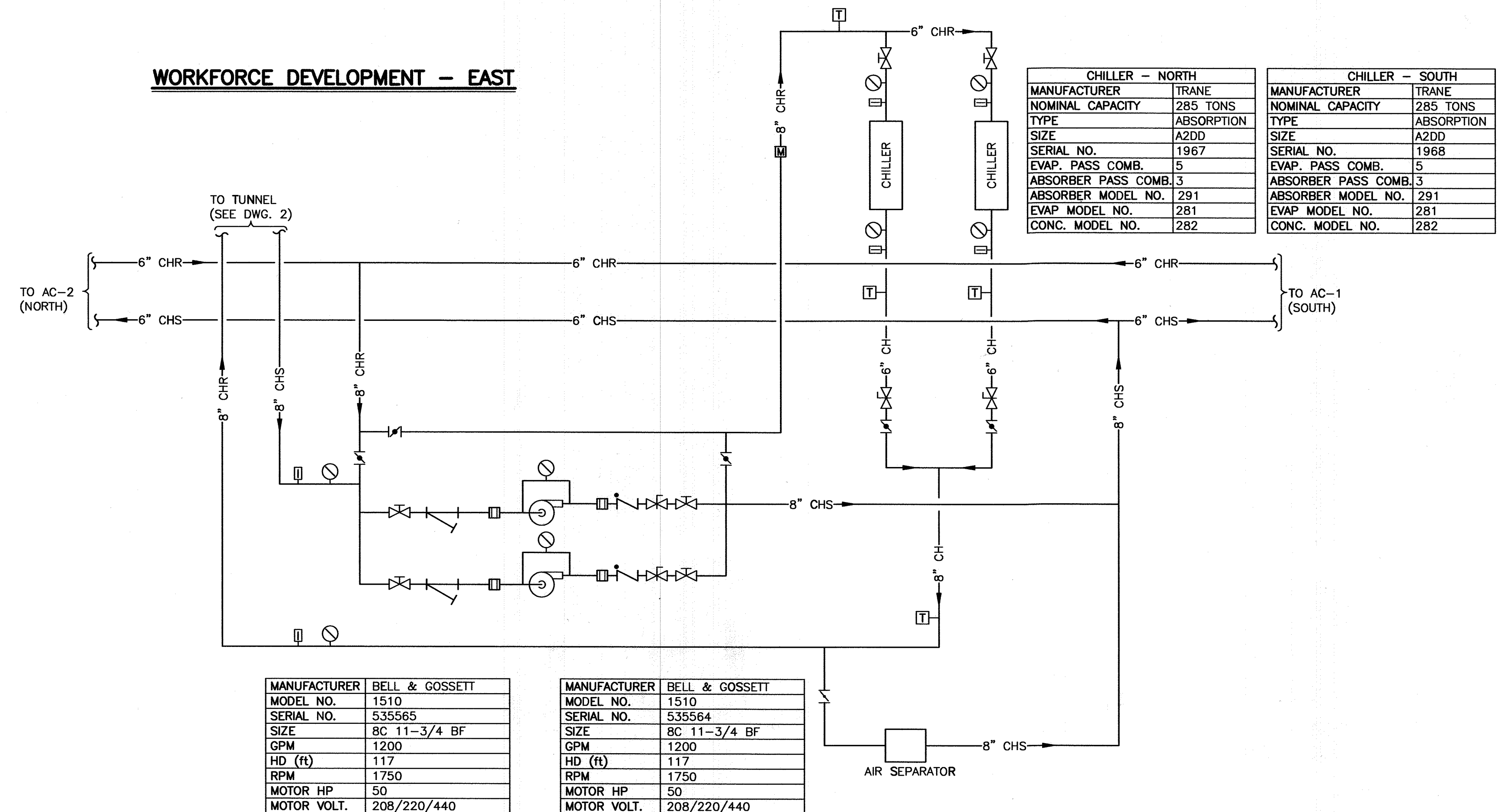
SHEET NO.
4 OF 7



WORKFORCE DEVELOPMENT - WEST



WORKFORCE DEVELOPMENT - EAST



GRIMES

DRAWN BY: MWH JOB DATE: AUGUST 2001
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 CAD DATE: December 10, 2001 10:56:03 a.m.
 CAD FILE: 174550J\CLIENT\12.10.01\MM105.DWG (MHYMBAU)

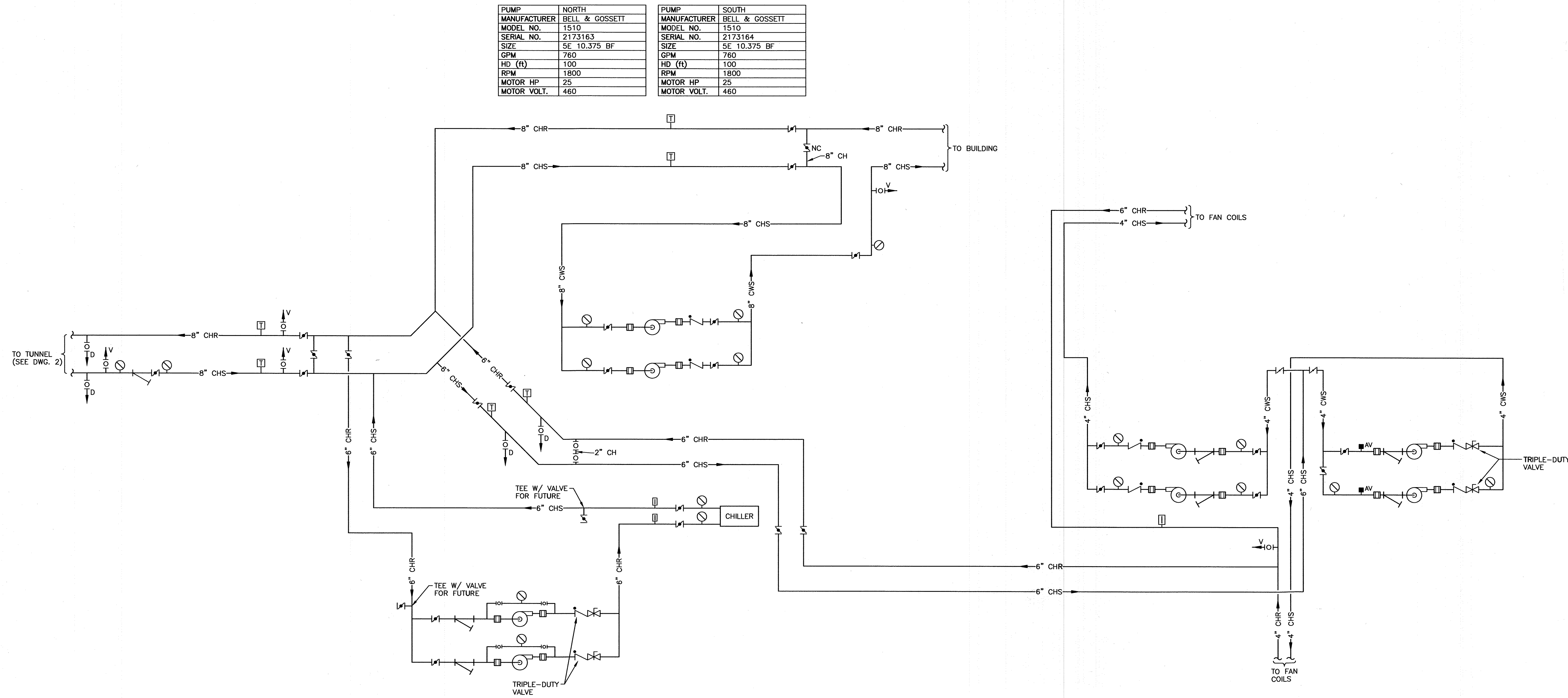
NO.	DATE	BY	REVISION DESCRIPTION

Howard R. Green Company
 CONSULTING ENGINEERS

STATE OF IOWA
DEPARTMENT OF GENERAL SERVICES
 CAPITOL COMPLEX DES MOINES, IOWA

CHILLED WATER DISTRIBUTION SYSTEM
GRIMES AND WORKFORCE DEVELOPMENT
BUILDING PIPING SCHEMATIC

SHEET NO.
5 OF 7



PUMP	NORTH	PUMP	SOUTH
MANUFACTURER	BELL & GOSSETT	MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510	MODEL NO.	1510
SERIAL NO.	2173163	SERIAL NO.	2173164
SIZE	5E 10.375 BF	SIZE	5E 10.375 BF
GPM	760	GPM	760
HD (ft)	100	HD (ft)	100
RPM	1800	RPM	1800
MOTOR HP	25	MOTOR HP	25
MOTOR VOLT.	460	MOTOR VOLT.	460

PUMP	NORTH	PUMP	SOUTH
MANUFACTURER	BELL & GOSSETT	MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510	MODEL NO.	1510
SERIAL NO.	2112113	SERIAL NO.	2112315
SIZE	3AB 6.625 BF	SIZE	3AB 6.625 BF
GPM	315	GPM	315
HD (ft)	30	HD (ft)	30
RPM	1800	RPM	1800
MOTOR HP	5	MOTOR HP	5
MOTOR VOLT.	208-230/460	MOTOR VOLT.	208-230/460

MANUFACTURER	CARRIER
NOMINAL CAPACITY	120 TONS
MODEL NO.	30HXC126R-600
SERIAL NO.	2998F57254
COMP	QTY VOLTS AC PH HZ RLA LRA
COMP	1 460 3 60 79.2 485
COMP	1 460 3 60 65.5 405

PUMP	EAST
MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510
SERIAL NO.	2182609
SIZE	4E 9.625 BF
GPM	450
HD (ft)	80
RPM	1800
MOTOR HP	15
MOTOR VOLT.	-

PUMP	WEST
MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510
SERIAL NO.	2182608
SIZE	4E 9.625 BF
GPM	450
HD (ft)	80
RPM	1800
MOTOR HP	15
MOTOR VOLT.	230/460

PUMP	SOUTH
MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510
SERIAL NO.	2113726
SIZE	3BB 9.5 BF
GPM	345
HD (ft)	60
RPM	1800
MOTOR HP	7.5
MOTOR VOLT.	230/460

PUMP	NORTH
MANUFACTURER	BELL & GOSSETT
MODEL NO.	1510
SERIAL NO.	2113727
SIZE	3BB 9.5 BF
GPM	345
HD (ft)	60
RPM	1800
MOTOR HP	7.5
MOTOR VOLT.	230/460

CAPITOL

DRAWN BY: MWH JOB DATE: AUGUST 2001
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 CAD FILE: 174550J\CLIENT\12.10.01\MM106.DWG (MHYBAU)

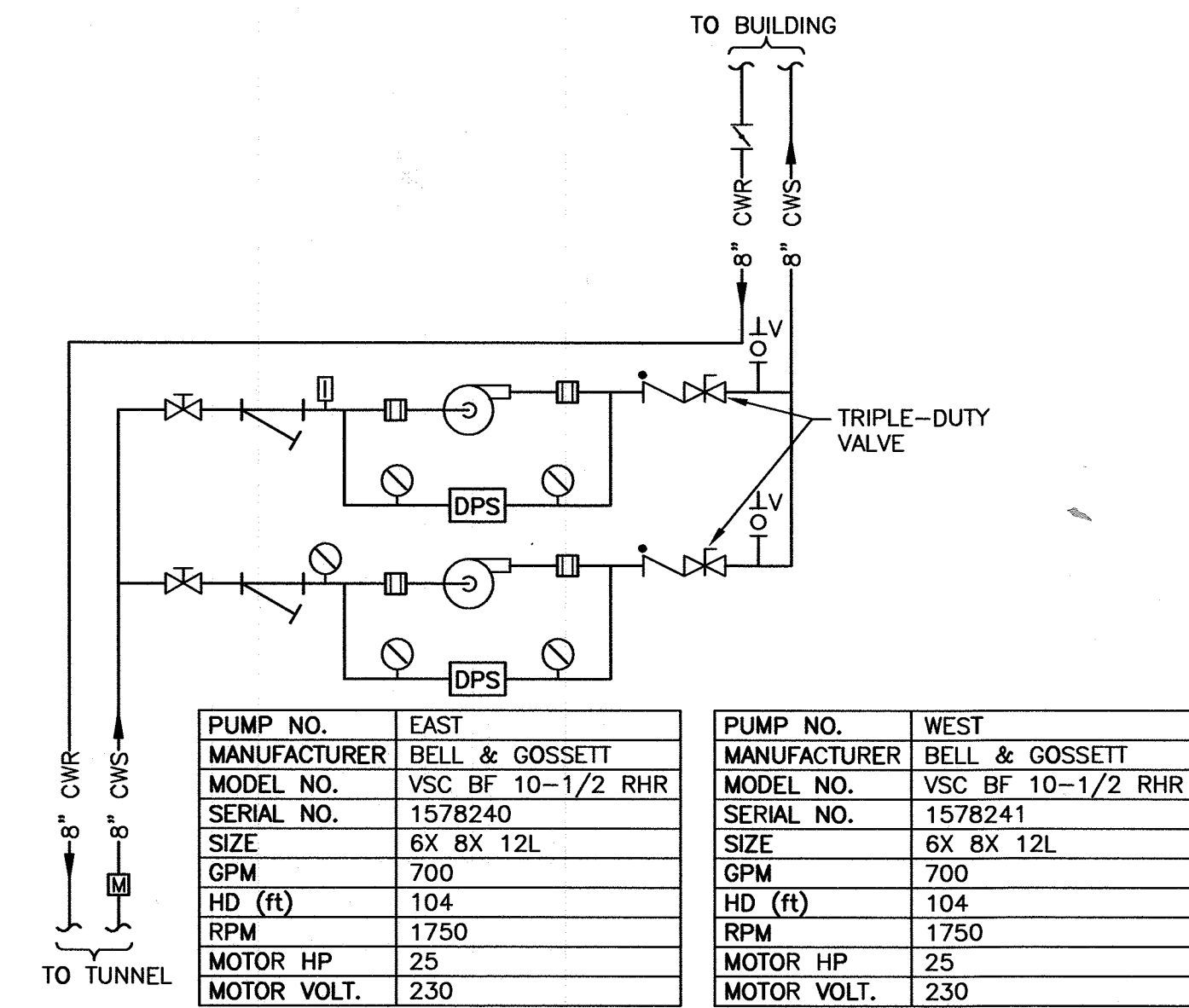
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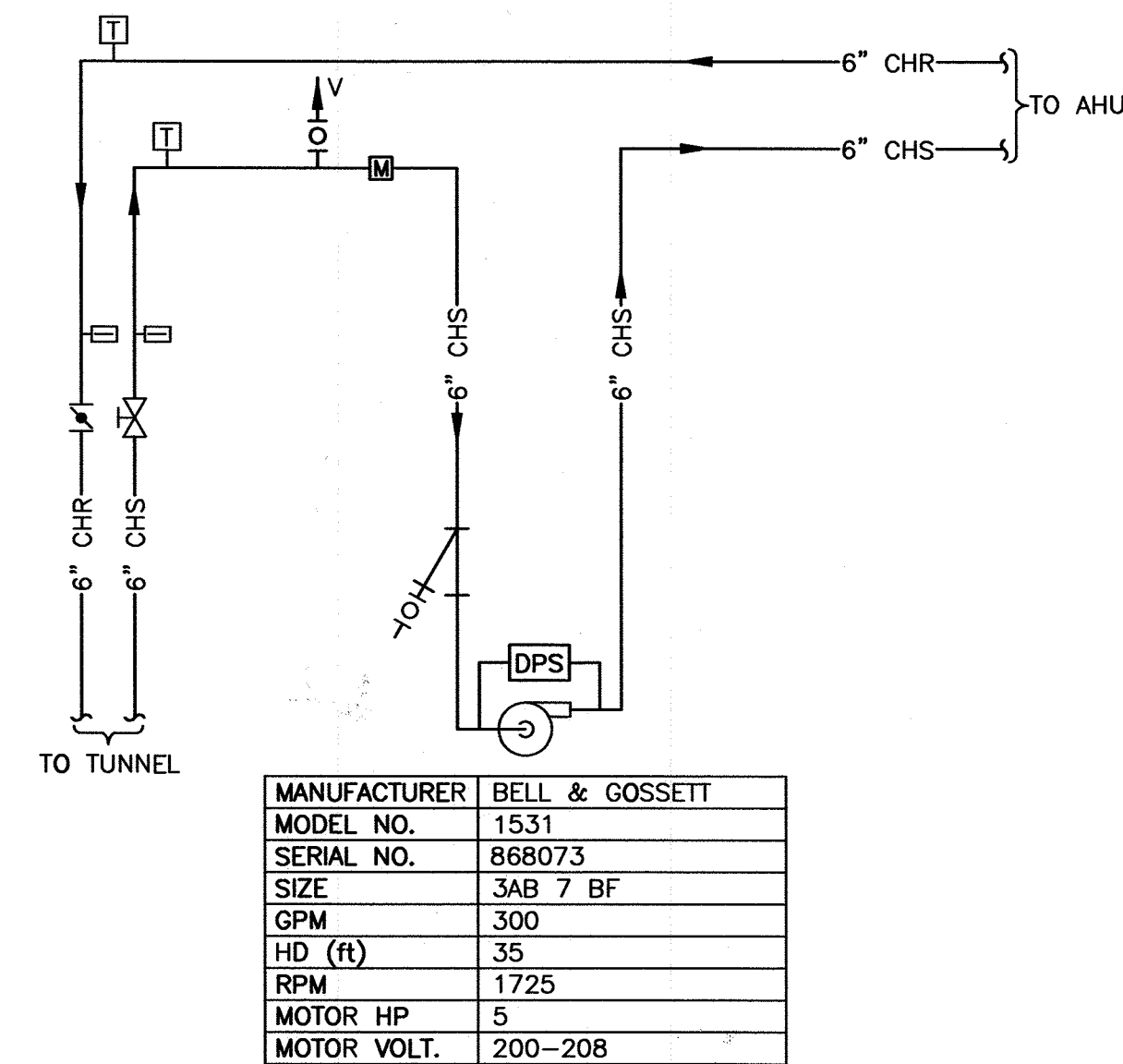
STATE OF IOWA
 DEPARTMENT OF GENERAL SERVICES
 CAPITOL COMPLEX DES MOINES, IOWA

