PLOTTED: 6-15-2015 9:35 AM
PLOT SCALE: 1:2

CONSTRUCTION DRAWINGS FOR UNIT WELL 12 UPGRADE AND CONVERSION TO A TWO ZONE WELL

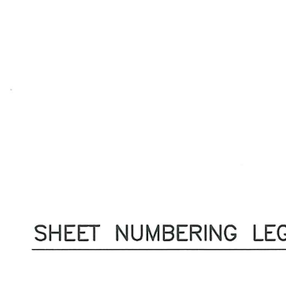
CONTRACT NO. 7498
MUNIS NO. 10452-86-140
MADISON, WISCONSIN

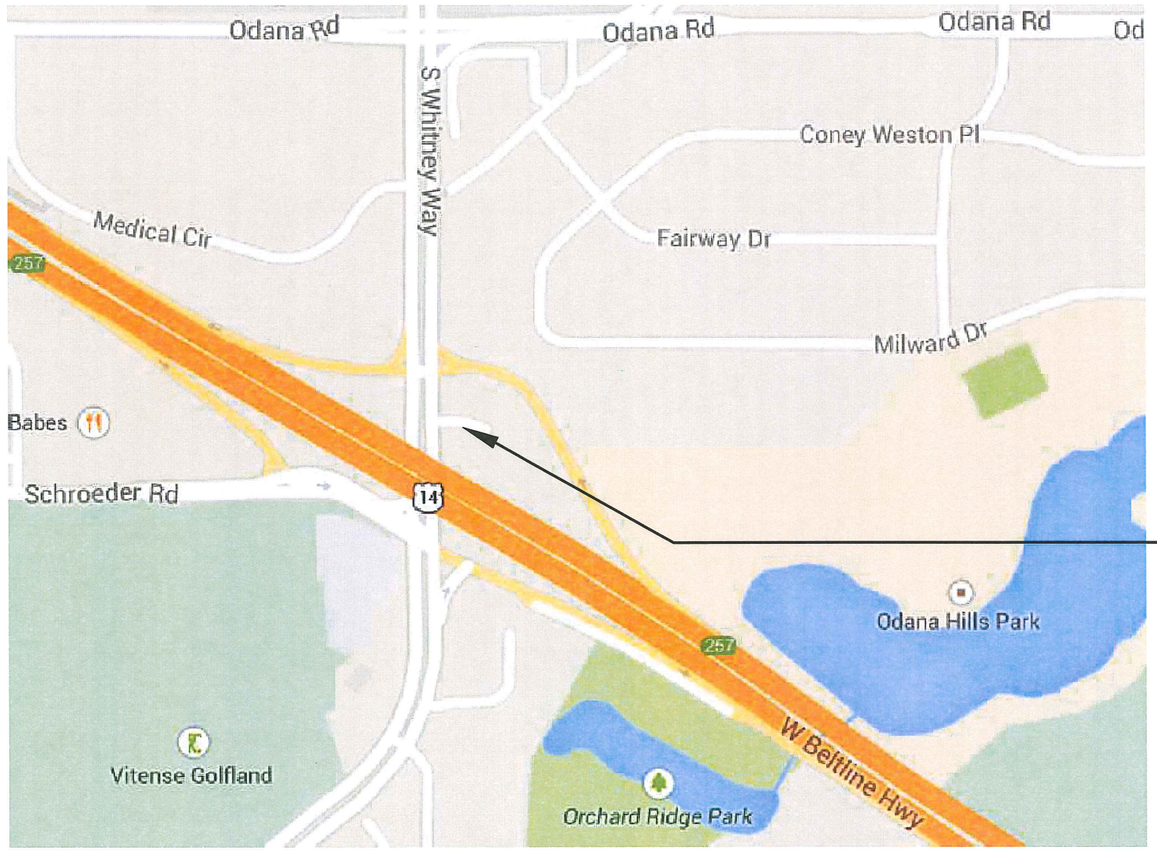
PUBLIC IMPROVEMENT PROJECT APPROVED BY THE COMMON COUNCIL OF MADISON, WI

SHEET NUMBERING LEGEND

SHEET P2

- P2 — CONSECUTIVE SEQUENCE DRAWING NUMBER
- DISCIPLINE
  - G GENERAL
  - R REMOVAL
  - C CIVIL
  - A ARCHITECTURAL
  - S STRUCTURAL
  - P PROCESS
  - M MECHANICAL & PLUMBING
  - E ELECTRICAL





PROJECT LOCATION

Madison Water Utility

N

WISCONSIN
JON I. STRAND
29237
CHIPPEWA FALLS, WI
PROFESSIONAL ENGINEER
6-12-2015

Madison Water Utility
SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
REVISIONS		

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-15
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN

SHEET TITLE: TITLE SHEET

SHEET G1

M:\KO\M\MADWU\130564\5-DESIGN\51-DRAWINGS\BASE\01-TITLE SHEET.DWG
SAVED: 6-2-2015 4:55 PM USER: CHRIS EPSTEIN
XREFs: P:\KO\M\Madwu\126154\5-Design\51-drawings\Cont dwg\2--new border

SHEET INDEX

GENERAL DRAWINGS

CIVIL DRAWINGS

ARCHITECTURAL DRAWINGS

STRUCTURAL DRAWINGS

PROCESS PIPING DRAWINGS

PLUMBING & MECHANICAL DRAWINGS

ELECTRICAL DRAWINGS

Madison Water Utility

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK | DATE | DESCRIPTION
REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-15
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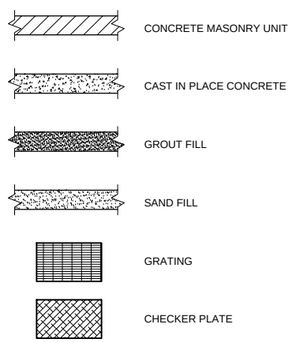
SHEET TITLE
GENERAL DRAWINGS
SHEET INDEX

SHEET
G2

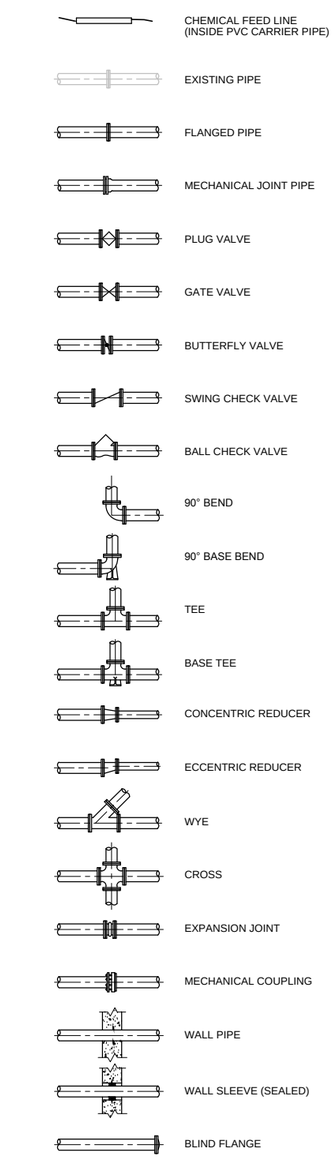
PROCESS GENERAL ABBREVIATION LIST

AB	ANCHOR BOLT
AF	ADAPTER FLANGE
ALT	ALTERNATE
ALUM	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATELY
ARCH	ARCHITECT
ASSY	ASSEMBLY
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AUX	AUXILIARY
AVG	AVERAGE
AWWA	AMERICAN WATERWORKS ASSOCIATION
AZ	AZIMUTH
&	AND
@	AT
BC	BOLT CIRCLE
BIT	BITUMINOUS
BLDG	BUILDING
BF	BLIND FLANGE
BLK	BLOCK
BOT	BOTTOM
BFV	BUTTERFLY VALVE
BFV & B	BUTTERFLY VALVE AND BOX
°C	DEGREES CELSIUS
C	CHECK
CFM	CUBIC FEET PER MINUTE
CHEM	CHEMICAL
CHL	CHLORINE
CI	CAST IRON
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CKD	CHECKERED
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN-OUT
CONC	CONCRETE
CONT	CONTINUOUS
C.T.	CERAMIC TILE
CTE	CONNECT TO EXISTING
CTRL JT	CONTROL JOINT
CU	CUBIC
CV	CHECK VALVE
DP	DEEP
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DWG	DRAWING
E	EAST
EA	EACH
ECC	ECCENTRIC
EL	ELEVATION
ELEC	ELECTRICAL
EQUIP	EQUIPMENT
EMBED	EMBEDDED
EW	EACH WAY
EX	EXISTING
°F	DEGREES FAHRENHEIT
FD	FLOOR DRAIN
FDN	FOUNDATION
FFE	FINISHED FLOOR ELEVATION
FL	FLOOR
FLG	FLANGE
FM	FORCEMAIN
FPS	FEET PER SECOND
FRP	FIBERGLASS REINFORCED
FT	FEET/FOOT
FTG	FITTING/FOOTING
FUT	FUTURE
G	GATE
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GND	GROUND
GP	GUARD POST
GPD	GALLONS PER DAY
GPM	GALLONS PER MINUTE
GRV	GROOVE
GV & B	GATE VALVE & BOX
HD	HEAVY DUTY
HM	HOLLOW METAL
HP	HORSEPOWER
HPT	HIGH POINT
HR	HOUR
HSP	HIGH SERVICE PUMP
HTR	HEATER
HWL	HIGH WATER LEVEL
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HYD	HYDRANT
ID	INSIDE DIAMETER
IN	INCHES
INV	INVERT
I/P	CURRENT/PRESSURE
IPS	IRON PIPE SIZE
JT	JOINT
KV	KNIFE VALVE
LG	LONG
LF	LINEAL FEET/FOOT
LL	LIQUID LEVEL
LT	LEFT
MAG	MAGNETIC
MATL	MATERIAL
MAX	MAXIMUM
MECH	MECHANICAL
MFG	MANUFACTURING
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
N/A	NOT APPLICABLE
NOM	NOMINAL
NEG	NEGATIVE
NC	NORMAL CLOSED
NIC	NOT IN CONTRACT
NO	NORMAL OPEN
No.	NUMBER
NPS	NATIONAL PIPE SIZE
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
NW	NORTHWEST
NWL	NORMAL WATER LEVEL
O/C, OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
OS&Y	OUTSIDE SCREW AND YOKE
PE	PLAIN END
PED	PEDESTRIAN
P&ID	PIPING AND INSTRUMENTATION DIAGRAM
PL	PLATE
PNT	PAINT
POS	POSITIVE
PP	POWER POLE
PPC	PRESTRESSED PRECAST CONCRETE
PRV	PRESSURE RELIEF VALVE
PSI	POUNDS PER SQUARE INCH
PT	POINT
PV	PLUG VALVE
PV & B	PLUG VALVE & BOX
PVC	POLYVINYL CHLORINE
QTY	QUANTITY
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RECT	RECTANGULAR
RED	REDUCER
REINF	REINFORCE (D)
REQ	REQUIRE (D)
REV	REVISION
RP	RECLAIM PUMP
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
SAN	SANITARY
SE	SOUTHEAST
SEC	SECTION
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SCH	SCHEDULE
SIM	SIMILAR
SLV	SLEEVE
SP	SLUDGE PUMP
SPEC	SPECIFICATION
SS	STAINLESS STEEL
STD	STANDARD
STRUCT	STRUCTURAL
SQ	SQUARE
SYM	SYMMETRICAL
TEMP	TEMPORARY
TH	THICK
THD	THREAD
THRU	THROUGH
TOC	TOP OF CONCRETE
TRTD	TREATED
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VAC	VACUUM
VCP	VITRIFIED CLAY PIPE
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VOC	VOLATILE ORGANIC CHEMICAL
W	WIDE/WEST
W/	WITH
W/O	WITHOUT
WL	WATER LEVEL
WM	WATER MAIN
WS	WATER SURFACE
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WWTP	WASTEWATER TREATMENT PLANT
X	FENCE
YD	YARD

PROCESS CONSTRUCTION LEGEND



PROCESS PIPING LEGEND



PROCESS GENERAL NOTES

1. INFORMATION REGARDING THE EXISTING CONDITIONS WAS OBTAINED FROM SURVEY DATA AND PRELIMINARY FIELD INVESTIGATIONS. ALL EXISTING AND PROPOSED CONDITIONS SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO ANY CONSTRUCTION.
2. THE DRAWINGS ARE ESSENTIALLY TO SCALE UNLESS NOTED OTHERWISE. DRAWINGS SHALL NOT TAKE PRECEDENCE OVER FIELD MEASUREMENTS.
3. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES. THE CONTRACTOR SHALL CONSULT ALL DRAWINGS AND VARIOUS CONSTRUCTION TRADES TO ACQUAINT SELF WITH THE PROJECT. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES NOTED BEFORE AND DURING CONSTRUCTION. THE ENGINEER RESERVES THE RIGHT TO MAKE REASONABLE MODIFICATIONS IN LAYOUT TO AVOID CONFLICT WITH THE WORK OF OTHER TRADES AND FOR THE PROPER EXECUTION OF THE WORK AT NO ADDITIONAL COST TO THE OWNER.
4. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY ADDITIONAL COSTS WHICH MAY RESULT FROM UNAUTHORIZED DEVIATIONS FROM THE CONTRACT DOCUMENTS.
5. CONTRACTOR SHALL PROTECT ALL EXISTING AND INSTALLED PIPING, EQUIPMENT, AND STRUCTURES DURING CONSTRUCTION NOT NOTED TO BE REMOVED. ALL DAMAGED ITEMS SHALL BE REPAIRED OR REPLACED WITH NO ADDITIONAL COST TO THE OWNER.
6. ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES SHALL BE ADHERED TO THROUGHOUT THE CONSTRUCTION PROJECT.
7. STANDARD DETAILS ARE INTENDED TO SHOW GENERAL DESIGN CONCEPTS. REFER TO THE SPECIFIC STRUCTURE DRAWINGS FOR DIMENSIONS AND SIZES.
8. WHERE NOT SPECIFICALLY SHOWN ON THE DRAWINGS, IT IS INTENDED THAT ALL AREAS BE GRADED TO SLOPE AWAY FROM BUILDINGS AND STRUCTURES (EXCEPT DRAINAGE RECEIVING STRUCTURES) UNLESS OTHERWISE NOTED ON THE DRAWINGS OR SPECIFICATIONS.
9. SIZE OF FITTINGS AND VALVES SHALL CORRESPOND TO THE SIZE OF ADJACENT PIPING. JOINTS AND FITTING MATERIAL SHALL BE AS SHOWN FOR ADJACENT PIPING.
10. PROVIDE PROPER PLUGS, CAPS, AND RESTRAINTS WHEN ANY PIPING IS TERMINATED.
11. PIPE HANGERS AND SUPPORTS SHALL BE LOCATED IN THE FIELD AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. SEE SPECIFICATIONS FOR THE MAXIMUM SPACING. ALL LINES SHALL BE ADEQUATELY ANCHORED AND SUPPORTED TO PREVENT EXCESS MOVEMENT DURING TESTING AND OPERATION.
12. ALL SUBMERGED ANCHOR BOLTS, NUTS, FASTENERS, ETC., SHALL BE 304 STAINLESS STEEL UNLESS OTHERWISE NOTED.
13. ALUMINUM SURFACES IN CONTACT WITH CONCRETE SHALL RECEIVE TWO COATS OF BITUMASTIC OR ZINC CHROMATE.
14. METAL STAIRWAYS, PLATFORMS, AND GRATING SHALL HAVE ADEQUATE STRUCTURAL CHARACTERISTICS AND DESIGN CHARACTERISTICS TO SUPPORT A MINIMUM OF 100 POUNDS PER SQUARE FOOT. METAL FABRICATIONS SHALL MEET ALL OSHA STANDARDS AND THE REQUIREMENTS SET FORTH IN THE SPECIFICATIONS.
15. ALL WOOD NAILERS AND OTHER LUMBER WHICH IS INSTALLED IN CONTACT WITH METAL, CONCRETE, OR MASONRY SHALL BE TREATED (UNLESS OTHERWISE NOTED) AS OUTLINED IN THE SPECIFICATIONS.
16. ALL PIPING BENEATH FLOOR SLAB SHALL HAVE RESTRAINED JOINTS.
17. ALL PROCESS PIPING SHALL BE DUCTILE IRON UNLESS SPECIFIED OTHERWISE.
18. USE OF UNI-FLANGES SHALL ONLY BE ALLOWED WITH PRIOR APPROVAL OF ENGINEER.
19. THE PROCESS DRAWINGS INDICATE REQUIRED PIPE SIZES, ELEVATIONS, AND THE EXTENT AND GENERAL ARRANGEMENT FOR PROCESS PIPING AND EQUIPMENT. PRIOR TO THE FABRICATION OR INSTALLATION OF ANY PIPING OR EQUIPMENT THE CONTRACTOR SHALL CONSULT ALL DRAWINGS AND CONSTRUCTION TRADES TO ACQUAINT SELF WITH THE MATERIALS, FINISHES, AND LOCATIONS OF CEILINGS, STRUCTURAL MEMBERS, PIPES, DUCTS, LIGHTING FIXTURES, CONDUITS, ETC. WHICH MAY AFFECT THE INSTALLATION. COORDINATE THE WORK WITH OTHER TRADES AND MAKE REASONABLE MODIFICATIONS IN LAYOUT TO AVOID CONFLICT WITH THE WORK OF OTHER TRADES.
20. ALTHOUGH NOT SPECIFICALLY SHOWN, THE CONTRACTOR SHALL PROVIDE 1/2" POLY TUBING AIR INSTRUMENTATION PIPING BETWEEN THE AIR COMPRESSOR, THE VALVE ACTUATOR SOLENOID PANEL, ALL PNEUMATIC VALVES, AND REMOTE AIR CONNECT POINTS TO COMPLETE A FUNCTIONAL VALVE CONTROL SYSTEM.

Madison Water Utility

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

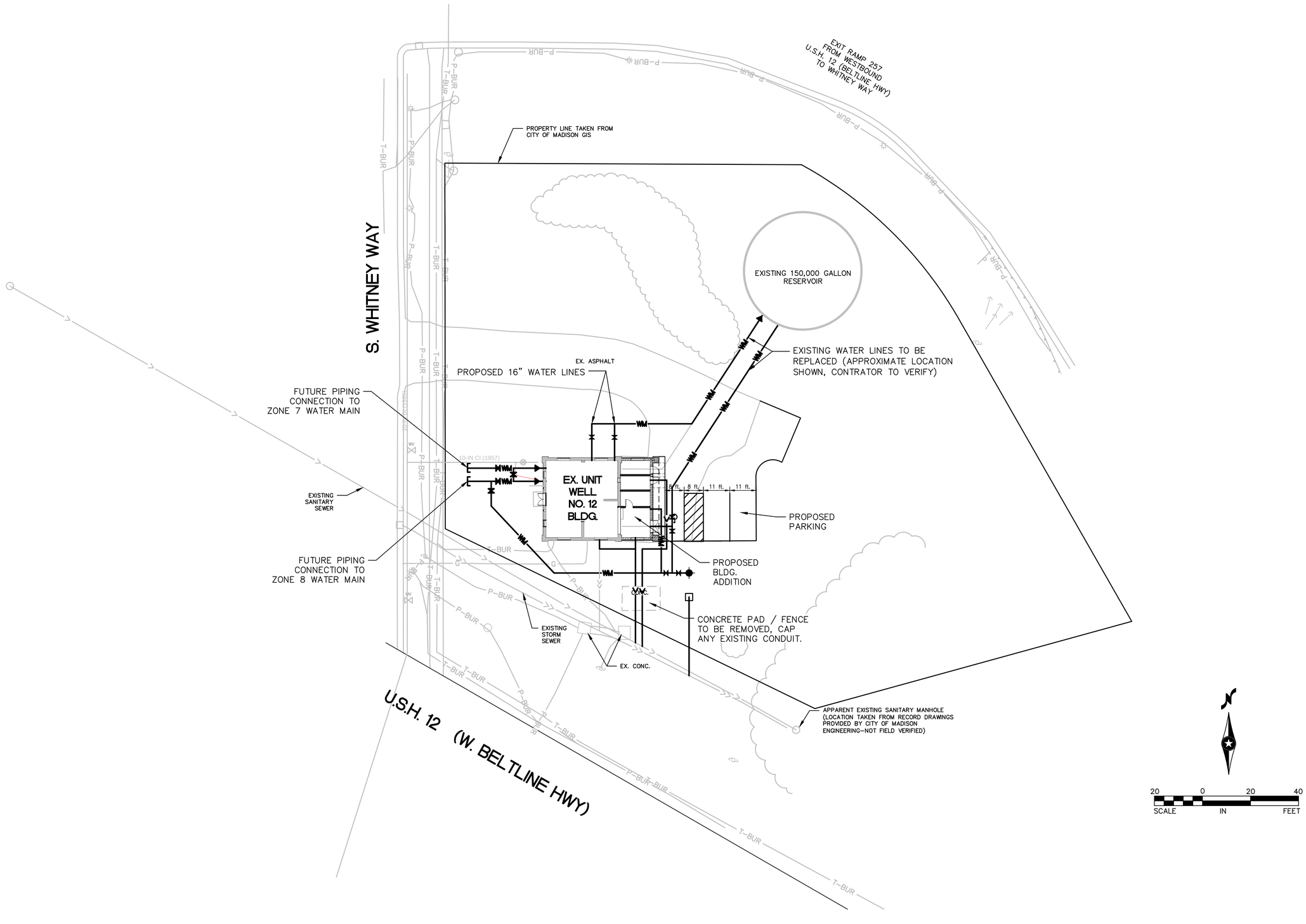
MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-15
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN

SHEET TITLE
SYMBOLS, ABBREVIATIONS, LEGENDS & GENERAL NOTES

SHEET
G3

PLOTTED: 6-15-2015 11:50 AM



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SAVED: 6-13-2015 12:11 AM USER: CHRIS EPSTEIN

Madison Water Utility

Potter Lawson
Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

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PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY JON STRAND
DRAWN BY PATTY LIBECKI

Short Elliott Hendrickson, Inc. @ (SEH)

SITE MAP

SHEET
C1

PLOTTED: 6-15-2015 11:51 AM

S. WHITNEY WAY

EXISTING 150,000 GALLON RESERVOIR

EXIT RAMP 257 FROM WESTBOUND U.S. 12 (BELTLINE HWY) TO WHITNEY WAY

EXISTING 10" WATER LINE TO BE REPLACED WITH NEW 16" WATER LINE REROUTED AS SHOWN (APPROXIMATE LOCATION, CONTRATOR TO VERIFY)

EXISTING 12" WATER LINE TO BE REPLACED WITH NEW 12" WATER LINE (APPROXIMATE LOCATION, CONTRATOR TO VERIFY)

EX. ASPHALT SAWCUT PAVEMENT & INSTALL GRAVEL TRACKING DRIVE

PROPOSED 16" WATER LINES

FUTURE 16" PIPING CONNECTION TO ZONE 7 WATER MAIN

10-IN DI (1985)

10-IN CI (1957)

EX. UNIT WELL NO. 12 BLDG.

PROPOSED BLDG. ADDITION

FFLR 994.74

PROPOSED PARKING

FUTURE 16" PIPING CONNECTION TO ZONE 8 WATER MAIN

STAKED SEDIMENT LOG OR SILT FENCE

CONC.

PROPERTY LINE TAKEN FROM CITY OF MADISON GIS

994.64
994.10
993.70
993.86
994.00
994.30
994.00
993.50

SCALE 10 0 10 20 IN FEET

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

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		REVISIONS

SEH FILE NO. 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY MARK MICKELSON
DRAWN BY PATTY LIBECKI

Short Elliott Hendrickson, Inc. © (SEH)

GRADING PLAN

SHEET C2

M:\VG\M\MADWI\130564\5-DESIGN\51-DRAWINGS\CIVIL\MA130564C1.DWG
SAVED: 6-13-2015 12:11 AM USER: CHRIS EPSTEIN

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10 0 10 20
SCALE IN FEET

S. WHITNEY WAY

EXISTING 150,000 GALLON RESERVOIR

EXISTING RESERVOIR

PR. 16"x12" REDUCER

PR. CONNECTIONS TO BE MADE OUTSIDE OF RESERVOIR TANK

EXISTING 10" WATER MAIN TO BE REPLACED WITH NEW 16" WATER MAIN REROUTED AS SHOWN (APPROXIMATE LOCATION, CONTRATOR TO VERIFY)

EXISTING 12" WATER MAIN TO BE REPLACED WITH NEW 12" WATER MAIN (APPROXIMATE LOCATION, CONTRATOR TO VERIFY)

EX. ASPHALT

EXISTING SAN MH
RIM 993.86'
INV. (N) 980.16'
INV. (SE) 980.06'
INV. (NW) 980.16'
INV. (SW) 980.16'
(ELEVATIONS PER RECORD DRAWINGS)

FUTURE PIPING CONNECTION TO ZONE 7 WATER MAIN CUT/CAP EX. 10" PIPE FROM STREET, REMOVE REMAINDER OF EX. 10" LINE TO BUILDING. INSTALL NEW 16" STUB FROM 16"x12" REDUCER AT BUILDING, TERMINATE STUB WITH CAP.

FUTURE PIPING CONNECTION TO ZONE 8 WATER MAIN INSTALL NEW 16" STUB FROM 16"x12" REDUCER AT BUILDING, TERMINATE STUB WITH CAP.

376 LF± EX. 8" SANITARY SEWER

10-IN DI (1985)

10-IN CI (1957)

PR. 16"x12" REDUCERS

PR. 16" BUTTERFLY VALVES

PR. 16" WATER MAINS

PR. 90° BEND

PR. 16"x16" TEE

PR. 16" WATER MAIN

PR. 45° & 22.5° BEND

PR. 16"x12" TEE

PR. 16"x16" TEES

PR. 12" GATE VALVE

EX. 4" SAN. PIPE, ABANDON AND CAP AT MAIN

PR. 45° BEND

PR. 12" WATER MAINS

EX. UNIT WELL NO. 12 BLDG.

PROPOSED BLDG. ADDITION

PR. 45° BEND

PR. 90° BEND

PROPOSED PARKING

PR. 12" GATE VALVE

PR. 12"x12"TEE

PR. 12" GATE VALVE

PR. 6" WATER MAIN

PR. 12" WATER MAIN

PR. 12" WATER MAIN

PR. 12"x12" TEE w/6" REDUCER EAST

PR. FLUSHING HYDRANT WITH ISOLATION VALVE. PAINT WHITE.

PR. 6" GATE VALVE

REROUTE EX. FLOOR DRAIN TO PR. SAN LATERAL INSTALL CLEAN-OUTS AT BENDS

PR. 45° BEND

EX. STORM LINE TO BE CAPPED & ABANDONED

PR. 12"x6" TEE

PR. 12" GATE VALVE

PR. 3'x3' STM INLET W/ GRATED CASTING (NF R-1878 SERIES)

CONC.

CONC.

PR. 8" SAN SWR LATERALS

PR. 12" STM SWR

EX. CONCRETE PAD / FENCE TO BE REMOVED, CAP ANY EXISTING CONDUIT.

CONTRACTOR TO VERIFY CONNECTION LOC. & ELEV. PRIOR TO CONSTRUCTION.

APPARENT EX. SAN. SWR. & CONCRETE BOX CULVERT LOCATION. CONTRACTOR TO EXCAVATE, VERIFY INV. & LOCATION. CONTACT ENGINEER TO VERIFY & EVALUATE POTENTIAL CONNECTION LOCATION.

PROPERTY LINE TAKEN FROM CITY OF MADISON GIS

APPARENT EX SAN MH
IE = 977.9±
CONTRACTOR TO VERIFY LOCATION & ELEVATION PRIOR TO CONSTRUCTION

(LOCATION/ELEV TAKEN FROM RECORD DRAWINGS PROVIDED BY CITY OF MADISON ENGINEERING & HAVE NOT BEEN FIELD VERIFIED)

U.S.H. 12 (W. BELTLINE HWY)

P-BUR T-BUR G WM WV MH CONC.

Madison Water Utility

Potter Lawson Success by Design

SEH

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UTILITY PLAN

SHEET
C3

M:\KO\WI\MADMU\130564\5-DESIGN\51-DRAWINGS\CIVIL\MA130564C1.DWG
SAVED: 6-13-2015 12:11 AM USER: CHRIS EPSTEIN

PLOTTED: 6-15-2015 11:54 AM

PLANT LIST

QUANTITIES LISTED HEREIN ARE FOR REVIEW PURPOSES ONLY.
PLANT QUANTITIES ILLUSTRATED ON PLANS SHALL BE VERIFIED BY BIDDING CONTRACTOR.

QTY.	SYM	BOTANICAL NAME	COMMON NAME	SIZE	COMMENTS
DECIDUOUS TREES					
1	AFM	ACER X FREEMANII 'MARMO'	MARMO MAPLE	2 1/2" CAL	B & B
4	QR	QUERCUS RUBRA	RED OAK	2 1/2" CAL	B & B
1	TLA	TILIA AMERICANA	AMERICAN LINDEN	2 1/2" CAL	B & B
DECIDUOUS SHRUBS					
7	IV	ILEX VERTICULATA	WINTERBERRY	36" HT	B & B
20	PO	PHYSOCARPOS OPULIFOLIUS 'MINDA'	COPPERTINA NINEBARK	36" HT	B & B
EVERGREEN SHRUBS					
15	JCS	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	36" SPD	B & B

LEGEND

DECIDUOUS TREES

DECIDUOUS SHRUBS

EVERGREEN SHRUBS

GENERAL NOTES

-ALL PLANT MATERIAL IS SUBJECT TO AVAILABILITY AND PROPER SEASONAL PLANTING PROCEDURES.

-ANY SUBSTITUTIONS, MODIFICATIONS, OR DEVIATIONS FROM THIS PLAN REQUIRE PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT.

-ALL PLANT MATERIAL SHALL BE PLANTED IN ACCORDANCE TO THE PLANTING DETAILS.

-ALL PLANTING BEDS TO RECEIVE 3" SHREDDED HARDWOOD MULCH.

-THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES, INCLUDING IRRIGATION LINES, PRIOR TO DIGGING. CONSULT DIGGERS HOTLINE.

-THE CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS, FEES AND LICENSES NECESSARY FOR THE INSTALLATION OF THIS PLAN.

-THE CONTRACTOR IS TO REVIEW ALL SITE ENGINEERING DOCUMENTS PRIOR TO INSTALLATION. ANY CONFLICTS MUST BE REPORTED TO THE LANDSCAPE ARCHITECT. THESE LANDSCAPE DRAWINGS ARE FOR THE INSTALLATION OF PLANT MATERIALS ONLY UNLESS OTHERWISE STATED.

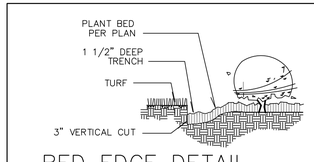
-STAKE AND LAYOUT ALL PLANT LOCATIONS FOR APPROVAL OF LANDSCAPE ARCHITECT OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

NOTE:

ORDINANCE 28.142 (2)(a)-(d) APPLICABILITY
ALL CONDITIONS ARE MET, THUS LANDSCAPE IMPROVEMENTS ONLY APPLY TO AFFECTED AREA.

ORDINANCE 28.142 (5)(a) DEVELOPMENT FRONTAGE
SITE FRONTAGE ON WHITNEY WAY EQUALS 251'. THEREFORE 9 OVERSTORY TREES AND 45 SHRUBS ARE REQUIRED.

ORDINANCE 28.142(6) PARKING LOT
THE EXISTING PARKING LOT PLUS PROPOSED ADDITIONAL PARKING SPACES IS LESS THAN 20 PARKING SPACES, THEREFORE PARKING LOT LANDSCAPING IS NOT REQUIRED.



BED EDGE DETAIL

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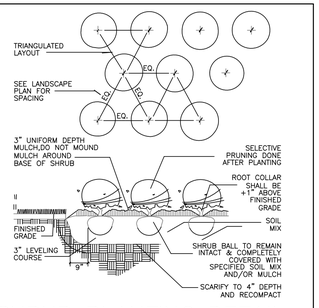
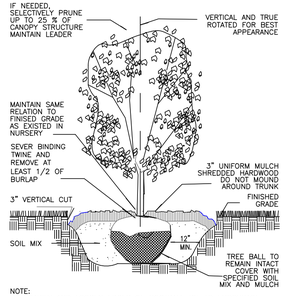
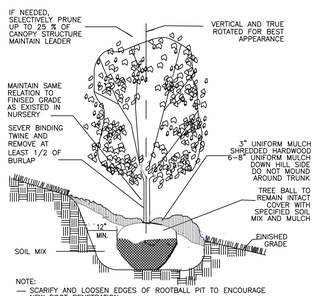


SHRUB PLANTING DETAIL

SCALE:N.T.S.



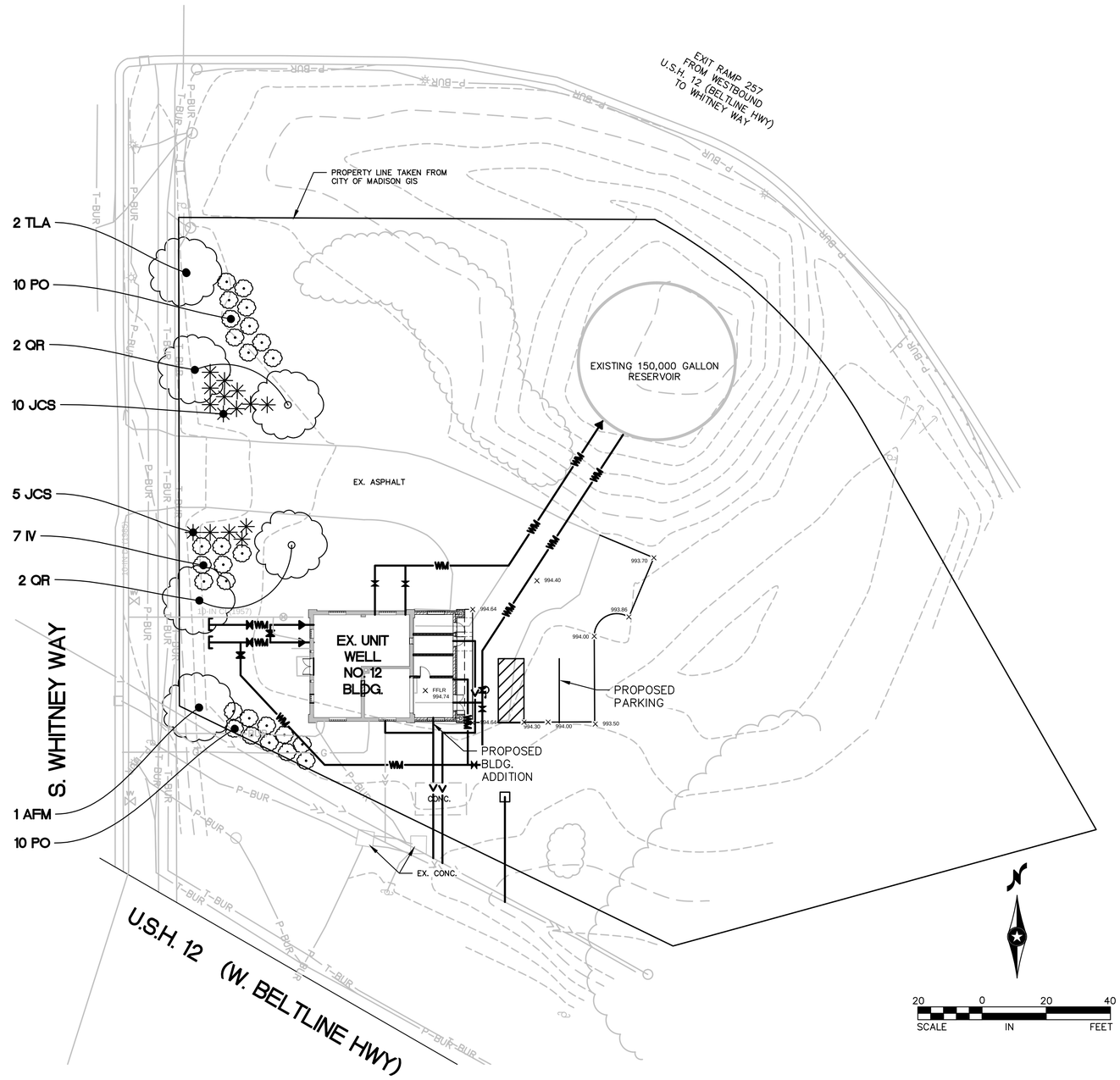
NOTE:
— SCARIFY AND LOOSEN EDGES OF ROOTBALL PIT TO ENCOURAGE NEW ROOT PENETRATION
— MULCH BEDS SHALL BE CIRCULAR UNLESS OTHERWISE NOTED, ONE FOOT PER CALIPER INCH, MINIMUM FIVE FOOT DIAMETER.
— FOR EVERGREEN TREES MULCH TO ONE FOOT BEYOND DRIPLINE.
— REMOVE ALL PROTECTIVE WRAPPING AFTER INSTALLATION.



NOTE:
— SCARIFY AND LOOSEN EDGES OF ROOTBALL PIT TO ENCOURAGE NEW ROOT PENETRATION
— MULCH BEDS SHALL BE CIRCULAR UNLESS OTHERWISE NOTED, ONE FOOT PER CALIPER INCH, MINIMUM FIVE FOOT DIAMETER.
— FOR EVERGREEN TREES MULCH TO ONE FOOT BEYOND DRIPLINE.
— REMOVE ALL PROTECTIVE WRAPPING AFTER INSTALLATION.

TREE PLANTING DETAIL

SCALE:N.T.S.



MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY ROGER DUPLER
DRAWN BY PATTY LIBECKI

Short Elliott Hendrickson, Inc. © (SEH)

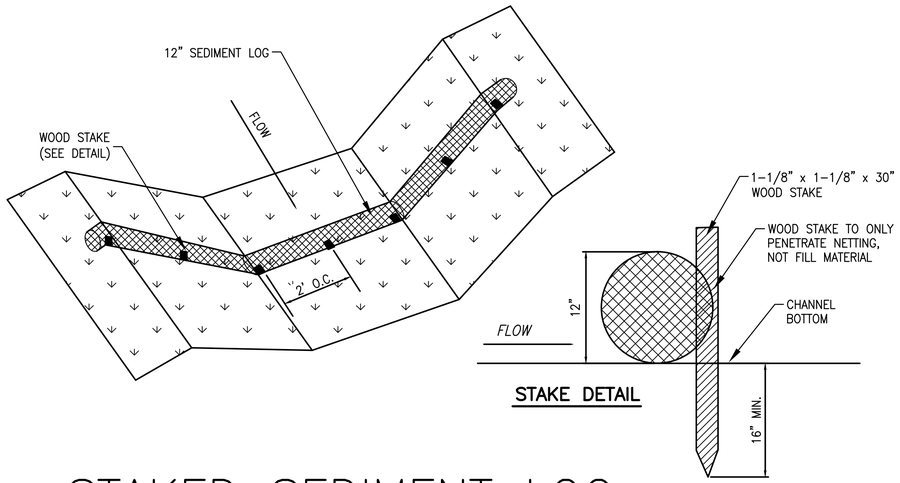
UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

LANDSCAPE PLAN

SHEET
L1

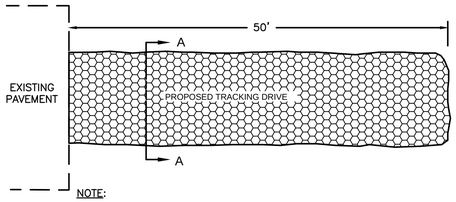
M:\KO\WA\WADWA\130564\5-DESIGN\51-DRAWINGS\CIVIL\MA130564C1.DWG
SAVED: 6-13-2015 12:11 AM
USER: CHRIS EPSTEIN

PLOTTED: 6-11-2015 10:22 PM



STAKED SEDIMENT LOG

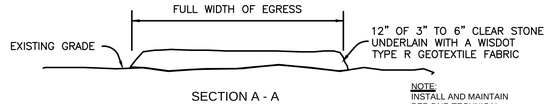
NTS



NOTE:

CONTRACTOR TO INSTALL ENTRANCE ROAD PRIOR TO START OF CONSTRUCTION, AND MAINTAIN ROAD UNTIL WORK IS COMPLETED.

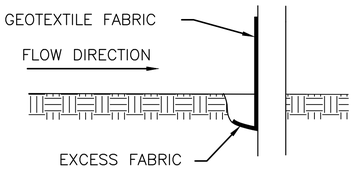
CONTRACTOR TO CLEAN EXISTING PAVEMENT DAILY AT DIRECTION CITY ENGINEER



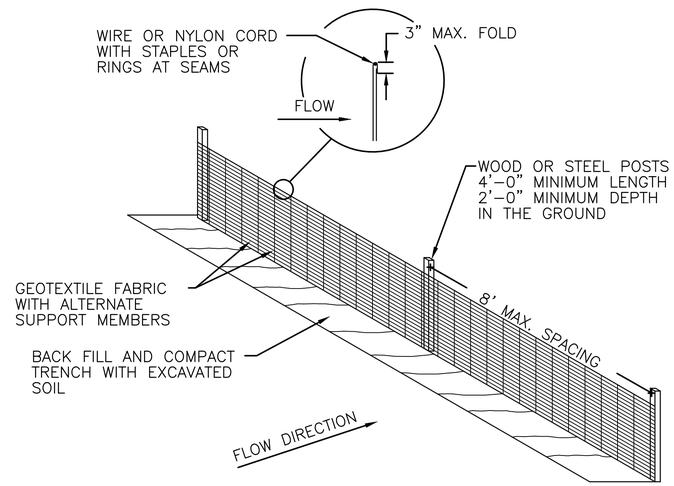
SECTION A - A

NOTE:
INSTALL AND MAINTAIN
PER DNR TECHNICAL
STANDARD 1057

TEMPORARY GRAVEL TRACKING DRIVE

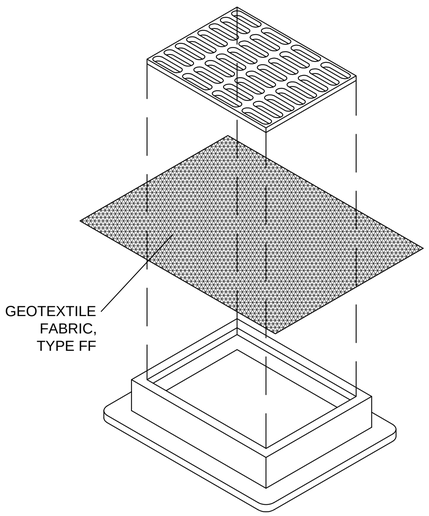


TRENCH DETAIL



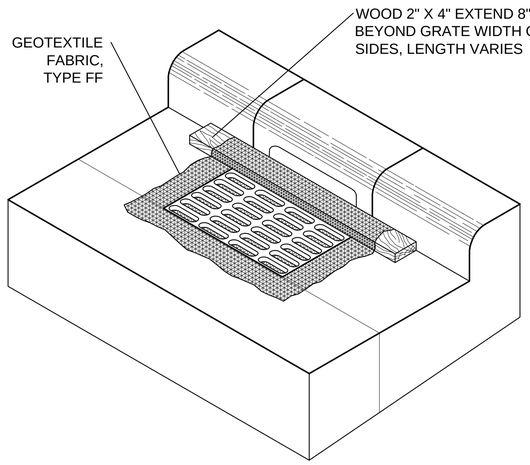
SILT FENCE

NTS



INLET PROTECTION, TYPE B WITHOUT CURB BOX

(CAN BE INSTALLED ON ANY INLET TYPE)
NTS



INLET PROTECTION WITH CURB BOX

NTS

NOTE:
INSTALL AND MAINTAIN
PER DNR TECHNICAL
STANDARD 1060

GENERAL NOTES:

FABRIC SHALL BE REPLACED AT THE ENGINEER'S DISCRETION.

THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX.

MANUFACTURED ALTERNATIVES MAY BE USED WITH THE ENGINEERS APPROVAL.

WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMANT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

FABRIC SIZE SHALL BE 8" (MIN.) GREATER ON ALL SIDES OF THE INLET COVER TO PROVIDE A HAND HOLD WHEN MAINTENANCE OR REMOVAL IS REQUIRED.

FOR INLET PROTECTION WITH CURB BOX, AN ADDITIONAL 18" OF FABRIC SHALL BE WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES.

PROTECTION TO REMAIN IN PLACE UNTIL SITE VEGETATION IS ESTABLISHED.

M:\VO\WA\WADWU\130564\5-DESIGN\51-DRAWINGS\CIVIL\MA130564D1.DWG
SAVED: 6-11-2015 9:35 AM USER: CHRIS EPSTEIN

Madison Water Utility

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

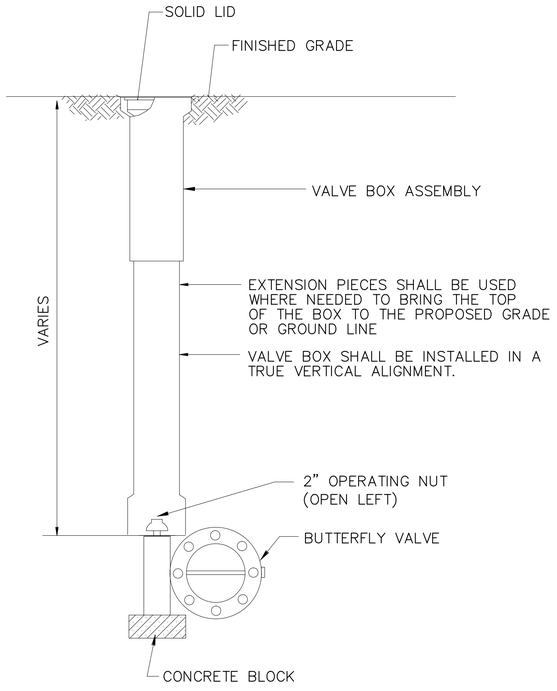
REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 6-12-2014
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN
Short Elliott Hendrickson, Inc. © (SEH)

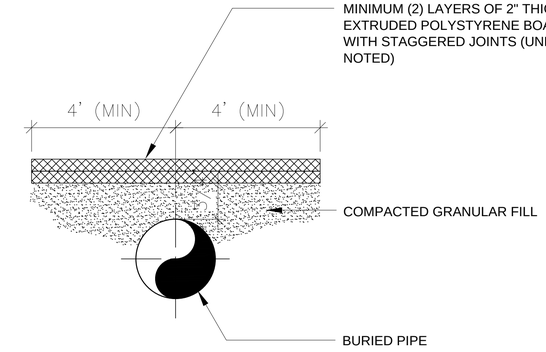
SHEET TITLE
SITE DETAILS

SHEET
D1

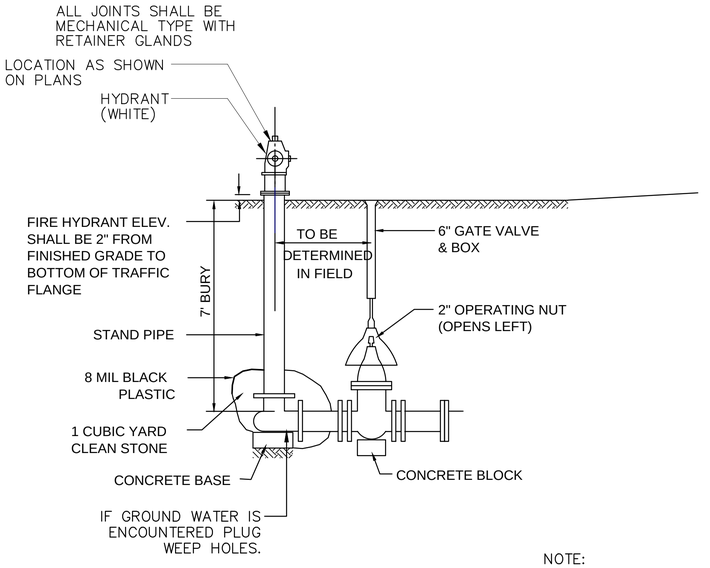
PLOTTED: 6-11-2015 10:31 PM



A D2 BUTTERFLY VALVE & BOX
SCALE: NONE

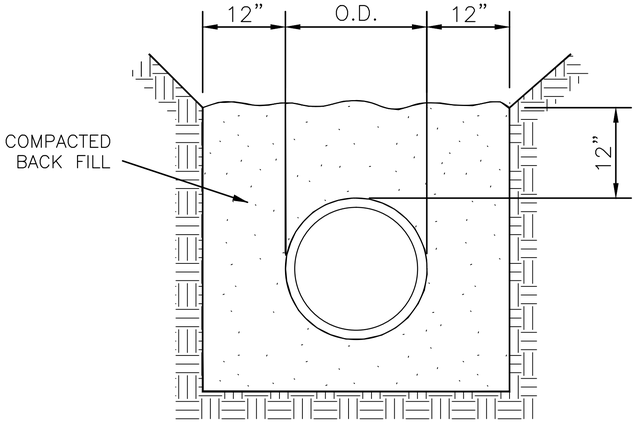


B D2 PIPE INSULATION DETAIL
SCALE: NONE

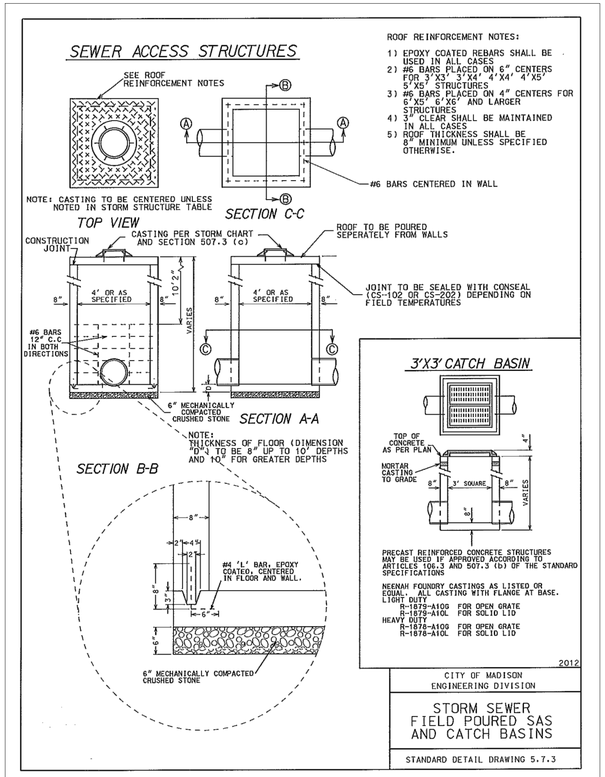


NOTE:
ALL JOINTS SHALL BE MECHANICAL TYPE W/ RETAINER GLANDS

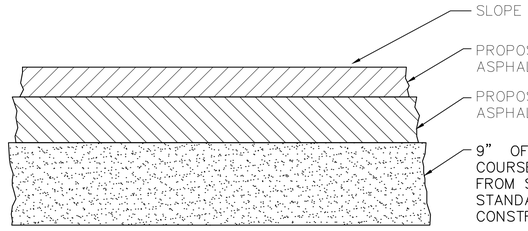
C D2 TYPICAL HYDRANT
SCALE: NONE



D D2 TYPICAL PIPE EMBEDMENT
SCALE: NONE



E D2 STORM INLET DETAIL
SCALE: NONE



F D2 ASPHALT PAVEMENT SECTION
SCALE: NONE

Madison Water Utility

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 12-03-2014
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN
Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE
SITE DETAILS

SHEET
D2

M:\VG\WI\MADWU\130564\5-DESIGN\51-DRAWINGS\CIVIL\MA130564D2.DWG
SAVED: 6-11-2015 1:32 PM USER: CHRIS EPSTEIN

REFERENCE STANDARDS

ACI	AMERICAN CONCRETE INSTITUTE
ADA	AMERICANS WITH DISABILITIES ACT
AGA	AMERICAN GAS ASSOCIATION
AIA	AMERICAN INSTITUTE OF ARCHITECTS
AWS	AMERICAN WELDING SOCIETY
AWI	ARCHITECTURAL WOODWORKING INSTITUTE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING REFRIGERATING, AND AIR CONDITIONING ENGINEERS
ASPE	AMERICAN SOCIETY OF PLUMBING ENGINEERS
ASSE	AMERICAN SOCIETY OF SANITARY ENGINEERS
AWWA	AMERICAN WATER WORKS ASSOCIATION
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASTM	AMERICAN SOCIETY OF TESTING AND MATERIALS
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS
CS	COMMERCIAL STANDARD
CSI	CONSTRUCTION SPECIFICATION INSTITUTE
CISPI	CAST IRON SOIL PIPE INSTITUTE
DNR	STATE OF WISCONSIN, DEPARTMENT OF NATURAL RESOURCES
DOT	STATE OF WISCONSIN, DEPARTMENT OF TRANSPORTATION
DOC	STATE OF WISCONSIN, DEPARTMENT OF COMMERCE
FS	FEDERAL SPECIFICATIONS
IGCC	INSULATING GLASS CERTIFICATION COUNCIL
MSS	MANUFACTURERS STANDARDIZATION SOCIETY
NBS	NATIONAL BUREAU OF STANDARDS
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NFPA	NATIONAL FOREST PRODUCTS ASSOCIATION
NPA	NATIONAL PARTICLEBOARD ASSOCIATION
NSF	NATIONAL SANITATION FOUNDATION
NSPI	NATIONAL SWIMMING POOL INSTITUTE
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PCI	PRECAST/PRESTRESSED CONCRETE INSTITUTE
PDI	PLUMBING AND DRAINAGE INSTITUTE
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SIGMA	SEALED INSULATING GLASS MANUFACTURERS ASSOCIATION
SSHSC	STANDARD SPECIFICATION FOR HIGHWAY AND STRUCTURE CONSTRUCTION, WISCONSIN DOT, DIVISION OF HIGHWAYS
UL	UNDERWRITERS LABORATORIES
WCF	WATER CONDITIONING FOUNDATION

TRADE STANDARDS

A/E	ARCHITECT AND/OR ENGINEER
EC	ELECTRICAL CONTRACTOR
ELC	ELEVATOR CONTRACTOR
FPC	FIRE PROTECTION CONTRACTOR
FSC	FOOD SERVICE CONTRACTOR
GC	PRIME CONTRACTOR OR DESIGNATED CONTRACTOR OF HIS CHOICE
HC	HEATING CONTRACTOR
PC	PLUMBING CONTRACTOR
TCC	TEMPERATURE CONTROL CONTRACTOR

GENERAL STANDARDS

AFF	ABOVE FINISHED FLOOR
ALUM	ALUMINUM
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BLKHD	BULKHEAD
C/C	CENTER TO CENTER
C&G	CURB AND GUTTER
CJ	CONTROL JOINT
CL	CENTER LINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CONST JT	CONSTRUCTION JOINT
COL	COLUMN
CONC	CONCRETE
DIM	DIMENSION
DWG	DRAWING
EA	EACH
EFS	EXTERIOR FINISH SYSTEM
EL	ELEVATION
ELEC	ELECTRIC/ELECTRICAL
EMER	EMERGENCY
EQ	EQUAL
EQUIP	EQUIPMENT
EXST	EXISTING
EXP	EXPANSION
EXP BT	EXPANSION BOLT
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
EXST GR	EXISTING GRADE
FD	FLOOR DRAIN
FGL	FIBERGLASS
FT	FOOT/FEET
FTG	FOOTING
GL	GLASS
GL BLK	GLASS BLOCK
GLZ	GLAZING
GLZ CMU	GLAZED CONCRETE MASONRY UNIT
GR	GRADE/GRADING
GSB	GYPSUM SHEATHING BOARD
GWB	GYPSUM WALLBOARD
GYP	GYPSUM
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTER
HDR	HEADER
HDWD	HARDWOOD
HDW	HARDWARE
HM	HOLLOW METAL
HMD	HOLLOW METAL DOOR
HMF	HOLLOW METAL FRAME
HT	HEIGHT
HTG	HEATING
HVAC	HEATING, VENTILATING, & AIR CONDITIONING

GENERAL STANDARDS

IN	INCHES
JAN CLO	JANITOR CLOSET
JST	JOIST
JT	JOINT
K	KIP
KD	KNOCKED DOWN
KIP FT	ONE THOUSAND FOOT POUNDS
KIT	KITCHEN
KLF	KIPS PER LINEAR FOOT
KO	KNOCKOUT
KOP	KNOCKOUT PANEL
KPL	KICK PLATE
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH
LAB	LABORATORY
LAM	LAMINATE/LAMINATED
LAU	LAUNDRY
LAV	LAVATORY
LBR	LUMBER
LBS	POUNDS
LD BRG	LOAD BEARING
LF	LINEAR FEET (FOOT)
LG	LENGTH, LONG
LH	LEFT HAND
LHR	LEFT HAND REVERSE
LIB	LIBRARY
LIN	LINEAR
LKR	LOCKER
LKR RM	LOCKER ROOM
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LPT	LOW POINT
LR	LIVING ROOM
LT	LIGHT
LTG	LIGHTING
LT WT	LIGHTWEIGHT
LVR	LOUVER
LWC	LIGHTWEIGHT CONCRETE
MAINT	MAINTENANCE
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MBR	MASTER BEDROOM
MBW	MASONRY BEARING WALL
MCM	METAL COMPOSITE MATERIAL
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MEMB	MEMBRANE
MEZZ	MEZZANINE
MFR	MANUFACTURER
MH	MANHOLE
MHGT	MOUNTING HEIGHT
MIN	MINIMUM
MIRR	MIRROR
MISC	MISCELLANEOUS
MJ	MOVEMENT JOINT
MKBD	MARKER BOARD
ML	METAL LATH
MLDG	MOLDING (MOULDING)
MLWK	MILLWORK
MO	MASONRY OPENING
MS	MACHINE SCREW
MTD	MOUNTED
MTG	MOUNTING
MTL	METAL
MTP	METAL TOILET PARTITION
MULL	MULLION
MWP	MEMBRANE WATERPROOFING
N	NORTH
NA	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
OFCI	OWNER FURNISHED-CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED-OWNER INSTALLED
O/O	OUT TO OUT
OF	OUTSIDE FACE
OA	OUTSIDE AIR
OC	ON CENTER
OD	OUTSIDE DIAMETER
OFF	OFFICE
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OVHD	OVERHEAD
OZ	OUNCE
PAR	PARALLEL
PB	PUSHBUTTON
PBD	PARTICLEBOARD
PCF	POUNDS PER CUBIC FOOT
PCP	PORTLAND CEMENT PLASTER
PERIM	PERIMETER
PERP	PERPENDICULAR
PERF	PERFORATED
PG	PIPE GUARD
PI	POINT OF INTERSECTION
PIV	POST INDICATOR VALVE
PKWY	PARKWAY
PL	PLATE
PL	PROPERTY LINE
PL GL	PLATE GLASS
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLBG	PLUMBING
PLF	POUNDS PER LINEAR FOOT
PLYWD	PLYWOOD
PMFS	PRE-MOLDED FILLER STRIP
PNL	PANEL
POL	POLISHED
PP	POWER POLE
PR	PAIR
PREFAB	PREFABRICATED
PREFIN	PREFINISHED
PRKG	PARKING
PROJ	PROJECT
PROP	PROPERTY
PS CONC	PRESTRESSED CONCRETE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PNT	PAINT/POINT/POST TENSIONED/
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
QT	QUARRY TILE
QTB	QUARRY TILE BASE
QTF	QUARRY TILE FLOOR
QTY	QUANTITY

GENERAL STANDARDS

RB	RESILIENT BASE
RC	REINFORCED CONCRETE
RCVR	RECEIVER
RECPT	RECEPTACLE
RD	ROOF DRAIN
RD	ROAD
REBAR	REINFORCING STEEL BARS
REC	RECESSED
RECT	RECTANGULAR
REF	REFERENCE
REFR	REFRIGERATOR
REINF	REINFORCING/REINFORCEMENT
REM	REMOVABLE
REQD	REQUIRED
RESIL	RESILIENT
RET	RETURN
REV	REVISE/REVISION
RFG	ROOFING
RF	RESILIENT FLOORING
RH	RIGHT HAND
RHR	RIGHT HAND REVERSE
RLG	RAILING
RM	ROOM
RND	ROUND
RO	ROUGH OPENING
ROW	RIGHT OF WAY
RR	RAILROAD
RV	ROOF VENT
S	SOUTH
SA	SUPPLY AIR
SAFB	SOUND ATTENUATION FIRE BLANKET
SAN	SANITARY
SB	SPLASH BLOCK
SC	SOLID CORE
SCHED	SCHEDULE/SCHEDULED
SCJ	SLAB CONTROL JOINT
SCMU	SOLID CONCRETE MASONRY UNIT
SCT	STRUCTURAL CLAY TILE
SD	SOAP DISPENSER
SECT	SECTION
SFTWD	SOFTWOOD
SHR	SHOWER
SHT	SHEET
SHTHG	SHEATHING
SIM	SIMILAR
SJ	SCORED JOINT
SM	SHEET METAL
SND	SANITARY NAPKIN DISPENSER
SNR	SANITARY NAPKIN RECEPTOR
SPEC	SPECIFICATION
SPKLR	SPRINKLER
SPKR	SPEAKER
SQ	SQUARE
SQ FT	SQUARE FOOT (FEET)
SQ IN	SQUARE INCH
SQ YD	SQUARE YARD
SS	SERVICE SINK
SST	STAINLESS STEEL
ST	STREET
STAG	STAGGERED
STC	SOUND TRANSMISSION CLASSIFICATION
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STL JST	STEEL JOIST
STL LNTL	STEEL LINTEL
STL PL	STEEL PLATE
STOR	STORAGE
STRUCT	STRUCTURAL/STRUCTURE
SUSP	SUSPEND/SUSPENDED
SUSP CLG	SUSPENDED CEILING
SW	SIDEWALK
SW	SWITCH
SYMM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
TB	TOWEL BAR
TD	TOWEL DISPENSER
TD	TRENCH DRAIN
TDR	TOWEL DISPENSER/RECEPTACLE
TEL	TELEPHONE
TEMP	TEMPERATURE
TER	TERRAZZO
TFF	TOP OF FINISH FLOOR
T&G	TONGUE AND GROOVE
THRES	THRESHOLD
TMPD GL	TEMPERED GLASS
TOB	TOP OF BEAM
TOC	TOP OF CONCRETE
TOC	TOP OF CURB
TOF	TOP OF FOOTING
TOJ	TOP OF JOIST
TOPO	TOPOGRAPHY
TOS	TOP OF SLAB
TOS	TOP OF STEEL
TOW	TOP OF WALL
TP	TELEPHONE POLE
TPH	TOILET PAPER HOLDER
TRTD	TREATED
TV	TELEVISION
TYP	TYPICAL
UC	UNDERCUT
UF	UNDER FLOOR
UGND	UNDERGROUND
UH	UNIT HEATER
UNEX	UNEXCAVATED
UNFIN	UNFINISHED
UON	UNLESS OTHERWISE NOTED
UR	URINAL
UTIL	UTILITY
UV	UNIT VENTILATOR
VB	VINYL BASE
VIF	VERIFY IN FIELD
VR	VAPOR RETARDER
VNR	VENEER
VENT	VENTILATING
VERT	VERTICAL
W	WEST
W/O	WITHOUT
WBL	WOOD BLOCKING
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WGL	WIRED GLASS
WH	WALL HYDRANT
WP	WEATHERPROOF

MATERIAL LEGEND

SECTION

- EARTH
- GRANULAR FILL
- GROUT, MORTAR AND PLASTER
- CONCRETE MASONRY UNITS
- BRICK
- STONE
- METAL
- WOOD (ROUGH)
- PLYWOOD
- INSULATION (LOOSE OR BATT)
- INSULATION (RIGID)

ELEVATION

- BRICK
- CONCRETE, PLASTER AND ACOUSTICAL CEILING TILE
- STONE

SYMBOLS LEGEND

SPECIFIC NOTES

- XX — NEW NOTE
- XX — DEMOLITION NOTE
- X — WINDOW/IGU TYPE
- XXXX — FINISH NOTE
- XXX'-XX" — CEILING HEIGHT NOTE

ROOM NAME AND NUMBER

ROOM NAME
RM. #

'OPENING' REFERENCE NUMBER

100A

PARTITION TYPE REFERENCE

XX / XX — NOTE: PARTITION TYPES DESIGNATED 'S' ARE TO EXTEND TO STRUCTURE ABOVE. EXAMPLE: XXS

BUILDING SECTION REFERENCE

XX / XXXX — DETAIL NUMBER; DRAWING NUMBER

WALL SECTION REFERENCE

XX / XXXX — DETAIL NUMBER; DRAWING NUMBER

EXTERIOR ELEVATION REFERENCE

XX / XXXX — DETAIL NUMBER; DRAWING NUMBER

INTERIOR ELEVATION REFERENCE

XX / XXXX — DETAIL NUMBER; DRAWING NUMBER

INTERIOR ELEVATION REFERENCE (MULTIPLE VIEW)

XX / XXXX / XX / XX — DETAIL NUMBER; DRAWING NUMBER

DETAIL SECTION REFERENCE

XX / XXXX — DETAIL NUMBER; DRAWING NUMBER

DETAIL REFERENCE

XX / XXXX — DETAIL NUMBER; DRAWING NUMBER

EXIT ARROW SYMBOL

XX" — EXIT WIDTH
XXX — NUMBER OF OCCUPANTS

DIMENSIONS

3/4" — SLASH INDICATES DIMENSION TO FACE OR CENTERLINE OF OBJECT

SPOT ELEVATIONS ON PLANS

000'-00"

FLOOR ELEVATION REFERENCE

LOCATION
000'-0"

A — WINDOW/LOUVER TYPE

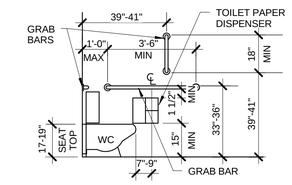
F.E.C. — FIRE EXTINGUISHER, OFCI

MOUNTING HEIGHTS

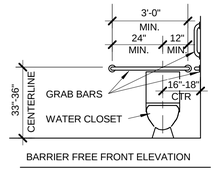
GENERAL NOTES:

1. SEE FLOOR PLANS/ENLARGED FLOOR PLANS FOR TOILET DESIGNATIONS AND LOCATIONS.
2. MOUNTING HEIGHT DRAWINGS BELOW ARE NOT TO SCALE.
3. SEE PLUMBING DRAWINGS/SPECS FOR TYPES OF PLUMBING FIXTURES.

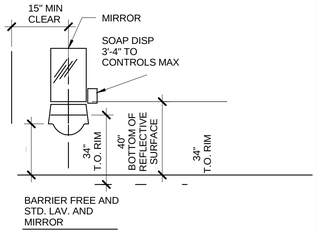
MOUNTING HEIGHTS



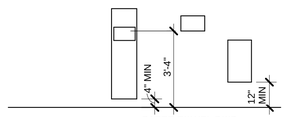
BARRIER FREE SIDE ELEVATION



BARRIER FREE FRONT ELEVATION



BARRIER FREE AND STD. LAV. AND MIRROR



PAPER TOWEL DISP. & WASTE RECEPTACLE

GENERAL NOTES

1. SEE FLOOR PLAN FOR PARTITION TYPE
2. SEE STRUCTURAL DRAWINGS FOR INTERIOR CMU LOAD BEARING WALLS.
3. SEE A301 FOR PARTITION TYPES INDICATED ON THE DRAWINGS.
4. ALL CMU PARTITIONS ARE RUNNING BOND UNLESS OTHERWISE INDICATED.
5. REFER TO ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES, FOR ADDITIONAL NOTES, SYMBOLS AND ABBREVIATIONS.
6. IN MASONRY CONSTRUCTION, LOCATE DOOR FRAMES ON THE SIDE OF THE WALL TOWARD THE ROOM INTO WHICH THE DOOR SWINGS UNLESS OTHERWISE INDICATED.
7. PROVIDE BULLNOSE CMU AT OUTSIDE VERTICAL CORNERS UNLESS OTHERWISE INDICATED.
8. SEE DRAWINGS A002 FOR REFERENCE FLOOR PLAN INDICATING FIRE RATED PARTITIONS AND SPACES. ALL MECHANICAL, ELECTRICAL AND PLUMBING PENETRATIONS THROUGH FIRE RATED CONSTRUCTION SHALL BE SLEEVED AND FIRE-SAFED, HAVE FIRE DAMPERS EQUIVALENT TO THE HOURLY FIRE RATING OF THE PENETRATED CONSTRUCTION.
9. ALL PITCHED FLOOR AREAS SHOWN WITH PITCH LINES SHALL SLOPE AT 1/4"/FT. UNLESS OTHERWISE INDICATED. PROVIDE A SLAB DEPRESSION AT ALL FLOOR DRAINS WHERE PITCH LINES ARE NOT SHOWN ON PLANS.
10. UNLESS OTHERWISE INDICATED, DASHED PLAN ELEMENTS INDICATE ITEMS TO BE PROVIDED BY THE OWNER AND ARE SHOWN FOR COORDINATION PURPOSES ONLY.
11. WHERE SPECIFIC DIMENSIONS, DETAILS OR DESIGN INTENT CANNOT BE DETERMINED FROM THE DOCUMENTS, CONSULT A/E BEFORE PROCEEDING WITH THE WORK.
12. FINISH FLOOR ELEVATIONS ARE TO THE TOP OF CONCRETE UNLESS OTHERWISE INDICATED.
13. WHERE DOORS OCCUR IN PARTITIONS WITHOUT DIMENSIONS, SEE THE DOOR FRAME DETAILS TO DETERMINE THE EXACT LOCATION OF THE DOOR.
14. REFER TO 1/4" SCALE ENLARGED FLOOR PLANS FOR DIMENSIONS OF TOILET ROOMS AND OTHER PLAN ELEMENTS
15. GENERAL CONTRACTOR SHALL PROVIDE STIFFENERS, BRACING, BACKING PLATES, AND SUPPORTING BRACKETS REQUIRED FOR THE PROPER INSTALLATION OF ALL CASEWORK, TOILET ROOM ACCESSORIES, TOILET PARTITIONS, AND OTHER SIMILAR.
16. ALL RECESSED CABINETS, PANELS, BOXES, ETC. LOCATED IN FIRE RATED PARTITIONS SHALL BE INSTALLED IN A MANNER WHICH MAINTAINS THE FIRE RATING OF THE PARTITION.
17. GENERAL CONTRACTOR SHALL COORDINATE ALL PLUMBING, MECHANICAL AND ELECTRICAL FLOOR, ROOF AND WALL SLEEVES AND SHAFTS WITH THE DRAWINGS OF ALL OTHER TRADES.
18. REFER TO PLUMBING, MECHANICAL AND ELECTRICAL CONTRACTORS DRAWINGS AND MANUFACTURERS TEMPLATE DRAWINGS FOR ALL EQUIPMENT, SUPPORTS, BOLT SETTING TEMPLATES, ISOLATIONS, SPRING ISOLATORS, ETC.
19. TUCK POINT EXISTING STONE WALL. CONFIRM LOCATIONS WITH OWNER
20. SALVAGE EXISTING STONE WHERE REMOVED AND RE-USE TO PATCH WALL AS SHOWN IN DRAWINGS.
21. SEE ELECTRICAL FOR LIGHTING PLAN. CEILING TO BE EXPOSED TO STRUCTURE. SEE FINISH SCHEDULE FOR INTERIOR FINISH.

GENERAL DEMOLITION NOTES

1. GENERAL CONTRACTOR (GC) SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO DEMOLITION. IF DISCREPANCIES ARE FOUND, NOTIFY A/E FOR CLARIFICATION BEFORE COMMENCING WITH THE WORK.

2. GC AND SUBCONTRACTORS FOR EACH TRADE ARE ADVISED THAT INFORMATION PERTINENT TO THEIR WORK MAY BE INDICATED OR DESCRIBED IN OTHER PORTIONS OF THE CONTRACT DOCUMENTS.

3. REFER TO OTHER TRADES DRAWINGS FOR PLUMBING, HVAC AND ELECTRICAL DEMOLITION WORK.

4. GC AND SUBCONTRACTORS ARE RESPONSIBLE FOR PROVIDING ALL DEMOLITION AND PATCHING WORK REQUIRED TO COMPLETE THEIR WORK IN ACCORDANCE WITH THE DESIGN INTENT, WHETHER FULLY INDICATED OR NOT IN THE CONTRACT DOCUMENTS.

5. THESE DEMOLITION DRAWINGS HAVE BEEN PREPARED BASED UPON EXISTING CONSTRUCTION DOCUMENT DRAWINGS AND FIELD OBSERVATIONS. THE EXACT LOCATION OF THE BUILDING STRUCTURAL ELEMENTS (COLUMNS, BEAMS, LOAD BEARING WALLS, ETC) MAY BE DIFFERENT IN THE FIELD THAN WHAT IS INDICATED OR ASSUMED ON THESE DRAWINGS. GC SHALL FIELD VERIFY THE LOCATION OF ALL BUILDING STRUCTURAL ELEMENTS. ALL BUILDING STRUCTURAL ELEMENTS SHALL REMAIN UNLESS INDICATED TO BE REMOVED ON THE STRUCTURAL DRAWINGS. ANY BUILDING STRUCTURAL ELEMENT INDICATED AS BEING REMOVED ON THIS DRAWING SHALL BE CONFIRMED WITH THE A/E PRIOR TO COMMENCING DEMOLITION.

6. PROVIDE NEW LINTELS AT NEW OPENINGS IN EXISTING WALLS. SEE STRUCTURAL DRAWINGS FOR INFORMATION ON LINTELS.

7. REPLACE OR REPAIR ANY EXISTING CONSTRUCTION SCHEDULED TO REMAIN WHICH IS DAMAGED DURING DEMOLITION.

8. GC SHALL PROVIDE REQUIRED SHORING OR TEMPORARY BRACING DURING DEMOLITION.

9. REMOVE EXISTING CEILINGS AND SUPPORTS WHERE NEW CEILINGS ARE SCHEDULED IN THE ROOM FINISH SCHEDULE.

10. REMOVE PARTITIONS, SHELVING, CABINETRY AND ALL MISCELLANEOUS ITEMS SHOWN WITH DASHED LINES.

11. PATCH ALL FLOORS, WALLS, BASE AND CEILINGS WHERE PARTITIONS, OR MISCELLANEOUS ITEMS ARE REMOVED.

12. REMOVE DOORS, FRAMES AND SIDELIGHTS SHOWN WITH DASHED LINES, UNLESS OTHERWISE NOTED.

13. REMOVE TOILET PARTITIONS AND GRAB BARS SHOWN WITH DASHED LINES, REPAIR EXISTING CONSTRUCTION SCHEDULED TO REMAIN.

14. SALVAGE EXISTING STONE BEING REMOVED FOR RE-USE ON NEW CONSTRUCTION.

15. IF DURING THE CONSTRUCTION OF THIS PROJECT, WORK INVOLVING HAZARDOUS SUBSTANCES IS SUSPECTED, OR ENCOUNTERED, NOTIFY THE OWNER IMMEDIATELY. THE OWNER WITH HIS OWN FORCES OR BY SEPARATE CONTRACT WILL BE RESPONSIBLE FOR COMPLETE INVESTIGATION, REMOVAL, AND DISPOSITION OF THE HAZARDOUS SUBSTANCES IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.

