→ Bruce Urben - LMD
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LMD SOLID WASTE

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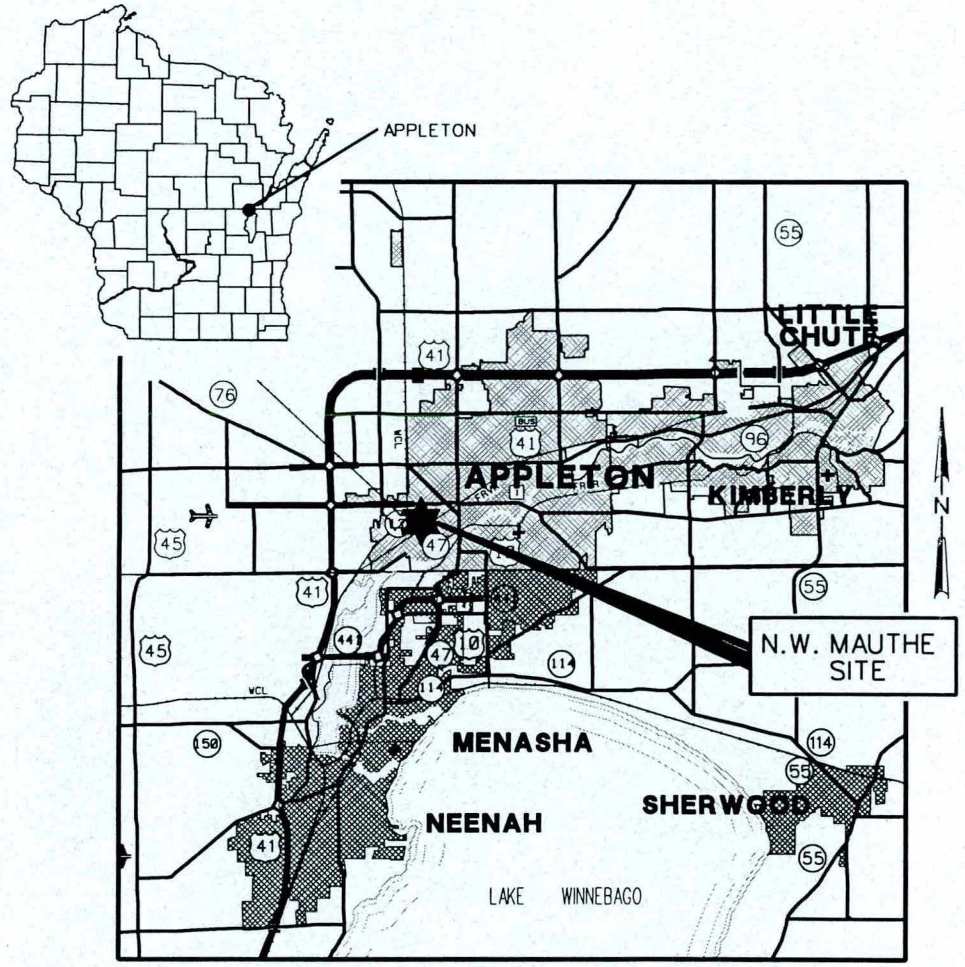
EMERG & REMEDIAL RESPONSE SECTION
BUR OF SOLID & HAZRD WASTE

REMEDIAL ACTION
N.W. MAUTHE SITE
APPLETON, WISCONSIN



SITE VICINITY MAP

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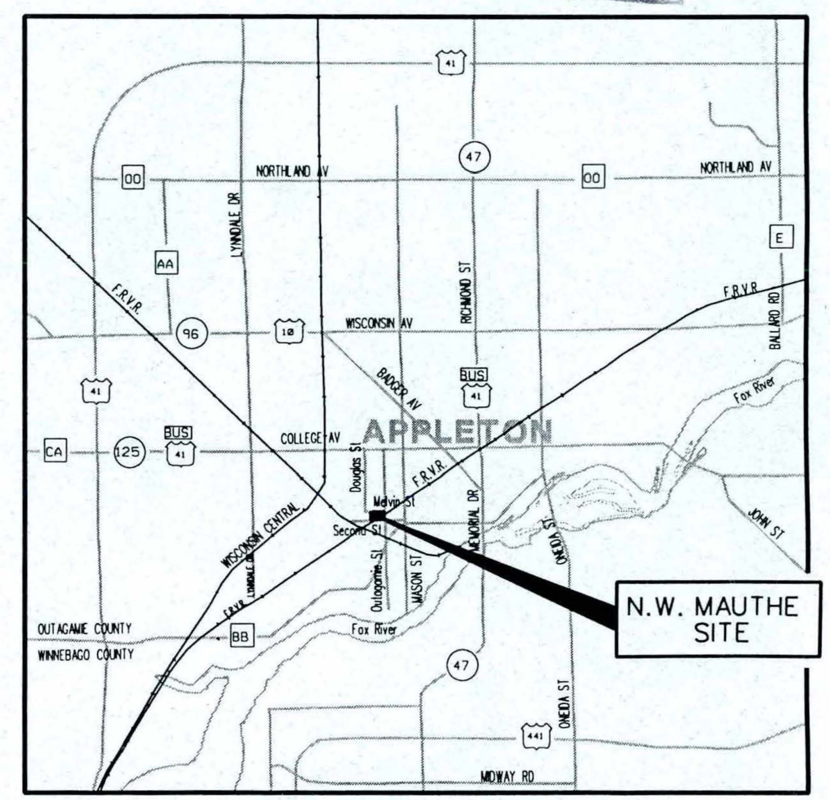


SITE LOCATION MAP

DSGN B.R.LEHMAN	NO.	DATE	REVISION	BY / APVD
DR P.E.ALLEN				
CHK B.R.LEHMAN				
APVD L.A.AMUNDSON				

CH2M HILL

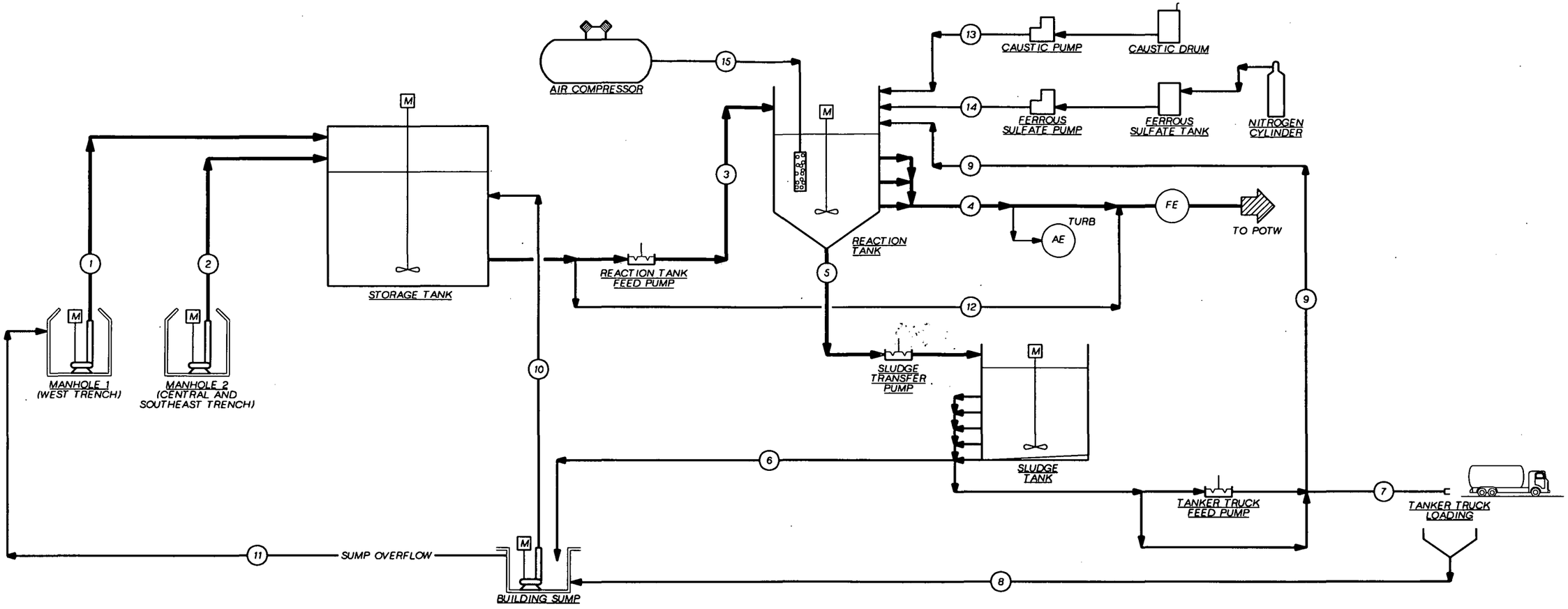
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 — 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
TITLE, VICINITY AND LOCATION MAPS, AND INDEX OF DRAWINGS

SHEET	1
DWG NO.	G1
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS



MAUTHE GROUNDWATER TREATMENT SYSTEM MASS BALANCE SUMMARY

ID	TYPE	PH	FLOW/VOLUME UNIT	FLOW/VOLUME AVG	FLOW/VOLUME MAX	INSTANTANEOUS FLOW UNIT	INSTANTANEOUS FLOW AVG	INSTANTANEOUS FLOW MAX	TSS, mg/L AVG	TSS, mg/L MAX
1	MANHOLE 1 EFFLUENT	6.0 - 8.0	GPD	1,300	1,300	GPM	43	43	5	30
2	MANHOLE 2 EFFLUENT	6.0 - 8.0	GPD	1,300	1,300	GPM	43	43	5	30
3	REACTION TANK INFLUENT	6.0 - 8.0	GPD	2,600	10,400	GPM	86	86	5	2000
4	REACTION TANK EFFLUENT	6.0 - 10.0	GPD	2,600	10,400	GPM	43	43	5	30
5	SLUDGE TANK INFLUENT	6.0 - 10.0	GAL/MON	500	1,500	GPM	4	12	1% SOLIDS	2% SOLIDS
6	SLUDGE TANK DECANT	6.0 - 10.0	GAL/MON	250	750	GPM	10	70	20	500
7	TANKER TRUCK INFLUENT	6.0 - 10.0	GAL/6 MON	1,500	4,000	GPM	10	70	2% SOLIDS	10% SOLIDS
8	TANKER TRUCK OVERFLOW	6.0 - 10.0	GAL/6 MON	-	4,000	GPM	-	30	2% SOLIDS	10% SOLIDS
9	SLUDGE RETURN	6.0 - 10.0	GAL/MON	-	1,050	GPM	-	35	2% SOLIDS	2% SOLIDS
10	BUILDING SUMP EFFLUENT	6.0 - 10.0	GPD	-	10,400	GPM	86	86	20	1% SOLIDS
11	BUILDING SUMP OVERFLOW	6.0 - 10.0	GPD	-	10,400	GPM	170	170	20	1% SOLIDS
12	STORAGE TANK BYPASS TO SEWER	6.0 - 8.0	GPD	10,000	10,000	GPM	170	170	5	30
13	SODIUM HYDROXIDE ADDITION (50%)	-	ml/D	260	950	ml/MIN	50	200	-	-
14	FERROUS SULFATE HEPTAHYDRATE ADDITION (25%)	-	ml/D	500	3,600	ml/MIN	50	300	-	-
15	REACTION TANK AERATION	-	SCFM	2	5	-	-	-	-	-

NOTE: TEMPERATURES ARE EXPECTED TO RANGE FROM 50 TO 70 DEGREES F BASED ON INFLUENT TEMPERATURE.

CH2M HILL

DSGN T.D.HARRISON
DR B.R.LEHMAN
CHK R.A.YOLO
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

VISUAL SCALE
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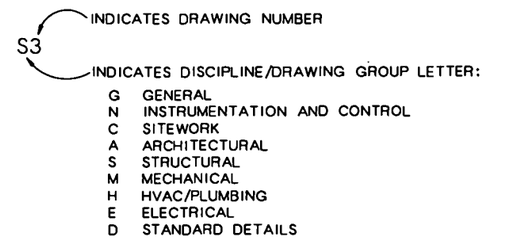
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
GENERAL
PROCESS FLOW DIAGRAM

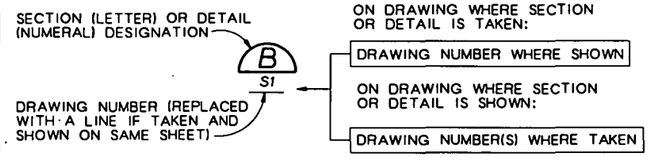
SHEET 2
DWG NO. G-2
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

DRAWING NUMBERING DESIGNATION



DETAIL, SECTION AND VIEW DESIGNATION



STANDARD DETAIL DESIGNATION

ABBREVIATIONS

@	AT
A/B	AERATION BASIN
AB	ANCHOR BOLT
ABDN	ABANDONED
ACBD	ACOUSTICAL BOARD
ACST	ACOUSTICAL TILE
ACT	ACOUSTICAL
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AHR	ANCHOR
AL	ALUMINUM
ALTN	ALTERNATE
ANOD	ANODIZED
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
AS	AIR SCRUBBER
ASSY	ASSEMBLY
AVG	AVERAGE
B	BOILER
BD	BOARD
BETW	BETWEEN
BF	BOTTOM FACE
BLDG	BUILDING
BITUM	BITUMINOUS
BLKG	BLOCKING
BM	BEAM/BENCHMARK
BOD	BOTTOM OF DUCT
BOD_5	BIOCHEMICAL OXYGEN DEMAND (5 DAY TEST)
BOP	BOTTOM OF PIPE
BOT	BOTTOM
BRG	BEARING
CAB.	CABINET
CAF	CABINET FAN
CARP.	CARPET
CB	CATCH BASIN
CC	COOLING COIL
C/C	CHLORINE CONTACT
CEF	CEILING EXHAUST FAN
CEM PLAS	CEMENT PLASTER
CF	CENTRIFUGAL FAN
CFM	CUBIC FEET PER MINUTE
CG	CORNER GUARD
CH	COAT HOOK
CHEM	CHEMICAL
CHKD	CHECKERED
CJ	CONSTRUCTION JOINT
℄	CENTER LINE
CI	CAST IRON
CL	CLOSET
CL_2	CHLORINE
CLG	CEILING
CLP	CLAY PIPE
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNITS
CO	CLEANOUT
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CONT JT	CONTROL JOINT
COR	CORNER
CP	CONCRETE PIPE
CPLG	COUPLING
CT	CERAMIC TILE
CPVC	CHLORINATED POLYVINYL CHLORIDE
C TO C	CENTER TO CENTER
CTR	CENTER
CTRD	CENTERED
CU FT	CUBIC FEET
CUH	CABINET UNIT HEATER
Δ	CENTRAL ANGLE
D	DRAIN/DAY
DB	DIRECT BURIED
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DECHLOR	DECHLORINATION
DET	DETAIL
DH	DEHUMIDIFIER
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DISCH	DISCHARGE
DN	DOWN
DRWR	DRAWER
DS	DOWNSPOUT
DWG(S)	DRAWING(S)
DWL	DOWEL
E	EAST/EASTING
E	EXTERNAL
EA	EACH
ECC	ECCENTRIC
EDH	ELECTRIC DUCT HEATER
EF	EACH FACE
EFL	EFFLUENT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL
ELEV	ELEVATOR
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
EST	ESTIMATED
EW	EACH WAY
EXF	EXHAUST FAN
EXP JT	EXPANSION JOINT
EXT	EXTERIOR
EXST	EXISTING
F	FAHRENHEIT
FACIL	FACILITY
FB	FLAT BAR
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDN	FOUNDATION
FEXT	FIRE EXTINGUISHER
F FL EL	FINISHED FLOOR ELEVATION
FLEX	FLEXIBLE
FLG	FLANGE
FLR	FLOOR
FMC	FLUSH MOUNT COVER
FNSH	FINISH
FR	FIRE RATED
F/R/L	FILTER/REGULATOR/LUBRICATOR
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FEET
FTG	FOOTING
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GA	GAUGE
GAL	GALLON(S)
GALV	GALVANIZED
GALVS	GALVANIZED STEEL
GAR	GARAGE
GB	GRAB BAR, GRADE BREAK
GPD	GALLONS PER DAY
GVL	GRAVEL
GWB	GYPSUM WALLBOARD
GYP PLAS	GYPSUM PLASTER
H.A.S	HEADED ANCHOR STUD
HC	HEATING COIL
HD	HUB DRAIN
HDNR	HARDENER
HDPE	HIGH DENSITY POLYETHYLENE
HDR	HEADER
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HR	HOUR
HSE	HOUSE
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
HWP	HOT WATER PUMP
HX	HEAT EXCHANGER
I&C	INSTRUMENTATION AND CONTROL
ID	INSIDE DIAMETER
IF.	INSIDE FACE
IG	INSULATING GLASS
INFL	INFLUENT
INSTL	INSTALL
INSUL	INSULATION
INTR	INTERIOR
INVT	INVERT
ITG	INSULATED TEMPERED GLASS
JAN.	JANITOR
JT	JOINT
KVA	KILOVOLT-AMPERE
L	LENGTH OF CURVE
L	ANGLE
LAP	LOCAL AREA PANEL
LAV	LAVATORY
LB,LBS	POUNDS
LB/D	POUNDS PER DAY
LCP	LOCAL CONTROL PANEL
LCUS	LOAD CENTER UNIT SUBSTATION
LG	LONG
LIW	LOAD INDICATING WASHERS
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG	LONGITUDINAL
LOS	LOCKOUT STOP PUSHBUTTON
LR	LONG RADIUS
LT	LEFT, LIGHT
LV	LOW VOLTAGE
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MG/L	MILLIGRAMS PER LITRE
MH	MANHOLE
MIN	MINIMUM
MIR	MIRROR
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
ML	MILLILITRE
MO	MONTH
MO	MASONARY OPENING
MON	MONUMENT
MTG	MOUNTING
MTL	METAL
MTRG	METERING
MW	MONITORING WELL
N	NORTH/NORTHING
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NORM	NORMAL
NTS	NOT TO SCALE
NV	NAPKIN VENDOR
OC	ON CENTER
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
OF.	OUTSIDE FACE
O/H	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
O TO O	OUT TO OUT
OZ.	OUNCE
P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PBX	PULL BOX
PC	POINT OF CURVATURE
P/C	PRIMARY CLARIFIERS
PE	PLAIN END
PF	PROPELLER FAN
PH	PHASE
PI	POINT OF INTERSECTION
PJF	PREMOLDED JOINT FILLER
ℙ	PROPERTY LINE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
POC	POINT ON CURVE
POT	POINT ON TANGENT
POTW	PUBLICLY OWNED TREATMENT WORKS
PR	PAIR
PRCST	PRECAST
PS	PUMP STATION
PSC	PROTECTIVE STEEL COVER
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PTD/WR	PAPER TOWEL DISPENSER/ WASTE RECPTACLE
PVC	POINT OF VERTICAL CURVATURE
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
QDRNT	QUADRANT
QT	QUARRY TILE
R	R-VALUE (INSULATION)
R OR RAD	RADIUS
R	RISER
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
REC	RECESSED EXTINGUISHER CABINET
REHAB	REHABILITATION
REINF	REINFORCE/REINFORCING
REQD	REQUIRED
RESIL	RESILIENT
RF	RETURN FAN
RH	ROBE HOOK
RM	ROOM
RO	ROUGH OPENING
RR	RAILROAD
RST	REINFORCING STEEL
RT	RIGHT
R/W	RIGHT-OF-WAY
S	SOUTH
SAN	SANITARY
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SEAL.	SEALER
SECT	SECTION
SF	SUPPLY FAN
SG	SAFETY GLASS
SH	SHEET
SHTG	SHEETING
SIM	SIMILAR
SLV	SHORT LEG VERTICAL
S.O.	SHUTOFF
SPECD	SPECIFIED
SPECS	SPECIFICATIONS
SPG	SPACING
SQ	SQUARE
SS	SUBSTATION
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIF	STIFFENER
STOR	STORAGE
STR	STRAIGHT
STRUCT	STRUCTURAL
STL	STEEL
SUSP	SUSPENDED
SWD	SIDE WATER DEPTH
SYMM	SYMMETRICAL
T	TANGENT LENGTH
T	TINTED
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TC	TOP OF CONCRETE
TEMP	TEMPORARY
TF	TOP FACE
TG	TEMPERED GLASS
THK	THICK
THRD	THREADED
T.O.	TOP OF
TP	TRAP PRIMER
TPD	TOILET PAPER DISPENSER
TPI	TURNOUT POINT OF INTERSECTION
TRANSV	TRANSVERSE
TSS	TOTAL SUSPENDED SOLIDS
TST	TOP OF STEEL
TTC	TELEPHONE TERMINAL CABINET
TURB	TURBIDITY
TW	TOP OF WALL
TYP	TYPICAL
UF	UTILITY FAN
UHE	ELECTRIC UNIT HEATER
UHG	GAS UNIT HEATER
UPS	UNINTERRUBTIBLE POWER SUPPLY
V	VENT
VB	VINYL BASE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE
VD	MANUAL AIR VOLUME DAMPER
VE	VEHICLE EXHAUST SYSTEM
VERT	VERTICAL
VP	VAPOR PROOF
VTR	VENT THRU ROOF
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
W/O	WITHOUT
WD	WOOD
WE	WALL EXHAUSTER
WG	WIRE GLASS
WH	WATER HEATER
WK	WEEK
WR	WASTE RECEPTACLE
WR GWB	WATER RESISTANT GYPSUM WALLBOARD
WS	WATER STOP OR WATERSURFACE
WS	WELDED STEEL
WWF	WELDED WIRE FABRIC
XFMR	TRANSFORMER
YR	YEAR

DSGN	B.R.LEHMAN				
DR	B.R.LEHMAN				
CHK	R.A.YOLO				
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY / APVD

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REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

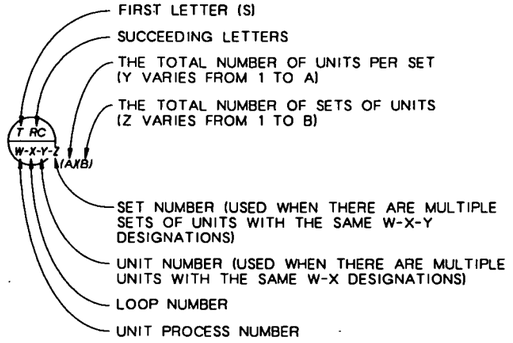
GROUNDWATER TREATMENT FACILITY
GENERAL
DESIGNATION LEGENDS AND ABBREVIATIONS

SHEET	3
DWG NO.	G3
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS

INSTRUMENT IDENTIFICATION

EXAMPLE SYMBOLS



FIELD MOUNTED INSTRUMENT

REAR-OF-PANEL MOUNTED INSTRUMENT

PANEL MOUNTED INSTRUMENT

MOTOR CONTROL CENTER MOUNTED INSTRUMENT

INSTRUMENT SOCIETY OF AMERICA TABLE

LETTER	FIRST LETTER (S) PROCESS OR INITIATING VARIABLE	FIRST LETTER (S) MODIFIER	SUCCEEDING LETTERS READOUT OR PASSIVE FUNCTION	SUCCEEDING LETTERS OUTPUT FUNCTION	SUCCEEDING LETTERS MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER FLAME		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
C	CONDUCTIVITY			CONTROL	
D	DENSITY (S.G)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGE		GLASS	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION				MIDDLE
N	USERS CHOICE (+)		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
O	USERS CHOICE (+)		ORIFICE		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT(+)	INTEGRATE	INTEGRATE		
R			RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (+)		MULTIFUNCTION (+)	MULTIFUNCTION (+)	MULTIFUNCTION (+)
V	VISCOSITY			VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (+)		UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	USERS CHOICE (+)			RELAY OR COMPUTE (+)	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

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

SPECIAL CASES

ON AND OFF EVENT LIGHTS

OPENED AND CLOSED POSITION LIGHTS

OPENED AND CLOSED POSITION SWITCHES

ON-OFF HAND SWITCH. MAINTAINED CONTACT SWITCH (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).

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

ELECTRIC ACTUATOR WITH INTEGRAL OPEN-STOP-CLOSE MOMENTARY CONTACT CONTROL SWITCH.

FLOW INDICATING, COMPUTER/MANUAL CONTROL STATION.

FLOW INDICATING, COMPUTER/AUTO/MANUAL CONTROL STATION.

FLOW INDICATING SUPERVISORY SET POINT (BY COMPUTER) , AUTO/MANUAL CONTROL STATION.

TRANSDUCERS

A	ANALOG	I	CURRENT
D	DIGITAL	P	PNEUMATIC
E	VOLTAGE	PF	PULSE FREQUENCY
F	FREQUENCY	PD	PULSE DURATION
H	HYDRAULIC	R	RESISTANCE

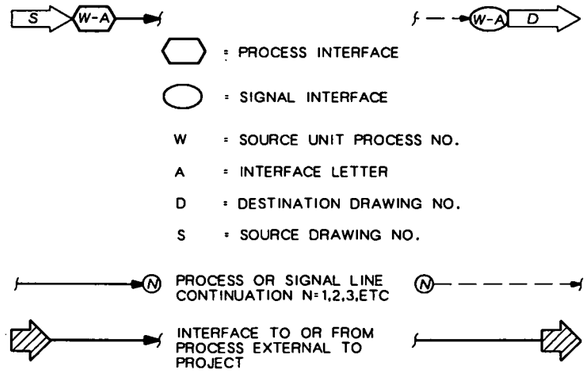
EXAMPLE:

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

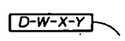
LINE LEGEND

- PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)
- PROCESS (OPEN CHANNEL)
- —A— ANALOG SIGNAL (4 TO 20 mAdc, ETC.)
- DISCRETE SIGNAL (ON/OFF, ETC.)
- –PD– PULSE DURATION SIGNAL
- –PF– PULSE FREQUENCY SIGNAL
- PNEUMATIC SIGNAL
- FILLED SYSTEM SIGNAL
- HYDRAULIC SYSTEM SIGNAL
- BUILDING OR FACILITY BOUNDARY
- PARALLELING LINES (PARENTHETICAL NUMBER INDICATES THE NUMBER OF SIGNALS REPRESENTED)
- CONNECTING LINES
- NON-CONNECTING LINES

INTERFACE SYMBOLS



SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS



D: ARV = AIR RELEASE VALVE
AVRV = AIR AND VACUUM RELEASE VALVE
E = EJECTOR
FCV = FLOW CONTROL VALVE
G = GATE
LCV = LEVEL CONTROL VALVE
M = MECHANICAL EQUIPMENT
P = PUMP
PRV = PRESSURE REGULATING VALVE
T = TANK
TCV = TEMPERATURE CONTROL VALVE

W = UNIT PROCESS NUMBER
X = LOOP NUMBER
Y = UNIT NUMBER

ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
ALKY	ALKALINITY
AM	AUTO-MANUAL
CAM	COMPUTER-AUTO-MANUAL
CCS	CENTRAL CONTROL SYSTEM
CL_2 etc.	CHLORINE (TYPICAL: USE STANDARD CHEMICAL ELEMENT ABBREVIATION)
CM	COMPUTER-MANUAL
COD	CHEMICAL OXYGEN DEMAND
CP-X	CONTROL PANEL NO. X
DC	DIRECT CURRENT
DO	DISSOLVED OXYGEN
FCL_2	FREE CHLORINE RESIDUAL
FOS	FAST-OFF-SLOW
FOSA	FAST-OFF-SLOW-AUTO
FOSR	FAST-OFF-SLOW-REMOTE
FP-W-X	FIELD PANEL NO. WX (W = UNIT PROCESS NUMBER X = PANEL NUMBER)
FR	FORWARD-REVERSE
HDNS	HARDNESS
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
LEL	LOWER EXPLOSIVE LIMIT
LOE	LOSS OF ECHO
LOS	LOCKOUT STOP
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MBAS	METHYLENE BLUE ACTIVE SUBSTANCES
MC	MODULATE-CLOSE
MCC-X	MOTOR CONTROL CENTER NO. X
OC	OPEN-CLOSE (D)
OCR	OPEN-CLOSE-REMOTE
OCA	OPEN-CLOSE-AUTO
OIU	OPERATOR INTERFACE UNIT
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OP	ORTHO PHOSPHORUS
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
pH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
RM-X	REMOTE MULTIPLEXING MODULE NO. X
RTU-X	REMOTE TELEMETRY UNIT NO. X
SF	SLOWER-FASTER
SS	START-STOP
SSC	SUPERVISORY SET POINT CONTROL
TCL_2	TOTAL CHLORINE RESIDUAL
TOC	TOTAL ORGANIC CARBON
TOD	TOTAL OXYGEN DEMAND
TURB	TURBIDITY
VHC	VOLATILE HYDROCARBONS
VIB	VIBRATION
Δ	DIFFERENCE
Σ	SUM
X	MULTIPLY
÷	DIVIDE
f(x)	CHARACTERIZED
X^n	RAISE TO THE Nth POWER
√‾	SQUARE ROOT
AVG	AVERAGE
1:1	REPEAT OR BOOST
>	SELECT HIGHEST SIGNAL
<	SELECT LOWEST SIGNAL
±	BIAS
%	GAIN OR ATTENUATE

GENERAL NOTES

1. COMPONENTS AND PANELS SHOWN WITH A (◆) ARE TO BE PROVIDED UNDER SECTION INSTRUMENTATION AND CONTROLS.
2. COMPONENTS AND PANELS SHOWN WITH A DOUBLE ASTERISK (**) ARE TO BE PROVIDED AS PART OF A PACKAGE SYSTEM.
3. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THIS INFORMATION MAY BE USED ON THIS PROJECT.