CHILLED WATER DISTRIBUTION SYSTEM
 CAPITOL BUILDING PIPING SCHEMATIC

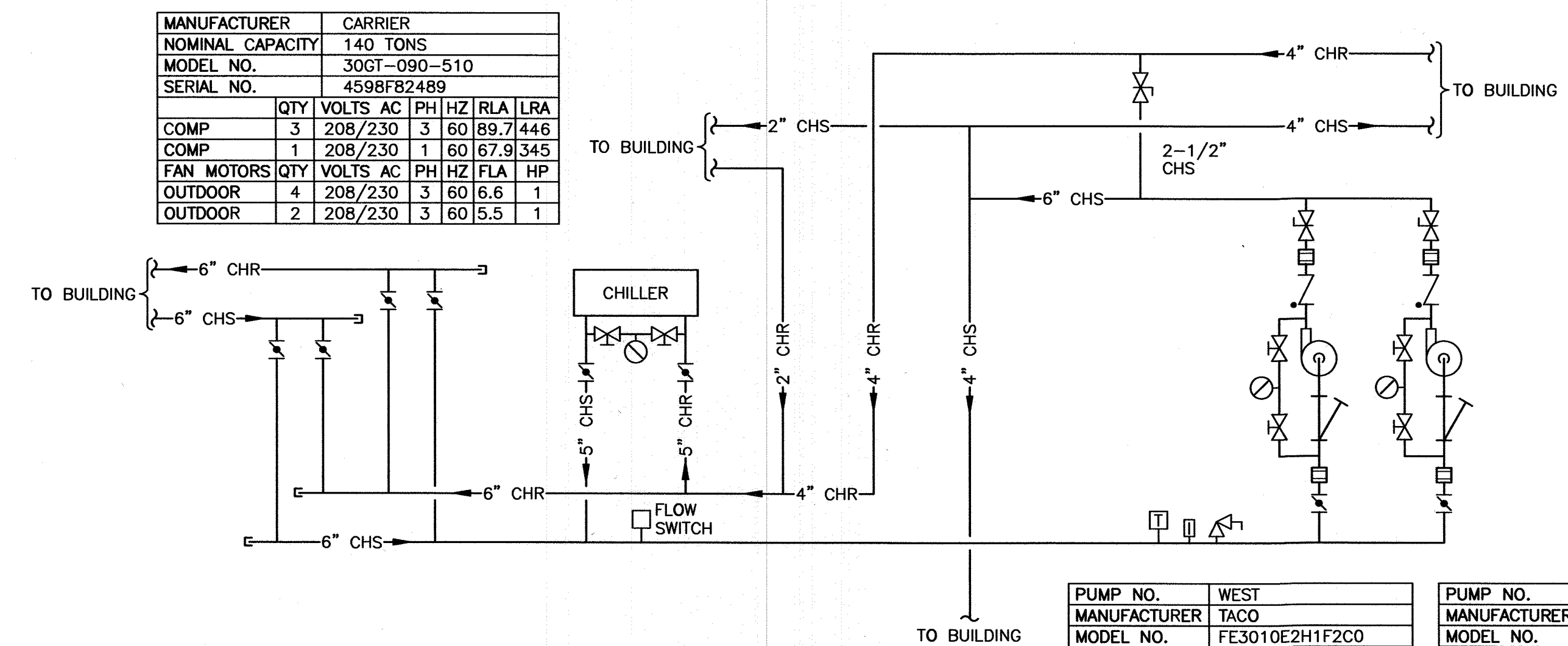
SHEET NO.
 6 OF 7



WALLACE



JESSE M. PARKER



OLD HISTORICAL

BOILER NO. 2 REPLACEMENT CENTRAL ENERGY PLANT

STATE OF IOWA CAPITOL COMPLEX

DEPARTMENT OF ADMINISTRATIVE SERVICES
DES MOINES, IOWA
GSE PROJECT NO. 1194.00

SHEET INDEX

GENERAL

G000 COVER SHEET

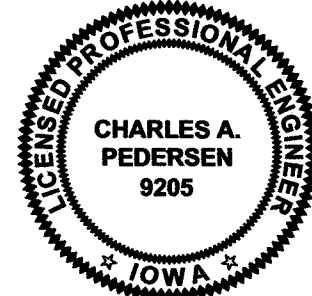
MECHANICAL

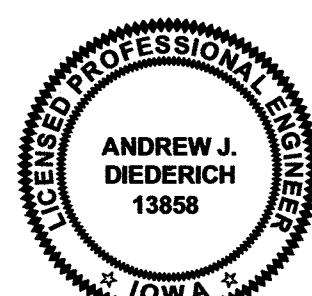
M000 MECHANICAL LEGEND, SYMBOLS AND ABBREVIATIONS
MM005 MECHANICAL DEMOLITION PLAN AND SECTIONS
MM101 MECHANICAL INSTALLATION PLAN
MM401 MECHANICAL EQUIPMENT AND PIPING SECTIONS
MM402 MECHANICAL EQUIPMENT ACCESS PLATFORMS

ELECTRICAL

E000 ELECTRICAL LEGEND, SYMBOLS AND ABBREVIATIONS
EP101 ELECTRICAL POWER PLAN

CERTIFICATION

	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. <i>Charles A. Pedersen</i> 2/9/04 CHARLES A. PEDERSEN, P.E. DATE License Number: 9205 My license renewal date is DECEMBER 31, 2004 Pages or sheets covered by this seal: M000, MM005, MM101, MM401, MM402
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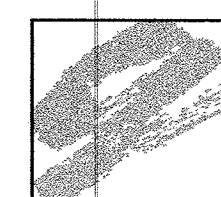
	I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa. <i>Andrew J. Diederich</i> 2/9/04 ANDREW J. DIEDERICH, P.E. DATE License Number: 13858 My license renewal date is DECEMBER 31, 2004 Pages or sheets covered by this seal: E000, EP101
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RECORD DRAWING

THIS DRAWING HAS BEEN REVISED TO REPRESENT THE RECORDS OF CONSTRUCTION AS BASED UPON BEST RECORDED INFORMATION AT THE TIME OF COMPLETION OF THE WORK SET FORTH ON THE DRAWING.

HOWARD R. GREEN COMPANY SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS THAT MAY HAVE BEEN INCORPORATED AS A RESULT OF ERRONEOUS INFORMATION PROVIDED BY OTHERS.

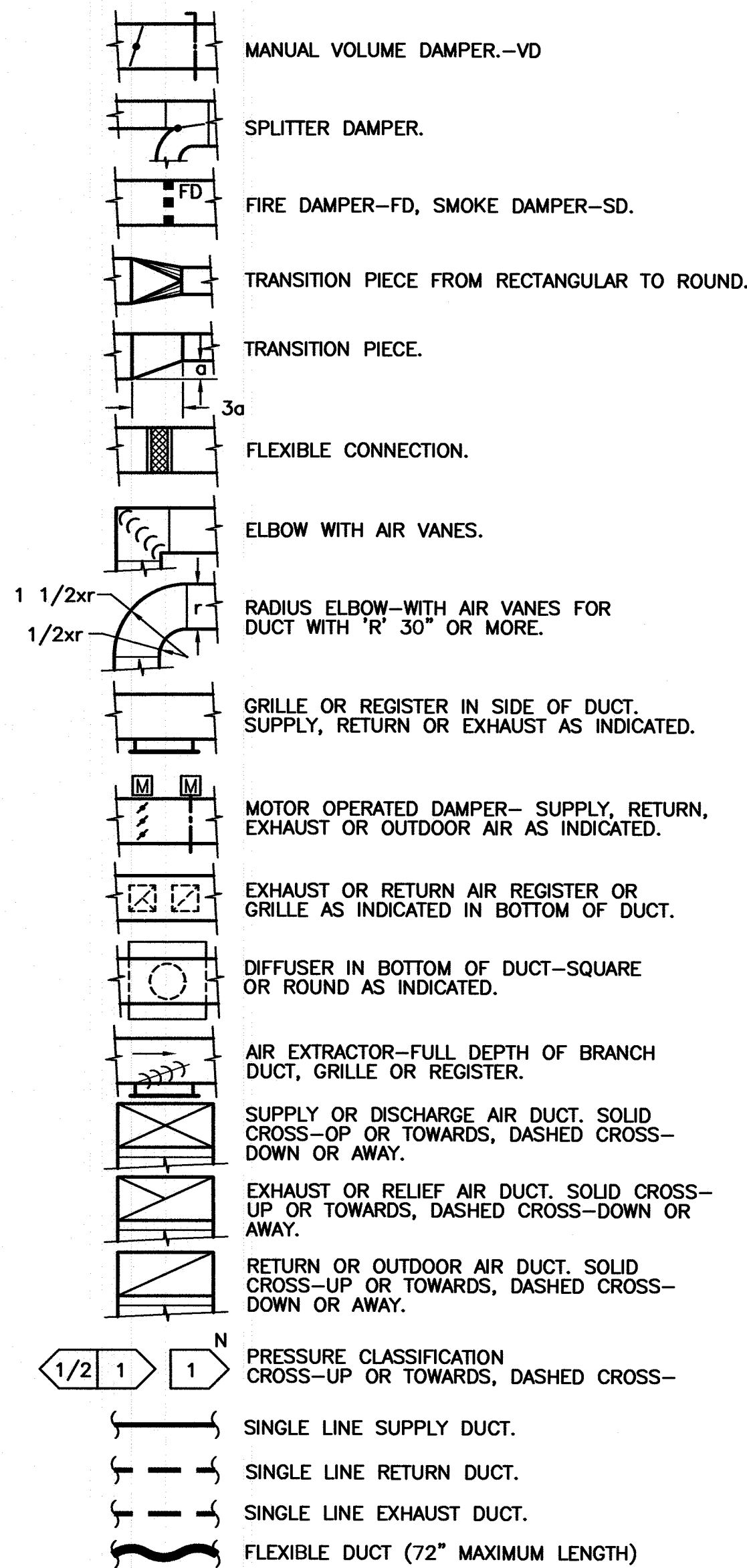
Howard R. Green Company DATE: 3/22/05



Howard R. Green Company
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4685 MERLE HAY ROAD SUITE 106, DES MOINES, IOWA 50322 (515) 278-2913 1-800-593-2339 FAX 515) 278-1846 <http://www.hrgreen.com>
CEDAR RAPIDS, IA DES MOINES, IA IOWA CITY, IA MOLINE, IL SIOUX FALLS, SD St. PAUL, MN

MECHANICAL SYMBOLS SHEETMETAL



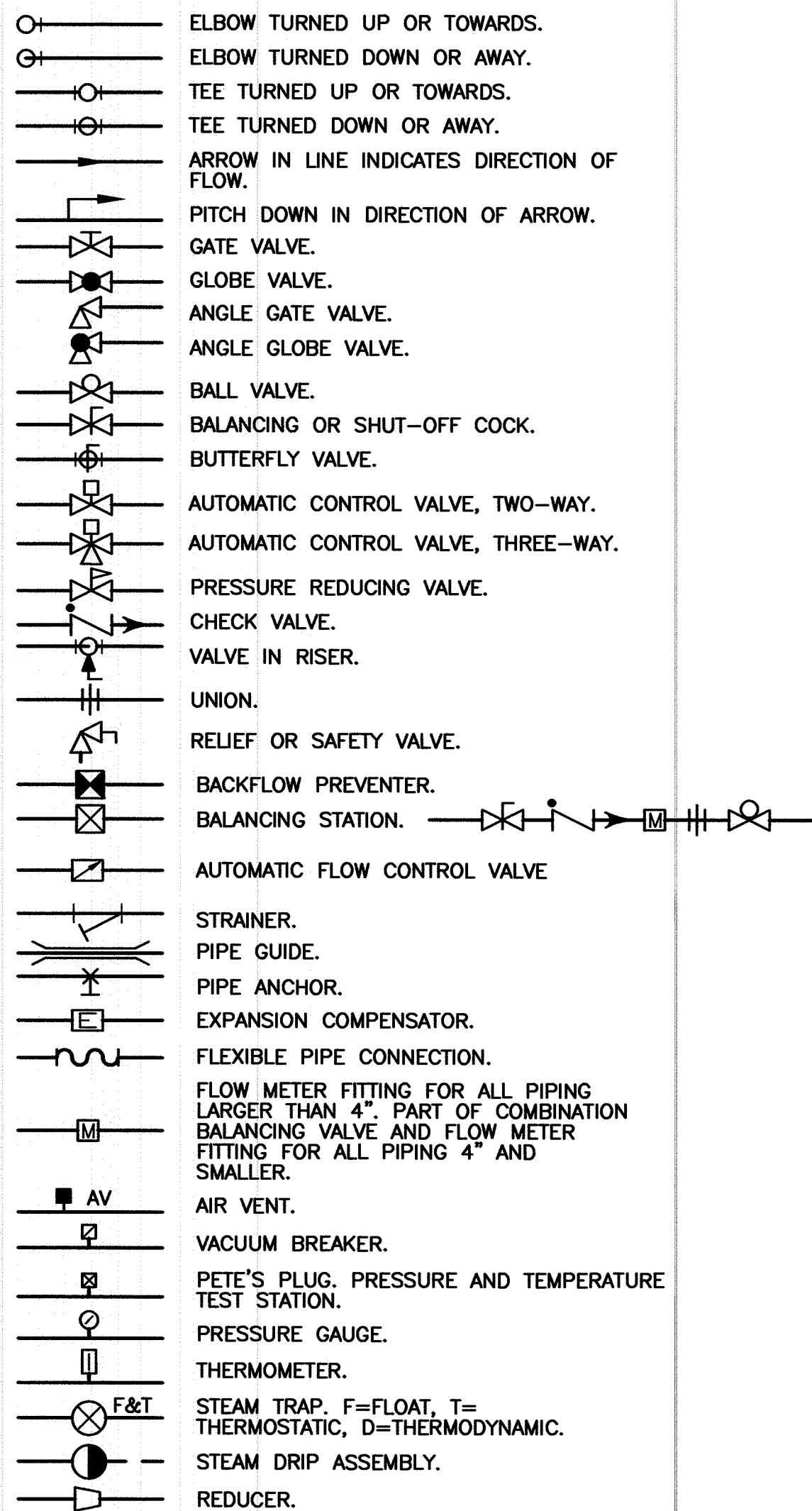
DUCT SIZES IN INCHES (CLEAR INTERIOR OPENING)

- RECTANGULAR DUCT HORIZONTAL WIDTH BY VERTICAL HEIGHT
- ROUND DUCT = Ø
- OVAL DUCT = ♂

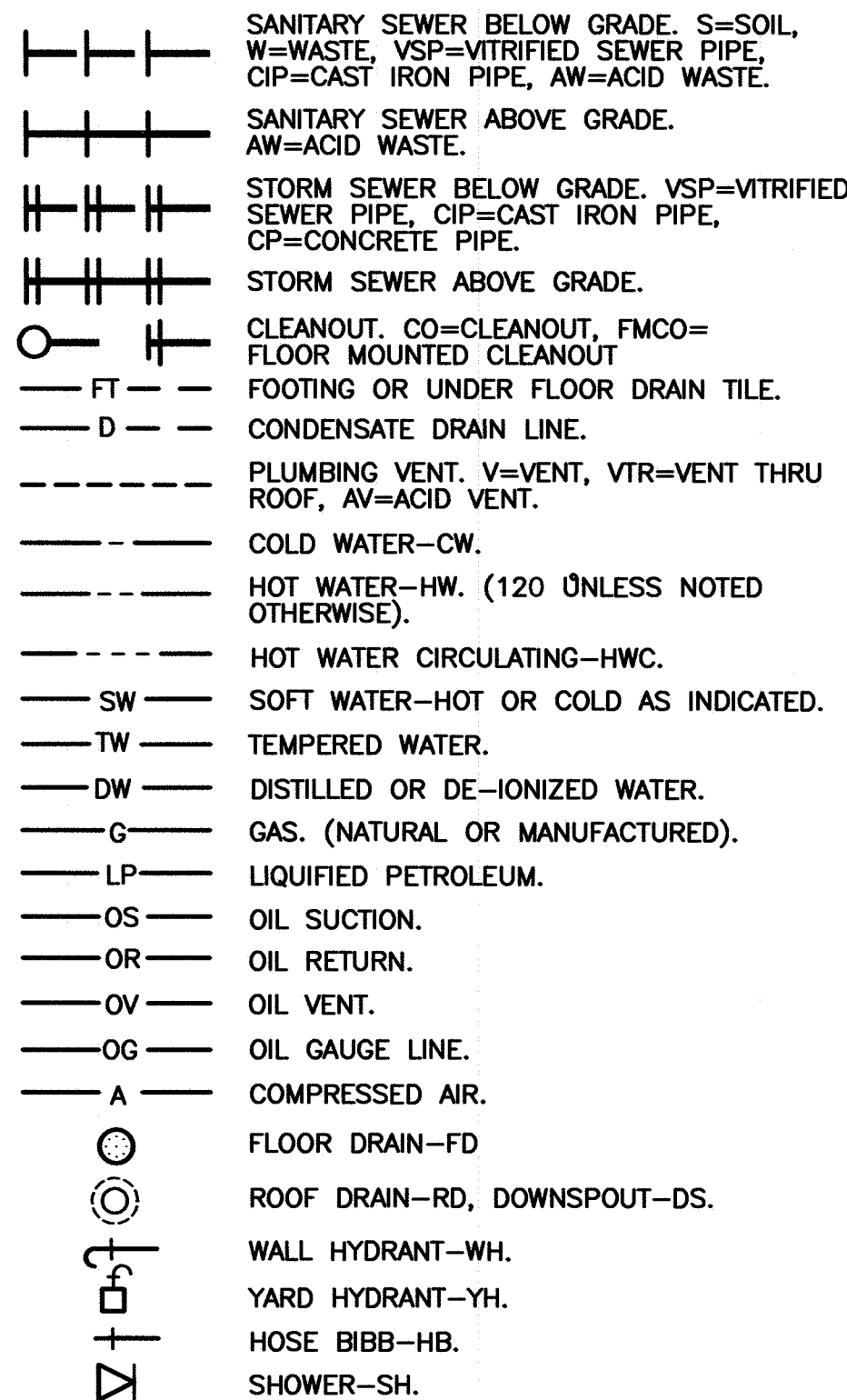
SHEETMETAL ABBREVIATIONS

SA - SUPPLY AIR	RG - RETURN GRILLE
RA - RETURN AIR	EG - EXHAUST GRILLE
EA - EXHAUST AIR	CD - CEILING DIFFUSER
SR - SUPPLY REGISTER	LD - LINEAR DIFFUSER
RR - RETURN REGISTER	FR - FLOOR REGISTER
ER - EXHAUST REGISTER	FG - FLOOR GRILLE
SG - SUPPLY GRILLE	BDD - BACK DRAFT DAMPER