Madison Water Utility

Potter Lawson — Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 126154
PROJECT NO.
ISSUE DATE 06-11-2015
DESIGNED BY
DRAWN BY
Short Elliott Hendrickson, Inc. (SEH)

SHEET TITLE
ABBREVIATIONS, SYMBOLS & NOTES

SHEET
A001

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USER: KELLY HENSLER

CODE INFORMATION

Well 12 UPGRADE AND CONVERSION **Potter Lawson Project No.** 2014.52.00

Madison, WI

General Code Information

ITEM	INFORMATION	REMARKS
Design code:	2009 IBC	
Scope of Work	New masonry and reinforced concrete building	
Occupancy Type:	Separated Use	
	F-1 Factory Industrial (water treatment)	
	H-2 Hazardous (Fluoride Room)	
	H-3 Hazardous (Chlorine Room)	
Construction type:	5B	
Occupancy Separation	Fire Rating	
F-1:H-2	2 hour	
F-1:H-3	1 hour	
H-2:H-3	1 hour	
Fully Sprinkled?	Yes, per WCBC 903.3.1.1	

General Building Information

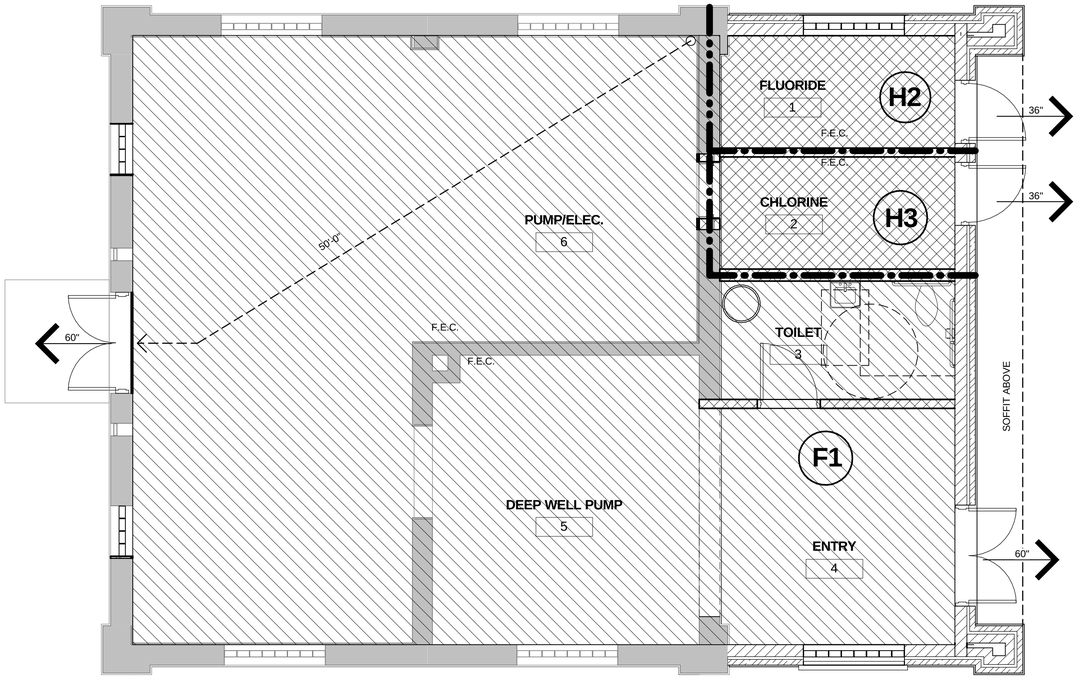
ITEM	ALLOWABLE	ACTUAL
Building height & no. of stories:		
Stories	2	1
Building Height	6'-0"	13'-3"
Area per floor level		
F-1	8,500 SF	1,250 SF
H-2	3,000 SF	75 SF
H-3	6,000 SF	75 SF
		Building Total Area: 1,400 SF

Means of Egress

ITEM	REQUIRED	PROVIDED / REMARKS
Number of Exits	1 per floor	2 provided per floor
Travel Distances	**EXIT ACCESS**	**COMMON PATH**
F-1	250 FEET	100 FEET
H-2	100 FEET	25 FEET
H-3	150 FEET	25 FEET

Fire Resistances, Suppression and Alarm

ITEM	REQUIRED	PROVIDED
Fire Resistance Rating for all Building Components:	0	Per Table 601
Fire Suppression	Fully Sprinkled	Fully Sprinkled



1 A002 Code Plan

1/4" = 1'-0"

0' 2' 4' 8'

CODE LEGEND

Fire barriers and smoke barriers shall be permanently identified with stenciling in accessible and concealed locations at intervals not exceeding 30' along the barrier

EXIT WIDTH

60"

B — OCCUPANCY CLASSIFICATION

F-1 OCCUPANCY CLASSIFICATION

H-2, H-3 OCCUPANCY CLASSIFICATION

1-HOUR FIRE BARRIER

2-HOUR FIRE BARRIER

F.E.C. — FIRE EXTINGUISHER, OFCI

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility

Potter Lawson Success by Design

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UNIT WELL 12 UPGRADE AND CONVERSION MADISON, WISCONSIN

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SEH FILE NO. MADWU 126154
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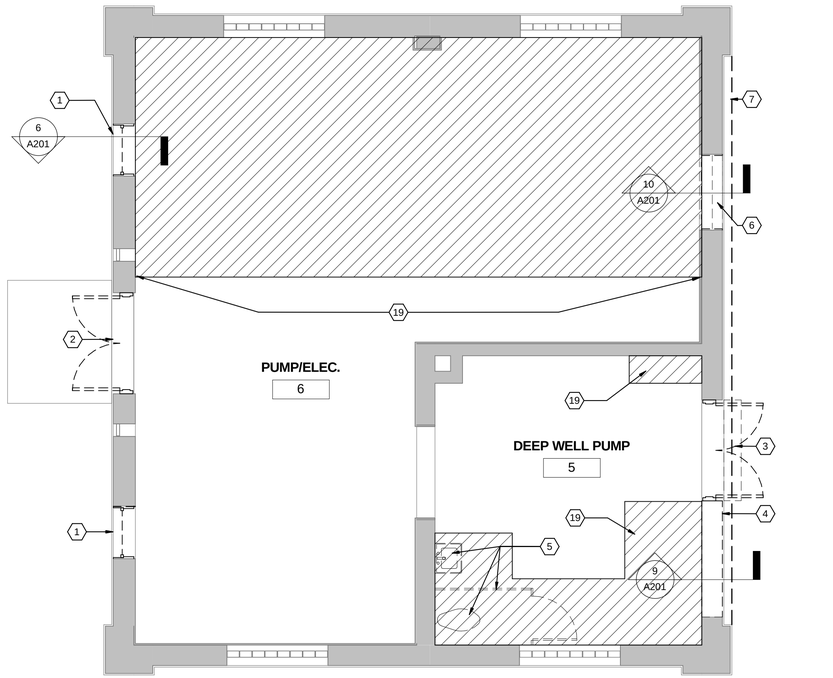
SHEET TITLE: CODE PLAN

SHEET: A002



1 A101 First Floor Demolition Plan

1/4" = 1'-0"

0' 2' 4' 8'

NORTH

KEYNOTES

1. REMOVE EXISTING WINDOW AND FRAMES, PATCH AS NEEDED FOR NEW CONSTRUCTION, SEE FLOOR PLAN AND ELEVATIONS.
2. REMOVE DOOR AND FRAME.
3. REMOVE DOOR, FRAME, STOOP, AND EXTERIOR STAIRS. SEE CIVIL DRAWINGS.
4. REMOVE PORTION OF EXTERIOR WALL AS NEEDED FOR NEW OPENING. SALVAGE ALL STONE REMOVED.
5. REMOVE EXISTING PLUMBING FIXTURES AND ACCESSORIES, SEE PLUMBING DRAWINGS.
6. REMOVE EXISTING LOUVER, PATCH AS NEEDED WITH SALVAGED STONE.
7. REMOVE PORTION OF EXISTING ROOF, SEE DRAWINGS ON A201 FOR FURTHER DETAIL.
8. PATCH EXISTING WALL TILE (CERAMIC TILE) AND FLOOR TILE (QUARRY TILE) TO MATCH EXISTING. CONFIRM ALL PATCHING LOCATIONS WITH OWNER.
9. REMOVE EXISTING WINDOW AND REPLACE WITH NEW GLASS BLOCK OPENING AS SHOWN IN ELEVATIONS. SEE WINDOW SCHEDULE
10. REMOVE EXISTING DOOR AND FRAME AND REPLACE WITH NEW DOOR AND FRAME. SEE DOOR SCHEDULE.
11. REMOVE EXISTING LOUVER AND ADD FIRE RATED INTERIOR WINDOW. SEE WINDOW SCHEDULE FOR SIZE. PATCH WALL AS NEEDED. VERIFY LOCATION IN FIELD.
12. CONCRETE STOOP ALONG ENTIRE EAST WALL AS SHOWN. SEE STRUCTURAL/CIVIL DRAWINGS FOR SIZE AND LOCATION.
13. NOT IN USE
14. NOT IN USE
15. MOVEMENT JOINT
16. GLASS BLOCK WINDOW, SEE ELEVATIONS, SECTIONS AND WINDOW SCHEDULE.
17. PAINT EXISTING CONCRETE/CAST STONE TO MATCH FLASHING. SEE SPECIFICATIONS FOR FINISH TYPE AND COLOR.
18. EXISTING EXPOSED CONCRETE ROOF DECK TO REMAIN. REMOVE PORTION OF EXISTING CONCRETE ROOF AS SHOWN IN SECTION. FULLY ADHERE TAPERED INSULATION AND EPDM OVER EXISTING EXPOSED CONCRETE ROOF.
19. REMOVE AND REPLACE EXISTING FLOOR WITH NEW QUARRY TILE (AREA INDICATED WITH DIAGONAL HATCH) CUT ALONG EXISTING GROUT LINE WHEN REMOVING QUARRY TILE. LOCATIONS INDICATED BY DIAGONAL HATCH.
20. PROPOSED FLOOR DRAIN
21. PROPOSED HUB DRAIN
22. EXISTING HUB DRAIN
23. EXISTING FLOOR DRAIN

DEMOLITION PLAN LEGEND:

- EXISTING WALL TO BE DEMOLISHED
- EXISTING WALL TO REMAIN
- EXISTING DOOR AND FRAME TO BE DEMOLISHED
- EXISTING DOOR AND FRAME TO REMAIN
- (#) KEYNOTE

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility

Potter Lawson — Success by Design

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UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

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REVISIONS

SEH FILE NO. MADWU 126154
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SHEET TITLE
Demolition Plan

SHEET
A101

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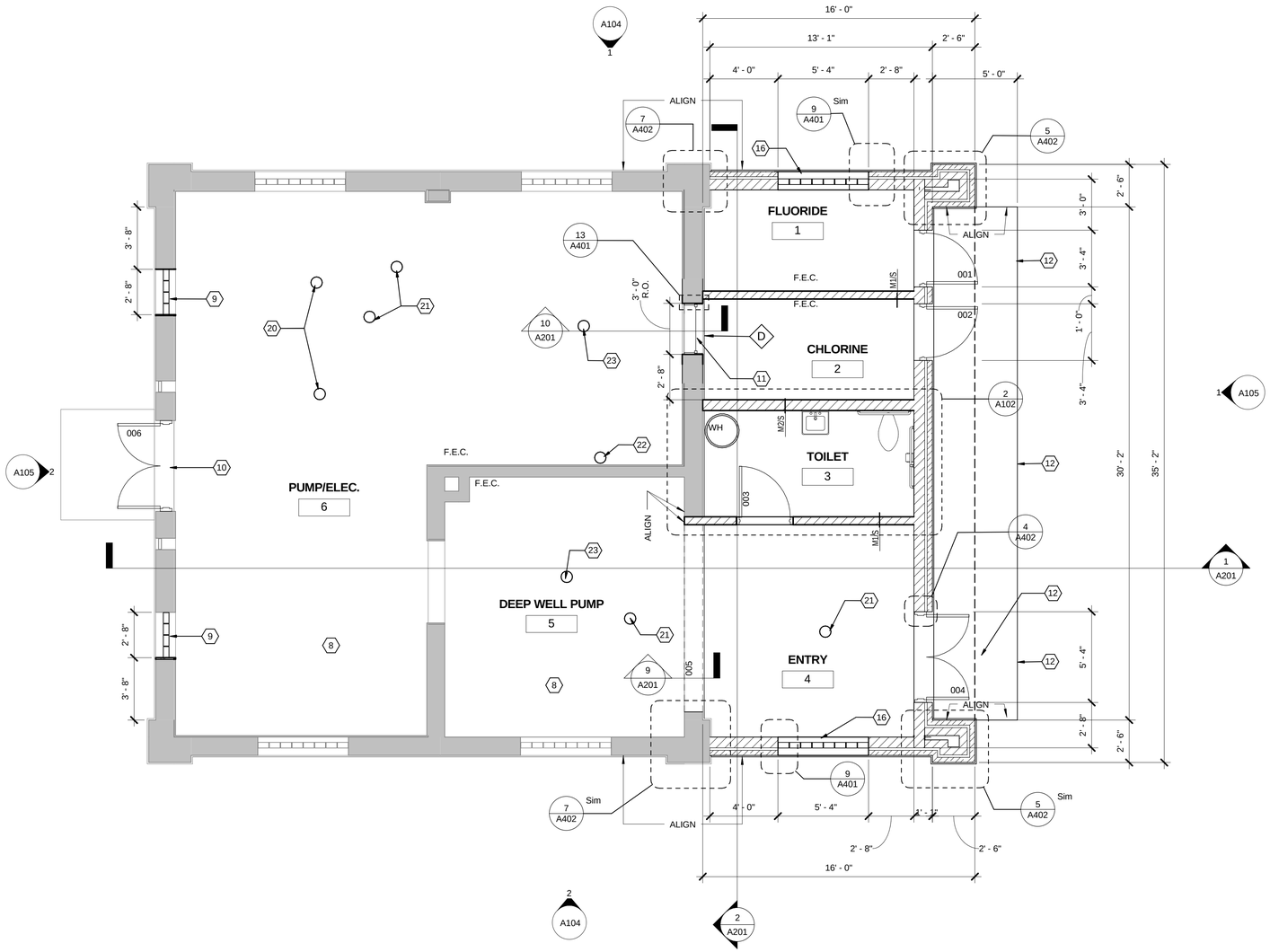

1 A102 First Floor Plan

1/4" = 1'-0"

KEYNOTES

1. REMOVE EXISTING WINDOW AND FRAMES, PATCH AS NEEDED FOR NEW CONSTRUCTION, SEE FLOOR PLAN AND ELEVATIONS.
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15. MOVEMENT JOINT
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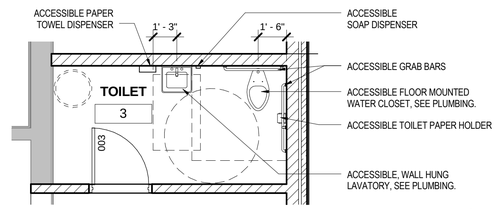
20. PROPOSED FLOOR DRAIN
21. PROPOSED HUB DRAIN
22. EXISTING HUB DRAIN
23. EXISTING FLOOR DRAIN

NOTE: PAINT NEW WALL BASE. PAINT EXISTING WINDOW/LOUVER SILLS AND FRAME; DOOR CANOPY; CONCRETE ORNAMENT; WALL BASE; AND COPING ON PUMP STATION AND WATER WELL TO MATCH NEW COPING COLOR. SEE FINISH SCHEDULE AND SPECIFICATIONS.

FLOOR PLAN LEGEND:

F.E.C: FIRE EXTINGUISHER , OFCI



2 A102 Toilet Room Plan

1/4" = 1'-0"

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Madison Water Utility

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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK DATE DESCRIPTION
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SHEET TITLE
Floor Plan

SHEET
A102

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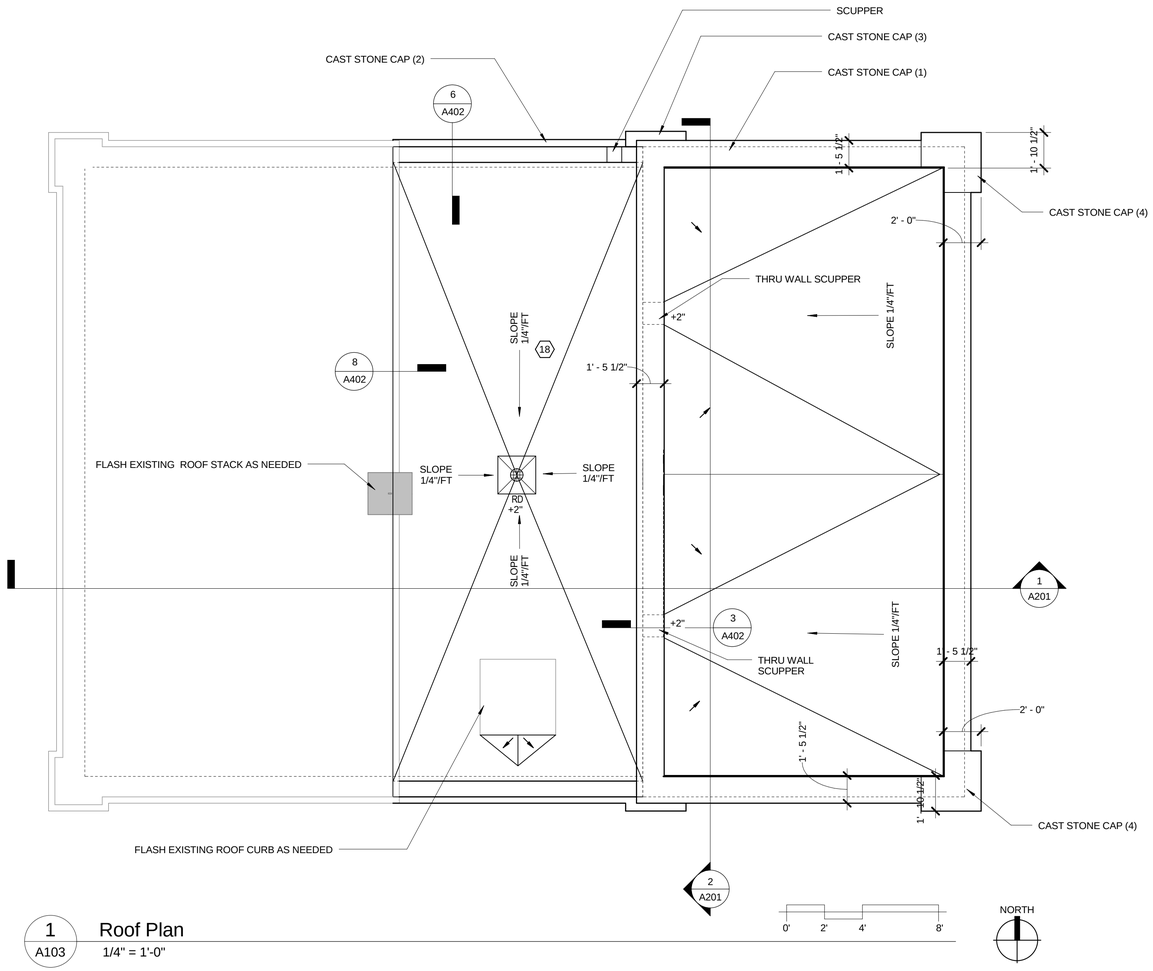

1 / A103 Roof Plan

1/4" = 1'-0"

KEYNOTES

1. REMOVE EXISTING WINDOW AND FRAMES, PATCH AS NEEDED FOR NEW CONSTRUCTION, SEE FLOOR PLAN AND ELEVATIONS.
2. REMOVE DOOR AND FRAME.
3. REMOVE DOOR, FRAME, STOOP, AND EXTERIOR STAIRS. SEE CIVIL DRAWINGS.
4. REMOVE PORTION OF EXTERIOR WALL AS NEEDED FOR NEW OPENING. SALVAGE ALL STONE REMOVED.
5. REMOVE EXISTING PLUMBING FIXTURES AND ACCESSORIES, SEE PLUMBING DRAWINGS.
6. REMOVE EXISTING LOUVER, PATCH AS NEEDED WITH SALVAGED STONE.
7. REMOVE PORTION OF EXISTING ROOF, SEE DRAWINGS ON A201 FOR FURTHER DETAIL.
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12. CONCRETE STOOP ALONG ENTIRE EAST WALL AS SHOWN. SEE STRUCTURAL/CIVIL DRAWINGS FOR SIZE AND LOCATION.
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14. NOT IN USE
15. MOVEMENT JOINT
16. GLASS BLOCK WINDOW, SEE ELEVATIONS, SECTIONS AND WINDOW SCHEDULE.
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20. PROPOSED FLOOR DRAIN
21. PROPOSED HUB DRAIN
22. EXISTING HUB DRAIN
23. EXISTING FLOOR DRAIN

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MADISON, WISCONSIN

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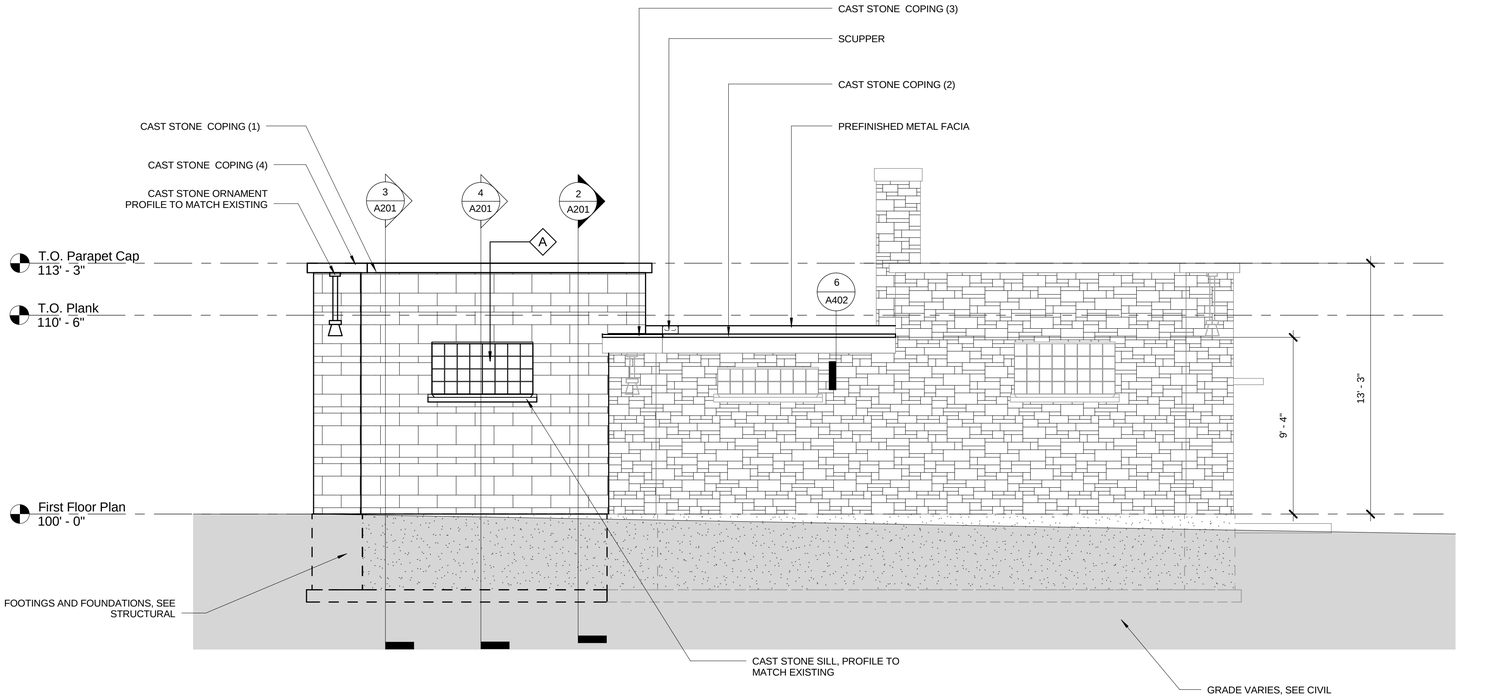
SHEET TITLE
Roof Plan

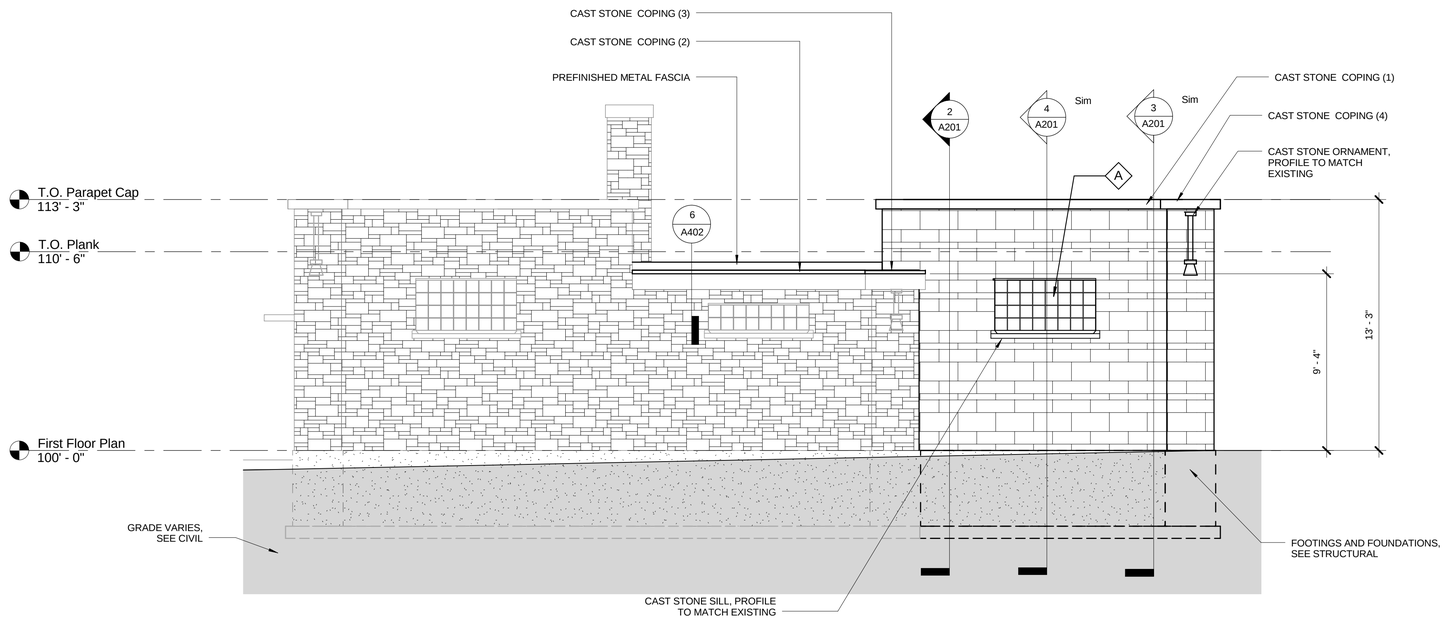
SHEET
A103



1 A104 North Elevation

1/4" = 1'-0"

0' 2' 4' 8'



2 A104 South Elevation

1/4" = 1'-0"

0' 2' 4' 8'

KEYNOTES

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20. PROPOSED FLOOR DRAIN
21. PROPOSED HUB DRAIN
22. EXISTING HUB DRAIN
23. EXISTING FLOOR DRAIN

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"X22" SHEETS

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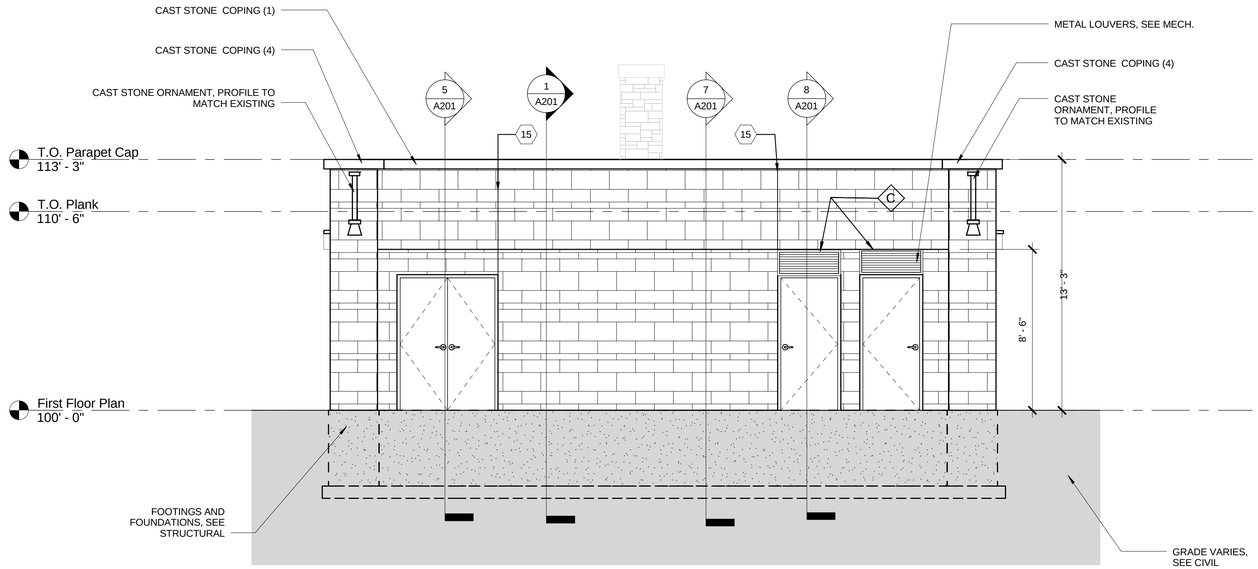
SHEET TITLE
Building Elevations

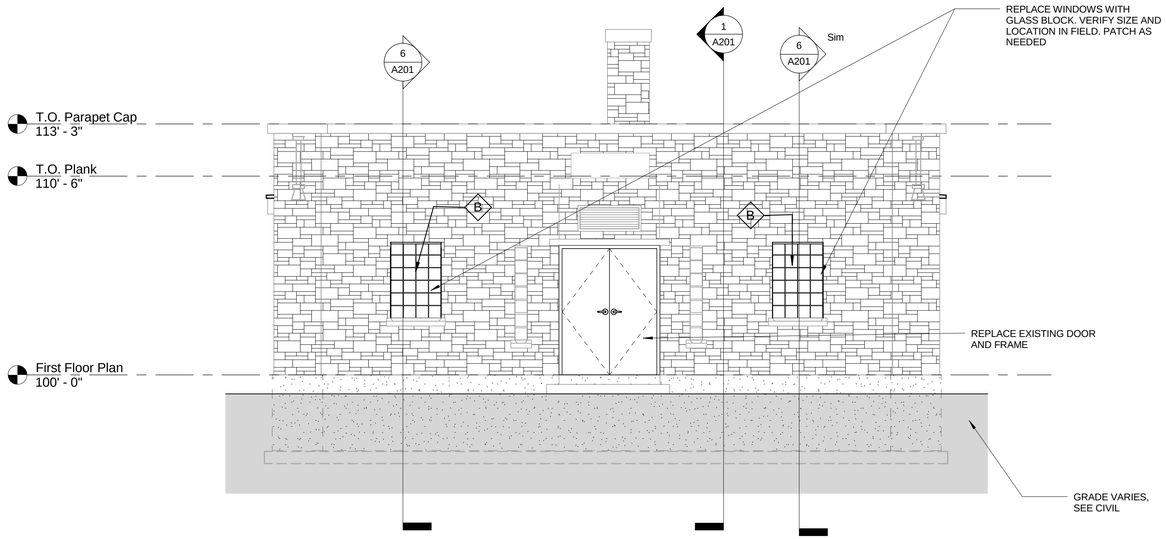
SHEET
A104



1 A105 **East Elevation**

1/4" = 1'-0"

0' 2' 4' 8'



2 A105 **West Elevation**

1/4" = 1'-0"

0' 2' 4' 8'

KEYNOTES

1. REMOVE EXISTING WINDOW AND FRAMES, PATCH AS NEEDED FOR NEW CONSTRUCTION, SEE FLOOR PLAN AND ELEVATIONS.
2. REMOVE DOOR AND FRAME.
3. REMOVE DOOR, FRAME, STOOP, AND EXTERIOR STAIRS. SEE CIVIL DRAWINGS.
4. REMOVE PORTION OF EXTERIOR WALL AS NEEDED FOR NEW OPENING. SALVAGE ALL STONE REMOVED.
5. REMOVE EXISTING PLUMBING FIXTURES AND ACCESSORIES, SEE PLUMBING DRAWINGS.
6. REMOVE EXISTING LOUVER, PATCH AS NEEDED WITH SALVAGED STONE.
7. REMOVE PORTION OF EXISTING ROOF, SEE DRAWINGS ON A201 FOR FURTHER DETAIL.
8. PATCH EXISTING WALL TILE (CERAMIC TILE) AND FLOOR TILE (QUARRY TILE) TO MATCH EXISTING. CONFIRM ALL PATCHING LOCATIONS WITH OWNER.
9. REMOVE EXISTING WINDOW AND REPLACE WITH NEW GLASS BLOCK OPENING AS SHOWN IN ELEVATIONS. SEE WINDOW SCHEDULE
10. REMOVE EXISTING DOOR AND FRAME AND REPLACE WITH NEW DOOR AND FRAME. SEE DOOR SCHEDULE.
11. REMOVE EXISTING LOUVER AND ADD FIRE RATED INTERIOR WINDOW. SEE WINDOW SCHEDULE FOR SIZE. PATCH WALL AS NEEDED. VERIFY LOCATION IN FIELD.
12. CONCRETE STOOP ALONG ENTIRE EAST WALL AS SHOWN. SEE STRUCTURAL/CIVIL DRAWINGS FOR SIZE AND LOCATION.
13. NOT IN USE
14. NOT IN USE
15. MOVEMENT JOINT
16. GLASS BLOCK WINDOW, SEE ELEVATIONS, SECTIONS AND WINDOW SCHEDULE.
17. PAINT EXISTING CONCRETE/CAST STONE TO MATCH FLASHING. SEE SPECIFICATIONS FOR FINISH TYPE AND COLOR.
18. EXISTING EXPOSED CONCRETE ROOF DECK TO REMAIN. REMOVE PORTION OF EXISTING CONCRETE ROOF AS SHOWN IN SECTION. FULLY ADHERE TAPERED INSULATION AND EPDM OVER EXISTING EXPOSED CONCRETE ROOF.
19. REMOVE AND REPLACE EXISTING FLOOR WITH NEW QUARRY TILE (AREA INDICATED WITH DIAGONAL HATCH) CUT ALONG EXISTING GROUT LINE WHEN REMOVING QUARRY TILE. LOCATIONS INDICATED BY DIAGONAL HATCH.
20. PROPOSED FLOOR DRAIN
21. PROPOSED HUB DRAIN
22. EXISTING HUB DRAIN
23. EXISTING FLOOR DRAIN

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility

Potter Lawson — Success by Design

SEH

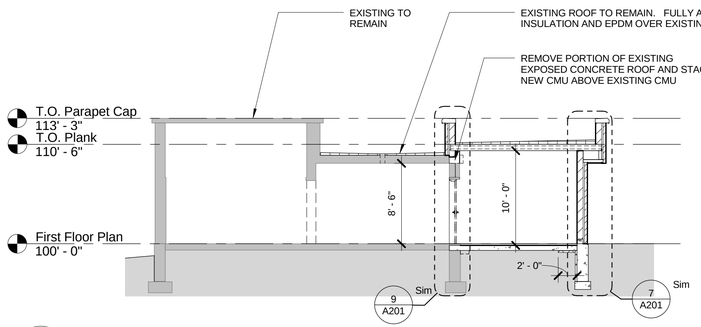
UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

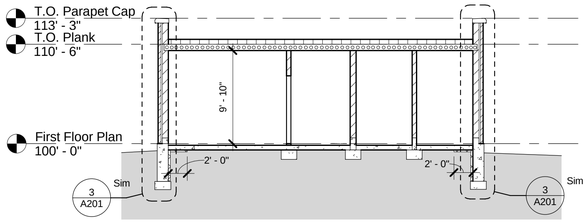
SEH FILE NO. MADWU 126154
PROJECT NO.
ISSUE DATE 06-11-2015
DESIGNED BY
DRAWN BY
Short Elliott Hendrickson, Inc. (SEH)

SHEET TITLE: Building Elevations

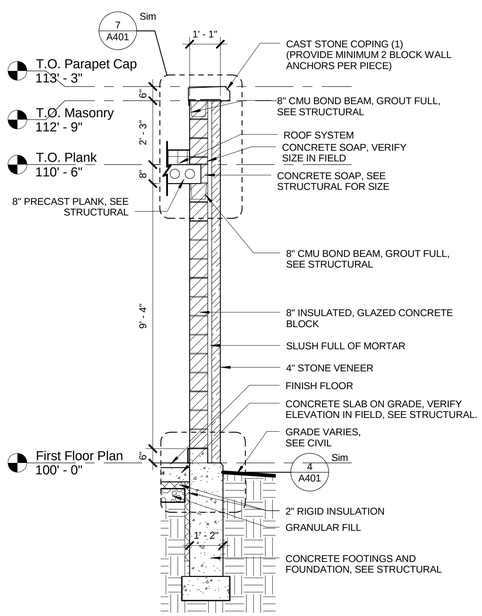
SHEET A105



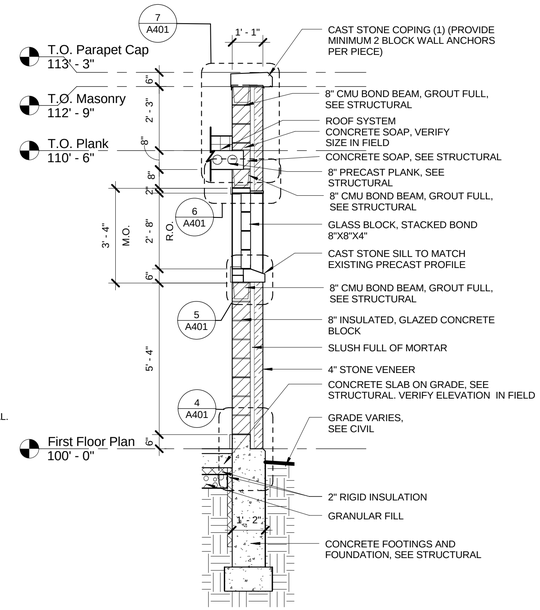
1 A201 EAST-WEST BUILDING SECTION
1/8" = 1'-0"



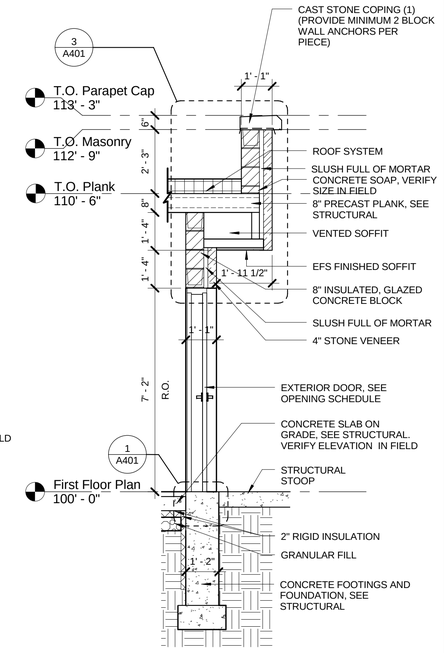
2 A201 NORTH SOUTH BUILDING SECTION
1/8" = 1'-0"



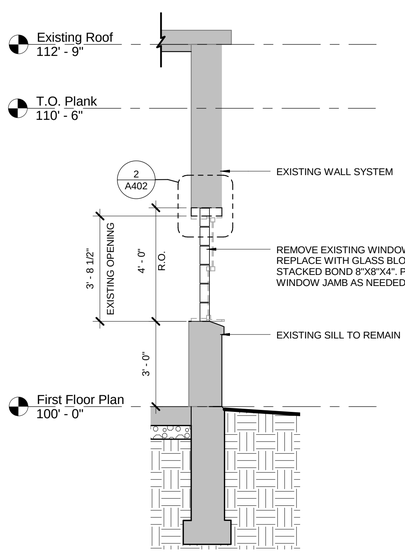
3 A201 Wall Section - Stone Wall
3/8" = 1'-0"



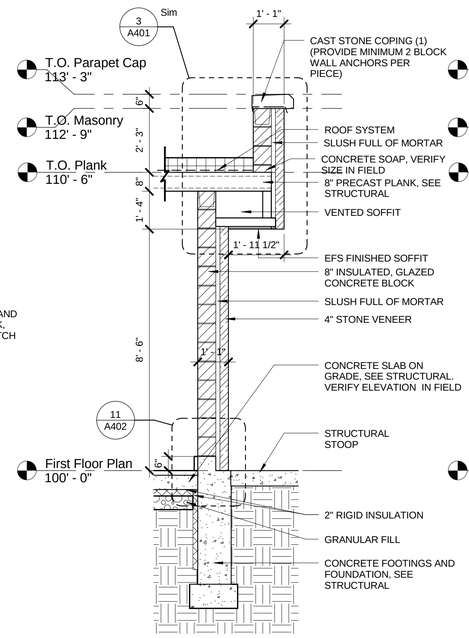
4 A201 Wall Section - Stone Wall at Glass Block
3/8" = 1'-0"



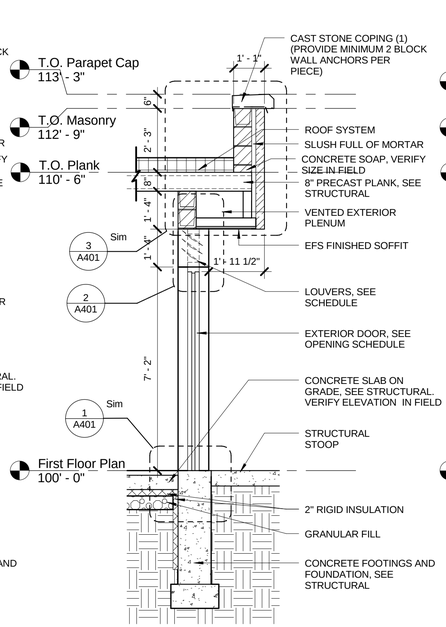
5 A201 Wall Section - Entrance Door
3/8" = 1'-0"



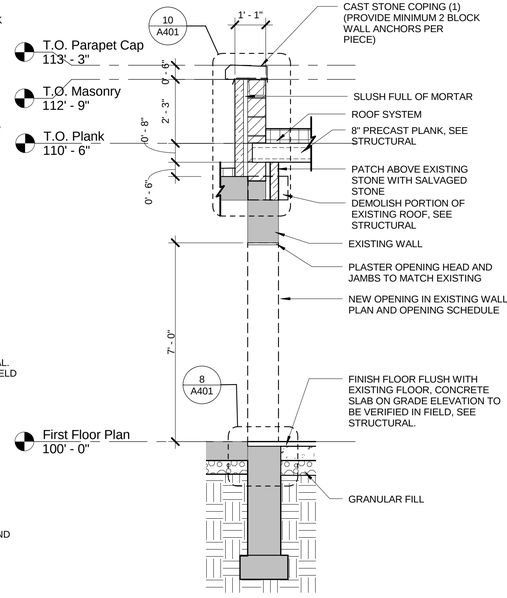
6 A201 Wall Section - Existing Wall at Glass Block
3/8" = 1'-0"



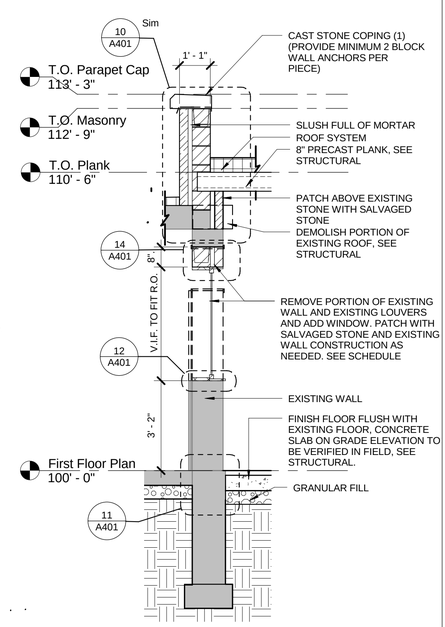
7 A201 Wall Section - Stone Wall Overhang
3/8" = 1'-0"



8 A201 Wall Section - Stone Wall at Louvers
3/8" = 1'-0"



9 A201 Wall Section - Existing Wall at opening
3/8" = 1'-0"



10 A201 Wall Section - Existing Wall at Window
3/8" = 1'-0"

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 126154
PROJECT NO.
ISSUE DATE 06-11-2015
DESIGNED BY
DRAWN BY
Short Elliott Hendrickson, Inc. (SEH®)

SHEET TITLE
Building and Wall Sections

SHEET
A201

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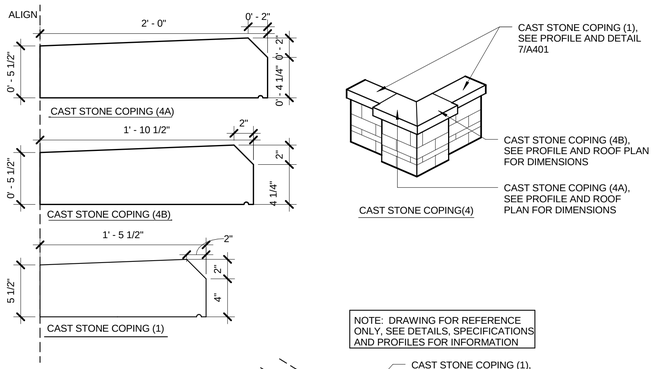
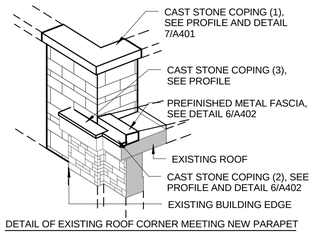


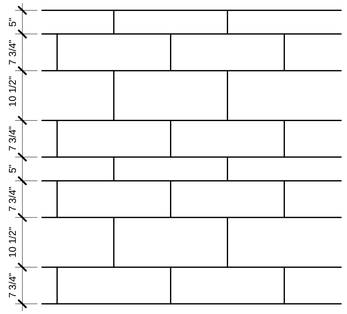
NOTE: DRAWING FOR REFERENCE ONLY, SEE DETAILS, SPECIFICATIONS AND PROFILES FOR INFORMATION



DETAIL OF EXISTING ROOF CORNER MEETING NEW PARAPET

Cast Stone Profiles

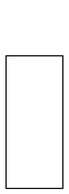
CAST STONE ORNAMENT PROFILE AND WINDOW SILL TO MATCH EXISTING PROFILES, VERIFY IN FIELD.



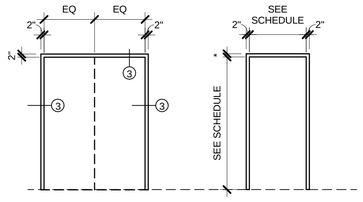
NOTE: STONE LENGTHS VARY BETWEEN 8" AND 32", STONE HEIGHT COURSING AS SHOWN ABOVE. SEE SPECIFICATIONS FOR STONE TYPE

Exterior Stone Veneer Coursing

Door Number	Door Information					Label	Frame Information				Hdwr Group	Notes
	Width	Height	Matl	EI			Matl	Frame Type	Head	Jamb		
001	3' - 0"	7' - 0"	FGL	1			FGL	A	2/A401	1/A402	1	electric strike/card reader
002	3' - 0"	7' - 0"	FGL	1			FGL	A	2/A401	1/A402	1	electric strike/card reader
003	3' - 0"	7' - 0"	FGL	1			FGL	A	8/A301	9/A301	2	
004	5' - 0"	7' - 0"	FGL	1			FGL	B	3/A401	1/A402	3	electric strike/card reader
005	11' - 0"	7' - 0"	-	-			-	-	-	-	-	cased opening, finish head and jamb with plaster to match existing
006	5' - 0"	6' - 8"	FGL	1			FGL	B	-	-	3	electric strike/card reader, replace existing door and frame in existing R.O.



1.



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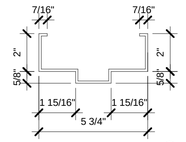
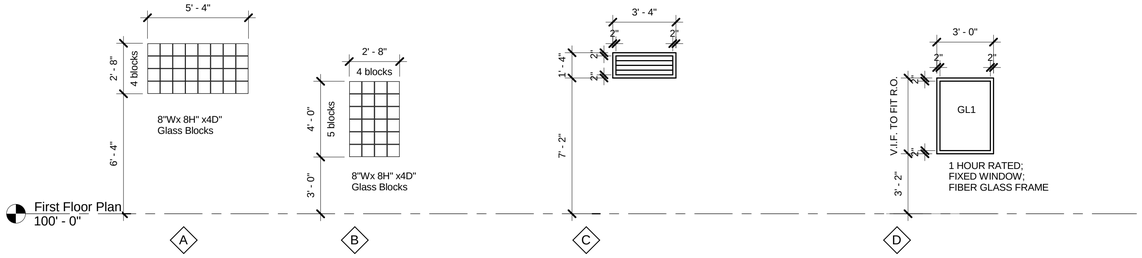
A.



Door Frame Detail 3.

1 A301 Door Elevation — 1/4" = 1'-0"

2 A301 Door Frame Types — 1/4" = 1'-0"



3 A301 Glass Block Types — 1/4" = 1'-0"

4 A301 Louver Type — 1/4" = 1'-0"

5. A301 FGL Window Type — 1/4" = 1'-0"

ROOM FINISH SYMBOLS LEGEND

Potter Lawson — Success by Design

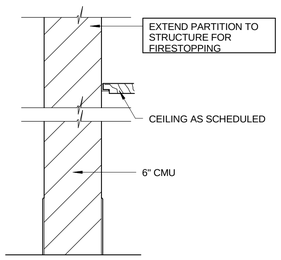
Well 12 Upgrade and Conversion
Madison, Wisconsin

Floor		Base		Wall		Ceiling	
Code	Description	Code	Description	Code	Description	Code	Description
F1	Quarry Tile	B1	Quarry Tile Base	W1	Glazed Block	C1	Paint PreCast Concrete Plank
a	Match Existing Floor Tile	a	Match Existing Base 6" high	a	Mfr: Trenwyth Color: Eggshell		Color: Match Existing Plaster

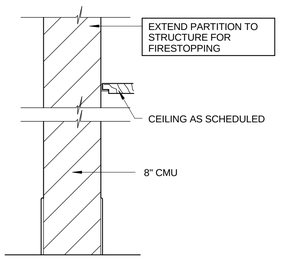
Notes
1 Doors and Door Frame: Fiberglass color to be selected by A/E
2 Painter to review with Potter Lawson prior to painting.
3 Plaster all unfinished or cased openings to match existing plaster
4 Misc. Metals to match PAC-CLAD color Sierra Tan

Solid Surface
SS-1: Wilsonart Solid Surface, Capers, 9063GG (3)

Exterior Paint
W2 Paint on Existing Precast / Metal Frames /New Concrete Base
Color: Benjamin Moore, kingsport gray HC-86

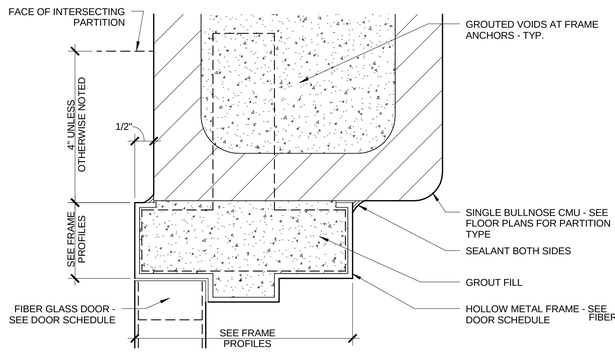


6 A301 PARTITION TYPE M1/S - 2 HOUR — 1 1/2" = 1'-0"

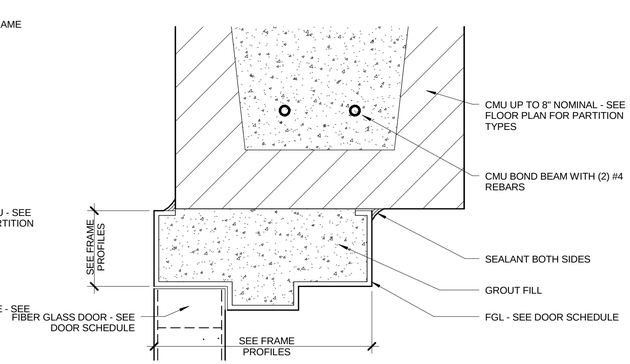


7 A301 PARTITION TYPE M2/S - 2 HOUR — 1 1/2" = 1'-0"

Partition Types



8 A301 FIBER GLASS DOOR JAMB — 6" = 1'-0"



9 A301 FIBER GLASS DOOR HEAD — 6" = 1'-0"

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility — Quality and Reliability since 1882

Potter Lawson — Success by Design

SEH

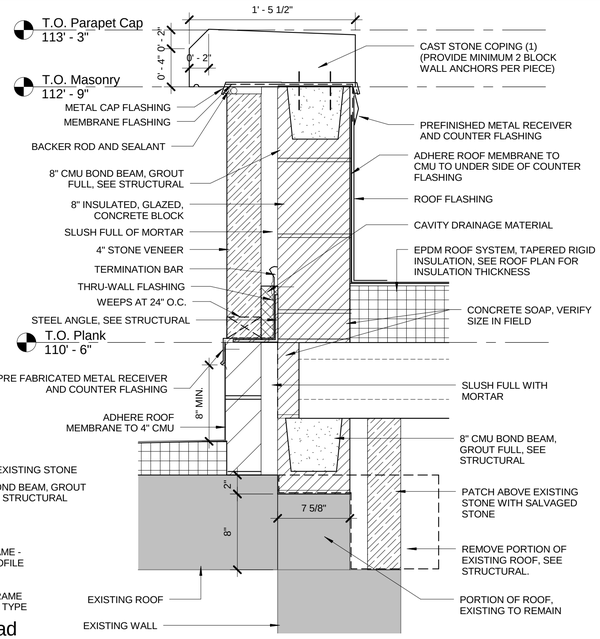
UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

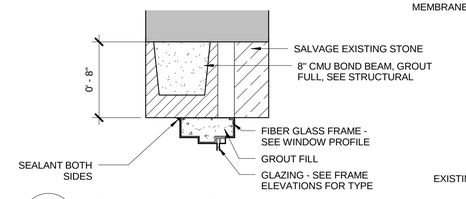
SEH FILE NO. MADWU 126154
PROJECT NO.
ISSUE DATE 06-11-2015
DESIGNED BY
DRAWN BY
Short Elliott Hendrickson, Inc. (SEH)

SHEET TITLE
OPENINGS, PROFILES & PARTITION TYPES

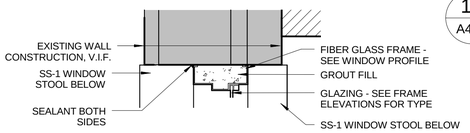
SHEET
A301



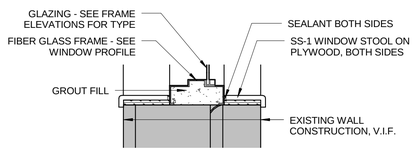
10 A401 Section Detail at Existing Roof
1 1/2" = 1'-0"



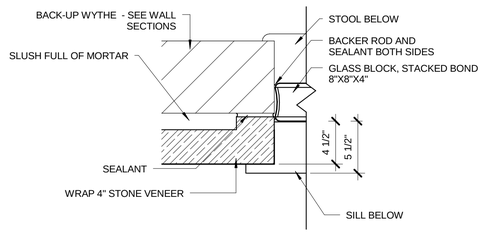
14 A401 Section Detail at Window Head
1 1/2" = 1'-0"



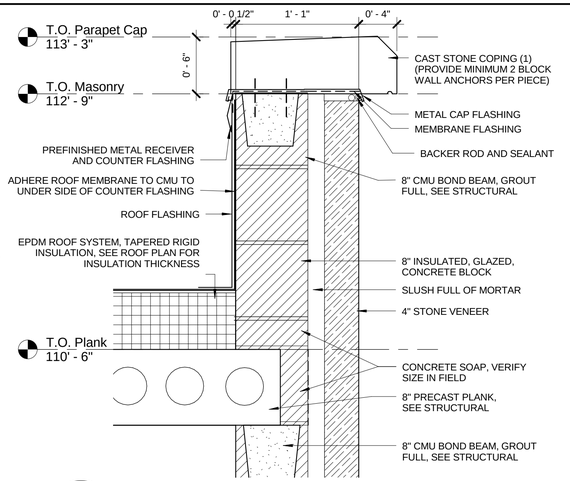
13 A401 Plan Detail at Window Jamb
1 1/2" = 1'-0"



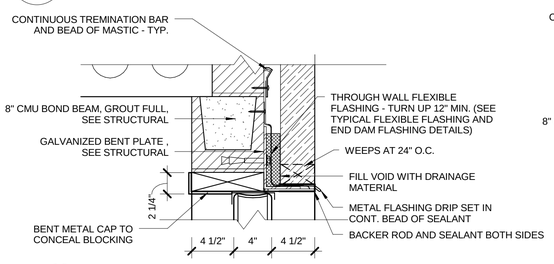
12 A401 Section Detail at Window Sill
1 1/2" = 1'-0"



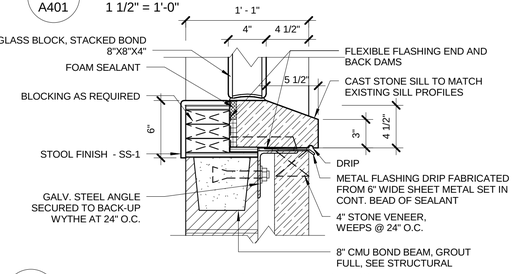
9 A401 Plan Detail - Glass Block Jamb
1 1/2" = 1'-0"



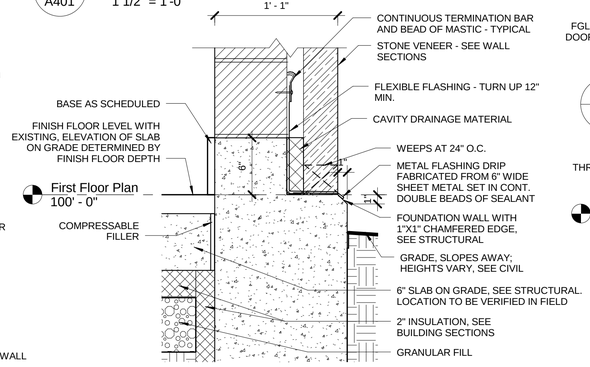
7 A401 Section Detail at Parapet
1 1/2" = 1'-0"



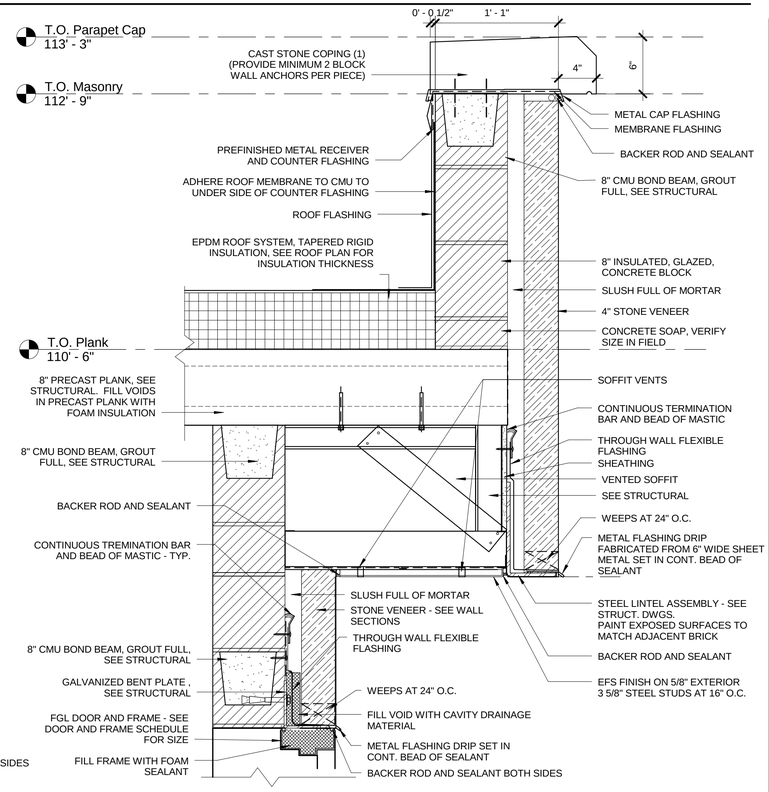
6 A401 Section Detail at Glazed Block Head
1 1/2" = 1'-0"



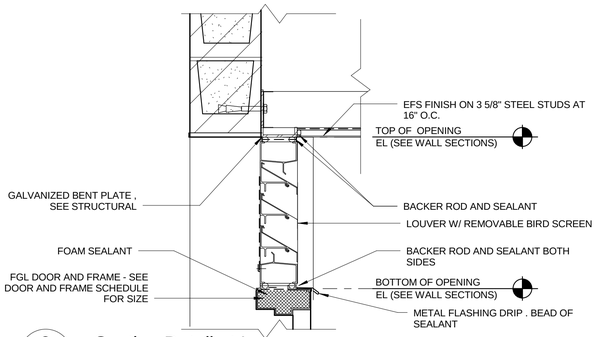
5 A401 Section Detail at Glazed Block Sill
1 1/2" = 1'-0"



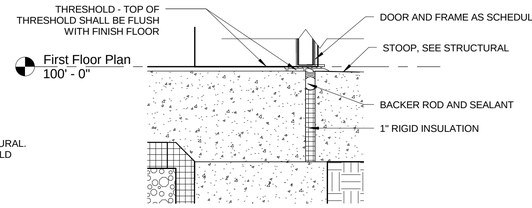
4 A401 Section Detail at Wall Base
1 1/2" = 1'-0"



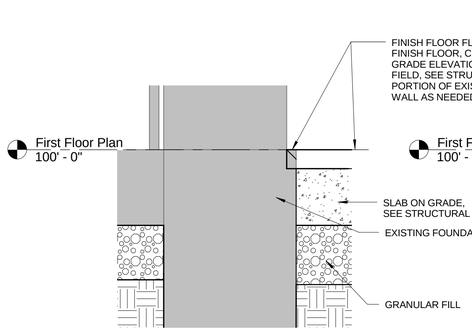
3 A401 Section Detail at Exterior Door Head
1 1/2" = 1'-0"



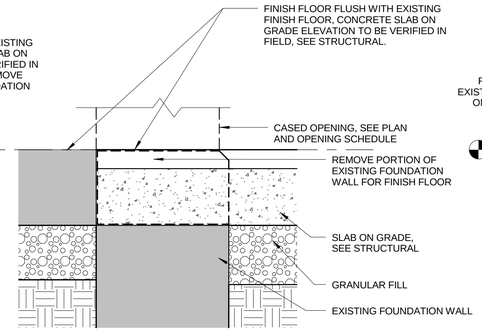
2 A401 Section Detail at Louver
1 1/2" = 1'-0"



1 A401 Section Detail at Exterior Threshold
1 1/2" = 1'-0"



11 A401 Section Detail at Existing Floor
1 1/2" = 1'-0"



8 A401 Section Detail at Cased Opening Threshold
1 1/2" = 1'-0"

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 126154
PROJECT NO.
ISSUE DATE 06-11-2015
DESIGNED BY
DRAWN BY
Short Elliott Hendrickson, Inc. (SEH)

SHEET TITLE
DETAILS

SHEET
A401

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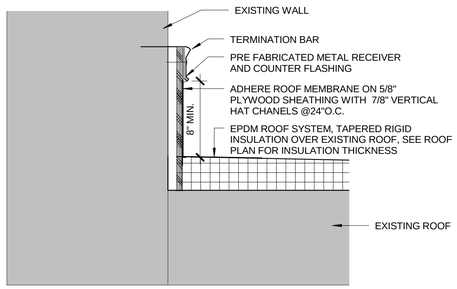
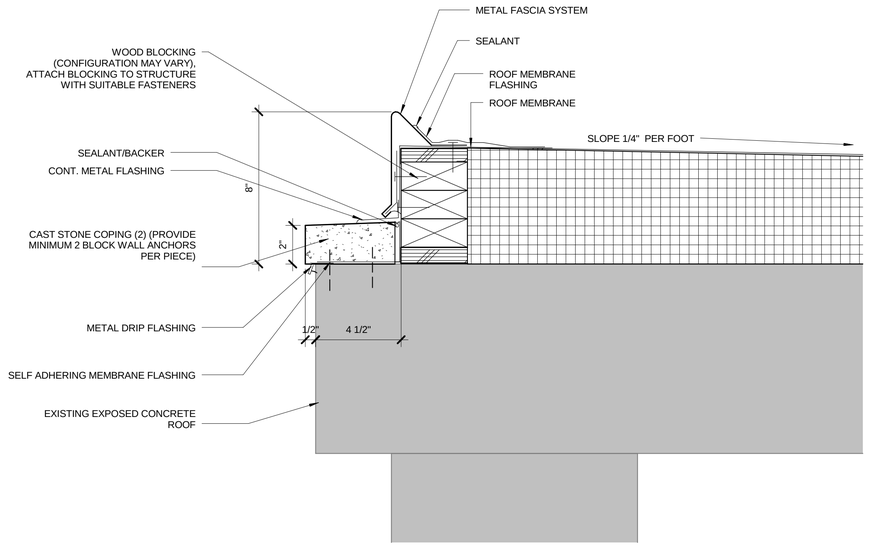
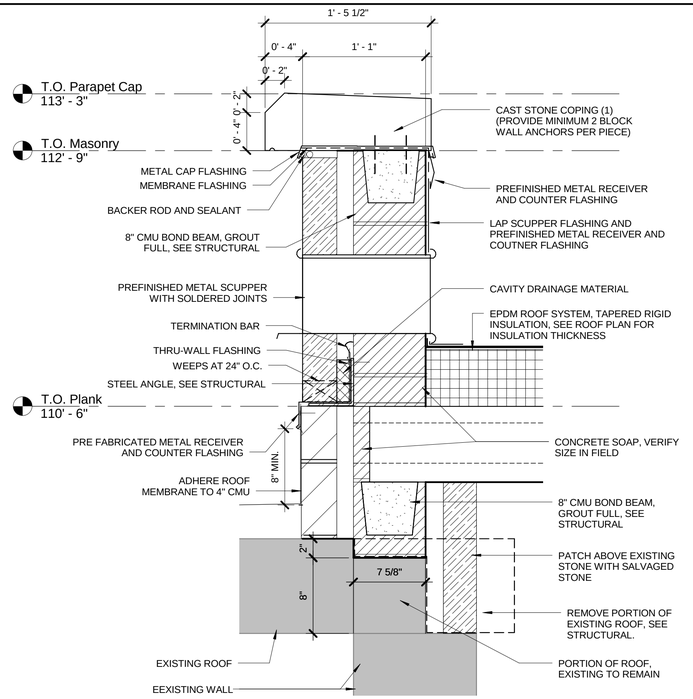


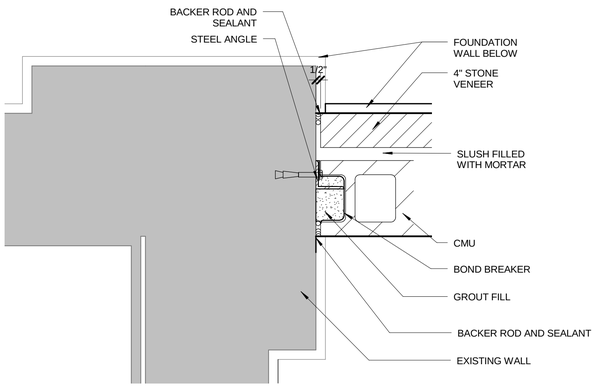
8 A402 — Section Detail at Existing Roofs
1 1/2" = 1'-0"



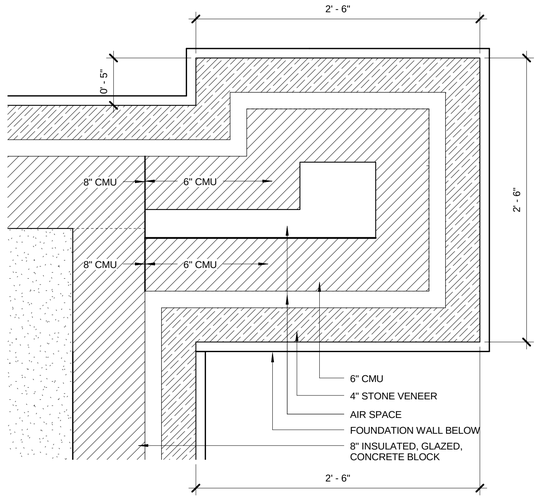
6 A402 — Section Detail at Existing Roof Gravel Stop
3" = 1'-0"



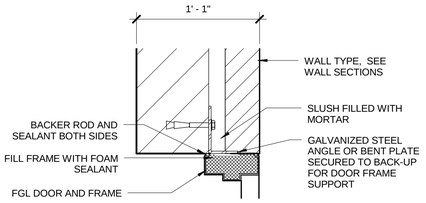
3 A402 — Section Detail at Scupper
1 1/2" = 1'-0"



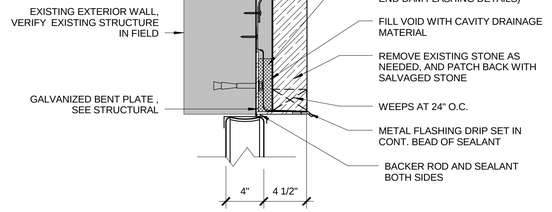
7 A402 — Plan Detail - Expansion Joint at Existing Wall
1 1/2" = 1'-0"



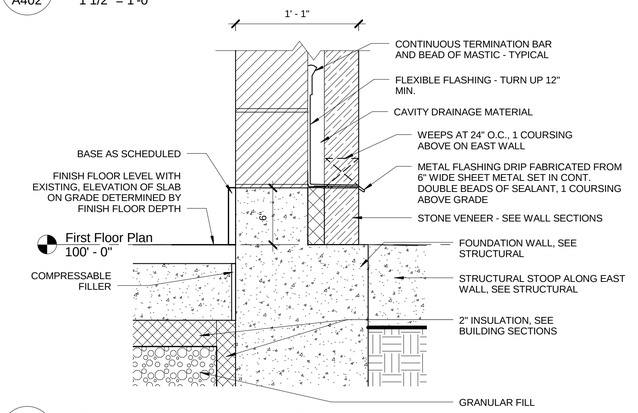
5 A402 — PLAN DETAIL, CORNER
1 1/2" = 1'-0"



4 A402 — Plan Detail - Exterior Door Jamb
1 1/2" = 1'-0"



2 A402 — Section Detail at Existing Wall at Glass Block
1 1/2" = 1'-0"



11 A402 — Section Detail at East Wall Base
1 1/2" = 1'-0"

NOTE: ALL DRAWING SCALES ARE FOR PLANS PRINTED ON 34"x22" SHEETS

Madison Water Utility

Potter Lawson — Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

REVISIONS
MARK | DATE | DESCRIPTION

SEH FILE NO. MADWU 126154
PROJECT NO.
ISSUE DATE 06-11-2015
DESIGNED BY
DRAWN BY
Short Elliott Hendrickson, Inc. (SEH)

SHEET TITLE: DETAILS

SHEET A402

THESE NOTES DO NOT REPLACE THE SPECIFICATIONS BUT ARE TO BE READ IN CONJUNCTION WITH THEM. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE TWO SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER. THESE DRAWINGS ARE FOR THE EXPANSION OF WELL HOUSE 12 IN MADISON, WI AND NO OTHER USE IS AUTHORIZED.

GOVERNING BUILDING CODE

1. 2011 WISCONSIN ENROLLED COMMERCIAL BUILDING CODE
2. 2009 INTERNATIONAL BUILDING CODE AS ADOPTED AND AMENDED BY THE STATE BUILDING CODE 3. ACI-350 ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
4. ACI-318
5. ACI-530
6. AISC-360, 303

DESIGN LOADS

1. LIVE LOAD:	
FLOOR SLABS	150 PSF UNO
2. SNOW LOADS:	
GROUND SNOW LOAD	40 PSF
ROOF SNOW LOAD	35 PSF + DRIFTING AND UNBALANCED PER IBC
SNOW ON OVERHANG	70 PSF + DRIFTING AND UNBALANCED BER IBC
IMPORTANCE FACTOR	1.10 (BASED ON OCC CAT III)
THERMAL FACTOR	1.00
RAIN LOADS	N/A
3. WIND LOADS:	(ASCE 7-05)
WIND SPEED (3 SEC GUST)	90 MPH
WIND IMPORTANCE FACTOR	1.15 (BASED ON OCC CAT III)
WIND EXPOSURE	C
INTERNAL PRESS COEF	+/-0.18
4. SEISMIC LOADS:	
SITE CLASS D	
Ss	0.50
S1	0.3
Fa	1.2
Fv	1.6
Ie	1.1
RIST CATEGORY	II
SEISMIC DESIGN CATEGORY	B
5. SOIL CRITERIA:	
ALLOWABLE SOIL BEARING PRESSURE	2,000 PSF
FROST DEPTH	48 INCHES

DESIGN/CONSTRUCTION CRITERIA:

1. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES, INCONSISTENCIES, OR DIFFICULTIES AFFECTING THE WORK BEFORE PROCEEDING.

2. ALL MATERIAL, WORKMANSHIP, AND DETAILS SHALL BE IN ACCORDANCE WITH TYPICAL COMPETENT CONSTRUCTION PRACTICES, CURRENT MANUFACTURERS RECOMMENDATIONS, AND ALL APPLICABLE CODES AND GOVERNMENT REGULATIONS, SPECIAL STRUCTURAL INSPECTIONS IS REQUIRED AS SCHEDULED AND PER IBC CHAPTER 17, CONTRACTOR SHALL COORDINATE WITH TESTING AGENCY.

3. THE CONTRACTOR SHALL COORDINATE ALL DISCIPLINES, VERIFYING SIZE AND LOCATION OF ALL OPENINGS, WHETHER SHOWN ON STRUCTURAL DRAWINGS OR NOT, AS CALLED FOR ON ARCHITECTURAL, MECHANICAL OR ELECTRICAL DRAWINGS, ALL CONFLICTS, INCONSISTENCIES, OR OTHER DIFFICULTIES AFFECTING STRUCTURAL WORK SHALL BE CALLED TO THE ENGINEER'S ATTENTION FOR DIRECTION BEFORE PROCEEDING.

4. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.

5. JOB SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR & THEIR SUBCONTRACTORS.

6. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PRACTICES WHERE DRAWINGS AND DETAILS IMPLY THIS, THEY ARE PROVIDED TO SHOW FINAL CONSTRUCTION, IF CONTRACTOR DESIRES TO USE DIFFERENT MEANS AND METHODS THAN IMPLIED BY THESE DRAWINGS. SUBMIT SIMILAR DETAILS TO THE ENGINEER FOR REVIEW.

7. STANDARD OR TYPICAL STRUCTURAL DETAILS ARE INTENDED TO ILLUSTRATE DESIGN CONCEPTS AND TO SPECIFY MATERIAL AND REQUIRED PHYSICAL DIMENSIONS MATCHING OR SIMILAR TO THE REFERENCED LOCATIONS IN THE DRAWINGS SET.

8. THERE IS NO PROVISION FOR FUTURE VERTICAL EXPANSION IN THE DESIGN.

FOUNDATIONS:

1. CAUTION: EXISTING UNDERGROUND UTILITIES MAY EXIST ANYWHERE ON THE SITE, NOTIFY DIGGER'S HOTLINE (800) 242-8511 PRIOR TO DISTURBING ANY GRADE OR EXCAVATION.

2. STRUCTURAL FOUNDATIONS CONSIST OF WALL AND SPREAD FOOTINGS ESTABLISHED ON MATERIAL CAPABLE OF SAFELY SUPPORTING 2.0 KSF THE ENGINEER IS NOT RESPONSIBLE FOR THE ACCURACY OR CONTENT OF THE SUBSURFACE SOIL CONDITIONS CONTRACTOR SHALL EMPLOY A CERTIFIED GEOTECHNICAL ENGINEER TO TEST, INSPECT AND VERIFY ALL ASSUMED SOIL CONDITIONS.

3. WHEN PLACING COMPACTED FILL ADJACENT TO FOUNDATION WALLS, PLACE BACKFILL AT EQUAL RATES ON BOTH SIDES TO PREVENT OVERTURNING OR STRUCTURAL DAMAGE.

4. CONTRACTOR SHALL PROVIDE FOR DEWATERING AT EXCAVATIONS FROM EITHER SURFACE WATER OR SEEPAGE.

5. MOISTURE CONTENT IN SOILS BENEATH BUILDING LOCATIONS SHOULD NOT BE ALLOWED TO CHANGE AFTER FOOTING EXCAVATIONS AND AFTER GRADING FOR SLABS ON GRADE ARE COMPLETED. IF SUBGRADE MATERIALS BECOME DESICCATED OR SOFTENED BY WATER OR OTHER CONDITIONS, REMOVE AND REPLACE WITH ENGINEERED FILL, AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. DO NOT PLACE CONCRETE ON FROZEN GROUND, NOR ALLOW GROUND BENEATH FOUNDATIONS TO FREEZE ALL FOUNDATION WORK SHALL BE PLACED ON SUBSTRATE APPROVED AND TESTED BY GEOTECHNICAL ENGINEER OF RECORD.

6. DO NOT PLACE BACKFILL ON FROZEN SUBGRADE. DO NOT PLACE FROZEN BACKFILL.

7. GRADING: WHERE NOT SPECIFICALLY SHOWN ON THE PLANS, IT IS INTENDED THAT ALL EXCAVATED AND BACKFILLED AREAS SHALL BE GRADED TO SLOPE AWAY FROM BUILDINGS AND STRUCTURES.

CONCRETE:

1. CONCRETE AND ITS PLACEMENT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING:
   ACI 350 ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
   ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
   ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE
   ACI MCP MANUAL OF CONCRETE PRACTICE

2. CEMENTITIOUS GROUT SHALL BE NON-SHRINK, AND NON-METALLIC GROUT. PLACE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND TRIM NEATLY WHERE VISIBLE.

3. COORDINATE WITH OTHER TRADES FOR SLEEVES, CONDUIT, ELECTRICAL GROUNDING WIRES, INCORTS, UNDERGROUND UTILITIES, AND OTHER ITEMS TO BE EMBEDDED INTO CONCRETE AND VERIFY THAT THEY ARE PROPERLY INSTALLED AND SUPPORTED BEFORE CASTING CONCRETE. DIAMETER OF CONDUIT AND PIPE RUNNING WITHIN SLAB OR WALL SHALL NOT EXCEED 1/6 THE SLAB OR WALL THICKNESS AND SHALL BE PLACED IN THE CENTER OF THE MEMBER. PLACEMENT OF SUCH ITEMS SHALL BE COORDINATED WITH REINFORCING PLACEMENT WHERE THEY WOULD OTHERWISE DISPLACE EACH OTHER. FOR INSTANCE, IN AREAS WITH A SINGLE MAT OF REINFORCING, EAST-WEST CONDUIT SHOULD BE PLACED WITH EAST-WEST REINFORCING, THEN NORTH-SOUTH CONDUIT IS PLACED WITH NORTH-SOUTH REINFORCING.

4. NO UNCOATED ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE, ALL ALUMINUM SURFACES IN DIRECT CONTACT WITH CONCRETE SHALL RECEIVE ONE 8-12 MIL DRY FILM THICKNESS BITUMASTIC.

5. UNLESS SHOWN ON DRAWINGS, CONCRETE SHALL BE PLACED WITHOUT CONSTRUCTION JOINTS EXCEPT WHERE SPECIFICALLY SHOWN ON SHOP DRAWINGS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING ADDITIONAL OR ALTERNATE CONSTRUCTION JOINT LOCATIONS TO THE ENGINEER FOR APPROVAL.

6. BEVEL ALL EXPOSED CORNERS OF CONCRETE 3/4" X 3/4" UNLESS NOTED OTHERWISE

7. VERIFY SIZE AND LOCATION OF ALL EQUIPMENT BARS/HOUSEKEEPING PADS.

8. CONCRETE FLOORS: ALL CAST-IN-PLACE CONCRETE FLOORS SHALL BE PROVIDED WITH A MIN. 1/8" PER FT SLOPE TO FLOOR DRAINS UNLESS NOTED OTHERWISE. IF CONCRETE CONTAINS MORE THAN 2 PERCENT ENTRAINED AIR, DELAY START OF FINISHING TO PRECLUDE WEAKENED AIR-RICH PLANE JUST BELOW SURFACE.

REINFORCING STEEL:

1. ALL CONCRETE IS REINFORCED CONCRETE UNLESS SPECIFICALLY CALLED OUT AS UNREINFORCED. REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH SAME STEEL AS IN SIMILAR SECTIONS OR AREAS ANY DETAILS NOT SHOWN SHALL BE DETAILED PER ACI 315 AND MEET REQUIREMENTS OF ACI 318 CURRENT EDITIONS.

2. ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 OR A706 GRADE 60 STEEL. WELDED PLAIN WIRE FABRIC SHALL BE SUPPLIED IN SHEETS. NOT ROLLS, AND CONFORM TO THE REQUIREMENTS OF ASTM A185.

3. CLEAR MINIMUM COVERAGE OF CONCRETE OVER REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS SPECIFICALLY NOTED OTHERWISE:
CONCRETE PLACED AGAINST EARTH: 3"
ALL OTHER CONCRETE: 2"

4. ALL FOOTING DOWELS SHALL BE ACCURATELY POSITIONED AND WIRED IN PLACE BEFORE CASTING FOOTING CONCRETE WHERE NOT NOTED. PROVIDE AND INSTALL DOWELS OF SAME SIZE AND SPACING AS VERTICAL REINFORCEMENT IN ALL COLUMNS AND WALLS. POSITION ALL ANCHOR BOLTS WITH TEMPLATES.

5. BAR LAP LENGTHS IN CONCRETE AND 90 DEGREE END HOOKS SHALL BE IN ACCORDANCE WITH ACI.

6. BARS MARKED CONTINUOUS, CORNER BARS, AND ALL VERTICAL STEEL SHALL BE LAPPED IN ACCORDANCE WITH TABLE ABOVE AT SPLACES AND EMBEDMENTS, UNLESS SHOWN OTHERWISE, SPLICE TOP BARS NEAR MIDSPAN AND SPLICE BOTTOM BARS OVER SUPPORTS, UNLESS NOTED OTHERWISE.

7. ALL SLABS NOT SHOWN OTHERWISE SHALL BE 6" THICK WITH #4 BARS AT 12" ON CENTER EACH WAY. ALL EXTERIOR STOOPS NOT OTHERWISE DETAILED MAY BE CONSTRUCTED IN ANY STANDARD MANNER. SOLID OR HOLLOW, BUT MST BE REINFORCED WITH EPOXY COATED #4 BARS AT 12" ON CENTER EACH WAY MINIMUM. PORCHES AND STOOPS SHALL BE DOWELED TO ADJACENT WALLS OR GRADE BEAMS WITH #4 BARS AT 12" ON CENTER, HOOKED OR EMBEDDED DIAMETERS INTO BOTH MEMBERS, SLOPE STOOPS 1/8" PER FOOT FOR DRAINAGE UNLESS NOTED OTHERWISE.

CONCRETE BLACK MASONRY:

1. CONCRETE BLOCK SHALL MEET THE FOLLOWING MINIMUM REQUIREMENTS:
MASONRY ASSEMBLY F'M=2250 PSI
CONCRETE MASONRY UNITS: ASTM C90-11a 3275 PSI
MORTAR, ASTM C-270-10 TYPE M BELOW GRADE TYPE S ABOVE GRADE
GROUT: ASTM C-476-10 f'g=3000 PSI

2. CONCRETE BLOCK SHALL BE LAID IN RUNNING BOND UNLESS NOTED OTHERWISE

3. PLACE HORIZONTAL JOINT REINFORCEMENT IN EVERY OTHER COURSE

4. ALL JOINTS SHALL BE CONCAVE TOOLED JOINTS ABOVE AND BELOW GRADE

5. GROUT SOLID AT VERTICAL REINFORCEMENT LOCATIONS.

6. ALL BOND BEAMS SHALL HAVE STANDARD HOOKED DEVELOPMENT REINFORCEMENT BARS AT WALL CORNERS AND INTERSECTIONS.

7. PROVIDE ADDITIONAL VERTICAL REINFORCEMENT AT END OF WALL CORNERS AND EACH SIDE OF OPENINGS. REINFORCEMENT SIZE TO MATCH WALL REINFORCEMENT.

8. WALL VERTICAL REINFORCEMENT SHALL BE A MINIMUM OF #5 BARS IN GROUTED CELLS SPACED AT 48" ON CENTER.

POST INSTALLED ANCHOR RODS AND DOWELS:

1. UNLESS NOTED OTHERWISE NOTED OTHERWISE ANCHORS AND REINFORCING DOWELS INSTALLED IN CONCRETE OR CONCRETE MASONRY SHALL BE AS NOTED BELOW.

2. SUBMIT PRODUCT DATA AND CURRENT ICC ES REPORT OR IAPMO REPORT SHOWING PRODUCT IS COMPLIANT WITH PROJECT CODE REQUIREMENTS FOR REVIEW. CONTRACTOR SHALL ARRANGE FOR MANUFACTURER'S REP TO TRAIN ALL INSTALLERS ON THE COMPLETE INSTALLATION PROCESS. A LETTER OF PROCEDURE STATING METHOD OF DRILLING. THE PRODUCT FOR USE, THE COMPLETE INSTALLATION PROCEDURE. MANUFACTURER TRAINING DATE AND A LIST OF THE PERSONNEL TRAINED ON ANCHOR INSTALLATION SHALL BE SUBMITTED TO THE ENGINEER

3. PERMANENT ANCHORS EXPOSED TO EARTH, WEATHER, OR CORROSIVE ENVIRONMENTS, INCLUDING ALL ANCHORS IN WELL HOUSE SHALL BE STAINLESS STEEL TYPE 304 OR 316. ANCHORS IN CONTACT WITH SEWAGE OR CHLORIDE DE-ICER RUNOFF SHALL BE TYPE 316. OTHERWISE ANCHORS SHALL BE ZINC PLATED, MINIMUM ASTM A36 MATERIAL UNLESS ASTM A193 GRADE B7 IS NOTED IN THE DRAWINGS, AND SHALL BE ACCORDING TO ASTM F1554. REINFORCING DOWELS SHALL BE OF THE SAME MATERIAL AND COATING (IF ANY) AS THE CONTINUING REINFORCING.

4. WHERE EXPANSION ANCHORS ARE CALLED FOR, CONTRACTOR MAY SUBSTITUTE SCREW TYPE ANCHORS WITH SELF-TAPPING THREADS OR ADHESIVE ANCHORS OF THE SAME SIZE AND EMBEDMENT, SUBJECT TO REVIEW OF CAPACITY BY THE ENGINEER FOR THE PRODUCT SUBSTITUTED. WHERE ADHESIVE ANCHORS ARE CALLED FOR, OTHER TYPES SHALL NOT BE SUBSTITUTED.

5. ADHESIVE SHALL HAVE A CURRENT IC ES REPORT. USE HIGH VISCOSITY ADHESIVE AND PLACEMENT DEVICES IN CONSULTATION WITH THE MANUFACTURER FOR OVERHEAD WORK. OVERHEAD INSTALLATION SHALL BE SUBJECT TO CONTINUOUS SPECIAL INSPECTION DURING INSTALLATION. USE LOW TEMPERATURE FORMULATIONS FOR COLD WEATHER WORK. DO NOT APPLY SIGNIFICANT LOAD TO ANCHORS IN COLD WEATHER UNTIL THEIR CAPACITY HAS BEEN ASSURED.

6. ANCHORS INSTALLED IN CONCRETE MASONRY SHALL BE INSTALLED IN CORES GROUTED SOLID. MINIMUM GROUT STRENGTH f'g=3000 PSI. MINIMUM 6 INCHES OF GROUT EACH WAY ALONG HORIZONTAL CORES FROM ANCHOR. VERTICAL CORES SHALL BE GROUTED FULL HEIGHT. ANCHORS INSTALLED IN MASONRY SHALL NOT BE INSTALLED WITHIN 1 1/2 INCHES OF ANY HEAD JOINT UNLESS BLOCK IS SQUARE END AND MORTARED ACROSS FULL WIDTH OF HEAD JOINT OR FILLED BOND BEAM.

7. HOLES SHALL BE DRILLED, CLEANED, AND MAINTAINED UNTIL INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING STANDARD ROTARY-IMPACT BITS, AND OIL-FREE COMPRESSED AIR, DIAMOND CORE BITS SHALL NOT BE USED UNLESS SPECIFICALLY APPROVED BY THE MANUFACTURER. LOCATE AND AVOID REINFORCING BARS AND PT TENDONS. MAINTAIN SPACING (MINIMUM 8 INCHES) AND EDGE/CORNER ENTRANCES (MINIMUM 4 INCHES) AS RECOMMENDED BY MANUFACTURER UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS.

8. UNLESS NOTED OTHERWISE ANCHORS SHALL BE INSTALLED TO THE FOLLOWING REQUIREMENTS: EXPANSION/SCREW:
   1/2" DIA - 3-1/2 INCHES CIP CONC, 4-1/2 INCHES GROUTED CMU
   5/8" DIA - 4 INCHES CIP CONC, 5 INCHES GROUTED CMU
   3/4" DIA - 5 INCHES CIP CONC, 6 INCHES GROUTED CMU
   ADHESIVE:
   1/2" DIA - 4-1/2 INCHES CIP CONC, 5-1/2 INCHES GROUTED CMU
   5/8" DIA - 5 INCHES CIP CONC, 6 INCHES GROUTED CMU
   3/4" DIA - 6 INCHES CIP CONC, 6 INCHES GROUTED CMU

STRUCTURAL METALS:

1. ALL STRUCTURAL STEEL WIDEFLANGE BEAMS AND COLUMNS SHALL BE ASTM A992, GRADE 50 STEEL AND ALL MISCELLANEOUS STEEL SHALL BE ASTM A992 OR A36 STEEL (MIN Fy=36 KSI), RECTANGULAR STEEL TUBES (HSS) SHALL BE ASTM A500. GRADE B STEEL (Fy=46 KSI), PIPE SHALL BE ASTM A53 (Fy=35 KSI) OR A500 GRADE B (42 KSI). OTHER SHAPES SHALL BE ASTM A36 (36 KSI). SPLICING OR MODIFICATION OF MEMBERS IN THE FIELD IS PROHIBITED WITHOUT PRIOR WRITTEN APPROVAL OF THE S.E.R.

2. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AISC MANUAL OF STEEL CONSTRUCTION, EXCEPT AS FOLLOWS: TO PARAGRAPH 3.1 ADD THE PROJECT ARCHITECTURAL DRAWINGS AREA PART OF THE STRUCTURAL STEEL DESIGN DRAWINGS BY REFERENCE AND MUST BE USED CONCURRENTLY WITH THE STRUCTURAL STEEL DESIGN DRAWINGS FOR ANY INFORMATION NOT SHOWN ON THE STRUCTURAL STEEL DESIGN DRAWINGS

DELETE PARAGRAPH 3.2 AND INSERT THE FOLLOWING: ARCHITECTURAL, PROCESS, ELECTRICAL, AND MECHANICAL PLANS SHALL BE USED AS A SUPPLEMENT TO THE STRUCTURAL STEEL DESIGN DRAWINGS TO DEFINE DETAIL CONFIGURATIONS AND CONSTRUCTION INFORMATION.

PARAGRAPH 3.3 MODIFY THE LAST SENTENCE TO READ: IN CASE OF DISCREPANCIES BETWEEN THE STRUCTURAL STEEL PLANS AND PLANS OF OTHER DISCIPLINES, SUCH DISCREPANCIES SHALL BE CALLED TO THE ENGINEER'S ATTENTION FOR RESOLUTION.

3. ALL WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER USING E70 ELECTRODES IN ACCORDANCE WITH THE REQUIREMENTS OF THE AWS D1.1 AND D1.2 "STRUCTURAL WELDING COD" AND VISUALLY INSPECTED. FULL PEN WELDS SHALL ALSO BE INSPECTED BY NDT METHODS SUCH AS ULTRASONIC, MAG, PARTICLE, OR DYE PEN.

4. ALL FIELD WELDED CONNECTIONS SHALL BE CHIPPED, GROUND WHERE REQUIRED WIRE BRUSH CLEANED AND PAINTED TO MATCH THE PAINT SYSTEM

5. ALL ANCHOR RODS SHALL BE 3/4" DIAMETER STAINLESS STEEL TYPE 304 UNLESS NOTED OTHERWISE, WHERE HEADED RODS ARE NOTED OR SPECIFIED, BENT RODS SHALL NOT BE FURNISHED

6. ALL EXPOSED STEEL SHALL BE GALVANIZED UNLESS NOTED OTHERWISE. DAMAGED GALVANIZING SHALL BE REPAIRED BY APPLICATION OF COL GALVANIZING COMPOUND SUCH AS ZRC (MINIMUM 3 COATS). PAINT FINISH PER ARCHITECTURAL.

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION

MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO.	130564
PROJECT NO.	-
ISSUE DATE	06-04-2015
DESIGNED BY	REF
DRAWN BY	SJL

Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE

STRUCTURAL GENERAL NOTES

SHEET

S100

PLOTTED: 6-11-2015 5:35 PM
PLOT SCALE: 1:2

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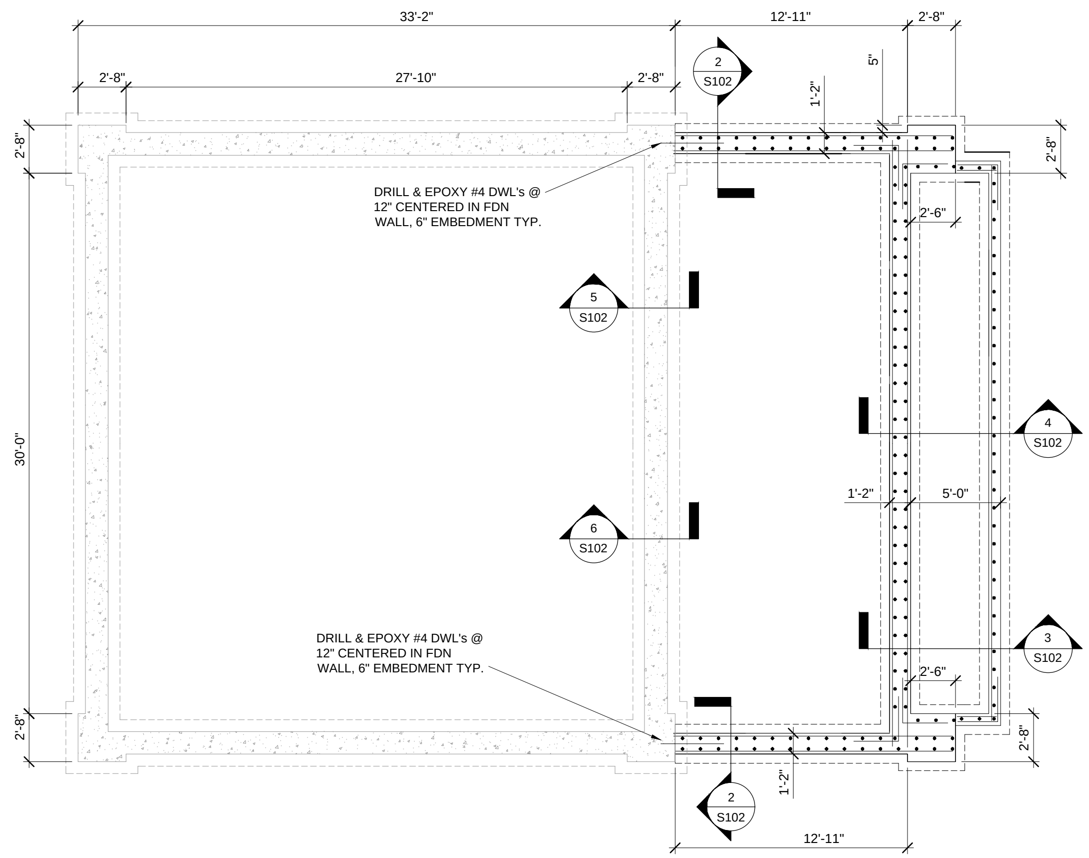
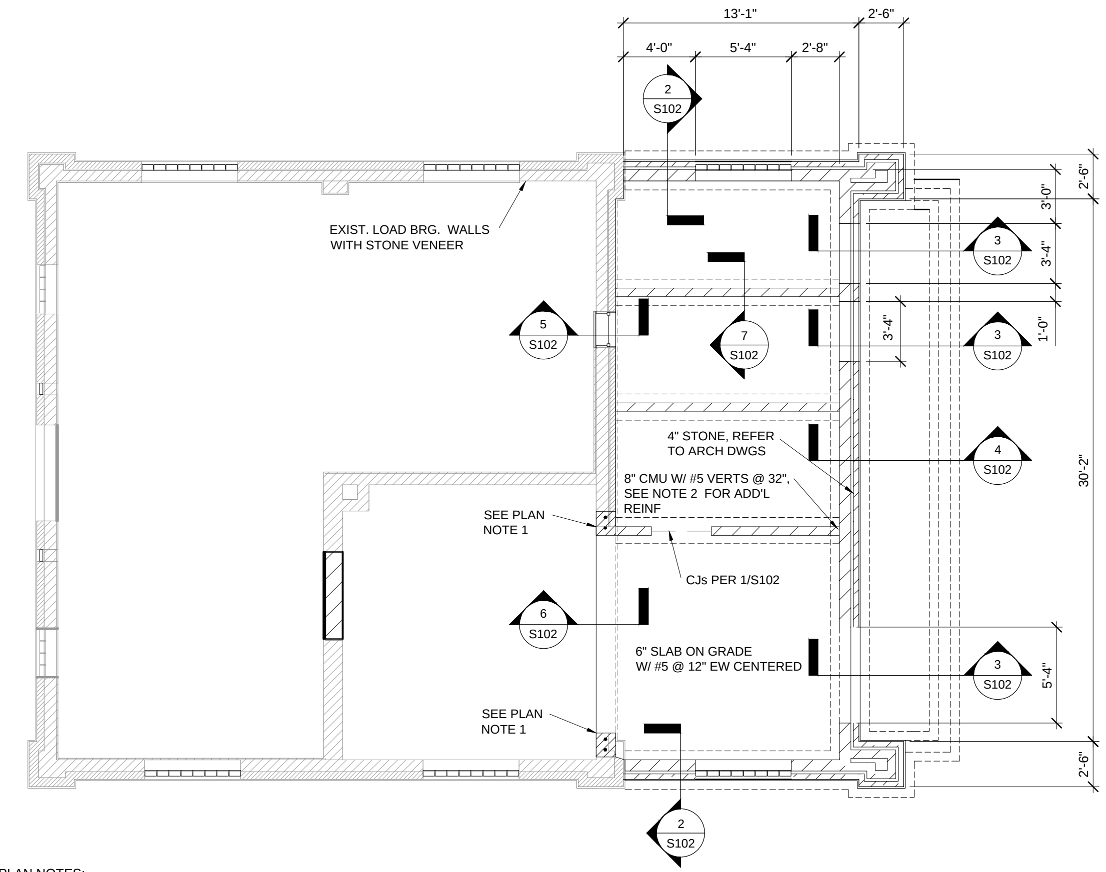


PLAN NOTES:
1. FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. NOTIFY ENGINEER OF ANY DISCREPANCIES

1 S101 FOUNDATION PLAN
SCALE: 3/16" = 1'-0"

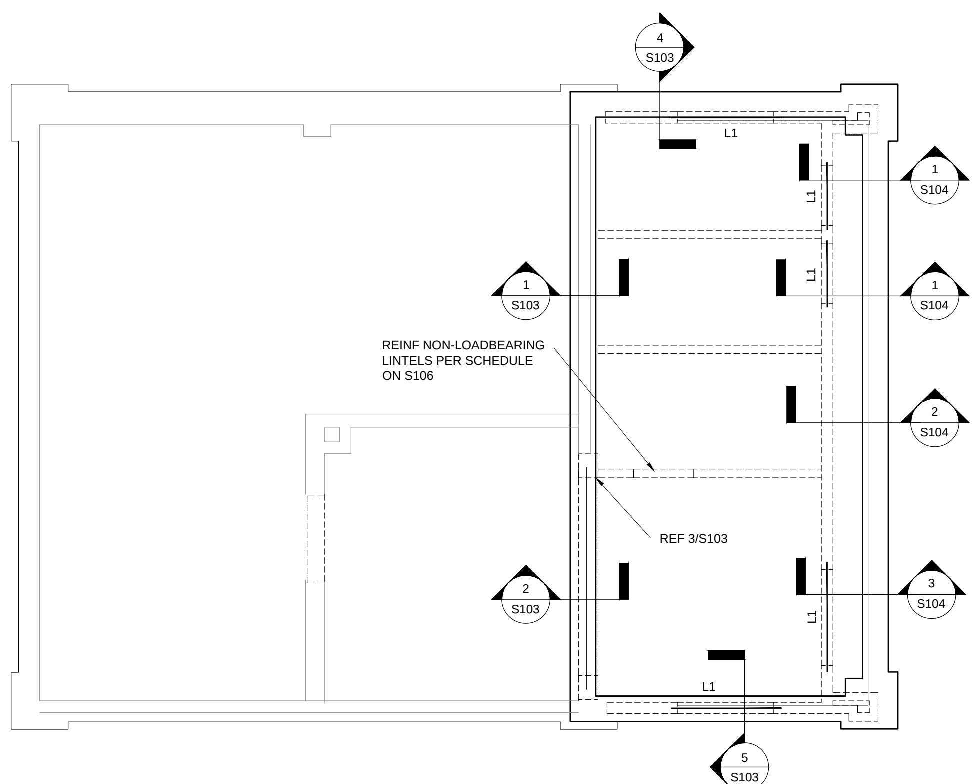


PLAN NOTES:
1. GROUT (2) CORES FULL HEIGHT BELOW BEAM BEARING, TYPE. REINF. W/ 1-#5 BAR EACH CORE. DRILL AND EPOXY INTO EXISTING CONCRETE, 6" EMBEDMENT

2. ADDITIONAL CMU WALL REINFORCEMENT: FULLY GROUT CORES AND REINF. W 1-#5 BAR AT EDGES OF OPENINGS, WALL CORNERS, AND WALL ENDS. EXTEND #5 HOOKED DOWELS INTO CONCRETE BEAM ABOVE

3. FIELD VERIFY ALL DIMENSIONS AND EXISTING CONDITIONS. NOTIFY ENGINEER OF ANY DISCREPANCIES.

2 S101 FLOOR PLAN
SCALE: 3/16" = 1'-0"



PLAN NOTES:
1. REFER TO LINTEL SCHEDULES ON SHEET S106 (L1)

3 S101 ROOF FRAMING PLAN
SCALE: 3/16" = 1'-0"

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO.	130564
PROJECT NO.	-
ISSUE DATE	06-04-2015
DESIGNED BY	REF
DRAWN BY	SJL

SHEET TITLE
STRUCTURAL PLANS

SHEET
S101

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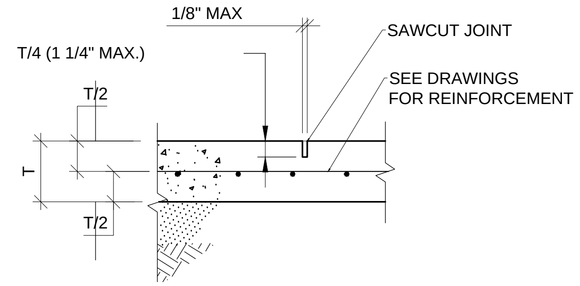
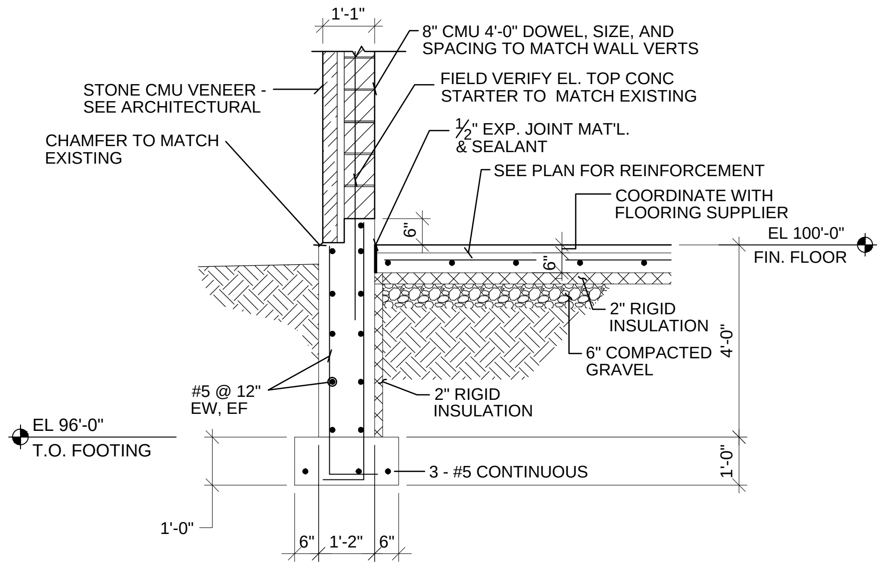
PLOT SCALE:



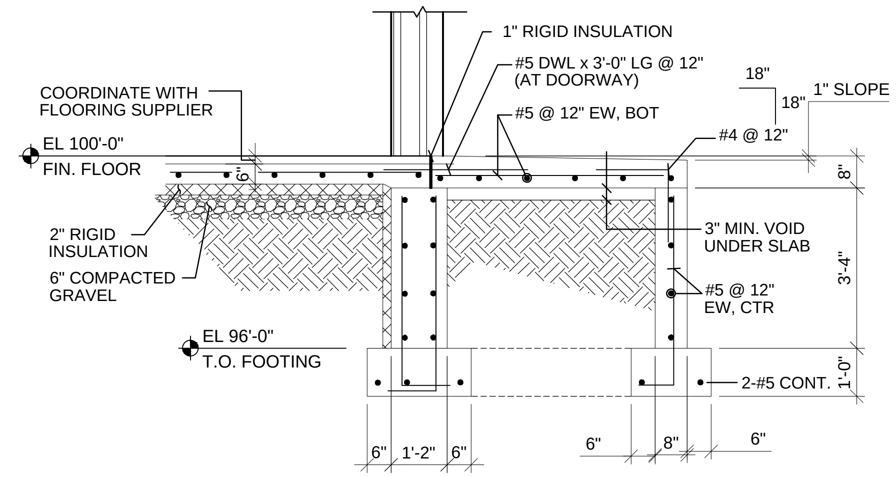
NOTES

1. SEE PLAN FOR CONTROL JOINT LOCATIONS AND SLAB THICKNESS.
2. MAKE SAWCUTS AS SOON AS CUTTING CAN BE DONE WITHOUT RAVELING THE CONCRETE.
3. FILL JOINTS WITH JOINT SEALER UNLESS NOTED OTHERWISE.

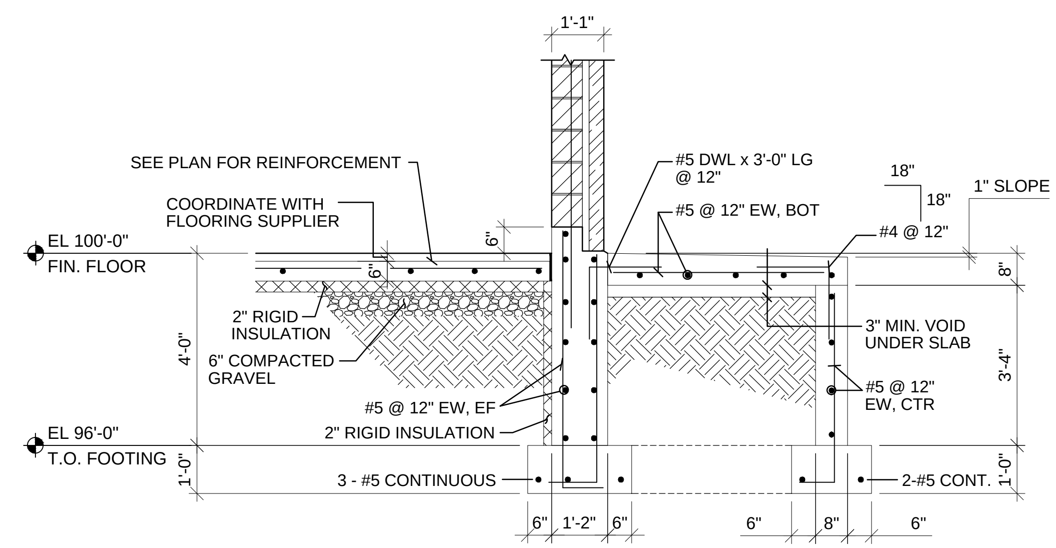
1 S102 TYPICAL SLAB CONTROL JOINT
SCALE: 1/2" = 1'-0"



2 S102 TYPICAL FOUNDATION WALL SECTION
SCALE: 1/2" = 1'-0"



3 S102 TYPICAL STOOP SECTION
SCALE: 1/2" = 1'-0"



4 S102 SECTION
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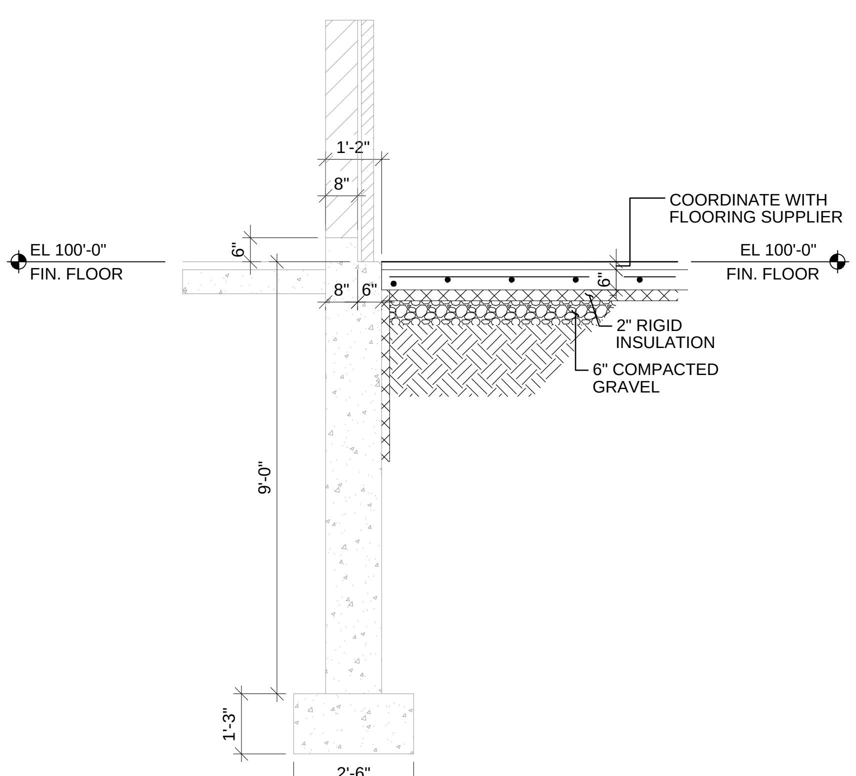

5 S102 SECTION
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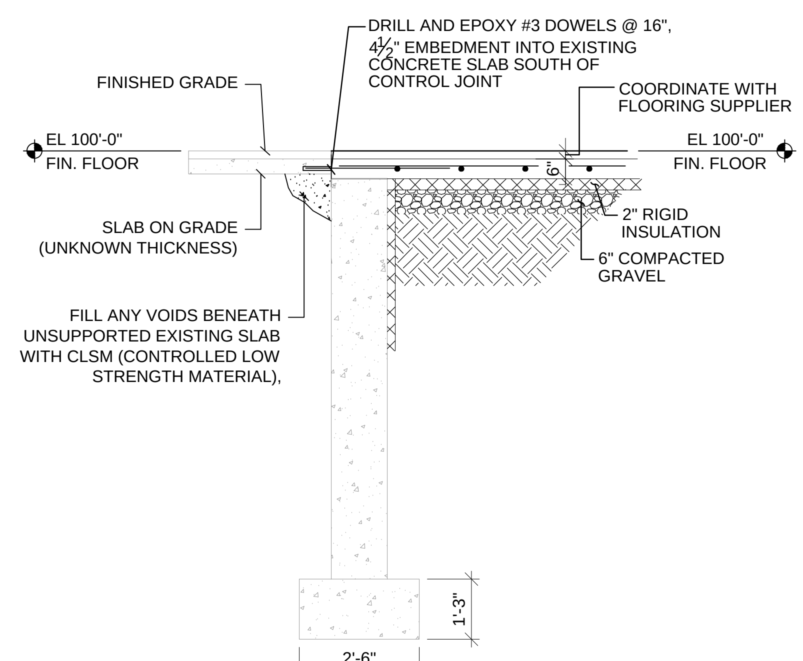

6 S102 SECTION
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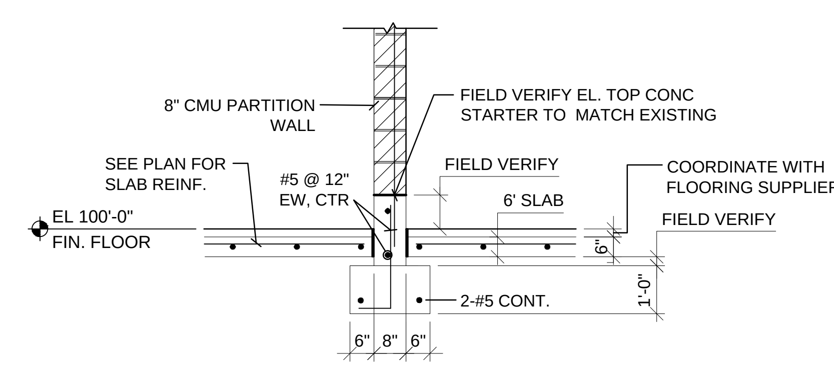

7 S102 TYPICAL THICKENED SLAB DETAIL
SCALE: 1/2" = 1'-0"

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Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

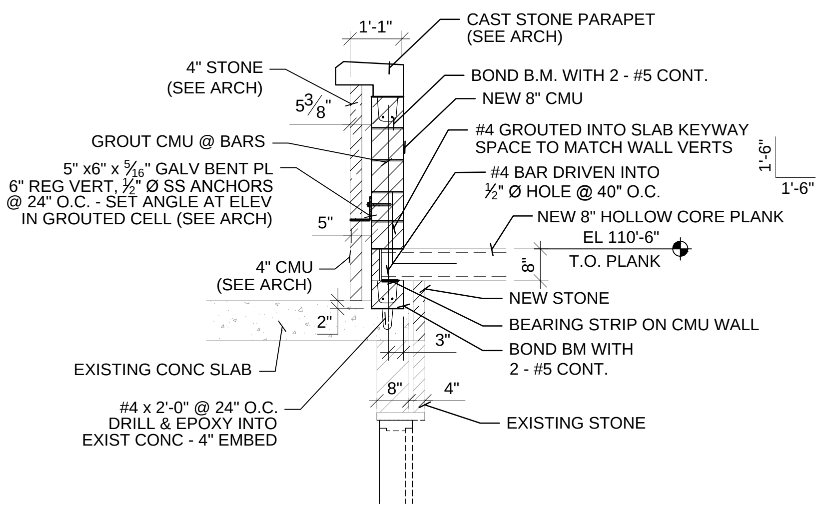
MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO.	130564
PROJECT NO.	.
ISSUE DATE	06-04-2015
DESIGNED BY	REF
DRAWN BY	SJL

SHEET TITLE
BUILDING AND WALL SECTIONS

SHEET
S102



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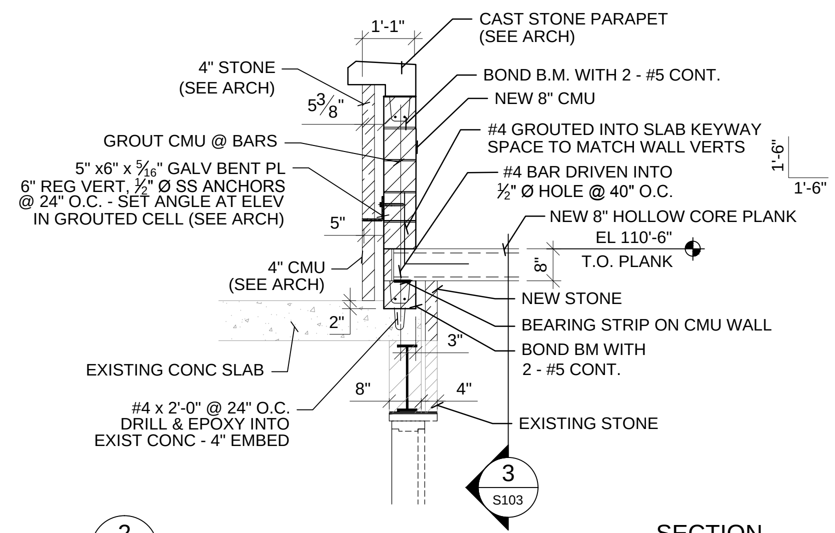

2 S103 SECTION
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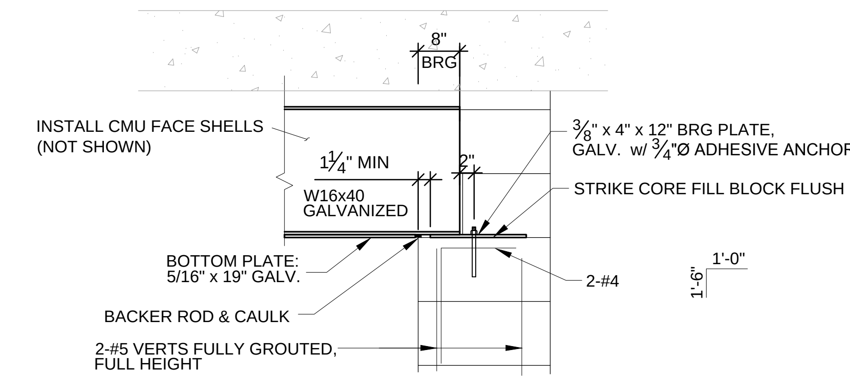
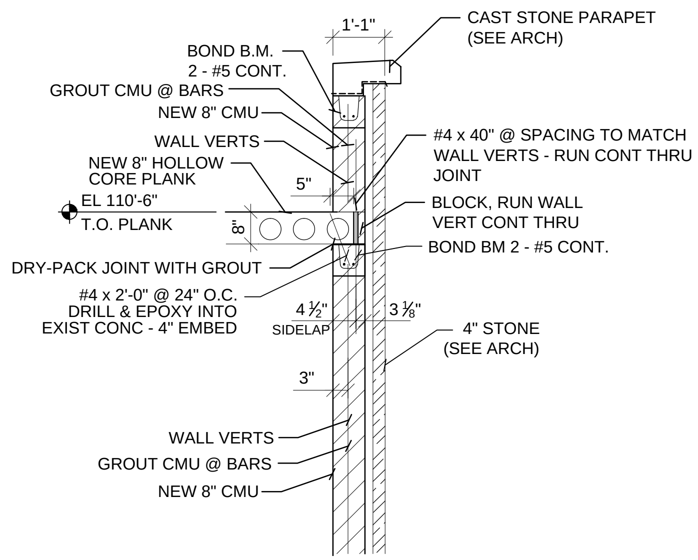


3 S103 STEEL LINTEL WITH BOTTOM PLATE
SCALE: 1" = 1'-0"



4 S103 SECTION
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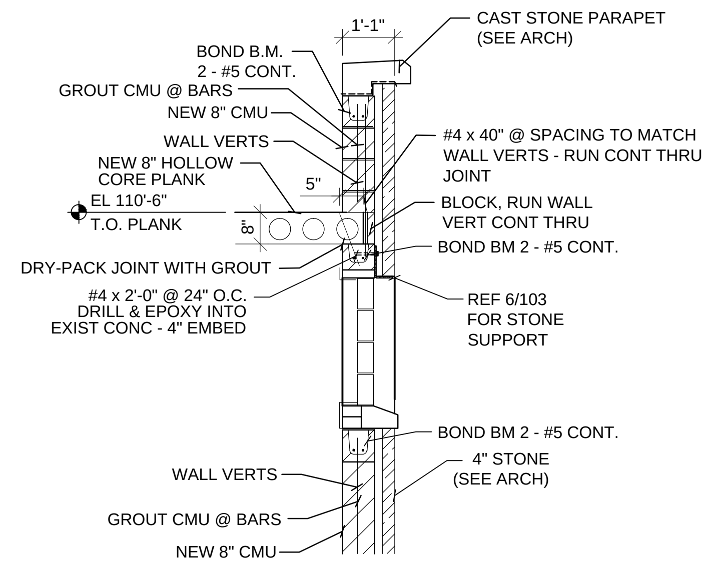

5 S103 SECTION
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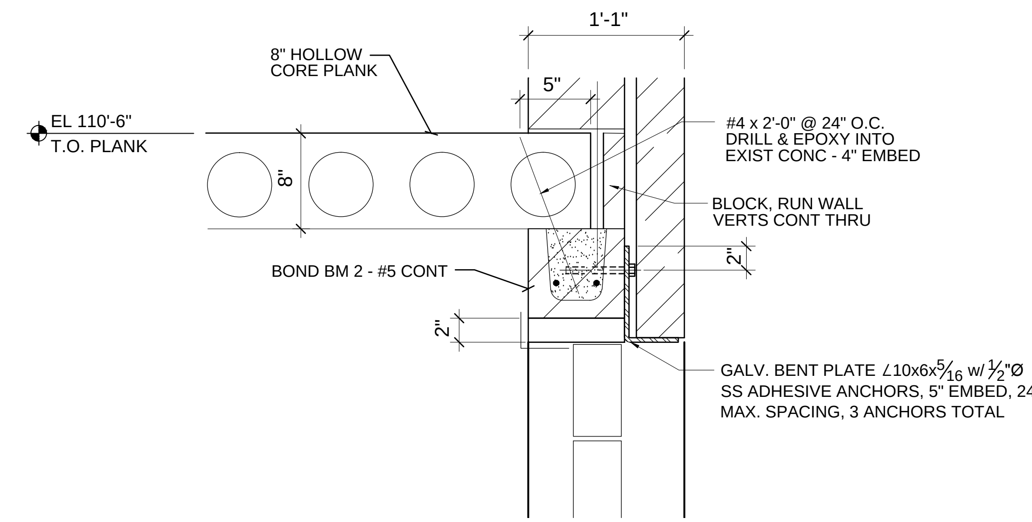

6 S103 MASONRY DETAIL
SCALE: 1-1/2" = 1'-0"

Madison Water Utility

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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO.	130564
PROJECT NO.	-
ISSUE DATE	06-04-2015
DESIGNED BY	REF
DRAWN BY	SJL

SHEET TITLE
BUILDING AND WALL SECTIONS

SHEET
S103

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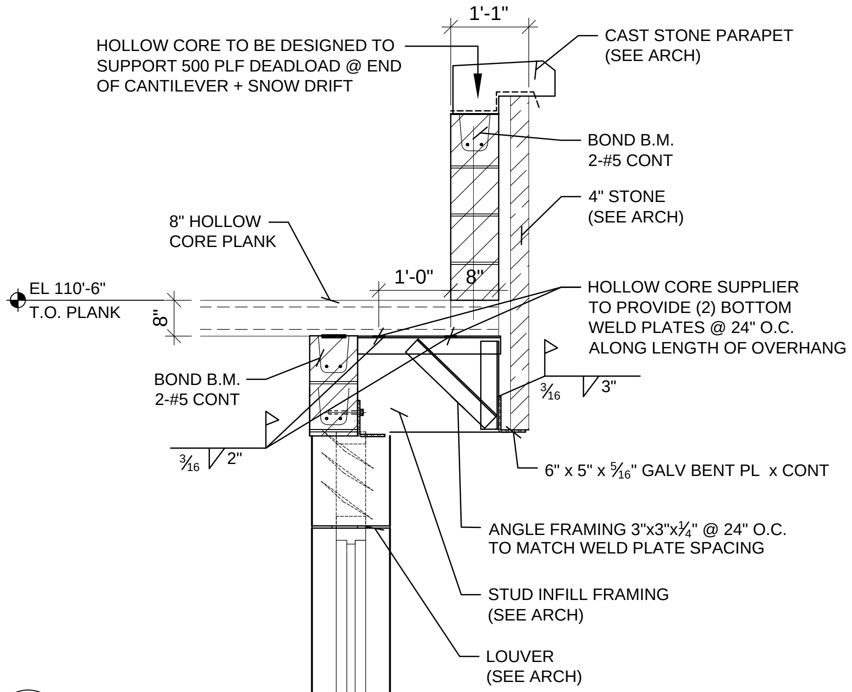

1 S104 SECTION
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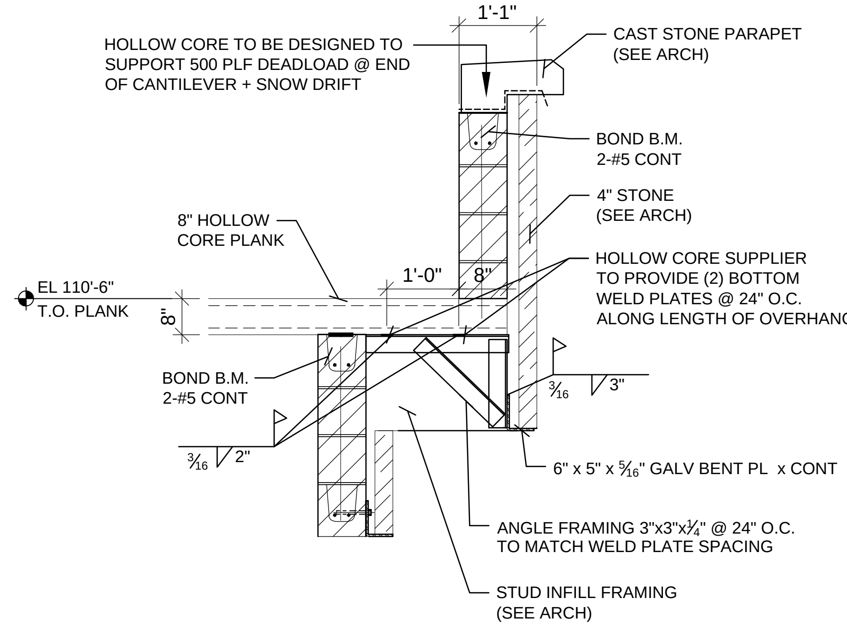
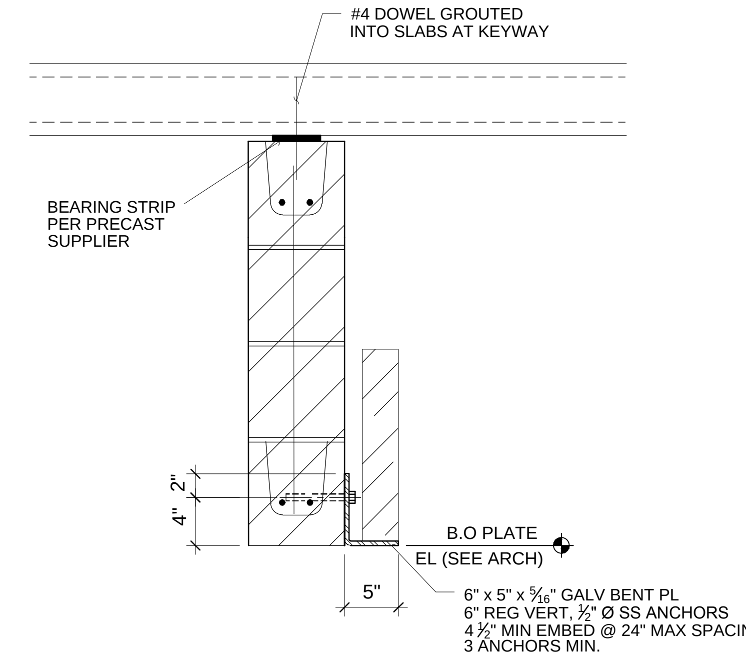


2 S104 SECTION
SCALE: 3/4" = 1'-0"



2 S104 SECTION
SCALE: 1-1/2" = 1'-0"

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Potter Lawson Success by Design
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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

REVISIONS
MARK DATE DESCRIPTION

SEH FILE NO. 130564
PROJECT NO.
ISSUE DATE 06-04-2015
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DRAWN BY SJL
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SHEET TITLE
BUILDING AND WALL SECTIONS

SHEET
S104

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PLOT SCALE: 1:2
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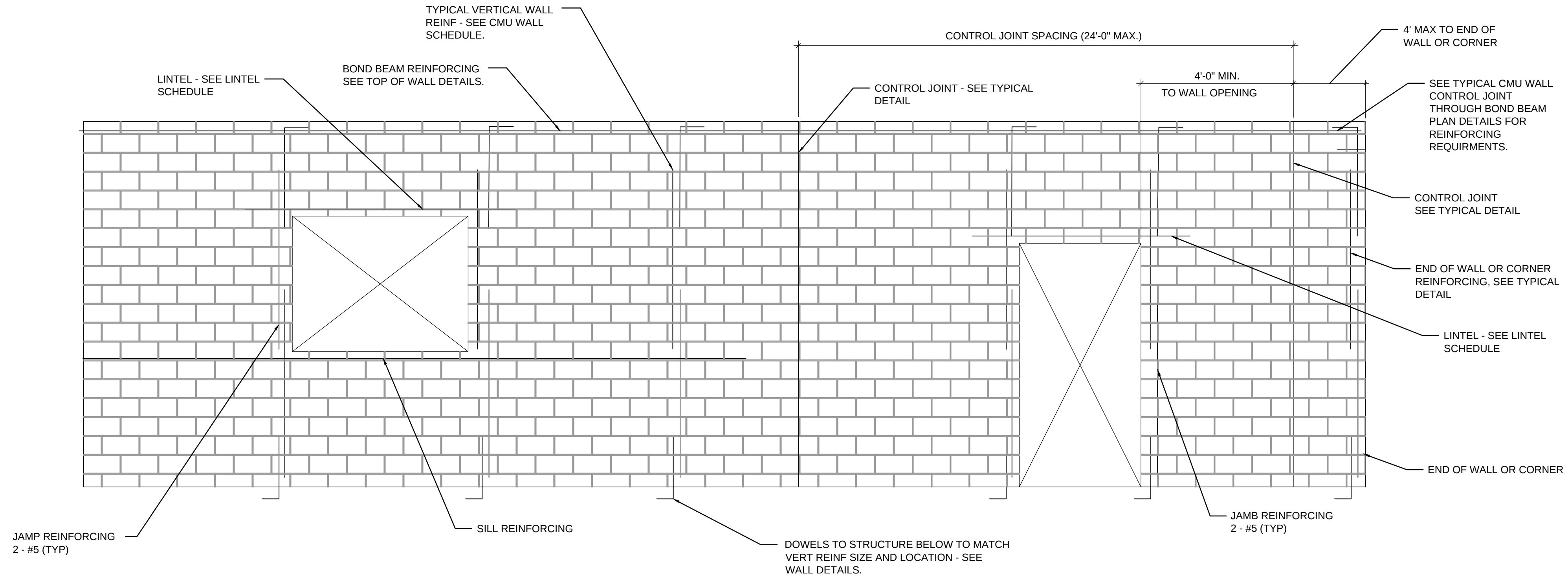
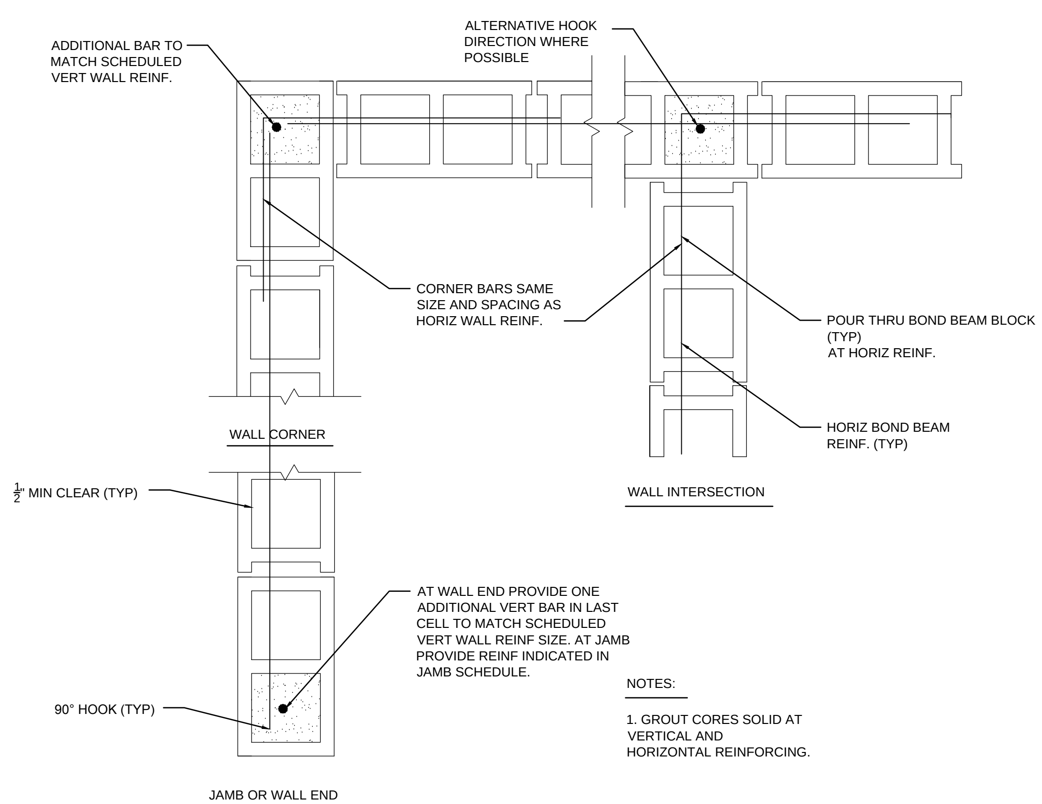


NOTES:

1. JAMB AND END OF WALL REINFORCING SHALL BE FULL HEIGHT OF WALL AND SHALL BE IN ADDITION TO TYPICAL VERTICAL WALL REINFORCING.
2. PROVIDE CONTROL JOINTS TO MEET SPACING REQUIREMENTS SHOWN AT LOCATIONS WHERE CHANGES IN WALL HEIGHT OCCUR, WHERE CHANGES IN WALL THICKNESS OCCUR, AND WHERE MOVEMENT JOINTS IN THE FLOOR ABOVE AND/OR BELOW OCCUR.
3. SEE ARCHITECTURAL DRAWINGS FOR CONTROL JOINT LOCATIONS AT NON LOAD BEARING WALLS NOT SHOWN ON STRUCTURAL DRAWINGS.
4. SEE ARCHITECTURAL DRAWINGS FOR WALL OPENINGS NOT SHOWN ON STRUCTURAL DRAWINGS.
5. PROVIDE CLEAN OUT AT BOTTOM COURSE FOR GROUT PORES GREATER THAN 5'-0" HIGH.
6. SILL REINFORCING SHALL BE LADDER JOINT REINFORCING IN THE FIRST OR SECOND MORTAR JOINT BELOW THE SILL OR IN A REINFORCED BOND BEAM. SILL REINFORCING SHALL EXTEND BETWEEN CONTROL JOINTS.

1 TYPICAL CMU WALL REINFORCING SCHEMATIC

SCALE: NONE

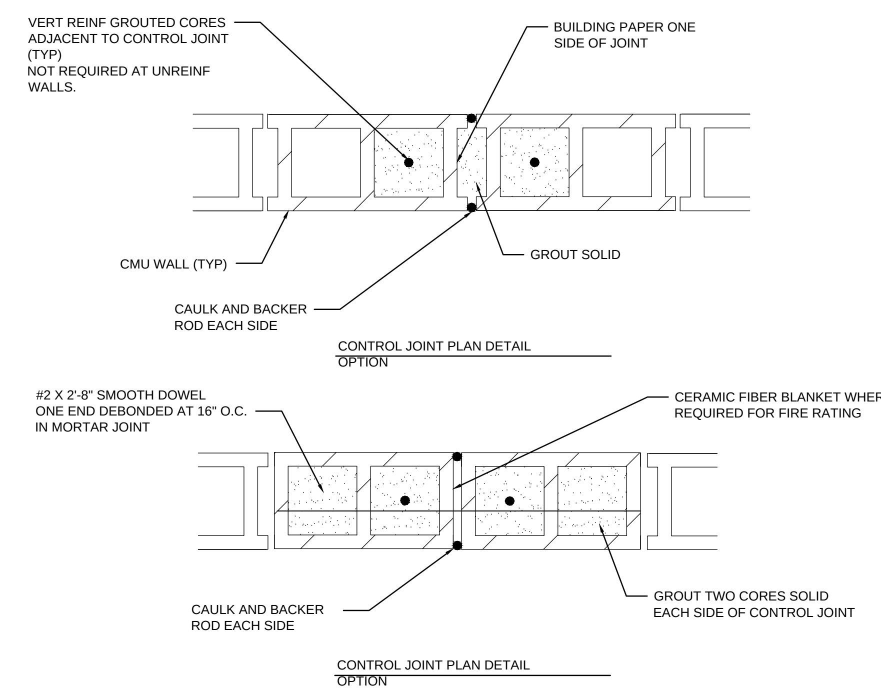


NOTES:

1. GROUT CORES SOLID AT VERTICAL AND HORIZONTAL REINFORCING.

2 CMU WALL REINFORCING

SCALE: NONE



NOTES:

1. SEE ARCHITECTURAL DRAWINGS, GENERAL STRUCTURAL NOTES, TYPICAL CMU WALL REINFORCING SCHEMATIC AND TYPICAL CMU WALL CONTROL JOINT THROUGH BOND BEAM DETAILS FOR CONTROL JOINT REQUIREMENTS AND LOCATIONS.
2. TERMINATE HORIZONTAL JOINT REINFORCEMENT AT CONTROL JOINTS.
3. DO NOT TERMINATE LINTEL REINFORCING AT CONTROL JOINTS.

3 CMU WALL CONTROL JOINT

SCALE: NONE

Madison Water Utility
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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN
MARK DATE DESCRIPTION REVISIONS
SEH FILE NO. 130564
PROJECT NO.
ISSUE DATE 06-04-2015
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DRAWN BY SJL

SHEET TITLE TYPICAL SECTIONS

SHEET S105

BAR SIZE	CMU REINFORCING BAR LAP SPLICE SCHEDULE: fm= 2000 PSI						
	6" CMU	8" CMU		10" CMU		12" CMU	
	CASE 1	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	14"	14"	15"	14"	14"	14"	14"
#4	21"	18"	25"	18"	24"	18"	22"
#5	32"	22"	39"	22"	37"	22"	35"
#6	–	38"	54"	35"	54"	35"	54"
#7	–	52"	–	40"	63"	40"	63"
#8	–	–	–	61"	–	53"	72"

NOTES:

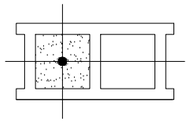
1. REINFORCING BAR LAP SPLICE SCHEDULE APPLIES TO UNCOATED, GRADE 60 REINFORCING. BARS IN ASTM C90 HOLLOW UNITS.

2. FOR EPOXY COATED BAR, MULTIPLY THE ABOVE LENGTHS BY 1.5.

3. MAXIMUM SPACING OF BARS BEING LAPPED IS $\frac{1}{5}$ THE LAP SPLICE LENGTH, NOT TO EXCEED 8".

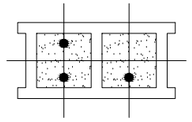
4. REINFORCING BARS SHALL BE LAPPED IN THE SAME CMU CELL.

5. ALL BARS MUST BE PLACED IN FULLY GROUTED CELLS OR BOND BEAMS.



CASE 1

ONE BAR PER CELL LOCATED IN THE CENTER OF THE CELL.

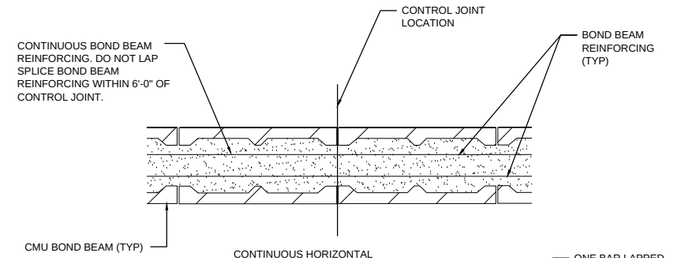


CASE 2

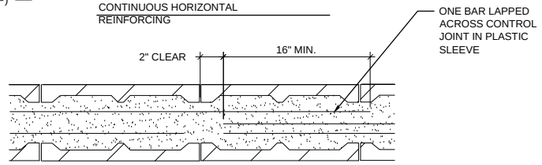
ALL OTHER CONDITIONS INCLUDING TWO BARS PER CELL AND SINGLE BARS NOT LOCATED IN THE CENTER OF THE CELL.

4 CMU REINFORCING LAP SPLICE

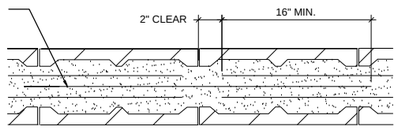
SCALE: NONE



CONTINUOUS HORIZONTAL REINFORCING



LAPPED HORIZONTAL REINFORCING



DISCONTINUOUS HORIZONTAL REINFORCING WITH DOWEL

NOTES:

1. SEE ARCHITECTURAL DRAWINGS, GENERAL STRUCTURAL NOTES, TYPICAL CMU WALL REINFORCING SCHEMATIC AND TYPICAL CMU WALL CONTROL JOINT THROUGH BOND BEAM DETAILS FOR CONTROL JOINT REQUIREMENTS AND LOCATIONS.

2. PROVIDE CONTINUOUS HORIZONTAL BOND BEAM REINFORCING THROUGH CONTROL JOINTS AT FLOOR AND ROOF LEVELS AND AS OTHERWISE INDICATED FOR CMU WALLS SHOWN ON THE STRUCTURAL DRAWINGS.

3. PROVIDE LAPPED OR DISCONTINUOUS HORIZONTAL BOND BEAM REINFORCING AT CONTROL JOINTS UNLESS NOTED OTHERWISE AND FOR CMU NOT SHOWN ON THE STRUCTURAL DRAWINGS.

5 CMU WALL CONTROL JOINT THRU BOND BM

SCALE: NONE

NON-LOAD BEARING INTERIOR CMU WALL REINFORCING SCHEDULE										
NOMINAL CMU WALL THICKNESS	WALL HEIGHT	REINFORCING								
		VERTICAL FIELD	WALL OPENING SIZE							
			</= 4'-0"		</= 8'-0"		</= 12'-0"		</= 16'-0"	
			LINTEL	JAMB	LINTEL	JAMB	LINTEL	JAMB	LINTEL	JAMB
6"	< 12'-0"	UNREINFORCED	8" DEEP 1 - #4	8" WIDE, 1-#4	8" DEEP 1 - #6	8" WIDE, 1-#6	16" DEEP 1 - #4	16" WIDE, 4-#4	24" DEEP 1 - #5	24" WIDE, 3-#6
	< 18'-0"	#4 @ 48" O.C.		8" WIDE, 1-#5		16" WIDE, 2-#6		24" WIDE, 3-#4		NOT PERMITTED
8"	< 18'-0"	UNREINFORCED	8" DEEP 1 - #5	8" WIDE, 1-#5	8" DEEP 2 - #5	8" WIDE, 1-#5	16" DEEP 1 - #5	8" WIDE, 2-#5	24" DEEP 2 - #5	16" WIDE, 4-#5
	< 24'-0"	#5 @ 48" O.C.		8" WIDE, 1-#5		8" WIDE, 2-#5		16" WIDE, 4-#5		16" WIDE, 4-#5
10"	< 22'-0"	UNREINFORCED	8" DEEP 1 - #5	8" WIDE, 1-#5	8" DEEP 2 - #5	8" WIDE, 1-#5	16" DEEP 1 - #5	8" WIDE, 2-#5	24" DEEP 2 - #5	16" WIDE, 2-#5
	< 30'-0"	#5 @ 48" O.C.		8" WIDE, 1-#5		8" WIDE, 2-#5		16" WIDE, 4-#5		16" WIDE, 2-#5
12"	< 28'-0"	UNREINFORCED	8" DEEP 1 - #5	8" WIDE, 1-#5	8" DEEP 2 - #5	8" WIDE, 2-#5	16" DEEP 2 - #5	8" WIDE, 2-#5	24" DEEP 2 - #5	16" WIDE, 2-#5
	< 36'-0"	#5 @ 48" O.C.		8" WIDE, 1-#5		8" WIDE, 2-#5		16" WIDE, 4-#5		16" WIDE, 2-#5
16"	< 36'-0"	UNREINFORCED	8" DEEP 1 - #5	8" WIDE, 1-#5	8" DEEP 2 - #5	8" WIDE, 2-#5	16" DEEP 2 - #5	8" WIDE, 2-#5	NOT PERMITTED	
	< 48'-0"	#5 @ 48" O.C.		8" WIDE, 1-#5		8" WIDE, 2-#5		8" WIDE, 4-#5		

NOTES:

1. WALL HEIGHT INDICATES MAXIMUM ALLOWABLE VERTICAL CLEAR DISTANCE BETWEEN POINTS OF CONTINUOUS LATERAL WALL SUPPORT.
2.VERTICAL REINFORCEMENT SHALL BE LOCATED IN THE CENTER OF THE WALL.
3. CMU LINTELS SHALL BE GROUTED SOLID WITH A MINIMUM OF 2" BOTTOM COVER TO REINFORCING.
4. PROVIDE 8" BEARING ON JAMBS AT EACH END OF CMU LINTELS.
5. JAMB REINFORCING SPECIFIED SHALL BE EVENLY DISTRIBUTED ALONG THE JAMB WIDTH. AT LOCATIONS WITH 2 BARS PER CELL, BARS SHALL BE PLACED PER CASE 2 OF THE CMU REINFORCING BAR LAP SPLICE SCHEDULE.
6. SEE ARCH FOR LOCATIONS AND SIZES OF INTERIOR NON-LOAD BEARING CMU WALLS.
7. SEE TYPICAL CMU WALL DETAIL FOR ADDITIONAL INFORMATION.