CH2M HILL

DSGN B.OHLSSON
DR S.L.GANDREY
CHK D.M.WILSON
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

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N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
GENERAL
INSTRUMENTATION AND CONTROL
LEGEND

SHEET 4
DWG NO. G4
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE- BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- SAMPLE
- MUD
- PRESSURE RELIEF
- AIR AND / OR VACUUM RELEASE
- REGULATED SIDE PRESSURE CONTROL
- MULTI-PORT VALVES (BALL VALVE SHOWN. FOR OTHER VALVES TYPES, APPROPRIATE VALVE SYMBOL SHOWN.) ARROWS INDICATE FLOW PATTERN. SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- HOSE VALVE
- REDUCED PRESSURE BACKFLOW PREVENTER

PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORFICE PLATE
- FLOW TUBE
- PITOT-STATIC
- VORTEX METER
- ROTAMETER
- ULTRASONIC FLOWMETER (INLINE)
- ELECTROMAGNETIC FLOWMETER
- PROPELLER OR TURBINE METER
- DENSITY METER (X: N = NUCLEAR, O = OPTICAL, U = ULTRASONIC)
- ULTRASONIC FLOWMETER (CLAMP-ON)
- LEVEL (ULTRASONIC)
- LEVEL (BUBBLER TUBE)
- LEVEL (FLOAT)

ACTUATOR SYMBOLS

- PZ XX — PNEUMATIC W/POSITIONER
- PS XX — PNEUMATIC W/SOLENOID
- E XX — ELECTRIC
- EZ XX — ELECTRIC W/POSITIONER
- EH XX — ELECTROHYDRAULIC
- H XX — HYDRAULIC
- PB XX — PNEUMATIC WITH VOLUME BOOSTER
- S — SOLENOID
- T — MANUAL

NOTE:
ON LOSS OF PRIMARY POWER (PNEUMATIC, ELECTRICAL OR HYDRAULIC)
XX: FO = FAIL OPEN
FC = FAIL CLOSED
FLP = FAIL TO LAST POSITION

MISCELLANEOUS SYMBOLS

- SIGHT GLASS
- DIAPHRAGM SEAL
- BLIND FLANGE
- AIR GAP
- VENT TO ATMOSPHERE
- AERATOR
- PLUG
- RECEPTACLE
- SELF CONTAINED AIR SUPPLY
- SD — COMPOSITE SAMPLER (DIPPER TYPE)
- SS — COMPOSITE SAMPLER (SUCTION TYPE)
- TV — TV CAMERA
- RADIO ANTENNA
- ON-TD X-SEC — "ON" TIME DELAY B "ON" X-SEC. AFTER A "ON". INSTANT "OFF".
- OFF-TD X-SEC — "OFF TIME DELAY B "OFF" X-SEC. AFTER A "OFF" INSTANT "ON"
- I — INTERLOCK. SEE CONTROL DIAGRAMS (OR)
- S / R — MEMORY ELEMENT S= SET . R= RESET
- XP — PURGE SET X: W = WATER, A = AIR (SEE ○)
- XX — AIR SET XX= SUPPLY PRESSURE IN PSIG.
- FILTER/ REGULATOR/ GAUGE SET
- 120V — 120 VOLT, 60 HZ POWER
- 480V — 480 VOLT, 60 HZ POWER
- ANNULAR DIAPHRAGM SEAL
- RUPTURE DISK
- PIG INSERT POINT
- OR — PIG CATCH POINT
- OR — MIXER
- M — ELECTRIC MOTOR
- PRESSURE GAUGE
- X — TONE TRANSMITTER NO. X
- X — TONE RECEIVER NO. X
- VOICE COMMUNICATION POINT
- TV — TV MONITOR
- A, B, AND, C — LOGIC ELEMENT: IF A AND NOT B THEN C
- A, B, OR, C — LOGIC ELEMENT: IF A OR B THEN C
- S, R — ON/OFF RELAY. INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT.
- SWITCHING SIGNAL
- S, R — SWITCHING RELAY. INPUT WITH DOT IS CONNECTED TO OUTPUT WHEM SWITCHING SIGNAL IS PRESENT
- OTHER INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS NOT PRESENT.
- F — FLUSHING CONNECTION
- HOSE ADAPTOR
- S — SEAL WATER SET
- SIGHT GLASS

PUMP AND COMPRESSOR SYMBOLS

NOTE: XX: AS = ADJUSTABLE SPEED
CS-1 = CONSTANT SPEED (SINGLE SPEED)
CS-2 = CONSTANT SPEED (TWO SPEED)

- CENTRIFUGAL PUMP (DRY PIT) XX
- CENTRIFUGAL WET PIT PUMP OR TURBINE PUMP XX
- CHEMICAL FEED PUMP XX
- DIAPHRAGM PUMP XX
- GEAR PUMP OR BLOWER (POSITIVE DISPLACEMENT) XX
- PISTON PUMP XX
- PROGRESSIVE CAVITY PUMP XX
- SUBMERSIBLE SUMP PUMP XX
- COMPRESSOR (CENTRIFUGAL) BLOWER OR TURBINE XX
- COMPRESSOR (PISTON) XX
- EJECTOR

FLOW STREAM IDENTIFCATION

(SEE MECHANICAL LEGEND)

BID DOCUMENTS

DSGN	B.OHLSSON		
DR	S.L.GANDREY		
CHK	D.M.WILSON		
APVD	A.AMUNDSON		

NO.	DATE	REVISION	BY	APVD

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APPLETON, WISCONSIN

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GENERAL
INSTRUMENTATION AND CONTROL
LEGEND

SHEET	5
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SITEWORK LEGEND

- EXISTING OVERHEAD TELEPHONE
- EXISTING GAS MAIN
- EXISTING OVERHEAD POWERLINE
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING FENCE
- EXISTING CURB
- APPROXIMATE PROPERTY LINE
- EXISTING STRUCTURE
- EXISTING RAILROAD TRACKS
- EXISITNG MANHOLE
- EXISTING INLET
- EXISTING UTILITY POLE
- EXISTING GUY
- EXISTING RAILROAD SWITCH
- EXISTING RAILROAD SIGNAL
- EXISTING SIGN
- EXISTING VALVE
- EXISTING GROUNDWATER MONITORING WELL
- EXISTING TREE
- EXISTING SHRUB OR TREE LINE
- EXISTING CONTOUR LINE (800)
- EXISTING GRADE (800.0)
- PROPOSED GRADE (800.00)
- PROPOSED CONTOUR (800)
- DRAINAGE WAY OR DITCH
- SLOPE INDICATOR
- PROPOSED STRUCTURE
- DEMOLITION
- HORIZONTAL CONTROL POINT (CP*X)

ARCHITECTURAL LEGEND

SYMBOL	LEGEND
ACTIVE / INACTIVE	INDICATES PAIR OF DOORS
100A	DOOR NUMBER
103	ROOM NUMBER
3 DIRECTION SHOWN	INTERIOR WALL ELEVATION
3	SIGN INDICATION
X	COLUMN GRID NUMBER OR LETTER
WALL FEXT	FIRE EXTINGUISHER

MATERIAL SYMBOLS

- CONCRETE
- CMU PLAN
- CMU SECTION
- GYPSUM WALLBORAD OR STONE
- RIGID INSULATION
- BATT INSULATION
- PLYWOOD
- STEEL
- WOOD, ROUGH CONTINUOUS
- WOOD, ROUGH NON-CONTINUOUS
- WOOD, FINISHED
- GROUND SURFACE

GENERAL STRUCTURAL NOTES

GENERAL

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE WISCONSIN ADMINISTRATIVE CODE, RULES OF DEPARTMENT OF INDUSTRY, LABOR AND HUMAN RELATIONS, 1994 BUILDING AND HEATING AND AIR CONDITIONING CODE.

LOADS

1. ROOF SNOW LOAD — 30 PSF
   WIND LOAD — 20 PSF
   FLOOR LIVE LOADS
   PROCESS ROOM — 100 PSF
   TRUCK BAY — AASHTO H20-44
   EQUIPMENT LOADS — SEE FOUNDATION/FLOOR PLAN

FOUNDATIONS

1. PROVIDE A MINIMUM OF 2'-0" (COMPACTED THICKNESS) OF GRANULAR FILL BENEATH ALL FOUNDATIONS AND SLABS TO LIMITS SHOWN IN DETAIL 2/C3.
2. ALLOWABLE SOIL BEARING PRESSURE OF COMPACTED GRANULAR FILL IS 3,500 PSF.

CONCRETE

1. ALL CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF f'c=4,000 PSI, UNLESS OTHERWISE NOTED.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60. SEE REINFORCING DETAIL NOTES BELOW.
3. CONTINUOUS WATERSTOP, AS SPECIFIED, SHALL BE INSTALLED IN CONSTRUCTION JOINTS AS SHOWN ON DRAWINGS.

REINFORCING DETAILS

1. THE MINIMUM REINFORCING FOR ALL CONCRETE WALLS AND SLABS SHALL BE AS FOLLOWS:

WALL THICKNESS	REINF EACH WAY	LOCATION
6"	#4@12"	CENTERED
8"	#5@12"	CENTERED
10"	#4@12"	EACH FACE
12"	#5@12"	EACH FACE

   PROVIDE LARGER SIZES AND MORE REINFORCING IN ALL SECTIONS OF CONCRETE WHERE REQUIRED BY THE DETAILS ON THE DRAWINGS OR BY THE SPECIFICATIONS.
2. CLEARANCE FOR REINFORCEMENT BARS, UNLESS SHOWN OTHERWISE, SHALL BE:
   - FOR ALL SLABS PROVIDE A SINGLE MAT OF REINFORCING 2" CLR OF TOP OF CONCRETE UNLESS NOTED OTHERWISE.
   - WHEN PLACED ON GROUND: —— 3"
   - EXPOSED TO WATER, WEATHER, BACKFILL OR CONDENSATION:
     #5 BAR OR SMALLER —— 1½"
     #6 BAR OR LARGER —— 2"
3. ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE A 90 DEGREE STANDARD HOOK AS DEFINED IN LATEST EDITION OF ACI 318.
4. REFER TO WALL CORNER AND WALL INTERSECTION REINFORCING DETAIL. ALL WALL CORNER AND WALL INTERSECTION REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS.
5. PROVIDE A MINIMUM OF TWO FULL HEIGHT VERTICAL BARS WITH MATCHING DOWELS AT WALL ENDS, CORNERS AND INTERSECTIONS WITH SIZE TO MATCH TYPICAL VERTICAL REINFORCING STEEL SHOWN OR REQUIRED BY NOTES ABOVE.
6. UNLESS INDICATED OTHERWISE, SUBCONTRACTOR MAY SPLICE CONTINUOUS SLAB BARS AT LOCATIONS OF THEIR CHOOSING, EXCEPT THAT TOP BAR SPLICES SHALL BE LOCATED AT MIDSPAN AND BOTTOM BAR SPLICES SHALL BE LOCATED AT SUPPORTS. ALL REINFORCEMENT BENDS AND LAPS, UNLESS OTHERWISE NOTED, SHALL SATISFY THE FOLLOWING MINIMUM REQUIREMENT:

BAR SIZE		#4	#5	#6	#7	#8	#9	#10
SPACING ≤6"	TOP BAR*	2'-0"	2'-6"	3'-0"	3'-6"	4'-3"	7'-6"	9'-6"
	OTHER BAR	1'-7"	1'-11"	2'-4"	2'-9"	3'-3"	5'-9"	7'-4"
SPACING >6"	TOP BAR*	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	6'-0"	7'-8"
	OTHER BAR	1'-7"	1'-11"	2'-4"	2'-9"	3'-1"	4'-8"	5'-10"

*TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BAR PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR, IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.

CONCRETE MASONRY (CMU)

1. MINIMUM STRENGTH OF MASONRY ASSEMBLAGE, f'm = 1500 PSI.
2. NORTH AND SOUTH 10" MASONRY WALLS SHALL BE REINFORCED WITH A MINIMUM OF #5 VERTICAL BARS @ 72" CENTERED IN WALL, LOCATED BETWEEN ROOF BEAM LOCATIONS. ADDITIONAL VERTICAL REINFORCING AS PER BEAM SEAT DETAIL. EAST, WEST AND INTERIOR 10" MASONRY WALLS SHALL BE REINFORCED WITH A MINIMUM OF #5 VERTICAL BARS @ 48" CENTERED IN WALL UNLESS NOTED OTHERWISE.
3. ALL HORIZONTAL REINFORCING STEEL SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH INTERSECTING WALLS. SEE CMU WALL CORNER DETAIL. PROVIDE HORIZONTAL BOND BEAMS WITH REINFORCING AT THE FIRST BLOCK COURSE , AT THE TOP OF THE WALL, AND AS SHOWN ON THE PLANS WITH 2-#5 BARS. REINFORCING SHALL BE CONTINUOUS THROUGH CONTROL JOINTS AT THE ROOF LEVEL.
4. REINFORCING SHALL BE LAPPED 48 BAR DIAMETERS MINIMUM AND WIRE TIED TOGETHER.
5. ALL VERTICAL REINFORCING SHALL BE LAPPED WITH MATCHING FOUNDATION DOWELS EXCEPT AS NOTED ON PLANS.
6. FOR REINFORCING AROUND OPENINGS, SEE (306), 2-#5 VERTICAL BARS SHALL BE PLACED AT ALL WALL CORNERS, UNDER STEEL BEAMS, ENDS OF WALLS, CONTROL JOINTS AND EXPANSION JOINTS.
7. ALL MASONRY CELLS WITH REINFORCING TO BE FULLY GROUTED.
8. ALL BOND BEAMS TO BE FULL DEPTH.
9. ALL MASONRY UNITS SHALL BE LAID RUNNING BOND.
10. ALL OPENINGS TO BE SHORED AS REQUIRED UNTIL GROUT IS FULLY CURED.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE NOTED.
2. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN CONFORMANCE WITH THE AISC MANUAL OF STEEL CONSTRUCTION, NINTH EDITION.
3. ALL BOLTS AND CONNECTIONS SHALL BE 3/4-INCH DIAMETER CONFORMING TO ASTM A325 (TYPE N) UNLESS OTHERWISE SHOWN.
4. ALL WELDS SHALL CONFORM TO AWS D1.1-90, E70XX ELECTRODES, EXCEPT THAT E60XX ELECTRODES SHALL BE USED FOR METAL DECKING. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS.

METAL DECK

1. WELD PANELS TO PERPENDICULAR SUPPORTS WITH A MINIMUM OF 5 WELDS PER 36 INCH PANEL WIDTH. WELDS TO SUPPORTS SHALL BE WITH 5/8-INCH EFFECTIVE DIAMETER ARC SPOT (PUDDLE) WELDS.
2. WELD PANELS TO PARALLEL SUPPORTS WITH WELDS AT 12 INCHES ON CENTER, UNLESS OTHERWISE SHOWN. PANEL SIDELAPS SHALL BE FASTENED/ INTERCONNECTED AT 12 INCHES ON CENTER. NESTED SIDELAPS SHALL BE FASTENED/INTERCONNECTED USING NO. 10 BUILDEX TEKS SCREWS.
3. DECK PANELS SHALL BE CONTINUOUS OVER A MINIMUM OF THREE SPANS.
4. ROOF DECK SHALL BE 1½ INCHES DEEP x 21 GAUGE GALVANIZED STEEL TYPE B DECK CONFORMING TO THE FOLLOWING MINIMUM SECTION PROPERITES:
   I = 0.192 IN⁴/FT
   S_p = 0.213 IN³/FT
   S_n = 0.221 IN³/FT

GRATING

1. FRP GRATING TO BE A 2" THICK MOLDED GLASS FIBER REINFORCED THERMO SETTING RESIN. BONDED GRATING RESIN SYSTEM SHALL BE VINYL ESTER.
2. MANUFACTURERS AND PRODUCTS:
   a) FOWLER FIBERGLASS GRATING; 2"x2" GATOR GRATE, GG20V-25
   b) FIBERGATE CORPORATION; 2" SQUARE MESH WITH VI-CORR RESIN

BID DOCUMENTS

CH2M HILL

DSGNR K.HARGREAVES B.W.HUGHES
DR R.G.SIEBERS B.R.LEHMAN
CHK T.GLAWTSCHEW A.L.WOODHULL
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

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REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
GENERAL
CIVIL LEGEND AND
ARCHITECTURAL/STRUCTURAL LEGEND

SHEET 6
DWG NO. G6
DATE FEB 1996
PROJ NO. 104200

MECHANICAL LEGEND AND NOTES

GENERAL PIPING NOTES

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. FINAL SUPPORT REQUIREMENTS SHALL BE DETERMINED IN THE FIELD AND REVIEWED BY THE ENGINEER PRIOR TO INSTALLATION. MAXIMUM SPACING SHALL BE AS SPECIFIED.
4. ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL.
5. ALL FLEXIBLE CONNECTORS OR FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST TIES, BLOCKS, OR ANCHORS, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
6. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE PLANS, WHEREVER APPLICABLE. NOT ALL OF THE VARIOUS PIPING COMPONENTS ARE NECESSARILY USED IN THE PROJECT.
7. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED, EXCEPT FLANGED, WELDED, OR SCREWED PIPING, SHALL BE PROVIDED WITH CONCRETE THRUST BLOCKS AT ALL DIRECTION CHANGES, UNLESS OTHERWISE NOTED. SEE THRUST BLOCK NOTES AND DETAILS.
8. NUMBER AND LOCATION OF UNIONS SHOWN ON PLANS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
9. EXISTING PIPING AND EQUIPMENT IS SHOWN LIGHT-LINED AND/OR SCREENED. NEW PIPING AND EQUIPMENT IS SHOWN HEAVY-LINED.

FLOW STREAM IDENTIFICATION

PROCESS IDENTIFICATION

AHP	AIR, HIGH PRESSURE
CAU	CAUSTIC
DR	DRAIN
FS	FERROUS SULFATE
NG	NATURAL GAS
NPW	NON-POTABLE WATER
OF	OVERFLOW
PEF	PLANT EFFLUENT
PIF	PLANT INFLUENT
PW	POTABLE WATER
RS	RECIRCULATED SLUDGE
VTR	VENT THROUGH ROOF
WS	WASTE SLUDGE

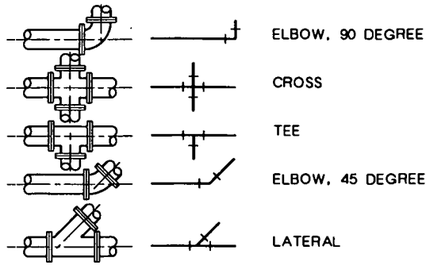
PIPE MATERIAL

CISP	CAST IRON SOIL PIPE
CS	CARBON STEEL
CU	COPPER
GS	GALVANIZED STEEL
HDPE	HIGH DENSITY POLYETHYLENE
PPE	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE

PIPE AND FITTING SYMBOLS

DOUBLE LINE / SINGLE LINE

- EXISTING PIPE
- NEW PIPE
- EXISTING PIPE TO BE ABANDONED
- EXISTING PIPE TO BE REMOVED
- WELDED JOINT
- GROOVED END JOINT
- FLANGED JOINT
- PROPRIETARY RESTRAINED AS SPECIFIED
- BELL & SPIGOT JOINT (LEADED)
- HUB & SPIGOT JOINT (RUBBER GASKET)
- BALL JOINT
- ADAPTER SIDE GROOVED END ADAPTER FLANGE
- FLANGED COUPLING ADAPTER
- FLANGED COUPLING ADAPTER WITH THRUST TIES
- FLEXIBLE COUPLING
- FLEXIBLE COUPLING WITH THRUST TIES
- STEEL BELLOWS EXP JOINT
- ELASTOMER BELLOWS EXP JOINT
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- LATERAL UP
- LATERAL DOWN
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION
- CAP



- ELBOW, 90 DEGREE
- CROSS
- TEE
- ELBOW, 45 DEGREE
- LATERAL

NOTES:
1. ONLY FLANGED END CONNECTIONS ARE SHOWN HERE FOR DOUBLE LINE FITTINGS. FITTINGS WITH OTHER END PATTERNS ARE SHOWN SIMILARLY ON THE CONSTRUCTION DRAWINGS. ALSO SEE PIPING SPECIFICATIONS.
2. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE GENERIC ONLY. REFER TO PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS FOR SINGLE LINE PIPE AND FITTINGS.

VALVE SYMBOLS AND DESIGNATIONS

(SEE INSTRUMENTATION AND CONTROL DIAGRAM LEGEND)

PIPING DESIGNATION

EXAMPLE: 16" - PIF - PVC

- 16"-PIF-PVC
- 16" — NOMINAL PIPE DIAMETER
- PIF — FLOW STREAM IDENTIFICATION (IF LISTED)
- PVC — PIPE MATERIAL

MISCELLANEOUS PIPING SYMBOLS

- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- GAUGE WITH COCK
- F/R/L — FILTER/REGULATOR/LUBRICATOR WITH ISOLATION VALVE, SEE SECTION 11318
- PS 26-1-2 — TYPICAL INSTRUMENT SYMBOL (SEE I&C LEGEND)
- HOSE RACK (TYPE AS INDICATED)
- S — SAMPLE VALVE — ½" PVC VALVE
- F — FLUSH CONNECTION HARD PIPED — ½" BALL VALVE

HEATING, VENTILATING, AND AIR CONDITIONING SYMBOLS

- M — MOTORIZED DAMPER
- T — THERMOSTAT

BUILDING SERVICES SYMBOLS

- CO — CLEANOUT
- HD-1 — HUB DRAIN
- D-X — DRAIN (SEE SECTION 15400)
- ES — EYEWASH WITH SAFETY SHOWER

PLUMBING FIXTURE IDENTIFICATION

LAV	LAVATORY
SK	SINK
SSH	SAFETY SHOWER
WC	WATER CLOSET
WH	WATER HEATER

EXAMPLE: LAV-2 — FIXTURE LEGEND; NO. IN SPECIFICATIONS

BID DOCUMENTS

CH2MHILL

DSGN L.A.AMUNDSON
DR R.I.OXLEY
CHK R.A.YOLO
APVD L.A.AMUNDSON

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APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
GENERAL MECHANICAL LEGEND

SHEET 7
DWG NO. G7
DATE FEB 1996
PROJ NO. 104200

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
○	CONTROL DEVICE - FURNISHED AND INSTALLED UNDER OTHER SECTIONS: RACEWAYS, CONDUCTORS, AND CONDUCTOR END TERMINATORS FURNISHED AND INSTALLED UNDER THIS SECTION AS SHOWN. CONDUCTOR FINAL CONNECTIONS PROVIDED UNDER OTHER SECTIONS.
Ⓐ	CONNECTION POINT TO EQUIPMENT SPECIFIED. FURNISHED AND INSTALLED UNDER OTHER SECTIONS. RACEWAY, CONDUCTOR AND CONNECTION IN THIS SECTION.
[5-6] or [5-E(3)]	INDICATES RACEWAYS AND CIRCUIT NUMBERS. FIRST NUMBER IS RACEWAY AND NUMBER AFTER DASH IS CIRCUIT NUMBER. 5-E(3) INDICATES THAT THERE ARE 3 EMPTY RACEWAY NO. 5, SEE SCHEDULE.
MCC-A	MAJOR ELECTRICAL COMPONENT OR DEVICE - NAME OR IDENTIFYING SYMBOL AS SHOWN.
▬	BRANCH CIRCUIT PANEL BOARD
UH1	UNIT HEATER NO. 1
TTC	TELEPHONE TERMINAL CABINET
TJB	TERMINAL JUNCTION BOX
10	WOUND-ROTOR MOTOR, HORSEPOWER INDICATED
5 2	MOTOR, SQUIRREL CAGE INDUCTION, HORSEPOWER INDICATED
1	LUMINAIRE, SEE SCHEDULE
2	LUMINAIRE, SEE SCHEDULE
3	LUMINAIRE AND POLE, SEE SCHEDULE
4	WALL MOUNTED LUMINAIRE, SEE SCHEDULE
5	FLOOD LIGHTS - AIM IN THE DIRECTION SHOWN
⊗	EXIT LIGHTS, SEE SCHEDULE
S_a or 2a	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT IN PANELBOARD.
LA-2	HOME RUN - DESTINATION SHOWN
— or —H/G	EXPOSED CONDUIT AND CONDUCTORS*
— or —H/G	CONCEALED CONDUIT AND CONDUCTORS*
	NOTE: * ALL UNMARKED CONDUIT RUNS CONSIST OF TWO NO.12 CONDUCTORS IN CONDUIT. RUNS MARKED WITH CROSSHATCHES INDICATE NUMBER OF NO.12 CONDUCTORS. CROSSHATCH WITH SUBSCRIPT "G" INDICATES GREEN GROUND WIRE. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
—H—	CROSSHATCHES WITH BAR INDICATE #10 CONDUCTOR. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
	CONDUIT DOWN
	CONDUIT UP
	CONDUIT, STUBBED AND CAPPED AS SHOWN
—C—	CABLE TRAY, SEE SPECIFICATIONS
—B—	BUS DUCT, SEE SPECIFICATIONS
—P—	TRENCHING FOR UTILITY COMPANY PRIMARY POWER CKTS
—T—	TRENCHING FOR TELEPHONE COMPANY CIRCUITS
—CE—	CONCRETE ENCASED CONDUIT
—DB—	DIRECT BURIED CONDUIT
S	WALL SWITCH: 2- DOUBLE POLE P- PILOT LIGHT 3- THREE WAY K- KEY OPERATED 4- FOUR WAY D- DIMMER WP-WEATHERPROOF CRE-CORROSION RESISTANT
S_M	MANUAL MOTOR STARTER SWITCH

SYMBOL	DESCRIPTION
	CONVENIENCE RECEPTACLE - DUPLEX UNLESS SPECIFIED OTHERWISE WP-WEATHERPROOF C- CLOCK HANGER TL-TWIST LOCK CRE-CORROSION RESISTANT
	CONVENIENCE RECEPTACLE, PEDESTAL, DUPLEX SINGLE FACE UNLESS INDICATED OTHERWISE
30	RECEPTACLE - 240V., 1ϕ, AMPERAGE INDICATED
30 Ⓐ	RECEPTACLE, SPECIAL PURPOSE - AMPERAGE AS INDICATED
	DUPLEX CONVENIENCE RECEPTACLE - FLUSH IN FLOOR
ϕϕϕ	MULTI OUTLET ASSEMBLY
	WALL CLOCK WITH CLOCK HANGER CONVENIENCE RECEPTACLE
	TELEPHONE RECEPTACLE (OUTLET BOX ONLY) FLUSH IN FLOOR
	TELEPHONE RECEPTACLE (OUTLET BOX ONLY)
J or HH	GENERAL CONTROL OR WIRING DEVICE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.
PB	PUSH-BUTTON STATION. FOR TYPE PUSH BUTTON REQUIRED, SEE CONTROL DIAGRAMS.
30	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
60/40 F	FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 60 = SWITCH RATING; 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE.
2	CONTACTOR, MAGNETIC, NEMA SIZE INDICATED.
30 L	LIGHTING CONTACTOR, CURRENT RATING INDICATED. FOR NUMBER OF POLES, SEE CONTROL DIAGRAM.
2	STARTER MAGNETIC NEMA SIZE INDICATED, SEE CONTROL DIAGRAM.
2	COMBINATION (FUSE OR CIRCUIT BREAKER AS INDICATED) MAGNETIC STARTER, NEMA SIZE INDICATED, SEE CONTROL DIAGRAM.
	METERING FACILITIES
⊗	GROUND ROD
	MULTI-PARTY DESK TOP COMMUNICATIONS SYSTEM STATION WITH REMOTE AMPLIFIER
W	MULTI-PARTY WALL MOUNTED COMMUNICATIONS SYSTEM STATION WITH INTEGRAL AMPLIFIER
	CONE TYPE PAGING SPEAKER, CEILING MOUNTED
	INTERIOR PAGING TRUMPET SOUND REPRODUCER, WITH REMOTE AMPLIFIER, SURFACE MOUNTED.
	OUTDOOR PAGING TRUMPET SOUND REPRODUCER, WITH REMOTE AMPLIFIER, SURFACE MOUNTED.
	TERMINAL CABINET FOR COMMUNICATIONS SYSTEM
F	FIRE ALARM STATION, MANUAL
FA	FIRE ALARM STATION, AUTOMATIC, HEAT DETECTOR
F	FIRE ALARM BELL
F	FIRE ALARM HORN
FI	FIRE ALARM IONIZATION DETECTOR
I	AIR DUCT IONIZATION DETECTOR

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
100/M	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
400	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
100	SWITCH - CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
225	FUSE - RATING INDICATED
	DRAWOUT CIRCUIT BREAKER, LOW VOLTAGE
	DRAWOUT CIRCUIT BREAKER, MEDIUM VOLTAGE
	DRAWOUT FUSED SWITCH, MEDIUM VOLTAGE
	SURGE ARRESTER
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 TO	TIME DELAY RELAY CONTACT (TIME ACTION INDICATED)
	REMOTE DEVICE
O H A 1 2	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

SYMBOL	DESCRIPTION
(3)	CURRENT TRANSFORMER, NUMBER INDICATED
A	INDICATING LIGHT, PUSH-TO-TEST, LETTER INDICATES COLOR
A	INDICATING LIGHT - LETTER INDICATES COLOR A - AMBER G - GREEN B - BLUE R - RED C - CLEAR W - WHITE

ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
A	AMMETER, AMPERE, AMBER
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFF	ABOVE FINISHED FLOOR
AS	AMMETER SWITCH, AMPERE SENSOR
ASU	AIR SUPPLY UNIT
AT	AMPERE TRIP
ATC	AUTOMATIC THROWOVER CONTROL
ATS	AUTOMATIC TRANSFER SWITCH
B	BELL, BLUE
BC	BARE COPPER
C	CONDUIT, CONTACTOR
CB	CIRCUIT BREAKER
CC	CONTROL CABLE
CKT	CIRCUIT
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CRS	COATED RIGID STEEL CONDUIT
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DIV	DIVISION
E	EMPTY
EF	EXHAUST FAN
EO	ELECTRIC OPERATOR
ETM	ELAPSED TIME METER
EXST	EXISTING
FDR	FEEDER
F, FU	FUSE
FLR	FLOOR
FLUOR	FLUORESCENT
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G	GREEN, GROUND
GALV	GALVANIZED
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
H	HIGH SPEED, HORN, HOWLER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM
HVAC	HEATING, VENTILATING & AIR CONDITIONING
IC	INTERRUPTING CAPACITY
I & C	INSTRUMENTATION AND CONTROL
INCAND	INCANDESCENT
INST	INSTANTANEOUS
J, J-BOX	JUNCTION BOX
K	KEY INTERLOCK
L	LIGHTING CONTACTOR, LOW SPEED
LOS	LOCKOUT STOP PUSH BUTTON
LS	LIMIT SWITCH
LT FLEX	LIQUID TIGHT FLEX CONDUIT
LR	LATCHING RELAY

ABBREVIATIONS	DESCRIPTION
M	MAGNETIC CONTACTOR COIL
MCC	MOTOR CONTROL CENTER
MDC	MOTORIZED DAMPER CONTROL
MERC	MERCURY VAPOR
MH	MANHOLE
MMP	MECHANICAL MOUNTING PANEL
MO	MOTOR OPERATER
MS	MOTOR STARTER
MT	MOUNT
MTD	MOUNTED
N	NEUTRAL
NA	NON-AUTOMATIC
NC	NORMALLY CLOSED
NL	NIGHT LIGHT
NO	NORMALLY OPEN
NP	NAMEPLATE
OL	OVERLOAD RELAY
PB	PULL BOX, PUSH BUTTON SWITCH
PC	PHOTOCELL
PNL	PANEL
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE CONDUIT
R	RED
RCPT	RECEPTACLE
RM	REMOTE MULTIPLEXER
RS	RIGID STEEL CONDUIT
RT	REMOTE TELEMETRY
RVNR	REDUCED VOLTAGE NON-REVERSING
RVR	REDUCED VOLTAGE REVERSING
SA	SURGE ARRESTOR
SC	SPEED CONTROL
SH	SPACE HEATER
S/N	SOLID NEUTRAL
SPD	SPEED
SST	STAINLESS STEEL
SV	SOLENOID VALVE
SW	SWITCH
T	THERMOSTAT
TB	TERMINAL BOARD
TC	TIME CLOCK, TIME CLOSE
TD	TEMPERATURE DETECTOR RELAY
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TM	TIMING RELAY
TO	TIME OPEN
TR	TIMER-REPEAT CYCLE
TS	AUTO TRANSFORMER TEMPERATURE SWITCH
TSP	TWISTED SHIELDED PAIR
TST	TWISTED SHIELDED TRIAD
TYP	TYPICAL
UH	UNIT HEATER
UVR	UNDER VOLTAGE RELAY
V	VOLTMETER, VOLT
VFD	VARIABLE FREQUENCY DRIVE
VS	VOLTMETER SWITCH
W	WATT
WHD	WATTHOUR DEMAND METER
WP	WEATHERPROOF
XFMR	TRANSFORMER

NOTES:
1. THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.
2. A SUBSCRIPT NUMBER NEXT TO SYMBOLS INDICATES CIRCUIT IN PANELBOARD.