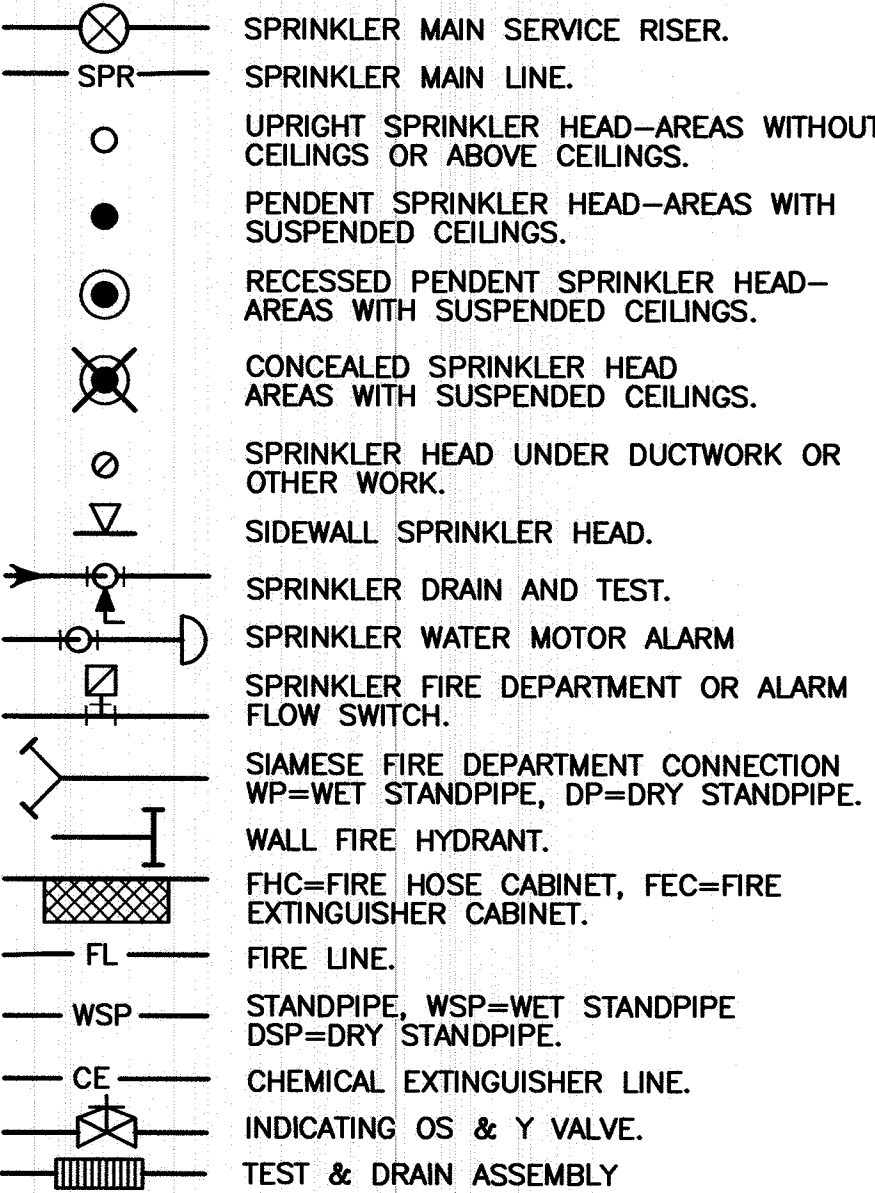
MECHANICAL SYMBOLS PIPING SPECIALTIES



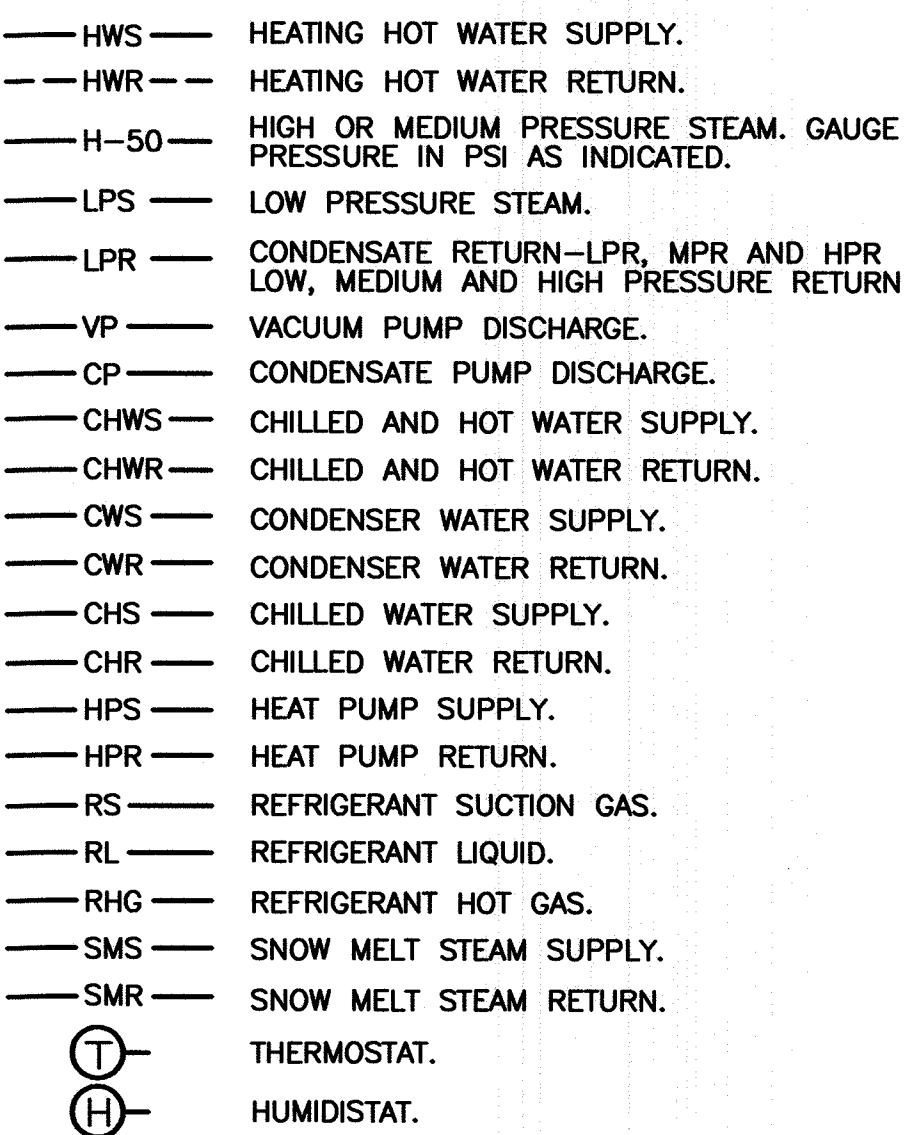
MECHANICAL SYMBOLS PLUMBING



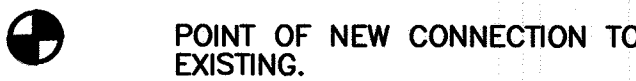
MECHANICAL SYMBOLS FIRE PROTECTION



MECHANICAL SYMBOLS HVAC



MISCELLANEOUS



NOTE: NOT ALL SYMBOLS SHOWN MAY BE REQUIRED FOR THIS PROJECT.

DRAWN BY: MWH JOB DATE: FEBRUARY, 2004
APPROVED: CAP JOB NUMBER: 523570J
CAD DATE: February 06, 2004 11:22:26 a.m.
CAD FILE: 523570J\Drawgs\M-M-000.DWG (MHYMBAU)

NO.	DATE	BY	REVISION DESCRIPTION
1	3/22/05	CAP	PLAN OF RECORD



BOILER NO. 2 REPLACEMENT
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE CAPITOL COMPLEX

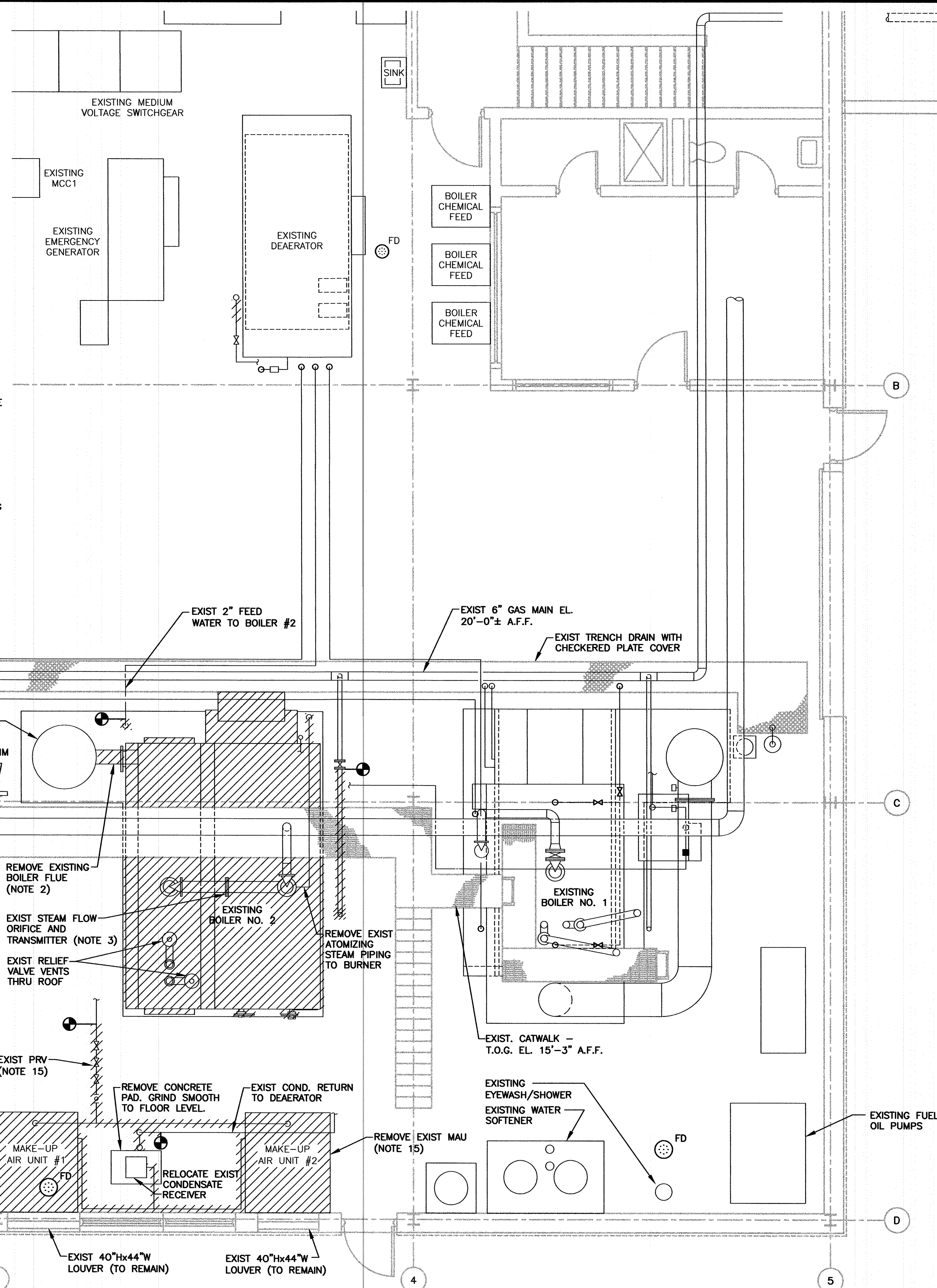
MECHANICAL
CENTRAL ENERGY PLANT
LEGEND, SYMBOLS AND ABBREVIATIONS

SHEET NO.

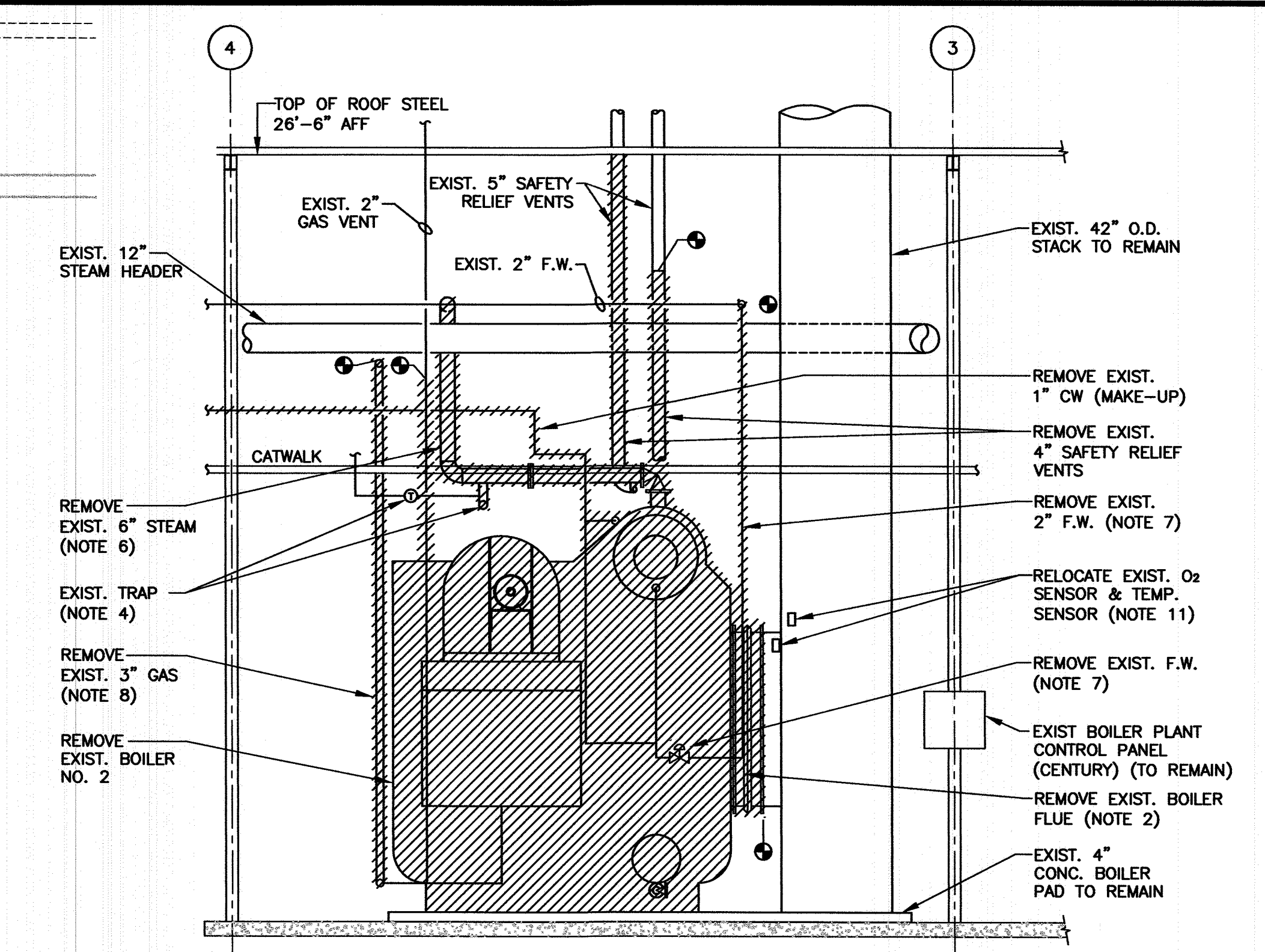
M000

DEMOLITION NOTES

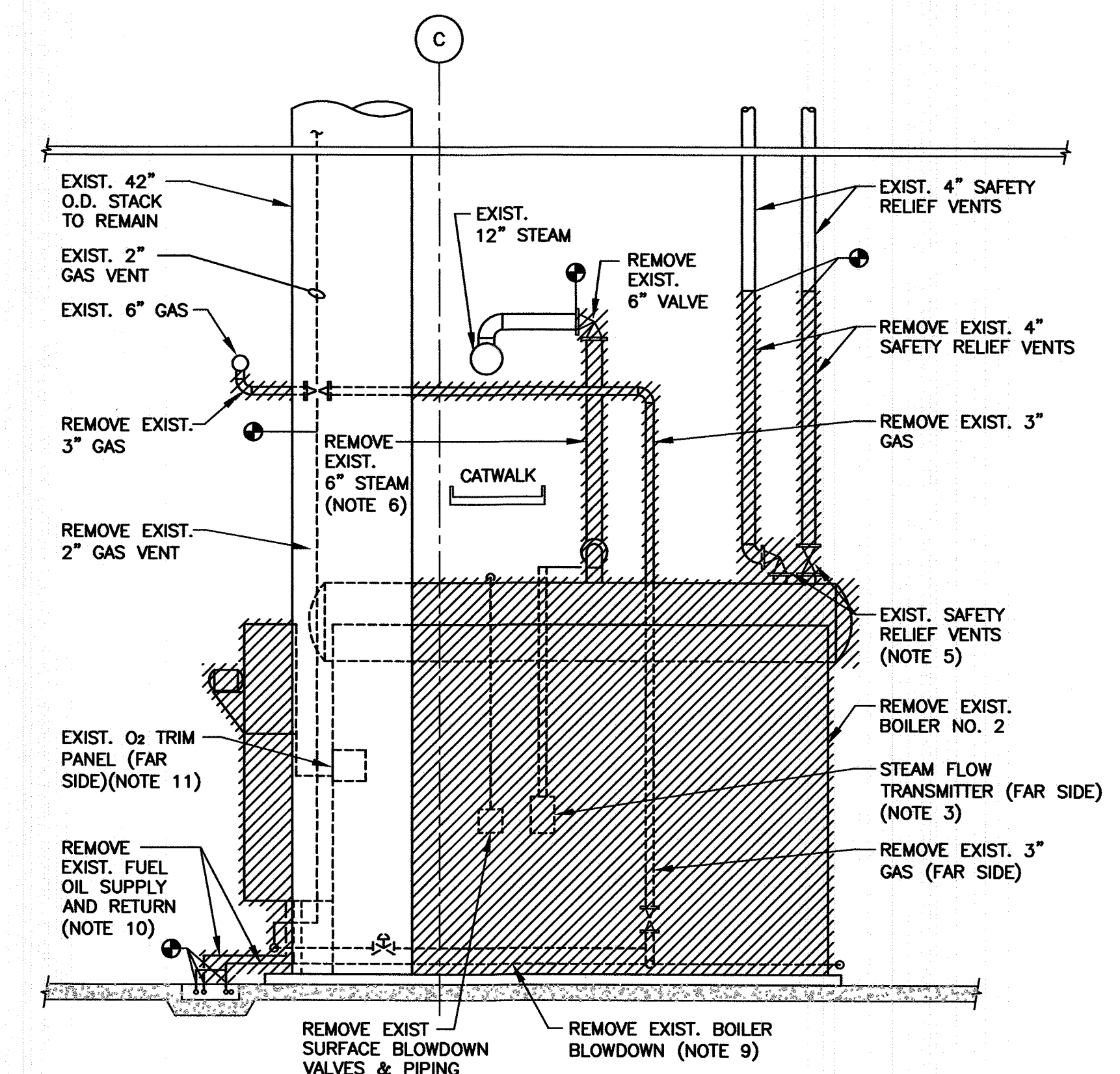
- CONTRACTOR SHALL COMPLETELY REMOVE EXISTING BOILER NO. 2. THE BOILER SHALL BE REMOVED FROM THE BUILDING AND FROM THE SITE INTACT. REMOVE FROM THE BUILDING USING ADEQUATE NUMBER AND SPACING OF ROLLERS TO ASSURE THAT EXISTING 6" CONCRETE FLOOR IS NOT DAMAGED. ANY DAMAGE INCURRED SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
- REMOVE EXISTING BOILER FLUE TO THE STACK FLANGE CONNECTION. FLANGED CONNECTION SHALL BE COVERED WITH 3/8" THICK STEEL PLATE. PROVIDE INSULATION AND ALUMINUM JACKET TO MATCH EXISTING.
- REMOVE EXISTING STEAM FLOW TRANSMITTER, ORIFICE, PIPING, BLOWDOWN PIPING AND TUBING.
- REMOVE EXISTING TRAP SYSTEM DRIP POCKET. EXISTING TRAP SYSTEM SHALL BE REUSED. SEE DRAWING MM101.
- REMOVE EXISTING RELIEF VALVES, DRIP PAN AND DRIP PAN DRAIN PIPING. REMOVE VENT PIPING TO LOCATION SUITABLE FOR INSTALLATION OF NEW RELIEF VALVE VENT PIPING. SEE DRAWING MM101.
- REMOVE EXISTING 6" BOILER STEAM STOP/CHECK VALVE, PIPING, HANGERS, ETC. TO EXISTING 6" ANGLE VALVE AT 12" MAIN.
- REMOVE EXISTING FEEDWATER CONTROL VALVE, VALVES, PIPING, HANGERS, ETC.
- REMOVE EXISTING GAS SUPPLY PIPING FROM LOCATION SHOWN INCLUDING BOILER GAS TRAIN AND PILOT GAS PIPING. COORDINATE SHUTDOWN OF GAS SYSTEM WITH OWNER.
- REMOVE ALL BLOWDOWN PIPING TO THE BLOWDOWN MAIN IN THE TRENCH. PROVIDE TEMPORARY CAP.
- REMOVE FUEL OIL SUPPLY AND RETURN PIPING TO CONNECTION IN THE TRENCH. PROVIDE TEMPORARY CAP.
- RELOCATE EXISTING O₂ TRIM PANEL. RELOCATE EXISTING O₂ SENSOR AND TEMPERATURE SENSOR ON STACK.
- CONTRACTOR SHALL REMOVE ALL CONDUIT AND WIRING FROM BOILER TO MCC. ALL UNDERFLOOR CONDUIT SHALL REMAIN. REMOVE CONDUIT TO BELOW FLOOR LINE. GROUT LEVEL TO FLOOR.
- CONTRACTOR SHALL REMOVE ALL MISC. PIPING, TUBING, CONDUIT AND WIRING ABANDONED THROUGH REMOVAL OF THE BOILER.
- CONTRACTOR SHALL REMOVE AND REPLACE MISC. PIPING, TUBING, CONDUIT AND WIRING REQUIRED FOR REMOVAL OF THE BOILER.
- CONTRACTOR SHALL COMPLETELY REMOVE EXISTING MAKE-UP AIR UNITS #1 & #2, INCLUDING THE EXISTING PRV STATION, SAFETY RELIEF VALVE, AND STEAM PIPING, AS REQUIRED. REMOVE CONDENSATE PIPING TO EXISTING CONDENSATE RECEIVER.