LOAD BEARING CMU WALL LINTEL SCHEDULE				
MARK	WALL TYPE	LINTEL DESCRIPTION	BEARING	
L1	8" CMU	16" HIGH W/ 2 - #5 BOTTOM	8"	

NOTES:

1. GROUT LINTEL SOLID FULL HEIGHT- USE GROUT NOT MORTAR
2. FOR ADDITIONAL INFORMATION, SEE TYPICAL CMU WALL REINFORCING SCHEMATIC
3. SEE ARCH FOR SIZES LOCATIONS OF WALL PENETRATIONS.
4. CORES BENEATH LINTELS PROVIDE 2 VERTICAL WALL BARS (#5'S MINIMUM) BELOW EACH BEARING END

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PLOT SCALE: 1:2

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Madison Water Utility

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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. 130564
PROJECT NO.
ISSUE DATE 06-04-2015
DESIGNED BY REF
DRAWN BY SJL
Sheri Elliott Hendrickson, Inc. @ (SEH)

SHEET TITLE
TYPICAL SECTIONS

SHEET
S106

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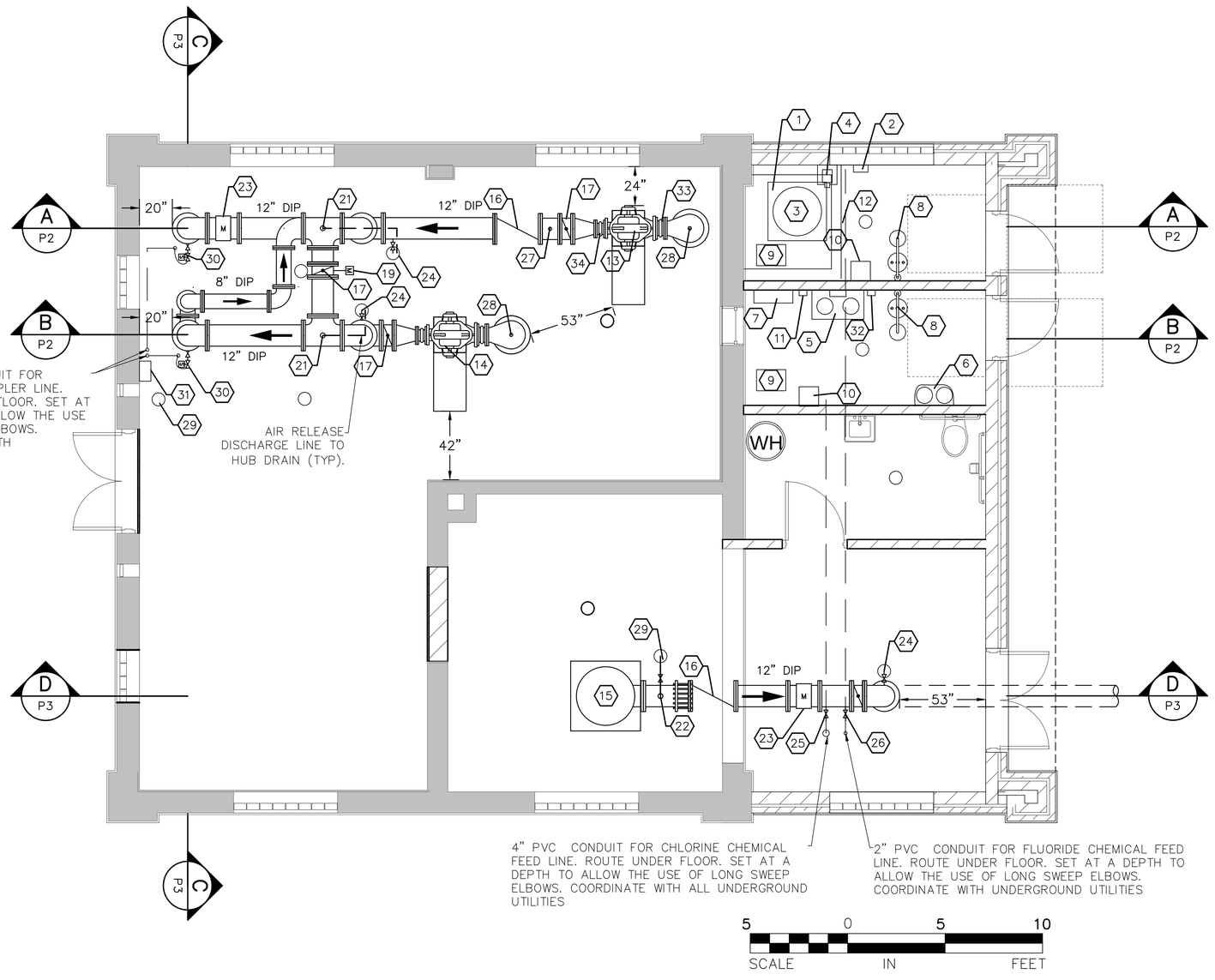

KEYNOTES

1. 36" x 36" SCALE PLATFORM
2. DIGITAL SCALE INDICATOR
3. 150 GALLON FLUORIDE TANK
4. FLUORIDE METERING PUMP
5. DUAL CYLINDER SCALE PLATFORM WITH INDICATOR
6. SPARE CYLINDER STORAGE WITH CHAINS
7. EMERGENCY CHLORINE SHUT-OFF PANEL
8. EYE WASH STATION WITH OVERHEAD SHOWER
9. UNIT HEATER, CEILING MOUNTED
10. VENTILATION DUCT
11. LOSS OF VACUUM DETECTOR
12. CONTAINMENT CURB
13. ZONE 7 BOOSTER PUMP, 8" SUCTION X 6" DISCHARGE
14. ZONE 8 BOOSTER PUMP, 8" SUCTION X 6" DISCHARGE
15. DEEP WELL PUMP
16. CHECK VALVE, 12"
17. BUTTERFLY VALVE, 12"
18. BUTTERFLY VALVE, 8"
19. MOTORIZED VALVE ACTUATOR
20. PRESSURE REDUCING VALVE, 8"
21. AIR RELEASE VALVE – SEE DETAIL D/DP1
22. AIR AND VACUUM VALVE – SEE DETAIL B/DP1
23. FLOW METER, 12"
24. SAMPLE TAP TO HUB DRAIN
25. CORPORATION STOP, CHLORINE INJECTION – SEE DETAIL G/DP2
26. CORPORATION STOP, FLUORIDE INJECTION – SEE DETAIL G/DP2
27. PRESSURE TRANSMITTER
28. PRESSURE GAUGE – SEE DETAIL E/DP2
29. HUB DRAIN
30. CHLORINE ANALYZER SUPPLY
31. CHLORINE ANALYZER
32. CHLORINE GAS DETECTOR
33. RUBBER EXPANSION JOINT, 8"
34. RUBBER EXPANSION JOINT, 6"

N

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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 6-12-2015
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
PROCESS FLOOR PLAN

SHEET
P1

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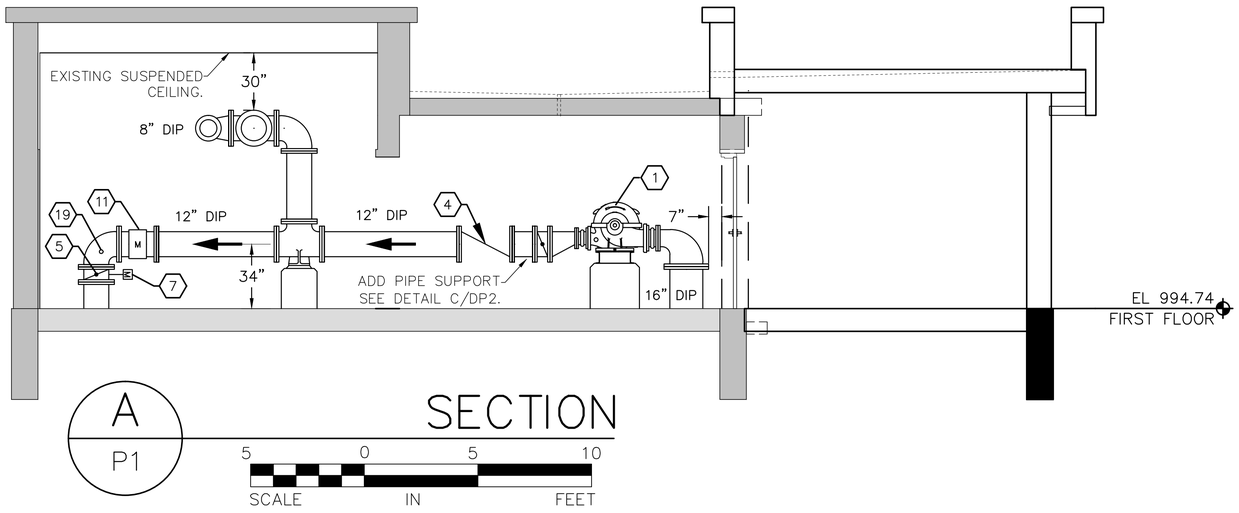

A
P1

SECTION

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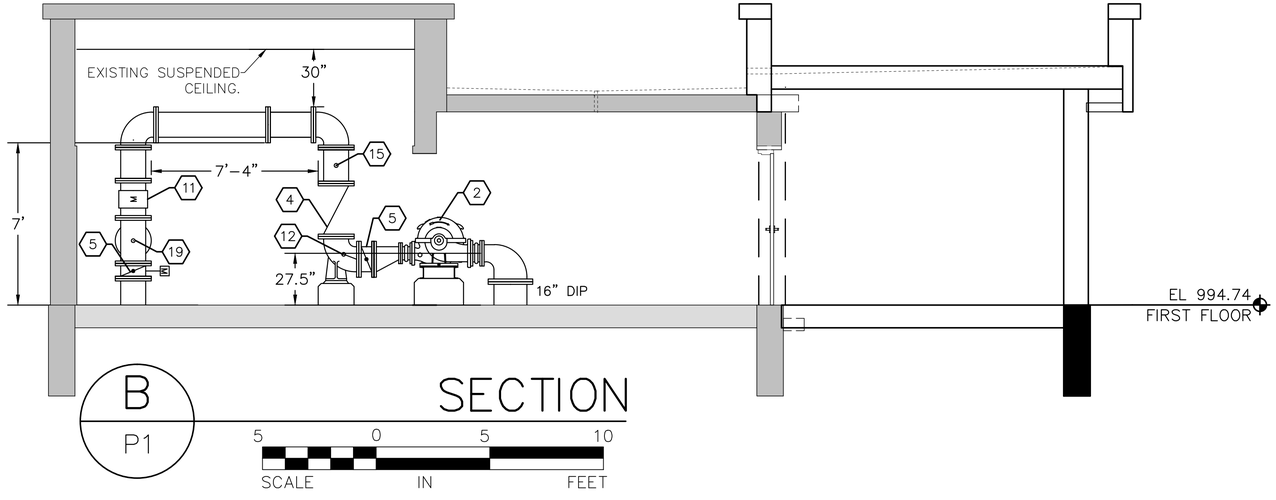
SCALE IN FEET



B
P1

SECTION

5 0 5 10
SCALE IN FEET

KEYNOTES

1. ZONE 7 BOOSTER PUMP, 8" SUCTION X 6" DISCHARGE
2. ZONE 8 BOOSTER PUMP, 8" SUCTION X 6" DISCHARGE
3. DEEP WELL PUMP
4. CHECK VALVE, 12"
5. BUTTERFLY VALVE, 12"
6. BUTTERFLY VALVE, 8"
7. MOTORIZED VALVE ACTUATOR
8. PRESSURE REDUCING VALVE, 8"
9. AIR RELEASE VALVE – SEE DETAIL D/DP1
10. AIR AND VACUUM VALVE – SEE DETAIL B/DP1
11. FLOW METER, 12"
12. SAMPLE TAP TO HUB DRAIN – SEE DETAIL A/DP1
13. CORPORATION STOP, CHLORINE INJECTION – SEE DETAIL G/DP1
14. CORPORATION STOP, FLUORIDE INJECTION – SEE DETAIL G/DP1
15. PRESSURE TRANSMITTER
16. PRESSURE GAUGE – SEE DETAIL E/DP2
17. RUBBER EXPANSION JOINT, 8"
18. RUBBER EXPANSION JOINT, 6"
19. CHLORINE ANALYZER SUPPLY

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UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 6-12-2015
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN
Short Elliott Hendrickson, Inc. ® (SEH)

SHEET TITLE
PROCESS SECTIONS

SHEET
P2

PLOTTED: 6-15-2015 5:39 PM
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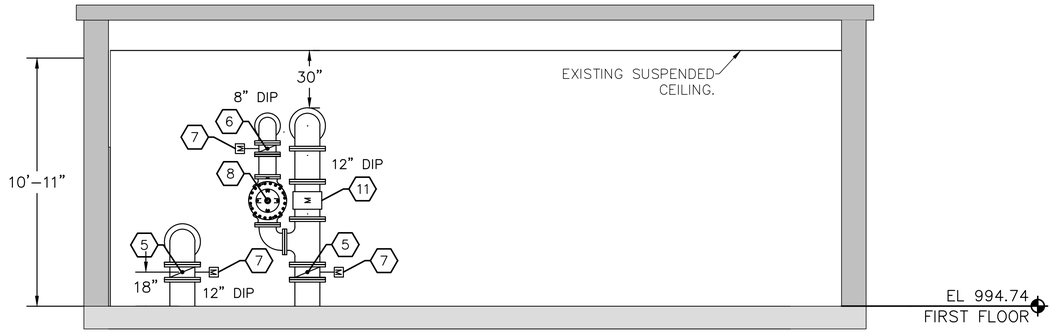
PLOTTED: 6-15-2015 6:02 PM



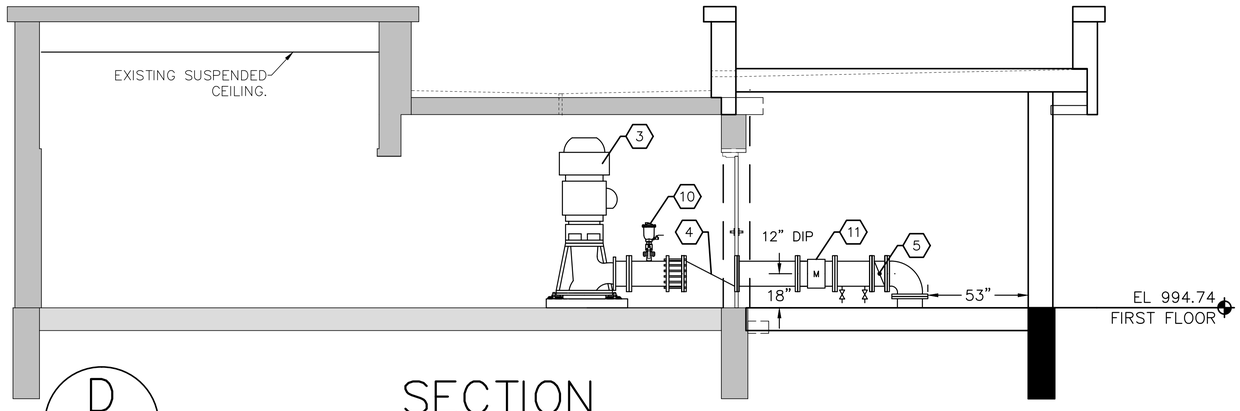
C
P1

SECTION

5 0 5 10
SCALE IN FEET

KEYNOTES

1. ZONE 7 BOOSTER PUMP, 8" SUCTION X 6" DISCHARGE
2. ZONE 8 BOOSTER PUMP, 8" SUCTION X 6" DISCHARGE
3. DEEP WELL PUMP
4. CHECK VALVE, 12"
5. BUTTERFLY VALVE, 12"
6. BUTTERFLY VALVE, 8"
7. MOTORIZED VALVE ACTUATOR
8. PRESSURE REDUCING VALVE, 8"
9. AIR RELEASE VALVE – SEE DETAIL D/DP1
10. AIR AND VACUUM VALVE – SEE DETAIL B/DP1
11. FLOW METER, 12"
12. SAMPLE TAP WITH HUB DRAIN – SEE DETAIL A/DP1
13. CORPORATION STOP, CHLORINE INJECTION – SEE DETAIL G/DP1
14. CORPORATION STOP, FLUORIDE INJECTION – SEE DETAIL G/DP1
15. PRESSURE TRANSMITTER
16. PRESSURE GAUGE – SEE DETAIL E/DP2
17. RUBBER EXPANSION JOINT, 8"
18. RUBBER EXPANSION JOINT, 6"
19. CHLORINE ANALYZER SUPPLY



D
P1

SECTION

5 0 5 10
SCALE IN FEET

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 6-12-2015
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN
Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE
PROCESS SECTIONS

SHEET
P3

M:\KO\W\WADWU\130564\5-DESIGN\51-DRAWINGS\PROCESS\MA130564PM2.DWG
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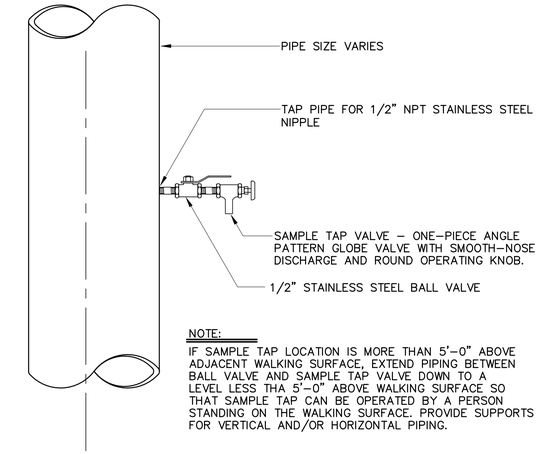
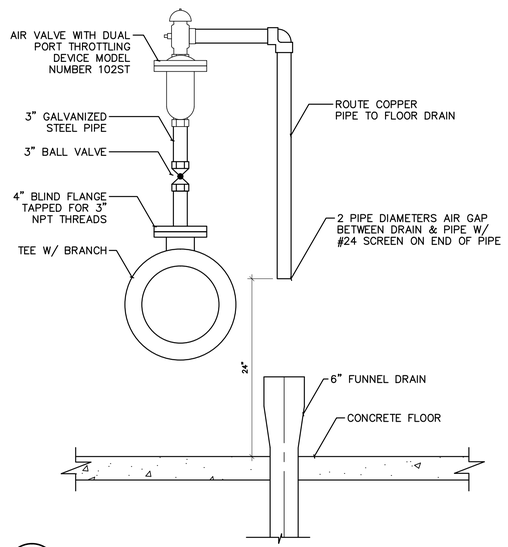
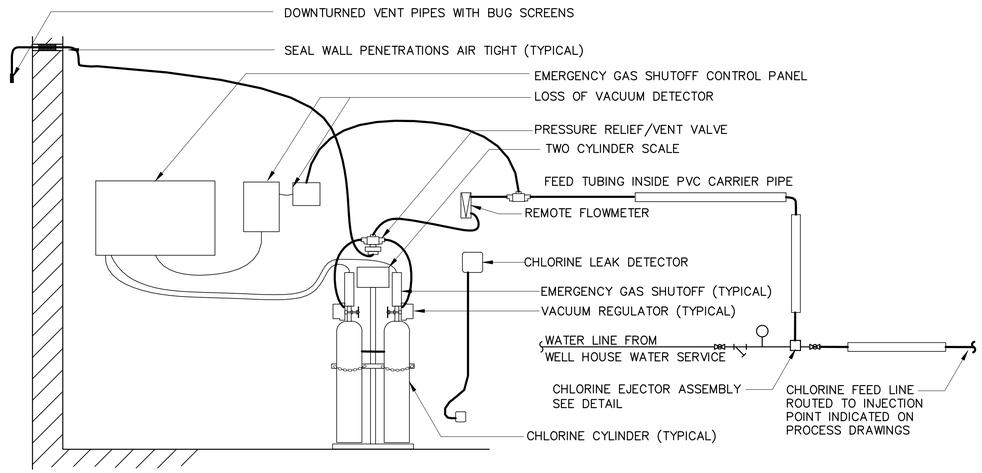


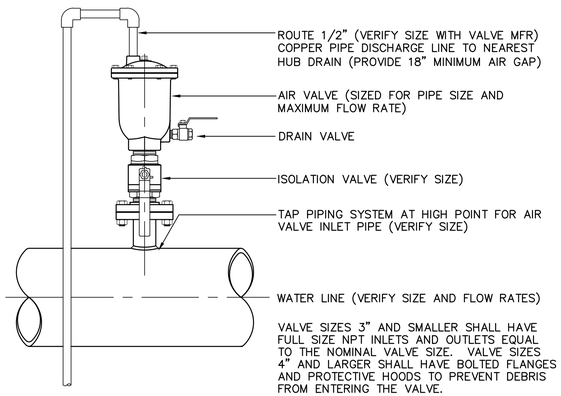
A DP1 — SAMPLE TAP DETAIL
SCALE: NONE
PPIPE021



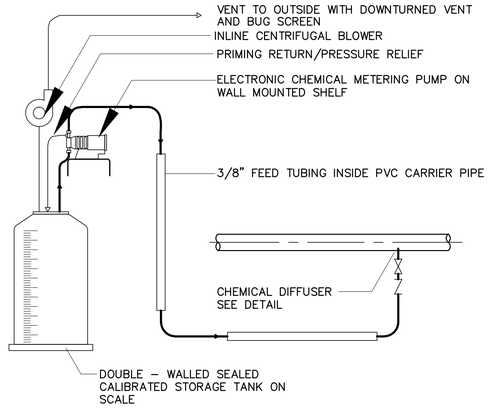
B DP1 — AIR VALVE & FUNNEL DRAIN DETAIL
SCALE: NONE



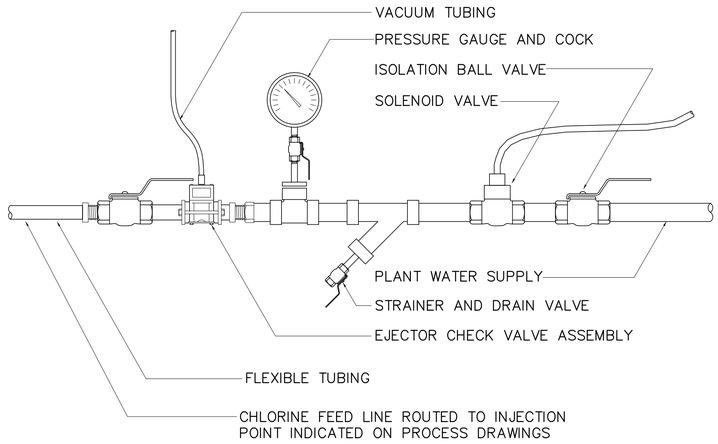
C DP1 — CHLORINE GAS FEED SYSTEM DETAIL
SCALE: NONE
PCHEM003



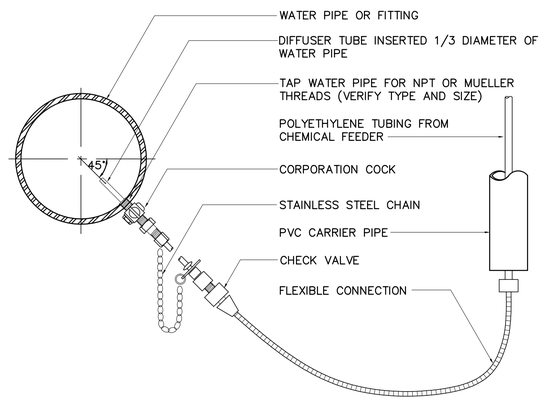
D DP1 — AIR VALVE DETAIL
SCALE: NONE
PVALV001



E DP1 — CHEMICAL FEED DETAIL
SCALE: NONE
PCHEM007



F DP1 — CHLORINE EJECTOR DETAIL
SCALE: NONE
PCHEM001



G DP1 — CHEMICAL DIFFUSER DETAIL
SCALE: NONE
PCHEM002

Madison Water Utility

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 12-03-2014
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
PROCESS DETAILS

SHEET
DP1

M:\KO\W\MADWU\130564\5-DESIGN\51-DRAWINGS\PROCESS\MA130564DP1.DWG
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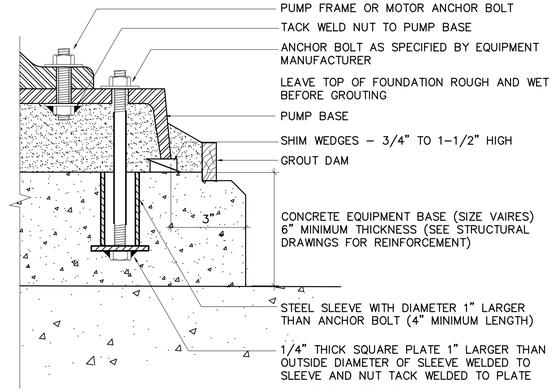
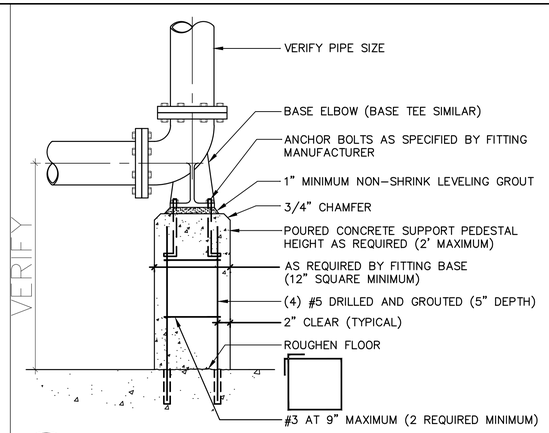
USER: CHRIS EPSTEIN

PLOTTED: 6-11-2015 8:43 PM



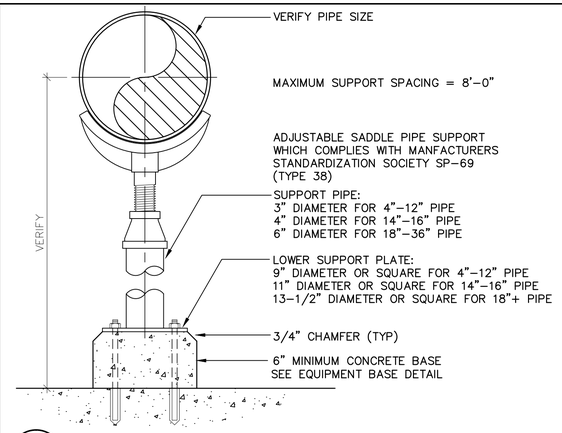
A DP2 — **PUMP BASE DETAIL** — PEQIP001

SCALE: NONE



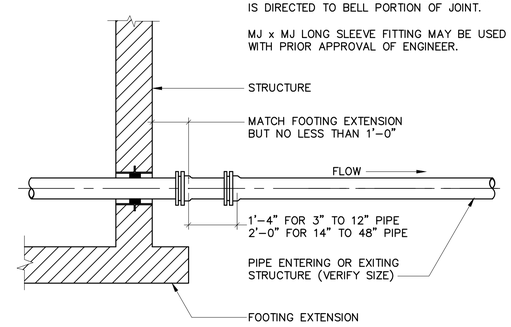
B DP2 — **BASE BEND SUPPORT DETAIL** — PSUPP005

SCALE: NONE



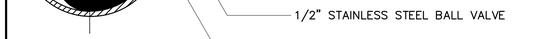
C DP2 — **PIPE SUPPORT FROM FLOOR DETAIL** — PSUPP002

SCALE: NONE



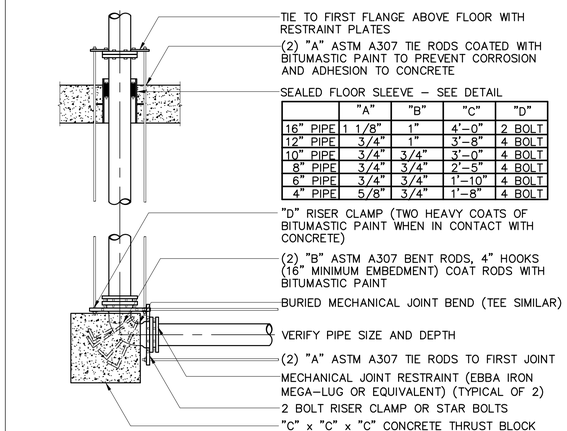
D DP2 — **PIPE CONNECTION DETAIL** — PPIPE003

SCALE: NONE



E DP2 — **PRESSURE GAUGE DETAIL** — PPIPE018

SCALE: NONE



	"A"	"B"	"C"	"D"
16" PIPE	1 1/8"	1"	4'-0"	2 BOLT
12" PIPE	3/4"	1"	3'-8"	4 BOLT
10" PIPE	3/4"	3/4"	3'-0"	4 BOLT
8" PIPE	3/4"	3/4"	2'-5"	4 BOLT
6" PIPE	3/4"	3/4"	1'-10"	4 BOLT
4" PIPE	5/8"	3/4"	1'-8"	4 BOLT

F DP2 — **JOINT RESTRAINT DETAIL** — PPIPE001

SCALE: NONE

M:\KO\M\MADWU\130564\5-DESIGN\51-DRAWINGS\PROCESS\MA130564DP2.DWG
SAVED: 6-5-2015 12:19 PM USER: CHRIS EPSTEIN

Madison Water Utility

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 6-12-2015
DESIGNED BY JON STRAND
DRAWN BY CHRIS EPSTEIN

SHEET TITLE
PROCESS DETAILS

SHEET
DP2

CONTACT PERSONS

DESCRIPTION:	PERSON:
PROJECT MANAGER	KRIS COTHARN
MECHANICAL ENGINEER	KANAIYA PATEL

FIRE HYDRANT FLOW TEST DATA

STATIC PRESSURE: 75 PSI

SIZE OF MAIN: 6"

GENERAL FIRE PROTECTION NOTES:

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT ACTUAL INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. READ ALL SPECIFICATIONS. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. LAYOUT AND COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH ANY FABRICATION OR EQUIPMENT ORDERS.
4. CONTRACTOR IS RESPONSIBLE FOR REVIEW OF SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKING REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES THAT ARE REQUIRED TO ELIMINATE CONFLICTS AND RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO THE OWNER.
6. CAULK ALL PIPE PENETRATIONS OF FULL HEIGHT NON FIRE RATED WALLS, PARTITIONS, FLOORS AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN THE ROOMS.
7. CONTRACTOR IS RESPONSIBLE FOR ALL COST ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT DIFFERENT THAN THE BASIS OF DESIGN.

FIRE PROTECTION SYMBOLS LIST

SYMBOL:	DESCRIPTION:
C.C.	CIVIL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR

*ALL SYMBOLS AND ABBREVIATIONS LISTED MAY NOT BE APPLICABLE TO THIS PROJECT.

FIRE PROTECTION SYMBOLS LIST

SYMBOL:	DESCRIPTION:
	EXISTING TO REMAIN
	EXISTING TO BE REMOVED
	NEW
	NEW CONNECTION
NO HATCH	LIGHT HAZARD
	ORDINARY GROUP 2
D	DRAIN LINE
FP	FIRE PROTECTION
W	SERVICE WATER - POTABLE
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	AIR PRESSURE MAINTENANCE DEVICE
	AIR SUPERVISORY SWITCH
	ANGLE VALVE
	BUTTERFLY VALVE WITH MONITOR SWITCH
	INSPECTOR TEST AND DRAIN VALVE
	OS&Y GATE VALVE
	OS&Y GATE VALVE WITH MONITOR SWITCH
P	PRESSURE SWITCH
	MONITOR SWITCH
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
N.I.C.	NOT IN CONTRACT
N.O.	NORMALLY OPEN

Madison Water Utility

Potter Lawson — Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

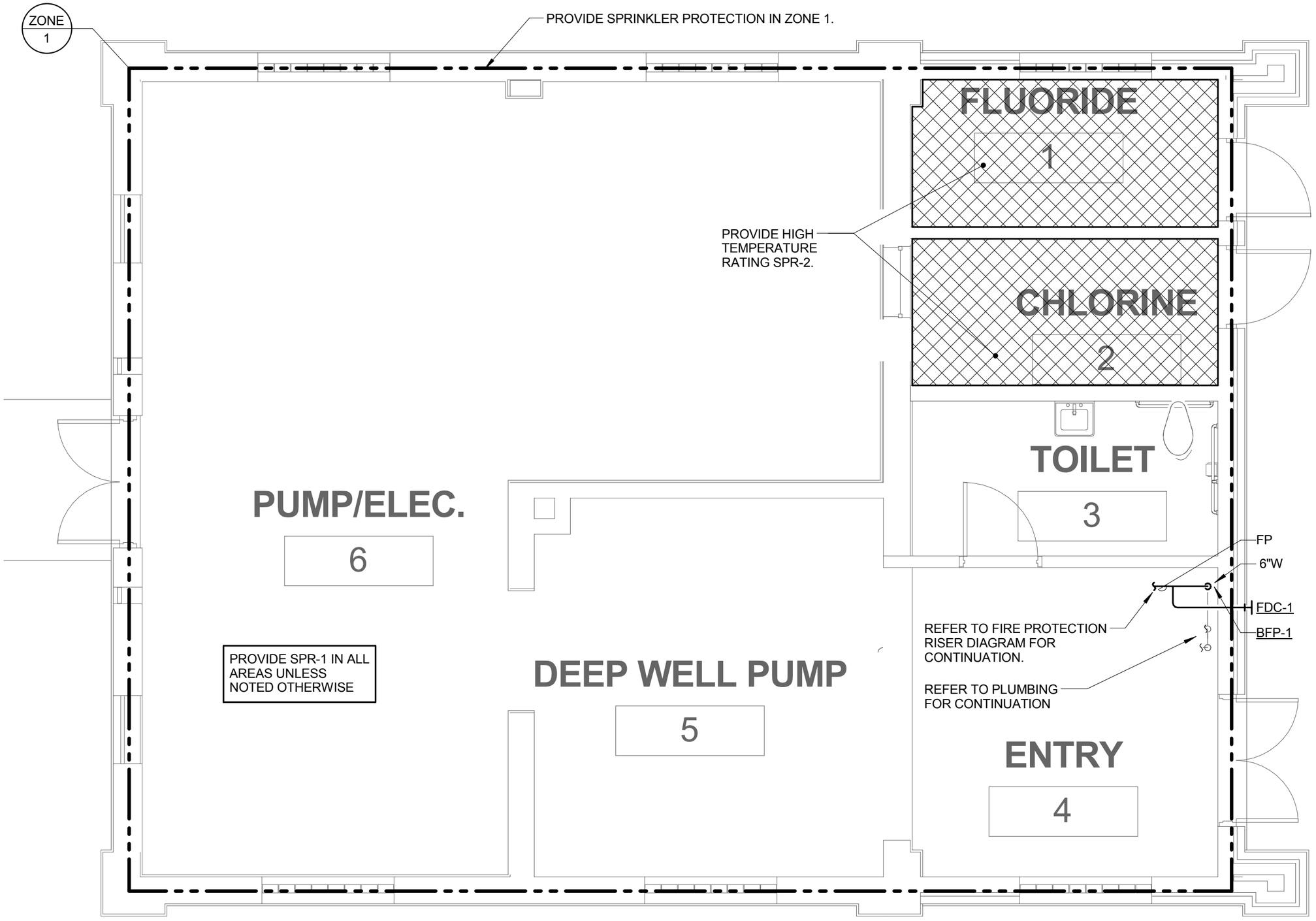
MARK | DATE | DESCRIPTION
REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06/12/15
DESIGNED BY Designer
DRAWN BY Author
Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE
COVER SHEET - FIRE PROTECTION

SHEET
FP000

15.0280.00 MADISON WELL 12



NORTH

1

FIRST FLOOR - FIRE PROTECTION

1/4" = 1'-0"

15.0280.00 MADISON WELL 12

Madison Water Utility

Potter Lawson — Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

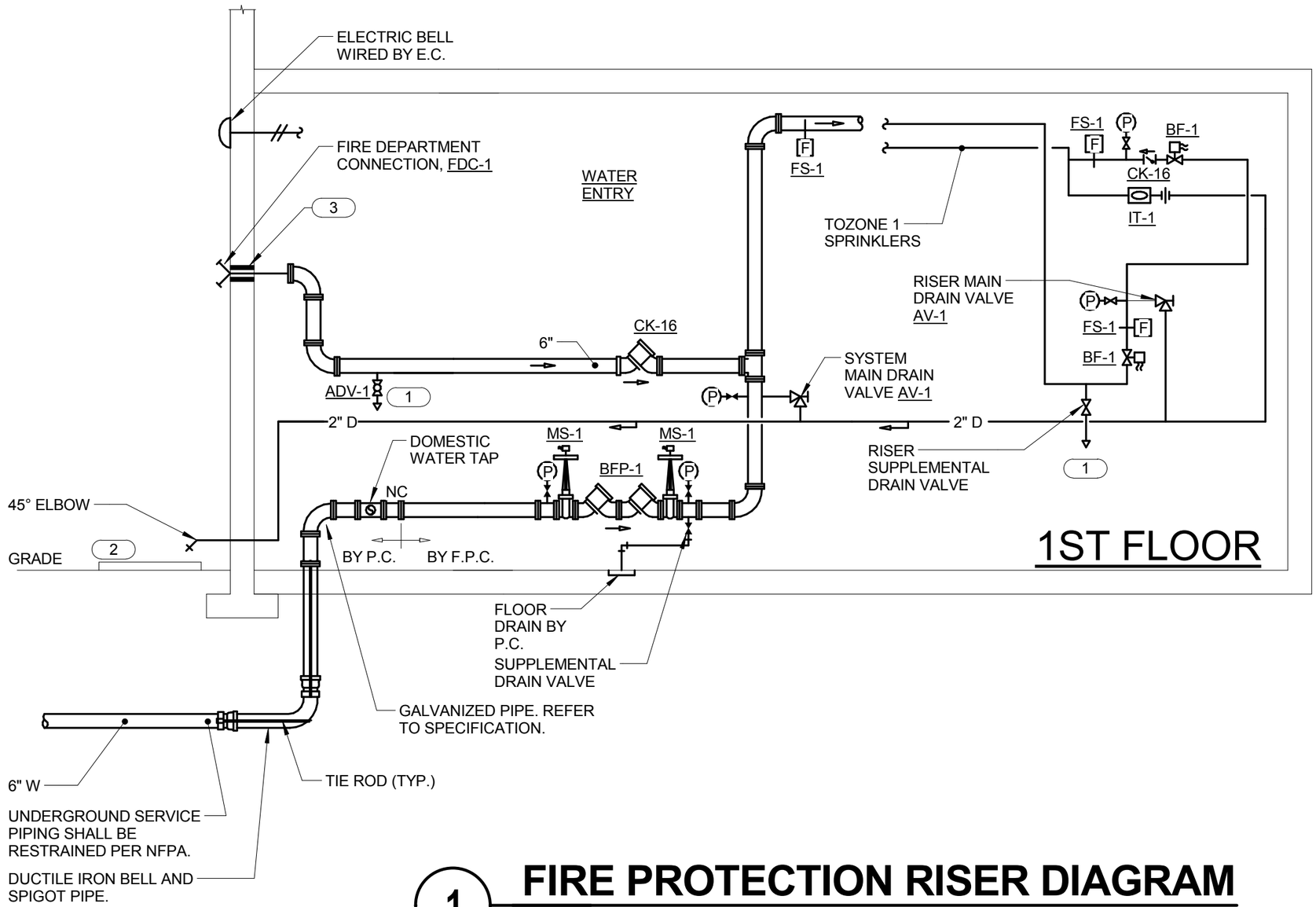
SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06/12/15
DESIGNED BY KRICOT
DRAWN BY FREBOL

SHEET TITLE
FIRST FLOOR - FIRE PROTECTION

SHEET
FP101

KEYNOTES: (#)

1. DISCHARGE DOWN OVER NEAREST FLOOR DRAIN.
2. PROVIDE CONCRETE SPLASHBLOCK AT GRADE.
3. SEAL WALL PENETRATION WATERTIGHT.(TYPICAL)



1 FIRE PROTECTION RISER DIAGRAM

NO SCALE

15.0280.00 MADISON WELL 12

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06/12/15
DESIGNED BY Designer
DRAWN BY Author

SHEET TITLE
RISER DIAGRAM - FIRE
PROTECTION

SHEET
FP200

FIRE SPRINKLER USAGE SCHEDULE

NOTES: 1. SEE FLOOR PLANS FOR ZONING REQUIREMENTS. 2. ALL SPRINKLERS SHALL BE UL ----AND FM---- LISTED. 3. CONTRACTOR TO VERIFY SPRINKLER REQUIREMENTS BASED ON ACTUAL INSTALLATION, USAGE, ARCHITECTURAL CEILING PLAN AND NFPA 13 REQUIREMENTS. 4. TAG NAME IS PRIMARILY FOR IDENTIFIYING SPRINKLERS IN SUBMITTALS. IT MAY OR MAY NOT BE FOUND ELSEWHERE ON THE DRAWINGS. CONTRACTOR TO SUBMIT ALL SPRINKLER TYPES TO BE USED. 5. AREAS ARE GENERAL IN NATURE. CONTRACTOR TO MATCH UNSCHEDULED AREAS TO SIMILAR SPACES.

AREA TYPE (NOTE 1 & 5)	AREA HAZARD	SPRINKLER				TEMPERATURE RATING	MANUFACTURER & MODEL	NOTES
		TAG NAME (NOTE 3 & 4)	SPRINKLER TYPE	RESPONSE CATEGORY	FINISH			
CONDITIONED AREA WITHOUT CEILING	SEE PLANS	SPR-1	UPRIGHT	QUICK	ROUGH BRASS	155, PER NFPA	VIKING VK, RELIABLE F1FR, TYCO TY-FRB, VICTAULIC V2704	NOTE 2
FLUORIDE 1, CHLORINE 2	SEE PLANS	SPR-2	UPRIGHT	QUICK	ROUGH BRASS	200, PER NFPA	VIKING VK, RELIABLE F1FR, TYCO TY-FRB, VICTAULIC V2704	NOTE 2

FIRE PROTECTION MATERIAL LIST

TAG NAME	DESCRIPTION	MANF. & MODEL
ADV-1	AUTOMATIC DRIP VALVE, 175 PSI WP, BRASS BAR, BERYLLIUM COPPER SPRING AND RETAINING RING, CLOSING PRESSURE 7 PSI WITH INCREASING PRESSURE, OPENING PRESSURE 5 PSI WITH DECREASING PRESSURE, 1/2" NPT INLET AND 1/4" NPT DRAIN OUTLET.	VIKING B-1 TYCO AD-1 RELIABLE C
BF-1	2" TO 12" BUTTERFLY VALVE, 175 [250] PSI WP, LUGGED OR GROOVED TYPE, IRON BODY, ALUMINUM BRONZE OR EPDM COATED IRON DISC, STAINLESS STEEL STEM AND SCREWS, EPDM SEAT, INTEGRAL MONITOR SWITCH, RATED FOR DEAD END SERVICE, UL/FM. 1" TO 2-1/2" SLOW CLOSE BUTTERFLY VALVE, 175 PSI WP, BRONZE BODY, TYPE 304 STAINLESS STEEL ELASTOMER COATED DISK, SLOW CLOSE MANUAL OPERATOR WITH INTEGRAL TAMPER SWITCH, GROOVED OR THREADED ENDS. UL/FM.	2" TO 12": GEM, TYCO, KENNEDY, NIBCO, VICTAULIC, KENNEDY, ANVILSTAR 1" TO 2-1/2": MILWAUKEE BB-SCS OR APPROVED EQUAL
BFP-1	DOUBLE CHECK DETECTOR ASSEMBLY BACKFLOW PREVENTER WITH SPRING LOADED CHECK VALVES AND OS&Y RISING STEM SHUTOFF GATE VALVES ON BOTH SIDES OF CHECK VALVES. RATED FOR 175 PSI AT 33 TO 140 DEGREE F, PRESSURE DROP LESS THAN 6 PSI AT 10 FPS. APPROVED BY: USC FCCC & HR, AWWA C-510-92, ASSE 1015, CSA B64.5, UL/FM. SAME SIZE AS PIPE IF NO SIZE IS SHOWN ON THE DRAWING.	WATTS SERIES 709DCDA CONBRACO SERIES 40-600 FEBCO 856 CLA-VAL DD7L
CK-16	2-1/2" TO 12" SWING CHECK VALVE, 175 PSI WP, FLANGED OR GROOVED, IRON BODY, BRONZE MOUNTED, BRONZE SEAT RING AND RUBBER CLAPPER FACING, SWING TYPE, UL/FM.	VIKING D-1/G-1 TYCO CV-2 RELIABLE D OR G KENNEDY 126A OR 426
FDC-1	STORZ FIRE DEPT. INLET CONNECTION, HARD COATED ALUMINUM FINISH, BLIND CAPS WITH CHAINS. WALL PLATE LABELED “AUTO SPKR”.	CROKER 6300 SERIES, POTTER-ROEMER 5700 SERIES, GUARDIAN, ELKHART

FIRE PROTECTION MATERIAL LIST

TAG NAME	DESCRIPTION	MANF. & MODEL
FS-1	FLOW SWITCH - VANE TYPE FOR USE ON WET PIPE SPRINKLER SYSTEM TO DETECT A MINIMUM FLOW OF 10 GPM. TWO SINGLE POLE DOUBLE THROW SWITCHES WITH PNEUMATIC RETARD-ADJUSTABLE FROM 0-90 SECONDS WITH AUTOMATIC RESET, TAMPER RESISTANT METAL HOUSING. UL/FM.	SYSTEM SENSOR WFD SERIES, POTTER ELECTRIC VSR-F
IT-1	1" INSPECTOR'S TEST AND DRAIN VALVE WITH INTEGRAL SIGHT GLASS, BALL VALVE WITH INTEGRAL LABELED PLATE SHOWING OFF-TEST-DRAIN POSITIONS. FURNISHED WITH TEST ORIFICE GIVING FLOW EQUIVALENT TO ONE SPRINKLER OF A TYPE HAVING THE SMALLEST ORIFICE INSTALLED ON THE SYSTEM, UL.	RELIABLE B W/1" BALL VALVE TYCO F350 AGF MODEL 1000
MS-1	MONITOR SWITCH - ELECTRIC, ONE SINGLE POLE, DOUBLE THROW CONTACT, CAST ALUMINUM HOUSING WITH CORROSION RESISTANT PARTS, WITH J-BOLTS FOR MOUNTING. UL/FM. VERIFY ELECTRICAL CHARACTERISTICS WITH ELECTRICAL CONTRACTOR PRIOR TO PURCHASE.	POTTER ELECTRIC OSYSU-1 SYSTEM SENSOR OSY2

15.0280.00 MADISON WELL 12

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK | DATE | DESCRIPTION
REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE: 06/12/15
DESIGNED BY Designer
DRAWN BY Author
Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE
SCHEDULES - FIRE PROTECTION

SHEET
FP300

MECHANICAL DEMOLITION NOTES:

1. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF DEMOLITION WORK REQUIRED AND DO NOT INDICATE EVERY PIPE, DUCT, OR PIECE OF EQUIPMENT THAT MUST BE REMOVED. ACCESSIBILITY OF EQUIPMENT AND SYSTEMS IS NOT SHOWN NOR SHOULD IT BE INFERRED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS.
2. CONTRACTOR IS RESPONSIBLE FOR ALL COST ASSOCIATED WITH CEILING SYSTEM DISASSEMBLY AND REASSEMBLY TO ACCOMMODATE THIS WORK. CONTRACTOR TO SALVAGE, STORE, AND REINSTALL ALL CEILING MOUNTED DEVICES.
3. CONTRACTOR TO COORDINATE WITH OWNER FOR ALL MECHANICAL SERVICE OUTAGES. EXISTING WATER SYSTEM: MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR SERVICE. DRAIN SYSTEM ONLY TO MAKE SWITCHOVER AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER AT LEAST 72 HOURS BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MINIMIZE OUTAGE DURING OPERATION.
4. CONTRACTOR IS RESPONSIBLE FOR PATCHING ALL PENETRATIONS CREATED BY REMOVAL OF EQUIPMENT, DUCTWORK, PIPING, ETC. TO MATCH EXISTING. REPAIR ADJACENT CONSTRUCTION AND FINISHES DAMAGED DURING DEMOLITION AND EXTENSION WORK. PATCH TO MATCH ORIGINAL CONSTRUCTION. VERIFY ALTERNATIVE OR SPECIAL REPAIR METHODS WITH ARCHITECT/ENGINEER BEFORE PROCEEDING WITH DEMOLITION.
5. CONTRACTOR IS RESPONSIBLE FOR ALL MODIFICATIONS TO THE EXISTING HVAC PIPING AND DUCTWORK NECESSARY TO PERMIT THE INSTALLATION OF NEW WORK.
6. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION.
7. WHEN WORK MUST BE PERFORMED ON OPERATING EQUIPMENT, USE PERSONNEL EXPERIENCED IN SUCH OPERATIONS.
8. EXTEND EXISTING INSTALLATIONS USING MATERIAL AND METHODS COMPATIBLE WITH EXISTING MECHANICAL INSTALLATIONS, OR AS SPECIFIED FOR INTENDED SERVICE.
9. ALL SYSTEM CHANGEOVERS BE COMPLETED IN OVERTIME, NOT DURING NORMAL WORKING HOURS.
10. REMOVE, RELOCATE, AND EXTEND EXISTING INSTALLATIONS TO ACCOMMODATE NEW CONSTRUCTION.
11. REMOVE ABANDONED DUCTS AND PIPING TO SOURCE OF SUPPLY AND/OR MAIN LINES AND CAP OR MAKE READY FOR RECONNECTION IF SERVICE IS EXTENDED AS PART OF NEW WORK.
12. REMOVE EXPOSED ABANDONED PIPING AND DUCTS. CUT DUCTS FLUSH WITH WALLS AND FLOORS, CAP DUCT THAT REMAINS, AND PATCH SURFACES. CUT PIPING BELOW FLOORS, AND BEHIND WALLS. CAP REMAINING LINES. REMOVE ALL ASSOCIATED CLAMPS, HANGERS, SUPPORTS, ETC., ASSOCIATED WITH PIPING AND DUCT REMOVAL.
13. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.
14. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS WHICH REMAIN ACTIVE. MODIFY INSTALLATION OR PROVIDE ACCESS PANEL AS APPROPRIATE.
15. MECHANICAL ITEMS REMOVED AND NOT RELOCATED REMAIN THE PROPERTY OF THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER DOES NOT WANT TO REUSE OR RETAIN FOR MAINTENANCE PURPOSES.

GENERAL MECHANICAL NOTES:

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT ACTUAL INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF ALL DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.
2. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM ARCHITECTURAL, STRUCTURAL, SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. READ ALL SPECIFICATIONS. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.
3. LAYOUT AND COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ARCHITECT/ENGINEER BEFORE PROCEEDING WITH ANY FABRICATION OR EQUIPMENT ORDERS.
4. CONTRACTOR IS RESPONSIBLE FOR REVIEW OF SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKING REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.
5. ANY CHANGES THAT ARE REQUIRED TO ELIMINATE CONFLICTS AND RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO THE OWNER.
6. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON FIRE RATED WALLS, PARTITIONS, FLOORS AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN THE ROOMS.
7. CONTRACTOR IS RESPONSIBLE FOR ALL COST ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT DIFFERENT THAN THE BASIS OF DESIGN.
8. ALIGN LIGHT SWITCHES AND TEMPERATURE SENSORS WHEN IN CLOSE PROXIMITY TO EACH OTHER.
9. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.

GENERAL MECHANICAL SIZING NOTES:

1. DUCTWORK SIZING SHALL CONFORM TO THE FOLLOWING CONSTRAINTS:

SUPPLY DUCTWORK:
- 0.08"/100' OF DUCT PRESSURE DROP OR 1500 FT/MIN WHICHEVER RUSTS IN THE LARGER DUCT SIZE.

RETURN/EXHAUST DUCTWORK:
- 0.08"/100' OF DUCT PRESSURE DROP OR 1500 FT/MIN WHICHEVER RESULTS IN THE LARGER DUCT SIZE.

CONTACT PERSONS

DESCRIPTION:	PERSON:
PROJECT MANAGER	KRIS COTHARN
MECHANICAL ENGINEER	KANAIYA PATEL

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06/12/15
DESIGNED BY Designer
DRAWN BY Author

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SHEET TITLE
COVER SHEET - MECHANICAL

SHEET
M000

15.0280.00 MADISON WELL 12

*ALL SYMBOLS AND ABBREVIATIONS LISTED MAY NOT BE APPLICABLE TO THIS PROJECT.

MECHANICAL SYMBOLS LIST

SYMBOL:	DESCRIPTION:
	EXISTING DUCT TO REMAIN
	EXISTING DUCT TO BE REMOVED
	NEW DUCT
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	PITCH PIPE IN DIRECTION
	DIRECTION OF FLOW IN PIPE
	DIELECTRIC CONNECTION
	DIRECTION OF AIR FLOW
	FLEXIBLE DUCT
	MANUAL VOLUME DAMPER
	DUCT CAP
	DUCT DOWN
	DUCT UP
	EXHAUST/RELIEF AIR DUCT SECTION
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
T	THERMOSTAT/SENSOR
C	CF CONTROLLER
CR	COLD WATER RETURN
CS	COLD WATER SUPPLY
D	DRAIN LINE
T.C.C.	TEMPERATURE CONTROL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
F.P.C.	FIRE PROTECTION CONTRACTOR
G.C.	GENERAL CONTRACTOR

MECHANICAL SYMBOLS LIST

SYMBOL:	DESCRIPTION:
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
AFF	ABOVE FINISHED FLOOR
EA	EXHAUST/RELIEF AIR
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
OA	OUTSIDE AIR
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED
	AUTOMATIC BALANCING VALVE
	CONTROL VALVE (TWO-WAY)
	CHECK VALVE
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	"WYE" - STRAINER
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
M	METER
P	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
T	TEMPERATURE SENSOR WITH WELL
	THERMOMETER WITH WELL (FILLED TYPE)
FM	FLOW METER
FS	FLOW SENSOR
UC-1	DOOR UNDERCUT

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MADISON, WISCONSIN

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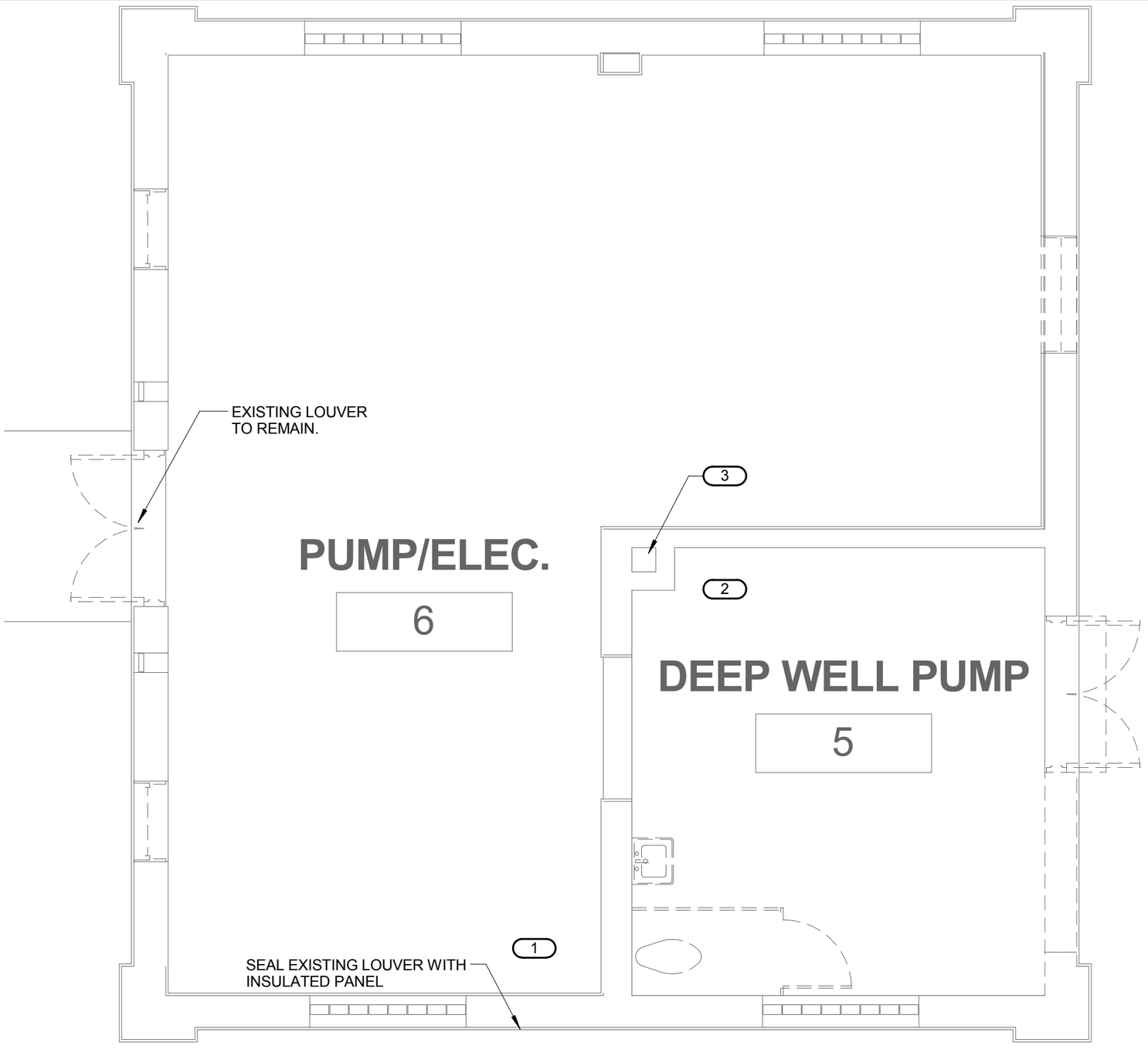
SHEET TITLE
SYMBOL LIST - MECHANICAL

SHEET
M001

15.0280.00 MADISON WELL 12



NORTH

1

FIRST FLOOR DEMOLITION PLAN - HVAC

1/4" = 1'-0"

KEYNOTES: (#)

1. REMOVE EXISTING COOLING UNIT AND ALL ASSOCIATED SUPPORTS, CONTROLS , AND ACCESSORIES.
2. REMOVE EXISTING FURNACE AND ALL ASSOCIATED SUPPORTS, CONTROLS, AND ACCESSORIES..
3. REMOVE FURNACE FLUE.

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UNIT WELL 12 UPGRADE
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MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

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PROJECT NO.
ISSUE DATE 06/12/15
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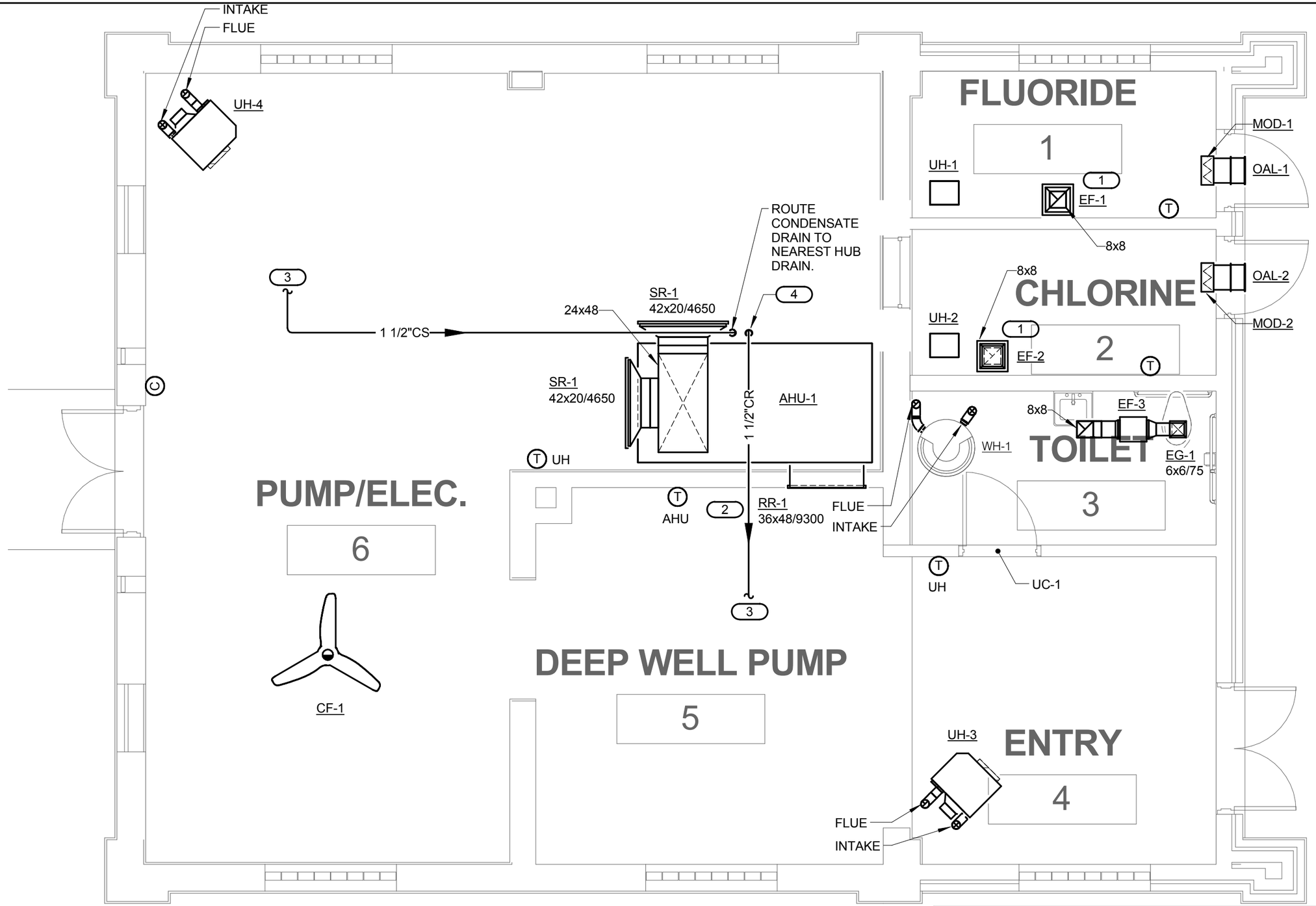
DRAWN BY FREBOL

SHEET TITLE
FIRST FLOOR DEMOLITION
PLAN - HVAC

SHEET
MD101



FIRST FLOOR - HVAC

1/4" = 1'-0"

KEYNOTES: (#)

1. ROUTE 8x8 DUCT DOWN TO WITHIN 12" OF FINISH FLOOR.
2. INSTALL RETURN GRILL ±6" ABOVE FINISH FLOOR.
3. COORDINATE WITH THE CITY ON FINAL TIE -IN LOCATIONS FOR COLD WATER CONNECTION. CONNECT CS TO DISCHARGE SIDE OF ZONE 7 PUMP. CONNECT CR TO DISCHARGE SIDE OF THE DEEP WELL PUMP.
4. REFER TO 1/M202 FOR COIL PIPING DETAIL.

Madison Water Utility

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UNIT WELL 12 UPGRADE
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MADISON, WISCONSIN

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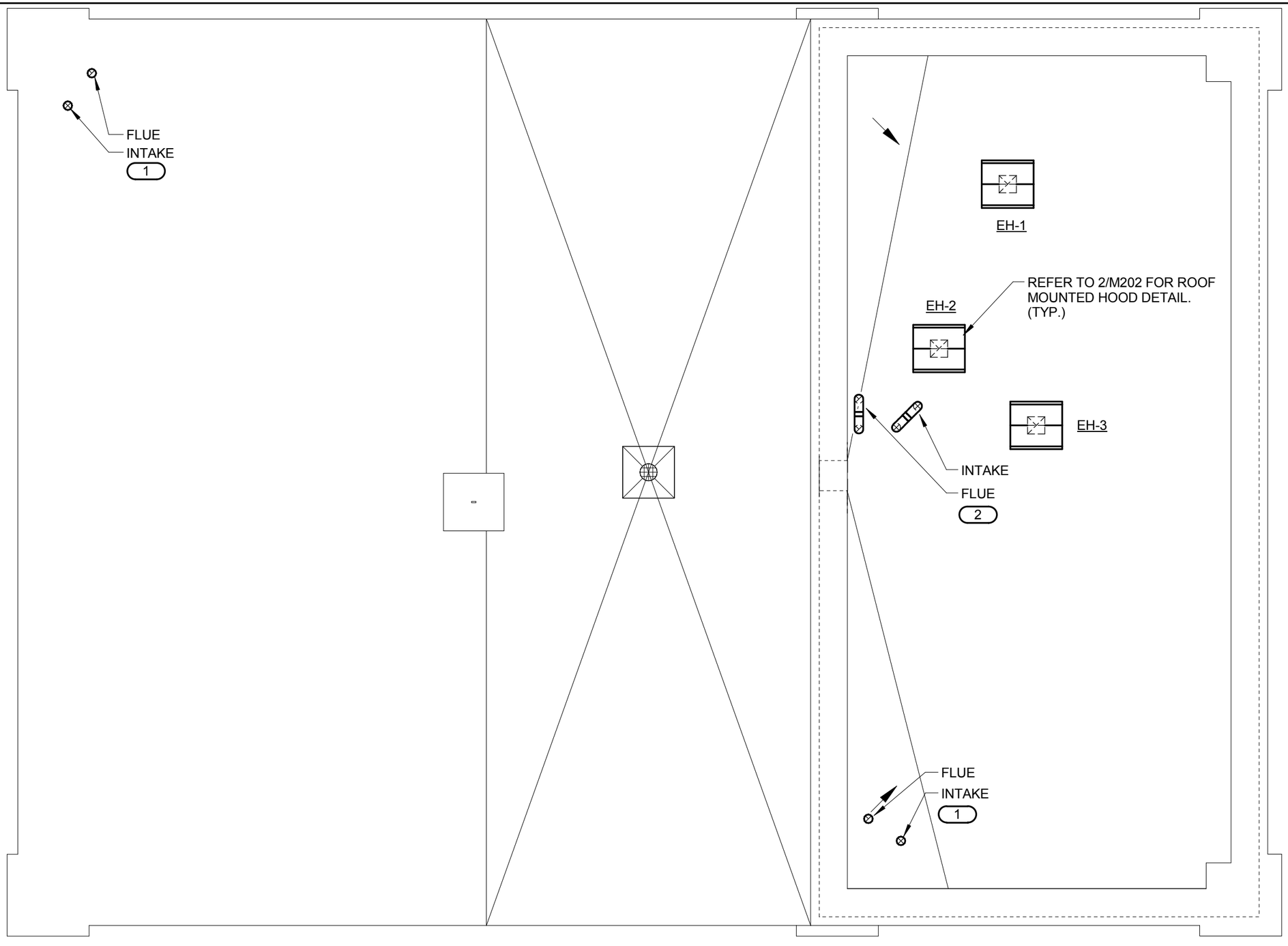
SHEET TITLE
FIRST FLOOR - HVAC

SHEET
M101

15.0280.00 MADISON WELL 12



1 ROOF PLAN - HVAC

1/4" = 1'-0"

KEYNOTES: (#)

1. TERMINATE GAS FIRED UNIT HEATER'S FLUE AND INTAKE AS PER MANUFACTURER'S RECOMMENDATIONS.
2. INSTALL INTAKE AND FLUE OF GAS FIRED WATER HEATER AS PER MANUFACTURER'S RECOMMENDATIONS.

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UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION

REVISIONS

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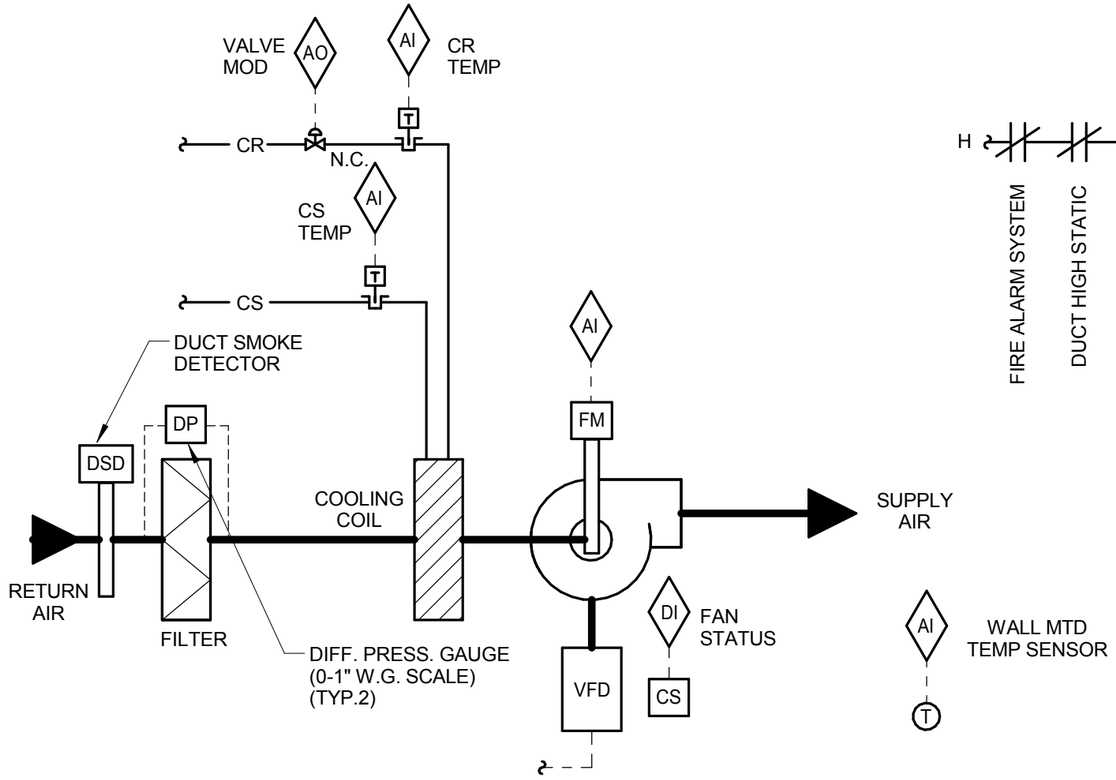
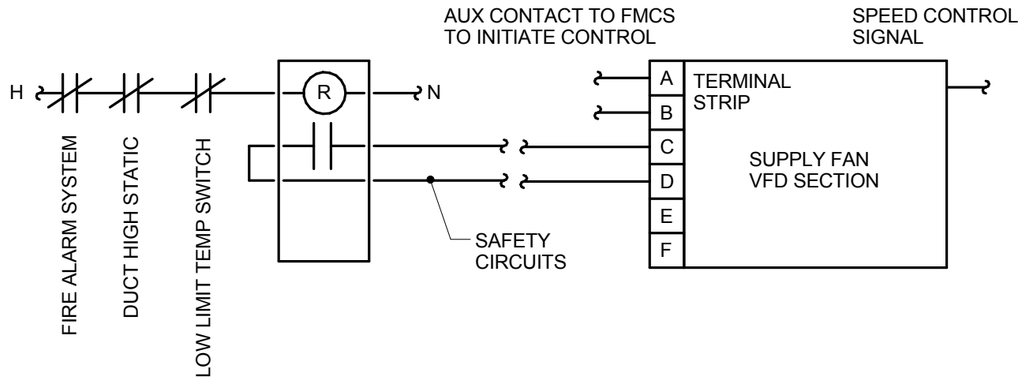
SHEET TITLE
ROOF PLAN - HVAC

SHEET
M102

15.0280.00 MADISON WELL 12





SUPPLY FAN VFD CONTROL

SEQUENCE OF OPERATION:

SUPPLY FAN AND CONTROL VALVE OPERATION:
THE UNIT CONTROLLER WILL MODULATE THE SUPPLY FAN AND COOLING CONTROL VALVE TO ACHIEVE THE ROOM TEMPERATURE OF 75°F (ADJ.) WITH 2°F (ADJ.) DEAD BAND BASED ON A SIGNAL FROM A WALL MOUNTED TEMPERATURE SENSOR. SEE DRAWINGS FOR TEMPERATURE SENSOR REQUIREMENTS. SPACES WITH ADJUSTABLE THERMOSTATS WILL ALLOW A +/- 3°F (ADJ.) OFFSET FROM THE SETPOINT.

- ON A CALL FOR COOLING, THE SUPPLY FAN SHALL BE ENERGIZED AND THE COOLING CONTROL VALVE SHALL MODULATE TO MAINTAIN ROOM SETPOINT.
- AS THE ROOM AIR TEMPERATURE FALLS, THE SUPPLY FAN SHALL RAMP DOWN TO MAINTAIN ROOM TEMPERATURE SET POINT WHILE MAINTAINING A 55ºF (ADJ) DISCHARGE AIR TEMPERATURE SET POINT.
- ON A FURTHER FALL IN ROOM TEMPERATURE, THE SUPPLY FAN WILL REMAIN AT MINIMUM SPEED AND THE COOLING CONTROL VALVE SHALL MODULATE TO MAINTAIN ROOM AIR TEMPERATURE SET POINT. WHEN THE SUPPLY FAN IS AT MINIMUM SPEED THE AHU DISCHARGE AIR TEMPERATURE SHALL NOT CONTROL THE COOLING CONTROL VALVE.

ALARMS, INTERLOCKS, AND SAFETIES:
WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION, AHU SHALL BE SHUTDOWN.

- DUCT SMOKE DETECTOR PROVIDED AND INSTALLED BY MC AND WIRED BY TCC SHALL SHUT UNIT DOWN.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM, HOWEVER AHU SHALL CONTINUE TO OPERATE:

- AN ALARM IS INDICATED AT SUPPLY FAN VFD.

WHENEVER AHU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:

- COOLING CONTROL VALVE SHALL FULLY CLOSE.
- SUPPLY FAN VFD SHALL BE DE-ENERGIZED.

1 AIR HANDLING UNIT CONTROL - AHU-1

NO SCALE

15.0280.00 MADISON WELL 12

Madison Water Utility

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UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

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PROJECT NO.
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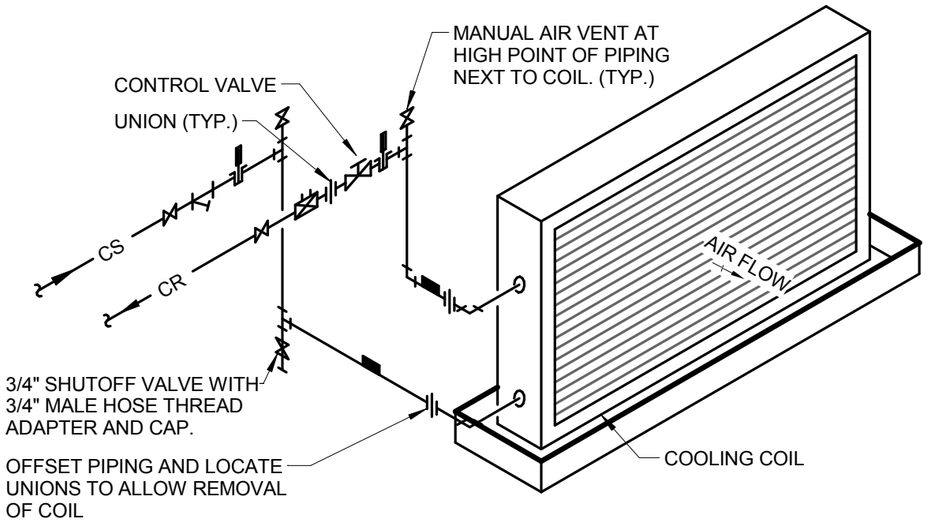
DRAWN BY Author

SHEET TITLE
DETAIL - MECHANICAL

SHEET
M201

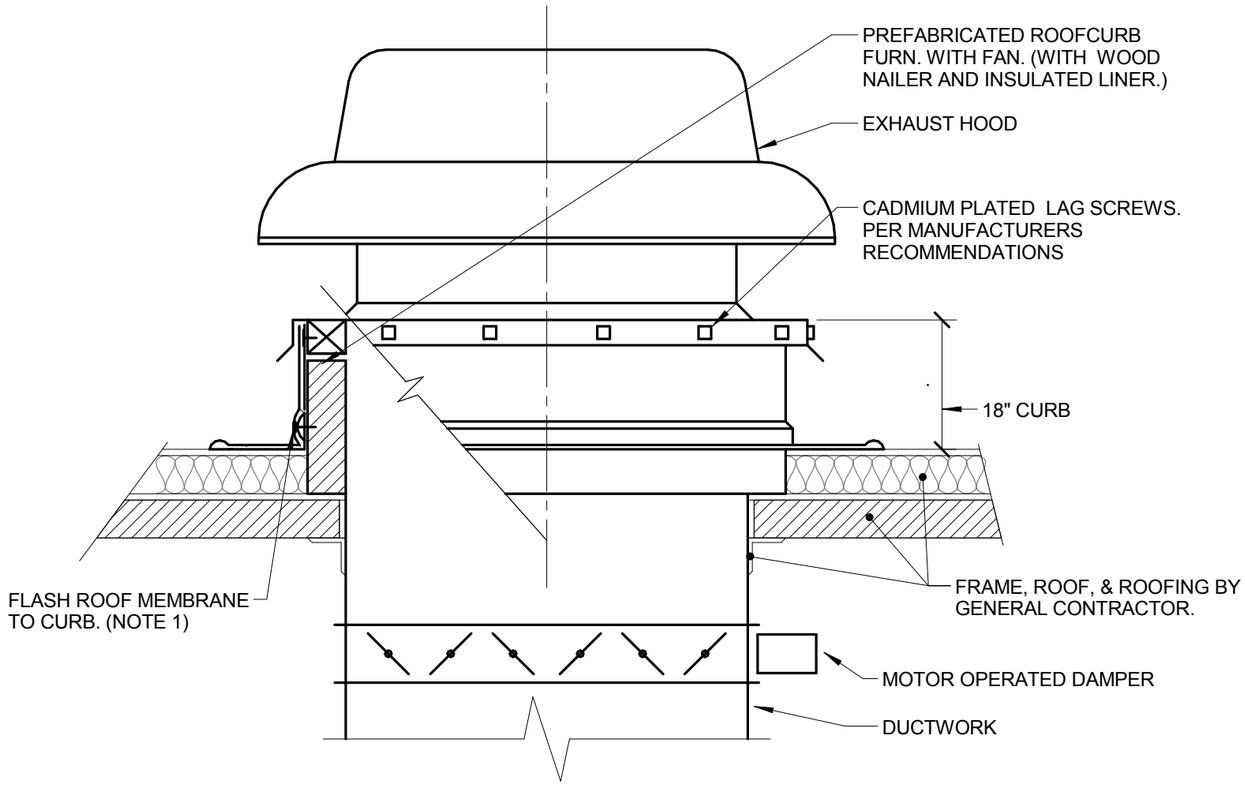


1 COLD WATER COIL PIPING

NO SCALE

NOTES:

1. SEE SPECIFICATION SECTION 23 21 00 - HYDRONIC PIPING FOR BALANCE VALVE SIZING REQUIREMENTS.

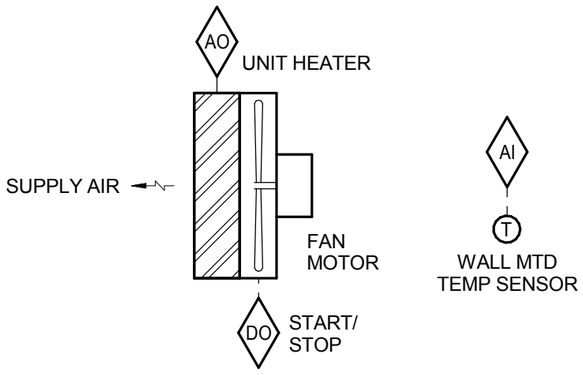


2 ROOF MOUNTED FAN/HOOD (MEMBRANE ROOF)

NO SCALE

NOTES:

1. ALL ROOF FLASHING SHALL BE PER ROOFING MANUFACTURERS RECOMMENDATIONS.



SEQUENCE OF OPERATION:

WHEN THE OUTDOOR AIR TEMPERATURE IS ABOVE 40°F (ADJ.), TEMPERATURE SENSOR SHALL ENERGIZE FAN AND MODULATE THE ELECTRIC COIL OR GAS BURNER TO MAINTAIN A SPACE TEMPERATURE OF 70°F (ADJ.). WHEN SPACE TEMPERATURE IS SATISFIED THE FAN SHALL TURN OFF.