CH2M HILL
DSGN H.E.NAGEL
DR S.L.GANDREY
CHK M.L.HATHAWAY
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

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APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
GENERAL ELECTRICAL LEGEND

SHEET 8
DWG NO. G8
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

MCP ◆

PLC — SEE LOOP DESCRIPTIONS FOR SOFTWARE FUNCTIONS & BATCH PROCESSING STEPS

"ALERT CONDITION ACTIVE" — "SHUTDOWN CONDITION ACTIVE" — "SAFETY" — AUTODIALER — LAHH 1-1 — LAHH 1-2

"WATCHDOG RESET" — OFF-TD 5-SEC — "PLC FAIL" — MALF — OA 2

"TANK LEVEL LOW, STOP MIXER"

"LOE" — LAH 3 — LAHH 18

QIU DATA ACCESS MODULE

PAL 17

"RUN" — 1 — (2) — "ON/AUTO"

120V

"ON" — "HIGH/LOE" — (2) — 120V

HS 2 OOA — LITSH 3

ALARM HORN ENABLE/DISABLE — HS x

HS 4 OOA

PSL 17

M — CS-1 — M-2

LE/TE 3

VTR

2"-PIF-HDPE — 2"-PIF-PVC — 2"-PIF-PVC

3"-OF-PVC — 2"-PIF-PVC

STORAGE TANK T-2

"LEVEL HIGH HIGH" — "STOP" — "LEVEL HIGH HIGH" — "STOP"

"LEVEL HIGH HIGH"

480V — HS 1-2 OOA — 1 — (2) — "MOTOR POWER" — 2"-PIF-CS — LSHH 1-2 — LSH 1-2 — LSL 1-2 — CS-1 — MANHOLE 2 PUMP P-1-2

480V — HS 1-1 OOA — 1 — (2) — "MOTOR POWER" — 2"-PIF-CS — LSHH 1-1 — LSH 1-1 — LSL 1-1 — CS-1 — MANHOLE 1 PUMP P-1-1

480V — HS 18 OOA — 1 — (2) — "MOTOR POWER" — LSHH 18 — LSH 18 — LSL 18 — BUILDING SUMP PUMP P-18 — BUILDING SUMP T-18

2"-DR-PVC

3"-PVC

4"-OF-HDPE

CENTRAL TRENCH

SOUTHEAST TRENCH

WEST TRENCH

N-2 D 3"-PVC

½"-AHP-CU — S — FV 4

2"-PIF-PVC — A N-2

P-4 REACTION TANK FEED PUMP**

3"-PEF-PVC — B N-2

1"-AHP-CU — C N-2

1"-AHP-CU

480V — AIR COMPRESSOR M-17** — 3"-PVC

BID DOCUMENTS

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APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
INSTRUMENTATION AND CONTROL P&ID

SHEET	9
DWG NO.	N1
DATE	FEB 1996
PROJ NO.	104200

26-FEB-1996
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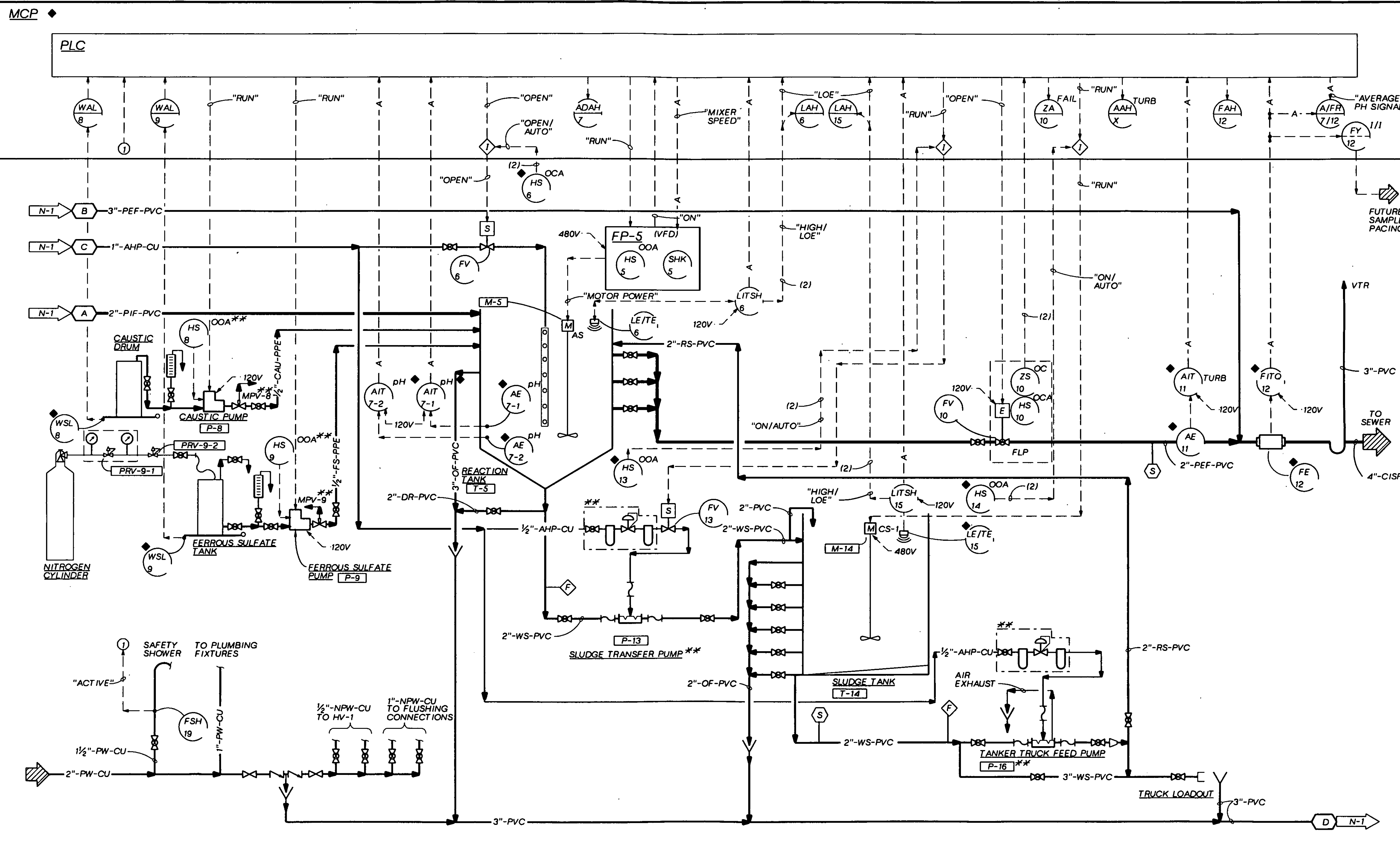

MCP
PLC
WAL 8
WAL 9
"RUN"
"OPEN"
"OPEN/ AUTO"
ADAH 7
"RUN"
"MIXER SPEED"
"LOE"
LAH 6
LAH 15
"RUN"
"OPEN"
ZA 10
FAIL
AAH X
TURB
FAH 12
A/FR 7/12
"AVERAGE PH SIGNAL"
FY 12
FUTURE SAMPLER PACING
N-1
3"-PEF-PVC
1"-AHP-CU
2"-PIF-PVC
HS 6
OCA
FP-5 (VFD)
480V
"ON"
HS 5
SHK 5
OOA
"HIGH/ LOE"
LITSH 6
"MOTOR POWER"
M-5
LE/TE 6
120V
2"-RS-PVC
FV 6
"ON/ AUTO"
VTR
3"-PVC
CAUSTIC DRUM
HS 8
OOA**
1/2"-CAU-PPE
MPV-8
CAUSTIC PUMP
P-8
WSL 8
PRV-9-2
PRV-9-1
NITROGEN CYLINDER
HS 9
1/2"-FS-PPE
MPV-9
FERROUS SULFATE TANK
FERROUS SULFATE PUMP
P-9
WSL 9
AIT 7-2
AIT 7-1
pH
AE 7-1
AE 7-2
2"-DR-PVC
3"-OF-PVC
REACTION TANK
T-5
ZS 10
OC
HS 10
OCA
FV 10
FLP
AIT 11
AE 11
FITO 12
FE 12
2"-PEF-PVC
TO SEWER
4"-CISP
HS 13
1/2"-AHP-CU
FV 13
2"-PVC
2"-WS-PVC
LITSH 15
CS-1
M-14
LE/TE 15
HS 14
2"-WS-PVC
P-13
SLUDGE TRANSFER PUMP**
SAFETY SHOWER
TO PLUMBING FIXTURES
"ACTIVE"
FSH 19
1 1/2"-PW-CU
1"-PW-CU
2"-PW-CU
1/2"-NPW-CU TO HV-1
1"-NPW-CU TO FLUSHING CONNECTIONS
2"-OF-PVC
SLUDGE TANK
T-14
AIR EXHAUST
TANKER TRUCK FEED PUMP
P-16
3"-WS-PVC
TRUCK LOADOUT
2"-RS-PVC

DSGN B.OHLSSON	DR B.OXLEY	CHK D.M.WILSON	APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

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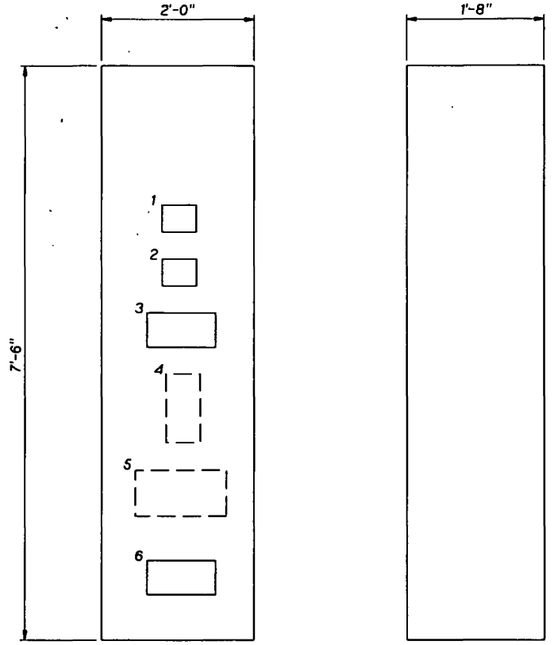
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY

INSTRUMENTATION AND CONTROL P&ID

SHEET 10
DWG NO. N2
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

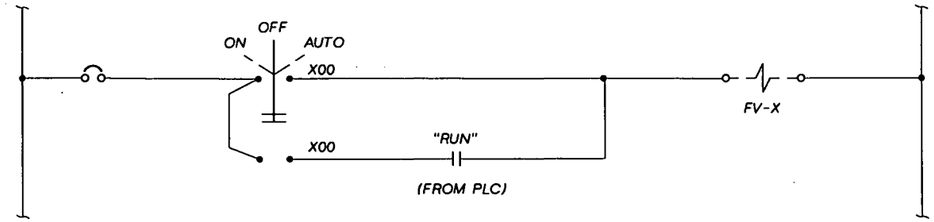


MCP PANEL SCHEDULE		
ITEM NO.	INSTRUMENT ITEM/ TAG NUMBER	NAMEPLATE INSCRIPTION
1	ANNUNCIATOR	(N/A)
2	A/FR 7/12	REACTION TANK ph/EFFLUENT FLOWRATE
3	DATA ACCESS MODULE	(N/A)
4	AUTO DIALER	(N/A)
5	PLC SYSTEM	(N/A)
6	UPS	(N/A)

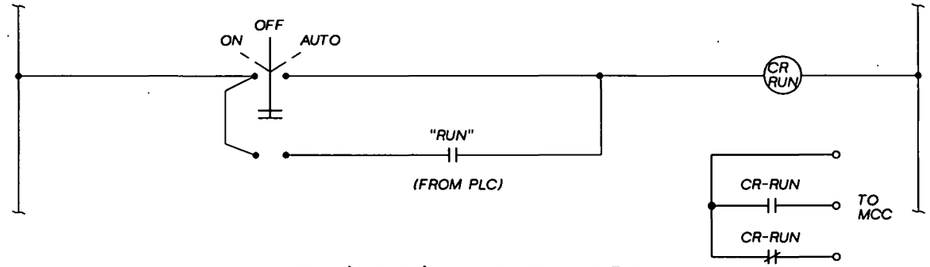
MCP ANNUNCIATOR SCHEDULE		
ARRANGEMENT	INSTRUMENT ITEM	NAMEPLATE INSCRIPTION
#1 #9 #2 #10 #3 #11 #4 #12 #5 #13 #6 #14 #7 #15 #8 #16	SEE LOOP DESCRIPTIONS	SEE LOOP DESCRIPTIONS

NOTES:
1. TERMINATE ALARM SIGNALS IN LOOP NUMBER SEQUENCE FOLLOWING SEQUENTIAL ARRANGEMENT SHOWN.
2. DASHED LINE INDICATES REAR OF PANEL MOUNTING.

MCP LAYOUT AND SCHEDULES
NTS



ON/OFF/AUTO CONTROL AIR OPERATED DIAPHRAM PUMPS
NTS



ON/OFF/AUTO CONTROL MIXERS
NTS

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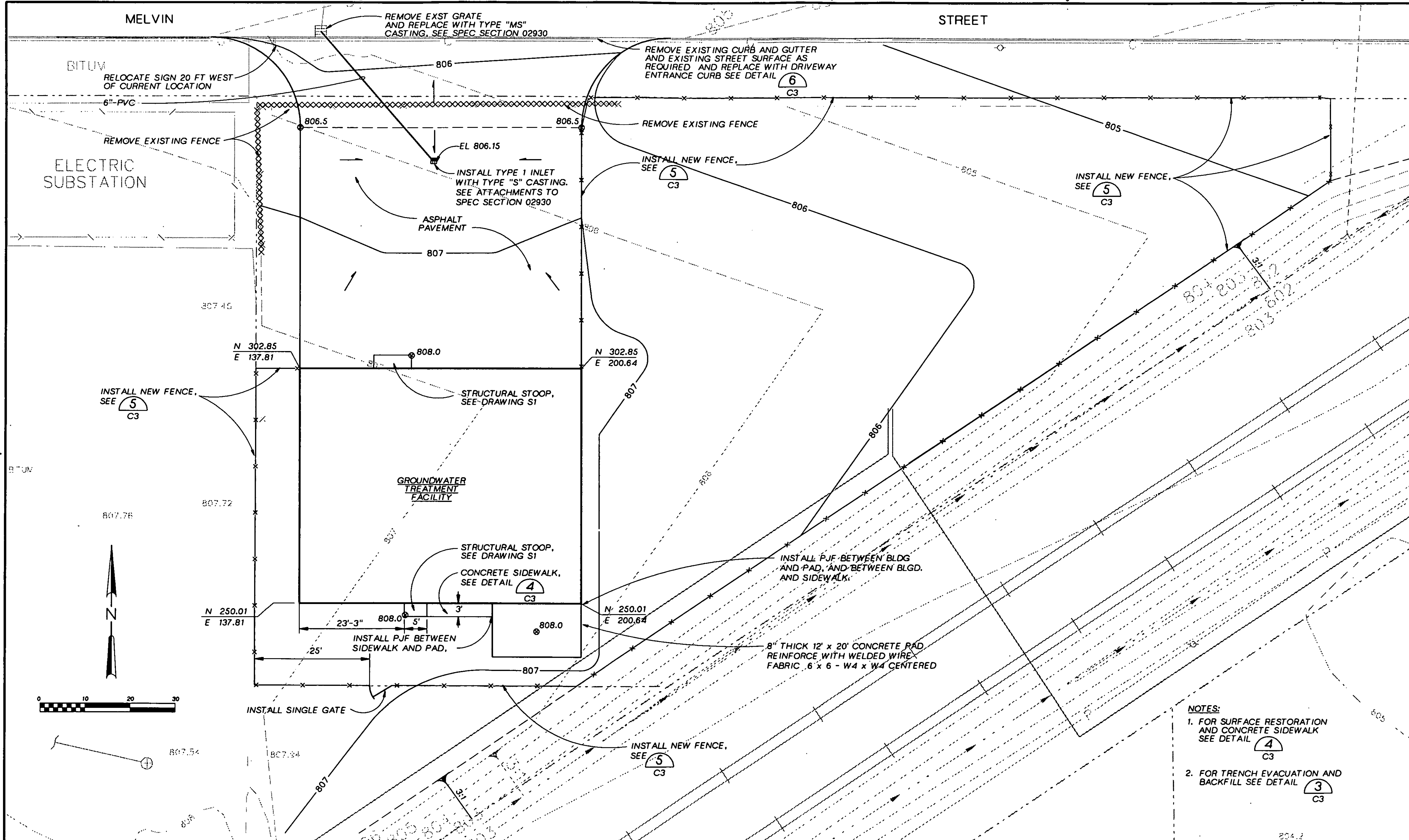
26-FEB-1996 I:/104200/DRAWINGS/1042C01.DLV



MELVIN
STREET
REMOVE EXST GRATE
AND REPLACE WITH TYPE "MS"
CASTING, SEE SPEC SECTION 02930
BITUM
RELOCATE SIGN 20 FT WEST
OF CURRENT LOCATION
6"-PVC
REMOVE EXISTING CURB AND GUTTER
AND EXISTING STREET SURFACE AS
REQUIRED AND REPLACE WITH DRIVEWAY
ENTRANCE CURB SEE DETAIL 6 C3
806
806.5
806.5
REMOVE EXISTING FENCE
REMOVE EXISTING FENCE
805
ELECTRIC
SUBSTATION
EL 806.15
INSTALL TYPE 1 INLET
WITH TYPE "S" CASTING.
SEE ATTACHMENTS TO
SPEC SECTION 02930
INSTALL NEW FENCE,
SEE 5 C3
INSTALL NEW FENCE,
SEE 5 C3
ASPHALT
PAVEMENT
806
807
807.45
N 302.85
E 137.81
808.0
N 302.85
E 200.64
INSTALL NEW FENCE,
SEE 5 C3
STRUCTURAL STOOP,
SEE DRAWING S1
807
806
GROUNDWATER
TREATMENT
FACILITY
807.72
807.76
BITUM
STRUCTURAL STOOP,
SEE DRAWING S1
CONCRETE SIDEWALK,
SEE DETAIL 4 C3
INSTALL PJF BETWEEN BLDG
AND PAD, AND BETWEEN BLGD.
AND SIDEWALK.
N 250.01
E 137.81
23'-3"
808.0
5'
3'
N 250.01
E 200.64
808.0
INSTALL PJF BETWEEN
SIDEWALK AND PAD.
8" THICK 12' x 20' CONCRETE PAD
REINFORCE WITH WELDED WIRE
FABRIC 6 x 6 - W4 x W4 CENTERED
25'
807
N
0 10 20 30
INSTALL SINGLE GATE
INSTALL NEW FENCE,
SEE 5 C3
807.54
807.34
807
3:1
3:1
804
805
803
NOTES:
1. FOR SURFACE RESTORATION
AND CONCRETE SIDEWALK
SEE DETAIL 4 C3
2. FOR TRENCH EVACUATION AND
BACKFILL SEE DETAIL 3 C3

CH2M HILL

DSGN C.G. BARNETT						
DR P.E. ALLEN						
CHK M.A.SCHMIEGE						
APVD L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD	

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APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
SITEWORK
GRADING PLAN

SHEET	12
DWG NO.	C1
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS

20-DEC-1995
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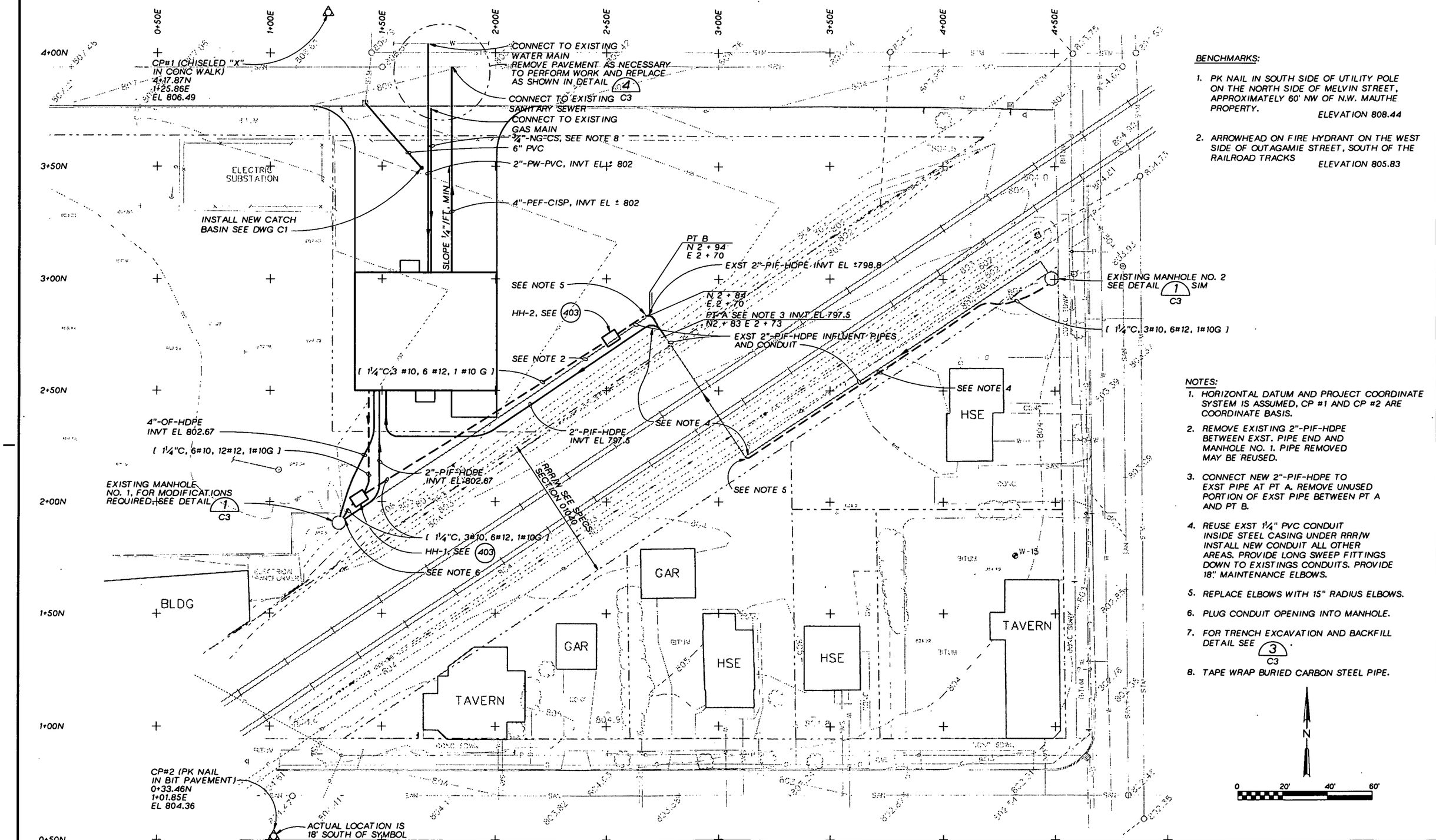

BENCHMARKS:

1. PK NAIL IN SOUTH SIDE OF UTILITY POLE ON THE NORTH SIDE OF MELVIN STREET, APPROXIMATELY 60' NW OF N.W. MAUTHE PROPERTY. ELEVATION 808.44
2. ARROWHEAD ON FIRE HYDRANT ON THE WEST SIDE OF OUTAGAMIE STREET, SOUTH OF THE RAILROAD TRACKS ELEVATION 805.83

NOTES:

1. HORIZONTAL DATUM AND PROJECT COORDINATE SYSTEM IS ASSUMED, CP #1 AND CP #2 ARE COORDINATE BASIS.
2. REMOVE EXISTING 2"-PIF-HDPE BETWEEN EXST. PIPE END AND MANHOLE NO. 1. PIPE REMOVED MAY BE REUSED.
3. CONNECT NEW 2"-PIF-HDPE TO EXST PIPE AT PT A. REMOVE UNUSED PORTION OF EXST PIPE BETWEEN PT A AND PT B.
4. REUSE EXST 1¼" PVC CONDUIT INSIDE STEEL CASING UNDER RRR/W INSTALL NEW CONDUIT ALL OTHER AREAS. PROVIDE LONG SWEEP FITTINGS DOWN TO EXISTINGS CONDUITS. PROVIDE 18" MAINTENANCE ELBOWS.
5. REPLACE ELBOWS WITH 15" RADIUS ELBOWS.
6. PLUG CONDUIT OPENING INTO MANHOLE.
7. FOR TRENCH EXCAVATION AND BACKFILL DETAIL SEE 3 C3
8. TAPE WRAP BURIED CARBON STEEL PIPE.

BID DOCUMENTS

DSGN C.G. BARNETT					
DR P.E. ALLEN					
CHK M.A.SCHMIEGE					
APVD L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD

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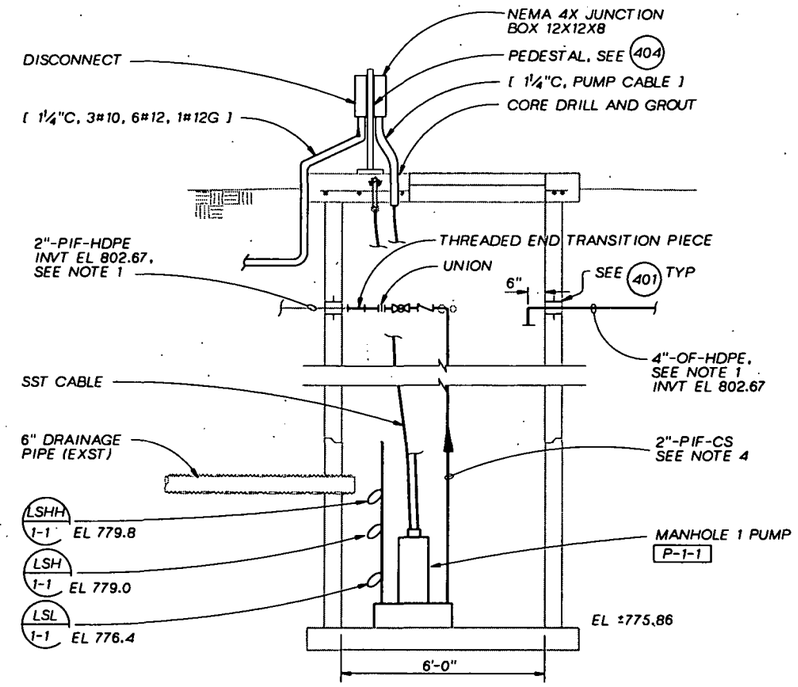
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
SITEWORK
YARD PIPING AND UTILITY PLAN

SHEET NO.	13
DWG NO.	C2
DATE	FEB 1996
PROJ NO.	104200



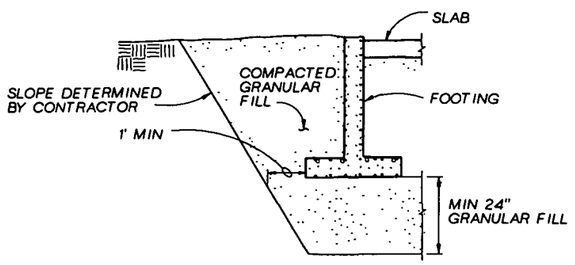
COMPOSITE SECTION

NOTES:

1. CORE DRILL NEW HOLE FOR 4"-OF-HDPE. GROUT AROUND PIPE.
2. FIELD VERIFY ALL ELEVATIONS.
3. MANHOLE NO. 2 SIMILAR.
4. SUPPORT 2"-PIF-CS WITH ANGLE BRACKET PIPE SUPPORT EVERY 10'-0". ANCHOR ANGLE BRACKET TO MANHOLE WALL WITH SST WEDGE ANCHORS.

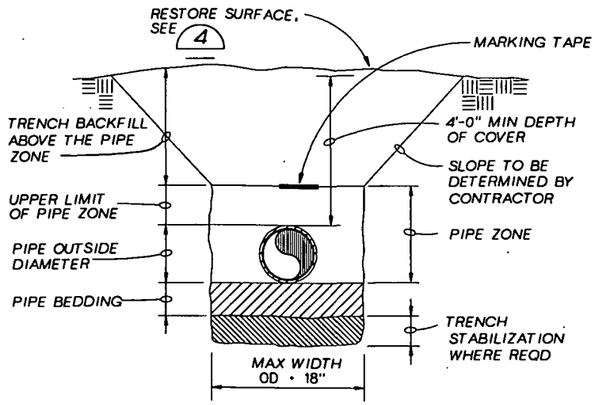
MANHOLE NO.1 DETAIL (1)

NTS C2



STRUCTURAL EXCAVATION DETAIL (2)

NTS G6

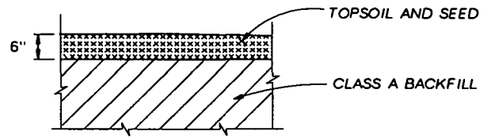


NOTE:

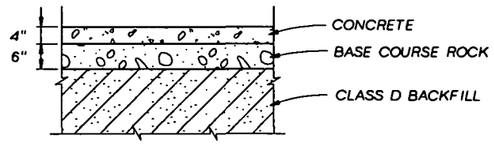
1. OD EQUALS OUTSIDE DIAMETER OF PIPE, CONDUIT, CABLE, OR DUCT BANK. WITH MULTIPLE PIPES, CONDUITS, CABLES, OR DUCT BANKS IN SINGLE TRENCH, OD EQUALS AGGREGATE WIDTH PLUS SPACE BETWEEN.