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



2 BOILER ELEVATION LOOKING SOUTH
SCALE: 1/4" = 1'-0"



3 BOILER ELEVATION LOOKING EAST
SCALE: 1/4" = 1'-0"

DRAWN BY: MWH JOB DATE: FEBRUARY, 2004
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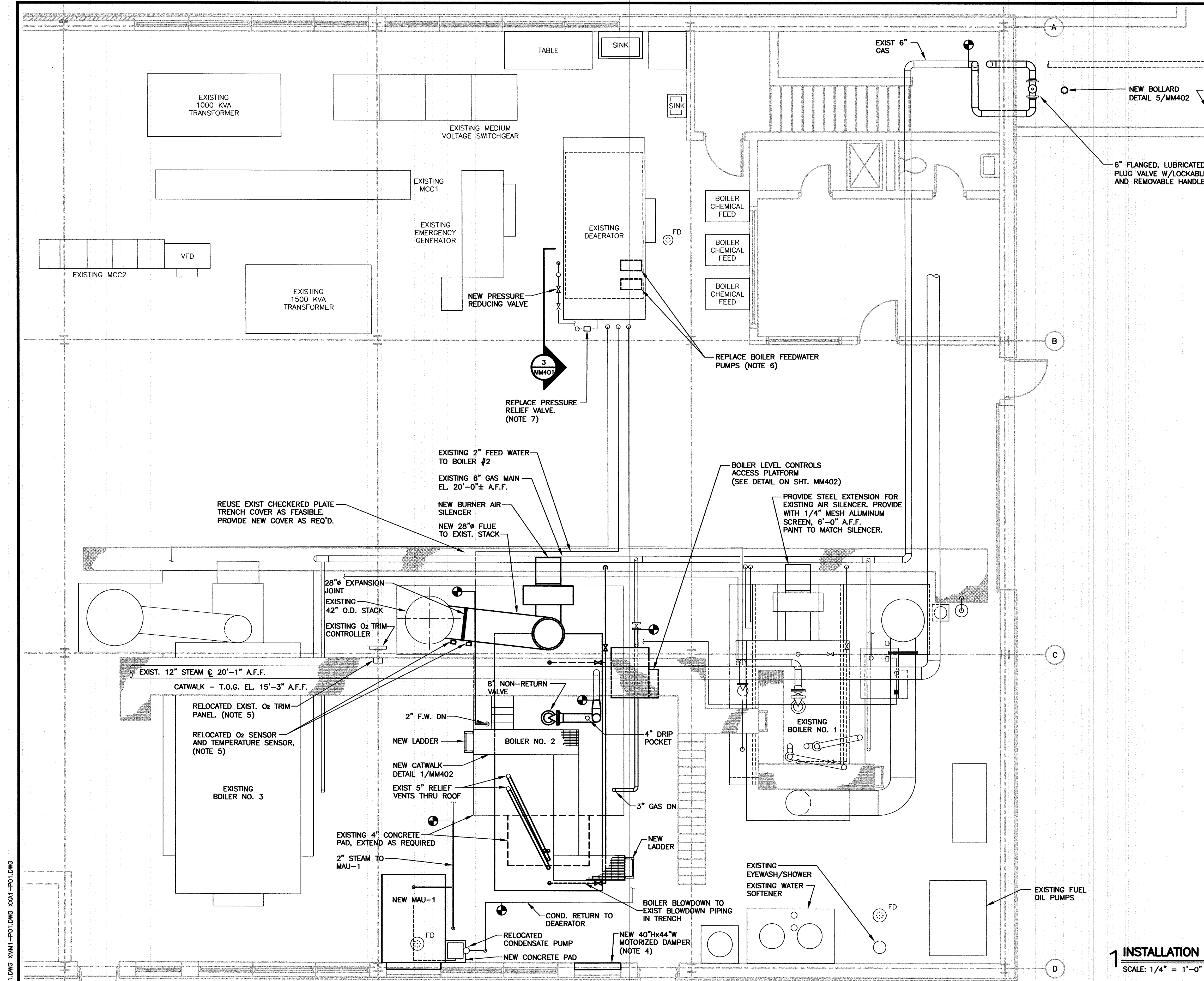
NO.	DATE	BY	REVISION DESCRIPTION
1	3/22/05	CAP	PLAN OF RECORD

Howard R. Green Company
CONSULTING ENGINEERS

BOILER NO. 2 REPLACEMENT
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE CAPITOL COMPLEX

MECHANICAL
CENTRAL ENERGY PLANT
DEMOLITION PLAN AND SECTIONS

SHEET NO.
MM005



INSTALLATION NOTES

- CONTRACTOR SHALL FURNISH AND INSTALL COMPLETE AND OPERABLE, NEW BOILER NO. 2, INCLUDING CONNECTIONS TO EXISTING STEAM, FEEDWATER, STACK, GAS, FUEL OIL, BLOWDOWN AND ELECTRICAL SYSTEMS.
- BOILER ARRANGEMENT, CONNECTIONS, ETC. SHOWN ARE BASED ON A BURNHAM, MODEL 4SP-600, FOUR-PASS BOILER. CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR REQUIRED FOR REVISIONS TO PIPING, BREACHING, ELECTRICAL, ACCESS PLATFORMS, AND MISC. SYSTEMS TO ACCOMMODATE FURNISHING A BOILER OTHER THAN A BURNHAM BOILER.
- EXISTING FUEL SUPPLY PRESSURES ARE:
NATURAL GAS - 12 PSIG
FUEL OIL - 100 - 120 PSIG
- EXISTING WALL LOUVER SHALL REMAIN. FURNISH AND INSTALL A NEW MOTORIZED COMBUSTION AIR DAMPER AT THE INSIDE FACE OF THE LOUVER. DAMPER SHALL OPEN WHEN MAU-1 SHUTS DOWN ON FREEZE PROTECTION.
- CONTRACTOR SHALL RELOCATE EXISTING BOILER NO. 2 O₂ TRIM PANEL AS INDICATED. EXISTING O₂ TRIM PANEL IS CONTROLLED BY AN EXISTING CENTURY CONTROLS, MODEL CC700 COMBINATION O₂ TRIM CONTROLLER AND BOILER SEQUENCER, LOCATED BETWEEN BOILERS NO. 2 & NO. 3. NEW BOILER NO. 2 SHALL BE CONNECTED TO EXISTING CONTROLLER FOR O₂ TRIM AND BOILER SEQUENCE CONTROL. RELOCATE EXISTING FAN LINKAGE ACTUATOR AND LOAD POTENTIOMETER. RELOCATE SENSORS, AS SHOWN. INSTALL CONDUIT AND WIRING, AS REQUIRED.
- CONTRACTOR SHALL REPLACE TWO (2) SHIPCO BOILER FEEDWATER PUMPS, MODEL P, TYPE 129, 15 HP WITH TWO (2) FEEDWATER PUMPS AS SCHEDULED. PROVIDE NEW CONDUIT AND WIRING FROM DEAERATOR CONTROL PANEL TO PUMPS. PROVIDE ALL NECESSARY ELECTRICAL MODIFICATIONS TO DEAERATOR CONTROL PANEL (CIRCUIT BREAKER, STARTER, OVERLOADS) AS REQUIRED. REPLACE THE CARTRIDGE IN THE EXISTING GRISWOLD FLOW CONTROL AT THE DISCHARGE OF EACH FEEDWATER PUMP WITH A CARTRIDGE SUITABLE FOR 130 GPM.
- REMOVE EXISTING PRESSURE RELIEF VALVE. FURNISH AND INSTALL A NEW ORIFICE NIPPLE, 1/2" ORIFICE, STAINLESS STEEL BODY, 6" LONG. REPLACE EXISTING ELBOW DIRECTLY DOWNSTREAM OF THE ORIFICE WITH A 3000# FORGED STEEL, THREADED ELBOW.

BOILER SCHEDULE				
DESCRIPTION	BOILER NO. 2			
TYPE	FIRE-TUBE, 4-PASS			
RATED BOILER HORSEPOWER	600			
CAPACITY (LBS/HR STEAM)	20,700			
HEATING SURFACE (MIN. SQ. FT.)	3,000			
DESIGN PRESSURE (PSIG)	150			
OPERATING PRESSURE (PSIG)	100			
FUEL	GAS AND #2 FUEL OIL			
ELECTRICAL POWER	480V, 3 PH, 60 HZ.			
BLOWER MOTOR, HORSEPOWER	30			
EFFICIENCY-GAS (MIN. EFF/%LOAD)	82.0/100	82.2/75	82.2/50	82.0/25 *
EFFICIENCY-#2 F.O. (MIN. EFF/% LOAD)	85.5/100	85.7/75	85.7/50	85.3/25 *
MANUFACTURER / MODEL NO.	BURNHAM / MODEL 4SP-600			

* FUEL-TO-STEAM EFFICIENCY

BOILER FEEDWATER PUMP SCHEDULE		
DESCRIPTION	BFP-1	BFP-2
TYPE	CENTRIFUGAL	CENTRIFUGAL
CAPACITY (GPM)	130	130
TOTAL HEAD (PSI)	135	135
RPM	3500	3500
MOTOR, HP	20	20
MOTOR, VOLT/PH/HZ	480V, 3 PH, 60 HZ.	480V, 3 PH, 60 HZ.
MANUFACTURER/MODEL	SHIPCO/MODEL P, TYPE 129	SHIPCO/MODEL P, TYPE 129

PUMP CAPACITY INCLUDES 20 GPM RECIRCULATION FLOW.

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



Xref: XXA1-PO1.DWG XXA1-PO1.DWG XXA1-PO1.DWG

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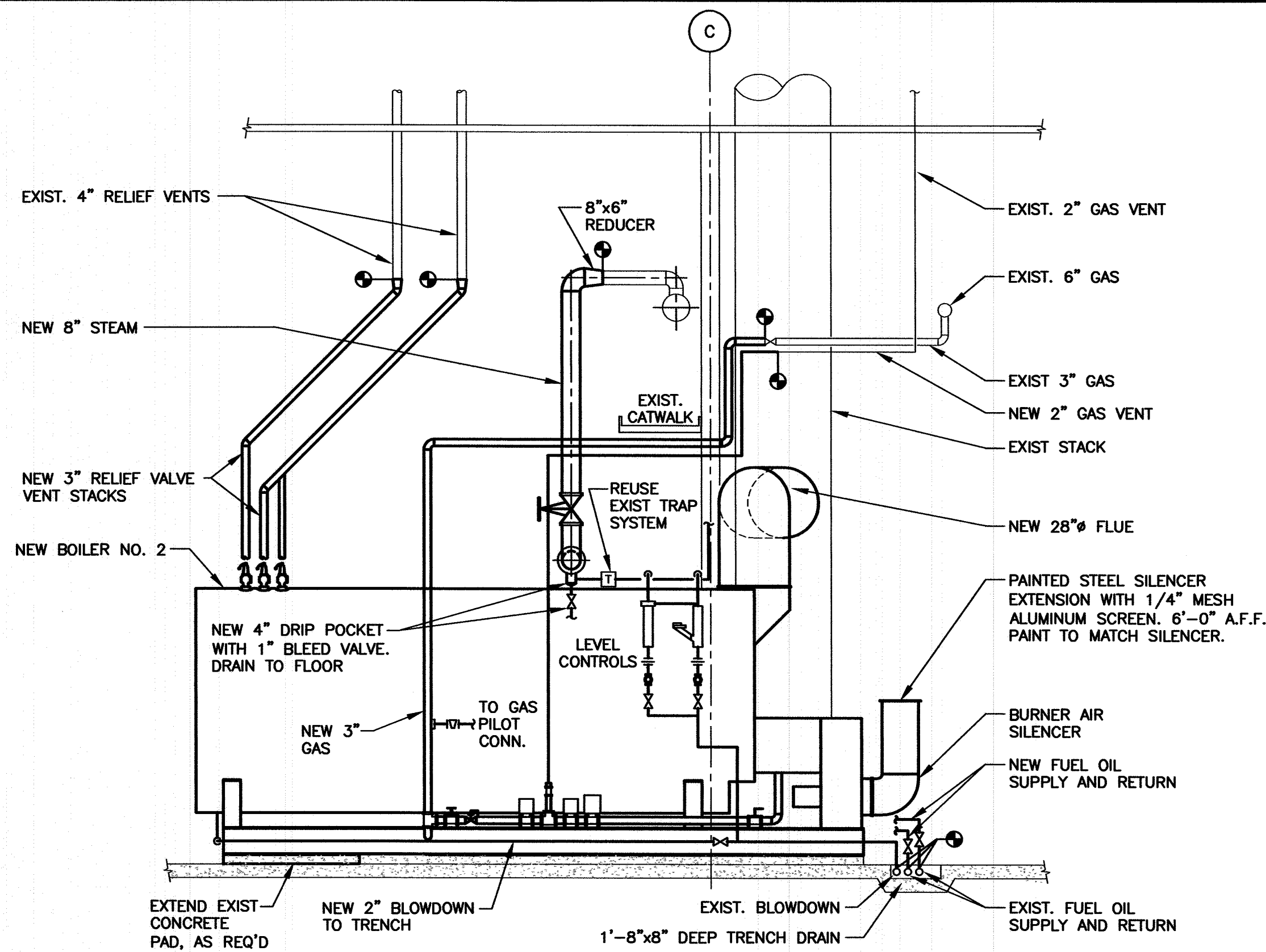
NO.	DATE	BY	REVISION DESCRIPTION
1	3/22/05	CAP	PLAN OF RECORD

Howard R. Green Company
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BOILER NO. 2 REPLACEMENT
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE CAPITOL COMPLEX

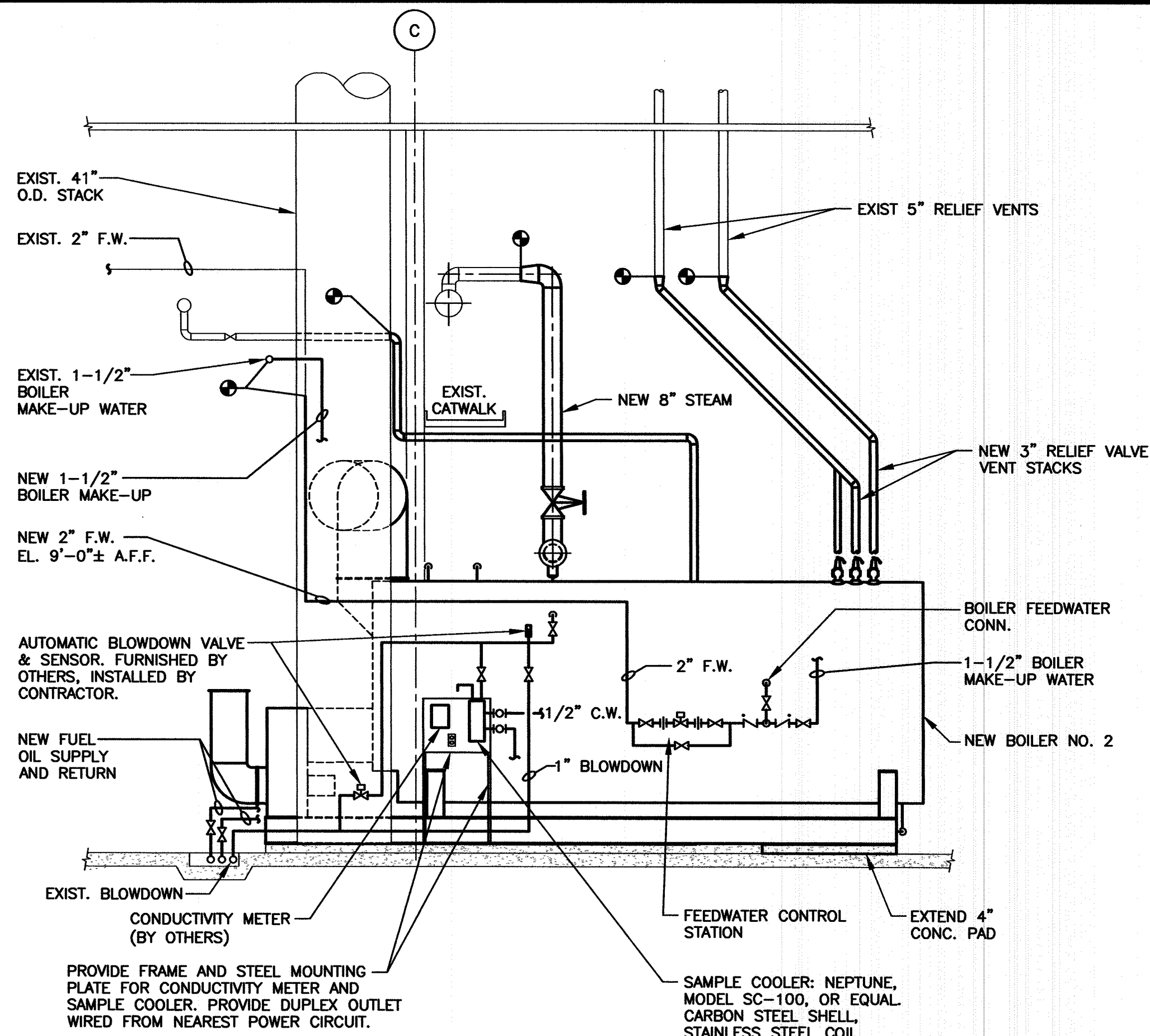
MECHANICAL
CENTRAL ENERGY PLANT
INSTALLATION PLAN

SHEET NO.
MM101



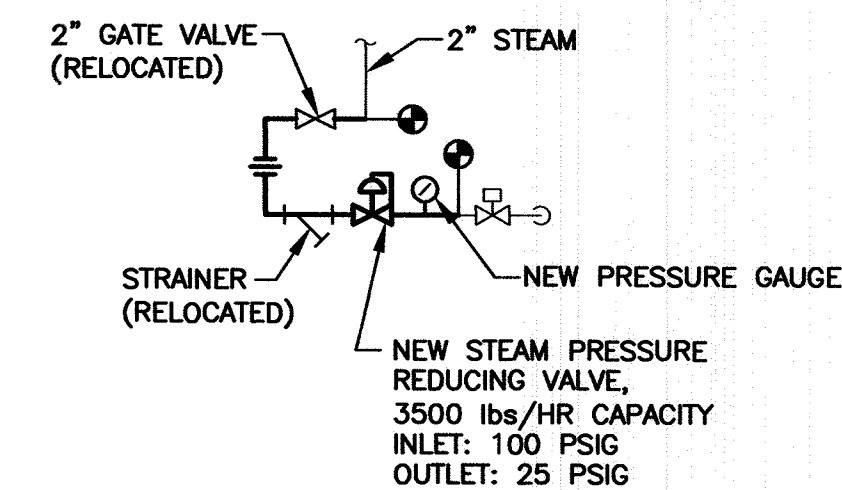
1 BOILER SECTION LOOKING WEST

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



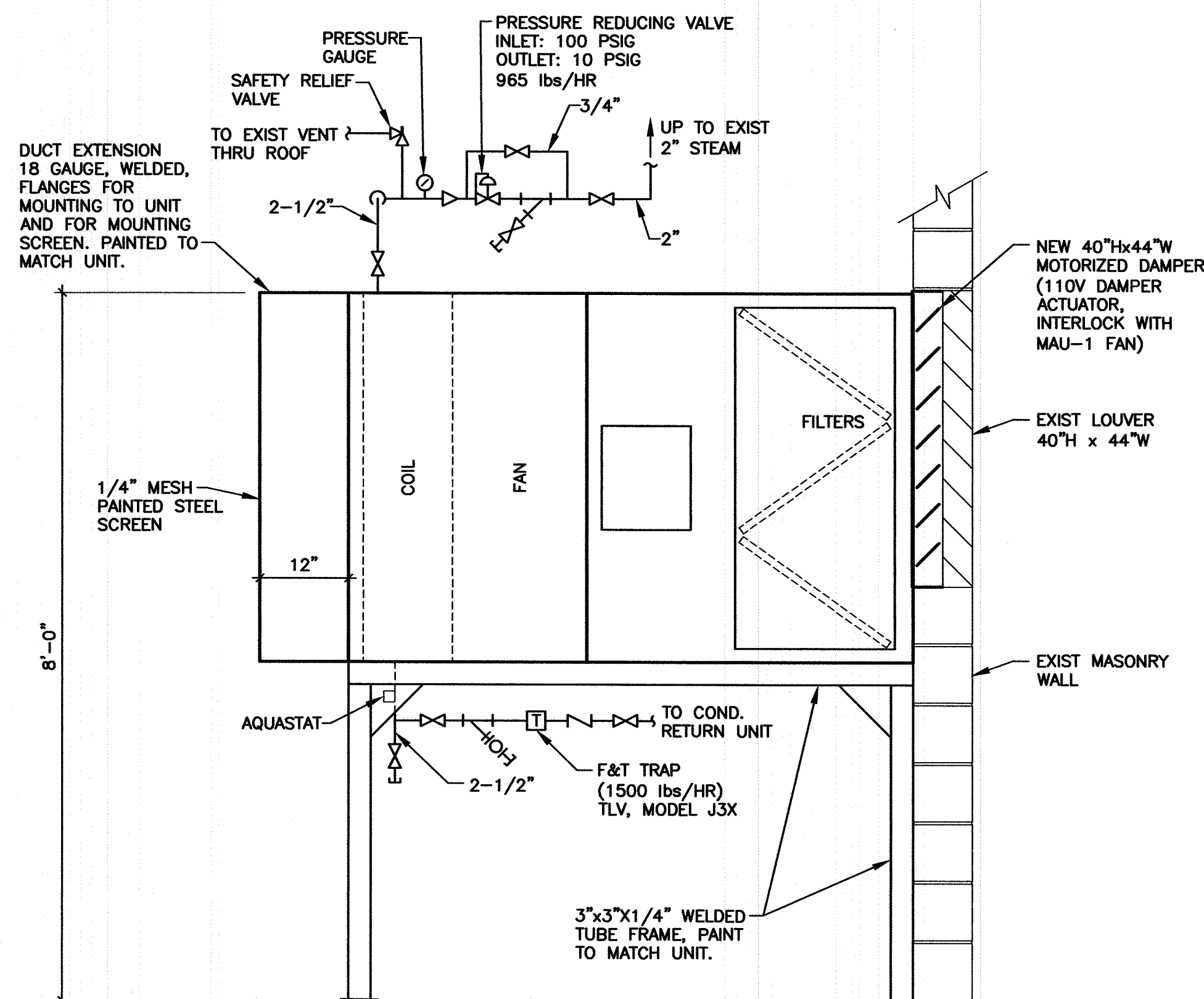
2 BOILER SECTION LOOKING EAST

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



3 DETAIL - DEARATOR PRV

SCALE: NONE



4 DETAIL - MAKE-UP AIR UNIT (MAU-1)

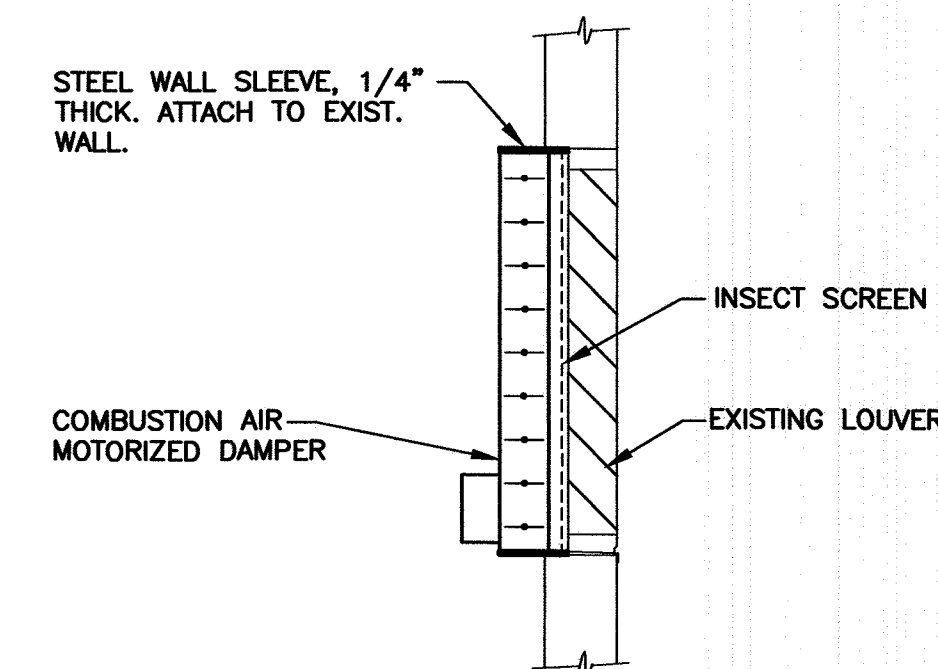
SCALE: 3/4" = 1'-0"