WHEN THE OUTDOOR AIR TEMPERATURE IS BELOW 40°F (ADJ.), TEMPERATURE SENSOR SHALL MODULATE THE ELECTRIC COIL OR GAS BURNER TO MAINTAIN A SPACE TEMPERATURE OF 70°F (ADJ.) AND THE UNIT FAN SHALL RUN CONTINUOUSLY.

ALARMS, INTERLOCKS & SAFETIES:

SEND AN ALARM IF SPACE TEMPERATURE FALLS 10°F (ADJ.) BELOW SETPOINT.

3 UNIT HEATER CONTROL - ELECTRIC

NO SCALE

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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

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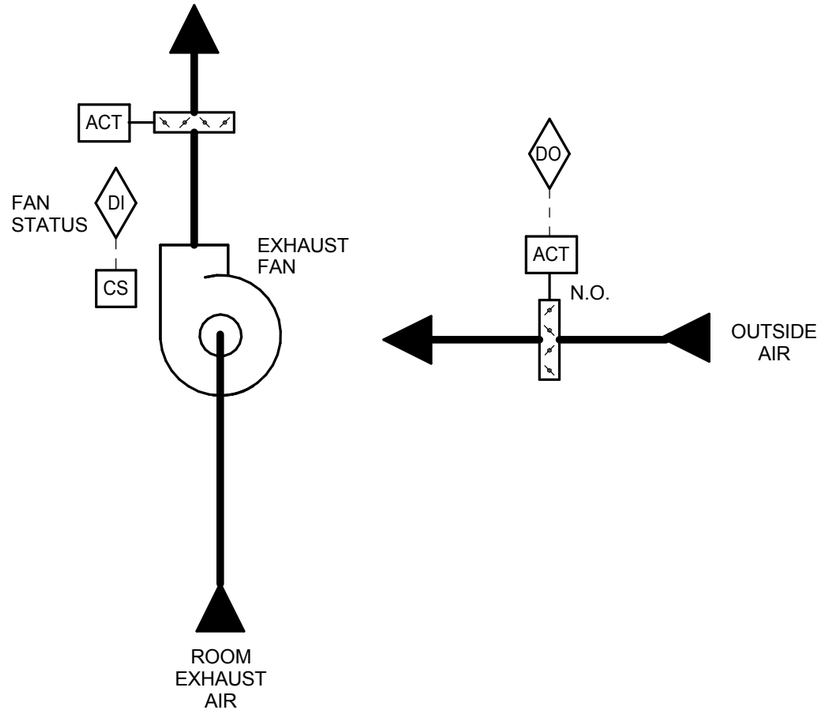
SHEET TITLE
DETAIL - MECHANICAL

SHEET
M202



SEQUENCE OF OPERATION: EF-1 AND EF-2

FAN SHALL BE INTERLOCKED TO RUN CONTINUOUSLY WHEN RESPECTIVE 2-POSITION DAMPER OF OUTSIDE AIR LOUVER IS OPEN.

WHEN FAN IS INDEXED TO RUN THE FOLLOWING SHALL OCCUR:
- EXHAUST DAMPER SHALL FULLY OPEN
- INTAKE DAMPERS SHALL FULLY OPEN
- FAN SHALL BE ENERGIZED TO RUN AFTER 15 SECOND (ADJ.) DELAY TO ALLOW FOR OPENING OF DAMPERS.

WHEN FAN IS DE-ENERGIZED THE FOLLOWING SHALL OCCUR:
- EXHAUST DAMPER AND ALL INTAKE DAMPERS SHALL FULLY CLOSE

WHEN FAN IS ENERGIZED, 2-POSITION DAMPER SHALL FULLY OPEN. WHEN FAN IS DE-ENERGIZED, 2-POSITION DAMPER SHALL FULLY CLOSE.

ALARMS, INTERLOCKS AND SAFETIES:

AN ALARM SHALL BE GENERATED IN THE FOLLOWING EVENTS:
- THE FAN COMMANDED IS TO OPERATE AND THE CURRENT SENSING RELAY DETECTS INSUFFICIENT CURRENT DRAW.

EXHAUST FAN CONTROL - INTERLOCKED WITH 2-POSITION DAMPER

1

NO SCALE

15.0280.00 MADISON WELL 12

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AND CONVERSION
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SHEET TITLE
DETAIL - MECHANICAL

SHEET
M203

UNIT HEATER SCHEDULE - ELECTRIC

TAG NAME	AREA SERVED	CONFIGURATION	CFM	EAT °F	LAT °F	ELECTRICAL							CONTROL	MANUFACTURER	MODEL	REMARKS
						KW	VOLTAGE	PHASES	FLA	DISCONNECT BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/ STARTER BY (NOTE A)				
UH-1	FLOURIDE 1	HORIZONTAL	700	70.0	105.0	7.5	480	3	9.4	MFR.	NF	MC	TSTAT	QMARK	QWD 07 4 3	
UH-2	CHLORINE 2	HORIZONTAL	700	70.0	95.0	5	480	3	6.4	MFR.	NF	MC	TSTAT	QMARK	QWD 05 4 3	

UNIT HEATER SCHEDULE - GAS FIRED

NOTES : 1. PROVIDE ROOM THERMOSTAT FOR CONTROL. 2. CONTROL THROUGH AHU-1 CONTROLLER AND REMOTE THERMOSTAT TO AVOID SIMULTANEOUS HEATING AND COOLING. 3. SEALED COMBUSTION UNIT.

TAG NAME	AREA SERVED	CFM	HEATING (MBH)		ELECTRICAL							GAS PRESSURE IN. OF W.C.	MANUFACTURER	MODEL	REMARKS
			INPUT	OUTPUT	HP	RPM	VOLTAGE	PHASES	DISCONNECT BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/ STARTER BY (NOTE A)				
UH-3	ENTRY 4	1480	100	80	0.05	1050	115	1	MFR	NF	MC	7	TRANE	GAND	NOTE 1, 3
UH-4	PUMP / ELEC 6	2530	175	140	0.33	1140	115	1	MFR	NF	MC	7	TRANE	GAND	NOTE 2, 3

MOTOR OPERATED DAMPER SCHEDULE

NOTES : 1. COORDINATE DAMPER ACTUATOR LOCATION AND MOUNTING REQUIREMENTS WITH TEMPERATURE CONTROL CONTRACTOR.

TAG NAME	AREA SERVED	SIZE		CFM		BLADE CONFIGURATION	BLADE ORIENTATION	INSULATED	ACTUATOR TYPE	ACTUATOR STYLE	POWER FAILURE POSITION	REMARKS
		WIDTH	HEIGHT	MAX.	MIN.							
MOD-1	FLUORIDE 1	12	12	150	150	OPPOSED	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY CLOSED (NC)	NOTE 1
MOD-2	CHLORINE 2	12	12	150	150	OPPOSED	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY CLOSED (NC)	NOTE 1
MOD-3	EF-3	8	8	150	150	OPPOSED	HORIZONTAL	Yes	ELECTRIC	TWO POSITION	NORMALLY CLOSED (NC)	NOTE 1

GRILLES REGISTERS & DIFFUSERS SCHEDULE

NOTES: 1. CONTRACTOR SHALL DETERMINE PROPER MARGIN STYLE TO MATCH CEILING CONSTRUCTION. 2. ALL RUN OUT DUCTWORK TO DIFFUSERS SHALL BE NECK SIZE UNLESS OTHERWISE NOTED.

TAG NAME	MATERIAL	CONFIGURATION	MARGIN (NOTE 1)	INLET SIZE (IN.) (NOTE 2)	FACE SIZE (IN.)	VOLUME DAMPER REQUIRED	MANUFACTURER	MODEL	REMARKS
EG-1	ALUMINUM	35 DEGREE DEFLECTION	1 1/4"	SEE DWG	INLET +2	NO	TITUS	355FS	
RR-1	ALUMINUM	35 DEGREE DEFLECTION	1 1/4"	SEE DWG	INLET +2	NO	TITUS	350FL	
SR-1	ALUMINUM	DOUBLE DEFLECTION	1 1/4"	SEE DWG	INLET +2	YES	TITUS	301FL	FRONT BLADES VERTICAL

LOUVER SCHEDULE

NOTES: 1. STANDARD COLOR - SELECTION BY ARCHITECT.

TAG NAME	AREA SERVED	CFM	SIZE (INCHES)		FREE AREA VELOCITY	S.P. IN. W.C.	FINISH	MANUFACTURER	MODEL	REMARKS
			WIDTH	HEIGHT						
OAL-1	FLOURIDE 1	150	12	12	577	0.08	MILL	RUSKIN	ELF375	NOTE 1
OAL-2	CHLORINE 2	150	12	12	577	0.08	MILL	RUSKIN	ELF375	NOTE 1

SCHEDULE GENERAL NOTES:

Key Name
A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND
INSTALLED BY:
MFR = MANUFACTURER
EC = ELECTRICAL CONTRACTOR.
MC = FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
MFR/EC = FURNISHED LOOSE BY MANUFACTURER INSTALLED BY ELECTRICAL CONTRACTOR.
ATC = AUTOMATIC TEMPERATURE CONTROL CONTRACTOR
B. DISCONNECT TYPE:
F = FUSED
NF = NON-FUSED
C. CONTROLLER STARTER TYPE:
MS = MANUAL STARTER
VFD = VARIABLE FREQUENCY DRIVE
VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS
D. FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE WITH THE SCHEDULE WHEEL TYPE. SUBSITUTION OF BI OR BIA FANS.
FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.
E. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING
NAME PLATE RATING.
F. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.
G. CURB TYPE:
MFR = STANDARD CURB BY MANUFACTURER

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SHEET TITLE
SCHEDULES - MECHANICAL

SHEET
M301

15.0280.00 MADISON WELL 12

AIR HANDLING SCHEDULE

NOTES: 1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13, FOR ALL ITEMS LISTED IN SCHEDULE.

TAG NAME	AREA SERVED	MAX. DIMENSIONS			SUPPLY FAN											COOLING COIL									
											DISCONNECT		CONTROLLER/ STARTER												
		LENGTH	WIDTH	HEIGHT	CFM	EXT. S.P.	TYPE	RPM (NOTE D)	BHP (NOTE E)	MHP (NOTE E)	BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)	VOLTAGE	PHASES	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	EWT °F	LWT °F	GPM	TOTAL MBH	MAX. A.P.D. IN. W.C.	W.P.D. FEET HEAD
AHU-1	PUMP / ELEC 6, DEEP WELL PUMP 5	114	58	75	9300	0.5	FC	735	5.6	7.5	MFR	F	EC	VFD	460	3	75.0	62.6	53.6	53.2	50	60	48.7	246	1.0	16.2

AIR HANDLING SCHEDULE (CONT.)

FILTER						
PRE-FILTER						
TYPE	FACE VELOCITY	PRESSURE DROP		MANUFACTURER	MODEL	REMARKS
		DIRTY	CLEAN			
MERV 8	525	0.5	0.3	JOHNSON CONTROL	INDOOR AIR HANDLER XT I	

FAN SCHEDULE

NOTES: 1. EXHAUST FAN IS INTERLOCKED WITH MOD-1 AND ASSOCIATED HOOD DAMPER. 2. EXHAUST FAN IS INTERLOCKED WITH MOD-2 AND ASSOCIATED HOOD DAMPER. 3. INTERLOCK EXHAUST FAN AND / HOOD MOTORIZED DAMPER WITH LIGHT SWITCH. DAMPER SHALL OPEN AND FAN BE ENERGIZED WHENEVER THE LIGHTS ARE ON.

TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	WHEEL DIA. INCHES	FAN RPM (NOTE F)	DRIVE TYPE	MAX. AMCA SONES	BACKDRAFT DAMPER TYPE	ELECTRICAL								MANUFACTURER	MODEL	REMARKS
									BHP	MHP	VOLTAGE	PHASES	DISCONNECT BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/ STARTER BY (NOTE A)	CONTROLLER/ STARTER TYPE (NOTE C)			
EF-1	FLUORIDE 1	200	0.75	11.19	1764	DIRECT	14.2	GRAVITY	0.17	0.5	115	1	MFR	NF	MC	FV	GREENHECK	SQ-97-VG	NOTE 1
EF-2	CHLORINE 2	200	0.75	11.19	1764	DIRECT	14.2	GRAVITY	0.17	0.5	115	1	MFR	NF	MC	FV	GREENHECK	SQ-97-VG	NOTE 2
EF-3	TOILET 3	100	0.50	8.13	1725	DIRECT	5.6	GRAVITY	0.03	0.17	115	1	MFR	NF	MC	FV	GREENHECK	SQ-70-VG	NOTE 3

HOOD & LOUVERED PENTHOUSE SCHEDULE

TAG NAME	AREA SERVED	CFM	THROAT SIZE		THROAT VELOCITY	STATIC PRESSURE DROP	FREE AREA (FT ²)	CONFIGURATION	MAX. HEIGHT (TOP OF CURB TO TOP OF EQUIP.)	DAMPER TYPE	CURB TYPE	MANUFACTURER	MODEL	NOTES
			WIDTH	LENGTH										
EH-1	EF-1	150	8	8	338	0.02	0.44	GRAVITY HOOD	12	MOTOR OPERATED	MFR	GREENHECK	FGR-8X8	
EH-2	EF-2	150	8	8	338	0.02	0.44	GRAVITY HOOD	12	MOTOR OPERATED	MFR	GREENHECK	FGR-8X8	
EH-3	EF-3	75	8	8	169	0.01	0.44	GRAVITY HOOD	12	MOTOR OPERATED	MFR	GREENHECK	FGR-8X8	

CEILING FAN SCHEDULE

NOTES: 1. FAN BLADE COLOR SELECTION BY ARCHITECT. 2. VERIFY EXTENSION TUBE LENGTH AND MOUNTING BRACKET WITH MANUFACTURER PRIOR TO ORDERING. 3. SUPPLY POWERFOIL AIRFOILS AND WINGLETS. 4. SUPPLY WITH WALL MOUNTED CONTROL PAD FULLY INTEGRATED WITH THE ONBOARD CONTROL. 5. SUPPLY WITH C-FACED MOTOR AND HERMETICALLY SEALED GEARBOX. 6. PROVIDE FAN GUARD/CAGE. 7. PROVIDE CABLE BACK-UP SUPPORT.

TAG NAME	AREA SERVED	DIAMETER	FAN RPM	DRIVE TYPE	ELECTRICAL								MANUFACTURER	MODEL	REMARKS
					MHP	VOLTAGE	PHASE	FLA	MCA	MOCP	DISCONNECT BY (NOTE A)	DISCONNECT TYPE (NOTE B)	CONTROLLER/ STARTER BY (NOTE A)	CONTROLLER/ STARTER TYPE (NOTE C)			
CF-1	PUMP / ELEC 6	7'-0"	141	DIRECT	0.09	115	1	0.5	0.7 A	20 A	MFR	NF	MFR	FV	BIG ASS FAN	HAIKU-84	NOTE 1, 2, 3, 4, 5, 6, 7

Madison Water Utility

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UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

REVISIONS

MARK	DATE	DESCRIPTION

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PROJECT NO.
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SHEET TITLE
SCHEDULES - MECHANICAL

SHEET
M302

*ALL SYMBOLS AND ABBREVIATIONS LISTED MAY NOT BE APPLICABLE TO THIS PROJECT.

PLUMBING SYMBOLS LIST

SYMBOL:	DESCRIPTION:
———	EXISTING TO REMAIN
- - - - - - -	EXISTING TO BE REMOVED
———	NEW
———‖———	NEW CONNECTION
——CW——	COLD WATER - POTABLE
——D——	DRAIN LINE
——G——	NATURAL GAS
——HW——	HOT WATER - POTABLE
——SAN——	SANITARY DRAINAGE
—ST(1,000)—	STORM DRAINAGE (ROOF SQUARE FOOTAGE)
——V——	VENT
——W——	SERVICE WATER - POTABLE
———⊐	PIPE CAP
———⊃	PIPE DOWN
———○	PIPE UP OR UP/DOWN
———○ FD	PIPE SERVING FIXTURE ON FLOOR ABOVE. (EXAMPLE: FD = FLOOR DRAIN)
- - - - - - -	UNDERFLOOR PIPING (LONG DASHES)
——⌐	PITCH PIPE IN DIRECTION
———▶	DIRECTION OF FLOW IN PIPE
RD-1 6"(1000)	ROOF DRAIN PROPERTIES SYMBOL SIZE (ROOF SQ. FT.)
———‖———	DIELECTRIC CONNECTION
———‖———	UNION/FLANGE
———⋈———	SHUTOFF VALVE NORMALLY OPEN
———⋈———	SHUTOFF VALVE NORMALLY CLOSED
0.5	BALANCING VALVE (NO. INDICATES GPM)
	MIXING VALVE
	CHECK VALVE
	SAFETY/RELIEF VALVE
	PRESSURE REDUCING VALVE (LIQUID/GAS)
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
M	METER
T	TEMPERATURE SENSOR WITH WELL
	THERMOMETER WITH WELL (FILLED TYPE)

PLUMBING SYMBOLS LIST

SYMBOL:	DESCRIPTION:
——AV——	ACID VENT
——AW——	ACID WASTE
AFF	ABOVE FINISHED FLOOR
CO	CLEANOUT
ESE	EMERGENCY SHOWER/EYEWASH
FCO	FLOOR CLEANOUT
FD	FLOOR DRAIN
HB	HOSE BIBB
I.E.	INVERT ELEVATION (FOR REFERENCE ONLY)
LAV	LAVATORY
MV	MIXING VALVE
NC	NEW CONNECTION
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
RD	ROOF DRAIN
VTR	VENT THROUGH ROOF
WC	WATER CLOSET
WH	WATER HEATER
C.C.	CIVIL CONTRACTOR
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.	TELECOMMUNICATIONS CONTRACTOR
FD-E	FLOOR DRAIN-EXISTING

PLUMBING FIXTURE ROUGH-IN SCHEDULE

NOTES: 1. SANITARY RISER UP IN WALL TO FIXTURE SHALL BE A MINUMUM OF 2". 2. 1/2" CW AND HW APPLIES ONLY TO THE FINAL VERTICAL RISE-DROP TO EACH FIXTURE, BRANCH PIPING TO VERTICAL RISE-DROP SHALL BE A MINIMUM OF 3/4" UNLESS NOTED OTHERWISE. 3. SIZES SHOWN ARE MINIMUMS. SIZES SHOWN ON THE DRAWING THAT ARE LARGER THAN THE SIZES LISTED IN THE SCHEDULE SHALL DICTATE THE ROUGH-IN SIZE.

FIXTURE DESCRIPTION	DOMESTIC CW (NOTE 3)	DOMESTIC HW (NOTE 3)	SANITARY (NOTE 3)	VENT (NOTE 3)	REMARKS
EMERGENCY SHOWER - EYEWASH	1"	3/4"	-	-	1 1/2" TW AFTER MIXING VALVE
FLOOR DRAIN	-	-	3"	1 1/2"	-
FLOOR DRAIN	-	-	4"	2"	-
HOSE BIBB	3/4"	-	-	-	-
HUB DRAIN	-	-	4"	2"	-
LAVATORY	1/2"	1/2"	1 1/4"	1 1/4"	NOTE 1 & 2
WATER CLOSET	1"	-	4"	2"	-

PLUMBING FIXTURE SCHEDULE GENERAL NOTES

THE SYMBOLS AND THE MATERIAL LIST ARE FOR THE CONVENIENCE OF THE CONTRACTOR. CONTRACTOR SHALL VERIFY QUANTITIES AND FURNISH ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SYSTEMS, WHETHER SPECIFIED OR NOT.

CATALOG NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR COMPLETE DESCRIPTION OF MATERIAL ON THESE DRAWINGS AND IN THE SPECIFICATIONS BEFORE ORDERING. THE DESCRIPTION OF THE MATERIAL TAKES PRECEDENCE OVER THE CATALOG NUMBER. THE FIRST MANUFACTURER LISTED IS THE BASIS OF DESIGN.

CONTRACTOR SHALL VERIFY THAT FIXTURES SUPPLIED ARE APPROVED PER ALL APPLICABLE STATE, LOCAL AND GOVERNING AUTHORITIES.

ALL FIXTURES SHALL CONFORM TO FEDERAL ACT S.3874

Madison Water Utility

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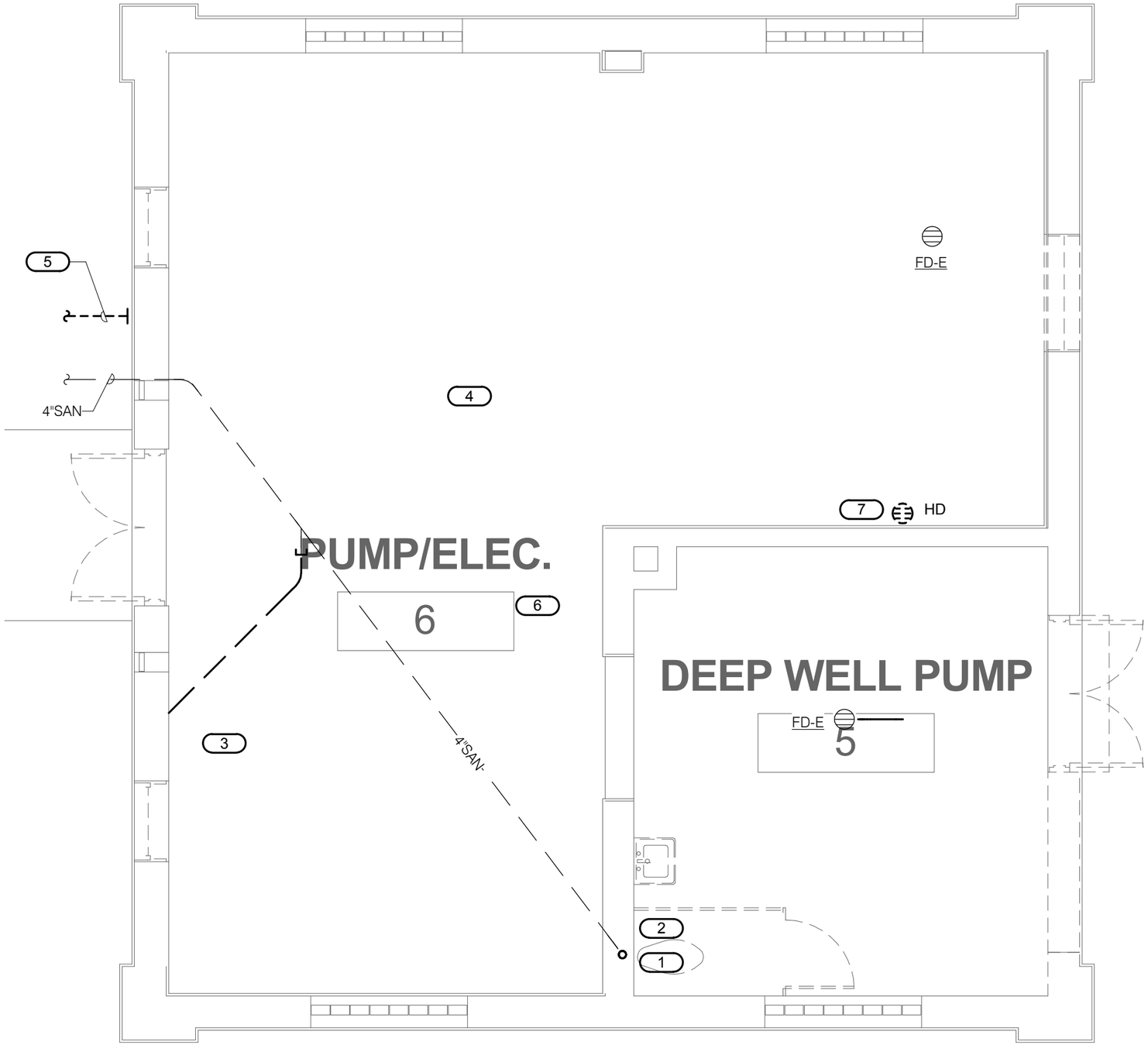
SHEET TITLE
COVER SHEET - PLUMBING

SHEET
P000



KEYNOTES: (#)

1. REMOVE EXISTING WATER CLOSET AND ALL ASSOCIATED SUPPORTS AND PIPING. ABANDON SANITARY PIPING UNDERFLOOR, CAP AND SEAL AT FLOOR LINE.
2. REMOVE EXISTING LAVATORY AND ALL ASSOCIATED SUPPORTS AND PIPING. ABANDON SANITARY PIPING UNDERFLOOR, CAP AND SEAL AT FLOOR LINE.
3. REMOVE EXISTING DRINKING FOUNTAIN AND ALL ASSOCIATED SUPPORTS AND PIPING. REMOVE UNDERGROUND SANITARY BACK TO MAIN AND CAP.
4. ABANDON EXISTING 2" WATER SERVICE UNDER FLOOR.
5. CAP 2" WATER SERVICE OUTSIDE BUILDING AND ABANDON IN PLACE EXISTING PIPING UNDER FLOOR.
6. REMOVE EXISTING EMERGENCY EYE WASH STATION.
7. REMOVE EXISTING FLOOR DRAINS AND HUB DRAINS AND CAP EXISTING UNDERFLOOR PIPING. ONLY EXISTING FLOOR DRAINS SHOWN TO REMAIN ON 3/P101 SHALL REMAIN AND BE RE-PIPED AS SHOWN.

NORTH

1 FIRST FLOOR DEMOLITION - PLUMBING

1/4" = 1'-0"

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MADISON, WISCONSIN

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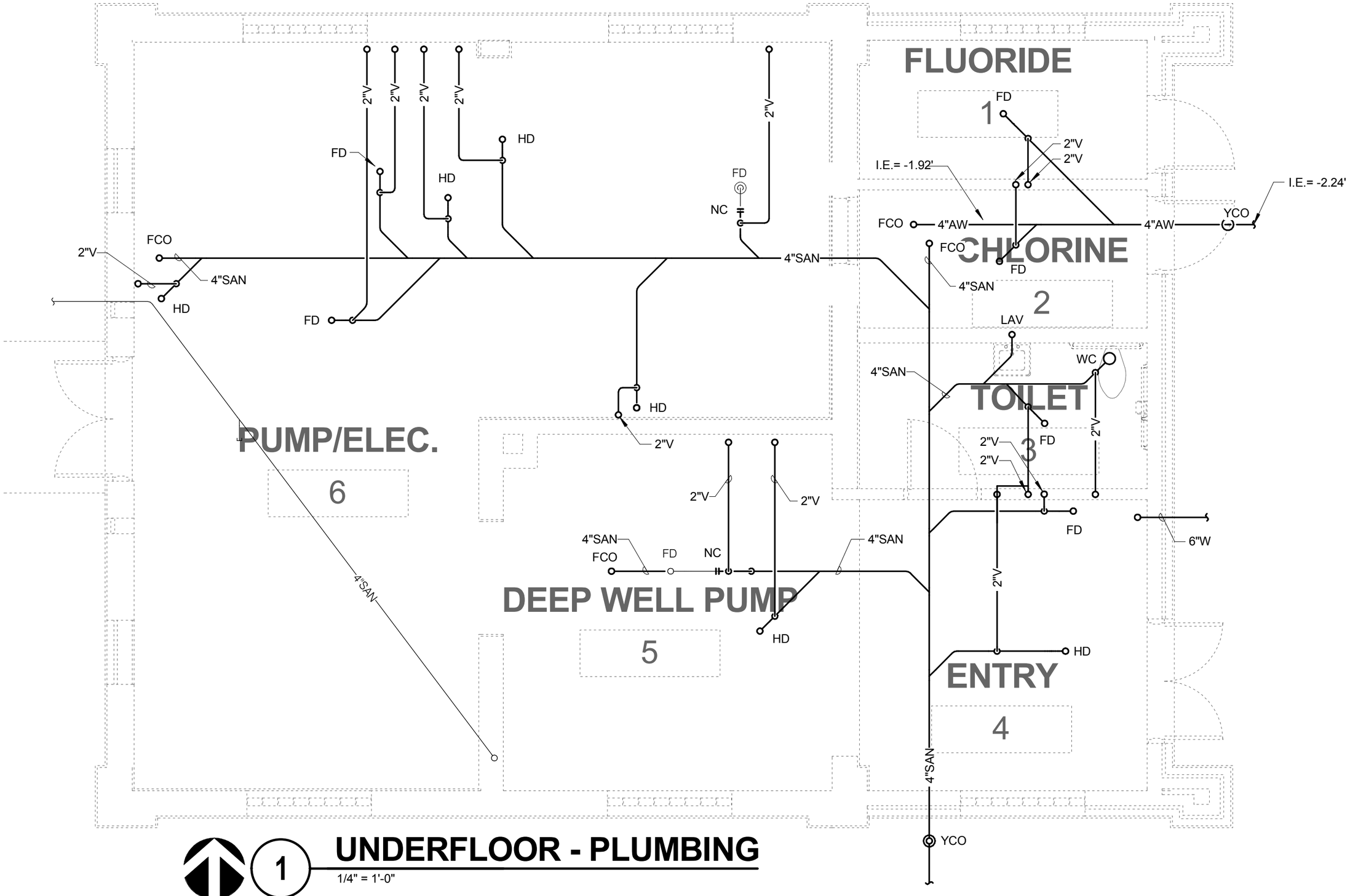
SHEET TITLE
FIRST FLOOR DEMOLITION
- PLUMBING

SHEET
PD101



NORTH

1 **UNDERFLOOR - PLUMBING**

1/4" = 1'-0"

15.0280.00 MADISON WELL 12

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UNIT WELL 12 UPGRADE
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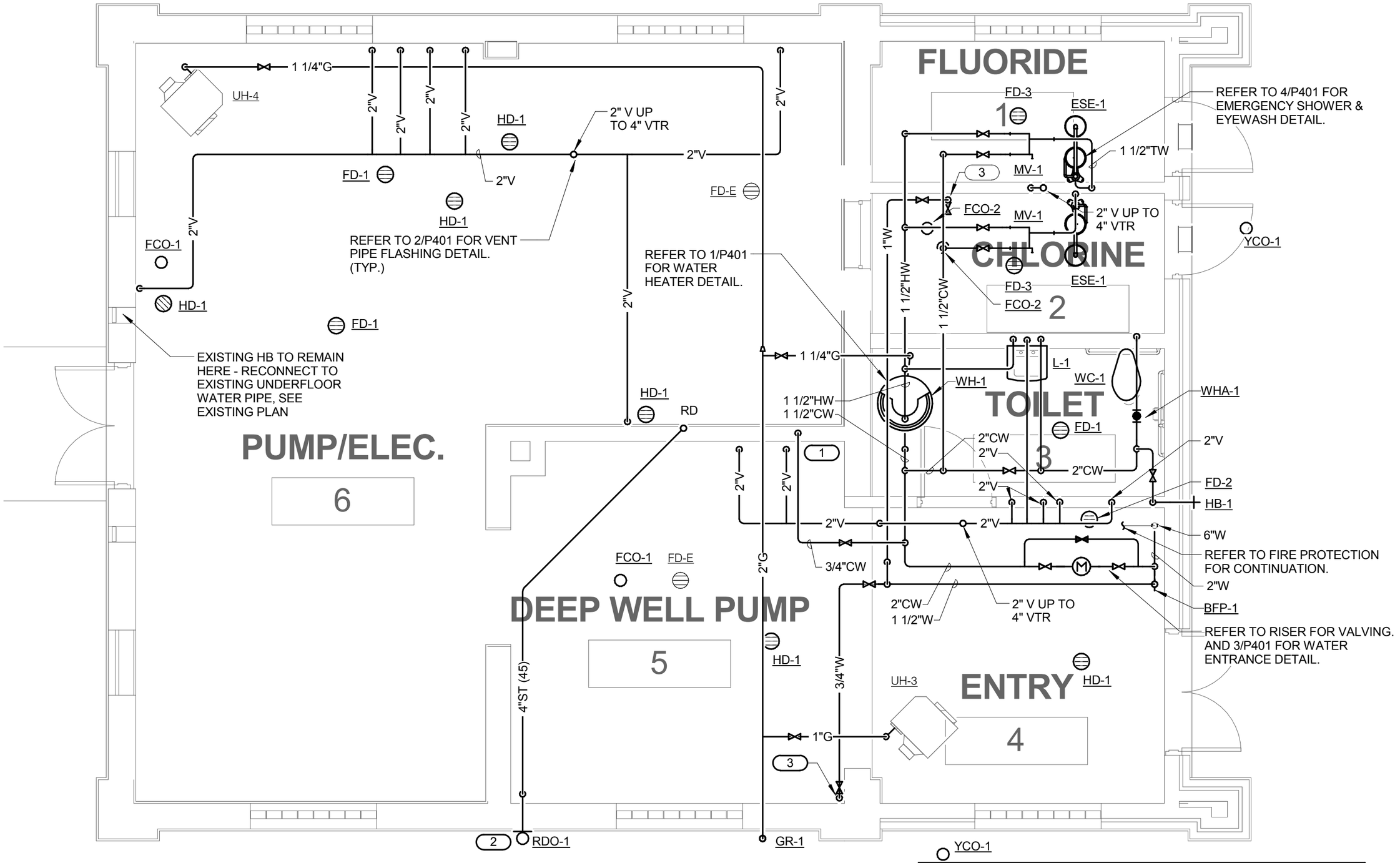
SHEET TITLE
UNDERFLOOR PLAN - PLUMBING

SHEET
P100



FIRST FLOOR - PLUMBING

1/4" = 1'-0"

NORTH

KEYNOTES: (#)

1. ROUTE DOWN AND CONNECT TO EXISTING UNDERFLOOR WATER LINE SERVING EXTERIOR HOSE BIBB TO REMAIN.
2. PROVIDE CONCRETE SPLASHBLOCK AT GRADE.
3. ROUTE WATER LINE DOWN WALL TERMINATE WITH THREADED SHUT-OFF AT 36" AFF. REFER TO PROCESS PLANS FOR CONTINUATION.

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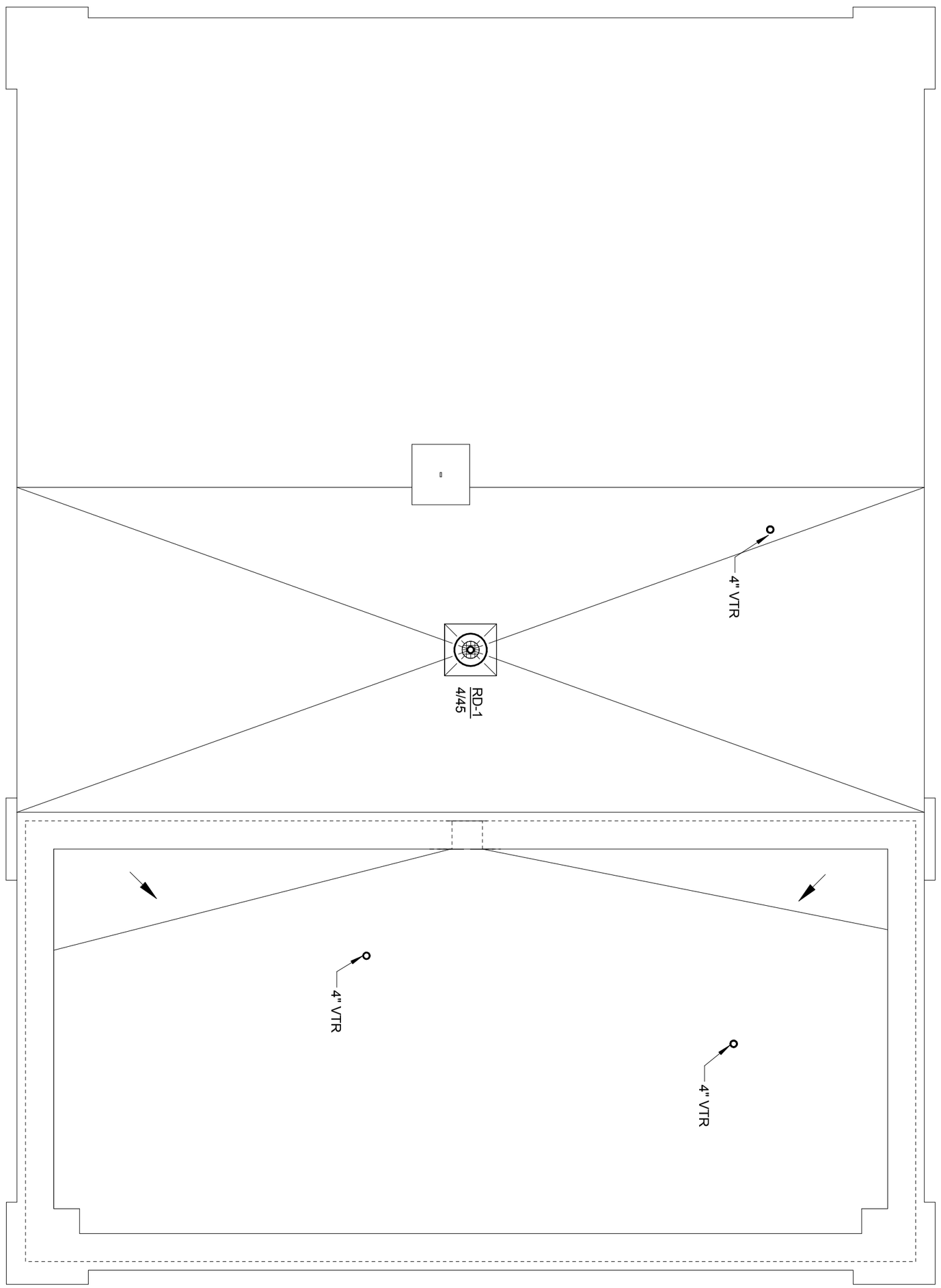
SHEET TITLE
FLOOR PLANS - PLUMBING

SHEET
P101

15.0280.00 MADISON WELL 12



NORTH

1

ROOF PLAN - PLUMBING

1/4" = 1'-0"

SHEET P102

SHEET TITLE
ROOF PLAN - PLUMBING

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MARK DATE DESCRIPTION
REVISIONS

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

SEH

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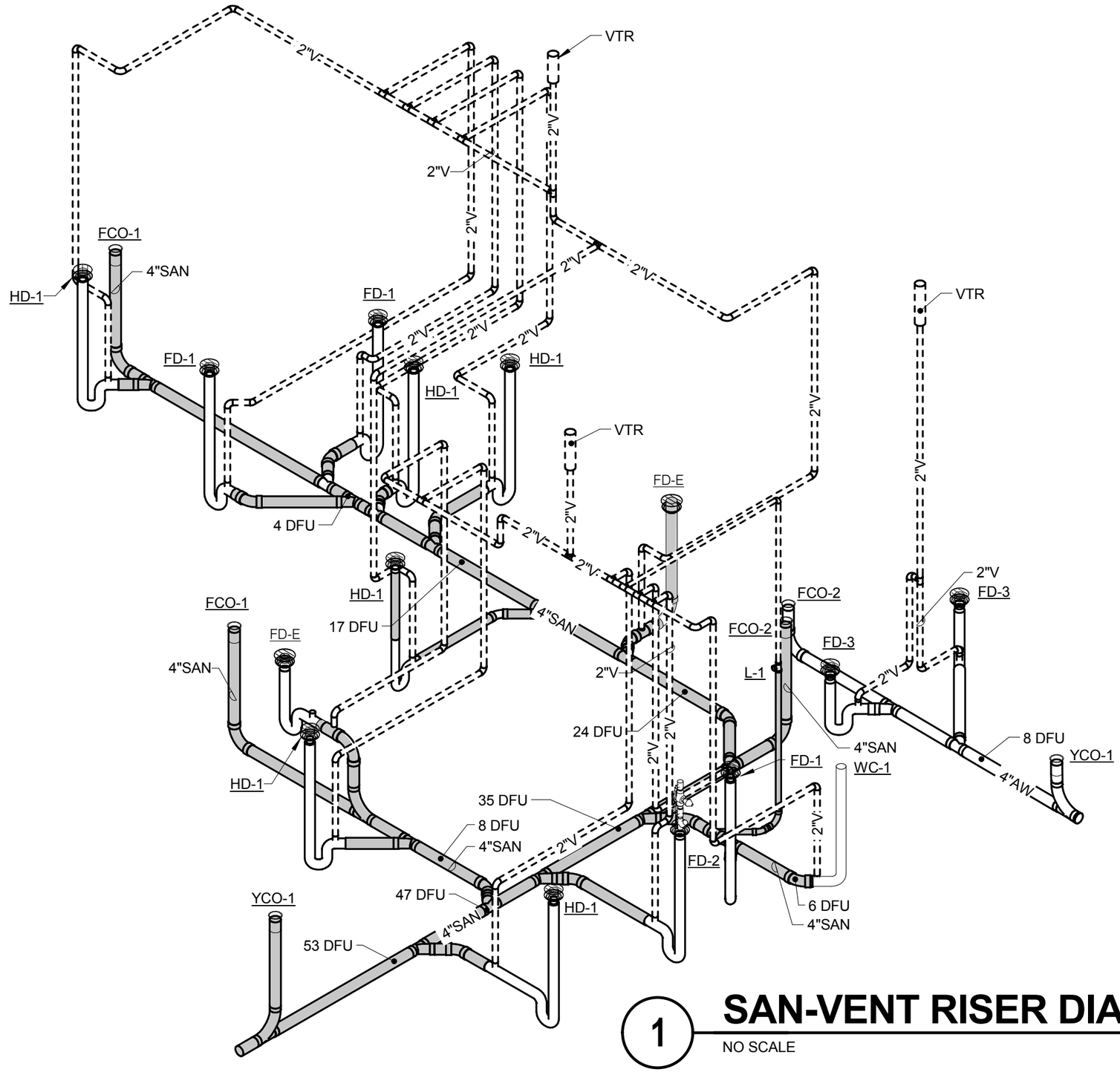
Madison Water Utility



1 **SAN-VENT RISER DIAGRAMS**

NO SCALE

15.0280.00 MADISON WELL 12

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UNIT WELL 12 UPGRADE
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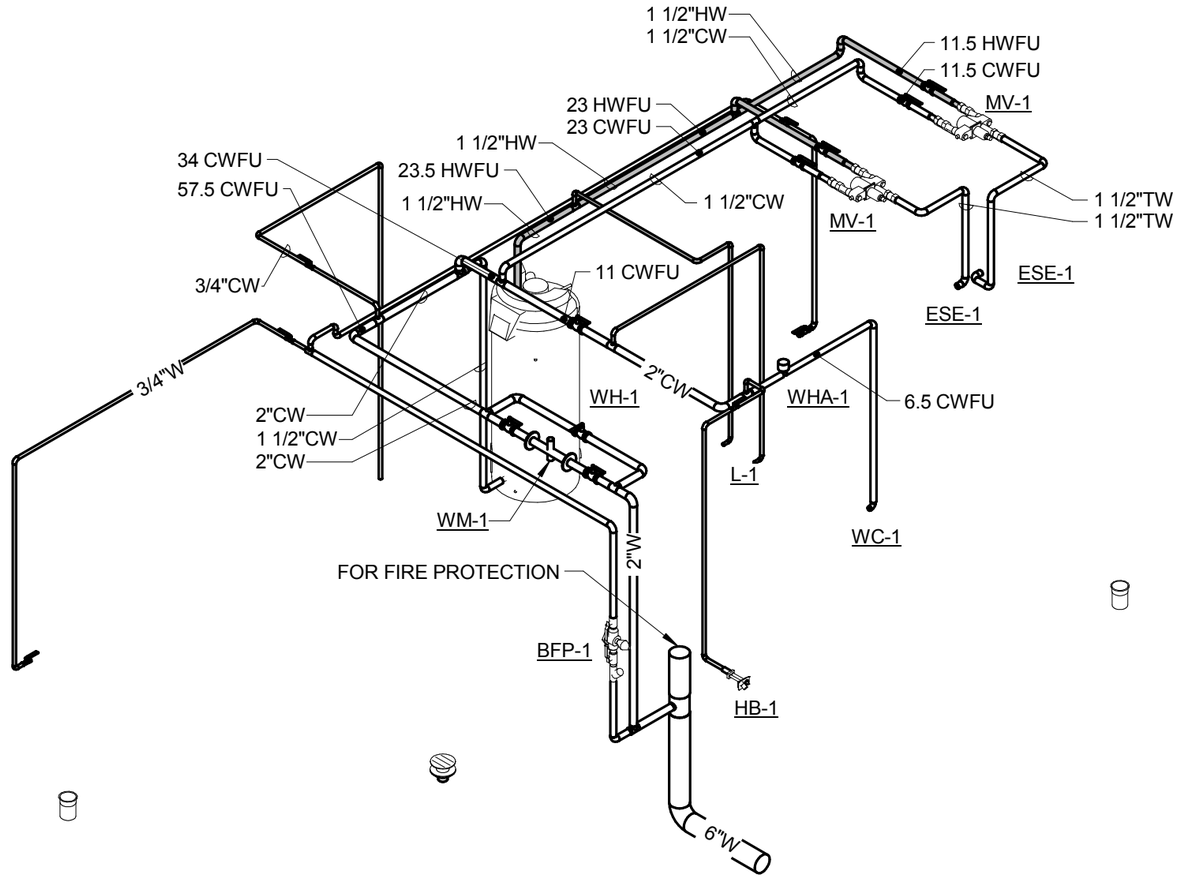
SHEET TITLE
RISER DIAGRAMS

SHEET
P201



1 DOMESTIC RISER DIAGRAMS

NO SCALE

15.0280.00 MADISON WELL 12

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SHEET TITLE
RISER DIAGRAMS

SHEET
P202

PLUMBING FIXTURE SCHEDULE

TAG NAME	DESCRIPTION	MANF. & MODEL
BFP-1	BACK FLOW PREVENTER - REDUCED PRESSURE ZONE, LEAD FREE BRONZE OR STAINLESS STEEL CONSTRUCTION, SIZE SAME AS PIPE, NON-CORROSIVE INTERNAL PARTS, STAINLESS STEEL SPRINGS, DIFFERENTIAL PRESSURE RELIEF VALVE BETWEEN SPRING-LOADED CHECK VALVES, SHUT-OFF VALVES ON INLET AND OUTLET OF UNIT, BALL STYLE SHUTOFF VALVES FOR 3/4"-2" AND GATE STYLE VALVES FOR 2 1/2"-10", AIR GAP DRAIN FITTING, TEST PORTS WITH SHUT-OFF VALVES, RATED FOR 175 PSI AT 33°F TO 140°F, 15 PSI (MAXIMUM) PRESSURE DROP AT 10 FPS, FACTORY TESTED, ALL PARTS TO BE SERVICEABLE WITHOUT REMOVING UNIT FROM LINE, APPROVED BY USC FCCC & HR, AWWA C511-92, ASSE 1013, IAPMO AND SBCCI LISTED. MOUNT WITHIN 60" OF FINISHED FLOOR. PROVIDE AND INSTALL BRONZE OR EPOXY COATED STRAINER UPSTREAM OF EACH UNIT AND ADDITIONAL VALVE UPSTREAM OF EACH STRAINER. FLOW PRESSURE DROP CURVES SHALL BE SUBMITTED.	WATTS (LF919 / 994), WILKINS (975XL2 / 375AST), CONBRACO (RPLF4A)
ESE-1	EMERGENCY SHOWER & EYE/FACE WASH - ACCESSIBLE, COMBINATION UNIT, FREESTANDING, FLOOR MOUNTED WITH TOP INLET, STAINLESS STEEL SHOWER HEAD, BRASS/BRONZE STAY OPEN BALL VALVE, STAINLESS STEEL/ALUMINUM PULL ROD, STAINLESS STEEL BOWL WITH HINGED DUST COVER, PLASTIC SPRAY HEADS WITH CAPS AND RETAINING CHAINS/STRAPS, BRASS SUPPLY ARMS, BRASS/BRONZE STAY OPEN BALL VALVE, METAL FLAG, INTEGRAL FLOW CONTROL FITTINGS, STAINLESS STEEL SUPPLY PIPING AND FITTINGS, UNIVERSAL IDENTIFICATION SIGN, ANSI Z358.1-2004 COMPLIANT. MINIMUM FLOW RATE OF SHOWER SHALL BE 20 GPM AT 30 PSI. MINIMUM FLOW RATE OF EYE/FACE WASH SHALL BE 3.0 GPM AT 30 PSI. ACTIVATION TIME SHALL BE 1 SECOND OR LESS. BRASS/BRONZE PIPING, FITTINGS, AND VALVES SHALL BE CHROME-PLATED OR CHEMICAL-RESISTANT POWDER COATED. MOUNT SHOWER HEAD BETWEEN 80"-96" AND PULL ROD AT MAXIMUM 48" ABOVE FINISH FLOOR. EYE/FACE WASH OUTLET HEADS SHALL BE AT MAXIMUM 36" ABOVE FINISH FLOOR WITH MINIMUM 27" OF KNEE CLEARANCE BELOW, AND MINIMUM OF 19" OF CLEARANCE FROM CENTER OF BOWL TO WALL OR OBSTRUCTION. IN COMPLIANCE WITH LATEST ADA AND ANSI 117.1 STANDARDS	BRADLEY (S19-310BF), ACORN SAFETY (S13/S23 SERIES), GUARDIAN (GBF1900 SERIES), HAWS (8300 SERIES), ENCON
FCO-1	FLOOR CLEANOUT - ADJUSTABLE, CAST IRON HOUSING, ANCHOR FLANGE, TAPERED THREAD PLUG, SECURED NICKEL BRONZE TOP. TOP STYLE SHALL MATCH FLOOR FINISH AS FOLLOWS: UNFINISHED FLOOR - ROUND SOLID SCORIATED TOP TILE OR TERRAZZO - ROUND RECESSED TOP	ZURN (Z1400), JOSAM (55000), MIFAB (C1100), SMITH (4000), WADE (6000), WATTS (CO-200)
FCO-2	FLOOR CLEANOUT - POLYPROPYLENE THREADED ADJUSTABLE BODY, GAS AND WATER TIGHT TAPERED PLUG AND ROUND SECURED STAINLESS STEEL TOP.	ACCEPTABLE MANUFACTURERS: ORION (FCO), ZURN (Z9A-CO1), IPEX ENFIELD (FCO)
FD-1	FLOOR DRAIN - DURA-COATED CAST IRON BODY, COMBINATION INVERTIBLE MEMBRANE CLAMP, POLISHED NICKEL BRONZE ADJUSTABLE TOP, 6" ROUND, 3" BOTTOM OUTLET, FLASHING COLLAR, DEEP SEAL TRAP.	FLOOR DRAIN - ZURN (ZN-415, TYPE H), WADE (AX6) OR EQUAL

PLUMBING FIXTURE SCHEDULE

TAG NAME	DESCRIPTION	MANF. & MODEL
FD-2	FLOOR DRAIN - DURA-COATED CAST IRON BODY, POLISHED BRONZE TOP, 9" ROUND, 7" OVAL FUNNEL CONVERTING ASSEMBLY, 4" BOTTOM OUTLET, SHALLOW SUMP, FREE STANDING SEDIMENT BUCKET, FLASHING COLLAR, SURFACE MEMBRANE CLAMP, DEEP SEAL TRAP.	FLOOR DRAIN - ZURN (ZN-550), WADE (1300) OR EQUAL FUNNEL CONVERTING ASSEMBLY - ZURN (Z-329), WADE (EG-8) OR EQUAL
FD-3	FLOOR DRAIN - ACID RESISTANT, POLYVINYLIDENE FLOURIDE BODY, POLYPROPYLENE STAINLESS STEEL GRATE, 8" ROUND, 4" BOTTOM OUTLET, COMBINATION INVERTIBLE MEMBRANE CLAMP, DEEP SEAL TRAP.	FLOOR DRAIN - ZURN (Z9A-PFD2) OR EQUAL
GR-1	GAS PRESSURE REGULATOR - CAST IRON BODY, EXTERNAL PRESSURE RELIEF, THREADED CONNECTIONS, ADJUSTABLE PRESSURE SETTING, TIGHT SHUTOFF. 2 PSI INLET PRESSURE, 10" W.C. OUTLET PRESSURE, 674 CFH CAPACITY, MINIMUM CONTROLLABLE FLOW OF 0 CFH	FISHER (S200), ITRON, SENSUS, MAXITROL.
HB-1	HOSE BIBB - FREEZELESS WALL HYDRANT, BRASS VALVE BODY AND SEAT, STANDARD FINISH, NON-FERROUS METAL STEM, AUTOMATIC DRAINING, VACUUM BREAKER, 3/4" MALE HOSE THREAD, WALL CLAMP, CONCEALED IN FLUSH MOUNTED LOCKABLE WALL BOX, KEY OPERATED, ASSE 1019 APPROVED AND LISTED. VERIFY NUMBER OF KEY OPERATORS TO BE PROVIDED WITH OWNER. BOX COVER AND HYDRANT SHALL USE A COMMON KEY. MOUNT AT 18" ABOVE GRADE UNLESS NOTED OTHERWISE ON DRAWINGS.	WOODFORD (B67), ZURN (Z1300), JOSAM (71000), WATTS (HY-725), PRIER (C-534-WB), MIFAB (MHY-20), SMITH (5509QT)
HD-1	HUB DRAIN - OPEN SITE HUB, 304 STAINLESS STEEL BODY, 6" DIAMETER FUNNEL, ALUMINUM BOTTOM DOME STRAINER, 4" BOTTOM OUTLET, DEEP SEAL TRAP. EXTEND 4" A.F.F.	HUB DRAIN - KUSEL EQUIPMENT OR EQUAL
L-1	LAVATORY - ACCESSIBLE, WALL MOUNTED, WHITE VITREOUS CHINA, 20" X 18", FAUCET HOLES ON 8" CENTERS, DRILLED FOR CONCEALED ARM CARRIER. LAVATORY TRIM - TWO HANDLE MIXING FAUCET, BRASS CONSTRUCTION, CHROME-PLATED FINISH, RIGID GOOSENECK SPOUT WITH NOMINAL 6" REACH AND AERATOR, 4" WRIST BLADE HANDLES AT 8" CENTERS, CERAMIC DISC CARTRIDGE, PERFORATED GRID STRAINER WITH 1-1/4" 17 GAUGE TAILPIECE. MAXIMUM FLOW TO BE 0.5 GPM IN COMPLIANCE WITH ENERGY POLICY ACT OF 2005 AND ASME/ANSI STANDARD A112.18.1M. FAUCET SHALL COMPLY WITH FEDERAL ACT S.3874. PROVIDE RESTRICTIVE DEVICE AS REQUIRED. INSULATION KIT - PRE-MANUFACTURED FOR P-TRAP, STOP VALVES AND SUPPLY LINES. ACCESSORIES - QUARTER-TURN 3/8" CHROME PLATED HEAVY BRASS ANGLE SUPPLY LOOSE KEY STOPS, CHROME PLATED SOFT COPPER SUPPLY LINES, DRAIN AND OFFSET TAILPIECE, 1-1/4" 20 GAUGE CAST BRASS P-TRAP, SUPPORT CARRIER. MOUNT LAVATORY WITH SUPPORT CARRIER BOLTED SECURELY TO FLOOR. TOP OF RIM SHALL BE AT 34" ABOVE FLOOR IN COMPLIANCE WITH LATEST ADA STANDARD. PROVIDE 29" MINIMUM CLEARANCE FROM FLOOR TO BOTTOM OF APRON IN COMPLIANCE WITH LATEST ANSI A117.1 AND ADA STANDARDS. ARMAFLEX WITH TAPE IS NOT ACCEPTABLE IN LIEU OF INSULATION KIT.	LAVATORY - KOHLER (K-2053), ZURN (Z5318) LAVATORY TRIM - DELTA (23C624-R4), AMERICAN STANDARD (6540.170), CHICAGO FAUCET (786), KOHLER (K-7304) MOEN (8248), SYMMONS (S-254), T&S BRASS (B-2867-04), ZURN (Z831B4-XL) INSULATION KIT - TRUEBRO (LAV-GUARD), BROCAR PRODUCTS (TRAP WRAP), MCGUIRE (PROWRAP), PLUMBEREX (PRO-EXTREME)

Madison Water Utility

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SHEET TITLE
SCHEDULES - PLUMBING

SHEET
P301

PLUMBING FIXTURE SCHEDULE Copy 1

TAG NAME	DESCRIPTION	MANF. & MODEL
MV-1	MIXING VALVE - THERMOSTATIC MIXING VALVE FOR EMERGENCY SHOWER OR COMBINATION SHOWER/EYEWASH FIXTURE, BRONZE BODY CONSTRUCTION, COLD WATER BYPASS, INLET AND OUTLET THERMOMETERS, INTEGRAL CHECKSTOPS, OUTLET ISOLATION VALVE, MOUNTING BRACKET. CABINET SHALL BE SURFACE MOUNTED 18 GAUGE STAINLESS STEEL WITH 16 GAUGE LOCKING DOOR TO ENCLOSE VALVE, INLET STOPS, OUTLET THERMOMETER, AND OUTLET VALVES. DUAL THERMOSTATIC MIXING AND PRESSURE REGULATING VALVES TO DELIVER 25 GPM OF TEMPERED WATER (60-100 DEGREE F) WITH 10 PSI PRESSURE DIFFERENTIAL. UNIT SHALL BE ASSE 1071 LISTED AND APPROVED. VALVE SHALL COMPLY WITH FEDERAL ACT S.3874.	LEONARD (TM-LF), ACORN CONTROLS (ET71 SERIES), ARMSTRONG (Z358), BRADLEY (S19), HAWS (9201H), LAWLER (911),
RD-1	ROOF DRAIN - CAST IRON BODY, SECURED CAST IRON DOME, 15" ROUND, BOTTOM OUTLET, FLASHING CLAMP, GRAVEL STOP, UNDERDECK CLAMP, BEARING PAN, OUTLET SIZE AS LISTED ON DRAWINGS.	ZURN (Z-100), SMITH (1010), WADE (3000), JOSAM (21500), WATTS (RD-300), MIFAB (R1200)
RDO-1	ROOF DRAIN OUTLET - LAMBS TONGUE DOWNSPOUT NOZZLE, BRONZE BODY, INTEGRAL ANCHORING FLANGE, OUTLET SIZE AS LISTED ON DRAWINGS.	ZURN (Z-199), SMITH (1770), WADE (3940), JOSAM (25010), WATTS (RD-940), MIFAB (R1940)
WC-1	WATER CLOSET - ACCESSIBLE, FLOOR MOUNTED, FLUSH VALVE TYPE, WHITE VITREOUS CHINA, SIPHON JET, WATER SAVING, ELONGATED BOWL, 1-1/2" TOP SPUD, BOLT CAPS. FLUSH VALVE - EXPOSED, SENSOR OPERATION, BATTERY POWERED, 1.6 GALLONS PER FLUSH, 11-1/2" ROUGH-IN, CHROME PLATED, 1" I.P.S. SCREWDRIVER STOP-CHECK VALVE WITH VANDAL RESISTANT CAP, HIGH BACK PRESSURE VACUUM BREAKER, ADJUSTABLE TAILPIECE, SPUD COUPLING AND FLANGE, MECHANICAL OVER-RIDE BUTTON, WALL FLANGE WITH SET SCREW, CHLORAMINE RESISTANT MATERIALS, ADA COMPLIANT, 3 YEAR WARRANTY. SEAT - WHITE, EXTRA HEAVY, OPEN FRONT, INJECTION MOLDED SOLID PLASTIC, SELF-SUSTAINING HINGE, STAINLESS STEEL OR PLATED STEEL POSTS AND NUTS. CONTRACTOR OPTION: COMBINATION WATER CLOSET/FLUSH VALVE PACKAGED SYSTEM BY AMERICAN STANDARD, SLOAN, OR ZURN TOP OF SEAT SHALL BE AT 17"-19" ABOVE FINISHED FLOOR. VERIFY EQUIPMENT REQUIREMENTS AND ROUGH-IN LOCATIONS.	WATER CLOSET - AMERICAN STANDARD (3043.001), CRANE (3H701), GERBER (25-730), KOHLER (K-4368), SLOAN (ST-2023), ZURN (Z5660) FLUSH VALVE - ZURN (ZER6000AV), SLOAN (8111), AMERICAN STANDARD (6065.161), HYDROTEK (HB-8000C), MOEN (8310) SEAT - [BEMIS (1655C), CHURCH (9500C), BENEKE (533), KOHLER (K-4666-C), OLSONITE (95), SAME AS WATER CLOSET MANUFACTURER]

PLUMBING FIXTURE SCHEDULE Copy 1

TAG NAME	DESCRIPTION	MANF. & MODEL
WH-1	WATER HEATER - GAS FIRED, VERTICAL, MINIMUM 94% EFFICIENT, SEALED COMBUSTION, METAL CABINET, BAKED ENAMEL FINISH, GLASS-LINED ASME STAMPED WELDED STEEL TANK, 160 PSI WORKING PRESSURE, FIBERGLASS OR FOAM INSULATION, BRASS WATER CONNECTIONS AND DRAIN VALVE, ASME APPROVED T&P RELIEF VALVE, MULTIPLE MAGNESIUM ANODE RODS, VENT PIPING KIT, HIGH TEMPERATURE GAS SHUT OFF, AUTOMATIC WATER THERMOSTAT, BUILT-IN GAS REGULATING VALVE, ADJUSTABLE TEMPERATURE RANGE, CONDENSATE DRAIN NEUTRALIZATION KIT, 3-YEAR WARRANTY, UL LISTED, COMPLIANT TO NAECA, ASHRAE 90.1 AND ASHRAE 90A. 119 GALLON CAPACITY, 399,900 BTUH INPUT NATURAL GAS, 575 GPH RECOVERY AT 80°F RISE. ELECTRICAL REQUIREMENTS - 120V CIRCUIT FOR BLOWER AND CONTROLS, HARD-WIRED SET WATER TEMPERATURE AT 120°F. SET SUPPLY GAS PRESSURE AT 7" W.C.	AMERICAN WATER HEATER (AMERISIZE), A.O. SMITH (CYCLONE Xi BTH), BOCK (OT SERIES), BRADFORD WHITE (EF SERIES), HTP (PHOENIX PLUS), RHEEM (GHE), STATE (SUF)
WHA-1	WATER HAMMER ARRESTER - BELLOWS TYPE, PRE-CHARGED, ALL LEAD FREE STAINLESS STEEL CONSTRUCTION, ASSE 1010 APPROVED, PDI CERTIFIED, RATED FOR 1-11 FIXTURE UNITS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.	ZURN (Z1700), JR SMITH (5005-5050), WADE (W5-100), JOSAM (75000 SERIES), WATTS (SS), MIFAB (WHB)
WM-1	WATER METER - TURBINE TYPE, ALL BRONZE CONSTRUCTION, 2" SIZE, TOP READING CUMULATIVE DIAL WITH FACE PLATE CAP AND REMOTE READOUT, AWWA COMPLIANT. PROVIDE STRAINER, TEST PORT AND FULL SIZE BYPASS WITH LOCKABLE VALVE.	NEPTUNE, BADGER, HERSEY
YCO-1	YARD CLEANOUT - ROUND, DURA-COATED CAST IRON, SIZE AS LISTED ON DRAWINGS, DOUBLE FLANGED HOUSING, HEAVY DUTY SECURED SCORIATED DURA-COATED CAST IRON COVER, LIFTING DEVICE, BRONZE CLEANOUT PLUG WITH GAS/WATER-TIGHT SEAL.	ZURN (Z1474), SMITH (4261), WADE (W-8300), JOSAM (58680), WATTS (CO-300)

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

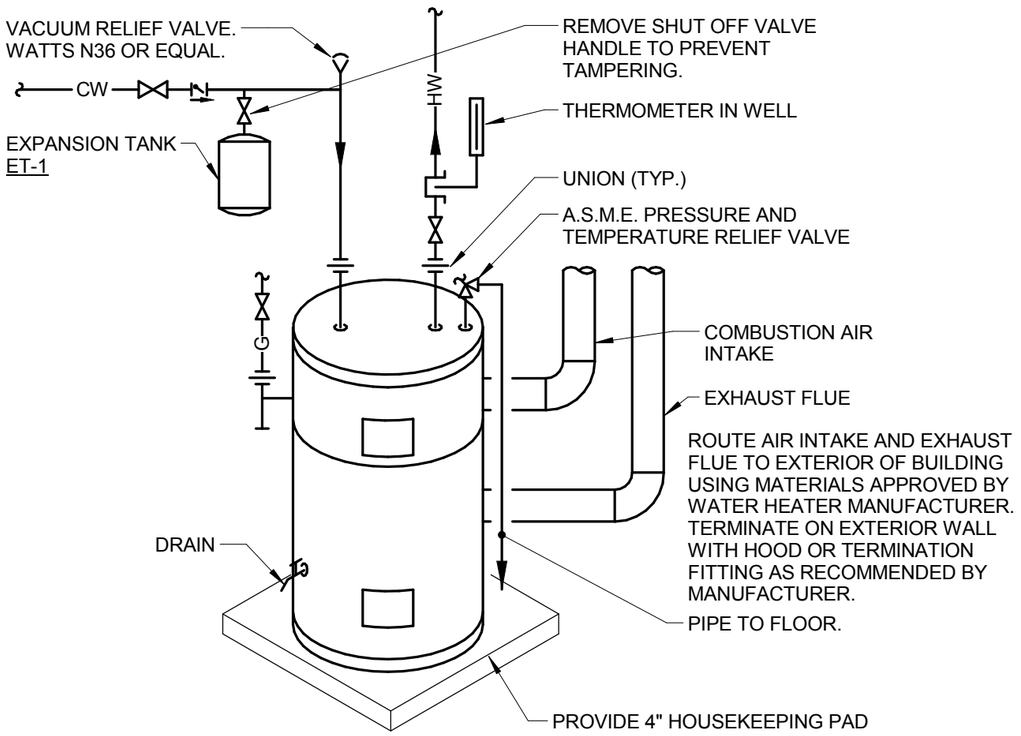
MARK	DATE	DESCRIPTION

REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06/12/15
DESIGNED BY Designer
DRAWN BY Author

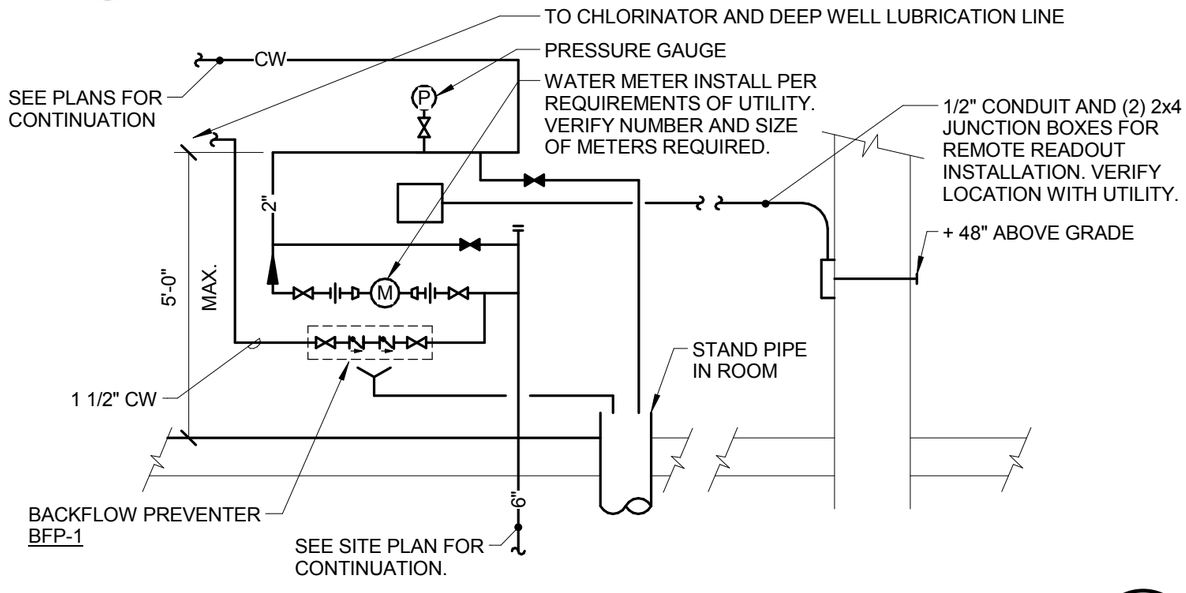
SHEET TITLE
SCHEDULES - PLUMBING

SHEET
P302



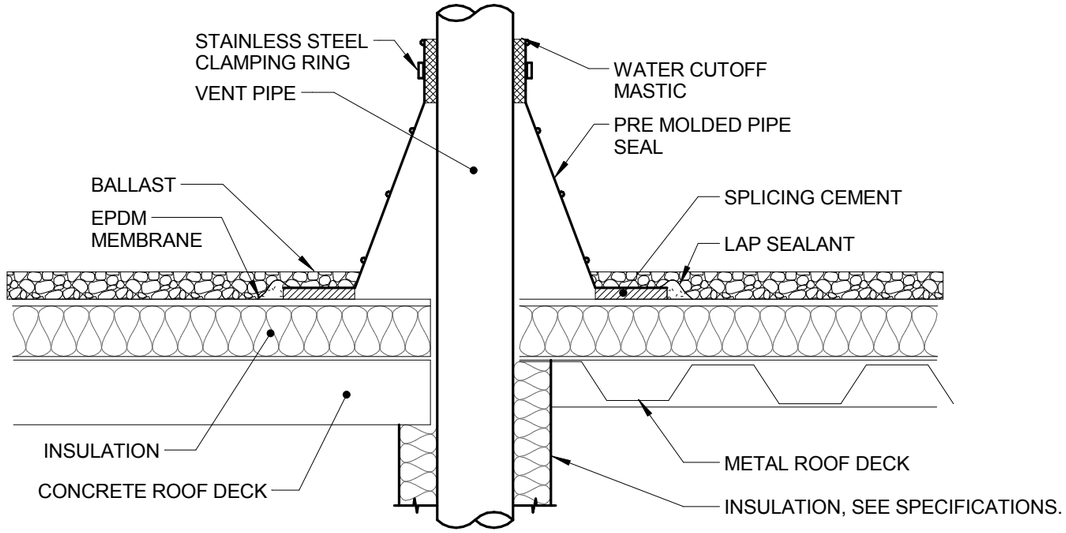
1 WATER HEATER DETAIL

NO SCALE



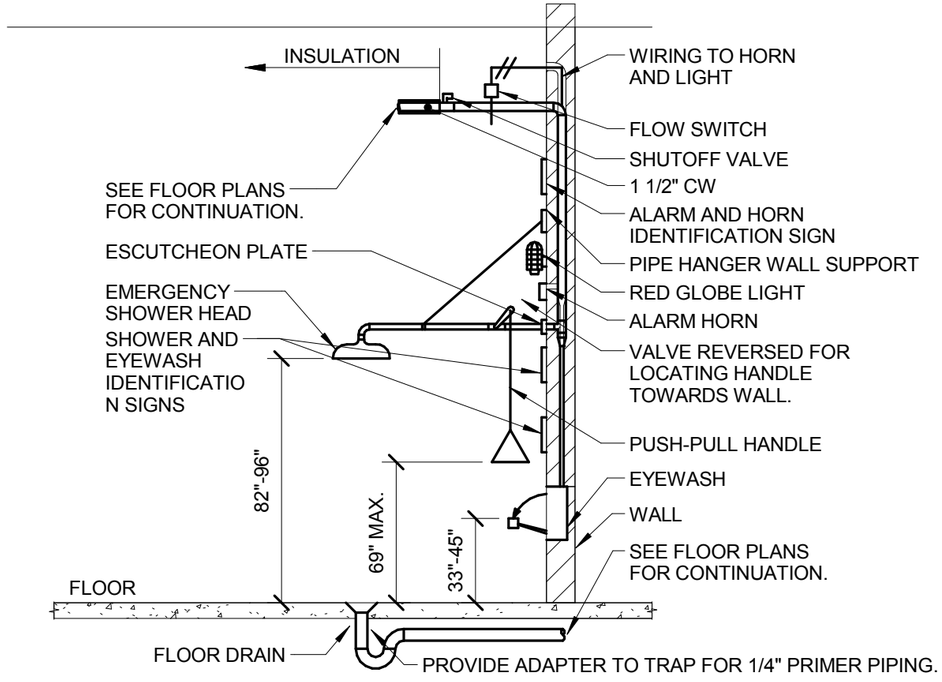
3 DOMESTIC WATER ENTRANCE

NO SCALE



2 VENT PIPE FLASHING

NO SCALE



4 EMERGENCY SHOWER & EYEWASH DETAIL

NO SCALE

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
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SHEET TITLE
DETAILS - PLUMBING

SHEET
P401

15.0280.00 MADISON WELL 12

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
MCC–A	MAJOR ELECTRICAL COMPONENT OR DEVICE – NAME OR IDENTIFYING SYMBOL AS SHOWN.
LA–2	HOME RUN – DESTINATION SHOWN
$x	WALL SWITCH (WHERE X SUBSCRIPT INDICATES) BLANK – SINGLE POLE CRE – CORROSION RESISTANT D – DIMMER EXP – EXPLOSION PROOF K – KEY OPERATED P – PILOT LIGHT WP – WEATHERPROOF 2 – DOUBLE POLE 3 – THREE WAY 4 – FOUR WAY
	CONVENIENCE RECEPTACLE – DUPLEX UNLESS SPECIFIED OTHERWISE MOUNT 48"AFF, UNLESS OTHERWISE NOTED.
	CONTROL STATION, NEMA 12 ENCLOSURE UNLESS INDICATED OTHERWISE. (WP = NEMA 4 ENCLOSURE) SEE CONTROL DIAGRAMS FOR TYPE PUSH BUTTON REQUIRED.
W	MULTI–PARTY WALL MOUNTED COMMUNICATIONS SYSTEM STATION WITH INTEGRAL AMPLIFIER.
400	DRAWOUT VACUUM CONTACTOR, MEDIUM VOLTAGE, CURRENT RATING INDICATED.
400/ST	ADJUSTABLE SOLID STATE OR STATIC TRIP CIRCUIT BREAKER, 3 POLE – CONTINUOUS CURRENT TRIP INDICATED.
FIT–10–1–2 OR 200–MCC–1	TYPICAL EQUIPMENT TAG NAME. SEE I AND C LEGEND OR ELECTRICAL ABBREVIATIONS FOR EXPLANATION.
(X,Y)	TYPICAL CONDUIT AND CONDUCTOR CALL OUT, X – IS CONDUIT, Y – IS CONDUCTOR. IF CODES OR TAG NAMES ARE USED INSTEAD OF ACTUAL SIZES, SEE CKT. AND RACEWAY SCHEDULE.
X	KEYED NOTE, REFER TO LIST OF NOTES ON PLANS.
	LIGHT OUTLET, CEILING MOUNT, INCANDESCENT OR H.I.D., SHADING INDICATES EMERGENCY, R INDICATED RED.
	LIGHT OUTLET, WALL MOUNT, INCANDESCENT OR H.I.D., HEIGHT AS INDICATED.
	POLE MOUNTED HID LIGHT FIXTURE
	WALL MOUNTED FLUORESCENT FIXTURE
	FLUORESCENT FIXTURE – SHADING INDICATES EMERGENCY CIRCUIT
	TRACK LIGHT FIXTURE – LENGTH SCALED OR SPECIFIED, QUANTITY OF FIXTURES AS SHOWN.
	STEP, AISLE OR NIGHT LIGHT
	EMERGENCY LIGHTING BATTERY UNIT
	EXIT LIGHT, CEILING MOUNT, SHADED SIDE INDICATES "EXIT" FACE.
	EXIT LIGHT, WALL MOUNT, HEIGHT AS INDICATED, SHADED SIDE INDICATES "EXIT" FACE.
	EXIT LIGHT WITH DIRECTIONAL ARROW(S) AS INDICATED.
$x	LOCAL LINE VOLTAGE SWITCH – MOUNTED 48" AFF DLS – DUAL LEVEL SWITCHING (INNER/OUTER LAMPS) PL – PILOT LIGHT 3 – 3 WAY
OS x	OCCUPANCY SENSOR CD – CEILING DUAL TECHNOLOGY (PIR/ULTRASONIC) CU – CEILING ULTRASONIC DLS – DUAL LEVEL SWITCHING (INNER/OUTER LAMPS) PP – POWER PACK SP – SLAVE PACK W – WALL MOUNTED WP – WEATHER PROOF 2 – TWO INDEPENDENT LTG. LOADS 3 – 3 WAY
L x	LOW VOLTAGE SWITCH STATION DLS – DUAL LEVEL SWITCHING K – KEYED SWITCH OR – OVERRIDE
P	PHOTOCELL
	PUSH BUTTON
C 1	CONTACTOR, NUMBERED AS SHOWN
TC 1	TIME CLOCK, NUMBERED AS SHOWN
PC	PHOTO CELL
T	THERMOSTAT
	DUPLEX, GROUNDING RECEPTACLE
	DUPLEX, GROUNDING RECEPTACLE, COUNTER HEIGHT OR AS INDICATED.
	SINGLE, GROUNDING RECEPTACLE
GFCI	DUPLEX, GROUND FAULT CIRCUIT INTERRUPTER
WP	DUPLEX, GROUNDING RECEPTACLE, WEATHERPROOF ALUMINUM IN–USE LOCKABLE COVER.
GFCI/WP	DUPLEX, GROUND FAULT CIRCUIT INTERRUPTER WITH ALUMINUM INUSE LOCKABLE COVER.
GFCI/CR	DUPLEX, GROUND FAULT CIRCUIT INTERRUPTER CORROSION RESISTANT (REQUIRES GFI CIRCUIT BREAKER).
EXP	GROUNDING RECEPTACLE (EXPLOSION PROOF)
TP	TELE–POWER POLE

SYMBOL	DESCRIPTION
	CLOCK OUTLET
T	TELEPHONE OUTLET – FLUSH WALL MOUNTED
	TELEPHONE OUTLET – FLOOR MOUNTED
D	DATA OUTLET – FLUSH WALL MOUNTED
	JUNCTION BOX
M W	MOTION SENSOR, FLUSH WALL MOUNTED
	SPECIAL PURPOSE OUTLET OR DEVICE
	BRACKET SYMBOL INDICATES COMMON ENCLOSURE AND PLATE
K L	KEYPAD, BACK LITE, FLUSH WALL MOUNTED.
M	MOTOR – REFER TO SCHEDULE, INTERNAL NUMBER INDICATES HORSE POWER.
$M	MOTOR STARTER SWITCH (MANUAL)
$SC	VARIABLE SPEED CONTROL – FAN
	MAGNETIC MOTOR STARTER
	COMBINATION MOTOR STARTER/DISCONNECT SWITCH
$MOL	MOTOR STARTING SWITCH WITH TERMINAL OVERLOADS
NF	SAFETY/DISCONNECT SWITCH NON–FUSED, NEMA 12
F	SAFETY/DISCONNECT SWITCH–FUSED, NEMA 12
NF/WP	SAFETY/DISCONNECT SWITCH WON FUSED, NEMA 4X STAINLESS STEEL
WP	DISCONNECT SWITCH, FUSED, NEMA 4X STAINLESS STEEL
S	SPEAKER OUTLET
C	COMPUTER CABLE OUTLET
	TERMINAL CABINET, SYSTEM AS NOTED
	ANNUNCIATOR, SYSTEMS NOTED
T X	TRANSFORMER, X REFERS TO NUMBER
	BRANCH CIRCUIT HOMERUN TO PANELBOARD WITH CIRCUIT NO.
	VERTICAL CONDUIT RUNS DOWN, ID DARKENED IS OPEN
	CONDUIT STUB, CAPPED
	WIREMOLD WITH MULTIPLE OUTLETS
	SINGLE POLE SWITCH
FS	SPRINKLER SYSTEM FLOW SWITCH
FS TS	SPRINKLER SYSTEM TAMPER SWITCH
SD	DUCT–MOUNTED SMOKE DETECTOR
FA SD	FIRE ALARM SMOKE DETECTOR
FA HD	FIRE ALARM HEAT DETECTOR
SD 2	DOUBLE CONTACT SMOKE DETECTOR
FA PS	FIRE ALARM MANUAL PULL STATION
FA B	FIRE ALARM SIGNAL – BELL
FA VD	FIRE ALARM SIGNAL – VISUAL INDICATOR
FA CP	FIRE ALARM CONTROL PANEL
	END OF LINE RESISTOR
FA S	SPEAKER FOR FIRE ALARM COMMUNICATION SYSTEM
NF/EXP	DISCONNECT SWITCH, NON–FUSED, NEMA 7
SV	ELECTRICALLY OPERATED SOLENOID VALVE
BV	ELECTRICALLY OPERATED BALL VALVE
SV E	SOLENOID VALVE, EXPLOSION PROOF
D	DIAPHRAGM PUMP
H	WEATHER PROOF HORN
	WEATHER PROOF STROBE
M S	SECURITY MOTION DETECTOR

(SEE I & C SYMBOLS)

GENERAL NOTES:

1. THE SYMBOLS SHOWN ON THIS SCHEDULE COVER A RANGE OF TYPICAL ELECTRICAL SYMBOLS COMMON TO A VARIED RANGE OF PROJECTS. ONLY THOSE SYMBOLS SPECIFICALLY SHOWN ON THE DRAWINGS ARE APPLICABLE TO THIS SCHEDULE.
2. EQUIPMENT SHALL BE INSTALLED AT THE HEIGHTS INDICATED, UNLESS OTHERWISE SHOWN ON THE ARCHITECTURAL ELEVATIONS, ON THE DRAWINGS OR IN THE SPECIFIC EQUIPMENT SPECIFICATION SECTION.
3. FOR I & C COMPONENTS AND ABBREVIATIONS, SEE I & C LEGEND.
4. FOR GENERAL ABBREVIATIONS, SEE GENERAL LEGEND.