TRENCH DETAIL (3)

NTS C2



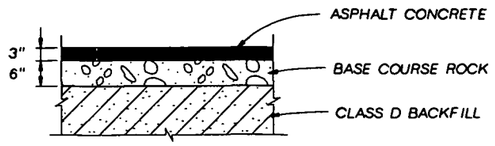
GRASS SURFACE



NOTE:

1 CONSTRUCT SIDEWALK IN ACCORDANCE WITH CITY OF APPLETON REQUIREMENTS

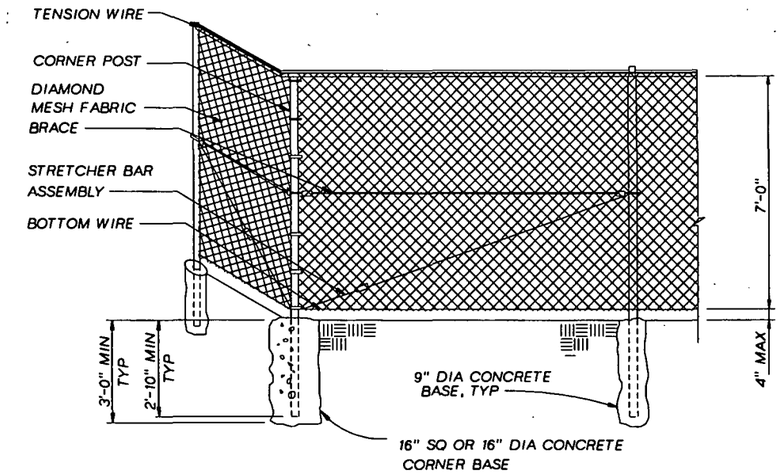
CONCRETE SIDEWALK



ASPHALT SURFACE

SURFACE RESTORATION DETAIL (4)

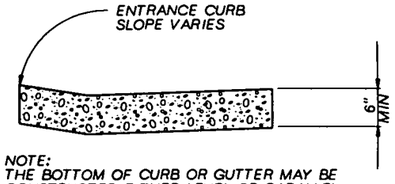
C2



FENCING

DETAIL (5)

NTS C1



NOTE:
THE BOTTOM OF CURB OR GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLPOE OF THE BASE COURSE PROVIDED A 6" GUTTER THICKNESS IS MAINTAINED.

DRIVEWAY ENTRANCE CURB

DETAIL (6)

NTS C1

CH2M HILL

DSGN	C.G. BARNETT
DR	P.E. ALLEN
CHK	M.A.SCHMIEGE
APVD	L.A.AMUNDSON

NTS

NO.	DATE	REVISION	BY	APVD

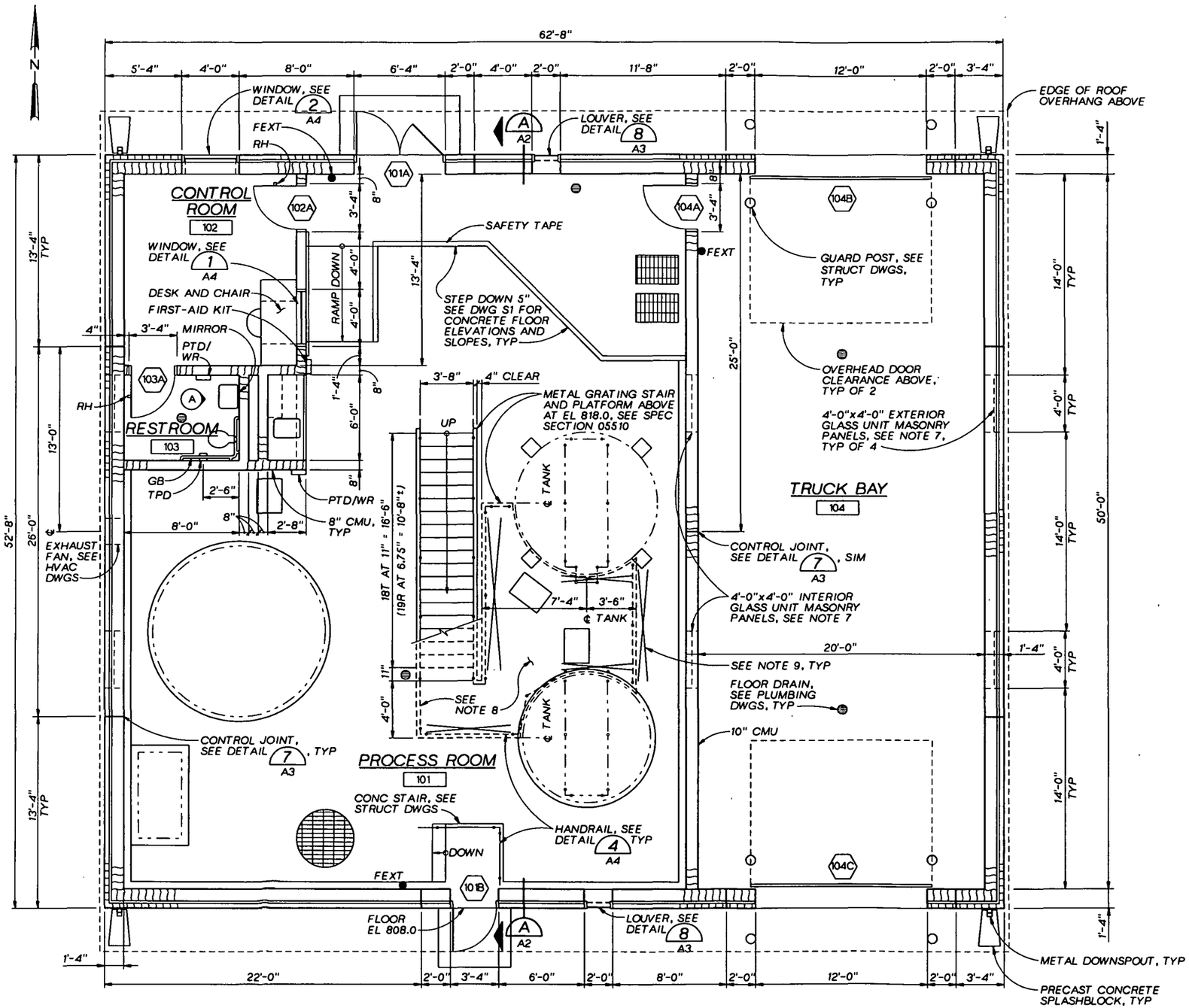
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
SITEWORK DETAILS

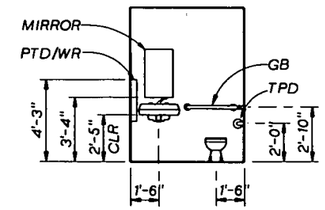
SHEET NO.	14
DWG NO.	C3
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS



FLOOR PLAN

1/4" = 1'-0"



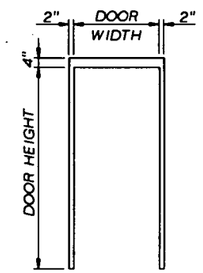
REST ROOM ELEVATION A

1/4" = 1'-0"

GENERAL ARCHITECTURAL NOTES

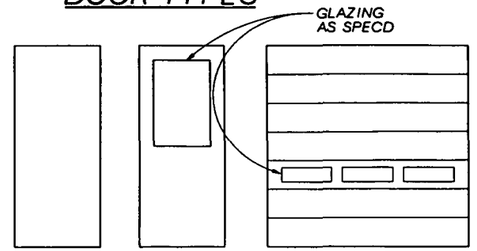
1. UNLESS OTHERWISE NOTED, PLAN DIMENSIONS ARE TO NOMINAL SURFACE OF MASONRY WALLS.
2. REPETITIVE FEATURES ARE NOT DRAWN IN THEIR ENTIRETY AND SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
3. LINE OF EXISTING GRADES, AS SHOWN ON THE BUILDING ELEVATIONS AND SECTIONS ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE, EXCEPT AS NOTED.
4. VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT.
5. VERIFY SIZE AND LOCATION OF, AND PROVIDE: ALL OPENINGS THROUGH FLOORS AND WALLS, ACCESS DOORS, FURRING, CURBS, ANCHORS AND INSERTS. PROVIDE ALL BASES, BLOCKING REQUIRED FOR ACCESSORIES, MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT.
6. SEAL AROUND ALL PENETRATIONS THROUGH WALLS.
7. PROVIDE GLASS UNIT MASONRY PANELS AT LOCATIONS AS SHOWN ON PLAN WITH BOTTOM OF OPENINGS AT ELEVATION 818.00. SEE SPECIFICATION SECTION 04270, GLASS UNIT MASONRY, FOR ANCHORS, PANEL REINFORCING AND OTHER REQUIREMENTS. INSTALL INTERIOR GLASS UNIT MASONRY PANELS IN MASONRY OPENINGS SIMILAR TO DETAIL 1 A4 AND EXTERIOR PANELS IN MASONRY OPENINGS SIMILAR TO DETAIL 8 A3.
8. LOCATE PLATFORM FRAMING, BRACING, AND SUPPORTS TO ALLOW ACCESS BELOW INDICATED AREA. PROVIDE MINIMUM CLEAR HEIGHT 4'-0".
9. INDICATES ACCEPTABLE LOCATIONS FOR PLATFORM VERTICAL BRACING. COLUMN LOCATIONS PER CONTRACTOR DESIGN. SEE SPECIFICATION SECTION 05510.

FRAME TYPE



F-1

DOOR TYPES



BID DOCUMENTS

CH2M HILL

DSGN K.K.HARGREAVES						
DR R.G.SIEBERS						
CHK T.GLAWTSCHEW						
APVD L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
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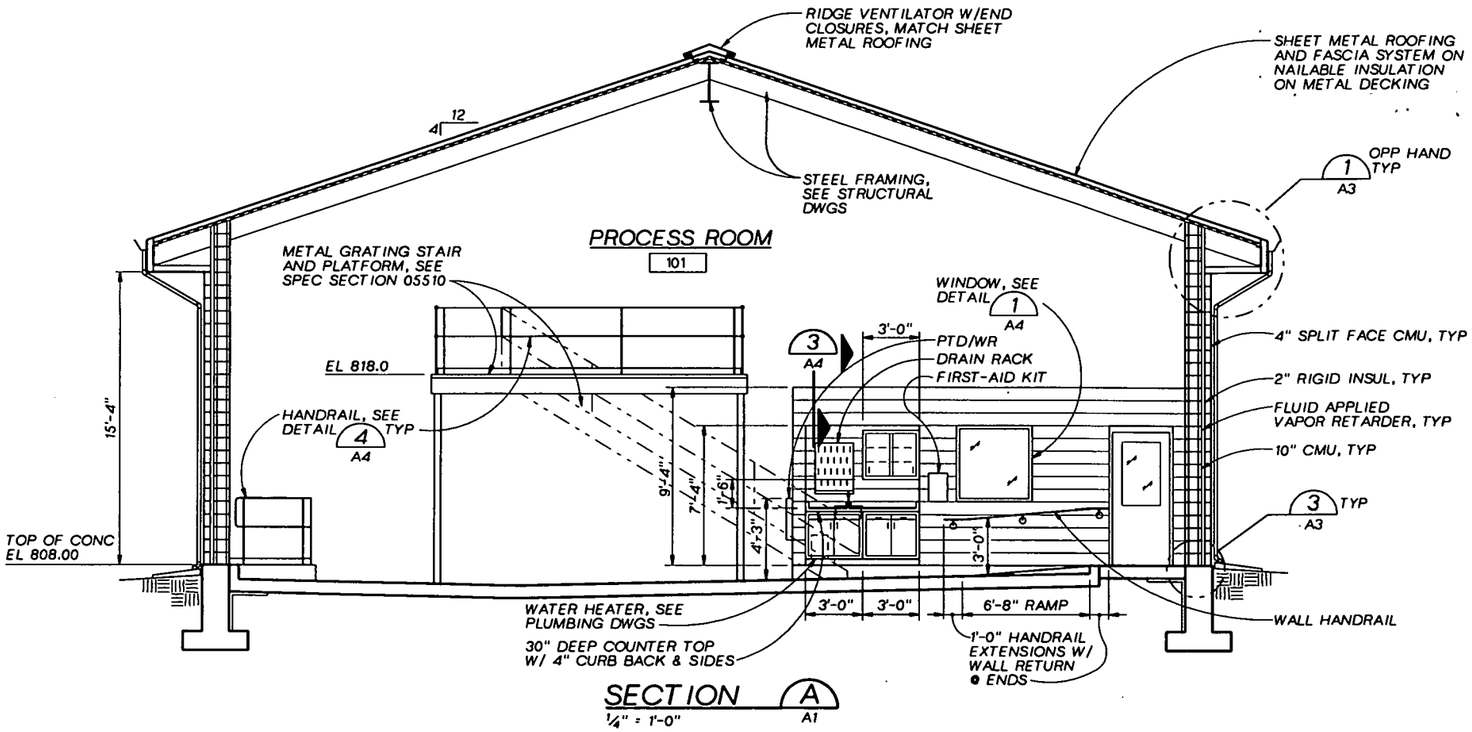
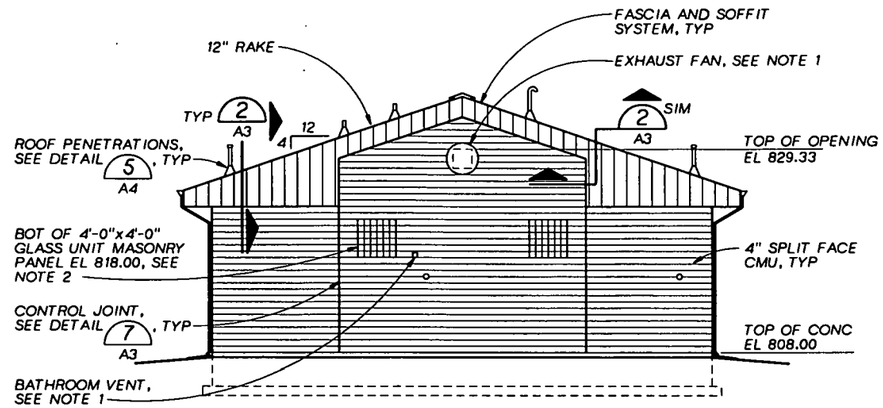
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
ARCHITECTURAL
FLOOR PLAN
AND INTERIOR ELEVATION

SHEET	15
DWG NO.	A1
DATE	FEB 1996
PROJ NO.	104200



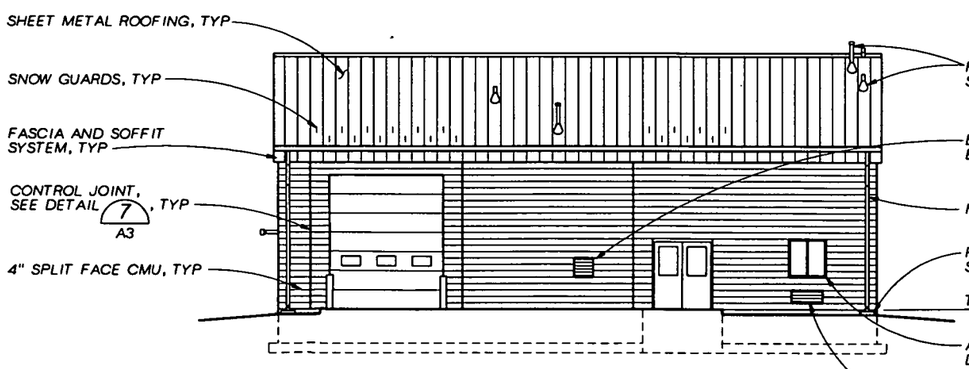
SECTION A (A1)
1/4" = 1'-0"



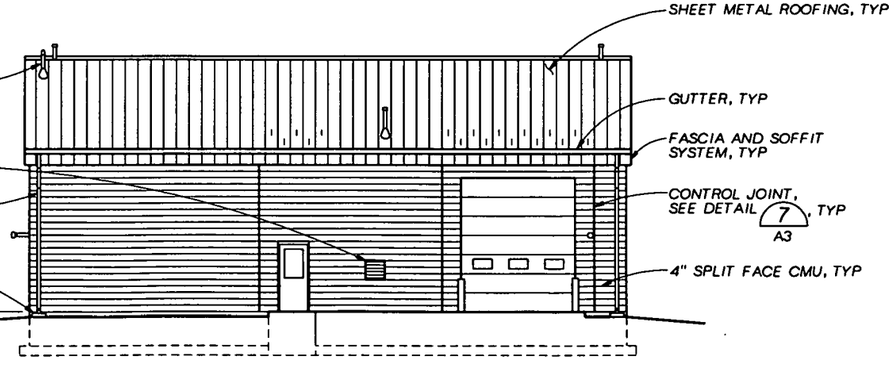
WEST ELEVATION
1/8" = 1'-0" EAST EL SIMILAR

NOTE:

1. OPENING SIZE AS REQUIRED BY HVAC EQUIPMENT MANUFACTURER. SEE HVAC DRAWINGS. PROVIDE SEALANT ALL AROUND, BOTH SIDES.
2. GLASS BLOCK PANELS SHALL BE AS SPECIFIED IN SECTION 04270, EXTERIOR PANELS SHALL BE SIMILAR TO DETAIL 8 A3.



NORTH ELEVATION
1/8" = 1'-0"



SOUTH ELEVATION
1/8" = 1'-0"

CH2MHILL	DSGN K.K.HARGREAVES DR R.G.SIEBERS CHK T.GLAWTSCHEW APVD L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD	**REUSE OF DOCUMENTS** THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. ©CH2M HILL

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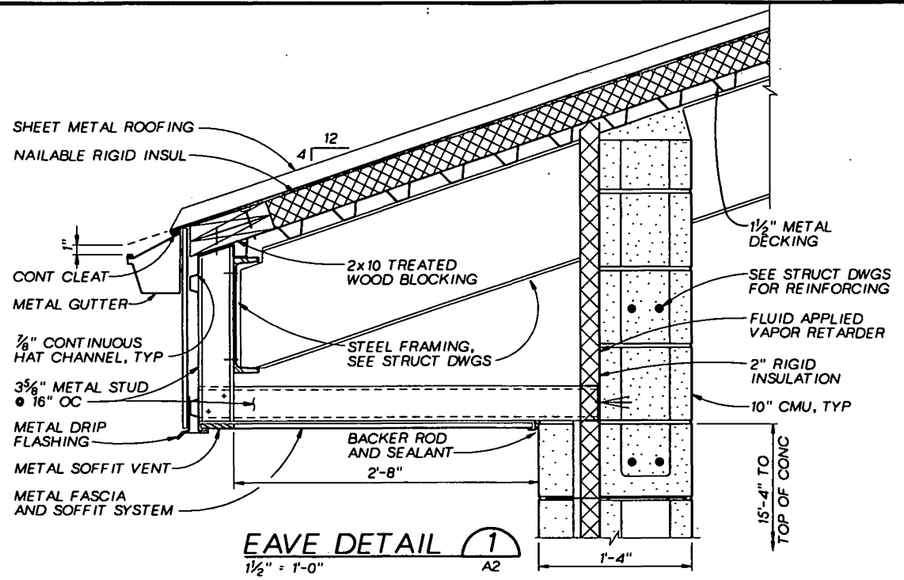
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

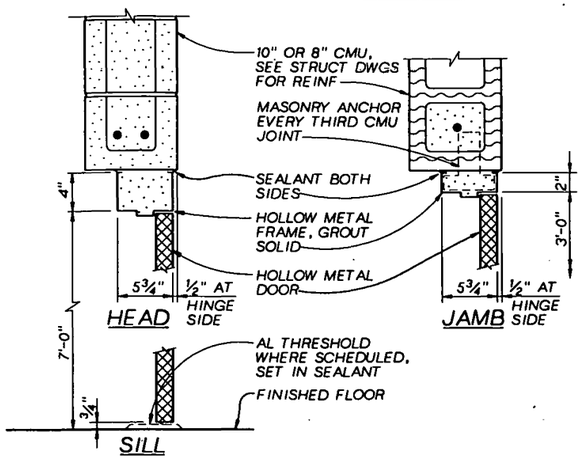
GROUNDWATER TREATMENT FACILITY
ARCHITECTURAL
BUILDING SECTION AND ELEVATIONS

SHEET NO.	16
DWG NO.	A2
DATE	FEB 1996
PROJ NO.	104200

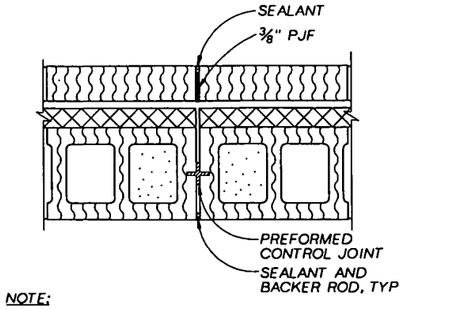
BID DOCUMENTS



EAVE DETAIL 1
1½" = 1'-0" A2

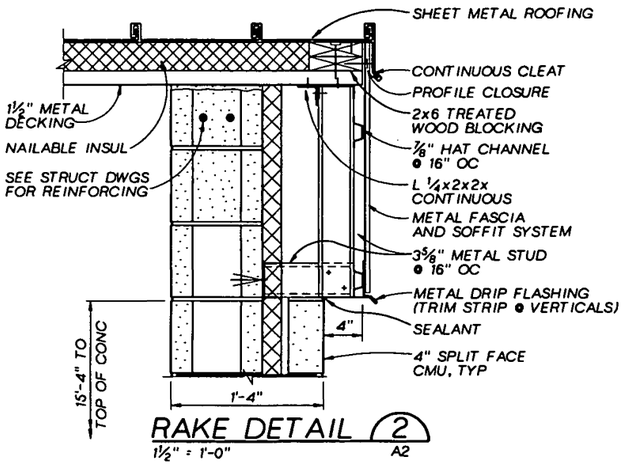


INTERIOR DOOR DETAIL 5
1½" = 1'-0" SPEC SECTION 08001

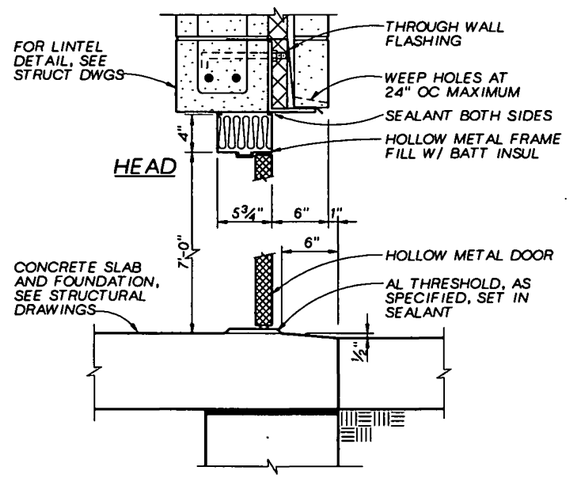


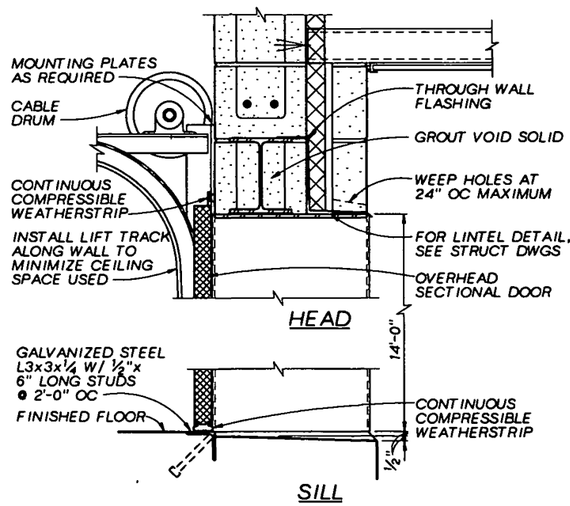
NOTE:
1. STOP ALTERNATE ROWS OF HORIZONTAL REINF AT CONTROL JOINT.

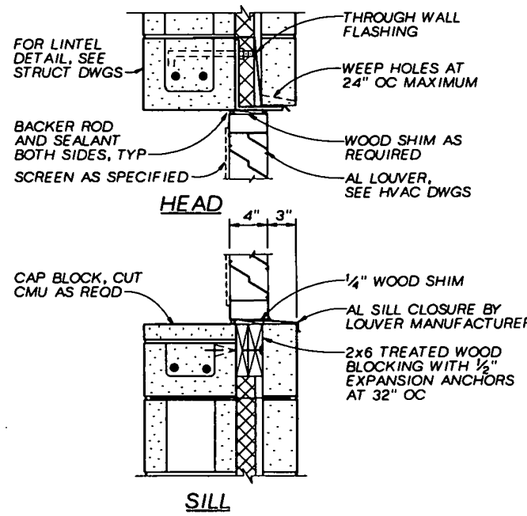
CONTROL JOINT DETAIL 7
1½" = 1'-0" A1, A2



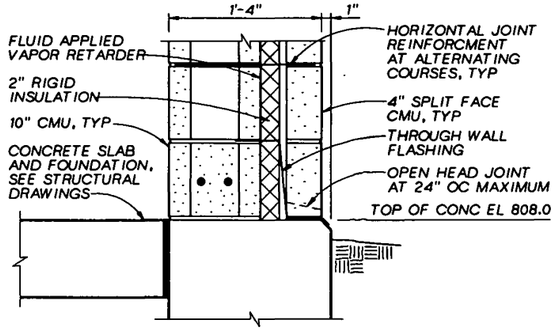
RAKE DETAIL 2
1½" = 1'-0" A2



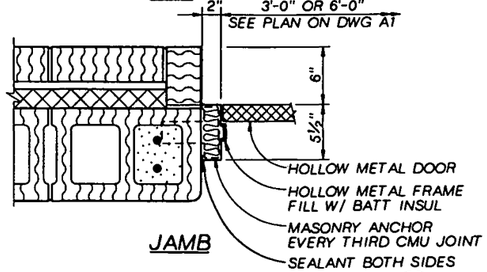




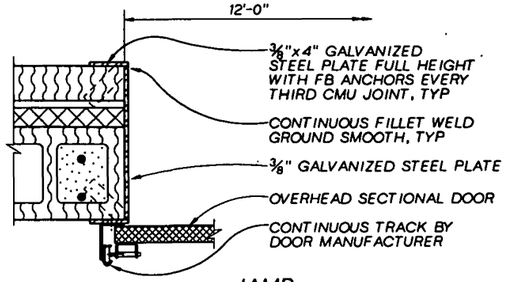
TYPICAL LOUVER DETAIL 8
1½" = 1'-0" A1, A2



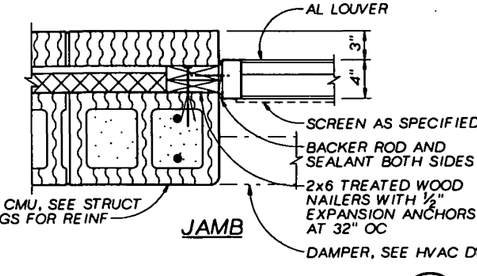
BASE DETAIL 3
1½" = 1'-0" A2



EXTERIOR DOOR DETAIL 4
1½" = 1'-0" SPEC SECTION 08001



OVERHEAD SECTIONAL DOOR 6
1½" = 1'-0" SPEC SECTION 08001



TYPICAL LOUVER DETAIL 8
1½" = 1'-0" A1, A2

CH2M HILL

DSGN	R.G.SIEBERS				
DR	R.G.SIEBERS				
CHK	T.GLAWTSCHEW				
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY / APVD

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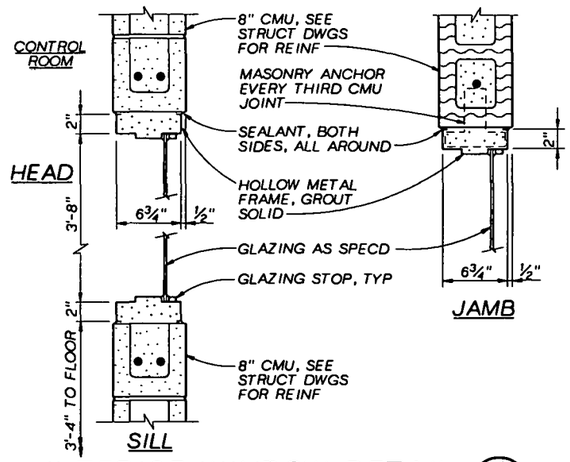
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

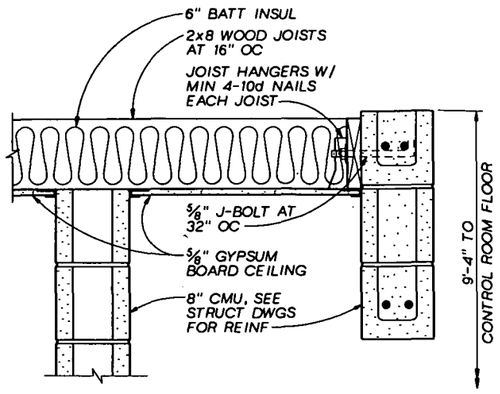
GROUNDWATER TREATMENT FACILITY
ARCHITECTURAL DETAILS

SHEET	17
DWG NO.	A3
DATE	FEB 1996
PROJ NO.	104200

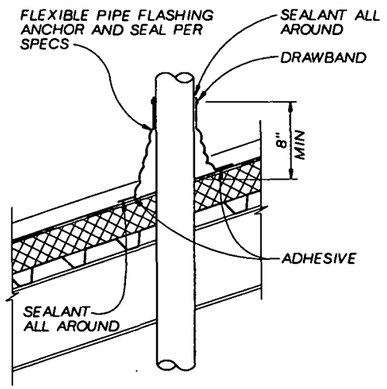
BID DOCUMENTS



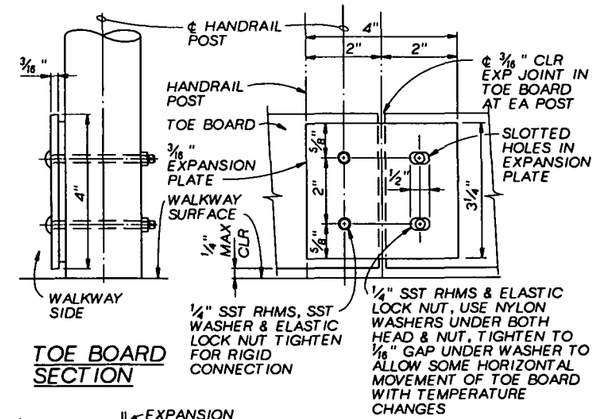
INTERIOR WINDOW DETAIL 1
1½" = 1'-0" — A1, A2



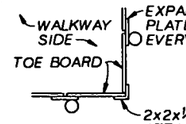
CEILING DETAIL 3
1½" = 1'-0" — A2



ROOF PENETRATION 5
1½" = 1'-0" — A2



TOE BOARD SECTION

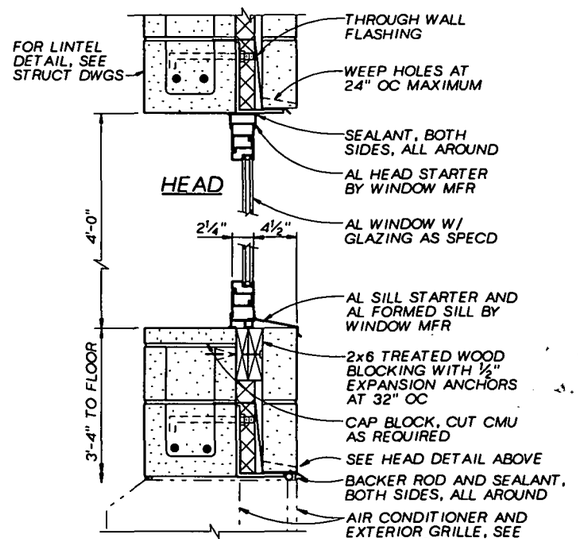


ELEVATION - TOE BOARD/ EXPANSION PLATE CONNECTION

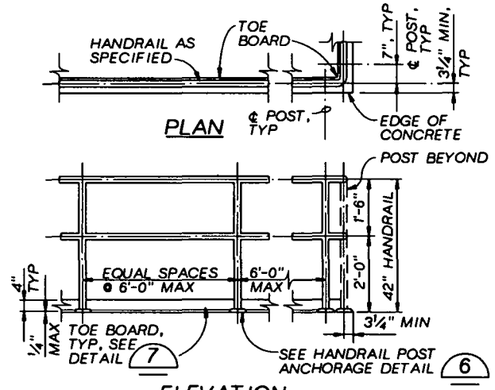
NOTES:
1. WHERE BOLTED BASE PLATE EXTENDS ABOVE WALKWAY SURFACE, NOTCH TOE BOARD TO FIT AROUND BASE PLATE WITH MAXIMUM OF ¼" GAP.
2. TOE BOARD TO BE MOUNTED ON WALKWAY SIDE OF HANDRAIL.
3. RHMS = ROUND HEAD MACHINE SCREW AS SPECIFIED, SST.