STEAM MAKE-UP AIR UNIT										
PLAN MARK	CFM	EXT. S.P. INCHES	FAN HP	FAN VOLTS	FAN PH	STEAM COIL (PSIG)	ENT. AIR (°F)	LVG. AIR (°F)	CAPACITY (MBTUH)	MANUFACTURER & MODEL NO.
MAU-1	10,500	0.15	2	480	3	10	-10	75	965	L.J. WING, FAS-U38

1. FILTER SECTION W/2" PLEATED FILTERS.
2. PNEUMATIC CONTROLS W/AIRSTREAM THERMOSTAT.
3. OPTIONAL CONTROLS - FREEZESTAT, AQUASTAT. IF NOT FACTORY SUPPLIED AND/OR MOUNTED ON UNIT CONTRACTOR SHALL PROVIDE, INSTALL, AND WIRE TO UNIT CONTROL.

COMBUSTION AIR - SEQUENCE OF OPERATION

1. MAKE-UP AIR UNIT (MAU-1): MAKE-UP AIR UNIT SHALL BE STARTED AND STOPPED MANUALLY AT EXISTING STARTER, IN EXISTING MCC. WHEN MANUALLY STARTED THE OUTDOOR AIR DAMPER SHALL OPEN AND FAN SHALL START. THE MAKE-UP AIR UNIT CONTROLS SHALL AUTOMATICALLY CONTROL THE FACE AND BYPASS DAMPERS TO MAINTAIN THE SETPOINT DISCHARGE AIR TEMPERATURE. WHEN STOPPED THE FAN SHALL STOP, THE OUTDOOR DAMPER SHALL CLOSE, AND THE FACE & BYPASS DAMPERS SHALL CLOSE. FREEZE PROTECTION FOR THE MAKE-UP AIR UNIT SHALL CONSIST OF A DISCHARGE AIR FREEZESTAT OR AQUASTAT, THE FAN SHALL STOP, THE FACE AND BYPASS DAMPERS SHALL CLOSE, AND THE OUTDOOR AIR DAMPER SHALL CLOSE.
2. COMBUSTION AIR DAMPER: THE MOTORIZED COMBUSTION AIR DAMPER SHALL OPEN ONLY ON FREEZE PROTECTION SHUTDOWN OF MAKE-UP AIR UNIT (MAU-1).



5 DETAIL - COMBUSTION AIR DAMPER

SCALE: N.T.S.

(TYP. - 2)

DRAWN BY: MWH JOB DATE: FEBRUARY, 2004
 APPROVED: CAP JOB NUMBER: 175280J
 CAD DATE: February 06, 2004 11:31:15 a.m.
 CAD FILE: 523570J\Drawgs\M\MM-401.DWG (MHYBAU)

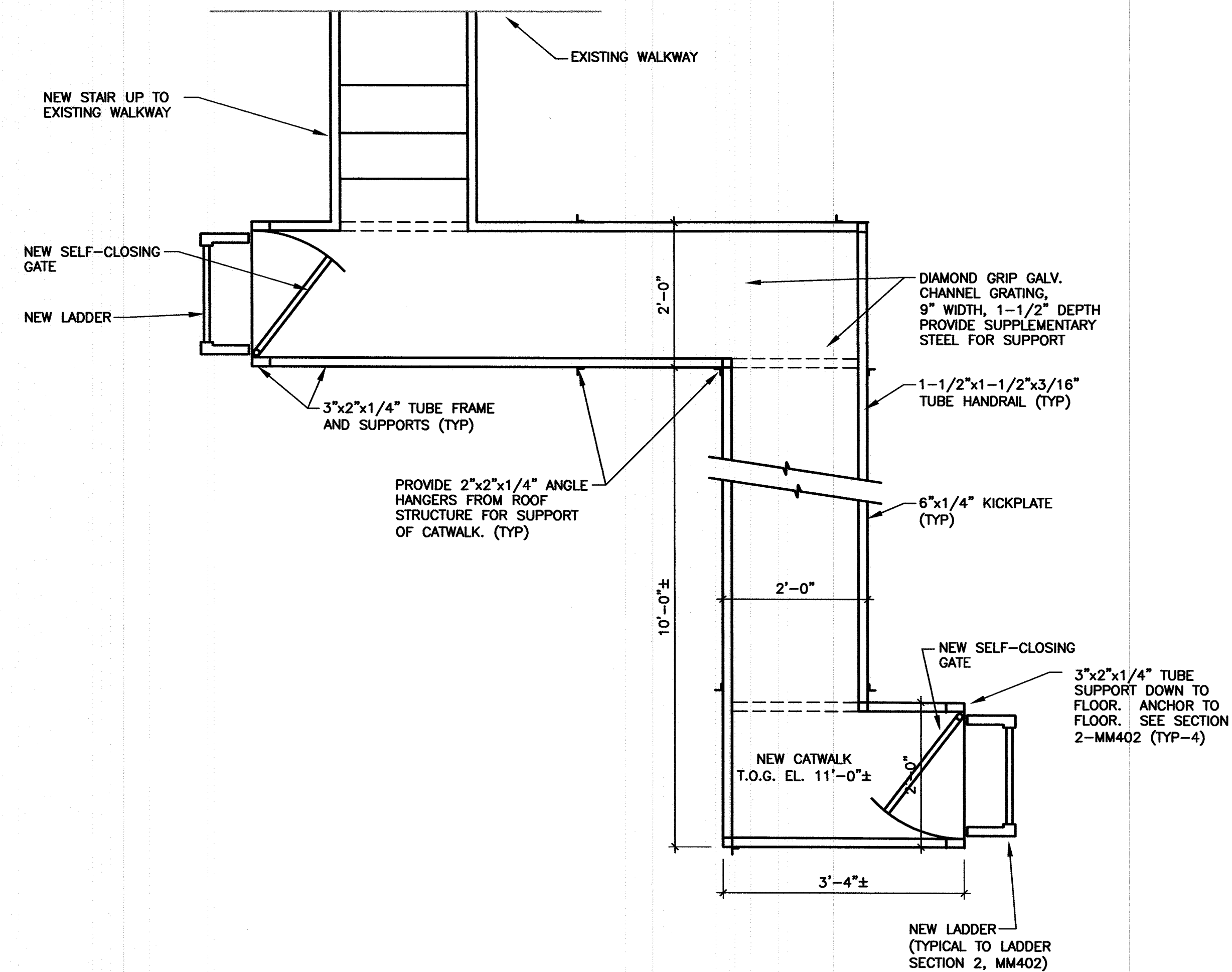
NO.	DATE	BY	REVISION DESCRIPTION
1	3/22/05	CAP	PLAN OF RECORD

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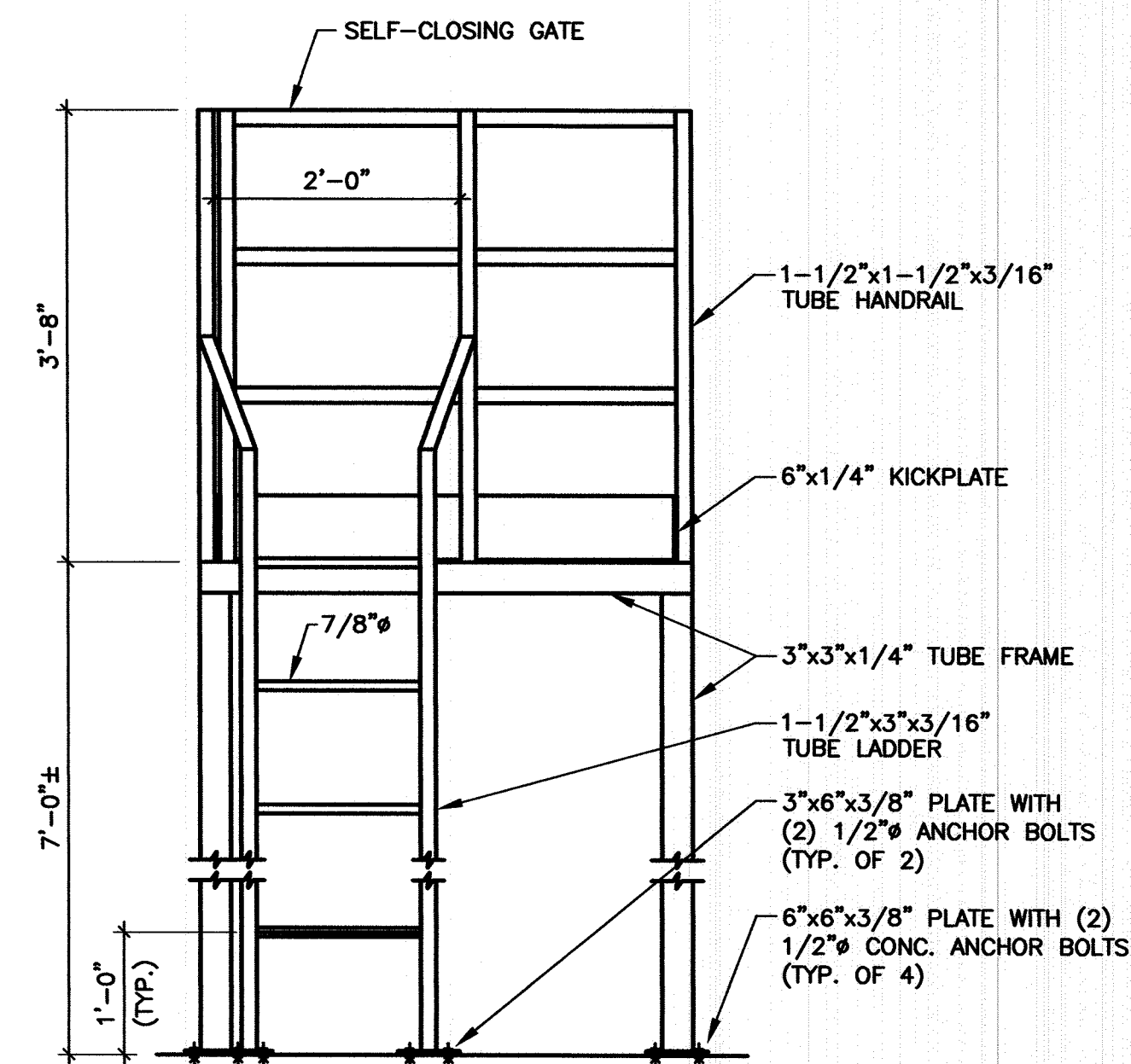
BOILER NO. 2 REPLACEMENT
 IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
 STATE CAPITOL COMPLEX

MECHANICAL
 CENTRAL ENERGY PLANT
 EQUIPMENT AND PIPING SECTIONS

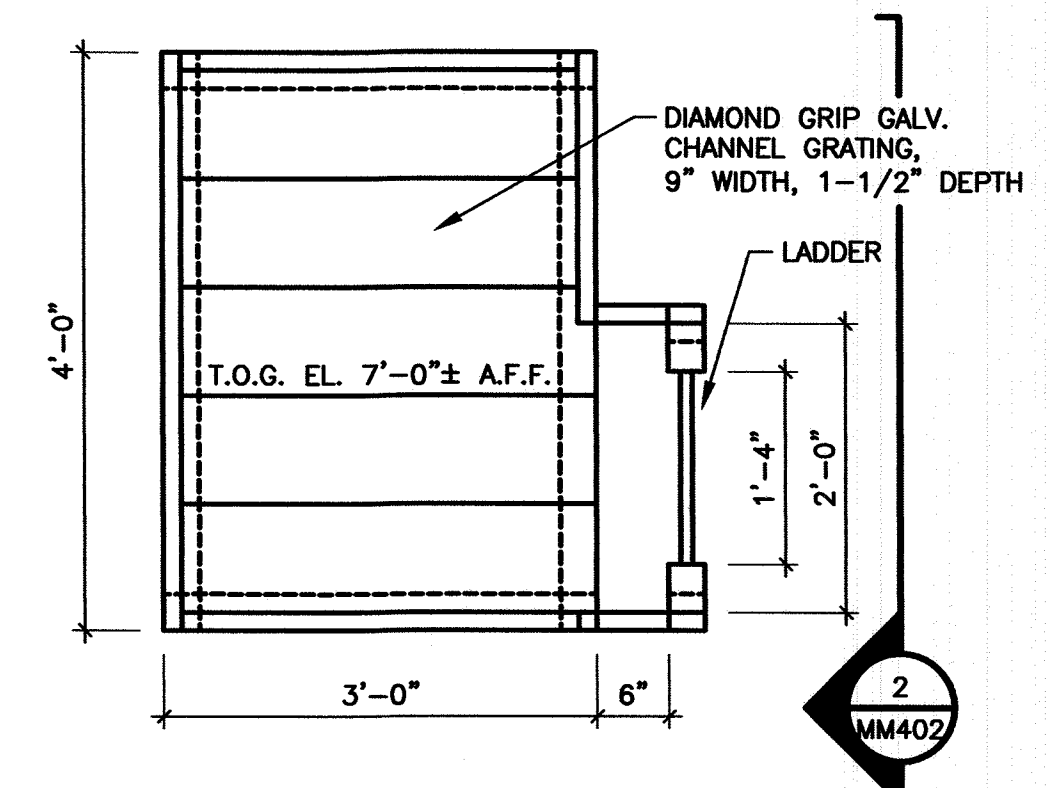
SHEET NO.
MM401



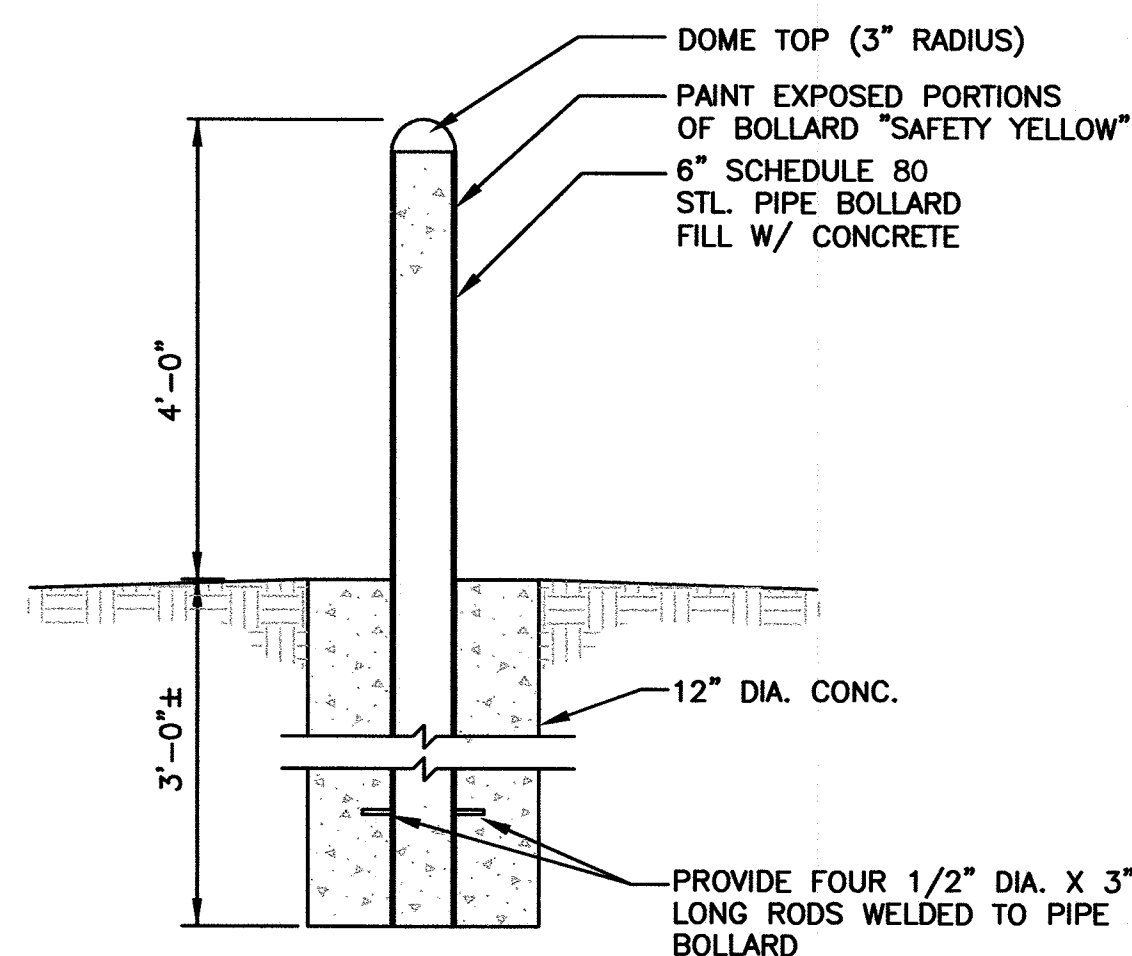
1 BOILER CATWALK DETAIL
SCALE: 3/4" = 1'-0"



2 SECTION
SCALE: 3/4" = 1'-0"



**3 ACCESS PLATFORM -
BOILER LEVEL CONTROLS**
SCALE: 3/4" = 1'-0"



5 DETAIL - BOLLARD
SCALE: NTS

Xref: XM41-SQ1.DWG

DRAWN BY: MWH JOB DATE: FEBRUARY, 2004
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Howard R. Green Company
CONSULTING ENGINEERS

BOILER NO. 2 REPLACEMENT
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE CAPITOL COMPLEX

MECHANICAL
CENTRAL ENERGY PLANT
EQUIPMENT ACCESS PLATFORMS

SHEET NO.