SYMBOL	DESCRIPTION
1	CONTACT – NORMALLY OPEN WITH NEMA SIZE INDICATED AS APPLICABLE.
1	CONTACT – NORMALLY CLOSED WITH NEMA SIZE INDICATED AS APPLICABLE.
	OVERLOAD RELAY HEATER
1	MAGNETIC STARTER WITH NEMA SIZE INDICATED REV INDICATES REVERSING STARTER.
MCP/100	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
1	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE. FRAME SIZE AND TRIP RATING SHOWN, IF ADJUSTABLE.
400 400	CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
400 225	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
100	SWITCH – CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
	DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE
	DRAWOUT VACUUM CIRCUIT BREAKER, MEDIUM VOLTAGE
	DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE
	LIGHTNING ARRESTER WITH SURGE CAPACITOR
	FUSE
(10	CAPACITOR – KVAR INDICATED
SW V 0–600V	METER WITH SWITCH – SCALE RANGE SHOWN
	GROUND
120V OR 120/240V 15 KVA 1 PH	TRANSFORMER, SECONDARY VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE.
GFR 25A 0.1	PICK–UP SETTING TIME CURRENT CHARACTERISTIC (GROUND FAULT RELAY WITH C.T.)
	PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN.
	PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED.
	PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK.
	3 POSITION SELECTOR SWITCH MAINTAINED CONTACT
TDR TC OR TDR TC	TIME DELAY RELAY CONTACT (TIME ACTION INDICATED)
	REMOTE DEVICE

SELECTOR SWITCH – MAINTAINED CONTACT – CHART IDENTIFIES OPERATION:

POSITION			
CKT.	HAND	OFF	AUTO
1	X	O	O
2	O	O	X

X – CLOSED CONTACT
O – OPEN CONTACT

(A) INDICATING LIGHT – LETTER INDICATES COLOR

A – AMBER
B – BLUE
C – CLEAR
G – GREEN
R – RED
W – WHITE
Y – YELLOW

ABBREVIATIONS

ABBREVIATION	DESCRIPTION
A	AMMETER, AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFG	ABOVE FINISHED GRADE
AIC	AMPS INTERRUPTING CURRENT
AS	AMMETER SWITCH, AMPERE SENSOR
ASC	ADJUSTABLE SPEED CONTROLLER
ASU	AIR SUPPLY UNIT
AT	AMPERE TRIP
ATC	AUTOMATIC THROWOVER CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
B	BELL
BCP	BRANCH CIRCUIT PANEL
BPP	BARE POWER PANEL
BPS	BOLTED PRESSURE SWITCH
C	CONDUIT
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CC	CONTROL CABLE
CKT	CIRCUIT
CL	CURRENT LIMIT
COMB	COMBINATION
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CRT	CATHODE RAY TUBE (TERMINAL)
CRE	CORROSION RESISTANT
CRS	COATED RIGID STEEL CONDUIT
CT	CURRENT TRANSFORMER
CTR	CONTROLLER
CU	COPPER
DC	DIRECT CURRENT
DISC	DISCONNECT
DIV	DIVISION
DPR	DAMPER
DUP	DUPLEX
E	EMPTY
EBB	ELECTRIC BASE BOARD
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
ELR	END OF LINE RESISTOR
EMERG	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EP	EXPLOSION PROOF
ETM	ELAPSED TIME METER
EXP	EXPOSED
F, FU	FUSE
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FC	FOOT CANDLE
FDR	FEEDER
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLUOR	FLUORESCENT
FR	FRACTIONAL
FUT	FUTURE
GALV	GALVANIZED
GEN	GENERATOR
GENL	GENERAL
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
GRS	GALVANIZED RIGID STEEL
H	HORN, HOWLER
HD	HEAVY DUTY
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND–OFF–AUTO
HPS	HIGH PRESSURE SODIUM
HS	HIGH SPEED
HT	HEAT TRACE
HTG	HEATING
HTR	HEATER
HV	HIGH VOLTAGE
HVC	HEATING/VENTILATION/COOLING
HVAC	HEATING/VENTILATION/AIR CONDITIONING
HZ	HERTZ
I	ISOLATE GROUND
I	INSTRUMENTATION AND CONTROL
IC	INTERCOM
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
INST	INSTANTANEOUS
INTM	INTERMEDIATE
ISR	INTRINSICALLY SAFE RELAY
IU	IN UNIT
JB	JUNCTION BOX, J BOX
K	KEY INTERLOCK
KCMIL	THOUSAND CIRCULAR MILL
KO	KNOCKOUT
KV	KILOVOLTS
KWH	KILOWATT HOURS

ABBREVIATION	DESCRIPTION
L	LOUVER
LA	LIGHTING ARRESTOR
LC	LIGHTING CONTACTOR
LO	LOCK OUT
LOC	LOCATION
LPS	LOW PRESSURE SODIUM
LRA	LOCKED ROTOR AMPS
LS	LOW SPEED
LTG	LIGHTING
LT FLEX	LIQUID TIGHT FLEX CONDUIT
LV	LOW VOLTAGE
M	METER
MAG	MAGNETIC
MAN	MANUAL
MATV	MASTER ANTENNA TV
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDC	MOTORIZED DAMPER CONTROL
MERC	MERCURY VAPOR
MH	MANHOLE
MMP	MECHANICAL MOUNTING PANEL
MO	MOTOR OPERATOR
MS	MOTOR STARTER
MTR	MOTOR
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NF	NON–FUSED
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NP	NAMEPLATE
NR	NOT REQUIRED
NU	NEAR UNIT
OA	OVERALL
OL	OVERLOAD RELAY
ONT	OFF–NORMAL–TEST
OU	ON UNIT
P	POLE
PA	PUBLIC ADDRESS
PB	PUSHBUTTON SWITCH
PC	PHOTOCELL
P/E	PNEUMATIC/ELECTRIC
PED	PEDESTAL
PF	POWER FACTOR
PH	PHASE
PL	PILOT LIGHT
PNL	PANEL
PRI	PRIMARY
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
RC	REMOTE CONTROL
RCPT	RECEPTACLE
REF	REFERENCE
REFL	REFLECTOR
RM	REMOTE MULTIPLEXER
RMS	ROOT MEAN SQUARE
RS	RIGID STEEL CONDUIT
RT	REMOTE TELEMETRY
SC	SPEED CONTROL
SEC	SECONDARY
SF	SUPPLY FAN
SH	SPACE HEATER
SHLD	SHIELD, SHIELDED
SIG	SIGNAL
S/N	SOLID NEUTRAL
SP	STANDBY POWER
SPD	SPEED
SPKR	SPEAKER
SPO	SPECIAL PURPOSE OUTLET
ST	STATIC TRIP
STR	STARTER
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCH BOARD
SWGR	SWITCH GEAR
SYS	SYSTEM
T	THERMOSTAT
TB	TERMINAL BOARD
TC	TIME CLOCK
TDR	TIME DELAY RELAY
TEL	TELEPHONE
TERM	TERMINAL(ATE)
TJB	TERMINAL JUNCTION BOX
TR	TRANSFORMER (XFMR)
TS	TIME SWITCH
UCC	UNDER CARPET CONDUCTOR
UG	UNDERGROUND
UH	UNIT HEATER
UVR	UNDER VOLTAGE RELAY
V	VOLTS
VA	VOLT AMPERES
VFD	VARIABLE FREQUENCY DRIVE
W	WATT, WATTMETER
W/O	WITHOUT
WP	WEATHERPROOF

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson — Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

REVISIONS

MARK	DATE	DESCRIPTION

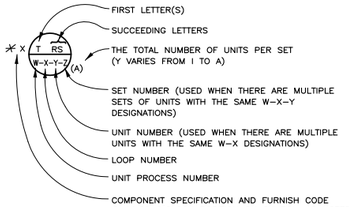
SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06–12–2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
ELECTRICAL SYMBOLS AND ABBREVIATIONS

SHEET
E1

INSTRUMENTATION IDENTIFICATION

EXAMPLE SYMBOLS



e.p. — FIELD MOUNTED INSTRUMENT, EXPLOSION–PROOF

EXST — FIELD MOUNTED INSTRUMENT, EXISTING

IS — FIELD MOUNTED INSTRUMENT, INTRINSICALLY SAFE

120V — FIELD MOUNTED INSTRUMENT THAT REQUIRES 120VAC AT THE DEVICE

REAR–OF–PANEL MOUNTED INSTRUMENT

FACE OF PANEL MOUNTED INSTRUMENT

MOTOR CONTROL CENTER MOUNTED INSTRUMENT

SPECIAL CASES (@ 2 O'CLOCK POSITION ON SYMBOL)

YL OO — ON AND OFF EVENT LIGHTS

ZL OC — OPENED AND CLOSED POSITION LIGHTS

ZS OC — OPENED AND CLOSED POSITION SWITCHES

HS OO — ON–OFF HAND SWITCH. MAINTAINED CONTACT SWITCHES (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).

HS SS — STOP–START HAND SWITCH. MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).

HS HOR — HAND–OFF–REMOTE HAND SWITCH. MAINTAINED CONTACT SELECTION

HS HOA — HAND–OFF–AUTOMATIC HAND SWITCH. MAINTAINED CONTACT SELECTION

YL OOR — ON–OFF–REMOTE EVENT LIGHTS

YL OORA — ON–OFF–REMOTE–AUTO EVENT LIGHTS

INSTRUMENT SOCIETY OF AMERICA TABLE

	FIRST LETTER(S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS(†)		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE (†)	USER'S CHOICE (†)	USER'S CHOICE (†)
C	USER'S CHOICE (†)			CONTROL	
D	USER'S CHOICE (†)	DIFFERENTIAL	SENSOR (PRIMARY ELEMENT)		
E	VOLTAGE				
F	FLOW RATE	RATIO(FRACTION)		FAULT	
G	USER'S CHOICE (†)		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE (†)	MOMENTARY			MIDDLE
N	USER'S CHOICE (†)		USER'S CHOICE (†)	USER'S CHOICE (†)	USER'S CHOICE (†)
O	USER'S CHOICE (†)		ORIFICE, RESTRICTION		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (†)		MULTIFUNCTION (†)	MULTIFUNCTION (†)	MULTIFUNCTION (†)
V	VIBRATION			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED (†)	X AXIS	UNCLASSIFIED (†)	UNCLASSIFIED (†)	UNCLASSIFIED (†)
Y	EVENT, STATE	Y AXIS		RELAY OR COMPUTE (†)	
Z	POSITION, DIMENSION	Z AXIS		DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(†) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

TRANSDUCERS (@ 2 O'CLOCK POSITION ON SYMBOL)

A	ANALOG	I	CURRENT	I/I	SIGNAL ISOLATOR
D	DIGITAL	P	PNEUMATIC	R/I	RESISTANCE TO CURRENT
E	VOLTAGE	PF	PULSE FREQUENCY		
F	FREQUENCY	PD	PULSE DURATION	CT	CURRENT TRANSFORMER

INSTRUMENT PANEL LOCATION IDENTIFICATION

HS / X — LOCATED IN PANEL IDENTIFIED ON DRAWING, "X" IS USED @ 7 O'CLOCK TO IDENTIFY PANEL LOCATION WHEN DEVICE IS NOT ON THE MCP OR OTHERWISE INDICATED ON DRAWING.

HS OSC — OPEN–STOP–CLOSE MOMENTARY CONTACT CONTROL SWITCH

FIHK CM — FLOW INDICATING, COMPUTER/MANUAL CONTROL STATION

FIC CAM — FLOW INDICATING, COMPUTER/AUTO/MANUAL CONTROL STATION

FIC SSC — FLOW INDICATING SUPERVISORY SET POINT (BY COMPUTER), AUTO/MANUAL CONTROL STATION

∫ — INTEGRAL

Σ — SUMMATION

PROGRAMMABLE CONTROLLER INPUT OR OUTPUT

TELEMETRY INPUT OR OUTPUT

EXAMPLE: FY I/P — CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

LINE LEGEND

PROCESS (CLOSED CONDUIT) DASHED LINE INDICATES ALTERNATE FLOW STREAM

PROCESS (OPEN CHANNEL)

(4) (6) (3) — PARALLEL LINES. (#) PARENTHETICAL NUMBER INDICATES THE NUMBER OF SIGNALS REPRESENTED

-----A----- ANALOG SIGNAL (4 TO 20 mA DC, ETC.)

---------- DISCRETE SIGNAL (ON/OFF ETC.)

CONNECTING LINES

-----PF----- PULSE FREQUENCY SIGNAL

-----DH----- DATA HIGHWAY CABLE

NON–CONNECTING LINES

PNEUMATIC SIGNAL

-----PD----- PULSE DURATION SIGNAL

FILLED SYSTEM SIGNAL

-----COM----- MISC. DIGITAL DATA SIGNAL COMMUNICATIONS

HYDRAULIC SYSTEM SIGNAL

BUILDING OR FACILITY BOUNDARY

MISCELLANEOUS EQUIPMENT AND INSTRUMENTS — DASHED LINE INDICATES COMPONENTS SUPPLIED AS A COMPLETE PACKAGE SYSTEM OR AS NOTED

MISCELLANEOUS EQUIPMENT AND INSTRUMENTS — PHANTOM LINE INDICATES TYPICAL FUNCTIONS FOR SIMILAR PROCESS SYSTEMS AS NOTED

INTERFACE SYMBOLS

S W–A — W–A D

= PROCESS INTERFACE

= SIGNAL INTERFACE

W = UNIT PROCESS NO.

A = INTERFACE LETTER

D = DESTINATION SHEET NO.

S = SOURCE SHEET NO.

INTERFACE TO OR FROM PROCESS EXTERNAL TO PROJECT

ABBREVIATIONS & LETTER SYMBOLS

AC – ALTERNATING CURRENT
ALKY – ALKALINITY
AM – AUTO–MANUAL
AVG – AVERAGE

BCP – BUILDING CONTROL PANEL

CAM – COMPUTER–AUTO–MANUAL
Cl_2 – CHLORINE
CM – COMPUTER MANUAL
COD – CHEMICAL OXYGEN DEMAND

D – DIFFERENCE
DC – DIRECT CURRENT
DCP – DIGESTER CONTROL PANEL
DO – DISSOLVED OXYGEN

e – SQUARE ROOT

F(X) – CHARACTERIZED
FCl_2 – FREE CHLORINE RESIDUAL
FOS – FAST–OFF–SLOW
FOSA – FAST–OFF–SLOW–AUTO
FOSR – FAST–OFF–SLOW–REMOTE
FR – FORWARD–REVERSE

HDNS – HORN, HOWLER
HOA – HAND–OFF–AUTO
HOR – HAND–OFF–REMOTE
H_2S – HYDROGEN SULFIDE

I – DIVIDE

LCP–W–X – LOCAL CONTROL PANEL (W=UNIT PROCESS NUMBER, X=PANEL NUMBER)
LEL – LOWER EXPLOSIVE LIMIT
LOS – LOCKOUT STOP
LR – LOCAL REMOTE

MA – MANUAL–AUTO
MC – MODULATE–CLOSE
MCC–X – MOTOR CONTROL CENTER NO. X
MCP – MAIN CONTROL PANEL (IN CENTRAL CONTROL ROOM)

N – SUM

OC – OPEN–CLOSE (D)
OCA – OPEN–CLOSE–AUTO
OCR – OPEN–CLOSE–REMOTE
OO – OFF–ON
OOA – OFF–ON–AUTO
OOR – OFF–ON–REMOTE
OSC – OPEN–STOP–CLOSE

PCP – PROCESS CONTROL PANEL
PH – HYDROGEN ION CONCENTRATION

RM–X – REMOTE MULTIPLEXING MODULE NO. X
RTD – RESISTANCE TEMPERATURE DETECTOR

SF – SLOWER–FASTER
SS – START–STOP
SSC – SUPERVISORY SET POINT CONTROL

TC – THERMOCOUPLE

VIB – VIBRATION

X – MULTIPLY
Xn – RAISE TO THE Nth POWER

1:1 – REPEAT OR BOOST
> – SELECT HIGHEST SIGNAL
< – SELECT LOWEST SIGNAL

GENERAL NOTE:

1. THIS IS A STANDARD LEGEND. NOT ALL INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson — Success by Design

SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

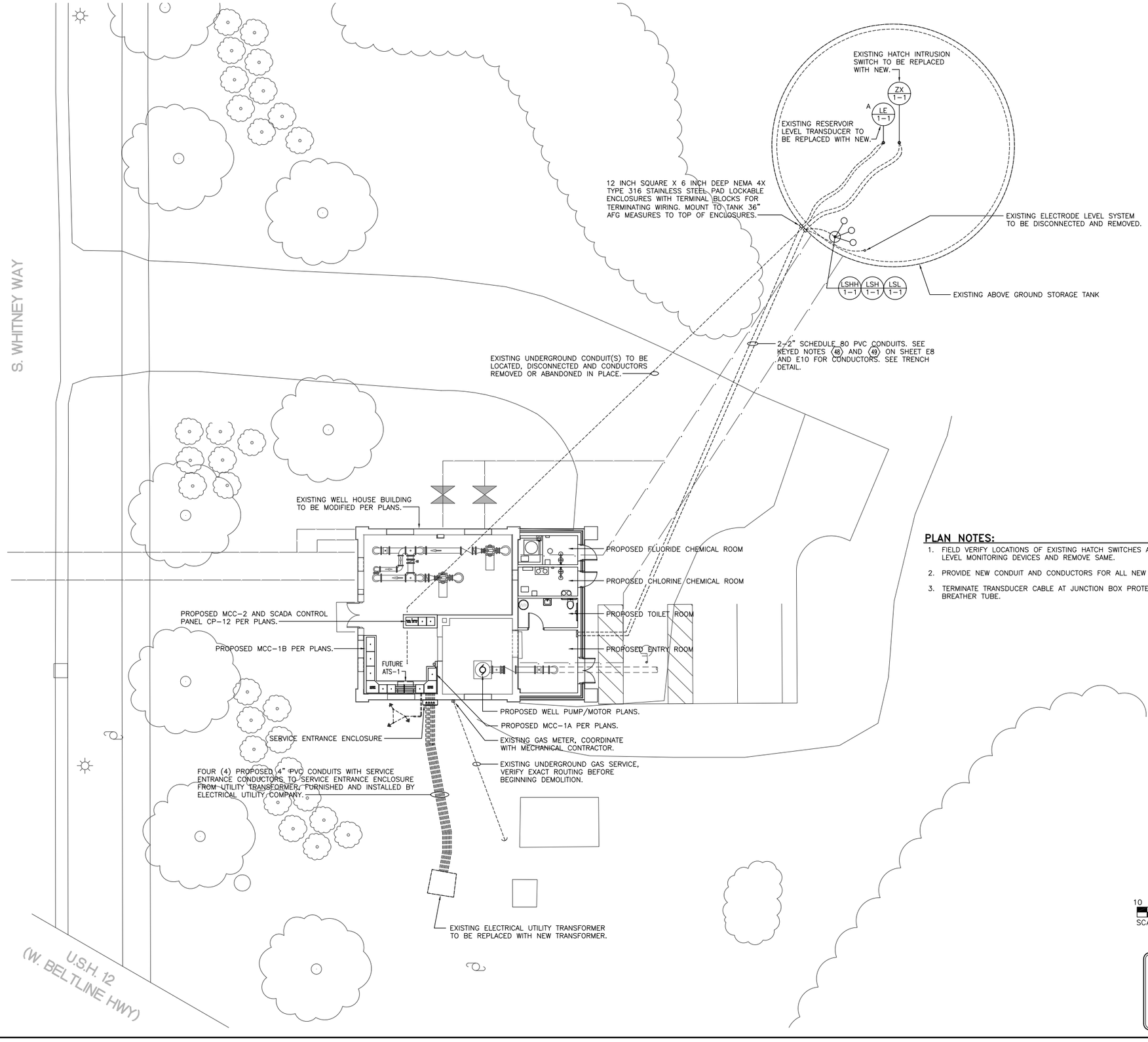
REVISIONS

MARK	DATE	DESCRIPTION

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06–12–2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
INSTRUMENTATION SYMBOLS AND ABBREVIATIONS

SHEET
E2



PLAN NOTES:

1. FIELD VERIFY LOCATIONS OF EXISTING HATCH SWITCHES AND LEVEL MONITORING DEVICES AND REMOVE SAME.
2. PROVIDE NEW CONDUIT AND CONDUCTORS FOR ALL NEW DEVICES.
3. TERMINATE TRANSDUCER CABLE AT JUNCTION BOX PROTECTING BREATHER TUBE.

10 0 10 20
SCALE IN FEET

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
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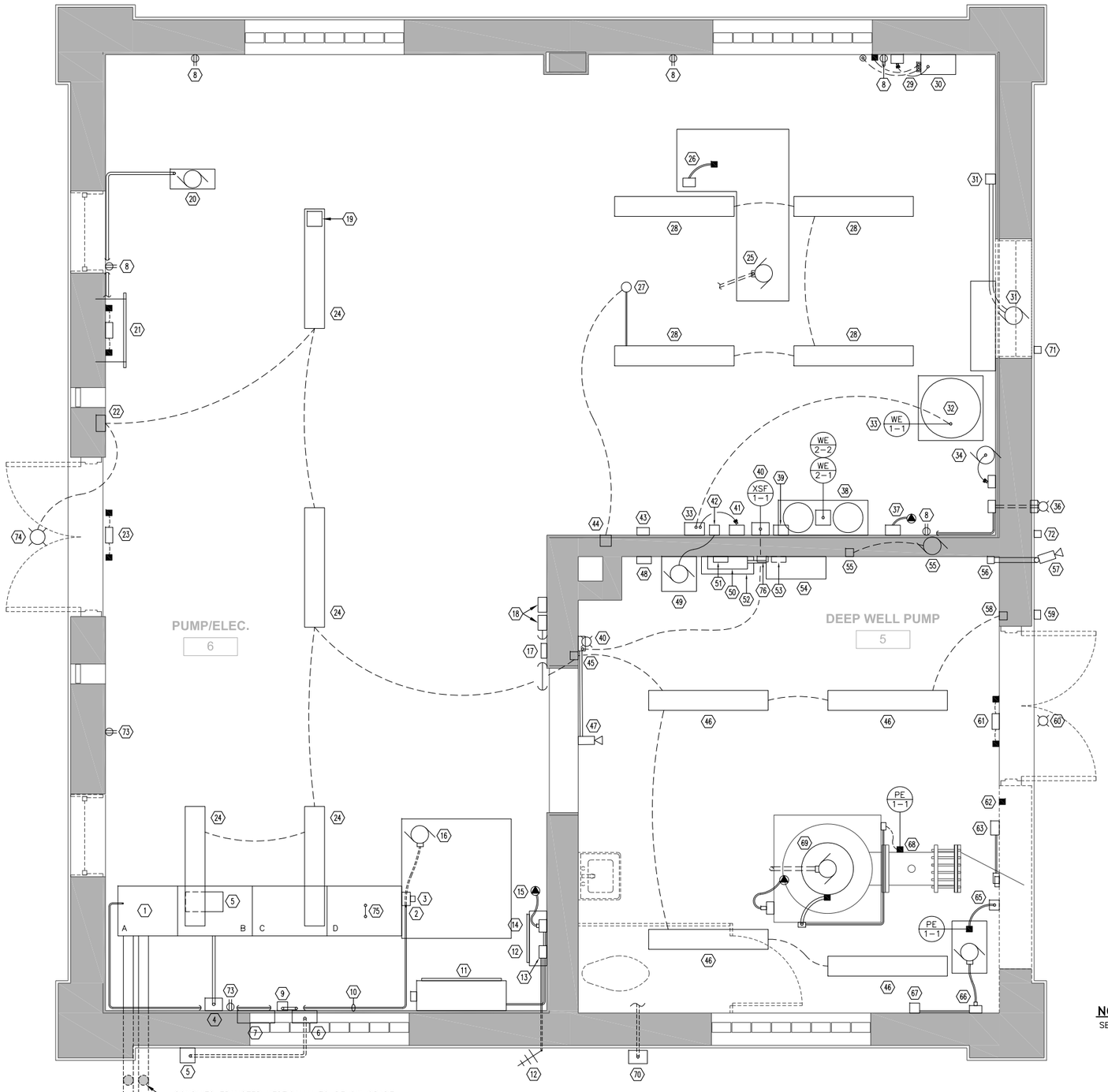
SHEET TITLE
ELECTRICAL SITE PLAN

SHEET
E3



ELECTRICAL DEMOLITION PLAN

0' 1' 2' 3'

NOTE:

SEE SHEET E5 FOR GENERAL DEMOLITION NOTES AND KEYED NOTES.

Powrtek Engineering,Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

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SHEET TITLE
ELECTRICAL DEMOLITION PLAN

SHEET
E4

WELL NO.12 DEMOLITION KEYED NOTES:

1. EXISTING 800 AMP, 277/480 VOLT, 3 PHASE, 4 WIRE MAIN SERVICE ENTRANCE RATED CIRCUIT BREAKER SECTION WITH UTILITY CT'S LOCATED IN SECTION A, 250 HP WELL PUMP PART WINDING STARTER IN SECTION B, 150 HP HIGH SERVICE PUMP PART WINDING STARTER IN SECTION C AND ASSOCIATED CONTROL RELAYS AND HVAC UNIT STARTER IN SECTION D TO BE DISCONNECTED AND REMOVED.

   THE ELECTRICAL CONTRACTOR SHALL LOCATE AND DISCONNECT EXISTING GROUNDING DISCONNECT AND ABANDON IN PLACE.
2. EXISTING METER SOCKET – TO BE DISCONNECTED AND REMOVED.
3. EXISTING METER – TO BE REMOVED AND TURNED OVER TO THE ELECTRICAL UTILITY COMPANY.
4. EXISTING ABANDONED METER SOCKET TO BE DISCONNECTED AND REMOVED.
5. EXISTING TELEPHONE SERVICE – TO REMAIN AND TO BE EXTENDED.
6. EXISTING TELEPHONE IN WALL SERVICE ENCLOSURE – TO BE REMOVED.
7. EXISTING 120/240 VOLT IN WALL PANELBOARD – TO BE DISCONNECTED AND REMOVED.
8. EXISTING IN WALL MOUNTED BUILDING GENERAL RECEPTACLES (TYPICAL) – EXISTING WALL BOX AND WIRING TO REMAIN. REPLACE EXISTING RECEPTACLES.
9. EXISTING WALL MOUNTED JUNCTION BOX FOR TELEPHONE CONNECTIONS – TO BE DISCONNECTED AND REMOVED.
10. EXISTING CONDUIT FROM METER SOCKET TO MAIN CIRCUIT BREAKER SECTION A TO BE DISCONNECTED AND REMOVED.
11. EXISTING SCADA CONTROL PANEL WITH LOW TEMPERATURE THERMOSTAT – TO BE DISCONNECTED AND REMOVED.
12. EXISTING SCADA RADIO CONTROL PANEL WITH EXTERIOR MOUNTED SCADA ANTENNA – TO BE DISCONNECTED AND REMOVED.
13. EXISTING AHU COOLING THERMOSTAT – TO BE DISCONNECTED AND REMOVED.
14. EXISTING SURFACE MOUNTED RECEPTACLE CONTROLLED BY THE COOLING THERMOSTAT FOR THE COOLING SOLENOID – TO BE DISCONNECTED AND REMOVED.
15. EXISTING COOLING WATER SOLENOID VALVE – TO BE DISCONNECTED AND REMOVED.
16. EXISTING CEILING MOUNTED AHU WITH .75 HP MOTOR – TO BE DISCONNECTED AND REMOVED.
17. EXISTING JUNCTION BOX – TO REMAIN.
18. EXISTING JUNCTION BOXES FOR CHLORINE GAS DETECTION SYSTEM WITH CONDUITS AND CABLES TO EXISTING SCADA CONTROL PANEL – TO BE DISCONNECTED AND REMOVED.
19. EXISTING FLOOR MOUNTED TELEPHONE JUNCTION BOX – TO REMAIN.
20. EXISTING CHART RECORDER ASSEMBLY– TO BE DISCONNECTED AND REMOVED.
21. EXISTING WALL MOUNTED WATER SYSTEM PRESSURE, WELL DRAWDOWN, WATER RESERVOIR LEVEL WITH CHART RECORDER – TO BE DISCONNECTED AND REMOVED.
22. EXISTING IN WALL BOX WITH PUMP ROOM AND EXTERIOR LIGHT SWITCHES – THE WALL BOX AND WIRING SHALL REMAIN WITH LIGHT SWITCHES DISCONNECTED AND REMOVED. SEE PROPOSED PLANS FOR NEW REQUIREMENTS.
23. EXISTING SURFACE MOUNTED JUNCTION BOX AND TWIN DOOR MONITORING SWITCHES – TO REMAIN.
24. EXISTING 2 LAMP CONTROL ROOM FLUORESCENT LIGHT FIXTURES (TYPICAL) – TO BE DISCONNECTED AND REMOVED.
25. EXISTING 150 HP HIGH SERVICE PUMP TO BE DISCONNECTED AND REMOVED. REMOVE EXISTING CONDUCTORS AND ABANDON EXISTING CONDUIT.
26. EXISTING VALVE POSITION LIMIT SWITCH – TO BE DISCONNECTED AND REMOVED.
27. EXISTING CEILING SURFACE MOUNTED JUNCTION BOX FOR LIGHTING–TO REMAIN.
28. EXISTING 2 LAMP CONTROL ROOM FLUORESCENT LIGHT FIXTURES (TYPICAL) – TO BE DISCONNECTED AND REMOVED.
29. EXISTING SURFACE MOUNTED RECEPTACLE – TO BE DISCONNECTED AND REMOVED.
30. EXISTING CHLORINE ANALYZER– TO BE DISCONNECTED AND REMOVED. THE CHLORINE ANALYZER SHALL BE RELOCATED PER THE PROPOSED PLANS. DISCONNECT AND REMOVE EXISTING MONITORING CONDUCTORS AND CONDUITS.
31. EXISTING EXHAUST FAN AND DISCONNECT SWITCH – TO BE DISCONNECTED AND REMOVED.
32. EXISTING FLUORIDE TANK TO BE REMOVED.
33. EXISTING FLUORIDE WEIGHT SCALE AND WALL MOUNTED TRANSMITTER– TO BE DISCONNECTED AND REMOVED. THE TRANSMITTER AND WEIGHT SCALE SHALL BE TURNED OVER TO THE OWNER.
34. EXISTING CORD AND PLUG CONNECTED FLUORIDE PUMP AND ASSOCIATED RECEPTACLE – TO BE DISCONNECTED AND REMOVED. THE FLUORIDE PUMP SHALL BE TURNED OVER TO THE OWNER.
35. EXISTING SURFACE MOUNTED JUNCTION BOX – TO BE DISCONNECTED AND REMOVED.
36. EXISTING EXTERIOR MOUNTED ALARM WARNING LIGHT – TO BE DISCONNECTED AND REMOVED. REMOVE EXISTING CONDUIT AND WIRING TO SCADA CONTROL PANEL.
37. EXISTING CORD AND PLUG CONNECTED SOLENOID VALVE – TO BE DISCONNECTED AND REMOVED.
38. EXISTING CHLORINE WEIGHT SCALES WITH INTEGRAL MOUNTED TRANSMITTER – TO BE DISCONNECTED AND REMOVED. THE TRANSMITTER AND WEIGHT SCALE SHALL BE TURNED OVER TO THE OWNER.
39. EXISTING SURFACE MOUNTED JUNCTION BOX – TO BE DISCONNECTED AND REMOVED.
40. EXISTING CHLORINE GAS DETECTOR ELEMENT TO BE DISCONNECTED AND REMOVED. DISCONNECT AND REMOVE EXISTING MONITORING CONDUCTORS AND CONDUITS TO GAS DETECTOR TRANSMITTER AND WARNING LIGHT TO BE TURNED OVER TO THE OWNER.
41. EXISTING WALL MOUNTED RECEPTACLE FOR CORD AND PLUG CONNECTED FLUORIDE WEIGHT SCALE TRANSMITTER – TO BE DISCONNECTED AND REMOVED.
42. EXISTING WALL MOUNTED THERMOSTAT FOR FURNACE TO BE DISCONNECTED AND REMOVED.
43. EXISTING WALL MOUNTED RECEPTACLE – TO BE DISCONNECTED AND REMOVED.
44. EXISTING IN WALL BOX WITH CHEMICAL ROOM LIGHT SWITCH – THE WALL BOX SHALL REMAIN WITH LIGHT SWITCH DISCONNECTED AND REMOVED. SEE PROPOSED PLANS FOR NEW REQUIREMENTS.
45. EXISTING IN WALL BOX WITH WELL PUMP ROOM LIGHT SWITCH – THE WALL BOX SHALL REMAIN WITH LIGHT SWITCH DISCONNECTED AND REMOVED. SEE PROPOSED PLANS FOR NEW REQUIREMENTS.
46. EXISTING 2 LAMP WELL PUMP ROOM FLUORESCENT LIGHT FIXTURES (TYPICAL) – TO BE DISCONNECTED AND REMOVED.
47. EXISTING WALL MOUNTED CAMERA – TO BE DISCONNECTED AND REMOVED. SEE PROPOSED PLANS FOR RELOCATION.
48. EXISTING SURFACE MOUNTED JUNCTION BOX – TO REMAIN.
49. EXISTING FURNACE – TO BE DISCONNECTED AND REMOVED.
50. EXISTING SECURITY SYSTEM CONTROL PANEL – TO BE MODIFIED. SEE PROPOSED PLANS FOR NEW CALL–OUT.
51. EXISTING SURFACE MOUNTED JUNCTION BOX – TO BE DISCONNECTED AND REMOVED.
52. EXISTING CARD READER CONTROL PANEL – TO REMAIN. SEE PROPOSED PLANS FOR NEW CALL–OUT.
53. EXISTING ALTRONIX INTERFACE ENCLOSURE – TO REMAIN.
54. EXISTING LONG WATCH CONTROL PANEL TO REMAIN. SEE PROPOSED PLANS FOR NEW CALL–OUT.
55. EXISTING EXHAUST FAN AND DISCONNECT SWITCH – TO REMAIN.
56. EXISTING SURFACE MOUNTED JUNCTION BOX – TO REMAIN.
57. EXISTING EXTERIOR MOUNTED POLE MOUNTED CAMERA – TO BE DISCONNECTED AND REMOVED. SEE PROPOSED PLANS FOR RELOCATION.
58. EXISTING IN WALL BOX WITH WELL PUMP ROOM LIGHT SWITCH – THE WALL BOX AND LIGHT SWITCH SHALL BE DISCONNECTED AND REMOVED. SEE PROPOSED PLANS FOR NEW REQUIREMENTS.
59. EXISTING EXTERIOR MOUNTED CARD READER.
60. EXISTING EXTERIOR MOUNTED LIGHT FIXTURE – TO BE DISCONNECTED AND REMOVED. REMOVE EXISTING CONDUIT AND WIRING TO SOURCE, SEE DEMOLITION NOTES.
61. EXISTING SURFACE MOUNTED JUNCTION BOX AND TWIN DOOR MONITORING SWITCHES – TO REMAIN.
62. EXISTING DOOR MOUNTED JUNCTION BOX AND DOOR MONITORING SWITCH – TO BE DISCONNECTED AND REMOVED.
63. EXISTING SURFACE MOUNTED RECEPTACLE – TO BE DISCONNECTED AND REMOVED.
64. EXISTING SURFACE MOUNTED JUNCTION BOXES – TO BE DISCONNECTED AND REMOVED.
65. EXISTING SURFACE MOUNTED JUNCTION BOX FOR AIR PRESSURE SWITCH – TO BE DISCONNECTED AND REMOVED.
66. EXISTING CORD AND PLUG CONNECTED AIR COMPRESSOR – TO BE DISCONNECTED AND REMOVED.
67. EXISTING SURFACE MOUNTED JUNCTION BOX – TO BE DISCONNECTED AND REMOVED.
68. EXISTING SURFACE MOUNTED JUNCTION BOX FOR SYSTEM PRESSURE SWITCH – TO BE DISCONNECTED AND REMOVED.
69. EXISTING 250 HP WELL PUMP – TO BE REPLACED WITH A NEW SIMILAR MOTOR BY THE OWNER UNDER SEPARATE CONTRACT. EXISTING CONDUCTORS TO BE REMOVED AND CONDUIT REUSED IF CONDUIT IS INTACT, IF NOT ABANDON IN PLACE. EXISTING VIBRATION ANALYZER TO BE REMOVED BY THE OWNER (TURNED OVER TO THE ELECTRICAL CONTRACTOR) AND SOLENOID VALVE TO BE REMOVED BY THE OWNER. SEE PROPOSED PLANS FOR ADDITIONAL REQUIREMENTS.
70. EXISTING GAS METER – TO REMAIN.
71. EXISTING EXTERIOR MOUNTED ELECTRICAL BOX – TO BE DISCONNECTED AND REMOVED. FIELD VERIFY SOURCE.
72. EXISTING EXTERIOR MOUNTED CHEMICAL VENT PIPE – TO BE DISCONNECTED AND REMOVED.
73. EXISTING RECEPTACLES AND BACK BOXES TO BE REMOVED. FIELD VERIFY IF BACK BOX FEEDS OTHER RECEPTACLES OR EQUIPMENT. IF NOT, SEAL BOX WITH GROUT, IF IT DOES, REMOVE ALL WIRING, GROUT SAME AND REROUTE CONDUITS AS NECESSARY.
74. EXISTING LIGHT FIXTURE TO BE REMOVED. REMOVE EXISTING LIGHT SWITCH. SEE PROPOSED PLANS FOR ADDITIONAL INFORMATION.
75. EXISTING BUBBLER SYSTEM TUBING TO BE REMOVED. CUT OFF ALL CUTS FLUSH WITH FLOOR AND GROUT AS NECESSARY. COORDINATE WITH GENERAL CONTRACTOR.
76. EXISTING RECEPTACLE GROUPING TO BE DISCONNECTED AND REMOVED.

GENERAL DEMOLITION NOTES:

1. THE LOCATION OF EQUIPMENT SHOWN IS BASED ON EXISTING LIMITED PLANS AND CASUAL REVIEW OF THE SITE. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY EXISTING CONDITIONS.
2. THE ELECTRICAL CONTRACTOR SHALL MEGGER TEST EACH EXISTING BRANCH CIRCUIT INCLUDING NEUTRAL CONDUCTORS TO DETERMINE IF THE WIRING REQUIRES REMOVAL AND REPLACEMENT FOR THE VARIOUS RECEPTACLE(S), LIGHTING AND EQUIPMENT CIRCUITS SHOWN TO REMAIN ACTIVE. IF THE TESTING INDICATES THE CONDUCTORS ARE IN POOR CONDITION, REPLACE WITH TYPE XHHW INSULATION PER SPECIFICATIONS.

   SEE EXISTING EQUIPMENT AND INSULATION TESTING SPECIFICATIONS FOR COMPLETING THE ASSOCIATED SCHEDULE 1A IN THE BACK OF THAT SECTION. TURN OVER TO THE ENGINEER PRIOR TO DEMOLITION. IMMEDIATELY NOTIFY ENGINEER IF ANY OTHER CONDITION EXISTS FOR CORRECTIVE ACTION.
3. WHERE EXISTING CONDUITS ARE DETERMINED TO BE UNUSABLE, REMOVE WIRING AND ABANDON IN PLACE, CUT EVEN WITH FLOOR OR COMPLETELY REMOVE AS NECESSARY.
4. IN GENERAL, MOST ELECTRICAL JUNCTION AND PULL BOXES, ELECTRICAL EQUIPMENT AND SOME EXISTING CONDUITS ARE SHOWN, THE ELECTRICAL CONTRACTOR SHALL FIELD VERIFY AND REMOVE, RELOCATE OR OTHERWISE MODIFY CONDUITS AS NECESSARY. WHERE EQUIPMENT IS SHOWN TO BE REMOVED OR RELOCATED, THE ASSOCIATED CONDUITS SHALL BE REMOVED FROM THEIR SOURCE. WHERE CONDUITS ARE TO BE REMOVED OR RELOCATED OR OTHERWISE MODIFIED, IT IS THE ELECTRICAL CONTRACTORS RESPONSIBILITY TO DETERMINE THE CONDUCTOR AND CABLES LOCATED WITHIN EACH CONDUIT AND TO DETERMINE IF THESE SUPPLY POWER AND/OR CONTROL OF OTHER EQUIPMENT AND MODIFY/EXTEND AS NECESSARY.
5. TURN OVER REMOVED EQUIPMENT AS REQUESTED BY THE OWNER, ALL EQUIPMENT NOT REQUESTED SHALL BE DISPOSED OF OFF–SITE.

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

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SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
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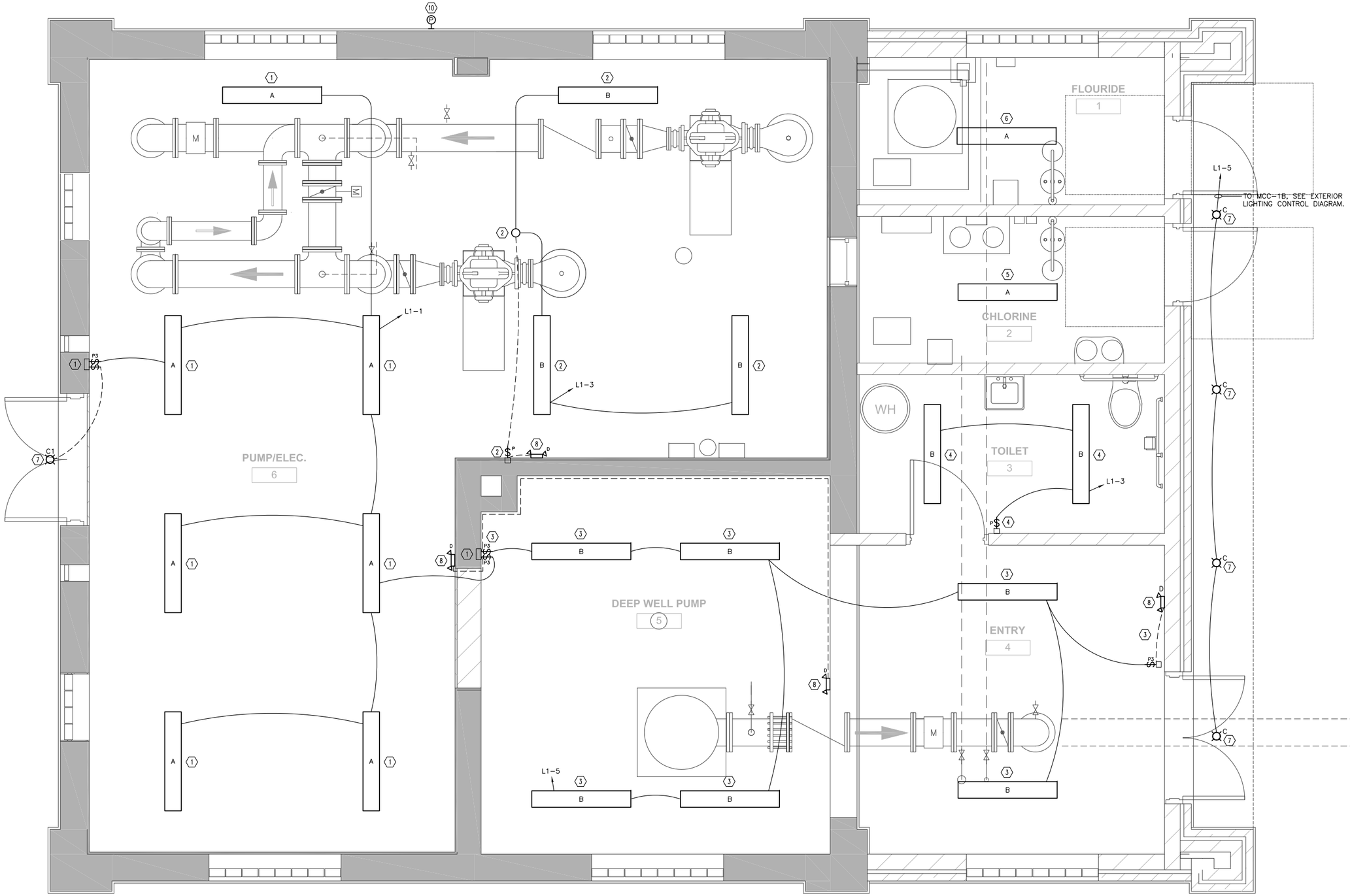
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
GENERAL DEMOLITION NOTES AND KEYED NOTES

SHEET
E5



PROPOSED LIGHTING PLAN

0' 1' 2' 3'

NOTES:

1. SEE SHEET E7 FOR KEYED NOTES.
2. SEE SHEET E7 FOR LIGHTING FIXTURE SCHEDULE.

Powrtek Engineering,Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
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SHEET TITLE
PROPOSED LIGHTING PLAN

SHEET
E6

LIGHTING PLAN KEYED NOTES ONLY:

(1) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) 3 POLE LIGHT SWITCH EACH WITH PILOT LIGHTS IN THE ELECTRICAL ROOM AS SHOWN ON THE PLANS FOR THE CEILING MOUNTED LIGHT FIXTURES. THE PILOT LIGHTS SHALL BE ACTIVE WITH THE LIGHTS OFF. THE LIGHT SWITCHES SHALL BE MOUNTED INTO THE EXISTING BACK BOX WHERE SHOWN AND INTO NEW BACK BOXES SHOWN. MATCH EXISTING WALL BOX HEIGHTS FOR NEW INSTALLATIONS.

THE LIGHT SWITCHES SHALL BE CONNECTED TO THE LIGHTING CIRCUIT SHOWN ON THE PLANS USING 3/4 INCH GALVANIZED RIGID STEEL CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND TO EACH FIXTURE AND THE APPROPRIATE CONDUCTOR QUANTITY AND COLOR TO THE 3 WAY LIGHT SWITCHES SHOWN FROM PANELBOARD L1 AND CONNECT TO THE CIRCUIT SHOWN ON THE PANELBOARD SCHEDULE. PROVIDE A NEUTRAL CONDUCTOR IN EACH SWITCH BOX.

(2) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) 3 POLE LIGHT SWITCH EACH WITH PILOT LIGHTS IN THE PUMP/ELECTRIC PUMP ROOM AS SHOWN ON THE PLANS FOR THE CEILING MOUNTED LIGHT FIXTURES. THE PILOT LIGHTS SHALL BE ACTIVE WITH THE LIGHTS OFF. THE LIGHT SWITCHES SHALL BE MOUNTED INTO THE EXISTING BACK BOX WHERE SHOWN AND INTO NEW BACK BOXES SHOWN USING THE EXISTING CEILING MOUNTED JUNCTION BOX. MATCH EXISTING WALL BOX HEIGHTS FOR NEW INSTALLATIONS.

THE LIGHT SWITCHES SHALL BE CONNECTED TO THE LIGHTING CIRCUIT SHOWN ON THE PLANS USING 3/4 INCH GALVANIZED RIGID STEEL CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND TO EACH FIXTURE AND THE APPROPRIATE CONDUCTOR QUANTITY AND COLOR TO THE 3 WAY LIGHT SWITCHES SHOWN FROM PANELBOARD L1 AND CONNECT TO THE CIRCUIT SHOWN ON THE PANELBOARD SCHEDULE. PROVIDE A NEUTRAL CONDUCTOR IN EACH SWITCH BOX.

(3) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL TWO (2) 3 POLE LIGHT SWITCH EACH WITH PILOT LIGHTS IN THE WELL PUMP AND ENTRY ROOMS AS SHOWN ON THE PLANS FOR THE CEILING MOUNTED LIGHT FIXTURES. THE PILOT LIGHTS SHALL BE ACTIVE WITH THE LIGHTS OFF. THE LIGHT SWITCHES SHALL BE MOUNTED INTO THE NEW BACK BOXES. MATCH EXISTING WALL BOX HEIGHTS FOR NEW INSTALLATIONS.

THE LIGHT SWITCHES SHALL BE CONNECTED TO THE LIGHTING CIRCUIT SHOWN ON THE PLANS USING 3/4 INCH GALVANIZED RIGID STEEL CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND TO EACH FIXTURE AND THE APPROPRIATE CONDUCTOR QUANTITY AND COLOR TO THE 3 WAY LIGHT SWITCHES SHOWN. PROVIDE A NEUTRAL CONDUCTOR IN EACH SWITCH BOX.

THE ELECTRICAL CONTRACTOR SHALL ROUTE 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND TO EACH FIXTURE AND THE APPROPRIATE CONDUCTOR QUANTITY AND COLOR TO THE 3 WAY LIGHT SWITCHES AS SHOWN FROM PANELBOARD L1 AND CONNECT TO THE CIRCUIT SHOWN ON THE PANELBOARD SCHEDULE.

(4) THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND WIRE THE CEILING MOUNTED LIGHT FIXTURES TO THE LIGHT SWITCH AS SHOWN ON THE PLANS.

THE LIGHT SWITCH SHALL BE MOUNTED INTO A NEW BACK BOX. MATCH EXISTING WALL BOX HEIGHTS FOR NEW INSTALLATIONS.

NOTE THE TOILET ROOM EXHAUST FAN IS ALSO WIRED INTO THE CIRCUIT PER THE RESPECTIVE KEYED NOTE SHOWN ON THE PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLANS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE LIGHT SWITCH TO THE LIGHT AND FROM THE LIGHT SWITCH TO THE PANELBOARD L1 AND CONNECT TO THE CIRCUIT SHOWN ON THE PANELBOARD SCHEDULE.

(5) THE SYSTEM INTEGRATOR SHALL FURNISH THE CHLORINE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL AND PUSHBUTTON LIGHT SWITCH STATIONS WITH PILOT LIGHTS AND THE ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE AS SHOWN ON THE PLANS.

THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND WIRE THE CEILING MOUNTED LIGHT FIXTURE AS SHOWN ON THE PLANS.

THE PUSH BUTTON LIGHT SWITCHES SHALL BE CONNECTED TO THE CONTROL PANEL SHOWN ON THE PLANS USING 3/4 INCH STAINLESS STEEL CONDUIT WITH 5 #14 CONDUCTORS, 4 #14 SPARES AND 1 #14 GROUND FROM THE PUSHBUTTON STATION AND 4 #12 CONDUCTORS AND 1 #12 GROUND FROM THE CONTROL PANEL TO THE PANELBOARD L1 AND 2 #12 CONDUCTORS AND 1 #12 GROUND TO THE ROOM LIGHT FIXTURE USING THE APPROPRIATE CONDUCTOR COLORS FROM THE CONTROL PANEL AS SHOWN. THE CONDUITS SHALL TRANSITION TO GALVANIZED RIGID STEEL OUTSIDE THE CHLORINE ROOM FROM PANELBOARD L1 AND CONNECT TO THE CIRCUIT SHOWN ON THE PANELBOARD SCHEDULE.

SEE THE CHLORINE ROOM LIGHTING AND EXHAUST FAN CONTROL DIAGRAM FOR REQUIREMENTS. NOTE THE DOOR LIMIT SWITCHES, CHLORINE ROOM GAS DETECTOR AND ROOM EXHAUST FAN ARE ALSO INTEGRATED INTO THE CONTROL SYSTEM PER THEIR RESPECTIVE KEYED NOTES SHOWN ON THE PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLANS.

(6) THE SYSTEM INTEGRATOR SHALL FURNISH THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL AND PUSHBUTTON LIGHT SWITCH STATIONS WITH PILOT LIGHTS AND THE ELECTRICAL CONTRACTOR SHALL INSTALL AND WIRE AS SHOWN ON THE PLANS.

THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND WIRE THE CEILING MOUNTED LIGHT FIXTURE AS SHOWN ON THE PLANS.

THE PUSH BUTTON LIGHT SWITCHES SHALL BE CONNECTED TO THE CONTROL PANEL SHOWN ON THE PLANS USING 3/4 INCH STAINLESS STEEL CONDUIT WITH 5 #14 CONDUCTORS, 4 #14 SPARES AND 1 #14 GROUND FROM THE PUSHBUTTON STATION AND 4 #12 CONDUCTORS AND 1 #12 GROUND FROM THE CONTROL PANEL TO THE PANELBOARD L1 AND 2 #12 CONDUCTORS AND 1 #12 GROUND TO THE ROOM LIGHT FIXTURE USING THE APPROPRIATE CONDUCTOR COLORS FROM THE CONTROL PANELS SHOWN. THE CONDUITS SHALL TRANSITION TO GALVANIZED RIGID STEEL OUTSIDE THE FLUORIDE ROOM FROM PANELBOARD L1 AND CONNECT TO THE CIRCUIT SHOWN ON THE PANELBOARD SCHEDULE.

SEE THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL DIAGRAM FOR REQUIREMENTS. NOTE THE DOOR LIMIT SWITCHES AND ROOM EXHAUST FAN ARE ALSO INTEGRATED INTO THE CONTROL SYSTEM PER THEIR RESPECTIVE KEYED NOTES SHOWN ON THE PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLANS.

(7) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL FLUSH MOUNTED EXTERIOR SOFFIT LIGHT FIXTURES ON THE BUILDING AS SHOWN.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE FIXTURES TO THE EXTERIOR LIGHTING CONTROL MCC AND CONNECT TO PANELBOARD L1, CKT #14.

(8) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE WALL MOUNTED EMERGENCY EXIT LIGHT FIXTURES IN THE BUILDING ROOMS AS SHOWN. THE EMERGENCY LIGHT FIXTURES SHALL BE MOUNTED 90 INCHES ABOVE FINISHED FLOOR.

THE ELECTRICAL CONTRACTOR ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE FIXTURE TO THE LIGHTING CIRCUIT LOCATED IN THEIR RESPECTIVE ROOMS.

THE ELECTRICAL CONTRACTOR SHALL ADJUST THE AIMING OF EACH LAMP FOR PROPER OPERATION.

(9) ROUTE 2 #12 CONDUCTORS AND 1 #12 GROUND TO PROPOSED LIGHT FIXTURE IN EXISTING CONDUIT. MODIFY/EXTEND AS NECESSARY.

(10) THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE PHOTO CONTROL REQUIRED FOR CONTROLLING THE SOFFIT LIGHT FIXTURES. SEE THE EXTERIOR LIGHTING CONTROL DIAGRAM FOR ADDITIONAL INFORMATION ON THE PHOTO CONTROL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4" CONDUIT WITH 3 #12 CONDUCTORS AND 1 #12 GROUND FROM THE PHOTO CONTROL TO THE EXTERIOR LIGHTING CONTROLLER LOCATED IN MCC-1B.

MOUNT THE PHOTO CELL ON A CAST ALUMINUM PULL BOX WITH A THREADED ALUMINUM COVER WITH GASKET.

LIGHTING FIXTURE SCHEDULE

ABBREVIATIONS

C – CONCRETE
CB – CONCRETE BASE
CH – CHAIN
ES – EXPOSED STRUCTURE
F – FLUSH
G – GYP BOARD
LG – LAYIN GRID
P – PENDANT
R – RECESSED
S – SURFACE
U – UNIVERSAL
V – VARIES
W – WALL

DES.	DESCRIPTION	LAMP DATA		VOLT	DEPTH	LIGHTING FIXTURE		MTG.	MTG. SURF	SEE NOTE
		NO.	TYPE			MFR.	CAT. NO.			
A	4' LED ENCLOSED AND GASKETED UNITS (4000lm)	–	LED	120	–	HOLOPHANE	EMS4LED-4L-IMAFL-SD	S	ES	
B	4' LED ENCLOSED AND GASKETED UNITS (3000lm)	–	LED	120	–	HOLOPHANE	EMS4LED-3L-IMAFL-SD	S	ES	
C	SOFFIT LIGHT FIXTURES	–	LED	120	–	LITHONIA	REAL6CD6-BZA-ESL-1000L-3K-.955C-120-LP6NL-ISH	R		
C1	SOFFIT LIGHT FIXTURE	–	LED	120	–	LITHONIA	REAL6CD6-BZA-ESL-1000L-3K-.95SC-120-6VLR-ISH	R		3
D	EMERGENCY LIGHTS	–		120	–	LIGHT ALARMS	WWXVE-1-R-D 1.2 WATTS WITH SELF TEST DIAGNOSTICS AND NICKEL-CADMIUM BATTERY	S	W	

LIGHTING FIXTURE SCHEDULE NOTES:

1. THE FIXTURE(S) HAS BEEN PROVIDED FOR THE PROPER LIGHTING LEVELS AND FOR ENERGY CODE COMPLIANCE. FOR THE ELECTRICAL CONTRACTOR TO FURNISH A DIFFERENT MANUFACTURER(S) OR FIXTURE(S) CATALOG NUMBER(S), THE ELECTRICAL CONTRACTOR SHALL FIRST SUBMIT LIGHTING AND ENERGY CALCULATIONS WITH DETAILED FIXTURE CUT SHEETS PROVING THE FIXTURE(S) MEET PROJECT REQUIREMENTS USING A VISUAL LIGHTING SOFTWARE PACKAGE OR SIMILAR PROGRAM. THE ENGINEER WILL DETERMINE IF A REVIEW IS APPROPRIATE AND IF SO WILL PROVIDE ONE REVIEW ONLY OF THE ELECTRICAL CONTRACTOR'S SUBMITTAL, IF THE SUBSTITUTED FIXTURE(S) ARE NOT ACCEPTABLE AS DETERMINED BY THE ENGINEER, NO ADDITIONAL REVIEWS WILL BE PROVIDED BY THE ENGINEER AND THE SPECIFIED FIXTURE(S) THAT ARE SHOWN ON THE PLANS SHALL BE SUBMITTED DURING SHOP DRAWING REVIEW. IF THE SUBMITTED FIXTURE(S) SUBSTITUTES MEET PROJECT CONDITIONS THEN CALCULATIONS ARE ALSO REQUIRED FOR ON SITE STATE REVIEW BY THE ELECTRICAL CONTRACTOR, AND AS DETERMINED BY THE ENGINEER.
2. IT IS ALSO THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO VERIFY THE CATALOG NUMBERS SHOWN ON THE PLANS AND UPDATE SAME BEFORE SUBMITTING SHOP DRAWINGS. ANY CATALOG NUMBER REVISIONS OR SUBSEQUENT FIXTURE COST INCREASES SHALL BE MADE AT NO ADDITIONAL COST TO THE CONTRACT WHETHER IT IS BECAUSE OF A DIFFERENT TYPE OR FIXTURE MOUNTING DUE TO PROJECT CONDITIONS, DISCONTINUED CATALOG NUMBERS OR OTHER SUCH ISSUES. IN THE CASE OF DISCONTINUED CATALOG NUMBERS, THE ELECTRICAL CONTRACTOR SHALL BRING IT TO THE ENGINEER'S ATTENTION BEFORE SHOP DRAWINGS ARE SUBMITTED SO THAT A NEW FIXTURE TYPE CAN BE SELECTED BY THE ENGINEER.
3. PROVIDE REMODEL VERSION FOR WEST SIDE DOORS.

LIGHTING AND WIRING GENERAL NOTES:

1. ALL POWER CONDUCTORS SHALL BE 600 VOLT RATED, STRANDED COPPER WITH TYPE XHHW OR THWN INSULATION PER THE SPECIFICATIONS.
2. THE MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH FOR UNLESS OTHERWISE NOTED.
3. IN GENERAL, ALL CONDUITS SHALL BE INSTALLED ON THE EXISTING WALLS AND INSIDE PROPOSED WALLS WITH ONLY MINIMAL CONDUITS EXPOSED.
4. ALL CONDUITS LEAVING OR ENTERING THE PANELS, ENCLOSURES AND MOTOR CONTROL CENTERS FROM EXTERIOR OR COLD AREAS SHALL BE DUX SEALED AT BOTH ENDS.
5. ALL HOLES THROUGH MASONRY SHALL BE MADE WITH CORE DRILLS IF NOT SLEEVED THROUGH THE WALLS. IF CONDUITS REQUIRE CORE DRILLING, OTHER METHODS SUCH AS CHISELING OR HAMMERED OUT OPENINGS ARE NOT ACCEPTABLE. THE HOLES SHALL BE MADE NOT LARGER THAN 1/4 LARGER DIAMETER THEN THE CONDUIT. ALL OPENINGS SHALL BE GROUTED WHERE INSTALLED THROUGH CONCRETE AND CAULKED WERE INSTALLED THROUGH SIDING MATERIALS IF SHOWN, DRYWALL OR OTHER FINISHES ABOVE FINISHED GRADE.
6. USE STAINLESS STEEL FASTENERS FOR MOUNTING OF JUNCTION BOXES OR OTHER DEVICES LOCATED ON THE BUILDING EXTERIOR.
7. USE STAINLESS STEEL FASTENERS FOR MOUNTING OF JUNCTION BOXES OR OTHER DEVICES LOCATED ON THE INTERIOR OF THE BUILDING.
8. NOT ALL CONDUITS ARE SHOWN. THE CONDUITS SHOWN ARE INTENDED FOR GENERAL ROUTING ONLY. COORDINATE THE EXACT CONDUITS AND LOCATIONS WITH THE ENGINEER.

   THE ELECTRICAL CONTRACTOR SHALL SUBMIT CONDUIT AND EQUIPMENT LOCATION PLANS DURING SHOP DRAWING REVIEW. THE PLANS SHALL ALSO INDICATE THE RELATIONSHIP OF THE CONDUITS WITH OTHER EQUIPMENT TO BE INSTALLED.
9. THE ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE WITH THE OTHER TRADES FOR LOCATIONS OF SUCH EQUIPMENT AS PROCESS PIPING, MECHANICAL EQUIPMENT, HVAC EQUIPMENT AND DUCTS, FIXTURE LOCATIONS AND SUPPORTS, PULL BOXES, JUNCTION BOXES, MOTOR CONTROL CENTERS AND SIMILAR ELECTRICAL EQUIPMENT, GENERATOR INSTALLATION, DISCONNECT SWITCHES, CONTROL OR MONITORING STATIONS, PROCESS EQUIPMENT, RECEPTACLES AND LIGHT SWITCHES AND SIMILAR DEVICES SHOWN ON THE PLANS PRIOR TO CONSTRUCTION. ANY ELECTRICAL EQUIPMENT RELOCATIONS REQUIRED BY THE ENGINEER DUE TO IMPROPER PLANNING ON THE ELECTRICAL CONTRACTORS PART OR BY THE OTHER TRADES SHALL BE RELOCATED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.
10. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL HVAC AND PROCESS INSTALLATIONS WITH THE ELECTRICAL INSTALLATIONS WITH THE RESPECTIVE CONTRACTORS PRIOR TO BEGINNING WORK. THIS INCLUDES ALL INTERCONNECT WIRING AND EQUIPMENT NECESSARY TO PROVIDE PROPERLY OPERATING SYSTEMS WETHER IT IS SHOWN ON THE PLANS OR NOT. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO VERIFY THE PROPER OR INTENDED OPERATION OF EQUIPMENT AND TO WORK-OUT ALL NECESSARY EQUIPMENT, DETAILS, CONDUIT, WIRING AND HARDWARE WITH THE RESPECTIVE CONTRACTORS. THIS INFORMATION SHALL BE PROVIDED TO THE ENGINEER DURING SHOP REVIEW.
11. ALL NEW WORK SHALL CONSIDER FUTURE EXPANSION OF EQUIPMENT WHERE SHOWN ON THE PLANS. PROPER SPACING OF EQUIPMENT, LOCATIONS, AND ROUTING OF CONDUIT(S) SHALL BE PROVIDED. IF THE ENGINEER DETERMINES THAT THE INSTALLATION IS NOT ADEQUATE TO PROVIDE FOR FUTURE EXPANSION, THE ELECTRICAL CONTRACTOR SHALL RELOCATE THE EQUIPMENT AND CONDUIT AT NO ADDITIONAL COST TO THE CONTRACT.
12. THE INSTALLATIONS SHALL PROVIDE FOR EASE OF MAINTENANCE OF ALL EQUIPMENT INSTALLED. IF THE ENGINEER DETERMINES THAT THE INSTALLATION DOES NOT MEET THIS REQUIREMENT, THE ELECTRICAL CONTRACTOR SHALL RELOCATE THE ELECTRICAL EQUIPMENT AND CONDUIT AT NO ADDITIONAL COST TO THE CONTRACT.
13. SEE THE KEYED NOTES FOR OTHER PLAN REQUIREMENTS.