PLAN - TOE BOARD INSIDE CORNER
(OUTSIDE CORNER SIMILAR)

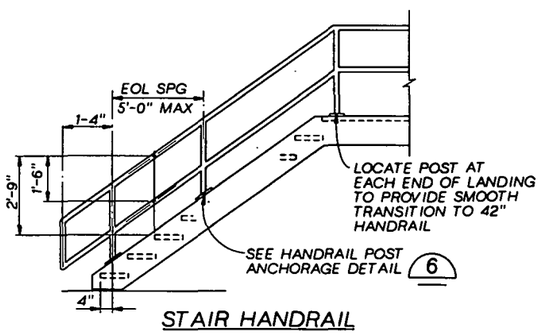
HANDRAIL TOE BOARD 7
NTS

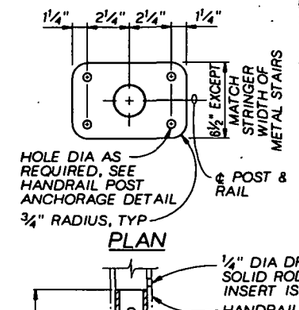


EXTERIOR WINDOW DETAIL 2
1½" = 1'-0" — A1, A2

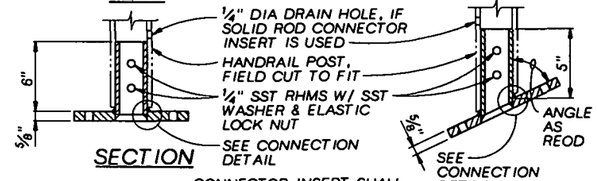


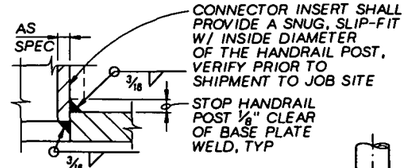
HANDRAIL DETAIL 4
NTS — A1, A2

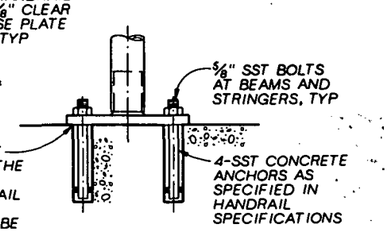




NOTES:
1. GALVANIZED STEEL POST CONNECTORS AND HANDRAILS.
2. AT CONTRACTOR'S OPTION VERTICAL POST TOLERANCE MAY BE OBTAINED BY CUTTING POST IN FIELD TO FIT AND WELDING POST TO BASE PLATE WITHOUT THE CONNECTOR INSERT. GRIND WELDS SMOOTH AND APPLY GALVANIZING REPAIR TO WELD AREA TO MATCH POST FINISH.
3. PROVIDE PROTECTION FOR DISSIMILAR METALS AND CONCRETE PER SPECIFICATIONS.







HANDRAIL POST ANCHORAGE 6
NTS

CH2M HILL

DSGN	R.G.SIEBERS				
DR	R.G.SIEBERS				
CHK	T.GLAWTSCHEW				
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY / APVD

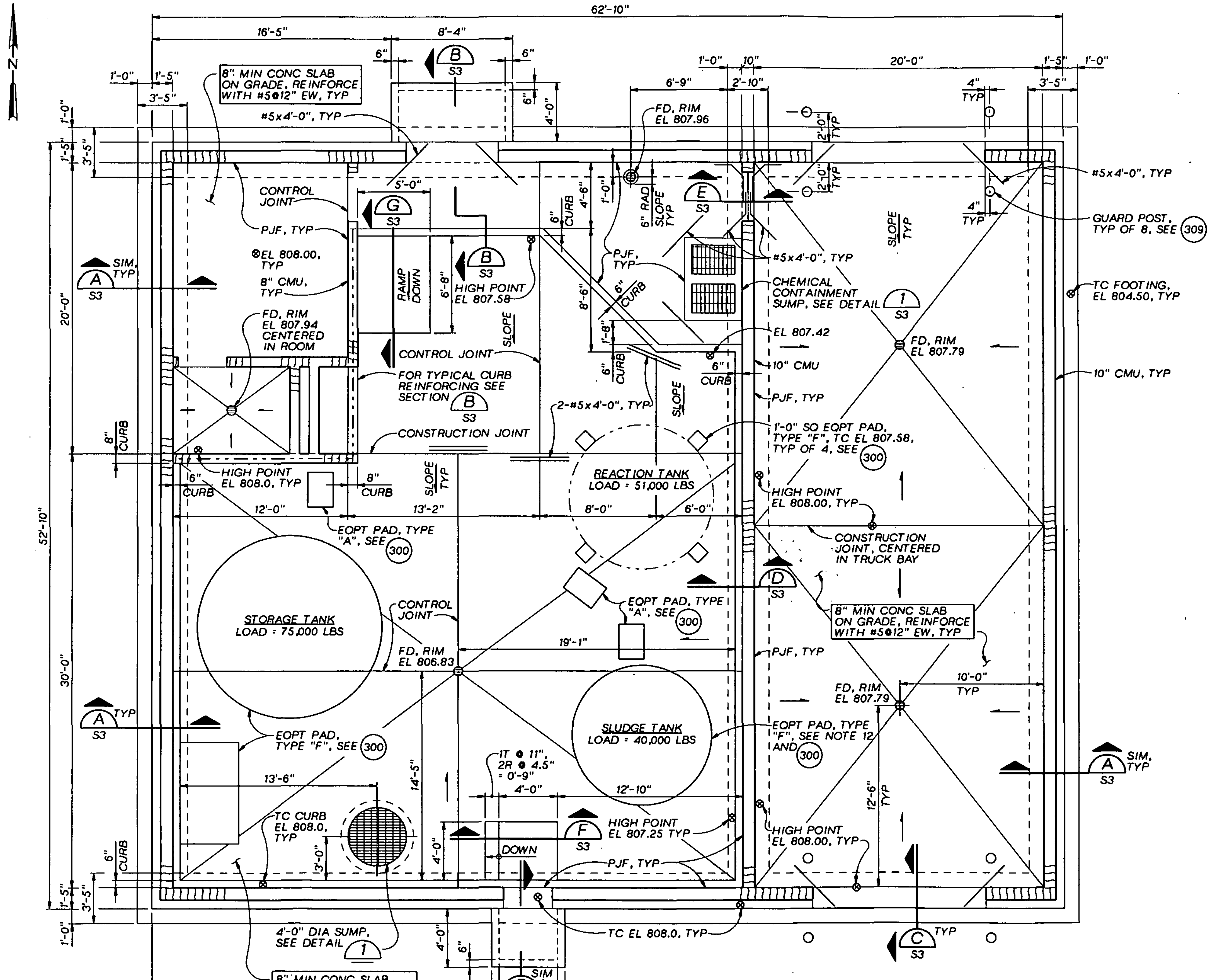
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
ARCHITECTURAL DETAILS

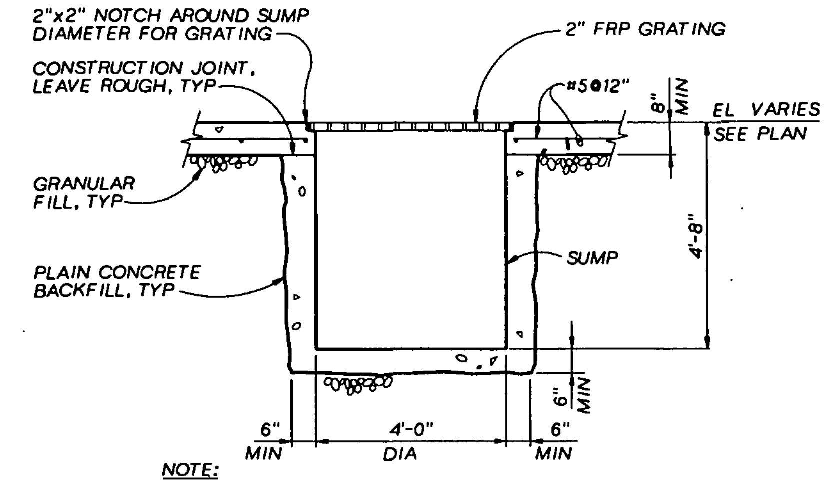
SHEET	18
DWG NO.	A4
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS



FOUNDATION/FLOOR PLAN

1/4"=1'-0"



NOTE:
1. PROVIDE 2 LAYERS OF BUILDING FELT BETWEEN FOUNDATION AND CONCRETE BACKFILL.
2. PROVIDE 8" PENETRATION IN FOUNDATION WALL FOR SUMP OVERFLOW PIPE, SEE MECHANICAL DRAWINGS.

SUMP DETAIL 1

1/2"=1'-0"

LEGEND

- - - - DENOTES CONCRETE CURB BELOW CMU WALL. T.O. CURB EL 808.00. WIDTH OF CURB SHALL MATCH CMU WALL WIDTH ABOVE.

NOTES:

1. FOR GENERAL STRUCTURAL NOTES SEE DRAWING G6.
2. FOR ADDITIONAL REINFORCING AROUND CONCRETE OPENINGS, SEE (302).
3. FOR CORNER REINFORCING IN CAST-IN-PLACE CONCRETE, SEE (301).
4. FOR CMU CORNER REINFORCING, SEE (307).
5. FOR OPENINGS IN CMU WALLS, SEE (306). FOR STEEL LINTEL OVER 12'-0" OVERHEAD DOOR OPENINGS SEE DETAIL 2/S4.
6. FOUNDATION WALL DOWELS AND WALL REINFORCING ARE NOT REQUIRED FOR 8" CMU WALLS.
7. FOR FLOOR AND WALL PIPE/CONDUIT PENETRATIONS, SEE MECHANICAL AND ELECTRICAL DRAWINGS.
8. FOR LOCATION OF EQUIPMENT PADS SEE MECHANICAL AND ELECTRICAL DRAWINGS. FOR SIZE OF EQUIPMENT PADS VERIFY WITH EQUIPMENT SUPPLIER UNLESS NOTED OTHERWISE.
9. FOR LOCATIONS OF CMU WALLS AND CMU OPENINGS, SEE ARCHITECTRAL DRAWINGS.
10. FOR BRICK LEDGER OVER WALL OPENINGS SEE DETAIL 1/S4.
11. FOR STAIRS AND HANDRAILS, SEE ARCHITECTURAL DRAWINGS.
12. BLOCKOUT CONCRETE TANK PAD FOR 2" DRAIN, SET TANK, AND FILL WITH GROUT. COORDINATE SIZE AND DEPTH OF BLOCKOUT WITH TANK PROVIDED.

BID DOCUMENTS

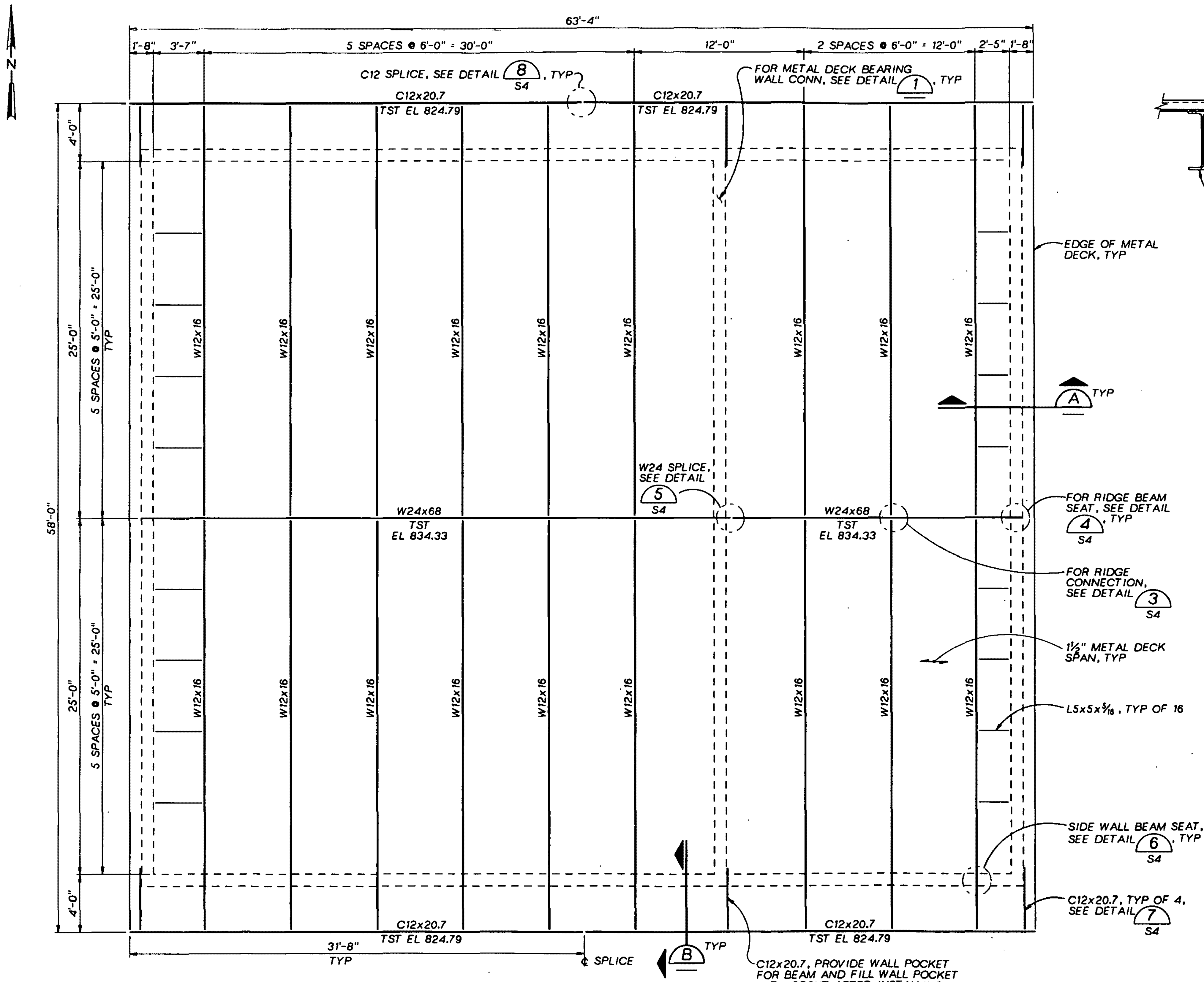
CH2M HILL	DSGN B.W.HUGHES	DR B.R.LEHMAN	CHK A.L.WOODHULL
	APVD L.A.AMUNDSON	NO. / DATE / REVISION / BY / APVD	

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

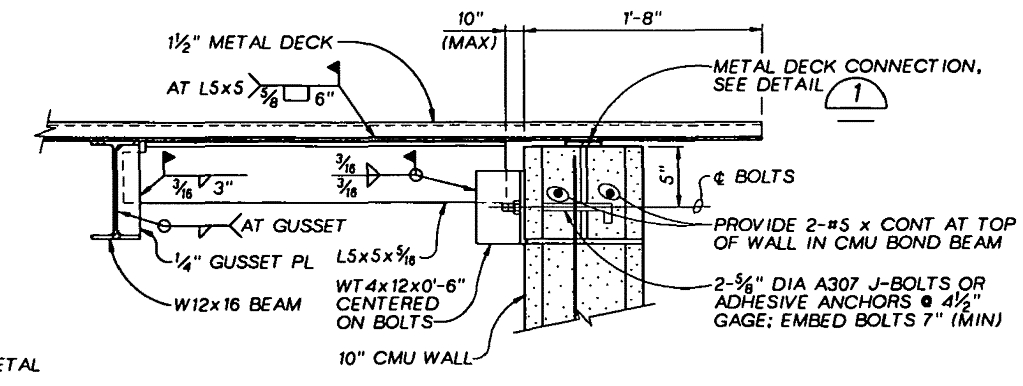
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
STRUCTURAL
FOUNDATION/FLOOR PLAN

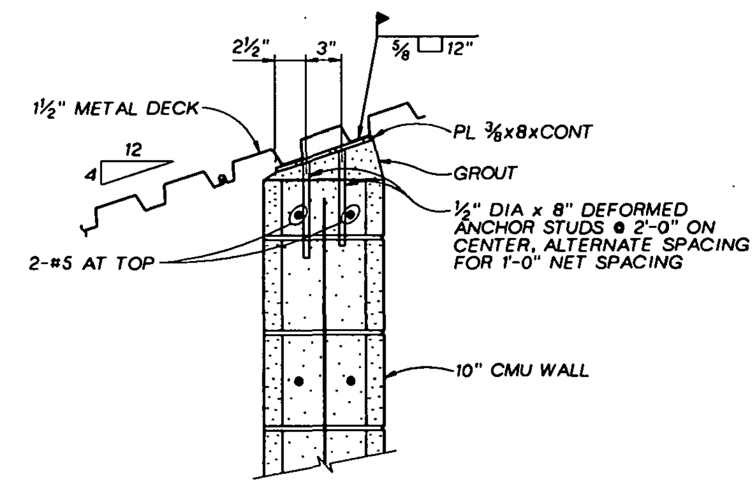
SHEET	19
DWG NO.	S1
DATE	FEB 1996
PROJ NO.	104200



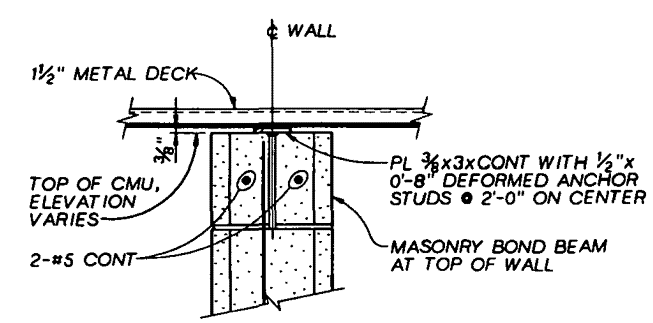
ROOF PLAN
1/4"=1'-0"



SECTION A
1½"=1'-0"



SECTION B
1½"=1'-0"



METAL DECK BEARING WALL TOP CONNECTION DETAIL 1
1½"=1'-0"

CH2M HILL	DSGN B.W.HUGHES	NO.	DATE	REVISION	BY	APVD
	DR B.R.LEHMAN					
	CHK A.L.WOODHULL					
	APVD L.A.AMUNDSON					

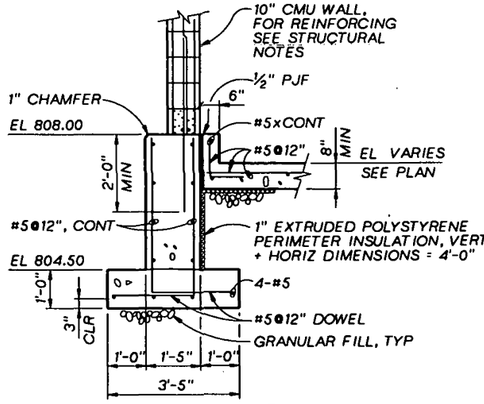
VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

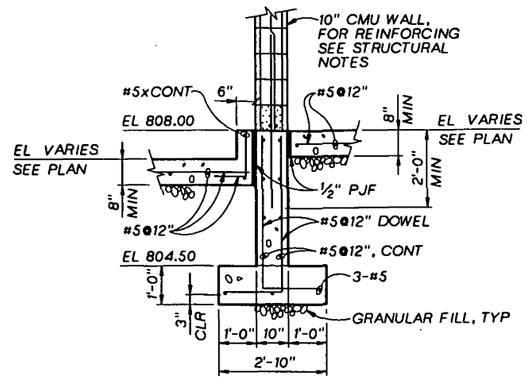
GROUNDWATER TREATMENT FACILITY
STRUCTURAL
ROOF PLAN, SECTIONS AND DETAIL

SHEET	20
DWG NO.	S2
DATE	FEB 1996
PROJ NO.	104200

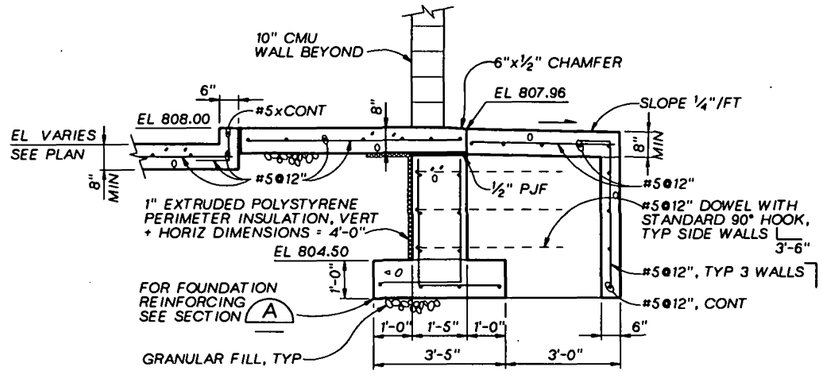
BID DOCUMENTS



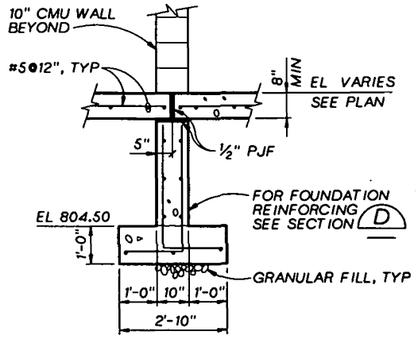
SECTION A
½"=1'-0" S1



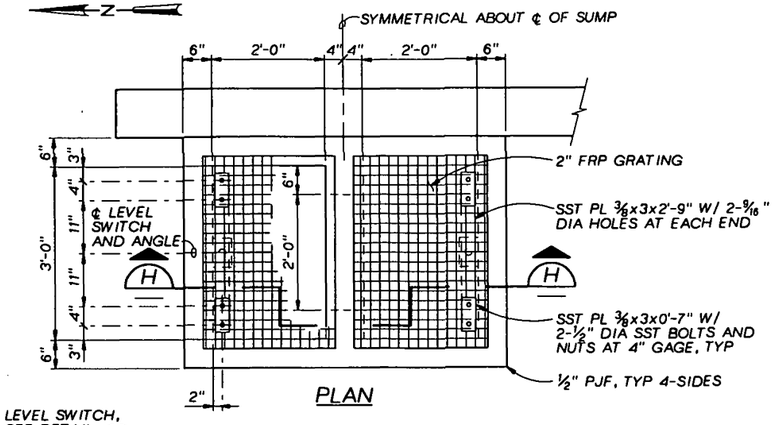
SECTION D
½"=1'-0" S1



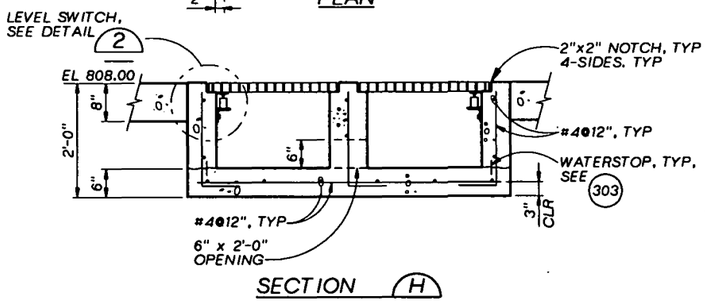
SECTION B
½"=1'-0" S1



SECTION E
½"=1'-0" S1



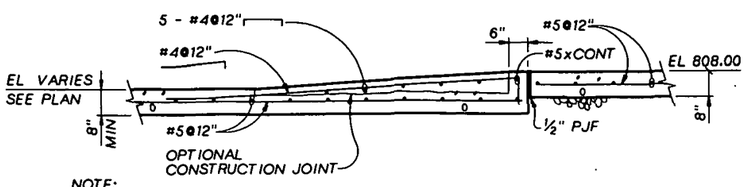
PLAN



SECTION H

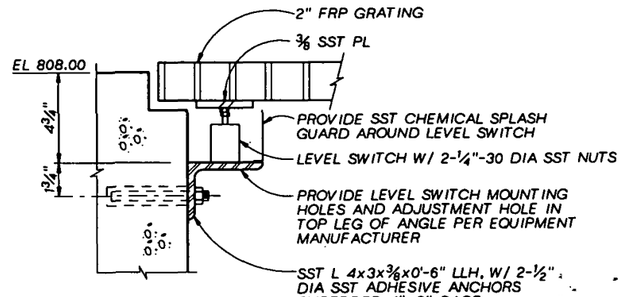
SECTION F
½"=1'-0" S1

SECTION C
½"=1'-0" S1



NOTE:
1. IF A CONSTRUCTION JOINT IS USED AT RAMP, PROVIDE A 1½" CONCRETE RECESS IN THE 8" SLAB.