MM402

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AICS	AMPERES INTERRUPTING CAPACITY, SYMMETRICAL
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BC	BARE COPPER
C	CONDUIT
CB	CIRCUIT BREAKER
CO	CONDUIT ONLY
CKT	CIRCUIT
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
DB	DIRECT BURIED
DC	DIRECT CURRENT
DWG	DRAWING
EG	ENGINE GENERATOR
ELEV	ELEVATION
ENCL	ENCLOSURE
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
EXIST	EXISTING
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTOMATIC
HP	HORSEPOWER
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HZ	HERTZ
INCAND	INCANDESCENT
JB	JUNCTION BOX
KVA	KILOVOLT-AMPERES
KW	KILOWATT
LA	LIGHTNING ARRESTOR
LOS	LOCKOUT STOP PUSH-BUTTON
LS	LIMIT SWITCH
LTG	LIGHTING
MA	MILLIAMPERE
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MCM	THOUSAND CIRCULAR MILS
MH	MANHOLE
MIN	MINIMUM
MT	MOUNT
MTD	MOUNTED
N	NEUTRAL
NC	NORMALLY CLOSED
NL	NIGHTLIGHT
NO	NORMALLY OPEN
NO.	NUMBER
NTS	NOT TO SCALE
OL'S	MOTOR OVERLOAD CONTACTS
P	POLE
PB	PUSHBUTTON, PULLBOX
PH	PHASE
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
REF	REFERENCE
REQ'D	REQUIRED
SH	SHIELDED
SHT	SHEET
STD	STANDARD
SW	SWITCH
TACH	TACHOMETER
TB	TERMINAL BOARD
TEL	TELEPHONE
TEMP	TEMPERATURE
TP	TWISTED PAIR
TRANSF	TRANSFORMER
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRAIL
TSTAT	THERMOSTAT
TYP	TYPICAL
UG	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V	VOLT
VS	VARIABLE SPEED
W	WATTS WIRE
WP	WEATHERPROOF
ZS	POSITION SWITCH

ELECTRICAL SYMBOLS ONE-LINES

	UTILITY METERING
	METERING DEVICE: AM-AMMETER VM-VOLTMETER WM-WATTMETER FM-FREQUENCY METER WHM-KILOWATT HOUR METER DM-DIGITAL MULTI-FUNCTION METER
	AMMETER SWITCH
	VOLTMETER SWITCH
	CURRENT TRANSFORMER, QUANTITY INDICATED
	POTENTIAL TRANSFORMER, QUANTITY INDICATED
	POWER TRANSFORMER
	CIRCUIT BREAKER, 3 POLE UNLESS NOTED MCP INDICATES MOTOR CIRCUIT PROTECTOR
	MAGNETIC MOTOR CONTACTOR, NEMA SIZE INDICATED FVNR = FULL-VOLTAGE NON-REVERSING FVR = FULL-VOLTAGE REVERSING RV = REDUCED VOLTAGE STARTING 2S, 2W = 2 SPEED, 2 WINDING
	THERMAL OVERLOAD RELAY
	SWITCH
	FUSE
	MOTOR, 10 HP
	GENERATOR
	KEY INTERLOCKING OF EQUIPMENT
	POWER FACTOR CORRECTING CAPACITOR
	DRAW-OUT TYPE EQUIPMENT
	SURGE ARRESTER
	LIGHTNING ARRESTER
	GROUND
	DELTA CONNECTION
	WYE CONNECTION
	MECHANICAL INTERLOCKING OF EQUIPMENT
	ELECTRICAL INTERLOCKING OF EQUIPMENT
	PHASE MONITORING RELAY
	VARIABLE FREQUENCY DRIVE
	SOLID STATE STARTER
	TRANSIENT VOLTAGE SURGE SUPPRESSOR
	AUTOMATIC TRANSFER SWITCH
	FEEDER BUS DUCT
	PLUG IN BUS DUCT
	SWITCHGEAR DEVICE: 13 SYNCHRONOUS-SPEED DEVICE 25 SYNCHRONIZING OR SYNCHRONISM CHECK DEVICE 27 UNDERVOLTAGE RELAY 32 DIRECTIONAL POWER RELAY 37 UNDERCURRENT OR UNDERPOWER RELAY 40 FIELD RELAY 41 FIELD CIRCUIT BREAKERS 43 MANUAL TRANSFER OR SELECTOR DEVICE 46 REVERSE-PHASE OR PHASE-BALANCE CURRENT RELAY 47 PHASE-SEQUENCE VOLTAGE RELAY 49 MACHINE OR TRANSFORMER THERMAL RELAY 50 INSTANTANEOUS OVERCURRENT OR RATE OF RISE RELAY 50G ZERO SEQUENCE GROUND FAULT RELAY 51 A-C TIME OVERCURRENT RELAY 52 A-C CIRCUIT BREAKER 59 OVERVOLTAGE RELAY 65 GOVERNOR 67 A-C DIRECTIONAL OVERCURRENT RELAY 81 FREQUENCY RELAY 86 LOCKOUT RELAY 87 DIFFERENTIAL PROTECTIVE RELAY

ELECTRICAL SYMBOLS SCHEMATICS

NORMALLY OPEN	NORMALLY CLOSED	DEVICE
		CONTACT
		TIMED CONTACT
		CONTACT ACTION RETARDED ON ENERGIZATION CONTACT ACTION RETARDED ON DE-ENERGIZATION
		PUSH BUTTON SINGLE CIRCUIT LOCK-OUT
		PUSH BUTTON SINGLE CIRCUIT LOCK-OUT
		LIMIT SWITCH
		LIQUID LEVEL SWITCH
		PRESSURE OR VACUUM SWITCH
		FLOW SWITCH
		TEMPERATURE SWITCH
		SELECTOR SWITCH (NUMBER OF ARROWS INDICATES NUMBER OF POSITIONS. OXO INDICATES OPERATION FOR EACH POSITION. X=CLOSED. O=OPEN)
		MANUAL MOTOR STARTER
		DOOR INTERLOCK SWITCH
		MOTOR OVERLOAD HEATER CONTACTS
		MOTOR OVERLOAD HEATER
		PILOT LIGHT R=RED, W=WHITE G=GREEN, A=AMBER
		PILOT LIGHT - PUSH-TO-TEST R=RED, W=WHITE G=GREEN, A=AMBER
		RELAY
		TIME DELAY RELAY
		STARTER COIL
		SOLENOID OPERATED VALVE
		120V, SINGLE PHASE MOTOR
		ALARM
		ELAPSED TIME METER
		PHASE MONITORING RELAY
		FUSE
		CONTROL POWER TRANSFORMER
		GROUND
		WIRING IN MOTOR STARTER
		FIELD WIRING
		WIRE TERMINAL IN MOTOR STARTER
		WIRE TERMINAL IN PLC
		PLC SOFTWARE

ELECTRICAL SYMBOLS PLANS

LIGHT FIXTURES	
	CEILING MOUNTED FIXTURE, INCANDESCENT, HID, ETC. AS SPECIFIED.
	WALL MOUNTED FIXTURE, INCANDESCENT, HID, ETC. AS SPECIFIED.
	FLUORESCENT FIXTURE, AS SPECIFIED
	FLUORESCENT FIXTURE AS SPECIFIED, CONNECTED TO UNSWITCHED CIRCUIT.
	FLUORESCENT STRIP FIXTURE
	EXIT LIGHT, CEILING MOUNTED, ARROW DIRECTION AS INDICATED. SHADED SECTION INDICATES ILLUMINATION FACE.
	EXIT LIGHT, WALL MOUNTED, ARROW DIRECTION AS INDICATED. SHADED SECTION INDICATES ILLUMINATION FACE.
	BATTERY OPERATED EMERGENCY LIGHT FIXTURE TOP OF UNIT BELOW FINISHED CEILING OR AS NOTED.
	REMOTE LIGHT FIXTURE FOR BATTERY OPERATED LIGHT FIXTURE

CONDUIT, RACEWAY AND WIRING

	UNDERGROUND CONDUIT
	CONDUIT CONCEALED IN WALL OR CEILING CONSTRUCTION
	'MT' INDICATES EMPTY CONDUIT
	HOME RUN TO PANELBOARD
	CABLE TRAY, SIZE AS NOTED
	PLUG IN STRIP-TYPE RECEPTACLES OR OTHER OUTLETS AS INDICATED
	LAY IN WIREWAY DUCT, SIZE AS NOTED
	FEEDER DUCT-RATING AND NUMBER OF CONDUCTORS AS NOTED
	PLUG IN DUCT-RATING AND NUMBER OF CONDUCTORS AS NOTED
	CENTER RAIL TYPE CABLE TRAY, AS NOTED
	LADDER TYPE CABLE TRAY, AS NOTED
	UNDERFLOOR DUCT-ELECTRICAL
	UNDERFLOOR DUCT-TELEPHONE OR OTHER LOW TENSION AS NOTED

COMMUNICATIONS SYSTEM

	TELEPHONE OUTLET, IN WALL 16" ABOVE FLOOR OR AS NOTED. 'WF' INDICATES WALL MOUNTED TELEPHONE AT 60"
	COMPUTER TERMINAL OUTLET-IN WALL OR AS NOTED

MISCELLANEOUS

	THERMOSTAT 48" ABOVE FLOOR.
	FLOAT SWITCH
	PRESSURE SWITCH
	PHOTOCELL CONTROL
	REFERENCED NOTE
	PAGING ZONE
	TIME SWITCH
	TELECOMMUNICATIONS MAIN GROUND BAR AT 80" OR AS NOTED.
	TELECOMMUNICATIONS GROUND BAR. XX INDICATES GROUND BAR NUMBER.
	OCCUPANCY SENSOR, CEILING MOUNTED
	OCCUPANCY SENSOR, WALL MOUNTED, 48" ABOVE FLOOR

WIRING DEVICE

	CLOCK HANGER RECEPTACLE-20A, 125V, 2P, 3W (NEMA 5-20R), IN WALL +84" OR AS NOTED
	SIMPLEX RECEPTACLE - 125V, 2P, 3W, 20A, 30A, OR 50A AT OUTLET INDICATES AMP. RATING (NEMA 5-20R, 5-30R, OR 5-50R), IN WALL OR AS NOTED
	DUPLEX RECEPTACLE-20A, 125V, 2P, 3W (NEMA 5-20R), IN WALL
	DUPLEX RECEPTACLE-20A, 125V, 2P, 3W (NEMA 5-20R) IN CEILING
	DUPLEX RECEPTACLE-20R, 125V, 2P, 3W (NEMA 5-20R) IN WALL ABOVE COUNTER TOP OR BACK SPLASH 'GFI'-INDICATES GROUND FAULT INTERRUPTER TYPE 'SS'-INDICATES SURGE SUPPRESSOR TYPE 'IG'-INDICATES ISOLATED GROUND TYPE
	DUPLEX RECEPTACLE-20R, 125V, 2P, 3W (NEMA 5-20R) IN WALL OR AS NOTED, ONE RECEPTACLE HOT, ON RECEPTACLE SWITCH
	FLOOR OUTLET BOX WITH SIMPLEX RECEPTACLE-20A, 125V, 2P, 3W (NEMA 5-20R)
	FLOOR OUTLET WITH DUPLEX RECEPTACLE
	OUTLET WITH SPECIAL DEVICE AS NOTED, IN WALL
	OUTLET WITH SPECIAL DEVICE AS NOTED, IN FLOOR
	OUTLET WITH SPECIAL DEVICE AS NOTED, IN CEILING
	JUNCTION BOX OR OUTLET BOX
	SINGLE POLE WALL SWITCH, '2'-INDICATES 2 POLE SWITCH, '3'-INDICATES 3-WAY, '4'-INDICATES 4-WAY, 'PL'-INDICATES SWITCH WITH PILOT LIGHT, 'L/T'-INDICATES LOCKING TYPE SWITCH, 'LV'-INDICATES LOW VOLTAGE TYPE
	PULL BOX
	PUSHBUTTON, AS NOTED
	LOCAL LIGHT DIMMER, 'M' INDICATES MASTER 'F' INDICATES FLUORESCENT '1000' INDICATES 1000 WATTS '1500' INDICATES 1500 WATTS '2000' INDICATES 2000 WATTS
	MOTOR SPEED CONTROLLER 2-SPEED, 3-SPEED OR VARIABLE SPEED AS INDICATED
	MAGNETIC DOOR HOLD

EQUIPMENT

	MOTOR CONNECTION
	EQUIPMENT TERMINAL POINT
	SAFETY DISCONNECT SWITCH, NON-FUSED UNLESS NOTED (F)
	FUSE HOLDER WITH FUSESTAT AND TOGGLE SWITCH
	MOTOR STARTER-MAGNETIC UNLESS NOTED MAN. (MANUAL)
	COMBINATION MOTOR STARTER AND FUSED DISCONNECT SWITCH-MAGNETIC STARTER
	BRANCH CIRCUIT PANELBOARD SURFACE MOUNTED
	BRANCH CIRCUIT PANELBOARD FLUSH MOUNTED
	SPECIAL CABINET OR EQUIPMENT AS NOTED SURFACE MOUNTED
	SPECIAL CABINET OR EQUIPMENT AS NOTED FLUSH MOUNTED
	DRY-TYPE TRANSFORMER, NUMBER INDICATES KVA SIZE
	POWER DISTRIBUTION PANELBOARD SURFACE MOUNTED OR FREESTANDING, AS NOTED.
	POWER DISTRIBUTION PANELBOARD, FLUSH MOUNTED
	ELECTRICAL EQUIPMENT MCC OR SWITCHBOARD, AS NOTED
	AUTOMATIC TRANSFER SWITCH
	MANUAL TRANSFER SWITCH

NOTES:

- ALL WALL RECEPTACLES, TELEPHONE OUTLETS OR SIMILAR OUTLETS TO BE 16" ABOVE FLOOR TO BOTTOM UNLESS OTHERWISE INDICATED
 - ALL WALL SWITCHES, PUSHBUTTONS AND DIMMERS TO BE 48" ABOVE FLOOR TO BOTTOM UNLESS OTHERWISE INDICATED
 - UPPER CASE LETTERS 'DD' AS DUPLEX RECEPTACLE INDICATE DOUBLE DUPLEX RECEPTACLES IN TWO GANG BOX
 - LETTERS 'WP' AT DEVICE OR EQUIPMENT INDICATE WEATHERPROOF TYPE
 - LETTERS 'XP' AT DEVICE OR EQUIPMENT INDICATES EXPLOSION-PROOF TYPE.
 - LETTERS 'TL' AT RECEPTACLE INDICATE TWIST-LOCK TYPE.
 - LETTERS 'WG' AT DEVICE OR LIGHT FIXTURE INDICATE A WIREGUARD IS TO BE PROVIDED.
 - LETTERS 'RI' AT DEVICE OR EQUIPMENT CONNECTION INDICATE ROUGH-IN ONLY.
 - LOWER CASE LETTERS AT SWITCHES AND FIXTURES INDICATE ASSOCIATED UNITS FOR SWITCHING.
 - UPPER CASE LETTERS AT FIXTURE INDICATE FIXTURE TYPE.
 - NUMBER AT FIXTURE OR OUTLET INDICATES PANEL CIRCUIT NUMBER.
 - PLUS (+) SIGN WITH DIMENSION AT OUTLET INDICATES HEIGHT ABOVE FINISHED FLOOR LINE OR HEIGHT ABOVE FINISHED GRADE.
 - LETTERS 'IG' AT RECEPTACLE INDICATE ISOLATED GROUND TYPE.
 - LETTERS 'SS' AT RECEPTACLE INDICATE SURGE SUPPRESSION TYPE.
- EM - SPECIAL SYSTEM WIRING TO CENTRAL EQUIPMENT, PANEL, TERMINAL CABINET OR NEXT DEVICE.
EM = EMERGENCY SYSTEM
C = CRITICAL SYSTEM
L = LIFE SAFETY SYSTEM
S = LIFE SUPPORT SYSTEM
E = EMERGENCY EQUIPMENT SYSTEM
FA = FIRE ALARM
CP = MASTER CLOCK AND PROGRAM SYSTEM
MC = MASTER CLOCK SYSTEM
IC = INTERCOM SYSTEM
TV = TELEVISION SYSTEM
TVC = TELEVISION REMOTE CONTROL
NC = NURSE CALL SYSTEM
P = PAGING SYSTEM
TA = TELEPHONE SYSTEM-TA,TB,TC,ETC. INDICATES TO TERMINAL CABINET OR MOUNTING BOARD TA,TB,TC, ETC.
GF = CIRCUIT TO GROUND FAULT CIRCUIT BREAKER.
EIL = EQUIPMENT INTERLOCK.

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Howard R. Green Company
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BOILER NO. 2 REPLACEMENT
IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
STATE CAPITOL COMPLEX

ELECTRICAL
CENTRAL ENERGY PLANT
LEGEND, SYMBOLS AND ABBREVIATIONS

SHEET NO.

E000

REFERENCED ELECTRICAL NOTES:

- E1 PROVIDE NEW 90 AMP, 3-POLE CIRCUIT BREAKER IN 12" SPACE OF EMERGENCY POWER SECTION OF MCC1 FOR NEW BOILER NO. 2 SQUARE D MODEL 4 MCC, 42K AIC MINIMUM.
- E2 NEW BOILER NO. 2. (3)#4,#8 GND, 1-1/4" CONDUIT TO NEW 90 AMP CIRCUIT BREAKER IN MCC1.
- E3 EXISTING EMERGENCY STOP BUTTON. TIE-IN NEW BOILER NO. 2 TO EXISTING "EMERGENCY STOP" CIRCUIT.
- E4 INSTALL MOMENTARY MUSHROOM PUSHBUTTON NEAR LEVEL CONTROLS AT BOILER. WIRE IN PARALLEL WITH LOW LEVEL SHUT-DOWN CONTACT. OPERATION OF PUSHBUTTON SHALL BYPASS LOW LEVEL SHUT DOWN. VERIFY EXACT PLACEMENT WITH OWNER, SQUARE D CLASS 9001 30.5 MM HEAVY DUTY PUSHBUTTON WITH ENCLOSURE.

GENERAL ELECTRICAL NOTES:

1. REFER TO MECHANICAL PLANS FOR EXACT EQUIPMENT LOCATIONS.
2. PROVIDE A CONTINUOUS GREEN GROUND WIRE IN ALL CONDUITS.
3. EMERGENCY WIRING SHALL BE INSTALLED IN A SEPARATE CONDUIT SYSTEM. JUNCTION BOXES SHALL BE MARKED WITH A RED "EM" ON COVER.
4. UPDATE NAMEPLATES FOR CHANGES ON MCC1 WITH NEW ENGRAVED PLATES TO MATCH EXISTING. SPARES ARE TO MARKED "SPARE".
5. FINAL CONNECTIONS TO EQUIPMENT ARE TO BE WATERTIGHT FLEXIBLE METAL CONDUIT.

GENERAL ELECTRICAL DEMOLITION NOTES:

1. REFER TO MECHANICAL DEMOLITION FOR EXTENT OF EQUIPMENT REMOVAL.
2. DISCONNECT & REMOVE ALL ELECTRICAL CONNECTIONS TO MECHANICAL ITEMS AS INDICATED ON THE MECHANICAL DEMOLITION DRAWINGS.
3. DISCONNECT & REMOVE ALL EXPOSED CONDUIT, BOXES, & RELATED SUPPORTS FOR REMOVED ITEMS. NO EXPOSED CONDUIT, BOXES, OR RELATED SUPPORTS SHALL BE LEFT IN PLACE AFTER DEMOLITION WORK IS COMPLETE.
4. DISCONNECT & REMOVE BRANCH CIRCUITS AND FEEDERS FOR ALL ELECTRICAL EQUIPMENT TO BE REMOVED BACK TO THE SOURCE OR THE FIRST ACTIVE JUNCTION BOX THAT IS TO REMAIN. PROVIDE HOLE CLOSURES IN ALL CONDUIT OPENINGS WHICH REMAIN AFTER DEMOLITION WORK.
5. CUT OFF ALL ABANDONED, CAST-IN-PLACE CONDUITS FLUSH WITH CONCRETE SURFACE.
6. PATCH & SEAL ALL WALL & FLOOR OPENINGS WHICH RESULTS FROM ELECTRICAL DEMOLITION WORK. PATCHING & SEALING OF WALLS & FLOOR SHALL RESTORE FIRE & SMOKE RATINGS OF EACH RESPECTIVE WALL & FLOOR.