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

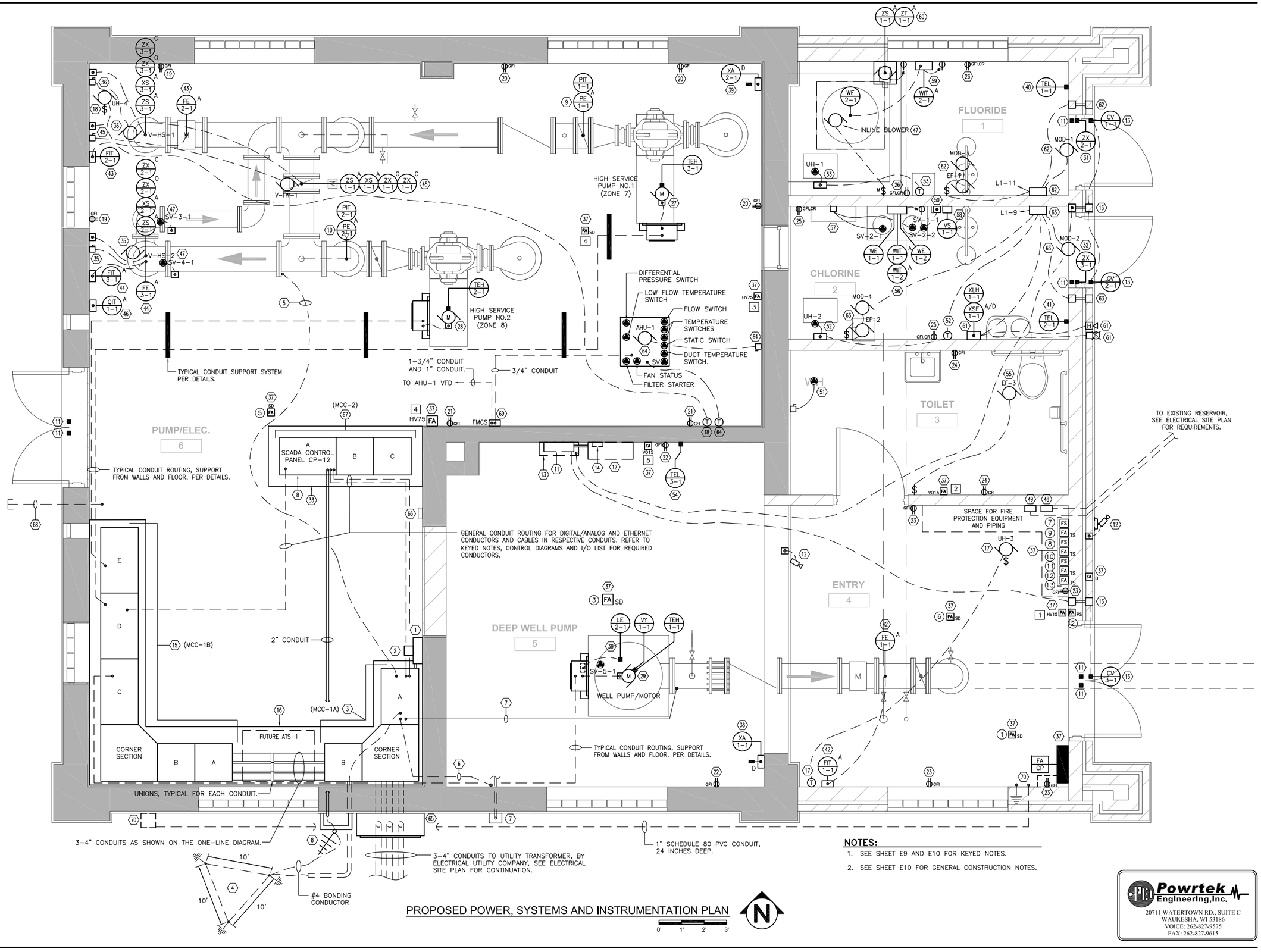
REVISIONS

MARK	DATE	DESCRIPTION

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
LIGHTING PLAN NOTES
AND KEYED NOTES

SHEET
E7



NOTES:

1. SEE SHEET E9 AND E10 FOR KEYED NOTES.
2. SEE SHEET E10 FOR GENERAL CONSTRUCTION NOTES.

PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLAN

0' 1' 2' 3'

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
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SHEET TITLE
PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLAN

SHEET
E8

PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLAN KEYED NOTES:

(1) PROPOSED METER SOCKET FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE METER SOCKET 48 INCHES ABOVE FINISHED FLOOR USING STAINLESS STEEL SPACERS AND BOLTS. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE FINAL LOCATION WITH THE ENGINEER AND UTILITY COMPANY. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE EXACT MANUFACTURER AND MODEL NUMBER WITH THE UTILITY COMPANY. SEE KEYED NOTE (3) BELOW.

(2) PROPOSED UTILITY METER, FURNISHED AND INSTALLED BY UTILITY COMPANY.

(3) PROPOSED MOTOR CONTROL CENTER MCC-1A FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL MOTOR CONTROL CENTER MCC-1A AT THE LOCATION SHOWN ON THE PLANS AND ONE-LINE DIAGRAM. THE MCC SHALL BE INSTALLED APPROXIMATELY 1 INCH FROM THE BACK WALL ON THE REQUIRED CONCRETE PAD.

THE CT'S ARE FURNISHED BY THE ELECTRICAL UTILITY COMPANY AND INSTALLED BY THE SYSTEM INTEGRATOR AND CONDUCTORS INSTALLED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL PROVIDE A 1-1/4 INCH CONDUIT FROM MCC-1A TO THE METER SOCKET. THE ELECTRICAL CONTRACTOR SHALL ROUTE THE CONDUIT AND CONDUCTORS AND GROUNDING SHOWN ON THE ONE LINE DIAGRAM. THE ELECTRICAL UTILITY COMPANY WILL TERMINATE THE CT WIRING AT THE METER SOCKET AND WILL TERMINATE THE CT WIRING TO MCC-1A FROM THE ELECTRICAL UTILITY TRANSFORMER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 CONDUCTORS AND 1 #14 GROUND FROM THE SURGE ARRESTOR UNIT TO THE PROPOSED SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH AN ETHERNET CABLE FROM THE OWNER'S METERING TO SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE THE CONDUIT AND WIRING SHOWN ON THE ONE-LINE DIAGRAM FROM MOTOR CONTROL CENTER MCC-1A TO MOTOR CONTROL CENTER-1B.

THE ELECTRICAL CONTRACTOR SHALL BOLT THE MCC TO FLOOR AT EACH OF THE FOUR CORNERS ON THE CONCRETE PAD. SEE THE ELEVATION PLAN FOR ADDITIONAL INFORMATION.

(4) PROPOSED GROUNDING ELECTRODE SYSTEM PER THE ONE-LINE DIAGRAM AND DETAILS. INSTALL CLOSEST GROUND ROD TEN (10) FEET FROM BUILDING, PER THE DETAIL.

(5) PROPOSED SYSTEM BONDING TO PROCESS PIPING PER THE ONE-LINE DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH SCHEDULE 80 PVC CONDUIT ALONG THE WALL WITH BONDING CONDUCTOR AND BOLT TO FLANGE WITH A BOLTED CONNECTION USING A TINNED COPPER LUG SUITABLE FOR THE INSTALLATION.

(6) PROPOSED GAS PIPING SYSTEM BONDING TO PROCESS PIPING PER THE ONE-LINE DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH SCHEDULE 80 PVC CONDUIT ALONG THE WALL WITH BONDING CONDUCTOR AND BOLT TO PIPING WITH A CLAMP TYPE CONNECTION SUITABLE FOR THE INSTALLATION.

EXISTING GAS SERVICE TO BE BONDED PER NATIONAL ELECTRICAL CODE (NEC).

(7) PROPOSED SYSTEM BONDING TO WELL PUMP PER THE ONE-LINE DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH SCHEDULE 80 PVC CONDUIT ALONG THE WALL WITH BONDING CONDUCTOR AND BOLT TO FLANGE WITH A BOLTED CONNECTION USING A TINNED COPPER LUG SUITABLE FOR THE INSTALLATION.

(8) PROPOSED SCADA CONTROL PANEL CP-12 WITH ANTENNA AND ANTENNA CABLE FURNISHED AND PROGRAMMED BY THE SYSTEM INTEGRATOR, OTHERWISE REFERRED TO AS "SCADA CONTROL PANEL" ON PLANS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH CONDUIT TO THE ANTENNA MAST PER AND INSTALL THE ANTENNA PER THE DETAILS. THE ELECTRICAL CONTRACTOR SHALL ROUTE A #4 BARE COPPER BONDING CONDUCTOR FROM THE ANTENNA SUPPORT STRUCTURE TO THE GROUNDING ELECTRODE SYSTEM. THE CONDUCTOR SHALL BE ROUTE ALONG THE BUILDING PERIMETER AT A DEPTH OF 12 INCHES AND EXOTHERMICALLY WELDED TO THE GROUNDING ELECTRODE SYSTEM.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #10 CONDUCTORS AND 1 #10 GROUND FROM PANELBOARD L1, CKT #21 TO THE SCADA CONTROL PANEL FOR POWER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FROM MCC-1A TO THE SCADA CONTROL PANEL AND ROUTE A CAT 6 CABLE FOR ETHERNET COMMUNICATIONS FROM OWNER METERING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FROM MCC-1B ETHERNET SWITCH TO THE SCADA CONTROL PANEL AND ROUTE A CAT 6 CABLE FOR ETHERNET COMMUNICATIONS FOR MONITORING THE VFD UNITS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FROM MCC-1A TO MCC-1B ROUTING 2 #14 CONDUCTORS AND 1 #14 GROUND FOR MONITORING SURGE ARRESTOR STATUS AT THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3 INCH CONDUIT FOR DIGITAL WIRING FROM MCC-1B TO SCADA CONTROL PANEL. REFER TO CONTROL DIAGRAMS AND I/O LIST FOR REQUIRED CONDUCTORS, INCLUDE TEN (10) SPARE #14 CONDUCTORS AND 1 #14 GROUND.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH CONDUIT FOR ANALOG WIRING FROM MCC-1B TO SCADA CONTROL PANEL. REFER TO CONTROL DIAGRAMS AND I/O LIST FOR REQUIRED CABLES, INCLUDE FOUR (4) SPARE ANALOG CABLES.

SEE OTHER KEYED NOTES AND I/O LIST FOR OTHER REQUIRED CONDUITS ROUTED TO SCADA CONTROL PANEL CP-12. NOT ALL CONDUITS MAYBE SHOWN, IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO ROUTE REQUIRED CONDUITS AND WIRING FROM EACH DEVICE SHOWN ON THE PLANS. IT IS PERMISSIBLE TO COMBINE DIGITAL I/O WITH OTHER DIGITAL I/O AND ANALOG I/O WITH OTHER ANALOG I/O IF VERIFIED BY THE EQUIPMENT MANUFACTURERS TO DO SO AND TO MAINTAIN PROPER SEPARATION.

(9) PROPOSED INLINE PRESSURE SWITCH PE-1-1/PIT-1-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE ELEMENT/TRANSMITTER ON THE PROCESS PIPING WITH A BRASS GLOBE VALVE SPECIFIED IN THE PROCESS DRAWINGS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH (TWO) 2/C #18 AWG TWISTED SHIELDED PAIR CABLE TO SCADA CONTROL PANEL, ONE FOR 24VDC POWER AND ONE FOR THE 4/20MA SIGNAL.

(10) PROPOSED INLINE PRESSURE SWITCH PE-2-1/PIT-2-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE ELEMENT/TRANSMITTER ON THE PROCESS PIPING WITH A BRASS GLOBE VALVE SPECIFIED IN THE PROCESS DRAWINGS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH (TWO) 2/C #18 AWG TWISTED SHIELDED PAIR CABLE TO SCADA CONTROL PANEL, ONE FOR 24VDC POWER AND ONE FOR THE 4/20MA SIGNAL.

(11) EXISTING AND MODIFIED SECURITY SYSTEM CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE 3/4 INCH CONDUIT FROM THE EXISTING SECURITY SYSTEM CONTROL PANEL TO EACH ENTRANCE DOOR MAGNETIC DOOR SWITCH OR GROUP OF MAGNETIC DOOR SWITCHES AS SHOWN AND INSTALL 2 #14 CONDUCTORS AND 1 #14 GROUND FOR EACH SWITCH TO THE EXISTING SECURITY SYSTEM CONTROL PANEL. THE DOOR SWITCHES SHALL BE FURNISHED BY THE SYSTEM INTEGRATOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR WITH FINAL WIRING CONNECTIONS MADE BY OWNER'S SECURITY CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A RECEPTACLE AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #23 TO THE RECEPTACLE. PLUG IN THE CONTROL PANEL POWER AND TEST FOR PROPER OPERATION.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH 12 #14 CONDUCTORS, 2 #14 SPARE AND 1 #14 GROUND FROM THE EXISTING SECURITY CONTROL PANEL TO THE SCADA CONTROL PANEL FOR MONITORING DOOR STATUS.

(12) EXISTING AND MODIFIED LONG WATCH CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #16.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A JUNCTION BOX NEAR THE CAMERA LOCATION AND RELOCATE THE EXISTING INTERIOR MOUNTED PTZ CAMERA ABOVE THE ENTRANCE INTO THE DEEP WELL PUMP ROOM AS SHOWN AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS WITH 1 #12 GROUND FOR POWER AND A CAT 6 CONTROL CABLE FROM THE LONG WATCH CONTROL PANEL TO THE CAMERA.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A JUNCTION BOX NEAR THE CAMERA LOCATION AND RELOCATE THE EXISTING EXTERIOR MOUNTED PTZ CAMERA ON A NEW RIGID ALUMINUM PIPE MATCHING THE EXISTING DIAMETER AND HEIGHT ABOVE THE MAIN BUILDING ENTRANCE AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS WITH 1 #12 GROUND FOR POWER AND A CAT 6 CONTROL CABLE FROM THE LONG WATCH CONTROL PANEL TO EACH CAMERA.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH 8 #14 CONDUCTORS, 4 #14 SPARE AND 1 #14 GROUND FROM THE EXISTING CAMERA CONTROL PANEL TO THE SCADA CONTROL PANEL FOR MONITORING CAMERA STATUS.

THE CAMERA TERMINATIONS WILL BE PROVIDED BY BOLDTRONICS.

(13) EXISTING CARD READER CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE BACK BOXES SHOWN AND RELOCATE THE EXISTING DOOR CARD ACCESS READER NEAR THE ENTRY DOOR AS SHOWN AND ROUTE A 1 INCH CONDUIT FOR THE SECURITY CONTRACTOR TO INSTALL THEIR CABLE(S) FROM THE EXISTING CARD READER CONTROL PANEL TO THE RELOCATED CARD ACCESS READER. THE TERMINATIONS SHALL BE MADE BY THE OWNER'S SECURITY CONTRACTOR.

THE DOOR MANUFACTURER OR INSTALLING CONTRACTOR SHALL FURNISH AND INSTALL A 24VDC ELECTRIC DOOR STRIKE CV-3-1. THE ELECTRICAL CONTRACTOR SHALL ROUTE 3/4 INCH CONDUIT WITH 2 #14 CONDUCTORS & 1 #14 GROUND FROM THE EXISTING CARD READER CONTROL PANEL TO THE DOOR STRIKE AND TERMINATE AS REQUIRED AT THE DOOR. THE TERMINATIONS AT THE EXISTING CARD READER CONTROL PANEL WILL BE MADE BY THE OWNER'S SECURITY CONTRACTOR

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE BACK BOXES SHOWN AND INSTALL THE PROPOSED DOOR CARD ACCESS READER FURNISHED BY THE OWNER'S SECURITY CONTRACTOR BETWEEN THE TWO CHEMICAL ROOM DOORS FOR ACCESS TO BOTH ROOMS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FOR THE SECURITY CONTRACTOR TO INSTALL THEIR CABLE(S) FROM THE EXISTING CARD READER CONTROL PANEL TO THE PROPOSED CARD READER. THE TERMINATIONS SHALL BE MADE BY THE OWNER'S SECURITY CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 6 #14 CONDUCTORS, 2 #14 SPARE AND 1 #14 GROUND FROM THE EXISTING CARD READER CONTROL PANEL TO THE EXISTING LONG WATCH CONTROL PANEL.

THE DOOR MANUFACTURER SHALL FURNISH AND INSTALL THE 24VDC ELECTRIC DOOR STRIKES CV-1-1 AND CV-2-1. THE ELECTRICAL CONTRACTOR SHALL ROUTE 3/4 INCH CONDUIT WITH 2 #14 CONDUCTORS & 1 #14 GROUND FROM THE PROPOSED CARD READER CONTROL PANEL TO EACH DOOR STRIKE AND TERMINATE AS REQUIRED AT EACH DOOR. THE TERMINATIONS AT THE EXISTING CARD READER CONTROL PANEL WILL BE MADE BY THE OWNER'S SECURITY CONTRACTOR

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH AN RS-232 CABLE FROM THE EXISTING CARD READER CONTROL PANEL TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #31 TO THE CONTROL PANEL.

THE NEW EQUIPMENT TERMINATIONS WILL BE PROVIDED BY TYCO. SEE THE EXISTING AND PROPOSED DOOR ACCESS AND MONITORING CONTROL DIAGRAM.

(14) EXISTING ALTRONIX INTERFACE PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #20 TO THE RECEPTACLES FOR POWER TO THE ALTRONIX INTERFACE PANEL AND LONG WATCH AND SECURITY EQUIPMENT.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 8 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND FROM THE EXISTING INTERFACE PANEL TO THE PROPOSED SCADA CONTROL PANEL.

(15) PROPOSED MOTOR CONTROL CENTER MCC-1B FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE MOTOR CONTROL CENTER MCC-1B AT THE LOCATION SHOWN ON THE PLANS.

THE MCC SHALL BE INSTALLED ON THE REQUIRED CONCRETE PAD.

THE ELECTRICAL CONTRACTOR SHALL ROUTE THE POWER CONDUITS FROM MOTOR CONTROL CENTER MCC-1A AS SHOWN ON THE ONE LINE DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL BOLT THE MCC TO FLOOR AT EACH OF THE FOUR CORNERS ON THE CONCRETE PAD. SEE THE ELEVATION PLAN FOR ADDITIONAL INFORMATION.

SEE OTHER KEYED NOTES FOR ADDITIONAL INFORMATION.

(16) PROPOSED CONCRETE EQUIPMENT PAD FOR MCC-1A, FUTURE ATS-1 AND MCC-1B FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR TO SUPPORT THE MOTOR CONTROL CENTER AND FUTURE AUTOMATIC TRANSFER SWITCH. THE EQUIPMENT PAD SHALL BE 6 INCHES LONGER AND WIDER THEN THE MCC AND 4 INCHES THICK.

(17) PROPOSED GAS UNIT HEATER UH-3 WITH INTEGRAL DISCONNECT SWITCH FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #22 TO THE HEATER. THE ELECTRICAL CONTRACTOR SHALL INSTALL A JUNCTION BOX ON THE WALL NEAR THE GAS UNIT HEATER AND ROUTE CONDUIT FROM THE JUNCTION BOX TO WITHIN 18 INCHES OF THE UNIT HEATER AND INSTALL A LENGTH OF LIQUID TIGHT FLEXIBLE METAL CONDUIT TO THE GAS UNIT HEATER.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A FLUSH MOUNTED WALL BOX FOR MOUNTING THE THERMOSTAT AND ROUTE 3/4 INCH CONDUIT FOR THE MECHANICAL CONTRACTOR TO INSTALL THE THERMOSTAT WIRING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH INTERLOCKING CONTROL WIRING FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR FOR MONITORING AT FMCS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR.

(18) PROPOSED GAS UNIT HEATER UH-3 WITH INTEGRAL DISCONNECT SWITCH FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #22 TO THE HEATER. THE ELECTRICAL CONTRACTOR SHALL INSTALL A JUNCTION BOX ON THE WALL NEAR THE GAS UNIT HEATER AND ROUTE CONDUIT FROM THE JUNCTION BOX TO WITHIN 18 INCHES OF THE UNIT HEATER AND INSTALL A LENGTH OF LIQUID TIGHT FLEXIBLE METAL CONDUIT TO THE GAS UNIT HEATER.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A SURFACE MOUNTED WALL BOX FOR MOUNTING THE THERMOSTAT AND ROUTE 3/4 INCH CONDUIT FOR THE MECHANICAL CONTRACTOR TO INSTALL THE THERMOSTAT WIRING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH INTERLOCKING CONTROL WIRING FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR FOR MONITORING AT FMCS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHNICAL CONTRACTOR

(19) PROPOSED GFI RECEPTACLES LOCATED IN THE PUMP/ELECTRICAL ROOM.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE PROPOSED 20 AMP, 120 VOLT RECEPTACLES INTO THE EXISTING WALL MOUNTED BACK BOXES.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE EXISTING RECEPTACLE REMOVALS WITH THE NEW INSTALLATIONS SUCH THAT IF THE REMOVED RECEPTACLES AND ABANDONED WALL BOXES PROVIDED POWER TO THIS RECEPTACLE(S) AND CANNOT BE REUSED DUE TO REMOVALS, THE ELECTRICAL CONTRACTOR SHALL ROUTE NEW SURFACE MOUNTED CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #13 TO THE RECEPTACLE(S).

IF OTHER RECEPTACLE(S) LOCATIONS ARE FEED BY THIS RECEPTACLE, IT IS PERMISSIBLE TO FEED FROM THIS SAME BACK BOX USING THE SPECIFIED PANELBOARD L1 CIRCUITS. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

TO FEED OR TO EXTEND THE EXISTING CIRCUITS THAT ARE NO LONGER ACCESSIBLE FROM THE REMOVALS WITH SURFACE MOUNTED CONDUIT, INSTALL A THOMAS & BETTS CAST ALUMINUM IHEF2-2 EXTENSION RING WITH 3/4 INCH CONDUIT HUBS FOR MOUNTING THE RECEPTACLES. PLUG CONDUIT OPENINGS THAT ARE NOT USED.

(20) PROPOSED GFI RECEPTACLES LOCATED IN THE PUMP/ELECTRICAL ROOM.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE PROPOSED 20 AMP, 120 VOLT RECEPTACLES INTO THE EXISTING WALL MOUNTED BACK BOXES.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE EXISTING RECEPTACLE REMOVALS WITH THE NEW INSTALLATIONS SUCH THAT IF THE REMOVED RECEPTACLES AND ABANDONED WALL BOXES PROVIDED POWER TO THIS RECEPTACLE(S) AND CANNOT BE REUSED DUE TO REMOVALS, THE ELECTRICAL CONTRACTOR SHALL ROUTE NEW SURFACE MOUNTED CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #15 TO THE RECEPTACLE(S).

IF OTHER RECEPTACLE(S) LOCATIONS ARE FEED BY THIS RECEPTACLE, IT IS PERMISSIBLE TO FEED FROM THIS SAME BACK BOX USING THE SPECIFIED PANELBOARD L1 CIRCUITS. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

TO FEED OR TO EXTEND THE EXISTING CIRCUITS THAT ARE NO LONGER ACCESSIBLE FROM THE REMOVALS WITH SURFACE MOUNTED CONDUIT, INSTALL A THOMAS & BETTS CAST ALUMINUM IHEF2-2 EXTENSION RING WITH 3/4 INCH CONDUIT HUBS FOR MOUNTING THE RECEPTACLES. PLUG CONDUIT OPENINGS THAT ARE NOT USED.

(21) PROPOSED GFI RECEPTACLES LOCATED IN THE PUMP/ELECTRICAL ROOM.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE PROPOSED 20 AMP, 120 VOLT RECEPTACLES INTO THE EXISTING WALL MOUNTED BACK BOXES.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE EXISTING RECEPTACLE REMOVALS WITH THE NEW INSTALLATIONS SUCH THAT IF THE REMOVED RECEPTACLES AND ABANDONED WALL BOXES PROVIDED POWER TO THIS RECEPTACLE(S) AND CANNOT BE REUSED DUE TO REMOVALS, THE ELECTRICAL CONTRACTOR SHALL ROUTE NEW SURFACE MOUNTED CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #17 TO THE RECEPTACLE(S).

IF OTHER RECEPTACLE(S) LOCATIONS ARE FEED BY THIS RECEPTACLE, IT IS PERMISSIBLE TO FEED FROM THIS SAME BACK BOX USING THE SPECIFIED PANELBOARD L1 CIRCUITS. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

TO FEED OR TO EXTEND THE EXISTING CIRCUITS THAT ARE NO LONGER ACCESSIBLE FROM THE REMOVALS WITH SURFACE MOUNTED CONDUIT, INSTALL A THOMAS & BETTS CAST ALUMINUM IHEF2-2 EXTENSION RING WITH 3/4 INCH CONDUIT HUBS FOR MOUNTING THE RECEPTACLES. PLUG CONDUIT OPENINGS THAT ARE NOT USED.

(22) PROPOSED GFI RECEPTACLES LOCATED IN THE DEEP WELL ROOM.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE PROPOSED 20 AMP, 120 VOLT RECEPTACLES INTO THE EXISTING WALL MOUNTED BACK BOXES.

THE ELECTRICAL CONTRACTOR SHALL COORDINATE EXISTING RECEPTACLE REMOVALS WITH THE NEW INSTALLATIONS SUCH THAT IF THE REMOVED RECEPTACLES AND ABANDONED WALL BOXES PROVIDED POWER TO THIS RECEPTACLE(S) AND CANNOT BE REUSED DUE TO REMOVALS, THE ELECTRICAL CONTRACTOR SHALL ROUTE NEW SURFACE MOUNTED CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #19 TO THE RECEPTACLE(S).

IF OTHER RECEPTACLE(S) LOCATIONS ARE FEED BY THIS RECEPTACLE, IT IS PERMISSIBLE TO FEED FROM THIS SAME BACK BOX USING THE SPECIFIED PANELBOARD L1 CIRCUITS. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

TO FEED OR TO EXTEND THE EXISTING CIRCUITS THAT ARE NO LONGER ACCESSIBLE FROM THE REMOVALS WITH SURFACE MOUNTED CONDUIT, INSTALL A THOMAS & BETTS CAST ALUMINUM IHEF2-2 EXTENSION RING WITH 3/4 INCH CONDUIT HUBS FOR MOUNTING THE RECEPTACLES. PLUG CONDUIT OPENINGS THAT ARE NOT USED.

(23) PROPOSED GFCI RECEPTACLES LOCATED IN THE ENTRY ROOM.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE RECEPTACLES 36 INCHES AFF, MEASURED TO TOP OF BOX.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #2 TO THE RECEPTACLES. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

THE CONDUITS SHALL BE IN THE WALL AND NOT EXPOSED UNLESS OTHERWISE NOTED.

Powrtek Engineerlng,Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc. ® (SEH)

SHEET TITLE
PROPOSED POWER AND SYSTEMS PLAN KEYED NOTES

SHEET
E9

PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLAN KEYED NOTES:

(24) PROPOSED GFCI RECEPTACLES LOCATED IN THE TOILET ROOM.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE RECEPTACLE NEAR THE SINK AT 42 INCHES AFF AND THE OPPOSITE RECEPTACLE AT 24 INCHES AFF, MEASURED TO TOP OF BOX.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #4 TO THE RECEPTACLES. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

THE CONDUITS SHALL BE IN THE WALL AND NOT EXPOSED UNLESS OTHERWISE NOTED.

(25) PROPOSED CORROSION RESISTANT GFCI RECEPTACLES LOCATED IN THE CHLORINE ROOM.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE RECEPTACLES 20 INCHES AFF, MEASURED TO TOP OF BOX. PROVIDE GASKETED COVER PLATE FOR EACH RECEPTACLE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #27 TO THE RECEPTACLES. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

THE CONDUITS SHALL BE IN THE WALL AND NOT EXPOSED UNLESS OTHERWISE NOTED.

(26) PROPOSED CORROSION RESISTANT GFCI RECEPTACLES LOCATED IN THE FLUORIDE ROOM.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE RECEPTACLES 36 INCHES AFF, MEASURED TO TOP OF BOX. PROVIDE GASKETED COVER PLATE FOR EACH RECEPTACLE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #25 TO THE RECEPTACLES. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

THE CONDUITS SHALL BE IN THE WALL AND NOT EXPOSED UNLESS OTHERWISE NOTED.

(27) PROPOSED HIGH SERVICE PUMP P-HS-1 WITH TEH-3-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND TO THE VFD AND TERMINATE AT EACH LOCATION FOR THE MOTOR THERMAL DEVICE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3 INCH CONDUIT FROM THE VFD SECTION LOCATED IN MCC-1B TO THE HIGH SERVICE PUMP AS SHOWN ON THE ONE-LINE DIAGRAM AND CONTROL DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL CONSTRUCT AND INSTALL THE CONDUIT AND PULL BOX SUPPORT STRUCTURE FOR TERMINATING THE POWER AND THERMAL WIRING ON POWER AND TERMINAL BLOCKS INSIDE THE ENCLOSURE PER THE DETAILS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH 12 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND FROM THE VFD TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH TWO (2) 2 #16 AWG TWISTED SHIELDED PAIR CABLES FROM THE VFD TO THE SCADA CONTROL PANEL.

(28) PROPOSED HIGH SERVICE PUMP P-HS-2 WITH TEH-2-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND TO THE VFD AND TERMINATE AT EACH LOCATION FOR THE MOTOR THERMAL DEVICE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3 INCH CONDUIT FROM THE VFD SECTION LOCATED IN MCC-1B TO THE HIGH SERVICE PUMP AS SHOWN ON THE ONE-LINE DIAGRAM AND CONTROL DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL CONSTRUCT AND INSTALL THE CONDUIT AND PULL BOX SUPPORT STRUCTURE FOR TERMINATING THE POWER AND THERMAL WIRING ON POWER AND TERMINAL BLOCKS INSIDE THE ENCLOSURE PER THE DETAILS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH 12 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND FROM THE VFD TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH TWO (2) 2 #16 AWG TWISTED SHIELDED PAIR CABLES FROM THE VFD TO THE SCADA CONTROL PANEL.

(29) PROPOSED WELL PUMP P-RW-1 WITH THERMAL SENSORS TEH-1-1, PRE-INSTALLED AND FURNISHED AND INSTALLED BY THE OWNER AND WATER SOLENOID VALVE SV-5-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL DRILL AN OPENING INTO THE MOTOR TERMINAL BOX FOR MOUNTING THE VIBRATION ANALYZER.

THE MOTOR, VIBRATION ANALYZER YV-1-1 AND SOLENOID VALVE SV-5-1 SHALL BE WIRED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM THE VFD TO THE SOLENOID VALVE FOR POWER AND CONTROL.

THE VIBRATION ANALYZER SHALL BE FURNISHED AND INSTALLED BY AND WIRED BY THE ELECTRICAL CONTRACTOR. THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH A 2/C #18AWG TWISTED SHIELDED CABLE TO EXISTING SCADA CONTROL PANEL AND TERMINATE AT EACH LOCATION.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND TO THE VFD AND TERMINATE AT EACH LOCATION FOR THE MOTOR THERMAL SENSORS. THE ELECTRICAL CONTRACTOR MAY ROUTE THE WIRING THROUGH THE PULL BOX.

THE ELECTRICAL CONTRACTOR SHALL CONSTRUCT AND INSTALL THE CONDUIT AND PULL BOX SUPPORT STRUCTURE FOR TERMINATING THE POWER AND THERMAL WIRING ON POWER AND TERMINAL BLOCKS INSIDE THE ENCLOSURE PER THE DETAILS. THE VIBRATION ANALYZER WIRING SHALL NOT BE ROUTED INTO THIS ENCLOSURE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH 14 #14 CONDUCTORS, 4 #14 SPARE CONDUCTORS AND 1 #14 GROUND FROM THE VFD TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 14 INCH CONDUIT WITH TWO (2) 2 #16 AWG TWISTED SHIELDED PAIR CABLES FROM THE VFD TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3 INCH CONDUIT FROM THE VFD SECTION LOCATED IN MCC-1B TO THE PULL BOX AND THEN TO THE WELL PUMP AS SHOWN ON THE DETAIL, ONE-LINE DIAGRAM AND CONTROL DIAGRAM.
THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE PULL BOX PER THE DETAIL

SEE KEYED NOTE (30) FOR THE LEVEL TRANSDUCER.

(30) PROPOSED LEVEL TRANSDUCER LE-2-1 FURNISHED BY THE SYSTEM INTEGRATOR AND INSTALL AND WIRED BY THE ELECTRICAL CONTRACTOR INTO THE STILLING WELL.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE NEMA 4X JUNCTION BOX FOR ROUTING THE TRANSDUCER CABLE FROM THE STILLING WELL TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE PROPOSED JUNCTION BOX ON THE CONDUIT SUPPORT STRUCTURE. THE JUNCTION BOX SHALL BE 8 INCHES HIGH X 8 INCHES WIDE X 4 INCH DEEP ENCLOSURE, WITH BACK PANEL AND THE SPECIFIED TERMINAL BLOCKS FOR TERMINATING THE CONDUCTORS.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE NEMA 4X JUNCTION BOX 36 INCHES ABOVE FINISHED FLOOR, MEASURED TO TOP OF THE ENCLOSURE AND ROUTE A 1 INCH CONDUIT WITH A 4/C # 18 AWG TWISTED SHIELDED CABLE FROM SCADA CONTROL PANEL TO THE JUNCTION BOX AND TERMINATE EACH ON THE TERMINAL BLOCKS. THE CABLE FROM THE JUNCTION BOX TO SCADA CONTROL PANEL SHALL MEET THE TRANSDUCER MANUFACTURER'S REQUIREMENTS AND SHALL BE TERMINATED AT SCADA CONTROL PANEL BY THE SYSTEM INTEGRATOR.

(31) PROPOSED DOOR LIMITED SWITCH ZX-2-1 LOCATED IN THE FLUORIDE ROOM FURNISHED BY THE SYSTEM INTEGRATOR. SEE THE SPECIFICATIONS FOR THE REQUIRED DOOR SWITCH. NOTE THIS DOOR SWITCH REQUIRES DOUBLE CONTACTS FOR MONITORING INTRUSION AND FOR CONTROL OF THE LIGHTING AND EXHAUST FAN.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE DOOR SWITCH AT THE LOCATION ON THE PLANS AT THE TOP OF THE DOOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 4 #14 & 1 #14 GROUND TO SCADA CONTROL PANEL FROM THE DOOR SWITCH.

(32) PROPOSED DOOR LIMITED SWITCH ZX-3-1 LOCATED IN THE CHLORINE ROOM FURNISHED BY THE SYSTEM INTEGRATOR. SEE THE SPECIFICATIONS FOR THE REQUIRED DOOR SWITCHES. NOTE THIS DOOR SWITCH REQUIRES DOUBLE CONTACTS FOR MONITORING INTRUSION AND FOR CONTROL OF THE LIGHTING AND EXHAUST FAN.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE DOOR SWITCH AT THE LOCATION ON THE PLANS AT THE TOP OF THE DOOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 & 1 #14 GROUND TO SCADA CONTROL PANEL FROM THE DOOR SWITCH AND A 3/4 INCH CONDUIT WITH 2 #14 & 1 #14 GROUND TO THE LIGHTING AND EXHAUST FAN CONTROL PANEL.

(33) PROPOSED CONCRETE EQUIPMENT PAD FOR MCC-2 AND SCADA CONTROL PANEL CP-12 FURNISHED AND INSTALLED BY THE GENERAL CONTRACTOR TO SUPPORT THE MOTOR CONTROL CENTER. THE EQUIPMENT PAD SHALL BE 6 INCHES LONGER AND WIDER THEN THE MCC AND 4 INCHES THICK.

(34) NOT USED.

(35) PROPOSED MOTORIZED VALVE V-HS-2 WITH VALVE POSITIONING, MONITORING AND LIMITS FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A NON-FUSED DISCONNECT SWITCH ON THE WALL AND ROUTE A 3/4 INCH CONDUIT WITH 3 #12 AND 1 #12 GROUND FROM MCC-2 TO THE DISCONNECT SWITCH AND ROUTE A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT FROM THE DISCONNECT SWITCH TO THE VALVE MOTOR AND INSTALL 3 #12 CONDUCTORS AND 1 #12 GROUND.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE MOTORIZED VALVE TO THE SCADA CONTROL PANEL WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR CONTROL AND MONITORING VALVE POSITIONING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE MOTORIZED VALVE FROM SCADA CONTROL PANEL WITH 8 #14 CONDUCTORS, 4 #14 SPARES & 1 #14 GROUND TO A JUNCTION BOX AND FROM THE JUNCTION BOX TO THE VALVE WITH 4 #14 CONDUCTORS & 1 #14 GROUND IN A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR CONTROL AND MONITORING VALVE OPEN & CLOSED POSITIONS. THE JUNCTION BOX SHALL MOUNTED NEAR THE DISCONNECT SWITCH.

(36) PROPOSED MOTORIZED VALVE V-HS-1 WITH VALVE POSITIONING, MONITORING AND LIMITS FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A NON-FUSED DISCONNECT SWITCH ON THE WALL AND ROUTE A 3/4 INCH CONDUIT WITH 3 #12 AND 1 #12 GROUND FROM MCC-2 TO THE DISCONNECT SWITCH AND ROUTE A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT FROM THE DISCONNECT SWITCH TO THE VALVE MOTOR AND INSTALL 3 #12 CONDUCTORS AND 1 #12 GROUND.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE MOTORIZED VALVE TO THE SCADA CONTROL PANEL WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR CONTROL AND MONITORING VALVE POSITIONING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE MOTORIZED VALVE FROM SCADA CONTROL PANEL WITH 8 #14 CONDUCTORS, 4 #14 SPARES & 1 #14 GROUND IN A JUNCTION BOX AND FROM THE JUNCTION BOX TO THE VALVE WITH 4 #14 CONDUCTORS & 1 #14 GROUND IN A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR CONTROL AND MONITORING VALVE OPEN & CLOSED POSITIONS. THE JUNCTION BOX SHALL MOUNTED NEAR THE DISCONNECT SWITCH.

(37) PROPOSED FIRE ALARM SYSTEM CONTROL PANEL (FACP) AND REMOTE DEVICES FURNISHED, INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR PER THE PLANS AND SPECIFICATIONS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #24 FOR CONTROL POWER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 4 #14 CONDUCTORS, 4 #14 SPARE AND 1 #14 GROUND TO THE SCADA CONTROL PANEL FOR REMOTE MONITORING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE 3/4 INCH GALVANIZED RIGID STEEL CONDUIT TO EACH FIRE ALARM DEVICE (PULL STATION, SMOKE DETECTOR, HORN/STROBES, STROBES, EACH FIRE PROTECTION FLOW AND TAMPER SWITCH AS SHOWN AND ROUTE THE REQUIRED FIRE ALARM MONITORING CABLES TO EACH SHOWN ON THE PLAN. COORDINATE AND INSTALL ALL WIRING PER THE MANUFACTURERS REQUIREMENTS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE FACP CONTROL PANEL TO THE ALARM BELL.

SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION. THE JUNCTION BOXES REQUIRED FOR EACH DEVICE SHALL BE GALVANIZED STEEL.

SEE THE FIRE ALARM SYSTEM INTERCONNECT DIAGRAM FOR ADDITIONAL INFORMATION.

THE ELECTRICAL CONTRACTOR SHALL ROUTE TWO (2) PHONE LINES TO THE FACP FOR REMOTE COMMUNICATIONS, COORDINATE THE SERVICES AND WIRING WITH THE TELEPHONE COMPANY.

(38) PROPOSED FLOOD ALARM XA-1-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE FLOOD ALARM (WATERBUG) AT THE LOCATION SHOWN ON THE PLANS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 4 #14 CONDUCTORS & 1 #14 GROUND FROM THE DEVICE TO SCADA CONTROL PANEL. NOTE THE DEVICE IS 24 VOLTS DC AND REQUIRES A POWER SUPPLY FOR PROPER OPERATION. TWO CONDUCTORS ARE REQUIRED FOR POWER AND TWO CONDUCTORS ARE REQUIRED FOR MONITORING.

(39) PROPOSED FLOOD ALARM XA-2-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE FLOOD ALARM (WATERBUG) AT THE LOCATION SHOWN ON THE PLANS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 4 #14 CONDUCTORS & 1 #14 GROUND FROM THE DEVICE TO SCADA CONTROL PANEL. NOTE THE DEVICE IS 24 VOLTS DC AND REQUIRES A POWER SUPPLY FOR PROPER OPERATION. TWO CONDUCTORS ARE REQUIRED FOR POWER AND TWO CONDUCTORS ARE REQUIRED FOR MONITORING.

(40) PROPOSED FLUORIDE ROOM LOW TEMPERATURE THERMOSTAT TEL-1-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE THERMOSTAT SHALL BE INSTALLED AND WIRED TO THE SCADA CONTROL PANEL BY ELECTRICAL CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE THERMOSTAT IN THE FLUORIDE ROOM AT 48 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE.

SEE SPECIFICATIONS FOR THE REQUIRED THERMOSTAT.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 & 1 #14 GROUND TO THE SCADA CONTROL PANEL FROM THE THERMOSTAT.

(41) PROPOSED CHLORINE ROOM LOW TEMPERATURE THERMOSTAT TEL-2-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE THERMOSTAT SHALL BE INSTALLED AND WIRED TO THE SCADA CONTROL PANEL BY ELECTRICAL CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE THERMOSTAT IN THE CHLORINE ROOM AT 48 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE.

SEE SPECIFICATIONS FOR THE REQUIRED THERMOSTAT.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 & 1 #14 GROUND TO THE SCADA CONTROL PANEL FROM THE THERMOSTAT.

(42) PROPOSED FLOW ELEMENT FE-1-1 AND FLOW TRANSMITTER FIT-1-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE FLOW ELEMENT SHALL BE INSTALLED BY THE PROCESS CONTRACTOR AND THE FLOW TRANSMITTER FIT-1-1 INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR AT 54 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE TWO (2) 1 INCH CONDUITS FROM THE FLOW ELEMENT TO THE FLOW TRANSMITTER FOR THE SIGNAL AND COIL WIRING. COORDINATE EXACT WIRING WITH MANUFACTURER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L-1, CKT #29 TO THE FLOW TRANSMITTER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE TRANSMITTER FIT-1-1 TO THE SCADA CONTROL PANEL WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR MONITORING INSTANTANEOUS FLOW AND TOTALIZED FLOW.

(43) PROPOSED FLOW ELEMENT FE-2-1 AND FLOW TRANSMITTER FIT-2-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE FLOW ELEMENT SHALL BE INSTALLED BY THE PROCESS CONTRACTOR AND THE FLOW TRANSMITTER FIT-2-1 INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR AT 54 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE TWO (2) 1 INCH CONDUITS FROM THE FLOW ELEMENT TO THE FLOW TRANSMITTER FOR THE SIGNAL AND COIL WIRING. COORDINATE EXACT WIRING WITH MANUFACTURER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L-1, CKT #20 TO THE FLOW TRANSMITTER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE TRANSMITTER FIT-2-1 TO THE SCADA CONTROL PANEL WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR MONITORING INSTANTANEOUS FLOW AND TOTALIZED FLOW.

(44) PROPOSED FLOW ELEMENT FE-3-1 AND FLOW TRANSMITTER FIT-3-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE FLOW ELEMENT SHALL BE INSTALLED BY THE PROCESS CONTRACTOR AND THE FLOW TRANSMITTER FIT-3-1 INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR AT 54 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE TWO (2) 1 INCH CONDUITS FROM THE FLOW ELEMENT TO THE FLOW TRANSMITTER FOR THE SIGNAL AND COIL WIRING. COORDINATE EXACT WIRING WITH MANUFACTURER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L-1, CKT #22 TO THE FLOW TRANSMITTER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE TRANSMITTER FIT-3-1 TO THE SCADA CONTROL PANEL CP-1 WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR MONITORING INSTANTANEOUS FLOW AND TOTALIZED FLOW.

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

REVISIONS

MARK	DATE	DESCRIPTION

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
PROPOSED POWER AND SYSTEMS PLAN KEYED NOTES

SHEET
E10

PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLAN KEYED NOTES:

(45) PROPOSED MOTORIZED VALVE V-FW-1 WITH VALVE POSITIONING, MONITORING AND LIMITS FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A NON-FUSED DISCONNECT SWITCH ON THE WALL AND ROUTE A 3/4 INCH CONDUIT WITH 3 #12 AND 1 #12 GROUND FROM MCC-1B TO THE DISCONNECT SWITCH AND ROUTE A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT FROM THE DISCONNECT SWITCH TO THE VALVE MOTOR AND INSTALL 3 #12 CONDUCTORS AND 1 #12 GROUND.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE MOTORIZED VALVE TO THE SCADA CONTROL PANEL WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR CONTROL AND MONITORING VALVE POSITIONING.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE MOTORIZED VALVE FROM SCADA CONTROL PANEL WITH 8 #14 CONDUCTORS, 4 #14 SPARES & 1 #14 GROUND TO A JUNCTION BOX AND FROM THE JUNCTION BOX TO THE VALVE WITH 4 #14 CONDUCTORS & 1 #14 GROUND IN A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT FOR CONTROL AND MONITORING VALVE OPEN & CLOSED POSITIONS. THE JUNCTION BOX SHALL MOUNTED NEAR THE DISCONNECT SWITCH.

(46) PROPOSED CORD AND PLUG CONNECTED CHLORINE ANALYZER QIT-1-1 AND SOLENOID VALVES SV-3-1 AND SV-4-1 INSTALLED BY THE PROCESS CONTRACTOR. FIELD VERIFY FINAL LOCATIONS OF EQUIPMENT WITH PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE RECEPTACLE AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #12.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH A 4/C #18 AWG TWISTED SHIELDED CABLE FROM THE CHLORINE ANALYZER TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL MOUNT A JUNCTION BOX ON THE WALL NEAR THE ANALYZER AND ROUTE A 3/4 INCH CONDUIT FROM THE SCADA CONTROL PANEL LOCATION WITH 3 #12 CONDUCTORS AND 1 #12 GROUND AND A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE JUNCTION BOX TO THE VALVES FOR CONTROL. VERIFY FINAL LOCATION OF VALVES WITH ENGINEER IN THE FIELD. VALVE SHALL BE POWERED OPEN, SPRING CLOSED AND SHALL BE CONTROLLED BY THE SCADA CONTROL PANEL WHEN THE RESPECTIVE HIGH SERVICE PUMPS ARE OPERATING.

(47) PROPOSED INLINE BLOWER FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL 120 VOLT, 20 AMP DISCONNECT SWITCH AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #24 TO THE DISCONNECT SWITCH AND 3#4 INCH LIQUID TIGHT FLEXIBLE METAL CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND TO THE MOTOR.

(48) PROPOSED 12 INCH SQUARE X 6 INCH DEEP NEMA 12 PULL BOX NO.1 WITH TERMINAL BLOCKS MOUNTED 36 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE FOR RESERVOIR PRESSURE TRANSDUCER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH CONDUIT WITH 2 PAIR #16 AWG TWISTED SHIELDED CABLE FROM THE JUNCTION BOX LOCATED AT THE RESERVOIR TO THIS JUNCTION BOX AND TERMINATE AS REQUIRED.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FROM THIS JUNCTION BOX TO THE SCADA CONTROL PANEL AND INSTALL AND TERMINATE THE 2 PAIR #16 AWG TWISTED SHIELDED CABLE AT BOTH LOCATIONS.

(49) PROPOSED 12 INCH SQUARE X 6 INCH DEEP NEMA 12 PULL BOX NO.2 WITH TERMINAL BLOCKS MOUNTED 36 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE FOR RESERVOIR FLOATS AND HATCH INTRUSION SWITCH.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 2 INCH CONDUIT WITH 10 #12 CONDUCTORS FOR HATCH INTRUSION SWITCHES AND FLOATS, 4 #12 SPARE, 1 #12 GROUND FROM THE JUNCTION BOX LOCATED AT THE RESERVOIR TO THIS JUNCTION BOX AND TERMINATE AS REQUIRED.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FROM THIS JUNCTION BOX TO THE SCADA CONTROL PANEL AND INSTALL AND TERMINATE THE 10 #12 CONDUCTORS, 4 #12 SPARE, 1 #12 GROUND AT BOTH LOCATIONS.

(50) PROPOSED CHLORINE INJECTOR SOLENOID VALVE SV-1-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS FROM THE SOLENOID VALVE AND 1 #12 GROUND FROM THE WELL PUMP VFD TO OPERATE WHEN THE WELL PUMP IS OPERATING.

(51) PROPOSED ELECTRIC WATER HEATER WH-1FURNISHED AND INSTALLED BY PLUMBING CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL INSTALL A SINGLE POLE, 20 AMP RATED DISCONNECT SWITCH AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS & 1 #12 GROUND TO THE DISCONNECT SWITCH FROM PANELBOARD L1, CKT #18. THE ELECTRICAL CONTRACTOR SHALL THE DISCONNECT SWITCH NEAR THE UNIT AND ROUTE A 3/4 INCH LIQUID-TIGHT FLEXIBLE METAL CONDUIT WITH 2 #12 CONDUCTORS & 1 #12 GROUND TO THE UNIT.

(52) PROPOSED ELECTRIC UNIT HEATER UH-2 WITH INTEGRAL DISCONNECT SWITCH AND REMOTE THERMOSTAT FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE CONDUIT AND WIRING SHOWN ON THE ONE-LINE DIAGRAM FROM MCC-1B TO A FLUSH MOUNTED NEMA 4X 316 STAINLESS STEEL JUNCTION BOX AND THEN TO THE UNIT HEATER.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE JUNCTION BOX ON THE WALL NEAR THE ELECTRIC UNIT HEATER AND ROUTE CONDUIT FROM THE JUNCTION BOX TO WITHIN 18 INCHES OF THE UNIT HEATER AND INSTALL A LENGTH OF LIQUID TIGHT FLEXIBLE METAL CONDUIT TO THE ELECTRIC UNIT HEATER.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A FLUSH MOUNTED WALL BOX FOR MOUNTING THE THERMOSTAT AND ROUTE 3/4 INCH CONDUIT FOR THE MECHANICAL CONTRACTOR TO INSTALL THE THERMOSTAT WIRING. ALSO SEE KEYED NOTE (63) BELOW FOR ADDITIONAL CONTROL REQUIREMENTS.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH INTERLOCKING CONTROL WIRING FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR FOR MONITORING AT FMCS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHNICAL CONTRACTOR

(53) PROPOSED ELECTRIC UNIT HEATER UH-1 WITH INTEGRAL DISCONNECT SWITCH AND REMOTE THERMOSTAT FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE CONDUIT AND WIRING SHOWN ON THE ONE-LINE DIAGRAM FROM MCC-1B TO A FLUSH MOUNTED NEMA 4X 316 STAINLESS STEEL JUNCTION BOX AND THEN TO THE UNIT HEATER.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE JUNCTION BOX ON THE WALL NEAR THE ELECTRIC UNIT HEATER AND ROUTE CONDUIT FROM THE JUNCTION BOX TO WITHIN 18 INCHES OF THE UNIT HEATER AND INSTALL A LENGTH OF LIQUID TIGHT FLEXIBLE METAL CONDUIT TO THE ELECTRIC UNIT HEATER.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A FLUSH MOUNTED WALL BOX FOR MOUNTING THE THERMOSTAT AND ROUTE 3/4 INCH CONDUIT FOR THE MECHANICAL CONTRACTOR TO INSTALL THE THERMOSTAT WIRING.

(54) PROPOSED BUILDING LOW TEMPERATURE THERMOSTAT TEL-3-1 FURNISHED BY THE SYSTEM INTEGRATOR.

THE THERMOSTAT SHALL BE INSTALLED AND WIRED TO THE SCADA CONTROL PANEL BY ELECTRICAL CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL MOUNT THE THERMOSTAT IN THE DEEP WELL PUMP ROOM AT 48 INCHES ABOVE FINISHED FLOOR MEASURED TO TOP OF ENCLOSURE.

SEE SPECIFICATIONS FOR THE REQUIRED THERMOSTAT.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 & 1 #14 GROUND TO THE SCADA CONTROL PANEL FROM THE THERMOSTAT.

(55) PROPOSED EXHAUST FAN EF-3 FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE LIGHT SWITCH SHOWN ON THE LIGHTING PLANS AND ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND TO THE EXHAUST FAN FROM THE SWITCH AND 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND PANELBOARD L1, CKT #7 TO THE LIGHT SWITCH.

(56) PROPOSED CORD AND PLUG CONNECTED CHLORINE CHEMICAL WEIGHT SCALE WE-1-1WE-1-2/WIT-1-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH A 4/C #18AWG TWISTED SHIELDED CABLE FROM THE SCALE CONTROLLER TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A 20 AMP RATED CORROSION RESISTANT RECEPTACLE APPROXIMATELY 48 INCHES ABOVE FINISHED FLOOR TO POWER THE WEIGHT SCALE. THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #8.

(57) PROPOSED CHLORINE SHUT DOWN CONTROL PANEL WITH SOLENOID VALVES SV-2-1 AND SV-2-2 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANEL L1, CKT #26 TO THE CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS FOR EACH SOLENOID VALVE AND 1 #12 GROUND FROM THE SHUT DOWN CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 ALARM CONDUCTORS AND 1 #14 GROUND FROM THE SHUT DOWN CONTROL PANEL TO SCADA CONTROL PANEL.

(58) PROPOSED LOSS OF VACUUM DETECTOR VS-1-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANEL L1, CKT #28 TO THE DETECTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS FROM THE SOLENOID VALVE AND 1 #12 GROUND TO THE VACUUM DETECTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 VS-1-1 ALARM CONDUCTORS AND 1 #14 GROUND FROM THE VACUUM DETECTOR TO SCADA CONTROL PANEL.

(59) PROPOSED CORD AND PLUG CONNECTED FLUORIDE CHEMICAL WEIGHT SCALE WE-2-1/WIT-2-1 FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH A 4/C #18AWG TWISTED SHIELDED CABLE FROM THE SCALE CONTROLLER TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A 20 AMP RATED CORROSION RESISTANT RECEPTACLE WITH GASKETED COVER PLATE APPROXIMATELY 48 INCHES ABOVE FINISHED FLOOR TO POWER THE WEIGHT SCALE. THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #6.

(60) PROPOSED CORD AND PLUG CONNECTED FLUORIDE PUMP FURNISHED AND INSTALLED BY THE PROCESS CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A CORROSION RESISTANT RECEPTACLE ON THE WALL WITH GASKETED COVER PLATE.

THE PUMP IS 120 VOLT (CORD & PLUG CONNECTED).

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANEL L1, CKT #30. THE ELECTRICAL CONTRACTOR SHALL MOUNT THE RECEPTACLE 42 INCHES AFF.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT WITH TWO (2) 2/C #18 AWG TWISTED SHIELDED PAIR CABLES, ONE FOR PACING AND ONE FOR VERIFICATION OF SPEED TO THE SCADA CONTROL PANEL.

(61) PROPOSED CHLORINE GAS DETECTOR AND GAS DETECTION CONTROL PANEL FURNISHED BY THE SYSTEM INTEGRATOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L-1, CKT #10 TO THE GAS DETECTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM THE GAS DETECTION CONTROL PANEL TO THE GAS DETECTOR AND 3/4 INCH CONDUIT WITH 4#4 CONTROL CONDUCTORS, 2 #14 SPARE AND 1 #14 GROUND FROM THE GAS DETECTION CONTROL PANEL TO THE SCADA CONTROL PANEL.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT FROM THE GAS DETECTOR TO THE SCADA CONTROL PANEL WITH TWO (2) 2/C #18 TWISTED SHIELDED CABLES FOR MONITORING CHLORINE GAS LEVELS.

(62) PROPOSED FLUORIDE ROOM EXHAUST FAN EF-1 AND MOTORIZED DAMPERS MOD-1 AND MOD-3 SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

PROPOSED DOOR SWITCHES AND LIGHT/EXHAUST FAN PUSHBUTTON STATIONS FURNISHED BY THE SYSTEM INTEGRATOR AND INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.

THE FLUORIDE ROOM EXHAUST FAN AND DAMPERS SHALL BE CONTROLLED BY THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL FURNISHED BY THE SYSTEM INTEGRATOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR. SEE THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL DIAGRAM FOR ADDITIONAL INFORMATION.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL THE EXHAUST FAN DISCONNECT SWITCH AND INSTALL THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL TO CONTROL THE EXHAUST FAN, ROOM LIGHTS AND DAMPERS FROM THE INTERIOR AND EXTERIOR PUSHBUTTON STATIONS SHOWN FOR THE FLUORIDE ROOM.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL TO THE EXHAUST FAN DISCONNECT SWITCH AND MOTORIZED DAMPER FROM PANELBOARD L1, CKT #11.

THE ELECTRICAL CONTRACTOR SHALL ROUTE THE REQUIRED CONDUIT AND WIRING SHOWN ON THE SYSTEM INTEGRATOR'S CONTROL DIAGRAMS LISTED IN THE SHOP DRAWINGS. ALL CONTROL WIRING SHALL BE #14 AWG THWN STRANDED COPPER.

THE WIRING SHALL BE TERMINATED ON TERMINAL BLOCKS IN THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL WITH ALL THE OTHER WIRING ENTERING OR LEAVING THE ENCLOSURE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH INTERLOCKING CONTROL WIRING FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR FOR MONITORING AT FMCS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHANICAL CONTRACTOR.

(63) PROPOSED CHLORINE ROOM EXHAUST FAN EF-2 AND MOTORIZED DAMPERS MOD-2 AND MOD-4 SHALL BE FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

PROPOSED DOOR SWITCHES AND LIGHT AND EXHAUST FAN PUSHBUTTON STATIONS FURNISHED BY THE SYSTEM INTEGRATOR AND INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.

THE FLUORIDE ROOM EXHAUST FAN AND DAMPER SHALL BE CONTROLLED BY THE CHLORINE LIGHTING AND EXHAUST FAN CONTROL PANEL FURNISHED BY THE SYSTEM INTEGRATOR AND INSTALLED BY THE ELECTRICAL CONTRACTOR.

SEE THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL DIAGRAM AND KEYED NOTE 61 FOR ADDITIONAL INFORMATION.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL TO CONTROL THE EXHAUST FAN, ROOM LIGHTS AND DAMPER FROM THE PUSHBUTTON STATIONS SHOWN IN THE FLUORIDE ROOM.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL TO THE EXHAUST FAN DISCONNECT SWITCH AND MOTORIZED DAMPERS FROM PANELBOARD L1, CKT #9.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #14 CONTROL CONDUCTORS TO INTERRUPT THE CIRCUITING FROM THE HEATING CONTROL THERMOSTAT TO THE HEATER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE THE REQUIRED CONDUIT AND WIRING SHOWN ON THE SYSTEM INTEGRATOR'S CONTROL DIAGRAMS LISTED IN THE SHOP DRAWINGS. ALL CONTROL WIRING SHALL BE #14 AWG THWN STRANDED COPPER.

THE WIRING SHALL BE TERMINATED ON TERMINAL BLOCKS IN THE FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL PANEL WITH ALL THE OTHER WIRING ENTERING OR LEAVING THE ENCLOSURE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH INTERLOCKING CONTROL WIRING FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR FOR MONITORING AT FMCS. COORDINATE EXACT LOCATION AND REQUIREMENTS WITH MECHNICAL CONTRACTOR

(64) PROPOSED AIR HANDLER UNIT AHU-1 FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 3 #12 CONDUCTORS AND 1 #12 GROUND FROM MCC-1B VFD TO THE AIR HANDLER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 8 #14 MONITORING CONDUCTORS, 6 #14 SPARE AND 1 #14 GROUND FROM MCC-1B VFD TO THE AIR HANDLER.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 1 INCH CONDUIT FOR DIGITAL CONTROL WIRING TO FMCS AND A 3/4 INCH CONDUIT WITH ANALOG CONTROL WIRING TO THE MODULATING VALVES AS REQUIRED.

COORDINATE ALL WIRING AND ROUTING WITH MECHANICAL CONTRACTOR.

(65) PROPOSED SERVICE ENTRANCE ENCLOSURE FURNISHED AND INSTALLED AND WIRED BY THE ELECTRICAL CONTRACTOR.

THE SERVICE ENTRANCE ENCLOSURE SHALL BE A 1200 AMP RATED FOR 277/480 VOLT, 3 PHASE, 4 WIRE ELECTRICAL SERVICE AND SHALL BE MG&E APPROVED.

THE ENCLOSURE SHALL MEASURE 55.75 INCHES HIGH X 46.25 INCHES WIDE X 15 INCHES DEEP MADE FROM .125 INCH THICK ALUMINUM, BE 600 VOLT RATED, UL LISTED AND NEMA 3R RATED. THE ENCLOSURE SHALL BE MANUFACTURED BY RJB CALVA-CLOSURE PRODUCTS CO., CATALOG NUMBER 1200 AMP BUS- IN AC544614 AND SHALL BE SUPPLIED WITH SHORTING BARS FOR THE PHASE CONDUCTORS. NO APPROVED EQUAL.

THE ENCLOSURE SHALL BE WALL MOUNTED AND THE SERVICE ENTRANCE CONDUITS FROM THE ELECTRICAL COMPANY SHALL ENTER THROUGH THE BOTTOM OF THE ENCLOSURE AND THE CONDUITS TO MCC-1A CORNER SECTION SHALL ENTER NEAR THE BOTTOM OF THE OF THE MCC SUCH THAT THEY CAN BE BOTTOM FEED INTO THE MAIN CIRCUIT BREAKER LOCATED IN MCC-1A AS SHOWN ON THE ONE-LINE DIAGRAM.

(66) EXISTING JUNCTION BOX.

(67) PROPOSED MOTOR CONTROL CENTER MCC-2 AND SCADA CONTROL PANEL CP-12 FURNISHED BY THE SYSTEM INTEGRATOR. SEE KEYED NOTE (8) FOR SCADA CONTROL PANEL REQUIREMENTS.

THE ELECTRICAL CONTRACTOR SHALL INSTALL THE MOTOR CONTROL CENTER MCC-2 AT THE LOCATION SHOWN ON THE PLANS.

THE MCC SHALL BE INSTALLED ON THE REQUIRED CONCRETE PAD.

THE ELECTRICAL CONTRACTOR SHALL ROUTE THE POWER CONDUITS FROM MOTOR CONTROL CENTER 1B AS SHOWN ON THE ONE-LINE DIAGRAM.

THE ELECTRICAL CONTRACTOR SHALL BOLT THE MCC TO FLOOR AT EACH OF THE FOUR CORNERS ON THE CONCRETE PAD. SEE THE ELEVATION PLAN FOR ADDITIONAL INFORMATION.

SEE THE OTHER KEYED NOTES FOR ADDITIONAL INFORMATION.

Powrtek Engineering, Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

REVISIONS

MARK	DATE	DESCRIPTION

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
PROPOSED POWER AND SYSTEMS PLAN KEYED NOTES

SHEET
E11

PROPOSED POWER, SYSTEMS AND INSTRUMENTATION PLAN KEYED NOTES:

(68) PROPOSED 2 INCH GALVANIZED STEEL CONDUIT STUBBED THROUGH TH WALL AND OUT THE BUILDING AND CAPPED INSDIE THE BUILDING AT ABOUT 6 INCHES AFF AND ROUTE 24 INCHES BFG AND CAPPED AT FIVE (5) FEET FROM THE BUILDING FOR FUTURE FIBER OPTIC CABLE

(69) PROPOSED FMCS FURNISHED AND INSTALLED BY THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH INTERLOCKING CONTROL WIRING FROM AHU-1, EXHAUST FANS EF-1 AND EF-2 AND GAS UNIT HEATERS UH-1, UH-2 AND UH-3 .

COORDINATE EXACT LOCATION AND INTERLOCKING REQUIREMENTS OF THE FMCS WITH THE HVAC CONTRACTOR.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 CONDUCTORS AND 1 #12 GROUND FROM PANELBOARD L1, CKT #16.

(70) EXISTING TELEPHONE SERVICE (TWO LINES) TO BE ROUTED TO A NEW 24 INCH SQUARE PAINTED BACK BOARD, 3/4 INCH THICK FOR TELEPHONE COMPANY PUNCH BLOCKS.

THE ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL A RECEPTACLE 24 INCHES AFF, MEASURED TO TOP OF BOX.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A 3/4 INCH CONDUIT WITH 2 #12 AND 1 #12 GROUND FROM PANELBOARD L1, CKT #2 TO THE RECEPTACLES. NOTE THAT THE CIRCUIT BREAKER IN PANELBOARD L1 IS A GFI TYPE.

THE ELECTRICAL CONTRACTOR SHALL ROUTE A #10 INSULATED GROUND CONDUCTOR AND SECURE IT TO THE BACKBOARD FOR TELEPHONE COMPANY TERMINATIONS.

GENERAL CONSTRUCTION NOTES:

1. ALL LIGHT SWITCHES AND RECEPTACLES SHALL BE SURFACE MOUNTED ON EXISTING WALLS AND IN THE WALLS WHERE NEW CONSTRUCTION IS SHOWN AT 48 INCHES AND 36 INCHES RESPECTIVELY, UNLESS OTHERWISE NOTED.
2. ALL POWER AND DIGITAL CONTROL CONDUCTORS SHALL BE 600 VOLT RATED, STRANDED COPPER WITH TYPE XHHW INSULATION PER THE SPECIFICATIONS. THE MINIMUM SIZE CONDUCTORS SHALL BE #12 AWG.
3. EACH 20 AMP 120 VOLT CIRCUIT SHALL BE 2 #12 CONDUCTORS AND 1 #12 GROUND, UNLESS OTHERWISE NOTED.
4. ALL INSTRUMENTS SHALL BE WIRED WITH 2 #12 CONDUCTORS AND 1 #12 GROUND, UNLESS OTHERWISE NOTED.
5. ALL CONDUITS SHALL INCLUDE A SEPARATE EQUIPMENT GROUNDING CONDUCTOR.
6. ALL ANALOG AND ETHERNET CABLES SHALL MEET THE ELECTRICAL SPECIFICATIONS.
7. EACH DEVICE, ELECTRICAL EQUIPMENT AND INSTRUMENT SHALL BE WIRED PER THE ALARM LIST IN THE PLANS AND SPECIFICATIONS.
8. THE MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH FOR ABOVE FLOOR INSTALLATIONS AND 1 INCH CONDUIT BELOW FLOOR INSTALLATIONS, UNLESS OTHERWISE NOTED.
9. IN GENERAL, ALL CONDUITS SHALL BE INSTALLED UNDER THE FLOOR WHERE PRACTICABLE AND ALONG THE WALLS.
10. ALL CONDUITS LEAVING OR ENTERING THE PANELS, ENCLOSURES AND OTHER EQUIPMENT FROM EXTERIOR OR COLD AREAS SHALL BE DUX SEALED AT BOTH ENDS. SEE SPECIFICATIONS FOR EXPLOSION-PROOF AREAS.
11. ALL HOLES THROUGH MASONRY SHALL BE MADE WITH CORE DRILLS IF NOT SLEEVED THROUGH THE WALLS. IF CONDUITS REQUIRE CORE DRILLING, OTHER METHODS SUCH AS CHISELING OR HAMMERED OUT OPENINGS ARE NOT ACCEPTABLE. THE HOLES SHALL MADE NOT LARGER THAN ¼ LARGER DIAMETER THEN THE CONDUIT O.D. ALL OPENINGS SHALL BE GROUTED WHERE INSTALLED THROUGH CONCRETE AND CAULKED WERE INSTALLED THROUGH SIDING MATERIALS.
12. USE STAINLESS STEEL FASTENERS FOR MOUNTING OF JUNCTION BOXES OR OTHER DEVICES LOCATED ON THE BUILDING EXTERIOR.
13. USE GALVANIZED OR ZINC COATED FASTENERS FOR MOUNTING OF JUNCTION BOXES OR OTHER DEVICES LOCATED ON THE INTERIOR OF THE BUILDING.
14. NOT ALL CONDUITS ARE SHOWN. THE CONDUITS SHOWN ARE INTENDED FOR GENERAL ROUTING ONLY. COORDINATE THE EXACT CONDUITS AND LOCATIONS WITH THE ENGINEER.

    THE ELECTRICAL CONTRACTOR SHALL SUBMIT CONDUIT AND EQUIPMENT LOCATION PLANS DURING SHOP DRAWING REVIEW.
15. THE ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE WITH THE OTHER TRADES FOR LOCATIONS OF SUCH EQUIPMENT AS PROCESS PIPING, MECHANICAL EQUIPMENT, HVAC EQUIPMENT, FIXTURE LOCATIONS AND SUPPORTS, PULL BOXES, JUNCTION BOXES, VFD UNITS AND SIMILAR ELECTRICAL EQUIPMENT, DISCONNECT SWITCHES, CONTROL OR MONITORING STATIONS, PROCESS EQUIPMENT, RECEPTACLES AND LIGHT SWITCHES AND SIMILAR DEVICES SHOWN ON THE PLANS PRIOR TO CONSTRUCTION. ANY ELECTRICAL EQUIPMENT RELOCATIONS REQUIRED BY THE ENGINEER DUE TO IMPROPER PLANNING ON THE ELECTRICAL CONTRACTORS PART OR BY THE OTHER TRADES SHALL BE RELOCATED BY THE ELECTRICAL CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT.
16. ALL NEW WORK SHALL CONSIDER FUTURE EXPANSION OF EQUIPMENT WHERE SHOWN ON THE PLANS. PROPER SPACING OF EQUIPMENT, LOCATIONS, AND ROUTING OF CONDUIT(S) SHALL BE PROVIDED. IF THE ENGINEER DETERMINES THAT THE INSTALLATION IS NOT ADEQUATE TO PROVIDE FOR FUTURE EXPANSION, THE ELECTRICAL CONTRACTOR SHALL RELOCATE THE EQUIPMENT AND CONDUIT AT NO ADDITIONAL COST TO THE CONTRACT.
17. THE INSTALLATIONS SHALL PROVIDE FOR EASE OF MAINTENANCE OF ALL EQUIPMENT INSTALLED. IF THE ENGINEER DETERMINES THAT THE INSTALLATION DOES NOT MEET THIS REQUIREMENT, THE ELECTRICAL CONTRACTOR SHALL RELOCATE THE ELECTRICAL EQUIPMENT AND CONDUIT AT NO ADDITIONAL COST TO THE CONTRACT.
18. ALL CONDUITS SHOWN FOR THE REQUIRED GROUNDING SHALL BE INSTALLED BEFORE THE FOUNDATION OR FOOTINGS ARE POURED. DO NOT INSTALL THE GROUNDING ELECTRODE CONDUCTORS IN DIRECT CONTACT WITH CONCRETE WITH EXCEPTION OF WHERE THE CONDUCTOR IS EXOTHERMICALLY WELDED TO THE REBAR OR WIRE MESH.

    IF THE GROUNDING IS NOT INSTALLED AS SHOWN ON THE PLANS, IT SHALL BE THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO SAW CUT, DEMOLISH, OR OTHERWISE REMOVE THE EXISTING CONCRETE AND INSTALL THE GROUNDING REQUIRED. THIS WORK SHALL BE PROVIDED AT NO ADDITIONAL COST TO THE CONTRACT.
19. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL HVAC AND PROCESS INSTALLATIONS WITH THE ELECTRICAL INSTALLATIONS WITH THE RESPECTIVE CONTRACTORS PRIOR TO BEGINNING WORK. THIS INCLUDES ALL INTERCONNECT WIRING AND EQUIPMENT NECESSARY TO PROVIDE PROPERLY OPERATING SYSTEMS WETHER IT IS SHOWN ON THE PLANS OR NOT. IT IS THE ELECTRICAL CONTRACTOR'S RESPONSIBILITY TO VERIFY THE PROPER OR INTENDED OPERATION OF ALL EQUIPMENT AND TO WORK-OUT ALL NECESSARY EQUIPMENT, DETAILS AND HARDWARE WITH THE RESPECTIVE CONTRACTORS. THIS INFORMATION SHALL BE PROVIDED TO THE ENGINEER DURING SHOP REVIEW.

Powrtek Engineering,Inc.
20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson Success by Design

SEH

UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

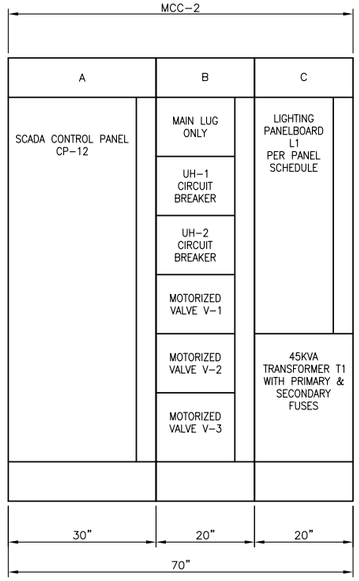
REVISIONS

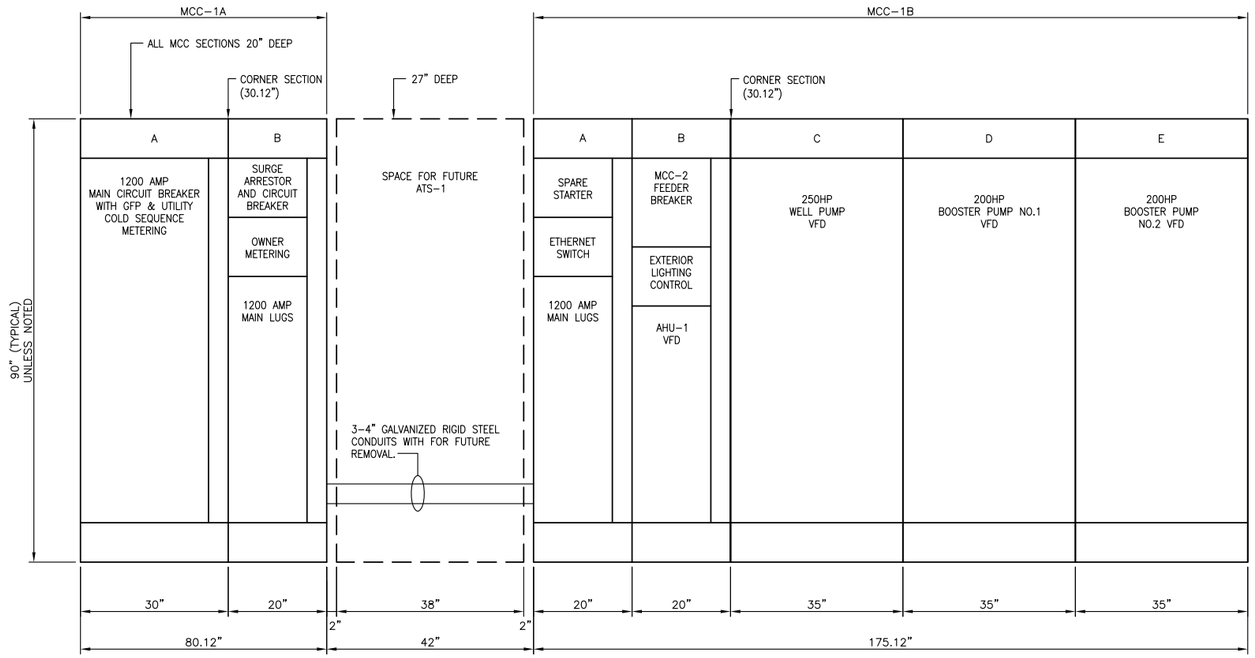
MARK	DATE	DESCRIPTION

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH®)

SHEET TITLE
PROPOSED POWER AND SYSTEMS PLAN KEYED NOTES AND GENERAL CONSTRUCTION NOTES

SHEET
E12





WELL HOUSE NO.12 PROPOSED MOTOR CONTROL CENTER ELEVATIONS

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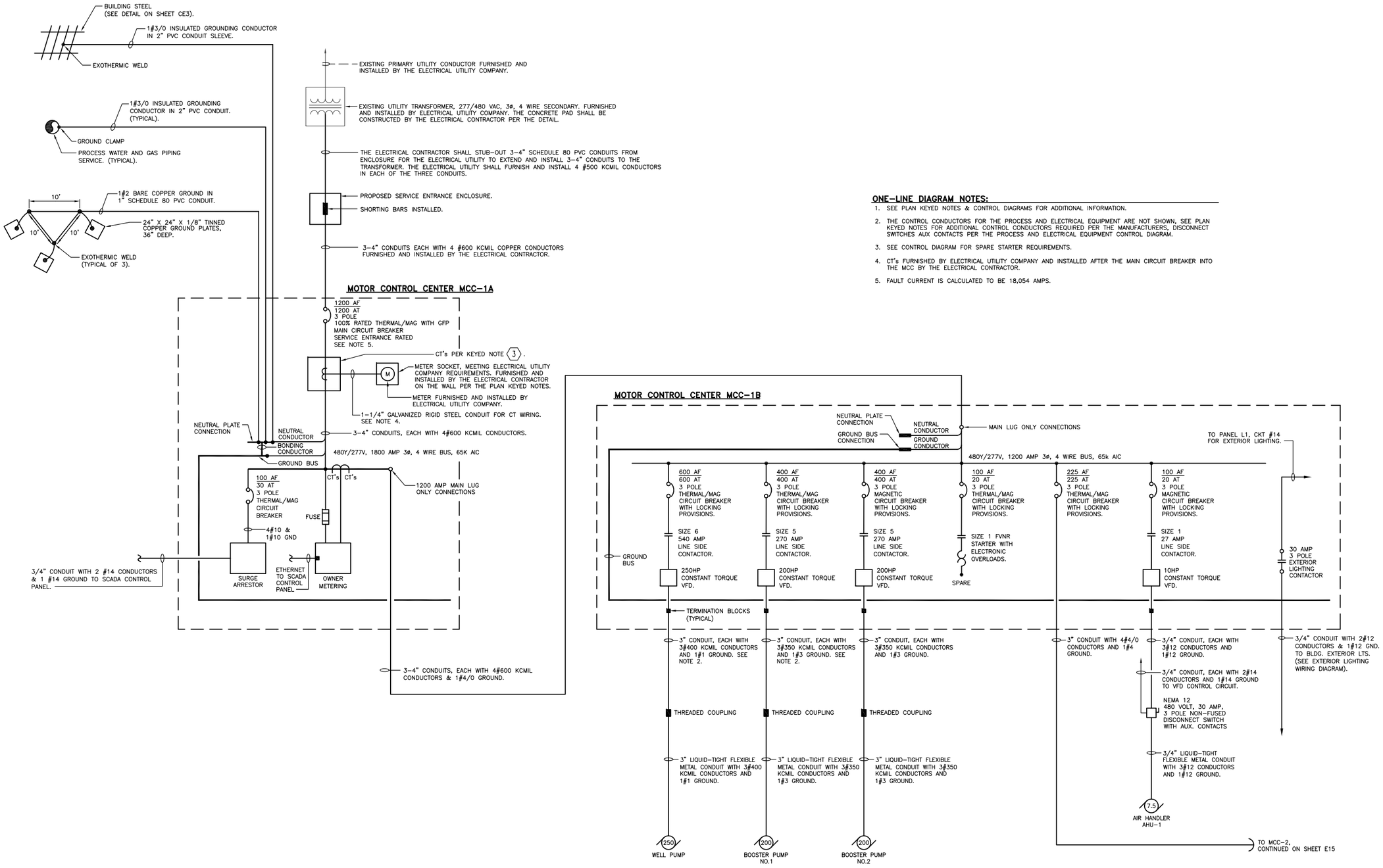
SHEET TITLE
WELL HOUSE NO.12
PROPOSED MOTOR
CONTROL CENTER
ELEVATIONS

SHEET
E13



ONE-LINE DIAGRAM NOTES:

1. SEE PLAN KEYED NOTES & CONTROL DIAGRAMS FOR ADDITIONAL INFORMATION.
2. THE CONTROL CONDUCTORS FOR THE PROCESS AND ELECTRICAL EQUIPMENT ARE NOT SHOWN, SEE PLAN KEYED NOTES FOR ADDITIONAL CONTROL CONDUCTORS REQUIRED PER THE MANUFACTURERS, DISCONNECT SWITCHES AUX CONTACTS PER THE PROCESS AND ELECTRICAL EQUIPMENT CONTROL DIAGRAM.
3. SEE CONTROL DIAGRAM FOR SPARE STARTER REQUIREMENTS.
4. CT's FURNISHED BY ELECTRICAL UTILITY COMPANY AND INSTALLED AFTER THE MAIN CIRCUIT BREAKER INTO THE MCC BY THE ELECTRICAL CONTRACTOR.
5. FAULT CURRENT IS CALCULATED TO BE 18,054 AMPS.