SECTION G
½"=1'-0" S1



LEVEL SWITCH DETAIL 2
3"=1'-0"

SUMP DETAIL 1
¾"=1'-0" S1

CH2M HILL

DSGN	B.W.HUGHES
DR	B.R.LEHMAN
CHK	A.L.WOODHULL
APVD	A.A.MUNDSON

NO.	DATE	REVISION	BY	APVD

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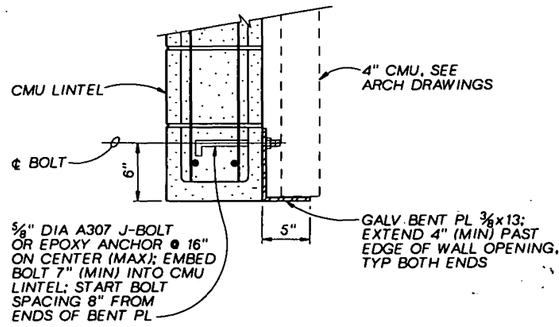
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

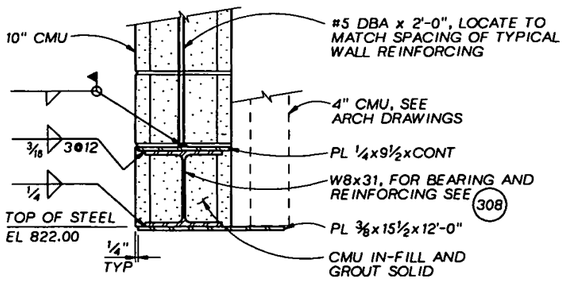
GROUNDWATER TREATMENT FACILITY
STRUCTURAL
SECTIONS AND DETAILS

SHEET	21
DWG NO.	S3
DATE	FEB 1996
PROJ NO.	104200

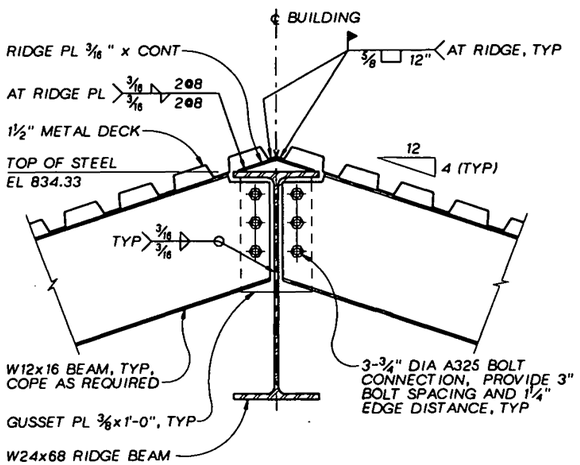
BID DOCUMENTS



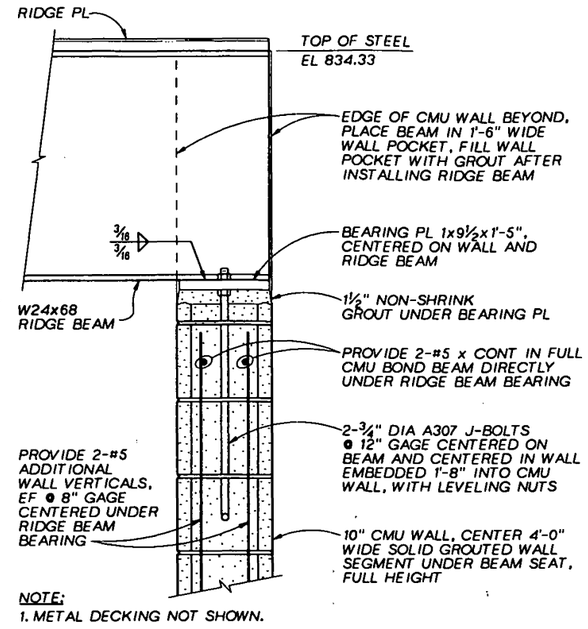
BRICK LEDGER DETAIL (1)
1½"=1'-0" S1



OVERHEAD DOOR LINTEL DETAIL (2)
1½"=1'-0" S1, D3

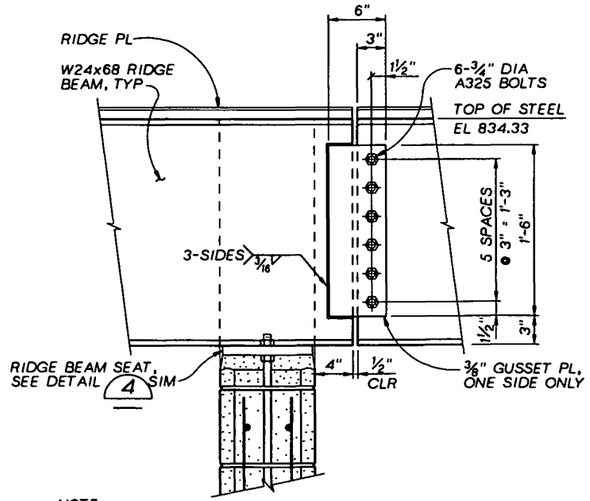


RIDGE CONNECTION DETAIL (3)
1½"=1'-0" S2



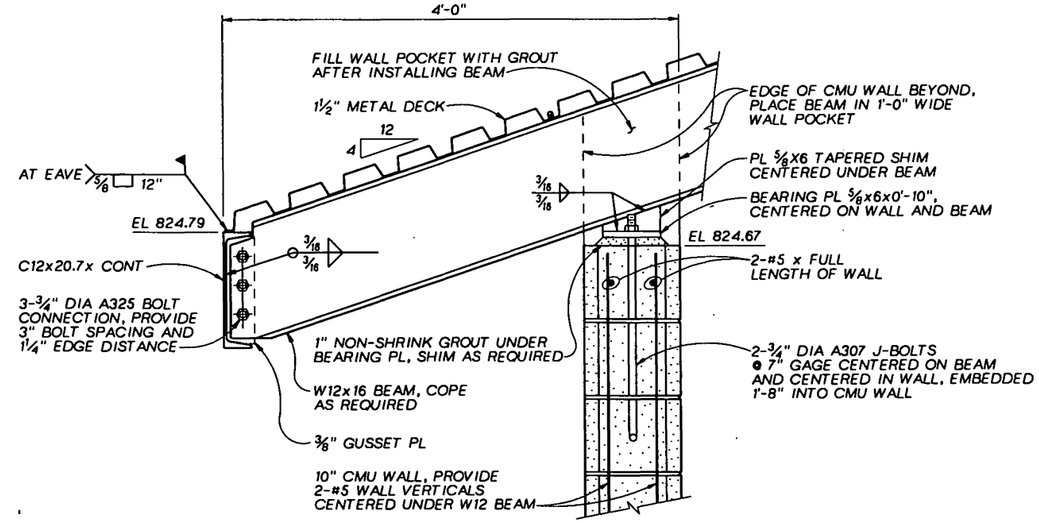
NOTE:
1. METAL DECKING NOT SHOWN.

RIDGE BEAM SEAT DETAIL (4)
1½"=1'-0" S2

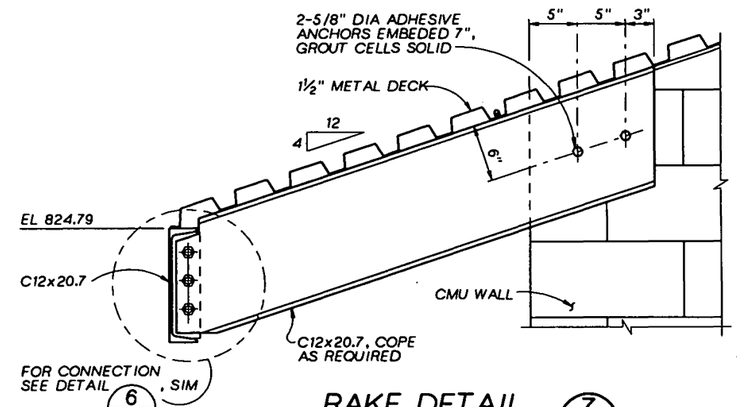


NOTE:
1. METAL DECKING NOT SHOWN.

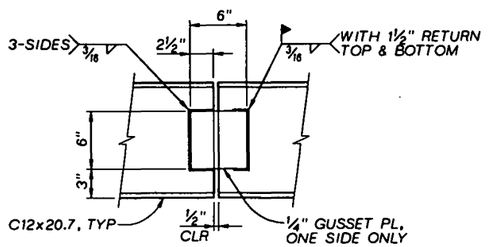
W24 SPLICE DETAIL (5)
1½"=1'-0" S2



SIDE WALL BEAM SEAT DETAIL (6)
1½"=1'-0" S2



RAKE DETAIL (7)
1½"=1'-0" S2



C12 SPLICE DETAIL (8)
1½"=1'-0" S2

BID DOCUMENTS

CH2M HILL

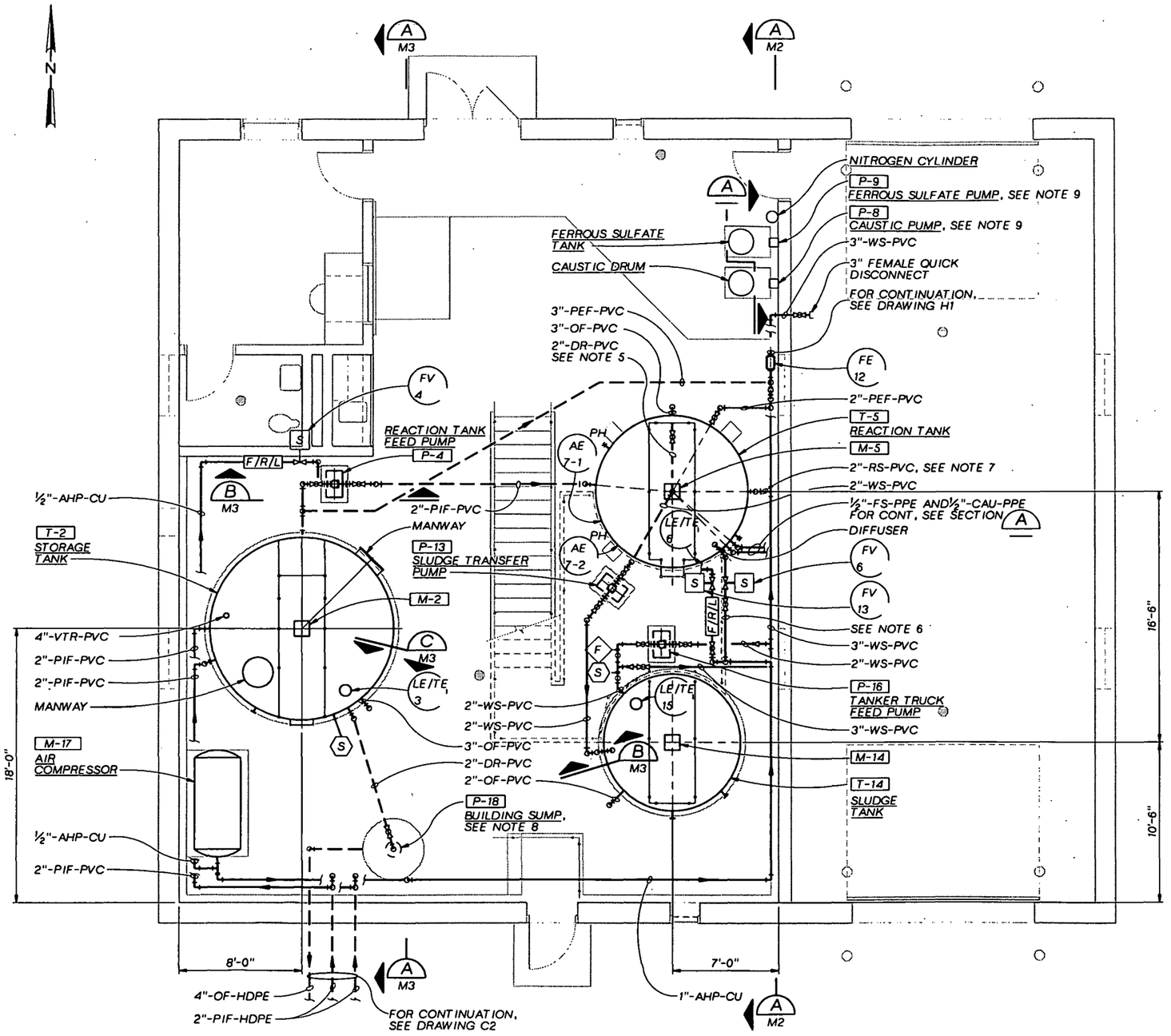
DSGN	B.W.HUGHES					
DR	B.R.LEHMAN					
CHK	A.L.WOODHULL					
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD

BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

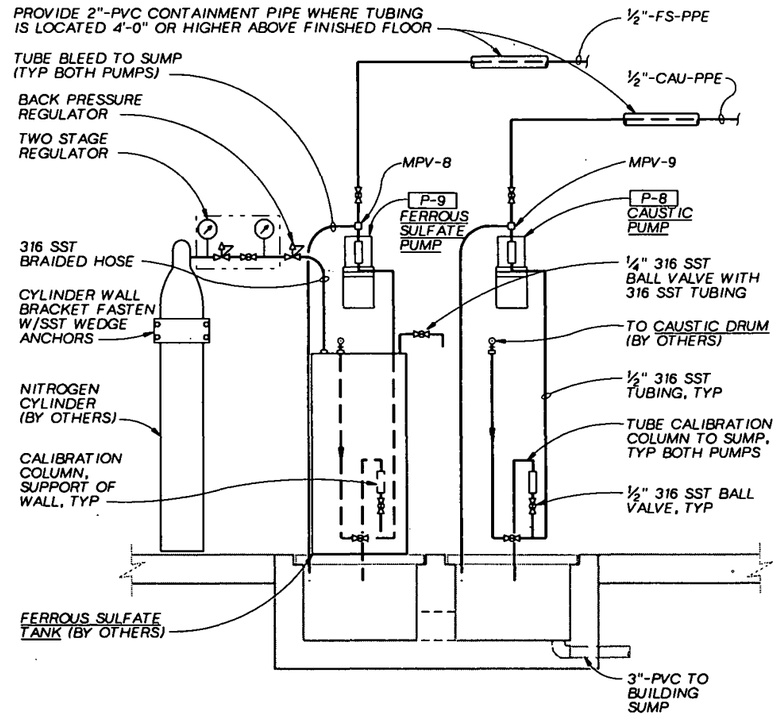
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
STRUCTURAL DETAILS

SHEET	22
DWG NO.	S4
DATE	FEB 1996
PROJ NO.	104200



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



SECTION A
1"=1'-0"

NOTES:

1. NOT USED
2. FOR MOUNTING OF LEVEL ELEMENTS ON CLOSED-TOP TANKS, SEE (103).
3. FOR MOUNTING OF pH PROBES (AE), SEE (100).
4. ROUTE COMPRESSOR DRAINS TO HUB DRAIN.
5. CONNECT 2"-DR-PVC TO 3"-OF PVC. SEE SECTION C M3, SIM.
6. MOUNT 1"-AHP-CU TO PLATFORM HANDRAIL. VALVES SHALL BE ACCESSIBLE FROM PLATFORM.
7. INSTALL 2" BALL VALVE IN VERTICAL, 4'-0" ABOVE FLOOR.
8. CONNECTIONS TO SUMP SHALL BE DRESSER COUPLING, STYLE 38. SEE DWG H1 FOR ADDITIONAL CONNECTIONS TO SUMP. EXCEPT 2" DR-PVC SHALL BE A FLANGED CONNECTION.
9. INSTALL PUMP ON WALL BRACKET PROVIDED.
10. CONNECT AIR LINE TO DIAPHRAM PUMPS WITH AIR HOSE, TYP OF 3.

CH2M HILL

DSGN L.A.AMUNDSON
DR R.I.OXLEY
CHK R.A.YOLO
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

BAR IS ONE INCH ON ORIGINAL DRAWING. 0 1"
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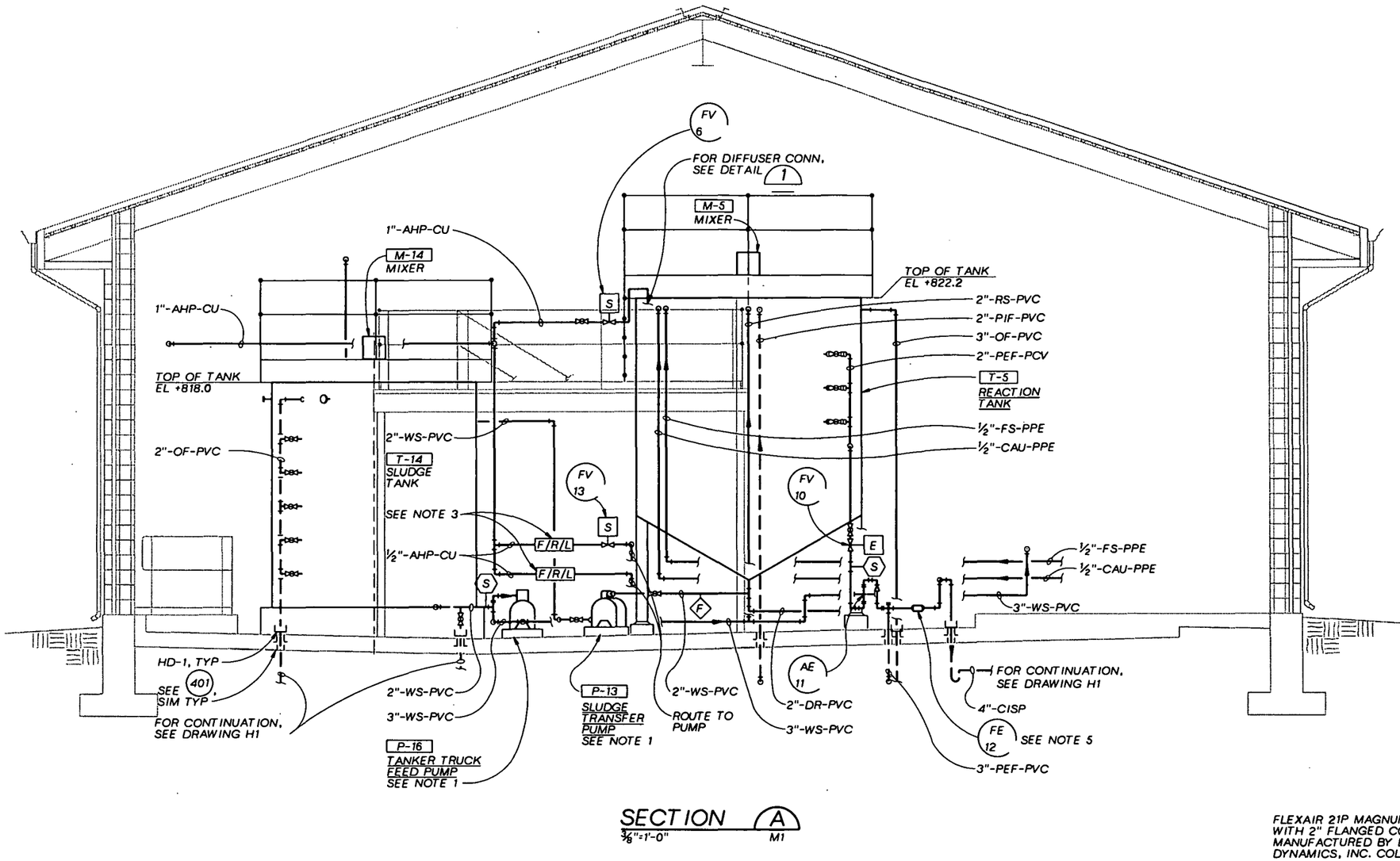
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
MECHANICAL
FLOOR PLAN AND SECTION

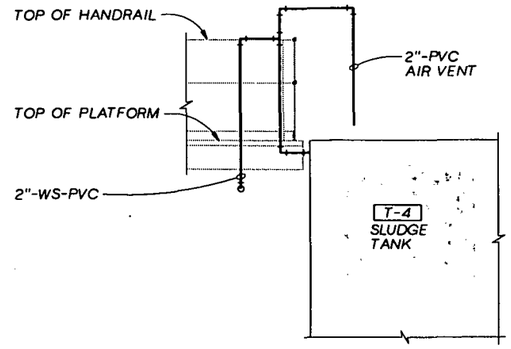
SHEET 23
DWG NO. M1
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

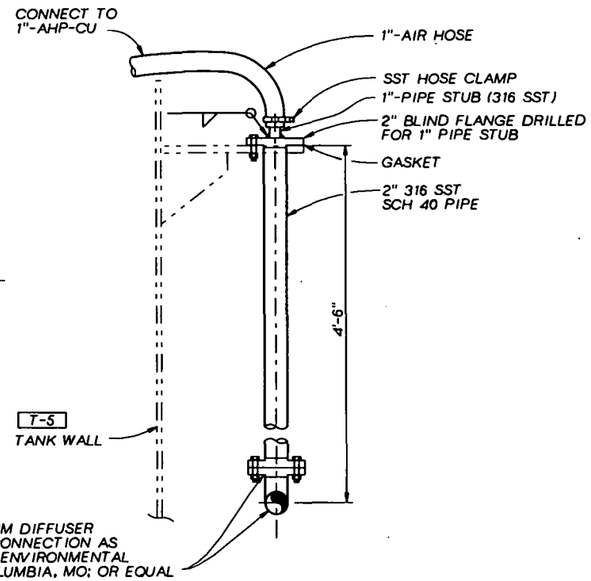
1042m1.mst 1-16, 10-63
1042m02.dlv 1-63
1042m1.mst 1-63
LAST PLOT



SECTION A
3/8"=1'-0"
M1



SECTION B
3/8"=1'-0"



DETAIL 1
1½"=1'-0"

NOTES:
1. INSTALL PUMPS PER B M3 SIM AND DETAIL 1 M3.
2. BOLT REACTION TANK TO PAD, SEE 300 TYPE F.
3. SUPPORT F/R/L OFF FLOOR WITH UNISTRUT SUPPORT.
4. PROVIDE AIR GAP BETWEEN PIPE AND HUB DRAIN.
5. INSTALL FE-12 WITH MINIMUM OF 12" STRAIGHT RUN OF PIPE UPSTREAM OF METER.

CH2M HILL

DSGN	L.A.AMUNDSON				
DR	R.I.OXLEY				
CHK	R.A.YOLO				
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY / APVD

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0 1"
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REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

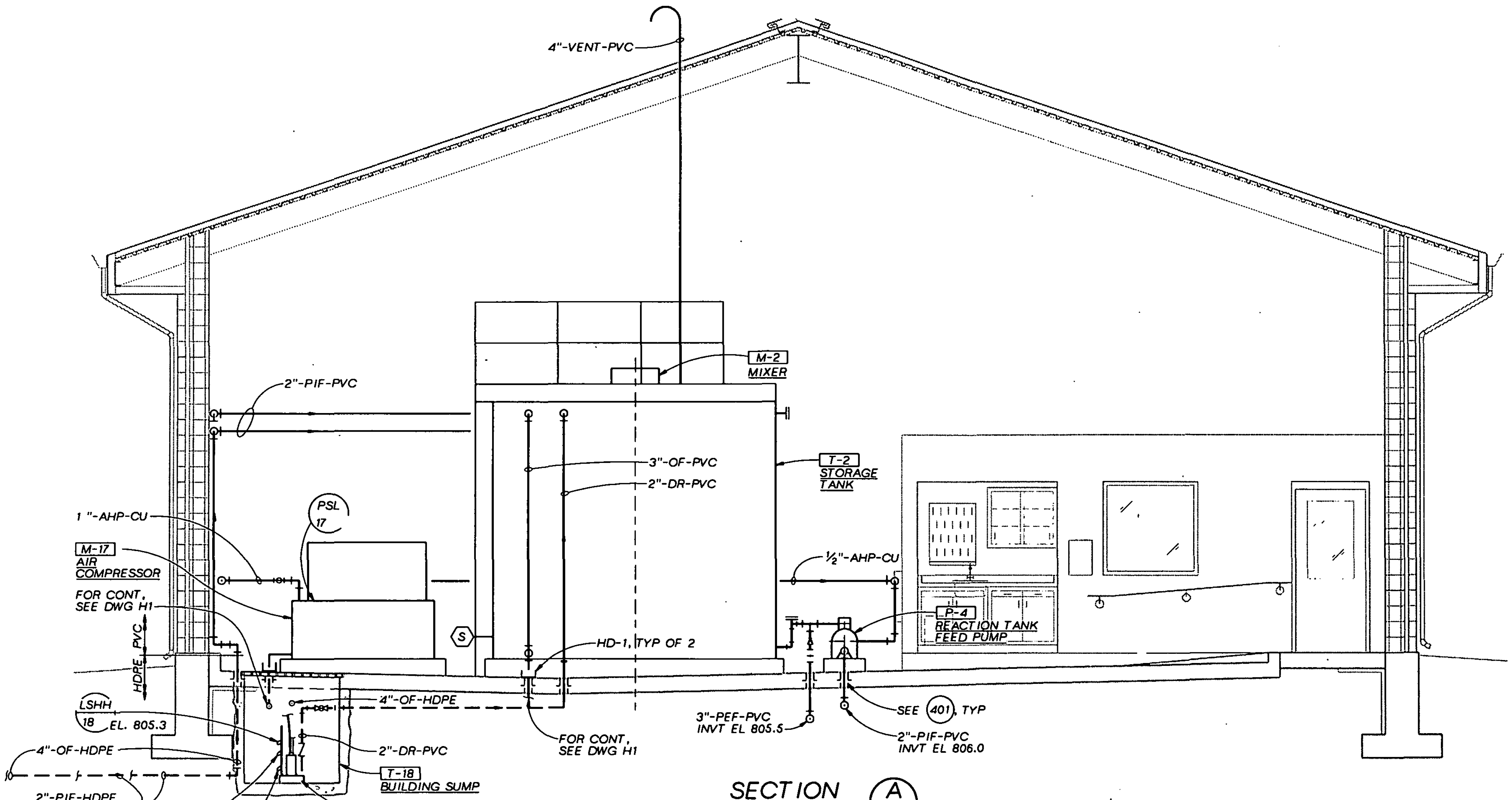
GROUNDWATER TREATMENT FACILITY
MECHANICAL
SECTIONS AND DETAIL

SHEET	24
DWG NO.	M2
DATE	FEB 1996
PROJ NO.	104200

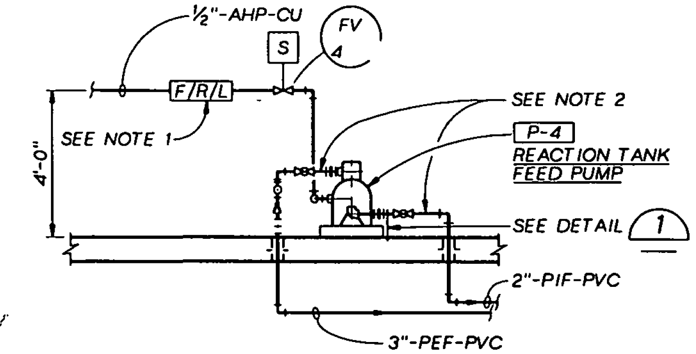
BID DOCUMENTS

PLOTTED

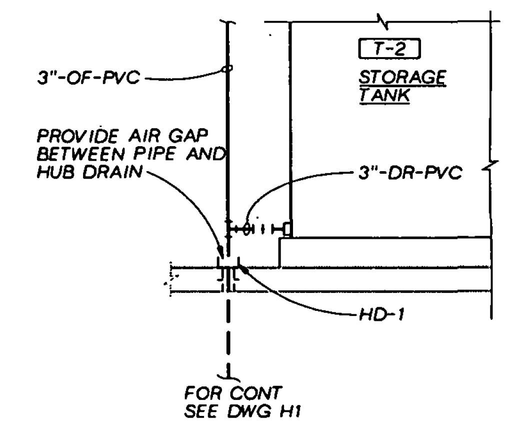
12-FEB-1996
i:/104200/DRAWINGS/1042m03.dlv



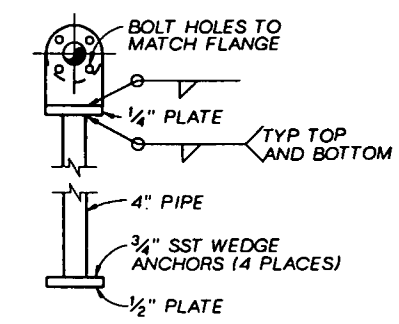
SECTION A
3/8"=1'-0" M1



SECTION B
3/8"=1'-0" M1



SECTION C
3/8"=1'-0" M1



DETAIL 1
NTS M2

NOTES:

1. SUPPORT F/R/L OFF WALL.
2. PROVIDE EXPANSION JOINTS ON PUMP SUCTION AND DISCHARGE. ANCHOR DISCHARGE. SEE DETAIL 1

CH2M HILL	DSGN L.A. AMUNDSON						
	DR R.I. OXLEY						
	CHK R.A. YOLO						
	APVD L.A. AMUNDSON	NO.	DATE	REVISION	BY	APVD	

VERIFY SCALE
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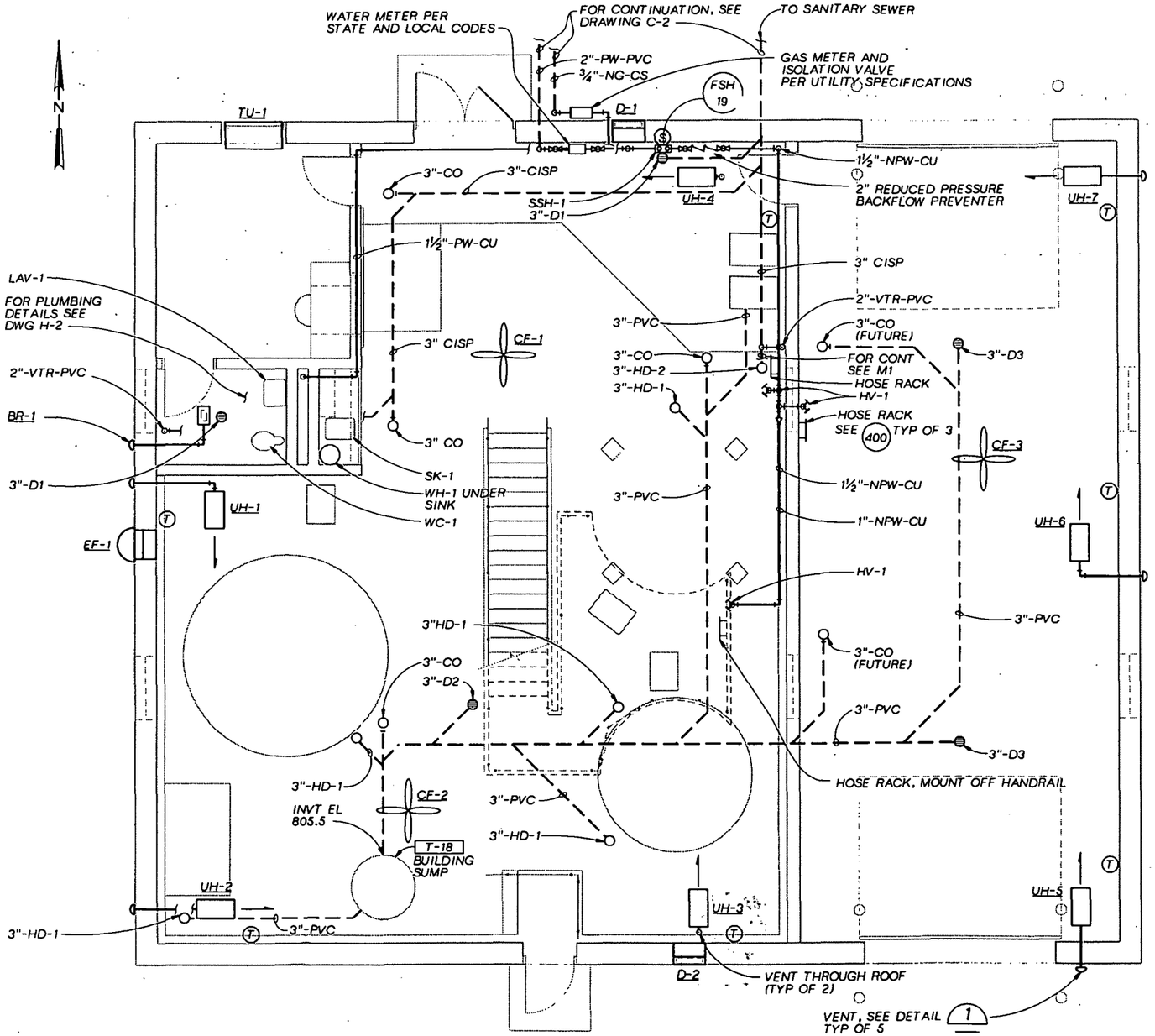
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

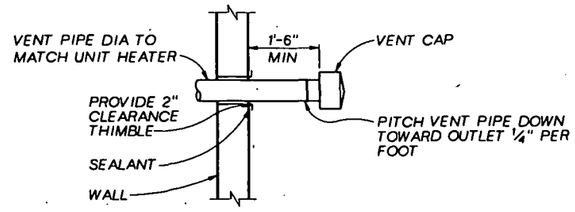
GROUNDWATER TREATMENT FACILITY
MECHANICAL
SECTIONS AND DETAIL

SHEET	25
DWG NO.	M3
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS



FLOOR PLAN
¼" = 1'-0"



DETAIL 1
NTS

NOTES:

1. UNIT HEATERS (UH): SUSPEND FROM ROOF AND MOUNT 8'-0" FROM FLOOR TO BOTTOM OF UNIT. ROUTE ½" NG AND ISOLATION VALVE TO EACH UNIT HEATER.
2. CEILING FANS (CF): SUSPEND FROM ROOF AND MOUNT 15'-0" FROM FLOOR. PROVIDE SECONDARY SUPPORT CABLES.
3. SEE DRAWING M1 FOR ADDITIONAL UNDERGROUND PROCESS PIPING AND NOTES.
4. SLOPE DRAINS ⅛/FT MINIMUM
5. FOR PLUMBING RISER DIAGRAMS SEE DRAWING H-2
6. ROUTE PW PIPING ABOVE DOORS AND ABOVE CONTROL ROOM.