1 ELECTRICAL POWER PLAN

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



Xref: XEP1-P01.DWG XXM1-P01.DWG XXM1-P01.DWG XXA1-P01.DWG

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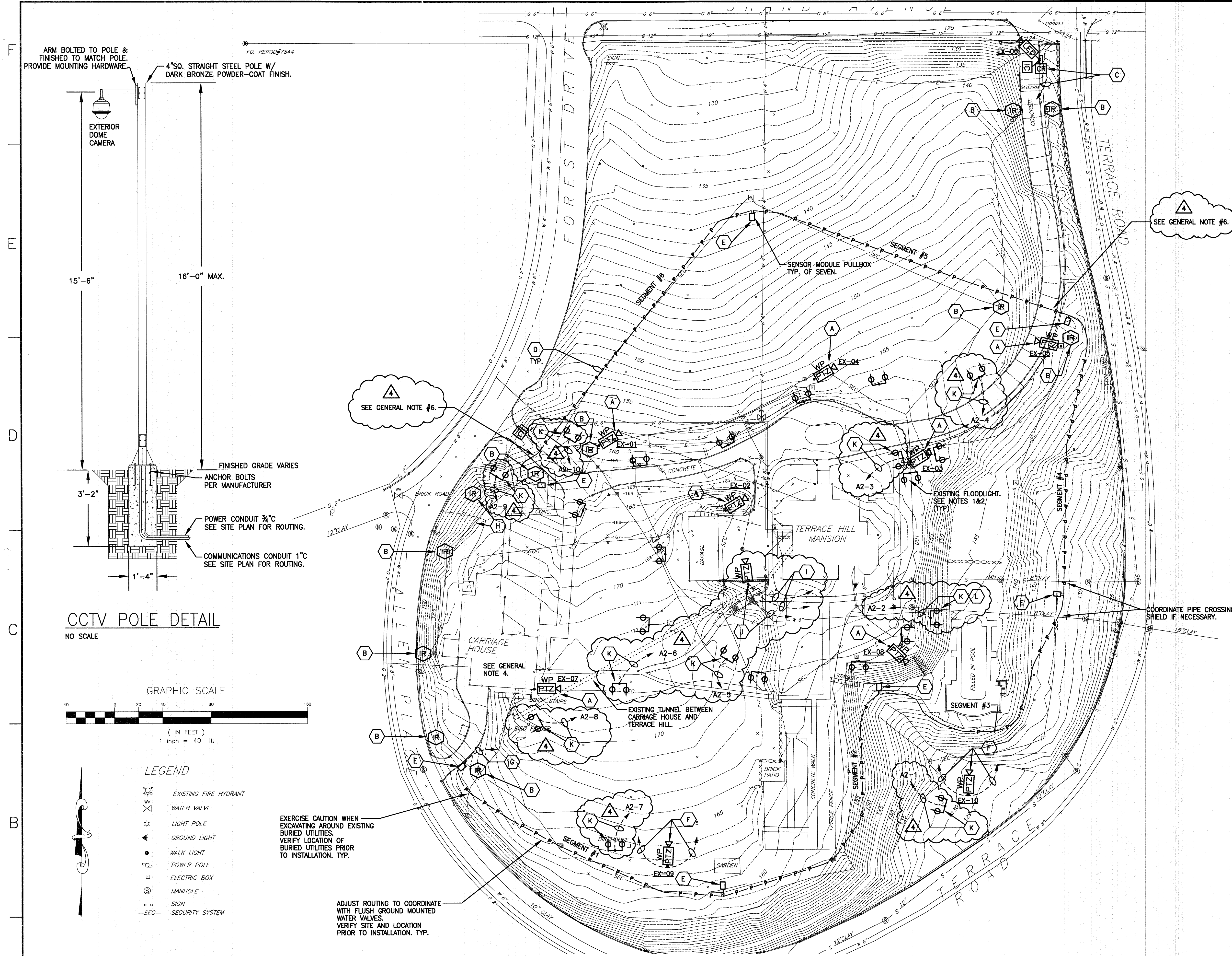
BOILER NO. 2 REPLACEMENT
 IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
 STATE CAPITOL COMPLEX

ELECTRICAL
 CENTRAL ENERGY PLANT
 POWER PLAN

SHEET NO.

EP101

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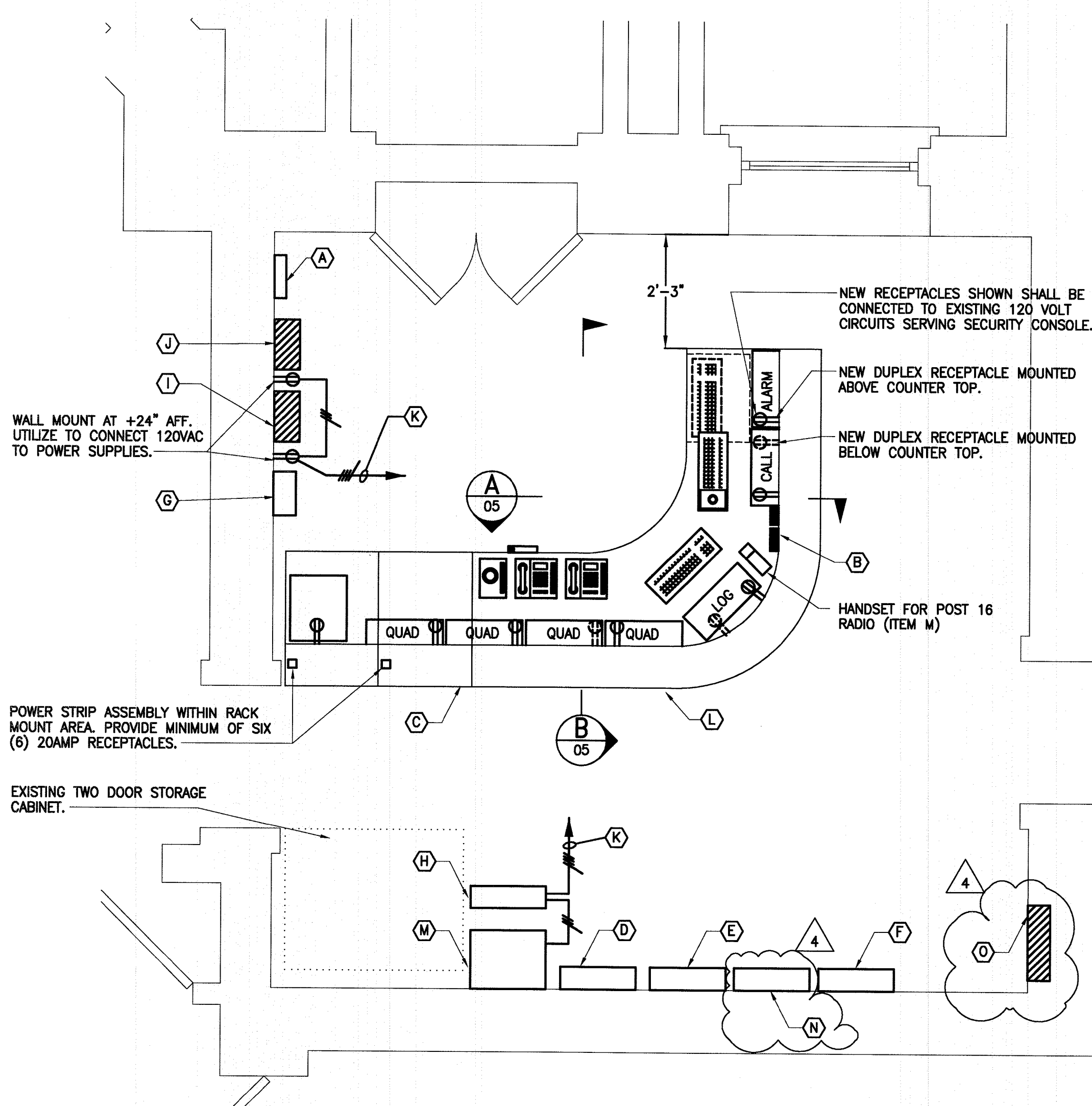


- GENERAL NOTES:**
- CONTRACTOR SHALL TEST EACH EXTERIOR FLOOD LIGHT FIXTURE FOR PROPER OPERATION. REPLACE DEFECTIVE LAMPS, HOUSINGS, OR SOCKETS.
 - CONTRACTOR SHALL LOCATE, AND TEST EACH 120 VOLT CIRCUIT SERVING EACH FLOOD LIGHT. TEST SHALL BE OF THE INSULATION-RESISTANCE TYPE AND SHALL BE PERFORMED ON EACH CONDUCTOR WITH RESPECT TO GROUND AND ADJACENT CONDUCTORS. APPLIED POTENTIAL SHALL BE 500 VOLTS DC FOR 300 VOLT RATED CABLE AND 1000 VOLTS DC FOR 600 VOLT RATED CABLE. TEST DURATION SHALL BE ONE MINUTE. PROVIDE WRITTEN REPORT FOR EACH CABLE AND LIST ANY AND ALL DISCREPANCIES FOUND. SUBMIT TO STATE OF IOWA CONSTRUCTION MANAGER.
 - ALL OTHER LIGHT FIXTURES, AND DEVICES SHALL REMAIN AS IS ON SITE. DO NOT DISTURB DURING NEW WORK AND PROTECT CONDUIT/WIRE.
 - INTERCEPT CONDUIT AND/OR WIRING TO CARRIAGE HOUSE MOTION SENSORS AND REWORK TO NEW ANDOVER ACCESS CONTROLLER ENCLOSURE. INTERCONNECT TO NEW INPUT MODULES. FIELD COORDINATE WITH SMS EQUIPMENT VENDOR. ROUTING OF CONDUIT AND/OR WIRING IS NOT KNOWN, FIELD VERIFY EXACT LOCATION.
 - ALL PENETRATIONS INTO TUNNEL, BUILDING, OR STRUCTURE FROM BELOW GRADE SHALL BE THOROUGHLY SEALED TO PREVENT WATER LEAKS BY GROUTING AROUND PENETRATION AND FILLING INSIDE OPENING OF CONDUIT WITH OAKUM.
 - CONTRACTOR SHALL INSTALL NEW DIRECT BURIED INTRUSION DETECTION CABLING IN EXISTING DRIVE. UTILIZE EXISTING SAWCUT AND EXPAND WIDTH AND DEPTH TO 3/8" WIDE, 2.25" DEEP. INSTALL CABLE WITH FOAM BACKER ROD. SEAL SLOT WHEN INSTALLATION IS COMPLETE. MATCHING EXISTING SEALANT CURRENTLY IN USE ON DRIVE. SEALANT MUST BE APPROVED BY TERRACE HILL FOUNDATION PRIOR TO USE. THE CONNECTION OCCURS AT THE EAST DRIVE AND THE WEST DRIVE. AS AN OPTION THE CONTRACTOR MAY ROUTE THE CABLE DIRECTLY UNDER THE DRIVE PROVIDED NO LOSS IN DETECTION OR INTERFERENCE DUE TO MATERIALS WITHIN THE DRIVE CONSTRUCTION WILL OCCUR. WRITTEN STATEMENTS FROM THE CABLE MANUFACTURER ATTESTING TO THIS WILL BE REQUIRED.
 - ANY AND ALL CONDUIT RUNS BE ROUTED UNDER EAST OR WEST DRIVE SHALL UTILIZE HORIZONTAL DIRECTIONAL BORING. DO NOT OTHERWISE DISTURB EXISTING DRIVES UNLESS WRITTEN PERMISSION FROM STATE OF IOWA CONSTRUCTION MANAGER IS OBTAINED.
- PLAN NOTES:**
- INSTALL NEW EXTERIOR DOME CAMERAS TO EXISTING PENDANT OR POLE MOUNT ARM ASSEMBLIES. VERIFY MOUNTING HARDWARE REQUIREMENTS WHEN ORDERING DOME. CONNECT TO EXISTING PAN-TILT-ZOOM CONTROL VOLTAGE SOURCE AND COAXIAL CCTV CABLE. TEST AND AIM CAMERA AFTER INSTALLATION. PROGRAMMING AND SETUP IS COMPLETE. TESTING SHALL OCCUR DURING DAYLIGHT AND EVENING HOURS. FINAL SETTINGS SHALL BE AS MUTUALLY AGREED TO DURING TESTING WITH POST 16 PERSONNEL. COORDINATE EXISTING CONTROL SOURCE WITH NEW MATRIX/SWITCHER.
 - THE CONTRACTOR SHALL PROVIDE AND INSTALL NEW TAKEX TYPE PB-IN-100HF INFRARED SENSORS AND MOUNT TO EXISTING STANCHIONS. FIELD VERIFY MOUNTING HARDWARE REQUIREMENTS WHEN ORDERING NEW SENSORS. THE CONTRACTOR SHALL UTILIZE EXISTING POWER AND CONTROL WIRING, WHERE POSSIBLE, AND INTERCONNECT NEW SENSORS. PROVIDE TESTING AND AIM BEAM OUTPUTS AS DIRECTED BY MANUFACTURERS REQUIREMENTS AFTER CONNECTION AND START-UP IS COMPLETE. WHEN NEW SENSORS ARE MOUNTED BACK-TO-BACK WITH EXISTING, ALIGN AND TEST BOTH NEW AND EXISTING AFTER INSTALLATION. IN THE EVENT CONDUIT AND WIRING IS NOT AVAILABLE BETWEEN SENSORS PROVIDE CONDUIT AND WIRING NOTED ON CONNECTION DIAGRAM SHEET T-ES-06. ROUTE TO BASEMENT SECURITY CONSOLE VIA TUNNEL. NEW INFRARED SENSORS SHOWN ON EAST DRIVE SHALL BE CONFIGURED WITH SENSORS NORTH-SOUTH AS WELL AS EAST-WEST. REPLACE EXISTING STANCHIONS WITH NEW TALLER UNITS TO MEET THIS REQUIREMENT.
 - PROVIDE NEW HID MINIPROX CARD READER AND MOUNT ON EXISTING STANCHION DIRECTLY BELOW OR IN-BETWEEN THE EXISTING LED CAMERA AND INTERCOM STATION. MOUNT NEW ACCESS CONTROLLER WITHIN GATE CONTROLLER HOUSING AND INTERCONNECT TO NEW CARD READER WITH 3/4" C. 6/C#18. PROVIDE 3/4" C. 4/C#18 FROM ACCESS CONTROLLER TO NEW NETWORK CONTROLLER IN BASEMENT SECURITY CENTER. NEW CONDUIT INSTALLATION TO TERRACE HILL CAN BE TRENCHED ALONG SIDE OF DRIVE OR USE DIRECTIONAL HORIZONTAL BORING. CARD READER CONTROL AT GATE SHALL BE INSTALLED TO OPERATE IN CONJUNCTION WITH MANUAL SWITCH OPERATOR LOCATED AT THE BASEMENT SECURITY DESK.
 - APPROXIMATE LOCATION OF NEW DIRECT BURIED INTRUSION DETECTION CABLE. THE CONTRACTOR SHALL INSTALL IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS AND SPECIFICATION SECTION 13876. TRENCHING FOR NEW DIRECT BURIED INTRUSION DETECTION CABLE SHALL OCCUR IN SAME LOCATION AS CIRCUITS THAT SERVED IR SENSORS BEING REMOVED. THE CONTRACTOR SHALL EXCAVATE AND REMOVE THESE CONDUITS AND WIRING COMPLETELY. IN ADDITION THE CONTRACTOR SHALL UTILIZE THE GPR READOUTS FOR ROUTING THE CABLE TO AVOID POTENTIAL OBSTRUCTIONS OR OBSTACLES THAT WILL DEGRADE THE OPERATIONAL EFFECTS OF THE CABLE.
 - NEW QUAZITE PULLBOXES WITH LOCKABLE LID. INSTALL BOXES FLUSH TO EXISTING GRADE AND SIZE TO ACCOMMODATE DIRECT BURIED INTRUSION DETECTION CABLE ELECTRONIC DEVICES. FIELD COORDINATE EXACT LOCATIONS WITH EXISTING UTILITIES.
 - NEW EXTERIOR CAMERA COMPLETE WITH ALL MOUNTING HARDWARE AND PENDANT MOUNTED FROM 16'-0" STRAIGHT SQUARE DARK POWER COAT ANODIZED POLE. PROVIDE CONCRETE MOUNTING BASE TO SUPPORT POLE AS DETAILED THIS SHEET. PROVIDE 1-3/4" C. WITH 2#12, 1#12 FOR POWER, AND 1-1" C. WITH 1-RG11U FOR VIDEO, 4/C#18 FOR CAMERA CONTROL. ROUTE TO TUNNEL AND INTO VIDEO EQUIPMENT NOTED ON CONNECTION DIAGRAM SHEET T-ES-06. MAINTAIN MINIMUM OF 8'-0" DISTANCE FROM DIRECT BURIED INTRUSION DETECTION CABLE.
 - PROVIDE 1/2" C. 2#12, 1#12 GROUND FOR FIELD POWER MODULE, AND 1/2" C. WITH 4/STRAND MULTIMODE FIBER (62.5/125) FROM PULLBOX TO NETWORK CONTROL MODULE IN BASEMENT SECURITY CENTER. SEE T-ES-05 FOR LOCATION.
 - PROVIDE NEW INFRARED SENSORS, STANCHION, AND CONCRETE BASE AND MOUNT NEW INFRARED SENSORS WHERE SHOWN. INTERCEPT EXISTING CONDUIT/WIRE SERVING EXISTING SENSORS, CUT CONDUIT, INSTALL NEW FLUSH GROUND MOUNTED QUAZITE PULLBOX WITH LOCKABLE COVER AND EXTEND CONDUIT WIRING TO NEW SENSORS. ALIGN NEW SENSORS WITH EXISTING SENSORS AFTER INSTALLATION IS COMPLETE.
 - NEW EXTERIOR CAMERA COMPLETE WITH ALL MOUNTING HARDWARE AND PENDANT MOUNTED FROM 8'-0" STRAIGHT SQUARE DARK POWER COAT ANODIZED POLE. PROVIDE CONCRETE MOUNTING BASE TO SUPPORT POLE AS DETAILED THIS SHEET. PROVIDE 1-3/4" C. WITH 2#12, 1#12 FOR POWER, AND 1-1" C. WITH 1-RG11U FOR VIDEO, 4/C#18 FOR CAMERA CONTROL. ROUTE TO VIDEO EQUIPMENT NOTED ON CONNECTION DIAGRAM SHEET T-ES-06.
 - PROVIDE NEW POLE TOP MOUNTED 1800VA 120-VOLT PHOTO-CELL. MOUNT FACING NORTH. SET TO OPERATE AT 15FC. PROVIDE 3/4" C. 2#12, 1#12 GND TO ANDOVER DI/DO CABINET.
 - NEW FLOODLIGHT FIXTURE "A1" ON NEW STANCHION. REFER TO DETAIL ON T-ES-07. PROVIDE 3/4" C. 3#10, 1#10 GND FROM LIGHT FIXTURES TO NEW PANEL "A2" AND CONNECT TO CIRCUITS INDICATED. MAINTAIN MINIMUM OF 8'-0" DISTANCE FROM DIRECT BURIED INTRUSION DETECTION CABLE. AIM FIXTURES AS DIRECTED BY POST 16 PERSONNEL. SUBMIT WRITTEN REPORT AT PROJECT CLOSEOUT THAT FIXTURES WERE AIMED PROPERLY AND FULLY FUNCTIONAL.
 - MOUNT NEW STANCHION ALONG EDGE OF SLOPE & AIM FIXTURES AS DIRECTED BY POST 16 PERSONNEL.