PROPOSED ELECTRICAL ONE-LINE DIAGRAM
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WAUKESHA, WI 53186
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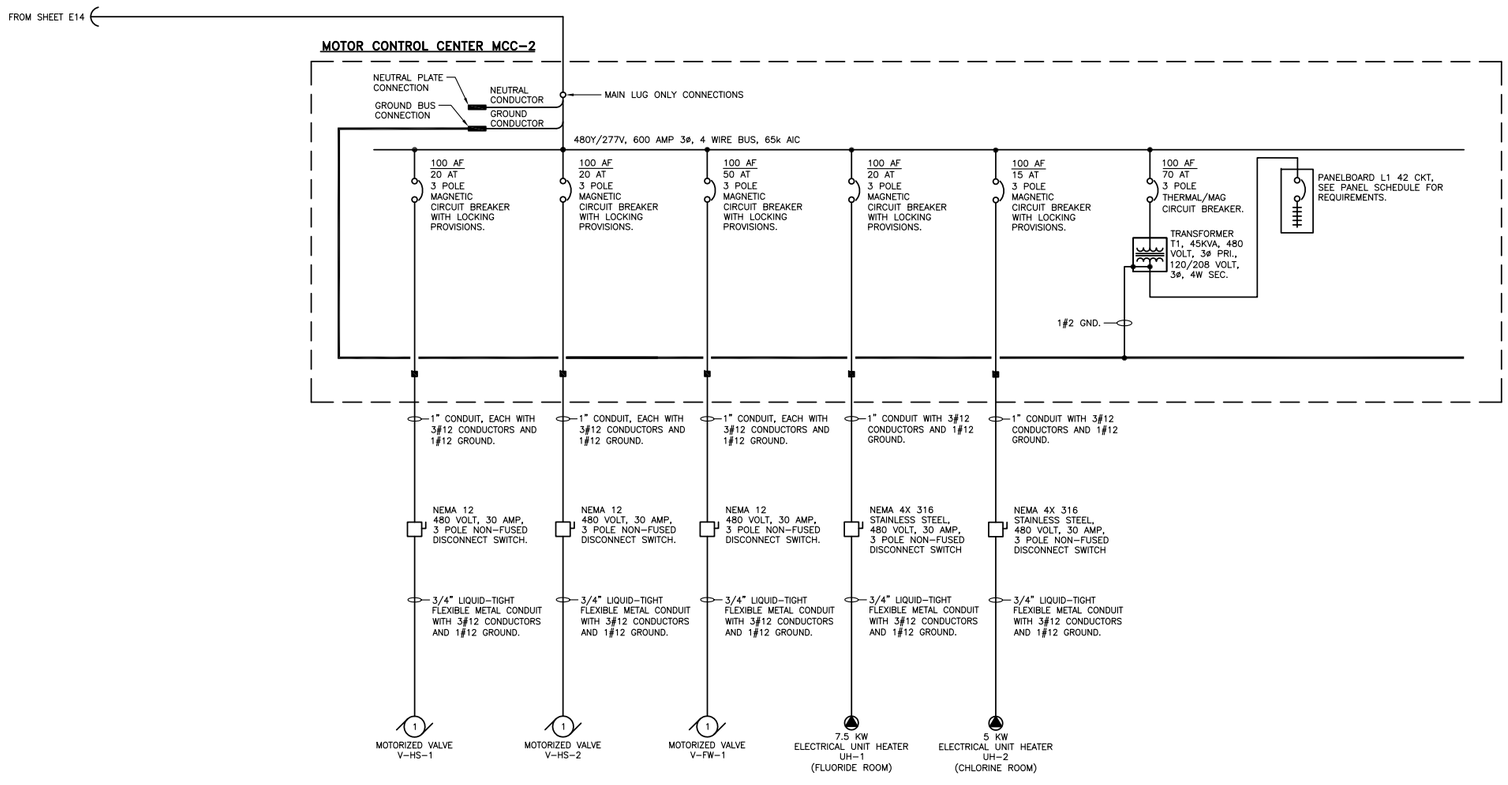
SHEET TITLE
PROPOSED ELECTRICAL ONE-LINE DIAGRAM

SHEET
E14

PANELBOARD: L1	BUS AMPS:	225	MAIN: 225 AF/150AT, 3 POLE		MOUNTING:		NOTES:	LOCATED IN MCC-1B
	VOLTAGE:	120/208	CIRCUIT BREAKER:	X	SURFACE:			42 SPACE PANELBOARD
	PHASE:	3	MAIN LUG ONLY:		FLUSH:			
	WIRE:	4	SUB-FEED LUGS:				AIC RATING:	10KAIC

CIRCUIT DESCRIPTION:	AMPS A	AMPS B	AMPS C	CB AMP	CKT	CKT	CB AMP	AMPS A	AMPS B	AMPS C	CIRCUIT DESCRIPTION:
ELECTRICAL ROOM LIGHTING	3.00			20/1	1	2	20/1	4.50			ENTRY ROOM RECEPTACLES (1)
HIGH SERVICE PUMP ROOM LIGHTING		1.30		20/1	3	4	20/1		3.00		REST ROOM RECEPTACLES (1)
METER AND WELL PUMP ROOM LIGHTING			2.70	20/1	5	6	20/1			0.20	FLUORIDE SCALE RECEPTACLE (2)
REST ROOM LIGHTING AND EXHAUST FAN	2.50			20/1	7	8	20/1	0.20			CHLORINE SCALE RECEPTACLE (2)
CHLORINE ROOM LIGHTING AND EXHAUST FAN				20/1	9	10	20/1		0.10		CHLORINE GAS DETECTOR
FLOURIDE ROOM LIGHTING AND EXHAUST FAN				20/1	11	12	20/1			0.20	CHLORINE ANALYZERS NO.1 & NO.2
EXISTING RECEPTACLE CIRCUIT IN PUMP/ELECTRICAL ROOM (1)	3.00			20/1	13	14	20/1	2.00			EXTERIOR LIGHTS
EXISTING RECEPTACLE CIRCUIT IN PUMP/ELECTRICAL ROOM (1)		3.00		20/1	15	16	20/1		2.00		FMCS
EXISTING RECEPTACLE CIRCUIT IN PUMP/ELECTRICAL ROOM (1)			3.00	20/1	17	18	20/1			1.50	TELEPHONE RECEPTACLE
EXISTING RECEPTACLE CIRCUIT IN PUMP/ELECTRICAL ROOM (1)	3.00			20/1	19	20	20/1	0.10			FLOW TRANSMITTER FIT-2-1
EXISTING SCADA CONTROL PANEL RECEPTACLE				20/1	21	22	20/1		0.10		FLOW TRANSMITTER FIT-3-1
EXISTING RADIO CONTROL PANEL				20/1	23	24	20/1			8.00	INLINE BLOWER
FLUORIDE ROOM RECEPTACLES (1)	3.00			20/1	25	26	20/1				SPARE
CHLORINE ROOM RECEPTACLES (1)		3.00		20/1	27	28	20/1				SPARE
FLOW TRANSMITTER FIT-1-1			0.10	20/1	29	30	20/1				SPARE
EXISTING CARD READER CONTROL PANEL RECEPTACLE	0.10			20/1	31	32	20/1				SPARE
SPARE				20/1	33	34	20/1				SPARE
SPARE				20/1	35	36	20/1				SPARE
SPARE	0.00			20/1	37	38	20/1				SPARE
SPARE		0.00		20/1	39	40	20/1				SPARE
SPARE			0.00	20/1	41	42	20/1				SPARE
SUB-TOTAL:	14.60	7.30	5.80			SUB-TOTAL:		6.80	5.20	9.90	
						TOTAL:		21.40	12.50	15.70	

NOTES:
(1) PROVIDE GFI CIRCUIT BREAKER WITH 5ma GROUND FAULT TRIP SETTING AND CORROSION RESISTANT RECEPTACLES.
(2) PROVIDE CORROSION RESISTANT RECEPTACLES.



PROPOSED ELECTRICAL ONE-LINE DIAGRAM
N.T.S.

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20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
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FAX: 262-827-9615

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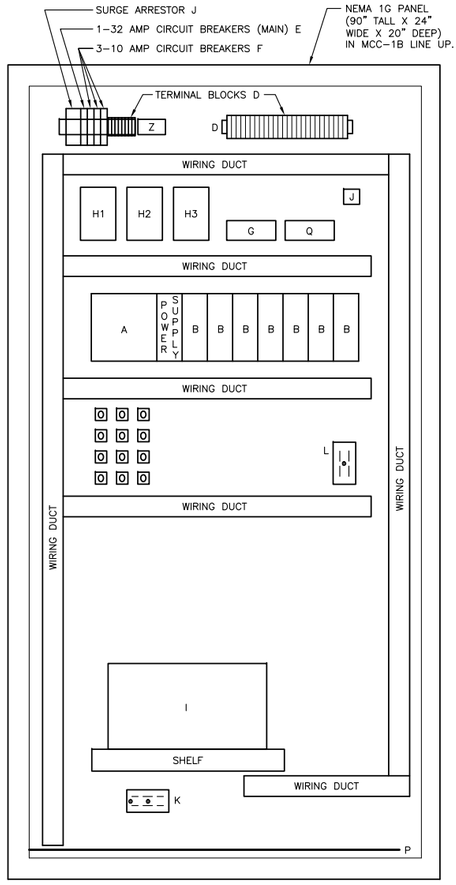
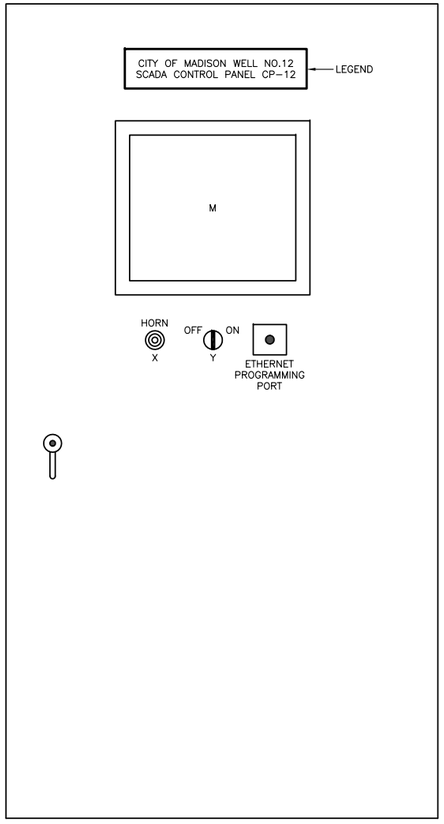
Short Elliott Hendrickson, Inc. ® (SEH)

SHEET TITLE
PROPOSED ELECTRICAL ONE-LINE DIAGRAM AND PANELBOARD L1 SCHEDULE

SHEET
E15



INTERIOR VIEW



EXTERIOR VIEW

SCADA CONTROL PANEL – CP-12 LAYOUT
N.T.S.

BILL OF MATERIALS – FOR SCADA CONTROL PANEL CP-12

"LEGEND"	NAME/DESCRIPTION	NO. REQ'D.	MANUFACTURER	CATALOG OR PART NO.
A	PROGRAMMABLE LOGIC CONTROLLER (PLC)	1	ALLEN BRADLEY	COMPACTLOGIX 1769-L32E
B	DIGITAL AND ANALOG I/O	AS REQ'D	ALLEN BRADLEY	PROVIDE 30% SPARE I/O
D	TERMINAL BLOCKS, FINGER SAFE	AS REQ'D	PHOENIX CONTACT	LT SERIES, 800 VOLT, 32 AMP (1) (5)
E	CIRCUIT BREAKER 32 AMP (PANEL)	1	PHOENIX CONTACT	TMC SERIES, NORMAL BLOW
F	CIRCUIT BREAKER 10 AMP (CONTROLS)	AS REQ'D	PHOENIX CONTACT	TMC SERIES, NORMAL BLOW
G	ETHERNET SWITCH, 16 PORT, MANAGED	1	N-TRON	714FX6
H1	POWER SUPPLY (HMI)	1	PHOENIX CONTACT	CM125-PS-120-230AC/24VDC/5/F
H2 & H3	PLC POWER SUPPLY PS2, PS3 & PLC INPUTS	2	PHOENIX CONTACT	CM125-PS-120-230AC/24VDC/5/F
I	UNINTERRUPTIBLE POWER SUPPLY 1.0KVA (UPS)	1	POWERWARE	1000VA, 900 WATT CATALOG 9130 WITH RELAY MONITOR CARD
J	ANTENNA SURGE ARRESTOR	1		
K	RECEPTACLE, 120 VOLT, 20 AMP	1	HUBBELL	HBL5352
L	RECEPTACLE, GFCI, 120 VOLT, 20 AMP	1	HUBBELL	GF5362
M	OPERATOR INTERFACE, PANEL VIEW PLUS CE 1500	1	ALLEN BRADLEY	2711-P-T-15C-4-A-6 (4)
N	NOT USED			
O	INTERFACE RELAYS	AS REQ'D	ALLEN BRADLEY	700-HB32Z24-3-4
P	INTERNAL MCC GROUND BUSSING	AS SHOWN	CUTLER HAMMER/ ALLEN BRADLEY	N/A
Q	RADIO (BY OWNERS SCADA CONTRACTOR)	1		
W	NOT USED	1	PER SPECIFICATIONS	SEE GENERAL NOTE 12.
X	FRONT PANEL MOUNTED HORN	1	EDWARDS	E110A (3)
Y	TWO POSITION SELECTOR SWITCH	1	ALLEN BRADLEY	800T, 30.5MM
SCADA CONTROL PANEL (AS SHOWN)	PLASTIC WIRING DUCT, 2"x2" TYPE "G" SNAP-IN SLOT TYPE	AS REQ'D	PANDUIT	G2X2LG6, LIGHT GREY W/ COVER
(PARTIALLY SHOWN)	SUB-PANEL	1	MCC BACK PANEL	ALLEN BRADLEY
(PARTIALLY SHOWN)	ENCLOSURE, NEMA 1, GASKETED SECTION, 21"W X 21"DP X 90"H	1	MCC SECTION	ALLEN BRADLEY
N/A	120VAC WIRING, WHITE STRANDED #14 AWG	AS REQ'D	DISTRIBUTOR	TYPE MTW-THW
N/A	120VAC WIRING, RED STRANDED #14 AWG	AS REQ'D	DISTRIBUTOR	TYPE MTW-THW
N/A	GROUND WIRING, GREEN STRANDED #14 AWG	AS REQ'D	DISTRIBUTOR	TYPE MTW-THW
N/A	PLC INPUT WIRING, BLUE STRANDED #14 AWG	AS REQ'D	DISTRIBUTOR	TYPE MTW-THW
N/A	PLC CABLES	AS REQ'D	DISTRIBUTOR	N/A (4)
N/A	BLACK ON GREY, #16 AWG SHIELDED, TWISTED PAIR.	AS REQ'D	ANIXTER	317-023-1601-B
(NOT SHOWN)	COMPUTER GENERATED HEAT SHRINK TYPE WIRE MARKERS	AS REQ'D	BRADY	PSIDP-111-187
Z	SURGE ARRESTOR	1	CRITEC	PER SPECIFICATIONS
AA	NOT USED			

NOTES:

(1) PROVIDE RED FOR 120V WIRING. PROVIDE WHITE FOR NEUTRAL WIRING. PROVIDE GREEN FOR GROUND WIRING.

(2) PROVIDE 1/2" LETTERS.

(3) USE OUTPUT CONTACT ON PLC TO POWER ALARM SIGNAL DEVICE.

(4) PROVIDE CABLES PER MANUFACTURER'S RECOMMENDATIONS.

(5) QUANTITY OF TERMINAL BLOCKS SHOWN IS FOR LOCATION ONLY, PROVIDE AS REQUIRED. ADD 30% SPARE AFTER ALL WIRING INCLUDING SPARE CONDUCTORS.

GENERAL NOTES:

1. SUPPLIER'S NAME AND PART NUMBERS ARE PROVIDED AS A MEANS OF ESTABLISHING CONFORMANCE STANDARDS FOR PERFORMANCE AND RATING, TESTING, AND MATERIALS. OTHER EQUIPMENT MAY BE SUBSTITUTED IF APPROVED BY THE ENGINEER.
2. ALL PANEL HARDWARE SHALL BE FASTENED TO BACK PANEL WITH STAINLESS STEEL THREADED SCREWS. DO NOT USE SELF-DRILLING OR SELF-TAPPING SCREWS.
3. PROVIDE INTERFACE RELAYS AS REQUIRED PER PLANS.
4. FRONT PANEL LAYOUT IS SHOWN FOR GENERAL CONFORMANCE ONLY.
5. PROVIDE 30% SPARE TERMINAL BLOCKS.
6. PROVIDE A MINIMUM OF 3" OF ISOLATION FOR ANALOG CABLES.
7. PROVIDE TWO (2) 4-20 MA INPUTS FOR FUTURE INSTRUMENTATION.
8. PROVIDE ALL REQUIRED CABLES AND PROGRAMMING.
9. SEE SPECIFICATIONS FOR I/O LIST.
10. PANEL SHALL BEAR UL LABEL.
11. INCLUDE ALL LEGEND PLATES AND GASKETS WITH ALL FRONT MOUNTED DEVICES.
12. PROVIDE 3 POINT LOCKING MECHANISM WITH FOUR (4) KEYES.

Powrtek Engineering, Inc.
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WAUKESHA, WI 53186
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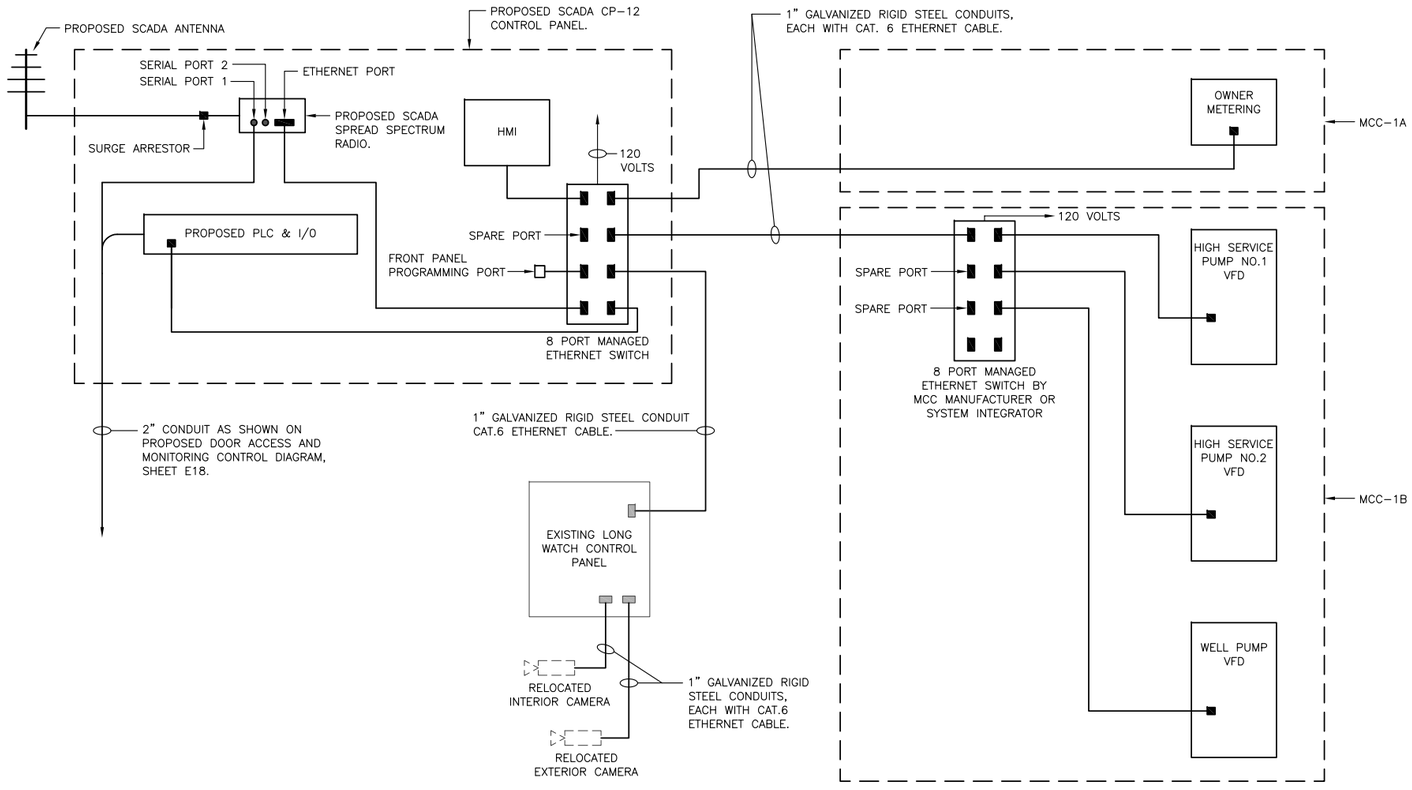
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc. (SEH)

SHEET TITLE
SCADA CONTROL PANEL LAYOUT AND BILL OF MATERIALS

SHEET
E16



NOTES:

1. POWER WIRING NOT SHOWN.
2. ALL CABLES TO OWNER METERING, PUMP NO.1 VFD AND PUMP NO.2 VFD ARE CAT. 6 CABLES.
3. ALL OTHER ETHERNET CABLES ARE PATCH CORDS.
4. SEE PLANS FOR PART OR CATALOG NUMBERS.

PLC ETHERNET INTERCONNECT DIAGRAM
N.T.S.

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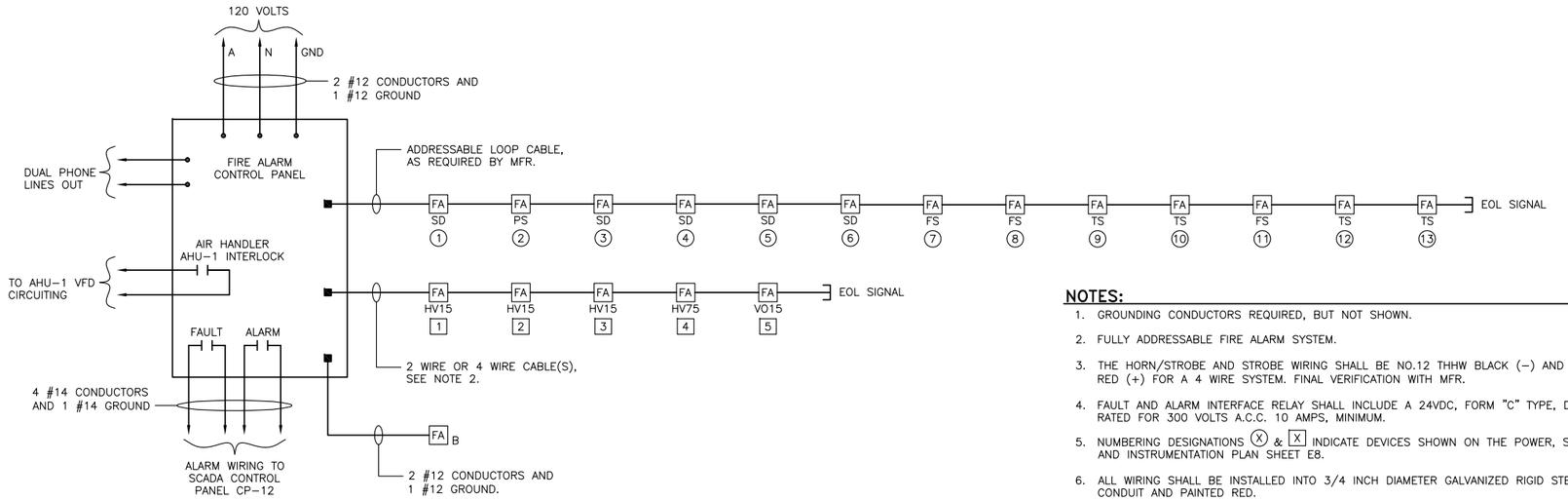
SHEET TITLE
PLC ETHERNET INTERCONNECT DIAGRAM

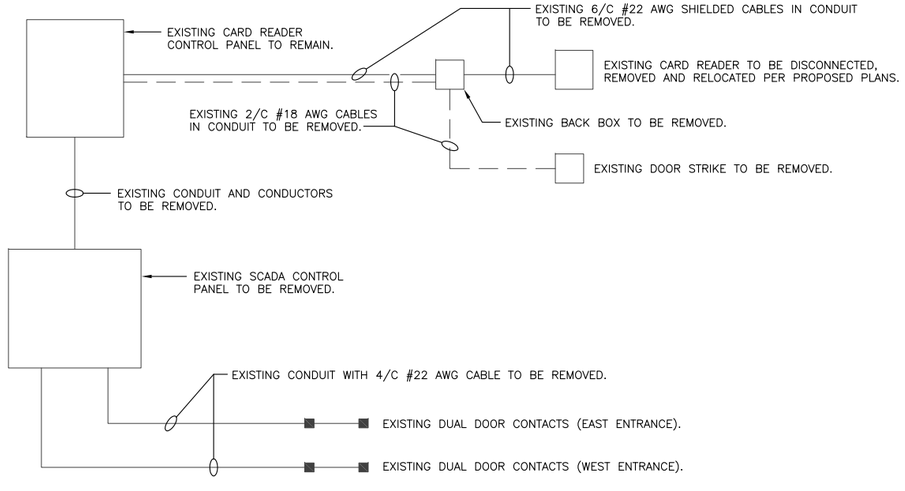
SHEET
E17



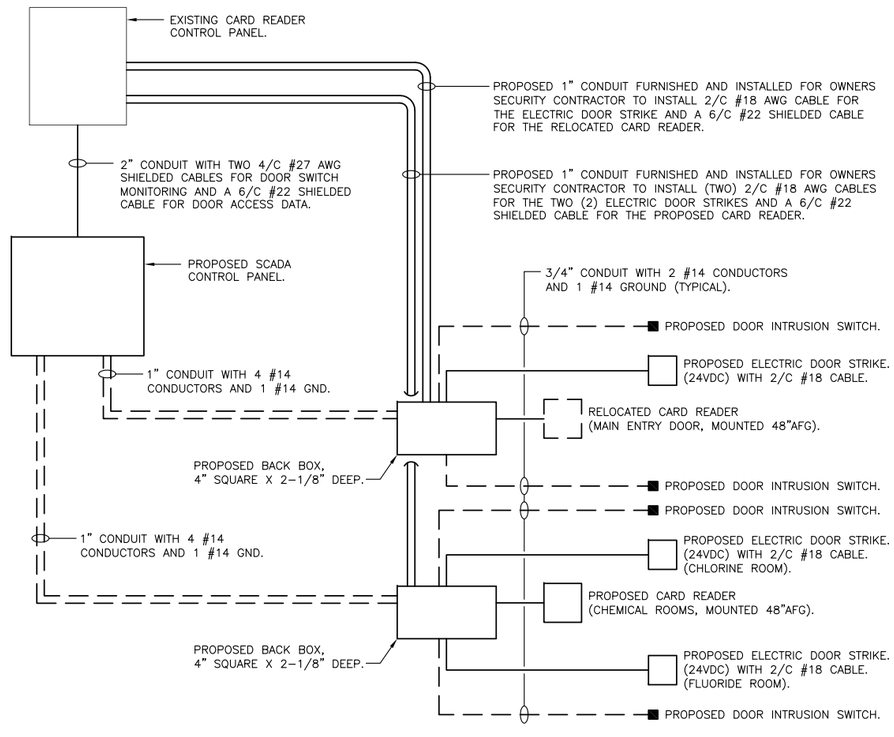
NOTES:

1. GROUNDING CONDUCTORS REQUIRED, BUT NOT SHOWN.
2. FULLY ADDRESSABLE FIRE ALARM SYSTEM.
3. THE HORN/STROBE AND STROBE WIRING SHALL BE NO.12 THHW BLACK (–) AND NO.12 RED (+) FOR A 4 WIRE SYSTEM. FINAL VERIFICATION WITH MFR.
4. FAULT AND ALARM INTERFACE RELAY SHALL INCLUDE A 24VDC, FORM "C" TYPE, DPDT RATED FOR 300 VOLTS A.C.C. 10 AMPS, MINIMUM.
5. NUMBERING DESIGNATIONS (X) & [X] INDICATE DEVICES SHOWN ON THE POWER, SYSTEMS AND INSTRUMENTATION PLAN SHEET E8.
6. ALL WIRING SHALL BE INSTALLED INTO 3/4 INCH DIAMETER GALVANIZED RIGID STEEL CONDUIT AND PAINTED RED.
7. ALL JUNCTIONS BOXES SHALL BE PAINTED RED.

FIRE ALARM SYSTEM INTERCONNECT DIAGRAM
N.T.S.



EXISTING DOOR ACCESS AND MONITORING CONTROL DIAGRAM
N.T.S.



PROPOSED DOOR ACCESS AND MONITORING CONTROL DIAGRAM
N.T.S.

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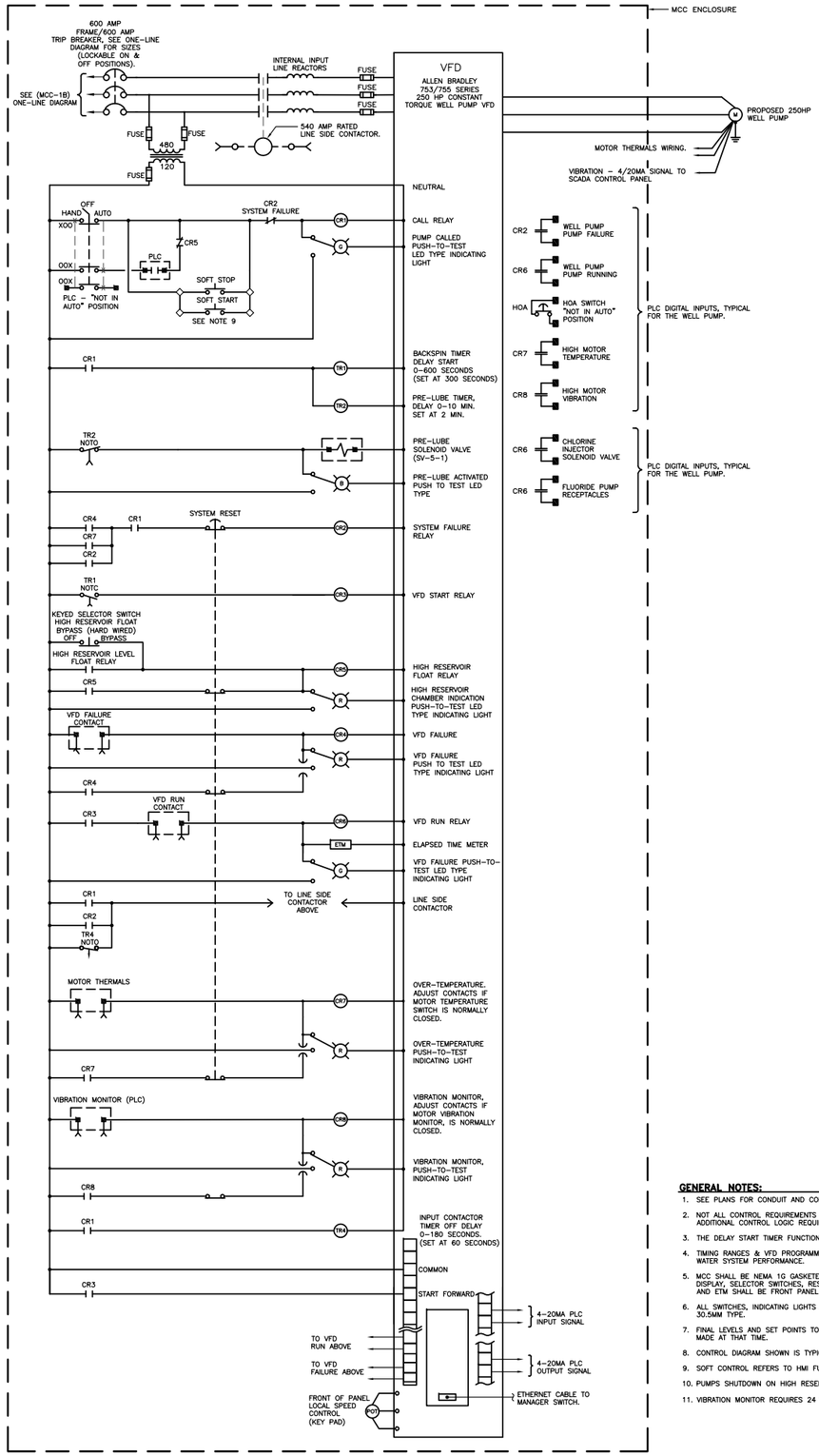
SHEET TITLE
FIRE ALARM SYSTEM INTERCONNECT DIAGRAM AND DOOR ACCESS MONITORING CONTROL DIAGRAM

SHEET
E18



TYPICAL WELL PUMP CONTROL DIAGRAM
N.T.S.

GENERAL NOTES:

1. SEE PLANS FOR CONDUIT AND CONDUCTOR SIZES.
2. NOT ALL CONTROL REQUIREMENTS MAY BE SHOWN. SEE SPECIFICATION SECTION 26 09 01 FOR ADDITIONAL CONTROL LOGIC REQUIREMENTS. WELL LEVEL SHALL BE INCLUDED IN PLC LOGIC.
3. THE DELAY START TIMER FUNCTIONS VARY WITH EACH PUMP OR MOTOR LOAD.
4. TIMING RANGES & VFD PROGRAMMING TO BE FINALIZED IN THE FIELD TO OPTIMIZE WATER SYSTEM PERFORMANCE.
5. MCC SHALL BE NEMA 1G GASKETED FOR CONTROL RELAYS AND TIMERS. VFD DISPLAY, SELECTOR SWITCHES, RESET, LED TRANSFORMER TYPE INDICATING LIGHTS, AND ETM SHALL BE FRONT PANEL MOUNTED.
6. ALL SWITCHES, INDICATING LIGHTS AND PUSH BUTTONS SHALL BE NEMA 13 RATED, 30.5MM TYPE.
7. FINAL LEVELS AND SET POINTS TO BE FIELD DETERMINED. FINAL ADJUSTMENTS WILL ALSO BE MADE AT THAT TIME.
8. CONTROL DIAGRAM SHOWN IS TYPICAL, USING ALLEN BRADLEY 753 SERIES VFD, MODIFY AS REQUIRED.
9. SOFT CONTROL REFERS TO HMI FUNCTIONS.
10. PUMPS SHUTDOWN ON HIGH RESERVOIR LEVELS.
11. VIBRATION MONITOR REQUIRES 24 VOLTS FOR OPERATION (NOT SHOWN).

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WAUKESHA, WI 53186
VOICE: 262-827-9575
FAX: 262-827-9615

Madison Water Utility

Potter Lawson Success by Design

SEH

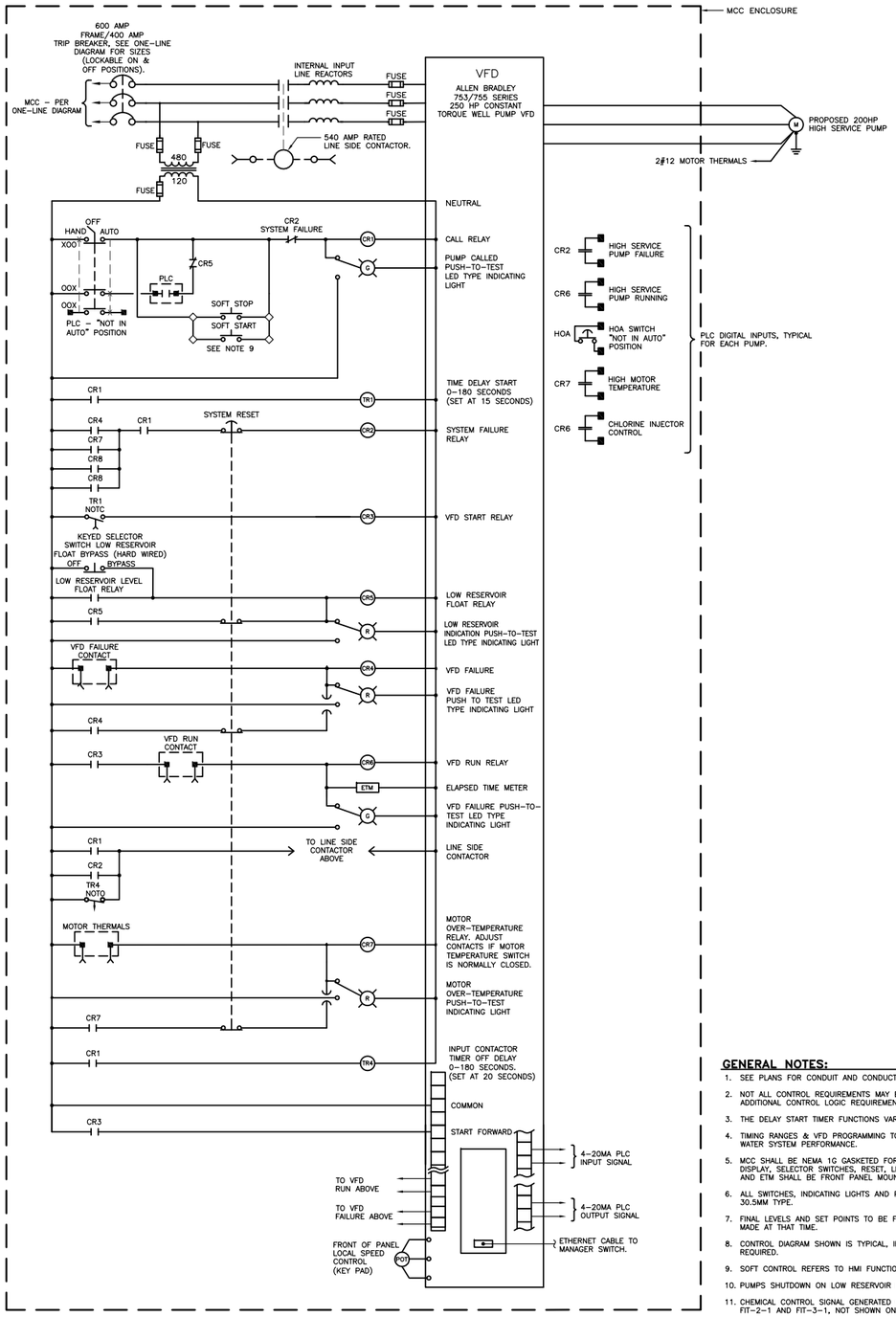
UNIT WELL 12 UPGRADE
AND CONVERSION
MADISON, WISCONSIN

MARK	DATE	DESCRIPTION
		REVISIONS

SEH FILE NO. MADWU 130564
PROJECT NO.
ISSUE DATE 06-12-2015
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc. © (SEH)

SHEET TITLE
TYPICAL WELL PUMP CONTROL DIAGRAM

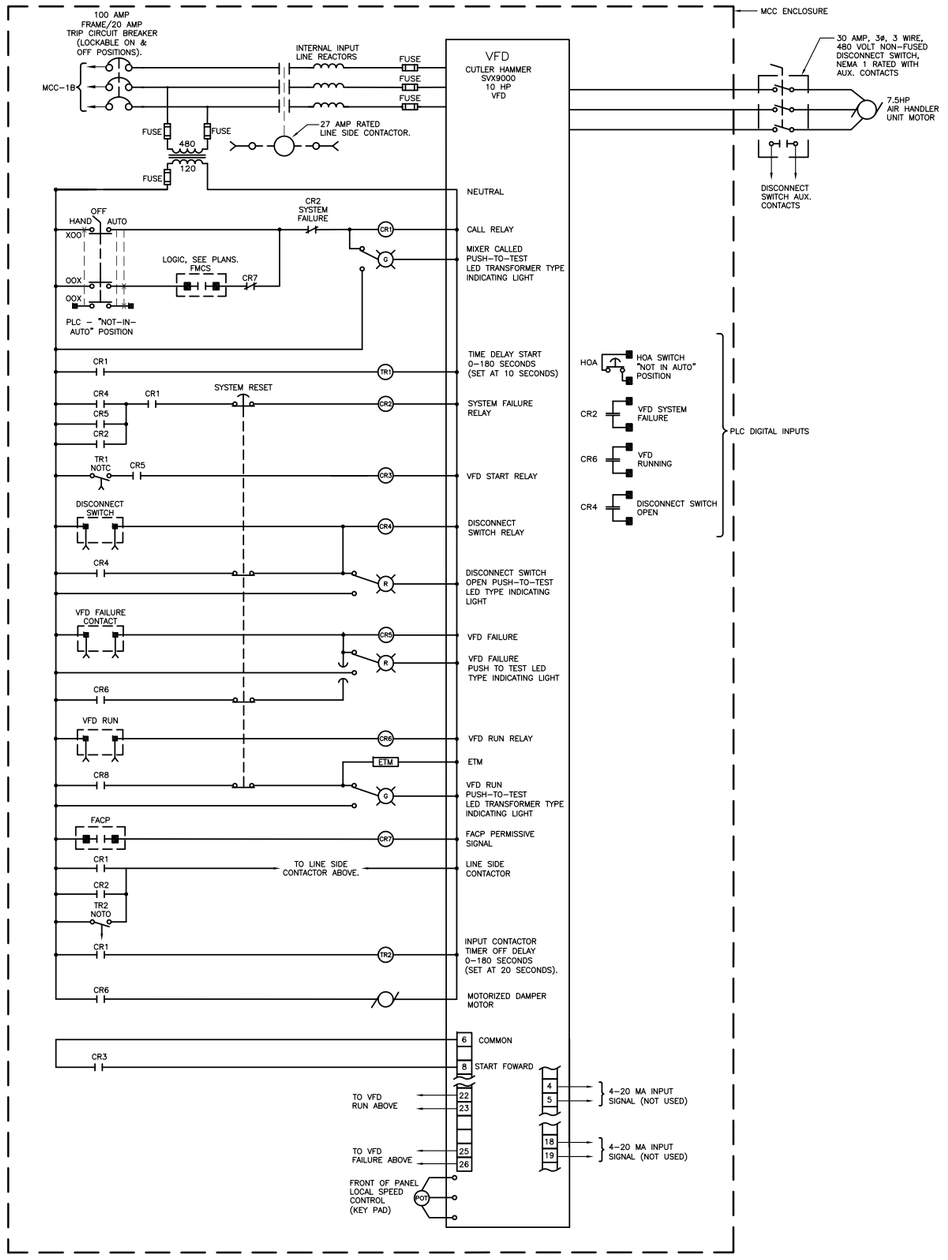
SHEET
E19



HIGH SERVICE PUMP P-HS-1 & P-HS-2 CONTROL DIAGRAM
N.T.S.

GENERAL NOTES:

1. SEE PLANS FOR CONDUIT AND CONDUCTOR SIZES.
2. NOT ALL CONTROL REQUIREMENTS MAY BE SHOWN. SEE SPECIFICATION SECTION 26 09 01 FOR ADDITIONAL CONTROL LOGIC REQUIREMENTS.
3. THE DELAY START TIMER FUNCTIONS VARY WITH EACH PUMP OR MOTOR LOAD.
4. TIMING RANGES & VFD PROGRAMMING TO BE FINALIZED IN THE FIELD TO OPTIMIZE WATER SYSTEM PERFORMANCE.
5. MCC SHALL BE NEMA 1G GASKETED FOR CONTROL RELAYS AND TIMERS. VFD DISPLAY, SELECTOR SWITCHES, RESET, LED TRANSFORMER TYPE INDICATING LIGHTS, AND ETM SHALL BE FRONT PANEL MOUNTED.
6. ALL SWITCHES, INDICATING LIGHTS AND PUSH BUTTONS SHALL BE NEMA 13 RATED, 30.5MM TYPE.
7. FINAL LEVELS AND SET POINTS TO BE FIELD DETERMINED. FINAL ADJUSTMENTS WILL ALSO BE MADE AT THAT TIME.
8. CONTROL DIAGRAM SHOWN IS TYPICAL, IF USING ALLEN BRADLEY 753 SERIES VFD, MODIFY AS REQUIRED.
9. SOFT CONTROL REFERS TO HMI FUNCTIONS.
10. PUMPS SHUTDOWN ON LOW RESERVOIR LEVEL.
11. CHEMICAL CONTROL SIGNAL GENERATED ON RESPECTIVE HIGH SERVICE PUMP FLOW METERS FIT-2-1 AND FIT-3-1, NOT SHOWN ON DIAGRAM AND LOCATED IN PLC LOGIC.



AIR HANDLER UNIT NO.1 CONTROL DIAGRAM
N.T.S.

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WAUKESHA, WI 53186
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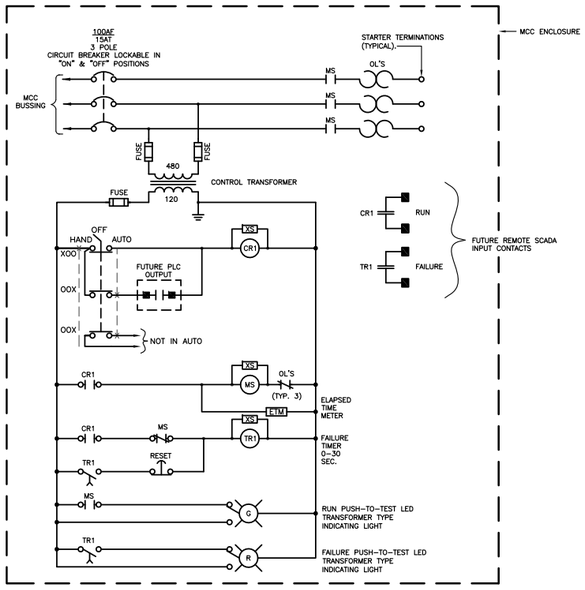
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
TYPICAL HIGH SERVICE PUMPS AND AHU-1 CONTROL DIAGRAMS

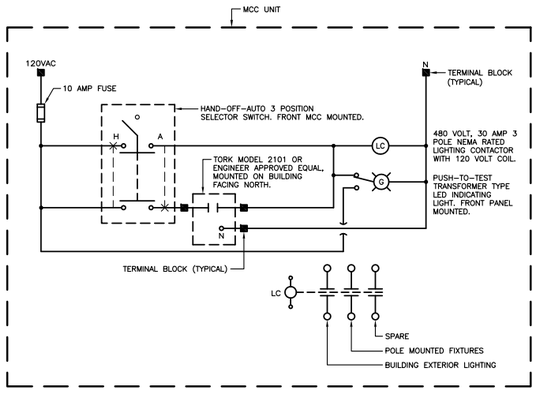
SHEET
E20



SPARE STARTER NOTES:

1. MCC SHALL BE NEMA 1G GASKETED FOR CONTROL RELAYS AND TIMERS. SELECTOR SWITCH, RESET PUSH BUTTON, LED TRANSFORMER TYPE INDICATING LIGHTS, AND ETM SHOWN ON CONTROL DIAGRAM SHALL BE FRONT PANEL MOUNTED.
2. ALL SWITCHES, INDICATING LIGHTS AND PUSH BUTTONS SHALL BE NEMA 13 RATED, 30.5MM TYPE.
3. DIAGRAMS ARE SHOWN IN GENERAL ONLY. OTHER RELAYS, TIMERS, AND FIELD DEVICES MAY BE REQUIRED.

SPARE STARTER CONTROL DIAGRAM
N.T.S.



NOTES:

1. ALL CONTROL WIRING SHALL BE #14 AWG STRANDED THWN OR XHHW COPPER CONDUCTORS IN 1/2" CONDUIT.
2. MOUNT PHOTOCELL ON WEATHERPROOF JUNCTION BOX WITH GASKETED COVER.
3. LOCATE FUSE IN ENCLOSURE.

WELL UNIT EXTERIOR LIGHTING CONTROL DIAGRAM
N.T.S.

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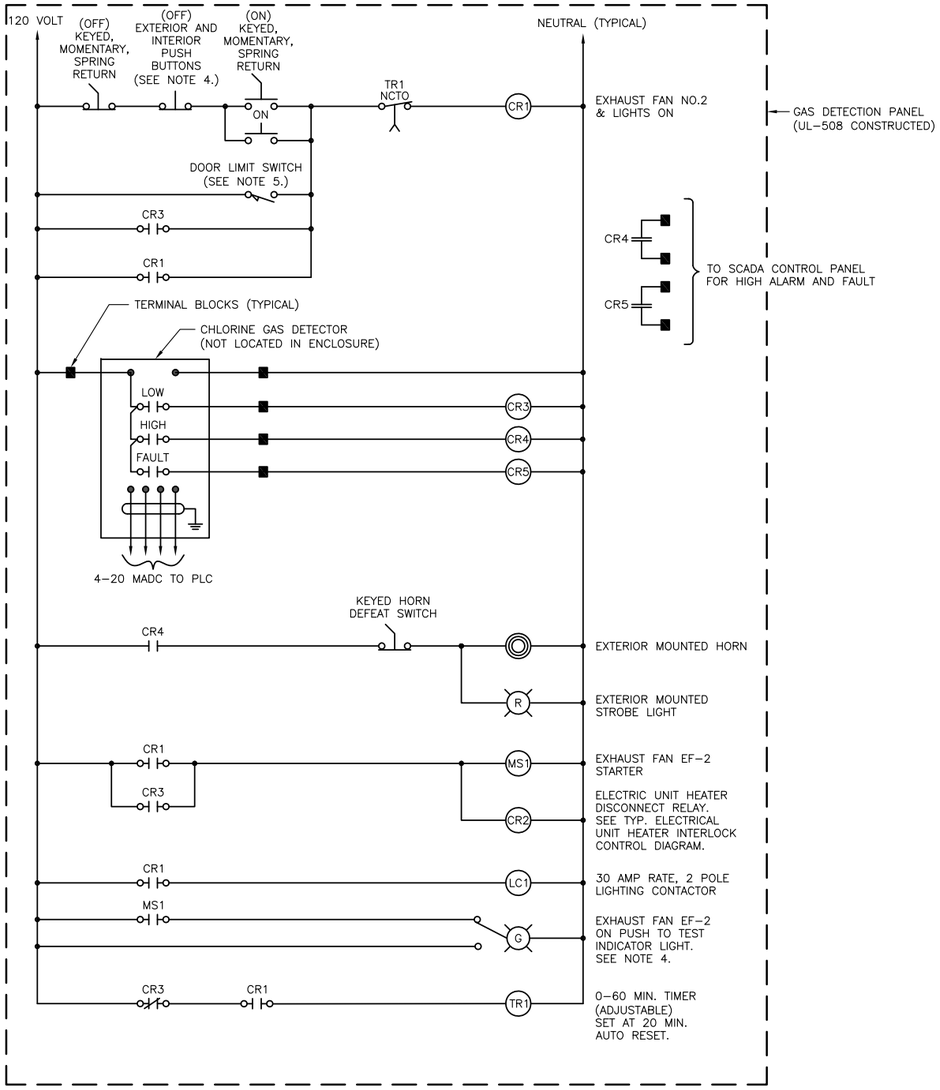
SHEET TITLE
SPARE STARTER AND EXTERIOR LIGHTING CONTROL DIAGRAMS

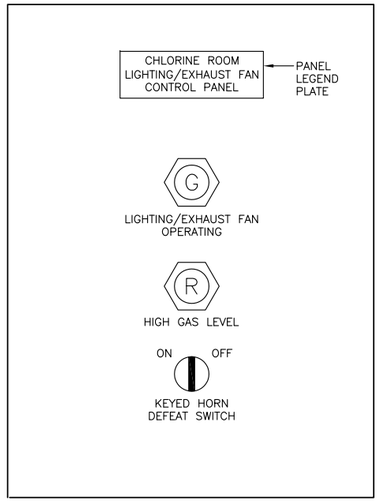
SHEET
E21



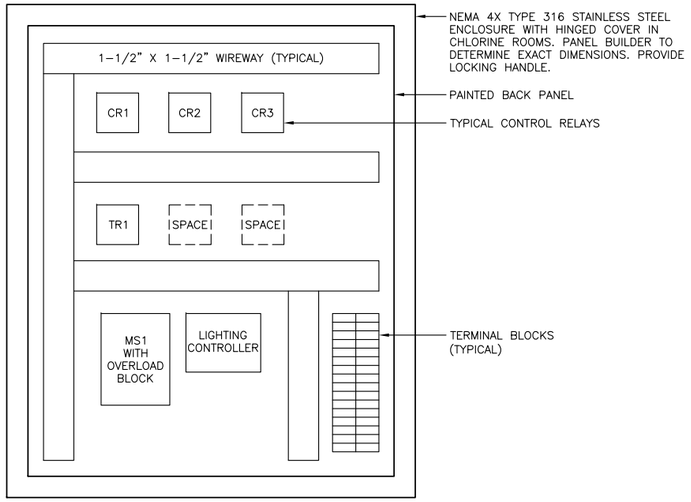
NOTES:

1. FOLLOW TYPICAL PUMP CONTROL PANEL DETAILS FOR CONSTRUCTION REQUIREMENTS FOR EACH PANEL. CHLORINE GAS DETECTOR IS LOCATED OUTSIDE ENCLOSURE AS SHOWN ON THE PLANS.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE THE CONTROL MODIFICATIONS TO EACH ELECTRIC UNIT HEATER WITH MECHANICAL CONTRACTOR.
3. PROVIDE A 20" X 16" X 8" DP NEMA 4 STAINLESS STEEL ENCLOSURE WITH CONTROL RELAY AND TERMINAL BLOCKS. UNIT SHALL BE UL-508 CONSTRUCTED AND LISTED. PROVIDE HINGED COVER.
4. EXTERIOR KEYED SWITCHES AND INTERIOR PUSH BUTTON SWITCHES AND LED TRANSFORMER TYPE INDICATING LAMPS SHALL BE MOUNTED IN THE EXTERIOR AND INTERIOR FLUSH MOUNTED NEMA 4X ALLEN BRADLEY OR APPROVED EQUAL CONTROL STATION.
5. THE DOOR INTRUSION LIMIT SWITCH SHALL INCLUDE AN ADDITIONAL SET OF CONTACTS FOR FAN/LIGHTING CONTROL.
6. THE EXTERIOR MOUNTED HORN SHALL BE FLOYD BELL CATALOG #TMB-86-201-S(S), 95dB(A)C 120 VOLTS AND NEMA 4X RATED.
7. VERIFY FINAL CIRCUITING WITH ENGINEER DURING SHOP DRAWING REVIEW. CONTROLS TO BE MODIFIED AT NO ADDITIONAL COST TO THE CONTRACT INCLUDING ADDITIONAL CONDUITS AND WIRING REQUIRED.

CHLORINE ROOM LIGHTING/EXHAUST FAN AND UNIT HEATER CONTROL DIAGRAM
N.T.S.



EXTERIOR VIEW
N.T.S.

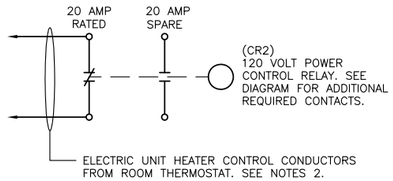


INTERIOR VIEW
N.T.S.

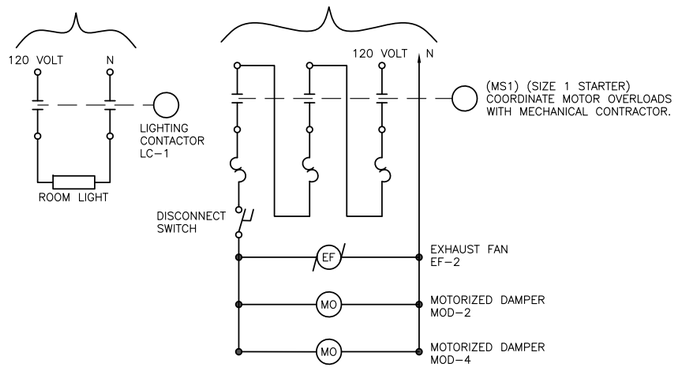
NOTES:

1. SEE RESPECTIVE CONTROL DIAGRAMS FOR ADDITIONAL INFORMATION AND REQUIREMENTS
2. ALL PANELS SHALL BE UL-508 CONSTRUCTED AND LISTED. PANEL SHALL BEAR UL LABEL.
3. ALL LIGHTS ARE LED TYPE, TRANSFORMER, 120 VOLT WITH PUSH-TO-TEST FEATURE.
4. REFER TO MOTOR STARTER SPECIFICATIONS FOR ADDITIONAL INFORMATION.
5. ALL CONDUIT TO BE STAINLESS STEEL.

CHLORINE ROOM LIGHTING/EXHAUST FAN CONTROL PANEL DETAIL
N.T.S.



TYPICAL ELECTRICAL UNIT HEATER INTERLOCK CONTROL DIAGRAM
N.T.S.



NOTE:
IF DAMPER REQUIRES 24VAC, PROVIDE CONTROL TRANSFORMER.

CHLORINE ROOM LIGHTING/EXHAUST FAN CONNECTIONS
N.T.S.

Powrtek Engineering, Inc.
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Madison Water Utility

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SEH

UNIT WELL 12 UPGRADE AND CONVERSION
MADISON, WISCONSIN

REVISIONS

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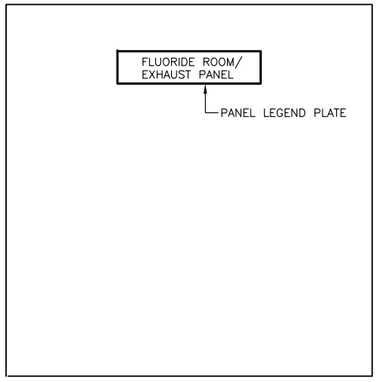
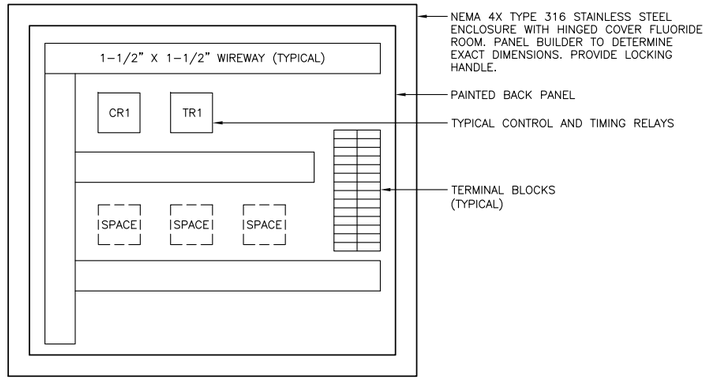
DESIGNED BY RICHARD J. BOYA
DRAWN BY BRIAN E. FULLER
Short Elliott Hendrickson, Inc.® (SEH)

SHEET TITLE
CHLORINE ROOM LIGHTING, EXHAUST FAN CONTROL DIAGRAMS AND PANEL DETAILS

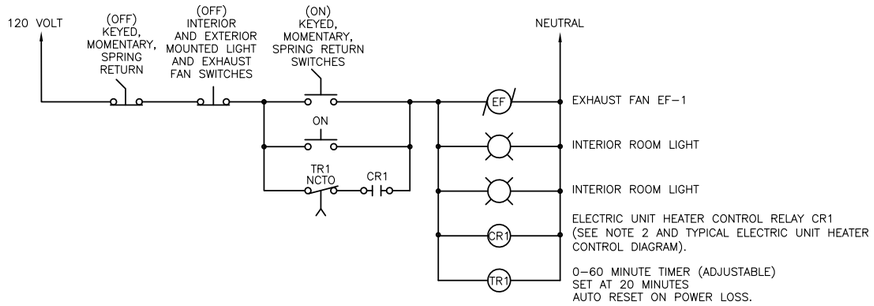
SHEET
E22



EXTERIOR VIEW
N.T.S.



INTERIOR VIEW
N.T.S.



FLUORIDE ROOM LIGHTING AND EXHAUST FAN CONTROL DIAGRAM
N.T.S.

NOTES:

1. SEE RESPECTIVE CONTROL DIAGRAMS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. ALL PANELS SHALL BE UL-508 CONSTRUCTED AND LISTED. PANEL SHALL BEAR UL LABEL.

FLUORIDE ROOM LIGHTING/EXHAUST FAN CONTROL PANEL DETAIL
N.T.S.

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20711 WATERTOWN RD., SUITE C
WAUKESHA, WI 53186
VOICE: 262-827-9575
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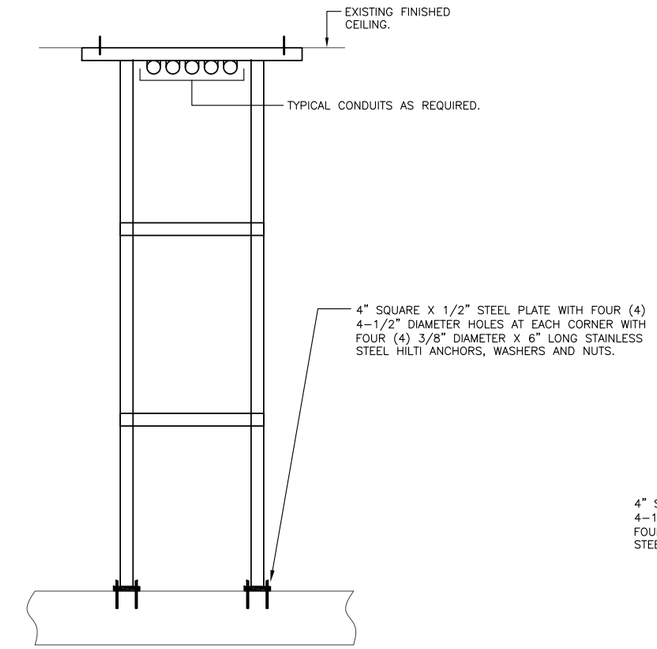
SHEET TITLE
FLUORIDE ROOM LIGHTING/EXHAUST FAN CONTROL DIAGRAM AND DETAILS

SHEET
E23

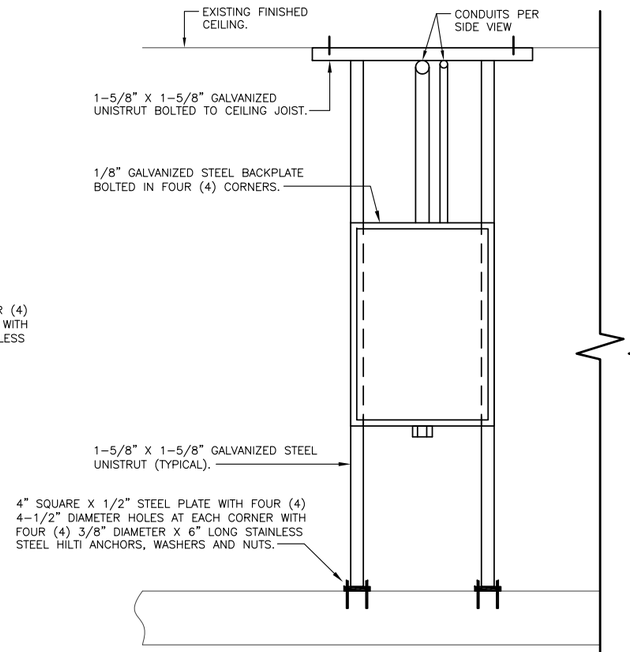
H:\PROJECTS\2285 - Madison Well No.12\Powrtek\E16_E25 - Diagrams and Details.dwg, 6/10/2015 5:40:16 PM



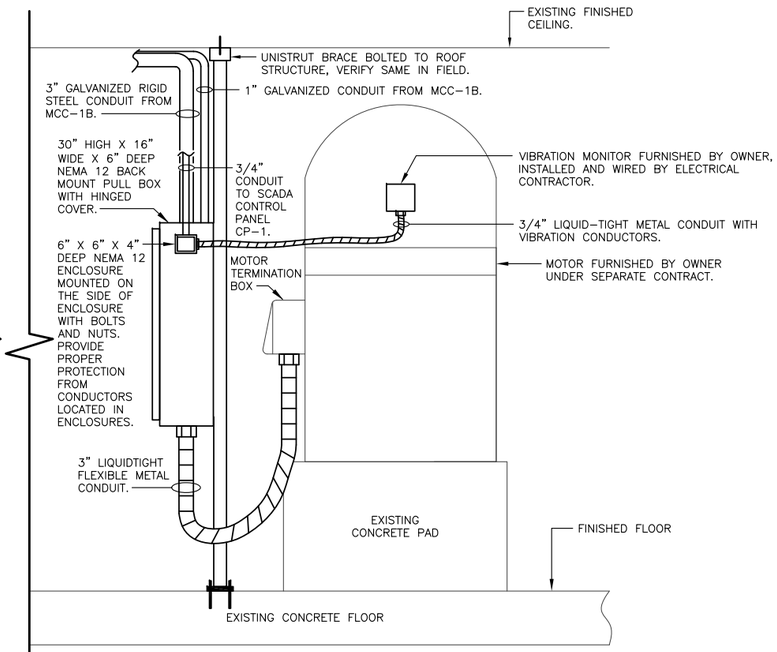
NOTES:

1. LOCATE BRACING IN CEILING TO STABILIZE UNISTRUT SUPPORT AT THE CEILING AND SECURE WITH GALVANIZED FASTENERS IN BRACING LOCATED ABOVE CEILING.

TYPICAL CONDUIT SUPPORT STRUCTURE DETAIL
N.T.S.



FRONT DETAIL
N.T.S.

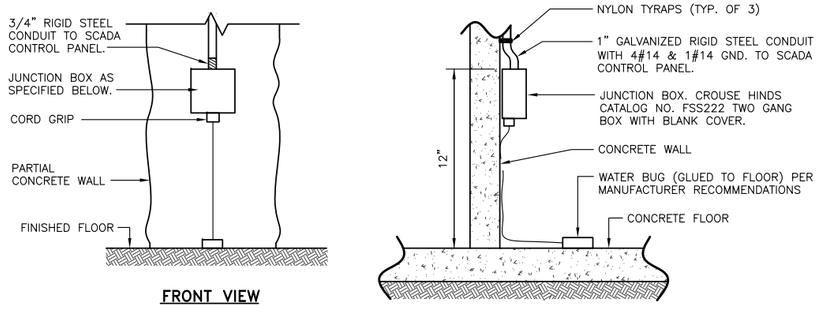


SIDE VIEW
N.T.S.

NOTES:

1. PULL BOXES AT HIGH SERVICE PUMPS ARE THE SAME EXCEPT WITHOUT EXTERIOR MOUNTED JUNCTION BOX FOR VIBRATION ANALYZER WIRING.
2. LOCATE BRACING IN CEILING TO STABILIZE UNISTRUT SUPPORT AT THE CEILING AND SECURE WITH GALVANIZED FASTENERS IN BRACING LOCATED ABOVE CEILING.
3. REFER TO ARCHITECTURAL PLANS FOR CEILING HEIGHTS.

WELL PUMP CONDUIT ENTRANCE DETAIL
N.T.S.

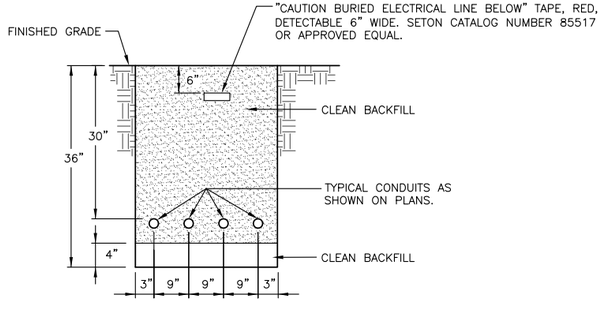


FRONT VIEW

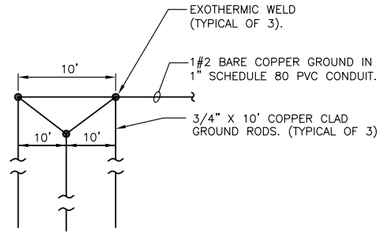
NOTE:

1. ALL MOUNTING HARDWARE SHALL BE 316 SST. USE WASHERS AND SPLIT LOCK WASHERS UNDER ALL NUTS AND BOLTS.

TYPICAL MOISTURE SENSOR (WATER BUG) MOUNTING DETAIL
N.T.S.



TRENCH DETAIL
N.T.S.



GROUNDING ELECTRODE DETAIL
N.T.S.

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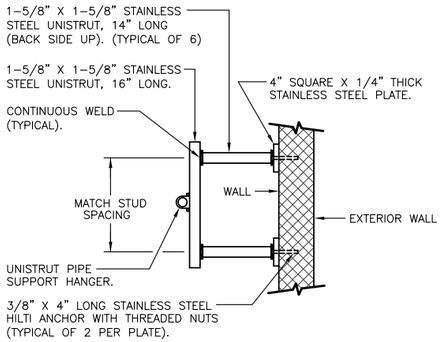
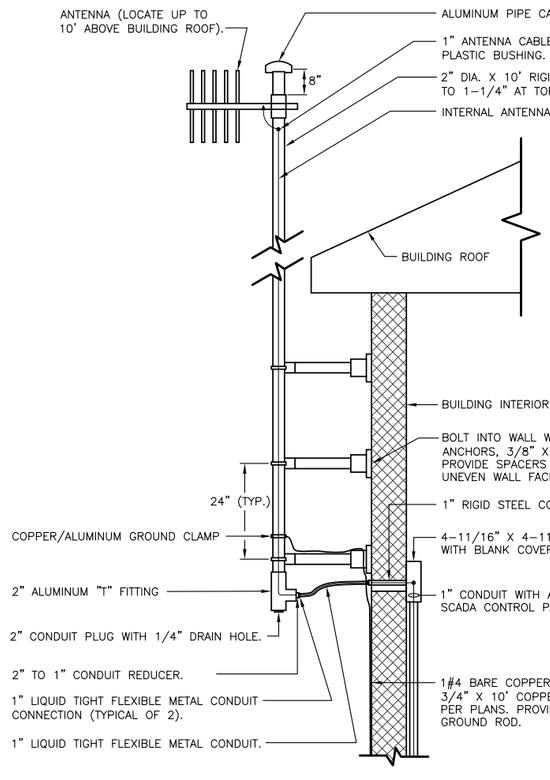
SHEET TITLE
ELECTRICAL DETAILS

SHEET
E24



PLAN VIEW

ANTENNA MOUNTING DETAIL
N.T.S.

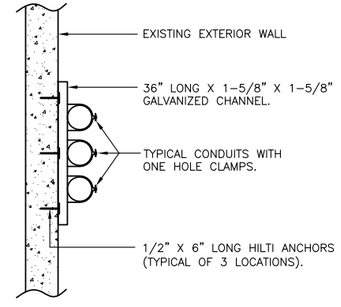


ANTENNA VIEW

GENERAL NOTES:
(WELL UNIT BUILDING ANTENNA)

1. INSTALL ALL EQUIPMENT PER MANUFACTURES REQUIREMENTS. FURNISH AND INSTALL ALL CONNECTORS, STRAPS, AND ECT TO PROVIDE A COMPLETE INSTALLATION.
2. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
3. ALL STAINLESS STEEL TO BE TYPE 316L.

WELL UNIT BUILDING ANTENNA MOUNTING DETAIL
N.T.S.



TYPICAL WALL MOUNTED CONDUIT DETAIL
N.T.S.

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SHEET TITLE
ELECTRICAL DETAILS

SHEET
E25