BID DOCUMENTS

1	2-3, 13	1042h1.mst
	1-63	1042h1.mst
	1-63	1042o1.mst

CH2M HILL

DSGN	R.A.YOLO
DR	R.I.OXLEY
CHK	R.A.YOLO
APVD	L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
HVAC/PLUMBING FLOOR PLAN

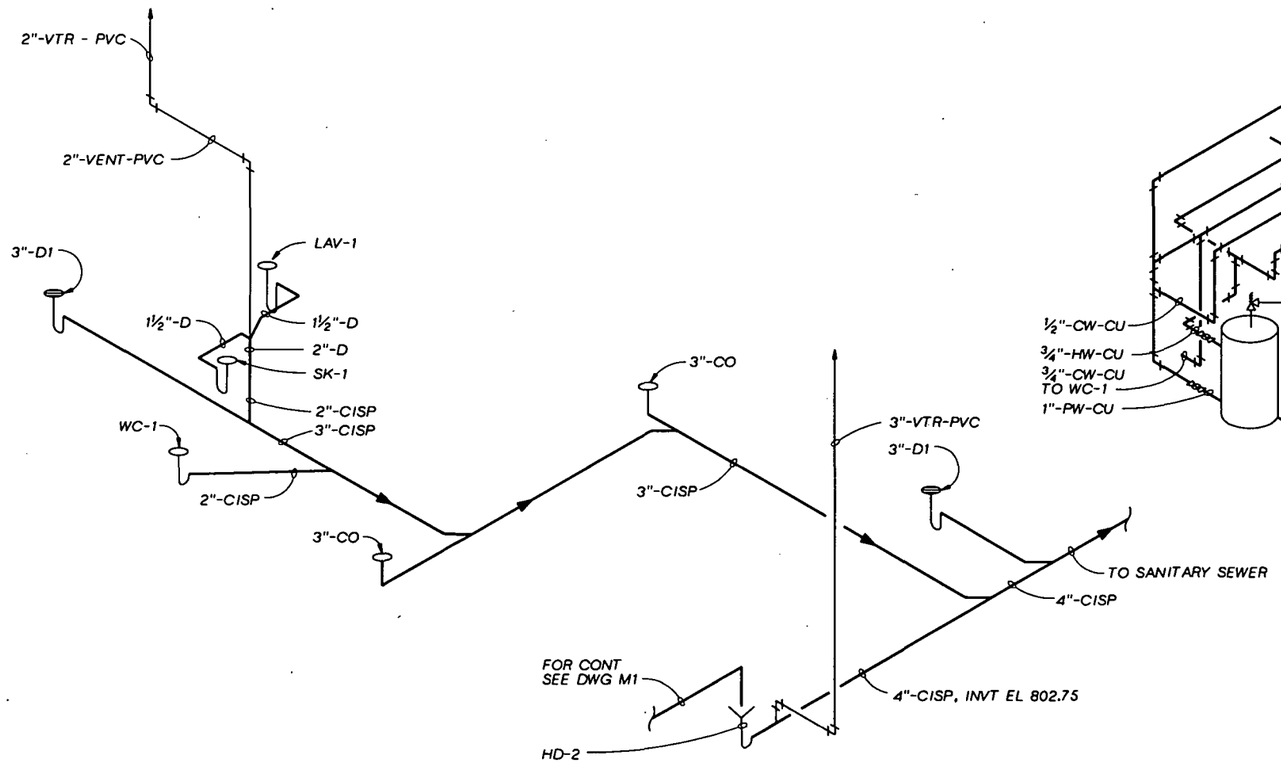
SHEET	26
DWG NO.	H1
DATE	FEB 1996
PROJ NO.	104200

HVAC EQUIPMENT SCHEDULE

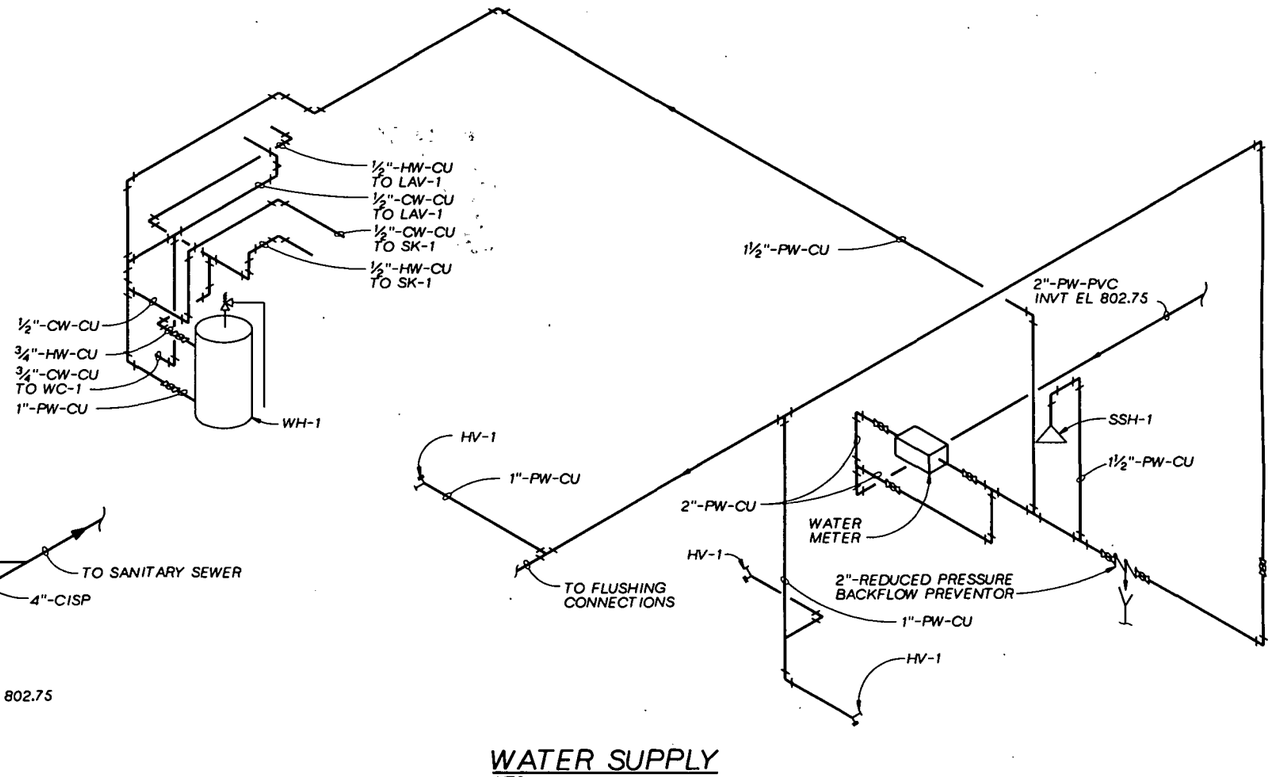
TAG NUMBER	DESCRIPTION	TYPE	ELECTRIC VOLTS	ELECTRIC AMPS OR (HP)	COOLING BTU/H	HEATING BTU/H	FAN CFM	MANUFACTURE	MODEL	ACCESSORIES
TU-1	PACKAGED TERMINAL AIR CONDITIONER WITH HEATER	ELECTRIC	230/1 P 230/1 P	15.5 HEAT 4.6 COOLING	9000	11,900	——	GE	ZONELINE AZC209DB	WALL CASE, PLUG, AND LEXAN OUTDOOR GRILLE
BR-1	BATHROOM VENT, HEAT AND LIGHT	ELECTRIC	110/1 P	13.5	——	4500	70	DAYTON	4C606	4" UL AIR DUCT, 4" WALL CAP, AND 3 GANG TOGGLE SWITCH
UH-1 THRU 7	UNIT HEATER	GAS	110V/1 P	1/30 HP	——	30,000	700	DAYTON	3E366	AUTO SPARK IGNITION, AUTO GAS VALVE, 24 V TRANSFORMER WITH 24 VOLT T-STAT, 4" UL TYPE B GAS VENT AND VENT CAP
CF-1 THRU 3	36" CEILING FAN	ELECTRIC	110V/1 P	0.65	——	——	12,500	DAYTON	4C852	24" DOWN ROD, (2) ADJUSTABLE SPEED CONTROLS, AND FAN GUARDS
EF-1	20" WALL EXHAUST FAN	ELECTRIC	110V/1 P VARIABLE SPEED	¾ HP	——	——	3835	ACME	PW200HG	GRAVITY BACKDRAFT DAMPER, DAMPER BOX, BIRDSCREEN, AND SOLID STATE CONTROLLER
D-1 & 2	24" SQUARE MOTORIZED ALUMINUM DAMPER	ELECTRIC	110V/1 P BIDIRECTIONAL	0.3	——	——	——	RUSKIN	IL35	INSULATED WITH BLADE SEALS AND 110V ELECTRIC ACTUATOR IN STREAM MOUNTING

PLUMBING FIXTURE SCHEDULE

ITEM NO.	QUAN.	DESCRIPTION	NEW	DRAIN	VENT	CW	HW	DFU	WSFU
WC-1	1	WATER CLOSET	X	3"	2"	¾"		4	2
LAV-1	1	LAVATORY	X	1½"	2"	½"	½"	1	1
SK-1	1	SINK	X	1½"	2"	½"	½"	2	1
WH-1	1	WATER HEATER	X	1½"		¾"	¾"		3
D-1	2	FLOOR DRAIN	X	3"	2"			6	
SSH-1	1	SAFETY SHOWER	X			1½"		4	50
						TOTAL:		17	57



SANITARY VENTS AND DRAINS
NTS



WATER SUPPLY
NTS

BID DOCUMENTS

CH2M HILL

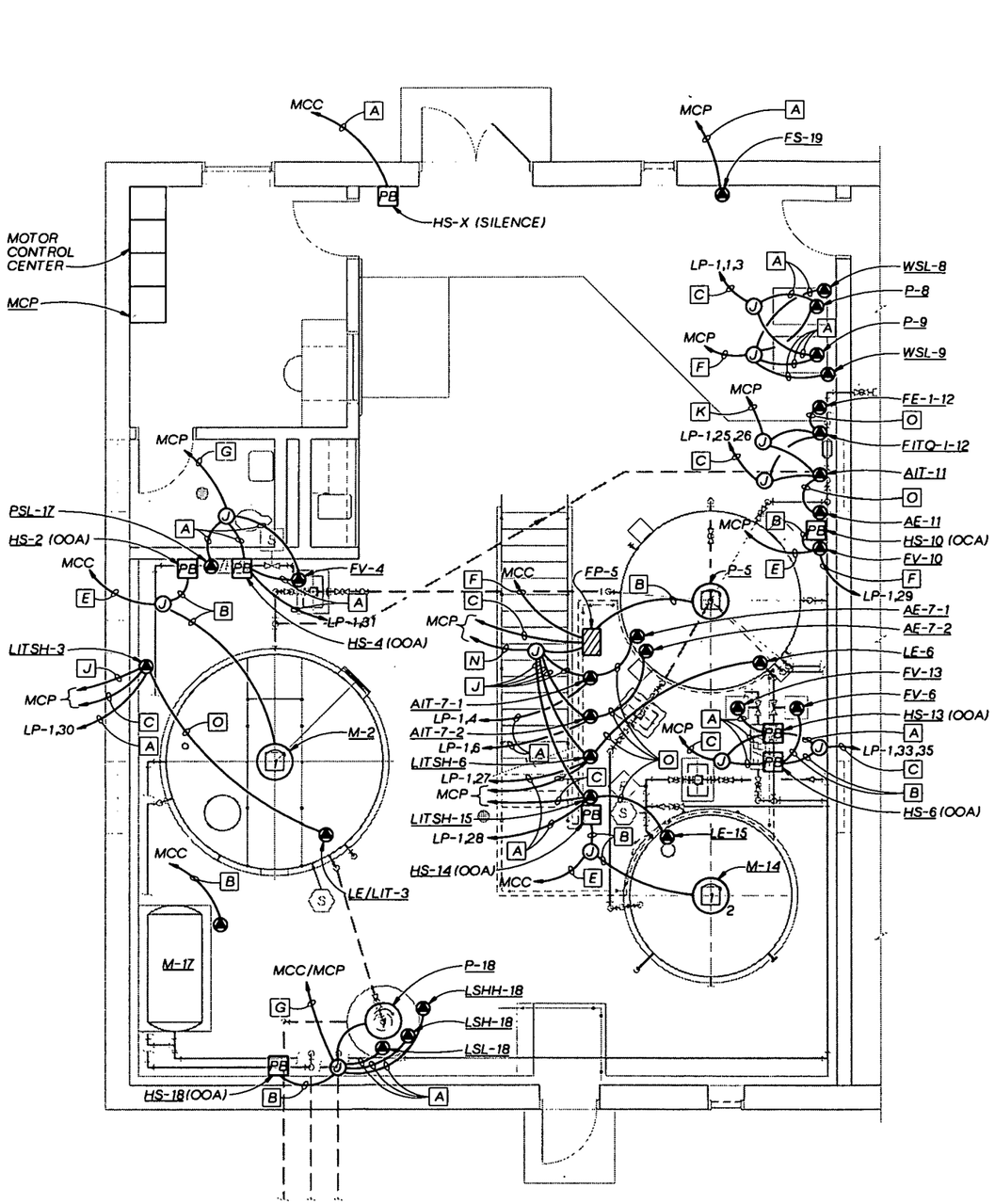
		NO.	DATE	REVISION	BY	APVD
DSGN	R.A.YOLO					
DR	R.G.SIEBERS					
CHK	R.A.YOLO					
APVD	L.A.AMUNDSON					

BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
HVAC/PLUMBING EQUIPMENT SCHEDULES AND RISER DIAGRAMS

SHEET	27
DWG NO.	H2
DATE	FEB 1996
PROJ NO.	104200



PROCESS FLOOR PLAN
1/4"=1'-0"

PANEL: LP-1			LOCATION:				MW MAUTHE SITE		
SERVICE VOLTAGE: 240/120			PHASE:		1		WIRE: 3		
TOTAL KVA:		21.5	BUS SIZE		100		MAIN SIZE: 80 AMPS	TYPE:	BRKR
REMARKS:			NEUTRAL:		100		MOUNTING: MCC		
LOAD IN KVA			BKR	CKT	CKT	BKR		LOAD IN KVA	
		CIRCUIT DESCRIPTION	A/P	NO.	NO.	A/P	CIRCUIT DESCRIPTION		
0.8		Ferrous Sulfate Pump (P-9)	20/1	1	2	20/1	Main Control Panel MCP	0.6	
	0.8	Caustic Pump (P-8)	20/1	3	4	20/1	AIT-7-1		0.1
0.9		EF-1 & Dampers	20/1	5	6	20/1	AIT-7-2	0.1	
	1.9	Package HVAC (TU-1)	20/1	7	8	20/1	Unit Htrs UH-1 thru 7		1.5
1.6		Bathroom Lt/Ht/Fan	20/1	9	10	20/1	Ceiling Fans CF-1 thru 3	1.5	
	0.6	Outdoor Lights	20/1	11	12	20/1	Overhead Door (North)		0.3
0.9		Process Area Lights	20/1	13	14	30/1	Hot Water Heater	2.0	
	0.9	Process Area Lights	20/1	15	16	20/1	Spare		0.9
0.5		Control Rm Lts	20/1	17	18	20/1	Truck Bay Lights	0.9	
	0.7	Truck Bay Rec'ps	20/1	19	20	20/1	Exit & Emergency Lights		0.3
0.9		Control Rm Rec'ps	20/1	21	22	20/1	Lab Area & Toilet GFI Rec'ps	0.6	
	0.7	Process Area Rec'ps	20/1	23	24	20/1	Process Area Rec'ps		0.7
0.1		FITQ-12	20/1	25	26	20/1	AIT-11	0.1	
	0.1	LITSH-6	20/1	27	28	20/1	LITSH-15		0.1
0.1		FV-10	20/1	29	30	20/1	LITSH-3	0.1	
	0.1	FV-4	20/1	31	32	20/1	Overhead Door (South)		0.3
0.1		FV-6	20/1	33	34	20/1	Spare		
	0.1	FV-13	20/1	35	36	20/1	Spare		
		Space	20/1	37	38	20/1	Space		
		Space	20/1	39	40	20/1	Space		
		Space	20/1	41	42	20/1	Space		

NOTE:
1. REFER TO DWG C2 FOR ELECTRICAL SITE WORK.

RACEWAY SCHEDULE

A	3/4"C,2#12,1#12G
B	3/4"C,3#12,1#12G
C	3/4"C,4#12,1#12G
D	3/4"C,5#12,1#12G
E	3/4"C,6#12,1#12G
F	3/4"C,9#12,1#12G
G	3/4"C,12#12,1#12G
H	3/4"C,3#10,6#12,1#12G
J	3/4"C,1-TYPE 2
K	3/4"C,2-TYPE 2
L	1 "C,3-TYPE 2
M	1"C,4-TYPE 2
N	1"C,5-TYPE 2
O	3/4"C,MFGRS CABLE

CH2M HILL

DSGN R.E.NAGEL
DR B.OXLEY
CHK M.L.HATHAWAY
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

BAR IS ONE INCH ON ORIGINAL DRAWING.
0
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

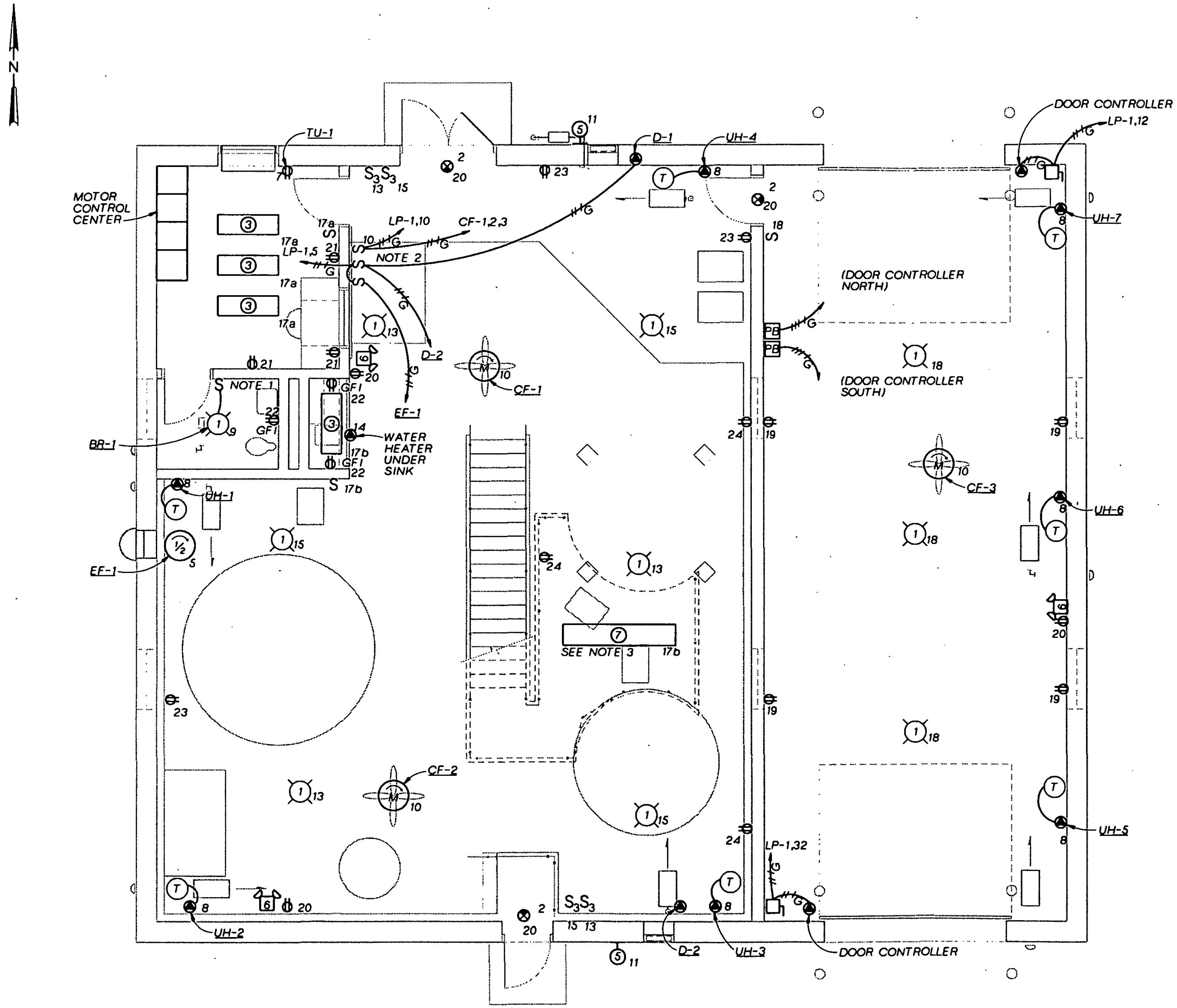
GROUNDWATER TREATMENT FACILITY
ELECTRICAL
PROCESS FLOOR PLAN

SHEET 28
DWG NO. E1
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

PLOT 1042e1.mst 1042m1.mst 1-3, 13 2

22-FEB-1996
i:/104200/DRAWINGS/1042e02.dlv



FACILITY FLOOR PLAN

1/4"=1'-0"

NOTES:

1. PROVIDE 3 GANG TOGGLE SWITCH FOR COMBINATION UNIT (HEAT, LIGHT, & FAN).
2. PROVIDE 3AMP SPEED CONTROL / ON-OFF FOR FANS.
3. MOUNT BELOW PLATFORM.

DSGN	R.E.NAGEL					
DR	B.OXLEY					
CHK	M.L.HATHAWAY					
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD

CH2M HILL

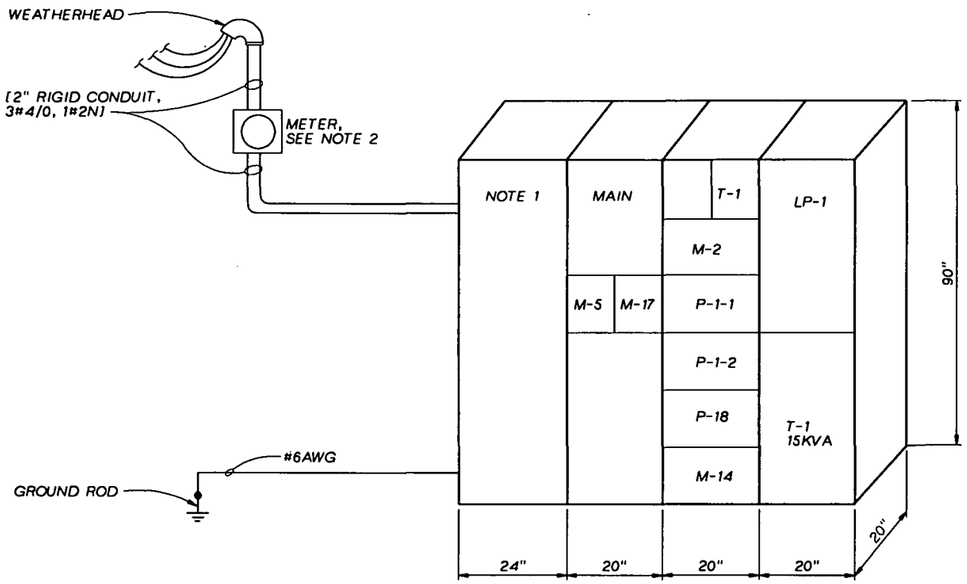
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

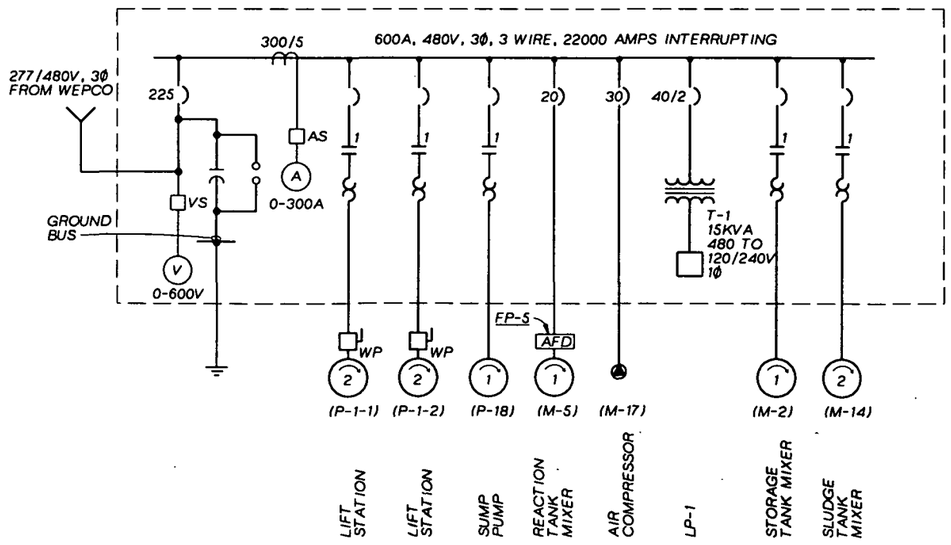
GROUNDWATER TREATMENT FACILITY
ELECTRICAL
FACILITY FLOOR PLAN

SHEET	29
DWG NO.	E2
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS

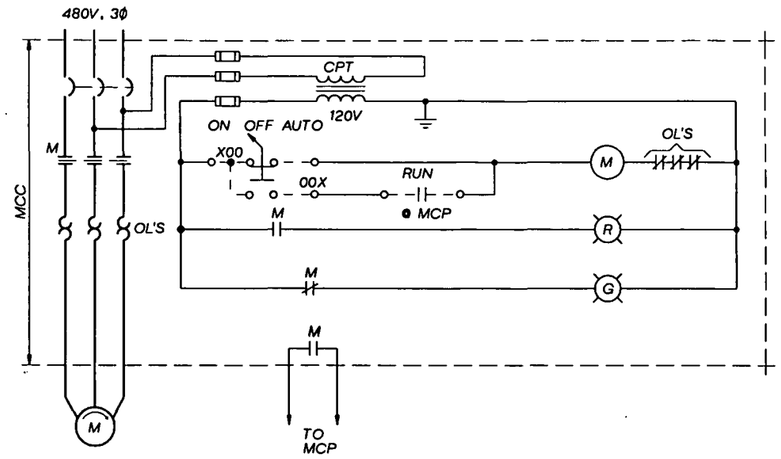


ELEVATION MCC-1
NTS

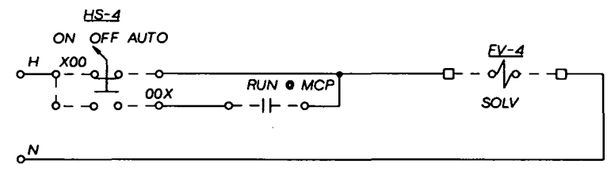


NOTES:
1. BLANK SECTION WITH NO VERTICAL BUS FOR CONTROLS.
2. METERING INSTALLATION PER WEPCO REQUIREMENTS.