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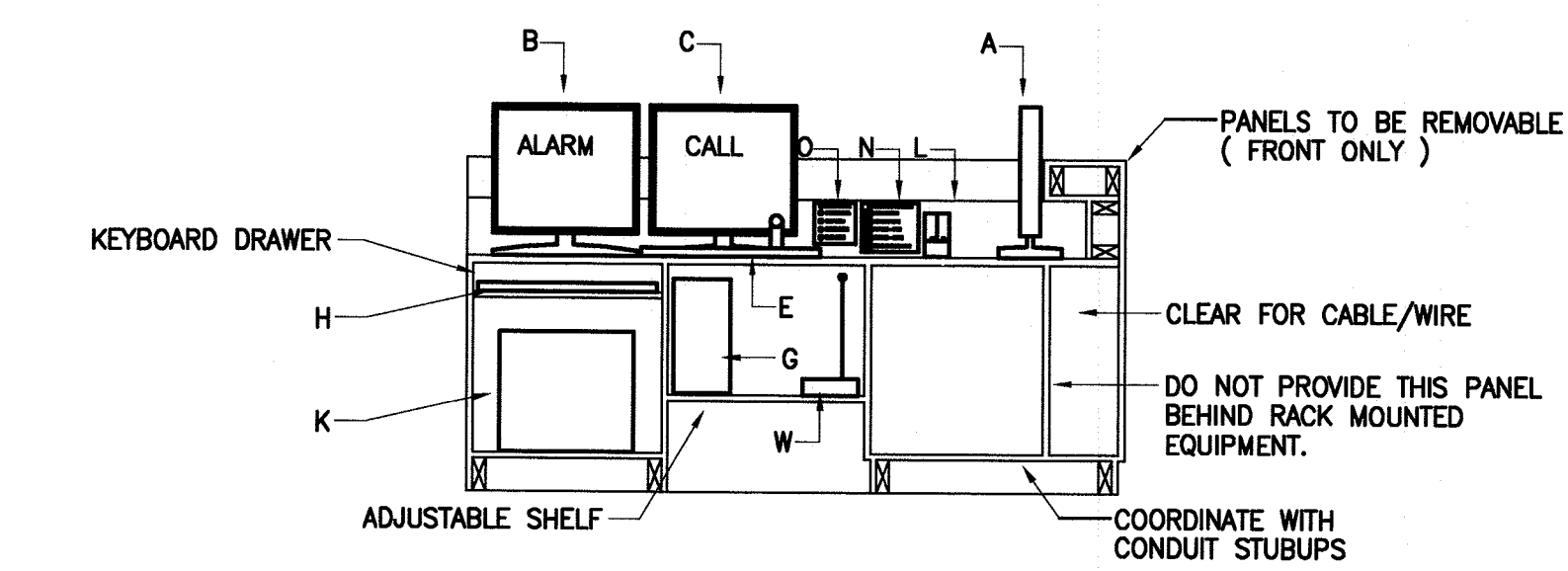
TERRACE HILL - SECURITY/CCTV PLAN - BASEMENT
SCALE: 1/2"=1'-0"

GENERAL NOTES:

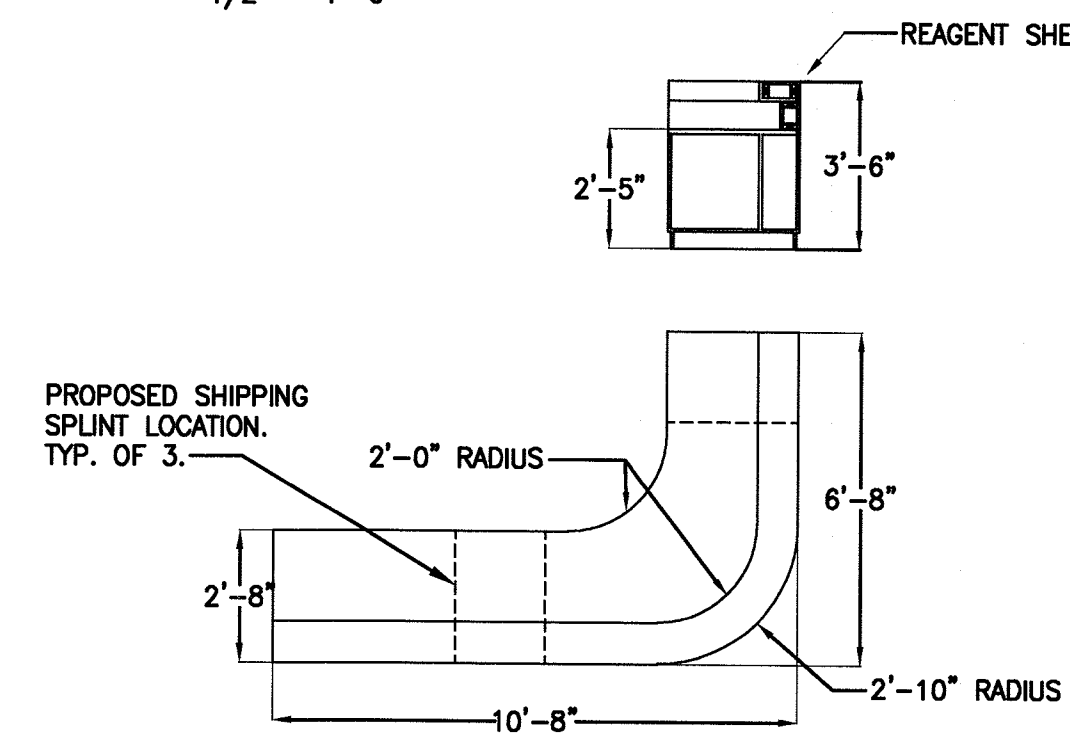
- INSTALL ALL NEW WIRE AND CABLE WITHIN CABLE ACCESS SPACE. DO NOT DRILL NEW DESK FOR CABLING FROM AND/OR TO DEVICES, UTILIZE CABLE SLOTS PROVIDED BY THE DESK MANUFACTURER ONLY.
 - ALL NEW OR EXISTING LINE-VOLTAGE (120 VOLT OR GREATER) SHALL BE "MC" TYPE OR INSTALLED WITHIN EMT CONDUIT NO EXCEPTIONS. SEE ALSO DEMOLITION NOTE "F" ON SHEET T-ES-04-D.
 - LABEL PANELBOARDS "A" AND "A1" WITH NEW NAMETAGS STATING PANEL NAME, VOLTAGE, AND AMPACITY. ATTACH TO FRONT OF EACH PANEL DOOR USING PERMANENT ADHESIVE. NAMETAGS SHALL BE PHENOLIC WHITE LETTERS, BLACK BACKGROUND.
- PLAN NOTES:
- RELOCATED LED CLOCK. MOUNT ON WALL AT +60" AFF MINIMUM. FIELD COORDINATE MOUNTING HEIGHT.
 - NEW FLUSH MOUNTED ANNUNCIATOR AND PUSHBUTTON STATION. SEE DETAIL THIS SHEET.
 - NEW SECURITY CENTER DESK FURNISHED AND INSTALLED BY IOWA PRISON INDUSTRIES (IPI). FIELD COORDINATE MANUFACTURER, DELIVERY, AND INSTALLATION OF DESK WITH STATE OF IOWA CONSTRUCTION MANAGER.
 - NEW ANDOVER LIGHTING CONTROL RELAY PANEL. RECONNECT CIRCUITS SERVING EXTERIOR FLOOD LIGHTS TO THIS PANEL. IF TESTING, CALLED FOR ON SITE DEMOLITION PLAN, INDICATE THAT WIRING SHOULD BE REPLACED CONNECT NEW WIRING AT THIS PANEL FOR CONTROL PURPOSES. MOUNT PANEL AT +6'-6" TO TOP.
 - NEW ANDOVER ACCESS/NETWORK CONTROLLER CABINET AND D0/DI MODULES. INSTALL AND MOUNT ON WALL AND ALIGN TOP OF PANEL WITH EXISTING PANELS.
 - EXISTING SURFACE MOUNTED 120/208V 3Ø 4W BRANCH CIRCUIT PANEL "A1". EXISTING FLOODLIGHTS & BRANCH CIRCUITS SERVING SECURITY CONSOLE ARE SERVED FROM THIS PANEL. FIELD COORDINATE.
 - WIRELESS MOTION SENSOR CONTROL PANEL INTERFACE. WALL MOUNT AT +6'-0" TO TOP AND CONNECT POWER SUPPLY. PROGRAM MOTION MOTION SENSORS AND REPEATER AND INTERCONNECT WITH ANDOVER SECURITY SYSTEM D/DO CABINET. SEE ALSO CONNECTION DIAGRAM T-ES-06. PRIOR TO MOUNTING, THE CONTRACTOR SHALL VERIFY WITH MANUFACTURER THAT THE WIRELESS CONTROL PANEL INTERFACE DOES NOT PRODUCE RF OR OTHER FREQUENCY INTERFERENCE THAT MAY AFFECT VIDEO, OR COMMUNICATIONS PERFORMANCE.

- NEW INTERCOM SYSTEM HEAD-END. TOA ELECTRONICS, INC. TYPE VS-900 COMPLETE WITH CARD CAGE, LOCKABLE ENCLOSURE, INTEGRAL POWER SUPPLIES, WALL BRACKET, AND LINE CARDS AS REQUIRED. SPLICE EXISTING INTERCOM CIRCUITS AT SECURITY DESK LOCATION USING APPROVED TERMINAL STRIP AND EXTEND TO THIS PANEL. RECONNECT AND TEST EACH STATION FOR PROPER OPERATION. FIELD VERIFY EXACT STATION QUANTITY AND LOCATIONS PRIOR TO ORDERING NEW SYSTEM. LOCATE NEW MASTER STATION AT LOCATION SHOWN ON PLAN AND ELEVATION VIEWS.
- WALL MOUNTED DIRECT BURIAL INTRUSION DETECTION SYSTEM NETWORK CONTROLLER. MOUNT AT +6'-0" TO TOP. CONNECT POWER SUPPLY AND CONNECT TO SYSTEM CONTROLLER.
- WALL MOUNTED INFRARED SENSOR POWER SUPPLY MODULE. MOUNT +6'-0" TO TOP.
- PROVIDE 3/4"C. 2#12, 1#12 GROUND FROM EACH RECEPTACLE OR EQUIPMENT TO EXISTING BRANCH CIRCUIT PANELBOARD. PROVIDE NEW SQUARE D CIRCUIT BREAKERS MATCHING EXISTING FRAME TYPE AND INSTALL IN EXISTING AVAILABLE SPACE. CONNECT TO NEW CIRCUITS SHOWN. UPDATE PANEBOARD DIRECTORY WHEN COMPLETE.
- REMOVABLE PANELS ON FRONT OF SECURITY DESK BY IPI.
- WALL MOUNTED PLC CABINET FOR BURIED INTRUSION DETECTION CABLE. WALL MOUNT DIRECTLY BELOW NEW INTERCOM CABINET. INTERCONNECT TO BURIED INTRUSION DETECTION ALARM INPUTS FROM CENTRAL CONTROLLER AND OUTPUTS TO ANDOVER D/DO MODULES. PROVIDE CONNECTION TO 120 VOLT POWER SUPPLY.
- NEW SURFACE MOUNTED 120/208V 3Ø 4W BRANCH CIRCUIT PANEL "A2". PANELBOARD TO SERVE NEW FLOODLIGHTS AS NOTED ON T-ES-00. FIELD COORDINATE.
- EXISTING FLUSH MOUNTED 120/208V 3Ø 4W BRANCH CIRCUIT PANEL "A". EXISTING FLOODLIGHTS & BRANCH CIRCUITS SERVING SECURITY CONSOLE ARE SERVED FROM THIS PANEL. FIELD COORDINATE.

SECTION A - SECURITY CENTER DESK
1/2" = 1'-0"



SECTION B - SECURITY CENTER DESK
1/2" = 1'-0"

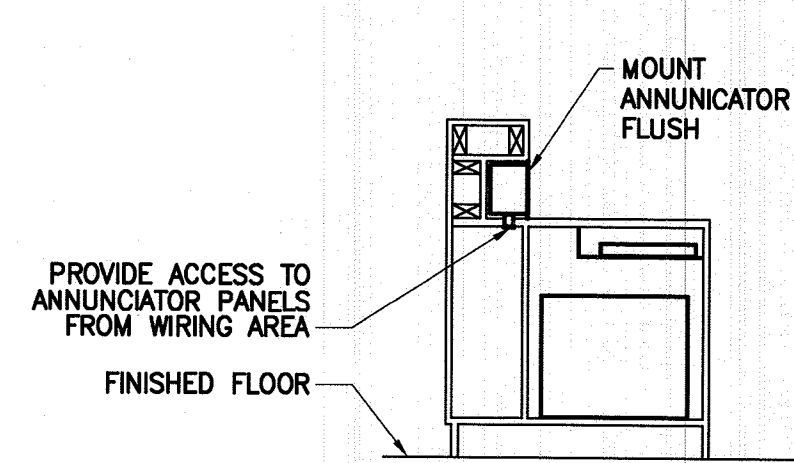


SECURITY CENTER DESK
1/4" = 1'-0"

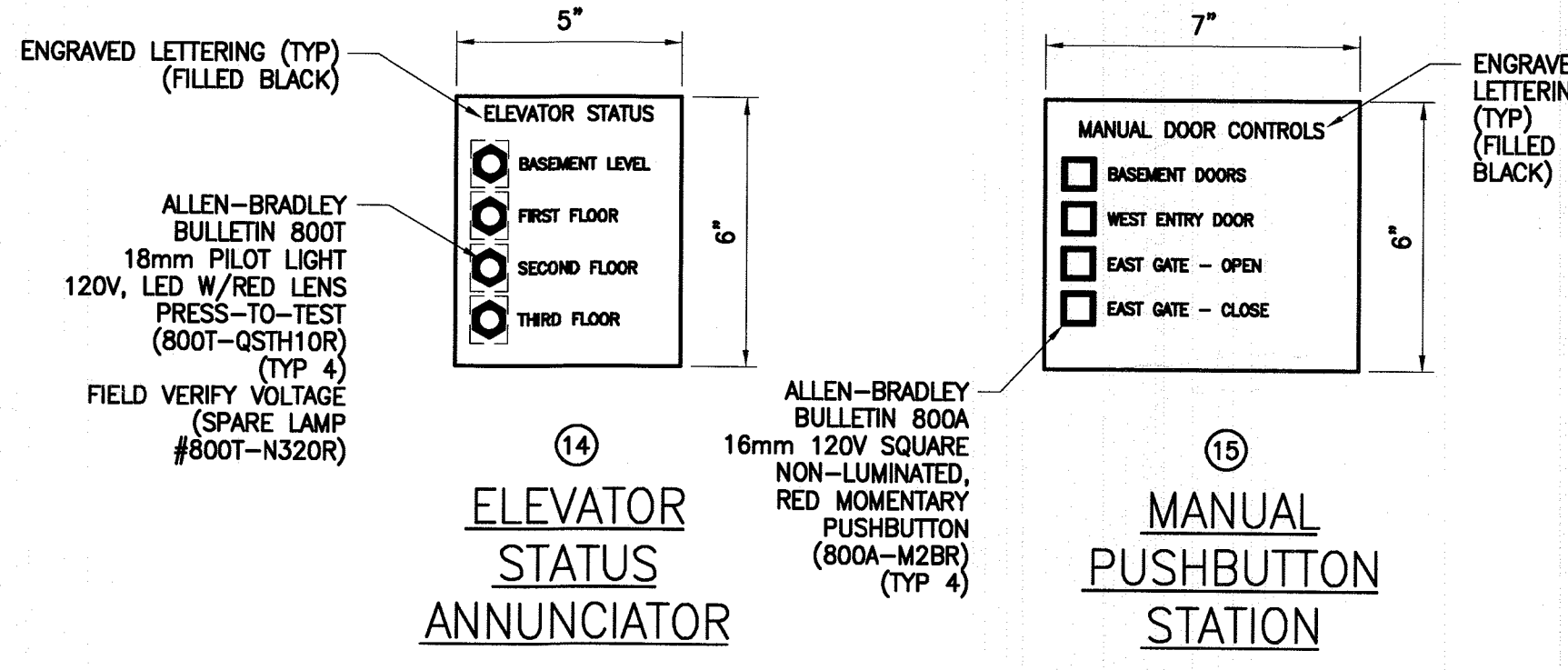
NEW SECURITY EQUIPMENT						
ITEM	DESCRIPTION	MANUFACTURER	QUANTITY	CATALOG NUMBER	LOCATION	NOTES
1	CCTV LCD SECURITY MONITOR - 19" QUAD	SANYO	4	VMC-L1019	A	10
2	ANDOVER LCD SECURITY ALARM MONITOR - 19"	SANYO	1	VMC-L1019	B	10
3	CCTV LCD SECURITY CALL MONITOR - 19"	SANYO	1	VMC-L1019	C	10
4	CCTV MATRIX/SWITCHER	PELCO	1	CM6800-32X6	D	1
5	CCTV PAN-TILT-ZOOM CONTROLLER KEYBOARD/JOY STICK	PELCO	1	KBD960	E	2
6	CCTV DVR SYSTEM - DX EXPRESS	INTEGRAL TECH	1	3540-1V-2C-4D-0S	F	3
7	ANDOVER ALARM ADMIN PC	EXISTING	1	EXISTING	G	11
8	ANDOVER ALARM ADMIN STATION KEYBOARD	EXISTING	1	EXISTING	H	11
9	AUXILIARY POST 16 LOG MONITOR - 19"	SANYO	1	VMC-L1019	I	10
10	AUXILIARY POST 16 PC AND KEYBOARD	EXISTING	1	EXISTING	J	12
11	POST 16 LASER PRINTER - HP 4250n	EXISTING	1	EXISTING	K	13
12	POST 16 PERSONNEL IDENTIFIER	EXISTING	1	EXISTING	L	4
13	POST 16 RADIO TRANSMITTER/RECEIVER	EXISTING	1	EXISTING	M	5
14	ELEVATOR STATUS ANNUNCIATOR (SEE ELEVATION THIS SHEET)	---	1	NEW	N	6
15	MANUAL PUSHBUTTON STATIONS (SEE ELEVATION THIS SHEET)	---	1	NEW	O	7
16	TELEPHONE HANDSETS (POTS)	EXISTING	2	EXISTING	P	14
17	NEW INTERCOM MASTER STATION	TOA ELECTRONICS	1	MS-900	Q	15
18	OFF-SITE DOT MATRIX PRINTER (PRINTS OFF-SITE DATA ONLY.)	EXISTING	1	EXISTING	R	8
19	NETWORK HUB (RACK MOUNTED)	EXISTING	1	EXISTING	S	9
20	CCTV MULTIPLEXER	PELCO	2	MX4016CD	T	
21	CCTV DATA MANAGER INTERFACE	PELCO	4	CM9760-DMR	U	
22	BURIED INTRUSION DETECTION CABLE PC	SENSTAR	1	---	V	
23	CITY OF DES MONIES POLICE SCANNER	EXISTING	1	EXISTING	W	

NEW SECURITY EQUIPMENT NOTES:

- MOUNT NEW PELCO MATRIX/SWITCHER IN AVAILABLE RACK SPACE WHERE SHOWN. RECONNECT ALL EXISTING CABLES AND CONNECT NEW LCD MONITORS, ANDOVER ALARM PC, AND NEW DVR. SEE ALSO CCTV RISER DIAGRAM ON SHEET T-ES-06.
- LOCATE CCTV CONTROLLER ON DESK TOP AND RECONNECT TO MATRIX/SWITCHER.
- NEW DVR. CONNECT TO MATRIX SWITCHER AND PROVIDE FULL SETUP OF UNIT. DVR SHALL BE 32 CHANNEL WITH 120 IMAGES/PER SECOND, 32 ALARM INPUTS, AND 1 TERE-BYTE OF INTERNAL STORAGE MINIMUM.
- RELOCATED POST 16 PERSONNEL IDENTIFIER. MOUNT O UNDERSIDE OF REAGENT SHELVE AND RECONNECT ALL WIRING.
- RELOCATED POST 16 RADIO TRANSMITTER AND RECEIVER. MOUNT AS SHOWN AND RECONNECT ALL EXISTING WIRING, INCLUDING EXTERIOR ANTENNA.
- NEW ELEVATOR STATUS ANNUNCIATOR. LED TYPE WITH RED LENS, AND NAMEPLATES AS NOTED IN DETAIL THIS SHEET. MOUNT FLUSH IN VERTICAL WALL BETWEEN DESKTOP AND REAGENT SHELVE.
- NEW MANUAL PUSHBUTTON STATION. PROVIDE PUSHBUTTONS AND NAMEPLATES AS NOTED IN DETAIL THIS SHEET. MOUNT FLUSH IN VERTICAL WALL BETWEEN DESKTOP AND REAGENT SHELVE.
- EXISTING DOT MATRIX PRINTER. MOUNT ON DESKTOP (IF SUFFICIENT ROOM EXISTS) AND RECONNECT ALL EXISTING CABLES.
- EXISTING NETWORK HUB. PROVIDE ADDITIONAL FLANGES AND DEVICES AS REQUIRED TO RACK MOUNT AT LOCATION SHOWN. RECONNECT ALL EXISTING CABLES.
- NEW LCD MONITORS. MOUNT AT LOCATION SHOWN AND CONNECT CABLES AS REQUIRED. SEE ALSO CCTV RISER DIAGRAM SHEET T-ES-06.
- RELOCATED ANDOVER ALARM PC AND ASSOCIATED HARDWARE. MOUNT AT LOCATION SHOWN AND RECONNECT ALL EXISTING CABLES.
- RELOCATED POST 16 AUXILIARY PC AND ASSOCIATED HARDWARE. MOUNT AT LOCATION SHOWN AND RECONNECT ALL EXISTING CABLES.
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