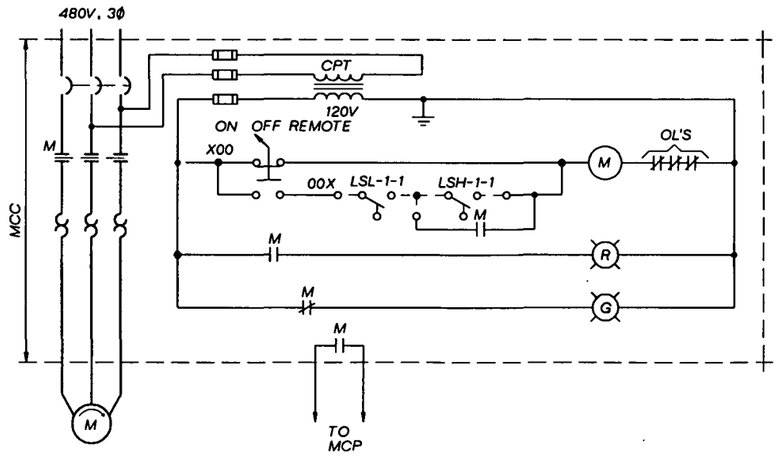
SINGLE LINE DIAGRAM
NTS



CONTROL DIAGRAM M-2 & M-14
NTS



CONTROL DIAGRAM FV-4, FV-6 AND FV-13
NTS



CONTROL DIAGRAM P-1-1 & 2, P-18
NTS

CHM HILL	DSGN R.E.NAGEL DR B.OXLEY CHK M.L.HATHAWAY APVD L.A.AMUNDSON	NO.	DATE	REVISION	BY	APVD	**REUSE OF DOCUMENTS** THIS DOCUMENT, AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF CH2M HILL. ©CH2M HILL

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

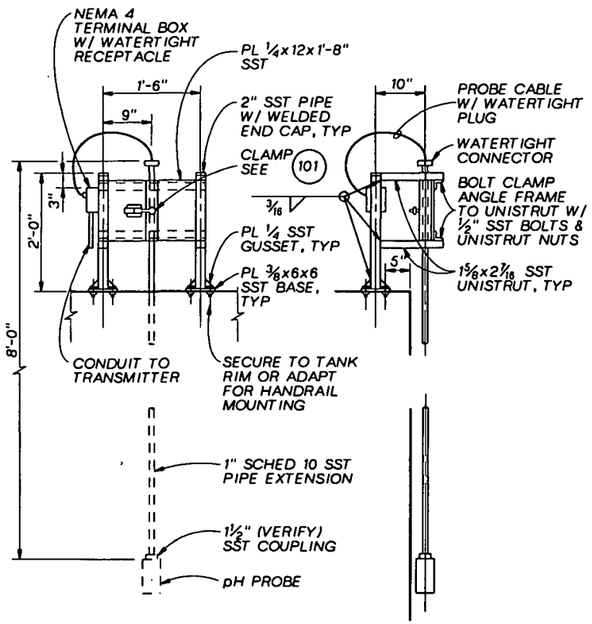
REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
ELECTRICAL
MCC ELEVATION, SINGLE LINE DIAGRAM AND CONTROL DIAGRAMS

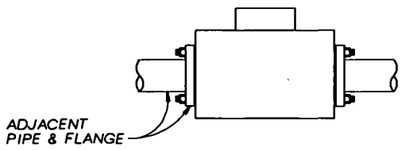
SHEET	30
DWG NO.	E3
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS

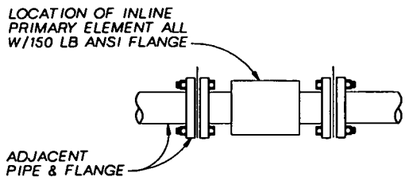
dr.mst



pH ELEMENT INSTALLATION (100)
NTS

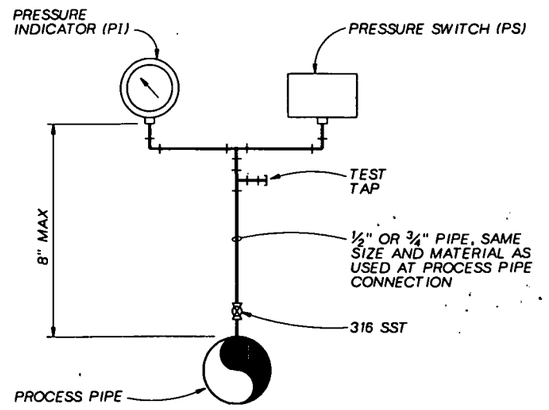


WAFER BODY STYLE
NTS



FLANGED BODY STYLE

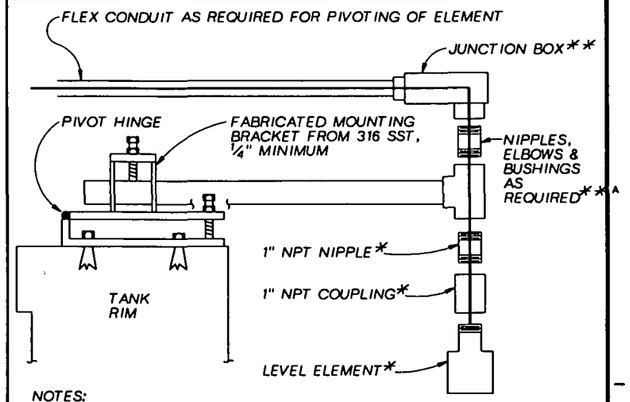
INLINE FLOW ELEMENT INSTALLATIONS (102)
NTS



DIRECT MOUNTING

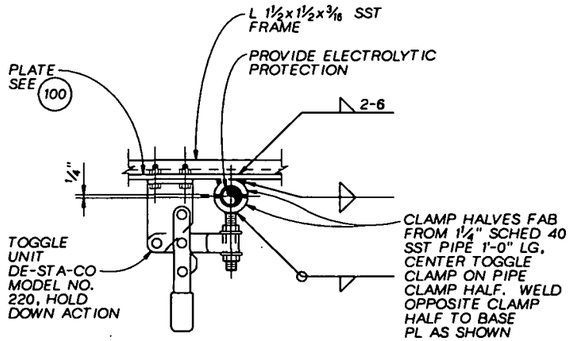
NOTE:
INDICATOR AND SWITCH INSTALLATION SHOWN. FOR SINGLE INSTRUMENT INSTALLATIONS, MOUNT DEVICE DIRECTLY ABOVE TEST TAP.

PRESSURE SWITCH & INDICATOR INSTALLATION (104)
NTS

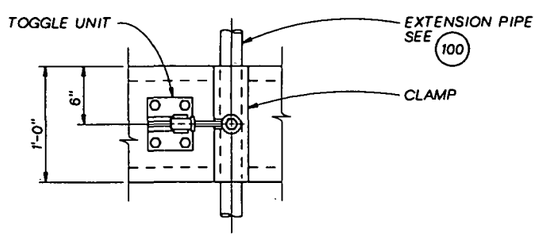


NOTES:
1. INSTALL MOUNTING BRACKET WITH 4-⅜" SST ANCHORS, ADJUST MOUNTING ARM ROTATION AND ANGLE TO ACHIEVE HORIZONTAL ATTITUDE OF POSITION ELEMENT FACE. MAINTAIN POSITION WITH LOCK BOLTS AND JAMB NUTS.
2. MOUNTING ARM TO PIVOT UP FOR CLEANING.
3. MOUNTING ARM LENGTH AS REQUIRED TO LOCATE POSITION ELEMENT CENTERLINE 2 FEET FROM INSIDE OF TANK WALL.
4. PROVIDE DOUBLE BEND IN MOUNTING ARM IF REQUIRED TO ACHIEVE MINIMUM REQUIRED AIR GAP.

ULTRASONIC LEVEL ELEMENT INSTALLATION OPEN TOP TANK APPLICATIONS COMPONENT CODE L5 (106)
NTS

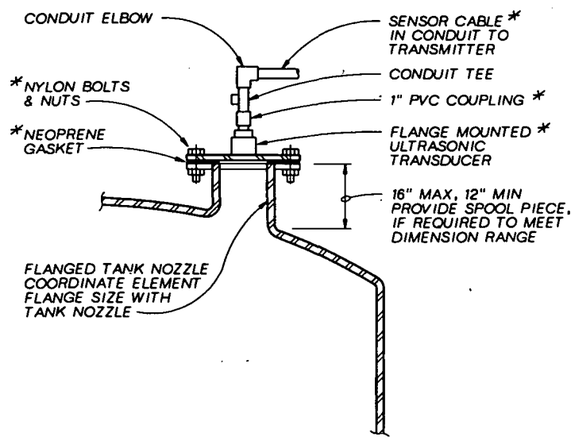


PLAN



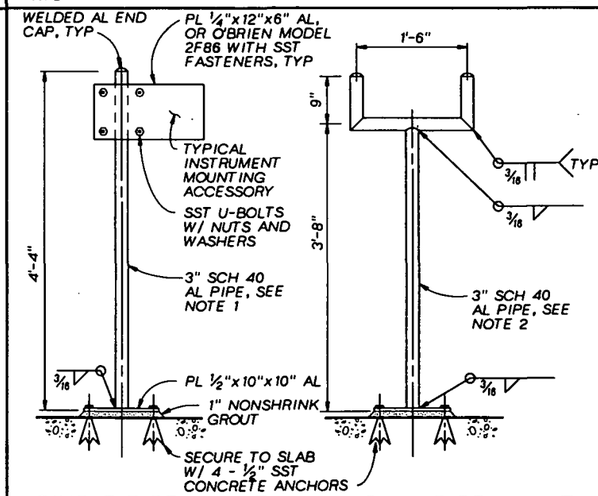
ELEVATION

CLAMP (101)
NTS



NOTE: COMPONENTS DESIGNATED BY * ARE SUPPLIED BY INSTRUMENT MANUFACTURER.

ULTRASONIC LEVEL ELEMENT INSTALLATION - COVERED TANK (103)
NTS



SINGLE PIPE MOUNT DUAL PIPE MOUNT

NOTES:
1. ALTERNATIVELY, STANCHION SUPPORT SHALL BE O'BRIEN MODEL FP52 WITH 9 MIL ARC SPRAY ZINC METALLIZED COATING; OR EQUAL.
2. ALTERNATIVELY, DUAL SUPPORT SHALL BE O'BRIEN MODEL FP40 STANCHION WITH MODEL AFM, S24M & A8M(2) ACCESSORIES, ALL WITH 9 MIL ARC SPRAY ZINC METALLIZED COATING; OR EQUAL.
3. PAINT ALUMINUM IN CONTACT WITH CONCRETE ACCORDING TO SPECIFICATIONS FOR PAINTING.

FLOOR MOUNTED INSTRUMENT PIPE STANDS (105)
NTS

CH2M HILL

DSGN	B.OHLSSON
DR	S.L.GANDREY
CHK	D.M.WILSON
APVD	L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
STANDARD DETAILS
INSTRUMENTATION AND CONTROL

SHEET	31
DWG NO.	D1
DATE	FEB 1996
PROJ NO.	104200

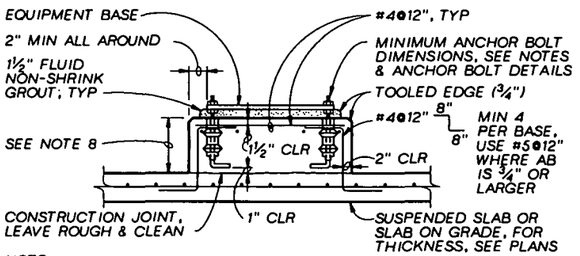
BID DOCUMENTS

p.mst

1. PAD SIZE SHALL BE MINIMUM INDICATED OR AS SHOWN ON THE PLANS OR AS INDICATED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIPMENT MANUFACTURER, AND SHALL BE AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A ONE PIECE TEMPLATE, MATCHING THE BASE PLATE, WHILE PAD IS BEING POURED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE THE ANCHOR BOLT A MINIMUM MOVEMENT OF ½" IN ALL DIRECTIONS. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
4. ANCHOR BOLT SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT.
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE.
6. TYPE "D" DETAIL SHALL BE USED ONLY FOR SLABS ON GRADE AND AT GRADE. THE SURROUNDING FLOOR SLAB SHALL NOT BE PLACED UNTIL THE EXACT SIZE AND LOCATION OF THE PAD IS KNOWN.
7. WEDGES OR SHIMS SHALL BE USED TO SUPPORT THE BASE WHILE THE NON-SHRINK GROUT IS PLACED. TEMPORARY LEVELING NUTS SHALL BE BACKED OFF. IF LEFT IN, THE WEDGES OR SHIMS SHALL NOT BE EXPOSED TO VIEW.
8. HEIGHT OF PADS SHALL BE MINIMUM REQUIRED FOR ANCHOR BOLT CLEARANCE TO KEEP ANCHOR BOLT OUT OF SLAB (SEE TABLE BELOW). WHERE EQUIPMENT OR PIPING ELEVATION REQUIRE A PAD HEIGHT LESS THAN THE MINIMUM SHOWN, USE TYPE B WITH BLOCKOUT.

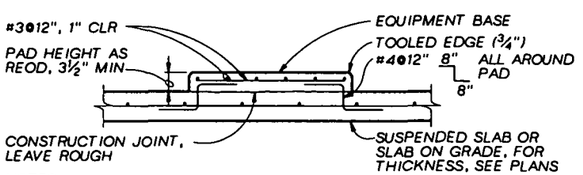
AB DIA (IN.)	½	⅝	¾	⅞	1	1¼	1⅜	1½	1¾	2
MIN PAD HT (IN.)	7	8½	10	11	12½	15	16½	18	21	24

EQUIPMENT BASE NOTES



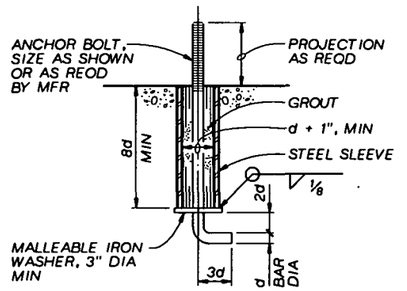
NOTE: SEE EQUIPMENT BASE NOTES.

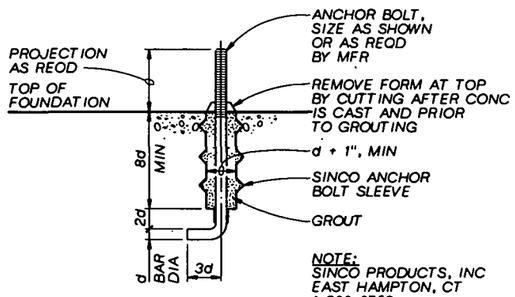
TYPE A
EQUIPMENT PAD
NTS



NOTES:
1. SEE EQUIPMENT BASE NOTES.
2. WHEN ANCHORAGE OF EQUIPMENT TO SLAB IS REQUIRED, USE SST WEDGE ANCHORS SPECIFIED, AND GROUT AS REQUIRED.

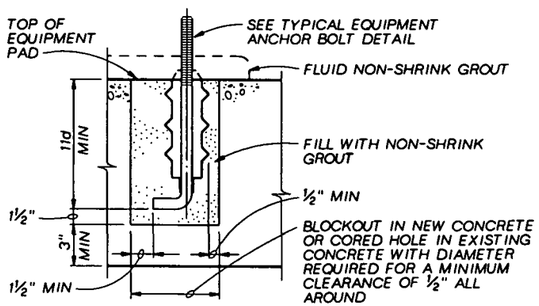
TYPE F
EQUIPMENT PAD
NTS





NOTE: SINCO PRODUCTS, INC EAST HAMPTON, CT 1-800-6753

ALTERNATE MACHINERY ANCHOR BOLT
NTS

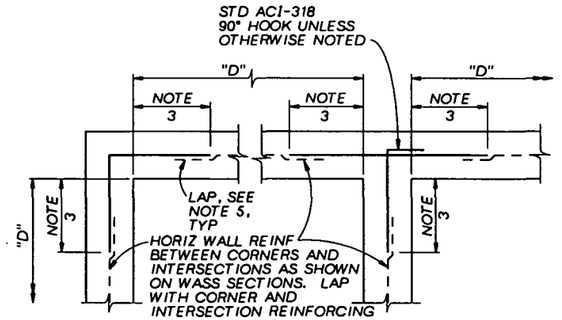


ANCHOR BOLT BLOCKOUT DETAIL
NTS

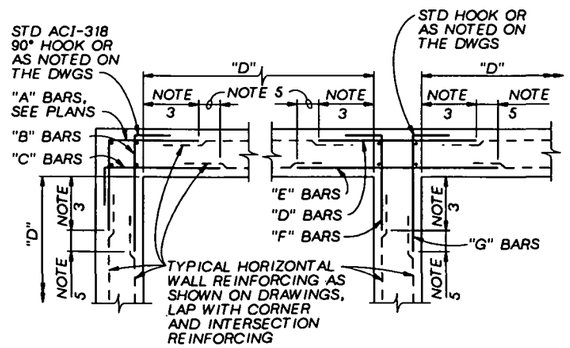
(300)

CORNER AND INTERSECTION REINFORCING DETAILS

1. TYPICAL HORIZONTAL WALL CORNER AND INTERSECTION REINFORCING LAYOUT IS SHOWN TO AVOID CONGESTION AND PERMIT PROPER PLACEMENT, FOR SIZE AND SPACING SEE PLANS. ALL HORIZONTAL REINFORCING AT CORNERS AND INTERSECTIONS SHALL BE FABRICATED AND INSTALLED WITH SPLICES LOCATED WHERE SHOWN REGARDLESS OF BAR SIZE AND SPACING.
2. WHERE THE CORNER OR INTERSECTION REINFORCING SIZE AND SPACING IS NOT SHOWN, NOTED OR TABULATED ON THE PLANS, THE SIZE AND SPACING SHALL BE THE SAME AS THE WALL HORIZONTAL REINFORCING SHOWN ON THE WALL SECTIONS OR AS NOTED FOR THE REINFORCING BETWEEN THE CORNERS OR INTERSECTIONS.
3. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 3" SHALL BE THE LESSER OF D/4, 10 FEET, OR 1.0 TIMES THE HEIGHT OF THE WALL, EXCEPT THAT IN NO CASE SHALL IT BE LESS THAN 2.0 FEET.
4. D = LENGTH OF WALL PARALLEL TO THE BAR LENGTH IN QUESTION.
5. EXCEPT WHERE OTHERWISE SHOWN ON THE DRAWINGS, THE LENGTH INDICATED AS "NOTE 5" SHALL BE EQUAL TO ONE "LAP LENGTH" AS REQUIRED BY THE GENERAL STRUCTURAL NOTES. USE THE LAP LENGTH AS REQUIRED FOR THE SMALLER OF THE TWO REINFORCING BARS BEING SPLICED.
6. UNLESS OTHERWISE NOTED, "B" AND "C" BARS ARE THE SAME SIZE AND SPACING AND, "F" AND "G" BARS ARE THE SAME SIZE AND SPACING.

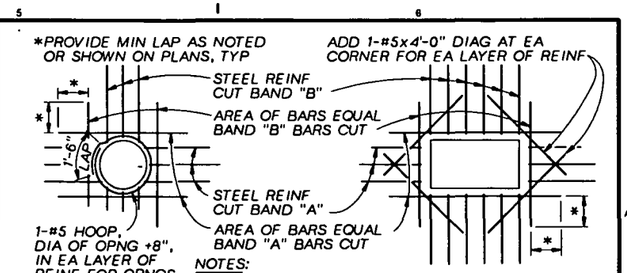


TYPICAL SINGLE MAT CORNER AND INTERSECTION REINFORCING
NTS



TYPICAL DOUBLE MAT CORNER AND INTERSECTION REINFORCING
NTS (SEE PLANS FOR SIZE AND SPACING)

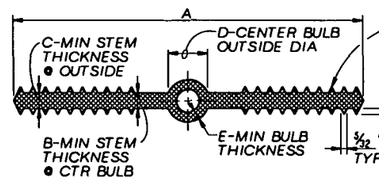
(301)



NOTES:
1. TYPICAL FOR ALL OPENINGS IN CONCRETE WALLS AND SLABS UNLESS INDICATED OTHERWISE ON PLANS.
2. DO NOT WELD REINFORCEMENT TO PIPE SLEEVES AND INSERTS.

OPENING REINFORCING
NTS

(302)



SIZE	A	B	C	D	E	F
6"x⅜"	6"	⅜"	⅜"	⅞"	¼"	6

NOTES:
1. MATERIAL QUALITY PER SPECIFICATIONS.
2. DIM REQUIREMENTS INDICATED SHOULD BE GIVEN TO SUPPLIERS PRIOR TO PLACING ORDERS.
3. NON-ROUND CENTER BULBS SHALL HAVE A MIN OUTSIDE DIM OF 'D'.

PLASTIC WATERSTOP
NTS

(303)

BID DOCUMENTS

CH2M HILL

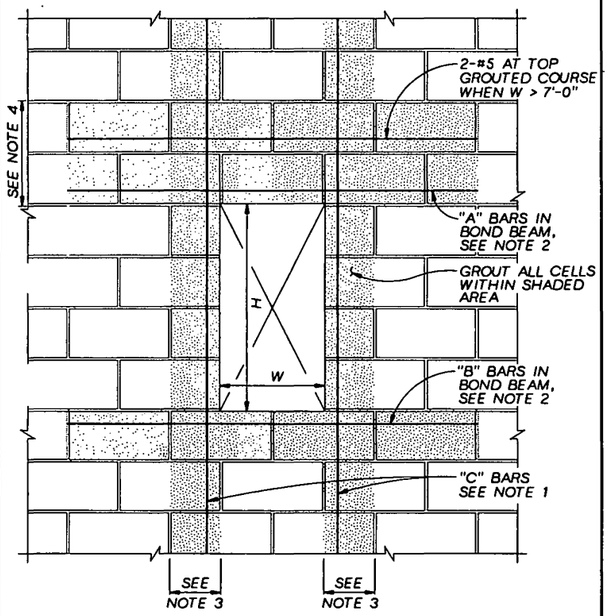
DSGN	B.W.HUGHES				
DR	M.A.REICHERT				
CHK	A.L.WOODHULL				
APVD	L.A.AMUNDSON	NO.	DATE	REVISION	BY / APVD

BAR IS ONE INCH ON ORIGINAL DRAWING. IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
STANDARD DETAILS
STRUCTURAL

SHEET	32
DWG NO.	D2
DATE	FEB 1996
PROJ NO.	104200



NOTES:

1. EXTEND "C" BARS 2'-0" MINIMUM BEYOND TOP AND BOTTOM OF OPENING EXCEPT THAT WHEN "H" OR "W" EXCEEDS 2'-0", "C" BARS SHALL EXTEND AND BE GROUTED FULL HEIGHT OF WALL. STOP REINFORCING AT CONTROL JOINT.
2. "A" AND "B" BARS SHALL EXTEND 2'-0" EACH SIDE OF THE OPENING. GROUT TO END OF BARS. STOP REINFORCING AT CONTROL JOINT.
3. GROUT SOLID MINIMUM OF 8" AT BEARING. SEE SCHEDULE FOR NUMBER CELLS TO GROUT ON EACH SIDE OF THE OPENING.
4. SOLID GROUT COURSES ABOVE OPENING PER SCHEDULE.
5. USE THIS DETAIL AT ALL OPENINGS INCLUDING DOOR AND LOUVER UNLESS NOTED OTHERWISE ON PLAN.
6. REFERENCE ARCHITECTURAL PLANS FOR MASONRY OPENING SIZES AND LOCATIONS.
7. FOR OVERHEAD DOOR STEEL LINTEL DETAIL, SEE (2/S4).

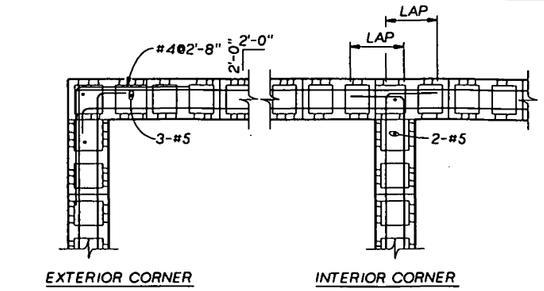
CMU OPENING REINFORCING SCHEDULE

W	REINFORCING BARS			# CELLS TO GROUT SEE NOTE 3	# COURSES TO GROUT SEE NOTE 4
	"A" BARS	"B" BARS	"C" BARS		
≤2'-0"	2-#5	2-#5	2-#5	1	1
>2'-0" ≤5'-0"	2-#5	2-#5	4-#5, 2 EACH CELL	2	2
>5'-0" ≤7'-0"	2-#6	2-#6	6-#6, 2 EACH CELL	3	2
9'-0"	2-#8	2-#6	8-#6, 2 EACH CELL	4	3

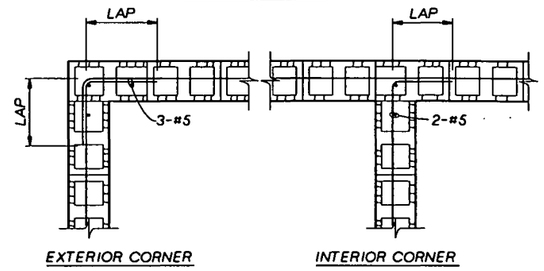
CMU WALL OPENING REINFORCING AND LINTELS

NTS

306



DOUBLE MAT



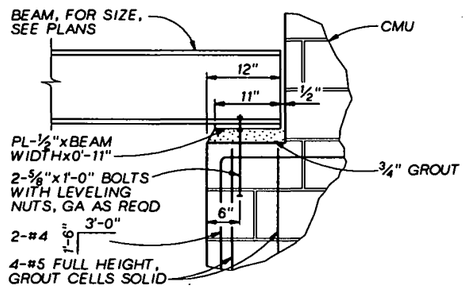
SINGLE MAT

NOTE:
LAP=30 BAR DIAMETERS OR 2'-0" MIN UNLESS OTHERWISE NOTED.

CMU WALL CORNERS

NTS

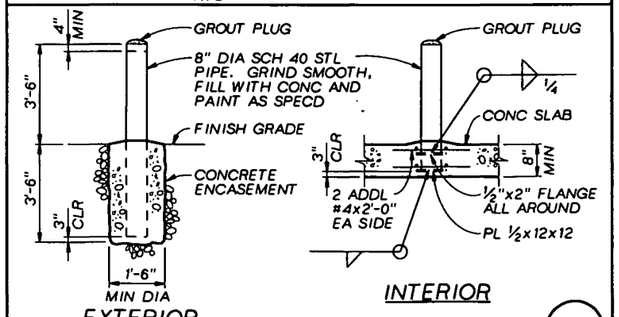
307



BEAM SEAT

NTS

308



GUARD POST

NTS

309

CH2M HILL

DSGN B.W.HUGHES
DR M.A.REICHERT
CHK A.L.WOODHULL
APVD L.A.AMUNDSON

NO.	DATE	REVISION	BY	APVD

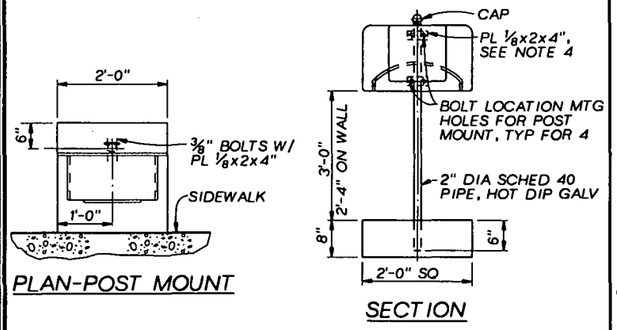
BAR IS ONE INCH ON ORIGINAL DRAWING.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
STANDARD DETAILS
STRUCTURAL

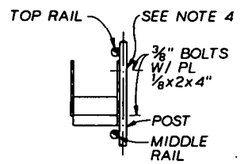
SHEET 33
DWG NO. D3
DATE FEB 1996
PROJ NO. 104200

BID DOCUMENTS

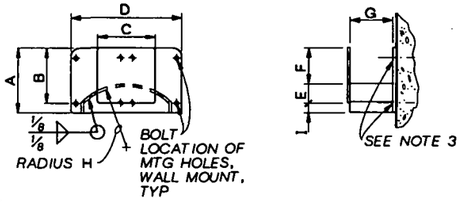


PLAN-POST MOUNT

SECTION



HANDRAIL POST MOUNTED



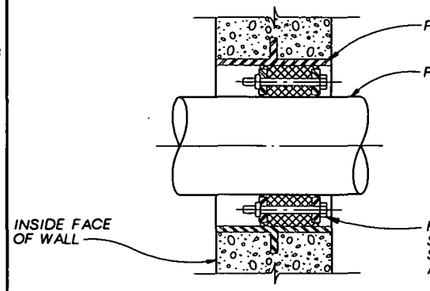
WALL MOUNTED

RACK TYPE	DIMENSION IN INCHES								
	A	B	C	D	E	F	G	H	I
TYPE A-3/4" & 1" HOSE	10-1/2	9	9	18	3	6	7-1/2	9-3/4	1-1/2

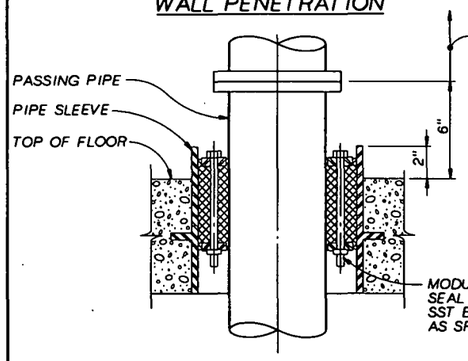
NOTES:
1. UNITS SHALL BE FABRICATED FROM 3/16" 6061-T6 ALUMINUM ALLOY PLATE.
2. ATTACH TO CONCRETE WALL WITH (4)-1/4" STAINLESS STEEL STUD TYPE WEDGE ANCHORS.
3. ATTACH TO VERTICAL HANDRAIL OR INDIVIDUAL POST WITH PLATES AND (4)-1/4" STAINLESS STEEL BOLTS.
4. ATTACH TO STEEL COLUMN WITH (4)-1/4" ROUND HEAD BOLTS, ONE IN EACH CORNER. INSERT DOUBLE SPACER NUTS BETWEEN COLUMN AND HOSE RACK.

HOSE RACK DETAILS
NTS

400



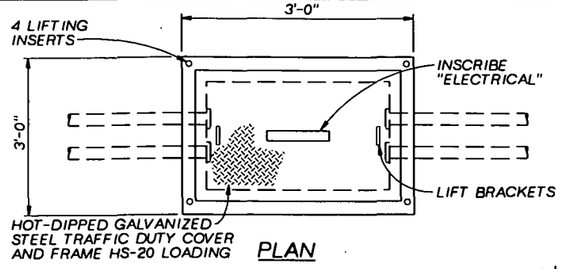
WALL PENETRATION



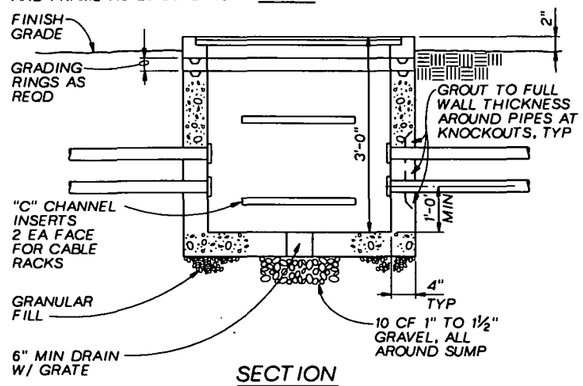
FLOOR PENETRATION

WALL/FLOOR PENETRATION SEAL DETAIL
NTS

401



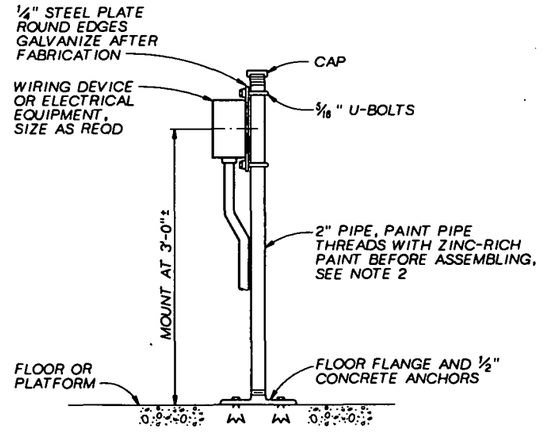
PLAN



SECTION

TYPICAL HANDHOLE
NTS

403



NOTES:
1. ALL MOUNTING HARDWARE TO BE GALVANIZED. USE WASHERS AND SPLIT LOCK-WASHERS UNDER ALL NUTS.
2. PIPE AND FITTINGS: GALVANIZED STEEL PIPE MEETING ASTM A120, SCHEDULE 40 WALL THICKNESS. THREADED 150-POUND MALLEABLE IRON FLOOR FLANGE MEETING ASTM A197. ANSI STANDARD PIPE THREADS ON PIPE AND FITTINGS.

PEDESTAL MOUNTED DEVICE
NTS (PIPE PEDESTAL)

404

CH2M HILL

DSGN	L.A.AMUNDSON			
DR	S.L.GANDREY			
CHK	R.A.YOLO			
APVD	L.A.AMUNDSON	NO.	DATE	REVISION

BY | APVD

VISUAL SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

REMEDIAL DESIGN
N.W. MAUTHE SITE
APPLETON, WISCONSIN

GROUNDWATER TREATMENT FACILITY
STANDARD DETAILS
MECHANICAL/ELECTRICAL

SHEET	34
DWG NO.	D4
DATE	FEB 1996
PROJ NO.	104200

BID DOCUMENTS